

University of New Hampshire

University of New Hampshire Scholars' Repository

Doctoral Dissertations

Student Scholarship

Spring 2022

First-Generation Student Status as a Predictor of Participation in Selected High-Impact Practices at the University of New Hampshire

Paula Marie DiNardo

University of New Hampshire, Durham

Follow this and additional works at: <https://scholars.unh.edu/dissertation>

Recommended Citation

DiNardo, Paula Marie, "First-Generation Student Status as a Predictor of Participation in Selected High-Impact Practices at the University of New Hampshire" (2022). *Doctoral Dissertations*. 2668.
<https://scholars.unh.edu/dissertation/2668>

This Dissertation is brought to you for free and open access by the Student Scholarship at University of New Hampshire Scholars' Repository. It has been accepted for inclusion in Doctoral Dissertations by an authorized administrator of University of New Hampshire Scholars' Repository. For more information, please contact Scholarly.Communication@unh.edu.

**AN EXPLORATORY STUDY OF FIRST-GENERATION STUDENT STATUS
AS A PREDICTOR OF PARTICIPATION IN SELECTED HIGH-IMPACT PRACTICES
AT THE UNIVERSITY OF NEW HAMPSHIRE**

BY

PAULA MARIE DiNARDO

Bachelor's Degree, Worcester State University, 1986

Master of Arts Degree, Michigan State University, 1988

Certificate of Advanced Graduate Study, University of New Hampshire, 1999

DISSERTATION

Submitted to the University of New Hampshire

In Partial Fulfillment of the
Requirement for the Degree of

Doctor of Philosophy

in

Education

May, 2022

ALL RIGHTS RESERVED

© 2022

Paula M. DiNardo

Committee Signature Page

This dissertation was examined and approved in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Education.

Todd DeMitchell, Ed.D.
Committee Chair
Professor Emeritus, Department of Education
University of New Hampshire

Cari Moorhead, Ph.D.
Dean, Graduate School
University of New Hampshire

Stacey Hall Ph.D.
Assistant Vice Provost for Student Life
University of New Hampshire

Gavin Henning, Ph.D.
Professor, Higher Education Programs
New England College

On April 21, 2022

Approval signatures are on file with the University of New Hampshire Graduate School.

CONTENTS	PAGE
Committee Signature Page	iii
Dedication	v
Acknowledgements	vi
List of Tables	viii
Abstract	ix
I: INTRODUCTION	1
Definitions.....	2
Problem Statement	5
Research Method	5
Importance	6
Theoretical Framework.....	7
II: LITERATURE REVIEW	10
First-Generation Students	10
Retention.....	16
Student Involvement Theory.....	19
Student Engagement Theory.....	20
High-Impact Practices.....	23
Summary	31
III: METHODOLOGY	33
Population	33
Survey Instrument.....	34
Variables	35
Statistical Analysis.....	35
Researcher Positionality.....	37
IV. RESULTS AND ANALYSIS	39
Introduction.....	39
Research Questions	39
Descriptive Statistics.....	40
Survey Instrument.....	40
Response Rate.....	41
Data.....	42
Results: Research Question 1.....	42
Results: Research Question 2.....	45
Summary	51
V. CONCLUSION, DISCUSSION, AND RECOMMENDATIONS	54
Findings.....	54
Recommendations for Policy and Practice	59
Recommendations for Further Study	64
Limitations	65
Conclusion	66
REFERENCES	68

Dedication

I dedicate this work to two people who have had a profound impact on me as a person and a professional, both of whom inspired me and taught me how to find humor and beauty in everyday things, and both of whom I wish could be here to see this happen.

First to my mother, Laura (Testarmata) DiNardo: You once, rather off-handely, told me that you never had to worry about me because I was like a cat and always landed on my feet. That one comment has stayed with me more than anything else you ever said to me, and it has given me the confidence to take on just about any challenge, because you knew I would always be ok. And you were right. It always has and always will work out fine. Thank you for believing in me.

And second, to Robert N. Coffey, Jr., Ph.D.: Thank you for so much inspiration and unwavering support, and for adding so more love and laughter to my life while you were here. Thank you for encouraging me to take on this challenge, and for introducing me to Zotero. We were supposed to celebrate my defense with a trip to Disneyworld together, Coffey-Chang style, and I promise you that Steven and I still will, and that you will be with us in spirit.

I miss you both more than words can convey, I wish more than anything that you both could be here with me today.

Acknowledgements

First and foremost: to my committee, most of whom have been colleagues and friends for many years (decades even), I am grateful that you were able to be part of this with me, and for giving me so much wisdom and support; I cannot thank you enough. Prof. Todd DeMitchell has waited patiently for me to finally be ready for doctoral studies since the first class I took with him in the 1990s. I appreciate that; you can retire now. Dean Cari Moorhead has been a colleague, friend, and mentor since she worked in Student Activities and I was in Residential Life, and has been a constant positive force in my life through so many changes. Prof. Gavin Henning and I were hall directors together in the 1990s, and he brought that same sense of collegiality to my doctoral studies, offering direction, feedback, and so much statistical help, always with unbelievable kindness, for which I will forever be grateful. And Dr. Stacey Hall, the newest kid on the block, who gave such valuable insight to HIPs and NSSE, to whom I am eternally indebted. So, you see, this committee felt a bit like a homecoming to me, and always made me feel capable and valued. You saw potential in me when I didn't always see it in myself. Everyone should be so lucky as to have a Dissertation Committee that is so talented, thoughtful, kind, and committed.

Prof. Suzanne Graham deserves a very special shout out for holding my hand through more than a few regression tutorials and drafts of chapter five. Thank you for your unwavering commitment to the Education Department's Dissertation Seminar, too.

Behind every doctoral student is a legion of fans and supporters, and I am lucky to have my own. To the *Lady Bosses*—Kate, Yoka, Michelle, and Jenn—you've pulled me through so much over the past five years with love, laughter, and a lot of nachos. Our squad is by far the best thing to come out of this crazy journey. Also, I am grateful to my constant side-kick,

Colleen, who has had my back since we met during my first job interview at UNH, on Patriot's Day in 1988. Thanks for being my sounding board and my tech guru for over thirty years. And to so many other women who have been in my corner and lifted me up: Debra, Tamara, Sheila, Leyla, Marsha, Megan, Shantel, Leo, Trena, Chloe...I hope you know how much you are appreciated.

And lastly to my family, Stacey, Annie, and Griffin: I started this crazy endeavor with a commitment not to let it interfere with our family life, and to prove that one could succeed at really hard things, even if one scored in the ninth percentile on the math portion of the GRE. I think I managed to accomplish those goals. I hope I've done that and made you proud.

List of Tables

Table 1 <i>Questions from NSSE used in this research</i>	34
Table 2 NSSE question and corresponding research question.....	35
Table 3 Comparison of UNH population to survey respondents	41
Table 4 <i>Logistic Regression Results with FIRSTGEN Predicting FACRESEARCH</i>	43
Table 5 <i>Logistic Regression Results with FIRSTGEN Predicting INTERNSHIP</i>	44
Table 6 <i>Logistic Regression Results with FIRSTGEN Predicting STUDYABR</i>	45
Table 7 <i>Variance Inflation Factors for FIRSTGEN, GENDER_ID, WHITE, BLACK, ASIAN, and LATINO</i>	46
Table 8 <i>Logistic Regression Results with FIRSTGEN, GENDER_ID, WHITE, BLACK, ASIAN, and LATINO Predicting FACRESEARCH</i>	47
Table 9 <i>Variance Inflation Factors for FIRSTGEN, GENDER_ID, WHITE, BLACK, ASIAN, and LATINO</i>	48
Table 10 <i>Logistic Regression Results with FIRSTGEN, GENDER_ID, WHITE, BLACK, ASIAN, and LATINO Predicting INTERNSHIP</i>	49
Table 11 <i>Variance Inflation Factors for FIRSTGEN, GENDER_ID, WHITE, BLACK, ASIAN, and LATINO</i>	50
Table 12 <i>Logistic Regression Results with FIRSTGEN, GENDER_ID, WHITE, BLACK, ASIAN, and LATINO Predicting STUDYABR</i>	51

Abstract

Institutions of higher education are under increased scrutiny as graduation rates decline while student loan debt soars. One proposed strategy to improve completion rates is to give additional support to those students who are most at-risk of leaving college before graduating. Research has shown that first-generation students are more likely to leave college before attaining a degree than their non-first-generation counterparts.

Research has also suggested that engaging in two or more High-Impact Practices (or HIPs) during college can improve one's academic achievement and persistence to graduation. HIPs are defined as educationally purposeful activities that require students to delve deeply into subject matter, engage more with their peers and instructors, and require reflection and responding to feedback.

This study examines data gathered at the University of New Hampshire (UNH), Durham campus, through the National Survey of Student Engagement (NSSE). The sample consists of senior students during 4 consecutive spring semesters (2016-2019), to determine if participation in 3 designated HIPs can be predicted by student generational status, and if that prediction changes depending on students' gender or race/ethnicity. The three HIPs chosen for this study are: faculty-led research, internships, and study abroad. Logistic regression was used to examine the relationship between generational status and student participation in the 3 chosen HIPs, to determine participation, given the presence of one or more dichotomous variables.

Finding suggest that first-generation student status can be used as a statistically significant predictor of participation in HIPs for the average student at UNH. Gender identity is also a statistically significant predictor of participation, but only for internships and study

abroad. Student race/ethnicity is not a significant predictor of participation in HIPs.

Recommendations and suggestions for further study are offered as a means of addressing the disparities between first-generation students and their continuing-generation counterparts in participation in HIPs at UNH.

I: INTRODUCTION

Students typically enroll in college with the intention of attaining a degree and enhancing their life choices. However, not all students complete their course of study. Low graduation rates have “become an issue of increasing concern for higher education institutions in the United States and Canada” (Hanover Research, 2014, p. 5), in addition to negatively impacting the student. Students who leave before completing their program of study may take crippling student debt with them along with reduced opportunities for repayment. Jane Wellman, Executive Director of the Delta Cost Project, which analyzes higher education revenues, spending, and outcomes, states that reduction in retention impacts the institution through “losses of tuition and auxiliary revenue, loss of future alumni philanthropy, the additional cost of recruiting and enrolling students to fill the void of those students who did not persist to graduation, and the loss in state subsidies for those students” (Hanover Research, 2014, pp. 6-7).

While concerns regarding student retention are not new, they have reached a level of urgency in recent years, in part because of a drop in birthrates resulting in a smaller pool of high school graduates from which to recruit (Payne et al., 2017). Roberts and Styron (2010) said it best:

Now more than ever, higher education administrators must be cognizant of the reasons why students depart from institutions of higher learning prematurely and what can be done to help students overcome these barriers so they can achieve their academic and career goals. (p. 2)

Of those students who are in danger of not persisting to graduation, first-generation college students are among the most vulnerable. Research has consistently shown that first-generation student status is highly correlated with lower rates of persistence (Ishitani, 2006; Post-

Secondary National Policy Institute (2018); Soria & Stebleton, 2012; M. J. Stebleton & Soria, 2012; Terenzini et al., 1996; Wilbur & Roscigno, 2016). It is for this reason that continued research that more closely examines the first-generation student population is valuable to higher education administrators and policy makers today.

Definitions

Before addressing the problem statement and discussing the proposed research questions, it is important to clarify the terms that will be used in this research.

First-generation college student. For the purposes of this research, a first-generation college student is defined as an undergraduate student whose parents or guardians have not attained a baccalaureate degree. The data collected by the University of New Hampshire and is used in this research utilized this definition. This is the definition most often used by college and university admissions offices, and is most frequently used in scholarly research (Davis, 2010; Toutkoushian et al., 2018). But it is by no means the only definition. One literature review of studies on first-generation students found 18 different definitions used in peer-reviewed research, including differing definitions within the same journal (Nguyen & Nguyen, 2018). For example, the National Center for Educational Statistic (NCES) defines a first-generation college student as one who is the first in their family to attend college. This definition is not widely used in academic research and can be problematic for students with older siblings or close extended family members in college but who have parents without a bachelor's degree. Each of the components of this definition—first, family, and college—can be open to interpretation, thereby rendering this definition unreliable for research purposes (Post-Secondary National Policy Institute (2018). I am rejecting the NCES definition and others for this study and, for the

purposes of this research, am defining first-generation students as those whose parents or guardians have not earned a baccalaureate degree.

Persistence and retention. Historically, institutions have used terms like student mortality, student attrition, withdrawal, or dropout/stopout rates when addressing issues and concerns related to college completion. However, the most commonly used terms in the contemporary scholarly literature are “persistence” and “retention.” Tinto (2012) describes persistence as the ability of the student to reach their goal of degree attainment, regardless of institution. A student who starts at one institution and transfers to another has demonstrated persistence. Retention, on the other hand, is used to describe the ability of one institution to enroll a student and keep them at that institution, from admission to graduation (Tinto, 2012). The distinction between the two is important because of the locus of control. Students persist; institutions retain (Seidman, 2005). The term an institution chooses to use in its goal setting and programmatic initiatives reflects the values of those in leadership positions, and where their focus may lay. It stands to reason, then, “that measures of student persistence and completion are higher on average than institutional rates of student retention and graduation” (Tinto, 2012, p. 127).

High-impact practices. The term *high-impact practices* (or HIPs) first gained recognition in higher education through a publication by the Association of American Colleges and Universities (AAC&U), authored by George Kuh (2008), entitled “High-impact educational practices: What they are, who has access to them, and why they matter.” That publication presented research based on data collected through the National Survey of Student Engagement (NSSE) and identified 10 highly engaging and effective educational practices that were strongly correlated with increased persistence and academic achievement for undergraduate students and

especially those from traditionally underserved populations (first-generation college students, students of color, and low-income students). Those 10 practices were first-year seminars, common intellectual experiences, living learning communities, writing intensive courses, collaborative research assignments, undergraduate faculty-led research, global learning/study abroad, service learning, internships, and culminating/capstone projects (Kuh, 2008). This study will look more closely at just three HIPs: faculty-led research, internships, and study abroad experiences. These three practices were chosen because they are often student-initiated activities as opposed to the other HIPs, which are typically institutional curriculum requirements.

Low-income student. Low-income student status is typically used to describe students whose family income is low enough to meet the eligibility for federal aid known as a Pell Grant. These students may also be referred to as being “Pell eligible,” meaning that they meet the income requirements to qualify for the Pell Grant, whether or not they have received it. This information is easily attained by institutions and tracked through the students’ Free Application for Federal Student Aid (FAFSA). Low-income status is also highly correlated with lower rates of persistence in higher education (Post-Secondary National Policy Institute (2018); Seidman, 2005; Tinto, 2004; Wilbur & Roscigno, 2016).

Students of color. “Students of color” is the term that this study will use when discussing students who identify as African American/Black, Latino/Hispanic, Asian/Asian-Pacific/Pacific Islander, and Native American/Indigenous. According to the fact sheets published by the Postsecondary National Policy Institute (2018), as a group, students of color represent another category of students that are considered to be at-risk of failure to persist. Students of color are also one of the fastest growing college-going demographics in the country (Post-Secondary National Policy Institute (2018)).

Gender. The instrument that will be used in this research, the National Survey of Student Engagement (NSSE), asks students to state their gender identity and provides the following response options: “1.) Man; 2.) Woman; 3.) Another gender identity, please specify; and 4.) I prefer not to respond” (*NSSE: National Survey of Student Engagement*, 2019). Until very recently, much of the research on student engagement and retention conflated gender and sex, treating gender as a dichotomous variable—male or female. For this study, gender will be treated as a discreet variable with four possible answers.

