THE DIFFERENCE BETWEEN GROUPS AMONG THE COMPLETION OF UNDERREPRESENTED STUDENTS AND INTERACTIONS WITH NOT-FOR-PROFIT PRIVATE UNIVERSITY BUSINESS OPERATIONS

BY

DANIEL L. HAMMES

A dissertation submitted to City University of Seattle

In partial fulfillment of the requirements for the degree of

DOCTOR OF BUSINESS ADMINISTRATION

2025

SIGNATURE PAGE

SCHOOL OF BUSINESS AND MANAGEMENT

We, the faculty supervising this research project, affirm that we have read and approve of the project as written in scope and quality for the Doctor of Business Administration at City University of Seattle.

Deanne Larson, PhD, Chair

D Larson

Patricia Mouton, PhD, Committee Member

Patricia Mouton

Patricia Mouton (Sep 18, 2025 12:12:50 EDT)

David Griffin, PhD, Committee Member

David Griffin (Sep 24, 2025 22:17:26 GMT+2)

Michael Fors, Ph.D., Dean, School of Business and Management

Michael Fors

Michael Fors (Sep 18, 2025 07:14:06 PDT)

DEDICATION

My Family and Work-Family

This dissertation is dedicated to my mother, Edith L. Hammes, “The Queen of Delta.” She raised an extensive family across multiple generations and has provided unwavering support throughout our various pursuits. Her steadfast commitment to education in all its forms continues to inspire her descendants.

ACKNOWLEDGMENTS

I want to express my deepest gratitude to my dissertation chair, Dr. Deanne Larson, for her unwavering support, guidance, and encouragement throughout this journey. Her expertise and insights have been invaluable in shaping this dissertation. I also extend my heartfelt thanks to the entire dissertation committee for their constructive feedback and dedication to my academic growth.

I am profoundly grateful to the leadership and my coworkers at Embry-Riddle Aeronautical University for their financial and moral support. Their belief in my potential and their encouragement have been instrumental in the completion of this work.

To my family, your ongoing encouragement and love have been my anchor throughout this process. Your faith in my ability has been a constant source of motivation.

Lastly, I acknowledge Christ, who gives me strength, wisdom, and passion to pursue and complete this degree. His guidance and grace have been the foundation of my research.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ABSTRACT

The study examined how underrepresented students' (such as students of color, lower socioeconomic communities, and LGBTQIA+) completion rates are affected by their interactions with the business function of a university. Researching completion rates on this basis addresses an area of student success where there is currently a lack of research. This research examines factors associated with the completion rates of underrepresented students, aiming to provide university leadership with information on variables that may influence these rates. This research purposes to clarify how underrepresented student completion rates relate to interactions with business operations at private, not-for-profit universities, addressing a current research gap. Astin's (1999) Theory of Involvement and Tinto's (1975) Theory of Student Departure were the key theories referenced in this study and served as the foundational models for this study. The main question of this study asks, "Is there a possible link, if any, between the interactions of underrepresented students with the university business function systems of a university and the completion of these students?" Responses were collected using an online survey (SurveyMonkey) platform from individuals who are current or former students of two not-for-profit private universities. Following data collection, a quantitative research methodology was employed. The Mann-Whitney U test was used to contrast responses from students with differing levels of interaction with university business operations at a not-for-profit private university. This statistical method was also applied to assess the extent and direction of the association between the two student groups.

The study found that underrepresented students had an increased level of interaction with the university's business operations; however, no significant correlation was identified between the underrepresented students' interactions and the student completion rates. The survey found no correlation between the number of interactions with business offices and the completion rate of underrepresented student programs, based on the Mann-Whitney U Test results. Although the study found no direct correlation, opportunities remain to improve the interactions between business functions and underrepresented students.

Keywords: students, underrepresented, private university, not-for-profit, business operations, persistence, undergraduate, economic status, Whiteness, first generation, service quality, inclusion, LGBTQIA+

CHAPTER 1: INTRODUCTION TO THE STUDY

This study examined how underrepresented students' interactions with various university business operations (including financial aid, bursar, human resources, food services, housing, security, information technology, and library departments) of a U.S. not-for-profit private university affected their completion rates. The general problem, as demonstrated by the research, is that students of color, students of lower socioeconomic communities, women, and lesbian, gay, bisexual, transgender, queer, intersex, asexual, and plus (LGBTQIA+) students have a lower completion rate than their counterparts. For example, the National Center for Education Statistics (National Center for Education Statistics, 2018) found that only 55 % of first-time full degree-seeking Black and Hispanic students graduate from a 4-year program in 6 years, where 67% of White students. The current research on this subject reveals a narrow focus on factors such as grade point average entering college, academic preparedness, academic process, advising process, and the persistent intentions of students (Hatch & Garcia, 2017). The current research overlooks other factors that may impact student completion rates and fails to address critical questions about the broader context in which these factors operate.

Demetriou and Schmitz-Sciborski (2011) noted that since the early 1930s, researchers have sought to understand the predictors of student retention and graduation in undergraduate bachelor's degree programs. They further explained that these early studies on retention in the U.S. focused on the high rate of student failure to graduate. Despite decades of research on college student retention dating back to the 1930s, a gap remains in understanding the connection between interactions of underrepresented students attending not-for-profit private universities, the university's business operations, and student graduation rates. This study employed a quantitative research methodology to investigate the relationship between student interactions with the business operations of a university and the completion rates (i.e., the receipt of a diploma or certificate of completion) of students identified as part of the underrepresented population. The research was grounded in Astin’s (1999)Theory of Involvement and Tinto’s (1975) Theory of Student Departure, which provided foundational frameworks for this research.

This study applies and extends these theories to examine potential relationships between student interactions with business operations and student completion rates. This research addressed this central question: Is there a link, if any, between the interactions of underrepresented students with the university business function systems and the completion rates of these students? This research was guided by a central question, which is formally stated later in the chapter. The research question provides a foundation to examine underrepresented students and their completion rates in greater detail.

Study Background and Foundation

This study examines how historical and current disparities affecting underrepresented students may impact their completion rates compared to those of other students. At the time of this research, underrepresented students in not-for-profit private universities still had a lower completion rate than their counterparts, and the current research into this topic has failed to address the relationship between student completion rates and student interactions with the university's business operations.

Recently, there has been various research into the needs of underrepresented students as a whole and not into their unique needs as individuals (Estrada et al., 2016); (Inoue et al., 2015), as it relates to this research topic. The research by these individuals did not examine the connection between completion rates of underrepresented students and their interactions with the business operations of the university. This foundational issue provided the basis for the following study into underrepresented students and their interactions with the business function of the university. The following section addresses the current state of the field of study on student completion rates as it relates to underrepresented students.

Current State of the Field in Which the Problem Exists

Stewart et al. (2015), Hatch and Garcia (2017), and Bal et al. (2019) research on student completion rates focused on several key factors, including student grade point average entering college, academic preparedness, social preparedness, academic support, student support systems, student persistence intentions, and school discipline processes. Previous research on student completion has emphasized personality and background, along with related student success programs, rather than examining university structures or departments. These studies have enhanced our understanding of the challenges underrepresented students face in achieving degree completion (Tinto, 1975). The core structure of the university has not yet been examined regarding its role in supporting underrepresented students in completing their degrees or certifications. Previous studies examining student success, especially in relation to completion rates of underrepresented students, are limited unless they consider all facets of the university experience. This study focused on how students interact with the institution’s business operations.

Multiple factors may affect a student’s experience at a university (Braxton et al., 1997). Though many of these variables (e.g., student preparation; (French, 2017), a student’s financial status (Estrada et al., 2016), the academic advising (Hatch & Garcia, 2017)and the student support systems at the college (Bal et al., 2019)) have been previously examined, underrepresented students are still completing their programs at a lower rate than their counterparts.

It is essential to clearly define the term “underrepresented students” to establish a foundation for addressing this population of students and their completion rates, to evaluate the various university factors that may influence their academic achievement (*Broadening Participation at the National Science Foundation: A Framework for Action,* 2008). According to the National Science Foundation (2008), underrepresented students are defined as specific populations that have less representation in a particular context or field relative to their proportion in the general population. This typically refers to groups such as racial and ethnic minorities, women, LGBTQIA individuals, people with disabilities, and other marginalized communities. The term refers to the disparities in visibility, resources, opportunities, and participation across various sectors such as education, employment, politics, and media. Using this definition, identifying and addressing any factor that may affect these students can clarify their individual needs and support them in completing their program of study.

An example of the variables that may affect underrepresented students at a higher rate is noted in research by Bal et al. (2019). They found that underrepresented students face exclusionary discipline at a much higher rate than their counterparts. These students may suffer serious negative consequences despite similar violations to those of their counterparts. These students spend less time in instructional settings and may experience reduced social interaction compared to their counterparts due to the exclusionary discipline. The higher rate of exclusionary discipline of underrepresented students leads to an increased risk of school dropout rates and a higher chance of involvement with the justice system. Most universities have continued to be concerned with student persistence and completion rates. Institutions have invested significant resources and effort in improving these rates (Tinto & Cullen, 1973). However, there has been a slight change in the completion of underrepresented students over the years, despite the increased money and effort spent.

Universities, along with stakeholders such as accreditation agencies, government bodies, and the broader society, have a legitimate interest in student completion. Enhancing the academic environment and institutional culture is essential to improving student satisfaction and increasing completion rates. These efforts address key factors influencing whether students persist in their studies or choose to withdraw from a university (Tinto & Cullen, 1973). As universities become more diverse, it is essential to consider how business operations impact student experiences, as these interactions are often overlooked. Understanding the significance of various business operations (e.g., financial aid, bursar, human resources, food services, housing, security, information technology, library departments) involves examining their impact on student completion. Although these departments are not directly involved in academic advising, they regularly interact with students. As the number of underrepresented students increases, it is important to understand how these business operations support their completion and how the interactions between these operations may influence student success.

There has been a notable rise in the number of underrepresented students, particularly among those who self-identify as ethnically Black. The enrollment of students identified as Black has increased since 2000, from 13% to 15% at public 2-year institutions, from 10% to 13% at public 4-year institutions, from 13% to 14% at not-for-profit private 4-year institutions, and from 21% to 28% at private for-profit schools (Large Increases in Black Undergraduate Enrollment but Not at the Most Selective Institutions, 2019). Despite significant investment of resources and services aimed at improving completion rates among underrepresented students, including Black students, data indicated a slight change in graduation outcomes for these groups across universities and colleges. In the Journal of Blacks in Higher Education, the authors also noted that minority student enrollment has grown the least at very selective and moderately selective 4-year institutions (Large Increases in Black Undergraduate Enrollment but Not at the Most Selective Institutions, 2019). The limited growth observed in selective colleges and programs presents an opportunity to investigate factors influencing student completion rates, with a specific emphasis on disparities between the two groups and the impact of business function contact. This study examines the student interactions with the business operations (e.g., financial aid, bursar, human resources, food services, housing, security, information technology, library departments) to provide an opportunity to address another facet affecting the underrepresented student completion rates (Hussar, W. & Bailey, 2019) at some institutions. This study by these authors identified new opportunities by examining the historically low completion rates of underrepresented students at not-for-profit private universities.

Historical Background

Research studies about student completion and persistence rates have focused on the areas related to advising and academics (Braxton, 2019); (Cochran, 2016) (Mechur Karp, 2016); (Murphy, Joseph, 2016). These research studies were done by public and private organizations to address the need for more funding for education. However, historically, these research studies have lacked any research on the link between underrepresented students' completion and their interaction with the university's business operations. To better understand business operations, it is essential to consider whether these departments outside of advising and academics may impact student completion rates without a direct connection to student completion, advising, or the educational process (Andersen, 2024). Understanding this relationship may be just one more element in helping underrepresented students achieve their academic goals.

Historically, underrepresented students have been classified into various demographic categories, including women and individuals from non-Caucasian (non-White) backgrounds. Typically, White, heterosexual men with ancestry in Europe, the Middle East, or North Africa have been categorized as a group with higher representation in education settings (B. Hussar et al., 2020). Thus, some underrepresented populations (i.e., non-White men) that are affected at a higher rate, are Native American Indian or Alaskan Native, Black, Latino, women, and LGBTQIA+ students, were lumped into one group without addressing their unique needs. Underrepresented students now include first-generation students (Chen, 2017). First-generation students tend to be less educated and are less likely to vote or have access to fair wages and healthcare (Murphy, Joel P. & Murphy, 2018).

Historical race-based educational segregation is one factor that has contributed to underrepresented students being impacted at a higher rate in their academic pursuits (Bal et al., 2019). The race-based educational segregation in the United States exists even though it is prohibited by law (Bal et al., 2019). Carothers (2018) stated that segregation persists within a context of inequality, even though various groups have taken steps to address it. Though segregation has been prohibited by law for many years, there is still race-based discrimination found in many institutions. Students from underrepresented populations receive exclusionary disciplinary actions more frequently and severely (Carothers, 2018). These exclusionary disciplinary actions contribute to higher dropouts among underrepresented students and push them into special education programs. The overrepresentation of non-White students in special education programs and the underrepresentation in gifted programs contribute to race-based educational separation (Carothers, 2018).

Though the race-based educational segregation still exists, the enrollment of underrepresented students has increased in college over the past 10 years, and completion rates remain low compared to their counterparts. The Postsecondary Value Commission (Kwakye et al., 2020) It is stated that underrepresented students tend to attend public 2-year institutions and for-profit colleges, as opposed to other colleges and universities. However, the completion rates for these students have been lower than those of their peers at the same institutions. The commission also noted that although underrepresented students enroll in public four-year and not-for-profit private institutions at lower rates, their completion rates at those institutions are comparatively higher.

Data from the Integrated Postsecondary Education Data System (National Center for Education Statistics, 2018) noted that enrollment in for-profit, degree-granting institutions increased by 52% between 1995 and 2000. Given the growth of for-profit universities and the persistently low completion rates at not-for-profit private institutions, it is increasingly important to address the needs of underrepresented student populations.

Understanding the role of the university's business operations and the underrepresented students will hopefully move universities closer to resolving one more variable that affects student completion.

Student enrollment has increased among minority groups, and the population of White heterosexual men has decreased (Large Increases in Black Undergraduate Enrollment but Not at the Most Selective Institutions, 2019). However, the increase has not been equal for all groups of underrepresented students. Thus, the following section discusses some of the various groups of students considered underrepresented populations for this research. Identifying these populations provides a foundational understanding of the students who are being addressed through this study.

Asian students (B. Hussar et al., 2020) represent one of the underrepresented groups that have experienced significant enrollment growth, although this trend does not apply to all subgroups of Asians. Some subgroups of Asian students should be considered part of the underrepresented student population, even though some Asian subgroups are highly represented in universities and some programs. For example, Chinese, Korean, Indian, and Japanese students are well-represented in universities (Hussar, B. et al., 2020) whereas in STEM programs, students from Cambodia, Vietnam, and other nations remain underrepresented at most universities (Hussar, W. & Bailey, 2019). Asian students, as a group, still face challenges due to underrepresentation in some educational programs. Their interactions with the business operations, along with other support services, may provide opportunities to complete their degrees.

The next minority group is that of Native American Indians and Alaskan Native students. For this research, an American Indian and Alaska Native, as defined by B.

Hussar et al. (2019) is a person from North and South America (including Central America) who maintains tribal affiliation or community attachment. Many of these students remain underrepresented in science and engineering (S&E) degrees, except at the associate's level (Trapani & Hale, 2019). Though they are not highly represented in current research, this population will not be neglected in this research. One study in the Journal of College Science Teaching (Stumpff & Cole, 2012) expressed the importance of faculty in creating activities to engage the Native American students. Efforts to support these students through activities designed to promote an inclusive environment, along with enhancements in their interactions with the business operations, could contribute to higher program completion rates.

Black and African American students are defined as individuals with ancestry in any of the Black racial groups originating from Africa. These students are more likely than their counterparts to be first-generation students (Cataldi et al., 2018; Ellis, 2019). Between 1992 and 2000, approximitely14% of African American high school graduates who enrolled in U.S. postsecondary institutions were first-generation students, and only 8% had college-educated parents. These students have increased their enrollment, while the enrollment of White students has decreased. However, enrollments of these students at selective 4-year institutions have increased at a much lower rate. Black students continue to be underrepresented in STEM programs and among S&E degree recipients at all degree levels. Historically, Black students have suffered from race-based educational discrimination (Large Increases in Black Undergraduate Enrollment but Not at the Most Selective Institutions, 2019).

Discrimination is evident in special education, where underrepresented students, particularly Black students, are overrepresented. Research indicates that these students are subjected to more severe and frequent exclusionary actions and lower admission rates to gifted programs (Working, 2021). Such practices have impacted the academic outcomes of Black students and indicate the need for institutional attention. Historically discriminatory practices have affected the academic outcomes of Black students, and the institution needs to address these effects appropriately. These students have suffered from stereotyping that focuses on under-preparedness for the rigors of college, rather than the campus context that may undermine student achievement (Harper, S. R. et al., 2018). The underrepresentation of these students may be influenced by their interactions with the university's business operations.

Although Native Hawaiian or other Pacific Islander students are not the primary focus of this research, it is important to acknowledge the distinct challenges and opportunities they encounter in higher education. Understanding how various elements of university business operations may influence their experiences is vital for fostering an inclusive academic environment. As a group, these students are defined as people having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands. This group of underrepresented students is included in the study as part of the broader group of underrepresented individuals, rather than being analyzed as a separate subgroup. Although they comprise a smaller proportion of the population, their experiences may be influenced by interactions with the university’s business operations.

Hispanic (Latino) students are one of the fastest-growing student populations in all colleges and universities. Regardless of their racial identification, these students are typically from Mexican, Puerto Rican, Cuban, South or Central American, or other Spanish cultures (Ponjuan et al., 2015). Although Latino adolescents and young adults are enrolling in colleges and universities in record numbers, their completion rates remain comparatively low, ranging from 8% to 25%. Hispanics are underrepresented in all science and engineering programs except at the associate's level (Ponjuan et al., 2015).

The issue is not just a matter of completion but also the impact that noncompletion has on the economic standing of these Latino students. In 2011, just 13% of Latino students in community colleges and 8% pursuing bachelor's degrees attained their qualifications (Murphy, Joel P. & Murphy, 2018). Latino students are more likely to be first-generation students, with only 4% of them having both college-educated parents (Ishitani, 2016). As more Latino students achieve higher rates of educational completion, their overall level of education increases. This increase in educated population correlates with more opportunities to access fair wages and healthcare, and be more likely to participate in their community (Murphy, Joel P. & Murphy, 2018). Ozaki (2016) A notable lack of formal research and focus on the formal curriculum in education programs was observed, with an emphasis on examining how the community college environment affects the success of underrepresented students. Although the number of Hispanic students at educational institutions has increased, their experiences may continue to be influenced by their interactions with the university's business operations.

Women encompass not only groups traditionally considered underrepresented but also include White women. Although progress has been made toward achieving gender parity in various programs, enduring disparities remain in the science and engineering fields. Women, including those who self-identify as White or ethnically diverse, still face many of the same stereotype threats related to their identity and self-efficacy. Self-efficacy, which reflects students' perspectives of their roles in science and engineering, may influence their academic and professional progression. A student's worldview, defined as how individuals interpret their environment and beliefs about how life should be, may affect their ability to advance. Women, both White and ethnically diverse, face challenges in achieving their educational goals that may be increased by their interactions with the business operations of a university.

The final group among underrepresented populations at a university is LGBTQIA+ students. Unlike many minority groups, LGBTQIA+ students are not always easily visible. They may or may not disclose their identity to protect themselves both professionally and personally. The risk of stepping out, especially in STEM programs, is a danger many LGBTQIA+ students are hesitant to take (Hughes, 2018). One challenge these students face is that they may remain invisible to the rest of the community if they choose not to reveal their identities. Despite remaining invisible, these students come from diverse spiritual and religious backgrounds. Because their identity is not immediately apparent, there has been less focus on addressing their completion as a group in past research. Though not always visible, LGBTQIA+ students may also be affected by their interactions with the university's operations.

Historically, underrepresented students have completed their college degrees at a lower rate than their counterparts, prompting universities to invest in various strategies aimed at increasing their completion rates. Multiple factors influence student success, which in turn impacts future earning potential and may significantly affect the quality of life of underrepresented students. Numerous factors may influence a student's ability to complete their university studies, and failure to achieve this milestone can substantially affect their future opportunities and the opportunities of future generations. Recognizing these variables and barriers that underrepresented students face in postsecondary education may contribute to higher rates of successful degree attainment. School-wide behavioral formative interventions and solutions are necessary to address racial disproportionality to improve the successful completion of these students. These interventions involve the partnership of institutions and communities to address systemic issues (Bal et al., 2019)

Since the early 1970s, theories like Astin's (1999) Theory of Involvement and Tinto's (1975) Theory of Student Departure have aimed to explain student completion issues (Milem & Berger, 1997), especially among underrepresented groups. This research analyses key theories to guide strategies that improve student engagement and support, potentially increasing retention and completion rates. As higher education continues to evolve to the changing needs of students and the changing student population, these foundational theories remain relevant in shaping effective policies and practices that aim to ensure student success.

Theoretical Foundations

Astin's (1999) Theory of Involvement and Tinto's (1975) Theory of Student Departure were the foundational theories for this research. The theories were chosen based on their impact on the study of student completion. Both theories emphasize how integration, social and academic, and engagement in the university contribute to the persistence and completion of all students, with particular relevance for underrepresented student populations. Tinto and Astin's research provided a good foundation for this study into another element of underrepresented student completion.

Tinto's (1975) Theory emphasizes students' pre-entry traits and their initial levels of commitment to graduation and the institution. Furthermore, Tinto's study on student integration found that integration requires students to feel a sense of fitness or cohesion in the university campus. Astin's (1999) theory focuses on the involvement of students with faculty, academics, and peers, and how that involvement is critical to the students' persistence and success at the university. Many external forces and interactional processes impact the university culture (Andrade et al., 2020). Students' engagement with both institutions' informal and formal social and academic components may influence their completion. Astin and Tinto found that students who integrate into the university have the highest level of persistence and completion rates (Zong & Davis, 2022).

An examination of all university operations and departments by senior leadership will create an understanding of how each operation and department affects a student's experience and how these experiences are essential to understanding the university operations' role in supporting the completion of underrepresented students (Arif, 2016). This research examined the critical theories in depth to guide the dissertation research. Theories such as these (Astin, 1999); (Tinto, 2016) are synthesized, compared, and contrasted. Reviewing these theories will help readers apply them to the dissertation's research question.

Theory 1: Astin's Theory of Involvement

Astin's (1999) Theory of Involvement, first introduced in 1985, addresses the completion rates of students and the factors that influence these rates. The theory analyzes the extent of physical and psychological energy that students invest in their academic experience, which contributes to their level of involvement in their education. The theory emphasizes the extent to which students seek campus involvement and engage in their developmental process. The desire is crucial to understanding the elements that most affect a student's completion. The theory considers input, environment, and output as key factors in student completion, highlighting how students and the universities influence outcomes. This understanding informs the research of this study, which aims to identify the factors that impact a student's completion.

Astin's (1999) Theory of Involvement aimed to explain the factors that may affect the completion rates of students. The theory examined the physical and psychological energy students invest in their academic experiences, which affects their level of involvement in their education. The key to this theory was the degree of a student's desire for campus involvement and active participation in their developmental process. The desire is crucial to understanding the elements that most affect a student's completion. The theory examined the three major components (i.e., input, environment, and output) that affect students' completion. An examination of these three elements may reveal how students and the university influence the completion of the course. The understanding of this theory is pertinent to the research of this paper, which aims to identify factors that impact a student's completion.

Theory 2: Tinto's Theory of Student Departure

The second theory used as the foundation for this dissertation is Tinto's (1975) Theory of Student Departure. Tinto attempted to bridge the gaps in understanding the student dropout process by defining the topic and identifying key factors that may influence a student's decision to drop out. This theory was rooted in Durkheim's theory of suicide of 1951 (Ginsberg, 1951), which purports that alienation and inability to integrate into society increase suicidal ideation and behavior. Tinto believed that the same behaviors exhibited in Durkheim's theory are like the behaviors that individuals exhibit in their academic "suicide." Experiences with various college services are related to Tinto's theory, focusing on both academic and social interactions. Tinto's primary focus has been on understanding why students depart their educational pathway. Tinto understood how a student's academic and social fit in the university affects their decision to stay or leave (Braxton, 2019). At the heart of student success, Tinto focused his research on student interaction in the university environment. He believed that the more socially and academically involved students are in their education (Valli & Kanta, 2016), the more likely they are to persist and complete their education.

Review of Theories

Both Astin's and Tinto's theories contribute to the discussion and understanding of the elements that impact a student's completion. Tinto's (1975) examined the role of university culture fit, while Astin's (1999) addressed student involvement, together providing a deeper understanding of student persistence. Addressing the institution's informal and formal social and academic components is an essential responsibility of the educational institution. These two theories were integral to the research and provided a foundational framework for exploring factors that may impact the completion of underrepresented students in a university. This research explores several theoretical frameworks that may guide the study of university operations, emphasizing the importance of synthesizing, comparing, and contrasting these theories. By applying these frameworks across various departments and areas of a university, we may gain insights into how each facet contributes to the overall student experience and their completion rates. Hopefully, applying these theories to the university operations will improve student persistence and completion among underrepresented students. Tinto and Astin highlighted the complexities of student completion. However, there are still gaps in the research related to this area of study on underrepresented students and their interactions in the university environment.

Deficiencies in Evidence

Research into student completion has focused on the underrepresented students' academic and social interactions (Braxton et al., 1997). Studies addressing the impact of academic and student affairs programs on university initiatives to improve college persistence and degree attainment are extensive, yet gaps remain in the area of research (Cochran, 2016). Faculty may increase persistence by understanding their students' educational and personal backgrounds. The entire university, including all business operations, is committed to enhancing the completion rates of underrepresented student populations. The role of business operations in the university cannot be overlooked. Administrative processes, resource allocation, and support services must align to enhance student completion rates. Streamlining these operations ensures that students have access to the resources they need, from academic advising to mental health services, fostering an environment conducive to success. When faculty establish an environment of empathy and support, students are better equipped to overcome obstacles and pursue their academic goals with confidence (Sidelinger et al., 2016). However, it is essential to recognize how cultivating strong relationships with all students, regardless of their background, may yield significant benefits. Understanding what matters to students is valuable information for developing programming to support them (Millea et al., 2018) Every student deserves the opportunity to feel valued and supported, and faculty interactions play a crucial role in facilitating this.

Problem Statement

The study examined the difference between a group of underrepresented undergraduate students based on their interactions with the business operations of a university to their completion (i.e., the receipt of a degree or certificate). Tinto (2017b) and Grissom and Redding (2015) have investigated student completion. However, research related to the university's business operations remains limited. This gap presents an element that could potentially influence undergraduate program completion. Since business operations are part of a student's college experience, it is appropriate to examine this element as well as the other aspects of the college experience.

While the terms persistence, retention, withdrawal, and attrition are often used interchangeably, as noted by Claybrooks and Taylor (2016), this research will use the term completion. All these terms are focused on addressing the issue of completion. The importance of persistence, retention, withdrawal, and attrition is essential, though the overall completion of the students is the goal (Millea et al., 2018; Voigt & Hundrieser, 2008). The proposed research aims to assist universities in identifying strategies to improve program initiation and completion rates among students from underrepresented groups.

General Problem

The general problem is how the university's business operations, such as financial aid, bursar, human resources, food services, housing, security, information technology, and library departments, affect the completion of underrepresented undergraduate students. The problem revealed is that underrepresented students complete their programs at a much lower rate than their counterparts. The systematic challenges faced by these students significantly reduce their likelihood of completion compared to their counterparts. Estrada et al. (2016) noted that the number of students from underrepresented populations who complete their degrees and enter science, technology, engineering, and mathematics (STEM) professions is less than 20%. Although the number of white male students has declined since 2000, the number of underrepresented students has not increased to offset the decrease in males in education (Higher Education in Science and Engineering, 2019). As noted by scholars (Estrada et al., 2016; Samuelson & Litzler, 2016), these students represent great wealth to the community, and society loses significantly when they do not complete their degree or program of study.

The literature review identified a gap concerning the influence of university business operations on the completion rates of underrepresented students. From the application process to the acclimation to the campus culture, underrepresented students interact with the business operations of the university. The engagement of underrepresented students with the business function systems has an impact that has not been previously researched.

Localized Problem

This study aimed to analyze the relationship between engagement with business operations and the completion rates of underrepresented students, to clarify how these interactions may affect their academic success. The research examines potential correlations with student completion, without suggesting a relationship. The principal implications of the study were directed toward not-for-profit private universities. Lower completion rates among underrepresented students affect the students themselves, the university, and society (Grissom & Redding, 2015). Underrepresented students, including those from low-income backgrounds, first-generation college students, and students of color, often face systemic barriers that hinder their academic success. While previous research has addressed academics and student advising, there is limited knowledge about the impact of university business operations on underrepresented students. Examining university business operations and their interactions with underrepresented students will help fill a critical gap in the research regarding the completion rates of these students.

The business operations of a university and its interactions with underrepresented students have not yet been fully understood when considering a student's decision to persist in completion. When a university assesses strategies to enhance the inclusion of underrepresented students, it should develop robust support systems that enable these individuals to achieve optimal academic performance. Identifying one more element in the university system that is causing part of the issue for the student helps move institutions one step closer to closing the achievement gap (Valencia, 2015).

Scope

The primary scope of this research examined not-for-profit private universities, as well as their business operations, accordingly to previously established definitions. The study addressed two U.S.-based not-for-profit private universities serving primarily an adult learner student population. The research focused solely on the university's business operations, excluding student services or academics.

Audience

The audience was primarily university leadership, aiming to boost completion rates among underrepresented students. Most universities have concerns about students' persistence and completion. Despite significant spending and effort, completion rates have only risen slightly, particularly among underrepresented students. The work to address the completion rates of students and the efforts to improve student completion rates (Dancy et al., 2021; Miller & Bell, 2016; Tinto, 2012a), particularly among underrepresented students, are of importance to universities and their constituents, including accreditation agencies, government entities, and society. Thus, applying the study's findings to a university's business practices may improve completion rates of the underrepresented student populations at those universities.

Specific Business Administration Problem

Identifying whether business operations have a significant role at universities is essential for examining the relationship between underrepresented students' interaction with these operations and their rates of completion. Assessing whether business operations influence student completion could provide an additional strategy for enhancing completion rates of underrepresented students. Althodonesome progress has been made over the past 40 years in addressing the completion rates of underrepresented students, but much work remains to be done. By understanding the unique challenges these students face, universities may implement comprehensive, targeted strategies that support and assist in student completions. This understanding may create an environment conducive to the success of these students, fostering an inclusive educational landscape where all students may have the opportunity to thrive and complete their degrees. This understanding may help address low completion rates among students in various programs, including STEM.

The study analyzed how business operations affect the academic achievement of underrepresented students. Aligning all university business operations may help raise completion rates for these students. Every business function has the potential to foster an environment that prioritizes support and concern for all students, with particular emphasis on underrepresented students. Establishing a culture of support and concern involves implementing policies throughout all institutional stages, from recruitment to graduation, that prioritize diversity, actively address systematic biases, and revise those processes and procedures to eliminate inherent system biases. This study aimed to enhance diversity by addressing systematic biases in universities that impact the completion rates of underrepresented students.

The primary objective of this research study was to investigate the possible relationship between the underrepresented undergraduate students' interactions with the business operations of a university and their rates of completion in their educational programs. The study focused on the operational processes within university business units, analyzed completion rates among underrepresented students, and explored how the business operations may influence students' successful completion of their programs. For clarity, this study examined how the business operations here refer to business-related activities that are not related to academic or student services, but may still interact with students during their academic experience. The following section explains the methodology and research design that were used to fulfill this study's purpose.

Methodology and Research Design Overview

This research employed a quantitative method with a relational design to examine any possible relationship between the completion rates of underrepresented students and their interactions with the business operations of not-for-profit private universities. Inoue et al. (2015) provided a sample of what the quantitative method should look like. Inoue et al. focused on how addressing and reducing social inequalities in education could help improve the access and completion rates of underrepresented students. Additionally, the authors illustrated how examining empirical data can provide insights into the socioeconomic effects of particular cities and municipalities on distinct groups of students.

This quantitative research method (Martin, W. E. & Bridgmon, 2012) suits many business studies, including this project, as it delivers data quickly and efficiently for analysis. It further provides a less subjective interpretation of the data and an objective view of the possible differences between the two groups (Savage et al., 2019). For example, Bandaru et al. (2015) used the quantitative method to examine consumer-oriented companies. Moreover, like most businesses, universities are consumer-oriented businesses. As a foundation for research application, the relationship between students' (i.e., consumers') success and their interaction with the business operations of a not-for-profit private university may contribute to shaping the understanding of the link between these two variables.

This study employed a quantitative survey design to collect data from underrepresented students enrolled in various academic programs. The survey collected data specifically related to the interactions of students with the university business operations of not-for-profit private universities, as this information was essential to addressing the research hypothesis. First, an analysis was conducted on the variance observed among underrepresented students who completed their program, focusing on their interactions with business operations, as reported in the survey data. Second, this study examined whether a difference existed between the two groups or if no difference could be observed regarding completion and interactions. This research investigated the experiences of underrepresented students within a university environment, with particular attention to potential disparities in their academic completion rates in relation to their interactions with the business operations compared to other student groups.

Hypothesis

Null Hypothesis (H_0). The frequency of interactions with the university business function systems does not affect the completion of underrepresented students at not-for-profit private universities in the Northwest region of the United States.

