

2017

One Size Does Not Fit All: A Case For A More Diversified Approach To Identifying And Supporting First-Generation College Students

Alexander J. Thorngren
University of Vermont

Follow this and additional works at: <https://scholarworks.uvm.edu/graddis>



Part of the [Higher Education Commons](#)

Recommended Citation

Thorngren, Alexander J., "One Size Does Not Fit All: A Case For A More Diversified Approach To Identifying And Supporting First-Generation College Students" (2017). *Graduate College Dissertations and Theses*. 774.
<https://scholarworks.uvm.edu/graddis/774>

This Dissertation is brought to you for free and open access by the Dissertations and Theses at ScholarWorks @ UVM. It has been accepted for inclusion in Graduate College Dissertations and Theses by an authorized administrator of ScholarWorks @ UVM. For more information, please contact donna.omalley@uvm.edu.

ONE SIZE DOES NOT FIT ALL: A CASE FOR A MORE DIVERSIFIED APPROACH
TO IDENTIFYING AND SUPPORTING FIRST-GENERATION COLLEGE
STUDENTS

A Dissertation Presented

by

Alexander J. Thorngren

to

The Faculty of the Graduate College

of

The University of Vermont

In Partial Fulfillment of the Requirements
for the Degree of Doctor of Education
Specializing in Educational Leadership and Policy Studies

October, 2017

Defense Date: May 3, 2017
Dissertation Examination Committee:

Tammy G. Kolbe, Ed.D., Advisor
Brenda M. Solomon, Ph.D., M.S.W., Chairperson
Kieran M. Killeen, Ph.D.
Jill M. Tarule, Ed.D.
Cynthia J. Forehand, Ph.D., Dean of the Graduate College

ABSTRACT

First-generation college students earn college degrees in the United States at much lower rates when compared to non-first-generation college students. These students frequently face different challenges accessing and completing college degrees than those encountered by their peers with college-educated parents. A key challenge for institutions of higher education (IHE) is to develop effective policies, programs, and resources that support college completion among first generation college students.

First-generation college students, far from a homogenous group, exist on a spectrum of familial experiences with higher education. For instance, important differences may exist between students with a parent who did not complete high school and those that have some college or graduate education experience. Students' familiarity with higher education, as well as their social networks and family resources greatly influences first-generation college students' success in college. Yet, typically, first-generation college students are broadly defined as students whose parents did not earn a college degree. This definition fails to acknowledge potentially meaningful differences in student backgrounds.

Developing definitions for first-generation college students that more clearly describe their parents' educational backgrounds holds promise for improving IHEs' abilities to better align their support efforts with student needs. This study takes first steps to explore the application of alternative ways of defining first-generation college students, as well as understanding how IHEs currently identify these students at the point of admissions and track students once they matriculate.

Specifically, I developed a typology of possible definitions for identifying first-generation college students. Subsequently, I conducted a national survey of public, four-year, baccalaureate degree-granting IHEs that applied this typology to better understand IHE policies and practices for identifying and tracking first-generation college students.

The study's findings show that IHEs tend to adopt one of two general definitions for first-generation college students. The first definition does not account for whether or not students' parents participated in higher education; the second lumps together students with and without parents with any college exposure, but without a college degree. The processes and IHE administrative offices that track first-generation college students through graduation are institutional specific and not uniform across IHEs.

The analysis shows that many IHEs are trying to identify and support first-generation college students. However, differences in definitions used by IHEs pose challenges for the field in its efforts to understand these students' needs and makes it difficult for IHEs to align supports and services with student needs. Taken together, this exploratory study raises important questions for policymakers and educational leaders interested in expanding college access and success for first-generation college students.

ACKNOWLEDGEMENTS

It is my pleasure to acknowledge the many people who have provided guidance, encouragement, and support on my task to finish this dissertation. Among them are my UVM cohort classmates who provided the requisite humor needed in graduate school and for constant reminders that, “[we] got this...”

I would like to express my gratitude to my dissertation committee at the University of Vermont, Jill Tarule, Ed.D., Kieran Killeen, Ph.D., Brenda, Solomon, Ph.D., M.S.W., and Tammy Kolbe, Ed.D., for their guidance, suggestions, encouragement, and, importantly, for challenging me throughout. Special thanks to Tammy for her steady encouragement and for motivating me to strive for academic excellence.

My journey in higher education has also been supported by a number of friends and colleagues at my home institution of Dartmouth College. Chief among them are Brian Lacy, Ph.D., M.D., Jim Gorham, M.D., Ph.D., and Rosemary Orgren, Ph.D., all of whom trusted me to complete this degree along with my professional obligations. Thank you for your flexibility, encouragement, and confidence. Additionally, I would like to thank Emily Scherer, Ph.D. for generously sharing her time and research methodology expertise. Lastly, I must thank Hilary Llewellyn-Thomas, Ph.D. who more times than she knows inspired my graduate studies.

Finally, I would like to express my gratitude to my family whose support and encouragement was most welcome. Particularly, I would like to thank my parents, Barbara and Peter Thorngren, and my in-laws, Margaret and Gerald Roy. Lastly, for their unwavering support, encouragement, inspiration, and love, my deepest gratitude to my wife, Naomi, and my daughter Clara.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	ii
LIST OF TABLES.....	v
CHAPTER 1: INTRODUCTION.....	1
Problem Statement.....	1
First-Generation College Student Definitions & Parent Educational Experiences	6
Implications for Higher Education Practice.....	8
Theoretical Frameworks and Economic Considerations	9
Study Purpose	16
CHAPTER 2: LITERATURE REVIEW.....	18
Race, Gender, and Related Demographics	19
Economic and Geographic Considerations.....	22
Challenges of Navigating the College Experience	24
Institutional Support for First-Generation College Students	28
Murky Depths of Defining First-Generation College Students	32
Summary	34
CHAPTER 3: METHODOLOGY.....	36
Study Overview	36
Data & Measures	37
Limitations	50
CHAPTER 4: FINDINGS.....	51
Identifying First-Generation College Students	51

Criteria Used to Identify First-Generation College Students.....	52
Summary	56
CHAPTER 5: DISCUSSION.....	57
Introduction/Discussion	57
Limitations	61
Conclusions/Future Directions	63
Tables	67
References.....	75
Appendix 1: Inclusion and Exclusion Criteria for Selecting IHE	83
Appendix 2: Survey Questionnaire	86
Appendix 3: Survey Header Text	89

LIST OF TABLES

Table	Page
Table 1: Typology of Commonly Used Criteria for Defining First-Generation College Student Status Based on Parental Education Attainment as Seen in the Academic Literature.....	67
Table 2: Summary of Institutions of Higher Education (IHE) Characteristics in Study	68
Table 3: Institutions of Higher Education Identifying First-Generation College Students at Admissions	69
Table 4: Criteria Used to Identify First-Generation College Students At Admissions..	70
Table 5: Institutions of Higher Education (IHE) That Track First-Generation College Student at Matriculation	71
Table 6: Administrative Office Responsible for Maintaining Data Indicating Whether an Individual Student is a First-Generation College Student.....	72
Table 7: Institutions of Higher Education (IHE) Providing Support to Enrolled First-Generation College Students after Matriculation	73
Table 8: Types of Support Offered to First-Generation College Students	74

CHAPTER 1: INTRODUCTION

Problem Statement

Amid the backdrop of an increasingly complex labor market, the importance of possessing a college degree cannot be understated. College educated workers often enjoy higher wage opportunities resulting from their economic productivity. Higher available wages increase the tax base needed for sustaining the economic, social, and political endeavors of the nation. In addition to earning more, they tend towards leading healthier lives and are generally more civically involved than those without a college education (Baum, Ma, & Payea, 2013). The association between higher levels of education, better health outcomes, and a decrease in mortality is firmly established in the scientific literature (Cutler & Lleras-Muney, 2006; DeWalt, Berkman, Sheridan, Lohr, & Pignone, 2004; Walsemann, Bell, & Hummer, 2012). These are benefits measurable for individuals and society in both financial and non-financial terms.

Yet, despite the importance of a college degree, graduation rates from four-year degree-granting colleges remain persistently low in the United States and this is particularly true for first-generation college students. Students from families with little or no prior exposure to higher education represent a unique subset of college-going students with first-generation college students comprising a large segment of the undergraduate population at American institutions of higher education (IHE) or, more simply, college. In fact, The National Center for Education Statistics (NCES) report on undergraduate characteristics suggests that approximately 51% of students attending four-year degree-granting colleges are first-generation college students from a household

where at least one parent had only earned a high school diploma or less (U.S. Department of Education, 2010). As of 2008, 38% of students enrolled in four-year IHEs had parents who never pursued any form of postsecondary education, and another 6% of students had parents who attended some college, but did not earn a degree (U.S. Department of Education, 2010). Despite their growing numbers, first-generation college students are much less likely to graduate than non-first-generation college students. Nunez & Cuccaro-Alamin (1998) reported that less than 15% of enrolled first-generation college students graduate with a baccalaureate degree. A more recent study, examining all first-generation college students' graduation rates at four, five and six years post-matriculation, found graduation rates standing at 28%, 45%, and 50% respectively, at four-year degree-granting IHEs (DeAngelo, Franke, Hurtado, Pryor, & Tran, 2011). These rates were significantly lower than their non-first-generation counterparts who, in the same year graduated at 42%, 60%, and 64%, (DeAngelo et al., 2011). Other estimates, based on the U.S. Department of Education's Beginning Postsecondary Students Longitudinal Survey, suggest that as of 2009 just one-quarter of non-low income first-generation college students seeking a bachelor's degree graduated within six years, compared to 54% of their non-low income colleagues who were not first-generation (The Pell Institute, 2011). Moreover, 11% of low-income, first-generation college students had attained bachelor's degrees within the same period, compared to 24% of low-income, non-first-generation college students. Taken together, these statistics suggest that first-generation college students who attend four-year IHEs are less likely than their non-first-generation peers to complete their degree and that first-

generation college students entering college from economically disadvantaged backgrounds have a greater likelihood of leaving college without a degree when compared to their non-first-generation counterparts.

Comparatively lower graduation rates represent lost economic and human capital potential. Continued underinvestment in first-generation college students increases the risk of an untapped economic resource becoming a burden, a detriment for both individuals and society. From an economic standpoint, developing Human Capital (HC) in first-generation college students is frequently heralded as prudent and necessary for strong economic growth in the United States. Moreover, given other related characteristics, relatively low graduation rates among first-generation college students raise further concerns about educational opportunity and equity for historically disadvantaged groups. First-generation college students typically come from a lower socioeconomic status (SES) (Ishitani, 2006; Nunez & Cuccaro-Alamin, 1998; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996); do not gain admission to college as easily as their non-first-generation college student counterparts; and drop out of college at higher rates (Pike & Kuh, 2005). First-generation college students are often female (Inman & Mayes, 1999; Nunez & Cuccaro-Alamin, 1998) and are racial/ethnic minorities, notably Black or Hispanic (Hearn, 1991; Inkelas & McCarron, 2006; Karen, 2002; Ting, 2003).

IHEs incur real costs too when students do not complete degrees. The Educational Policy Institute's study of 1,669 four-year degree-granting IHEs shows the cost of college dropouts is over 16 billion dollars (Raisman, 2013). This report likely underreports the true costs to IHEs. Due to academic cycles an IHE can face difficulty

filling a dropout's place resulting in lost revenue due to running the IHE under capacity. Budgetary line items such as teaching and administrative salaries, building and maintenance expenses, and a host of other student-support related expenses make it difficult to parse cost for certain students or student groups.

IHEs see dropout rates of approximately 33% among all students by the end of a student's sophomore year (Rico, 2006). However, NCES reports first-year IHE students whose parents possess a high school diploma or less to comprise 46% of the student body. A year later that number drops to 28% and continues declining over time ("The NCES fast facts tool provides quick answers to many education questions (National Center for Education Statistics)," n.d.)

The challenges faced by first-generation college students often include those related to race, ethnicity, gender, SES, and less rigorous academic preparation than non-first-generation college students. Parent's lower education levels along with lower academic preparation, and lessened social and academic dedication have all been shown to diminish first-generation college students' success in college (Bowen, Chingos, & McPherson, 2009; Murphy & Hicks, 2006; Nunez & Cuccaro-Alamin, 1998; Terenzini et al., 1996; Warburton, Bulgarin, & Nunez, 2001). They also can face opposition from family members who did not pursue and/or eschew the value of a college education (Hsiao, 1992; Padron, 1992; Richardson & Skinner, 1992). The mix of often weaker pre-college traits, decreased understanding related to navigating the college experience, and an often diminished familial support all can lead to increased dropout rates for first-generation college students. Understanding these aspects of a first-generation college

student helps show the importance in understanding how IHEs identify, define, and support them as matriculated students.

The ability for IHEs to respond to the diverse learning needs of first-generation college students, however may be hampered by how they identify them. Generally, first-generation college students have been broadly defined as students whose parents did not earn a college degree. Such a general definition, however may pose challenges for IHE efforts to implement support and services to boost completion rates. These students are far from a homogenous group. Rather, first-generation college students exist on a spectrum of familial experiences with higher education. For instance, important differences may exist between students who have a parent who did not complete high school and those that have some college, or even postsecondary graduate education experience. Familiarity with higher education institutions and processes, as well as social networks from having some postsecondary educational experience greatly influences first-generation college students' success in (S. Dumais, 2002; Hearn, 1991; Ishitani, 2006; Terenzini et al., 1996; Warburton et al., 2001).

The definitions used by researchers studying first-generation college students compound an already murky understanding of the criteria needed to define these students leading to variable treatment of this group. For example, Gohn & Albin, 2006; Inman & Mayes, 1999; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Pike & Kuh, 2005; Terenzini et al., 1996 and others define first-generation college student status a bit differently from each other (Table 1). The differences range from parents who did not

attend any college to parents who attended some, typically unspecified amount, of college, but did not earn a degree.

Clear delineations of the spectrum of first-generation college students' needs coupled with an understanding of how best to support them could increase heterogeneity among student populations and ultimately the college-educated workforce in the United States. One method of potentially increasing success among this population begins with examining how the milieu of academic researchers and IHEs classify first-generation college students. It is likely that varying definitions exist across colleges too. Understanding the degree to which colleges apply uniform criteria when determining first-generation college student status during the admissions and matriculation process, if they do at all, is the aim of this study.

Pragmatically, doing a better job of characterizing and identifying first-generation college students, may permit policymakers and higher education leaders to better align policies, programs, and resources with student needs. In doing so, this may boost college completion rates among first-generation college students.

The following sections examine the key attributes related to the ambiguity and challenges posed by existing first-generation college student definitions. Additionally, a deeper examination follows of key attributes associated with these definitions as well as implications related to the economic and human capital notions of efficiency and equity.

First-Generation College Student Definitions & Parent Educational Experiences

Researchers broadly define first-generation college students as those who enter higher education institutions from households where neither parent attained a

baccalaureate degree. To some extent, they have recognized the inherent difficulties with using whether or not a parent possesses a college degree to characterize the first-generation college student population. While most studies demonstrate fidelity in regards to *a priori* inclusion and exclusion criteria, many vary significantly on how first-generation college student status is determined.