Problem Statement

Institutions of higher education are under increased scrutiny as graduation rates decline while student loan debt soars (Jackson & Reynolds, 2013). One proposed strategy to improve completion rates is to give additional support to those students who are most at-risk of leaving college before graduating (Kinzie et al., 2008). Research has shown that first-generation students are more likely to leave college before attaining a degree than their non-first-generation counterparts. For example, Ishitani (2006) found that students with first-generation status were 32%-51% less likely to graduate in a timely manner than their non-first-generation peers. Investing in policies and opportunities, like high-impact practices, that will benefit first-generation students and lead to increased rates of persistence to degree could help institutions improve their graduation rates, thereby providing the potential means to pay back their student loan debt (Kelchen, 2019; Kinzie et al., 2008; Payne et al., 2017).

Research Method

This research explores the broad issue of low persistence rates among first-generation students by answering these two questions regarding their choices of high-impact activities.

1. Does first-generation student status predict the probability that a college student will participate in selected, optional high-impact practices (faculty-led research, internships, study abroad) at the University of New Hampshire, without controlling for demographic variables?
2. Does participation in faculty-led research, internships, or study abroad differ when controlling for demographic characteristics such as gender and race?

These questions are answered through a secondary analysis of data collected through the National Survey of Student Engagement (NSSE) at the University of New Hampshire.

Undergraduate students who have reached senior class standing (90 or more credits earned) by the start of spring semester for each of the years 2016, 2017, 2018, and 2019 served as the study population. Using 4 years' worth of senior student data not only increased the statistical power of the analyses, but it also increased the number of variables that are permitted to be released to researchers by UNH Institutional Research and Assessment, who manage the NSSE data. By having a larger n , the research included several demographic correlational analyses that would possibly not be permitted with data from just one year. Because the NSSE survey questions selected for this study all offer dichotomous variables (participated or did not participate), the primary statistical analysis will be logistic regression.

Importance

Retention and graduation rates are a high priority for all institutions of higher education in the U. S. but are of particular importance to public colleges and universities because of their charter to serve the citizens of their given state, and to do so with taxpayer support. While concerns regarding retention are not new, they have reached a level of urgency recently, in part because of shifting demographics, particularly in the Northeastern U. S., which is facing

decreasing populations of traditional college-age students more so than other regions (18-24 years old) (Boeckenstedt, 2022; Cahalan et al., 2019). Research on first-generation college students is important because persistence, retention, and college completion are a grave concern for institutions of higher education that wish to survive these demographic changes.

Students who enroll but do not graduate from college are often burdened with high student loan debt and lower earning potential with which to pay off that debt (Jackson & Reynolds, 2013). One of the groups considered to be most in danger of failure to persist through graduation is first-generation college students (Ishitani, 2006; Post-Secondary National Policy Institute (2018); Terenzini et al., 1996).

Additionally, research has shown that participation in two or more highly engaging academic experiences identified as high impact practices (HIP) during college is highly correlated with higher graduation rates (Cataldi et al., 2018; Conefrey, 2021). Developing policies that support or encourage those students who are more likely to leave college before completion to participate in HIPs could lead to higher graduation rates for those students (Kuh & O'Donnell, 2013). If research shows that first-generation students participate in certain HIPs at statistically significant lower rates than their non-first-generation peers, institutions would be justified in providing additional support or funding to increase access and participation, and therefore likely increase graduation rates. Research that further examines the different identities that first-generation students carry may help customize those efforts by addressing the unique needs of various student demographics.

Theoretical Framework

Tinto's Student Departure Theory. Tinto's original theory of student retention (1975), often called "student departure theory" provides a framework through which to view student

persistence and retention, and this study. Tinto's early research and writing focused on academic and social integration into the college environment and the importance of each to student persistence. Attention is given to the individual student's goals and motivation as well as precollege conditions such as family background, individual personality attributes, and quality of high school education (Metz, 2002). In later research and writings (1987, 1993, 2012) Tinto assessed and advocated for institutional policy and programmatic interventions to increase persistence of all students. In all of Tinto's work, the importance of academic and social integration remains a key component to student retention. What changed over time is the locus of control, leading to contemporary emphasis on the institution's role and responsibility in supporting and guiding the process of student persistence through degree attainment (Tinto, 2012). This evolution is demonstrated in the titles of his works, beginning with "Dropout from higher education," which focused on the student's behavior and decision making as primary concerns, to "Completing College: Rethinking institutional action," which focused entirely on institutional programmatic and accountability measures. This research draws on the latter:

To be serious about student retention, institutions must recognize that the roots of attrition lie not only in their students and the situations they face but also in the very character of the settings, now assumed to be natural to higher education, in which they ask students to learn (Tinto, 1999).

Tinto's body of work has reached what one researcher refers to as "near paradigmatic status," meaning it is universally adopted and not often critically challenged (Braxton, 2000).

Tinto continues to be widely cited in literature regarding persistence and retention in higher

education and provides a theoretical and conceptual framework for a discussion of institutional actions that focus on building and sustaining an engaged and integrated community.

Student Engagement Theory. Student engagement theory developed in the field of student affairs, as a shift in focus to what students do with their time in college rather than examining what they think and feel about their experience (Quaye et al., 2019). Student engagement theorists assert that, “Those (students) who are actively engaged in educationally purposeful activities, both inside and outside the classroom, are more likely to persist through graduation (Quaye et al., 2019).

Contemporary student engagement theory holds two primary tenets as most important in the determining the quality of education for students: the amount of time and effort that students devote to their studies through what are considered educationally purposeful activities, and how the institution allocates its resources and curriculum to entice students to participate, in order to achieve the desired learning outcomes (Kuh et. al., 2007).

Both of these theories, their history and development, and how they apply to this research, will be discussed at length in the literature review.

II: LITERATURE REVIEW

The review of scholarly literature related to this research is presented below in order of broad topics to specific. This study examines differences between first-generation college students and continuing-generation college students, and their retention and persistence to degree, by examining their participation in three selected high-impact practices. Therefore, this literature review is organized to address those topics, in that order.

First-Generation Students

Colleges and universities have always been challenged to support struggling students from diverse backgrounds, whether those were rural students entering college after the passage of the Morrill Land Grant Act of 1862, former soldiers turning to higher education after passage the G.I. Bill in 1944, students of color enrolling after the Civil Rights Act of 1965, or low-income students seeking a higher education after the creation of the Pell Grant through the Basic Educational Opportunity Grant, also of 1965 (McNair et al., 2016). It was not until the late 1970s, when the cohort of the Baby Boomer generation was working their way through higher education that institutions began to face demographic changes that would lead to decreasing enrollments in the future (Seidman, 2005). Birth rates, particularly in the northeast, began to decline in the 1980s, recovering briefly only to be exacerbated by the Great Recession of 2008. A 2009 report by Van Der Werf & Sabatier published by *The Chronicle of Higher Education* predicted that by 2020, the majority of students enrolled in higher education would be minority students. Elite and highly selective private schools, as well as top tier flagship state institutions, may not witness these changes as quickly, but the majority of public colleges and universities will, and community colleges are well on their way (Van Der Werf & Sabatier, 2009).

According to the Center for First-Generation Student Success 24% of U. S. college students in the 2015-2016 academic year had parents or guardians with no post-secondary education, and 56% had parents who did not hold a bachelor's degree (RTI International, 2019). While the percentage of students whose parents have not earned a four-year degree is a smaller than it was a generation earlier, this current cohort of first-generation students is worthy of study because nationally, they are predominantly non-White and are part of low income families (Post-Secondary National Policy Institute (2018).

First-generation college students have been the subject of increasing concern recently, as evidenced by the growing body of research addressing their unique needs and challenges. Research supports the importance of knowing who is a first-generation student and provides insight into how these students are different from their continuing-generation peers (Davis, 2010). Two such studies, both featuring a quantitative method, are provided below as examples. As stated previously, this research uses the following definition of a first-generation student for purposes of consistency and clarity: “first-generation students as those whose parents or guardians have not earned a baccalaureate degree.”

Ishitani’s (2006) conducted a research study that examined college completion rates for undergraduate students. He sought to identify differences of completion rates between first-generation and continuing-generation students. Using correlational analyses to control for a variety of pre-college characteristics, Ishitani found that several factors had a small but statistically significant effect on college completion, including parental educational achievement (Ishitani, 2006).

Continuing the study of factors influencing persistence to graduation, Soria and Stebleton (2012) examined first-generation students and non-first-generation students to determine if there

were statistically significant differences in the academic engagement and persistence to graduation between the two groups. The researchers measured academic engagement by self-reported frequency of engaging in academic-related activities, interaction with faculty, contribution to class discussions, bringing ideas from other courses into class discussions, and asking insightful questions in class. When controlling for variables such as race, gender, and family income, first-generation students were found to participate in these academically engaging activities less frequently than their continuing-generation peers, as measured by Cohen's $d = 0.21$, which is a small yet statistically significant difference. First-generation students were also found to have lower first to second year retention rates, and if a first-generation student held other marginalized identities such as student of color or low income, the likelihood of not returning for second year doubled.

Once researchers established that there are significant differences between first-generation students and their non-first-generation peers, their attention turned to understanding why this is the case. What is it about having a parent who received a four-year degree that makes such a big difference in the student's post-secondary educational trajectory?

The role of the family. Qualitative research has been particularly fruitful in revealing some of the unique challenges that first-generation students face. In one focus group study, first-generation participants were asked questions about their adjustment to college, the barriers they faced as both college applicants and students (Gibbons et al., 2019). Reported barriers to their adjustment included family members wanting to help but not knowing how, or in some cases not really wanting the student to move away to college at all, financial constraints, and lack of information.

First-generation students are also unique in that they are more likely to experience the stress of “family achievement guilt” (Covarrubias et al., 2015). This condition is the feeling of discomfort with one’s success in college in the context of one’s family where other members have not had such success and may have sacrificed in order for the student to attend and remain in college. This concept was derived from studies of survivor’s guilt but differs in significant ways. Family achievement guilt is unique in that it does not arise from trauma or dysfunction. It occurs when the student’s achievements surpass those of family members, causing conflicting feelings of pride and discomfort (Covarrubias et al., 2015). This concept has also been referred to as “breakaway guilt” (Davis, 2010), which is similarly defined as the conflicting feelings first-generation students experience when they are given autonomy and distance to concentrate on their academics, possibly at the family’s expense—financial or otherwise. First-generation students returning home with new excitement for learning, expanded vocabulary, and new support systems after their first semester at college may be met with experiences of “otherness” and alienation from the family (Davis, 2010).

Jehanger (2010) was interested in understanding how first-generation students navigate the dissonance that is created between the home/family world, and the higher education world for first-generation students. She conducted a longitudinal study of students enrolled in a living-learning community to ascertain how first-generation students who have not been acculturated into college by their parents or upbringing learned how to navigate college. A central theme that arose through her analyses of their reflective writing assignments was that of the experience of disequilibrium. She found that certain feelings and experiences proved to be valuable to the learner in making meaning out of the discomfort and dissonance, when explored in the context of a community of trust. Trust between the instructor and the students, and among the students, was

developed slowly, through classroom storytelling, and students came to understand and value the many identities students shared, and the challenges they overcame (themselves and others) to make a successful transition to college (Jehangir, 2010).

According to Davis (2010), at many public colleges and universities in the U. S., first-generation status can be used as a “proxy” for students of color, meaning that there is a great deal of overlap in these two student populations, and any program designed to benefit one group will also likely benefit the other. Davis asserted that campuses constrained by conservative state legislatures or unfriendly political climates when offering support and resources solely for the benefit of students of color should instead consider repackaging those efforts as targeting first-generation students, in anticipation of reaching the same students while being more palatable to conservative legislators and policy makers. Nguyen and Nguyen (2018) concur, and caution against looking at first-generation students in a vacuum, without examining their other identities. First-generation students who hold other, sometimes more privileged identities, such as White or middle-class, have very different needs and experiences than those who do not, including those who are also low-income or students of color (Garriott, 2020). Nguyen and Nguyen, and others, argue that a one-size-fits-all approach to student support services can miss the mark by failing to address issues of intersecting identities (Quaye et al., 2019).

Role of society. Examining the different values held by students of varying social class backgrounds, and the institutions they attend, is one way to examine intersectionality more closely. Stephens et al. (2012) conducted several studies to examine how cultural mismatch theory may explain differences in retention and achievement between first-generation students and continuing generation students (Stephens, Fryberg, et al., 2012). Cultural mismatch theory asserts that in order for a student to feel a sense of belonging at an institution, the student’s

values should align with those of the institutions, and when they do not match, the student struggles academically and socially. When institutions tout their values of independent thinking, supporting students' quest for personal growth and exploration, this is in alignment with typical American middle- and upper-class values of independence and finding one's passion, and counters the traditionally more working-class values of interdependence, connection to community, and putting others' needs above one's own.

One study examined the issue of social class, compared two groups of Black, non-immigrant college students, first-generation college students ($n = 35$) at a highly selective institution, all of whom were from low-income families. The two groups differed in secondary school experiences of the students, and found that those students who crossed social class boundaries through diversity initiatives, pipeline programs, or private school scholarships experienced less culture shock in college than those who did not (Jack, 2014). Exposure to students of other social classes and races in high school was reported to have given students greater cultural capital from which to draw, to ease their integration into college, and resulted in students reporting more positive feelings about college and higher levels of integration into the academic community.

In another quantitative study ($n = 82$), conducted by Stephens et al. (2012), researchers found that when first-generation students of various racial backgrounds were asked to read aloud a letter that expressed the institution's values that align with middle- and upper-class values of independence and autonomy, and speak to their connection to these values, first-generation college students showed increased levels of the stress hormone cortisol, as compared to those first-generation students whose letter and reflection expressed interdependent values such as collaboration and community (Stephens, Townsend, et al., 2012).

Retention

There are many theories of college student retention and persistence, and they can be sorted into the following categories: psychological (individual traits), sociological (fitting in with social structure), organizational (compatibility with institution), cultural (skills to adapt to institution), and economic (personal value, return on investment) (Kuh, 2007). While reviewing all of these theories is beyond the scope of this research, a few are worth noting because of the frequency that they are cited.

One of the more prominent psychological theories suggests that persistence to degree should be likened to Maslow's hierarchy of needs, which is a psychological theory of human motivation (Braxton, 2000). Maslow's (1958) theory was originally offered as a theory of motivation which suggested that individuals are only capable of attaining a given or higher stage of development if the needs that are lower down on the pyramid are met. In order to satisfy higher order needs such as self-esteem or self-actualization, one must first have basic needs—food, water, shelter—met (Maslow, 1958). To put into the context of student persistence, Braxton asserts that those students who are distracted by financial struggles, housing or food insecurity, or feel unsafe or unwelcome on campus, are unable to consistently engage in the higher order thinking that is required during college even though they may be academically strong. If at the start of their first semester of college, a student's energy is driven away from academic engagement toward such concerns as safety or financial insecurity, the transition to college is hindered. If the transition is not navigated successfully, the student may fail to integrate into the institution's academic culture and may also fail to see the value of the required effort—how the investment of time and energy will benefit them in the long run. If the return on investment seen as weak, why continue to invest? (Braxton, 2000). Maslow's theory, however,

has recently come under criticism for having originated from but not attributed to a Native American tribe he has studied (Feigenbaum & Smith, 2020). Contemporary scholars contend that Maslow's original theory is based on individual success rather than that of the community and is missing the sense of belonging that upon which indigenous cultures place greater value. The element of belonging seems crucial to student integration into the academic and social culture of an institution, and therefore important to student persistence.

