San Francisco State University

Six-Year Graduation and Attrition

First-Time, Full-Time Freshmen

Fall 2018 Cohort

March 2025
Office of Institutional Research

Six-Year Graduation and Attrition for First-Time, Full-Time Freshmen Fall 2018 Cohort

Purpose

This attrition study aims to explore student outcomes within a specific cohort. The focus is on first-time, full-time freshmen (FTFTF) who entered San Francisco State University (SFSU) in Fall 2018. Within this group, students are categorized based on whether they graduated from SFSU or did not within six years, up to Fall 2024.

The study examines various student characteristics that may influence the likelihood of graduating within six years. Additionally, it tracks outcomes for students who left the university and were matched with records from the National Student Clearinghouse (NSC). This report provides historical insights into this cohort's trajectory while also serving as a foundation for discussions on improving graduation rates at SFSU.

Executive Summary of Key Findings

The Fall 2018 FTFTF cohort consisted of 4,066 students, with an overall graduation rate of 50.4%, reflecting a four-percentage-point decline from the 2010 FTFTF cohort's average graduation rate of 54.4%.

A summary of key factors is presented below. While we attempted to compare key findings from both the 2010 and 2018 cohort studies, caution is advised as regression results may vary depending on the modeling approach. For instance, the current study excluded the underrepresented minority variable because it is derived from race/ethnicity, and incorporating both could lead to distortions in the findings. Notably, this study employed multiple rigorous modeling approaches to effectively capture six-year graduation outcomes across diverse student backgrounds (See Appendix for methodological details). Additionally, an important advancement in this study is the analysis and interpretation of effect sizes (odds ratios), providing actionable insights to guide the prioritization of support systems and targeted interventions where needed.

Gender and Graduation Outcomes

- Students in the 2010 cohort showed a significant gender difference in graduation rates, but this gap disappeared in the 2018 cohort study. While more female students (52.2%) graduated compared to male students (47.6%), the difference was not statistically significant after accounting for other demographic factors. Interestingly, when controlling for these factors, male students showed a slight advantage in graduation likelihood, though the effect was not strong enough to be conclusive. This suggests that gender disparities in graduation may be shaped more by other variables rather than gender itself. (See p.17 for descriptive results and p. 9 for statistical results.)

Race and Graduation Gaps

- Among racial groups with substantial sample sizes, Asian students had the highest six-year graduation rate at 62.9%, serving as a benchmark for comparison. While most racial differences were not statistically significant, White students were notably less likely to graduate than their Asian peers. (See p.12 for descriptive results and p.6 for statistical results.)

- For Black students, the graduation rate stood at 36.4%. While the statistical analysis did not confirm a significant gap, the difference is large enough to be concerning. Given the large effect size, the small sample size likely makes it harder to detect a statistical difference, but the real-world gap remains meaningful. This reinforces the importance of addressing equity challenges through targeted student support initiatives. (See p.12 for descriptive results and p.7 for statistical results.)

How College Choice Affects Graduation

- Students' college of enrollment plays a significant role in their graduation outcomes. A benchmark group—Business, Ethnic Studies, and Education students—had a combined graduation rate of 58.4%. In comparison, students in HSS (51.6%), COSE (49.2%), and LCA (52.5%) had notably lower rates. These findings highlight the need for tailored interventions that address the unique challenges faced by students in different colleges to improve graduation rates across the board. (See p.11 for descriptive results and p.6 for statistical results.)

The Strongest Predictor of Graduation: University GPA

- Students with a higher GPA at SFSU were significantly more likely to graduate, making it the most powerful predictor of student success. In contrast, high school GPA had no significant impact. This finding underscores the critical importance of supporting students academically once they arrive at the university, rather than relying on their pre-college performance as an indicator of success. (See p.11 for descriptive results and p.6 for statistical results.)

- Interestingly, while high school GPA appears positively linked to graduation in descriptive data, regression analysis suggests the opposite: when controlling for other factors, students with higher high school GPAs were slightly less likely to graduate. This reiterates that high school GPA alone does not fully capture what leads to long-term success in college. (See p.14 for descriptive results and p.9 for statistical results.)

