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Currently, roughly one-third of college students fit the federal government's definition of first-generation college student status, meaning neither parent has earned a baccalaureate degree (RTI International, 2023). This study utilized archival data at an access institution in the southeastern United States in a causal-comparative study using binary logistic regression analysis to determine if first-generation college student status, gender, socioeconomic status, and academic preparedness are predictors for six-year graduation rates. Findings from this quantitative study determined that gender, socioeconomic status, and academic preparedness were significant predictors for graduation within six years of matriculation at the institution. A future qualitative study may provide context for the student experience and determine what factors influenced student success. These findings are intended to help administrators understand their student population and implement intervention strategies to increase graduation outcomes.

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First-generation college students constitute a substantial subpopulation in higher education. The definition of what constitutes a first-generation college student often varies. Some researchers define a first-generation college student as the first family member to attend college (Ward et al., 2012). The federal government defines a first-generation college student as one whose parents have not received a baccalaureate degree (U.S. Department of Education, n.d.), which is the definition employed for this research. In contrast to first-generation college students, continuing-generation students are those whose parent(s) have earned a baccalaureate degree (Redford et al., 2017). According to the Center for First-Generation College Student Success (2023), roughly one-third of college students currently fit the federal government's definition of first-generation status. For this study, student success and institutional success will be measured by graduation from an institution of higher education with an earned bachelor's degree.

First-generation college students are less likely to graduate with a bachelor's degree within 10 years of high school graduation than their continuing-generation counterparts (Nyhan, 2019). Additionally, 20% of first-generation college students obtain their bachelor's degree within ten years of high school graduation, whereas 42% of their continuing-generation counterparts obtained their bachelor's degree within this same timeframe. This achievement gap can be attributed to many factors. For example, continuing-generation students have social capital (relationships with college graduates) and cultural capital (knowledge of their new environment) by virtue of their birth (Rice et al., 2017). This lack of social and cultural capital can lead first-generation students, especially females, to experience deep imposter syndrome (Wilkins, 2018). Socioeconomic status is another factor that impacts persistence for first-generation college students. The Center for First-Generation College Student Success (2019) found that first-generation college students' median parent income was $41,000 compared to $90,000 for continuing-generation college students. There is a correlation between low socioeconomic status and academic preparedness, which adds to the difficulties faced by first-generation college students (Kahn & Rush, 2016).

Much has been studied about first-generation college students and their challenges as they persist toward graduation. However, there is little research on how academic preparedness impacts first-generation college students' retention, progression, and graduation rates. Additionally, few studies compare first-

generation college students' retention, progression, and graduation rates with those of their continuing-generation counterparts at the same institution.

Review of the Literature

First-generation college students are a significant subpopulation of students at postsecondary education institutions, which makes their success imperative. First-generation students begin their college careers at a deficit compared to their continuing-generation counterparts. This review of the literature will explore this deficit through the theoretical framework of social and cultural capital, as well as challenges unique to first-generation college students, retention and student success, and academic preparedness and learning support.

Theoretical Framework: Social and Cultural Capital and Student Departure Theory

Pierre Bourdieu's seminal work on the forms of capital provides context for the inherent difference in experiences for first-generation and continuing-generation students, and the benefit continuing-generation students have over their first-generation peers based on the family to which they were born. Social capital is the network of individuals that a person has access to in life, so because a continuing-generation student has a parent with an earned baccalaureate degree, they have a membership in the club of higher education with a network of people to help them through the process (Bourdieu, 1986). Furthermore, culture capital is passed down from generation to generation through hereditary transmission. Moreover, a continuing-generation student inherits cultural capital from their parents, giving this group of students more confidence in navigating higher education.

First-generation students must create their own social capital at their college or university. Azmitia et al. (2018) found that first-generation students struggled with a sense of belonging. However, many of these students were noted to have found "families" within services offered on campus, like the Student Government Association, volunteer programs, sports teams, student organizations, peer tutoring, and residential halls. Additionally, the research noted that a sense of belonging was important in academic persistence, and first-generation students shared that they would be embarrassed or ashamed to drop out of school or not finish because of these bonds formed. As a result of these bonds, the researchers found a positive correlation between first-generation status, mental health, and academic persistence.

Institutions often utilize social interventions to align students with faculty to build relationships and trust, improving first-generation student grade point averages (GPAs) and helping students be more active in their education and seek help when needed (Schwartz et al., 2018). However, faculty interaction is not the only valuable relationship formed on campus for first-generation students. For every individual meeting a first-generation student has with their academic advisor, their likelihood of being retained by the institution goes up 13% (Swecker et al., 2013), and multiple studies show that well-organized and centralized academic advising reliably decreases attrition for first-year first-generation students (Chan et al., 2019). These social interventions with faculty and staff create a network and social capital for students on campus, which is ultimately more predictive of first-generation student success than student grit or effort (Almeida et al., 2021). Social capital encompasses all student-derived benefits, such as institutional resources, information, and support through social networks that help first-generation students succeed in higher education (Almeida et al., 2021).