Psychological theories like Maslow's, however, put the locus on the individual, asserting that students fail to persist due to some individual weakness or deficit, thus relieving the institution of any responsibility (Tinto, 1993). The concept of student integration into the academic and social culture of an institution became the focus of retention research in higher education, starting in the 1970s, and gave rise to environmental and societal theories of student retention. These theories held the society at large or the specific institution accountable for creating conditions that lead to student departure.

Of the sociological theories, the most frequently cited are those of Vincent Tinto. Tinto (1975), following the lead of his contemporary Spady (1970), drew upon the work of sociologist Emile Durkheim's (1951) research on the causes of suicide, and applied them to higher education. Durkheim hypothesized that failure to integrate into society was a major cause of suicide. In his early works, Tinto applied this theory to what was then known as college student "dropout" behavior and hypothesizes that dropping out of college is caused by the student's failure to integrate into the society of college. He defined integration as the ability to interact with others in the environment of college and to develop congruency with the prevailing values of the community. The two specific arenas where integration should occur in higher education

are the social sphere and the academic sphere, and Tinto hypothesized that for students to successfully persist to graduation, they must attend to both (Tinto, 1975).

Tinto organized academic integration in two dimensions: structural and normative. Structural integration referred to meeting the explicit academic standards of an institution, and normative integration pertained to the individual's identification with the academic culture and intellectual environment. Social integration is defined as the "degree of congruency between the individual student and the social system of a college or university" (Davis, 2010, p. 3). This included peer groups, friendships, informal associations, extra-curricular activities, and informal interactions with faculty. Tinto's initial publication highlighted research that connects student involvement in campus extra-curricular activities to commitment to the institution and persistence to graduation. Tinto asserted that the level of student's social integration is an indication of commitment to the institution, and commitment to the goal of graduating from that institution. This, along with publications by Astin (1977) and others, promoting social integration, ushered in what has become known as "the age of involvement" in which student affairs professionals promoted social integration through student involvement in extra-curricular activities and social programming, especially during the first year of college. Research that supported involvement and engagement outside the classroom became integral part of many institutions' retention strategy in the 1980s through early 2000s (Astin, 1977; Tinto, 2007).

Tinto's (1975) theory suggests that the greater the student's level of social and academic integration into a campus, the greater the likelihood of persistence (Tinto, 1975). In his 1993 publication of *Leaving College: Rethinking the Causes and Cures of Student Attrition*, Tinto elaborates on the stages of integration. Borrowing from the work in the field of sociology on the significance of rites of passage (van Gennep, 1960), Tinto suggested that campus traditions and

rituals can move students through the stages that he identifies as separation, transition, and incorporation (Tinto, 1993).

Tinto continued to refine his theory over the course of his career (Tinto, 1975, 1993, 2004, 2007, 2012, 2017). As stated earlier, this research project draws on the most contemporary iterations of Tinto, with an emphasis on institutional responsibility for students persistence (Tinto, 2012). Those who challenged Tinto's original theory often pointed to the fact that the early research was conducted primarily on White, privileged, male students. Today, integration into the college community is more carefully defined so that it does not imply cultural assimilation, or ask that in order for students to integrate in the college environment successfully they must completely break away from their culture of origin (Braxton, 2000).

Student Involvement Theory

This emphasis on academic and social integration into college evolved first into an emphasis on student involvement on the college campus. Astin (1984) published an article entitled *Student Involvement: a developmental theory for higher education*, that served as a call for higher education professionals to aspire to the goal that college students to become more active participants in their own education. He defined student involvement as “physical and psychological energy that the student devotes to the academic experience” (Astin, 1984, p. 518)—meaning interaction with faculty and academic material, and investment of time and energy (in both quantity and quality) to the people and process of education. This stands in contrast to earlier student development theories in higher education that treated students as empty vessels to be education and molded. Astin posited that simply exposing students to knowledge or lecturing at students as they passed through predictable developmental stages does not necessarily result in learning or growth.

Not long after Astin's publication, Chickering and Gamson (1987) introduced their *Seven Principles for Good Practice in Undergraduate Education*. It focused attention on the policies and pedagogical practices that could promote student learning and retention. These seven principles were derived from "50 years of research on the way teachers teach and students learn, how students work and play with one another, and how students and faculty talk to each other (Chickering & Gamson, 1987, p.2). The seven principles they introduced are: 1) encourage contacts between students and faculty, 2) develop reciprocity and cooperation among students, 3) use active learning techniques, 4) give prompt feedback, 5) emphasize time on task 6) communicate high expectations, and 7) respect diverse talents and ways of learning. George Kuh, who would later become known as the "father of student engagement," along other researchers, began to refer to such practices with other terms, such as "educationally purposeful activities," "engaging academic experiences," and eventually settling on the term "high-impact practices" (Kuh, 2003, 2008; Kuh, Cruce, et al., 2008). Thus, the era of student engagement was born.

Student Engagement Theory

Student involvement theory had focused on the students' actions, and was understood to mean that the learner must be mentally as well as physically present, or be a member of a student organization or society—but not necessarily take any action, be reflective, or play a role (Groccia, 2018). Research at the turn of the century began to differentiate student involvement from student engagement by pointing out that in order to obtain the desired learning outcomes, a student must go beyond simply being involved, to include the engaging, purposeful and high-impact experiences.

The term “student engagement” had become ubiquitous in higher education (Tight, 2020). In an article exploring the origins and evolution of the connection between student retention and student engagement, Tight (2020) noted that articles with the term “student retention” dominated the scholarly literature in higher education until the mid-1980s, when “student engagement” surpassed it, and remained at in that position until at least 2019. This explosion of research and interest can be partially attributed to the founding of the National Survey of Student Engagement (NSSE), and to scholars like Kuh, who emphasized that actions an institution takes matter more in student retention and student engagement, and made recommendations for institutional change and accountability.

Student Engagement Theory has two main areas of foci: the time and effort of the student, and the allocation of resources of the institution (Quaye et al., 2019). The time and effort of the student can be further broken down into three components: behavioral, emotional, and cognitive engagement (Groccia, 2018). Behavioral engagement refers to what the student is actually doing—how time is spent, what activities and opportunities they are taking advantage of or participating in. Emotional engagement pertains to how the student feels about the institution and the subject matter, and cognitive engagement refers to what the student is thinking about, is curious about, and reflecting upon (Groccia, 2018).

One fundamental difference between involvement and engagement is the actor. Student involvement theory focused on the student as the primary actor. Student engagement, however, holds both the student and the institution as responsible parties. The term “engagement” implies a contract between two parties, and as such student engagement theory has evolved to examine what choices the student makes, but also how the institution uses its time and resources as it considers what activities, opportunities, and policies to support (Wolf-Wendel et al., 2009).

Most contemporary definitions of student engagement acknowledge this shared responsibility as demonstrated in the definition Trowler (2010) put forth in her extensive literature review:

Student engagement is concerned with the interaction between the time, effort and other relevant resources invested by both students and their institutions intended to optimise (sic) the student experience and enhance the learning outcomes and development of students and the performance, and reputation of the institution (Trowler, p. 2, 2010).

The notion that perhaps the student is not the only one responsible for increasing student engagement has taken firm hold in higher education. “Simply providing services for students is not sufficient to enrich their educational experiences” (Quaye et al., 2019, p. 8). With the advent of the NSSE in 2000, the survey’s explosive growth and all the data that it provided, institutions began to understand that they had a responsibility not just to offer but to ensure equitable access to more engaging and enriching educational practices and opportunities. While the NSSE instrument was used to show institutions where their students are spending their time and energy, institutions began to use it determine what they should be offering, and how to make it available to more students despite barriers such as working part-time or having family obligations while attending college (Quaye et al., 2019).

The correlation between student engagement and student persistence garnered more attention following the publication of several research studies that utilized national data, collected by NSSE. One was titled *Student Engagement and Student Learning: Testing the Linkages*, which showed a weak yet statistically significant correlation

between certain aspects of student engagement and measures of student achievement such as GRE scores (Carini et al., 2006). Another study, *Unmasking the effects of Student Engagement*, found a positive correlation between student engagement during the first year of college and persistence to sophomore year, regardless of the students' background characteristics or pre-college experiences (Kuh, Cruce, et al., 2008).

Critics of student engagement point to the implied “racelessness” of the research, and its failure to recognize the effect of the campus racial climate on student decisions to engage in the academic and social fabric of campus (Patton et al., 2015). It should be noted that...

The most noted student engagement pioneers are all white; they decided which experiences and activities add value to a student's college experiences. They are unlikely familiar with particular activities and practices in which minoritized students are engaged that bolster their sense of belonging and keep them...engaged and retained (Patton et al., 2015, p. 210).

High-Impact Practices

The term *high-impact practice* made its first appearance in print in the 2006 Annual Report of the National Survey of Student Engagement (NSSE), and was defined there as “activities that make a claim on student time and energy in ways that deepen learning and change the way students think and act” (National Survey of Student Engagement, 2007, p. 13). Until that time, other phrases were being used in the scholarly literature to describe the body of educational practices that require greater investment from students than their typical lecture based coursework that were being studied for their correlation with academic achievement and student

persistence—engaged learning, engaging educational practices, Enriching Educational Experiences (EEE)—when Kuh reportedly consulted with his colleagues and together, they agreed upon the term “high-impact practices,” or HIPs, for the purposes of the report (Kuh & O’Donnell, 2013). Such practices were really nothing new, they have been employed in higher education for a long time, but by giving them a name and a set of criteria, the language provided a framework for scholarly research and invited discussion among practitioners.

Kuh and his fellow researchers at the American Association of Colleges and Universities (AAC&U) embraced the term in their 2008 report. That publication used data collected through NSSE, and presented research that identified 10 highly engaging and effective educational practices—now referred to exclusively as high-impact practices—that Kuh strongly asserted would not only benefit undergraduate students, but would especially benefit students from traditionally underserved populations (first generation college students and traditionally underserved populations such as students of color). Those 10 practices are: first-year seminars, common intellectual experiences, living learning communities, writing intensive courses, collaborative research assignments, undergraduate faculty-led research, global learning/study abroad, service learning, internships, and culminating/capstone projects (Kuh, 2008, pp. 9-11).

In particular, the NSSE results suggested that students who participated in these particular activities tended to have statistically significant higher rates of academic achievement, as measured by overall grade point average (GPA) in their first year of college, and higher rates of persistence, as measured by graduation rates, than those who did not participate in them. The correlations were so strong for several different demographic groups, “that Kuh was concerned the initial analysis was flawed” (Kuh et al., 2017, p. 9). The more HIPs the student reported having participated in, the higher the scores on those two measures (GPA and graduation rates),

for all categories of students. Because of the strength of these correlations, the 2008 report concluded with a recommendation that all students be required or encouraged to complete at least two HIPs during their college career, with an emphasis on building at least one into the curriculum for first year students (Kuh, 2008).

In addition to the strong correlation to academic achievement and persistence for all students, the research also showed that for students of color who participated in HIPs, the gains were even greater. For Hispanic and Black students with lower-than-average ACT scores, high-impact practices were correlated with what has come to be known as a “compensatory effect”—higher improvements to their academic achievement than their white peers with similar pre-college conditions who had engaged in the same activities. This research suggested that as African-American students became “more engaged, they also become more likely to surpass white students in likelihood that they will persist” (Kuh, 2008, p. 19), in effect erasing the negative effects of pre-college achievement tests (Carini et al., 2006; Kuh, Kinzie, et al., 2008; Kuh & O’Donnell, 2013). This compensatory effect would draw the attention of higher education researchers, administrators, and policy makers at all levels as U.S. college-going demographics were expected to shift to include more students from underrepresented groups enrolling in our nation’s four-year colleges and universities (Post-Secondary National Policy Institute, 2018).

Kuh and his fellow researchers speculated about what made these particular activities or practices unique, proposing that the HIPs required more frequent attention and feedback from faculty, required more interaction with peers, demanded considerably more time and sustained effort from the students than ordinary lecture-based classes, provided opportunity for more frequent decision-making and reflection, and required high commitment and investment levels

on the part of the students. In other words, it was impossible for students to complete them without being highly engaged in their learning. Additionally, Kuh hypothesized that participating in these types of activities increased the chance that students would develop relationships with faculty and peers who were different from themselves, and therefore would challenge students to encounter and eventually develop new ways of thinking about their task at hand, their education, and their world (Kuh, 2008). Participation would make it “nearly impossible for a student in a HIP to be anonymous, a condition that is unfriendly to persistence and other desired outcomes” (Kuh et al., 2017, p. 12). Only under these conditions, it was suggested, would institution see the statistically significant increases in student achievement and persistence (Kuh, 2008).

According to Kuh (2008), the common thread running through all HIPs is that they require greater effort and commitment on the part of the student, above and beyond attending lectures, taking tests, and writing papers. HIPs require students to interact with faculty and peers, to hear and grapple with differing viewpoints, and to take advantage of opportunities for reflection and growth. These acts of deeper, iterative, and more meaningful engagement with academic concepts and materials produce the higher impact on the learner, leading to students who are more invested in and satisfied with their learning, and are more committed to persist to degree attainment (Kuh, 2008; Kuh, Cruce, et al., 2008; Kuh & O’Donnell, 2013).

Much of the early literature on HIPs cited the same few publications, only one of which is peer-reviewed, and often they are cited as “proof” of the importance or impact of participation in HIPs. One of the first publications to seriously challenge the HIP narrative was published in 2018, a full decade after Kuh’s initial publication. “Academic Engagement and Student Success: Do High-Impact Practices Mean Higher Graduation Rates?” used institutional data rather than student data from the NSSE, to investigate the correlation between HIPs and graduation rates.

The authors surveyed Deans and Directors of academic advising centers at over 100 large public universities and asked if each of the 10 HIPs were “required for all students,” required for some students,” “optional,” or “not offered.” The authors were surprised to report that “...One important finding from this study is that the quantity of practices offered on campus...was not related to graduation rates” (Johnson & Stage, 2018, p.776).

This study revealed a missing link between academically engaging activities and college completion at large public institutions....While some research has linked individual practices to engagement and learning outcomes, findings from this study question whether those benefits can be directly linked to timely college completion (Johnson & Stage, 2018, p. 777).

Shortly after this research was published, the website *Inside Higher Ed* reported on the findings with a story whose tagline stated: “Study questions whether ‘high impact’ practices yield higher graduation rates” (Valbrun, 2018). AAC&U contributed a statement for this story, asserting that, “we encourage institutions to analyze data on educational practices before calling them high impact, and we support ongoing research that examines their quality and effectiveness in helping students develop proficiency in defined learning outcomes” (Valbrun, p. 2).

The value of HIPs, or any particular program or academic activity on a college campus, can be measured in any number of ways, depending on the goals and values of the program or institution—examining the change in student grade point average, studying the institutional retention rate, meeting a variety of learning outcomes, measuring various forms of learning or development, or achieving career related goals for recent graduates. Each institution must decide for itself what its goals and values are, and

how to assess them. Administrators and decision-makers would do well to remember that high-impact practices should not be seen as a ‘silver bullet’ but rather should be viewed as one tool that can be used in ongoing efforts to improve student engagement and learning (Seifert et al., 2014).

This study focused on three specific HIPs: faculty-led research, internships, and study abroad experiences. These three have been selected for this study because they are typically not embedded in courses or requirements at the UNH. Participating in one of these practices is likely to be optional for the average UNH undergraduate student. Each of the three HIPs has also been well documented to be correlated with student persistence, academic achievement, and other positive outcomes such higher rates of faculty and peer interaction, increases in critical thinking, and greater appreciation of diversity and diverse viewpoints (Brownell & Swaner, 2010; Kilgo et al., 2015; Kuh, 2008).