The binary determination of first-generation college student status based on whether or not a parent ever attended college leaves a gap in understanding this student population as a whole because it does not account for the varying levels of parental education level and the differing levels of college preparation this can afford their children. The spectrum of experiences first-generation college student' parents possess range from not finishing middle or high school to earning a high school diploma to enrolling in college but ceasing their studies before attaining a degree. These nuances matter and these distinctions in parental experiences remain uncaptured by a binary assessment, that being whether one or both parents graduated from college. For example, because one's parents did not attend college, does not mean they graduated from high school or even middle school. Likewise, parents who attended some college without earning a degree could mean a single semester of attendance or all but one credit shy of completion, so classifying that as some college experience is similarly misleading as it fails to capture the inherent dissimilarity among these college enrollment experiences.

However, a deeper examination reveals first-generation college students to be much more heterogeneous than previously thought. The level of educational experience and knowledge these parents possess related to the college process (applying, enrolling,

studying, and such) can directly affect a first-generation college students' pursuit of a college degree and moreover truly inform their experiences (S. Dumais, 2002; Hearn, 1991; Ishitani, 2006; Terenzini et al., 1996; Warburton et al., 2001)

First-generation college student characteristics have been extensively studied and reported and the research generally acknowledges different definitions exist. However, a lack of consistency exists across studies adding difficulty in characterizing the defining family traits that influence and shape their experiences, successes, and failures in both college and in life. The implications of how policymakers and higher education practitioners define first-generation college students has not been examined.

Implications for Higher Education Practice

Where adopted, a binary definition of first-generation college students is potentially problematic. Eschewing the binary treatment of first-generation college students and increasing the specificity of their parents' education level as an indicator of student success could prove useful for college's seeking to recruit and retain more first-generation college students. Incorporating additional descriptors into the definition could guide the development of programs and policies aimed at increasing first-generation college students' success in college. To that end, future research and identification of this student population might be parsed into more distinct categories based on specific delineations of their parents' education levels.

As noted previously, current research suggests a positive relationship between higher levels of parental education attainment and a higher likelihood they will graduate from college. Understanding specific defining criteria based on academic preparation

gaps might guide education policy and program developers in better increasing and tailoring support and programming necessary to raise graduation rates among first-generation college students. To do this, colleges must first develop methods of identifying first-generation college students accurately and uniformly. Second, college personnel must both support first-generation college students and simultaneously track their academic performance over time. In the short-term, this work could lead to increased success among the first-generation college students at the institution. For the IHE, such work could lead to increased student diversity and, ideally, increased graduation rates. Ultimately, this research on both understanding and operationalizing first-generation college student status(es) could increase overall success among this group as they earn more degrees and enter the labor market on more equitable footing with other college graduates.

Theoretical Frameworks and Economic Considerations

Balancing both social justice and economic influences to turn first-generation college students into college-educated individuals is a multifaceted societal and economic imperative. Two aspects of these issues require unpacking. The first is a Human Capital (HC) issue and relates to why we should care that first-generation college students complete college at a lower rate than their non-first-generation college counterparts. The second looks beyond the HC implications of first-generation college students and, using the economic notions of efficiency and equity, examines the ineffective and inefficient educational resource allocation. These concepts are deeply intertwined and the

ramifications of why IHEs should care about first-generation college students dropping out cannot be understated.

Human and Cultural Capital Frameworks

Two important frameworks for understanding the precarious situation within which first-generation college students exist include Human Capital (HC) theory and Cultural Capital (CC) theory. Macro-level investments of educational resources are central to human capital development. These investments vary with each person's interests, innate abilities, and available opportunities. While simple sounding, the complexity of HC is nuanced. Personal investments in education, skills, knowledge, and other market-pertinent abilities undergird Human Capital Theory (Becker, 2009). To be clear, HC is not the value of a person, but rather how their skills are valued, or compensated in the labor market. Individual HC investments are dynamic; do not occur at prescribed times; nor to the same degree for everyone. This randomness results in myriad combinations of people with differing levels of skills, abilities, and interests filling jobs in the economic labor market.

Closely connected to human capital is cultural capital. Bourdieu (1977) described cultural capital as an internalized collection of knowledge and approaches to navigating one's social class position. This knowledge is both reproduced inter-generationally and reinforced by the educational system (Bourdieu, 1977). Students demonstrating higher levels of cultural capital are more facile at successfully navigating an educational system that rewards higher levels of cultural capital and penalizes those less adept (Biggart, 2002; S. A. Dumais & Ward, 2010). Rothstein (2004) examined the interaction between

family resources, health status, and parental expectations and the academic success gap between black and white children and revealed that despite lower achievement from both groups, aspects of cultural capital, including unbalanced treatment and income disparity, favor lower SES white students over black students. However, Tienda and Alon (2007) observed parental education level is correlated with the social and financial resources allocated to their children's education, and thus, their children's success. Consequently, cultural capital plays out in the social resources available to the child, which largely include financial resources at both the family level and investments at the public level.

Additionally, much research exists exploring other factors that influence college success. Social class, SES, race, sex, gender, and pre-college education and the implicit and explicit ways they interrelate and manifest also affect college success. For example, Anyon (1980), Bowles (1973), MacLeod (1995), Mehan (1992), and others examine the interplay and effects of social reproduction theory on students preparing to enter the workforce with or without a college degree and the effects of both situations. Social reproduction theory is the notion that inequality can be passed on, or reproduced and reinforced, through social settings, including school and that these inequities perpetuate themselves (Bowles, 1973). This interplay is not without real-world consequences for first-generation college students and others. Bowles (1973) showed the continuation of socioeconomic homeostasis between generations from perpetuated lack of equity for educational pursuits, meaning if the parents were low SES, the next generation was often low SES too. Anyon (1980) noted the different ways students are taught in each school based upon social class and the resulting impact these invisible lessons had on these

students as they prepared to enter the labor market. The degree of cultural capital a student possesses impacts their human capital potential. Lower levels of cultural capital directly affect first-generation college students' human capital potential as they progress through their formal schooling. However, these frameworks only go so far towards explaining why first-generation college students should have clearly delineated definitions.

Colleges and universities realize the practical outcome of training students for positions in the workforce that prepares them for what Labaree (1997) calls "social mobility" (p. 50). Labaree (1997) further notes that many institutions are philosophically bound to the social justice notion of the fair distribution of education and the societal ideal of developing free and critical thinkers. The principles of equity, efficiency, and liberty in education is shared by a number of educational theorists and philosophers including, Noah Webster, Thomas Jefferson, Robert Hutchins, John Dewey, and others (Ravitch & Viteritti, 2003). Thus, issues of social mobility are tied to success and equal access to education.

Resource Allocation

Augmenting the Human and Cultural Capital frameworks are the economic notions of equity and efficiency and, as they relate to first-generation college students, cannot be left unconsidered. Equity describes the extent to which inputs, processes, or outcomes are fairly allocated; whereas efficiency is concerned with maximizing outputs for a given stock of inputs. Equity and efficiency compete when there are scarce resources and can be in tension with one another when "fair" allocations are not

necessarily efficient and vice versa. Equity is not necessarily equal. For example, first-generation college students might need more resources to succeed in college than non-first-generation college students, therefore the distribution of a college's resources might lean heavily towards first-generation college students because to do otherwise would likely lead to failure to earn a degree. The compensatory nature of such inequality may be perceived as fair as this uneven distribution of resources in this case may be needed for these students to succeed. Efficiency, in this example, might be about supporting as many students deemed likely to succeed and the allocation of the college's resource mix might favor students needing less support, therefore maximizing the quantity of students who will graduate. A related concept is that of liberty, which is about maximizing choice through the elimination of coercion. Liberty is enhanced when coercion is reduced and the range of options is increased (Stone, 2011). For first-generation college students this might manifest as having the freedom to choose (and succeed) in college resulting in a greater range of labor market options available after graduation.

Educational resources have greater impact on students when allocated and utilized earlier in a student's academic career (Duncan, 2011). So why expend scarce educational resources on students known for lower college matriculation (Pike & Kuh, 2005), middling academic success, and meager graduation rates (Ishitani, 2006; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996)?

Pragmatically, an economic urgency exists in preparing first-generation college students for entry into the workforce as highly skilled employees as the current generation of workers, comprised largely of the "Baby Boomers," is beginning to exit the

workforce *en masse*. The level of complex communication and expert thinking required for success in the job market has increased exponentially from decades past in part due to the advent, adoption, and ever-increasing capability of computers (Levy & Murnane, 2005). Compounding this reality, Tienda and Alon (as cited in Belfield & Levin, 2007) note the population intended to fill the increasingly vacant jobs largely lack the skills required to replace the current aging workforce. If this workforce exodus continues unabated without enough highly skilled workers to replace their vacant jobs, the possibility exists for economic stagnation or worse, destabilization. The ramifications of which cannot be disregarded. Simply stated, the economic pay-off and growth seen in the labor market as measured by the US gross domestic product (GDP) is driven by workers with college degrees because jobs that provide financial compensation sufficient for living will be done by those adept at complex communication and expert thinking (Levy & Murnane, 2005). For these reasons, educational resources allocated towards supporting first-generation college students is paramount.

If IHEs and society at large want to make investments that are both fair and just then directing additional resources to first-generation college students could be construed as meeting both intentions. IHEs would benefit from targeting extra resources more precisely towards supporting first-generation college students. These benefits could be seen from increased graduation rates among first-generation college students. Moreover, such investment in first-generation college students could be considered a long term societal success as more college educated people enter the labor market adding both diversity and added value.

As previously noted, there are real individual and societal costs related to underinvesting in first-generation college students. These underinvestments manifest in the form of low participation in college overall and even lower completion rates for those that successfully matriculate. Increasing college completion among first-generation college students as measured by graduation rates will serve both the individual student as well as the collective labor market. Policies for improving college matriculation only goes so far. Policy activities addressing long-term strategies for developing scaffolding to support these students through to their college graduation are needed. Genuine policy efforts made to improve first-generation college students college graduation rates could translate into more diverse and economically productive members entering the workforce and helping the economy grow.

However, with broad definitions of first-generation college students that do not account for nuances in student experiences come the potential for policy and resource misalignment. Yet evidence suggests they are more heterogeneous than previously assumed and require different support and pathways to get them through college. Certainly, some first-generation college students do persist, earn a college degree and prove successful in the labor market, maintaining the status quo. However, by not acknowledging the differences of first-generation college students, we risk putting in place the wrong sets of services and supports they need to succeed in college. Broad definitions fail to account for the diverse needs of first-generation college students, especially when research suggests they can succeed in college when aided (Chaney, Muraskin, Cahalan, & Rak, 1997; Inkelas, Daver, Vogt, & Leonard, 2007; Tinto, 1999).

This is both economically inefficient and inequitable as well as socially unjust. In essence, this issue is about balancing the need for economic efficiency with the socially just need to allocate enough resources to elevate and prepare often-disadvantaged students, such as first-generation college students, to competitively enter the labor market with their non-first-generation peers.

Study Purpose

This dissertation seeks to synthesize the academic literature on first-generation college students to examine how public, four-year, degree-granting, American colleges and universities use this knowledge to retain and support first-generation college students. The research literature suggests that first-generation college students are actually not a homogenous group of students, but possess rather varied characteristics and needs. Furthermore, exploring this assortment of needs and the implications of how four-year colleges might encourage and support first-generation college students will contribute to the body of literature on this diverse segment of college students.

Knowing first-generation college students face higher difficulty enrolling in college and attaining a college degree, my postulation is that the current binary definitions for determining their status (e.g. parents have or do not have a college degree), is inadequate and does not capture the broad range or lack of experiences, backgrounds, and knowledge base they possess. The limitation of this binary approach is a hindrance to IHEs and in not possessing a more granular level of understanding of first-generation college students, the IHE cannot adequately support them through effective

policies, practices, and resource allocation. This is inefficient and detrimental at the individual, institutional, and societal level.

Using survey data, this study sought to understand how IHEs identify and support first-generation college students. In doing so, this study aims to make both conceptual and empirical contributions of importance to educational policy and practice. First, this study develops a typology for defining first-generation college students attending IHEs grounded in existing literature. This typology holds promise for helping the field and IHEs consider the continuum of first-generation college students' backgrounds and experiences. Second, the study examines how a sample of IHEs identify and track first-generation college students once admitted to college. This empirical work not only provides an opportunity to apply the study's conceptual framework, it also provides a necessary descriptive profile of IHE policies and practices. This profile could be useful to policymakers and practitioners considering strategies to improve first-generation college student retention and graduation. Policy questions addressing long-term strategies for developing scaffolding supporting first-generation college students through their college graduation are needed. Prioritizing policies to increase college graduation rates among first-generation college students is nothing short of an economic imperative for the United States. The implications of doing less could have far-reaching and long-felt consequences at the individual, institutional, and societal levels.

CHAPTER 2: LITERATURE REVIEW

First-generation college students comprise a large and growing segment of undergraduate students. First-generation college student status is determined by at least one parent's level of educational attainment, which is defined variously and dispersed on a spectrum of variation ranging from not completing middle school through to attending some college. Frequently studied, researchers determine the criteria for first-generation college student status *a priori* of their investigation. While consistent within each study, there is notable variation among studies in how first-generation college students are defined. Their experiences applying to, attending, and completing college vary significantly based on knowledge accumulated prior to pursuing a college degree. Yet, a twofold problem exists where there is variability in the definitions among researchers, but IHEs appear to denote first-generation college students' status in a binary fashion based on whether at least one parent earned a college degree or not. This bifurcated treatment of first-generation college students considers them a homogeneous group and downplays the variability of individual first-generation college students' pre-college experiences, knowledge, and preparation from which they may have gleaned from their parent's level of engagement with postsecondary education.

This review examines common characteristics of first-generation college students and how those traits relate to their persistence, success, challenges, and other experiences pursuing postsecondary education. Race, sex, gender, socioeconomic status (SES), as well as economic and geographic constraints contribute to their success or lack thereof. Additionally, how first-generation college students navigate the college experience is

examined. A one-size-fits-all perspective on first-generation college students seems a one-dimensional approach, as this population's characteristics are well known. Thus, a review of the kinds of institutional support structures generally in place is also included. Lastly, an examination of the various ways researchers have defined first-generation college students in their studies is explored.

Race, Gender, and Related Demographics

Many similarities exist among first-generation college students, particularly in areas in which they do not excel, including graduation rates, academic scores, and gaining admissions, and a host of other areas (Ishitani, 2006; Pike & Kuh, 2005; Terenzini et al., 1996). Other researchers including Bowen (2009), McCarron & Inkelas, (2006), Inman and Mayes (1999), and Nunez and Cuccaro-Alamin (1998), show SES, race, and gender also inform first-generation college students' success in college. SAT and ACT scores as well as grades earned during the first year of college are predictive of graduation rates in a study of 125,000 students from public universities (Bowen et al., 2009).

Ishitani (2006) examined pre-college traits in 4,427 students and noted, along with gender, that ethnic background appears correlated with diminished first-generation college student success as well as degree attainment. Ting's (2003) study of first-generation college students at a single institution showed that students of color had lower mean SAT scores and first semester GPAs than Caucasian students; they also engaged in less community service and are less knowledgeable in a field of study than most of their peers. Richardson and Skinner (1992) interviewed 107 community college students from

various IHEs and showed similar challenges among the African American, Hispanic, and Native American first-generation college students they interviewed. Strayhorn's (2006) analysis showed Black and ethnic minority status coupled with first-generation college student status was predictive of diminished success in college. Reduced academic success as well as discrimination along racial and ethnic lines was seen among the first-generation college students studied by Terenzini et al. (1996) as well. Ting's (2003) research reiterated racial discrimination being an issue for first-generation college students as well as a lack of positive role models.