Social capital is highly relevant to Tinto's work and is the foundation of the theoretical background of this study (Tinto, 1993). Tinto's seminal work on student departure theory highlights the struggles students experience as they assimilate into college life and the situations that often influence their decision to drop out of college. These four main factors that lead to student departure from their college or university are adjustment, difficulty, incongruence, and isolation. Additionally, Tinto's student departure theory focuses on student integration, both academically and socially. His findings show how critical certain parts of the college search are to the successful selection of an institution for the best fit to ensure better social and academic integration for students.

The student adjustment to college can be isolating and intimidating even under the best circumstances. However, the transition to college can be completely overwhelming for students academically underprepared for college, first-generation college students, and students who may not have selected an institution for the best fit. Students who do not adjust to college life easily and fail to integrate academically and/or socially may experience incongruence and isolation (Tinto, 1993). Additionally, incongruence can occur when a student has a negative experience on campus or interactions with the institution that conflict with the student's priorities, manifesting in the student actively rejecting integration because of poor institutional fit.

Incongruence is based entirely on interactions with the institution (faculty, staff, other students), while isolation is a complete lack of interactions. Furthermore, Tinto explained that incongruence is natural, as there will always be conflict and isolation is unavoidable because institutions should create a nurturing and accepting environment for developing students.

Challenges for First-Generation Students

The college search process is often a first-generation college student's first interaction with higher education. Holland (2020) conducted a study to determine how first-generation college students evaluated institutions for fit and how their high school counselors played a role in this crucial evaluative process. The researchers found that first-generation college students placed the most importance on being admitted, so first-generation college students are more likely to enroll in a for-profit college, which tends to have lower graduation rates and higher debt outcomes for students. First-generation college students lack the cultural capital of a parent helping them through the college selection process, so they may depend more on their high school counselor for insight throughout the process. However, the findings highlighted that high school counselors and high school students approach the evaluation process in a way that is often ineffective when helping first-generation college students with their college selection.

After students graduate from high school and enter college, first-generation college students report interdependent motives, which do not align with the independent culture of higher education and create a cultural mismatch for first-generation college students from the start of their college experience (Phillips et al., 2020). Additionally, the researchers conducted a longitudinal study and found that first-generation college students' cultural mismatch persists through graduation. These students reported a lower sense of fit at their institution and lower GPAs when compared to their continuing-generation counterparts. First-generation college students exhibit more interdependence than their continuing-generation counterparts, leading to difficulty with social integration on campus and a reluctance to seek help from faculty members (Katrevich & Arguete, 2017). Additionally, their study found that in introductory college mathematics courses, first-generation college students perform lower than their continuing-generation peers, which creates academic integration challenges.

Retention and Student Success

Student success is viewed through graduation and retention rates, the metrics many institutions and agencies use to measure institutional effectiveness and success. Graduation rates are metrics commonly used to gauge student success (Kuh et al., 2006). Student success and institutional success embody a symbiotic relationship, as students succeed and graduate, the institution fulfills its mission (Millea et al., 2018).

Johnson and Stage (2018) found that undergraduate research opportunities, specifically at open-access institutions, are a good indicator of persistence and positively impact student success. Under the Student Right-To-Know Act, institutions receiving federal funds must collect and publish their graduate rates (U.S. Congress, 1989). This reporting is utilized to evaluate institutional success and can also be utilized for funding, intervention strategies, and benchmarking (Integrated Postsecondary Education Data System, 2016). Additionally, the rate is also used by legislators in policymaking, and more importantly, the rate is used at the state level to determine funding and the allocation of budgets; if an institution has consistently lower graduation rates, their funding both at a state and federal level can be put in jeopardy.

Academic Preparedness and Learning Support

First-generation students struggle with academic integration, which leads to a lower GPA, academic difficulty, and a failure to persist (Katrevich & Arguete, 2017). Furthermore, the researchers found that first-generation college students enter college with both lower standardized test scores and high school GPAs, making them less academically prepared to take on college coursework than their continuing-generation counterparts. Royster et al. (2015) found a positive correlation between a parent's highest level of education and their student being more college-ready. Additionally, students with at least one parent with an earned bachelor's degree were about 1.8 times more likely to be college-ready in both English and mathematics college-level courses than their peers with parents who have no college degree. Remediation or learning support classes are designed to help underprepared students, such as first-generation college students, earn a higher education credential through a basic skills or developmental education course (Shields & O'Dwyer, 2017). There is a significant difference for students at two-year and four-year institutions who enroll in remedial coursework. Students enrolled at two-year institutions are twice as likely to enroll in remedial coursework as their four-year

institution peers (Shields & O'Dwyer, 2017). These students at two-year institutions are more likely to be placed in three or more remedial courses than their peers at four-year institutions. In turn, learning support enrollment can predict undergraduate success.