Below are descriptions of the three HIPs that this study will focus on, along with examples of the additional positive outcomes that research suggests they provide.

Faculty-led research. Faculty-led research is one of the HIPs that has shown a very strong correlation with academic achievement and student persistence, likely because of the ongoing feedback as well as formal and informal interaction with a faculty mentor (Kuh, 2008). Students who participate in research alongside a faculty member also report significantly higher levels of academic and emotional engagement, and that their experiences are more challenging than other experiences they participated in (Miller et al., 2011).

A 2008 study using data from the NSSE found that “students who receive feedback during or after working on a research project with a faculty member are more likely to report that their relationships with faculty are friendly or supportive” (Kuh, 2008, p.17). Students who have

participated in faculty-mentored research also report that the experience helped them develop their skills at formulating original ideas and contributing to academic knowledge. Developing an appreciation for scholarly research and how it is valued by their institution was found to help the student integrate into and feel accepted by their academic community (Demetriou et al., 2017). Additional research on student enrollment in undergraduate research has shown that faculty-led research is positively correlated with increased grade point average, even when controlling for students' pre-college test scores (Fechheimer et al., 2011).

Internships. Engaging in an internship or field experience during the undergraduate years has long been considered a valuable educational tool. Unsurprisingly, participation in internships during college is highly correlated with post-college employment. A 2018 study showed that an internship experience increased the odds of starting a new job after graduation by almost 200%, greater than any other HIP examined in the study (Miller, A. L. et al., 2018).

Research has also suggested that students who are involved in internships or field experiences report other benefits beyond career readiness. In one 2011 study, students who were involved in internship or practical experiences reported statistically significantly higher levels of four types of engagement than their counterparts who did not participate in one. The four engagement types include, skills engagement (study and notetaking skills), emotional engagement (relating course learning to personal experience), participation engagement (interaction with other learners), and performance engagement (academic achievement and getting good grades). As is the case with faculty-led research, this research also found that students who participated internships reported closer relationships and more frequent contact with faculty and supervisors (Miller et al., 2011).

Study abroad experiences. Studying abroad has long been touted as an experience that can increase a student's foreign language proficiency as well as improve global political awareness and intercultural competency (Gonyea, 2008; Hadis, 2005; Opper & Others, 1990). It is no surprise that study abroad was included in the first publications outlining the achievement and persistence gains of high-impact practices (Kuh, 2008). Intuitively the value of study abroad makes sense, but it was not until the more recent era of accountability that higher education researchers have attempted to identify and measure the effects of studying abroad beyond language acquisition and cultural competency (Stebbleton et al., 2013).

In one particular qualitative study that used in-depth interviews of successful first-generation college students to ascertain the qualities of successful first-generation students, the authors found that all of the students who were interviewed about their study abroad experiences ($n = 10$) “described their time abroad as a defining moment in their undergraduate career (Demetriou et al., 2017, p. 25). Positive outcomes found to be associated with study abroad include greater emotional resilience, great self-reported independence and self-confidence, and greater willingness to engage with unfamiliar individuals and surroundings (Demetriou et al., 2017; Goldstein & Lopez, 2021). Studying abroad has also been shown to be associated with higher levels of engagement in integrative and reflective learning, as well as growth in social and personal development. These gains affected the students' self-report of engagement in their academics not just while they are studying abroad, but in the subsequent semesters, following the experience (Gonyea, 2008). Study abroad participants also have shown to score higher on measures of civic engagement, philanthropy, and social entrepreneurship following their experience (Paige et al., 2009).

Study abroad has also been correlated with persistence to graduation (Engel, 2017; Kuh, 2008), though research has been inconclusive about causality—does the experience lead to persistence, or are those students who are drawn to or successful in the experience already in possession of the skills and attributes that result in persistence (Jenny et al., 2017)?

Summary

This literature review has sought to demonstrate how the study of student retention in higher education has evolved over the last century from an issue that institutions cared little about, to something that is vital to institutional survival. The focus of scholarly research was originally on factors outside the institution's control, and placed the blame for failure to persist to degree attainment squarely on the individual student. Contemporary studies on student retention and degree completion have pivoted completely toward the factors that are within an institution's control to create a climate in which students want to and are able to succeed. It is in this latter environment that this study took place, in an effort to identify and support the academic activities and programs that can address the needs of different demographic groups and lead them to graduation.

First-generation college students are one of the demographics that have been identified as needing additional resources to navigate a college campus successfully. Understanding first-generation students, and the intersectionality with other identities that first-generation students hold, is vital to ensuring that access to academic programs and support structures is equitable.

Student Engagement Theory, and HIPs in particular, can be used as one way to view and measure institutional efforts in the academic arena, especially given the plethora of data that is readily available from the National Survey of Student Engagement. While NSSE does not measure every type of engagement on a campus, nor measure the quality of a particular high-

impact experience, it can be useful to take the pulse of a campus, to identify areas where student engagement is weak and in need of improvement.

This study examined differences between first-generation college students and continuing generation college students in their participation in three selected high-impact practices. Consequently, this literature review provided contextual information in several areas—first generation college students, college student retention and persistence, student engagement, and high-impact practices—so that the reader can approach the methodology, findings, and discussion chapters with robust context and knowledge of contemporary scholarly literature.

III: METHODOLOGY

This research study employs a secondary analysis using data from selected questions from the 2016-2019 administrations of the National Survey of Student Engagement (NSSE) at the University of New Hampshire. The NSSE instrument, formally referred to as the *NSSE College Student Report* has been widely used in higher education scholarly research since its launch in 2000. The instrument is currently administered annually at over 700 college and universities in the U.S., including at the University of New Hampshire. The survey underwent a major revision in 2013, and the items on the survey have been unchanged since (*NSSE: Information About 2013 Update, 2013*). In addition to its consistency, one of the most appealing features of this instrument is that its validity and reliability have been discussed and tested at length both by the NSSE organization itself and higher education scholarly researchers (Miller et al., 2020).

Examining all 10 HIPs is beyond the scope of this project, therefore I have chosen to examine just three—faculty-led research, internships/field experiences, and study abroad—to determine if first-generation status can predict who will participate in these three HIPs. These HIPs were selected because they are typically not required in the curriculum for most academic majors, and should be accessible to all students who wish to take part. Furthermore, because they are not commonly associated with course or program requirements, students must demonstrate persistence, tenacity, and motivation to extend the normal boundaries of just adhering to curricular requirements.

Population

Undergraduate students at the University of New Hampshire served as the study population; particularly students who reached senior class standing (90 or more credits earned)

by the start of spring semester for each of the years 2016, 2017, 2018, and 2019. Combining 4 years' worth of senior student data into one dataset increases statistical power of the analyses. This amount of data also increases the number of variables that are permitted to be released to researchers by UNH Institutional Research and Assessment, who manage the NSSE data at UNH. By having a larger n , the research can include several demographic correlational analyses that would not be permitted with data from just one year. For example, the survey asks student to provide their gender identity and provides four options. With four years of responses, the sample size is large enough to allow this demographic data to be used.

Data from 2020 responses are not included so as to avoid any interruption that may have been caused by the global pandemic of COVID-19.

Survey Instrument

NSSE survey questions to be used for this study are: 11, 29, 30, and 37 (Table 1). The full NSSE 2019 survey is retrievable at <https://nsse.indiana.edu/nsse/survey-instruments/us-english.html>. Because the questions chosen for data collection data are dichotomous variables (participated or did not participate), the selected statistical analysis is logistic regression.

Table 1 *Questions from NSSE used in this research*

<p>11. Which of the following have you done or do you plan to do before you graduate? <i>Response options: Done or in progress, Plan to do, Do not plan to do, Have not decided</i></p> <p>a. Participate in an internship, co-op, field experience, student teaching, or clinical placement</p> <p>d. Participate in a study abroad program</p> <p>e. Work with a faculty member on a research project</p>
<p>29. What is the highest level of education completed by either of your parents (or those who raised you)? <i>Response options: Did not finish high school, High school diploma or G.E.D., Attended college but did not complete degree, Associate's degree (A.A., A.S., etc.), Bachelor's degree (B.A., B.S., etc.), Master's degree (M.A., M.S., etc.), Doctoral or professional degree (Ph.D., J.D., M.D., etc.)</i></p>

30. What is your gender identity? <i>Response options: Man; Woman; Another gender identity, please specify: I prefer not to respond</i>
34. How would you describe yourself? (Select all that apply.) <i>Response options: American Indian or Alaska Native, Asian, Black or African American, Hispanic or Latina/o, Middle Eastern or North African, Native Hawaiian or Other Pacific Islander, White, Another race or ethnicity, I prefer not to respond</i>

Table 2 (below) outlines which NSSE questions will be used to address each of my research questions in this study.

Table 2 NSSE question and corresponding research question

Research Question	NSSE Question that will address this Research Question
Does first-generation student status predict the probability that a college student will participate in selected, optional high-impact practices (faculty-led research, internships, study abroad) at the University of New Hampshire, without controlling for demographic variables?	Question 11 Question 29
Does participation in faculty-led research, internships, or study abroad differ when controlling for demographic characteristics such as gender and race?	Question 11 Questions 29, 30, 37

Variables

The predictor or independent variables will be generational status, race, and gender. The outcome or dependent variable in this study is participation in each of the following HIPs: faculty-led research, internship, or study abroad. All of these are categorical variables.

Statistical Analysis

These findings are an exploratory work, consisting of descriptive statistics to examine the population and the data, including graphical displays of the distributions and frequency distributions for categorical variables (participation, generational status, race, gender). Cross-tabulations and chi-square test were used to explore the uncontrolled relationships between

generational status and participation levels for each of the three HIPs (faculty-led research, internships, study abroad). This provided an initial understanding of whether statistically significant differences existed between proportions of first-generation students and non-first-generation students participating in each of the HIPs.

Next, dummy variables were created for the outcome variables. For each of the HIPs that were chosen for this study, the survey offered four options for responses: *done or in progress*, *plan to do*, *do not plan to do*, *have not decided*. “Done or in progress” was assigned a value of “0” and each of the other alternate answers were assigned a value of “1.” “Plan to do” was not assigned to the “0” dummy variable because this data was collected in the spring semester of senior year, which affords very little opportunity for intentions to be met before graduating.

Race and gender variables also had to be translated into dichotomous variables. Students were asked to select a racial/ethnic category from a list of options. These were turned into dummy variables of WHITE, BLACK, LATINO, and ASIAN, with a value of 0 for does not identify, and a value of 1 as does identify. For the gender identity category, the dummy variables of MAN, WOMAN, and OTHER/prefer not to answer, with a value of 0 for does not identify, and a value of 1 as does identify

Logistic regression analyses (also known as logit analysis) was then used to examine the relationship between generational status and student participation in the three chosen HIPs (Huang & Moon, 2013). Logistic models are designed to show probability or likelihood of a specific outcome, given the presence of one or more dichotomous variables (Kleinbaum & Klein, 2010). The predictor variable will be assigned a “dummy variable” of either 0 or 1—0 if did not participate in selected HIP, 1 if did participate in selected HIP (Pampel, 2021).

A series of increasingly more complex models were fitted, starting with a model that includes only generational status as a predictor of HIP participation. Subsequent models were systematically added to the control variables (gender, race). In addition, two-way interactions between the control variables and first-generation status were tested to determine whether the relationship between first-generation status on HIP participation varies by student demographics. By controlling for these factors and examining relationships between variables, the research endeavors to uncover the effect of students' generational status on their decision to take part in faculty-led research, internships, or study abroad in college, and how participation varies within different populations. It is in conducting the correlational analysis with the demographic information that the true richness of the data, and the intersectionality of various identities held by first-generation students, can be fully understood (Dumais & Ward, 2010; Nguyen & Nguyen, 2018).

Researcher Positionality

It is “necessary for (educational) researchers to consider dangers seen, unseen, and unforeseen in conducting research,” with regard to both implicit and explicit bias (Milner, 2007, p. 388). It is incumbent on the researcher to expose and disrupt beliefs or thinking that could lead to interpreting differences among groups as deficiency of one or more groups (Milner, 2007). In order to be transparent, I feel it is necessary to disclose my personal connection to the research I am proposing.

My interest in first-generation students does not stem from my own experience as a first-generation student. While neither of my parents attended any post-secondary education, my three older siblings, and 10 of my older first-cousins, did. Every one of my college friends was also a first-generation student, so I felt very much like I belonged from my first time stepping on the

campus. I had also grown up with the expectation that I would attend college, and that I would figure it out by myself, as those siblings and cousins had. My parents paid for college for all four of their children from saving \$2.00 per paycheck for each of us from the time we were born, with the express intent of using the money for college and college only. That is how all four children were able to graduate with no student loan debt in the 1970s and 1980s.

I became interested in the study of first-generation students and their participation in HIPs during a professional development workshop sponsored by The Washington Center for Internships and Academic Seminars, in Washington DC, at which Dr. George Kuh presented some of his research. At that time, I had been working with The Washington Center (TWC) for 10 years, advising and mentoring students from the University of New Hampshire who were applying to their internship program. Dr. Kuh concluded his remarks with, “Students benefit most when the internship integrates what they are doing with other experiences, on and off the campus. No organization does this better than TWC,” and I knew at that moment that I wanted to study the experiences of first-generation students at my own campus who took part in HIPs like this.

I came to this research with my lived experiences as a White lesbian woman and former first-generation student, from a blue-collar background that espoused working class values of community and selflessness. In my professional life today, I am surrounded by well-educated professional colleagues, from middle-class upbringings with values of independence and self-actualization. I brought this lens to my research.

IV. RESULTS AND ANALYSIS

Introduction

This study is a secondary analysis of data collected from the National Survey of Student Engagement (NSSE) by the University of New Hampshire's Institutional Research and Assessment (IR&A) office, who administer the NSSE. The data was collected from senior students in the spring semester of 2016-2019. Datasets over multiple years were combined in order to increase the number of variables that are permitted to be released to researchers by IR&A; by having a larger n , the data set could include several demographic correlational analyses that would not be permitted with data from just one year. For example, the survey asks student to provide their gender identity and provides four options. By combining 4 years of responses, the sample size is large enough to allow this demographic data to be used. Examining and combining four years' worth of senior student data also increases statistical power of the analyses.

Research Questions

This study included the following research questions:

1. Does first-generation student status predict the probability that a college student will participate in selected, optional high-impact practices (faculty-led research, internships, study abroad) at the University of New Hampshire, without controlling for demographic variables?
2. Does participation in faculty-led research, internships, or study abroad differ when controlling for demographic characteristics such as gender and race?

Descriptive Statistics

The population in this study is undergraduate baccalaureate students on the Durham campus of the University of New Hampshire (UNH) who reached senior status (90 or more credits earned) by the start of spring semester, in each of the following years: 2016, 2017, 2018, and 2019. UNH is the flagship institution of the University System of New Hampshire, with an undergraduate baccalaureate enrollment of 12,032 in Fall 2019. Roughly twenty five percent of UNH students are reported to be first-generation students. UNH can be categorized as a Predominantly White Institution (PWI) with over 83% of the population identified as White, 4% as Hispanic or Latino, 3% as Non-resident Alien, 3% as Asian, 2% as two or more races, and 1% as Black or African American (4% Unknown) (*University of New Hampshire Common Data Set, 2019*). According to the National Center for Education Statistics (NCES), during the 2019-2020 academic year, 23% of UNH students were eligible for federal aid known as a Pell Grant (*IPEDS Data Center, 2020*).