Survey research from 30,000 high school students showed consistency with other studies examining race and first-generation college student status, that race and lower SES often leads to attendance at less selective and/or less costly institutions of higher education (IHE), though this did not hold true for students displaying stronger academics (Hearn, 1991, p. 164). Karen (2002), replicating Hearn's 1991 study, used data from the NELS:88 dataset and drew similar conclusions.

Of course, not all first-generation college students are non-white. Stuber's (2011) examination of first-generation college students deviated from the commonly examined characteristics of first-generation college students and looked at solely white students from working-class backgrounds. Whiteness in first-generation college students was shown to be a factor of both success and detriment for these students as they tended to come from higher SES positions among the working-class, but inversely they were often unnoticed to those charged with supporting first-generation college students as it was assumed they did not require the services offered (Stuber, 2011).

Gender plays a factor in first-generation college students' success too. NCES' report on first-generation college students showed 57% of them were female whereas only 43% were male (Nunez & Cuccaro-Alamin, 1998). Warburton et al. (2001) found a similar distribution along gender lines as well. Being a female first-generation college student, in some cases, has been correlated with less success overall. Success being defined as persistence in completing college. For example, female college students had a higher likelihood of dropping out during their second year, but conversely a lower chance of dropping out should they make it to their fourth year (Ishitani, 2006). Ishitani (2006) also noted a 56% greater likelihood of female first-generation college students completing college compared to male counterparts within the traditional four year timeframe for degree attainment. King's (2003) research showed that males of color do not achieve academically at the same level as females or white males, but this was not seen in Inkelas and McCarron's (2006) research.

Bowen et al. (2009) found that SES, race, gender and ethnicity are all strongly correlated with academic performance and whether students graduate on time or at all. Other researchers consider SES a risk factor for first-generation college students' success in college too. Ishitani (2006) noted that SES, parents' education, and pre-college traits of the student affect their success and persistence in college. Pre-college traits include academic skills shown to be weaker and less rigorous than non-first-generation college students (Ishitani, 2006; Terenzini et al., 1996). It follows that weaker cognitive and academic training might result in lower test scores. Warburton et al. (2001) also observed lower GPAs and college admissions test scores among first-generation college

students when compared to non-first-generation college student peers. Given the interaction between lower SES, weaker academics, lower enrollment and matriculation rates into college, and similar related traits it is a small wonder that first-generation college students tend to drop out of college at higher rates than their non-first-generation college students counterparts.

Economic and Geographic Considerations

Though not limited to first-generation college students, the association between SES and college education affecting quality of life, health outcomes, and lifespan overall is well established (Cutler & Lleras-Muney, 2006; DeWalt, Berkman, Sheridan, Lohr, & Pignone, 2004; Walsemann, Bell, & Hummer, 2012). A reasonable postulation is that higher SES outcomes for these students and any others could come with the attainment of a college degree. Therefore, it is important to examine how the interplay between economic and geographic forces, though not always tied together, can influence first-generation college students decision to pursue a college degree or not. In 1999, college graduates earned 75% more than non-college graduates and this figure has risen over the years (Carnevale, 2011). US Census data echoes this trend that higher graduation rates lead to increased labor market opportunities.

Lower SES is correlated with a decreased likelihood of earning a college degree, especially when juxtaposed with students whose parents are more educated and/or earn more income (Bowen et al., 2009). Obtaining a college degree remains unchanged when measured in 1970 and again in 2002 for those occupying the lowest SES position, approximately, 6% (Belfield & Levin, 2007).

First-generation college students often feel geographically and financially constrained. Inmann and Mayes (1999) acknowledged that minority status and SES play a role in their success and further observed that geography factors into their college decisions. Financial and geographical limitations both real and perceived, appear to constrain first-generation college students decision-making related to college. Lee's (2004) study of 5,000 first-generation college students from California's community college system revealed similar findings, that being that first-generation college students need or want to stay closer to their home and family. This trend could be supported by the fact that first-generation college students are more likely to be older, sometimes married, and engaged in full-time employment when compared with non-first-generation college students (Nunez & Cuccaro-Alamin, 1998). Pascarella et al. (2004) also noted that first-generation college students were more likely to engage in paid employment.

These particular traits may stem from a necessity for gainful employment and/or the possibility of disturbing already established employment might be considered distasteful. Another possible consideration might be that first-generation college students often have financially dependent family members relying on them (Inman & Mayes, 1999). Additionally, moving far from a known and familial support structure might put undue or unwanted stress on the student (Terenzini et al., 1996).

In addition to geographical decisions related to choosing and attending college, first-generation college students also weighed heavily the economic opportunities as well as the financial support a school offered. Nunez and Cuccaro-Alamin's (1998) research showed first-generation college students considered job placement reputation, general

reputation of the schools they considered, and what employment opportunities were available to them while enrolled. Bowen et al. (2009) noted a correlation between both lower tuition costs and generous financial aid packages and increased attendance and graduation rates. A college education can potentially improve one's future economic opportunities and increase their economic stability. Financial support and/or labor market prospects are important for students and could provide some of the needed underpinnings for college success for first-generation college students (Inman & Mayes, 1999; Lee et al., 2004).

Challenges of Navigating the College Experience

Risk factors, including those related to race, ethnicity, gender, SES, and less rigorous academic preparation than their non-first-generation college student counterparts, influence the extent to which first-generation college students may successfully navigate the college experiences. These students also often lack familial support and preparation needed to navigate the higher education experience (Terenzini et al., 1996; Ting, 2003). For example, Ting (2003) studied 215 first-generation college students from a single institution looking at non-cognitive variables and found that that test scores were moderately predictive of college success. More importantly, a longitudinal study over three years examined 3,331 students from 18 colleges across 15 states showed parent's level of education as well as the student's pre-college academic competence influenced these students success in college (Pascarella et al., 2004). First-generation college students fared worse than non-first-generation college students related

to attending selective colleges, not having an academic degree plan by their second or third year of college, as well as their overall coursework grades (Pascarella et al., 2004).

Academic persistence is a commonly examined characteristic of first-generation college students. As a whole, first-generation college students do not complete college as quickly or at all when compared to the non-first-generation college students. Risk factors related to higher dropout rates of first-generation college students versus non-first-generation college students include lower academic competence during high school, family income, and parent's education level (Ishitani, 2006). Terenzini et al. (1996) examined in a longitudinal three-year investigation of 2,685 students (825 first-generation college students and 1,860 non-first-generation college students) from 23 institutions and found that educational aspirations are correlated to their parent' education level, SES as well as their likelihood of persisting. Pike and Kuh's (2005) examination of 3,000 undergraduate students confirmed SES, parent's education level as well as low levels of social engagement diminished first-generation college students and others chances of completing college. While noting the negative relationship between first-generation college students persistence and their parent's level of education attainment, Warburton et al, (2001) observed that academic preparation in mathematics before entering college was shown to increase persistence in college. Nunez and Cuccaro-Alamin (1998) acknowledged an increased academic persistence associated with higher levels of parental education attainment. First-generation college students demonstrated lower engagement levels in both social activities and academic dedication and with peers and others (Murphy & Hicks, 2006; Nunez & Cuccaro-Alamin, 1998; Terenzini et al.,

1996). McCarron and Inkelas (2006) looked at parental influence on first-generation college students' college ambitions and found that given eight years to complete college after completing high school, first-generation college students had inadequate understanding and preparation for the academic rigors of college, resulting in 30% having attained a baccalaureate degree in that timeframe. Compounding this dearth of preparation was the lack of adequate institutional support for first-generation college students (McCarron & Inkelas, 2006).

Additionally, first-generation college students demonstrate lower levels of both cultural competency related to such tasks as completing the college application process as well as lower proficiency in the traits that successful college students demonstrate during their tenure including time management, advocacy for themselves, academic acumen, and long-term focus on a goal (Merritt, 2008).

First-generation college students often experience a “culture shock” (Inman & Mayes, 1999, p. 5) in college when their upbringing clashes with the cultural norms associated with college life. Inman and Mayes (1999) also noted this cultural dissonance is often amplified by a familial view of an all-encompassing acceptance or rejection of their family upbringing/culture when deciding to/attending college, a commonplace reprise often faced by first-generation college students. Friends and family members of first-generation college students unacquainted with or disbelieving of the potential economic benefits and social mobility of attending college can often be at odds with these students. This friction can manifest as a general lack of support for their college degree pursuits to outright opposition. This lack of support between first-generation college

students and their non-college attending peers and family members is shown repeatedly (Hsiao, 1992; Padron, 1992; Richardson & Skinner, 1992). McCarron and Inkelas (2006), based on the NELS 88/2000 longitudinal data (1879 first-generation college students and 1879 non-first-generation college students participants) also observed an incongruence between parental interest/support or lack thereof that first-generation college students faced adjusting to the social aspects and expectations of college life.

Another aspect of the social challenges first-generation college students face when straddling their family backgrounds and their new college environment is that of cultural capital. Cultural capital, the transmittal of social, cultural, and class values from parent to child and the unequal nature of these differences based on class position are discernible (Bourdieu, 1977; Bourdieu, 1984). Hsiao (1992) noted that this straddling of different cultural worlds affected first-generation community college students including minorities, students from working-class backgrounds, and immigrants both of traditional and non-traditional age though the older a student was the less this straddling affected them. De Graaf and De Graaf (2000) found that cultural capital plays a larger role in the success of lower and middle class students. The notion of cultural capital is at play for first-generation college students as they essentially “codeswitch” between cultural environments. Selecting a linguistic style based upon the context in which a person finds themselves and changing with the context is codeswitching (Wheeler, Swords, & Carpenter, 2004). First-generation college students from lower SES or attending schools different from their cultural upbringing engage in cultural codeswitching in order to fit in both at school and with their family. Aries and Seider’s (2005) study of lower SES

college students found these students had higher levels of intimidation, feelings of powerlessness, and exclusion when compared to their counterparts at the same prestigious schools; these traits were not found in as high levels when examining students at public institutions. They also noted a fragmented cohesion from some of the lower SES students from their families as they became acculturated into their college social settings (Aries & Seider, 2005). Wang's (2012) semi-structured interviews with first-generation college students showed some students faced "competing discourses" (p. 339) between family members, college mentors, and their own internal attitude and motivation surrounding college. The challenges of straddling two different cultural environments are reduced depending on the level of cultural capital a student has acquired in their educational experience (Bourdieu, 1977; S. A. Dumais & Ward, 2010).

Institutional Support for First-Generation College Students

Many IHEs engage in a number of different strategies to support first-generation college students which often includes advising, academic support, and general aid in acculturating to college. Key to the success of these efforts is the extent to which the program design meets student needs. An important first step to doing so is recognizing that first-generation college students arrive at college with different backgrounds, including family exposure to the college experiences. Institutions that support first-generation college students do have higher retention rates of these students (Tinto, 1999). The evidence also suggests that such institutional programming helps first-generation college students succeed in college, but may still not be enough when compared to non-

first-generation college student counterparts (Inkelas & McCarron, 2006; Pike & Kuh, 2005; Nunez & Cuccaro-Alamin, 1998; Warburton et al., 2001).

Smith (2004), noted that many intervention programs focus on increasing academic skills among first-generation college students, but fall short because they are underequipped in handling the unseen cultural nuances of traversing higher education. Smith (2004) further suggested refocusing mentorship programs by developing accountability policies incentivizing college personnel to systematically work with students in need of social and academic support, not just students adept at navigating the social and cultural norms of their institution. Another large study conducted by Inkelas et al. (2007) examined 33 four-year institutions that delivered programming and guidance aimed at increasing first-generation college students' social and academic transition to college. Their investigation showed an increase in success among these students when compared to their counterparts that did not avail themselves of the resources offered (Inkelas et al., 2007).

Describing a number of themes related to first-generation college students' success related to familial and college mentor support gathered from semi-structured interviews with 30 such students, Wang (2012) suggested that such positive support was valuable for their college success. Reinforcing the necessity of positive support for first-generation college students, Gray (2013) observed negative effects on them in the PASS Program, a program designed to prepare first-generation college students for the rigors of college, at Eastern Michigan University. Countering negative attitudes towards first-generation college students because of their underprivileged backgrounds and inadequate

precollege preparation by faculty and administrators, Gray (2013) built personal connections, helped forge networks, and created a vision of belonging and success for these students. A similar program, ASPIRE, struggled to support first-generation college students due to limited funding (Stuber, 2011). Both programs had limited enrollment of approximately 200-250 students.

Woosley and Shepler (2011) surveyed 3,581 (42% male; 58% female) of which 804 (36% male; 64% female) were students of whom neither parent earned a baccalaureate degree and suggested the importance of a holistic approach to supporting first-generation college students including engaging faculty members, other mentors, student groups, residential life personnel, student affairs, and structured programming for these students beginning upon their arrival at the institution.

Some research exists on the positive impact summer enrichment or “pipeline” programs that provide academic and experiential opportunities to help first-generation college students prepare for college (Alexander & Mitchell, 2010; Beer, Le Blanc, & Miller, 2008; Walton, 2009). These programs can help show the value of college degree attainment entering into professional fields. An aspect of these types of enrichment programs is to encourage and prepare high school aged students to enter and attain a college degree and beyond (Harkness, Johnson, Hensley, & Stallworth, 2011). Pipeline programs also share a common goal of immersing students in a given subject area or field of study and preparing them for the next steps in their subject of interest. For example, there are programs in the United States that encourage students to pursue further knowledge and education on far ranging topics including agriculture, dentistry,

mathematics and many other topics (Alexander & Mitchell, 2010; Cannon, Broyles, Seibel, & Anderson, 2009; Chacon & Soto-Johnson, 2003). These programs support first-generation college students and others by preparing them for the rigors of college and other professional training and represent another set of pre-college experiences designed to support students who often have not had such opportunities.

Created by the Higher Education Act of 1965 and reauthorized as part of the Higher Education Opportunity Act of 2008, the United States Department of Education hosts a number of training programs for first-generation college students and other disadvantaged students through the TRIO Programs office including the McNair Postbaccalaureate Achievement program, Upward Bound, and Veteran's Upward Bound ("Higher Education Opportunity Act - 2008," 2010; "TRIO Home Page," 2014). The TRIO programs consist of eight programs "to serve and assist low-income individuals, first-generation college students, and individuals with disabilities to progress through the academic pipeline from middle school to postbaccalaureate programs" ("TRIO Home Page," 2014). Some debate exists surrounding the effectiveness of TRIO programs (McElroy & Armesto, 1998; Nelson, n.d.). Chaney et al (1997) note that there is some positive effect for underserved students when looking at higher education preparation and persistence. This sentiment is echoed by others as well as in a number of Pell Institute findings (The Pell Institute, 2009; Pitre & Pitre, 2009). More research is needed to fully understand the scope of the potential successes and shortcomings of these pre-college programs.