Saw (2019) found that students enrolled in mathematics and English learning support at nonselective schools were more likely to earn a baccalaureate degree within eight years of enrollment when compared to students enrolled in mathematics and English learning support at a selective college or university. Additionally, the study found that students enrolled in learning support at a selective college and university were more likely to transfer to a nonselective college. The researchers hypothesized that there is less stigma associated with learning support at a nonselective school due to many students being enrolled in at least one learning support course, so this removes the stigma of being academically underprepared for nonselective colleges. In contrast, students at a selective college or university enrolled in learning support may feel stigmatized or isolated and lack a sense of belonging.

In summary, first-generation college students make up a significant portion of the student population in the United States. When students drop out, they exclude the possibility of a higher earning potential afforded to them by obtaining a bachelor's degree and end up contributing to a less educated workforce. It is critical that institutions implement intervention strategies to help first-generation college students have an equitable college experience involving graduation at least at the same rate as their continuing-generation peers.

Research Questions

The overarching research question was: What is the predictive effect of gender, academic preparedness, first-generation student status, and socioeconomic status on undergraduate students' (first-generation and continuing-generation college students) six-year graduation rate?

Methodology

Research Design

The purpose of this study was to examine six-year graduation rates for a cohort of first-time college students at an access institution in the southeastern United States. For the purpose of this study, student success was measured by graduation from the institution with a baccalaureate degree. This non-experimental quantitative study used a binary logistic regression model to test the predictive effect of gender, academic preparedness, first-generation student

status, and socioeconomic status on progression to graduation.

Participants and Setting

Participants were undergraduate students at a four-year state college in the southeastern United States. This access institution (nonselective college) provides educational opportunities for residents statewide. This school is a Hispanic-serving institution, with over 25% of the student population self-identifying as Hispanic/Latino. Nearly half of the student body (49.6%) receives the Pell Grant, need-based Financial Aid. In the 2016-2017 academic year, 63.6% of the student population self-disclosed first-generation college student status. In that same year, there were 962 new freshmen. The participants for this study were first-time freshmen for Fall 2016. This did not include dual-enrolled students or students transferring at the freshman level. There were 727 students who met these criteria. This study followed the Fall 2016 first-time freshmen cohort longitudinally over six years through Spring 2022.

Instrument

The Office of Institutional Research at the access institution provided the total number of first-time freshmen for the 2016-2017 academic year. The office also provided the total number of first-generation college students for 2016-2017. Institutional research also provided learning support course registration information during year one for these first-time freshmen for both first-generation and continuing-generation college students, which is used to indicate academic preparedness. Additionally, Pell Grant eligibility was provided for first-generation and continuing-generation college students during their first semester of enrollment, indicating their socioeconomic status. The Office of Institutional Research provided information about re-enrollment for years two, three, four, five, and six and graduation information for six years.

Data Collection

The researcher used archival data from the research institution. All information provided to the researcher was de-identified. The Database Administrator from the Office of Computing and Information Systems extracted the requested data from Banner. The Database Administrator created an Excel spreadsheet containing columns for academic preparedness (mathematics learning support, English learning support, or both mathematics and English learning support), socioeconomic status (Pell grant recipient yes/no), Fall 2016 total credit hours, Fall 2017 enrollment (yes/no), Fall 2018 enrollment (yes/no), Fall 2019 enrollment (yes/no), Fall 2020 enrollment (yes/no), Fall

2021 enrollment (yes/no), Bachelor's degree earned (yes/no), gender (male/female), and first-generation student (yes/no).

Data Analysis

Statistical Package for the Social Sciences© (SPSS) was utilized to run the binary logistic regression model to test the predictive effect of sociodemographic characteristics on six-year graduation rates for the Fall 2016 first-time freshman cohort. SPSS was utilized to run the binary logistic regression model to test the predictive effect of first-generation college student status and how this characteristic predicted graduation within six years of enrollment. SPSS was utilized to run the binary logistic regression model to test the predictive effect of gender and how this characteristic predicted graduation within six years of enrollment. SPSS was utilized to run the binary logistic regression model to test the predictive effect of socioeconomic status and how this characteristic predicted graduation within six years of enrollment. SPSS was utilized to run the binary logistic regression model to test the predictive effect of academic preparedness and how this characteristic predicted graduation within six years of enrollment. The descriptive statistics were extracted from SPSS, and the omnibus model was used for the binary logistic regression model. The results will be provided in a table format (See Table 1) to show the statistical significance of the predictors (sociodemographic characteristics) on the outcome (graduation status).