Survey Instrument

This secondary analysis using data from selected questions from the 2016-2019 administrations of the NSSE at UNH. The NSSE instrument was administered by the institution each spring semester of the years indicated, and the combined sample consists of students who voluntarily completed the survey ($n = 2847$). According to a publicly available *UNH NSSE Multi-year Report Summary*, the NSSE response rate for seniors at UNH over the four-year period being studied ranged from 23%-34%: 2016 = 34% or 997 responses, 2017 = 28% or 749 responses, 2018 = 29% or 862, and 2019 = 29% or 711 responses (*NSSE 2019 Multi-Year Report, 2019*).

This study examines three of the eleven HIPs that NSSE collects information on— faculty-led research, internships/field experiences, and study abroad—to determine if first-generation status can predict who will participate in these three opportunities.

Response Rate

The overall NSSE response rate at UNH over the four-year period being studied ranged from 23%-34%. A low response rate such as 23% could be considered a weakness of this data set. However, this study, with just one predictor variable (generational status), requires a minimum sample size of just 81 participants to achieve an 80% chance of detecting a correlation at a probability level of $p = < .01$ (Soper, 2020).

Similarly, Fosnacht et al (2017) found that a NSSE response rate of less than 10% should be considered reliable (Fosnacht et al., 2017). NSSE researchers claim that, “...with few exceptions NSSE measures were reliable based on response rates as low as 5% to 10% for samples with 500 or more students,” and that their results show that low response rates can still generate reliable results” (Gonyea & Sarraf, 2020, p. 6-7).

Table 3 (below) shows the descriptive data of the UNH undergraduate population compared to that of the survey sample, demonstrating that even with lower response rate, the sample is sufficiently representative of the population.

Table 3 *Comparison of UNH population to survey respondents*

	UNH Durham Undergraduate Population Fall 2019	NSSE Survey Respondents 2016-2019
First-Generation Student	25%	29.4%
White	84%	87.5%
Black/African American	1%	0.4%
Hispanic or Latino	4%	1.4%
Asian/Pacific Islander	3%	4.3%
Non-resident Alien	3%	n/a
Other/More than one	5%	4.3%

Prefer not to respond	n/a	2%
-----------------------	-----	----

(*Institutional Research and Assessment, 2020*)

Data

The next step of the research process was to create dummy variables for each of the three selected high-impact practices (HIPs). Students were asked about their participation in each HIP, with four possible responses: “Have not decided,” “Do not plan to do,” “Plan to do,” and “Done or in progress.” Bivariate correlation analysis requires that the responses be transformed into dichotomous variables, with “Not done or in progress” given the value of 0, and “Done or in progress” given the value of 1. For the variable GENDER, NSSE gave four options, “male” “female,” “other,” or “prefer not to answer.” Due to the low response rate, the latter two categories were merged to create one category of “other/prefer not to answer.”

For the race/ethnicity variables, NSSE categories included White, Black, Asian/Pacific Islander/Native Hawaiian, and Other/two or more races. These were also changed into dichotomous variables and given the following names: WHITE, BLACK, ASIAN, LATINO, with 0 given the value of “no,” and 1 being “yes.”

Results: Research Question 1

Research Question 1 (RQ1) was: “Does first-generation student status predict the probability that a college student will participate in selected, optional high-impact practices (faculty-led research, internships, study abroad) at the University of New Hampshire, without controlling for demographic variables?” To answer this question, this study used the predictor variable of student generational status (FIRSTGEN), and outcome variable was participation in the designated HIP: faculty-led research (FACRESEARCH), internship or field-study (INTERNSHIP), and study abroad (STUDYABR).

Faculty-led research. Respondents were asked to indicate if they have done or are in the process of completing... “Work with a faculty member on a research project.” No definition of research project or what faculty involvement entails is given in the survey.

A binary logistic regression was conducted to examine whether first-generation student status had a significant effect on the odds of participating in faculty-led research. The reference category for FACRESEARCH was 0 (did not participate).

The model was evaluated based on an alpha of .01. The overall model was significant, $\chi^2(1) = 15.77, p < .001$, suggesting that being a first-generation student had a significant effect on the odds participating in faculty-led research. McFadden's R-squared was calculated to examine the model fit, where values greater than .2 are indicative of models with excellent fit (Louviere et al., 2000). The McFadden R-squared value calculated for this model was 0.00. The effect of being a first-generation student was significant, $\beta = -0.35$, odds ratio (OR) = 0.71, $p < .001$, indicating that being a first-generation student decreases the odds of participating in faculty-led research by approximately 29.44% relative to a non-first-generation student.

Table 4 summarizes the results of the regression model.

Table 4 Logistic Regression Results with FIRSTGEN Predicting FACRESEARCH

Variable	β	SE	χ^2	p	OR	99.00% CI
(Intercept)	-0.47	0.05	103.70	< .001	-	-
FIRSTGEN first-generation	-0.35	0.09	15.46	< .001	0.71	[0.56, 0.89]

Note. $\chi^2(1) = 15.77, p < .001$, McFadden $R^2 = 0.004$.

Internships. Students were asked to indicate if they have done or are in the process of completing an internship. Did you... “Participate in an internship, co-op, field experience, student teaching, or clinical placement.” No definition of internship, co-op, field experience student teaching or clinical placement” was given in the survey, and there is no mention of

minimum number of hours, supervisory requirements, or other criteria that the experience must include to be considered appropriate.

A binary logistic regression was conducted to examine whether first-generation student status had a significant effect on the odds of participating in an internship. The reference category for the variable of INTERNSHIP was 0.

The model was evaluated based on an alpha of .01. The overall model was significant, $\chi^2(1) = 9.38, p = .002$, suggesting that FIRSTGEN had a significant effect on the odds of participating in an internship. McFadden's R-squared was calculated to examine the model fit, where values greater than .2 are indicative of models with excellent fit (Louviere et al., 2000). The McFadden R-squared value calculated for this model was 0.00. The effect of being a first-generation student was significant, $\beta = -0.27, OR = 0.77, p = .002$, indicating that being a first-generation student decreases the odds of participating in an internship by approximately 23.34% relative to the non-first-generation students.

Table 5 summarizes the results of the regression model.

Table 5 *Logistic Regression Results with FIRSTGEN Predicting INTERNSHIP*

Variable	β	SE	χ^2	p	OR	99.00% CI
(Intercept)	0.77	0.05	254.09	< .001	-	-
FIRSTGEN first-generation	-0.27	0.09	9.46	.002	0.77	[0.61, 0.96]

Note. $\chi^2(1) = 9.38, p = .002, McFadden R^2 = 0.003$.

Study Abroad. Students were asked to indicate if they have done or are in the process of studying abroad. Did you... “Participate in a study abroad program.” There is no definition of study abroad given, or any minimum duration, in order to be considered a study abroad program.

A binary logistic regression was conducted to examine whether first-generation student status had a significant effect on the odds of participating in study abroad. The reference category for the variable STUDYABR was 0.

The model was evaluated based on an alpha of .01. The overall model was significant, $\chi^2(1) = 14.86, p < .001$, suggesting that being a first-generation student had a significant effect on the odds of studying abroad. McFadden's R-squared was calculated to examine the model fit, where values greater than .2 are indicative of models with excellent fit (Louviere et al., 2000). The McFadden R-squared value calculated for this model was 0.00. The effect of being a first-generation student was significant, $\beta = -0.38, OR = 0.68, p < .001$, indicating that being a first-generation student decreases the odds of participating in study abroad by approximately 31.61% relative to the non-first-generation students.

Table 6 summarizes the results of the regression model.

Table 6 *Logistic Regression Results with FIRSTGEN Predicting STUDYABR*

Variable	β	SE	χ^2	p	OR	99.00% CI
(Intercept)	-0.99	0.05	386.07	< .001	-	-
FIRSTGEN first-generation	-0.38	0.10	14.35	< .001	0.68	[0.53, 0.89]

Note. $\chi^2(1) = 14.86, p < .001, McFadden R^2 = 0.005$.

Results: Research Question 2

Research Question 2 is, “Does participation in faculty-led research, internships, or study abroad differ when controlling for demographic characteristics such as gender and race” when predicting the probability that a college student will participate in selected, optional high-impact practices (faculty-led research, internships, study abroad) at the University of New Hampshire.

Faculty-Led Research. A binary logistic regression was conducted to examine whether the variables of FIRSTGEN, GENDER_ID, WHITE, BLACK, ASIAN, and LATINO had a significant effect on the odds of participating in faculty-led research. The reference category for variable FACRESEARCH was 0. The assumption of absence of multicollinearity was examined.

Variance Inflation Factors (VIFs) were calculated to detect the presence of multicollinearity between predictors. High VIFs indicate increased effects of multicollinearity in the

model. VIFs greater than 5 are cause for concern, whereas VIFs of 10 should be considered the maximum upper limit (Menard, 2009). All predictors in the regression model have VIFs less than 10.

Table 7 presents the VIF for each predictor in the model.

Table 7 Variance Inflation Factors for *FIRSTGEN*, *GENDER_ID*, *WHITE*, *BLACK*, *ASIAN*, and *LATINO*

Variable	VIF
FIRSTGEN	1.01
GENDER_ID	1.03
WHITE	1.82
BLACK	1.07
ASIAN	1.56
LATINO	1.21

The model was evaluated based on an alpha of .01. The overall model was significant, $\chi^2(7) = 22.94, p = .002$, suggesting that *FIRSTGEN*, *GENDER_ID*, *WHITE*, *BLACK*, *ASIAN*, and *LATINO* had a significant effect on the odds of participating in faculty-led research. McFadden's R-squared was calculated to examine the model fit, where values greater than .2 are indicative of models with excellent fit (Louviere et al., 2000). The McFadden R-squared value calculated for this model was 0.01. The effect of being a first-generation student was significant, $\beta = -0.39, OR = 0.68, p < .001$, indicating that being a first-generation student decreases the odds of participating in faculty-led research by approximately 32.21% relative to the non- first-generation students. The effect of the Woman category of *GENDER_ID* was not significant, $\beta = -0.05, OR = 0.95, p = .626$, indicating that identifying as a Woman did not have a significant effect on the odds of participating in faculty-led research. The effect of the Other/Prefer not to respond category of *GENDER_ID* was not significant, $\beta = 0.68, OR = 1.98, p = .074$, indicating that identifying as Other/Prefer not to respond category of *GENDER_ID* did not have a significant effect on the odds participating in faculty-led research. The effect of identifying as White was not significant, $\beta = -0.27, OR = 0.76, p = .144$, indicating

that identifying as White did not have a significant effect on the odds of participating in faculty-led research. The effect of identifying as Black was not significant, $\beta = 0.20$, $OR = 1.22$, $p = .776$, indicating that identifying as Black did not have a significant effect on the odds of participating in faculty-led research. The effect of identifying as Asian was not significant, $\beta = -0.33$, $OR = 0.72$, $p = .243$, indicating that identifying as Asian did not have a significant effect on the odds of participating in faculty-led research. The effect of identifying as Latino was not significant, $\beta = 0.09$, $OR = 1.10$, $p = .825$, indicating that identifying as Latino did not have a significant effect on the odds participating in faculty-led research.

Table 8 summarizes the results of the regression model.

Table 8 *Logistic Regression Results with FIRSTGEN, GENDER_ID, WHITE, BLACK, ASIAN, and LATINO Predicting FACRESEARCH*

Variable	β	SE	χ^2	p	OR	99.00% CI
(Intercept)	-0.19	0.19	0.98	.323	-	-
FIRSTGEN first-generation	-0.39	0.10	14.18	< .001	0.68	[0.52, 0.88]
GENDER_ID Woman	-0.05	0.10	0.24	.626	0.95	[0.74, 1.22]
GENDER_ID Other/Prefer not to respond	0.68	0.38	3.19	.074	1.98	[0.74, 5.30]
WHITE1	-0.27	0.18	2.14	.144	0.76	[0.48, 1.23]
BLACK1	0.20	0.70	0.08	.776	1.22	[0.20, 7.36]
ASIAN1	-0.33	0.29	1.36	.243	0.72	[0.34, 1.50]
LATINO1	0.09	0.42	0.05	.825	1.10	[0.37, 3.23]

Note. $\chi^2(7) = 22.94$, $p = .002$, McFadden $R^2 = 0.008$.

Internships. A binary logistic regression was conducted to examine whether the variables FIRSTGEN, GENDER_ID, WHITE, BLACK, ASIAN, and LATINO had a significant effect on the odds of participating in an internship. The reference category for INTERNSHIP was 0. The assumption of absence of multicollinearity was examined.

Variance Inflation Factors (VIFs) were calculated to detect the presence of multicollinearity between predictors. High VIFs indicate increased effects of multicollinearity in the model. VIFs greater than 5 are cause for concern, whereas VIFs of 10 should be considered

the maximum upper limit (Menard, 2009). All predictors in the regression model have VIFs less than 10.

Table 9 presents the VIF for each predictor in the model.

Table 9 *Variance Inflation Factors for FIRSTGEN, GENDER_ID, WHITE, BLACK, ASIAN, and LATINO*

Variable	VIF
FIRSTGEN	1.01
GENDER_ID	1.03
WHITE	1.93
BLACK	1.07
ASIAN	1.67
LATINO	1.21

The model was evaluated based on an alpha of .01. The overall model was significant, $\chi^2(7) = 28.30, p < .001$, suggesting that FIRSTGEN, GENDER_ID, WHITE, BLACK, ASIAN, and LATINO had a significant effect on the odds of observing the 1 category of INTERNSHIP. McFadden's R-squared was calculated to examine the model fit, where values greater than .2 are indicative of models with excellent fit (Louviere et al., 2000). The McFadden R-squared value calculated for this model was 0.01. The effect of identifying as a first-generation student was significant, $\beta = -0.28, OR = 0.75, p = .005$, indicating that being a first-generation student decreases the odds of participating in an internship by approximately 24.63% relative to the non-first-generation students. The effect of the Woman category of GENDER_ID was significant, $\beta = 0.34, OR = 1.41, p < .001$, indicating that identifying as a Woman increases the likelihood of participating in an internship by approximately 40.75% relative to the Man category of GENDER_ID. The effect of the Other/Prefer not to respond category of GENDER_ID was not significant, $\beta = 0.06, OR = 1.06, p = .874$, indicating that observing the Other/Prefer not to respond category of GENDER_ID did not have a significant effect on the odds of participating in an internship. The effect of identifying as White was not significant, $\beta =$

0.10, OR = 1.10, $p = .613$, indicating that identifying as White did not have a significant effect on the odds of participating in an internship. The effect of identifying as Black was also not significant, $\beta = -0.70$, OR = 0.50, $p = .320$, indicating that identifying as Black did not have a significant effect on the odds of participating in an internship. The effect of identifying as Asian was not significant, $\beta = -0.38$, OR = 0.68, $p = .168$, indicating that identifying as Asian did not have a significant effect on the odds of participating in an internship. The effect identifying as Latino was not significant, $\beta = 0.13$, OR = 1.13, $p = .771$, indicating that identifying as Latino did not have a significant effect on the odds of participating in an internship.

Table 10 summarizes the results of the regression model.