Alternative Hypothesis (H_1). The frequency of interactions with the university business function systems does affect the completion of underrepresented students at not-for-profit private universities in the northwest region of the United States.

Study Limitations

As with any study, there are several limitations inherent to the research process, many of which also stem from the environment in which the researcher works. The first limitation of this study was the ability to collect and analyze the data within the scope of the dissertation, which was hindered by the restrictions on data provided by universities. The limitation was addressed by collaborating with schools to obtain non-FERPA-protected student information and relevant prior student data within the research scope. The second limitation was the availability of students willing to provide the information needed for research. This mitigation was mitigated by limiting the scope and collaborating directly with the schools to gain access to the students who fit in the scope of the research. The third limitation of the study was the nonresponse or incomplete response of the survey participants. There was no specific mitigation to address this limitation, except for expanding the participant pool through the snowball technique to increase the sample size. The fourth limitation was the self-reporting of student completion due to the inability to verify rates with the university. The fifth limitation was the selection bias. There was a natural tendency to seek only that population that supports the researcher's perceived and unperceived biases (Miyazaki & Taylor, 2008). The first four limitations were mitigated by emphasizing the importance of the study for the students and the institution, whereas the fifth limitation was mitigated by using a blind survey tool to limit the researcher from applying personal biases (Schoen et al., 2021).

Study Delimitations

Greener (2018) stated that identifying the limitations and delimitations of the research "not only demonstrates rigor but also gives the author a chance to identify clear directions for future research" (p. 567). The research delimitations ensure the external validity and transferability of the results, creating the rigor that is important for the analysis. The rigor of the research did not guarantee that the findings and results would necessarily generalize to other university types, locations, or future periods. This generalizability (i.e., external validity) did not invalidate the overall research. Still, it addressed using the research to make a typical application of the research to other situations. This generalization may always be an issue, but being clear about the applicability of the research and the limitations will address this concern. Being clear on the terms used in the research is also essential in overcoming limitations.

The scope of the research was limited to gathering information from a particular population of underrepresented students at not-for-profit private universities. This approach was limited by the author to include only not-for-profit private universities and focused only on the impact of business operations on underrepresented students. The delimitations that were placed on the research were as important. This research was focused on a specific population (i.e., underrepresented students) at a particular university type (i.e., not-for-profit private) and the business operations as they affect the completion of these students. The findings and results of this study may not be generalized and applied to other subjects, locations, or time periods.

Definitions of Key Terms

The following are the key terms used throughout this dissertation. Some of these may be unfamiliar, while others are familiar, but a clear understanding is necessary.

Cocurricular. Co-curricular activities are the activities that foster essential and desirable outcomes in students, such as career maturity, academic success, persistence, and degree attainment, principled moral reasoning, openness to diversity, well-being, psychosocial change, cognitive skill development, and intellectual growth (Cochran, 2016).

Completion. Unlike retention, students' completion focuses on the end goal of obtaining a certificate, an associate's, or a bachelor's degree.

Continuing generation. Continuing generations are students with at least one parent who earned a bachelor's degree or at least attended college.

Counter spaces. Counter spaces are academic and socially safe spaces that promote underrepresented students' learning. The students' experiences are validated and viewed as critical knowledge in these places. Ong et al. (2018) explained counter spaces are places where underrepresented students may "vent frustrations by sharing stories of isolation, microaggressions, and/or overt discrimination; and challenge deficit notions of people of color (and other marginalized groups) and establish and maintain a positive collegiate racial climate for themselves" (p. 209).

Dependent students. Dependent students are undergraduate students aged 23 and younger, unmarried, and have no dependent children.

Democratic manhood. Democratic manhood is the belief that men are partners who collaborate with women to make the world a better place by supporting flexible roles and tasks that people take in the world of work and family.

Diversity. Diversity is historically defined as certain groups of people who are defined by race, gender, sexual orientation, or other identities. Another definition that fits better for this dissertation is that people differ in how they may be affected by their organizational experiences, which impacts performance, motivation, communication, and inclusion.

First-generation students. First-generation students are undergraduate students whose parents have not participated in postsecondary education in any form. However, the federal TRIO program defined it as those for whom neither parent nor guardian completed a baccalaureate degree (Ishitani, 2016).

Inclusion. Inclusion is the active, intentional, and ongoing interaction with diversity, which includes supportive energy and commitment from all those in the institution to do their best work, and makes everyone feel valued.

Independent students. Independent students are students older than 23 and those younger than 23 who are married and may have dependent children.

Institutional microaggressions. Institutional microaggressions refer to the marginalizing actions and inertia within university structures and practices that foster a campus climate hostile to specific groups.

Non-traditional students. Remenick (2019) defined non-traditional students as having one of the following six characteristics: (a) delayed college enrollment, (b) attending part-time, (c) being financially responsible for themselves, (d) being a single parent, (d) working full time, or (e) not receiving a high school diploma.

Non-white People. Non-white people are Black people, Hispanic people, Asian people, Pacific Islanders, other races, and people who identify as more than one race.

Persistence. Persistence is the student's continued enrollment over time, even when it is difficult or others want the student to stop. It may or may not be continuous, which may or may not lead to degree attainment.

Prejudice. Harvey and Allard (2015) defined prejudice as “a preconceived evaluative attitude based on a person’s social group membership” (p. 13). This prejudice may be reflected through stereotyping (i.e., an overgeneralized belief that a category of people is alike), discriminating (i.e., a behavior or action that occurs when we treat people because of their membership in some group), or giving privilege (i.e., an unearned advantage that offers those who have it economic, social, or political power.

Private, for-profit institution. A private, for-profit institution is an institution that is one of the 3,400 colleges and universities in the United States that operate the educational institution as a profit-making business.

Retention rates. Retention rates are the percentage of first-time undergraduate students who return to the same institution the following academic term.

Student departure. Student departure is an umbrella term referring to students who do not persist at an institution. This term includes dropouts, stop-outs, and dismissals.

Student involvement. Student involvement refers to the amount of physical and psychological energy a student devotes to their college experience.

Service quality. Service quality in the nonacademic aspects of an institution’s students’ experience includes essential institutional functions ranging from course administration and student welfare to campus catering.

Undergraduate. An undergraduate is a student enrolled in a postsecondary institution (i.e., private for-profit, public, and private not-for-profit), including those who pursue a certificate, an associate degree, or a bachelor’s degree.

Whiteness. Carstairs (2001) defined “whiteness” as relating to British identity among people who settled new lands (p. 204). Galvan (2015) further describes whiteness as being associated with characteristics such as white, heterosexual, capitalist, and middle-class. Whiteness is an ideology based on beliefs, values, behaviors, habits, and attitudes, which result in the unequal distribution of power and privilege (p. 2). At a deeper level, L. M. Harper (2020) defined it as a “marker for the privilege and power that acts to reinforce itself through hegemonic cultural practice that excludes all who are different” (p. 68).

Summary

The completion rates for underrepresented students remained relatively unchanged. However, research has increasingly concentrated on retention, persistence, and completion (Bal et al., 2019; Hatch & Garcia, 2017; Stewart et al., 2015). These students complete their degrees or certificates at a much lower rate than their counterparts. Historically, their access to educational opportunities has been restricted. These restrictions have kept them from pursuing their academic goals (Kopp & Shaw, 2016). Grounded in Tinto’s (1975) Theory of Departure and Astin’s (1999) Theory of Involvement, this research enables others to investigate the relationship between completion rates among underrepresented students and their interactions with various business operations. The research examined how university business operations interact with different groups and affect the completion of underrepresented students in their educational programs. The study examined an additional area that may be associated with student completion. The findings may provide university leadership with further data to develop support structures for underrepresented students pursuing their degrees.

The purpose of this study was to investigate specific quantitative variables. The first variable examined was the university business function and its effect on increasing completion rates of underrepresented students in its program. The second variable is the underrepresented student population and their interactions with the university's business operations. The third variable is the percentage of underrepresented students at the not-for-profit private university who benefited from their interactions with university business operations and completed their degree.

Before examining these quantitative variables, it is necessary to review the existing research on factors associated with the completion rates of underrepresented students. To that end, the next chapter presents the literature review on elements related to the completion of underrepresented students.

CHAPTER 2: LITERATURE REVIEW

The overarching challenge for educational institutions is to determine how interactions with the university's business operations, including financial aid, bursar operations, housing services, food services, campus security, and IT support, may influence and predict student completion rates and overall educational attainment. There has been research (Stewart et al., 2015) done on many levels (e.g., remediation, demographic attributes, pre-college academic experiences, socioeconomic status) to understand student completion rates and the elements influencing completions (National Center for Education Statistics, 2018). Although past research has focused on academic and personal factors affecting graduation, this study shifts attention to how university business operations may also impact student experiences. Ensuring these services are efficient and inclusive may help improve student persistence and success.

Body of Literature Review

The literature review topics delve into assorted topics, including university business operations, such as financial aid, bursar, human resources, food services, housing, security, information technology, and library services, as well as student completion and underrepresented student populations. This research focused on students' interactions with business operations and their impact on students. The student completion research focused on the elements in which a university's business operations may affect student completion. This research was based on the lessons learned from existing academic research and student recruitment efforts regarding completion rates of underrepresented students.

Decades of research have examined factors influencing retention and completion rates in undergraduate programs (Barbera et al., 2020). However, extraordinarily little has been done regarding the institutional barriers. These barriers have been reflected in the interactions between underrepresented students and the business operations of a university (Murphy, Joel P. & Murphy, 2018). The underrepresentation of women, people of color, low-income, and lesbian, gay, bisexual, transgender, queer, intersex, asexual or plus (LGBTQIA+) students has been prevalent across many college programs; it is most pervasive in the science and engineering (S&E) programs (Murphy, Joel P. & Murphy, 2018; Trapani & Hale, 2019). Despite the growing emphasis on diversity and inclusion in higher education, research indicates a troubling trend: underrepresentation is most pronounced at the associate's level, and those who complete at a higher level have less recognition for their achievement than their counterparts (Hofstra et al., 2020). This phenomenon raises critical questions about access, equity, and the long-term implications for students pursuing higher education pathways (Trapani & Hale, 2019).

Aryal (2020) highlighted the significance of ensuring equal opportunity according to the Rawlsian principle of fair equality of opportunity. This principle is highly relevant to business operations, as organizations that implement fair equality of opportunity may enhance diversity, improve satisfaction, and foster ethical decision-making across their operations. Aryal emphasized the importance of equality of opportunity, as it may address many barriers holding back many underrepresented students. Baum et al.(2018) applied Lucas's Theory of Effectively Maintained Inequality in Education of 2001, in that the higher price point of private universities creates a gap in higher-quality education services for underrepresented students. This underrepresentation in all programs, especially in the S&E programs, is discussed throughout educational literature. The Rawlsian principle focuses on barriers to opportunity that may close the achievement gap between the haves and the have-nots. James (2020) suggested that closing the achievement gap may contribute to economic growth and directly fuel a solid economy. He observed that students who completed college had higher wage-earning potential and lower levels of debt. Burns et al. (2020) also discussed the significance of higher education for various populations, noting that over 60% of all jobs and 80% of middle-class jobs require some level of postsecondary education. The literature review examines this and other issues relating to student completion. The review examines the research gaps, the two critical theories used for the foundation of research, student demographics, institution characteristics, and the societal impact of student completion.

Gaps

The literature review examines previous research concerning underrepresented students, student success, and current programs to identify the research gaps primarily related to university business operations, nontraditional students, and institutional barriers. This study addresses one of the gaps in the completion of underrepresented students by examining the areas where they interact with business operations and how these interactions correlate with their completion rates at not-for-profit private universities. Lotkowski et al. (2004) and Patron et al. (2016) examined several factors, including academic and nonacademic ones (such as institutional commitment), that may impact all students' success, particularly underrepresented students, and found that both have an equal impact on student success. These authors stressed the importance of the institution's commitment to the student. This perceived commitment of the institution to student welfare consists of the importance of creating a positive and supportive environment where students may connect and grow professionally and personally (Hepworth et al., 2018).

Seal et al. (2011) expanded the discussion to include Tinto's Theory of Student Departure (Tinto & Cullen, 1973), which provides a framework for understanding a student's process in their academic career. Because studies of first-year students at 4-year institutions have often focused on traditional 18–24-year-old students, the challenges and enrollment patterns of first-time nontraditional underrepresented students remain unclear. There are three distinct types of barriers to completing higher education: (a) situational, related to the student's life circumstances, (b) institutional, related to current policies and practices in higher education, and (c) dispositional, related to student attitudes toward and perceptions of education (Musu-Gillette et al., 2016). Although much research has been conducted on situational and dispositional barriers to underrepresented students' success, there is a lack of research on institutional barriers, particularly those related to business operations.

Over time, the proliferation of support programs and non-business operations has led to confusion for students and ultimately failed. These programs focus squarely on the student rather than the university system. They include a variety of initiatives such as bridge programs, welcome programs, transition programs, orientations, boot camps, advising, mentoring, instructional support, peer mentors, and study support, along with study cafes, learning communities, 1st-year experience programs, undergraduate research, efforts to redesign courses into smaller classes, special residential environments, commuter centers, and service-learning programs (Kezar & Holcombe, 2020). The factors influencing a student's persistence are unique to each individual, based on their personal struggles. Although these challenges vary from student to student, the group of underrepresented students, as a whole, was not provided with the pathways needed to achieve their educational dreams (Cochran, 2016). Moreover, this issue of students falling behind is not limited to just one group. With the United States experiencing the highest attrition rate among the world's most developed nations, its students are increasingly failing to complete their education, something crucial for upward mobility. Kamer and Ishistani identified key elements that help understand student completion rates. They pointed out that many programs failed to adopt a systems approach to building university initiatives. They emphasized the need to align support structures, examine student motivations, and integrate these programs into the broader system of the university (2019). Kezar and Holcombe (2020) expressed the importance of implementing a systems approach that creates collaboration throughout all departments in the university. The lack of coordination created confusion for the students and barriers to completion. The lack of communication between departments and the lack of understanding of how other departments (Kezar & Holcombe, 2020) utilized resources and energy to support underrepresented students better were noted in the absence of coordination between university departments.

Another essential gap examined in the literature review was the importance of understanding several types of leavers. Kopp and Shaw (2016) examined the various causes of students leaving their academic pursuits. They examined the differences between students who left due to academic jeopardy and those who left by choice. Their research found that only 51% of the students finished their first 4-year institution in 6 years. This was especially true for first-generation and underrepresented students with higher pre-entry issues and non-academic responsibilities. They enter college with less realistic goals and fail to integrate into the university (Kopp & Shaw, 2016).

Student success has an impact on the community and students. The retention rate for not-for-profit private institutions in 2017 was 81% overall. In comparison, the retention rate for private for-profit institutions was only 60% overall in 2017 (National Center for Education Statistics, 2018). The retention rates may be of concern, but in comparison, 60% of college students attending 4-year public schools have failed to complete their degrees. Less than one quarter of these students at public schools were dismissed for academic performance (Savage et al., 2019). These numbers have raised issues and concerns for college administrators and community leaders. Koropeckyi et al. (2017) pointed out that a lack of completion has occupational, financial, and societal consequences.

With many factors impacting a student's completion, the support from family and support groups dramatically impacted their success. French (2017) found that first-generation students noted that family members discouraged their desire to attend college. Researching all factors that impact students' completion may increase the understanding of how to increase underrepresented students' persistence and retention rates (Owolabi, 2018). The previously mentioned gaps, including understanding underrepresented students, the relationship between business operations and student completion, and the meaning of leavers in the literature, collectively represent a significant gap in addressing student completion. That major gap is in the link between the university's business operations and the completion of underrepresented college students. This relationship was researched using the two theories (Astin, 1999; Tinto & Cullen, 1973) previously listed and surveying those who work in these universities' operations.

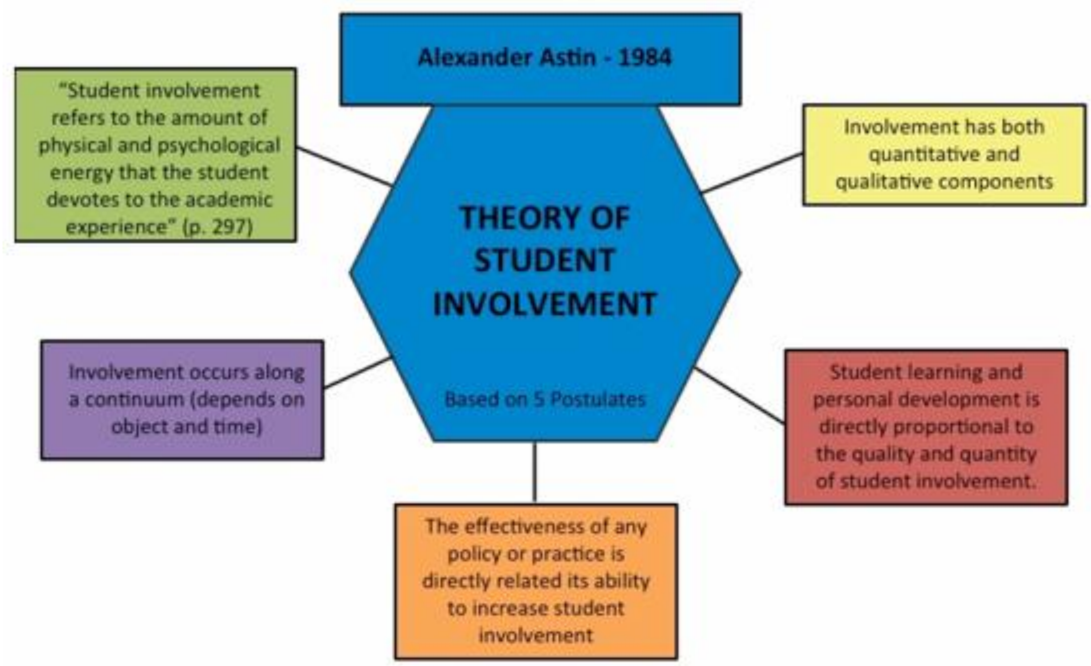
Theories

The theories being used for this research are Astin's Theory of Involvement in 1985 and Tinto's Theory of Student Departure in 1975 (Milen & Berger, 1997). The theories were chosen based on their impact on the study of student completion. These two theories focus on the importance of integration (i.e., social and academic) and involvement in the university to the persistence and completion of all students, especially underrepresented students. The research done by Tinto (1975) and Astin (1999) provides a good foundation for this study into another element of underrepresented student completion.

Theory 1: Astin's Theory of Involvement

Astin's (1999) Theory of Involvement focuses on understanding students' completion results, the factors of student involvement in the university, and how those factors affect student completion. Astin broke involvement into five essential elements of a student's interaction that are impacted by the student's involvement. Student involvement is fostered by active participation in campus activities and steady personal development, which also leads to consistent academic performance (Rahman et al., 2020-12). The university must invest in both quantitative and qualitative components to improve quality interactions and involvement in educational practice (Valli & Kanta, 2016). See Figure 1.1.

Figure 1.1
Astin's Theory of Involvement



Note. Taken from Jones-Archer (2025).

Understanding these elements of the theory provides a basis for this research. The first element examined by Astin's Theory is that of input(1999). The belief is that the more time students invest (i.e., input) in academic and cocurricular aspects of the college experience, the greater the learning will be (Valli & Kanta, 2016). This involvement (i.e., input) is critical to the student's role in completing their program.

A second element addressed in Astin's (1999) theory is the environment. This element is crucial in understanding the university environment's influence on the constructed environment of students. The student's involvement is based on each student's own physical and mental interaction on campus (Roose et al., 2020). This student involvement may positively or negatively affect the students' psychological and sociological development. Astin recognized the need for universities to develop more effective programs tailored to individual students, recognizing that the student development process is ongoing. This process may look different for each student, depending on the time and space. The programs designed for students must be built with the idea that no program may help all students or impact them in the same way. Establishing an environment that accommodates both individual students and the overall student body may contribute to higher university completion rates.

The third element of Astin's Theory is the output of students (1999). As students engage in the university environment, they may experience changes in their individuality. As students grow through adolescence and early adulthood, forming their individuality is crucial. This process shapes their self-esteem and sense of purpose. Astin looked at how engaged students are in campus activities. Student organizations commit time and dedication to their studies and build valuable connections with faculty, staff, and students.

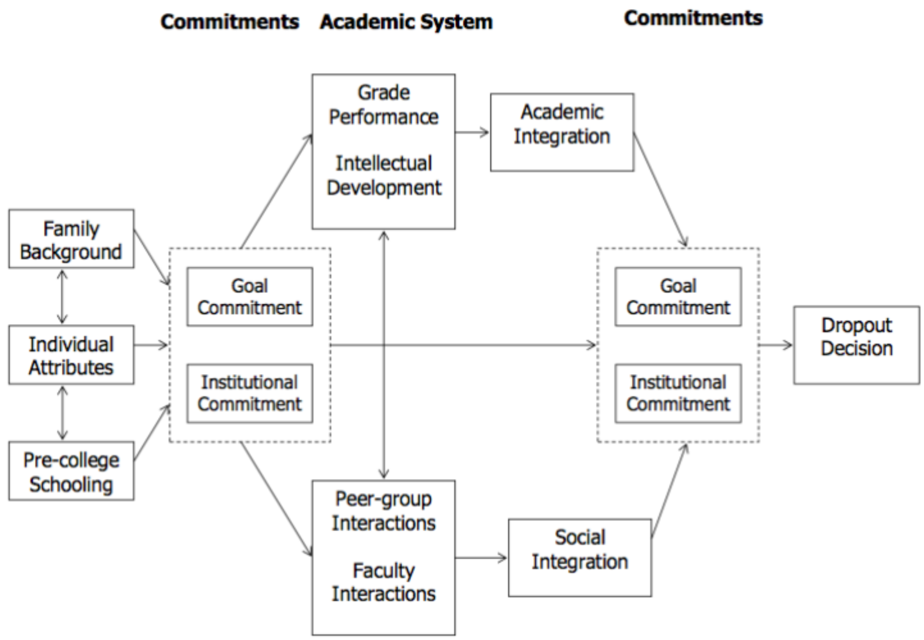
Astin's (1999) Theory is a versatile concept that has academic, social, and political dimensions. The theory examines the involvement of students in undergraduate programs and the link between that involvement and completion rates, academic performance, and levels of career-related competencies developed in their university experience. Astin further analyzed how interventions in higher education may address the involvement, environment, and outcome elements and create a particular intervention, either how a curricular experience (e.g., classroom teaching techniques) or a cocurricular experience (e.g., mentored summer research) supports student development. This theory requires the alignment of three components: (a) input, (b) environment, and (c) output. This alignment leads to effective intervention programs that address personal development and academic completion.

Astin's (1999) Theory is a decisive and focused theory on understanding student interaction. This theory examined how inputs (e.g., student characteristics) and environment (e.g., program attributes) may influence desired outputs (e.g., results of programs). These elements are examined to create more effective interventions to support students (Pearson et al., 2022). The implications of this theory are profound. Educators and institutions are encouraged to create environments that promote and facilitate student involvement. This theory has moved the discussion forward in understanding the positive relationship between environment and student involvement and the beneficial outcomes from that involvement.

Theory 2: Tinto's Theory of Student Departure

Tinto's (1975) Theory of Engagement and Student Departure has made significant contributions to the discussion of student departure. Tinto's initial research in 1975 was to define the difference between academic failure and voluntary withdrawal and, thus, created models to address the voluntary departure of students. He researched the many elements that may impact students' desire to depart from their educational pursuits. In his various research, Tinto identified eight significant causes for students leaving their academic pursuits. Tinto (2012a, 2012b) listed the major causes as intention, commitment, adjustment, difficulty, congruence, isolation, obligations, and finances. These eight causes reflect the importance of this study for the student and the student's family. Though family and support groups are not explicitly mentioned in Tinto's studies, research by French (2017) showed their importance in understanding a student's departure (see Figure 1.2).

Figure 1.2
Tinto's Theory of Engagement



Note. Taken from Student Retention Literature–Tinto's Model (Connolly, 2016).

Tinto (1975) first, he outlined his model explaining motivations for undergraduate student dropout rates. Tinto's model remains one of the forward-thinking and in-depth investigations into the causes of student departure. This research has been essential to advancing the study in the field of student success and sparked new investigations and interest by many stakeholders with hopes of reversing the trend of students leaving their education pathway. Tinto stressed the importance of seeing student retention from the institutional and student perspectives. He argued that much of the effort put in by institutions has been on the institution's need to retain students. He argued that actions need to be focused on the students' needs. He believed that institutions must seek to retain students and help them persist in their completion.

The original Tinto's (1975) Theory connected the university's environment with student retention rates, explaining that students who immerse themselves in their culture persist in their studies and thrive socially and emotionally. Though Tinto focused primarily on the 1st-year experience (French, 2017), the research done by Tinto implied and has been used for all university students. Tinto's original model contained five principles (i.e., two core principles addressing students and three other principles addressing the institution), which help explain the determination for a student's dropout decision. Three of Tinto's principles address the institution's focus and commitment to the students it serves, their commitment to their education, and their commitment to developing supportive social and educational communities. Tinto's core principles relate to students' academic and social integration. The theory proposes that though grades may easily validate the student's academic integration, the more critical and complex element to quantify is the social integration of a student (French, 2017).

Tinto's (1975) Theory has been influential in addressing the institutional environment's role in student persistence. The institutional environment connects the importance of personal and social support to college completion, and the environment must support the institution's environment and academics. The environment influences student achievement by fostering a strong relationship between students' integration and their academic achievement.

Tinto expanded his research on his theory of engagement in *Completing College.* In this book, he furthered his research, noting there needs to be an administrative commitment to ongoing student support. His later study expanded beyond the first-year students to all students and their need for ongoing just-in-time support. This kind of support requires collaborative administrative actions. He noted that first-generation, low-income students must work, leaving them minimal time for interaction with the institution and involvement in extracurricular activities.

Tinto's (1975) Theory emphasized the critical role that both academic and non-academic staff play in supporting student persistence. His research highlights how institutional characteristics and culture exert both direct and indirect influences on students' participation in academic and nonacademic activities. As Tinto expressed in his theory, the institution staff can, directly and indirectly, influence the students' interaction with the university and completion of their degree. These formal and informal aspects of institutional experiences could affect students' departure decisions (Connolly, 2016).

A crucial principle of Tinto's (1975) Theory emphasizes the importance of creating an environment where staff interactions facilitate students' integration into the environment. A student's decision to persist is significantly impacted by their individual traits, intertwined with their experiences in the institutional environment (Claybrooks & Taylor, 2016). Tinto expanded on two traits that a student brings to the institution. Those two traits are the degree of fitness and the willingness to engage. One may think that Tinto refers to the responsibility for the degree of fitness of the student. Still, with a deeper look at the theory, Tinto (1975) stressed the institution's importance in correcting this issue. He explained that structural and connotative integration is essential for the institution to address.

A student will approach the institution, willing to engage with the environment based on their perception of how they fit in and the care of the university's employees. Many factors impact this willingness to engage at the institution, such as financial resources, experiences, and interactions in the classroom. Research has indicated that there is a growing percentage of undergraduate students coming from poor families, especially at less selective colleges and universities (Fry & Cilluffo, 2019). The interactions a student has with staff and faculty have an impact on supporting students through academic achievement.

Tinto’s model is widely regarded as a foundational framework in retention and persistence research. Many studies, including Fung’s model of institutional performance in graduation rates and empirical research on intentional interventions in student retention, are rooted in Tinto’s integration theory. Tinto’s theory explores the processes by which students achieve academic and social integration in their institutions (Kamer & Ishitani, 2019) and acknowledges influential factors such as students’ backgrounds and prior academic preparation (French, 2017; Li & Jackson, 2024). Although many scholars commend Tinto’s contributions, other researchers have identified shortcomings. Students’ diverse experiences influence the need for support programs designed to promote positive interactions and integration in the institution (Li & Jackson, 2024).

Tinto’s (1975) Theory sheds light on the importance of student commitment to the goal of graduation and how the student’s commitment to the institution affects their persistence decisions. Tinto’s (1975, 2017a) later iterations added research on the importance of the students’ perception of their transition into college. First-generation students, in particular, suffer from a lack of family support and encouragement as they deal with persistent issues. Tinto addressed these issues as part of his later research.

As good as Tinto’s theory appears, there have still been critics. French (2017) noted that the original theory failed to incorporate diversity and social-psychological elements. He further asserted that the theory also did not address the concepts of stereotype threat and social comparison as critical elements in a student's persistence decision. Tinto's theory has been critically examined for its limited consideration of the needs of specific student groups, particularly those who do not spend substantial time on campus (Callahan et al., 2017). Among these are non-traditional commuter students, whose primary interaction with the institution is through classroom attendance. The theory also failed to address the experiences of diverse students concerning gender, race, ethnicity, income, sexual orientation, first-generation status, or socioeconomic status.

Some researchers also argued that, despite the support for the roles of social integration and students' commitment to the institution and the difference between group success and student persistence, limited empirical support for the theory's other proposition exists (Braxton et al., 1997; Braxton & Lee, 2005). Tinto added much to the discussion on student completion in all his research. However, he did not address the business operations of the university. Recognizing that the theory has shortcomings, Tinto made additions and modifications to include new groups of students who, because of their unique backgrounds, deserve special consideration from researchers and require specific interventions from the institution (French, 2017). The uniqueness of the students is further examined in the following section.

Students

Student attrition is influenced by a range of factors, including personal, family, and academic reasons (Kopp & Shaw, 2016). Because these factors differ among individuals, they should be considered in research on student attrition. Researchers in higher education have studied both student success and persistence in college through a range of rigorous investigations. Extensive research has been conducted on student success, with higher education scholars undertaking numerous comprehensive studies examining factors that influence student persistence in college. For example, Seymour and Hunter (2019) have shown that students leave their first institution at high rates for assorted reasons, and those reasons are unique to each student. However, they have also found that of those who persist in completing their degree within 6 years of entering their 4-year institution, only about 51% of those who started have completed their degree at that institution (Kopp & Shaw, 2016). Because these factors differ among individuals, they should be considered in research on student attrition. Researchers in higher education have studied both student success and persistence in college through a range of rigorous investigations.

There are distinct reasons students leave their educational pursuits, and they should be understood. As Kopp and Shaw (2016) noted, researchers must differentiate between leaving an institution in academic jeopardy or dismissal and leaving in good standing. They also pointed out that these two groups differ sharply in their characteristics and long-term outcomes. One group is not always considered in the research of those students who leave and then finish at another institution. The National Center for Education Statistics noted that students who transfer without completing a degree are often counted as non-completers in calculating these rates in many studies, even though the student may complete a degree at another institution. Savage et al. (2019) explained that there is no clear understanding of why students leave their first institution. They further noted that 45% of students who start college do not complete their degree at that institution, and less than one-quarter of those are dismissed for poor academic performance.

Underrepresented students are frequently subject to detrimental stereotypes. The perpetuation of such stereotypes by institutions and their members has resulted in considerable stress for these students and has adversely affected their academic performance. These students have suffered from stereotypes such as being identified as unintelligent, bad at mathematics, and unathletic. The university–student relationship may impact a student's decision to stay or transfer to another institution to finish their degree. The messages that students receive from the university may communicate the worth and importance of the student to the educational system and the institution (Pate et al., 2022). Varying the context and communication with the students may create that sense of worth and acceptance that a student perceives from the institution. Research by Savage et al. (2019) and Roose et al. (2020) found that a student's commitment to stay or leave may be influenced by the perception of messages from university members as much as their attributes and feelings. The messages received throughout the university affect the feelings of underrepresented students who have been accepted at the university. These messages may come from any university area, including the university's business operations.

Roose (2020) noted that students who have the cultural capital and ability to navigate the institution's environment have been shown to have the capacity to overcome the barriers to student success that many underrepresented students face. The prior knowledge of the institution's operational policies adds extra barriers to underrepresented students. On top of this, the faculty and staff's communication of the policies may make using the campus support services, technological resources, and learning systems difficult to access. The topic of attainment rates has been extensively researched in various aspects, yet the gap in current stop-out rates remains significant (Shapiro et al., 2017). In Washington state, the stop-out rates vary for different ethnic groups, with Native American Indian students having the highest stop-out rate at 48%. They are followed by Hispanic students at 45%, Native Hawaiian students at 44%, and Black students at 28%, and the stop-out rate for White students is at only 17% (Shapiro et al., 2017).

The various literature used in this section proves the complexity of understanding the many elements that impact a student's desire to complete their degree. Underrepresented students complete at a lower rate, which may be caused by the overall messages of acceptance or non-acceptance in the university (Savage et al., 2019). Several factors have been identified as contributing to the gap in student completion rates. Some issues that have caused a student to take an institution's voluntary departure have been a lack of persistence, motivation, interaction, challenges, and stereotyping. Though many of these issues show up in the 1st year, Tinto (2012a) reminded universities to look at the complete educational life of a student. Identifying the things that motivate students to stay, persist, and complete their degrees may help these students adjust and overcome the challenges that come from university life.

Student interactions and perspectives may be impacted by many elements, including elitism, difficulties adjusting to academic writing, time management, understanding professors' expectations, critical thinking, and self-confidence in abilities or performance (Tinto, 2012a). Those highly engaged in their education are more motivated to foster a positive relationship with their faculty, which in turn motivates them to impart more knowledge. The motivation of engaged students creates more motivation for faculty to engage with the students. Understanding students' perspectives about their educational pursuits is essential to addressing their pursuit issues. Murphy (2016) pointed out that more research should focus on the student voice, not just the vocal student voice groups. The concept of student voice encompasses gaining insight into the educational experience through the student's eyes, fostering a positive and supportive school culture, and developing an effective academic program.