The Role of Academic Support Services

- The 2010 cohort study showed that students needing remediation in both math and English were significantly less likely to graduate. In the current study, a new measure—GE placement category—offered additional insights. Surprisingly, students who initially needed English support were actually *more* likely to graduate after controlling for other factors. This suggests that English support services at SFSU are effectively helping

students succeed and should remain a priority. (See p.14 for descriptive results and p.6 for statistical results.)

- At first glance, students needing both math and English support had a low graduation rate (39%), and those needing math support alone had only a slightly better rate (43%). However, when analyzing the data while accounting for other factors, the statistical results tell a different story. The findings suggest that students receiving support in these areas might actually have a better chance of graduating, though the effect is not statistically significant. This reinforces the value of investing in support programs according to students' initial academic standings. (See p.14 for descriptive results and p. 9 for statistical results.)

The Impact of Enrollment Pauses

- Students who paused their enrollment at any point were significantly less likely to graduate, with a graduation rate of just 37.5%. This highlights the importance of initiatives that help students stay continuously enrolled or support their transition back to SFSU if they take a break. (See p.12 for descriptive results and p. 6 for statistical results.)

Local vs. Non-Local Students

- Students from the Bay Area were significantly more likely to graduate (55.8%) compared to their non-local peers. This trend, also observed in the 2010 cohort, suggests that local students may have stronger support networks or greater familiarity with university resources. Enhancing integration efforts for non-local students could help bridge this gap and improve their graduation outcomes. (See p.13 for descriptive results and p.7 for statistical results.)

First-Generation, EOP Participants, and Pell-Eligible Students: A Surprising Finding

- Contrary to expectations, first-generation students, EOP participants, and those eligible for Pell Grants were *not* significantly less likely to graduate. In fact, regression analysis showed they had a higher adjusted likelihood of graduating than initially suggested by the descriptive results. This suggests that institutional support services may be effectively assisting these students in overcoming challenges. (See pp.15- 16 for descriptive results and p.9 for statistical results.)

What Happens to Students Who Leave?

- By Spring 2020, 29% of the FTFTF had left SFSU, making up 64% of all student departures. However, leaving does not always mean dropping out higher education—about one-third of these students transferred to other institutions, and another third successfully graduated elsewhere (including SFSU). This emphasizes the need to track students beyond SFSU to understand their full academic journeys. (See pp. 18-19 for results.)

Where Do Students Go After Leaving SFSU?

- Local community colleges remain the most common transfer destinations, likely due to their affordability and accessibility. City College of San Francisco, Skyline College, and other nearby two-year schools continue to serve as major pathways for students who leave before completing their degrees at SFSU.
- However, a growing number of SFSU leavers are transferring to universities in Southern California. This may be linked to post-COVID shifts, including the rise of online learning, temporary relocations during the pandemic, or changes in students' financial and personal circumstances.
- There is also an increasing trend of students completing their degrees at private universities and UC campuses. Future research could explore what is driving this shift—whether it's better financial aid packages, the availability of specific academic programs, online learning options, or the prestige and career benefits of attending certain institutions. (See pp. 20-21for results.)

Final Thoughts

These findings highlight the many factors influencing student success at SFSU. While academic performance at the university level is the strongest predictor of graduation, other factors—such as college of enrollment, enrollment continuity, and access to support services—also play critical roles. The data suggest that support systems at SFSU may be positively impacting student outcomes, helping to mitigate disparities that might otherwise persist. Additionally, many students who leave SFSU continue their education elsewhere, underscoring the importance of tracking their academic trajectories beyond our campus. Understanding these patterns can inform future strategies to enhance student retention and ensure that all students, whether they persist at SFSU or transfer, have the resources they need to succeed.

Methodology & Overview

For the 20 factors such as gender, race/ethnicity, parental education level, Pell Grant eligibility, student categories for support needs in general education courses (Math and English/Writing), and program of study, a logistic regression model was used to analyze six-year graduation as the primary outcome.

When incorporating multi-level categorical variables (e.g., Race) in the regression analysis, it is crucial to maintain a consistent comparison group across all subcategories (e.g., comparing Black, Latinx, and other groups against Asian students). While effect coding allows comparisons to the overall average, our study prioritized identifying opportunities for improvement rather than mere description. Given this focus, we selected the best-performing category as the reference group, enabling comparisons against an aspirational benchmark rather than an arbitrary baseline.