Table 10 *Logistic Regression Results with FIRSTGEN, GENDER_ID, WHITE, BLACK, ASIAN, and LATINO Predicting INTERNSHIP*

Variable	<i>B</i>	<i>SE</i>	χ^2	<i>p</i>	<i>OR</i>	99.00% CI
(Intercept)	0.48	0.19	6.04	.014	-	-
FIRSTGEN first-generation	-0.28	0.10	7.96	.005	0.75	[0.58, 0.98]
GENDER_ID Woman	0.34	0.10	12.50	<.001	1.41	[1.10, 1.81]
GENDER_ID Other/Prefer not to respond	0.06	0.39	0.03	.874	1.06	[0.39, 2.93]
WHITE1	0.10	0.19	0.26	.613	1.10	[0.68, 1.79]
BLACK1	-0.70	0.70	0.99	.320	0.50	[0.08, 3.02]
ASIAN1	-0.38	0.28	1.90	.168	0.68	[0.33, 1.40]
LATINO1	0.13	0.43	0.08	.771	1.13	[0.37, 3.47]

Note. $\chi^2(7) = 28.30$, $p < .001$, McFadden $R^2 = 0.01$.

Study Abroad. A binary logistic regression was conducted to examine whether the variables of FIRSTGEN, GENDER_ID, WHITE, BLACK, ASIAN, and LATINO had a significant effect on the odds of studying abroad. The reference category for STUDYABR was 0. The assumption of absence of multicollinearity was examined.

Variance Inflation Factors (VIFs) were calculated to detect the presence of multicollinearity between predictors. High VIFs indicate increased effects of multicollinearity in the model. VIFs greater than 5 are cause for concern, whereas VIFs of 10 should be considered the

maximum upper limit (Menard, 2010). All predictors in the regression model have VIFs less than 10. Table 11 presents the VIF for each predictor in the model.

Table 11 *Variance Inflation Factors for FIRSTGEN, GENDER_ID, WHITE, BLACK, ASIAN, and LATINO*

Variable	VIF
FIRSTGEN	1.02
GENDER_ID	1.04
WHITE	1.83
BLACK	1.07
ASIAN	1.54
LATINO	1.24

The model was evaluated based on an alpha of .01. The overall model was significant, $\chi^2(7) = 63.49, p < .001$, suggesting that FIRSTGEN, GENDER_ID, WHITE, BLACK, ASIAN, and LATINO had a significant effect on the odds of studying abroad. McFadden's R-squared was calculated to examine the model fit, where values greater than .2 are indicative of models with excellent fit (Louviere et al., 2000). The McFadden R-squared value calculated for this model was 0.03. The effect of being a first-generation student was significant, $\beta = -0.43, OR = 0.65, p < .001$, indicating that being a first-generation student decreases the odds of studying abroad by approximately 34.95% relative to the non-first-generation students. The effect of identifying as a Woman was significant, $\beta = 0.78, OR = 2.18, p < .001$, indicating that identifying as a Woman increases the likelihood of participating in study abroad by approximately 118.03% relative to the Man category of GENDER_ID. The effect of the Other/Prefer not to respond category of GENDER_ID was not significant, $\beta = 0.73, OR = 2.09, p = .080$, indicating that identifying as Other/Prefer not to respond did not have a significant effect on the odds of studying abroad. The effect of identifying as White was not significant, $\beta = -0.35, OR = 0.70, p = .085$, indicating that identifying as White did not have a significant effect on the odds of studying abroad. The effect of the identifying as Black was not

significant, $\beta = 0.47$, $OR = 1.60$, $p = .530$, indicating that identifying as Black did not have a significant effect on the odds of participating in study abroad. The effect of identifying as Asian was not significant, $\beta = -0.25$, $OR = 0.78$, $p = .430$, indicating that identifying as Asian did not have a significant effect on the odds of studying abroad. The effect of identifying as Latino was not significant, $\beta = 0.56$, $OR = 1.75$, $p = .201$, indicating that identifying as Latino did not have a significant effect on the odds of participating in study abroad.

Table 12 summarizes the results of the regression model.

Table 12 *Logistic Regression Results with FIRSTGEN, GENDER_ID, WHITE, BLACK, ASIAN, and LATINO Predicting STUDYABR*

Variable	β	SE	χ^2	p	OR	99.00% CI
(Intercept)	-1.31	0.22	36.77	< .001	-	-
FIRSTGEN first-generation	-0.43	0.12	12.71	< .001	0.65	[0.48, 0.89]
GENDER_ID Woman	0.78	0.12	41.45	< .001	2.18	[1.60, 2.98]
GENDER_ID Other/Prefer not to respond	0.73	0.42	3.07	.080	2.09	[0.71, 6.14]
WHITE1	-0.35	0.20	2.96	.085	0.70	[0.42, 1.19]
BLACK1	0.47	0.75	0.40	.530	1.60	[0.23, 11.10]
ASIAN1	-0.25	0.32	0.62	.430	0.78	[0.34, 1.77]
LATINO1	0.56	0.44	1.63	.201	1.75	[0.57, 5.42]

Note. $\chi^2(7) = 63.49$, $p < .001$, McFadden $R^2 = 0.03$.

Summary

This chapter has described the methods used in this investigation and it has reported the results of the statistical analysis. The answer to the first research question, “Does first-generation student status predict the probability that an undergraduate student will participate in selected, optional high-impact practices (faculty-led research, internships, study abroad) at the University of New Hampshire, without controlling for demographic variables,” is yes, it does. First-generation student status serves as a statistically significant predictor of participation for each of our three HIPs for the average undergraduate student at UNH. The degree to which HIP participation predicts participation, though, varies depending on which HIP is examined. First-

generation student status is a stronger predictor for participation in faculty-led research and study abroad than of participation in an internship. The fact that the average first-generation student at UNH is 29-32% less likely to participate in one of these HIPs is sobering and deserving of institutional attention, but not surprising.

The answer to the second research question, “Does participation in faculty-led research, internships, or study abroad differ when controlling for demographic characteristics such as gender and race,” is more nuanced. When controlling for generational status, gender, and race, the results vary by HIP.

For faculty-led research, being a first-generation student decreases the likelihood of participating in faculty-led research by approximately 29% relative to non-first-generation students ($\beta = -0.39$, OR = 0.68). However, when controlling for gender and race, there is no statistically significant difference.

Being a first-generation student decreases the likelihood of participating in an internship experience by approximately 23% relative to the non-first-generation students ($\beta = -0.35$, OR = 0.371). When examining participation in internships and controlling for gender and race, identifying as female is the only demographic variable that results in a statistically significant finding. Identifying as female ($\beta = 0.34$, OR = 1.41) increases the likelihood of participating in an internship by approximately 41% relative to those identifying as male. When controlling for race/ethnicity, there are no statistically significant differences.

Being a first-generation student decreases the likelihood of studying abroad by approximately 32% relative to non-first-generation students ($\beta = -0.38$, OR = 0.68). When examining participation in study abroad and controlling for gender and race, identifying as female is the only demographic variable that results in a statistically significant finding.

Identifying as female increases the odds of studying abroad by approximately 118% relative to those who identify as male ($\beta = 0.78$, OR = 2.18). When controlling for race/ethnicity, there are no statistically significant differences.

A discussion of these findings, what they mean, and what scholar literature offers to support them, will be offered in chapter 5.

V. CONCLUSION, DISCUSSION, AND RECOMMENDATIONS

This chapter begins with a brief overview of the study before presenting findings, addressing each research question. Both research questions will be answered by presenting the findings, their implications, and connections to theory and literature. The chapter continues with limitations of the study and concludes policy recommendations and recommendations for future research.

This study examined differences between first-generation college students and their continuing generation counterparts at UNH in their participation in three selected high-impact practices: faculty-led research, internships, and study abroad. This study also examined other variables—gender and race/ethnicity—as possible predictors of participation in HIPs.

Findings

This study posed two research questions:

1. Does first-generation student status predict the probability that a college student will participate in selected, optional high-impact practices (faculty-led research, internships, study abroad) at the University of New Hampshire, without controlling for demographic variables?
2. Does participation in faculty-led research, internships, or study abroad differ when controlling for demographic characteristics such as gender and race?

Logistic regression analyses were conducted first to address RQ1, “Does first-generation student status predict the probability that a college student will participate in selected, optional high-impact practices (faculty-led research, internships, study abroad) or HIPs at the University of New Hampshire, without controlling for demographic variables?” Participation in each HIP as the predictor or independent variable, and generational status as the sole dependent variable.

Results indicate that for the average UNH student, generational status matters, and can be used as a predictor of whether they will participate in certain HIPs—faculty-led research, internships, or study abroad. First-generation students are significantly less likely to participate in each of the three of HIPs examined in this study.

The average first-generation student at UNH is about 29% less likely than their non-first-generation peers to participate in faculty-led research. This is a statistically significant finding at the $p < .05$ level ($\beta = -0.35$, OR = 0.71). An odds ratio (OR) of 0.71 means that the estimated odds of a first-generation college student participating in faculty-led research (vs. a non-first-generation student) are $1 - 0.71$ or 29%. With roughly 25% of the student population of UNH identifying as first-generation, this type of disadvantage, before considering any other barrier or challenge, is disheartening. Faculty-led research can lead to other opportunities, greater connection with faculty, greater appreciation for scholarly research and its role in academia, as well as high-quality nominations for awards or scholarships (Garriott, 2020). Students who have engaged with faculty in the research process have reported improvements in formulating ideas and contributing to academic knowledge, and integrating into the academic community (Demetriou et al., 2017). These outcomes are especially vital to anyone seeking to further their education by attending graduate school. The long-term implications of first-generation students being 29% less likely to participate in faculty-led research could be reduced access to alumni networks, strong letters of recommendation, competitive graduate programs, scholarships, fellowships, and awards.

First generation students at UNH are roughly 23% less likely to participate in an internship, which is also statistically significant at the $p < .05$ level ($\beta = -0.27$, OR = 0.77). An OR of 0.371 means that the estimated odds of a first-generation college student participating in

an internship (vs. a non-first-generation student) are $1 - 0.77$ or about 23%. This is slightly higher than the estimated odds or likelihood of participating in faculty-led research or study abroad, the other HIPs in this study. Internships and field experiences are more frequently required in undergraduate curricula at UNH than faculty-led research or studying abroad. In academic programs that lead to certification or licensure (teaching, nursing, occupational therapy), internships and field work are a vital part of the educational process. A reduced likelihood of participation in an internship could put a first-generation student at a disadvantage in their job search upon graduation, as participation in an internship has been found to increase the odds of starting new job after graduation by nearly 200% (Miller et al., 2018). Research has also suggested that students who have participated in internships while in college report greater academic engagement with faculty and supervisors, and a stronger ability to connect coursework to personal and professional experiences (Miller et al., 2011). As with faculty-led research, the implications of not participating in this HIP could result in first-generation students having fewer strong relationships with faculty and mentors, weaker letters of recommendation, and decreased access to employment opportunities or competitive graduate school opportunities.

First-generation students are about 32% less likely than their non-first-generation peers to study abroad. This is a statistically significant finding at the $p < .05$ level ($\beta = -0.38$, OR = 0.68). An OR of 0.68 means that the estimated odds of a first-generation college student participating in study abroad (vs. a non-first-generation student) are $1 - 0.68$ or 32%. An obvious benefit of participating in a study abroad program is the increased global awareness and intercultural competency that the experience provides, and in some cases, increase foreign language proficiency as well (Gonyea, 2008). Studying abroad has also been associated with greater self-confidence, self-advocacy, and emotional resilience (Demetriou et al., 2017). In addition, study

abroad participants have scored higher on measures of civic engagement and philanthropy, and report higher levels of reflective learning than their peers who have not studied abroad. These are skills and outcomes that could improve career or graduate school readiness, and lead to greater personal and civic engagement for first-generation students (Gonyea, 2008; Paige et al., 2009). Decreased access to study abroad opportunities could have lifelong effects for first-generation college students. However, these barriers can be overcome with advising and mentorship designed specifically to address the concerns of first-generation students and their families (Rausch, 2017).

These results are not surprising, and are consistent with the scholarly literature that has suggested that having a parent who has completed a bachelor's degree provides a significant advantage to undergraduate students (Davis, 2010; Ishitani, 2006; Soria & Stebleton, 2012; Wilbur & Roscigno, 2016). First-generation students have been found to have lower first-to-second year retention, and to participate in academically engaging activities less frequently than their non-first-generation peers (Soria & Stebleton, 2012). First-generation students also face more out-of-classroom barriers such as increased distraction from financial challenges and greater need for employment, greater family responsibilities, and lack of confidence or skills related to reaching out to and forming strong relationships with peers or faculty (Jehangir, 2010). At a national level, first-generation students are more likely to also be balancing language and cultural barriers as well (Stebleton & Jehangir, 2020). While these barriers may not be the case for the majority of first-generation students at UNH given UNH's demographic composition, there is a steadily growing population of students whose parents are immigrants, or for whom English is not their primary language at home.

The disadvantage that first-generation college students face could last well beyond the college years. Access to strong mentorship from faculty and advisors can affect graduate school professional networking, and career opportunities, which could have long-term consequences (Garriott, 2020; Tate et al., 2015).

Logistic regression analysis was then conducted to address RQ2, “Does participation in faculty-led research, internships, or study abroad differ when controlling for demographic characteristics such as gender and race?” Participation in each HIP as the predictor variable, but with race/ethnicity and gender identity added as outcome or dependent variables. The purpose of introducing control variables in regression is to eliminate possible alternative explanations for the results (Salkind & Frey, 2019). When examining the HIP participation data and controlling for gender and race/ethnicity, the findings show that gender identity does provide an alternative explanation for some of the results, and has a larger effect on who participates in internships and study abroad opportunities than who participates in faculty-led research.

When examining the effect of gender on participation in internships, identifying as a Woman was significant, $\beta = 0.34$, OR = 1.41. An OR of 1.41 means that the estimated odds of a female college student participating in an internship (vs. a male student) are 1.41 – 1, or 41%. Identifying as a Woman increases the likelihood of participating in an internship by approximately 41% relative to men. This finding may be a result of the academic programs that lead to certification or licensure (teaching, nursing, occupational therapy) which require internships or field work, have been traditionally dominated by women.

When examining the effect of gender on participation in study abroad, identifying as a Woman was significant, $\beta = 0.78$, OR = 2.18. An OR of 2.18 means that the estimated odds of a female college student participating in study abroad (vs. a male student) are 2.18 – 1, or 1.18%,

indicating that identifying as a Woman increases the likelihood of participating in study abroad by approximately 118% relative to the men. Women participating in study abroad programs at much higher rates than their male peers is not unique to UNH, and can be considered a national trend and cause for concern (Hurst, 2019; Shirley, 2006). Research has pointed to students' choice of major, social class, and family history/family support as possible explanations for the gender disparity (Tate et al., 2015).

When examining the HIP participation data and holding race constant, there was no statistically significant difference in participation for all three HIPs examined in this study. This stands in direct contradiction to what is found in the scholarly literature, nationally. It is quite common to find first-generation student status used as a “proxy” for identifying as a student of color, as there is a great deal of overlap of these two groups nationally (Davis, 2010). First-generation students hold any number of other identities (urban, rural, parent, low income, working class, immigrant employed), and their needs should not be addressed without taking these into consideration (Garriott, 2020; Nguyen & Nguyen, 2018; Quaye et al., 2019). A probable explanation for the results being so different in this research is likely attributed to the predominantly White and middle-class population at UNH, and the percentage of students of color who participate in HIPs is very low yet proportional to the population.

Recommendations for Policy and Practice

The recommendations based on the findings and conclusion derived from the research focus on considerations for policy and practice that could enhance and promote targeted university action intended to increase first-generation student participation in these three high-impact practices.

