CAREER OUTCOMES OF FIRST-GENERATION GRADUATES

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by
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ABSTRACT

Most undergraduate students enroll in college with the aim of securing a professional career after graduation; however, not all students achieve this goal. Prior research has explored whether career outcomes differ between students of varying academic and demographic backgrounds, but few studies have examined whether first-generation status is correlated with career outcomes. In addition, different parameters are used to define first-generation students within the research literature, making it difficult to capture consistent data on this population. In this quantitative study, I analyzed NACE First Destination Survey data to assess whether recent first-generation college graduates from the same higher education institution achieve differing career outcomes from their continuing-generation peers, applying three distinct definitions for first-generation students to highlight within-group differences in this population. The results of this study showed some disparities in career outcomes between first-generation graduates and their continuing-generation peers, with first-generation students unemployed at slightly higher rates, especially in the aftermath of the COVID-19 pandemic. However, graduates' field of study was a much stronger predictor for career outcomes than any other academic or demographic variables included in the study. This study aims to provide future directions for higher education institutions to critically examine the career outcomes of their graduates to better target career development resources to the students who need it most.

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CHAPTER 1

INTRODUCTION

John was reaching the end of his senior year at the business school and was starting to panic about life after graduation. Many of his peers had already secured full-time jobs, and some were even deliberating between multiple job offers. In contrast, John had barely started the job search process and was completely lost as to where to begin. His junior year internship had been canceled in response to the COVID-19 pandemic, diminishing his confidence even further. He was making plans to live at home with his parents after graduation and continue his job in food prep at Whole Foods. It was not that John lacked skills; to the contrary, he had over four years of work experience and had even earned Employee of the Month multiple times at his job. However, as the first person in his family to pursue a college degree, John did not feel that he could ask his parents for advice on his job search, and unlike many of his peers, he could not fall back on family connections to land a job.

During the spring semester of 2021, a few months prior to his graduation, John came to visit the business school's career services center where I worked as an Assistant Director. Unlike most visitors to the business career services center, he had not come in for a quick resume review or to practice interview questions: his primary concern was that he felt completely unfamiliar with the professional business world and did not know how to begin his job search. Without any office experience under his belt, how was he going to find a full-time professional job?

John and I began meeting regularly. We discussed everything, from career pathways in marketing to job search strategies, mock interviews, and navigating the job offer process. His confidence slowly grew as he started to gain traction in his job search. At the end of the spring semester of his senior year, I encouraged John to reach out to a local car manufacturer who had

posted a full-time job through the business career services center and was seeking to hire a graduating senior. John excelled in his interview and earned the job offer, launching into his new role shortly after graduation.

While John's story was ultimately a success, my concern grew for other students experiencing hurdles in their job search due to a lack of legacy experience within the professional business world. COVID-19 exacerbated job search concerns for graduating seniors, as companies reduced their hiring headcounts and students lost out on critical internship experiences which lead to employment (Teng et al., 2022). I knew that John was an outlier in his proactive use of career resources at the business school, and that most students were facing these career concerns on their own. For this reason, I wanted to focus my research on understanding which undergraduate students struggle the most to land post-graduate careers as a way to improve the reach of career development support services on campus.

Statement of the Problem

Like John, most undergraduate students pursue higher education with the primary aim of increasing their career opportunities (Pryor et al., 2007). It is easy to see why; the lifetime earnings of college graduates typically far outpace the earnings of workers without a college degree, even when accounting for the costs of pursuing a college degree (Carnevale et al., 2011; Ma et al., 2016). In addition, with tuition prices continually on the rise, college graduates often depend on finding full-time professional employment after graduation to pay off college loans and offset the costs of tuition, living expenses, and forgone wages during their studies (Zumeta et al., 2012). Unfortunately, in the wake of rising tuition prices, postsecondary credentials also no

longer provide the job security that they once boasted, calling the value of a college degree further into question.

Perhaps as a result of these challenges, college enrollments in the U.S. have steadily declined over the last decade. The COVID-19 pandemic has only accelerated this trend: between 2020-2022 alone, college enrollments dropped by over 7% (National Student Clearinghouse Research Center, 2022). In the post-pandemic world, students are increasingly open to pursuing alternative career-connected education credentials to avoid incurring college loan debt and to access skilled jobs without delaying their entry into the workforce (ECMC Group, 2022). Given these trends, higher education institutions are faced with the challenge of proving their value in a marketplace with a growing share of more affordable career-connected education pathways.

When college graduates succeed in achieving their career goals, higher education institutions also benefit because graduate career outcomes are a key metric in the college rankings formula through consumer reports such as the College Scorecard (Jackson, 2013). However, while higher education institutions publish career outcomes data externally to attract consumers in a competitive enrollment market, few institutions leverage these data to target support resources to students who struggle to land a post-graduate job. There are significant differences in employment rates and the quality of jobs between recent college graduates of differing academic and demographic backgrounds (Eismann, 2016; Ingram & Allen, 2018). This begs the question, what are the key factors that allow some college graduates to achieve a full-time professional career after graduation while leaving others unemployed or underemployed?

Purpose of the Study

Prior studies indicate that college graduates who were historically underrepresented in higher education (e.g., graduates of Color, women, and graduates from lower income backgrounds) face barriers which prevent them from achieving college-level employment and fair wages (Barroso & Brown, 2021; Eismann, 2016; Gray, 2022; Hurst, 2018, Jackson, 2013; Manzoni & Streib, 2018; Parks-Yancy, 2012; Venegas-Muggli et al., 2021). First-generation college students (FGs) have garnered increased attention in the research literature as a growing population in higher education institutions because these students have unique needs and attributes that differentiate them from continuing-generation peers (CGs). There is significant variation in how the FG population is described, which creates challenges in interpreting and comparing the results of prior studies in this area. In prior research literature, FGs are most commonly defined as students whose parents either did not pursue higher education or did not complete a bachelor's degree (Toutkoushian et al., 2018).

In recent years, higher education research has focused on improving access and retention of FG students as this population takes on an increasing share of undergraduate enrollments (Bui, 2002; Choy, 2001; Davis, 2010). However, little attention has been given to the career outcomes of FG graduates to ensure that they are receiving an adequate return on investment from their college degree (Frett, 2018; Manzoni & Streib, 2018; O'Shea et al., 2021). This study aims to analyze the complex intersecting factors that correlate with recent graduates' career outcomes, with the aim of fostering more equitable outcomes for future graduates.

While a few recent studies have examined the relationship between first-generation status and post-graduate career outcomes, these studies produced mixed results, with some indicating that FGs are unemployed at higher rates than their CG peers (Eismann, 2016; Manzoni & Streib,

2018) and others showcasing no difference in career outcomes (Venegas-Muggli et al., 2021). In addition, no prior studies related to FG student career outcomes have addressed the within-group differences that exist between first-generation graduates when utilizing different parameters to define this population. This points to a need for additional studies to explore whether and how career outcomes differ between various types of FG graduates and their CG peers. In addition, the world of work has changed significantly since the COVID-19 pandemic (Gittleman, 2022; Koc, 2021), calling for more research to examine career outcomes in 2020 and beyond. This study aims to critically analyze the career outcomes of recent college graduates, with a particular focus on determining whether first-generation status is correlated with landing a job after graduation.

Higher education institutions have a vested interest in promoting graduate career outcomes externally to attract enrollments; however, many institutions do not have a nuanced understanding of which of their students are successful in achieving their career goals. Additional quantitative studies examining the early career outcomes of college graduates can provide higher education institutions with a clearer picture of which students struggle to achieve professional post-graduate careers so they can implement career development resources and interventions while students are still enrolled. If the results of this study indicate that some populations of students at the study site have lower rates of success in transitioning to post-graduate employment, these findings can serve as a starting point for the higher education institution to devise strategies to bridge the career outcomes gaps.

Research Questions

To provide further clarity on whether and how career outcomes differ between recent college graduates, I proposed a quantitative research study to analyze the outcomes of recent undergraduate graduates from the same higher education institution, with a specific focus on whether and how first-generation status impacts career outcomes. To better capture within-groups differences in the first-generation student population, I applied 3 definitions for first-generation students within the research design in each of these three research questions. I used the following research questions:

a) Are there statistically significant differences in early career outcomes between first-generation graduates and their continuing-generation peers? If so, is the association between first-generation status and career outcomes still significant when taking into account other demographic and academic differences between these populations?

b) Are first-generation graduates more likely to be underemployed (i.e., working part time or working in a role that is not associated with their studies) than their continuing-generation peers?

c) Did graduating prior to, during, or after the onset of the COVID-19 pandemic have any differing impact on the career outcomes of first-generation graduates compared to their continuing-generation peers?

Definitions of Key Terms

1. <u>Career outcomes</u>: The percentage of college graduates who are engaged in a career outcome, with subcategories including employed full-time, employed part-time,

volunteer service, military service, or continuing education (National Association of Colleges and Employers, 2019)

2. Employed full-time: A job which requires 30 or more hours per week of working hours (National Association of Colleges and Employers, 2019)

3. First-generation: Three definitions for first-generation were applied in this study (See Appendix A):

    a. First-generation 1 (FG1): students who do not have any parents who graduated from college (bachelor's degree),

    b. First-generation 2 (FG2): students who do not have any parents who attended college,

    c. First in Family: individuals who do not have any parents or siblings who attended college

4. Knowledge rate: Percent of college graduates whose post-graduate career activities are known to their higher education institution (National Association of Colleges and Employers, 2019)

5. Professional jobs: Jobs requiring some level of post-secondary education, typically a bachelor's degree or higher (EEOC, 2022)

6. Underemployed: Involuntarily working in a job which is inadequate in comparison to one's employment options (OECD, 2002)

    a. Visible underemployment: Working less than the expected amount of hours in a role; seeking or available for additional work hours

    b. Invisible underemployment: Working in a job where one's skills or credentials are not adequately used

7. <u>Unemployed</u>: Not employed; available for work and actively looking for a job (U.S. Bureau of Labor Statistics, 2023)

Conclusion

Examining the early career outcomes of college graduates is of critical importance due to their predictive validity in determining long-term career success. Early-career unemployment and underemployment can lead to long-term career and financial instability (Goldberger et al., 2021). Presuming that disparate career outcomes are due to a lack of effort or ability on the part of students ignores structural barriers that prevent student success; it is also crucial to examine the role that higher education institutions play in predicting student outcomes (Witham & Bensimon, 2012). Instead of using career outcomes data primarily as an external vehicle for fueling tuition dollars, higher education institutions can also critically analyze these data and use insights to improve career outcomes for future students. Through analyzing trends in graduate career outcomes, colleges and universities can target programming and interventions to ensure that all students are able to achieve their post-graduation career goals to signal their value in a competitive enrollment marketplace.

CHAPTER 2

REVIEW OF THE LITERATURE

The purpose of this literature review is to contextualize the prior research on undergraduate career outcomes to understand which students are successful in securing a job after graduation, with a particular focus on the outcomes of first-generation graduates. I will start this chapter by describing social capital as the core theoretical construct underlying this study. Next, I will define the current parameters used to measure early career outcomes within higher education institutions and describe factors in the research literature which have shown to correlate with post-graduate career outcomes previously. Finally, I will summarize the literature related to first-generation college students to showcase what is already known about their career outcomes, in addition to the gaps in the research literature which informed my study.

Social Capital Theory

Social capital has frequently been used as a lens to analyze students' educational and employment outcomes in the research literature, especially when comparing students of differing demographic backgrounds. The concept of capital originates in economic theory and is associated with mercantile exchanges and maximizing profits in the marketplace. Sociologist Pierre Bourdieu criticized this simplistic view of capital, expanding the definition to cover all forms of exchange and defining capital more broadly as power (1986). Bourdieu (1986) diverged from the notion that academic success is always related to a student's natural abilities by recognizing that schools are inherently reflections of the dominant class. He suggested that working class students are placed at a disadvantage because they lack the social and cultural cues that are naturally socialized through being born into a middle- or upper-middle class family. In

other words, to succeed in school, students from lower class backgrounds need to acquire additional competencies to assimilate into the dominant culture and are penalized academically for their lack of ingrained capital. These perspectives challenged economic theories of human capital, demonstrating that academic success is not solely determined by natural aptitude, but rather is transmitted generationally through one's family of origin (Bourdieu, 1986).

Bourdieu (1986) established three forms of capital to build upon the limited scope of economic theory: economic capital, social capital, and cultural capital. Economic capital can be defined as that which can be directly converted into money. Social capital is defined as the resources which can be gained through belonging to a social network and leveraging relationships. Cultural capital is described as familiarity with the dominant cultural norms, which are passed on through the family of origin and through institutions. Bourdieu also notes that both social and cultural capital can be converted into economic capital; for example, by possessing a high level of social capital one may more access professional employment opportunities which result in economic gains.

First-generation College Students

Prior research has indicated that first-generation students (FGs) have less access to social capital through their family of origin compared to their continuing-generation (CG) peers, which impacts their ability to navigate higher education and professional employment settings. (Olson, 2014, Tate et al., 2015). This study focuses on social capital from the lens of professional employment, or how insider knowledge is transmitted to candidates seeking a transition from undergraduate studies to bachelor's-level jobs.

In one study observing FGs' transition to the workplace, Hirudayaraj and McLean (2018) found that FG students' families play a conflicting role in career development. While families

provide a major source of emotional support, they were also cited as a weak link because they were unable to provide guidance in career choices and lacked a professional network. In addition, the researchers found that FGs face unique barriers in the transition to professional employment, including a lack of familiarity with the corporate recruitment process and feeling like an outsider in corporate settings. Prior to applying for jobs, many of the FG participants assumed that completing a bachelor's degree would be enough to earn a post-graduate job, but upon entering the job market, many discovered that employers expected co-curricular and internship experiences as well. The final theme in this study outlined participants' reflections on their educational institutions, citing the importance of experiential learning opportunities, and also mentioning a lack of awareness of and identification with career services.

Tate et al. (2015) explored internal and external factors impacting FG career development by conducting focus groups with first-generation college students from a large public university, selecting 15 participants whose parents had not completed a 4-year degree. Tate et al. (2015) found family influences to be a significant external influence on FG career development, as participants' family members provided suggestions about career paths that would lead to job security but also had limited knowledge about navigating college and professional career development. In addition, observing parents' limited finances and job dissatisfaction also served as a motivational force for participants to persevere in the pursuit of professional employment. Other external factors that impacted FG career development included observing the lack of a professional career network as compared to CGs. Internal influences included participants' understanding of their own career development process and reflecting on their self-concepts as first-generation students. Participants felt they needed to work much harder than continuing-generation students to advance in their careers and expressed concerns that they may be

marginalized in the future workplace. However, participants were also able to describe the unique strengths they were able to develop as FGs, including the persistence and motivation they displayed in pursuit of their college and career goals. Overall, participants viewed themselves as less entitled, more self-reliant, and more adaptable than continuing-generation peers, all of which provided them with confidence that they could succeed in their career pursuits. A strengths-based lens magnifying these and other unique attributes of first-generation students can be leveraged to support first-generation students in achieving career success.

Career Services

In higher education settings, career services departments serve as a resource for transmitting social capital resources to students while enrolled in college. Career services can facilitate social connections within professional employment contexts by facilitating access to employer networks. In addition, career services help students to develop career development knowledge that may otherwise be unavailable through their family of origin, educating students on the employment landscape and helping them to proactively explore their career prospects to prepare for their post-graduate goals. Students who utilize career resources while enrolled in college are more likely to be employed full-time in professional careers after graduation; however, only about half of students report using career services during their undergraduate studies (Strada-Gallup, 2017).