Murky Depths of Defining First-Generation College Students

As mentioned previously, researchers use a number of definitions to characterize first-generation college students, but broadly define them as having no parent who earned a college degree. Table 1 categorizes how researchers have commonly defined first-generation college students and illustrates how each can be applied to the various categories mentioned in the literature. Depending on the study design, some researchers break the first-generation college students group into subgroups. These subgroups can include a range of educational attainment. While some granularity exists in how first-generation college students' are defined by at least one parents' educational attainment level, the sole commonality among the various researcher defined subgroups is that first-generation college students' parents did not graduate from college. If first-generation college students are defined by their parent's educational attainment and their parents land on a large continuum of experience, then it stands to reason that the level of college preparedness of first-generation college students is affected by where their parents fall upon this spectrum.

A few researchers do add further refinements to their definitions of first-generation college students. Lee et al. (2004) looked at differences in income for students graduating from community college in Los Angeles County, CA based on education level of parents. Among the categories of parent's education level less than junior high and less than high school were included as some of the variables. Inkelas and McCarron's (2006) analysis of the NELS 88:2000 longitudinal data looked at parental involvement and its impact on first-generation college students' success in college in 8-

year periods (enrollment to graduation or dropout). Their survey asked students to self-report their parent's education level and like the study from Lee et al. (2004) allowed for more differentiation in the gathered data, including a range of responses from one or both parents attending some college to completing high school or less versus completed a bachelor's degree from the control group (McCarron & Inkelas, 2006).

IHEs have difficulty agreeing on how to characterize first-generation college students as well ("The challenge of the first-generation student," n.d.). Both IHEs and researchers seem to agree that the level of parental education plays a role in a first-generation college students' success in college. An illustration of how parents' education levels matter when defining first-generation college students can be seen in the following example. "First-generation students were 51% and 32% less likely to graduate in the fourth and fifth years than were students whose parents graduated from college" (Ishitani, 2006, p. 877). Ishitani (2006) also noted better chances of graduating in the fourth and fifth years (44% and 29% respectively) for first-generation college students whose parents attained some college education, but no degree, than those whose parents never attended college. NCES data from 1989-90 segregated parents having some college education, but no degree as separate from those with first-generation college student status, yet neither subgroup earned a college degree (Nunez & Cuccaro-Alamin, 1998). These data showed slightly higher levels of degree attainment among students whose parent(s) attended some college when compared to first-generation college students whose parents had no college experience (Nunez & Cuccaro-Alamin, 1998).

There are three major categories of how first-generation college students have been defined that go beyond the current binary definition (Yes/No) based on parental education level: (1) parents who did not graduate from high school (HS) and, by extension who presumably have no experience with postsecondary education; (2) parents who graduated HS, but without postsecondary educational experience and (3) parents who graduated HS and have some postsecondary education, but did not earn a degree. At least one researcher, (Lee et al., 2004) added finer distinctions by adding subsets including parents who did not complete middle school and a category for community college attendance and/or completion as well as graduate school attendance and/or completion. This study serves as an example of how researchers and IHEs could apply a higher resolution to the first-generation college students.

Some researchers' definitions are not specific enough to include or exclude other domains. For example, one researcher defines first-generation college students as, "...definition of a FGC student: neither parent had completed a bachelor's degree" (Wang, 2012, p. 341). This could mean that a parent entered college in pursuit of a degree, but it is vague enough that the parent may not have completed high school. This ambiguity occurs throughout the academic research literature.

Summary

First-generation college students arrive with traits and experiences that make them unique among the broader college-going student population. However, despite having a parent without a college degree in common, there are many factors that further differentiate first-generation college students from one another. As institutions of higher

education work to support first-generation college students and work toward a shared goal of increasing degree completion rates for this population, a key issue will be how best to align programs, practices and resources with student needs.

One potential risk to this effort is the failure to recognize the heterogeneity in student background and experiences. Broad definitions of first-generation college students typically go no further than identifying a student as having a parent with or without a college degree. Adding clarity and specificity to defining the spectrum of first-generation college students' traits and experience is a clear next step in supporting this student population. Such effort could reduce variation in policy and practice of supporting them across the United States. It could further aid colleges to develop and customize their programming for their success. These efforts could also help these students overcome cultural and academic challenges and increase their persistence in attaining a college degree.

Using definitions that attend to likely heterogeneity in first-generation college students' backgrounds could inform college admissions, institutional researchers, and student affairs programs how to better support these students, which could ultimately lead to higher college degree attainment as well as increased graduation rates for the institutions. However, very little is known about the definitions used by institutions of higher education.

CHAPTER 3: METHODOLOGY

Study Overview

Researchers and institutions of higher education (IHE) may adopt different definitions for what constitutes a first-generation college student (Table 1). Differences in these definitions acknowledge that within the broad category of students who have parents without a college degree parents may have participated in postsecondary educational opportunities to different extents. Relatively little research examines how IHEs define first-generation college students. Yet, differences in how first-generation college students are defined and classified have implications for how institutions might best serve students with different family backgrounds. Aligning policies, programs, and resources with different student needs holds promise for providing relevant and timely programmatic support for this student population. Such efforts could ultimately increase college access and completion rates for first-generation college students.

The purpose of this study was to investigate how institutions of higher education defined who a first-generation college student is and the manner in which they track and support first-generation college students who matriculate to their institution. Specifically, this exploratory study sought to understand:

- What definitions do institutions of higher education apply when identifying first-generation college students at the time of admissions?
- To what extent do the definitions used vary according to institutional type, size and geographic location?

- Do institutions of higher education continue to track first-generation college students after matriculation? If so, how do they do so?
- What types of supports do institutions offer matriculated first-generation college students?

To answer these questions, an electronic survey was administered via email to admissions personnel at 562 public, four-year, baccalaureate degree-granting IHEs nationwide. Institutions were queried about their use of three definitions of first-generation college student identified in the literature (Table 1).

The remainder of this section is organized as follows. In the first section, I establish the criteria for selecting the survey's sample. This is followed by an overview of the steps taken to develop the survey's sampling frame. In the second section, I discuss the study's data collection procedures. The third section describes the study's analytic approach. The final section discusses the limitations inherent in the study's design.

Data & Measures

Sample design. This study focuses on one sector of postsecondary education institutions, public, four-year degree-granting colleges. The focus on public institutions was intentional. Private IHEs were excluded from this study because the literature shows higher degrees of support and success for first-generation college students enrolled at these institutions, particularly highly selective IHEs (Ishitani, 2006). Two-year colleges were excluded from this study as they are more likely to offer coursework that leads to degrees as well as non-credit bearing courses. They also serve a mix of students

transitioning to college from high school and adult learners (Kane & Rouse, 1999). In this study, the goal was to better understand the policies and practices adopted by degree-granting institutions who primarily served students transitioning to college from high school.

The survey's sample was derived from the Integrated Postsecondary Education Data System (IPEDS). IPEDS is a system of integrated surveys administered annually by the U.S. Department of Education's National Center for Educational Statistics (NCES). All higher education institutions that participate in federal financial assistance programs authorized by Title IV of the Higher Education Act of 1965 must respond to the IPEDS collection ("Higher Education Opportunity Act - 2008," 2010). As such, IPEDS comprises the most comprehensive listing of US higher education institutions. In this study, the 2012 IPEDS collection, consisting of 7,565 institutions, was used as the starting point for selecting the study's sample.

The IPEDS collection categorizes higher education institutions a number of different ways. These established classifications were used to screen the population of higher education institutions for those that most closely fit the description: public, four year, degree-granting institution. Specifically, five classification variables from the IPEDS survey were used: 1) sector of institution; 2) level of institution; 3) institutional category; 4) Carnegie classification; and 5) degree-granting. (See Appendix 1 for a breakdown of the full sample of institutions across the selected screening criteria.)

Using these classifications, initially, institutions were screened according to the Basic Classification criteria from the Carnegie Classification of Institutions for Higher

Education (“Carnegie Classifications | Basic Classification,” n.d.). This institutional classification system was developed in 1973 by the Andrew W. Carnegie Foundation for the Advancement of Teaching to establish groups of roughly comparable higher education institutions. The Basic classification organizes higher education institutions according to: 1) Doctoral-granting institutions; 2) master’s colleges and universities; 3) baccalaureate colleges; 4) associates colleges; 5) special focus institutions; 6) and tribal colleges. Subsequently, for-profit institutions, non-degree-granting institutions, as well as those granting only 2-year degrees were excluded. Also excluded from this sample were the special focus institutions which include medical schools, law schools, theological seminaries, bible colleges, and other faith-related institutions as well as other similar specialized institutions.

IHEs were included in the sample if they offered primarily baccalaureate degrees, otherwise they were excluded from the study. Subsequently, exclusions for this study were made on the same five classification variables previously mentioned from the IPEDS survey. Sector of institution only included public, 4-year or above, all others were excluded. Level of institution included only four or more years and institutional category used the IPEDS variable labelled degree-granting, primarily baccalaureate or above. All IHEs included in the study were listed as degree-granting under the Degree-granting status variable. Geographic region also was considered; only institutions from the 50 states were included. Altogether, 562 institutions were selected to participate in the survey. Appendix 1 provides further details on the inclusion and exclusion criteria for this study.

Generating contact information. The IPEDS collection includes general information for participating institutions, but does not contain current contact information for persons in admissions offices. Accordingly, additional steps were taken to identify a knowledgeable person within selected institutions' admissions offices, including their phone numbers and email addresses. Admissions personnel were designated the point of contact most likely to possess the requested information and/or who could identify the most appropriate point of contact at their institution. Initially, the goal was to obtain this information from a professional association that maintained a national directory. However, gaining access to such a network was unsuccessful. Instead, a list of contacts and their email addresses was developed by searching each selected institution's website and, where necessary, using follow-up phone calls. While time consuming, the effort proved fruitful and valid email addresses and phone numbers were obtained for each institution's admissions office.

Measures. The study's survey instrument was developed to collect the data necessary to address the study's research questions and included the following key constructs:

- Whether an institution identifies first-generation college students during its admissions process.
- How an institution defines first-generation college students.
- Whether an institution tracks first-generation college students once they matriculate to the institution and, when this occurs, the organizational entity responsible for tracking.

- Whether an institution offers supports for first-generation college students and where supports exist, broadly, what types of supports are offered.

A copy of the survey instrument used is provided as Appendix 2. The survey's questions were a mix of dichotomous, nominal, multiple choice, and some limited open-ended free text. Relying on closed-ended survey questions improves provides some uniformity of potential answers from respondents can reduce variability among survey responses (Reja, Manfreda, Hlebec, & Vehojar, 2003). These design features were not without consequence as reducing the types of answers respondents can provide limits the amount of information gathered but this homogeneity streamlines the analysis required for addressing the research questions. Specifically, the survey questions were designed to minimize respondent burden, and ensure low administrative cost, and efficient and straightforward data collection. When designing the instrument I followed practices recommended by Dillman, Smyth & Christian (2014) for effective web-based surveys. Survey questions were straightforward, and the instrument had few extraneous items such as progress trackers and audio/visual stimuli (which can prove distracting to respondents) and had consistent visual presentation (D. Dillman, Smyth, & Christian, 2014) .

Data Collection

The survey was administered via email to selected institutions' admissions personnel. Electronic surveys are not only a cost-effective approach to survey research, they also potentially reduce respondent burden associated with responding via pencil and paper or phone; however, the impersonal nature of electronic surveys does pose potential risks to response as it can be easily ignored by potential respondents and lead to a bias in

the results based on the type of person who may have responded (D. Dillman et al., 2014).

Survey Gizmo, a web-based survey platform, was used to manage survey administration. Survey Gizmo is an established tool for delivering, collating, and analyzing web-based surveys. For this study it tracked respondents and captured metadata, including length of time each respondent spent answering survey questions and whether or not the survey was completed. Survey pre-testing estimated that, on average the survey would take less than five minutes to complete. In actuality, the time for completion was typically less than two minutes. Survey Gizmo also pre-emailed all potential respondents to check for incorrect or outdated email addresses before the initial delivery of the survey. This pre-check was vital in ensuring that the survey questionnaire was sent to respondents with valid email addresses.

The procedures used to solicit and encourage respondent participation followed Dillman et al.'s (2014) Tailored Design Method (TDM). TDM incorporates procedures that build respondent trust and perceptions of increased rewards and reduced costs for being a respondent, account for features of the survey situation, and incorporate strategies that reduce overall survey error (Dillman et al., 2014). This approach to survey design and administration has been continually refined since the late 1970s as an all-encompassing approach to survey research intended to blend various methods of survey data collection while trying to satisfy both the researcher and responder's needs (D. Dillman et al., 2014).

Specifically, the electronic survey was sent via email to admissions personnel at selected institutions (n=562) using Survey Gizmo. The accompanying email explained the survey's purpose and invited participation, as well as outlined the study's provisions for protecting respondents' confidentiality (See Appendix 3 for email text). Included in the email was a secure link to the electronic survey instrument, available on the secure Survey Gizmo web site. Survey Gizmo automatically tracked who responded and did not respond to the survey. Non-responders received up to five scheduled reminder emails inviting participation. Survey Gizmo was programmed to send these reminders at fixed intervals, albeit at different times during the day, to maximize the potential for response. Altogether, the survey was open for participation for approximately eight weeks.

Response to the study's electronic survey fell short of expectations. Just 20% of potential respondents (n=111) answered the survey. Low response rates are a potential source of bias in survey findings. In particular, for this study the point of concern was in the extent that non-responders were systematically different from responders in ways that were related to institutions' policies and practices for identifying and tracking first-generation college students (Button et al., 2013; D. A. Dillman & Bowker, 2001). A related concern was the relatively small number of overall responses. Analytically, a small sample size can reduce the likelihood that a statistically significant result reflects a true effect, essentially undermining the reliability of the estimates (Button et al., 2013; Draugalis & Plaza, 2009).

Given these concerns, the survey protocol was amended to include follow-up phone reminder calls to non-responding institutions and, where possible, administering

the survey via phone. Effectively, this step shifted the procedure to a mixed-mode survey design. Mixed mode survey design strengths include being adaptive to the potential respondent's interest or preference for responding to one style of survey or another. Such flexibility on the part of the researcher allows for a potential increase in overall survey response (Dillman et al., 2014). However, the possibility for error in data collection as well as administrative time and cost are potential trade-offs in such investigations (Dillman et al., 2014). Research suggests that mode effects introduced from mixing survey procedures are minimal in circumstances where the questions posed are not sensitive in nature (Mockovak, n.d.; Yun & Trumbo, 2000).

Follow-up phone surveys were attempted with one-third of the sample of non-respondents. Institutions were selected using a systematic random sampling procedure, by first alphabetizing institutions and subsequently selecting every third institution for a phone survey attempt. Randomizing in this way minimized potential bias associated with selecting institutions based on other observable characteristics; there was no reason to think that institutions' policies and practices related to first-generation college students were related to alphabetization.

A standardized phone script was used when speaking with respondents. To ensure consistency between the electronic and phone surveys, the script adopted language similar to that used in the recruitment emails. Once an IHE representative consented to answer the survey questions, the questions were asked using the same wording and sequence as the electronic survey. This included omitting questions or ending the survey based on previous answers. Data were entered into a spreadsheet that was later merged

with the data collected using the electronic survey. Care was taken to ensure that data was entered exactly and double checked for accuracy after each successful call. Altogether, 61 phone interviews were completed. The survey's final response rate, including both electronic and phone interviews, was 30.6% (n=172)

Data Preparation

The study's analytic data file consisted of survey responses from the electronic and phone surveys, and appended data from the IPEDS collection that included descriptors for institutional characteristics. The steps taken to prepare this file are discussed below. The electronic survey data were initially screened for partial survey responses. For the purposes of this study a partial response was defined as one where the respondent ended the survey after answering the study's initial question: Does your institution identify first-generation college students? Fourteen partial responses to the electronic survey were dropped from the analysis based on this criterion; there were no partial responses for the phone survey. The resulting analytic sample included 158 completed surveys.