Researchers have pointed out that while institutions are wise to focus on issues of retention and persistence, graduation rates in the U. S. have not significantly improved over the past few decades (Cataldi et al., 2018; Seidman, 2005; Swail, 2014; Tinto, 2012). This leaves institutions scrambling to find solutions that will lead to increases in student persistence for specific populations. The strategy to focus on those subgroups of students who have had the lowest rates of persistence may be a logical recommendation—raising their graduation rates would naturally increase the institutional overall averages. In a climate of limited resources and diminished state funding, this would appear to be a very wise investment (McNair et al., 2016).

When promoting the value of student engagement through HIPs to first-generation students, it is important to examine whose values are being centered in the marketing materials and outreach efforts. In their HIP marketing and recruitment efforts, institutions may be unintentionally centering White, middle class, individualistic values of independence and personal growth over values of more collectivist-minded communities that value cooperation, commitment to community, and selflessness (Stephens, Townsend, et al., 2012). Study abroad program administrators may be unintentionally excluding some first-generation students by promoting studying abroad as a quest to find oneself or seek adventure, rather than as a way to build one's network or give back to one's community.

NSSE should not be considered the only source of information about participation in HIPs for any given campus. For those HIPs that are tied to specific courses (such as first-year seminars, study abroad, writing intensive courses, and capstone experiences) institutions would do well to use enrollment data, academic success software, and other sources that can track students throughout their undergraduate experience. First-to-second year retention, demographic data, academic achievement, number of academic advising appointments, and other factors can

be monitored, allowing the institution to conduct additional research on who participates in HIPs and who does not. This would allow the institution to assess progress in meeting predetermined learning outcomes for particular HIPs, disaggregating outcome data by student demographic variables. Assessments must move past inventories and checking boxes—self-reported “participated” or “did not participate”—to review campus offerings and make sure programs or initiatives are meeting institutional standards of quality and achieving the desired learning outcomes. Additionally, individual staff and faculty who are responsible for managing HIPs should be encouraged and supported to use quantitative and qualitative data to evaluate their programs, and to explore what barriers still exist for underrepresented groups. Quantitative data provides support for evidence-based decisions, and qualitative research can put a face on the numbers, providing narrative storytelling and context for that data.

A third way to increase student engagement and help first-generation students overcome barriers to participation in HIPs is an investment in academic advising. Research demonstrates the importance of advisors and mentors in student participation in HIPs and in student persistence (Goldstein & Lopez, 2021). One of the strongest arguments for increased academic advising contact comes from a 2013 study by Swecker et al. (2013) that sought to investigate the relationship between the number of individual advising appointments that first-year, first-generation students had with their (professional) academic advisor, and their likelihood to persist to sophomore year. For every meeting with an academic advisor, the researchers found a 13% increase in the likelihood that the student would persist to their second year. The institution in this study used an academic advising model that places the responsibility for scheduling appointments on the advisor, not the student. This model has been called “intrusive” or “proactive” advising, and calls for academic advising to be more than transactional in nature, to

include discussions of transition, adjustment, time management, etc., beyond the usual discussions of curriculum, course choices, and registration (Swecker et al., 2013). Participation in HIPs and other opportunities can be encouraged in a very individualized manner by introducing them early and revisiting them often as a trusting advising relationship is developed (Goldstein & Lopez, 2021).

Such an investment in academic advising could take the form of hiring additional professional staff and thereby reducing advising loads so that students can meet with advisors for more than just a pre-registration appointment once per semester. It can also take the form of professional development and software platforms for advisors, particularly faculty advisors, so that they understand the important role they play in a student's decision-making process, and to ensure that they know what's available on their campus and how it is related to their students' educational and professional goals, and share that information with colleagues in related areas. The key feature in advising, as well as first year seminars or mentoring programs, is the ongoing opportunity for students to build meaningful relationships with faculty, staff, and their peers (Stebbleton & Jehangir, 2016). Those relationships are necessary in building the trust that is a prerequisite for students to be open to experiences that will challenge them, such as engaging in HIPs like faculty-led research, internships, and study abroad (Goldstein & Lopez, 2021).

A fourth recommendation would be to not only view HIP participation as a means to an end (retention) but as a pathway to other personally and professionally enriching opportunities for students. Participation in faculty-led research, for example, could serve as a strong introduction to graduate and professional school opportunities for first-generation students who may not have considered an advanced degree.

A fifth recommendation is for UNH to seek an official designation as a “First-Gen Forward” institution. This designation was created in 2019 by The Center for First Generation Student Success (an initiative of NASPA: Student Affairs Administrators in Higher Education). The Center’s mission statement asserts that “The Center is the premier source of evidence-based practices, professional development, and knowledge creation for the higher education community to advance the success of first-generation students” (*The Center for First-Generation Student Success*, 2022, p. 1).” The benefits of this designation include receiving public recognition and identification as a “First-Gen Forward” institution, having access to official designation logo and marketing materials, gaining access to professional development opportunities for deeper engagement with the higher education community, and accessing other resources of the Center.

Several of UNH’s peer institutions have achieved this designation including Keene State College, University of Connecticut, University of Massachusetts Amherst, University of Massachusetts Lowell, University of North Carolina Charlotte, and University of Albany. In order to qualify and apply for this institutional designation, the university must be accredited, be an institutional member of NASPA, secure the support and commitment of senior leadership, designate faculty or staff representatives, and commit to fulfilling requirements of participation such as reporting results and providing professional development for faculty and staff.

Lastly, no assessment of HIPs would be complete without a deep exploration of institutional barriers that may be exacerbating equity gaps in student participation. Deficit-minded explanations that place responsibility for low participation rates of particular groups must be challenged. Excuses such as “those students work too much to be able to commit to research” or “their SAT/GPA make them ineligible for study away” need to be replaced with

questions such as “what institutional barriers exist to participating in HIPs” or “how to do we inform and encourage students to explore opportunities to do research with faculty?” Reviewing institutional policies and procedures—such as minimum GPA requirements for participation, forms and applications that require students to spend days tracking down faculty and administrators in person or by email for endorsements or signatures, or reviewing how UNH markets to and communicates with students about HIPs and other opportunities—should be reviewed and assessed for bias and deficit-minded assumptions (Finley & McNair, 2013).

Recommendations for Further Study

The findings presented in this study provide a snapshot of what is happening in a particular moment—the decisions a specific population of students at the University of New Hampshire made regarding participation in HIPs. These findings do not tell the institution why the students made those choices or what factors played a role in the students’ decisions to participate in faculty-led research, apply for an internship, or seek out a study abroad opportunity. Qualitative or mixed-methods research would complement this study, providing a fuller, richer understanding of the lived experience of average UNH first-generation student, and their decision-making regarding participating in HIPs.

Another area that calls for further exploration is the intersection of generational status with family income level. Because this study was a secondary analysis, the research is bound to the existing instrument and the demographic data that was collected with it. Consequently, family income, socioeconomic status, or eligibility for federal financial aid known as a Pell Grant was not included. Family income data would be a compelling variable to add to the list of independent variables used in this study. Low-income status is highly correlated with lower rates of persistence in higher education (Seidman, 2005; Tinto, 2004). Other research has shown that

social class, family income, and generational status all influence persistence to varying degrees (Wilbur & Roscigno, 2016). The NSSE instrument employed by the UNH does not collect this data, which leaves this area open for further exploration.

Obtaining other variables would also add more clarity to this study. Other HIPs could be examined and explored. Additional demographic data such as students' major, college, or in-state/out-of-state, age, disability, veteran or student athlete status might provide administrators more insight into how the institution can support more participation and reduce barriers to deeper, more engaged learning.

And finally, this study utilized data that was collected from UNH students who reached senior status in each of the spring semesters of 2016, 2017, 2018, and 2019. Due to the global pandemic declaration in spring semester 2020, student exposure to or opportunities for participation in HIPs may be very different in subsequent years. Replication of this study using data collected in spring 2023-2025, as the COVID cohorts reach senior standing, would examine the impact of the disruption caused by the pandemic and its effects on participation in HIPs. This could yield valuable information on access to HIPs under various COVID-related conditions, and on how these conditions differed for various populations.

Limitations

One perceived limitation of using NSSE data is the assumption that answers from non-respondents might vary significantly from respondents, leading to biased results. For example, are only high achieving or highly engaged students willing to answer questions about their level of student engagement or how often they study? Kuh (2001) addressed this concern directly by conducting phone interviews with non-respondents ($n = 553$) from 21 different institutions that participated in the 2001 administration of the NSSE survey. The research team employed

multivariate analysis of variance to compare answers of respondents to non-respondents. Their analysis showed that overall, those who did not take the survey are slightly more engaged in their college education, leaving the researchers to conclude that there is no statistical significant difference between the two groups, and to speculated that perhaps the non-respondents perceive themselves as too busy to take the time to take surveys (Kuh, 2001).

Another limitation is that NSSE survey results may not be generalizable to all college students in the U.S. although there is a high degree of generalizability when examining the data from a particular institution or even type of institution. Pike (2006) concluded that institutions would do well to use their own NSSE data to inform programmatic changes and identify areas for strategic improvement, but that NSSE should not be used to compare institutions to each other, as has been promoted by NSSE and other higher education thought leaders (Pike, 2006). This study was an attempt to adhere to Pike's recommendation.

Conclusion

This study sought to examine the differences between first-generation college students and their continuing generation counterparts in their participation in three selected high-impact practices: faculty-led research, internships, and study abroad, and has found statistically significant differences between the two groups.

This research study has advanced an argument for institutions to invest in student services and programming that addresses the unique needs of first-generation college students, regardless of other identities that they may have, as a means of increasing student engagement and participation in HIPs. It is recommended that colleges and universities invest in policies and programs that appeal to and engage first-generation students, who are significantly less likely to participate in HIPs, as a strategy to increase overall retention rates for an institution. There are

considerable longer-term advantages for the students as well. Increasing the likelihood of participation in HIPs could result in personal and professional gains for students such as increased access to graduate school and greater civic and community engagement.

High-impact practices are not a silver bullet or the answer to institutional disparities. However, by increasing first-generation student access to and participation in HIPs, both the student and the institution could realize a variety of positive outcomes.

REFERENCES

- Astin, A. W. (1977). *Four critical years* (1st ed.). Jossey-Bass Publishers.
- Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Development*, 40(5), 12.
- Boeckenstedt, J. (2022, March 22). Will your college survive the demographic cliff? *The Chronicle of Higher Education*. <https://www.chronicle.com/article/will-your-college-survive-the-demographic-cliff>
- Braxton, J. M. (2000). *Reworking the student departure puzzle*. Vanderbilt University Press.
- Brownell, J. E., & Swaner, L. E. (2010). *Five high-impact practices: Research on learning outcomes, completion, and quality*. Association of American Colleges and Universities. <https://www.aacu.org/publications-research/publications/five-high-impact-practices-research-learning-outcomes-completion>
- Cahalan, M., Perna, L. W., Yamashita, M., Wright-Kim, J., & Jiang, N. (2019). *Indicators of higher education equity in the United States: Historical trend report* (p. 180). The Pell Institute for the Study of Opportunity in Higher Education. http://pellinstitute.org/indicators/reports_2019.shtml
- Carini, R. M., Kuh, G. D., & Klein, S. P. (2006). Student engagement and student learning: Testing the linkages. *Research in Higher Education*, 47(1), 1–32. <https://doi.org/10.1007/s11162-005-8150-9>
- Cataldi, E. F., Bennett, C. T., & Chen, X. (2018). First-generation students: College access, persistence, and postbachelor's outcomes. In *National Center for Education Statistics*. National Center for Education Statistics. <https://eric.ed.gov/?id=ED580935>

- Chickering, A. W., & Gamson, Z. F. (1987). Seven Principles for Good Practice in Undergraduate Education. *AAHE Bulletin*. <https://eric.ed.gov/?id=ED282491>
- Conefrey, T. (2021). Supporting first-generation students' adjustment to college with high-impact practices. *Journal of College Student Retention: Research, Theory & Practice*, 23(1), 139–160. <https://doi.org/10.1177/1521025118807402>
- Covarrubias, R., Romero, A., & Trivelli, M. (2015). Family achievement guilt and mental well-being of college students. *Journal of Child and Family Studies*, 24(7), 2031–2037. <https://doi.org/10.1007/s10826-014-0003-8>
- Davis, J. (2010). *The first-generation student experience: Implications for campus practice, and strategies for improving persistence and success*. Stylus Publishing.
- Demetriou, C., Meece, J., Eaker-Rich, D., & Powell, C. (2017). The activities, roles, and relationships of successful first-generation college students. *Journal of College Student Development*, 58(1), 19–36. <https://doi.org/10.1353/csd.2017.0001>
- Dumais, S. A., & Ward, A. (2010). Cultural capital and first-generation college success. *Poetics*, 38(3), 245–265. <https://doi.org/10.1016/j.poetic.2009.11.011>
- Engel, L. (2017). *Underrepresented students in U.S. study abroad*. IEE Center for Academic Mobility Research and Impact. <http://mobilitytoolkit.ie/wp-content/uploads/2017/12/Underrepresented-Students-and-Study-Abroad.pdf>
- Fechheimer, M., Webber, K., & Kleiber, P. B. (2011). How well do undergraduate research programs promote engagement and success of students? *CBE—Life Sciences Education*, 10(2), 156–163. <https://doi.org/10.1187/cbe.10-10-0130>

- Feigenbaum, K. D., & Smith, R. A. (2020). Historical narratives: Abraham Maslow and Blackfoot interpretations. *The Humanistic Psychologist*, 48(3), 232–243.
<https://doi.org/10.1037/hum0000145>
- Finley, A., & McNair, T. (2013). *Assessing underserved students' engagement in high-impact practices*. Association of American Colleges and Universities.
- Fosnacht, K., Sarraf, S., Howe, E., & Peck, L. (2017). How important are high response rates for college surveys? *The Review of Higher Education*.
<http://www.tcrecord.org/Content.asp?ContentId=22042>
- Garriott, P. O. (2020). A critical cultural wealth model of first-generation and college students' academic and career development. *Journal of Career Development*, 47(1), 80–95.
<https://doi.org/10.1177/0894845319826266>
- Gibbons, M. M., Rhinehart, A., & Hardin, E. (2019). How first-generation college students adjust to college. *Journal of College Student Retention: Research, Theory & Practice*, 20(4), 488–510. <https://doi.org/10.1177/1521025116682035>
- Goldstein, S. B., & Lopez, H. N. (2021). An intersectional investigation of study abroad intent among Latino/a and White first-generation college students. *Frontiers: The Interdisciplinary Journal of Study Abroad*, 33(2), 1–16.
<https://doi.org/10.36366/frontiers.v33i2.534>
- Gonyea, R. M. (2008). *Impact of study abroad on senior year engagement*. 27.
- Gonyea, R. M., & Sarraf, S. (2020). NSSE's quest for quality: Seven lessons in designing a better survey. *Assessment Update*, 32(2), 6–14. <https://doi.org/10.1002/au.30207>
- Groccia, J. E. (2018). What Is student engagement? *New Directions for Teaching and Learning*, 2018(154), 11–20. <https://doi.org/10.1002/tl.20287>

- Hadis, B. F. (2005). Gauging the impact of study abroad: How to overcome the limitations of a single-cell design. *Assessment & Evaluation in Higher Education*, 30(1), 3–19.
<https://doi.org/10.1080/0260293042003243869>
- Hanover Research (2014) *Strategies for improving student retention*.
<https://www.hanoverresearch.com/media/Strategies-for-Improving-Student-Retention.pdf>
- Huang, F. L., & Moon, T. R. (2013). What are the odds of that? A primer on understanding logistic regression. *Gifted Child Quarterly*, 57(3), 197–204.
<https://doi.org/10.1177/0016986213490022>
- Hurst, A. L. (2019). Class and gender as predictors of study abroad participation among US liberal arts college students. *Studies in Higher Education*, 44(7), 1241–1255.
<https://doi.org/10.1080/03075079.2018.1428948>
- Institutional Research and Assessment Home*. (2020). University of New Hampshire.
https://public.tableau.com/app/profile/unhira/viz/UndergraduateEnrollment_15701159972360/EnrollmentTrends
- IPEDS Data Center*. (2020).
<https://nces.ed.gov/ipeds/datacenter/institutionprofile.aspx?unitId=183044&goToReportId=6>
- Ishitani, T. T. (2006). Studying attrition and degree completion behavior among first-generation college students in the United States. *Journal of Higher Education*, 77(5), 861–885.
- Jack, A. A. (2014). Culture shock revisited: The social and cultural contingencies to class marginality. *Sociological Forum*, 29(2), 453–475.