The current body of research on FGs' use of career services is limited. Some studies show that FGs are less likely to utilize career services than their CG peers (Gallup-Purdue, 2016), while others point to equal usage among these populations (Kaloko, 2020). This may suggest that usage of career services is context-dependent, which indicates a need for further research in this area. Higher education institutions can leverage career services as a structural

resource for supporting those students who do not possess legacy connections within the professional world of work to achieve a post-graduate outcome through the transmission of social capital resources.

Defining Early Career Outcomes

Since there are many ways that career outcomes can be measured, not all stakeholders agree about the best metrics for success. Prior research on career outcomes has used metrics such as employment contract type (full-time, part-time, contract), compensation (salary, bonuses, and other benefits), and job characteristics (job title, education requirements, etc.) to measure success on the job market (Jackson, 2013). While some studies focus on the long-term career outcomes of college graduates, others focus exclusively on measuring career outcomes within a few months of graduation (Jackson, 2013).

The College Scorecard, for example, is a large-scale data source funded by the Department of Education which is designed to help consumers make informed decisions about college options (U.S. Department of Education, 2023). The Scorecard utilizes graduates' median post-graduate salary as the primary career outcomes measure to demonstrate higher education institutions' value to external stakeholders (*College Scorecard*, 2021), despite the fact that salary data can be a misleading measure of institutional impact on career success. In addition, the Scorecard assesses salaries for full-time positions only, meaning it does not capture the outcomes for students who are unemployed or underemployed. Because the College Scorecard is designed for external stakeholders, these data are not useful for higher education institutions aiming to better serve students in achieving their career goals.

The First Destination Survey (FDS)

Standardized processes for measuring career outcomes are relatively new. Starting in 2014, the National Association of Colleges and Employers (NACE) launched the First Destination Survey (FDS), the first national survey focused on measuring career outcomes for recent college graduates (National Association of Colleges and Employers, 2021a; see Appendix B). The FDS provides a standardized set of definitions, standards, and protocols to facilitate the collection and dissemination of career outcomes data in a consistent manner across institutions (Kelly & Walters, 2016; National Association of Colleges and Employers, 2019). For this reason, the FDS is the most used data collection procedure measuring early career outcomes, with the most recent FDS summary reporting outcomes for 290 schools and over 500,000 undergraduates (National Association of Colleges and Employers, 2022a).

The FDS has quickly become the most popular data collection instrument for post-graduate career outcomes due to its ability to report trends within and across higher education institutions. Because FDS data can be integrated with institutional career services software (e.g., Handshake), this survey also allows for easy data access and analysis by career services personnel. NACE recommends that institutions share their career outcomes data externally so they can be integrated with the national career outcomes data dashboard, which allows higher education leaders to determine strategies to improve student outcomes within their own institution through benchmarking with others (National Association of Colleges and Employers, 2019).

Because the FDS is the central source of early career outcomes data, institutions are bound to how early career outcomes are measured and defined by NACE. The FDS divides students into standardized reporting categories which are meant to reflect their primary activity

after graduation, including employment (full and part-time), continuing education, military service, and volunteering (National Association of Colleges and Employers, 2019). NACE's outcomes measure for "traditional" graduate employment is defined as a graduate working in a role with "relatively steady work hours, a defined wage/salary, and a presumption of benefits such as medical insurance" (National Association of Colleges and Employers, 2022a). Notably missing from this definition is whether a student's post-graduate role is associated with their field of undergraduate study or commensurate with earning a bachelor's degree.

Underemployment

Higher education institutions are heavily focused on reducing unemployment rates in their outcomes reports; however, underemployment is a better measure for understanding whether a student's post-graduate job is commensurate with their degree. Underemployment is a term that is used to capture the experiences of those workers who are employed part-time or on a contractual basis when they would otherwise prefer to be working more hours (visible underemployment), or who are involuntarily working in a job which is beneath their skills or credentials (invisible underemployment) (OECD, 2002). Therefore, underemployment captures those college graduates who are working in jobs in which their skills or training are underutilized compared to other professionals with comparable skills (Cunningham, 2016). While NACE adequately reports on whether a recent college graduate is working in a full-time or part-time position, it misses the mark on measuring whether they are working in a role that is aligned with their undergraduate credentials. Post-graduate employment percentages are widely reported through the First Destination Survey, but underemployment should perhaps be the metric of most interest to prospective students because it is a more accurate portrayal of whether a college degree program is worth the investment.

Most prior research surrounding underemployment has solely focused on visible underemployment, with an emphasis on worker layoffs or the part-time workforce. Fewer studies have explored invisible underemployment, or working in a role which is not commensurate with one's education level (Abel & Dietz, 2018). This study aims to address the issue of underemployment through exploring which students are successful in landing full-time degree-associated roles after graduation in Research Question 2.

Factors Associated with Graduate Career Outcomes

In prior research literature, college graduate career outcomes have shown to correlate with a wide variety of variables, including external factors as well as individual factors associated with one's academics and demographics. This section will review those variables which have shown to correlate with career outcomes in the research literature.

Job Market Factors

Prior research has illuminated the impact of the job market on early career outcomes for college graduates (Abel and Dietz, 2018; Cunningham, 2016; Gittleman, 2022; Koc, 2021; Pinsker, 2020; Shierholz et al., 2014). Students who graduate in a slack job market, or a job market in which there is already a high level of unemployment, face increased competition for post-graduate roles and may have a more difficult time securing a career outcome. Slack job markets also may cause recent students to accept employment opportunities that pay less than what they would typically expect to be paid and which are not related to their area of study (Pinsker, 2020). Early career un- and underemployment for college graduates is concerning because it can have lasting effects: graduating into a volatile job market can lead to continued earnings instability and longer-term underemployment (Shierholz et al., 2014).

Prior studies have indicated that graduate unemployment and underemployment rates are closely associated with labor market conditions. For example, the Great Recession in 2008 had a major impact on the employment outcomes of recent college graduates, with an underemployment rate of up to 50% for those students who graduated between 2008-2010 (Cunningham, 2016). The COVID-19 pandemic also served as a major disruptor in the job market, with the overall unemployment rate quadrupling in comparison to prior years and employment rates declining significantly for 2020 graduates due to a significant decline in entry-level jobs (Gittleman, 2022; Koc, 2021; Pinsker, 2020).

Abel and Dietz (2018) sought to provide a detailed analysis of which recent bachelor's graduates between the ages of 22 and 27 were more likely to be un- and underemployed following the Great Recession. The researchers utilized the Department of Labor's O*NET database to analyze the career outcomes of recession-market graduates to determine which recent graduates were underemployed. When exploring factors contributing to recent graduate underemployment, Abel & Dietz (2018) outlined many intersecting macro-level trends, including the decrease in demand for cognitive skills in the workforce, an increase in non-college jobs, as well as a perception of an overall lack of employer-relevant skills in recent college graduates. Using regression equations, the researchers determined that several characteristics were associated with recent graduate underemployment, including gender (with men more likely to be underemployed), race (with Black, Hispanic, and Native American graduates underemployed at higher rates), age (with younger students experiencing more underemployment), and college major (with non-career-oriented majors underemployed at higher rates).

Conversely, tight labor markets, or job markets in which there are labor market shortages and increased unfilled job vacancies, have notable benefits for workers, especially those who are

historically disadvantaged. When there are less workers available in the job market, employers tend to be more willing to hire lower-skilled workers and train them into a role, hiring more candidates with disabilities, criminal records, and other work barriers (Smialek & Casselman, 2020). According to a report by the International Monetary Fund, the job market in 2021 tightened substantially, with a sharp increase in unfilled vacancies as labor market participation rates decreased in the aftermath of COVID-19 (Duval et al., 2022). This period became known as the Great Resignation, as workers voluntarily quit their jobs due to mismatches in employment preferences and barriers to returning to work. The roles that were impacted most included roles that historically were filled by lower-skilled workers, as these positions tended to be less flexible, more contact-intensive, and/or physically strenuous (Duval et al., 2022). The Great Resignation also reduced wage inequality in the U.S. as lower-pay industries were forced to respond to labor market tightness by increasing wages for workers.

More research is needed to explore whether and how COVID-19 and Great Resignation labor market conditions impacted employment rates of recent college graduates. This study will focus on examining the career outcomes of graduates prior to, during, and after the COVID-19 pandemic to get a sense for how different populations of students fared while faced with a volatile job market.

Demographics

Prior studies have sought to measure whether career success is distributed equally between working professionals of differing demographic identities (Barroso & Brown, 2021; Bartik & Herschbein, Bradbury, 2002; Carnevale et al., 2013; Eismann, 2016; Gaddis, 2014; Hurst, 2018 Manzoni & Streib, 2018; Venegas-Muggli et al., 2021). This section will discuss

findings from previous studies focused on career outcomes based on race/ethnicity, gender, and socioeconomic status.

Race/Ethnicity. While higher education is meant to promote opportunity for all, there are notable inequalities in career outcomes of college graduates of different races, even when looking at graduates with equal credentials. White and Asian workers earn more than Black and Hispanic workers at all levels of degree attainment (Carnevale et al., 2013). Discouragingly, the pay gap between professionals of different races is highest among college graduates, with Black men earning only 75% of White men's earnings, and Black women only earning 90% of the wages of White women (Bradbury, 2002).

Gaddis (2014) examined differences in job applicants' employer response rate based on the selectivity of their college institution and varying demographic factors. He found that graduates from elite institutions were 1.7 times more likely to receive a response to their job application than graduates from less selective institutions. However, even among applicants from selective institutions, racial disparities existed between White and Black applicants, with Black applicants significantly less likely to receive a response from employers. This indicates that racial bias on the part of the employer may play a role in career outcomes even when comparing candidates from similar institutions.

Gender. Gender has shown to be associated with college graduate career outcomes, with men faring more favorably on the job market despite women making up a larger share of college enrollments (Carnevale et al., 2013; Ma et al., 2016; Venegas-Muggli et al., 2021). Venegas-Muggli et al. (2021) conducted a study to explore how various factors impact underrepresented Chilean college graduates' occupational status and income, including academic characteristics, work environment, and sociodemographic characteristics. The researchers found that being a

female was the greatest structural barrier to employment outcomes; however, it is important to note that race was not measured as a demographic characteristic in this study, which can play a significant role in the U.S. market (Carnevale et al., 2013).

The gender pay gap refers to differences in earnings between women and men, and this gap exists across all levels of educational attainment. Some of the gender pay gap has been explained in the research literature by labor factors such as differences in educational attainment or occupational selection, as women tend to be concentrated in lower-paying occupations. According to a labor market study by Carnevale et al. (2013), a woman would need to hold a PhD to earn comparable pay to a man with a bachelor's degree. While the gender pay gap has steadily decreased over time, in 2020 women earned only about 84% of the overall median earnings of men (Barroso & Brown, 2021). Increased family responsibilities and gender discrimination in the workplace may also play a factor in the gap that persists.

Socioeconomic Status. Prior studies have pointed to differences in post-graduate outcomes by family income, with lower-income students earning less than their higher-income peers. Even among bachelor's degree holders, low-income college graduates earn on average half as much as their peers who are born into the middle class (Bartik & Herschbein, 2016). In a study assessing the impact of socioeconomic status on career outcomes for liberal arts college graduates, Hurst (2018) observed significant differences between students based on socioeconomic background. Students from more affluent backgrounds were more likely to attend graduate school immediately after college or obtain "high-pay prestigious full-time employment" (p. 1081), whereas students from lower income backgrounds were more likely to be underemployed in a job that was not aligned with their area of college study. According to Hurst (2018), these disparities in career outcomes may be related to differences in the application of

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social and cultural capital, engagement in extracurricular activities, or the limited ability of lower-income students to work in internships while attending school.

Academics

Field of Study. Another body of research explores how college students' choice of field of study is connected to their post-graduation career outcomes. Undergraduate majors have shown to correlate with students' post-graduation career outcomes, as some majors are associated with increased job opportunities and higher earnings. For example, students studying technical disciplines such as engineering and computer science demonstrate the highest earnings after graduation, while education, English, and arts majors are associated with the lowest earnings ("Mid-Career Outcomes", 2014). This wage gap tends to increase over time as annual salary increases are often based on the prior year's earnings. In addition, labor force participation rates are highest for students whose majors are associated with STEM fields and are significantly lower for humanities and education majors (Fogg et al., 2012).

GPA. Students' academic performance during college can also have an impact on their career outcomes. In terms of compensation, higher undergraduate GPAs are associated with higher earnings on the job (Manzoni & Streib, 2018). Students with lower GPAs are typically not eligible for as many post-graduate employment opportunities because many employers use a minimum GPA requirement as a candidate screening tool. It is notable, however, that the usage of GPA requirements is inconsistent across industries, geographic regions, and company sizes (National Association of Colleges and Employers, 2022b).

According to a survey examining recruitment practices from over 150 employers, the National Association of Colleges and Employers (2022b) found that GPA is becoming a less prevalent screening technique, with the percentage of employers that screen entry-level

candidates by GPA decreasing from 73% to 46% between 2019 and 2022. This trend could reflect a tightening job market, or perhaps could indicate employers' growing awareness that GPA requirements impede progress towards building inclusive workforce pipelines (Collins, 2022).

Institutional Characteristics. The characteristics of the higher education institution from which a student graduates may also impact their career outcomes. Prior research indicates that graduates from more selective, elite institutions have the best returns in the job market and earn higher wages than their counterparts at less selective institutions (Davies & Guppy, 1997; Ma et al., 2016). Numerous studies also indicate that graduates of four-year institutions are employed at higher rates and earn higher wages than graduates of two-year institutions (Ma et al., 2016). Through analyzing career outcomes of bachelor's graduates from a single institution, this study will effectively eliminate many of the institutional factors that can impact student success.

Work Experience

Prior work experience is a critical element to gaining entry into a post-graduate career. In particular, internships are a key entry point because they provide students with relevant work experience while also strengthening hiring pipelines for employers who prefer to hire internally (Saltikoff, 2017). Students who graduate with one or more internship experiences are more likely to find a job after graduation (Miller et al., 2017; Saltikoff, 2017).

The COVID-19 pandemic served as a large disruptor to internship participation in the 2020-2021 academic year, with an overall decline of undergraduate students participating in internships during this time period (Hora et al., 2021). At the time of this study, the long-term

effects of the barriers to internships that college students experienced during COVID-19 have yet to be covered in the research literature due to the pandemic's relative recency.

First-Generation College Students

First-generation college students (FGs) represent a growing share of undergraduates, resulting in numerous research studies focused on improving the educational outcomes of this population. Many researchers have determined that family members' level of education exerts a strong influence over the probability that FGs will enroll, and later succeed, in college (Toutkoushian et al., 2018). However, within this research literature, no consensus has been reached as to the appropriate definition to define the parameters of first-generation, nor how the definition that is selected within a research study might influence the findings. Toutkoushian et al.'s (2018) study examining the defining characteristics of first-generation students were able to identify eight different measures for FGs, which included varying levels of parental education as well as the number of parents at each level of educational attainment. The researchers discovered that these defining parameters for first-generation status influenced students' likelihood of applying to and enrolling in college, with larger deficits experienced by those students with neither parent attending college, especially when college was defined as a bachelor's degree.