Student Perception

Understanding the students' beliefs about themselves and their world has been essential in many previous studies by Tinto (2017) and others. Tinto (2017b) focused on the students' perception of their capability, prejudice, self-confidence, belonging, and positive interactions. The students' belief in their ability to succeed in college impacts their persistence. In contrast, institutions view a student's stay at the college as a retention and completion metric. Understanding this dichotomy affects the focus on creating an environment where students succeed (Conway, 2021). A student's worldview shapes their perception of college attainment. Their worldview helps them make sense of the present and, by extension, what they believe will emerge in the future. Their worldview may impact on their desire and commitment to persist through their education. Students who voluntarily leave college believe they are not failures but are taking positive steps to achieve their goals (Conway, 2021). Those who complete their college degree perceive it as a process that persists, rather than the institution's view of them as being retained. Academically dismissed students perceive themselves as having less realistic goals, are less aware of their academic deficiencies, and take less responsibility for their actions than other students.

A student's self-confidence (i.e., self-efficacy) also may have an impact on their persistence in their education. Callahan et al. (2017) noted that students' self-confidence boosts their well-being and allows individuals to approach complex tasks as proficiency challenges. They also stated that student self-confidence is impacted by their direct experience, called enactive proficiency experience. Lotkowski et al. (2004) noted that academic performance, or grade point average, significantly relates to a student's self-confidence. Another aspect related to the student's perception is the student disconfirmation paradigm. This paradigm relates to how the student perceives satisfaction with their education in comparison to the costs of the service. This paradigm relates to the students' quality satisfaction based on their perceptions and expectations.

Belonging is also viewed as a critical element of students' perception of their college education experience. Research from various authors, including Mariano et al. (2018) Women in engineering programs who decide to stay in the field continue to be interested in engineering careers and believe they may obtain an engineering degree. However, women in engineering programs find it difficult to form and participate in study groups in their college studies (Samuelson & Litzler, 2016). Their feelings are characterized by feelings of being different and a lack of a sense of belonging (Lee & Huang, 2021). The feelings of belonging are universal, yet the perception of these feelings is even more important to students from underrepresented populations (Mather & Sarkans, 2018).

A student's social identity and belonging cause conflicts for these students as they try to negotiate their identity in an unfamiliar environment. The student's social identity (e.g., race and ethnicity, gender, class, sexual orientation, religion) directly impacts their belonging to the college culture. Research on student perception indicates that a student's interactions in college are significantly influenced by their perception of the college. The interactions directly impact a student's perseverance, learning, and overall campus experience. Tinto (2016) found that student interactions influence a student's motivation to persist at an institution. The perception of the university by the students has an impact on their overall desire to persist at that institution. Each department at the university, including business operations, contributes to the perception of students at the university.

A student's perception of prejudice at the university may significantly impact their sense of belonging and, thus, their interactions in the institution. All departments contribute to the perception of prejudice and sense of belonging of underrepresented students. Harper (2020) and(Ong et al., 2018)(Ong et al., 2018) have noted that underrepresented students' perception of attending traditional university campuses has been affected by how the institution perceives these students and how these students perceive their sense of belonging at the university. Through focus groups with Black students, L. M. Harper (2020) found that these educational institutions perceive Black students as uneducable and inferior. Furthermore, Black students perceived that these universities did not expect much from them and that they would fail. Ong et al. (2018) found that African American women faced even higher rates of prejudice due to the intersection of prejudice by sexism and racism. However, all subgroups of underrepresented students endure various biases that have an impact on their sense of belonging and positive interactions in the institution. Underrepresented students' perception of the university's acceptance and expectations significantly influences the students' sense of belonging and their potential for success. All departments, including business operations, contribute to the acceptance and expectations of underrepresented students.

Student Struggles

All students face struggles when attending academic institutions. However, students from underrepresented groups face greater challenges in pursuing their education. Students face numerous challenges in their academic pursuits, including the relationship between educators and students. This relationship is essential, especially when educating adults, and especially difficult for students who do not see educators representing them. Students who enter academic institutions without adequate preparation may benefit from early support and guidance from educators. Leung (2015) reported that students from underrepresented groups often experience expectations to adapt to prevailing norms and demonstrate academic readiness for acceptance in academic settings. Such expectations may increase stress, particularly for LGBTQIA+ students, whose less visible identities may present additional challenges (Grissom & Redding, 2015).

Understanding when and why students leave their institutions is essential to addressing students' underlying struggles. Kopp and Shaw (2016) found that retention research rarely differentiates between the two kinds of leavers, those who leave voluntarily and those who are dismissed, even though it is essential for addressing these students' struggles. They further discussed the importance of understanding the reasons behind student attrition when examining retention programs. First-generation and non-traditional students from low-income backgrounds who enroll full-time face the highest risk of leaving during their first year of enrollment. In contrast, middle-class students have the most trouble during the 2nd year (Kamer & Ishitani, 2019).

Numerous factors contribute to students voluntarily choosing to end their educational pursuits, though nontraditional students exhibit higher rates of voluntary withdrawal. Paradoxically, despite demonstrating greater positive interactions and success at the course level, nontraditional students experience increased attrition in their academic programs (Ellis, 2019). Their distinct needs and circumstances influence this trend. The traditional higher education system does not understand or adequately address nontraditional student struggles and often fails to address the unique struggles of these students (Ellis, 2019).

Underrepresented students may be divided into many groups: (a) women of color, (b) men of color, (c) ethnic groups, and (d) LGBTQIA+ students. Some students may fit into two or more groups and must be understood. A student's race, gender, sexual orientation, and the combination of those characteristics may significantly increase the struggles for these students to get an education. (Rahman et al., 2020-12) noted that students with multiple underrepresented factors (e.g., gay Black men) face numerous issues and challenges throughout their lives. The challenges may affect their motivation, self-esteem, determination, and persistence in participating in college activities, ultimately impacting their educational completion. Women of color, as a group, face some of the greatest struggles in getting their education; they have experienced microaggressions and isolation. In academic structures, systems were developed that intentionally or unintentionally keep these students from engaging in the university culture. Women of color often must contend with a layer of stress in addition to the inherent challenges of succeeding in higher education.

People of color face cultural isolation, leading to a perception of not being accepted, which significantly impacts their perception of acceptance and belonging in the university. The cultural isolation is even more impactful for African American and Hispanic students. These students may experience what Schak et al. (2019) refer to as "cultural homelessness." This describes a situation in which students find themselves in an environment where their cultural identity is neither commonly shared nor acknowledged. Although Hispanics are the second-largest ethnic and racial group in the United States, they have the lowest attendance and completion rates of all groups (Schak et al., 2019). These students' lower sense of belonging has contributed to lower persistence and retention rates than other students (Webb, 2019). He noted that the isolation that underrepresented students feel is only exacerbated by higher education's ongoing exclusion and discriminatory processes. The lack of acceptance and not having a sense of belonging have contributed to isolation and cultural homelessness. Throughout their academic journeys, students from all backgrounds face challenges. However, for underrepresented students, those who are often first-generation college attendees or from marginalized communities, the act of seeking help may be perceived as a sign of weakness or inadequacy. Tinto (2017b) suggested that institutions identify struggling students, especially underrepresented students, and take initiative with steps to support them through their first year of college and beyond. For underrepresented students, who may already feel out of place, the pressure to succeed may be overwhelming.

Maturation

Tinto (2017a) addressed the issue of student maturation in his motivation theory. He suggested that students in the preliminary stages of development are influenced more by their university, their self-efficacy, their sense of belonging, and their perceived value of the curriculum in their lives. Various authors (Chen, 2017; Girgis et al., 2018; Harvey & Allard, 2015; Kopp & Shaw, 2016) also noted that understanding the maturation process of college students, particularly in relation to their racial identity and cognitive development, is important. As students enter a university, they enter with varying levels of maturation and understanding of themselves. Most students of all ethnic groups enter college in the preliminary stages of developing their racial identity. The challenge for underrepresented students is that they also enter an environment where their racial identity is not highly reflected. This unique blend of pre-entry attributes (e.g., lack of maturity) and non-academic factors (e.g., lack of academic preparedness) may impact a student's collegiate persistence and success (Kopp & Shaw, 2016). Part of the lack of maturation has been seen in the importance of the first years of college to a student's psychological development (Chen, 2017). Thus, institutions need to develop a strategic support system that helps students move through their psychological development in the 1st year of their college experience.

Social Interaction

Many areas impact students' ability to overcome struggles in their educational pursuits; this includes social interaction. Various authors explored the importance of students' social interaction to their educational careers. Kopp and Shaw (2016) focused on the social and academic exchange between the student and the institution and how those interactions affect the student's desire to persist. They emphasized the importance of developing institutional support systems, such as business operations, to foster positive interactions and encourage participation. Murphy (2016) noted in his research that a student with a weak or unhealthy relationship with the institution and those at the institution could develop disaffiliation with the institution. Lotko et al. (2004) researched the importance of students becoming integrated into the academic and social fabric of the campus. The researchers found that it impacts the students' level of commitment, academic self-confidence, and motivation.

Addressing first-generation students and their level of positive interaction is essential, as is doing so for all students. Where some authors have researched the students' interaction with the (Harper, L. M., 2020) and other authors have researched the importance of the students' social interaction with other students (Valli & Kanta, 2016). In their research, Ong et al. (2020) observed that women of color in engineering reported experiencing increased isolation when they were the sole representatives of their gender or ethnicity in their classes. Karp (2016) and Shapiro et al. (2017) further noted that students who find a place in the institution where they belong would develop relationships and create non-academic behaviors that lead them to success.

Preparation

Research by several authors (Alicea-Planas, 2017; Long, L. L. & Mejia, 2016) focused on the importance of preparation for the student's integration into the academic environment. Evaluating a student's readiness for college may run the risk of blaming the student for not fitting into a college environment and not being prepared to be a part of the community. L. L. Long and Mejia (2016) found that students from underrepresented populations were more adversely impacted by preparation due to ineffective counseling and other support systems. Alicea-Planas (2017) emphasizes that the success of Hispanic and underrepresented students in higher education is intricately linked to the support they receive from campus communities. By prioritizing inclusivity and actively addressing the challenges these students face, institutions may empower them to thrive academically and personally.

First Year

The 1st year for all students is essential for creating the foundation for a successful college career. Cochran (2016) and Owolabi (2018) emphasized the importance of the 1st-year experience, particularly for underserved populations, who often encounter numerous obstacles during their first year of college. The 1st year may create a negative perception for these students to develop levels of self-doubt. As previously noted, the 1st year of college is critical in developing a sense of acceptance and belonging that may give underrepresented students a foundation for a successful college career.

Non-traditional

Non-traditional students are unique in their needs related to persistence and completion. Though there has not been much research on the needs of nontraditional adult learners, there are some authors who have touched upon this group of students. Chen (2017) and Gibbs et al. (2017) noted that nontraditional adult learners often have been the most neglected population of students. As non-traditional student numbers have increased, institutions must reassess their policies and systems to address these students' unique needs. Chen (2017) identified three barriers that impact nontraditional students:

(a) situational, (b) institutional, and (c) dispositional. Situational barriers are those from students' life circumstances. The institutional barriers come from the current policies and practices of the higher education system. The dispositional barriers come from the students' attitudes toward and perceptions of education in general and specific to their situation. Specifically, the underrepresented nontraditional students face institutional barriers related to current policies and practices.

Family

Families play an essential role in student success. Various authors noted the importance of family to the persistence and completion of undergraduate students (Hepworth et al., 2018; Hlinka, 2017). First-generation students are usually from non-White families, where the parents are more likely not to be college-educated. Despite a significant increase in underrepresented students, the U.S. educational system has been set up to provide advantages to students from homes with college-educated parents.

First-generation students do not benefit from the advantages of the experience of parents who went to college. The family is a valuable resource for students to understand the college culture and community. Another advantage of being from a family with educated parents is financial resources. The lack of family financial resources plays a critical role in shaping the academic trajectories of students, particularly those from underrepresented backgrounds. These students often face unique challenges that extend beyond the classroom, impacting their ability to access higher education and succeed in it. This also affects the students who leave college without a degree; these students often leave with a significant amount of accumulated student loans. Tinto (2012b) noted that students from underrepresented populations are usually from disadvantaged backgrounds and inferior schools before entering college. Roksa & Kinsley (2019) conducted a deeper study into the impact of family support on student completion, examining the two significant elements, emotional and financial support, that relate to student success and family support. They found that low-income students are significantly impacted by the emotional and financial support they receive from their families. The support provided by the students is critical for the success of these first-generation, underrepresented students. Blandin and Herrington (2022) found that although U.S. college completions have increased by almost 50% between 1995 and 2015, the increase is not equal among all groups. This increase has been less for students than for underrepresented students who lack family emotional and financial support. The importance of strengthening the family to support the students in their move toward completion is critical for the success of these students. The students come to the university with various backgrounds and support; the institution provides the conditions for the students to thrive to completion.

Institution

Though enrollment in degree-granting institutions has increased by 19% from 2002 to 2016, institutions have struggled to address the needs of the underrepresented students. The overall enrollment in undergraduate college programs has increased since 2000. In recent years, there has been a notable increase in the enrollment of low-income students and students of color in colleges and universities across the country. This trend reflects a growing recognition of the value of higher education as a pathway to power and privilege in society. Dancy et al. (2021) noted the importance of education to students. The perceived value concept is important to addressing the needs of underrepresented students. Addressing the needs of underrepresented students is vital to improving their success as the number of these students continues to increase.

There are questions about how universities address the needs of underrepresented students, as the low graduation rates, high dropout rates, low earnings, and high student loan default rates among these students continue to increase. These factors have led some in society to question whether schools deliver the product they are supposed to provide (Fishman et al., 2020). Although many U.S. residents still believe in the value of education, the growing concerns regarding loan defaults, dropout rates, and postgraduation earnings cannot be ignored. To bridge the gap between belief and reality, stakeholders must work collaboratively to create an educational environment that not only promotes learning but also ensures that the benefits of education are accessible to all. As Tinto (2012b) and Stewart et al. (2015) have noted, there has been an increased interest on the part of institutions to address these issues. One concern of institutions is the failure of students to complete their programs, which means that the money invested in recruiting and preparing students is not fully realized. Thus, students who drop out and graduate with high debt or low earnings often fail to realize the value their education can bring. Colleges are starting to take a more comprehensive approach to student success, including recruitment to graduation. This focus has provided schools with targeted programs to increase participation by underrepresented students. However, despite localized success, national graduation rates still lag. Unfortunately, most institutions approach student success from the institution's viewpoint. Several authors (Barbera et al., 2020; Tinto, 2012a) highlight that adopting a student-centered approach and focusing on students' perspectives, rather than institutional ones, is vital for integrating campus life to support all students. The student-centered approach focuses on institutional factors that may predict retention and completion from the student's point of view. Institutions that create a comprehensive approach to student success based on the students' views may have tremendous success in targeting the needs of underrepresented students.

The path to retention is not easy, but focusing on students helps institutions create systems that support the students in all aspects of the university environment. Historical systems in institutions have failed to make persistence and degree attainment easy for underserved groups. College leaders who want to keep students enrolled must be concerned with attrition and student persistence and focus on these areas. Institutions focused on the retention and persistence of their students will need to understand their purpose, hire personnel who focus on student needs, reevaluate their retention models, and create supportive programs for students. The importance of identifying the institution's purpose is essential to setting the processes in place to address student retention concerns. Arif (2016) noted that the university system exists to provide higher education, including a conducive environment for teaching and learning. Setting clear and grand expectations is an essential responsibility of the institution to ensure that students persist. As college personnel listen to the students' concerns (Murphy, Joel P. & Murphy, 2018), they may provide both academic and non-academic support to address student needs in a holistic and multifaceted setting. Lotkowski et al. (2004) stated that educational retention models must incorporate both academic and non-academic factors to improve retention and performance. Institutions must identify their purpose and create processes to support services that address academic and non-academic factors that impact underrepresented students.

Institutions must invest substantial resources into welcoming and supportive business operations and services that meet student needs (Ong et al., 2018; Tinto, 2012b, 2017a). Some supportive services require investment of resources to address the needs of underrepresented students. The research done on women of color in engineering programs found that these students face an intense struggle with all aspects of their education, and few resources are spent on addressing this (Ong et al., 2020). Implementing retention programs that focus on all aspects of the university system may positively impact the retention of underrepresented students. This includes creating safe social spaces or counter spaces that provide a supportive environment to help these students persist in their education.

A diverse student body brings a wealth of perspectives and experiences that enrich the educational environment. Investing in these welcoming and supportive business services and operations may impact student completion rates in the long term and promote diversity and inclusion. This social support is crucial; students who feel connected to their peers and the institution are more likely to persevere through challenges and complete their degrees. These investments of resources are not only for financial reasons but also for improving the campus environment, which comes from the positive academic and social benefits of having a diverse student body. As enrollments continue to grow, institutions may continue to be pressured by students and other higher education stakeholders to close the gap between their expectations and their actual performance. Patron et al. (2016) identified seven critical academic performance expectations that students and higher education stakeholders have of institutions. Two of these expectations apply specifically to underrepresented students.

First, Camacho Liu (2011) identified how students' cultural capital affects the students' view of the university's social capital. Second, Camacho Liu identified how students' expectations are affected by their perception of the university as having a caring, knowledgeable faculty, staff, and administration to support underrepresented students. The gap remains between what underrepresented students expect from their university and what they find at the institution. Understanding the gap and addressing it is critical to the success of underrepresented students. As institutions provide clear messages of a solid commitment to these students, they may establish supportive personal relationships with the students that increase student interaction in campus events and support services and improve students' overall success. Institutions that address their organization's commitment to students may help the underrepresented students overcome many of the challenges they face in attending the university. Commitment comes from all university levels, including all business services and operations personnel. Allocating resources is an important initial step in establishing an environment that aligns the expectations of students and higher education stakeholders with institutional realities. Institutional systems can have both positive and negative effects (Mankins, 2018).

System

From a business perspective, the students in higher education are the institution's customers, where the students exchange money for education and services. Understanding this key aspect involves seeing the university services through the students' eyes, which means understanding how they look at (Tinto, 2017b). This view also means that institutions must distinguish between those students who leave the university voluntarily or nonvoluntarily and those who transfer to another institution.

This distinction can facilitate a deeper understanding of systemic factors that influence student success. Such factors may disproportionately affect underrepresented students and impede their ability to complete their educational objectives.

The processes and programs put in place at educational institutions may be there for excellent reasons, without realizing the hindrance they cause for underrepresented students (Thien & Jamil, 2020). Many educational systems have processes and programs that interfere with or prevent students from entering and succeeding in those systems (Chen, 2017). Although these systems may be implemented with positive intentions, if they are not designed with consideration for the students' perspective, they have the potential to impede rather than support student success. Adopting the student perspective (Tinto, 2016) means creating systems and support programs that remove confusion for the students (Kezar & Holcombe, 2020).

Coordination and collaboration between the abundance of support programs that institutions have put in place are essential in providing support programs that are student-focused and targeted to support underrepresented students (Kezar & Holcombe, 2020). Systems disproportionately affect nontraditional and underrepresented students. Institutions must better understand the longstanding racial inequities in the systems that have impacted students. Institutions that create a coherent framework to guide the system may work to build a system that supports the students socially, academically, and recreationally.

The system's role is to provide a structure for monitoring and enhancing the quality of the programs and experiences that influence a student's satisfaction. The university system, processes, and programs need to be adjusted to address the needs of all students and not be a hindrance, even if they were set up for good reasons. Systems may be good and evil. These systems may also be sound but unknowingly cause a hindrance to some students. Effective systems promote adequate communication to support all students, whereas poor systems may block marginalized groups. Science, technology, engineering, and mathematics (STEM) programs have traditionally favored White male scientists and blocked out the contributions of women of color in engineering. These STEM programs are designed to support a particular group of students; however, they may lead to varying outcomes for other students (Gasman et al., 2017). Collaboration among businesses has found ways to resolve many of these issues impacting underrepresented students.

Kezar and Holcombe (2020) focused their research on examining the barriers that have been created between administrative and student services. They noted that, historically, these departments had poor interactions and relationships. One solution Clegg (2019) One of the key issues identified in these historical issues was building a shared commitment among all individuals. This commitment by all individuals at the institution means they see themselves as a source of support for students (Martin, J. P. et al., 2020). Universities can foster collaboration among departments, administration, and students by drawing lessons from the business world. A system built on collaboration and effective communication can create a robust support system for all students, not just a select few.

Khoo et al. (2017) examine how an institution's system delivers services to students. Understanding how the system provides tangibles, responsiveness, assurance, and empathy to the students is essential in addressing any system deficiencies. S. R.

Harper et al. (2018) and Estrada et al. (2016) addressed the issue of barriers created by institutional systems that keep underrepresented students from being included in the institution. These barriers may be related to the perceived quality of service from various business departments. The stakeholders' (i.e., students) interactions with the various departments helped develop their perception of the service they receive. Creating inclusive and positive interactions for the stakeholders involves intentional, active, and ongoing positive interaction with supportive energy and commitment from all institution members.

Fixing and addressing deficiencies in the institution's systems is a crucial step for university administration. Various authors identified critical ways to address and fix system deficiencies (Shah & Whitehead, 2017). Though they approach the subject on various, distinctive levels, their solutions have strong similarities. First, the authors stated that the institution's administration needed to recognize the existing problem. The second step, they stated, was identifying the key stakeholders, particularly the student group. The third step was to make incremental changes that have a long-term impact (Khoo et al., 2017; Staley, 2020). The fourth step was to ensure the programs were committed to developing supportive social and educational communities. The fifth step was to apply a Six Sigma program for continual improvement. Following these steps may help the administration to fix and address the deficiencies that are in the institution.

Addressing institutions and their processes may also help them identify system biases and provide a basis for addressing those biases. L. M. Harper (2020) addressed these deficiencies related to the biased institutional system. Institutions have business operations and systems (e.g., human resources, recruitment, mentorship, promotion boards) that are inherently biased toward specific groups and individuals. The systems developed by most institutions were based on the traditional student from a middle-class, socially mobile, and with strong family support. L. M. Harper (2020) identified that unconscious microaggressions and underlying prejudice and discrimination are built into many institutional business systems and operations. Understanding how institutional systems work and their potential impact on all students can help address unconscious microaggressions and underlying prejudice and discrimination that may have been unknowingly built into these systems.

Faculty

Faculty are an essential part of any institution, and their participation carries significant influence. Their interactions with students significantly impact all students' success, especially underrepresented students. The research by L. L. Long and Mejia (2016) also showed that educators who engaged with diverse students understood the current and past events and barriers these underrepresented students had to overcome, and how those experiences had shaped society. Faculty members engaging in conversations with diverse students can gain a deeper understanding of their needs and support them in achieving success. Webb (2019) noted that faculty tended to support middle- and upper-class White students who already have advantages in access to universities. The importance of faculty cannot be overlooked in helping underrepresented students. Getting the faculty to focus on their interactions to include all students is essential in overcoming student success.

Leadership

Assorted studies on student success have stressed the importance of an institution's leadership to the success of underrepresented students. Dreyer (2012) emphasized the crucial influences of leadership. He stresses that the recent global fiscal crisis and corporate failures are evidence that there is a vacuum in leadership among senior corporate and government leaders. Leadership plays an essential role in dismantling institutional gaps, racism, and microaggressions toward select groups of people and is a crucial responsibility of leaders in higher education. Creating systems that address gaps, racism, and microaggressions, and preserving the valuable kernels of accumulated heritages of the past, is an essential role of leadership in all areas of the institution. Leaders and administrators set the tone for the institution and create or discourage collaboration among the staff, faculty, and students (Martin, J. P. et al., 2020). Leaders in business operations who involve others in the institution's planning process and communicate broadly with those within the institution may implement change and address gaps in education access more effectively. These leaders collaborate among all departments, creating cross-unit work groups that maximize the value of prior experiences to win over resisters and maintain momentum (Kezar & Holcombe, 2020). These cross-unit workgroups bring together various stakeholders to create systems that support all students in the institution.

Establishing cross-unit work groups often presents challenges, particularly when leadership does not proactively address factors that may impact group effectiveness. Two areas that receive little research in leadership and group work are microinvalidations and microaggressions, as they are hard to define and address. Though hard to define and address, leadership must address these in all university business operations. A study by Callahan et al. (2017) found that institutional communication has been used by institutions to "invalidate the experiences, feelings, and thoughts of people of color or other marginalized groups (e.g., women, persons with disabilities, LGBTQIA+)" (p. 570), serving as a form of microinvalidation. These micro-invalidations discourage students and staff from participating and taking full advantage of their educational experience. Microaggressions are those actions taken against others that minimize the contributions of individuals. These microaggressions occur, impacting students, staff, and faculty from diverse groups by marginalizing their uniqueness (Callahan et al., 2017). In certain institutions where the student body is predominantly White, the experiences of White students are often established as the standard. Attempts to challenge or change this norm may lack support, and views from people of other racial backgrounds may be discouraged.

According to Tinto (Tinto, 2012b) an institution's dedication and its leadership's dedication to supporting all students have been identified as important for institutional outcomes (Staley, 2020). Some research suggests that university leadership may need to adjust their institutions to address the needs of all students better (Museus et al., 2016), including underrepresented groups (Staley, 2020). Addressing all aspects of the student experience includes addressing the issues in all business operations and the university's academic and social aspects. The task of addressing issues in the university will take the commitment of all parties, including the students and the institution, to bring the institution's commitment to persistence to change that reality for all students (Savage et al., 2019). Increasingly, accessibility has emerged as a critical focal point in this endeavor. Over the past 30 years, significant strides have been made to create an inclusive environment for all students (Andrade et al., 2020), not just accessibility, but also to build a diverse body of students who are successful in their educational pursuits and persist in graduation.

Collaboration Among Departments

Leadership is responsible for fostering a collaborative environment at the institution that enables innovative solutions to address the issues and barriers faced by underrepresented populations. Kezar and Holcombe (2020) discussed the issue of collaboration in their study on student persistence programs. They stressed the importance of the planning team as a collaborative group where faculty, registrar, advising, admissions, tutoring, and student support offices work together to address issues affecting underrepresented students.

Program Growth

Trapani and Hale (2019) noted a growth in science and engineering programs being offered. Still, the percentage of underrepresented students in the programs does not reflect that growth. They noted that the number of programs has grown dramatically between 2000 and 2017. Still, the admission and completion of underrepresented students have not increased at the same level.

Accountability

Studies into an institution's accountability for its environment stressed the importance of holding institutions accountable for their successful students. The failure of individuals to complete their degree programs suggests that institutions are not adequately using their resources to meet the needs of their students. With increased scrutiny and rising education costs, retention and completion are critical metrics for assessing university value to society. Increased institutional accountability is required for addressing the resource disparities in supporting underrepresented students. Faculty, departments, and institutions have been encouraged to use their limited resources to address the gap in services to support underrepresented students. Institutions may help underrepresented students, whose social isolation often lowers academic interest, by offering support and encouragement. Institutions also foster skills and knowledge essential for economic growth.

Diversity

The rise in university enrollments has increased, but the percentage of underrepresented students has not increased proportionately to the percentage of the overall population, especially in STEM programs. The enrollments at degree-granting postsecondary institutions rose to 16.6 million in 2018, with the average tuition rate per year at $13,700 at public institutions, $27,000 at not-for-profit private institutions, and $22,100 at private for-profit institutions (Beddoes, 2018). In the academic year 2018–2019, U.S. postsecondary institutions made significant contributions to higher education by awarding a staggering number of degrees across various levels. This period saw the awarding of approximately 1 million associate degrees, 2 million bachelor's degrees, 820,000 master's degrees, and 184,000 doctoral degrees (Hussar, B. et al., 2020). However, women of color ages 18–24 only represented 7.6% of undergraduate engineering degrees, though they represented 20.6% of the U.S. population. The other graduates with engineering degrees included 12.7% White women and 79.1% men of any race or ethnicity (Callahan et al., 2017). The lack of underrepresented students, especially women of color, has been significantly seen at universities, especially in STEM programs.

The lack of diversity at universities has translated into fewer underrepresented students graduating from STEM programs and entering the workforce. Even though the United States has become increasingly more diverse, the growth of skilled workers who are of underrepresented populations (e.g., women, African Americans, Latinos, Native Americans, LGBTQIA+) has not entered STEM fields at the same rate. Despite decreasing the diversity gap and increasing opportunities, the completion rate for underrepresented students has remained low. This group includes LGBTQIA+ people who cannot always be out and may not disclose their identity to avoid negative consequences.

Since 2000, the diversity in postsecondary institutions of higher learning in the United States has increased. Many groups remain underrepresented, especially recipients of science and engineering degrees. Despite the significant investments in programs by foundations, policymakers, and individual institutions, the success of low-income, first-generation, and underrepresented students remains low. The number of students earning science and engineering degrees and those graduating has increased at all levels between 2010 and 2017, and underrepresented student populations have remained low in receiving degrees. Underrepresented students have historically had limited access to STEM fields (Long, L. L. & Mejia, 2016). In 1997, following the ban on affirmative action, Black, Hispanic, and Native American students averaged around 14%. The rate in 2020 had risen by 3% to an average of 17% (Long, M. C. & Bateman, 2020). The research highlighted a lack of diversity in university programs, particularly in STEM fields. In turn, fewer underrepresented students have entered the STEM programs (Hussar, B. et al., 2020).

Addressing the diversity of students at the university and in STEM programs may positively affect the institution and the workforce. Diversity and inclusion have become cornerstones of effective educational practices and environments. Institutions that embrace diverse student populations not only enrich academic experience but also prepare students for success in their future workplaces (Hussar, B. et al., 2020). As the United States becomes increasingly diverse, its institutions and workplaces must embrace these diverse environments.

Research has found that demographically underrepresented students innovate at higher rates than most students in the United States, and this diversity drives innovation (Roscoe, 2022). Even with this information, most disregard underrepresented students' innovations. The success of underrepresented students neither negatively impacts education systems, the workforce, nor White men in their access to power and resources. Diverse teams have been more likely to make breakthroughs in science and technological innovations. Developing a diverse workforce starts with addressing the need for diversity among university students, especially in STEM programs.

One issue in developing a diverse student body has been the stereotyping of underrepresented students. Stereotyping of women and other underrepresented students has negatively impacted them and discouraged them from pursuing academic achievement. The demeaning stereotypes based on their social identity have continued to push these students out of their programs. This high attrition rate of these students may slow the progression of equity in the various careers in the United States and negatively affect the leadership "pipeline" of a qualified and diversified workforce (Wheeler & Smith, 2018). The face of the future workforce has been changing and is expected to change even more by 2030. Though public elementary and secondary school enrollment of White students is projected to drop by 6%, the underrepresented student groups may increase between 1% and 21% (i.e., Black students by one percent, Hispanic students by 16%, Asian students by 21%, American Indian students by 10%, and two or more race students by 14%. The Hispanic population in the United States has increased from 22.6 million to 54.1 million from 2000 to 2013, and they now make up 17% of the U.S. population. Although they have been entering college at record numbers, their degree attainment in 2011 was only 13% for 2-year programs and 8% for 4-year programs (Hussar, W. & Bailey, 2019). The stereotyping of underrepresented students has impacted the ability of these students to enter and complete their university programs. This, in turn, impacts the number of underrepresented students graduating and entering the workforce.

Diversity at universities and in the workplace has been an issue with a historical context that has created an education crisis for the underrepresented population of the United States (Hussar, B. et al., 2020). Institutions must address these issues by encouraging and positively interacting with all members, and by revisiting historical policies and practices that create barriers and limit access to these groups. Barbera et al.(2020) and Mariano et al. (2018) stressed the importance of recruiting and retaining underrepresented students. Diversity starts at the university and impacts increasing diversity in the workforce.

Business Operations of an Institution

Not much has been written about the role of university business operations and their impact on a student's success, especially for underrepresented students. Critical to the purpose of this research is the importance of the university's business operations to the completion of underrepresented students at the institution. The rapid changes in technology, social expectations, and globalization necessitate that business operations better understand their implications on the triple bottom line. Understanding the university's triple-bottom-line costs and benefits is essential for all organizational levels and departments (Sapovadia, 2019). Japanese organizations address the triple bottom line by focusing on advancing innovation (Dobni et al., 2021). The triple bottom line encompasses various business departments, including culture management, open innovation, analytics, innovation management software, crowdsourcing, design thinking, measuring innovation, stage gates, and scientific discovery. A university's innovation capability significantly impacts its ability to coordinate business activities to support underrepresented students at the institution. The university's business operations involve a set of coordinated activities that prescribe and support the various stakeholders' roles, responsibilities, and benefits (Sapovadia, 2019).

Regarding the costs and benefits, Sapovadia (2019) stressed the importance of teaching people how to consider the organization's multiple stakeholders. Leaders and managers play an essential role in creating natural work units that establish an employee's sense of ownership over the job and responsibility to the multiple stakeholders (Nweke & Nwankwo, 2020). Developing strategies and business processes must be designed to provide practical significance and actionable steps to support all stakeholders, specifically underrepresented students. Although there is limited literature on the importance of business operations in the completion of underrepresented students, institutions must coordinate activities and focus on the triple bottom line to include their work in supporting underrepresented students in achieving their academic goals.

Even with the limited research on the business operations of the university, there are still some pieces of research regarding financial aid and bursar offices (El Zein et al., 2018). McKinney et al. (2014) noted that research into default rates of students who attend community colleges, such as first-generation or African American students, was high for many reasons. They found that early intervention and interaction of the financial aid staff may reduce the risks of school loan default. Financial aid may clarify the misconceptions about how loans work, but it cannot accurately assess the long-term costs and benefits of taking out loans.