Accordingly, we identified the subgroup with the highest graduation rate within each categorical variable and designated it as the reference group. This approach provides a goal-oriented

perspective, highlighting disparities relative to the most successful subgroup and offering insights into potential areas for targeted intervention.:

- Race: Asian students were chosen as the reference group due to their highest graduation rate among racial categories.
- SFSU Placement Support Need Category: The reference group selected was "No Support Needed," as this subgroup demonstrated the highest graduation rate.
- College: The reference group was a combined category consisting of students from the colleges of Business, Ethnic Studies, and Education (LFCOB+GCOE+ETHS), as these colleges collectively exhibited the highest graduation rates. In determining the reference group for college, we also considered maintaining a balanced study sample across different colleges, ensuring a reliable comparison. The combined category of LFCOB+GCOE+ETHS satisfied this consideration.

See the appendix for the modeling approach.

Report Structure

The first section of this report is an executive summary of key findings, followed by the presentation of statistical test results and then the descriptive results. The section presenting results is structured around statistical significance and effect size.

A statistical summary table lists key variables along with a brief description of their relationship to the outcome (i.e., six-year graduation), their statistical significance (Yes or No), the rank of effect size (measured by the odds ratio), and notable patterns in effect direction. The final column, “Same Direction as Descriptive,” indicates whether the association between a factor and the outcome changes direction after accounting for a third variable (commonly referred to as a confounder or lurking variable).

Descriptive results are also organized by statistical significance and presented in descending order of statistical significance and effect size. However, if a multi-level categorical variable (e.g., Race) is statistically significant only for a particular sub-category (e.g., White), the visual summary of descriptive results for the entire variable (i.e., Race) is included in the section for statistically significant variables.

Statistical Test Results

Statistically significant differences in six-year graduation rates were observed based on several variables, including specific ethnic subcategories, last known college, last SFSU GPA, residency status, pauses in enrollment within the six-year timeframe, and the need for writing support.

Table 1.

Variable	Description of Relationship (From Regression Results)	Statistical Significance	Effect Size Rank	Same Direction as Descriptive?
Last SFSU GPA	The higher last SFSU GPA, the more likely to graduate.	Yes	1	Yes
College HSS	Students in HSS are less likely to graduate than the reference group (LFCOB+GCOE+ETHS).	Yes	2	Yes
College COSE	Students in COSE are less likely to graduate than the reference group (LFCOB+GCOE+ETHS).	Yes	3	Yes
Enrollment Stop Yes	Students with one or more enrollment stops are less likely to graduate than those with continuous enrollment.	Yes	4	Yes
Support Need English	Student needing support in English are more likely to graduate than the reference group (No Need in Both).	Yes	5	No, Reversed
Race White	White students are less likely to graduate than the reference group(Asian)	Yes	6	Yes
College LCA	Students in LCA are less likely to graduate than the reference group (LFCOB+GCOE+ETHS).	Yes	7	Yes

Students with a higher last SFSU GPA were significantly more likely to graduate, with this variable showing the largest effect size in the analysis. In contrast, high school GPA was not a significant predictor. Given that both academic standing variables were significant in the 2010 cohort study, the current findings underscore the critical role of academic performance at the university level as a key determinant of long-term student success.

College emerged as a significant factor in both cohort studies. In the current study, a comparison using an "aspirational" benchmark—combining Business, Ethnic Studies, and Education (LFCOB + GCOE + ETHS, the combined graduation rate of 58.4%)—revealed that the graduation rates for students in HSS (51.6%), COSE (49.2%), and LCA (52.5%) were notably lower than the reference group. Given the substantial effect size of the College factor, targeted support, interventions, and strategies tailored to each college's unique challenges and context may be essential for improving overall graduation rates at SFSU.

Notably, the negative association remains consistent across both descriptive and regression results, suggesting that challenges faced by certain colleges are not merely due to confounding factors but are likely influenced by structural characteristics specific to each college—factors not accounted for in the current model. Possible explanations may include more rigorous coursework, higher attrition rates, or longer and more complex pathways to graduation in certain fields.

The significant and strong effect size observed in the graduation gap between Asian and White students can be interpreted in multiple ways. Since other racial comparisons were not statistically significant, one possible explanation is that institutional efforts to support specific racial groups have yielded positive outcomes. This finding suggests that some White students may also benefit from targeted support systems. However, to fully understand this pattern, a deeper examination of data on is needed to determine whether White students are more likely to leave for alternative opportunities, such as transferring to other institutions or pursuing non-traditional academic paths.