The two most commonly used definitions within the research literature describe either 1) students whose parents have no college education or 2) students whose parents did not complete a bachelor's degree (Hirudayaraj & McClean, 2018; Ishitani, 2003; Próspero & Vohra-Gupta, 2007; Toutkoushian et al., 2018). A third potential definition for first-generation students includes siblings in the parameters for familial educational attainment, with the understanding

that siblings can also provide helpful guidance for students planning to apply for and enroll in college (Aguirre & Matta, 2021).

FG college access and persistence have been studied extensively as a way to better understand and support these students to achieve a college degree despite a lack of familial experience, or social capital, within the higher education space. However, few studies have explored how FG status impacts post-graduation employment as a way to better understand whether these students are achieving a return on investment for their undergraduate degree in the form of a post-graduate job

Demographics

In addition to holding a unique position as the first in the family to achieve a college degree, first-generation college students often identify with one or more groups that are historically underrepresented in higher education and in the professional workforce when compared to continuing-generation (CG) peers, or students who have at least one parent or sibling with postsecondary education experience. FG students are more likely to come from a lower socioeconomic background, belong to a racial or ethnic minority, and speak English as a second language than CG peers (Bui, 2002; Davis, 2010; Próspero & Vohra-Gupta, 2007). First-generation students also tend to be older, work more hours, care for dependents, and attend college part-time (Próspero & Vohra-Gupta, 2007). The intersecting demographic differences between FGs and CGs may account for much of the variance that can be observed between these populations in the research literature. However, there is evidence that FGs share related experiences and barriers due to possessing less social capital resources, or an overall lack of historical familial knowledge within higher education and professional employment contexts (Tate et al., 2015).

Academics

FGs differ from CGs academically, which may impact their success in attaining a bachelor's degree. FGs are more likely to attend two-year colleges, which have significantly lower bachelor's degree attainment metrics than four-year institutions (Engle, 2007). In addition, FGs tend to earn fewer academic credits, have lower GPAs, and more frequently withdraw from or repeat courses (Bui, 2002; Chen & Carroll, 2005). Most concerningly, FGs are 71% more likely to depart from college prior to graduation than their CG peers, even when controlling for age, gender, socioeconomic status, ethnicity, and high school GPA (Chen & Carroll, 2005; Ishitani, 2003; Próspero & Vohra-Gupta, 2007). The differences in college completion rates between FG and CG students contributes to significant disparities in longitudinal career outcomes between these populations (Manzoni & Streib, 2018).

Work Experience

FGs are more likely than their CG peers to work part- or full-time during their undergraduate studies to offset the cost of college tuition, which provides them with more work experience to put on their resume. However, these work hours may conflict with academic requirements and can result in delayed academic progress and an inability to integrate into campus life (Garriott, 2020). While high-impact learning experiences such as internships have positive implications for all students, they have shown to have especially strong effects on historically underserved students such as first-generation college students (Kuh, 2008). However, first-generation students participate in internships at lower rates than continuing-generation peers, creating disparities in relevant work experience between these populations at graduation (Kuh, 2008). This trend became more pronounced during the onset of the COVID-19 pandemic, as overall participation in internship experiences declined in response to shelter-in-place policies

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(Hora et al., 2021). While online internship opportunities increased during this time period, participation in online internships was lower among FGs (Hora et al., 2021). This disparity may have impacted career outcomes for FGs in the Class of 2020 and beyond.

Career Outcomes

While research on FG graduate career outcomes is limited, some studies indicate that FG graduates are employed at lower rates and receive lower salary offers than their continuing-generation peers despite earning equal educational credentials (Manzoni & Streib, 2018; National Association of Colleges and Employers, 2016). However, one recent study conducted by Venegas-Muggli et al. (2021) found no significant differences in career outcomes between FGs and CGs. Underemployment may also be a pertinent theme for first-generation graduates; in Hirudayaraj & McLean's (2018) study, 13 out of 14 FG participants started at entry-level positions which did not require a college degree, delaying their access to the professional job market. Conflicting evidence in the current research literature indicates that more studies are needed to explore the nuances of career outcomes of FGs to determine whether FG status is directly correlated with career outcomes for recent graduates.

In an analysis of the National Association of Colleges and Employers (NACE) Class of 2016 Student Survey, Eismann (2016) examined factors that influenced students' early career outcomes across higher education institutions. The survey measured career plans for 5,013 graduating seniors, 40% of whom identified as first-generation, defined as having parent(s) who do not have a bachelor's degree (FG1). There were several key demographic differences between FG and CG respondents in the survey, as the FG student population was older and more racially diverse than the CG student population. FG and CG survey respondents also differed in terms of their field of study, with CGs much more likely to undertake a degree in engineering or computer

science and with FGs more concentrated in social and behavioral sciences. Post-graduation plans were distributed evenly between these student populations with about 60% of students planning to enter the workforce after graduation. However, a higher percentage of FG students reported they planned to pursue a career in the non-profit or government sector, whereas CG students reported a preference for private sector employment. Despite sharing similar employment goals, Eismann (2016) found significant differences in graduate career outcomes between these two populations. Employment success rates were measured by computing the percentage of students who applied for positions, received an offer, and accepted the offer, with continuing-generation students scoring higher in all three categories. This study determined that 33.4% of CGs were successful in securing a position as compared to only 24.9% of FGs. In addition, FGs received significantly lower salary offers than CGs. Eismann ascertained that the lower offer acceptance rates for FGs may have been due to insufficient compensation packages; however, she did not comment on factors that may contribute to FGs lower job application and employment offer numbers. In addition, while Eismann accounted for the impact of college major and employment sector in the variance of outcomes, her study did not further explore demographic differences within the first-generation and continuing-generation populations to determine whether race, gender, or socioeconomic status may have served as confounding variables in this study.

Manzoni and Streib (2017) sought to understand if a generational wage gap, or a difference in wages between FG and CG college graduates, exists 10 years after completing college. To conduct this study, researchers analyzed data from the 1993/2003 Baccalaureate and Beyond Longitudinal Study. They utilized FG status as the primary independent variable and also controlled for academic factors (e.g., institutional selectivity, college major and GPA), demographic factors (e.g., race, gender, and age) and labor market factors (e.g., job sector,

occupation, and hours worked per week). Manzoni and Streib identified a significant wage gap between FG and CG graduates, and also found significant differences in wages by gender. When examining the interaction effects of these differing career outcomes, the generational wage gap for men remained statistically significant when controlling for individual traits and educational experiences; however, differences in male participants' occupational sector, job title, and hours worked rendered the generational wage gap insignificant. For women, the wage gap became insignificant when controlling for factors such as race and motherhood. Therefore, Manzoni and Streib concluded that the wage gap is mostly a result of how FG and CG students are distributed into the labor market by way of their selected industries, jobs, and work locations. For this reason, the authors argue that providing additional support to FGs as they enter the labor market would be an effective use of higher education institutional resources. There are a few limitations within this study that limit its contemporary relevance. First, Manzoni and Streib (2017) measured racial categories as a White/non-White binary, which does not accurately measure between-group differences that Workers of Color experienced in the job market. In addition, the researchers only explored the outcomes of those participants who were employed at the time of the study, and therefore did not accurately capture any data on unemployment rates. Finally, the career outcomes in this study were from 2003. Twenty years and two major job market recessions later, more contemporary studies critically examining career outcomes are needed to provide more clarity on how first-generation college graduates are faring in today's job market.

Venegas-Muggli et al. (2021) conducted a study to explore how different factors impact underrepresented Chilean college graduates' occupational status and income, including academic characteristics, work environment, and sociodemographic characteristics. It was determined that being a female was the greatest structural barrier to employment outcomes measured in the

study. The researchers did not find any significant differences between FG and CG graduates when controlling for other demographic factors. One notable limitation of this study is that it only looked at career outcomes of those students who indicated that they were employed at the time of the study, so students who were unemployed were not captured in the data. Future studies on graduate career outcomes should also take into account un- and underemployment rates to get a more holistic picture of post-graduate career outcomes.

Conclusion

Previous research indicates that FG students significantly differ from CG students demographically, academically, and socially in ways which may serve as barriers to achieving career outcomes after college. However, recent studies on career outcomes of FG graduates have notable limitations and have often produced conflicting results. First, prior studies on CG career outcomes have notably analyzed data from across multiple higher education institutions (Eismann, 2016; Manzoni & Streib, 2018). Because the type and selectivity of graduates' higher education institutions are associated with differences in career outcomes, institutional factors may have served as a confounding variable within these studies (Davies & Guppy, 1997; Ma et al., 2016; Manzoni & Streib, 2018). In addition, some of the prior studies about FG career outcomes did not include data from graduates who indicated they were unemployed at the time of the study (Manzoni & Streib, 2018; Venegas-Muggli et al., 2021), which means they did not address core questions about un- and underemployment of FG graduates.

There are multiple definitions of first-generation student which have been applied within the prior research literature, which makes it difficult to compare results between prior studies in this area (Toutkoushian et al., 2018). Few studies have addressed within-group differences in the

FG student population, resulting in a lack of understanding in how the lived experiences of FGs with varying levels of familial education may differ. In this study, three definitions for FGs were applied to account for within-group differences in career outcomes between FG graduates.

Finally, the world of work is continually changing, and no studies to date have showcased whether and how the COVID-19 pandemic has changed the employment landscape for recent college graduates of differing familial education backgrounds. As of 2022, the job market officially recovered all of the jobs which were lost during the pandemic and the unemployment rate is at a 50-year low (Gamble, 2022). The relative strength of the current job market provides opportunities for higher education institutions to re-envision their strategy for supporting job seekers to achieve their post-graduation goals.

CHAPTER 3

METHODOLOGY

Introduction

This study aimed to explore whether there are significant differences in early career outcomes between first-generation (FG) and continuing-generation (CG) college graduates. I employed a correlational research design to analyze whether first-generation status is a statistically significant predictor of college graduates' career outcomes. A correlational research design is appropriate to address my research questions because unchangeable identity characteristics such as first-generation status and other student demographics will be used as predictor variables. The correlational study design allowed for a closer examination of the multiple intersecting factors that predict career outcomes, as well as the strength of the associations between the independent and dependent variables. However, causal claims cannot be made when utilizing a correlational approach because there is no experimental manipulation in this type of study and confounding variables which are not controlled for within the study may also impact student outcomes (Mertens, 2020).

Population and Sample Description

This research study analyzed the career outcomes of recent bachelor's graduates at a large urban doctoral university with very high research activity (Indiana University Center for Postsecondary Research, 2021). This study focuses on a four-year public university because most college students attend public universities, and four-year institutions have higher graduation and career placement rates than two-year institutions (National Center for Education Statistics, 2022). Public institutions also tend to enroll more diverse populations of students in terms of

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socioeconomic status and race/ethnicity than private institutions, which will contribute to a wider representation of student demographics within the data set (Hurst, 2018).

During the 2019, 2020, and 2021 academic years, 19,685 students graduated in the May, December, or August graduation cohorts; these students are considered the population for the purposes of this research. The study site has a large population of first-generation students (FGs), which make up approximately 30% of first-year students and 45% of transfer students at the institution each year (Institutional Research and Assessment, 2019), depending on the definition used for first-generation. In addition, 46% of students at this university belong to a racial or ethnic minority group, meeting racial diversity benchmarks at other comparable higher education institutions (Espinosa et al., 2019; National Center for Educational Statistics, 2021). The diversity of the student population within this institution serves to strengthen the findings of this study, because it addresses limitations of prior studies which surveyed more homogenous student populations. It should be noted that international students were not included in the study sample since career outcomes within six months of graduation may be limited by visa regulations (Mayberry, 2009) and therefore may not be representative of the domestic first-generation graduate experience.

The population for this study was selected intentionally in order to reduce the potential for extraneous variables. First, all participants in this study graduated from the same institution, which helped to control for some of the institutional factors shown to correlate with career outcomes in prior studies, such as institution type and selectivity (Davies & Guppy, 1997; Eismann, 2016; Ma et al., 2016; Manzoni & Streib, 2018; Venegas-Muggli et al., 2021). In addition, this study analyzes outcomes data for the Classes of 2019, 2020, and 2021, which were the most recent graduate outcomes data available at the time of the study. The timing of the

research study, which took place in the aftermath of the COVID-19 pandemic, allowed me to assess how disruptions in job market conditions can impact graduate career outcomes.

Data Collection

The data in this study came from a variety of sources. Career outcomes data for this study were captured by the central campus career services center and other institutional stakeholders through the National Association of Colleges and Employers' (NACE) First Destination Survey (See Appendix B). Student demographic and academic data were compiled by the study site's Office of Institutional Research and Assessment through the university's internal Banner software system and students' responses on the New Student Questionnaire (NSQ), an internal entry survey distributed to all incoming students on campus. The University uses the NSQ to classify students as first- or continuing-generation from questions that ask the students to identify the educational level of their mother and father. Next, all data sources were combined and de-identified by the institution's Office of Institutional Research and Assessment prior to analysis. The institution's IRB exempted this study because it does not meet the definition of human subjects research due to the use of de-identified, pre-existing data.

The First Destination Survey (FDS) was first administered at the study site for the Class of 2019; in previous years the institution collected data through an internal survey. Data for the Classes of 2019, 2020, and 2021 at this institution were collected through a variety of means and managed through the Handshake career management software platform. The centralized career services center at the study site coordinated outreach efforts with a variety of campus stakeholders to send messaging about the FDS to senior students while still on campus, as well as follow-up messaging after graduation. The direct outreach strategy included mass email

campaigns to senior students from the career services center and communications from other campus stakeholders such as decentralized career services centers associated with the colleges on campus, academic departments, Deans, Financial Aid, the campus bookstore, and student government representatives to reinforce FDS messaging. In addition, the career services center created marketing materials, displaying posters across campus and creating graphics for student-facing websites. Additional creative strategies were employed to promote the survey, such as tabling at on campus events and incentives such as t-shirts, an iPad raffle, and tickets to on-campus sporting events. The "final push" strategy included direct outreach to non-respondents by phone to solicit details on their post-graduate outcome.

In addition to soliciting survey responses directly from students, in alignment with NACE standards (National Association of Colleges and Employers, 2019), the career services center compiled data from other campus stakeholders who received secondhand reports of students' career outcomes, such as career services professionals and professors. Finally, career outcomes data for graduates who did not complete the survey were also collected through LinkedIn in some cases if the student had a postgraduate career listed publicly on their profile and their career outcome was otherwise unknown.

Knowledge Rate

Survey response rates can be a source of concern when looking at graduate career outcomes because collecting career outcomes data directly from recent graduates is difficult when they are no longer on site at the higher education institution. For this reason, NACE utilizes the term knowledge rate to refer to the number of graduates for whom a career outcome is known by the higher education institution and may include direct student survey responses or

secondary survey input by other institutional stakeholders who are aware of a graduate's career outcome through LinkedIn or information provided by employers, parents, or faculty (Kelly & Walters, 2016; National Association of Colleges and Employers, 2019).

NACE standards dictate that higher education institutions should strive for the highest possible knowledge rate of graduate career outcomes, with 65% as the recommended minimum knowledge rate for basic employment information from each graduating class (National Association of Colleges and Employers, 2019). There were 12,702 survey responses at the study site between the Classes of 2019, 2020, and 2021, which calculates to a knowledge rate of 64.5%. Using NACE's FDS over other measures of graduate outcomes has been shown to increase knowledge rates of graduate outcomes at many institutions (Kelly & Walters, 2016).