In the binary logistic regression, Pell Grant recipient (yes, no), learning support recipient (no, mathematics learning support, English learning support, both mathematics and English learning support), gender (male, female), and first-generation (first-generation, continuing-generation) served as predictors and baccalaureate degree receipt (yes, no) served as the criterion. Rather than employing the squared multiple correlation coefficient (R^2) as the effect size estimate in the regression analysis, the covariate-adjusted odds ratio (CAOR) was employed as the measure of the effect of any given predictor on the outcome. The CAOR is appropriate when interpreting the output from a binary logistic regression when the researcher wants to control for multiple independent variables to determine whether the dependent variable can be predicted based on one independent variable at a time (Laerd Statistics, 2018). When testing whether an independent variable can predict a dependent variable, the researcher should view the confidence interval in a binary logistic regression. If the confidence intervals cross the number 1.0, the independent variable is not a predictor for the dependent variable. This means the lower limit (LL)

would be below the number 1.0, and the upper limit (UL) would be above 1.0. For example, if the confidence interval for an independent variable is LL=0.5 and the UL=1.5, the confidence interval crosses the number 1.0, which shows that the independent variable is not a predictor. In addition to the confidence interval, the researcher must also review the CAOR. The independent variable is not a predictor if the CAOR is not above 1.0. Only when the CAOR is above 1.0, and the confidence intervals are above 1.0 (lower and upper both above 1.0) is the variable a predictor that increases the probability for an outcome. This means that if the confidence interval for an independent variable (gender, academic preparedness, first-generation student status, and sociodemographic status) is greater than 1.0 in both the lower limit and upper limit, and the CAOR is greater than 1.0, the independent variable does predict the dependent variable (graduation outcome). In addition to the CAOR, the p-value is also used to determine statistical significance. A p-value smaller than .01 indicates statistical significance.

For the baccalaureate degree, the receipt "yes" served as the referent category. Referent categories for all categorical predictors were as follows: for Pell Grant recipient, "yes" was employed as the referent category; for learning support recipient, "no" served as the referent category; for gender, female served as the referent category; and for first-generation status, continuing-generation served as the referent category. Thus, for all categorical predictors, a CAOR above 1.0 is interpreted such that other mutually exclusive categories have a higher likelihood of benefitting receipt of a baccalaureate degree relative to the referent category equal to the CAOR.

Findings

This institution had a student population with more than half of students self-reporting as first-generation college students and more than half enrolled in at least one learning support course. Table 1 contains the descriptive statistics for the first-time freshman cohort for Fall 2016. Only 17.9% of students in this cohort graduated with a baccalaureate degree within six years of college enrollment. In the Fall 2016 freshman cohort, 57.8% of students were female, and 42.2% were male. In addition, 57.5% self-identified as first-generation college students, and 64% of the cohort received need-based Federal financial aid through the Pell Grant. In the Fall 2016 Freshman cohort, 53.2% of students were not academically prepared for college and were enrolled in at least one learning support course to supplement their college-level mathematics and/or English course. The Fall 2016 first-

time freshman cohort in this study totaled 727 students (n=727). As noted in Table 1, the frequency value is the raw number for each variable as it responds to each category measured. The percent is of the population for each variable as it responds to each category measured. See Table 1.

Table 1. *Descriptive Statistics for Socioeconomic Status (Pell Grant), Gender (Male/Female), Academic Preparedness (Learning Support), and First-Generation Status*

Predictor	Frequency (*n*)	Percent
Pell Grant		
No	262	36.0
Yes	465	64.0
Gender		
Male	307	42.2
Female	420	57.8
Learning Support		
No Learning Support	340	46.8
Math	200	27.5
English	54	7.4
Both Math and English	132	18.2
Missing	1	0.10
First-Generation Status		
Continuing-Generation	309	42.5
First-Generation	418	57.5
Bachelor's Degree Earned		
No	597	82.1
Yes	130	17.9

Note. n = 727

Results revealed that the omnibus model was statistically significant, χ^2 (*df* = 6, *N* = 727) = 29.34, $p < .001$, indicating that the combined predictors accounted for 27% of the variability in six-year graduation rate, Nagelkerke's Pseudo R^2 = .270. Female students were 1.6 times more likely than male students to graduate. Interestingly,

first-generation status was not a significant predictor, as continuing-generation students were no more likely to graduate in six years than first-generation college students (CAOR = 1.03). First-generation college student status was not found to be a predictor for graduation. The evidence is clearer, too, as the CAOR=1.03, and only when the CAOR is above 1.0 and the confidence interval is above 1.0 (lower and upper limits are both above 1.0) is the variable a predictor that increases the probability for an outcome. For first-generation college students, the CAOR is not above 1.0, and the confidence interval crosses over 1.0, which confirms that this is not a predictor for graduation outcome.