McKinney et al. (2014) further, colleges that intentionally help students understand the risks and benefits of borrowing before taking out loans, have early communication during orientation sessions, and integrate financial literacy into the curriculum of 1st-year student success courses may help students understand what it means to take out a loan and how to finance their college education. Financial aid counselors who focus on assisting 1st-year students in obtaining the information and guidance they need about loans may decrease stress and improve completion. A student's healthy financial literacy is essential to a student's academic pathways to college, particularly for Hispanic families that face challenges in applying for financial aid.

Besides the need for strong financial aid support, food insecurity, sociodemographic factors, and international status may negatively impact students' success in their college experience (McKinney et al., 2014). Additionally, it was found that although many underrepresented students face food insecurity, only 38% of them use the free food pantry at a university. Reducing students' social stigma about using food pantries may help support underrepresented students in their college pursuits. Furthermore, they found that food security interventions and administrative policy should consider a new model that reduces social stigma concerns and provides ongoing communications of operational procedures tailored for the college student population. These studies from financial aid and food bank programs are only examples of the importance of business operations to the success of underrepresented students.

University leaders overseeing business operations should develop work processes that effectively support both underrepresented students and the broader student population. Though there has been little written on the importance of business operations to the success of students, a systematic design of work that focuses on the stakeholders and engages the educational staff who want to be involved in supporting students is critical to the modern educational business offices. Institutions that take a systematic and purposeful job design may allocate job-related tasks, responsibilities, functions, and duties to individuals and groups in the educational institution to support underrepresented student success objectives (Nweke & Nwankwo, 2020). Allocating more responsibilities for addressing diversity helps younger, highly skilled, better-educated employees make better decisions affecting them and their work (Nweke & Nwankwo, 2020). The systematic and purposeful job design also helps other employees engage in the decisions that contribute to student completion. The institution may significantly impact the completion of underrepresented students, who contribute to a higher level of society.

Society

The achievement of underrepresented students holds profound significance for society as a whole. When these students complete their education journey, they help drive economic growth, increase employment opportunities, and enrich their lives (Harvey & Allard, 2015). Their success not only breaks cycles of disadvantage but also inspires future generations, fostering greater equity and inclusion. By earning higher wages and securing meaningful careers with higher wages (French, 2017). Underrepresented graduates serve as catalysts for positive change. This ensures that the benefits they receive from their education extend far beyond themselves to uplift families, and this strengthens the social and economic fabric of their communities.

Economics

The education of underrepresented students is a matter of significant importance, both socially and economically. The completion of these students not only disrupts cycles of disadvantage but also drives economic growth, enhances employment rates, and strengthens communities (Harvey & Allard, 2015). Education is widely recognized as the primary tool for socioeconomic mobility, particularly for groups that have historically been marginalized or underrepresented.

Empirical research demonstrates a strong relationship between postsecondary education completion and improved economic future (James, 2020). For example, in Washington State, individuals with a bachelor's degree earn more than twice as much as those with only a high school diploma (Kwakye et al., 2020). This relationship between educational attainment and labor market access is significant for underrepresented individuals, who face disproportionate barriers (Museus et al., 2016). These disparities directly impact both persistence in education and their long-term potential.

There are economic benefits that come from equipping underrepresented students with advanced technological and critical thinking skills, aligning with the evolving demands (Lotkowski et al., 2004; Short & Keller-Bell, 2019). Today's economic systems increasingly rely on skilled labor. The lack of a degree or post-secondary training relegates underrepresented individuals to lower-wage occupations and perpetuates cycles of limited opportunity.

Beyond the individual benefit for the underrepresented student, the broader societal return on focusing on the educational success of these students is substantial. Those who complete postsecondary degrees or training tend to experience better employment conditions, higher civic participation, greater access to health care, and increased life expectancy (Andrade et al., 2020; Murphy, Joel P. & Murphy, 2018). Higher unemployment, lower earnings, and reduced ability to contribute to economic growth are linked to the noncompletion of post-secondary education.

Despite the recognition of these benefits, significant challenges continue to exist in attracting, retaining, and graduating underrepresented students, especially in (Fishman et al., 2020). Addressing these concerns is essential because the educational achievement of underrepresented students is important for achieving greater social equity and creating economic viability. Supporting access, providing targeted support, and ensuring degree completion will help maximize both individual economic stability and societal gains.

Employment

The successful completion of postsecondary education and training, along with the employment outcomes of underrepresented students, are important for the advancement of social and economic mobility. For these students, meaningful and high-wage employment is not only for individual aspiration but serves as a mechanism to overcome structural barriers and foster community wealth (Harper, L. M., 2020). Postsecondary attainment among the underrepresented population enhances workforce diversity, drives innovation, and yields many benefits for the individual and society.

These students not only seek employment with high wages, but they also want to know that the organization shares its values of diversity. Underrepresented students are looking for diverse organizations that reflect their unique individual characteristics (Harper, L. M., 2020). These students aim to secure employment in organizations that support underrepresented students after graduation, allowing them to contribute to society on both social and economic levels.

Community

The education of underrepresented students fulfills critical societal requirements, fostering a critical thinking, skilled, and equitable community (Lotkowski et al., 2004; Miller & Bell, 2016; Ruth, 2018; Schak et al., 2019). Beyond individual advancement, postsecondary educational and training enhances community well-being and sustains economic growth (Trapani & Hale, 2019). Postsecondary credentials are increasingly essential for social mobility because the high school degree is no longer sufficient for members to obtain gainful employment (Lotkowski et al., 2004).

Persistent equity gaps and low competition rates hinder the economic and social progress of underrepresented students. As the U.S. population continues to grow in diversity, especially among Hispanics, postsecondary completion has not increased at the same rate, expanding racial and ethnic disparities (Museus et al., 2016).

Education supports an educated society's needs and addresses the need for diversity. National attention has been placed on student retention and completion, and the importance of educational institutions addressing societal needs. The United States has been impacted by a significant shortage of underrepresented students completing their degrees and entering the workforce. This incompletion of degrees has been affected by the percentage of these students completing their high school degrees (Kwakye et al., 2020). This lack of increase in completion of Hispanic students has created equity gaps in U.S. society, and the racial gap has continued to grow, rather than decrease (Kwakye et al., 2020).

Bal et al. (2019) found that exclusionary disciplinary practices disproportionately affect underrepresented students, impeding degree attainment and perpetuating systemic barriers. These barriers have created barriers that keep the underrepresented students from graduating. These barriers often reflect broader institutional systematic failures to implement inclusive policies and practices (Harper, S. R. et al., 2018; Hasan et al., 2019). This results in many underrepresented individuals, especially women of color, turning to for-profit institutions, which leads to higher student debt and poorer career outcomes. Although there is still a vigorous pursuit of postsecondary education, only 62% of students who entered 4-year colleges in 2012 graduated in 6 years (National Center for Education Statistics, 2018), and the rates for underrepresented students are even lower.

Addressing systematic inequities and removing institutional barriers is important for advancing the educational and socioeconomic outcomes of underrepresented students. Community prosperity comes from promoting accessibility. Equitable education can help close the opportunity gaps and foster generational mobility. The success of underrepresented students in postsecondary education is essential for both social equity and community advancement.

Social Capital

The acquisition of postsecondary education significantly increases the social capital available to underrepresented students, providing an important means for socioeconomic mobility and community development. The social capital generated through postsecondary education and training expands the individual's network and their access to resources and fosters environments where all individuals can pursue their aspirations. Post-secondary institutions play a vital role in supporting underrepresented students by addressing systems that intentionally cultivate relationships, provide access to mentorship, and provide institutional resources.

Summary

The preponderance of the research has focused on the importance of addressing issues related to the completion of underrepresented students(Aryal, 2020; Kezar & Holcombe, 2020). A gap remains regarding the impact of group business operations and the completion of underrepresented students. Underrepresented students have been significantly impacted by their background, the university community, leadership, faculty, staff, and the community (Cochran, 2016). The university and the student share a relationship bond, though their goals may differ. The concepts of persistence and retention are often discussed in tandem but viewed from different perspectives. For students, persistence is a personal journey, a reflection of their determination to navigate the challenges of college life. On the other hand, universities focus on retention rates as a measure of institutional success. This article explores the significance of persistence from the student's perspective and the implications it has for educational institutions. These struggles may be lessened by a strong relationship with their university community. Researchers touched on the staff's relationship to the completion of underrepresented students (Claybrooks & Taylor, 2016; Nweke & Nwankwo, 2020). Still, there has been no complete research on the topic. Understanding the system and its impact on students' completion was an essential part of the research in this paper.

The diversity that comes from the success of the underrepresented students may improve the socioeconomic standing of these students, the U.S. economy, the community in which they live, and the students' future (Callahan et al., 2017; Gipson-Jones, 2017)(Callahan et al., 2017; Gipson-Jones, 2017) connecting the final link in the system, the business operations departments (e.g., financial aid, bursar, human resources, food services, housing, security, information technology, library departments) may help move the discussion further and hopefully increase the completion of underrepresented students. Chapter 3 examines the methodology to be used to research the topic of this report, the difference between the two groups of underrepresented student completion, and their interaction with the business operations of the university. Chapters 4 and 5 examine the survey and results as they relate to the link between underrepresented student completion and their interaction with the business operations of the university.

CHAPTER 3: METHODOLOGY

This study employed a quantitative approach to analyze the correlation between completion rates of underrepresented students at a not-for-profit private university and the business operations of the university with which these students interact. The study was based on research by Inoue et al. (2015), who studied social injustices and applied the same methodology used for this research. This study used a quantitative method to determine the link between the completion rates of underrepresented students and the interactions of these students with the business operation of a university. The study was designed to examine how those interactions impact the completion of these students. The research conducted by Bandaru et al. (2015) used the same quantitative method as was used in this study. This study looked at the relationship between consumer satisfaction and the interaction with the business operations of organizations. The research study in this paper followed the same process used by Bandaru et al., examining the connection between student completion rates and their interaction with university business operations.

The research design involved collecting data through a SurveyMonkey online survey of individuals who have attended a not-for-profit private university and then analyzing that data to determine if there is any link between underrepresented students' completion and their interactions with the business operations of the university. The research had limitations and delimitations based on students' availability and willingness to participate. Using the chosen quantitative methodology, this study investigated whether, if any, and to what extent the interactions of underrepresented students with university business operations are associated with the completion rates of these students.

This research was designed to answer the hypothesis: The frequency of interactions with the university business function systems does affect the completion of underrepresented students at not-for-profit private universities in the northwest region of the United States.

Research Method

The selective research methodology was quantitative, which aimed to collect and analyze data about the relationship between two variables. As a non-experimental method, it examined the non-causal association between underrepresented student completion rates and their interactions with the business operations of a university.

Chosen Methodology

Many research methods have been employed to investigate the topic of underrepresented students and their completion rates. In this study, the chosen method was a quantitative methodology. Various writers (Dreyer, 2012; Etchegaray & Fischer, 2010; Remler & Van Ryzin, 2015) have described this process and the importance of the quantitative approach in research. This approach will yield the most effective insights into the differences between two groups of underrepresented students, their academic outcomes, and their engagement with the university's business operations. Creswell and Creswell (2018) and Remler and Van Ryzin (2015) examined various other options for research methods, and though they discussed a variety of methods, the three primary methods were identified as qualitative, quantitative, and mixed methods. Of these three primary methods, the quantitative approach was chosen because of its focus on structured numerical analysis rather than on emotions, beliefs, and other intangible variables. The quantitative research method was chosen as the best approach to examine the topic of student completion rates and the variables that may impact the completion of underrepresented students.

Like most businesses, universities are consumer-oriented businesses, and students interact with various departments throughout their educational journey in the same way as consumers interact with a business throughout the buying process. Thus, looking at the relationship between a student's (i.e., a consumer's) completion rates and their interaction with the business operations of a not-for-profit private university is an essential research topic to explore. A quantitative research method is appropriate for this research and is a suitable research method, but the focus of quantitative research is more on data and less on descriptive, language-based study (Creswell & Creswell, 2018).

This study aimed to quantitatively analyze the differences in completion rates and the nature of interactions that underrepresented students have with university business operations. It employed a quantitative research design, allowing for the statistical analysis of data collected from a diverse sample of underrepresented students enrolled in not-for-profit private universities. An example of what the quantitative method looks like may be found in the research paper by Inoue et al. (2015). The authors employed a quantitative research methodology to examine social injustices, specifically addressing issues affecting underrepresented student populations. An additional illustration of the application of quantitative methods is provided by Bandaru et al. (Bandaru et al., 2015) who employed this approach to examine consumer-oriented companies and assess the effects of specific interactions on targeted populations. These two examples provide a foundational understanding of the quantitative process and the value of this method to this study.

The quantitative method used in this research is based on the Mann-Whitney U test. It focuses on the link between the interactions with business operations and the completion of underrepresented students. The Mann-Whitney U test is a nonparametric statistical test used to compare differences between two independent groups (Oti et al., 2021). The application of quantitative research methods in exploring the relationship between student completion rates and interactions with university business operations is not only appropriate but also essential. Through this dissertation, the aim was to shed light on the critical role that university business operations play in supporting student completion, benefiting both the institution and its student body.

Research Design

The basis of this research was to design a study that provides a survey of a selection of underrepresented students, examining their interactions with business operations and how those interactions may link to their completion. This section discusses the design of the study, the instruments being used, and the description of the participants.

Design of the Study

The research design for this study was to examine the relationship between two groups, using data collected from an online survey conducted with SurveyMonkey (see Appendix A). The chosen design for assessing the difference between two groups and relationships was used to examine the link between underrepresented student completion and the interaction of these students with the business operations of a university. This design was chosen over other types of quantitative research (e.g., descriptive, causal comparative, and quasi-experimental, experimental research) as it best fits the needs of the study. Although alternative design methods may yield valuable data for quantitative research, they do not generate the specific information required to analyze the relationship between the two variables or fulfill the objectives of this project. The design will use the Mann-Whitney U test to determine if there is a significant difference in the completion rates of students based on a high or low interaction with the business operations of the university.

Instrument

Data for this research were collected through an online survey (see Appendix A) using SurveyMonkey, which measured student interactions with university business operations and their completion rates. The survey was completed at the student's location and anonymously conducted via an online SurveyMonkey questionnaire program. The survey gathered the information necessary to analyze the data related to the research question. This survey will address the research hypothesis: "The frequency of interactions with the university business function systems does affect the completion of underrepresented students at not-for-profit private universities in the Northwest Region of the United States."

The survey method was chosen for its effectiveness in collecting quantitative data suitable for comparative analysis. This approach aligns with Ammigan and Jones (2018), who used a similar method to assess international students' satisfaction. The authors have a lot of data relevant to international student success, and they were able to use the survey to separate pertinent data. Gallup (*The State of Higher Education 2022 Report,* 2022) conducted another similar quantitative survey, focusing on the issues that impact a student considering the possibility of stopping out. This survey example demonstrates the value of quantitative surveys for the proposed research.

In alignment with the methodology used by Gallup (*The State of Higher Education 2022 Report,* 2022), this research project employed a survey to investigate the relationship between underrepresented students' interactions with the business operations and the student completion rates. Furthermore, the survey collected data concerning various demographic groups (e.g., Black students, Latino students, lesbian, gay, bisexual, transgender, queer, intersex, asexual, plus students). It analyzed the nature of respective interactions with university business operations.

Participants

The participants in the survey attended one of two not-for-profit private universities in the Pacific Northwest. The survey was sent to a random sample of students representing the underrepresented student population of their Pacific Northwest not-for-profit private university. The underrepresented student population attending not-for-profit private universities could be a large pool. However, by collaborating with the alumni offices of the two universities, the pool was limited to no more than 1,500 potential participants. The validity of the sampling was based on their self-identification of characteristics that reflect the entire population (see Appendix A). Based on the breadth of the literature review, the participants will include underrepresented students who have completed their program, are still attending, and have stopped attending without completing their program.

The quantitative study used in this research examined the link between the X variable (i.e., the number of interactions with business operations) and the Y variable (i.e., the completion of underrepresented students). This research method was used to understand the strength of the relationship between the completion of underrepresented students (i.e., the participants) and their interactions with the business operations of a university. The statistical significance will indicate the degree to which the interactions affect a student's completion. Using the Mann-Whitney U test, the researcher may see if there is a significant difference between the two groups of students based on their interactions with the business operations of the university (Oti et al., 2021).

Understanding the experiences and perspectives of underrepresented students in higher education is crucial for promoting inclusivity and ensuring equal opportunities for all (Oti et al., 2021). However, accessing data on students who have ceased their relationship with the university may be challenging. This research proposed a methodology that uses data provided by university alumni departments to conduct a survey-based study on underrepresented students. To overcome the limitations of accessing students who are no longer connected to the university, a simple random sampling approach was employed. The selection of these students was based on the availability and accuracy of the information provided by the university.

The research aimed to obtain a minimum of 50, which represents 5%, and a maximum of 100 survey responses of the total number of students contacted. The final number of respondents was 90 students, with 71 self-identifying as underrepresented. The initial round of surveys was distributed to students identified as underrepresented by the university alumni departments. If the response rate were not sufficient, a snowball sampling technique would have been employed. This method involves asking respondents to recommend and forward the survey to others who fit the demographic criteria of the study (Streeton et al., 2004). The survey exclusively targeted underrepresented students who have attended not-for-profit private universities in the United States. This includes students who have graduated, are currently attending, or have not yet graduated. The group consists of students who have graduated, are currently enrolled, or have not yet graduated. The emphasis was on survey completion rates and the frequency of student interactions with the business operations of the university.

Data Collection and Analysis

The survey was designed to collect relevant information on the experiences, challenges, and perceptions of underrepresented students. Data was collected through the universities' alumni departments, ensuring accuracy and reliability. The data gathered were analyzed using appropriate statistical techniques to identify meaningful trends, patterns, and insights. Descriptive statistics, such as means, medians, and standard deviations, were first calculated to summarize the frequency of student interactions with the university's business operations (Etchegaray & Fischer, 2010). Inferential analyses, including the Mann-Whitney U test, were then conducted to determine whether statistically significant differences exist between groups of students with varying levels of interaction. Data visualization tools, such as charts and graphs generated in Excel, further aided in interpreting the results and identifying key findings relevant to the research question.

The survey of the student population was conducted using data provided by the university's alumni departments to obtain a simple random sample of the desired student population, thereby achieving the minimum required sample size. The research examined not-for-profit private universities, focusing on underrepresented students who have graduated, are still attending, have not graduated, and are listed by the university as alumni. The number of 50 or more respondents was identified through a simple random process as being able to effectively represent the overall population of underrepresented students at the university (Mwita, 2022). Based on the G*Power analysis to determine the optimal sample size for the research, 60 participants would be necessary to achieve an 80% representation accuracy through the survey. The groupings focused on the completion and number of interactions the students have with the various business operations of the university.

Assumptions

In statistical research, the Mann-Whitney U test is a nonparametric method used to compare differences between two independent groups of participants (Oti et al., 2021). The Mann-Whitney U test is particularly valuable for ordinal or continuous variables when parametric tests like the t-test are used when there are unmet assumptions. Before using the Mann-Whitney U test for hypothesis testing, certain assumptions had to be met to ensure the validity of the test results. The first assumption of the Mann-Whitney test is that the two groups being compared are independent. This indicates that observations in each group are unaffected by those in the other group. If groups lack independence, bias may be introduced into the analysis, potentially resulting in incorrect conclusions (Greenstein, 2020).

The second assumption is that the dependent variable should be measured on a continuous scale (Creswell & Creswell, 2018). This means that the variable may take any real value and is not limited to specific categories or intervals. If the variable is categorical or discrete, other nonparametric tests should be considered instead. The third assumption is that the scores of the two groups being compared are equal in terms of their central tendency and dispersion. In other words, the medians of the groups should be about the same, and the spread of data in each group should be similar. Violations of this assumption may impact the accuracy of the Mann-Whitney U test results. The fourth assumption is random sampling. Random sampling means the data used in the Mann-Whitney U test should come from a random sample of the population. This means that each participant has an equal chance of being selected, ensuring that the sample is representative of the population (Samuh & Sanusi, 2020). In this specific research context, the population consists of underrepresented students who have attended a not-for-profit private university.

The Mann-Whitney U test is a powerful tool for hypothesis testing in nonparametric data, and researchers must carefully evaluate these assumptions before application. By ensuring the independence of observations, the suitability of data type, the similarity of distributions, and random sampling, researchers may enhance the validity of their findings and draw more robust conclusions from their analyses (Mwita, 2022). These assumptions include the independence of groups, a continuous scale measurement of the dependent variable, equality of scores and similar dispersion, and the use of a random sample (Mwita, 2022). By adhering to these assumptions, the validity of the test results may be verified, enhancing the reliability of the research findings.

This research aimed to provide valuable insights into the experiences of underrepresented students at not-for-profit private universities. By obtaining a representative sample through a simple random sampling approach, the study may contribute to a better understanding of the challenges faced by this population. The findings may inform universities' efforts to improve support systems, enhance inclusivity, and promote success for underrepresented students. Despite the limitations of accessing students who have ceased their relationship with the university, this research methodology, using data provided by the university's alumni department, will yield a sufficient pool of respondents. Through a combination of simple random sampling and snowball sampling, the study aimed to obtain an accurate representation of underrepresented students' experiences at the selected universities. The research findings provided valuable insights for universities striving to create a more inclusive and supportive environment for all students.

Data Analysis Methods

The quantitative data were analyzed from the information collected from an online survey of eleven questions, which will take less than 15 minutes to complete. The data analysis process used an Excel spreadsheet created from the online survey data as the primary tool for analysis. Compiling the data in this format provided information from the variables to develop an understanding of the data related to the study's primary focus (Brause, 2012). The participant's privacy and confidentiality were protected through the collection of data via an online survey, which included questions designed to eliminate person-identifying information. Confidentiality was guaranteed by following the procedures set up by the City University of Seattle Institutional Review Board (IRB).

The IRB plays a crucial role in ensuring ethical standards are upheld in research studies. The key procedures of the IRB were followed, including informed consent, anonymity, secure storage, data minimization, transparency, and data destruction. To begin with, the purpose of the research, the procedures, and the confidentiality process were clearly stated in the survey (see Appendix A). This aimed to provide clarity and instill confidence in the participants. The survey only collected necessary information relevant to addressing the research questions, ensuring no personal identifying information was collected. SurveyMonkey was used for storing participants' responses, with access restricted to only the pertinent information required for completing the research. Furthermore, the data collected from the survey were nonintrusive, avoiding any requests for sensitive information that may compromise participants' privacy. Participants were informed about how their information was stored, kept, and shared. Additionally, they were provided with information on how to submit any queries or concerns they may have regarding their involvement in the research (Please refer to City University of Seattle IRB Policy and Procedure, Appendix D).

Lastly, data were securely stored for a maximum of 7 years before disposal. This security process allows for potential future reviews by the IRB, if necessary. In conclusion, the IRB procedures encompass various important aspects such as informed consent, anonymity, secure storage, data minimization, transparency, and destruction. By adhering to these procedures, research studies may maintain ethical standards and protect the rights and confidentiality of the participants.

Data Collection

The initial step of the data analysis process involved systematically gathering the necessary information to facilitate robust inferential evaluation of the research hypothesis (Steinberg, 2011). Data collection was accomplished through an anonymous online survey using the SurveyMonkey platform. The survey was meticulously designed to address the core research question and ensure the integrity of the sampling process.

Furthermore, the survey instrument included items structured to appropriately categorize and identify participants for valid group assignment, as detailed in Appendix A.

The two biggest challenges were accessing the correct sample of non-completing underrepresented students and forming the right questions to gather the correct information without directing the answers. The questions were formed and then evaluated on a sample of faculty and students to verify the validity of the questions. The data collection involved a simple sample of underrepresented students who have attended and completed their program, are still attending, or have attended but never completed their program. The goal was to collect a minimum of 50 responses or 5% of those contacted and a maximum of 100 responses. If the initial survey failed to reach the participation target, Plan B, a Snowball process, would have involved resending the survey and asking participants to forward it to other underrepresented students with ties to not-for-profit private universities.

To ensure the utmost protection of the participant's confidentiality, the survey methodology was intentionally structured to facilitate fully anonymous responses. In collaboration with the alumni office, a secure approach was employed by the provision of email addresses solely for the controlled distribution of the survey. It was set up to provide anonymous responses. This process of distributing the survey was carefully designed to eliminate the risk of collecting personal identifying information and to safeguard the anonymity of respondents at every stage of the data collection process.

Data Analysis

The data analysis process for this study will involve using an Excel spreadsheet to compile the data collected from an online survey. The survey was designed to gather information for analysis. Although Excel is the primary tool for analysis, Jamovi will also be used as a secondary tool. The analysis included examining averages, scattergrams, and histograms to determine the frequency of student completions about their interactions with the business operations of the university (Sahin & Aybek, 2019).

The hypotheses under evaluation, along with the variables used for hypothesis testing, will establish the basis for evaluating the validity of the research. The null hypothesis was assessed to determine if the frequency of interactions with the university business function systems does not affect the completion of underrepresented students at not-for-profit private universities in the northwest region of the United States. The alternative hypothesis was to evaluate whether the frequency of interactions with the university business function systems affects the completion of underrepresented students at not-for-profit private universities in the northwest region of the United States.

Hypothesis testing used quantitative variables: underrepresented student completion rates (dependent variable) and their interactions with the business operations of the university (independent variable). The data were aggregated using frequency counts to quantify the number of business function interactions per participant. The data were grouped based on the number of interactions the underrepresented students had with the business operations. The grouping of students based on interaction frequency and counting those interactions will produce the aggregate values.

This analysis aimed to identify any potential group differences between these variables. The analysis was based on student interactions and the completion rates of underrepresented students. By computing these summary descriptive statistics (e.g., mean, median, mode, range) and creating scatterplots, it becomes possible to understand the characteristics, relationships, and distributions of the two identified variables (Creswell & Creswell, 2018). Additionally, various charts such as line, column, and pie charts were used to represent the data visually. The analysis was based on ordinal data (i.e., the number of student interactions) comparing students who completed their program with those who did not. Measures of central tendency, dispersion, and association were used to help organize, summarize, and present the data.

After visualizing the data, the data were analyzed using the nonparametric inferential statistics test, the Mann-Whitney U test. This test was used to compute the differences between groups. The test was used to examine a random sampling of underrepresented students to make predictions by determining the probability of a specific result based on the differences between the two groups of students. The Mann-Whitney U test is a nonparametric test used to determine if there is a significant difference between two independent groups (Oti et al., 2021). This test was instrumental when the data do not meet the assumptions of a parametric test, such as when the data are not normally distributed or when the sample size is small. In this dissertation, the researcher explored how the Mann-Whitney U test may be applied to a revised categorization using hypothetical data. This step evaluated the hypothesis and determined whether it is accepted or rejected.

The analysis focused on how the frequency of interactions of underrepresented students with the business operations, as defined previously, affects the completion of these students. The data were sorted into two groups, and the goal was to determine if there was a significant difference in the performance between these two groups. Group 1 consisted of students with a high frequency of interactions (e.g., 16–20, 21–25, more than

25) with the business operations, and Group 2 consisted of students with a low frequency of interactions (e.g., 1–5, 6–10) with the business operations.

This analysis focused on two variables and the relationship between them. The variables are the student interactions, measured through the number of interactions with university business operations, and the completion rates of these students in their programs. The aim was to uncover insights into the characteristics and patterns surrounding these variables by employing summary descriptive statistics and visual representations such as scatterplots. The analysis was based on ordinal data, which measures the number of student interactions and students who completed their program compared to those who did not. Completion, in this study, was defined as receiving a diploma or certificate of completion.

Following a quantitative strategy, the data were sorted through cross-tabulation using the coefficient approach, as explained by Brause (2012) to examine the difference in success between the two groups of students. This approach analyzed the data based on the interactions of underrepresented students and their completion. The quantitative strategy encompasses data aggregation and sorting of the data, calculation and presentation of descriptive statistics, identification of relevant variables, determination of statistical methods for hypothesis testing, recognition of underlying assumptions, and identification of the Type 1 alpha rate for hypothesis evaluation (Creswell & Creswell, 2018).

The Mann-Whitney U test analysis was used to rank the data from the two identified groups of students (i.e., those who completed and those who did not complete their education) from lowest to highest to see if there is a link between a student's interactions with the business operations of a university and their completion. This analysis was used to determine if there is a significant difference between the two groups (i.e., student interactions and the completion of underrepresented students). The analysis was based on the test statistic *U* evaluated by the *p-value* to determine the decision to reject or fail to reject the null hypothesis.

Brause (2012) emphasized the importance of interpreting data to understand its meaning. By thoroughly analyzing and questioning the data, the researcher may gain a deeper understanding of the link between the variables. After correlating completion and interactions with business operations, the data were summarized using statistics to better understand the relationship between the variables.

The outputs that were computed are the Mann-Whitney *U* statistics, *p-value*, confidence interval, and effect size. These outputs help in developing a conclusion as to the acceptance or rejection of the null hypothesis. The predetermined Type I alpha error rate for hypothesis testing was set at 0.05, the standard threshold for statistical significance (Wyman & McGuire, 2019). The coefficient was used to measure the strength and direction of the linear relationship between two continuous variables and, thus, determine if there is a difference between the two groups of students (Steinberg, 2011). The coefficient will also be used to evaluate hypotheses about the difference between the group coefficients. This process of understanding, questioning, and scrutinizing the data provided insights into the researcher and the reader.

When using inferential statistics, assumptions associated with statistical tests must be considered. Two common assumptions are the normality of the data or residuals and the adequacy of the sample size (Inoue et al., 2015). Failing to evaluate these assumptions properly may lead to inaccurate inferences and unreliable results. Inferential statistics often assume that the data or residuals follow a normal distribution. However, real-world data may not always conform to this assumption.

To assess normality, researchers can employ graphical methods such as histograms, Q-Q plots, or kernel density plots (Etchegaray & Fischer, 2010). These visual tools allow researchers to inspect the distribution of the data and determine if it deviates significantly from normality. Another crucial assumption was having an adequate sample size for statistical tests. A large sample size enables valid inferences about the population and reduces the risk of Type II errors, which occur when a false null hypothesis is not rejected. An insufficient sample size can lead to low statistical power, making it difficult to detect significant effects or relationships accurately. By thoroughly assessing the assumptions associated with inferential statistics, researchers can ensure the validity and reliability of their results. If the assumptions are violated, alternative tests or techniques should be considered to obtain accurate inferences. Ignoring or neglecting these assumptions may compromise the integrity of the research findings and potentially lead to erroneous conclusions (Oti et al., 2021).

The type I error rate, also known as the significance level or alpha level, was determined for conducting the hypothesis test. The standard Type I alpha error rate employed in hypothesis testing is conventionally set at an alpha level of 0.05. In other words, if the *p-value* obtained from the hypothesis test is less than 0.05, the null hypothesis is rejected. The choice of the alpha level is based on the desired balance between making Type I errors and Type II errors, which refers to not rejecting a false null hypothesis (Creswell & Creswell, 2018).

Quantitative Hypothesis and Variables

The articulation of hypotheses and variables serves as the cornerstone of this research project, establishing both its foundation and its trajectory. These elements guide the direction of the inquiry and the approach taken to address the central research question. Specifically, this study was designed to evaluate the hypothesis: There is a link between the interaction of underrepresented students with the business function of a nonprofit university and the completion of these students. Accordingly, the research is anchored by the following central question:

Does the frequency of interactions with the university business function systems affect the completion of underrepresented students at not-for-profit private universities in the Northwest region of the United States?

The previously listed question guided the research, but the formal question is found later in the chapter. This question gave a basis to explore the topic of underrepresented students and their completion at a deeper level. The questions direct the discussion toward establishing the formal research question and the subsequent hypotheses. The validity of the null hypothesis was reflected in an alpha of 0.05 (i.e., 5% chance that the null hypothesis is valid, and the null hypothesis can be rejected). This hypothesis testing can provide the basis for the discussion of the difference between the two (Creswell & Creswell, 2018).

Null Hypothesis (H_0). The frequency of interactions with the university business function systems does not affect the completion of underrepresented students at not-for-profit private universities in the northwest region of the United States.

Alternative Hypothesis (H_1). The frequency of interactions with the university business function systems does affect the completion of underrepresented students at not-for-profit private universities in the Northwest region of the United States.

The study will investigate the noncausal relationship between underrepresented student completion and its interactions with university business operations. This study employed a quantitative method to analyze the differences between two groups and their interactions with the university's business operations and the completion of their studies. Through the SurveyMonkey tool, data were gathered from a simple sample of students accessible via universities' alumni departments to examine the link between student interactions and student completion. The data were computed using the Mann-Whitney U test to determine the differences between the two groups based on the significance of their interactions with the business operations of a university. The data were placed on a scatterplot for a graphical representation to reflect the significance of the interactions between these two groups.

Limitations

Limitations in any research project happen naturally and must be noted and understood to gather the correct data to answer the research question. As Greener (2018) put it, limitations come from the environment in which the researcher works. The delimitations are those placed by the researcher to control internal and external validity and help provide the structure for the research. Greener (2018) also stated that the delimitations and limitations provide the boundaries to gather the correct data to solve the research question and not expand beyond this question. The first limitation was the ability to collect and analyze data to meet the dissertation's scope, due to the restrictions on data provided by universities. The second limitation is the availability of students to provide the information needed for research. The third limitation of the study is the nonresponse or incomplete response of the survey participants. The limitations outlined in this research happen naturally through the process. Understanding these is important to addressing the research question.