The 2010 cohort study included an additional variable related to academic standing—whether students required remediation in math and/or English—and found that those needing remediation in both subjects were significantly less likely to graduate. In contrast, the current study incorporated the GE placement category as an indicator of initial academic standing, yielding intriguing findings. Specifically, after controlling for other factors, initially needing English support emerged as a positive predictor of graduation, contradicting the descriptive results (49.8% graduation rate for the "English Only" group).

This shift suggests that once adjusted for confounding factors, the academic support provided to these students may have played a crucial role in improving their long-term graduation outcomes.

One more significant predictor, Enrollment Stop, suggests that students with one or more enrollment pauses significantly less likely to graduate (graduation rate of 37.5%), suggesting that initiatives to minimize enrollment disruptions or support returning students could improve graduation outcomes.

Table 2.

Variable	Description of Relationship (From Regression Results)	Statistical Significance	Effect Size Rank	Same Direction as Descriptive?
Race Black	Black students are less likely to graduate than Asian students.	No	8	Yes
Support Need Both	Student needing support in both areas are more likely to graduate than the reference group (No Need in Both).	No	9	No, Reversed
Bay Resident Applying	Students from Bay Area are more likely to graduate than counterparts.	Yes	0	Yes

Compared to the Asian group, the graduation rate for Black students (36.4%) is noteworthy. While not statistically significant, the effect size for Black students suggests a meaningful gap. This indicates that the lack of statistical significance is likely due to the small sample size rather than the absence of an equity gap in the underlying phenomenon. A limited sample size can lead to higher variability, making it more difficult to detect a statistically significant difference, even if a meaningful effect exists in the population. Moreover, the lack of statistical significance does not necessarily imply the absence of a true difference; rather, it suggests that the current data may not provide sufficient power to confirm the effect with confidence—particularly when the observed effect size is as large as it is in this case. Future research with a larger, more balanced sample could help determine whether this observed effect represents a consistent trend or is merely the result of random variation in the data.

Descriptively, only 39% of students needing support in both math and English and 43% of those math support graduated. However, these observed gaps present a different picture when analyzed statistically. The current study found that, after controlling for other variables, students needing support in both areas or in math alone had a positive coefficient for graduation likelihood, suggesting a higher probability of success. However, this result was not statistically significant. A key implication is that comprehensive academic support programs may have a beneficial impact and warrant further investment to enhance student outcomes.

Students from the Bay Area were significantly more likely to graduate than their non-local peers, with a graduation rate of 55.8%, a finding consistent with the 2010 cohort study. A key implication is that non-local students may benefit from enhanced integration and support services to improve their outcomes. However, the effect size of this factor is smaller than that of two other non-significant factors: A gap between Black and Asian students, and gap between students with support needs in both areas of math and writing and their counterparts with no additional support need.

Table 3.

Variable	Description of Relationship (From Regression Results)	Statistical Significance	Effect Size Rank	Same Direction as Descriptive?
Race Latinx	Latinx students are less likely to graduate than Asian students.	No	11	Yes
High School GPA	The higher high school GPA, the less likely to graduate.	No	12	No, Reversed
First Generation	First Generation students are more likely to graduate than counterparts.	No	13	No, Reversed
EOP Group	EOP students are more likely to graduate than counterparts.	No	14	No, Reversed
Pell Eligible	Pell eligible students are more likely to graduate than counterparts.	No	15	No, Reversed
Gender Male	Male students are more likely to graduate than female students.	No	16	No, Reversed
Race International	Gap between Asian and International (Less Likely)	No	17	Yes
Metro Group	Students in Metro group are more likely to graduate	No	18	Yes
Race Other	Gap between Asian and International (Less Likely)	No	19	Yes
Support Need Math	Gap between No Support and Math Area Needed (More Likely)	No	20	No, Reversed

With an "ambitious" comparison group, observed descriptive gaps in graduation rates for the Latinx, International, and Other Race groups were no longer statistically significant once other factors—such as academic performance, college of enrollment, and enrollment continuity—were accounted for. This suggests that racial disparities in graduation rates may be largely explained by differences in students' academic pathways rather than race itself.