Regarding receipt of learning support, students receiving mathematics (CAOR = 3.50), English (CAOR = 1.70), or both mathematics and English support (CAOR = 3.33) were more likely to graduate in six years than students who did not receive learning support. When evaluating the results of learning support in Table 2, the confidence interval for math, English, and math and English never crosses 1.0, as the lower and upper limits are about 1.0, and the CAOR is above 1.0 for each. These outputs indicate that learning support courses are a predictor of graduation outcomes. However, the results vary based on the type of learning support a student is placed in upon admission. Finally, Pell Grant recipients were 1.3 times more likely to graduate in six years than non-recipients. When evaluating the socioeconomic status and Pell eligibility results in Table 2, the confidence interval for students who receive the Pell Grant never crosses 1.0, and the CAOR is above 1.0. This output indicates that socioeconomic status is a predictor for graduation outcomes, and students from a lower socioeconomic status who receive the Pell Grant are more likely to graduate within six years of matriculation.

Table 2 contains the omnibus model coefficients and the 95% confidence intervals of the CAOR. In Table 2, the Wald value is the test statistic for the binary logistic regression model. The p-value tells the researcher if the category is statistically significant and thus a predictor. Any p-value of .01 or smaller is considered statistically significant and thus a predictor. Table 2 shows that each independent variable has a p-value of .01 or smaller, except for first-generation college student status. This p-value shows that the results for gender, academic preparedness, and socioeconomic status are statistically significant and thus a predictor for graduation. The CAOR value measures effect and adjusts for the number of predictors, which gives accurate results. This number also provides the researcher with the effect. For instance, for Pell recipients, the CAOR=1.3 means that they

are 1.3 times more likely to graduate within six years. The CAOR Confidence Interval provides the researcher with a band in which the odds ratios for the true population reside. The confidence interval is specific to the sample population and provides transparency within a measurement of error. Each variable was tested to see if it predicted the outcome or not. See Table 2.

Table 2. *Binary Logistic Regression Results for the Prediction of Pell Grant Recipient, Learning Support Recipient, Gender, and First-Generation Status on Six-Year Graduation Rate*

				CAOR $CI_{95\%}$	
Predictor	Wald	*p*-value	CAOR	LL	UL
Pell Grant	8.27	.001*	1.30	1.23	1.37
Gender	5.07	.01*	1.63	1.33	1.93
Learning Support					
Math	13.10	< .001*	3.50	1.77	6.77
English	9.53	.001*	1.70	1.51	1.89
Both Math and English	11.92	<.001 *	3.33	1.35	8.14
First-Generation Status	0.21	.884	1.03	0.67	1.55

Note. CAOR $CI_{95\%}$ = 95% confidence interval for the covariate-adjusted odds ratio; CAOR = covariate-adjusted odds ratio; LL = lower limit; UL = upper limit. *$p < .05$.

Discussion

The findings from this binary logistic regression model show no significant difference between first-generation college student graduation outcomes and continuing-generation college student graduation outcomes. First-generation and continuing-generation college students have an equitable experience, and their first-generation college student status has no implication on graduation outcomes. However, there are significant differences among other sociodemographic characteristics for graduation outcomes. This study found a significant difference in graduation outcomes based on gender. Female students are 1.6 times more likely to graduate than male students. This study found a significant difference in graduation outcomes based on socioeconomic status. Students receiving the Pell Grant, a need-based Federal financial aid grant, are 1.3 times more likely to graduate than a student not receiving the Pell Grant. This study found a significant difference in graduation outcomes based on academic

preparedness. Students enrolled in only learning support English courses are 1.7 times more likely to graduate than those not enrolled in learning support English courses. Students enrolled in only learning support mathematics courses are 3.5 times more likely to graduate than those not enrolled in learning support mathematics courses. Students enrolled in both learning support math and learning support English courses are 3.3 times more likely to graduate than those not enrolled in both learning support math and learning support English courses.

The results indicated that in the Fall 2016 cohort of first-time freshmen, only 17.9% of students graduated and earned a baccalaureate degree within six years of their enrollment in Fall 2016. Tinto (1993) argued that the students an institution loses to dropping out are very reflective of the students an institution recruits. For a nonselective institution, the cohort of first-time freshmen for this study had more students enrolled in learning support coursework because they are underprepared for college coursework than there are students not enrolled in any form of learning support and thus college-ready. For the students in the study, 53.2% were not academically prepared for college and had to enroll in one or more learning support courses. This cohort of first-time freshmen was composed of students from lower socioeconomic backgrounds, with 64% having received the Pell Grant. The student information utilized for this study found that 57.5% of this cohort self-identified as first-generation college students. In this cohort of first-time freshmen, 57.8% of students were female, and 42.2% were male. This study found that one significant predictor for graduation was gender, and this cohort of first-time freshmen was predominantly female. This study found that female students were 1.6 times more likely to earn a baccalaureate degree than their male counterparts.