Comparison of the Population and Respondents

This issue of missing data must be acknowledged in interpreting the results of this study. Since the knowledge rate represents only 64.5% of the graduating student population, it is possible that respondent data are not representative of the population since choosing to respond to the First Destination Survey is not a randomized event and may be correlated with student performance and outcomes (Bratti et al., 2003). Ignoring the student population that does not complete the survey may overestimate the overall rate of career outcomes for a graduating class. For this reason, it was important to assess any significant differences between survey respondent and non-respondent populations using available data from institutional academic records to assess the possible effect of non-respondent differences.

Demographics

A variety of demographic data were collected which were considered to be relevant to career outcomes based on prior literature. In addition to first-generation status, which is the major focus of this research, race, gender, Expected Family Contribution (as a proxy for family income), and age were included as variables given their prevalence in prior research literature related to career outcomes.

Race. The racial breakdown of the total graduate population and the FDS survey respondents are similar. The largest race category at the study site is White students, who make up 55.4% of the student population. White students were slightly more likely to respond to the First Destination Survey, as they made up 58.6% of survey respondents. Asian and African American students were the next largest race categories on campus, followed by Hispanic students and students who identified with multiple races. American Indian and Pacific Islander students are both very small samples and were therefore not. Table 3.1 below presents the percentages of each racial group at the study site as well as for those who completed the survey.

Table 3.1

Race Distribution of the Population and the Study Sample

Race	Population	Study Sample
African American	10.7%	10.2%
American Indian	0.1%	0.1%
Asian	11.4%	11.9%
Hispanic	6.3%	6.2%
Multiple	3.0%	3.1%
Pacific Islander	0.1%	0.1%
White	55.4%	58.6%
Unknown	13.1%	9.9%

Gender. The graduating Classes of 2019, 2020, and 2021 at the study site were disproportionately female (49.4%) as compared to male (40.3%). Nonbinary students made up only 0.1% of the population. The percentages in the respondent sample are similar. Since there are very few respondents who self-identified as nonbinary, these respondents were not included in the final analyses on gender. The percentages of the student population that identify with each gender category are presented in Table 3.2.

Table 3.2

Gender Distribution of the Population and the Study Sample

Gender	Population	Study Sample
Female	49.4%	50.4%
Male	40.3	42.3%
Nonbinary	0.1%	0.1%
Unknown	10.2%	7.2%

Expected Family Contribution (EFC). The proxy for family income employed in this study was Expected Family Contribution (EFC). The EFC is the amount which a student's family is expected to be able to contribute to their education costs. In other words, the higher the EFC amount, the more money a student's family can offer towards their education. Annual EFC amounts captured within this study had an enormous range. The median EFC for all students in the respondent group was $17,859. It should be noted that there was a substantial amount of missing data for this variable in both the population and the study sample (approximately 25% in both groups). Data on the mean and standard deviations of the EFC of the population and the study sample are presented in Table 3.3.

Table 3.3

Annual Expected Family Contribution (EFC) of the Population and the Study Sample

Group	Mean	SD	Range
Population	$16,725.47	$31,158.74	$0 - $718,484
Study Sample	$17,859.16	$32,744.53	$0 - $823,556

Age. As shown in Table 3.4, there was very little difference in the age of the population or the study sample. It is also evident that recent graduates represented a wide range of ages, from age 19 to age 74, at the time of graduation. Overall, however, 91.3% of the graduates were 27 years or younger.

Table 3.4

Age at Graduation of Population and Study Sample

Group	Mean	Median	Range
Population	23.8	23.0	19 - 74
Study Sample	23.0	23.0	19 - 69

Academics

This section will explore academic factors which are predictive of students' career outcomes in the research literature, including GPA, transfer status, and enrollment status.

Field of Study. Knowledge rates for the FDS varied significantly by college on campus. This means that student responses from some of the colleges on campus may be overrepresented in the survey data, whereas students pursuing other fields of study are underrepresented. The most popular fields of study were business and liberal arts. The colleges of Sport, Tourism, & Hospitality, the College of Business, the College of Engineering, and the College of Media & Communications had the highest knowledge rates, indicating that respondents from these schools make up a larger share of the survey responses than the corresponding population of graduates

from each college. In contrast, the colleges of Public Health, Liberal Arts, Music & Dance, and Social Work had knowledge rates lower than 50%, meaning the number of survey responses from these students was substantially lower than those college's student populations. The data for the total number of surveys returned within each of the study site's 12 colleges, as well as the knowledge rate for each college, are displayed in Table 3.5 below.

Table 3.5

FDS Knowledge Rates by College

College	Number Surveys	Knowledge Rate
Art & Architecture	930	45.9%
Business & Management	4,770	84.5%
Education and Human Development	838	45.2%
Engineering	1,007	83.6%
Liberal Arts	4,076	43.6%
Media and Communication	2,345	83.0%
Music & Dance	318	44.3%
Public Health	2,047	48.3%
Science & Technology	1,948	69.8%
Social Work	201	49.3%
Sport Tourism & Hospitality	532	91.0%
Theater, Film & Media Arts	673	64.5%

GPA. The GPA of both the graduate population and study sample had similar means and medians, between 3.35 and 3.40. The mean and range of the GPAs of the population and study sample at graduation are presented in Table 3.6.

Table 3.6

GPA of Population and Study Sample

Group	Mean	Range
Population	3.35	2.03 - 4.00
Study Sample	3.36	2.21 – 4.00

Credit Enrollment. Full-time enrollment is defined as the student taking at least 12 credits per semester. Most students at the study site were enrolled in full time study. The sample of full-time student survey responses was slightly higher than the population of full-time students, which means that part-time students may be slightly underrepresented in the survey responses. Data on enrollment statuses are presented in Table 3.7 below.

Table 3.7

Percentage of Full-time and Part-time Students, Population and Study Sample

Group	Full-time	Part-Time	Unknown
Population	69.2%	20.7%	10.1%
Study Sample	73.5%	19.3%	7.2%

Transfer Status. First-time freshmen are those students who enter the institution in their first year of college enrollment, and transfer students are those students who bring academic credits from a prior institution or experience. First-time freshmen made up the majority of students on campus. The percentage of survey respondents who were first-time freshmen was slightly higher than the overall population of graduates. Data on students' transfer status are included below in Table 3.8.

Table 3.8

Percentage of First-Time Freshmen and Transfer Students, Population and Study Sample

Group	First-time Freshmen	Transfer	Unknown
Population	58.9%	38.5%	2.6%
Study Sample	61.4%	36.8%	1.8%

Summary

The data presented in Tables 3.1 through 3.8 indicate that the graduates who completed the survey are similar to the overall graduate population, with some slight variation. For both groups, most of the subjects are white and female, with an Expected Family Contribution (EFC) is approximately $17,000. The average age at graduation for both groups was between 23 and 24. Average cumulative GPAs for both groups were around 3.35, they were more likely to attend school full-time, and most typically entered the university as freshmen.

First-generation Status

Prior research has indicated that the definition that is used for first-generation status can produce significant impacts on results (Toutkoushian et al., 2018). For this reason, it was important to center within-group differences when establishing the parameters to define FG graduates within this study. Three different definitions for first-generation were used to assess whether there were significant differences in career outcomes between FG graduates with varying levels of familial education and between FG and CG graduates at the study site.

- *Definition 1 – First-generation 1 (FG1)*: Neither parent graduated from college (bachelor's degree)
- *Definition 2 – First-generation 2 (FG2):* Neither parent attended college

- *Definition 3 - First in Family (FiF):* Neither parent nor siblings attended college

Moving from definition 1 to definition 3, the criteria for inclusion within the first-generation population becomes more restrictive. The First-generation 1 (FG1) population represents the largest percentage of first-generation students at the study site and is also the definition that is most used to define first-generation students at the study site. First-generation 2 (FG2) students include those students whose parents never attended an institution of higher education. FG1 and FG2 are the most commonly used definitions for first-generation in the research literature. Finally, "First in Family" (FiF) students do not have any close relations (mother, father, or sibling) who have attended an institution of higher education. In other words, FiF student possess the least social capital in higher education and professional employment due to a lack of direct experience in these spaces within their nuclear family. The number and percentages of these three groups are presented in Table 3.9.

Table 3.9

First-Generation Status for the Population and Study Sample

Group	FG1	FG2	FiF
Population	28.6%	13.7%	5.6%
Study Sample	28.5%	13.6%	5.5%

Defined in these ways, each subsequent definition for first-generation (FG1 to FG2 to FiF) includes within it those students who were contained in the prior definition. As shown in Table 3.9, the percentages of students classified as first-generation are almost identical in the population and the study sample. None of the prior research studies on FG graduate career outcomes have utilized the FiF definition to assess the effects of siblings' educational backgrounds, so using all three definitions serves as a strength of this study design.

Hypotheses

Based on gaps in the existing literature focused on career outcomes for FG college graduates, this research study sought to uncover differences in career outcomes between first- and continuing-generation students, in a more contemporary job market context. The research questions which informed this study are posed below, in addition to my hypotheses about what would be found based on prior research literature.

Research Question 1.

Are there statistically significant differences in early career outcomes between first-generation and continuing-generation graduates from the same higher education institution? If so, is the association between first-generation status and career outcomes still significant when taking into account other demographic and academic differences between these populations?

Hypothesis 1.

I expected there to be significant differences in career outcomes between FG and CG graduates, with CG graduates employed at higher rates after graduation. I hypothesized that there would also be significant variance in career outcomes between populations of FG students when applying different definitions, with FG1 students more likely to be employed than FG2 and FiF students. I also expected that first-generation status would be significantly associated with career outcomes when also including the other demographic and academic factors that have been shown to differ between these populations, both in the research literature and at the sample site, due to differences in social capital.

Research Question 2.

Are first-generation graduates more likely to be underemployed (i.e., working part time or working in a role that is not associated with their studies) than their continuing-generation peers?

Hypothesis 2.

I expected that FG students would be underemployed compared to CG students across all three definitions for first-generation, with the strongest disparity existing between FiF students and their CG peers. I hypothesized that FG graduates would experience underemployment disparities across both axes of underemployment: visible (i.e., employed part time) and invisible (i.e., working in a role which is not aligned with their degree). In other words, I expected that CG graduates would more frequently be employed in full-time degree associated roles.

Research Question 3.

Did graduating prior to, during, or after the onset of the COVID-19 pandemic have any differing impact on the career outcomes of first-generation graduates compared to their continuing-generation peers?

Hypothesis 3.

I expected the career outcomes of the Class of 2020 to showcase wider disparities in FG and CG career outcomes, due to the slack job market conditions that occurred in the onset of the COVID-19 pandemic. I expected that the employment gap between CG and FG students would be reduced for the Class of 2021, due to the tight labor market and increased opportunities for hire.

Variables

Dependent Variables

For research questions one and three, the dependent variable is career outcomes six months after graduation, as measured by the First Destination Survey. The institution captured students' post-graduate outcomes in a variety of categories:

- *Working*: employed in a full- or part-time role

- *Still looking*: engaged in the job search process

- *Continuing education*: matriculating into further study, such as graduate school

- *Seeking continuing education*: looking for a post-graduate program of study

- *Volunteer service*: participating in a service program or volunteering

- *Military service*: participating in the U.S. Armed Forces

- *Not seeking*: choosing not to pursue employment, continuing education, or other post-graduate engagement

- *No response*: no data are available on student's post-graduate outcome

For this study, the variables most of interest included comparing those students who indicated they were working after graduation against those students who indicated they were still looking for employment opportunities. The "Still looking" students align most with the Bureau of Labor Statistics' definition for unemployed (U.S. Bureau of Labor Statistics, 2023), because these students are available to work and actively seeking employment but have not yet found a job.

Since this study examines the career outcomes of recent graduates, a number of these categories were considered outside of the scope of this study and were therefore not included in analysis. Students in the "Not seeking" category are not actively searching for work, and thus

were not considered to be a part of the unemployed student population. Continuing education students were not included in this study since their post-graduate pathway did not align with an employment outcome. Military and volunteer students were also eliminated from this study due to their lack of alignment with a concrete career outcome as well as the small sample sizes in each of these three categories (n= <1%), which results in a lack of statistical power within these categories.

For research question two, the dependent variable is full employment, or full-time (30+ hours) employment in a degree-relevant role. The first element of this dependent variable required looking at working students' employment by hours (full-time or part-time). The second element of this dependent variable focuses on the degree relevancy of the role, which is captured through the optional FDS question added on by the institution, "I have found a position related to my field of study" (yes/no).

Independent Variables

The primary independent variable for this study was first-generation status, to analyze differences in career outcomes between FG and CG students across the three definitions (FG1, FG2, and FiF). Other independent variables analyzed within the study included gender (male/female), race (White, African American, Asian American, Hispanic, & mixed race), socioeconomic status (as measured by students' Expected Family Contribution), field of study (Public Service, STEM, Business, and Liberal Arts), graduation year (Class of 2019, 2020, and 2021), GPA, transfer status (first time freshman or transfer), and enrollment status (full-time or part-time student).

Data Analysis

The first step of the analysis for this study included analyzing the career outcomes of graduates by each independent variable to determine which variables significantly correlated with career outcomes. There are two primary univariate statistical tests that were used for the analyses in this section of the results: Chi-squared analysis, and separate samples t-tests. For nominal independent variables, such as race, gender, and transfer status, Chi-squared analysis was used to analyze for any statistically significant differences between groups (Mertens, 2020). Separate samples t-tests were used to analyze the association between career outcomes and numerical values, such as GPA and EFC. Both types of statistical analyses allowed me to identify which factors may serve as confounding variables when looking at differences in career outcomes between first- and continuing-generation students.

The large sample size of the graduate classes analyzed within this study (n=19,685 graduates) serves as both an asset and a challenge to the study design. While there are some missing data within each of the variables, the sample size for most of the analyses presented within this study is greater than 15,000. The advantage of a sample of this size is that statistical analyses have enormous power; however, the disadvantage is that it will be easier to produce statistical significance within each analysis (Mertens, 2020). For this reason, each of the analyses for which statistical significance was found will also include an effect size, which will allow for a more nuanced interpretation of the results. The interpretation of these Chi-squared and t-test in terms of effect size are presented in Tables 3.10 and 3.11 below (Holcomb & Cox, 2016).

Table 3.10

Cramer's V Effect Size for Chi-squared Analysis

Cramer's V	Effect Size
0.0	No association
< 0.1	Trivial
0.1	Small
0.3	Medium
0.5	Large

Table 3.11

Cohen's d Effect Size for t-test Analysis

d Score	Effect Size
0.0	No association
< 0.1	Trivial
0.1 - 0.3	Small
0.3 - 0.5	Medium
> 0.5	Large

For research question 1, I looked at whether there were significant differences between FG and CG groups by analyzing the academic and demographic characteristics of students in the "Working" and "Still looking" outcomes categories. First, I used Chi-squared analyses and t-tests to determine whether there were significant differences between groups. Next, I used Cohen's d and Cramer's V to interpret the effect size of each association. Finally, I conducted a binary logistic regression analysis to examine if there was a statistically significant and meaningful association between first-generation status and employment when taking into account other independent variables which have shown to correlate with career outcomes. Regression allows the researcher to analyze the association between two variables after accounting for other

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confounding variables, and binary logistic regression is appropriate when the outcome variable is a dichotomy (Mertens, 2020). Within this binary logistic regression, I analyzed which variables predicted whether a student was working or still looking for a job after graduation.