Descriptive analysis showed that higher high school GPAs are associated with higher graduation rates. However, regression results suggest a reversed relationship—after accounting for other factors, students with higher high school GPAs appear less likely to graduate, though this finding is not statistically significant. This suggests that high school GPA alone may not fully capture long-term student success. Instead, academic performance at the university level emerges as the strongest predictor of six-year graduation outcomes.

While the 2010 cohort study found a statistically significant difference between male and female students, the 2018 cohort study did not identify gender as a significant factor. The observed gender gap—52.2% for female students and 47.6% for male students—was not statistically significant when controlling for other demographic characteristics. Additionally, the current study found a "reversal" effect: Male students are more likely to graduate after accounting for

other factors, though it was not statistically significant. A key implication is that observed gender disparities might be influenced by other confounding variables rather than gender itself.

First-generation status and Pell eligibility were not significant predictors of graduation in either cohort study. Interestingly, the current study revealed a reversed relationship compared to the descriptive results. While descriptive findings indicated lower graduation rates for these groups, regression analysis showed higher adjusted odds of graduation, suggesting that first-generation and Pell-eligible students may have a greater likelihood of graduating after controlling for other factors. A key implication is that institutional support efforts may be effectively aiding those students.

A similar reversed relationship emerged for EOP participation. Descriptive results showed lower graduation rates among EOP participants, but regression analysis indicated a potential positive effect after controlling for other factors. This suggests that EOP services may be playing a beneficial role in student success, even if raw graduation rates appear lower.

The lack of statistically significant effects—or even reversed effects—of traditionally negative predictors, such as Latinx identity, gender, initial academic standing (high school GPA), first-generation status, EOP participation, and need for additional math support, does not necessarily imply that institutional efforts should be discontinued. Instead, these findings may serve as evidence of the impact of institutional initiatives aimed at enhancing academic performance and outcomes for targeted student groups. For example, given that the EOP program, Pell-grant primarily supports low-income, and first-generation students—groups often perceived as having a lower likelihood of graduation—this lack of statistical difference actually serves as corroborating evidence that relevant programs and services are effectively supporting these students.

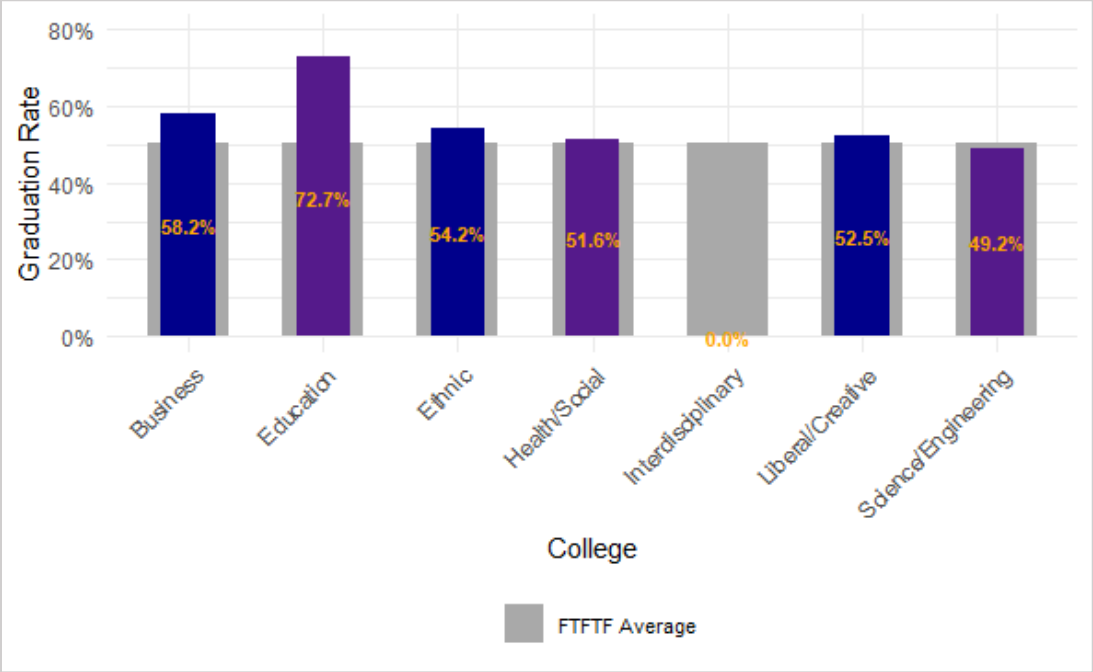
Descriptive Results

Factors with Significant Effects or Significant Sub-Categories

Last SFSU GPA

The Graduated group had an average SFSU GPA of 3.4 (SD = 0.39), while the Not-Graduated group had a mean GPA of 2.37 (SD = 1.04), highlighting that graduated students have higher means of the last SFSU GPA than their counterparts.