This study found that another significant predictor for graduation was socioeconomic status. Specifically, 64% of the cohort of first-time freshmen received need-based Federal financial aid through the Pell Grant. The Pell Grant is a type of need-based financial aid designated for students with high financial needs from lower socioeconomic backgrounds. Among these first-time freshmen, students who received the Pell Grant were 1.3 times more likely to graduate with a baccalaureate degree within six years than their peers who did not receive the Pell Grant. These findings were supported by other studies in that Millea et al. (2018) conducted a longitudinal study and found that students receiving grants had an increased probability of graduating by 9%. Tinto (1993) also found that grants had the

most positive impact on graduation. However, Tinto (1993) found that reported financial reasons are the biggest cause for students to drop out.

Additionally, Tinto reported that students approach financial reasons as more of a cost-benefit analysis, while institutions view financial reasons as affordability. A student may have the funding to cover the cost of attendance. However, these students may weigh their options and ultimately decide that they are missing out on earning potential by remaining enrolled in college and thus decide to stop out of school. Mitchall & Jaegar (2018) conducted a study on how students select an institution for fit and found that students will often select for perceived affordability for their parents, even if the student is receiving enough financial aid to cover their cost of attendance. Tinto's (1993) theory on student departure highlights that when a student does not select for fit, the student can develop incongruence and isolation, which is a major influence on student departure and stopping out of an institution. These studies highlight that financial stress and affordability are entirely subjective and mean something different to everyone. However, these findings do support other research findings that highlight the importance of grants on student progression toward graduation.

The most unexpected results of this study centered around academic preparedness. Of those studied, 53.2% of students were not academically prepared for college-level coursework and were enrolled in learning support courses to supplement their college-level course (co-requisite). Shields & O'Dwyer (2017) found that students at nonselective colleges were more likely to enroll in learning support courses and were academically underprepared for college when compared to those students enrolled at selective colleges and universities. These findings align with the student population at this particular access institution. Additionally, this study found different outcomes based on the number of learning support courses students were enrolled in and the type of learning support courses they were required to take. These first-time freshmen cohorts enrolled in an English learning support class were 1.7 times more likely to graduate than those not enrolled in learning support English.

Additionally, students enrolled in a mathematics learning support class were 3.5 times more likely to graduate than those not enrolled in mathematics learning support. Finally, those enrolled in both English and mathematics learning support were 3.3 times more likely to graduate than those not enrolled in both English and mathematics learning support. While this particular access

institution only offers two learning courses (one for mathematics and one for English), the study finds that students enrolled in two learning support courses are more likely to graduate. While this particular access institution does not have three or more learning courses and only offers two (one for mathematics and one for English), the study finds that students enrolled in two learning support courses are more likely to graduate. The impact of learning support is key as there are many ways we could bring this into areas such as residence life and other areas of student affairs. University staff need to consider collaborating with entities such as student affairs to develop effective student support, ranging from nurturing their professional development to creating a pipeline of student support networks to better understand the role of faculty within these efforts (Raaper & Brown, 2020). Faculty and staff professional development and learning designs must be incorporated into these learning support efforts to best provide students the support to succeed academically (Børte et al., 2020).

Additionally, it was found that first-generation college student status was not a significant predictor for graduation. First-generation college students graduated at similar rates compared to their continuing-generation college student peers. Swecker et al. (2013) reiterated the importance of first-generation college students connecting with faculty and staff on campus. For each individual meeting a first-generation college student had with their academic advisor, their likelihood of being retained would increase by 13%. This is significant for the student population because this institution requires regular meetings with student success advisors. Students must meet with their advisor prior to registering for each semester. These meetings may have a direct impact on first-generation college student persistence and graduation outcomes.

Limitations

This study utilized first-generation college students as a predictor. First-generation status is determined by information provided on the financial aid application, so one potential limitation is that there is room for error in a student's understanding of their parent's highest level of education. This study focuses on one institution and one cohort of students, which limits its generalizability. In addition, this study measures student success as earning a baccalaureate degree. However, the possibility of transferring students is not measured in any way.

The delimitations of this study do not account for the student's story and their reason for dropping out. Many factors contribute to a student's decision to stop or

drop out of school. Factors like lack of support, financial obligations, work obligations, and academic preparedness are a few examples of major obstacles students have while in college and may be the reason a student is forced to drop out. A more in-depth exploration of the student experiences may help guide a future study of first-generation college student retention and progression toward graduation. The COVID-19 pandemic impacted the six-year graduation information of the cohort in this study. This study does not account for student experience, so many students may have slowed their progress due to the global pandemic. As a result of the Covid-19 pandemic, admission criteria have changed. Many institutions have moved to test-optional admission requirements. Students admitted now are placed in learning support by their high school GPA and test scores like the ACT and SAT, which are no longer used for admission decisions and learning support placement at this particular school. This study assumed that the data provided by the Office of Institutional Research is correct and accurate.