Subsequently, several data elements from the IPEDS system were appended to each institutional observation included in the analytic sample. Specifically, the following variables describing relevant institutional characteristics were appended: 1) institutional size; 2) geographic region; and 3) Carnegie classification.

Institutional size describes the total number of student enrolled for credit at the institution. For this study, I hypothesized that institutional enrollment might impact the likelihood that an institution tracks first-generation college students after matriculation as

well as the range of programs and supports offered for these students. For instance, larger institutions may have more resources available to dedicate to tracking systems and support services than smaller institutions. Institutions that track and provide services to first-generation college students after matriculation may have greater incentive to not only identify first-generation college students at admissions, but also use more nuanced definitions of first-generation college students to support program planning like those suggested by Ishitani (2006), Lee (2004), or Warburton (2001).

IPEDS also categorizes institutions according to the geographic region in which they are located. I initially hypothesized the geographic region also might impact whether and how institutions identify and track first-generation college students. The survey results do not show much variance across geographic regions. Research was not discovered during the course of this study to suggest that geographic location affects first-generation college students.

Carnegie classifications were used as one of the defining IHE characteristics reference points in this study. These classifications are determined by the Carnegie Classification of Institutions of Higher Education Center for Postsecondary Research and use a number of factors to determine an IHE's classification. For instance, IHEs granting at least 50 percent baccalaureate degrees would most often be considered a baccalaureate college, regardless of the other types of degrees (associated, masters, etc) they offer. Similarly, research driven programs offering baccalaureate degrees as well as masters and doctoral degrees would often be determined by level of research, degrees awarded, and faculty and student populations ("Carnegie Classifications | Basic Classification," n.d.).

These classifications appear to correlate well with IHE student body size and serve as a proxy for similar characteristics shared among the examined subgroups within this study.

Finally, open-ended survey responses were evaluated and coded. Coding categorizes verbatim responses into groups that can then be used in analysis. However, coding processes are open to judgment and interpretation by the coder. To minimize the potential for bias in transforming verbatim data into standardized codes a standardized process should be used to identify and group responses according to key themes (Miles & Huberman, 1994). The survey had limited open-ended questions and therefore few answers were provided in this format. All open-ended answers provided were examined and, when appropriate, reclassified into one of the survey's provided answers. Respondent answers that were considered unclear and/or ambiguous were analyzed separately. Overall, the open-ended responses were few.

Data Analysis

The purpose of the analysis was to identify descriptive patterns and trends related to IHE administrative practices around first-generation college students. Data were analyzed using SPSS. The exploratory nature of this study coupled with the small response rate to the survey and the smaller number of responses in each subgroup inferential statistical testing was deemed unconstructive. Instead, response frequencies were calculated, both overall and for key institutional subgroups (i.e., Carnegie classifications, institutional size groupings, and geographic location indicators).

Evaluating Survey Non-response

The explanatory power of sample surveys is largely dependent on the full measure of response on the part of selected participants. As a result, something less than full response to a sample survey represents a source of potential bias in results. Bias results when there are systematic differences between responders and non-responders on key attributes the researcher is measuring, acknowledging that some attributes may be more susceptible to bias given the correlation between the measure in question and a respondent's propensity to respond (Groves, 2006). The effect of non-response can be larger in some surveys than others, and also can vary from question-to-question in the same survey (Groves, 2006).

Quantifying the extent of non-response bias inherent in sample survey data, however, is challenged by the fact that it we cannot know with certainty how non-responders might have responded to the survey. Effectively, given that very little is known about non-responders it is difficult to assess the impact of their absences on final data analyses. Instead, we might evaluate the likelihood for non-response bias by profiling responders and non-responders according to their known characteristics.

For the purposes of this study, four types of profile data available from the IPEDS collection were used to evaluate differences between those who did and did not respond to the survey: 1) An institution's Carnegie Classification; 2) institutional enrollment; 3) the geographic region in which an institution is located; and 4) whether an institution is a land grant college or university. Response frequencies were calculated for each profile data subgroup (Table 2). Given the relatively small sample sizes within cells, it was not

practical to formally test for statistical differences among institutional groupings; instead, data were evaluated for descriptive trends.

Table 2 describes the characteristics of those IHEs responding and not responding to the survey. Among the 562 potential responders, there were few differences between institutions that responded to the survey and those that did not. When looking at responding institutions' Carnegie classifications we see that, on average, that the following types of institutions were somewhat less likely to be represented in the sample: 1) Baccalaureate colleges, with diverse fields of study (66%); 2) baccalaureate/Associate's colleges (64%); 3) Master's colleges and universities, with smaller programs (66%); and 4) research universities with high and very high research activity (63 and 65%, respectively). Proportionally, very large institutions – with enrollments above 20,000 students – were less likely to respond to the survey (66%), while small institutions with less than 1,000 students were proportionally more likely to have responded. Taken together, one possible conclusion that might be drawn from this analysis is that larger, comprehensive research universities maybe underrepresented in the analytic sample. For the most part, survey responses were geographically representative, with one exception – there were proportionally fewer respondents from the Rocky Mountain region (55%).

With the few exceptions noted previously, the IHEs responding to this inquiry about first-generation college students showed little difference when compared across the following four characteristics, Carnegie Classification (both individual and aggregated), region, IHE size, and land-grant status. Accordingly, I concluded that the potential for

non-response bias, relevant to observed institutional characteristics, was low. That said, no extant research exists to support or refute claims that these profile characteristics for four-year institutions are associated with institutional behavior related to identifying, tracking, and supporting first-generation college students, making it impossible to know with certainty how survey non-response may have impacted the study's findings.

Limitations

The study's primary limitation rests with its generalizability. The decision to focus on four-year public institutions constrains the applicability of the study's findings to institutions within that sector. However, the uncertainties attributable to survey non-response call for further caution in applying the study's findings more generally to even the subset of four-year public institutions. Taken together, the findings should be considered exploratory, yet an important first step toward better understanding the existing landscape of institutional policies and practices.

CHAPTER 4: FINDINGS

The study's findings are organized into four sections, each corresponding with one of the study's research questions: 1) the extent to which institutions of higher education (IHE) identify and track first-generation college students; 2) among those who do identify first-generation college students, the definition that is used to describe them; 3) the processes used by IHEs to identify and track first-generation college students; and 4) types of support offered to these students by IHEs.

Identifying First-Generation College Students

Slightly less than two-thirds of the IHE's (65%) participating in this study identified first-generation college students during their admissions process (Table 3). Although the small number of respondents limits the ability to make definitive comparisons among different types of IHEs, descriptively institutional responses suggest several interesting trends. First, the share of IHEs identifying first-generation college students at the point of admissions is fairly consistent according to institutions' Carnegie classifications, with 63-67% of institutions within each classification identifying first-generation college students (Table 3). However, survey responses suggest that there may be some variation in practice among institutions located in different geographic regions. Eighty-four percent of institutions located in the IPEDS-classified Great Lakes region identified first-generation college students, whereas just over one-third of institutions (in the Mid-East region (38%) reported identifying first-generation college students at admissions. Institutions located in the Far West region were more evenly split with about

half identifying first-generation college students and half reporting that they do not identify these students.

The extent to which institutions identified first-generation college students at the point of admissions varied according to institutional size, albeit without a clear pattern (Table 3). That is, although variation existed it was not the case that identification practices were skewed toward larger or smaller institutions.

Criteria Used to Identify First-Generation College Students

IHEs indicating that they identify first-generation college students at the outset of their admissions process subsequently were asked about the criteria they used to determine first-generation college student status. Using the definitional framework established for this study (Table 1), IHEs were asked about whether they employed one of four definitions to identify incoming first-generation college students:

1. One or both parents attended college, but did not earn a degree.
2. One or both parents completed high school, but neither attended college
3. Parents did not complete high school
4. Parents did not complete middle school

Among IHEs that identified first-generation college students at admissions, slightly more than half (55%) adopted the most liberal definition – with one or more parents having attended college, but neither having earned a degree (Table 4). The majority of other IHEs identified first-generation college students as those whose parents completed high school, but did not attend college (41%) (Table 4).

The limited responses make it difficult to draw irrefutable conclusions across the different IHE types, however, the institutional responses suggest some descriptive trends. First, the definitions used by IHEs to define first-generation college students appear to vary across the Carnegie Classification groupings (Table 4). Doctoral and research universities were more likely to use the more liberal definition, identifying first-generation college students as having parents with some college but no degree; about 61% of IHE's matching this Carnegie classification did so, with the remaining institutions defining first-generation college students as having parents who had no college experience. There was a similar pattern among master's colleges and universities, with 58% employing a definition that allowed parents to have some college and 40% of master's level institutions limited the first-generation college student designation to students having parents with no college experience. In contrast, the balance between the two definitions was reversed in the case of baccalaureate colleges – about 46% identified first-generation college students as having parents with a high school diploma, but no college; 42% identified first-generation college students as having either parent with some college, but no college degree earned.

Similarly, there was a descriptive pattern according to IHE enrollment – with larger institutions tending to adopt a more liberal definition (Table 4). For instance, about two-thirds IHEs enrolling 10,000-19,999 students adopted the definition that allowed parents to have some college, but no degree; just 29% adopted a definition that restricted the first-generation college student definition to just those whose parents had a high school degree. Whereas, among IHE's with student enrollments between 1,000-

4,999 students, half defined first-generation college students as having parents with a high school degree, but no college; 46% defined first-generation college students as parents with some college, but no college degree.

Finally, the survey responses point toward the potential for geographic variation in the definitions used (Table 4). Examining trends in first-generation college student definitions among IPEDS-designated regions showed wide variation in the extent to which the two definitions were used. For instance, most IHEs in New England and the Rocky Mountains (83%, respectively) defined first-generation college students as having a parent with some college, but no degree. However, in other regions there was more a more equal balance in the share of IHEs that used either definition.

Process Used to Identify First-Generation College Students

Among IHEs that identify first-generation college students during the admissions process, 64% track first-generation college students once they matriculate to the institution; 11% indicated that they did not track first-generation college students upon matriculation (Table 5). Interestingly, nearly a quarter of respondents did not know whether the institution tracked first-generation college students after matriculation.

Whether tracking occurred did not appear to vary across different types of institutions, according to Carnegie classifications (Table 5). Examining the geographic regions revealed some variation. For instance, while 83% of New England institutions tracked first-generation college students upon matriculation, just 44% of Mid East institutions did so (Table 5). Survey findings also suggest that smaller institutions may be more likely to track first-generation students after matriculation than their peer

institutions that enroll more students. Between 68 and 73% of institutions with less than 5,000 students tracked students, whereas 58-60% of institutions with more than 10,000 students did so (Table 5).

Across all institutions, different administrative offices were responsible for maintaining institutional data on first-generation college students (Table 6). At 34% of institutions admissions offices maintained data on which students were first-generation college students. Similarly, about 31% of institutions the Office of Institutional Research held the data, and at about 11% institutions this information was maintained by the Registrar's office. Additionally, 25% of respondents indicated that some other office was responsible for first-generation college students' data. Examples provided by respondents for these offices included, Student Success Centers, New Student and Retention Programs, and the campus TRIO program office. No indication was provided as to whether these other administrative sections were connected to admissions, registrars, or institutional research offices.

Support Programs for First-Generation College Students

Three-quarters of IHEs who identified first-generation college students at admissions indicated that they offer support programs for these students who enroll at their institutions; just 11% indicated that they did not offer such programs (Table 7). Among institutions that offer programs for first-generation college students, 81% offered academic support, and about two-thirds of IHEs offered financial aid, social/community building activities, and mentoring programs (68% of IHEs, respectively, for each response). Just under two-thirds of IHEs offered networking opportunities (59%) for

their first-generation college students (Table 8). There was no notable variation in responses across geographic regions, IHE size, or Carnegie classification.

Summary

Nearly two-thirds of IHEs identify first-generation college students at the point of admissions. Among institutions that identify, about half define a first-generation college student as a person with a parent with “some college, but no college degree,” but nearly 41% define first-generation college students as persons with parents with no postsecondary educational experience. The majority of IHEs have some mechanism in place to track first-generation college students once they matriculate to the institution. This is usually the responsibility of the admissions office. However, despite identifying and tracking first-generation students, only about three-quarters reported offering support programs for these students.

CHAPTER 5: DISCUSSION

Introduction/Discussion

Race, gender, socioeconomic status (SES), and academic preparedness are the cornerstone traits first-generation college student researchers investigate. The literature on first-generation college students shows a disconnection between how researchers and institutions of higher education (IHE) define them. This study confirms that while many IHEs identify first-generation college students at the point of admissions, they do so using different definitions. Using different definitions can have serious implications for first-generation college students as they are not a homogenous group and face a number of challenges that non-first-generation college student do not. Among those challenges are lower academic preparedness and other pre-college traits that can impede college success (Bowen, Chingos, & McPherson, 2009; Murphy & Hicks, 2006; Nunez & Cuccaro-Alamin, 1998; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996; Warburton, Bulgarin, & Nunez, 2001). Additionally, first-generation college students often come from lower socioeconomic standing (Ishitani, 2006; Nunez & Cuccaro-Alamin, 1998; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996) and face racial barriers as well (Hearn, 1991; Inkelas & McCarron, 2006; Karen, 2002; Ting, 2003).

This study did not seek to further understand these well-established aspects of first-generation college students. Rather, this study sought to understand how IHE's identify, classify, track, and support first-generation college students. This was accomplished by surveying public, four-year, degree-granting IHEs about their policies and practices related to first-generation college students.

This study adds to the field surrounding first-generation college students. Specifically, I developed a typology of commonly used definitions of first-generation college students from the research literature (Table 1). Building on this typology I conducted a national survey of public, four-year, baccalaureate degree-granting IHEs where I applied this typology to better understand how aligned the common research definitions used are with institutional policies and practices for identifying and tracking first-generation college students.

The survey results show that ambiguity is the central theme to this study's findings. There is a lack of consensus among IHEs on how they determine first-generation college student status, if at all. This ambiguity warrants consideration as the literature on first-generation college students shows that the amount of postsecondary education their parents possess factors into their own success as college students (S. Choy, 2001; S. P. Choy, Horn, Nuñez, & Chen, 2000; Nunez & Cuccaro-Alamin, 1998; Pike & Kuh, 2005). IHEs appear to treat first-generation college students in a binary fashion as either first-generation college student or not and this one-size-fits-all approach reduces the likelihood of success for the already disadvantaged student. The nuance of these students' needs and expectations for success is further diminished when IHEs use different criteria to determine first-generation college student status, assuming they do identify them in the first place.

It is important note that researchers typically establish defining criteria for first-generation college student status for the purpose of their studies, but spend little time attending to the real-world implications of their chosen definition. Some researchers,

including Choy (2001), Inmann and Mayes (1999) and Pascarella (2004) use one or more parent completing high school as their criteria. Others, opt for one or more parent having some postsecondary education, among them are Ishitani (2006), Pike and Kuh (2005), and Warburton et al. (2001). Most definitions used leave room for interpretation. For instance, not completing college does not imply that they did complete high school. Likewise, attending college could mean dropping out during the first semester or it could mean leaving college with only a few classes left to complete the degree. This lack of specificity by researchers and IHEs creates ambiguity which can lead to uncertainty on how best to identify and support first-generation college students. This shows that there is support for first-generation college students even among IHEs that claim not to identify or track them at all. This discovery also indicates a clear need for further study of IHE practices related to identifying and supporting first-generation college students.