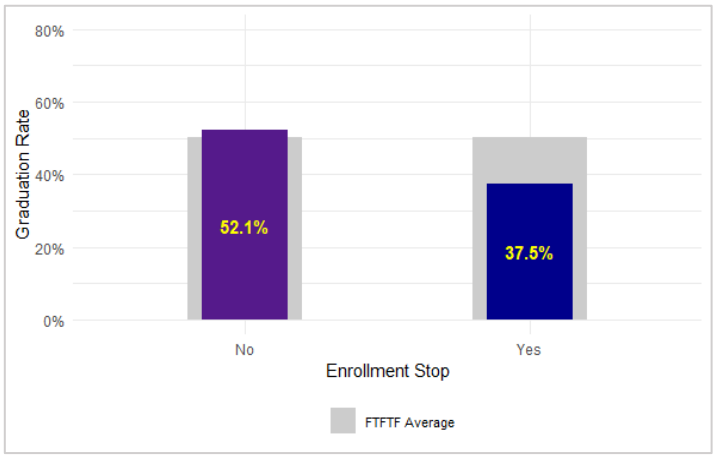
Six-Year Graduation Rates by Last College Enrolled



Students whose last known college was the College of Science and Engineering had a lower six-year graduation rate as a group, despite representing the largest number of students (n = 1,135). Graduation rates for the Colleges of Education and Ethnic Studies should be interpreted with caution due to their small sample sizes (22 and 48, respectively). In the regression model, the three colleges with the highest graduation rates—Business, Ethnic Studies, and Education—were combined into a single category, serving as the reference group for comparisons with other colleges.

A previous study on the Fall 2010 cohort found a similar pattern, with students majoring in Science and Engineering being less likely to graduate within six years. The present study identified additional colleges, HSS and LCA, exhibiting the same pattern when compared to an 'ambitious' benchmark (LFCOB + GCOE + ETHS as the reference group in comparisons).

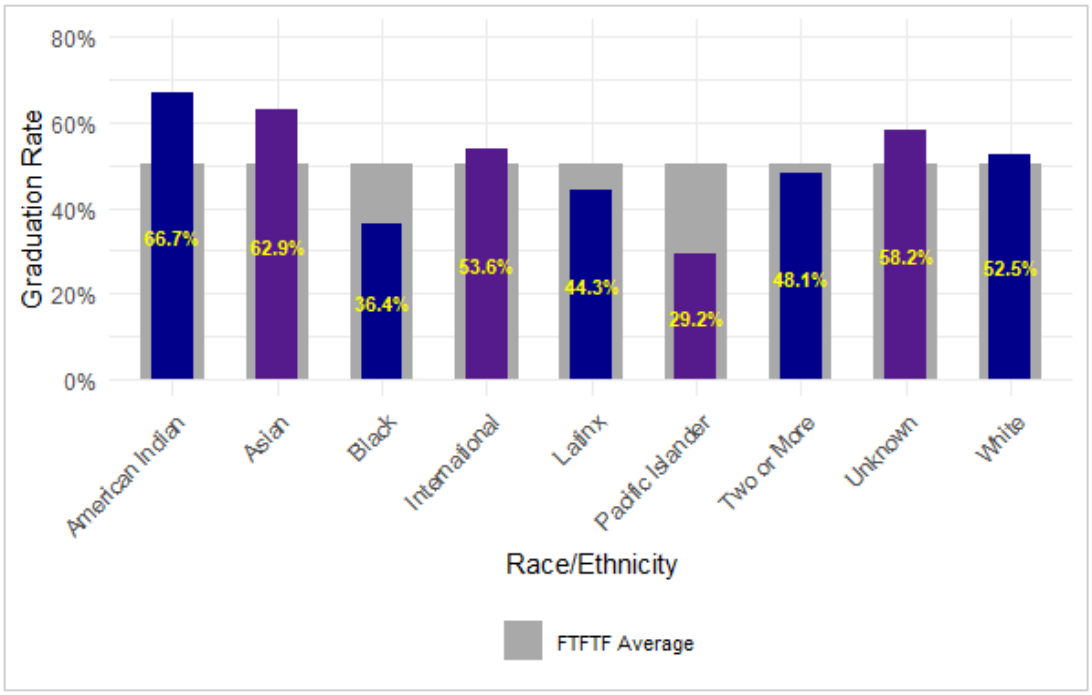
Six-Year Graduation Rates by Enrollment Stop Status