Delimitations

This research focused on a specific population (i.e., underrepresented students) at a particular university type (i.e., not-for-profit private). It examined how business operations affect the completion of these students. The scope of the research was limited to gathering information from a particular population of underrepresented students at not-for-profit private universities. This scope will cause a delimitation set by the author to include not-for-profit private universities and focus only on the business operation's impact on underrepresented students. Greener (2018) stated that identifying the limitations and delimitations of the research "not only demonstrates rigor but also gives the authors a chance to identify clear directions for future research" (p. 568).

The delimitations of the research limit the application of the research to areas that were intended to be addressed in the research. The research delimitations in this study are there to ensure that the external validity and transferability of the results create the rigor that is important for the analysis. The delimitations of this study include focusing on only one group of students and a single variable that may impact them. Focusing only on underrepresented students and their completion as related to their interactions with the business operations of the university is critical to addressing the gap that the research is focused on filling. The other delimitation placed on the study was that it only dealt with not-for-profit universities. The findings and results may or may not necessarily generalize to other university types, locations, or future periods. Still, the focus of this study is only on not-for-profit private universities.

The survey (see Appendix A) has been designed to limit the information collected to protect the participants' anonymity, provide informed consent, and verify the information's validity. Finally, the results are not intended to be generalized (i.e., external validity). This generalization may always be an issue, but being transparent about the applicability of the research and the limitations will address this concern. The delimitations on a select group of students and the impact of one variable are intended to address a specific gap identified in the research into student completion. The findings of this study may or may not be generalized and applied to other student populations or university types, for the present or in the future.

Summary

The methodology for this research examined business operations and how those interactions correlate with the completion of the underrepresented population of students. The methodology used was a quantitative analysis examining differences between two groups of underrepresented students, their completion, and their interactions with the business operations of the university. The quantitative analysis was based on information from an online survey using the SurveyMonkey online tool. The survey addressed the interaction of underrepresented students with business operations, student completion of the program, and other variables (e.g., business department training in customer service, the needs of underrepresented students). This research method addressed the hypothesis, "The interactions with the university business function systems impact the completion of underrepresented students." The research design surveyed underrepresented students from a selection of students provided by the university departments. The students were selected based on their characteristics that fit the underrepresented student description. The number of students surveyed ranged from a minimum of 50 to a maximum of 100 respondents. They were surveyed regarding their perceptions of their interactions with the university's business operations, and their perception of how these interactions impacted their completion. Thus, the final analysis was based on the data collected from an online survey of underrepresented students from two not-for-profit private universities.

The data analysis was done using the Mann-Whitney U test, which is a nonparametric test of the null hypothesis for two groups of students based on the frequency of their interactions with the business operations of the university. With a p less than .05, the researcher would reject the null hypothesis. This would indicate, based on the sample data, that there is no evidence to suggest that the frequency of interactions with business operations influences the completion of underrepresented students in their undergraduate degree or certificate program. This approach allowed for a thorough examination and analysis of the data to yield meaningful insights for both the researcher and the reader. Although the research hypothesis established certain limitations and delimitations, the scope appropriately addressed the identified gap in this research.

In the chapters that follow, the demographic profiles of participants, survey response frequencies, and statistical outcomes are presented in detail. The analysis not only explores the direct impact of the interactions with the business operations but also sheds light on the broader factors influencing completion rate among underrepresented students, offering insights into institutional practice and future research.

CHAPTER 4: RESULTS

Chapter 4 presents the findings and results of the research study examining the relationship between university operations and the completion rates of underrepresented students at not-for-profit private universities. This chapter synthesizes and analyzes the data collected, then contextualizes the results regarding the central research question and hypothesis.

The research used a quantitative methodology, employing an online survey distributed via SurveyMonkey. The survey included responses from 90 participants out of 1,206 individuals invited to participate; thus, the survey achieved an overall response rate of 7.46%. The respondents included 68 who self-identified as underrepresented, so 5.64% of the invited participants responded and self-identified as underrepresented students. The survey targeted underrepresented students at two private not-for-profit universities, with participants selected based on their Northwest location and academic criteria related to the study's focus. A complete listing of survey questions is in Appendix A, and the results are included in Appendix B.

The methodology used the Mann-Whitney U Test, a nonparametric statistical analysis designed to compare differences between two independent groups of underrepresented students in terms of their interactions with business operations. The survey collected demographic data, details about the students' interactions with business operations, and their perceptions regarding the effect of these interactions on their outcomes.

The central question guiding this chapter is, "How do interactions with university business operations affect the completion rates of underrepresented students in not-for-profit private universities?' By directly examining how interactions of underrepresented students with the university business operations influence completion rates, this report uncovered key patterns in the experiences of these students at not-for-profit private universities. The study assessed the null hypothesis that there is no relationship between the frequency of business operations encountered and student competition rates. Using statistical methods with a significance threshold level at $p < .05$, the resulting data offered insight into whether or not the interactions had a measurable impact on student persistence and ultimate success.

To examine how interactions with university business operations influence the completion rates of underrepresented students at not-for-profit private institutions, start by considering the survey demographic response frequencies for these students, as shown in Table 4.1. This table outlines both the number of responses (n) and the corresponding percentages (%), providing context for the students under study. Table 4.2 then details how these students responded to the questions specifically related to their interactions with the various university business operations. Analyzing these response patterns can uncover potential relationships between engagement with business operations and student completion outcomes.

Table 4.1

Survey Demographic Response Frequencies

Survey item	Response	n	%
Are you a male or a female?	Male	39	57.35
	Female	29	42.64
Your age?	18–24	16	23.52
	25–34	16	23.52
	35–44	16	23.52
	45–54	7	10.29
	55–64	10	14.71
	65+	3	4.41
Do you identify as . . . ?	Black	7	10.29
	Hispanic/Latino	24	35.29
	White (non-Latino)	22	32.35
	Native American or First Nations	1	1.47
	None of the above	14	20.59
Completion status?	Finished	47	69.12
	Still attending	19	27.94
Are you likely to finish your degree or certificate?	Already Finished	41	60.29
	Very Likely	25	36.76
	Neither likely nor unlikely	0	0.0
	Unlikely	2	2.94
Did you attend a . . . ?	Not-for-profit private university	19	27.94
	Public university	12	17.65
	Private for-profit university	6	8.82
	None of the above	2	2.94
	Unclassified	29	42.65

Table 4.2

Survey Item Response Frequencies

Survey item	Response category	n	%
Q10 Bursar	1–5	13	23.2
	6–10	14	25.0
	11–15	9	16.1
	16–20	6	10.7
	21–25	5	8.9
	More than 25 times	5	8.9
	None of the above	4	7.1
Q11 FA	1–5	12	21.4
	6–10	15	26.8
	11–15	10	17.9
	16–20	8	14.3
	21–25	6	10.7
	More than 25 times	3	5.4
	None of the above	2	3.6
Q12 HR	1–5	14	25.0
	6–10	18	32.1
	11–15	9	16.1
	16–20	5	8.9
	21–25	3	5.4
	More than 25 times	4	7.1
	None of the above	2	3.6
Q13 Marketing	1–5	15	26.8
	6–10	12	21.4
	11–15	10	17.9
	16–20	9	16.1
	21–25	3	5.4
	More than 25 times	6	10.7
	None of the above	2	3.6
Q14 Food	1–5	14	25.0
	6–10	18	32.1
	11–15	7	12.5
	16–20	6	10.7
	21–25	3	5.4
	More than 25 times	3	5.4
	None of the above	4	7.1
Q15 Provost	1–5	12	21.4
	6–10	15	26.8
	11–15	9	16.1
	16–20	7	12.5
	21–25	4	7.1
	More than 25 times	3	5.4
	None of the above	5	8.9

Table 4.2 continued

Survey item	Response category	n	%
Q16 Registrars	1–5	14	25.0
	6–10	17	30.4
	11–15	10	17.9
	16–20	6	10.7
	21–25	5	8.9
	More than 25 times	3	5.4
	None of the above	2	3.6
Q17 IT	1–5	16	28.6
	6–10	18	32.1
	11–15	9	16.1
	16–20	7	12.5
	21–25	4	7.1
	More than 25 times	3	5.4
	None of the above	2	3.6
Q18 Security	1–5	14	25.0
	6–10	15	26.8
	11–15	10	17.9
	16–20	8	14.3
	21–25	3	5.4
	More than 25 times	3	5.4
	None of the above	2	3.6
Q19 President	Very likely	30	53.6
	Likely	18	32.1
	Neither likely nor unlikely	4	7.1
	Unlikely	4	7.1
Q20 Refer	Very likely	28	50.0
	Likely	20	35.7
	Neither likely nor unlikely	3	5.4
	Unlikely	5	8.9

Restatement of Research Questions and Hypothesis

The following section will restate the research questions and the hypothesis for clarity in the examination and understanding of the findings. The main question of the research asks, “Is there a possible link, if any, between the interactions of underrepresented students with the university business function systems of a university and the completion of these students?” This research question provides a foundation for exploring the topic of underrepresented students and their academic outcomes at a deeper level. The hypotheses are the "Null Hypothesis (H0): The frequency of interactions with the university business function systems does not affect the completion of underrepresented students at not-for-profit private universities in the Northwest region of the United States.," and the "Alternative Hypothesis (H1): The frequency of interactions with the university business function systems does affect the completion of underrepresented students at not-for-profit private universities in the Northwest region of the United States."

To explore the link between underrepresented students' successes and their interactions with the university's business operations, an analysis was conducted on the frequency of those interactions and the students' perceptions based on those interactions. Demographic information based on ethnicity, gender, and other relevant characteristics helped identify the participants of the survey who fit the underrepresented classification as identified by the research. Using these data points, the aim was to determine if there was a significant correlation between the interactions with the business operations of the university and the completion rates of the underrepresented students. Through this analytical process, the hypotheses were evaluated.

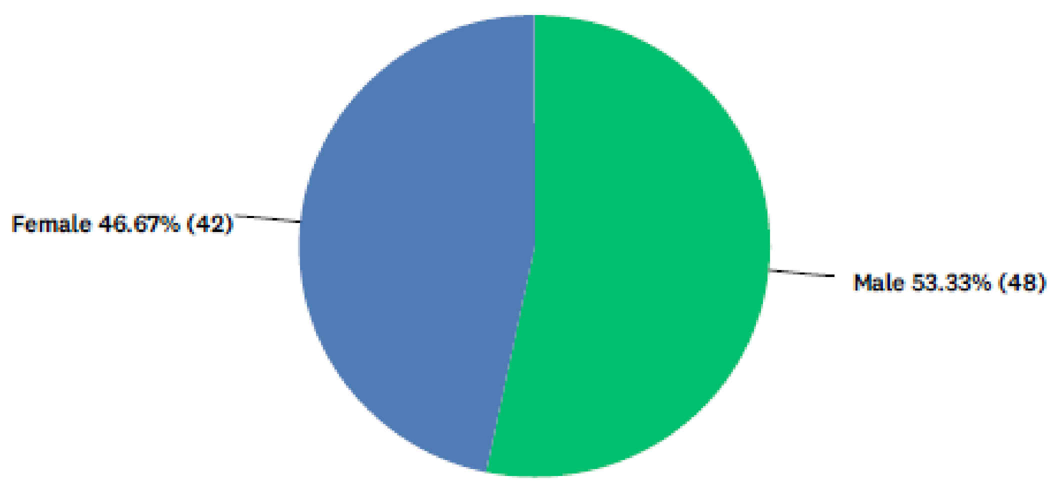
Descriptive Findings

Central to this study is understanding the impact that interactions with business operations, i.e., financial aid, bursar, security, and more, have on the completion rates of underrepresented students. The following section highlights the survey findings that directly address the primary research question: How do these interactions shape the educational outcomes for students who are historically underrepresented? The research aims to illuminate whether and how the business operations of a university serve as either barriers or facilitators for underrepresented student completion. The focus was to evaluate the research hypothesis: the frequency of interactions with the university business function systems does affect the completion of underrepresented students at not-for-profit private universities in the Northwest region of the United States.

In the survey conducted between February and April 2025, the survey (see Appendix A) went out to over 1200 individuals to share their experiences, resulting in 90 complete responses, with 68 individuals self-identified as underrepresented students. Those who completed the survey included 42 females and 48 males (see Figure 4.3). The results of the survey, detailed in Appendix B, comprised data from 90 individual participants, with a return rate of 7.46%. Of these respondents, 68 individuals, or 5.64% of invited participants, self-identified as underrepresented students.

Figure 4.3

Gender of All Respondents



The demographics of those who qualified as the 68 underrepresented students were 39 women and 29 men (see Figure 4.4). The proportion of female students was M = .5735 and SD = .495. Demographic breakdowns include 20 white females, 19 females of other ethnic backgrounds, 10 students identifying as LGBTQIA+, 25 Hispanic/Latino men, eight Black men, and one Native American woman (see Figure 4.5). Among these students, 22 are identified as underrepresented because they belong to more than one category. For example, LGBTQIA+ includes some white men and others who may fit in other categories.

Figure 4.4

Gender – Underrepresented Participants

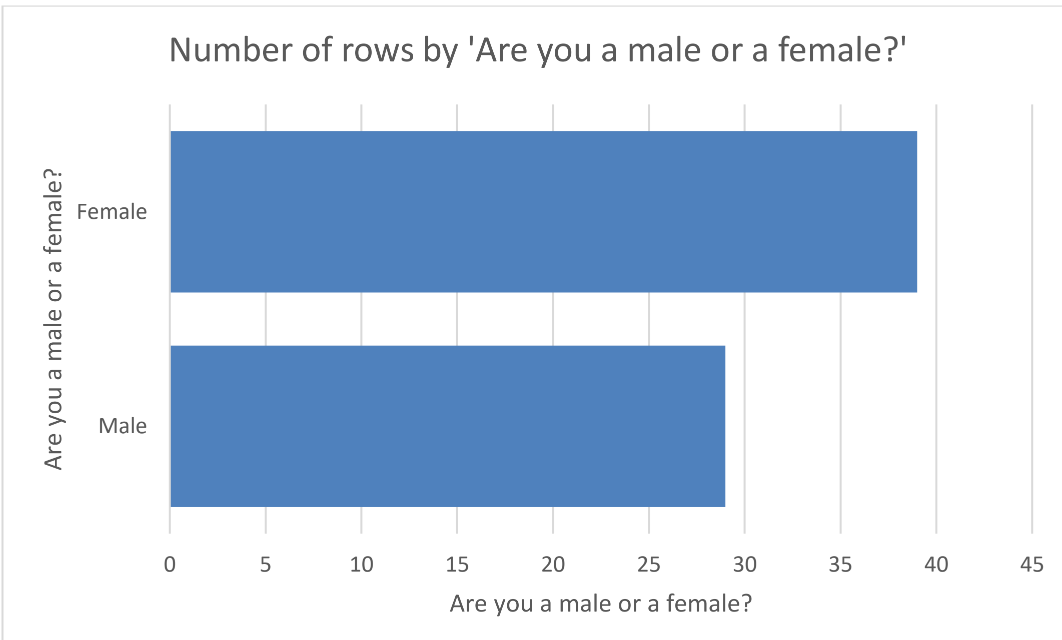
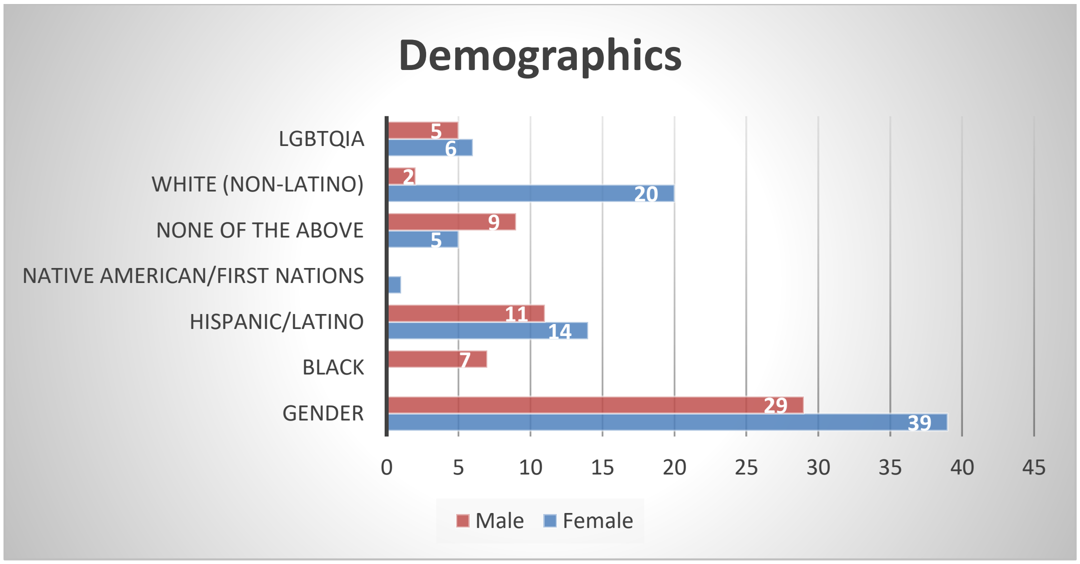


Figure 4.5

Demographics



The survey was fully completed by 90 participants, 71 (78.89%) of whom self-identified as an underrepresented group, reflecting the diverse demographics targeted in this study. Their interactions with the university business operations directly influenced both their sense of belonging and their ability to complete their program of study.

A further demographic analysis revealed that the majority of underrepresented student participants identified as female (57.35%), with the remainder identified as male (42.64%), and additional identity factors intersecting with ethnicity and LGBTQIA+ self-identification. The age of the participants was 18 to 65+, with a mean age for the underrepresented participants of $M = 37.68$, $SD = 14.6$. The differences between these males and females were not analyzed in detail, other than to identify participants who are females for inclusion in the underrepresented student grouping. Females fall directly into the category of underrepresented students based on the literature review on historical discrimination against women in many academic fields. Individual males have been classified as underrepresented based on additional demographic factors, such as identification with an underrepresented group based on additional demographic factors, such as identification with an underrepresented ethnicity or with the LGBTQIA+ community. The LGBTQIA+ community comprises a diverse range of individuals who self-identify as female, male, and other. This means the community has individuals who are not outwardly identified as underrepresented, yet still face discrimination in their education.

The survey responses provided insights into participant completion rates and their experiences in relation to the research hypothesis. The main objective of the research was to investigate whether a correlation exists between completion rates and participant interactions. The average completion likelihood for underrepresented students was measured at a mean (M =1.34) and a standard deviation (SD = 0.529), and the interaction rate was at a mean (M = 5.41) and a standard deviation (SD = 5.50), see Table 4.3. These data points suggested that the frequency and quality of interactions with the university business function can correlate with student completion rates. For instance, those who engage with supportive business services report a more straightforward pathway to resolving administrative challenges and navigating institutional systems. Conversely, negative interactions often lead to increased frustration and barriers to timely completion. The demographics of the respondents are presented first to provide context for the subsequent findings. The underrepresented participants in the survey included 43 individuals who identify as white non-Latino, 39 individuals who identify as female, and eight individuals who identify as LGBTQIA+.

Table 4.3

Descriptive Statistics of Survey Responses

Variable	*M*	*SD*
Likely to finish rates	1.34	0.529
Encounter rates	5.41	5.50

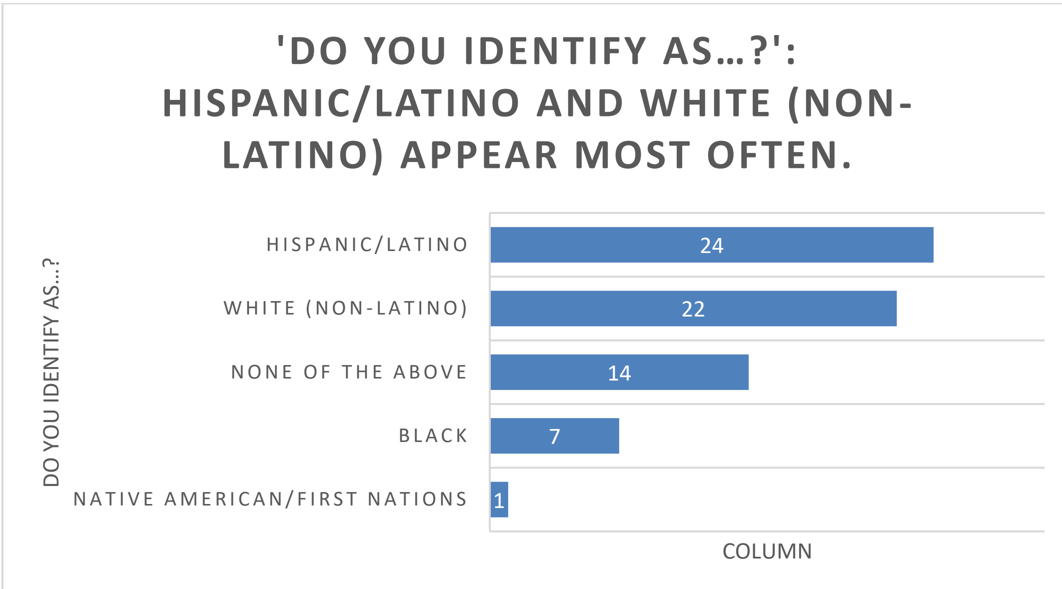
In the survey, the majority of underrepresented female participants were between 18 and 24 years old, while the largest group of male participants was between 34 and 44 years old. Female underrepresented participants ranged from 18 to over 65 years old, with an average age of 37.51 (SD = 16.13), and male underrepresented participants' ages spanned from 18 to over 65 years old, with a mean of 38.34 (SD = 12.77). However, the age of the participants was not considered a primary factor for the survey as it was not directly relevant to the study's central question or hypothesis.

Of the 90 participants in the survey, 68 met the criteria to be classified as underrepresented. In Figure 4.6, the largest ethnic group of underrepresented participants was 24 (35.29%), identified as Hispanic/Latino. The next largest group outside of Hispanic/Latino was 22 (32.35%) non-White females. The next largest ethnic group was 14 (20.59%) individuals who did not identify with any group and selected "none of the above," which included Asians, mixed race, and any others who did not identify with any of the listed ethnic groups.

Although the demographic snapshot helps understand the composition of underrepresented students, for this study, the relationship between the completion rates and the interactions with the business operations of the university was of highest concern. Positive interactions with these business operations can reduce barriers, foster belonging, and ultimately support a student's progress to completion. The nuances of these interactions offer valuable insight into student success on another level.

Figure 4.6

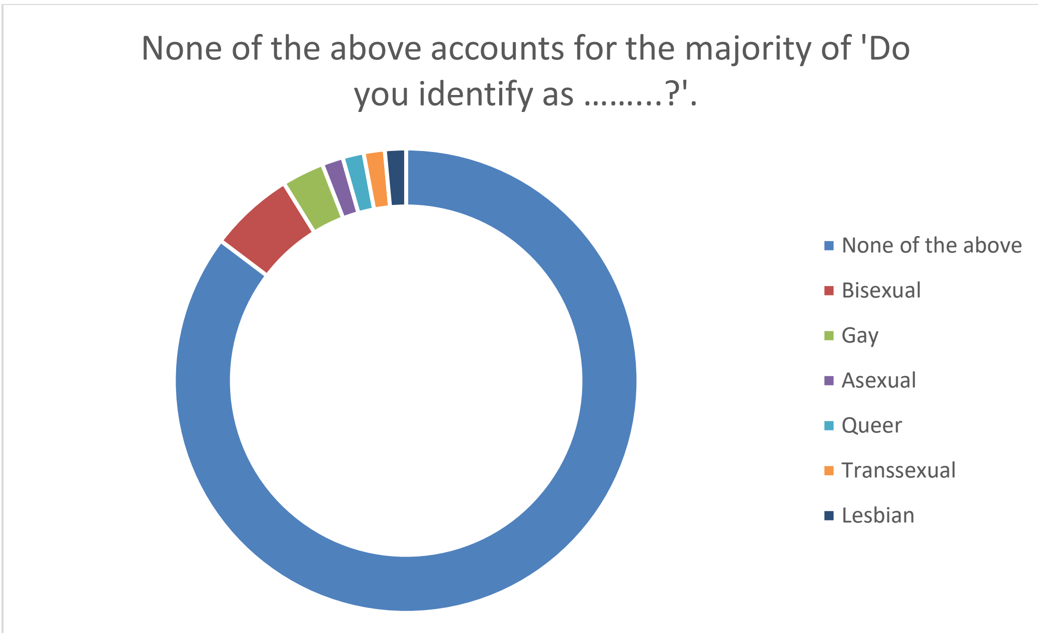
Ethnic Groups



Among the survey's underrepresented student participants, 10 individuals self-identified as LGBTQIA+ (see Figure 4.7). These students represent 14.71% of the underrepresented participants in the survey. Many of these individuals fell into multiple underrepresented categories, such as gender, race, and sexual orientation, highlighting the intersectional challenges they face. Notably, six female participants identified as underrepresented by gender, race, and sexual orientation, underscoring the importance of supportive business operations in a supportive university environment. The intersections can influence progression and completion rates by creating systems that impact students' sense of belonging and their ability to overcome institutional barriers. Understanding the effectiveness of the university system in creating an inclusive environment is crucial for supporting underrepresented students and improving their completion rates.

Figure 4.7

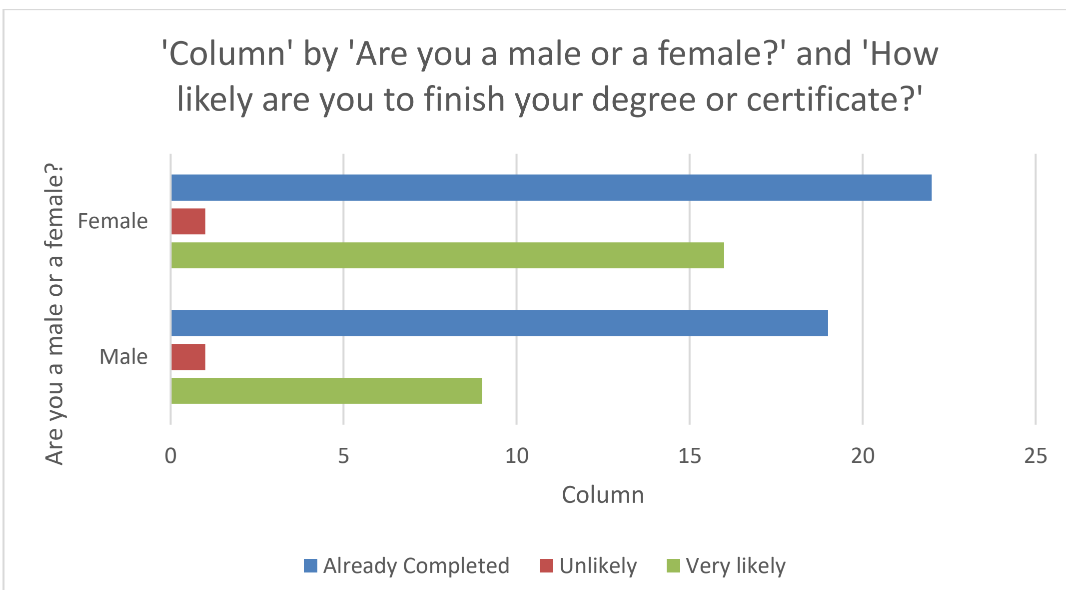
LGBTQIA+ Participants



A key datum point for answering the hypothesis for this study is based on Question 8 of the survey, “How likely are you to finish your degree or certificate?” This question not only created the groups for the survey but also answered the initial part of the research on student completion rates. Survey data indicated that among underrepresented students, positive and effective interactions with the business operations may correlate with higher completion rates. Specifically, 47 (69.12%) individuals reported completing their program of study, suggesting that they did not have any challenges navigating through the university system (see Figure 4.8). The underrepresented participants who stated that they completed their program were 49, which represents an $M = 1.66$, $SD = 0.53$. Of the 21 underrepresented participants who have not completed their degrees, 19 (90.48%) stated that they are very likely to complete their degrees. Additionally, 19 (27.94%) of those participants were still in their undergraduate program, only two (2.94%) participants did not finish and plan not to finish their programs. However, a small minority of all the underrepresented participants (9.52%) indicated that they are unlikely to finish their degree or certificate program (see Figure 3.8). The overall data suggested that the quality of the interactions may either facilitate or hinder the academic progress of underrepresented students, directly impacting their completion rates.

Figure 4.8

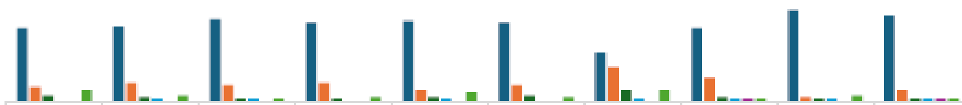
Likely to Complete



The frequency of interactions with university business operations may play a pivotal role in shaping the completion rates of underrepresented students. The data gathered from Questions 10–19 directly related to the number of interactions that the students had with the various business operations of the university. The number of interactions with the various departments of the university varied according to the responses of the participants. Notably, the registrar's office saw the highest number of interactions with the students, with 32 (47%) underrepresented participants reporting more than five interactions with the department (see Figure 4.9). Other departments, such as the bursar's office, had 17 participants (25%), the financial aid office had 16 participants (23.5%), and the IT Department had 18 participants (26.5%) with five or more interactions. Participants indicated that they experienced a higher number of interactions involving their academic records or financial accounts, and overall, 25 (35.21%) of the underrepresented participants reported having fewer than five interactions with any of the university's business operations (see Figure 4.9). This data suggests that robust and accessible interactions with business operations are closely linked to improved completion outcomes for underrepresented students.

Figure 4.9

Interactions

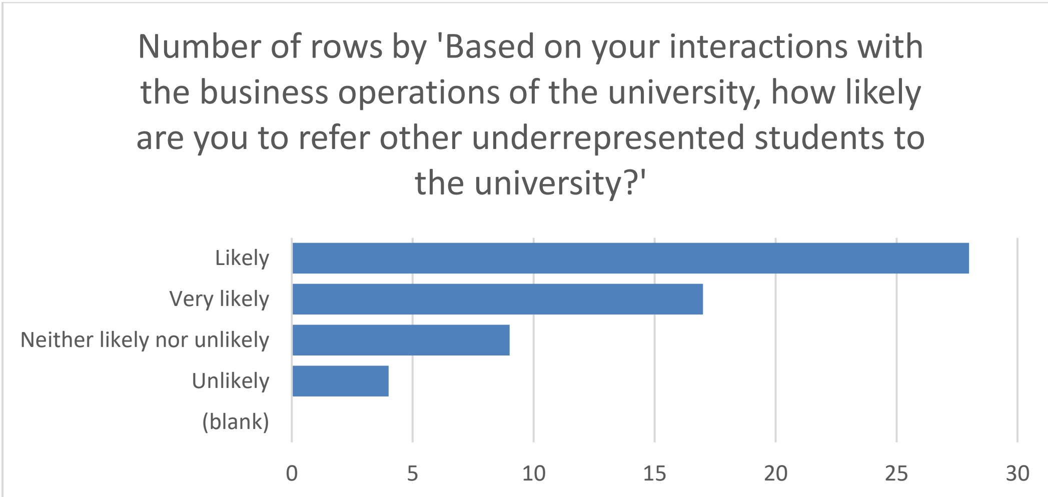


	Bursar	Financial aid	Human resources	Marketing	Food Sevices	Provost	Registrars	IT	Safety	President
1-5	41	42	46	44	45	44	27	41	51	48
6-10	8	10	9	10	6	9	19	13	2	6
11-15	3	2	1	1	2	3	6	2	1	1
16-20	0	1	1	0	1	0	1	1	1	1
21-25	0	0	0	0	0	0	0	1	0	1
26+	6	3	1	2	5	2	6	1	3	1

Among the 68 underrepresented participants in the survey, 45 (66.18%) indicated that positive interactions with university business operations contributed to the likelihood that underrepresented students would recommend their university to another underrepresented student based on their experiences with the university business operations. Conversely, 23 (33.82%) participants did not perceive that experiences with the business operations had a favorable impact on their inclination to recommend their university. These findings may highlight the potential influence of university business operations on a student's positive interactions with the university (see Figure 4.10).

Figure 4.10

Likely to Refer



Inferential Statistics

The study investigated the identified gap in the research related to the influence of the interactions with university business operations on the completion rates of underrepresented students at not-for-profit private universities. To address this question, a quantitative methodology approach was employed based on the Mann-Whitney U test to test the frequency and quality of student interactions with the business operations. To answer the research question, this test examines the likelihood of students with high contact with business operations recommending other underrepresented students to the university, compared to those with low interactions. The Mann-Whitney U test is a nonparametric statistical test used to compare differences between two independent groups. The data were being computed using the Mann-Whitney U test to measure the strength and direction of the statistical relationship between the two groups of students. Group 1 consisted of students who were unlikely to complete their university studies based on their interactions with the business operations, and those who were likely to complete their university studies. These two groups demonstrated a difference in their responses based on their interactions with the university's business operations.

The research survey collected data from 90 participants, of whom 71 (78.89%) self-identified with one of the underrepresented groups. The final group of underrepresented participants represented 5.64% of the 1,206 total students invited to participate in the survey. A minimum of 50 survey responses was set at the start of the research project. Recognizing the challenge of meeting the minimum number of qualified respondents, the study employed an initial round of direct survey distribution requests, augmented by a snowball sampling technique to increase participation among underrepresented students. The snowball method involved asking respondents to recommend and forward the survey to others who might fit the demographic criteria of the study.