Of the two commonly used definitions, one does not seem inherently better than the other. An argument can be made for either “completed high school” or “some college, no degree” being acceptable as the best way to determine first-generation college student status. First-generation college students exist on a spectrum of varying experience, knowledge, and other pre-college traits that all add or detract to the level of success they will have with navigating the college experience. The research on first-generation college students shows that those with parents possessing more experience with postsecondary education have a greater likelihood of succeeding in college than those whose parents have little to none. Understanding the wide variation among this student population could aid IHEs in both matriculating and graduating more first-

generation college students. That being said there are a number of policy implications to consider.

First, IHEs that understand that the more exposure first-generation college students have to postsecondary education based on their parents' level of education could provide tailored support programs for them. Such customized support could allow IHEs to support more students overall by maximizing their resource allocation among all students. Such tailored support could be integrated and/or added to already successful pipeline programs both before and during college. Examples of such pipeline program include the TRIO programs as well as other national and institution-specific programs like the previously mentioned PASS, ASPIRE, and A Better Chance. Building upon existing infrastructure could prove astute by maximizing both financial resources as well as capitalizing on the existing human capital that administers such programs.

Second, at the federal level, policy changes could also have large impact on these students. For example, The US Census Bureau, a part of the US Department of Commerce, plays a large role in how many different facets of society are categorized and characterized. Perhaps, these departments could, in partnership with IHEs develop and issue a standard definition that best denotes the defining criteria of a first-generation college student. These standards could be adopted by the National Center for Education Statistics (NCES) as well as all IHEs providing institutional data to the Integrated Postsecondary Education Data Systems (IPEDS) database. Such adoption could further enhance the uniformity among IHEs as well as provide a basis for a formal definition adoption in the IPEDS.

Overall, IHEs might be well served by relatively uniform consensus around what criteria determine first-generation college student status. Additionally, consistent definitions may be used as a basis for a more nuanced approach to allocating resources to support first-generation college students. Furthermore, it could allow IHEs and/or federal/state funding to be distributed maximally as tailored support could prove more equitable. In the end, supporting college access and success among first-generation college students serves the individuals, the institutions, and society at large.

Limitations

There are a number of potential limitations to this study. Among them is the survey's low response rate which could reduce generalizability and understanding of true variation across each IPEDS-defined region as it relates to IHE policies and practices related to first-generation college students. Additionally, focusing on public, four-year, degree-granting IHEs confines the applicability of this study's findings to that sector of postsecondary education. Care also should be taken with generalizing the study's findings to non-public, four year institutions. That said, a natural extension of this work would be research that examines the policies and practices of private, for-profit, and two-year degree-granting institutions. However, the uncertainties attributable to survey non-response call for further caution in applying the study's findings more generally to even the subset of four-year public institutions. Taken together, the findings should be considered exploratory, yet an important first step toward better understanding the existing landscape of institutional policies and practices.

An unexpected finding occurred during the primary data collection period. Given an initially low survey response rate, direct telephone calls to IHEs was necessary to increase the overall responses. Randomly calling additional IHEs revealed an unexpected layer of complexity to how IHEs identify, classify, track, and support first-generation college students. Two phenomena commonly occurred. First, the initial respondent could not answer questions about admissions practices and first-generation college students. In these instances, I was frequently transferred two to three times to another admissions officer or another administrative office entirely, including the Institutional Research Office, the Dean of the College, and the Provost's offices before someone could speak about admissions practices related to first-generation college students. Sometimes, telephone respondents seemed defensive and protective about their administrative practices and questioned the integrity of the study, requested an electronic version of the survey, or ended the communication outright.

Second, the person interviewed often volunteered unsolicited information about their IHE and its practices related to first-generation college students. In these instances, personnel were genuinely interested in the study and/or excited to speak about their roles in supporting first-generation college students and of the varying programs, support, and opportunities available. Interestingly, a number of IHEs said they do not identify first-generation college students at the admissions process, but did note they supported them if those students identified themselves after matriculation. Such support ranged from IHE-specific financial aid and academic support to mentorship opportunities. One IHE did not track first-generation college students, but had unique program for identifying first-

generation college students and supporting them upon matriculation. Their state is comprised of a largely rural population with low socioeconomic status and has a statewide mandate to increase the number of students matriculating and graduating with a college degree. This IHE, along with others in the state, rely on high school counselors and summer programs starting in 8th grade to begin supporting and preparing students for college matriculation with an emphasis on first-generation college students.

These vignettes into other practices, methods, and means of supporting first-generation college students were not captured by the initial electronic survey. These experiences also raised questions about whether the person answering the electronic survey felt empowered to answer the questions, or if there was a subsequent passing along of the survey to academic personnel in higher positions. Given the large number of responses from admissions officers, it appears that the act of speaking on the phone changed the nature of the information exchange. This dynamic, often leading to in-person communication with academic personnel holding more autonomy and authority within their IHE may have gleaned information with more depth related to administrative practices and first-generation college students. Given this unexpected development, a natural next step for investigation would be to undertake a separate study that involved phone or in-person interviews with IHE personnel in higher positions regardless of whether their IHE formally identifies first-generation college students.

Conclusions/Future Directions

The conceptual and empirical work from this exploratory study shows there are differences in how large and small IHEs identify, classify, and track first-generation

college students. Just 41% of IHEs that fall into the Baccalaureate Colleges Carnegie classification identify first-generation college students using the definition of “some college, no degree,” while this number is closer to 60% for those in both the Master's Colleges and Universities and Doctoral/Research Universities classifications. This definition is also favored by IHEs with student bodies ranging from 10,000 – 19,999 (67%). This seems to suggest that smaller IHEs and those with less academic offerings while they may identify and track first-generation college students, they may not have robust infrastructure to support these students. Yet, these same IHEs offer more financial support than the larger institutions with more academic programs. The implications of these findings raises questions about institutional practice and policies related to first-generation college students. A first-generation college student looking at these results might also make different choices about where to attend college too.

The definitions used to define first-generation college students are loaded with assumptions about first-generation college students and those assumptions are not without consequence for students, institutions, and society. It has been well established that college educated workers typically benefit from higher wage opportunities in the labor market resulting from their economic productivity. Higher wages increase the tax-generated revenue required for supporting the economic, social, and political endeavors of a nation. Additionally, college educated people have a tendency towards more civic engagement and have generally healthier lifestyles than those without a college education (Baum et al., 2013). Moreover, research shows that higher levels of education are associated with better health outcomes, and a decrease in mortality (Cutler & Lleras-

Muney, 2006; DeWalt et al., 2004; Walsemann et al., 2012). These are benefits measurable for individuals and society in both financial and non-financial terms.

Potential implications of a standard definition of a first-generation college student could help address larger issues such as how the category of first-generation college student emerged and the internal assumptions that IHEs and individuals might make about such a label. Through the process of data collection, the nature and the experience of a first-generation college student is reduced to a single indicator. Care must be taken in how we define first-generation college students or we effectively reduce individuals' lived experience in a particular way – necessarily ignoring some aspects of this experience – in our effort to quantify and characterize. It is particularly important that we diligently and authentically develop these definitions to capture the essence of the individual experience.

Additional and expanded surveys of IHEs could glean more information about institutional policies and practices related to first-generation college students. However, speaking directly with admissions personnel appears to be a necessary next step in future research. These front-line IHE personnel are a wellspring of institution-specific knowledge and could potentially add to a national-level conversation about institutional trends and patterns surrounding first-generation college students. Specifically, engaging both government agencies, such as the US Census Bureau, and academic professionals, including student services, admissions, and others to standardize the definition of a first-generation college student might be a good next step towards helping ensure that first-

generation college students graduate college and become productive members of the labor market.

Table 1

Typology of commonly used criteria for defining first-generation college student status based on parental education

Author(s)	Year	Parents who did not graduate from high school and by extension did not attend any post-secondary education	Parents who graduated high school, but did not attend any post-secondary education	Parents who graduated high school and attended some post-secondary education, but did not earn a degree
Choy, S.	2002	x	x	
Gofen, A	2009	x	x	
Gohn et al. (NASPA)	2006		x	x
Hsiao	1992	x	x	
Inmann and Mayes	1999	x	x	
Ishitani	2006	x	x	x
Lee	2004	x	x	x
McCarron, GP; Inkelas, K	2006	x	x	
Murphy and Hicks	2006	x	x	x
Nunez and Cuccaro-Alamin	1998	x	x	
Pascarella	2004	x	x	
Pike and Kuh	2005	x	x	x
Stuber	2010	x	x	x
Terenzini, PT, et al.	1996	x	x	
Ting, S	2003	x	x	
Wang, T.	2012	x	x	x
Warburton et al.	2001	x	x	x
Woosley, S. et al.	2011	x	x	

Table 2

Summary of Institutions of Higher Education (IHE) Characteristics in Study

Characteristics	Possible responses		Responses (partial & complete)		Complete Responses		Partial Response		Non-response	
	n	%	n	%	n	%	n	%	n	%
Overall	561	30.7	172	30.7	158	28.2	14	2.5	390	69.5
Carnegie Classification										
Baccalaureate Colleges--Arts & Sciences	31	22.6	7	22.6	7	22.6	0	0.0	24	77.4
Baccalaureate Colleges--Diverse Fields	65	33.8	22	33.8	20	30.8	2	3.1	43	66.2
Baccalaureate/Associate's Colleges	25	36.0	9	36.0	9	36.0	0	0.0	16	64.0
Doctoral/Research Universities	28	25.0	7	25.0	7	25.0	0	0.0	21	75.0
Master's Colleges and Universities (larger programs)	169	29.0	49	29.0	45	26.6	4	2.4	120	71.0
Master's Colleges and Universities (medium programs)	61	21.3	13	21.3	13	21.3	0	0.0	48	78.7
Master's Colleges and Universities (smaller programs)	38	34.2	13	34.2	13	34.2	0	0.0	25	65.8
Research Universities (high research activity)	73	37.0	27	37.0	23	31.5	4	5.5	46	63.0
Research Universities (very high research activity)	72	34.7	25	34.7	21	29.2	4	5.6	47	65.3
Carnegie Classification (aggregated)										
Baccalaureate Colleges--(all)	121	31.4	38	31.4	36	29.8	2	1.7	83	68.6
Master's Colleges and Universities--(all)	268	28.0	75	28.0	71	26.5	4	1.5	193	72.0
Doctoral/Research Universities--(all)	173	34.1	59	34.1	51	29.5	8	4.6	114	65.9
IHE size										
Under 1,000	16	18.8	3	18.8	3	18.8	0	0.0	13	81.3
1,000 - 4,999	144	30.6	44	30.6	42	29.2	2	1.4	100	69.4
5,000 - 9,999	141	31.2	44	31.2	40	28.4	4	2.8	97	68.8
10,000 - 19,999	131	27.5	36	27.5	34	26.0	2	1.5	95	72.5
Above 20,000	130	34.6	45	34.6	39	30.0	6	4.6	85	65.4
Land Grant status										
Land Grant	69	30.4	21	30.4	20	29.0	1	1.4	48	69.6
Not Land Grant	493	30.6	151	30.6	138	28.0	13	2.6	342	69.4
Region (IPEDS)										
Far West	57	28.1	16	28.1	14	24.6	2	3.5	41	71.9
Great Lakes	72	36.1	26	36.1	25	34.7	1	1.4	46	63.9
Mid East	107	24.3	26	24.3	24	22.4	2	1.9	81	75.7
New England	38	23.7	9	23.7	9	23.7	0	0.0	29	76.3
Plains	51	27.5	14	27.5	13	25.5	1	2.0	37	72.5
Rocky Mountains	29	44.8	13	44.8	10	34.5	3	10.3	16	55.2
Southeast	151	30.5	46	30.5	41	27.2	5	3.3	105	69.5
Southwest	57	38.6	22	38.6	22	38.6	0	0.0	35	61.4

Table 3

Institutions of Higher Education Identifying First-Generation College Students at Admissions

	Total	"Yes"		"No"		"Don't know"	
		n	%	n	%	n	%
Overall	158	102	64.6	44	27.8	12	7.6
Carnegie Classification (aggregated)							
Baccalaureate Colleges	36	24	66.7	8	22.2	4	11.1
Master's Colleges and Universities	71	45	63.4	21	29.6	5	7.0
Doctoral/Research Universities	51	33	64.7	15	29.4	3	5.9
Region (IPEDS)*							
Far West	14	7	50.0	7	50.0	0	0.0
Great Lakes	25	21	84.0	3	12.0	1	4.0
Mid East	24	9	37.5	13	54.2	2	8.3
New England	9	6	66.7	2	22.2	1	11.1
Plains	13	9	69.2	3	23.1	1	7.7
Rocky Mountains	10	6	60.0	4	40.0	0	0.0
Southeast	41	29	70.7	6	14.6	6	14.6
Southwest	22	15	68.2	6	27.3	1	4.5
IHE Size							
Under 1,000	3	2	66.7	1	33.3	0	0.0
1,000 - 4,999	42	26	61.9	13	31.0	3	7.1
5,000 - 9,999	40	25	62.5	11	27.5	4	10.0
10,000 - 19,999	34	24	70.6	8	23.5	2	5.9
Above 20,000	39	25	64.1	11	28.2	3	7.7

Table 4

Criteria Used to Identify First-Generation College Students At Admissions

	Total Respondents		"Some college, no degree"		"Completed high school"		Did not complete high school		"Don't Know" & Other Nonquantifiable	
	n	%	n	%	n	%	n	%	n	%
Overall	102	54.9	42	41.2	1	1.0	3	2.9		
Carnegie Classification (aggregated)										
Baccalaureate Colleges	24	41.7	11	45.8	1	4.2	2	8.3		
Master's Colleges and Universities	45	57.8	18	40.0	0	0.0	1	2.2		
Doctoral/Research Universities	33	60.6	13	39.4	0	0.0	0	0.0		
Region (IPEDS)*										
Far West	7	57.1	3	42.9	0	0.0	0	0.0		
Great Lakes	21	52.4	10	47.6	0	0.0	0	0.0		
Mid East	9	44.4	5	55.6	0	0.0	0	0.0		
New England	6	83.3	1	16.7	0	0.0	0	0.0		
Plains	9	55.6	2	22.2	0	0.0	1	11.1		
Rocky Mountains	6	83.3	1	16.7	0	0.0	0	0.0		
Southeast	29	48.3	15	51.7	0	0.0	0	0.0		
Southwest	15	53.3	5	33.3	1	6.7	1	6.7		
IHE Size										
Under 1,000	2	50.0	0	0.0	0	0.0	1	50.0		
1,000 - 4,999	26	46.2	13	50.0	0	0.0	1	3.8		
5,000 - 9,999	25	52.0	11	44.0	1	4.0	0	0.0		
10,000 - 19,999	24	66.7	7	29.2	0	0.0	0	0.0		
Above 20,000	25	56.0	11	44.0	0	0.0	0	0.0		

Table 5

Institutions of Higher Education (IHE) That Track First-Generation College Student at Matriculation

	Total Respondents		"Yes"		"No"		"Don't know"	
	n	%	n	%	n	%	n	%
Overall	102	63.7	11	10.8	26	25.5		
Carnegie Classification (aggregated)								
Baccalaureate Colleges	24	66.7	2	8.3	6	25.0		
Master's Colleges and Universities	45	64.4	7	15.6	9	20.0		
Doctoral/Research Universities	33	60.6	2	6.1	11	33.3		
Region (IPEDS)*								
Far West	7	71.4	0	0.0	2	28.6		
Great Lakes	21	52.4	6	28.6	4	19.0		
Mid East	9	44.4	1	11.1	4	44.4		
New England	6	83.3	0	0.0	1	16.7		
Plains	9	66.7	0	0.0	3	33.3		
Rocky Mountains	6	66.7	0	0.0	2	33.3		
Southeast	29	65.5	3	10.3	7	24.1		
Southwest	15	73.3	1	6.7	3	20.0		
IHE Size								
Under 1,000	2	0.0	0	0.0	2	100.0		
1,000 - 4,999	26	73.1	3	11.5	4	15.4		
5,000 - 9,999	25	68.0	2	8.0	6	24.0		
10,000 - 19,999	24	58.3	3	12.5	7	29.2		
Above 20,000	25	60.0	3	12.0	7	28.0		

Note. This table includes only the 102 responses from IHEs that completed the survey and indicated that they identify first-generation college students during the admissions process.