Approximately 12% of the study sample (493 students) paused their enrollment for one or more semesters between the fall of 2018 and their last term at SFSU. Among these, 435 students paused enrollment once, while 58 paused two or more times. This subset includes "leavers" who neither graduated nor were enrolled as of fall 2024. However, they are included in the analysis because their enrollment was paused before their final semester at SFSU. The 6-year graduation rate for this group is below the FTFTF average-- 37.5%.

The gap between the Yes and No groups has widened in the current study (52.1% - 37.5% = 14.6 percentage points) compared to the 2010 cohort study (55% - 51.6% = 3.4 percentage points). While it is unclear whether the 2010 cohort study included this variable in its regression model, the current study incorporated it and found it to be statistically significant, ranking fourth in effect size.

Six-Year Graduation Rates by Race/Ethnicity



The groups whose graduation rates fall short of the FTFTF graduation rate include Black, Latinx, Pacific Islander, and those identifying with two or more racial categories. Among them, three

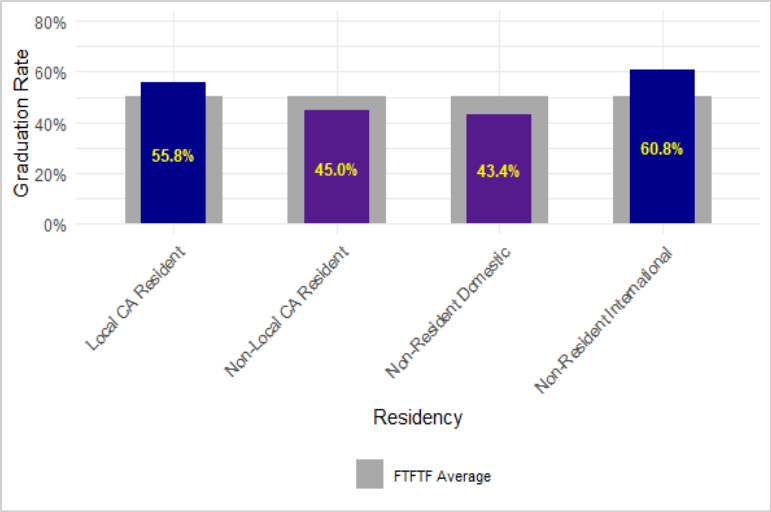
groups were included in the 2010 cohort Leaver Study, and we found the following gaps from the overall FTFTF rate (FTFTF Average = 54.4% in the 2010 cohort study and 50.4% in the 2018 cohort study):

- Black: -20.3% in the 2010 cohort study and -14% in the 2018 cohort study
- Latinx: -4.3% in the 2010 cohort study and -6.1% in the 2018 cohort study
- Two or More: -0.9% in the 2010 cohort study and -2.3% in the 2018 study

The Asian group indicated the largest graduation rate in both cohort studies, with an increase from the 2010 cohort study result (Asian = 61.5% in the 2010 cohort study). Then, the Asian group was used as the reference in the regression modeling of the current study.

The categories American Indian, Pacific Islander, Unknown, and Two or More were combined into a single level in the regression model to address issues related to the small number of cases in each category and the excessive number of levels in the model.