For research question 2, I used Chi-squared analyses to look at recent graduate outcomes from a lens of underemployment using both visible and invisible underemployment measures. I assessed for visible underemployment through comparing FG and CG graduates' work time statuses (full-time and part-time employment). Next, I analyzed invisible underemployment by comparing FG and CG responses to the FDS optional question of "I have found a position related to my field of study" (yes/no). Students who were working part-time or working in roles which were not associated with their studies were considered underemployed (OECD, 2002).

For research question 3, I looked at differences in un- and underemployment rates across the three graduating classes to determine whether rates shifted prior to, during, and after the onset of the COVID-19 pandemic across FG and CG populations.

CHAPTER 4

RESULTS

This chapter is divided into two sections. The first section investigates whether first-generation students (FGs) differ from continuing education students (CGs) at the study site on the demographic variables described in Chapter 3. The second section will present the results that address the research questions. For both sections, all analyses will compare the three definitions of first-generation presented in Chapter 3.

First-generation and Continuing-generation Comparisons

Chapter 2 presented the prior research literature on FGs, demonstrating the ways in which these students have been shown to differ from CGs. This section will investigate whether these differences also exist with the sample of students in this study and will also investigate whether the three definitions of first-generation affect these results. Each of the variables presented in Chapter 3 will be investigated. To keep the presentation simpler, for all of the analyses presented below, the tables will only contain the percentage of FG students; the percentage of corresponding CG students will not be presented since these two percentages always sum to 100%.

Demographics

Race. The percentages of each racial group that are classified as first-generation for the three definitions are presented in Table 4.1. All four race categories representing Students of Color (African American, Asian, Hispanic, and Multiple Races) had disproportionately higher percentages of first-generation students, whereas the percentage of White students who identified as first-generation was comparatively low. Looking across definitions for FG also showed some

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significant variation between races. For example, Asian and Hispanic students were more strongly concentrated within the First in Family (FiF) category than any other group when compared to the proportion of First-generation 1 (FG1) students. The Chi-squared results are presented in Table 4.2, which indicate there are significant differences between the FG and CG student populations by race.

Table 4.1

First-generation Status by Race

FG Definition	% Afr. Amer. First-gen	% Asian First-gen	% Hispanic First-gen	% Multi. Race First-gen	% White First-gen
FG1	36.3	42.5	41.6	29.7	24.6
FG2	15.5	28.9	24.2	14.9	10.0
FiF	6.4	11.6	11.4	7.3	4.1

Table 4.2

Chi-squared Analysis of First-generation Status by Race

FG Definition	Chi-sq	Sig.	Cramer's V
FG1	434.79	<.001	.162
FG2	657.20	<.001	.202
FiF	364.25	<.001	.127

Gender. There were significant differences between first-generation and continuing-generation student populations by gender. The percentage of female students who identify as first-generation was slightly higher than the percentage of males who are first-generation; however, the effect sizes were very small. Table 4.3 showcases differences between FG students by gender.

Table 4.3

First-generation Status by Gender

FG Definition	% Males First-gen	% Females First Gen	Chi-sq.	Sig.	Cramer's V
FG1	27.7	31.2	25.76	.001	.038
FG2	13.2	15.1	13.16	.001	.027
FiF	5.1	6.5	15.49	.001	.031

Expected Family Contribution (EFC). All three groups of first-generation students had significantly lower EFC amounts when compared to their corresponding continuing-generation populations, with a medium effect size. This indicates that FG families have significantly less income which can be utilized for higher education costs than CG families. The effect size of the differences in EFC between FG and CG students, as shown in Table 4.4, was the largest of all the independent variables employed within this study.

Table 4.4

Annual Expected Family Contribution (EFC) and First-generation Status

FG Definition	Mean EFC - CG	Mean EFC - FG	t	Sig.	Cohen's d
FG1	$20,719.09	$8,945.54	21.95	.000	.384
FG2	$18,741.24	$6,535.34	17.62	.000	.396
FiF	$17.517.33	$6,127.80	11.19	.000	.367

Age. The age difference between FG and CG students was significant when using the FG1 and FG2 definitions, with FG1 and FG2 students slightly older on average. The effect sizes for these age differences, however, were very small. There were no significant differences in age between CG students and FiF students, as shown in Table 4.5 below.

Table 4.5

Age at Graduation by First-generation Status

FG Definition	Mean Age: CG	Mean Age: FG	t	Sig.	Cohen's d
FG1	23.71	23.86	2.54	.011	.042
FG2	23.71	23.99	3.42	.001	.074
FiF	23.75	23.81	0.54	NS	-

Academics

Field of Study. The specific college that students chose to attend within the study site differed significantly between FG and CG students. The most popular colleges for FG students included Social Work, Public Health, and Education. The college that was least populated by all three types of FG students was the Music & Dance college. There are clear patterns indicating that FG students may be more inclined to fields of study that are aligned with public service professions (see Appendix C). The details of each college's first-generation student enrollment percentages are included in Tables 4.6 and 4.7 below.

Table 4.6

College Enrollments by First-generation Status

College	% FG1	% FG2	% FiF
Art & Architecture	22.4%	10.9%	4.5%
Business & Management	31.6%	14.4%	6.1%
Education and Human Development	32.1%	14.8%	6.4%
Engineering	29.1%	13.9%	5.2%
Liberal Arts	24.9%	11.7%	5.2%
Media and Communication	25.5%	11.1%	5.2%
Music & Dance	20.1%	7.9%	3.5%
Public Health	37.5%	18.4%	7.1%
Science & Technology	31.7%	16.5%	6.4%
Social Work	46.3%	28.3%	5.6%
Sport Tourism & Hospitality	28.8%	11.5%	3.6%
Theater, Film & Media Arts	21.8%	13.7%	5.6%

Table 4.7

Chi-squared Analysis of First-generation Status by College Enrollments

FG definition	Chi-sq.	Sig.	Cramer's V
FG1	208.0	<.001	.10
FG2	149.5	<.001	.09
FiF	50.3	<.001	.05

GPA. When comparing the GPAs of FG and CG students, there were significant differences across all three definitions for first-generation, with CG students having a higher mean GPA than FG peers. The effect size of GPA comparisons with CG students was small for FG1 (Cohen's d = 0.208) and FG2 students (Cohen's d =0.183) and was negligible for FiF

students (Cohen's d = .007). The largest difference in mean GPA was between FG1 students and CG students.

Table 4.8

GPA by First-generation Status

FG Definition	Mean GPA: CG	Mean GPA: FG	t	Sig.	Cohen's d
FG1	3.37	3.29	12.63	.001	.208
FG2	3.35	3.28	8.25	.001	.183
FiF	3.35	3.32	2.2	.030	.007

Credit Enrollment. There were no significant differences in credit enrollment between FG and CG students when looking at FG1 and FG2 students. FiF students were significantly more likely to be enrolled part-time than CG students; however, the effect size of this difference was very small.

Table 4.9

Credit Enrollment of First-Generation Students

FG Definition	Part-time CG	Part-time FG	Chi-sq.	Sig.	Cramer's V
FG1	23.1%	22.8%	.190	NS	-
FG2	23.0%	23.1%	.021	NS	-
FiF	23.2%	19.1%	9.61	.002	.023

Transfer Status. First-generation students were significantly more likely to be transfer students when using the FG1 definition, with a very small effect size. There were no significant differences in first-time freshman or transfer status between FG2 and First in Family students and their CG peers.

Table 4.10

Freshman / Transfer Status of First-Generation Students

FG Definition	Transfers: CG	Transfers: FG	Chi-squared	Sig.	Cramer's V
FG1	38.7%	41.5%	12.61	.000	.026
FG2	39.3%	41.1%	3.20	NS	-
FiF	39.5%	40.6%	.538	NS	-

Summary of the Differences and Effect Sizes

Table 4.11 below summarizes the differences between first-generation and continuing-generation student populations which were considered to be significant, as well as their effect size, on both demographic and academic variables. This table represents trends across all three definitions for FG students, unless otherwise indicated in parentheses that these comparisons only apply to a particular FG population.

Table 4.11

First-generation and Continuing-generation Student Population Comparisons

FG Student Characteristics	Effect Size
Have lower EFC	Medium effect
More typically study public service fields	Small effect
Have lower GPAs (FG1 & FG2)	Small effect
More typically Students of Color	Small Effect
More typically female	Very small effect
More typically transfer students	Negligible effect
More typically part-time students (FiF)	Negligible effect

Career Outcomes

There are multiple possible post-graduate outcomes captured by the FDS, including working, continuing education, military, and volunteer engagement. In addition, the FDS aims to capture the status of those students who have not yet landed an outcome, in the category "Still looking", as well as students who are "Not seeking" an outcome at the time of the survey. The most popular career outcome as reported on the FDS was "Working", with 45.0% of students reporting they were working after graduation. The second most popular outcome was "Continuing education", which represents those graduates pursuing additional study in graduate school or other educational programs, followed by "Still looking", which represents those graduates who are still seeking an outcome at the time of the survey. Table 4.12 below outlines the post-graduate outcomes of the Classes of 2019, 2020, and 2021.

Table 4.12

Descriptive Data on FDS Outcomes at Sample Site

Outcome	Frequency	Percentage
Working	8,861	45
Still looking	1,706	8.7
Continuing education	1,972	10.0
Military	72	0.4
Volunteering	53	0.3
Not seeking	38	0.2
No response	6,983	35.0
Total	19,685	100

The focus of this research is employment outcomes; therefore, all outcomes analyses in this section focused only on those students who indicated they were "Working" or "Still looking"

for employment on the FDS. Students who indicated they were continuing their education, engaging in military service, or volunteering were not considered to be within the scope of this study. Students who indicated that they were not seeking employment were not included within the study because they did not meet the threshold for the definition of unemployed in that they indicated they were not actively looking for a job (U.S. Bureau of Labor Statistics, 2023).

Table 4.13

Percentage of "Working" and "Still Looking" Students

Working	Looking
83.9%	16.1%

In the analyses below, I will focus on comparing the attributes of recent graduates who indicated that they were "Working". Of note, "Still looking" populations are not included within the data tables because these numbers would be redundant, as these two percentages always sum to 100%.

Demographics

First, I looked at whether there were significant demographic differences between the "Working" and "Still looking" graduate populations as a way to assess whether a correlation exists between each independent variable and student career outcomes. I analyzed differences in career outcomes based on those factors which were significantly different between first- and continuing-generation students to determine whether these predictors may have served as confounding variables when looking at FG students' career outcomes. Chi -squared and t-test analyses were used to examine demographic differences between the Working and Still Looking student populations.

Race. Race was a significant factor when comparing working and still looking students, with African American students, Asian Students, Hispanic students, and multiracial students working at lower rates than White students. Students who identified with Multiple Races were most likely to be still looking for employment after graduation. The effect size for the association between race and employment status was very small (Cramer's V = .061). The percentages of working graduates by race are represented in Tables 4.14 and 4.15 below.

Table 4.14

Percentage of Working Graduates by Race

Race	Working Rate
African American	80.2%
Asian	81.5%
Hispanic	82.6%
Multiple	79.5%
White	85.6%

Table 4.15

Chi-squared Analysis of Working Graduates by Race

Sig = <.001	Chi-sq. = 38.75	Cramer's V = .06

Gender. Gender was also deemed to be a significant factor when comparing working and still seeking student populations. Of the students who completed the FDS, female students were working at a lower rate than male students. The effect size for the association between gender and career outcome was very small (Cramer's V = 0.05). Tables 4.16 and 4.17 below show the gender breakdown of working graduates.

Table 4.16

Working Graduates by Gender

Gender	Working %
Female	82.7
Male	86.1

Table 4.17

Chi-squared Analysis of Working Graduates by Gender

Sig = <.001	Chi-sq. = 20.80	Cramer's V = .05

Expected Family Contribution (EFC). Expected Family Contribution (EFC) was a significant factor when comparing working and still looking student populations, with working students having a higher mean EFC. This indicates that the students who indicated they were working at the time of the survey had a higher family income on average that the students who were still looking for employment. The standard deviation of working students was higher than the standard deviation of still looking students, indicating that there was more variety in EFC within this group. The effect size between EFC and career outcome was very small (Cohen's d = 0.08). Table 4.18 and Table 4.19 below show the data on the differences between the working and still looking populations.

Table 4.18

Working and Still Looking Graduates by EFC

Outcome	Mean EFC	SD EFC
Working	$18,205.72	$33,478.22
Looking	$15,437.90	$29,304.27

Table 4.19

T-test Analysis of Working and Still Looking Graduates by EFC

Sig. = 0.02	t=2.78	Cohen's d = 0.08

Age. The age of students at graduation was significant when analyzing career outcomes, with students who are still looking for jobs slightly older on average than working students. The larger standard deviation of the still looking group (SD=4.47) compared to the working group (SD=3.5) indicates that there is more age variety within the group of students who are still looking for work than within the group of students who were working.

Table 4.20

"Still Looking" & "Working" by Age, All Students

Outcome	Mean Age	SD Age
Working	23.65	3.54
Looking	23.94	4.47

Table 4.21

T-test Analysis of Still Looking & "Working" by Age, All Students

Sig = .001	t=-.281	Cohen's d = .-08

When analyzing the career outcomes of only those students who were between the ages of 19-27 at the time of graduation, there was no significant difference in mean age between "Working" and "Still looking" populations. Because the difference in age of first-generation students and continuing-generation students met the threshold for a notable (though very small) effect, and because age is also considered to be a significant predictor of career outcomes, I chose to limit the population of first-generation students within the career outcomes analysis to

only those students under the age of 28 at graduation. Table 4.22 below includes the data on working students by age when limiting the data set to students under the age of 28.

Table 4.22

"Still Looking" & "Working" by Age, Students Under 28

Outcome	Mean Age	SD Age	Sig.
Working	22.84	1.21	0.995
Looking	22.84	1.20	0.995

Academics

Next, I analyzed academic differences between the "Working" and "Still looking" student populations to see which independent variables correlated with career outcomes. I placed an emphasis on those factors which were significantly different between FG and CG students to determine which of these variables may serve as confounding variables when looking at career outcomes. Chi-squared analyses were used to examine demographic differences between the "Working" and "Still looking" student populations.

Field of Study. Students' field of study was significantly correlated with their work outcomes. Students who were most likely to be working included those in the business & management college and the engineering college. Students least likely to be working included those studying fine arts, such as theater, film & media arts students and art & architecture students. The college that a student attended produced a medium effect size on their career outcome (Cramer's V = 0.28).

To simplify the logistic regression analysis, students' colleges were condensed down into four core fields of study, following procedures laid out by NACE (See Appendix C). The

breakdown for how each college condensed into the new field of study variable categories

(Liberal Arts, Business, Public Service, and STEM) are included in Tables 4.23 and 4.24 below.

Table 4.23

Working Graduates by College

College	% Working	Field of Study
Art & Architecture	66.6	Liberal Arts
Business & Management	93.9	Business
Education and Human Development	81.7	Public Service
Engineering	88.2	STEM
Liberal Arts	69.1	Liberal Arts
Media and Communication	87.9	Liberal Arts
Music & Dance	71.4	Liberal Arts
Public Health	81.7	Public Service
Science & Technology	74.1	STEM
Social Work	71.4	Public Service
Sport Tourism & Hospitality	74.5	Business
Theater, Film & Media Arts	56.0	Liberal Arts

Table 4.24

Chi-squared Analysis, Working Graduates by Field of Study

Sig = <.001	Chi-sq. = 821.50	Cramer's V = .28

When students were combined into their new variable categories, there were significant

differences between each of the four field of study groupings, with business students

outperforming all other areas (91.8% working). Liberal arts graduates were the least likely to be

employed (78.7% working). These new field of study groupings produced a nominal to small

effect size (Cramer's V = 0.018 - 0.166)

Table 4.25

Working Graduates by Field of Study

New Variable	% Working	Chi-sq.	Sig.	Cramer's V
Public Service	81.4	5.64	.018	.018
Liberal Arts	78.7	119.56	<.001	.115
STEM	80.1	24.427	<.001	.052
Business	91.8	248.232	<.001	.166

GPA. The GPAs of working and still looking students were almost exactly the same.