Table 6

Administrative Office Responsible for Maintaining Data Indicating Whether an Individual Student is a First-Generation College Student

	Total Respondents	"Yes"		"No"		"Don't know"	
		n	%	n	%	n	%
Overall	77	65	84.4	2	2.6	10	13.0
Admission's Office	26	22	33.8	1	50.0	3	30.0
Office of Inst. Research	24	20	30.8	1	50.0	3	30.0
Registrar's Office	9	7	10.8	0	0.0	2	20.0
Other	17	16	24.6	0	0.0	1	10.0
Don't Know	1	0	0.0	0	0.0	1	10.0

Note. This table includes only the 77 responses from IHEs that completed the survey and indicated that they identify first-generation college students during the admissions process and provided an answer to this query (25 IHEs did not respond to this question). Additionally, IHEs were asked about the primary office that was responsible for the data; multiple responses were not allowed, which explains why the data adds to 100%.

Table 7

Institutions of Higher Education (IHE) Providing Support to Enrolled First-Generation College Students after Matriculation

	Total Respondents			"Yes"			"No"			"Don't know"		
	n	%		n	%		n	%		n	%	
Overall	102	78	76.5	11	10.8	13	12.7					
Carnegie Classification (aggregated)												
Baccalaureate Colleges	24	16	66.7	5	20.8	3	12.5					
Master's Colleges and Universities	45	36	80.0	3	6.7	6	13.3					
Doctoral/Research Universities	33	26	78.8	3	9.1	4	12.1					
Region (IPEDS)*												
Far West	7	6	85.7	0	0.0	1	14.3					
Great Lakes	21	16	76.2	4	19.0	1	4.8					
Mid East	9	6	66.7	2	22.2	1	11.1					
New England	6	6	100.0	0	0.0	0	0.0					
Plains	9	7	77.8	1	11.1	1	11.1					
Rocky Mountains	6	6	100.0	0	0.0	0	0.0					
Southeast	29	21	72.4	2	6.9	6	20.7					
Southwest	15	10	66.7	2	13.3	3	20.0					
IHE Size												
Under 1,000	2	1	50.0	1	50.0	0	0.0					
1,000 - 4,999	26	17	65.4	5	19.2	4	15.4					
5,000 - 9,999	25	22	88.0	1	4.0	2	8.0					
10,000 - 19,999	24	19	79.2	1	4.2	4	16.7					
Above 20,000	25	19	76.0	3	12.0	3	12.0					

Note. This table includes only the 102 responses from IHEs that completed the survey and indicated that they identify first-generation college students during the admissions process.

Table 8

Types of Support Offered to First Generation College Students

	Total Responses		Financial Aid		Soc/CommBuilding		Networking		Mentoring		Academic Support		Other	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Overall	78	67.9	53	67.9	46	59.0	53	67.9	63	80.8	7	9.0		
Carnegie Classification (aggregated)														
Baccalaureate Colleges	16	81.3	12	75.0	10	62.5	12	75.0	14	87.5	3	18.8		
Master's Colleges and Universities	36	69.4	23	63.9	18	50.0	22	61.1	28	77.8	2	5.6		
Doctoral/Research Universities	26	57.7	18	69.2	18	69.2	19	73.1	21	80.8	2	7.7		
Region (IPEDS)*														
Far West	6	83.3	5	83.3	5	83.3	5	83.3	6	100.0	0	0.0		
Great Lakes	16	50.0	9	56.3	9	56.3	10	62.5	13	81.3	1	6.3		
Mid East	6	50.0	5	83.3	3	50.0	6	100.0	6	100.0	1	16.7		
New England	6	33.3	5	83.3	3	50.0	3	50.0	5	83.3	0	0.0		
Plains	7	71.4	3	42.9	2	28.6	5	71.4	5	71.4	2	28.6		
Rocky Mountains	6	66.7	3	50.0	3	50.0	3	50.0	5	83.3	2	33.3		
Southeast	21	76.2	14	66.7	13	61.9	13	61.9	15	71.4	1	4.8		
Southwest	10	100.0	8	80.0	8	80.0	8	80.0	8	80.0	0	0.0		
IHE Size														
Under 1,000	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0		
1,000 - 4,999	17	82.4	14	82.4	11	64.7	13	76.5	16	94.1	2	11.8		
5,000 - 9,999	22	68.2	13	59.1	10	45.5	14	63.6	16	72.7	1	4.5		
10,000 - 19,999	19	63.2	13	68.4	13	68.4	11	57.9	16	84.2	2	10.5		
Above 20,000	19	57.9	13	68.4	12	63.2	15	78.9	15	78.9	2	10.5		

Note: This table includes only the 78 responses from IHEs that completed the survey and indicated that they provide additional support for enrolled first-generation college students.

References

- Alexander, C. J., & Mitchell, D. A. (2010). The role of enrichment programs in strengthening the academic pipeline to dental education. *Journal of Dental Education*, 74(10 suppl), S110–S120.
- Anyon, J. (1980). *Social class and the hidden curriculum of work*. Journal of education.
- Aries, E., & Seider, M. (2005). The interactive relationship between class identity and the college experience: The case of lower income students. *Qualitative Sociology*, 28(4), 419–443. <https://doi.org/10.1007/s11133-005-8366-1>
- Baum, S., Ma, J., & Payea, K. (2013). *Education pays 2013: The benefits of higher education for individuals and society* (p. 48). The College Board.
- Becker, G. S. (2009). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.
- Beer, G., Le Blanc, M., & Miller, M. J. (2008). Summer learning camps: helping students to prepare for college. *College Student Journal*, 42(3), 930–938.
- Belfield, C. R., & Levin, H. M. (2007). *The price we pay: Economic and social consequences of inadequate education*. Washington, D.C: Brookings Institution Press.
- Biggart, N. W. (2002). *Readings in economic sociology*. Malden, Mass.: Blackwell.
- Bourdieu, P. (1977). *Outline of a theory of practice*. Cambridge University Press.
- Bourdieu, P. (1984). *Distinction: A social critique of the judgement of taste*. Harvard University Press.
- Bowen, W. G., Chingos, M. M., & McPherson, M. S. (2009). *Crossing the finish line: Completing college at America's public universities* (First Edition first Printing). Princeton University Press.
- Bowles, S. (1973). Understanding unequal economic opportunity. *The American Economic Review*, 63(2), 346–356.
- Button, K. S., Ioannidis, J. P. A., Mokrysz, C., Nosek, B. A., Flint, J., Robinson, E. S. J., & Munafò, M. R. (2013). Power failure: Why small sample size undermines the reliability of neuroscience. *Nature Reviews. Neuroscience*, 14(5), 365–376. <https://doi.org/10.1038/nrn3475>

Cannon, J., Broyles, T., Seibel, A., & Anderson, R. (2009). Summer enrichment programs: Providing agricultural literacy and career exploration to gifted and talented students. *Journal of Agricultural Education, 50*(2), 26–37. <https://doi.org/10.5032/jae.2009.02026>

Carnegie Classifications | Basic Classification. (n.d.). Retrieved October 29, 2016, from http://carnegieclassifications.iu.edu/classification_descriptions/basic.php

Carnevale, A. P. (2011, November). College graduates earn higher pay. *U.S. News & World Report*. Retrieved from <http://search.proquest.com/docview/910426437>

Chacon, P., & Soto-Johnson, H. (2003). Encouraging young women to stay in the mathematics pipeline: Mathematics camps for young women. *School Science and Mathematics, 103*(6), 274–284. <https://doi.org/10.1111/j.1949-8594.2003.tb18150.x>

Chaney, B., Muraskin, L., Cahalan, M., & Rak, R. (1997). *National study of student support services. Third-year longitudinal study results and program implementation study update* (p. 660). Rockville, MD: Westat, Inc, Rockville, MD.; SMB Economic Research, Inc., Washington, DC. Retrieved from <http://eric.ed.gov/?id=ED410805>

Choy, S. (2001). Students whose parents did not go to college: Postsecondary access, persistence, and attainment. findings from the condition of education, 2001. Retrieved from <http://eric.ed.gov/?id=ED460660>

Choy, S. P., Horn, L. J., Nuñez, A.-M., & Chen, X. (2000). Transition to college: What helps at-risk students and students whose parents did not attend college. *New Directions for Institutional Research, 2000*(107), 45–63. <https://doi.org/10.1002/ir.10704>

Cutler, D. M., & Lleras-Muney, A. (2006). *Education and health: Evaluating theories and evidence* (Working Paper No. 12352). National Bureau of Economic Research. Retrieved from <http://www.nber.org/papers/w12352>

De Graaf, N. D., De Graaf, P. M., & Kraaykamp, G. (2000). Parental cultural capital and educational attainment in the Netherlands: A refinement of the cultural capital perspective. *Sociology of Education, 73*(2), 92–111. <https://doi.org/10.2307/2673239>

DeAngelo, L., Franke, R., Hurtado, S., Pryor, J., & Tran, S. (2011). *Completing college: Assessing graduation rates at four-year institutions*. Los Angeles: Higher Education Research Institute, UCLA.

DeWalt, D. A., Berkman, N. D., Sheridan, S., Lohr, K. N., & Pignone, M. P. (2004). Literacy and health outcomes. *Journal of General Internal Medicine, 19*(12), 1228–1239. <https://doi.org/10.1111/j.1525-1497.2004.40153.x>

- Dillman, D. A., & Bowker, D. (2001). The web questionnaire challenge to survey methodologists. In *Dimensions of internet science* (pp. 159–178). Lengerich: Pabst Science Publishers. Retrieved from <http://www.websm.org/db/12/1162/rec/>
- Dillman, D., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method* (4 edition). Wiley.
- Draugalis, J. R., & Plaza, C. M. (2009). Best practices for survey research reports revisited: Implications of target population, probability sampling, and response rate. *American Journal of Pharmaceutical Education*, 73(8). Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2828303/>
- Dumais, S. (2002). *Cultural capital, gender and school success: The role of habitus*. *Sociology of education*.
- 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>
- Duncan, G. J. (2011). *Whither opportunity?: Rising inequality, schools, and children's life chances*. (R. J. Murnane, Ed.). New York : Chicago: Russell Sage Foundation.
- Gohn, L. A., & Albin, G. R. (2006). *Understanding college student subpopulations: A guide for student affairs professionals*. [S.l.]: NASPA Student Affairs Administrators in Higher Education.
- Gray, S. S. (2013). Framing “at risk” students: Struggles at the boundaries of access to higher education. *Children and Youth Services Review*, 35(8), 1245–1251.
- Harkness, S. S., Johnson, I. D., Hensley, B., & Stallworth, J. A. (2011). Apprenticeship of immersion: College access for high school students interested in teaching mathematics of science. *School Science and Mathematics*, 111(1), 11–19. <https://doi.org/10.1111/j.1949-8594.2010.00055.x>
- Hearn, J. C. (1991). Academic and nonacademic influences on the college destinations of 1980 high school graduates. *Sociology of Education*, 64(3), 158–171. <https://doi.org/10.2307/2112849>
- Higher Education Opportunity Act - 2008. (2010, June 28). [Indexes]. Retrieved March 8, 2014, from <http://www2.ed.gov/policy/highered/leg/hea08/index.html>
- Hsiao, K. P. (1992). First-generation college students. *ERIC Digest*. Retrieved from <http://www.eric.ed.gov/ERICWebPortal/detail?accno=ED351079>

- Inkelas, K. K., Daver, Z. E., Vogt, K. E., & Leonard, J. B. (2007). Living-learning programs and first-generation college students' academic and social transition to college. *Research in Higher Education, 48*(4), 403–434.
- Inman, W. E., & Mayes, L. (1999). The importance of being first: Unique characteristics of first generation community college students. *Community College Review, 26*(4), 3.
- Ishitani, T. T. (2006). Studying attrition and degree completion behavior among first-generation college students in the United States. *The Journal of Higher Education, 77*(5), 861–885.
- Kane, T. J., & Rouse, C. E. (1999). The community college: Educating students at the margin between college and work. *The Journal of Economic Perspectives, 13*(1), 63–84.
- Karen, D. (2002). Changes in access to higher education in the United States: 1980-1992. *Sociology of Education, 75*(3), 191–210. <https://doi.org/10.2307/3090265>
- King, J. E. (2003). *Gender equity in higher education: Are male students at a disadvantage?* Washington, DC: American Council on Education.
- Labaree, D. F. (1997). Public goods, private goods: The American struggle over educational goals. *American Educational Research Journal, 34*(1), 39. <https://doi.org/10.2307/1163342>
- Lee, J. J., Sax, L. J., Kim, K. A., & Hagedorn, L. S. (2004). Understanding students' parental education beyond first-generation status. *Community College Review, 32*(1), 1–1.
- Levy, F., & Murnane, R. J. (2005). *The new division of labor: How computers are creating the next job market*. New York; Princeton, N.J.: Princeton University Press.
- MacLeod, J. (1995). *Ain't no makin' it*. Westview Press Inc.
- McCarron, G. P., & Inkelas, K. K. (2006). The gap between educational aspirations and attainment for first-generation college students and the role of parental involvement. *Journal of College Student Development, 47*(5), 534–549. <https://doi.org/10.1353/csd.2006.0059>
- McElroy, E. J., & Armesto, M. (1998). TRIO and upward bound: History, programs, and issues-past, present, and future. *The Journal of Negro Education, 67*(4), 373–380. <https://doi.org/10.2307/2668137>
- Mehan, H. (1992). Understanding inequality in schools: The contribution of interpretive studies. *Sociology of Education, 65*(1), 1–20. <https://doi.org/10.2307/2112689>

- Merritt, C. (2008). First-generation college students: Then and now. *Human Architecture: Journal of the Sociology of Self-Knowledge*, 6(1). Retrieved from <http://scholarworks.umb.edu/humanarchitecture/vol6/iss1/7>
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Sage Publications, Inc.
- Mockovak, B. M. (n.d.). Mixed-mode survey design. What are the effects on data quality? Retrieved March 10, 2017, from https://www.bls.gov/ore/challenging_issues/mixedmode.htm
- Murphy, C. G., & Hicks, T. (2006). Academic characteristics among first-generation and non-First-generation college students. *College Quarterly*, 9(2). Retrieved from <http://www.eric.ed.gov/ERICWebPortal/detail?accno=EJ835403>
- Nelson, L. (n.d.). Policy brief calls for overhauling GEAR UP, TRIO Programs. Retrieved December 11, 2016, from <https://www.insidehighered.com/news/2013/05/08/policy-brief-calls-overhauling-gear-trio-programs>
- Nunez, A.-M., & Cuccaro-Alamin, S. (1998). *First-generation students: Undergraduates whose parents never enrolled in postsecondary education* (No. NCES 98-082). Washington, DC: U.S. Department of Education, National Center for Education Statistics. Retrieved from <http://www.eric.ed.gov/ERICWebPortal/detail?accno=ED420235>
- Padron, E. J. (1992). The challenge of first-generation college students: A Miami-Dade perspective. *New Directions for Community Colleges*, 1992(80), 71–80. <https://doi.org/10.1002/cc.36819928009>
- Pascarella, E. T., Pierson, C. T., Wolniak, G. C., & Terenzini, P. T. (2004). First-generation college students: Additional evidence on college experiences and outcomes. *The Journal of Higher Education*, 75(3), 249–284.
- Pike, G. R., & Kuh, G. D. (2005). First and second-generation college students: A comparison of their engagement and intellectual development. *The Journal of Higher Education*, 76(3), 276–300.
- Pitre, C. C., & Pitre, P. (2009). Increasing underrepresented high school students' college transitions and achievements: TRIO educational opportunity programs. *NASSP Bulletin*. <https://doi.org/10.1177/0192636509340691>
- Raisman, N. (2013). *The cost of college attrition at four-year colleges & universities: An analysis of 1669 US institutions*. Educational Policy Institute.