Implications for Practice

Institutions must prioritize retention, progression, and graduation for student success. This is crucial to institutional funding, adhering to regulations, and meeting the needs of the communities served. The results of this study will help the institution better understand its student population and what subpopulations may benefit from interventions. Based on previous studies, this cohort of students should have difficulty with academic and social integration, resulting in difficulty with persistence to graduation because they are predominantly first-generation college students from lower socioeconomic backgrounds and are academically underprepared for college coursework (Britt et al., 2016; Katrevich & Arguete, 2017; Neal & Kold, 2020; Tinto, 1993). However, the findings from this study do not entirely support prior research and, thus, the need for future research.

The results indicated that first-generation college student status is not a predictor for graduation within six years of matriculation, and this finding is a contradiction to Nyhan's (2019) study, which found that continuing-generation college students earned a baccalaureate degree at two times the rate of first-generation college students within the same timeframe. Azmitia et al. (2018) reported that 70% of first-generation college students reported lacking a sense of belonging on their college campus, which, according to Tinto (1993), is a significant cause for stopping out of an institution. This does not appear to reflect the

first-generation college student experience in this study, as this subpopulation of students is graduating at similar rates to continuing-generation college students. Mitchall and Jaegar (2018) conducted a study and found that a parent's lack of higher education experience would lead to their first-generation college student doubting their own abilities to be successful in college. While students at this particular access institution may have doubts or insecurities about their own abilities, these students are not graduating significantly differently than continuing-generation college students at the same school in the same cohort.

Holland (2020) noted how first-generation college students approach their college search and selection may not typically be based on best fit. These findings are concerning because they would indicate that first-generation college students would feel isolation or incongruence on their campus, which, according to Tinto's student departure theory (1993), is a major cause for stopping out. This would lead the researcher to believe that first-generation college students would not persist to graduation because of their flawed college search and selection approach. However, this does not match the findings of our study, as there is no significant difference in graduation rates for first-generation college students compared to their continuing-generation college student peers.

The findings show that female students are 1.6 times more likely to earn a baccalaureate degree within six years of enrollment than their male peers. This is in contrast to prior research, as Millea et al. (2018) conducted a longitudinal study that found that gender was not a predictor for graduation. In addition, Wilkins (2018) found that female students reported issues with fit at their institution much more often than their male peers. Female students do not just report that they do not feel a sense of belonging at their college or university but feel this much deeper than male students (Wilkins, 2018). Tinto (1993) reported that fit is a major indicator for stop outs. Two of the four major influences for student departure and stopping out are isolation and incongruence (Tinto, 1993). The findings from this study are a significant departure from prior research on gender as a predictor for graduation. However, Aiken et al. (2020) had findings similar to those of the study conducted. Their study found that female students are more likely to graduate and earn a baccalaureate degree within six years of enrollment than their male peers.

Students who are not academically prepared for college are placed in remediation or learning support classes, and these classes are designed to help students

earn college-level course credit through developmental education courses that can be taken in tandem (a co-requisite) with the college-level course (Shields & O'Dwyer, 2017). At the school where this study was conducted, students who are not academically prepared for the college-level course follow this model and enroll in a co-requisite course to supplement their college-level course, which is taken in tandem. Shields & O'Dwyer (2017) reported that students enrolled at access institutions, like two-year community colleges, are more than twice as likely to be enrolled in three or more learning support courses than those at a four-year, more selective institution. In line with this study, for this cohort in our study, more than half of the student body is enrolled in learning support courses. Students at this particular access institution can enroll in a maximum of two learning support courses, one for mathematics and one for English. In contrast to Shields & O'Dwyer's findings, students in this study who took part in two learning support classes were 3.3 times more likely to earn a baccalaureate degree than those not enrolled in two learning support classes.

Aligned with the findings of this study, Saw (2019) found that students at two-year nonselective colleges who were enrolled in both mathematics and English remedial courses were more likely to transfer up to a four-year college after their third year and were more likely to attain a bachelor's degree within eight years. However, Saw (2019) reported that students at nonselective two-year colleges had no significant difference in graduation when enrolled in either learning support mathematics or learning support English. These findings directly contradict our findings in that students enrolled in learning support English were 1.7 times more likely to graduate with a baccalaureate degree within six years of enrollment than those not enrolled in learning support English. In the most significant difference, students in mathematics learning support were 3.5 times more likely to earn a baccalaureate degree within six years of enrollment than those not enrolled in mathematics learning support. Students at this particular access institution are placed into learning support classes based on a combination of their final high school GPA and SAT/ACT scores. However, in another study, high school GPA was not a predictor of graduation rates (Millea et al., 2018). Aiken et al. (2020) used high school GPA to test if it would be a predictor for graduation at a large research (selective) university. That study found that while high school GPA is a predictor for graduation, it is not better than GPA in college. Additionally, that study found that more academically prepared students were more likely to graduate and graduate

earlier. Similarly, Shoulders et al. (2020) found that high school GPA was a positive predictor for graduation with a baccalaureate degree within six years of enrollment.