Therefore, GPA was not considered to be a significant factor when looking at career outcomes.

The data on GPA correlations with employment outcomes are below in Tables 4.26 and 4.27.

Table 4.26

Still Looking & Working Graduates by GPA

Outcome	Mean GPA	SD GPA
Working	3.33	1.21
Looking	3.34	1.20

Table 4.27

T-test Analysis of Still Looking & Working Graduates by GPA

Sig = 0.484	t=-0.475	Cohen's d = .-015

Credit Enrollment. When looking at students' enrollment status, part-time students were more likely to be working after graduation than full-time students. This may be because part-time students are more likely to work during their studies, which may result in them continuing to work in the same role after graduation. The effect of enrollment status on career outcomes is

very small (Cramer's V = 0.06). Data on working percentages by enrollment status are included in Table 4.28 and Table 4.29 below.

Table 4.28

Working Graduates by Enrollment Status

Student Type	% Working
Full-time Student	83.0
Part-time Student	87.8

Table 4.29

Chi-squared Analysis of Working Graduates by Enrollment Status

Sig. = <0.001	Chi-sq.= 34.10	Cramer's V = .06

Transfer Status. The association between a student's transfer status (i.e., whether a student started at the institution as a first time freshman or transferred from another institution) was not significant when looking at their career outcome. Therefore, transfer status will not be included as a factor in first-generation career outcome analyses.

Table 4.30

Working Graduates by Transfer Status

Student Type	% Working
First-time Freshman	84.3
Transfer	83.7

Table 4.31

Chi-squared Analysis of Working Graduates by Transfer Status

Sig = 0.441	Chi-sq. = 0.594	Cramer's V = .008

Summary of the Differences + Effect Sizes

There are numerous predictor variables which were significantly correlated with career outcomes. The summary of each variable's significance and effect size are included in Table 4.32 below.

Table 4.32

Summary of Working Student Attributes & Effect Sizes

Attributes	Significance	Effect Size
Field of Study	Significant	Small effect
Race	Significant	Very small effect
EFC	Significant	Very small Effect
Gender	Significant	Very small effect
Enrollment status	Significant	Very small effect
Age, under 28	Not significant	-
Transfer status	Not significant	-
GPA	Not significant	-

Analysis for Research Question 1: *Are there statistically significant differences in early career outcomes between first-generation and continuing-generation graduates? If so, is the association between first-generation status and career outcomes still significant when taking into account other demographic and academic differences between these populations?*

When analyzing the career outcomes of recent full-time college graduates under the age of 28, there were notable differences between first- and continuing-generation students, depending on the definition applied for first-generation. The disparity between FG1 and FG2 students and their CG peers was deemed to be significant, with a very small effect size (Cramer's V = 0.03). FiF students were also employed at a slightly lower rate than CG peers; however, this difference was not significant in the Chi-squared analysis.

Table 4.33

Working Graduates by First-Generation Status

FG Definition	FG Working	CG Working	Chi-sq.	Sig.	Cramer's V
FG1	82.6%	85.1%	8.25	.004	.03
FG2	81.5%	84.8%	8.64	.003	.03
FiF	82.3%	84.5%	-	NS	-

The small effect sizes produced by the association between FG status and career outcomes indicates that while being an FG1 or FG2 student is significantly associated with a lower chance of achieving a post-graduate job within 6 months of graduation, FG status alone is not a primary predictor of whether a student will successfully land a job. Therefore, it is important to look at other independent variables and their effect sizes to determine which predictors correlate most strongly with career outcomes. In this case, field of study was the strongest predictor of a career outcome measured within this study.

Looking at each independent variable on its own allowed me to gain a better understanding of which factors were associated with students' career outcomes. However, it is also critical to understand how and whether each of these factors interact with one another to reduce confounding variables which may serve to influence each independent variable's

association with a career outcome. For this reason, I chose to use a regression model to test all of the significant independent variables simultaneously in order to ascertain which variables were still considered significant when taken in tandem with other factors. Those factors that were considered to be significantly associated with career outcomes included race, gender, EFC, field of study, and enrollment status. Age (when only looking at students under the age of 28), transfer status, and GPA were not significantly correlated with career outcomes, and therefore were not included within the regression models.

I ran each logistic regression model separately for both populations of FG students who experienced significant career outcomes disparities with their CG peers (FG1 and FG2 students), and both models were considered to be statistically significant ($p < .001$). Since this was a binary logistic regression, all nominal predictor variables were coded as 0 or 1, with 0 as the reference category. In this case, 0 stood for White, male, part-time, business, and continuing-generation graduates, and 1 stood for non-White races (Hispanic, African American, Asian, Multiple races), female, full-time, non-business (Public Service, Liberal Arts, and STEM) and first-generation students.

There was a significant association between FG1 status and career outcomes, with FG1 students less likely to be working than their CG peers (Beta = -.172). This indicates that FG status is indicative of a lower chance of landing a job than CG status, and also that this variance can't be explained based on other factors such as race, income, gender, enrollment status or field of study. Field of study was the strongest predictor of career outcomes, with Liberal Arts students employed at the lowest rate (Beta = -.991). These results are presented in Tables 4.34 and 4.35 below.

Table 4.34

Binary Logistic Regression of FG1 Graduates, with Additional Variables

Independent Variable	Beta	S.E.	Sig.
Field of Study: Public Service	-.890	.126	<.001
Field of Study: Liberal Arts	-.991	.088	<.001
Field of Study: STEM	-.947	.102	<.001
Gender: Female	-.047	.073	.519
Race: African American	-.166	.102	.104
Race: Hispanic	-.156	.128	.224
Race: Asian	-.301	.103	.003
Race: Multiple	-.456	.162	.005
EFC	.000	.000	.207
Full Time Status	-.323	.098	<.001
FG1 Status	-.172	.072	.017
Constant	2.737	.120	<.001

Table 4.35

Binary Logistic Regression Model Statistics - FG1 Career Outcomes

Sig. = < 0.001	Chi-sq. = 221.175	Nagelkerke R-squared = 0.054

The model for FG2 graduates was also significant, which indicates that FG2 status was predictive of career outcomes when taken into account with other independent variables. Being an FG2 student had a slightly more negative impact (B=-.226) than FG1 status (B=-.172) on finding a job after graduation, when compared to CG peers. Within this model, field of study was still the strongest predictor of employment with Liberal Arts students lagging most in terms of career outcomes (Beta = -.989).

Table 4.36

Binary Logistic Regression of FG2 Graduates, with Additional Variables

Independent Variable	Beta	S.E.	Sig.
Field of Study: Public Service	-.887	.126	<.001
Field of Study: Liberal Arts	-.989	.088	<.001
Field of Study: STEM	-.948	.102	<.001
Gender: Female	-.046	.073	.527
Race: African American	-.173	.102	.091
Race: Hispanic	-.151	.128	.239
Race: Asian	-.285	.104	.006
Race: Multiple	-.452	.162	.005
EFC	.000	.000	.177
Full Time Status	-.324	.098	<.001
FG2 Status	-.226	.090	.012
Constant	2.711	.118	<.001

Table 4.37

Binary Logistic Regression Model Statistics - FG2 Career Outcomes

Sig. = < 0.001	Chi-sq. = 221.657	Nagelkerke R-squared = 0.055

Within both analyses, the Nagelkerke R-squared (0.054-0.055) indicated that this model was overall not very effective in predicting career outcomes, in that it only explained about 5-6% of the results that were observed. While the research question was able to be answered within this statistical analysis, this regression could be refined further by utilizing interaction effects, and separate regressions could be run for each field of study to reduce the variance being captured within the equation.

Analysis for Research Question 2. *Are recent first-generation graduates more likely to be underemployed than their continuing-generation peers?*

Underemployment contains within it two possible variables: visible underemployment and invisible underemployment. Visible underemployment indicates that one is working less than the expected number of hours in a role and is available to work additional hours (OECD, 2002). Invisible underemployment refers to working in a job in which one's skills or credentials are not adequately used (OECD, 2002).

Visible Underemployment

The best proxy for visible underemployment within the FDS data set is comparing those graduates who indicated that they are working full-time with those graduates doing part-time work. The vast majority of students who indicated that they were working on the FDS were working full-time (92.3%).

Table 4.38

Descriptive Data on Visible Underemployment at Sample Site

Time Status	Percent
Full-time	92.3
Part-time	7.7

Next, I explored differences within the working student group to ascertain whether there were differences in visible underemployment when comparing first- and continuing-generation graduates' career outcomes. When looking at the full-time working population, there were no significant differences between the first- and continuing-generation student populations when comparing time status at work. This indicates that first- and continuing-generation students experience visible underemployment at relatively similar rates.

Table 4.39

Visible Underemployment by First-Generation Status

FG Status	% CG Part-time	% FG Part-time	Chi-sq.	Sig.
FG1	2.4%	2.5%	0.56	NS
FG2	2.4%	2.8%	1.02	NS
FiF	2.4%	3.4%	1.78	NS

Invisible Underemployment

Perhaps the more critical measure is the second measure of underemployment, or invisible underemployment. In the case of a college graduate, this can be measured as working within a role that is not commensurate with one's college credentials. The FDS question which best aligns with invisible underemployment asks students to indicate whether they are working in a position which is related to their field of study (yes/no). Based on the low response rate to this survey question for the Class of 2019, it appears as though this question was added to the FDS as an optional response question in 2020. Looking at the working students under the age of 28 in the Classes of 2020 and 2021, the response rate to this question was 75.4% and 65.4% respectively, indicating that this question was optional on the survey.

Table 4.40

Invisible Underemployment/Field of Study (FOS) Count (and Rate) by Year

FOS Response	Class of 2019	Class of 2020	Class of 2021
Yes	16 (.01%)	1,831 (67.1%)	1,776 (56.2%)
No	1 (.00%)	225 (8.2%)	290 (9.2%)
No Response	2,959 (99.9%)	671 (24.6%)	1,092 (34.6%)

Of the students who did respond to this question, 91.2% of students indicated that they were working in a role which was related to their field of study. The 8.8% of respondents who

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indicated that they were not employed in a role associated with their studies were considered

underemployed. Table 4.41 below showcases the responses to this question.

Table 4.41

Descriptive Data, Invisible Underemployment, Students under 28

FOS Response	% Respondents
Yes	91.2
No	8.8

In reviewing these data more closely, I found some notable discrepancies in the response

rates for the "Field of Study" question between Colleges and Fields of Study. The highest

response rate was achieved by the College of Business & Management (91.7%), due to the fact

that the career services staff members in this college completed a strategic review to update

missing responses to this question, when doing so was possible based on the student's job title

and employer name. There were multiple colleges on campus which achieved response rates at

or below half of the working student population, including the Colleges of Sport, Tourism, &

Hospitality (26.3%), Education and Human Development (35.6%), Media and Communication

(43.3%), and Art and Architecture (50.0%). This indicates that business students, who achieved

the highest employment rates overall, are overrepresented in this sample whereas multiple other

fields of study were underrepresented. Response rates for the Field of Study question are

included in Table 4.42 below.

Table 4.42

Response Rates for Field of Study Question by College

College	Response Rate
Art & Architecture	50.0%
Business & Management	91.7%
Education and Human Development	35.6%
Engineering	60.0%
Liberal Arts	62.4%
Media and Communication	43.3%
Music & Dance	81.7%
Public Health	62.5%
Science & Technology	51.8%
Social Work	63.3%
Sport Tourism & Hospitality	26.3%
Theater, Film & Media Arts	61.1%

When assessing for invisible underemployment between first-generation statuses, there were no significant differences between FG and CG students when looking only at the career outcomes of students under the age of 28. FiF students actually indicated slightly higher rates of working in their field of study than their CG peers. The number of students in each category for first-generation students who indicated that they were not working in their field of study is included below, in Table 4.43.

Table 4.43

Invisible Underemployment by First-Generation Status, Students under 28

FG Definition	% FG Not FOS	% CG Not FOS	Sig.
FG1	8.0%	9.0%	NS
FG2	8.0%	8.3%	NS
FiF	6.4%	8.4%	NS

Analysis for Research Question 3: *Did graduating prior to, during, or after the onset of the COVID-19 pandemic have any differing impact on the career outcomes of first-generation graduates compared to their continuing-generation peers?*

While this research question was not initially a part of the study design, I stumbled across some interesting findings related to students' graduation timeline and their career outcomes which warranted inclusion in this paper. I chose to compare the career outcomes of each graduating class (i.e., Class of 2019, Class of 2020, and Class of 20201) separately to ascertain whether there was a statistically significant association between the COVID-19 job market conditions and recent graduates' employment status. The association between a student's graduation year and their career outcome was significant. Students in the Class of 2020 had the lowest working rates of all graduate classes, which is perhaps not surprising given the timing of the start of the COVID-19 pandemic during the Spring 2020 term. However, employment rates rebounded significantly for the Class of 2021. The effect size of a student's graduation term on their outcome was small (Cramer's V = 0.107). Data and statistics on working graduates by grad year are included below in Tables 4.44 and 4.45.

Table 4.44

Rate of Working Graduates by Grad Year

Grad Year	Working Rate
Class of 2019	83.3%
Class of 2020	81.8%
Class of 2021	87.6%

Table 4.45

Chi-squared Analysis of Working Graduates by Grad Year

Sig. = <.001	Chi-sq. = 42.64	Cramer's V = .07

Looking at the career outcomes of first-generation graduates within each graduating class produced interesting results. In the Class of 2019, FG student employment percentages lagged behind CG students across all three definitions of first-generation, with FG1 students employed 3% less, FG2 students employed 4.9% less, and FG1 students employed 4.4% less than CG peers. While the FG1 and FG2 employment gaps were statistically significant, the comparison between FiF and CG students was not significant, perhaps due to the relatively small population of working FiF students.

Table 4.46

Working Graduates by First-Generation Status, Class of 2019

FG Definition	FG Working %	CG Working %	Chi-sq.	Sig.	Cramer's V
FG1	81.2%	84.2%	4.127	.042	0.04
FG2	79.1%	84.0%	6.182	.013	0.05
FiF	79.1%	83.5%	2.029	NS	0.03

The first-generation career outcomes of the Class of 2020 were an anomaly as expected. FG employment rates still lagged behind those of CG graduates across all three definitions. However, the gap between FG1 and CG students was reduced to 1.8%, and the rate between FG2 and CG students was reduced slightly to 4.1%, compared to 2019. The only association which was considered to be statistically significant was the comparison between FiF and CG students, with FiF students employed at a rate of 7.9% less than CG peers, nearly doubling the employment gap from the year prior. This reduced employment rate may be related to tightening employer requirements related to job candidates, or could be a result of a lack of in-person work opportunities during the onset of the pandemic.