The participants were categorized into two distinct groups for analysis: Group 1 included individuals who, based on their interactions with business operations, reported being unlikely to complete their academic program ($n = 2$). Group 2 comprised those who indicated they were likely to, or already had, completed their program ($n = 66$). The Mann-Whitney U test was selected for its suitability in comparing nonparametric data between independent groups, allowing for assessment of differences in completion likelihood based on interactions with business operations. The aim was to shed light on the role that university business operations play in supporting student completion, ultimately benefiting both the institution and its student body.

The following results from analyzing the survey data (see Table 4.4) are based on answering the research question and hypothesis regarding the relationship between underrepresented student completion rates and their interactions with a university's business operations. Based on the number of interactions the underrepresented students had with the business operation, Group 1 of two participants had a total ranking of 119, and Group 2, with 69 participants, had a total ranking of 2202. The U-statistic for the survey was calculated at 116, which is greater than the critical value of approximately two. The *p-value* significance was 0.0174, which is less than a significance level of 0.05. In the case of this research, the null hypothesis was retained. There was not enough evidence from the survey to support the alternative hypothesis.

These findings suggest that there may be observable differences in how underrepresented students perceive their interactions with the university's business operations; however, the current data do not substantiate a direct or causal relationship with completion rates. This underscores the need for further research, potentially incorporating larger samples and more granular measures of interaction quality, to better understand the mechanisms by which business function interactions may support or hinder completion rates for underrepresented student populations.

Table 4.4

Mann-Whitney U Test Results

Designation	*n*
n1	2
n2	69
n1*n2	138
n1+1	3
N2+1	70
Middle Term 1	3
Middle term 2	2415
R1	119
R2	2202
U1	22
U2	116
U_Stat	116
U_Critical	2

The analysis was conducted to evaluate whether interactions with university business operations have any measurable impact on the completion rates of underrepresented students. Specifically, the Mann-Whitney test was employed to determine if, statistically, there was a significant difference between students who are unlikely to finish their programs and those who reported that they are likely or have finished their programs, concerning their interactions with the business operations of a university.

The statistical results (see Figure 4.11) yielded a *Z* score = –1.615, *p* score of 0.053, which is slightly above the conventional threshold of 0.05 for statistical significance. The observed effect size of *r* score = 0.192 indicates a small to medium effect, suggesting there is a difference in the groups; however, the magnitude of this difference is limited. The U value also exceeded the critical value (U_Critical = 2), indicating the findings did not meet the threshold to indicate a level at the chosen significance level.

These results suggest that there may be differences in completion rates associated with varying levels of positive interactions with business operations. However, the effect is minimal and does not reach a significant statistical level in this data sample. Although the university's business operations could support underrepresented students, the data suggest that the impact may be limited in scope.

Figure 4.11

Mann-Whitney U Test

- Mann-Whitney U
  - U = Min (U1, U2) = Min (22,116) = 116
  - U = 116 > U Critical 2
- Mean and Standard Deviation of U

$$\mu_U = \frac{n_1 n_2}{2} = \frac{2 \times 69}{2} = 69$$

$$\sigma_U = \sqrt{\frac{n_1 n_2 (n_1 + n_2 + 1)}{12}} = \sqrt{\frac{2 \times 69 \times (2 + 69 + 1)}{12}} = \sqrt{\frac{138 \times 72}{12}} = \sqrt{828} \approx 28.77$$

- Z-Score

$$z = \frac{U - \mu_U + 0.5}{\sigma_U} = \frac{22 - 69 + 0.5}{28.77} = \frac{-46.5}{28.77} \approx -1.615$$

- Effect size (r)

$$r = \frac{1.615}{\sqrt{71}} \approx \frac{1.615}{8.426} \approx 0.192$$

The Mann-Whitney U test of the collected data resulted in the retention of the null hypothesis. Although the calculated statistic of 116 exceeded the critical value of 2, and the resulting Z-score of 1.6115 produced a *p-value* of 0.053, which is slightly above the standard significance threshold of 0.05, these results point to a trend that, although statistically significant in this sample, warrants further scholarly research.

The observed effect size of 0.192 suggests a slight difference between the two groups, which is not substantial enough to be considered significant as related to the research question. This finding aligns with the emerging literature suggesting that enhanced interactions with the university system, including the business function of the university, may contribute to improved completion rates of underrepresented students.

Although the data from this survey does not provide strong statistical evidence to confirm the hypothesis and answer the research question definitively, the results underscore the potential importance of fostering supportive, accessible interactions with the business functions. Continued research in this area is important to narrowing equity gaps and promoting the academic success of underrepresented students at not-for-profit private universities. The discussion and implications derived from the survey data were further discussed in Chapter 5.

Summary of Findings

The survey was completed in March of 2025 with 90 participants from an invited pool of 1,206 individuals. Furthermore, 68 participants who identified as belonging to one of the underrepresented groups were included in the survey results.

The underrepresented students were divided into two groups: Group 1 (unlikely to complete) and Group 2 (likely to complete). The data collected were analyzed using the Mann-Whitney U Test, which yielded a *p-value* of less than 0.05. Consequently, the null hypothesis was retained, and the alternative hypothesis was not supported. The data from the survey provided insights related to the research hypothesis, which was examined in more detail in Chapter 5, focusing on the implications and applications.

CHAPTER 5: CONCLUSIONS AND DISCUSSION

This study examined the relationship between the academic outcomes of underrepresented students and their engagement with university business operations. The findings did not reject the *Null Hypothesis (H_0)*, which states that 'The frequency of interactions with the university business function systems does not affect the completion of underrepresented students at not-for-profit private universities in the Northwest region of the United States.' The study did not indicate a statistically significant difference between the two groups at the ($\alpha = 0.05$) significance level. Although the study indicated that the underrepresented students have some elevated level of interactions with the various business operations, it did not reveal a correlation between these interactions and the students' success.

This study investigated the relationship between underrepresented students' completion rates and their interactions with the business operations of a university, focusing on two groups of students relevant to the research hypothesis. Although the survey results were negative about the survey hypothesis, specific findings and conclusions may be drawn regarding the frequency of interactions with the business operations. The results from the research and survey relate to the research hypothesis, 'The frequency of interactions with the university business function systems does affect the completion of underrepresented students at not-for-profit private universities in the northwest region of the United States.'

The diverse group of participants, encompassing all underrepresented demographics, provided valuable insights into student completion rates. However, the survey categories did not include Asians as a separate ethnic group. This was identified by an Asian participant, noting that the survey lacked a category for individuals of Asian descent in the underrepresented student ethnic/racial identification section. The lack of an Asian ethnic category did not affect the count of non-White individuals marked as "none of the above," nor did it influence the survey results.

Research Question

The findings of the survey did not provide conclusive evidence regarding the research question: Is there a possible link, if any, between the interactions of underrepresented students with the university business function systems of a university and the completion of these students?' No significant difference was found in the likelihood of completion for the underrepresented students and the student interaction with the business operations of the university. Furthermore, the increased frequency of interactions with these business operations did not correspond to a higher impact on student completion rates.

The survey and related research presented an opportunity to study the possible correlation and to gain new insights into an element that is related to the underrepresented student completion rates. The frequency of interactions with university business function systems and its relationship to the completion rates of underrepresented students at not-for-profit private universities in the northwest region of the United States was the basis of this research. Because the students from the underrepresented group had higher levels of interactions with these departments, there was no significant correlation between those interactions and the students' completion rates based on the results of the survey. Among the underrepresented student participants (n = 68), 16 (23.53%) reported encountering one of the business offices 15 or more times, though among non-underrepresented students (n = 22), only one (4.55%) had 15 or more such interactions. Although a higher proportion of underrepresented students reported frequent interactions with business offices, statistical analysis did not reveal a significant correlation with completion rates. Fisher's exact test on these data confirmed, within the constraints of the sample size, that there was no statistically significant relationship between frequent business office interactions and completion rates among underrepresented students, thereby supporting the conclusions drawn from the Mann-Whitney U test.

Key Findings

The principal finding reveals that the underrepresented students experience a higher frequency of interactions with the business operations of the university; however, no significant correlation was identified between those interactions and student completion rates. The research question, "Is there a possible link, if any, between the interactions of underrepresented students with the university business function systems of a university and the completion of these students?" was not significantly answered. The survey did not demonstrate a link between the number of interactions with the business offices and the student completion rates.

The survey did not establish a correlation between the number of interactions with business offices and the completion rate of underrepresented student programs, according to the Mann-Whitney U Test results. The survey offered an opportunity to examine another factor that might influence an underrepresented student's completion rate and, in turn, impact their recommendation of the university to other underrepresented students based on those interactions. The research questions focused on whether the frequency of interactions with the university business function systems correlates with the completion of underrepresented students at not-for-profit private universities in the Northwest region of the United States.

Several limitations affected this study. University data access policies, including access to noncontinuing students, constrained data collection. However, it was addressed as much as possible through collaboration with schools for non-FERPA-protected and relevant student data. Participant willingness and survey nonresponse were mitigated by narrowing the research scope and employing a snowball sampling process. Self-reported completion rates could not be independently verified. Finally, potential selection bias was acknowledged, with mitigation through the use of a blind survey online tool to minimize researcher bias.

Discussion of Findings and Results, and Conclusions

This subsection details the findings. The Mann-Whitney U test did not reveal a significant correlation between the two variables and indicated that the null hypothesis was not rejected. The Mann-Whitney Test was used to compare outcomes based on the frequency of interactions underrepresented students had with university business operations across two groups. Group 1, which consisted of two participants, received a total ranking of 119, whereas Group 2, which consisted of 66 participants, had a total ranking of 2,202. Despite this analysis, no significant correlation was found between the frequency of interactions with the business operations of a university and the completion rates of underrepresented students. The survey revealed that 19 (20.2%) of all the participants in the study reflected less than positive responses to their interactions, based on Question 20 of the survey. However, only 21 (29.58%) of underrepresented participants in the study reflected a less than positive response to their interactions, based on Question 20 of the survey.

It is imperative to acknowledge that the statistical power of the present analysis is constrained by the relatively small sample sizes and the uneven distribution between groups. As such, the findings presented here should be interpreted with caution, and generalizations to all not-for-profit private universities or all underrepresented student populations should be avoided.

Another finding from the research was that only two (2.94%) of the survey's underrepresented participants indicated that they have not and will not complete their programs. None of the non-underrepresented participants indicated that they would not finish their program. This suggests that although the two underrepresented students decided not to finish their degrees, all other students indicated that they would finish their programs. Reflecting on the methodology, it becomes apparent that the surveyed population was comprised of current students and alumni, groups more easily accessible through the institutional channels. This approach inherently excludes individuals who began but did not complete their studies, a demographic whose perspective could contribute much to the insight into institutional barriers.

This study explored the impact of business operations on the success of underrepresented students. The purpose of this study was to address the gap in existing literature that failed to examine the impact that business operations have on the completion rates of underrepresented students. For a comprehensive overview of the background and the factors influencing underrepresented student completion rates at not-for-profit private universities, refer to Chapter 1. The identified gap in the research concerns the correlation between the completion rates of underrepresented students at not-for-profit private universities and their interactions with the university's business operations.

The study emphasized the need to examine all aspects of a student's life and experiences at a university, including interactions with the various business operations. Given the significance of underrepresented student success on the individual, their families, and society, universities and communities must identify and address all factors impacting underrepresented student success.

Application of Findings and Results, and Conclusions to the Problem Statement

University leaders must address any or all factors that may affect a student's completion rate, and this is especially true for any factor impacting underrepresented students' completion. It is critical to establish a system that supports students comprehensively until they complete their studies. University leadership plays a vital role in understanding and implementing strategies to mitigate elements impacting students' success. Their efforts in developing and executing a supportive system for underrepresented students are essential for student achievement and fostering a culture among university professionals that prioritizes support and inclusivity.

Application for Business

University business leaders could enhance the university's culture by implementing strategic supportive systems aimed at improving completion rates among underrepresented students. Strategic, positive support systems may function as a catalyst for enhancing underrepresented student completion rates (Saenz & Ponjuan, 2016). Such systems may improve student experience and streamline business operations in not-for-profit private universities. By examining and understanding how the operation impacts a student's experience, it becomes clearer how these operations affect the completion rates of underrepresented students. The role of the business operations leaders is critical in addressing many of the institutional gaps, racism, and microaggressions that exist in the cultural system of a university (Martin, J. P. et al., 2020).

Research on student success has emphasized the significance of an institution's leadership in supporting underrepresented students. As identified in the literature review, leadership in universities is instrumental in confronting institutional gaps, addressing racism, and mitigating microaggressions experienced by specific groups (Hatch & Garcia, 2017) Leaders and administrators set the tone for the institution and create or dissuade collaboration among the staff, faculty, and students (Martin, J. P. et al., 2020). The extent to which such initiatives influence the experiences or outcomes of underrepresented students, as explored here, warrants further empirical investigation beyond the present findings.

Recommendations for Action

Business function leaders at universities may implement change and address education access gaps more effectively by involving others in the planning process and communicating broadly in the institution. The following recommendations are offered to university leadership to address the gaps at their institutions:

- Collaborative planning across departments to establish cross-unit work groups to leverage past experiences and address institutional barriers (Kezar & Holcombe, 2020)

- Broad, regular communication that is implemented through channels for frequent and transparent communication among all university stakeholders (Kezar & Holcombe, 2020).
- Investing in professional development to provide ongoing training and growth opportunities for faculty and staff to support equity efforts (Kezar & Holcombe, 2020).
- Making data-driven decisions using evidence-based strategies to inform policy and practice, ensuring interventions are targeted and effective (Kezar & Holcombe, 2020).
- Creating mentorship initiatives to develop programs to support underrepresented students throughout their academic journey (Kezar & Holcombe, 2020).

Firstly, the university business operations leaders should encourage collaborative planning with other departments and student groups. By incorporating diverse groups of individuals, including both staff and students, they can effectively evaluate the functioning aspects and identify deficiencies in the level of service provided. This approach to collaborative planning promotes enhanced communication and ensures that diverse perspectives are considered. Considering multiple diverse viewpoints increases the likelihood of successfully implementing a process or policy.

Second, establishing regular communication channels that emphasize collaboration and openness to feedback addresses the gap found in both this study and the literature regarding the limited research on the relationship between student interactions and the completion rates of underrepresented students. Leaders may use these communication channels to share updates and solicit feedback from the university community. For example, financial aid may have relevant meetings with the student government groups to address the financial concerns of students, and the food service may want to seek opinions about the types of food options in the campus vending machines. Various channels may be employed depending on the tools available to each department, addressing the literature gap related to communication between students and the business operations of a university.

Third, the university leadership should invest in professional development that extends beyond the regular job duties of the employee, as research has shown that insufficient staff interactions can negatively impact underrepresented students' experiences (Hatch & Garcia, 2017). Providing ongoing training focused on diversity, inclusion, and cultural competency can better equip staff and faculty to support these students through their program.

Fourth, university leadership may implement data-driven decision-making processes. By systematically collecting and analyzing student data related to various demographic groups, retention rates, and academic performance, they may gain deeper insights into the factors affecting the various student groups. Through informed decision-making, the university leadership may better identify the gaps in support and tailor their strategies to provide targeted support accordingly.

Fifth, the university, under its leadership, may create mentorship programs specifically designed to support underrepresented students. These programs will connect underrepresented students with faculty, staff, and alumni, thereby fostering a supportive community of belonging. The primary objectives of these initiatives are to offer guidance, resources, and encouragement to enhance student completion rates.

University leadership should prioritize implementing these five steps to develop support system initiatives that emphasize student success and completion. Conducting regular training and workshop programs in all five areas of student success for all university departments may provide individuals with the necessary skills and tools to assist a diverse student population more effectively.

Recommendations for Further Research

Further research should encompass all aspects of a student's life at a university. Whether the factor is grade point average entering college, academic preparedness, academic process, advising process, or the persistent intentions of students (Hatch & Garcia, 2017), or interactions with various departments of a university.

The study underlines the impact of university business operations on the completion rates of underrepresented students. Although the study does prove a significant correlation between the interactions of underrepresented students with the business operations, it identifies gaps in the research. The research gaps highlight the need for a deeper understanding of the complex relationship between students and the university. While the research was ultimately inconclusive due to its limited scope and time constraints, it remains that the findings provide valuable insights. To gain a more comprehensive understanding of the complex relationship between business operations and underrepresented student success, future research should adopt a modified approach. This approach should incorporate broader sampling, extended time limits, and mixed methodologies.

One suggested area for further research is a longitudinal study of the long-term effects of business operations on student success. Through longitudinal studies, leadership may analyze the evolution of operational strategies and policies over time and assess the cumulative impact on student success. These studies should not only aim at identifying direct correlations but also strive to uncover the underlying mechanisms.

The second area focuses on research and development in cross-departmental collaboration. Examining various models to boost departmental collaboration may help leaders identify systems that aid student success. Leaders may gather insights by using qualitative methods, such as focus groups and interviews with students, to gather rich, contextual insights into the aspects that impact student success. Creating a strong collaborative environment will also increase open communication across all levels of the university.

The third area is research into effective training programs. By collaborating with other departments, such as Human Resources and the Diversity and Inclusion Department, we can identify the best training programs that align with the university's needs and culture. This cross-cultural department collaboration aims to develop or acquire the proper training tools to equip staff with the necessary tools and skills to address any gaps in the university training.

The fourth area of research pertains to the creation of comprehensive frameworks for effective data use in higher education institutions. By leveraging data in their decision-making, they address the gaps across the system. This area of research emphasizes the need for universities to systematically gather, integrate, and analyze data across departments to inform and shape policy decisions, resource allocation, and support initiatives aimed at enhancing student outcomes. The area of research aims to optimize university resources toward effective student success initiatives.

The university leadership should focus on these identified areas, allowing the university business operation leaders to address the gaps highlighted by the study's research. To address the existing gaps in understanding the impact of business operations on the completion rates of underrepresented students, the application of the previously listed steps should be implemented. A comprehensive 3-year longitudinal mixed methods approach to understanding and applying systematic fixes may contribute to increasing the completion rate of these students. This further exploration will provide opportunities to examine the long-term effects of the business operations across the whole university and their impact on the underrepresented students' success and completion rates. Furthermore, the qualitative studies could offer rich, contextual, and deeper insights into student experiences in a not-for-profit private university.

Concluding Statement

In summary, by prioritizing inclusive practices across all departments, universities can drive meaningful change for underrepresented students. Continued commitment to these values will ensure lasting progress and a more equitable academic environment.

AI Statement

I recognize that AI (Artificial Intelligence) is reshaping and impacting every area of our lives, especially in business decision-making. AI has enhanced our ability to access information and formulate answers for complex decisions. With that said, using this tool (AI) in business helps with analyzing complex student information and making data-driven decisions.

I acknowledge the ethical implications that accompany AI use in both business and educational systems. Further research on how to maximize the quality of AI use while avoiding the ethical implications is important for both research purposes and for student support.

REFERENCES

Alicea-Planas, J. (2017). We are shifting our focus to support the educational journey of underrepresented students. *The Journal of Nursing Education*, *56*(3), 159–163. https://doi.org/10.3928/01484834-20170222-07

Ammigan, R., & Jones, E. (2018). Improving the student experience: Learning from a comparative study of international student satisfaction. *Journal of Studies in International Education*, *22*(4), 283–301. https://doi.org/10.1177/1028315318773137

Andersen, G. (2024). *The role of a business operations manager in higher education*. MoldStud. https://moldstud.com/articles/p-the-role-of-a-business-operations-manager-in-higher-education

Andrade, M. S., Miller, R. M., McArthur, D., & Ogden, M. (2020). The impact of learning on student persistence in higher education. *Journal of College Student Retention: Research, Theory & Practice*, *24*(2), 316–336. https://doi.org/10.1177/1521025120915576

Arif, S. (2016). Leadership for change. *Business Process Management Journal*, *22*(5), 939–956. https://doi.org/10.1108/BPMJ-01-2016-0025

Aryal, S. (2020). Illusion of inequality of opportunity in education. *Rupantaran: A Multidisciplinary Journal*, *4*(1), 153–163. https://doi.org/10.3126/rupantaran.v4i1.34212

Astin, A. W. (1999). Student involvement: A developmental theory for higher education. *Journal of College Student Development*, *40*(5), 518–529. http://eric.ed.gov/ERICWebPortal/detail?accno=EJ614278

Bal, A., Afacan, K., & Cakir, H. I. (2019). Transforming schools from the ground up with local stakeholders: Implementing a learning lab for inclusion and systemic transformation at a middle school. *Interchange*, *50*(3), 359–387. https://doi.org/10.1007/s10780-019-09353-5

Bandaru, S., Gaur, A., Deb, K., Khare, V., Chougule, R., & Bandyopadhyay, P. (2015). Development, analysis, and applications of a quantitative methodology for assessing customer satisfaction using evolutionary optimization. *Applied Soft Computing*, *30*, 265–278. https://doi.org/10.1016/j.asoc.2015.01.014

Barbera, S. A., Berkshire, S. D., Boronat, C. B., & Kennedy, M. H. (2020). Review of undergraduate student retention and graduation since 2010: Patterns, predictions, and recommendations for 2020. *Journal of College Student Retention: Research, Theory & Practice*, *22*(2), 227–250. https://doi.org/10.1177/1521025117738233

Baum, D. R., Abdul-Hamid, H., & Wesley, H. T. (2018). Inequality of educational opportunity: The relationship between access, affordability, and quality of private schools in Lagos, Nigeria. *Oxford Review of Education*, *44*(4), 459–475. https://doi.org/10.1080/03054985.2017.1421153

Beddoes, K. (2018). Selling policy short? Faculty perspectives on the role of policy in addressing women's underrepresentation in engineering education. *Studies in Higher Education*, *43*(9), 1561–1572. https://doi.org/10.1080/03075079.2016.1266610

Blandin, A., & Herrington, C. (2022). Family heterogeneity, human capital investment, and college attainment. *American Economic Journal: Macroeconomics*, *14*(4), 438–478. https://doi.org/10.1257/mac.20200014

Brause, R. S. (2012). *Writing your doctoral dissertation: Invisible rules for success.* Taylor and Francis.

Braxton, J. M. (2019). Review of the book *Leaving college: Rethinking the causes and cures of student attrition*, by Vincent Tinto. *Journal of College Student Development*, *60*(1), 129–134. https://doi.org/10.1353/csd.2019.0012

Braxton, J. M., & Lee, S. D. (2005). Toward reliable knowledge about college student departure. In A. Seidman (Ed.), *College student retention: Formula for student success* (pp. 107–128). Praeger. https://doi.org/10.5040/9781639736522.0009

Braxton, J. M., Shaw Sullivan, A. V., & Johnson, R. M., Jr. (1997). Appraising Tinto's theory of college student departure. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 7, pp. 107–164). Agathon Press.

Burns, R., Bentz, A. H., & Hudson, L. (2020). *First-time sub-baccalaureate students: An overview of their institutions, programs, completion, and labor market outcomes after three years*. Institute of Education Sciences. https://nces.ed.gov/Pubs2020/2020035.pdf

Callahan, C. N., LaDue, N. D., Baber, L. D., Sexton, J., van der Hoeven Kraft, K. J., & Zamani-Gallaher, E. M. (2017). Theoretical perspectives on increasing recruitment and retention of underrepresented students in the geosciences. *Journal of Geoscience Education*, *65*(4), 563–576. https://doi.org/10.5408/16-238.1

Carothers, D. (2018). A culture of equality? *Journal of Culture and Values in Education*, *1*(2), 42–57. https://doi.org/10.46303/jcve.01.02.3

Carstairs, C. (2001). Defining whiteness: Race, class, and gender perspectives in north American history. *International Labor and Working-Class History*, *60*, 203–206. https://doi.org/10.1017/S0147547901214525

Chen, J. C. (2017). Non-traditional adult learners: The neglected diversity in postsecondary education. *Sage Open*, *7*(1). https://doi.org/10.1177/2158244017697161

Claybrooks, S. G., & Taylor, F. P. (2016). Student persistence and use of a college success course in proprietary postsecondary education. *College Student Journal*, *50*(2), 199–211.

Clegg, B. (2019). Improving systemic success factors in a university to achieve more effective and efficient operations. *Business Process Management Journal*, *26*(2), 630–654. https://doi.org/10.1108/BPMJ-11-2017-0308

Cochran, M. F. (2016). Student affairs, persistence, and the growing need for an inquiry. *Journal of Student Affairs Inquiry, Improvement, and Impact*, *2*(1). https://doi.org/10.18060/27833

Connolly, C. (2016). Student retention literature–Tinto's model. *Cornelia Thinks: Discussions in Higher Education, Learning and Life*.

Conway, M. (2021). *The idea of a university: Enabling or constraining possible university futures?* [Unpublished manuscript]. https://researchbank.swinburne.edu.au/items/c0bc1cbd-bec3-4b85-96dc-2a842edfe493/1/Maree_Conway_Thesis.pdf

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.

Dancy, K., Mugglestone, K., Roberson, A. J., DiBenedetto, K., Eckerson Peters, E., Voight, M., & Gray Parker, A. (2021). *Equitable value*. Post Secondary Value Commission.

Demetriou, C., & Schmitz-Sciborski, A. (2011). Integration, motivation, strengths, and optimism: Retention theories past, present, and future. Paper presented at the *Proceedings of the 7th National Symposium on Student Retention, 201*

Dobni, C. B., Wilson, G. A., & Klassen, M. (2021). Business practices of highly innovative Japanese firms. *Asia Pacific Management Review*, *27*(3), 155–162. https://doi.org/10.1016/j.apmrv.2021.06.005

Dreyer, W. (2012). An overview of doctoral research within Aotearoa/New Zealand. *Doctoral Research in Management and Business in New Zealand*, 9.

El Zein, A., Mathews, A. E., House, L., & Shelnutt, K. P. (2018). Why are hungry college students not seeking help? Predictors of and barriers to using an on-campus food pantry. *Nutrients*, *10*(9), Article 1163. https://doi.org/10.3390/nu10091163

Ellis, H. (2019). A nontraditional conundrum: The dilemma of nontraditional student attrition in higher education. *College Student Journal*, *53*(1), 24–32. https://eric.ed.gov/?id=EJ1315511

Estrada, M., Burnett, M., Campbell, A. G., Campbell, P. B., Denetclaw, W. F., Gutiérrez, C. G., Hurtado, S., John, G. H., Matsui, J., McGee, R., Okpodu, C. M., Robinson, T. J., Summers, M. F., Werner-Washburne, M., & Zavala, M. (2016). Improving underrepresented minority student persistence in STEM. *CBE Life Sciences Education*, *15*(3), Article es5. https://doi.org/10.1187/cbe.16-01-0038

Etchegaray, J. M., & Fischer, W. G. (2010). Understanding evidence-based research methods: Graphical data analysis. *HERD*, *3*(2), 118–125. https://doi.org/10.1177/193758671000300210

Fishman, R., Nguyen, S., & Francisco, M. (2020). *Varying Degrees 2020: New America's Fourth Annual Survey on Higher Education.* New America. https://files.eric.ed.gov/fulltext/ED617233.pdf

French, T. (2017). Toward a new conceptual model: Integrating the social change model of leadership development and Tinto's model of student persistence. *Journal of Leadership Education*, *16*(3). https://doi.org/10.12806/V16/I3/T4

Fry, R., & Cilluffo, A. (2019, May 22). A rising share of undergraduates are from poor families, especially at less selective colleges. *Pew Research Center.* https://www.pewresearch.org/social-trends/2019/05/22/a-rising-share-of-undergraduates-are-from-poor-families-especially-at-less-selective-colleges/

Gallup, I. (2022). *The State of Higher Education 2022 Report* [Report]. Gallup & Lumina. https://www.luminafoundation.org/wp-content/uploads/2022/04/gallup-lumina-state-of-higher-education-2022-report.pdf

Galvan, A. (2015, June 3). Soliciting performance, hiding bias: Whiteness and librarianship. *In the Library with the Lead Pipe*. http://www.inthelibrarywiththeleadpipe.org/2015/soliciting-performance-hiding-bias-whiteness-and-librarianship/

Gibbs, E. A., Smith, J. B., E. D., Nidiffer, J., & Sule, E. D. V. T. (2017). The experiences of non-traditional students in first-year courses: Exploring social engagement, academic engagement, and reflection. *The Journal of Continuing Higher Education*, *65*(3).

Ginsberg, M. (1951). Durkheim's ethical theory. *The British Journal of Sociology, 2*(3), 210–218. https://doi.org/10.2307/586721

Gipson-Jones, T. L. (2017). Preventing program attrition for underrepresented nursing students. *Journal of Cultural Diversity*, *24*(4), 111–117. https://www.proquest.com/docview/1985539513?sourcetype=Scholarly%20Journals

Girgis, F., Lee, D. J., Goodarzi, A., & Ditterich, J. (2018). Toward a Neuroscience of Adult Cognitive Developmental Theory. *Frontiers in Neuroscience*, *12*, Article 4. https://doi.org/10.3389/fnins.2018.00004

Greener, S. (2018). Research limitations: The need for honesty and common sense. *Interactive Learning Environments*, *26*(5), 567–568. https://doi.org/10.1080/10494820.2018.1486785

Greenstein, Y. Y. (2020). Inaccurate conclusions by Tang and colleagues. *Journal of Thrombosis and Haemostasis*, *18*(7), Article 1797. https://doi.org/10.1111/jth.14857

Grissom, J. A., & Redding, C. (2015). Discretion and disproportionality: Explaining the underrepresentation of high-achieving students of color in gifted programs. *Aera Open*, *2*(1). https://doi.org/10.1177/2332858415622175

Harper, L. M. (2020). Recruitment and retention strategies of LIS students and professionals from underrepresented groups in the United States. *Library Management, 41*(2/3), 67–77. https://doi.org/10.1108/LM-07-2019-0044

Harper, S. R., Smith, E. J., & Davis, C. H. F. (2018). A critical race case analysis of Black undergraduate student success at an urban university. *Urban*, *53*(1), 3–25. https://doi.org/10.1177/0042085916668956

Harvey, C. P., & Allard, M. (2015). *Understanding and Managing Diversity: Readings, Cases, and Exercises.* Pearson.

Hasan, M. M., Nekmahmud, M., Yajuan, L., & Patwary, M. A. (2019). Green business value chain: A systematic review. *Sustainable Production and Consumption, 20*, 326–339. https://doi.org/10.1016/j.spc.2019.08.003

Hatch, D. K., & Garcia, C. E. (2017). Academic advising and the persistence intentions of community college students in their first weeks in college. *Review of Higher Education*, *40*(3), 353–390. https://doi.org/10.1353/rhe.2017.0012

Hepworth, D., Littlepage, B., & Hancock, K. (2018). Factors influencing university student academic success. *Educational Research Quarterly, 42*(1), 45–61.

Hlinka, K. R. (2017). Tailoring retention theories to meet the needs of rural Appalachian community college students. *Community College Review*, *45*(2), 144–164. https://doi.org/10.1177/0091552116686403

Hofstra, B., Kulkarni, V. V., Munoz-Najar Galvez, S., He, B., Jurafsky, D., & McFarland, D. A. (2020). The diversity-innovation paradox in science. *Proceedings of the National Academy of Sciences - PNAS, 117*(17), 9284–9291. https://doi.org/10.1073/pnas.1915378117

Hughes, B. E. (2018). Coming out in STEM: Factors affecting retention of sexual minority STEM students. *Science Advances*, *4*(3), Article eaao6373. https://doi.org/10.1126/sciadv.aao6373

Hussar, B., Zhang, J., Hein, S., Wang, K., Roberts, A., Cui, J., Smith, M., Mann, F. B., Barmer, A., & Dilig, R. (2020). *The Condition of Education 2020: A Publication of the National Center for Education Statistics at IES*. National Center for Education Statistics. https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2020144.