- Ravitch, D., & Viteritti, J. P. (2003). *Making good citizens: Education and civil society*. Yale University Press.
- Reja, U., Manfreda, K. L., Hlebec, V., & Vehojar, V. (2003). Open-ended vs. close-ended questions in web questionnaires. *Developments in Applied Statistics, Advances in methodology and statistics (Metodološki zvezki)*(19), 159–177.
- Richardson, R. C., & Skinner, E. F. (1992). Helping first-generation minority students achieve degrees. *New Directions for Community Colleges, 1992*(80), 29–43. <https://doi.org/10.1002/cc.36819928005>
- Rico, L. (2006, May 1). Dropout rates worry colleges. *Knight Ridder Tribune Business News*, p. 1.
- Rothstein, R. (2004). *Class and schools: Using social, economic, and educational reform to close the black-white achievement gap* (8.8.2004 edition). New York, N.Y.; Washington, D.C.: Economic Policy Institute and Teachers College.
- Smith, B. (2004). Leave no college student behind. *Multicultural Education, 11*(3), 48–49.
- Stone, D. (2011). *Policy paradox: The art of political decision making* (Third Edition). W. W. Norton & Company.
- Strayhorn, T. L. (2006). Factors influencing the academic achievement of first-generation college students. *NASPA Journal, 43*(4), 82–111.
- Stuber, J. M. (2011). Integrated, marginal, and resilient: race, class, and the diverse experiences of white first-generation college students. *International Journal of Qualitative Studies in Education, 24*(1), 117–136. <https://doi.org/10.1080/09518391003641916>
- 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 challenge of the first-generation student. (n.d.). Retrieved October 21, 2015, from http://chronicle.com/article/The-Challenge-of-the/230137/?key=GysQ5dc1pzOtSFo9DMcxE2zpNEI8WkH11g1_8C0qboJYVGJubzMxcFhlaWktbDU4T2VBWFFFZ011T0lxSzJha1lQazZsN2RLS3Qw
- The NCES fast facts tool provides quick answers to many education questions (National Center for Education Statistics). (n.d.). Retrieved January 9, 2015, from <http://nces.ed.gov/fastfacts/display.asp?id=40>

The Pell Institute. (2009). National studies find TRIO programs effective at increasing college enrollment and graduation. The Pell Institute.

The Pell Institute. (2011, December 14). 6-year degree attainment rates for students enrolled in a post-secondary institution. Retrieved September 14, 2015, from http://www.pellinstitute.org/downloads/fact_sheets-6-Year_DAR_for_Students_Post-Secondary_Institution_121411.pdf

Ting, S.-M. (Raymond). (2003). A longitudinal study of non-cognitive variables in predicting academic success of first-generation college students. *College and University*, 78(4), 27–31.

Tinto, V. (1982). Limits of theory and practice in student attrition. *The Journal of Higher Education*, 53(6), 687–700. <https://doi.org/10.2307/1981525>

Tinto, V. (1999). Taking retention seriously: Rethinking the first year of college. *NACADA Journal*, 19(2), 5–9.

TRIO Home Page. (2014, February 28). [Programs; Offices; Reference Materials]. Retrieved March 8, 2014, from <http://www2.ed.gov/about/offices/list/ope/trio/index.html>

U.S. Department of Education, N. C. for E. S. [NCES]. (2010). *Web tables: Profile of undergraduate students 2007 - 2008* (No. 2010–205). Retrieved from <http://nces.ed.gov/pubs2010/2010205.pdf>

Walsemann, K. M., Bell, B. A., & Hummer, R. A. (2012). Effects of timing and level of degree attained on depressive symptoms and self-rated health at midlife. *American Journal of Public Health*, 102(3), 557–563. <https://doi.org/10.2105/AJPH.2011.300216>

Walton, A. (2009). Building a pipeline to college: A study of the Rockefeller-funded “a better chance” program 1963-1969. *American Educational History Journal*, 36(1/2), 151–169.

Wang, T. R. (2012). Understanding the memorable messages first-generation college students receive from on-campus mentors. *Communication Education*, 61(4), 335–357.

Warburton, E. C., Bulgarin, R., & Nunez, A.-M. (2001). *Bridging the gap: Academic preparation and postsecondary success of first-generation students* (No. NCES 2001153). Retrieved from <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2001153>

Wheeler, R. S., Swords, R., & Carpenter, M. (2004). Codeswitching: Tools of language and culture transform the dialectally diverse classroom, *Language Arts*(81), 470–480.

Woosley, S. A., & Shepler, D. K. (2011). Understanding the early integration experiences of first-generation college students. *College Student Journal*, 45(4), 700.

Yun, G. W., & Trumbo, C. W. (2000). Comparative response to a survey executed by post, e-mail, & web form. *Journal of Computer-Mediated Communication*, 6(1), 0-0. <https://doi.org/10.1111/j.1083-6101.2000.tb00112.x>

Appendix 1: Inclusion and Exclusion Criteria for Selecting IHE for Study

	Inclusion	Exclusion
Geographic region (HD 2012)		
Far West	x	
Great Lakes IL IN MI OH W	x	
Mid East DE DC MD NJ NY PA	x	
New England CT MA ME NH RI VT	x	
Plains IA KS MN MO NE ND SD	x	
Rocky Mountains CO ID MT UT WY	x	
Southeast AL AR FL GA KY LA MS NC SC TN VA WV	x	
Southwest AZ NM OK TX	x	
American Samoa		x
Guam		x
Federated States of Micronesia		x
Marshall Islands		x
Northern Marianas		x
Palau		x
Puerto Rico		x
Virgin Islands		
Sector of institution (HD2012)		
Public, 4-year or above	x	
Private not-for-profit, 4-year or above	x	
Private for-profit, 4-year or above		x
Public, 2-year		x
Private not-for-profit, 2-year		x
Private for-profit, 2-year		x
Public, less-than 2-year		x
Private not-for-profit, less-than 2-year		x
Private for-profit, less-than 2-year		x
Level of institution (HD2012)		
Four or more years	x	
At least 2 but less than 4 years		x
Less than 2 years (below associate)		x
{Not available}		x
Institutional category (HD2012)		
Degree-granting, primarily baccalaureate or above	x	

Degree-granting, graduate with no undergraduate degrees		X
Degree-granting, not primarily baccalaureate or above		X
Degree-granting, associate's and certificates		X
Nondegree-granting, above the baccalaureate		X
Nondegree-granting, sub-baccalaureate		X
Not reported		X
Not applicable		X
Carnegie Classification 2010: Basic (HD2012)		
Research Universities (very high research activity)	X	
Research Universities (high research activity)	X	
Doctoral/Research Universities	X	
Master's Colleges and Universities (larger programs)	X	
Master's Colleges and Universities (medium programs)	X	
Master's Colleges and Universities (smaller programs)	X	
Baccalaureate Colleges--Arts & Sciences	X	
Baccalaureate Colleges--Diverse Fields	X	
Baccalaureate/Associate's Colleges	X	
Associate's--Public Rural-serving Small		X
Associate's--Public Rural-serving Medium		X
Associate's--Public Rural-serving Large		X
Associate's--Public Suburban-serving Single Campus		X
Associate's--Public Suburban-serving Multicampus		X
Associate's--Public Urban-serving Single Campus		X
Associate's--Public Urban-serving Multicampus		X
Associate's--Public Special Use		X
Associate's--Private Not-for-profit		X
Associate's--Private For-profit		X
Associate's--Public 2-year colleges under 4-year universities		X
Associate's--Public 4-year Primarily Associate's		X
Associate's--Private Not-for-profit 4-year Primarily		
Associate's		X
Associate's--Private For-profit 4-year Primarily Associate's		X
Theological seminaries, Bible colleges, and other faith-related institutions		X
Medical schools and medical centers		X
Other health professions schools		X
Schools of engineering		X
Other technology-related schools		X
Schools of business and management		X
Schools of art, music, and design		X

Schools of law		X
Other special-focus institutions		X
Tribal Colleges		X
Not classified		X
Not applicable, not in Carnegie universe (not accredited or nondegree-granting)		X
Degree-granting status (HD2012)		
Degree-granting	X	
Nondegree-granting, primarily postsecondary		X

Appendix 2: Survey Questionnaire

Survey questions:

What is the primary role(s) in which you serve at your institution (closest to your own).

- Admissions Officer _____
- Institutional Research Officer _____
- Registrar _____
- Student Affairs _____
- Career Services _____
- Academic Advising _____
- Financial Aid _____
- Other _____
- If other, please specify _____

Does your school identify first-generation college students (FGCS) during the admissions process?

- Yes
- No *{SURVEY TO SKIP TO END OF SURVEY}*
- Don't know *(SURVEY TO SKIP TO END OF SURVEY)*

What definition does your institution use to determine first-generation college student status?

- One or both parents attended college, but did not earn a degree
- One or both parents completed high school, but neither attended college
- Parents did not complete high school
- Parents did not complete middle school
- Other, please specify:

What process does your institution use to determine if a student is a first-generation college student?

- Student self-reports on application or other intake materials
- Determined by FAFSA or other financial aid documents
- Designation is made by admissions, financial aid, or other college personnel
 - Who makes this designation?

- Designation is made by through some automated process

- What is this process?

- Other, please specify: _____

Does your institution track first generation students once they matriculate to the institution?

- Yes
- No *{SURVEY PROGRAMMING NOTE TO SKIP PAST NEXT QUESTION}*
- Don't know *{SURVEY PROGRAMMING NOTE TO SKIP PAST NEXT QUESTION}*

Where is first-generation college student data kept?

- Admissions office
- Registrar's office
- Office of Institutional Research
- Other, please specify: _____

Who tracks the first-generation college students from matriculation to graduation?

- Registrar's office _____
- Admission's office _____
- Faculty member(s) _____
- Other administrative office _____
- We don't track after matriculation _____
- Don't know _____

Does your school provide specific programs and supports for first-generation college students?

- Yes
- No *{SURVEY PROGRAMMING NOTE TO SKIP PAST NEXT QUESTION}*
- Don't know *{SURVEY PROGRAMMING NOTE TO SKIP PAST NEXT QUESTION}*

What support programs are offered to first-generation college students at your institution?
(Check all that apply)

- Financial aid

- Social/community building activities
- Networking with first-generation students, alumni, and/or faculty
- Mentoring specifically aimed at first-generation college students
- Academic support programs specifically aimed at first-generation college students
- Other, please specify: _____

What is the primary role(s) in which you serve at your institution (closest to your own).

- Admissions Officer _____
- Institutional Research Officer _____
- Registrar _____
- Student Affairs _____
- Career Services _____
- Academic Advising _____
- Financial Aid _____
- Other _____
- If other, please specify _____

Appendix 3:

SURVEY HEADER TEXT:

You are invited to take part in a short survey about your experiences as a higher education administrator working in admissions, student affairs, and/or similar such position.

This survey is part of a doctoral candidate research effort to understand public institutions of higher education (IHE) identify, define, classify, and support first-generation college students. The survey will ask you questions about your institution and first-generation college students.

The survey should take you less than 5 minutes to complete.

Your answers to the survey's questions will be kept confidential. Your answers will be combined, or aggregated, with those of other participants; individual responses will not be shared. In addition to their use in this doctoral study, survey findings may be used in research publications about first-generation college students.

I hope you will participate in the survey. However, your participation is, of course, voluntary and there will be no negative consequences – now or in the future – if you do not participate. If you do choose to take the survey, you may opt not to answer specific research questions if they make you uncomfortable or you would prefer not to share your response with the principal investigator.

Should you have any questions or concerns related to this survey, please contact Alex Thorngren at alex.thorngren@UVM.edu.

Appendix 3: Survey Header Text

INVITATIONAL TEXT TO POTENTIAL RESPONDENTS REGARDING SURVEY

Dear colleague:

My name is Alex Thorngren and I am an administrator in higher education at The Geisel School of Medicine at Dartmouth. I am also a doctoral candidate pursuing my degree in Educational Leadership and Policy Studies at the University of Vermont, which is why I am writing to you.

I am writing to invite you to take part in a short survey about your experiences as a higher education administrator working in admissions, student affairs, and/or similar such position.

This survey is part of a doctoral candidate research effort to understand public institutions of higher education (IHE) identify, define, classify, and support first-generation college students. The survey will ask you questions about your institution and first-generation college students.

The survey should take you less than 5 minutes to complete.

Click here to begin survey: **(HYPERLINK TO SURVEY)**.

Your answers to the survey's questions will be kept confidential. Your answers will be combined, or aggregated, with those of other participants; individual responses will not be shared. In addition to their use in this doctoral study, survey findings may be used in research publications about first-generation college students.

I hope you will participate in the survey. However, your participation is, of course, voluntary and there will be no negative consequences – now or in the future – if you do not participate. If you do choose to take the survey, you may opt not to answer specific research questions if they make you uncomfortable or you would prefer not to share your response with the principal investigator.

Should you have any questions or concerns related to this survey, please contact Alex Thorngren at alex.thorngren@UVM.edu.

Thank you kindly for your consideration in this matter; it is greatly appreciated.

Sincerely,

Alex

Alex Thorngren, MS
Operations Director, MD-PhD Program
Director, MD-PhD Undergraduate Summer Fellowship (MPUS)
Instructor, Dept. of Medicine

The Geisel School of Medicine at Dartmouth
One Medical Center Drive
Lebanon, NH 03756
geiselmed.dartmouth.edu/mdphd/