- Jackson, B. A., & Reynolds, J. R. (2013). The price of opportunity: Race, student loan debt, and college achievement. *Sociological Inquiry*, 83(3), 335–368.
<https://doi.org/10.1111/soin.12012>
- Jehangir, R. (2010). Stories as knowledge: Bringing the lived experience of first-generation college students into the academy. *Urban Education*, 45(4), 533–553.
<https://doi.org/10.1177/0042085910372352>
- Jenny, S. E., Chung, J. J., Rademaker, S. M., & Almond, E. C. (2017). University Students' Perceived and Experienced Challenges and Benefits to Studying Abroad: Gender, Class Year, and Length of Experience Comparisons. *Journal of Educational Research*, 22.
- Johnson, S. R., & Stage, F. K. (2018). Academic engagement and student success: Do high-impact practices mean higher graduation rates? *The Journal of Higher Education*, 89(5), 753–781. <https://doi.org/10.1080/00221546.2018.1441107>
- Kelchen, R. (2019). *Higher education accountability*. Johns Hopkins University Press.
<http://web.a.ebscohost.com/ehost/ebookviewer/ebook?sid=5c3bdf71-2da1-4d47-b070-aae041cd08dd%40sessionmgr4006&vid=0&format=EB>
- Kilgo, C. A., Ezell Sheets, J. K., & Pascarella, E. T. (2015). The link between high-impact practices and student learning: Some longitudinal evidence. *Higher Education*, 69(4), 509–525. <https://doi.org/10.1007/s10734-014-9788-z>
- Kinzie, J., Gonyea, R., Shoup, R., & Kuh, G. D. (2008). Promoting persistence and success of underrepresented students: Lessons for teaching and learning. *New Directions for Teaching and Learning*, 2008(115), 21–38. <https://doi.org/10.1002/tl.323>
- Kleinbaum, D. G., & Klein, M. (2010). *Logistic Regression*. Springer New York.
<https://doi.org/10.1007/978-1-4419-1742-3>

- Kuh, G. D. (2001). *The National Survey of Student Engagement: Conceptual Framework and Overview of Psychometric Properties*. Indiana University.
- Kuh, G. D. (2003). What We're Learning About Student Engagement From NSSE: Benchmarks for Effective Educational Practices. *Change: The Magazine of Higher Learning*, 35(2), 24–32. <https://doi.org/10.1080/00091380309604090>
- Kuh, G. D. (2007). *Piecing together the student success puzzle: Research, propositions, and recommendations*. Wiley Subscription Services at Jossey-Bass.
- Kuh, G. D. (2008). *High-impact educational practices: What they are, who has access to them, and why they matter*. Association of American Colleges and Universities.
- Kuh, G. D., Cruce, T. M., Shoup, R., Kinzie, J., & Gonyea, R. M. (2008). Unmasking the effects of student engagement on first-year college grades and persistence. *The Journal of Higher Education*, 79(5), 25.
- Kuh, G. D., Kinzie, J., Cruce, T., Shoup, R., & Gonyea, R. M. (2008). *Connecting the dots: Multi-faceted analyses of the relationships between student engagement results from the NSSE, and the institutional practices and conditions that foster student success* (p. 98). Lumina Foundation for Education.
- Kuh, G. D., & O'Donnell, K. (2013). *Ensuring quality and taking high-impact practices to scale*. Association of American Colleges and Universities.
- Kuh, G., O'Donnell, K., & Schneider, C. G. (2017, September 3). HIPs at Ten. *Change: The Magazine of Higher Learning*, 49(5), 8–16.
- Louviere, J. J., Hensher, D. A., & Swait, J. D. (2000). *Stated choice methods: Analysis and applications*. Cambridge University Press.

- Maslow, A. H. (1958). A dynamic theory of human motivation. In *Understanding human motivation* (pp. 26–47). Howard Allen Publishers. <https://doi.org/10.1037/11305-004>
- McNair, T., Albertine, S., Cooper, M. A., McDonald, N., & Major, T. (2016). *Becoming a student-ready college: A new culture of leadership for student success*. Jossey Bass Ltd.
- Menard, S. (2010). *Logistic Regression: From introductory to advanced concepts and applications*.
- Metz, G. W. (2002). *Challenges and changes to Tinto's persistence theory* (p. 30). U. S. Department of Education, Education Resources Information Center (ERIC). <https://eric.ed.gov/?id=ED471529>
- Miller, A. L., Rocconi, L. M., & Dumford, A. D. (2018). Focus on the finish line: Does high-impact practice participation influence career plans and early job attainment? *Higher Education*, 75(3), 489–506. <https://doi.org/10.1007/s10734-017-0151-z>
- Miller, A. L., Sarraf, S. A., Dumford, A. D., & Rocconi, L. M. (2020, April). *Construct Validity of NSSE Engagement Indicators*. http://nsse.indiana.edu/pdf/psychometric_portfolio/Validity_ConstructValidity_FactorAnalysis_2013.pdf
- Miller, R. L., Rycek, R. F., & Fritson, K. (2011). The effects of high impact learning experiences on student engagement. *Procedia - Social and Behavioral Sciences*, 15, 53–59. <https://doi.org/10.1016/j.sbspro.2011.03.050>
- Milner, H. R. (2007). Race, culture, and researcher positionality: Working through dangers seen, unseen, and unforeseen. *Educational Researcher*, 36(7), 388–400. <https://doi.org/10.3102/0013189X07309471>

- Nguyen, T.-H., & Nguyen, B. M. D. (2018). Is the “First-Generation Student” term useful for understanding inequality? The role of intersectionality in illuminating the implications of an accepted—yet unchallenged—term. *Review of Research in Education*, 42(1), 146–176. <https://doi.org/10.3102/0091732X18759280>
- NSSE 2019 Multi-Year Report* (p. 13). (2019). University of New Hampshire. <https://unh.app.box.com/s/jm5h11pibx12dlechagrimdaq7h6dgef>
- NSSE Annual Report*. (2007). National Survey of Student Engagement. http://nsse.indiana.edu/NSSE_2007_Annual_Report/index.cfm
- NSSE: Information About 2013 Update*. (2013). <http://nsse.indiana.edu/nsse-update/>
- NSSE: National Survey of Student Engagement*. (2019). NSSE: National Survey of Student Engagement. <https://nsse.indiana.edu/html/about.cfm>
- Opper, S., & Others. (1990). *Impacts of study abroad programmes on students and graduates* (Vol. 2; Higher Education Policy Series). Jessica Kingsley Publishers, 13 Brunswick Centre, London WC1 England (\$45).
- Paige, R. M., Fry, G. W., Stallman, E. M., Josić, J., & Jon, J. (2009). Study abroad for global engagement: The long-term impact of mobility experiences. *Intercultural Education*, 20(sup1), S29–S44. <https://doi.org/10.1080/14675980903370847>
- Pampel, F. C. (2021). *Logistic regression: A primer*. SAGE Publications.
- Patton, L. D., Harper, S. R., & Harris, J. (2015). Using critical race theory to (re) interpret widely studied topics related to students in U.S. higher education. *Critical Approaches to the Study of Higher Education*, 193–219.

- Payne, E. M., Hodges, R., & Hernandez, E. P. (2017). Changing demographics and needs assessment for learning centers in the 21st century. *Learning Assistance Review*, 22 (1), 16.
- Pike, G. R. (2006). The Dependability of NSSE Scaletts for College- and Department-level Assessment*. *Research in Higher Education*, 47(2), 177–195.
<https://doi.org/10.1007/s11162-005-8885-3>
- Post-Secondary National Policy Institute (2018). *Fact Sheet: First-Generation Students*.
<https://pnpi.org/first-generation-students/>
- Post-Secondary National Policy Institute (2018). *Fact Sheet: Latino Students*.
<https://pnpi.org/latino-students/>
- Quaye, S. J., Harper, S. R., & Pendakur, S. L. (2019). *Student engagement in higher education: Theoretical perspectives and practical approaches for diverse populations*. Routledge.
- Rausch, K. (2017). *First-Generation strength: Supporting first-feneration college students in study abroad* [Ed.D., Arizona State University].
<https://www.proquest.com/docview/1901897576/abstract/11207BCE976C44EBPQ/1>
- Roberts, J., & Styron, R. (2010). Student satisfaction and persistence. *Research in Higher Education Journal*.
- RTI International. (2019). *First-generation college students: Demographic characteristics and postsecondary enrollment*. NASPA. <https://firstgen.naspa.org/files/dmfile/FactSheet-01.pdf>
- Salkind, N. J., & Frey, B. B. (2019). *Statistics for people who (think they) hate statistics*. SAGE Publications.
- Seidman, A. (2005). *College student retention: Formula for student success*. Praeger Publishers.

- Seifert, T. A., Gillig, B., Hanson, J. M., Pascarella, E. T., & Blaich, C. F. (2014). The conditional nature of high impact/good practices on student learning outcomes. *The Journal of Higher Education*, 85(4), 531–564.
- Shirley, S. W. (n.d.). *The gender gap in post-secondary study abroad: Understanding and marketing to male students* [Ph.D., The University of North Dakota]. Retrieved April 3, 2022, from <https://www.proquest.com/docview/305287523/abstract/393069B882E34265PQ/1>
- Soper, D. S. (2020). *A-priori sample size calculator for multiple regression*. <http://www.danielsoper.com/statcalc>
- Soria, K. M., & Stebleton, M. J. (2012). First-generation students' academic engagement and retention. *Teaching in Higher Education*, 17(6), 673–685. <https://doi.org/10.1080/13562517.2012.666735>
- Stebleton, M. J., & Jehangir, R. (2016). Creating communities of engaged learners: An analysis of a first year inquiry seminar. *Learning Communities Research and Practice*, 4(2), 1–12.
- Stebleton, M. J., & Jehangir, R. R. (2020). A call for career educators to recommit to serving first-generation and immigrant college students: Introduction to special issue. *Journal of Career Development*, 47(1), 3–10. <https://doi.org/10.1177/0894845319884126>
- Stebleton, M. J., & Soria, K. M. (2012). Breaking down barriers: Academic obstacles of first-generation students at research universities. *The Learning Assistance Review*, 17(2), 7–19.
- Stebleton, M., Soria, K., & Cherney, B. (2013). The high impact of education abroad: College students' engagement in international experiences and the development of intercultural competencies. *The Interdisciplinary Journal of Study Abroad*, 1–24.

- Stephens, N. M., Fryberg, S. A., Markus, H. R., Johnson, C. S., & Covarrubias, R. (2012). Unseen disadvantage: How American universities' focus on independence undermines the academic performance of first-generation college students. *Journal of Personality and Social Psychology, 102*(6), 1178–1197. <https://doi.org/10.1037/a0027143>
- Stephens, N. M., Townsend, S. S. M., Markus, H. R., & Phillips, L. T. (2012). A cultural mismatch: Independent cultural norms produce greater increases in cortisol and more negative emotions among first-generation college students. *Journal of Experimental Social Psychology, 48*(6), 1389–1393. <https://doi.org/10.1016/j.jesp.2012.07.008>
- Swail, W. S. (2014). A different viewpoint on student retention. *Higher Learning Research Communications, 4*(2), 18–25. <https://doi.org/10.18870/hlrc.v4i2.210>
- Swecker, H. K., Fifolt, M., & Searby, L. (2013). Academic advising and first-generation college students: A quantitative study on student retention. *NACADA Journal, 33*(1), 46–53. <https://doi.org/10.12930/NACADA-13-192>
- Tate, K. A., Caperton, W., Kaiser, D., Pruitt, N. T., White, H., & Hall, E. (2015). An Exploration of first-generation college students' career development beliefs and experiences. *Journal of Career Development, 42*(4), 294–310. <https://doi.org/10.1177/0894845314565025>
- Terenzini, P. T., Springer, L., Yaeger, P. M., Pascarella, E. T., & Nora, A. (1996). First-generation college students: Characteristics, experiences, and cognitive development. *Research in Higher Education, 37*(1), 1–22. <https://doi.org/10.1007/BF01680039>
- The center for first-generation student success.* (2022). <https://firstgen.naspa.org/about-the-center/about-the-center>
- Tight, M. (2020). Student retention and engagement in higher education. *Journal of Further and Higher Education, 44*(5), 689–704. <https://doi.org/10.1080/0309877X.2019.1576860>

- Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research*, 45(1), 89–125.
- Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). University of Chicago Press.
- Tinto, V. (1999). Taking retention seriously: Rethinking the first year of college. *NACADA Journal*, 19(2), 5–9. <https://doi.org/10.12930/0271-9517-19.2.5>
- Tinto, V. (2004). *Student retention and graduation: Facing the truth, living with the consequences*. Pell Institute for the Study of Opportunity in Higher Education. <https://eric.ed.gov/?id=ED519709>
- Tinto, V. (2007). Research and practice of student retention: What’s next? *Journal of College Student Retention*, 8(1), 1–19.
- Tinto, V. (2012). *Completing college: Rethinking institutional action*. University of Chicago Press.
- Tinto, V. (2017). Through the eyes of students. *Journal of College Student Retention: Research, Theory & Practice*, 19(3), 254–269. <https://doi.org/10.1177/1521025115621917>
- Toutkoushian, R. K., Stollberg, R. A., & Slaton, K. A. (2018). Talking ’bout my generation: Defining “first-generation college students” in higher education research. *Teachers College Record*, 120(4).
- Trowler, V. (2010). *Student engagement literature review* (p. 74). The Higher Education Academy.
- University of New Hampshire Common Data Set*. (2019). University of New Hampshire. <https://www.unh.edu/institutional-research/common-data-set>

- Valbrun, M. (2018, April 25). Maybe not so “High Impact”? *Inside Higher Ed*.
<https://www.insidehighered.com/news/2018/04/25/study-questions-whether-high-impact-practices-yield-higher-graduation-rates>
- Van Der Werf, M., & Sabatier, C. (2009). *The College of 2020: Students*. Chronicle Research Services.
- van Gennep, A. (1960). The rites of passage (Vizedom, Monika & Caffee, Gabrielle, Trans.). *Science (American Association for the Advancement of Science)*, 131(3416), 1801–1802.
<https://doi.org/10.1126/science.131.3416.1801>
- Wilbur, T. G., & Roscigno, V. J. (2016). First-generation disadvantage and college enrollment/completion. *Socius*, 2, 2378023116664351.
<https://doi.org/10.1177/2378023116664351>
- Wolf-Wendel, L. E., Ward, K., & Kinzie, J. (2009). A tangled web of terms: The overlap and unique contribution of involvement, engagement, and integration to understanding college student success. *Journal of College Student Development*.
<https://doi.org/10.1353/csd.0.0077>