Hussar, W. J., & Bailey, T. M. (2019). Projections of education statistics to 2027. NCES 2019-001. *National Center for Education Statistics*. https://files.eric.ed.gov/fulltext/ED593299.pdf

Inoue, J., Ghosh, A., Chatterjee, A., & Chakrabarti, B. K. (2015). Measuring social inequality with quantitative methodology: Analytical estimates and empirical data analysis by Gini and K indices. *Physica A: Statistical Mechanics and its Application*, *429*, 184–204. https://doi.org/10.1016/j.physa.2015.01.082

Ishitani, T. T. (2016). First-generation students' persistence at four-year institutions. *College and University*, *91*(3), 22–32. https://eric.ed.gov/?id=EJ1113447

James, J. L. (2020). Students as stakeholders: Understanding expectations can increase student retention. *Journal of College Student Retention: Research, Theory & Practice*, *24*(1), 20–42. https://doi.org/10.1177/1521025119898844

Jones-Archer, W. (2025, January 15). *Knowledge and understanding of student populations.* College Student Services Administration. https://whitneykjones.weebly.com/knowledge-and-understanding-of-student-populations-and-student-development.html

The Journal of Blacks in Higher Education. (2019). *There have been large increases in Black undergraduate enrollment, but not at the most selective institutions*. https://www.jbhe.com/2019/05/large-increases-in-black-undergraduate-enrollment-but-not-at-the-most-selective-institutions/

Kamer, J. A., & Ishitani, T. T. (2019). First-year, non-traditional student retention at four-year institutions: How predictors of attrition vary across time. *Journal of College Student Retention: Research, Theory & Practice*, *23*(3), 560–579. https://doi.org/10.1177/1521025119858732

Kezar, A. J., & Holcombe, E. M. (2020). Challenges of implementing integrated programs for underrepresented students in STEM: A study of the CSU STEM collaboratives. *Educational Policy*, *34*(6), 864–893. https://doi.org/10.1177/0895904818802091

Khoo, S., Ha, H., & McGregor, S. L. T. (2017). Service quality and student/customer satisfaction in the private tertiary education sector in Singapore. *International Journal of Educational Management*, *31*(4), 430–444. https://doi.org/10.1108/IJEM-09-2015-0121

Kopp, J. P., & Shaw, E. J. (2016). How final is leaving college while in academic jeopardy? Examining the utility of differentiating college leavers by academic standing. *Journal of College Student Retention: Research, Theory & Practice*, *18*(1), 2–30. https://doi.org/10.1177/1521025115579670

Kwakye, I., Kibort-Crocker, E., & Pasion, S. (2020). *Equity landscape report: Exploring equity gaps in Washington postsecondary education*. Washington Student Achievement Council. https://files.eric.ed.gov/fulltext/ED613344.pdf

Lee, C. J., & Huang, J. (2021). The relationship between students' sense of school belonging, their perceptions of school kindness, and the character strength of kindness. *Journal of School Psychology, 84*, 95–108. https://doi.org/10.1016/j.jsp.2020.12.001

Leung, L. (2015). Validity, reliability, and generalizability in qualitative research. *Journal of Family Medicine and Primary Care*, *4*(3), 324–327. https://doi.org/10.4103/2249-4863.161306

Li, I. W., & Jackson, D. (2024). Influence of entry pathway and equity group status on retention and the student experience in higher education. *Higher Education*, *87*(5), 1411–1431. https://doi.org/10.1007/s10734-023-01070-4

Long, L. L., & Mejia, J. A. (2016). Conversations about diversity: Institutional barriers for underrepresented engineering students. *Journal of Engineering Education*, *105*(2), 211–218. https://doi.org/10.1002/jee.20114

Long, M. C., & Bateman, N. A. (2020). Long-run changes in underrepresentation after affirmative action bans in public universities. *Educational Evaluation and Policy Analysis*, *42*(2), 188–207. https://doi.org/10.3102/0162373720904433

Lotkowski, V. A., Robbins, S. B., & Noeth, R. J. (2004). *The role of academic and non-academic factors in improving college retention* [Report]. American College Testing. https://files.eric.ed.gov/fulltext/ED485476.pdf

Mankins, J. K. (2018). *Stakeholders' perceptions on mandated student retention in early childhood* http://erau.summon.serialssolutions.com/2.0.0/link/0/

Mariano, N., Miguel, A., Rempe, M., & Sloughter, J. M. (2018). *Quantitative analysis of barriers to completion of engineering degrees for female-identifying and underrepresented minority students* [Paper presentation]. The Collaborative Network for Engineering and Computing Diversity Conference, Crystal City, Virginia. https://peer.asee.org/quantitative-analysis-of-barriers-to-completion-of-engineering-degrees-for-female-identifying-and-underrepresented-minority-students

Martin, J. P., Stefl, S. K., Cain, L. W., & Pfirman, A. L. (2020). Understanding first-generation undergraduate engineering students' entry and persistence through social capital theory. *International Journal of STEM Education, 7*(1), 1–22. https://doi.org/10.1186/s40594-020-00237-0

Martin, W. E., & Bridgmon, K. D. (2012). *Quantitative and statistical research methods: From hypothesis to results* (1st ed.). Jossey-Bass.

Mather, M., & Sarkans, A. (2018). Student perceptions of online and face-to-face learning. *International Journal of Curriculum and Instruction*, *10*(2), 61–76. https://iopscience.iop.org/article/10.1088/1742-6596/1108/1/012094/pdf

McKinney, L., Gross, J. P., & Burridge, A. B. (2014). How community colleges can help prevent financial hardship among student borrowers. *Community College Journal of Research and Practice*, *38*(2-3), 270–274. https://doi.org/10.1080/10668926.2014.851984

Mechur Karp, M. (2016). A holistic conception of nonacademic support: How four mechanisms combine to encourage positive student outcomes in the community college. *New Directions for Community Colleges*, *2016*(175), 33–44. https://doi.org/10.1002/cc.20210

Milem, J. F., & Berger, J. B. (1997). A modified model of college student persistence: Exploring the relationship between Astin's Theory of Involvement and Tinto's Theory of Student Departure. *Journal of College Student Development*, *38*(4), Article 387. https://search.proquest.com/docview/1416093041

Millea, M., Wills, R., Elder, A., & Molina, D. (2018). What matters in college student success? Determinants of college retention and graduation rates. *Education*, *138*(4), 309–322. https://eric.ed.gov/?id=EJ1180297

Miller, N. B., & Bell, B. (2016). Analytics to action: Predictive model outcomes and a communication strategy for student persistence. *The Journal of Continuing Higher Education*, *64*(1), 16–29. https://doi.org/10.1080/07377363.2016.1125218

Miyazaki, A. D., & Taylor, K. A. (2008). Researcher interaction biases and business ethics research: Respondent reactions to researcher characteristics. *Journal of Business Ethics*, *81*(4), 779–795. https://doi.org/10.1007/s10551-007-9547-5

Murphy, J. P. (2016). *Understanding schooling through the eyes of students.* SAGE Publishing.

Murphy, J. P., & Murphy, S. A. (2018). Get ready, get in, get through: Factors that influence Latino college student success. *Journal of Latinos and Education*, *17*(1), 3–17. https://doi.org/10.1080/15348431.2016.1268139

Mwita, K. M. (2022). Factors influencing data saturation in qualitative studies. *International Journal of Research in Business and Social Science*, *11*(4), 414–420. https://doi.org/10.20525/ijrbs.v11i4.1776

National Center for Education Statistics. (2018). *Undergraduate retention and graduation rates* [Report]. U.S. Department of Education, Institute of Education Sciences. https://nces.ed.gov/programs/coe/indicator/ctr/undergrad-retention-graduation

National Science Foundation. (2008, August). *Broadening participation at the National Science Foundation: A framework for action* [Report]. https://nces.ed.gov/programs/coe/indicator/ctr/undergrad-retention-graduation

Nweke, E. O., Nwankwo, S. A. E. O., & Nwankwo, S. A. (2015). School administrators in job design school and performance of office employees in tertiary institutions in Rivers State. *International Journal of Educational Research and Management Technology*, *5*(1), 22–35. https://casirmediapublishing.com/wp-content/uploads/2020/08/Pages-22-35-2020-5001.pdf

Ong, M., Jaumot-Pascual, N., & Ko, L. T. (2020). Research literature on women of color in undergraduate engineering education: A systematic thematic synthesis. *Journal of Engineering Education*, *109*(3), 581–615. https://doi.org/10.1002/jee.20345

Ong, M., Smith, J. M., & Ko, L. T. (2018). Counter spaces for women of color in STEM higher education: Marginal and central spaces for persistence and success: *Journal of Research in Science Teaching*, *55*(2), 206–245. https://doi.org/10.1002/tea.21417

Oti, E. U., Olusola, M. O., & Esemokumo, P. A. (2021). Statistical analysis of the median test and the Mann-Whitney U test. *International Journal of Advanced Academic Research*, *7*(9), 44–51. https://ijaar.org/articles/v7n9/ste/Statistical%20Analysis%20of%20the%20Median%20Test%20and%20the%20Mann-Whitney%20U%20Test.pdf

Owolabi, E. (2018). *Improving student retention, engagement, and belonging*. Concordia University Chicago.

Ozaki, C. C. (2016). College impact theories past and present. *New Directions for Community Colleges*, *2016*(174), 23–33. https://doi.org/10.1002/cc.20200

Pate, A. N., Fleming, L., Jones-Bodie, A., Wagner, J. L., Fleming, J. W., Davis, C., & Brown, M. A. (2022). Impact of communication method and timeliness on student and faculty perception of professionalism and value. *American Journal of Pharmaceutical Education*, *86*(2), 115–123.

Pearson, J., Giacumo, L. A., Farid, A., & Sadegh, M. (2022). A systematic multiple-studies review of low-income, first-generation, and underrepresented, STEM-degree support programs: Emerging evidence-based models and recommendations. *Education Sciences*, *12*(5), Article 333. https://doi.org/10.3390/educsci12050333

Ponjuan, L., Palomin, L., & Calise, A. (2015). Latino male ethnic subgroups: Patterns in college enrollment and degree completion. *New Directions for Higher Education*, *172*(2015), 59–69. https://doi.org/10.1002/he.20153

Rahman, R. A., Hafiza Zakariya, N., Hidayah, S. N., Naim, J., & Ahmad, N. (2020). *Enhancing students' achievement through Astin's Theory of Involvement* [Paper presentation]. 4th UUM International Qualitative Research Conference.

Remenick, L. (2019). Services and support for nontraditional students in higher education: A historical literature review. *Journal of Adult and Continuing Education, 25*(1), 113–130. https://doi.org/10.1177/1477971419842880

Remler, D., & Van Ryzin, G. (2015). *Research methods in practice* (2nd ed.). SAGE Publications.

Roksa, J., & Kinsley, P. (2019). The role of family support in facilitating the academic success of low-income students. *Research in Higher Education*, *60*(4), 415–436. https://doi.org/10.1007/s11162-018-9517-z

Roscoe, R. D. (2022). Please join me/us/them on my/our/their journey to justice in STEM. *Discourse Processes*, *59*(5-6), 345–360. https://doi.org/10.1080/0163853X.2022.2050084

Ruth, D. (2018). Education as a gift: Taking education out of the market and the market out of education. *New Zealand Sociology*, *33*(2), 203–228. https://search.informit.org/doi/10.3316/informit.952659312059051

Saenz, V., & Ponjuan, L. (2016). *The Texas Education Consortium for Male Students of Color: Cross-Sector Collaboration as a Model for Improving Educational Outcomes*. American Council on Education.

Sahin, M. D., & Aybek, E. C. (2019). Jamovi: An easy-to-use statistical software for social scientists. *International Journal of Assessment Tools in Education*, *6*(4), 670–692. https://doi.org/10.21449/ijate.661803

Samuelson, C. C., & Litzler, E. (2016). Community cultural wealth: An Assets-Based approach to persistence of engineering students of color. *Journal of Engineering Education*, *105*(1), 93–117. https://doi.org/10.1002/jee.20110

Samuh, M. H., & Sanusi, R. A. (2020). Permutation tests for the two-sample location problem under extreme ranked set sampling. *Pakistan Journal of Statistics and Operations Research*, *16*(2), 387–408. https://doi.org/10.18187/pjsor.v1612.2746

Sapovadia, V. K. (2019). *Business management education for the 21st century: Integrating people and planet with profits*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3468561

Savage, M. W., Strom, R. E., Ebesu Hubbard, A. S., & Aune, K. S. (2019). Commitment in college student persistence. *Journal of College Student Retention: Research, Theory & Practice*, *21*(2), 242–264. https://doi.org/10.1177/1521025117699621

Schak, O., Bentley, C., Nichols, A., & Del Pilar, W. (2019). *Broken Mirrors: Latino Student Representation at Public State Colleges and Universities* [Report]. The Education Trust. https://files.eric.ed.gov/fulltext/ED598534.pdf

Schoen, J. L., DeSimone, J. A., Meyer, R. D., Schnure, K. A., & LeBreton, J. M. (2021). Identifying, defining, and measuring justification mechanisms: The implicit biases underlying individual differences. *Journal of Management*, *47*(3), 716–744. https://doi.org/10.1177/0149206319889137

Seymour, E., & Hunter, A. (2019). *Talking about leaving revisited: Persistence, relocation, and loss in undergraduate STEM education.* Springer.

Shah, M., & Whitehead, G. (2017). *Bridges, pathways and transitions: International innovations in widening participation*(1st ed.). Chandos Publishing.

Short, M. N., & Keller-Bell, Y. (2019). Essential skills for the 21st-century workforce. In J. Keengwe & R. Byamukama (Eds.), *Handbook of research on promoting higher-order skills and global competencies in life and work* (pp. 134–147). IGI Global.

Sidelinger, R. J., Frisby, B. N., & Heisler, J. (2016). Students' out-of-the-classroom communication with instructors and campus services: Exploring social integration and academic involvement. *Learning and Individual Differences*, *47*, 167–171. https://doi.org/10.1016/j.lindif.2016.02.011

Staley, D. J. (2020). The idea of the university as an incubator. *World Futures Review*, *12*(4), 363–368. https://doi.org/10.1177/1946756720976707

Steinberg, W. (2011). *Statistics alive!* (1st ed.). SAGE Publications.

Stewart, S., Lim, D. H., & Kim, J. (2015). Factors influencing college persistence for first-time students. *Journal of Developmental Education*, *38*(3), 12–20. https://files.eric.ed.gov/fulltext/EJ1092649.pdf

Streeton, R., Cooke, M., & Campbell, J. (2004). Researching the researchers: Using a snowballing technique. *Nurse Researcher*, *12*(1), 35–46. https://doi.org/10.7748/nr2004.07.12.1.35.c5929

Stumpff, L. M., & Cole, R. (2012). Engaging students from underrepresented populations: The enduring legacies of the Native Cases Initiative. *Journal of College Science Teaching*, *41*(4), 60–68. https://www.jstor.org/stable/43748542

Thien, L. M., & Jamil, H. (2020). Students as 'customers': Unmasking course experience and satisfaction of undergraduate students at a Malaysian research university. *Journal of Higher Education Policy and Management*, *42*(5), 579–600. https://doi.org/10.1080/1360080X.2019.1660045

Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research, 45*(1), 89–125. https://doi.org/10.3102/00346543045001089

Tinto, V. (2012a). *Completing college.* University of Chicago Press.

Tinto, V. (2012b). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). ERIC.

Tinto, V. (2016, September 26). *How to Improve Student Persistence and Completion,* Inside Higher Ed. http://www.insidehighered.com/print/views/2016/09/26

Tinto, V. (2017a). Reflections on student persistence. *Student Success*, *8*(2), 1–8. https://doi.org/10.5204/ssj.v8i2.376

Tinto, V. (2017b). Through the eyes of students. *Journal of College Student Retention: Research, Theory & Practice*, *19*(3), 254–269. https://doi.org/10.1177/1521025115621917

Tinto, V., & Cullen, J. (1973). Dropout in higher education: A review and theoretical synthesis of recent research.

Trapani, J., & Hale, K. (2019). *Higher education in science and engineering*. National Science Board. https://ncses.nsf.gov/pubs/nsb20197

Valencia, R. R. (2015). *Students of color and the achievement gap: Systemic challenges, systemic transformations.* Routledge.

Valli, P. S., & Kanta, K. N. M. (2016). Perception of student engagement among faculty in private engineering colleges. *Journal of Organization & Human Behavior*, *5*(4), 13–17. http://www.publishingindia.com/GetBrochure.aspx?query=UERGQnJvY2h1cmVzfC8zODU4LnBkZnwvMzg1OC5wZGY=

Webb, A. (2019). Getting there and staying in: First-generation indigenous students' educational pathways into Chilean higher education. *International Journal of Qualitative Studies in Education*, *32*(5), 529–546. https://doi.org/10.1080/09518398.2018.1488009

Wheeler, M. B., & Smith, D. (2018). Race and leadership in library and information science education: A study of African American administrators. *Library Trends*, *67*(1), 23–38. https://doi.org/10.1353/lib.2018.0023

Williams, L. B., Bourgault, A. B., Valenti, M., Howie, M., & Mathur, S. (2018). Predictors of underrepresented nursing students' school satisfaction, success, and future education intent. *The Journal of Nursing Education*, *57*(3), 142–149. https://doi.org/10.3928/01484834-20180221-03

Wyman, C., & McGuire, M. (2019). Improved alpha testing using hashed sampling. *IEEE Transactions on Visualization and Computer Graphics*, *25*(2), 1309–1320. https://doi.org/10.1109/TVCG.2017.2739149

Zong, C., & Davis, A. (2022). Modeling university retention and graduation rates using IPEDS. *Journal of College Student Retention: Research, Theory & Practice*, *26*(2), 311–333. https://doi.org/10.1177/15210251221074379

APPENDIX A

SurveyMonkey Survey

Hello, I am a Doctoral of Business Administration at City University of Seattle (Seattle, Washington, USA). I am now doing research for my dissertation. I need your help from underrepresented students who have attended a not-for-profit private university. Please complete the survey as soon as possible. For questions, please email me at dhammes@cityu.edu. Thank you so much for your help!

There are two parts of the questionnaire with multiple-choice questions. It includes a demographic portion and a portion based on the research topic.

Part I: Demographic Multiple-choice Questions (estimated time: three minutes)

1. Are you a male or a female? ( )
   (1) Male
   (2) Female
2. Your age?
   (1) 18 – 24
   (2) 25-29
   (3) 30-35
   (4) 36-40
   (5) Over 40
3. Do you identify as…?
   (1) Native American
   (2) Black
   (3) Hispanic/Latino
   (4) White (non-Latino)
   (5) None of the above

4. Do you identify as ……...?
   (1) Lesbian
   (2) Gay
   (3) Bisexual person

(4) Queer

(5) Transgender

(6) Asexual

(7) None of the above

5. What describes your completion status? ( )

   (1) I finished my undergraduate degree or certificate.

   (2) I am still attending my undergraduate degree or certificate program.

   (3) I did not finish my undergraduate degree or certificate, and have stopped pursuing it.

6. How likely are you to finish your degree or certificate?

   (1) Extremely Likely

   (2) Very likely

   (3) Likely

   (4) Not so likely

   (5) Already completed.

7. Did you attend a…?

   (1) Public University

   (2) Private For-profit university

   (3) Private Not-for-Profit university

   (4) None of the above

Part II: Survey Questions (estimated time: fifteen to twenty minutes)

Business operations are defined as departments that are not directly connected to academics or student advising. These include, but are not limited to, the Bursar's Office, Financial Aid, VA Benefits office, Housing, Food Service, and transportation.

1. How many interactions did you have with the bursar (the department that manages the student financial accounts)?
   (1) 1-5
   (2) 6-10
   (3) 11-15
   (4) 16-20
   (5) 21-25
   (6) more than 25

2. How many interactions did you have with the bursar's financial aid (the department that prepares and communicates about scholarships, federal aid, etc.) office?
   (1) 1-5
   (2) 6-10
   (3) 11-15
   (4) 16-20
   (5) 21-25
   (6) more than 25

3. How many interactions did you have with the human resources (the department that evaluates, prepares, trains, and oversees the employees of the university) office?
   (1) 1-5
   (2) 6-10
   (3) 11-15
   (4) 16-20
   (5) 21-25
   (6) more than 25

4. How many interactions did you have with the marketing (the department that designs, develops, and produces all material and content representing the university) office?
    (1) 1-5
    (2) 6-10
    (3) 11-15
    (4) 16-20
    (5) 21-25
    (6) more than 25

5. How many interactions did you have with the food/ dining services office?
    (1) 1-5
    (2) 6-10
    (3) 11-15
    (4) 16-20
    (5) 21-25
    (6) more than 25

6. How many interactions did you have with the bursar provost (the department that has leadership over the quality and practices of the academics of the university)
    (1) 1-5
    (2) 6-10
    (3) 11-15
    (4) 16-20
    (5) 21-25
    (6) more than 25

7. How many interactions did you have with the registrar’s office (the department that oversees the official academic records and maintains the academic integrity of the university)?
    (1) 1-5

(2) 6-10
(3) 11-15
(4) 16-20
(5) 21-25
(6) more than 25

8. How many interactions did you have with the information technology (the department that oversees the security and integrity of the processing and exchanging of information within and outside of the university) office?
   (1) 1-5
   (2) 6-10
   (3) 11-15
   (4) 16-20
   (5) 21-25
   (6) more than 25

9. How many interactions did you have with the security (the department that provides safety and security for employees, students, and visitors to the university) office?
   (1) 1-5
   (2) 6-10
   (3) 11-15
   (4) 16-20
   (5) 21-25
   (6) more than 25

10. How many interactions did you have with the President, Vice President, and the chancellor's (departments that provide leadership and direction for the university) offices?
    (1) 1-5
    (2) 6-10
    (3) 11-15

(4) 16-20
(5) 21-25
(6) more than 25

11. Based on your interactions with the business operations of the university, how likely are you to refer other underrepresented students to the university?
    (1) Very Unlikely
    (2) Unlikely
    (3) Neither likely nor unlikely
    (4) Likely
    (5) Very likely

Thank you so much for your help.

Best Regards.

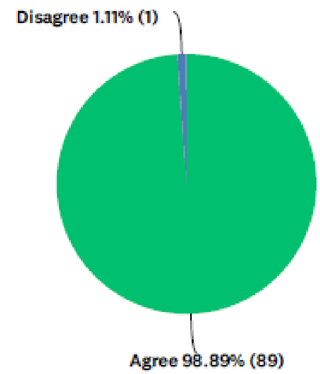
Daniel L. Hammes
DBA Student
City University of Seattle

APPENDIX B

Survey Responses

Q1 I understand I am being asked to participate in this study in an on-line survey: Participate in a data gathering on-line survey of 10 demographic questions and 11 survey questions; Approximate time 15 minutes

All Respondents - Answered: 90 Skipped: 4



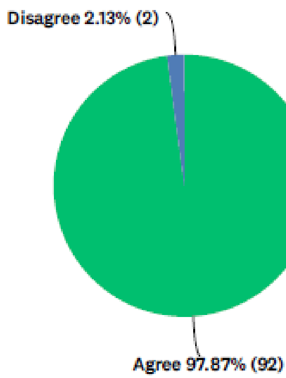
ANSWER CHOICES	RESPONSES	
Agree (1)	98.89%	89
Disagree (2)	1.11%	1
TOTAL		90

BASIC STATISTICS				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	2.00	1.00	1.01	0.10

Underrepresented Participants
71 Respondents
100% Agree

Q2 Steps will be taken to protect your identity, however, information collected about you can never be 100% secure. Your name and any other identifying information that can directly identify you will be stored separately from data collected as part of the research study. The results of this study will be published as a thesis and potentially published in an academic book or journal, or presented at an academic conference. To protect your privacy no information that could directly identify you will be included. All data (the questionnaires, audio/video tapes, typed records of the interview, interview notes, informed consent forms, computer discs, any backup of computer discs and any other storage devices) are kept locked and computer files will be encrypted and password protected by the researcher. The research data will be stored for 5 years. At the end of that time all data of whatever nature will be permanently destroyed. The published results of the study will contain data from which no individual participant can be identified. Signatures I have carefully reviewed and understand this consent form. I understand the description of the research protocol and consent process provided to me by the researcher. My signature on this form indicates that I understand to my satisfaction the information provided to me about my participation in this research project. My signature also indicates that I have been apprised of the potential risks involved in my participation. Lastly, my signature indicates that I agree to participate as a research subject. My consent to participate does not waive my legal rights nor release the researchers, sponsors, and/or City University of Seattle from their legal and professional responsibilities with respect to this research. I understand I am free to withdraw from this research study at any time. I further understand that I may ask for clarification or new information throughout my participation at any time during this research. I have been advised that I may request a copy of the final research study report. Should I request a copy, I understand that I will be asked to pay the costs of photocopy and mailing.

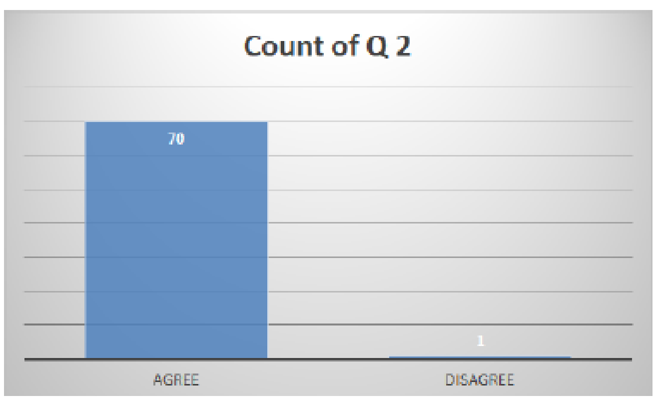
All Respondents - Answered: 94 Skipped: 0



ANSWER CHOICES	RESPONSES	
Agree (1)	97.87%	92
Disagree (2)	2.13%	2
TOTAL		94

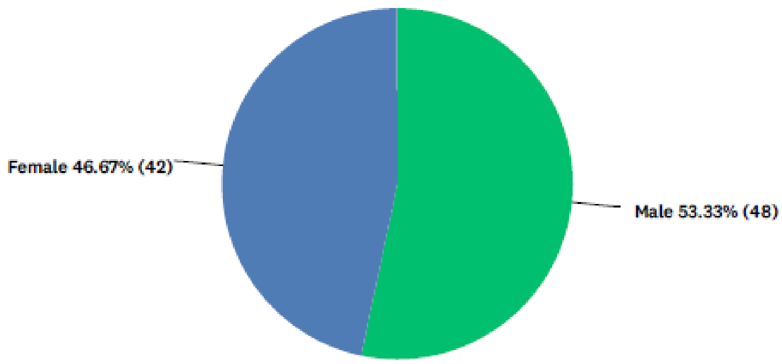
BASIC STATISTICS				
Minimum 1.00	Maximum 2.00	Median 1.00	Mean 1.02	Standard Deviation 0.14

Underrepresented Participants
71 Respondents
98.6% Agree
1.4% Disagree



Q3 Are you a male or a female?

Answered: 90 Skipped: 4



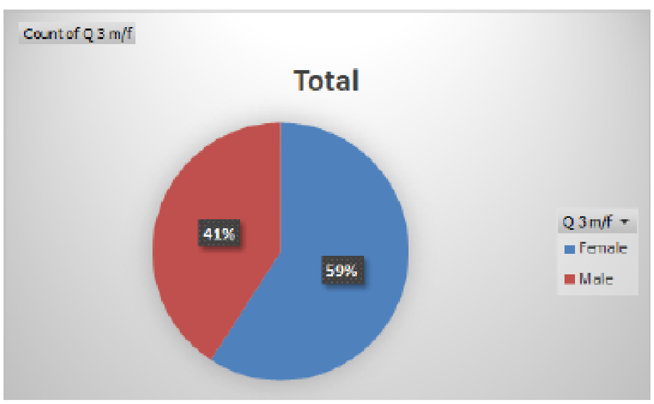
ANSWER CHOICES	RESPONSES	
Male (1)	53.33%	48
Female (2)	46.67%	42
TOTAL		90

BASIC STATISTICS				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	2.00	1.00	1.47	0.50

Underrepresented Respondents

Female 42 (59%)

Male 29 (41%)

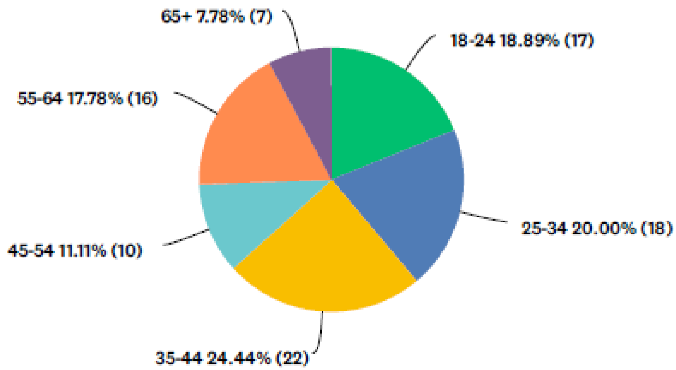


Mean: 35.5

Standard Deviation: 6.5

Q4 Your age?

Answered: 90 Skipped: 4

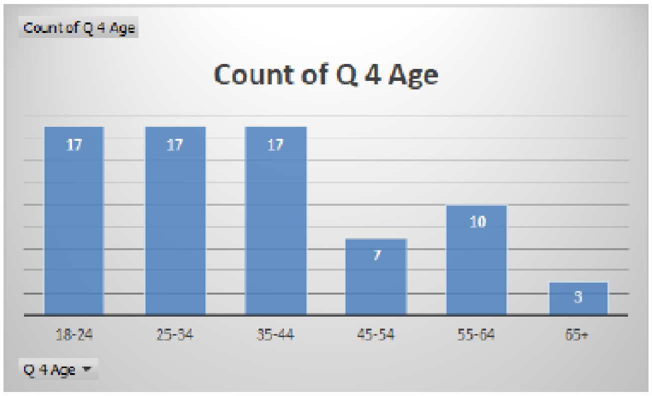


ANSWER CHOICES	RESPONSES	
18-24 (1)	18.89%	17
25-34 (2)	20.00%	18
35-44 (3)	24.44%	22
45-54 (4)	11.11%	10
55-64 (5)	17.78%	16
65+ (6)	7.78%	7
TOTAL		90

BASIC STATISTICS				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	6.00	3.00	3.12	1.57

Underrepresented Respondents

- 18-24 - 17 (24%)
- 25-34 - 17 (24%)
- 35-44 - 17 (24%)
- 45-54 - 7 (9.9%)
- 55-64 - 10 (14%)
- 65 + - 3 (4.2%)

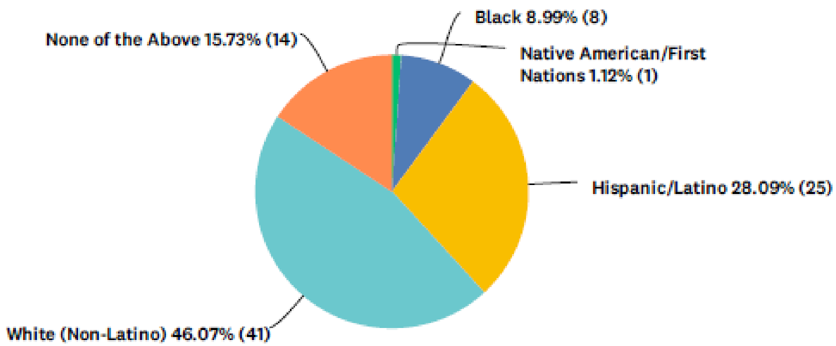


Mean Age: Approximately 37.53

Standard Deviation: Approximately 13.84

Q5 Do you identify as...?

Answered: 89 Skipped: 5

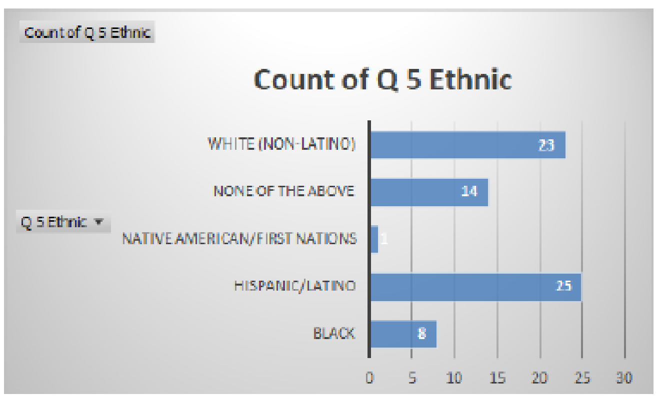


ANSWER CHOICES	RESPONSES	
Native American/First Nations (1)	1.12%	1
Black (2)	8.99%	8
Hispanic/Latino (3)	28.09%	25
White (Non-Latino) (4)	46.07%	41
None of the Above (5)	15.73%	14
TOTAL		89

BASIC STATISTICS				
Minimum 1.00	Maximum 5.00	Median 4.00	Mean 3.66	Standard Deviation 0.89

Underrepresented Respondents

Latino 25 (35%)
White 23 (32%)
None 14 (19.7%)
Black 8 (11%)
Native 1 (1.4%)

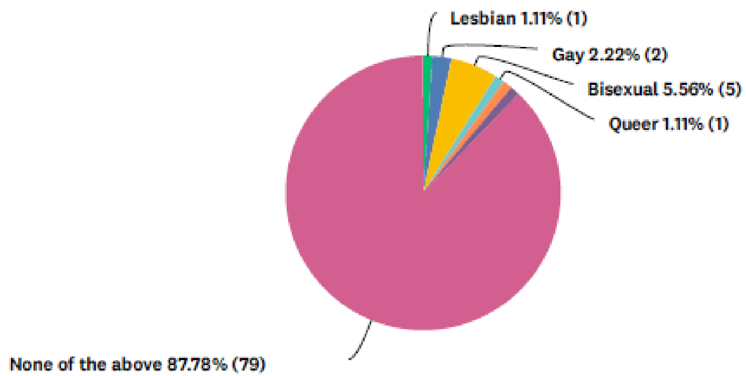


Mean: 14.2

Standard Deviation: Approximately 9.01

Q6 Do you identify as ....?