Academic preparedness was the strongest predictor for graduation within six years of matriculation for first-time freshmen. These findings are significant, as students are placed in learning support courses based on their admission documents. Students at the school in this study were placed in learning support based on their high school GPA and entrance exams (ACT, SAT, Accuplacer).

Students with a lower socioeconomic status receiving the Pell Grant were 1.3 times more likely to graduate with a baccalaureate degree than those not eligible for need-based funding like the Pell Grant. First-generation college students and continuing-generation college students have different mental health needs while progressing in college, and first-generation college students report experiencing financial stress much more often than continuing-generation students (Neal & Kold, 2020). According to the Center for First-Generation College Student Success (2019), first-generation college students are from a lower socioeconomic background, with their parents' median income being just 45% of the median income of continuing-generation students. Students who reported financial stress are more likely to drop out of school (Britt et al., 2016). This research does not support the findings of our study. The students from a lower socioeconomic background were 1.3 times more likely to graduate. Millea et al. (2018) had similar findings, noting that students receiving grants increased their probability of graduating by 9%.

Similarly, Tinto (1993) found that need-based Federal financial aid programs in the form of work-study and grants had the most positive impact on student success and persistence. Demeter et al. (2022) conducted a recent study to predict graduation for students, and the findings from their study do not align with the findings from this study. Demeter et al. (2022) found that students with more financial need (Pell grant eligible) from lower socioeconomic backgrounds were less likely to graduate, while students with less financial need (not Pell eligible) with a higher socioeconomic background were more likely to graduate. These findings were a significant difference from the student population at this particular access institution, where Pell-eligible students were more likely to graduate than those without Pell eligibility. Aiken et al. (2020) presented interesting findings regarding how socioeconomic status might predict graduation in that students from a higher socioeconomic background took

longer to graduate and earn a baccalaureate degree. However, the rationale for this is likely that these students have more resources while in college and can take their time in college more so than a student from a lower socioeconomic background (Aikens et al., 2020). An additional study from Shoulders et al. (2020) also contradicted the findings of this study. Shoulders et al. (2020) found that students who were Pell Grant eligible and from a lower socioeconomic background reported a decrease of 39% in relative odds of being a college graduate and earning a baccalaureate degree within six years of enrollment.

Recommendations for Future Research

The findings from this study are the first time series analysis that looks at a cohort of students longitudinally from matriculation through their six-year graduation date. It is hard to know if these findings are unique or part of a larger pattern. Additional studies of previous and future cohorts would benefit the institution to gauge a pattern.

This study is quantitative in nature. A qualitative study would be a positive next step. To understand the student story and experience would add a color to the story the data tells. Another recommendation would be to consider additional predictors. One predictor to add that would be significantly impactful is student involvement. Exploring whether student involvement predicts graduation would be a significant finding to show students the important role they play in determining their success.

Conclusion

The results of this study provided many insights into the student population at a non-selective (access) state college in the Southeastern United States. This study has provided context and findings for the most recent cohort of students and their six-year graduation outcomes. One of the biggest impacts of the findings of this study will result in a complete shift in how we advise first-time freshmen placed in learning support courses. Historically, the institution has allowed students to “test out” of learning support. Admission recruiters and academic advisors often encourage some students to attempt to test out. Taking learning support coursework does have major implications for students. They are enrolled in two to four credit hours, which limits the number of courses they can comfortably enroll in and slows progression toward graduation. There are also financial implications as often supplemental scholarship support, which is intended for students who excelled academically in high school, will not cover learning support courses, which impacts students in a very negative way financially. However, this study has informed practitioners and stakeholders

on campus that learning support courses make students 1.7 to 3.5 times more likely to persist to graduation and earn a baccalaureate degree. This information would likely increase a student and parent's comfort level in remaining in the course. In many ways, the study also validates the approach to learning support coursework by the institution. The courses are not just supplementing student education, but they are also pushing students past the finish line and across the stage.

The findings also provide important insights into significant populations who might need more focus and more attention. For instance, a male student from a higher socioeconomic background who is not eligible for the Pell Grant and is academically prepared for college may actually struggle with persistence more than any other subpopulation, based on the results of this study. The institution can now focus on how to reach this student and how to support their efforts to cross the finish line. The results of this study will be impactful on the campus and may change the way the institution is supporting students. With the results of this study, the institution can make a greater impact on retention, progression, and graduation rates.

Colleges and universities have a responsibility to the students and communities they serve to ensure that students are given every opportunity to be successful. Colleges and universities offer many resources to students to help them progress toward graduation, but institutions should be prepared to know their student population and identify subpopulations that require additional support and interventions. Student success and persistence towards graduation are crucial to remain eligible for federal funding, remain in good standing with accrediting bodies, and act as a moral obligation to students and communities.

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