Table 4.47

Working Graduates by First-Generation Status, Class of 2020

FG Definition	FG Working %	CG Working %	Chi-sq.	Sig.	Cramer's V
FG1	80.5%	82.3%	1.14	NS	0.02
FG2	78.2%	82.3%	3.66	NS	0.04
FiF	74.3%	82.2%	5.59	0.02	0.04

The Class of 2021 showcased significantly more favorable career outcomes, with all student groups employed at higher rates than the two prior years. The rate of working FG1 students lagged behind CG peers by 2.4%, which was the only employment gap considered to be statistically significant. FG2 graduates also were slightly behind their CG peers, but substantially reduced their employment gap to 1.1%, and this difference was not considered to be statistically significant. FiF students were employed at a 3.3% *higher* rate than their CG peers, representing the only positive employment gap between first- and continuing-generation students across these three years of data.

Table 4.48

Working Graduates by First-generation Status, Class of 2021

FG Definition	FG Working %	CG Working %	Chi-sq.	Sig.	Cramer's V
FG1	85.9%	88.3%	3.827	0.05	0.04
FG2	86.7%	87.8%	3.66	NS	0.01
FiF	90.7%	87.4%	1.826	NS	0.02

Conclusion

This research study yielded interesting results which substantiated prior research literature related to career outcomes lags between first- and continuing-generation graduates (Eismann, 2016; Manzoni & Streib, 2018). However, it is notable that effect sizes on many of the analyses related to FG and CG career outcomes differences were very small, indicating that while FG status correlates with a slightly smaller chance of landing a job after graduation, it is by no means a primary predictor for career outcomes. While the regression analysis applied within this study was still able to point to the significance of first-generation status in relation to other independent variables, the model only predicted roughly 5-6% of the career outcomes. This regression model would need to be refined further to predict career outcomes with more accuracy. Interaction effects could be utilized to further refine the regression and test additional independent variables.

In addition, this study points to clear between-group differences within the FG population, with immense diversity represented between FG1, FG2, and FiF students from a demographic and academic perspective. In addition, various job market conditions impacted working rates of FG1, FG2, and FiF students differently. These between-group differences

showcase a need for more nuance in how this population is defined and how resulting data are analyzed in future studies.

CHAPTER 5

DISCUSSION

Introduction

Prior research indicates that first-generation students (FGs) may experience additional barriers to entry into professional employment contexts, due to differences in social capital, academic performance, and demographics between this population and their continuing-generation (CG) peers (Eismann, 2016; Hirudayaraj & McLean, 2018; Manzoni & Streib, 2018; Olson, 2014; Tate et al., 2015). However, while extensive research has analyzed strategies to support FGs to enroll in higher education and persist to graduation, less attention has been given to whether these students are are achieving equitable post-graduate employment opportunities (Hirudayaraj & McLean, 2018; Tate et al., 2015). In addition, there are no existing studies that center within-group differences in career outcomes between various populations of FG students when using multiple definitions for first-generation. Prior research has indicated that FG students of varying familial education backgrounds possess differing levels of social capital, which can impact educational outcomes. The findings of this study substantiate the claims that the definition of first-generation applied within a study can have significant impacts on the findings (Aguirre & Matta, 2021). This study contributes to a more nuanced understanding of the career outcomes of recent first-generation college graduates.

This chapter will start with a summary of the significant findings within the study and their implications. Next, I will describe potential applications for this study within higher education institutional settings, grounded in the prior research literature. Finally, I will describe the limitations of this research and provide direction for future research to substantiate and expand upon the findings.

Summary of Findings

The Importance of the First-generation Definition

Numerous definitions are applied to FGs in the research literature (Toutkoushian et al., 2018), but very few studies utilize multiple definitions for FG students to understand how the definition applied in a study impacts the research outcomes. Within-group differences illustrated within this study show that FG students have varying characteristics, and therefore may also have differing needs when it comes to achieving a post-graduate career outcome. Consistent with prior research, the three FG populations captured at the sample site were more likely to be Students of Color, female, older, part-time and transfer students with lower EFC and lower GPAs on average than their CG peers. However, some of these academic and demographic differences between groups were only significant when looking at certain definitions of FG.

When looking at unemployment rates of FG students, all three categories of first-generation students lagged behind CG peers. This may be due to a variety of underlying factors which differ between these populations, including disparities in the level of familial experience navigating the professional employment landscape (Hirudayaraj & McLean, 2018; Olson, 2014; Tate et al., 2015). However, the gap between FiF and CG graduate employment rates was the smallest, despite FiF students having the least family legacy within college-associated roles. This could be due to the fact that more low-income FG students work while attending college (Garriott, 2020). The work experience that many FG students gain during their undergraduate studies could serve as an asset, since work experience is a key attribute to post-graduate hiring. Conversely, some students may capture their non-degree-associated jobs on the FDS if they are continuing with the same employer after graduation.

One asset to this study is that the higher education institution which serves as the study site is able to collect data on three different types of FG students, which allows for analysis between groups. At present, the study site most typically uses the FG1 definition when conducting research and assessing programming. This is a sensible choice for some research studies, since the FG1 student population is the largest and therefore provides more statistical power for quantitative analysis. However, there is evidence within this study that centering the experiences of FG2 and/or FiF students may produce more significant results, as these populations differ more than their CG peers and demonstrate different demographic attributes and academic experiences.

It is critical for institutions to think strategically about the research question(s) or problem(s) they are looking to solve to make the best choices about which first-generation definition to apply within a given analysis. For statistical analyses, using more inclusive definitions for first-generation (such as FG1) can help to produce more statistical power. However, for institutions seeking to provide targeted services to the students who are most historically disadvantaged in higher education spaces, FiF students may serve as a more appropriate population due to these students possessing less social capital resources and the higher likelihood that they belong to an economically marginalized group. Before deciding which population of FG students to center in a research study, institutions should conduct statistical analyses similar to the ones presented at the beginning of chapter 4 to better understand the academic, demographic, and social differences between the FG populations for whom data are available at the study site.

Intersectional Factors Related to Employment

Previous research has indicated that college graduates who are lower-income, African American or Hispanic, and/or women are more likely to be unemployed, underemployed, and/or underpaid than their more affluent, White, male peers (Bartik & Herschbein, 2016; Barroso & Brown, 2021; Carnevale et al., 2013; Gaddis, 2014; Hurst, 2018; Venegas-Muggli et al., 2021). Consistent with prior studies, the population of FG students at the study were more likely to belong to one or more of these marginalized identity categories than their CG peers. In order to understand which of the independent variables correlated with career outcomes, I ran a number of Chi-squared and t-test analyses. Many of the independent variables that were associated with post-graduate outcomes in the research literature also correlated with outcomes in this study, including race, EFC, gender, enrollment status, and first-generation status (FG1 and FG2).

I was surprised to find that transfer status and GPA did not significantly correlate with graduate career outcomes. The comparable career outcomes between first-time freshmen and transfer students could indicate a strong culture of support for transfer students at the institution, as transfers make up a significant portion of enrollments at the study site. The lack of correlation between GPA and career outcomes is also encouraging, as FG students and other historically underrepresented groups tend to have lower GPAs on average than their more advantaged peers. This change could reflect recent trends towards employers decreasing applicant GPA restrictions to attract more historically underrepresented candidates to apply for roles (National Association of Colleges and Employers, 2022b).

Next, I analyzed which predictor variables correlated with career outcomes when taking into account other variables which may have influenced employment. Through running binary logistic regressions with each of the independent variables that were significantly associated with

a career outcome, I was able to test the predictive ability of each variable while also controlling the effects of other independent variables included within the equation (Mertens, 2020). Within the regression, most of the variables remained significant, including gender, race, time status, and field of study. EFC did not significantly impact graduate career outcomes within this model when taken into account alongside other predictor variables. This indicates that students with lower EFC may have had other intersecting identity characteristics which were more directly associated with their career outcome. Interaction effects within this study could strengthen the results of the regression.

Field of study was the independent variable which was most strongly correlated with graduate career outcomes, indicating that this is a critical area for future analysis and programming support. Many students are unsure of what major to select and enter college undecided or change their field of study one or more times during their undergraduate studies. This indicates that more programming around major selection could serve to help students select the field of study that best serves their strengths and career goals. In addition, for colleges with lower employment rates, additional career programming and internship support could facilitate the post-graduate career transition. The study site currently has multiple decentralized career services centers connected to specific colleges and are able to meet the unique needs of the students they serve. For example, the Liberal Arts college has its own career services center, which also coordinates efforts to teach career-oriented courses as part of the core curriculum. These and other targeted efforts to support specific student populations whose career outcomes lag serve to extend the reach of the central career services center on campus.

FG1 and FG2 status remained significantly correlated with career outcomes when other independent variables were considered, indicating that belonging to either of these first-

generation groups reduces one's chances of achieving a career outcome after graduation independently of other factors. This finding is critical, as it indicates that FG students are a unique population on campus that could also benefit from targeted career programming and support. FiF status was previously determined to not significantly correlate with career outcomes, so it was not necessary to run a regression equation testing this independent variable. However, additional qualitative research examining the career preferences and behaviors of FiF students would help to better understand this unique population's assets and needs.

Underemployment Measures

There were no statistically significant differences between FG and CG students when it came to their likelihood of working full- or part-time jobs (visible underemployment). One limitation of the FDS is that it is impossible to determine whether graduates who are working in a part-time capacity would prefer to be working full-time. In addition, in some cases, recent graduates may undertake multiple jobs or may pursue multiple activity types (for example, working part-time and pursuing graduate study simultaneously), which can't be captured by the survey due to its reliance on "primary" activities. Because the FDS is only able to capture one outcome for each research participant, it has a limited ability to measure the outcomes of students who are undertaking more than one activity after graduation (i.e., working while attending graduate school) or working in multiple jobs.

The core questions on the NACE FDS do not include any measures for invisible underemployment. Therefore, it is greatly beneficial that this institution chose to add optional questions to gain a deeper understanding of the scope of students' post-graduate jobs. Based on data that were collected for the optional survey question, "I have found a position related to my field of study" (yes/no), there were no significant differences between FG and CG populations.

However, one critical issue is that the survey response to this question was optional, resulting in missing 30% of student responses. In addition, there were significant gaps between colleges in terms of response rates to this question, which ranged from 26.3% in the College of Sport, Tourism, & Hospitality to 91.7% in the College of Business & Management. In reviewing these responses, it is impossible to ascertain whether additional underemployment gaps exist within the non-respondent population.

In addition, I was able to review survey data in which students disclosed their job titles and employers, and many of the students who responded "yes" to indicate that their role was associated with their studies were working in roles which would not typically require a bachelor's degree candidate, such as customer service, food service, and administrative assistance. This indicated that many students who responded "yes" to this question may actually have been considered underemployed when examining the bachelor's degree requirements for the role. For some academic majors, such as philosophy or history, it may be difficult for a student to measure whether the role is associated with their field of study directly. The institution may consider benchmarking their additional questions with peer institutions to see if there are better ways to measure for underemployment than the current survey question set.

Job Market Effects on First-generation Career Outcomes

The timing of this study was significant, in that the COVID-19 pandemic marked a major job market disruption which impacted the availability of jobs worldwide (Gittleman, 2022; Koc, 2021). Perhaps not surprisingly, the employment rates of the Class of 2020 lagged significantly behind the Classes of 2019 and 2021. The Class of 2021 experienced a marked increase in employment rates, surpassing pre-pandemic employment rates at the institution and indicating a stronger job market for recent college graduates.

I was interested to analyze whether there were notable differences in employment rates between FG and CG graduates throughout these job market fluctuations, which produced fascinating results. Employment rates of FG and CG graduates changed year over year, indicating that the job market has a strong role not only in determining overall employment rates, but also in influencing the types of students that are hired. The Class of 2019's career outcomes were most consistent with the overall findings of the study, with FG graduates from the Class of 2019 lagging behind CG graduates by about 3-5% for all three definitions of first-generation. The onset of the pandemic in 2020 represented a slack job market, or a job market in which unemployment rose in response to labor market conditions. Perhaps as a result, the overall employment rate for Class of 2020 graduates dropped to 81.8%, the lowest outcome rate of all three years of data. The Class of 2020 saw reduced employment gaps between FG1 and FG2 students and their continuing-generation peers, but nearly doubled the employment gap rate for FiF students. This may have been due to a lack of availability for in-person roles, as remote positions increased. The Class of 2021 graduated into the "Great Resignation", a tight job market in which there were more roles available and with workers in high demand. This resulted in a higher rate of employment for all graduates from the Class of 2021 and reduced employment gaps for FG graduates, with FiF graduates actually outpacing their CG peers in career outcomes by 3.3%.

The findings from this analysis may align with the claim that tight job markets are most beneficial to historically underemployed applicants due to employers shifting hiring criteria to fill open roles (Smialek & Casselman, 2020). In this case, graduating into a tight job market was particularly beneficial to FG students, who were able to close employment gaps with their CG peers or even surpass their outcomes. The converse also appears to be true; in the slack job

market following the COVID-19 pandemic, the Class of 2020 experienced increased competition for roles. In this case, CG students tended to have a clear advantage over FiF peers, as employers were perhaps more selective about their candidates when there were more to choose from. This indicates that institutional strategies to career support may need to shift to become responsive to job market conditions, and perhaps more targeted support is warranted for FG students and other historically underrepresented populations in the professional workplace during job market disruptions.

Implications

Instead of viewing graduates' career outcomes as a direct result of their inherent skills or abilities, this study aims to inspire institutions to critically examine recent graduates' career outcomes in order to support those students who are not achieving their post-graduate aims. While most institutions measure and promote career outcomes as a means for boosting enrollments, the true value of post-graduate data lies in its ability to help higher education institutions improve and become more responsive to students' needs.

Since the results of the study indicated that some populations of students on this campus had less desirable career outcomes than their peers, this provides a valuable starting point for the institution to consider options that can help to bridge those career outcomes gaps. With these data in hand, this institution could make decisions about how to allocate career development resources most effectively. Many higher education institutions utilize an equality-focused approach by intentionally engaging *all* students in career development programming as part of their undergraduate degree program to ensure that each student is prepared to transition to a career after graduation. Others use a more equity-focused approach by targeting resources and

interventions to support those populations that face additional barriers to employment to help close critical career outcomes gaps. Ideas for implementing both methods will be explored below.

Equality-focused Approach: Career Services and Career Courses

The college student population continues to become more diverse as colleges and universities enroll more racial and ethnic minority, LGBTQIA+, low-income, immigrant, "non-traditional", and first-generation students (Dey & Cruzvergara, 2014). In order to promote a wider reach, career services departments must become more responsive to the evolving needs of the students they serve. In Hirudayaraj and McLean's study (2018), many first-generation college graduate participants cited a lack of awareness of the availability of career services, and those that did use these services felt that they could not relate to the staff members due to a lack of representation across racial and economic groups. Career services departments could improve the reach of their services by ensuring that staff members are more representative of the students they serve from an identity perspective. In other words, it would be beneficial for career services departments to prioritize hiring professionals from a diverse array of racial and economic groups, as well as staff members who identify as first-generation graduates.

Since help-seeking behaviors may differ among student populations (Flores & Spanierman, 1998), it is incumbent upon career services personnel to make services more accessible to all students, especially those in most need of career development and transition support. I was unable to identify any studies which analyzed how engagement with career services correlates with the career outcomes of first-generation graduates. A future study on this topic would help to ascertain whether utilizing career services resources produces more positive

effects for students who don't possess social capital resources through their family of origin, because social capital aids in the transition to professional employment after graduation.