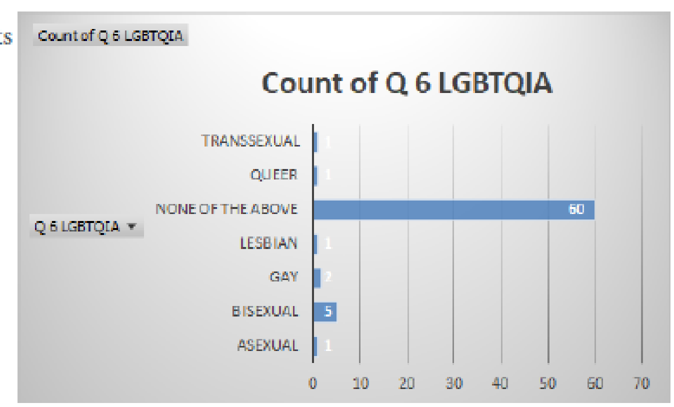
Answered: 90 Skipped: 4



ANSWER CHOICES	RESPONSES	
Lesbian (1)	1.11%	1
Gay (2)	2.22%	2
Bisexual (3)	5.56%	5
Queer (4)	1.11%	1
Transsexual (5)	1.11%	1
Asexual (6)	1.11%	1
None of the above (7)	87.78%	79
TOTAL		90

BASIC STATISTICS				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	7.00	7.00	6.53	1.33

Jnderrepresented Respondents
LGBTQIA 11 (15.5%)

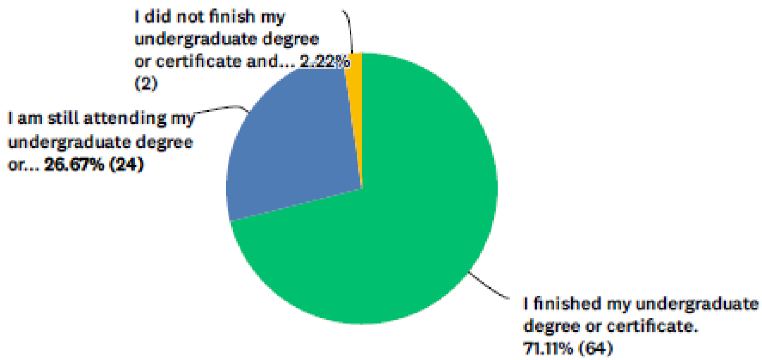


Mean: 10.14

Standard Deviation: 20.33

Q7 What describes your completion status? ( )

Answered: 90 Skipped: 4



ANSWER CHOICES	RESPONSES	
I finished my undergraduate degree or certificate. (1)	71.11%	64
I am still attending my undergraduate degree or certificate program. (2)	26.67%	24
I did not finish my undergraduate degree or certificate and have stopped pursuing it. (3)	2.22%	2
TOTAL		90

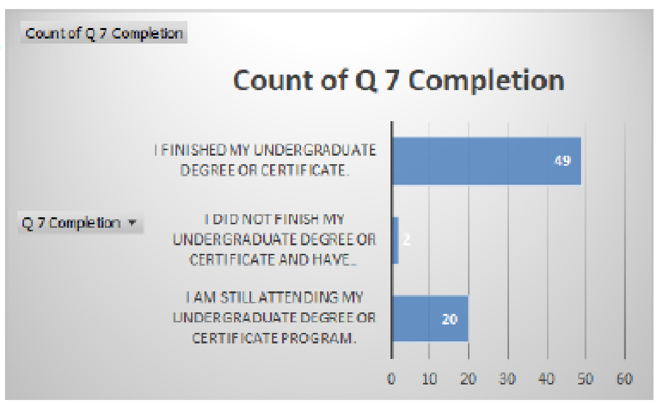
BASIC STATISTICS				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	3.00	1.00	1.31	0.51

Underrepresented Respondents

Finished 49 (69%)

Not finished 2 (2.8%)

Still attending 20 (28%)

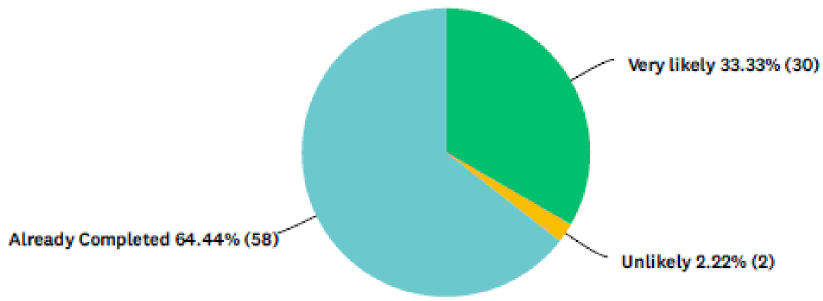


Mean: ≈ 1.66

Standard Deviation: ≈ 0.53

Q8 How likely are you to finish your degree or certificate?

Answered: 90 Skipped: 4



ANSWER CHOICES	RESPONSES	
Very likely (1)	33.33%	30
Likely (2)	0.00%	0
Unlikely (3)	2.22%	2
Already Completed (4)	64.44%	58
TOTAL		90

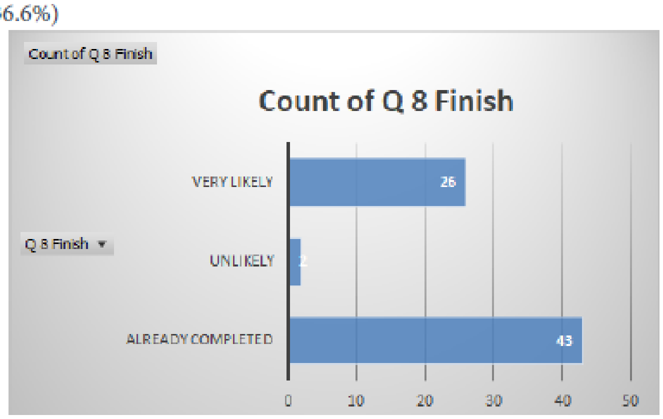
BASIC STATISTICS				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	4.00	4.00	2.98	1.41

Underrepresented Respondents

Completed 43 (60.5%)

Likely to finish 26 (36.6%)

Unlikely 2 (2.8%)

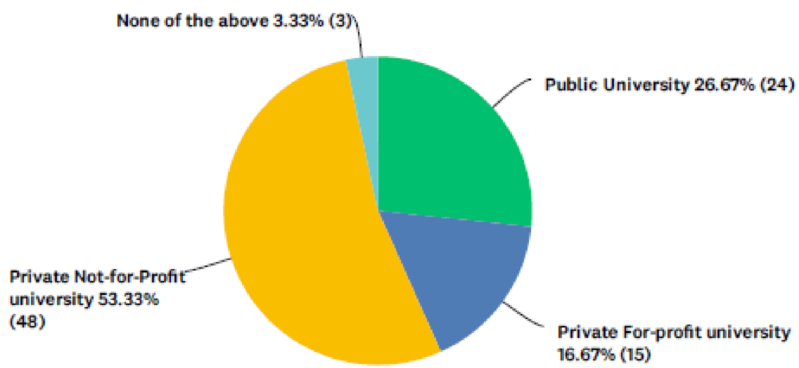


Mean ≃ 1.34

Standard Deviation ≃ 0.529

Q9 Did you attend a...?

Answered: 90 Skipped: 4

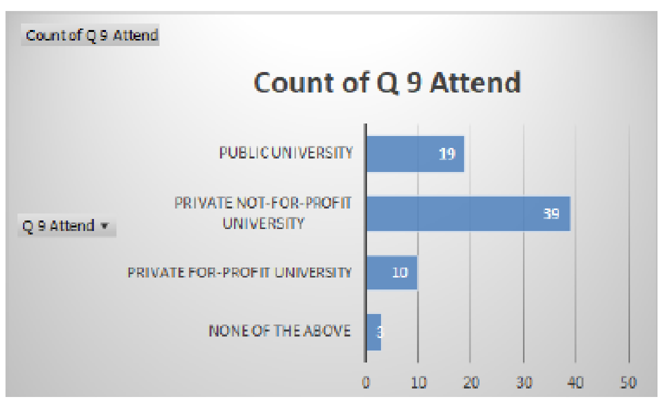


ANSWER CHOICES	RESPONSES	
Public University (1)	26.67%	24
Private For-profit university (2)	16.67%	15
Private Not-for-Profit university (3)	53.33%	48
None of the above (4)	3.33%	3
TOTAL		90

BASIC STATISTICS				
Minimum 1.00	Maximum 4.00	Median 3.00	Mean 2.33	Standard Deviation 0.91

Underrepresented respondents

Private 39 (55%)
Public 19 (26.7%)
Private 10 (14%)
None 3 (4.2%)

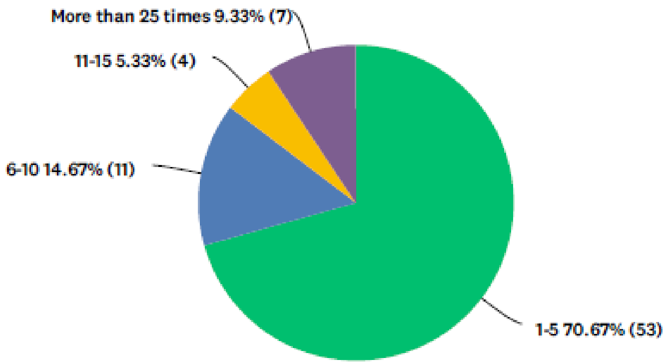


Mean: 3.05

Standard Deviation: 0.76

Q10 How many encounters did you have with the bursar (the department that manages the student financial accounts)?

Answered: 75 Skipped: 19

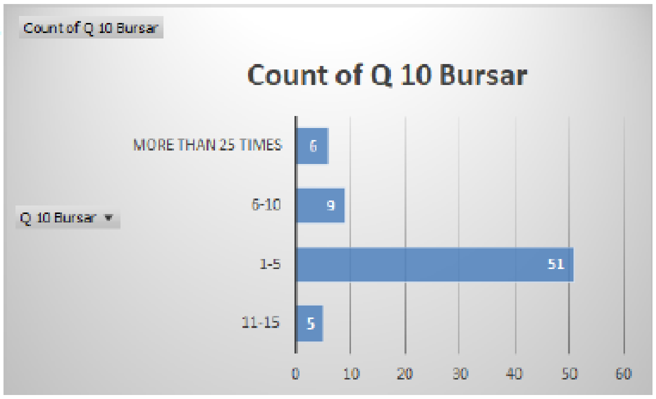


ANSWER CHOICES	RESPONSES	
1-5 (1)	70.67%	53
6-10 (2)	14.67%	11
11-15 (3)	5.33%	4
16-20 (4)	0.00%	0
21-25 (5)	0.00%	0
More than 25 times (6)	9.33%	7
TOTAL		75

BASIC STATISTICS

Minimum	Maximum	Median	Mean	Standard Deviation
1.00	6.00	1.00	1.72	1.47

Underrepresented respondents
1-5 - 51 (71.8%)
6-10 - 9 (12.7%)
11-15 - 5 (7%)
25 + - 6 (8.5%)

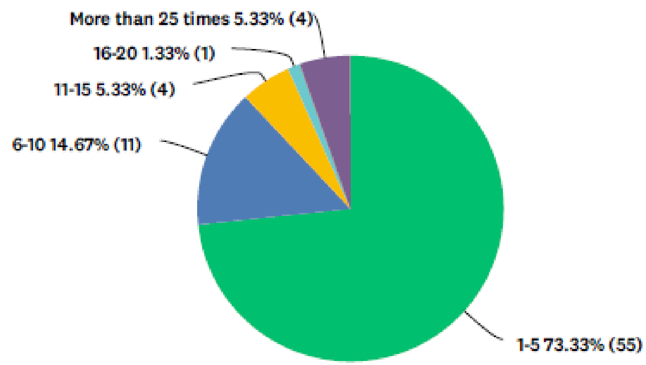


Mean: 3.05

Standard Deviation: 0.76

Q11 How many encounters did you have with the bursar financial aid (the department that prepares and communicates about scholarships, federal aid, etc.) office?

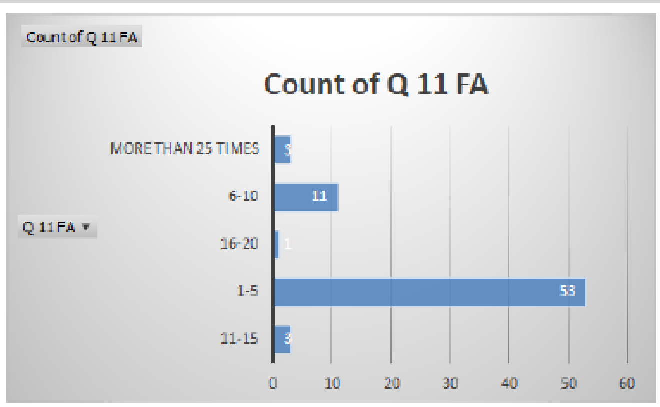
Answered: 75   Skipped: 19



ANSWER CHOICES	RESPONSES	
1-5 (1)	73.33%	55
6-10 (2)	14.67%	11
11-15 (3)	5.33%	4
16-20 (4)	1.33%	1
21-25 (5)	0.00%	0
More than 25 times (6)	5.33%	4
TOTAL		75

BASIC STATISTICS				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	6.00	1.00	1.56	1.22

Underrepresented Respondents
1-5 - 53 (74.6%)
6-10 - 11 (15.5%)
11-15 - 3 (4.2%)
16-20 - 1 (1.4%)
25 + - 3 (4.2%)

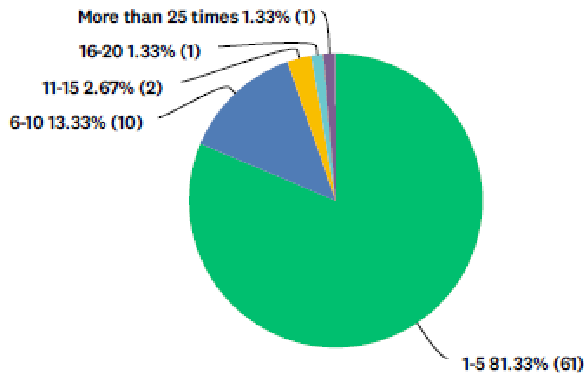


Mean 5.55

Standard Deviation 5.95

Q12 How many encounters did you have with the human resources (the department that evaluates, prepares, trains, and oversees the employees of the university) office?

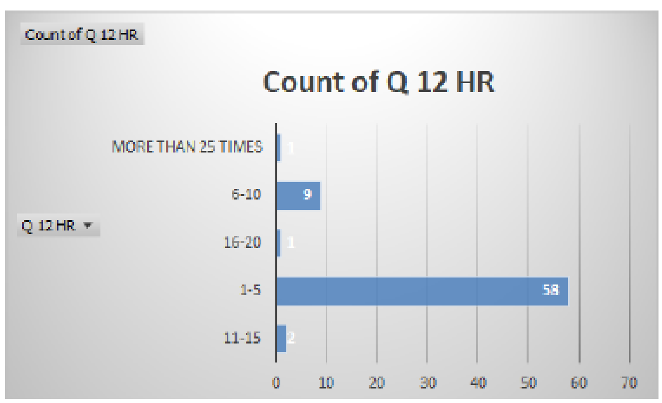
Answered: 75 Skipped: 19



ANSWER CHOICES	RESPONSES	
1-5 (1)	81.33%	61
6-10 (2)	13.33%	10
11-15 (3)	2.67%	2
16-20 (4)	1.33%	1
21-25 (5)	0.00%	0
More than 25 times (6)	1.33%	1
TOTAL		75

BASIC STATISTICS				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	6.00	1.00	1.29	0.78

Underrepresented Respondents
1-5 58 (81.6%)
6-10 9 (12.6%)
11-15 2 (2.8%)
16-20 1 (1.4%)
25 + 1 (1.4%)

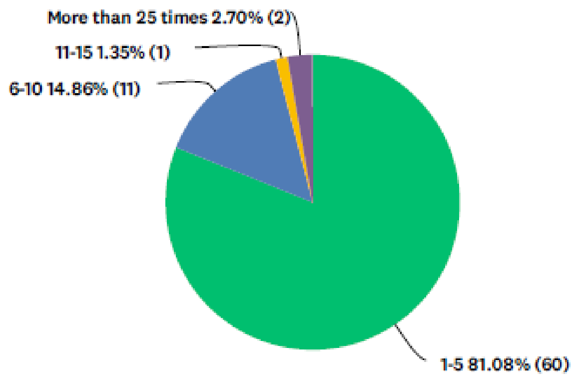


Mean: 4.44

Standard Deviation: 3.73

Q13 How many encounters did you have with the marketing (the department that designs, develops, and produces all material and content representing the university) office?

Answered: 74 Skipped: 20

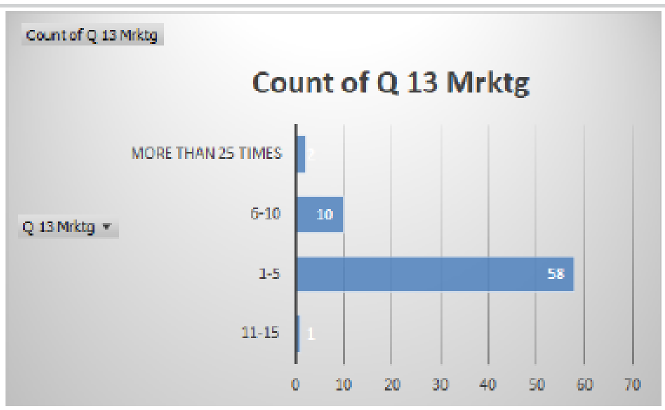


ANSWER CHOICES	RESPONSES	
1-5 (1)	81.08%	60
6-10 (2)	14.86%	11
11-15 (3)	1.35%	1
16-20 (4)	0.00%	0
21-25 (5)	0.00%	0
More than 25 times (6)	2.70%	2
TOTAL		74

BASIC STATISTICS				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	6.00	1.00	1.31	0.88

Underrepresented Respondents

1-5 58 (81.6%)
6-10 10 (14%)
11-15 1 (1.4%)
25 + 2 (2.8%)

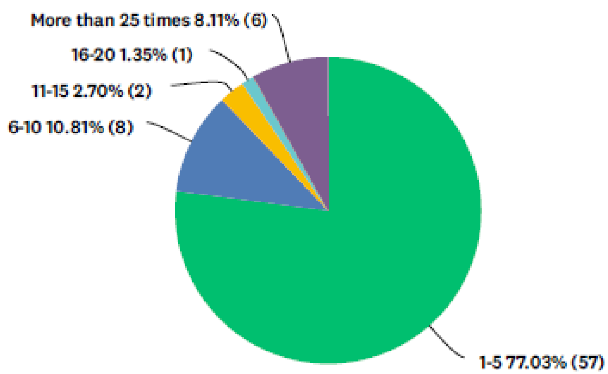


Mean 4.6

Standard Deviation 4.77

Q14 How many encounters did you have with the food/ dining services office?

Answered: 74 Skipped: 20

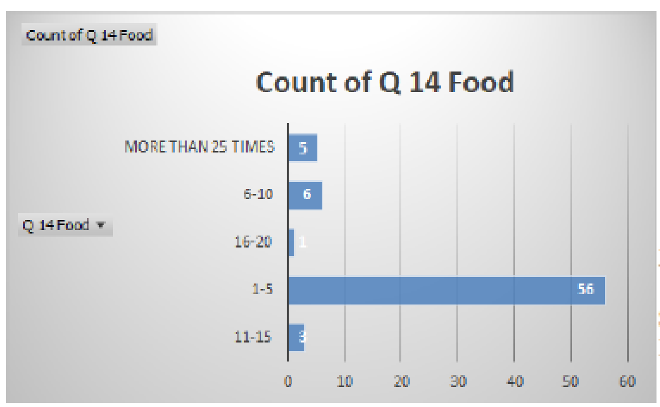


ANSWER CHOICES	RESPONSES	
1-5 (1)	77.03%	57
6-10 (2)	10.81%	8
11-15 (3)	2.70%	2
16-20 (4)	1.35%	1
21-25 (5)	0.00%	0
More than 25 times (6)	8.11%	6
TOTAL		74

BASIC STATISTICS				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	6.00	1.00	1.61	1.41

Underrepresented respondents

1-5 56 (78.8%)
6-10 6 (8.4%)
11-15 3 (4.2%)
16-20 1 (1.4%)
25+ 5 (7.04%)

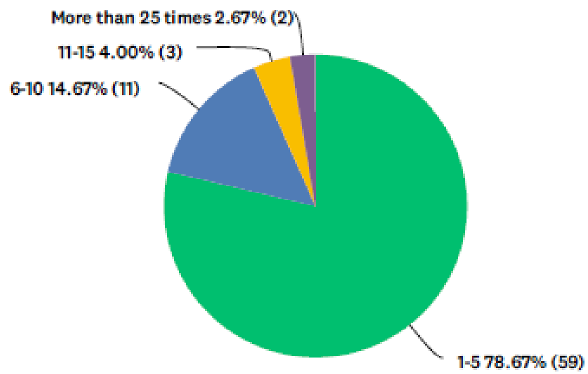


Mean: 5.96

Standard Deviation: 7.22

Q15 How many encounters did you have with the bursar provost (the department that leadership over the quality and practices of the academics of the university)

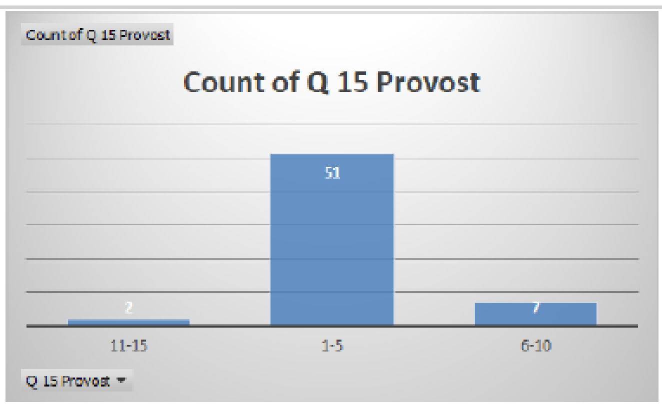
Answered: 75 Skipped: 19



ANSWER CHOICES	RESPONSES	
1-5 (1)	78.67%	59
6-10 (2)	14.67%	11
11-15 (3)	4.00%	3
16-20 (4)	0.00%	0
21-25 (5)	0.00%	0
More than 25 times (6)	2.67%	2
TOTAL		75

BASIC STATISTICS				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	6.00	1.00	1.36	0.92

Underrepresented Respondents
1-5 51 (71.8%)
6-10 7 (9.9%)
11-15 2 (2.8%)

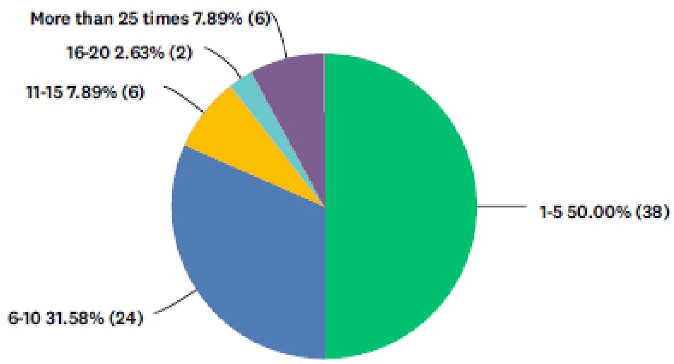


Mean: 3.92

Standard Deviation: 2.01

Q16 How many encounters did you have with the registrar's (the department that oversees the official academic records and maintains the academic integrity of the university) office?

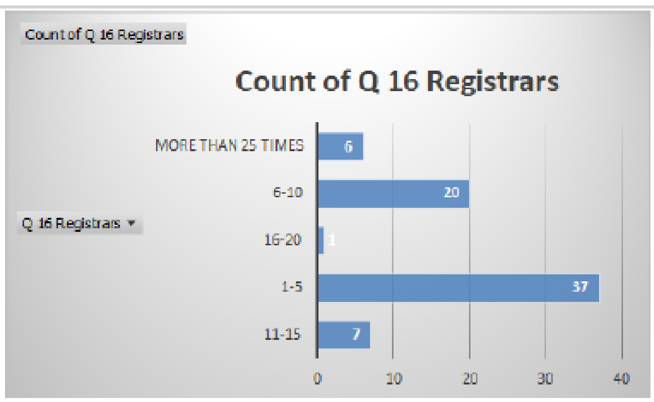
Answered: 76 Skipped: 18



ANSWER CHOICES	RESPONSES	
1-5 (1)	50.00%	38
6-10 (2)	31.58%	24
11-15 (3)	7.89%	6
16-20 (4)	2.63%	2
21-25 (5)	0.00%	0
More than 25 times (6)	7.89%	6
TOTAL		76

BASIC STATISTICS				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	6.00	1.50	1.95	1.39

Underrepresented Respondents
1-5 37 (52.0%)
6-10 20 (28.1%)
11-15 7 (9.86%)
16-20 1 (1.4%)
25 + 6 (8.45%)

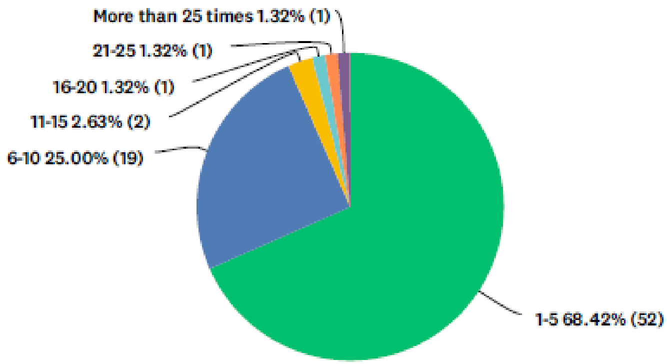


Mean: 7.87

Standard Deviation: 7.32

Q17 How many encounters did you have with the information technology (the department that oversees the security and integrity of the processing and exchanging of information within and outside of the university) office?

Answered: 76 Skipped: 18

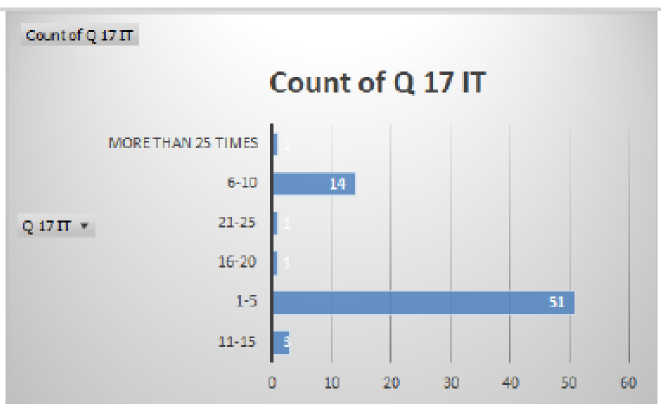


ANSWER CHOICES	RESPONSES	
1-5 (1)	68.42%	52
6-10 (2)	25.00%	19
11-15 (3)	2.63%	2
16-20 (4)	1.32%	1
21-25 (5)	1.32%	1
More than 25 times (6)	1.32%	1
TOTAL		76

BASIC STATISTICS				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	6.00	1.00	1.46	0.90

Underrepresented Respondents

1-5 51 (71.8%)
6-10 14 (19.7%)
11-15 3 (4.2%)
16-20 1 (1.4%)
21-25 1 (1.4%)
25+ 1 (1.4%)

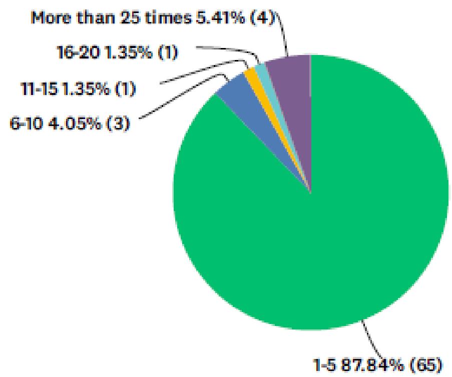


Mean 5.28

Standard Deviation 4.34

Q18 How many encounters did you have with the security (the department that provides safety and security of employees, students, and visitors of the university) office?

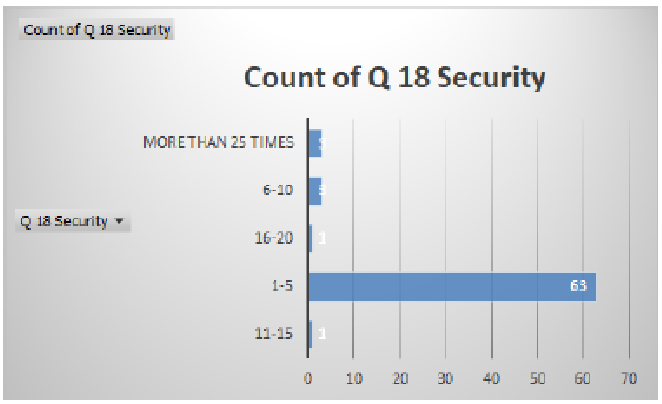
Answered: 74 Skipped: 20



ANSWER CHOICES	RESPONSES	
1-5 (1)	87.84%	65
6-10 (2)	4.05%	3
11-15 (3)	1.35%	1
16-20 (4)	1.35%	1
21-25 (5)	0.00%	0
More than 25 times (6)	5.41%	4
TOTAL		74

BASIC STATISTICS				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	6.00	1.00	1.38	1.19

Underrepresented Respondents
1-5 63 (88.7%)
6-10 3 (4.2%)
11-15 1 (1.4%)
16-20 1 (1.4%)
25+ 3 (4.2%)

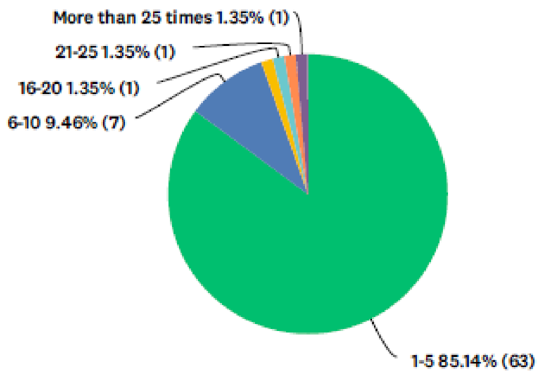


Mean: 4.70

Standard Deviation: 5.74

Q19 How many encounters did you have with the President, Vice President, and chancellor's (departments that provide leadership and direction for the university) offices?

Answered: 74 Skipped: 20

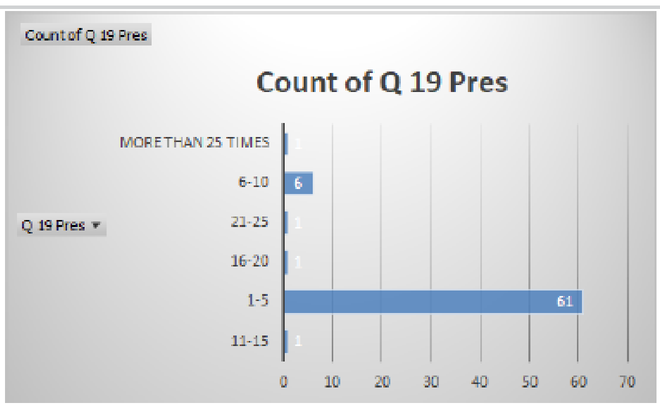


ANSWER CHOICES	RESPONSES	
1-5 (1)	85.14%	63
6-10 (2)	9.46%	7
11-15 (3)	1.35%	1
16-20 (4)	1.35%	1
21-25 (5)	1.35%	1
More than 25 times (6)	1.35%	1
TOTAL		74

BASIC STATISTICS				
Minimum 1.00	Maximum 6.00	Median 1.00	Mean 1.28	Standard Deviation 0.86

Underrepresented Respondents

1-5 61 (85.9%)
6-10 6 (8.45%)
11-15 1 (1.4%)
16-20 1 (1.4%)
21-25 1 (1.4%)
25+ 1 (1.4%)

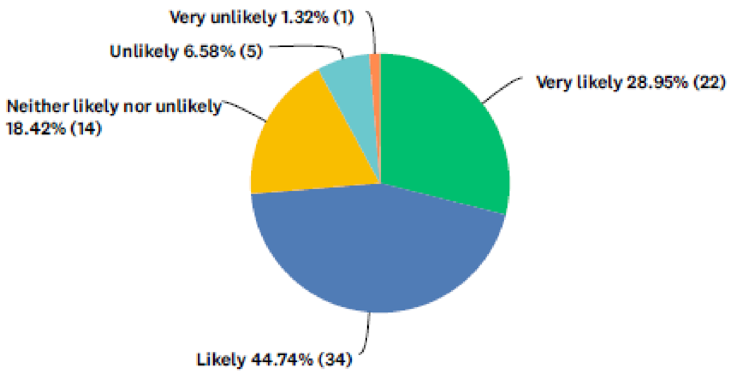


Mean : 4.44

Standard Deviation: 4.52

Q20 Based on your interactions with the business functions of the university, how likely are you to refer other underrepresented students to the university?

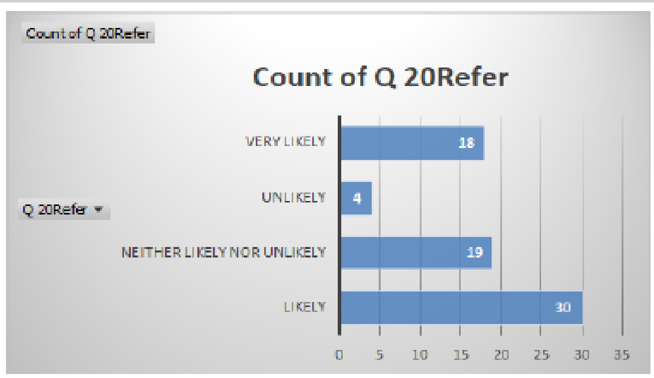
Answered: 76 Skipped: 18



ANSWER CHOICES	RESPONSES	
Very likely (1)	28.95%	22
Likely (2)	44.74%	34
Neither likely nor unlikely (3)	18.42%	14
Unlikely (4)	6.58%	5
Very unlikely (5)	1.32%	1
TOTAL		76

BASIC STATISTICS				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	5.00	2.00	2.07	0.92

Underrepresented Respondents
Very Likely 18 (25.4%)
Likely 30 (42.25%)
Neither 19 (28.8%)
Unlikely 4 (5.6%)



Mean: 2.87)

Standard Deviation: 0.86