Another strategy that many higher education institutions have implemented to promote career preparation for all students is through providing career courses as part of the academic curriculum. Career course effects can be measured in terms of their immediate effects ("outputs") as well as their long-term effects ("outcomes") on students (Folsom et al., 2005). Numerous studies have explored the outputs of career courses and found positive impacts on students across various measures, including increased career decision self-efficacy and career planning (Folsom & Reardon, 2003). However, there is little existing research on how career courses impact first-generation students uniquely, and whether there is a difference in pre-/post-course outcomes between FGs and CGs. Additional research on how career courses impact FG students would help to determine whether this is an effective strategy for moving the needle on career outcomes for this unique population.

Several of the colleges at the study site have required credit-bearing career courses as a part of their undergraduate curriculum, while others have optional courses and non-credit options for exploring career development. Aligning on a campus-wide strategy for ensuring that all students have access to career courses, or perhaps requiring career development coursework as part of the undergraduate curriculum campus-wide, could serve to fill critical career development gaps for FG students and other student populations for whom there are additional barriers to professional post-graduate employment.

Finally, many students do not start searching for work until after their studies are complete, which impacts their ability to utilize campus resources in their transition to employment. Extending career service support to recent graduates could serve to help those

students who are unable to focus on the job search until their studies are complete, such as working students and students for whom academic study is more labor-intensive. The higher education institution that served as the study site does offer alumni career services appointments, and the business college even has a dedicated alumni career coach to serve the needs of both recent graduates and mid- to late-career job seekers.

Equity-focused Approach: Targeted Programming and Career Interventions

Some studies have focused on assessing targeted career interventions throughout various stages of the career development process. Tara Yosso (2005) proposed a community cultural wealth model that countered Bourdieu's social capital narratives by focusing on leveraging the strengths of marginalized communities. Garriott (2020) applied Yosso's community cultural wealth framework to the academic and career development of first-generation and economically marginalized (FGEM) students, advocating for culturally sensitive programs that address the social-emotional needs and identity development of marginalized students. Garriott's adaptation of the cultural wealth model could serve as a framework for developing more culturally responsive career development programs for FGEM students.

Kezar et al. (2020) implemented a mixed-methods study to evaluate a college transition program serving first- and second-year low-income, first-generation, and minority students to see if the program impacted students' career self-efficacy. The CCTP program under evaluation included mentorship opportunities, academic and social support, and career and major exploration activities, in addition to a scholarship award. Kezar et al. compared data collected from program participants to a control group over time using the Career Decision Self-Efficacy (CDSE) Short Form scale and found that CCTP participants showed significantly higher mean scores on the CDSE, indicating that the program had significant impact on participants' internal

career development. This study was the first of its kind to evaluate a college transition program for first-generation, low-income, and underrepresented minority students, and was also focused on the transition to college. Additional mixed methods studies that focus on the college-to-career transition would help to determine whether targeted programs of this kind can also have an impact on career outcomes.

Given the salience of students' field of study on their career outcomes, targeting resources by major or college would be of great benefit to higher education institutions serving students with a diverse array of academic interests, such as four-year public institutions. At the study site, a few of the colleges on campus have dedicated career services offices or career coaches located within the academic departments, while others do not have targeted resources and are expected to utilize the campus' central career services department. A campus-wide review on career services availability by academic program would be beneficial to ensure equitable access to career resources for those students most in need of transition support.

Limitations and Future Research

Data Collection: The First Destination Survey

NACE's First Destination Survey is a valuable tool for assessing large graduate career outcome data sets; however, the FDS has a few notable limitations that may limit its effectiveness in measuring post-graduate career outcomes accurately. For one, it is challenging to gather data from graduates who are no longer associated with the higher education institution. For this reason, many institutions promote the survey to students during their senior year and start collecting data prior to when many students have their post-graduate plans concretized. This may result in more students indicating that they are "Still looking" and capturing their short-term

non-degree-associated jobs on their survey responses. In addition, the FDS only captures the career outcomes of students within six months of graduation and may miss critical career changes that occur after those six months are complete. More longitudinal studies showcasing the career outcomes of FG graduates would help to understand how familial education background impacts long-term career success.

While the NACE guidelines express a preference for career outcomes data that are directly reported by graduates (National Association of Colleges and Employers, 2019), collecting these data can be challenging at the institutional level. For this reason, institutions are permitted to collect data from secondary sources to achieve the recommended 65% knowledge rate (Makela & Hoff, 2019). These other sources may include secondhand reports from personal connections (such as employers, classmates, parents, or professors) or social media sites (such as LinkedIn). Social media sites provide an easy way to collect employment information through manual search processes or data mining (Makela & Hoff, 2019). While employment data collection of this type is not without precedent in research studies, in comparing employment information on social media to self-reported surveys, Makela and Hoff (2019) found that there were errors in data consistency approximately 30% of the time. This speaks to the need for institutions to be mindful of how these data are used and to critically review these data for accuracy.

Institutions should work towards increasing knowledge rates through students directly completing the FDS whenever possible to reduce inconsistencies in data collection. Some options for increasing student survey completion include increasing awareness around the FDS while students are still enrolled in college through partnerships with campus stakeholders and student groups. Another option for collecting student data directly while they are still a captive

audience would be to send out a student survey prior to graduation which asks students to indicate whether they are working or are still looking, which then directs them to either complete the FDS or update their contact information for later follow-up.

The question of underemployment is difficult to answer within the existing FDS structure. In the case of visible underemployment, in what has become increasingly a gig economy, contract work and part-time positions challenge traditional employment norms (Jackson & Bridgstock, 2019). For those students who are employed in industries which tend to employ on a part-time or contractual basis, this limitation in data collection may not accurately capture their outcomes. For this reason, the FDS may measure employment more accurately in traditional career paths such as business and may not accurately capture employment data for students in more creative industries (Jackson & Bridgstock, 2019).

Moreover, invisible underemployment is even more challenging to analyze given the current structure of the FDS. At the study site, the campus career services center was able to add a few optional questions to better assess underemployment within students' reported post-graduate jobs. For example, the career services center added a question about whether working students' career outcomes align with their chosen field of study or industry of study. However, not all students answered this question since it was not required and not a part of the core FDS survey. The College of Business at the study site implemented a strategic review of this question to ensure a higher response rate, resulting in capturing data on underemployment for over 90% of students, but other colleges on campus had much lower response rates. Given the rate of business students at the study site working after graduation, the responses that were captured for this question may not be an accurate representation of the overall student body. To ensure improved data accuracy, the centralized career services center could mark this as a required question to

increase knowledge rates for this measure. Better yet, NACE could adopt this question as part of the core survey given its importance in measuring underemployment in outcomes results.

Another challenge is that the field of study question is a self-reported measure and does not directly address whether the student's undergraduate degree was a required qualification for their initial post-graduate job. In reviewing students' open-ended responses, I did note a number of instances in which students marked "Yes" to this question but were objectively working in positions which did not require a bachelor's degree (e.g., bouncer, administrative assistant, or intern), and therefore would be considered underemployed. The study site could benefit from formalizing an approach to data review in a consistent manner to ensure that these data are accurate, given the importance of the underemployment metric in measuring the return on investment of a student's college degree. Abel and Dietz's (2018) study on underemployment measures provide consistent procedures for determining the degree relevance of college graduates' job titles using the Bureau of Labor Statistics data, which could provide a valuable starting point for increasing the underemployment knowledge rate at the study site. Secondary analysis into survey respondents' employment type (entrepreneur, temporary/contract work, freelance, etc.), employing organization and location, job title, and compensation would provide more insights into potential variance in the types of employment between FG and CG graduates.

Data Analysis

Some data procedures that were utilized within this study to ensure statistical power in data analysis with a large sample size (n=19,685) also prevented directly reporting on the career outcomes of students who belonged to certain minority groups on campus. For example, some students' genders (non-binary students) and races (Pacific Islander and Native American students) were not included within the analysis due to their small population size. These

students' data were included in the overall analysis of career outcomes, but their identities were not reported within the race and gender analyses that set up the study. In addition, international students were not included within this study to control for the additional barriers that these students face when transitioning to post-graduate employment. While these choices were made to ensure the statistical accuracy of outcomes reporting, it also limits our knowledge of some minority groups on campus which may also need additional support. Future studies could focus on the needs of these unique groups to ensure that their career development needs are also recognized and addressed within the institution.

While the career outcomes of multiple marginalized groups of students were analyzed in stand-alone Chi-squared analyses, as well as together in a logistic regression model, interaction terms were not included within this analysis. Interaction terms can serve to better showcase how and whether people who belong to multiple marginalized social groups may be impacted from several axes of inequality simultaneously (Crenshaw et al., 1989; Jackson et al., 2016). For example, while I was able to see that African American college graduates and first-generation college graduates had lower employment rates on average, I did not assess whether African American first-generation graduates may have experienced differing career outcomes from their White first-generation and/or African American continuing-generation peers on the basis of identifying within multiple marginalized groups. In future studies, interaction effects would be extremely valuable to explore to add further depth to understanding within-group differences in the first-generation student population.

Finally, there is no way to prove causation within correlational study designs (Mertens, 2020). In addition, effect sizes for many of the demographic and academic characteristics discovered to correlate with career outcomes were small, perhaps because there are so many

factors which relate to the topic of post-graduate employment. Several factors that have been shown to contribute to employment outcomes in the research literature were not included within this study. For example, co-curricular experiences such as internships have been shown to correlate with graduate career outcomes (Kuh, 2008). The study site has recently added a number of questions aiming to quantify students' co-curricular experiences as a way to measure this as a critical independent variable for future outcomes reports.

Quantitative Design

The quantitative design utilized in this study provided a solid foundation for analyzing the career outcomes of recent graduates from the institution. However, within quantitative studies it is impossible to ascertain the "why" behind students' outcomes, or to understand the lived experiences of the first-generation students at the study site. A mixed methods approach could help to make sense of some of the unexpected results within the study.

For example, while FiF students are associated with lower social capital resources, overall these students achieved comparable career outcomes to FG1 peers and were employed at higher rates than FG2 graduates. Follow-up interviews with students from different FG categories could help to better illuminate within-group differences in career development which facilitate or inhibit the transition to the workforce after graduation. More qualitative data could also be collected within the institution to better understand the factors that contributed to un- or underemployment for graduates who were unable to achieve a career outcome within six months of graduation as a way to design targeted resources for future students.

External Validity

Because this study only focuses on career outcomes of students from a single institution, the results lack external validity (Mertens, 2020). Therefore, the results of this study cannot

speak for the nuances of undergraduate employment within other settings. However, this study is meant to a) create a starting point from which this particular institution can address any inequities in career outcomes through interventions and programming and b) provide a procedural roadmap that can be replicated in other settings to understand the unique needs and attributes of different student populations. The study design and statistical procedures utilized within this study are meant to help higher education leaders think about how best to examine the early career outcomes of recent graduates within their own unique setting to be able to target resources appropriately.

Conclusion

Moving beyond access and persistence, higher education institutions must also consider students' career outcomes as a key indicator of educational equity. The NACE First Destination Survey offers multiple data points which allow institutional stakeholders to assess the effectiveness of their undergraduate programs in preparing students for post-graduate employment. In addition, the FDS can be customized by institutions to gather additional data on student engagement as well as the quality of post-graduate opportunities which are reported by students. Career services software, such as Handshake, are continually developing to allow institutions to easily review demographic data alongside FDS data to remove barriers to assessing how career outcomes are distributed among different populations of students on campus (*Analyzing outcomes*, 2021). The current study offers several ways in which undergraduate career outcomes can be collected and analyzed from an equity lens.

Disparate outcomes between recent graduate populations provide evidence that targeted support resources could benefit first-generation college students and other historically

marginalized groups as they transition to employment. Multiple research studies have outlined the types of institutional structures, programming, and interventions that positively impact student career development (Dey & Cruzvergara, 2014; Folsom et al., 2005; Folsom & Reardon, 2003; Hirudayaraj & McLean, 2018; Kezar et al., 2020). However, it is still unclear what types of career services and programming are most effective in addressing the unique needs of first-generation students in higher education institutions. More research studies assessing the impact of career programming on first-generation students' post-graduate career outcomes would help to provide a vision for how the findings in this study can be applied in practice.

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APPENDIX A:

NEW STUDENT QUESTIONNAIRE (NSQ): FIRST-GENERATION QUESTIONS (2021)

What is the highest level of formal education completed by your father or guardian 1?

a. Did not graduate high school

b. Graduated from high school

c. Some college education

d. Graduated from college (a bachelor's degree)

e. Postgraduate or professional degree

What is the highest level of formal education completed by your mother or guardian 2?

a. Did not graduate high school

b. Graduated from high school

c. Some college education

d. Graduated from college (a bachelor's degree)

e. Postgraduate or professional degree

What is the highest level of formal education completed by any of your college age (18 years of age or older) siblings?

a. Did not graduate from high school

b. Graduated from high school

c. Some college education, but did not graduate

d. Currently enrolled in college

e. Graduated from college (a bachelor's degree or higher)

f. I do not have any college age siblings

FIRST DESTINATION SURVEY CORE AND CUSTOM SURVEY QUESTIONS

CORE QUESTIONS

What are you primarily doing after graduation?
1. Working
2. Volunteering
3. Continuing Education 4. Military
5. Fellowship
6. Still Looking
7. Not Seeking

Working
1. How many hours per week are you working?
- Over 30 Hours a week (Full Time)
- Under 30 Hours a week (Part Time)

2. What best describes your employment?
- Organization/Company
- Entrepreneur
- Freelancer
- Temporary/Contract Work Assignment
- Other

3. What is your job?
- Who is your employer?
- What industry is your employer in?
- What city is this position located in?

4. Tell us about your job?
- What is your position?
- Were you already working in this position during school?
- Is this an internship?
- Did you get this job through Handshake?
- What is your job function?

5. How are you compensated?

6. When did you get this offer?

7. When did you accept it?

8. When is your start date?

CUSTOM SURVEY QUESTIONS

1. Which choice best describes how you found your primary job? (Select 1)
- *Applied Directly to Employer (including their dedicated Human Resources/Recruitment website)*
- *Family/Friend/Professional Contacts/Temple Alumni*
- *Professor/Department/Temple Student Organization Referral*
- *Previous Part-Time Job (resulting in a full-time offer)*
- *Previous Fieldwork/Placement/Practicum or Internship (resulting in a full-time*
  - *job or postgraduate internship offer)*
- *Temple University Career Center Lead (including On-Campus Interview,*
  - *career fair or other professional events)*
- *School/College Specific Lead (including KleinConnect, STHM Passport, On-*
  - *Campus Interview, career fair or other events)*
- *Professional Association/Organization (including a conference or presentation)*
- *Non-Temple Affiliated Lead (including Indeed.com, Craigslist, Campus Philly,*
  - *LinkedIn, or industry-specific job board)*
- *Other*

Please specify... (Free response for more detail)

2. I have a position related to my field of study. (Yes or No)

3. I have a position related to my industry/field of choice. (Yes or No)

4. While studying at Temple, did you complete any of the following activities? Check all that apply.
> *Internship/Cooperative Education, Fieldwork/Placement/Practicum, On/Off Campus Work-Study Job, Student Teaching, Research Project with Faculty, Teaching Assistantship, Research Assistantship, Study Abroad/Away, Credit-Bearing Professional Development Course/Seminar, Part Time Employment, I did not complete any of the above*