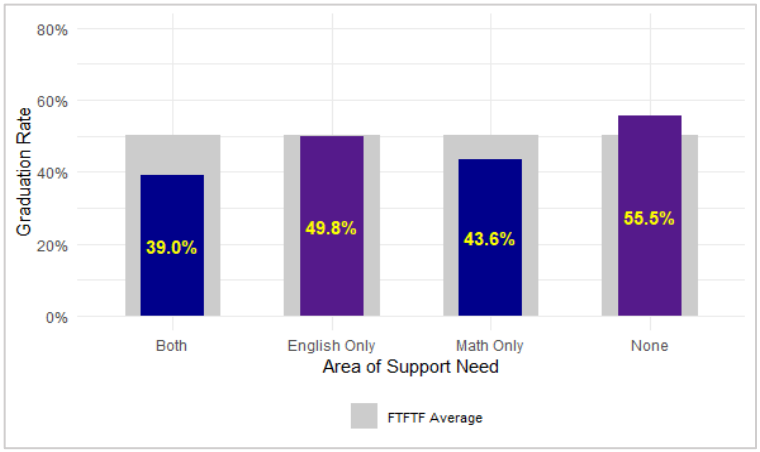
Six-Year Graduation Rates by Residency



Among the four entering residency status categories, the Non-Resident International group had the highest 6-year graduation rate, while the Local CA Resident group slightly exceeded the FTFTF average. In contrast, the 6-year graduation rates for the other two residency groups, Non-Local CA Resident and Non-Resident Domestic, fell below the FTFTF average.

Compared to the 2010 cohort study, a notable finding is the improvement in the graduation rate of the international student group. The 2010 study ranked this group second, with a graduation rate of 53.8%, which did not surpass the FTFTF average of 54.4%.

Six-Year Graduation Rates by Math/Writing Support Need



All three groups of students who were recommended or required additional support based on the CSU pathway category show lower graduation rates than the FTFTF average, with the English Only group almost approaching the average.

The 2010 cohort study also examined a similar factor related to students' initial academic standing in math and English. A comparison with the 2010 cohort study reveals that the English Only group experienced the largest decline, dropping 10 percentage points from 59.8% in the 2010 cohort. This was followed by the Both group, which saw an 8.5 percentage point decrease from 47.5%, and the Math Only group, which dropped 8.2 percentage points from 51.8%. Even accounting for the overall decline in the FTFTF average graduation rate between the 2010 and 2018 cohorts (a 4-percentage point decrease), these declines among the three student groups needing support suggest that the negative impact of this factor on the 6-year graduation rate has worsened since the 2010 cohort.

The 2010 cohort study also found a positive association between English-only status and graduation, a finding reiterated in the present study. However, a key difference is that the previous study identified the English-Only group as having the highest graduation rates. If the None group served as the reference (which is unclear from the methodology notes), the statistically significant relationship would align directly with the descriptive results. However, the present study observed a reversal effect, as discussed earlier in the Statistical Test Results section.

Factors with Not Significant Effects

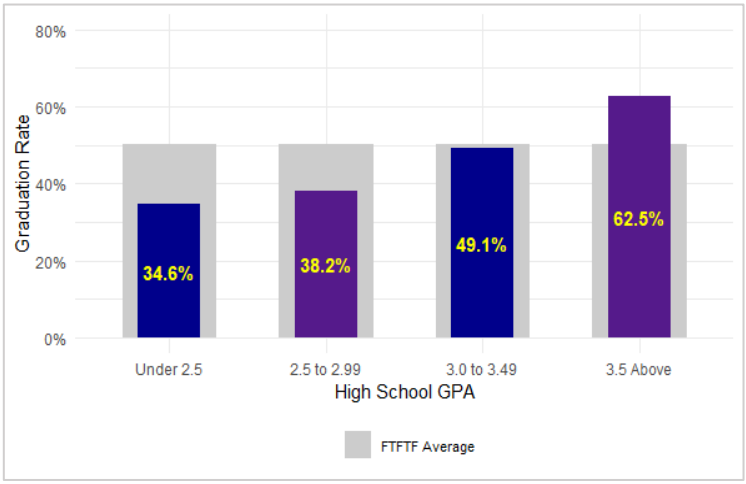
Six-Year Graduation Rates by High School GPA

The Graduated group had an average high school GPA of 3.34 (SD = 0.42), while the Not-Graduated group had a mean GPA of 3.19 (SD = 0.39).

When GPA values were categorized into four groups, all three groups with a high school GPA below 3.5 had lower graduation rates than the FTFTF average. However, the 3.0 to 3.49 group came close to the overall average.

Compared to the 2010 cohort study, the six-year graduation rate declined from 50.8% to 34.6% for students with a high school GPA below 2.5 and from 47% to 38.2% for those in the 2.5 to 2.99 range. This suggests that the negative impact of a low high school GPA on graduation rates

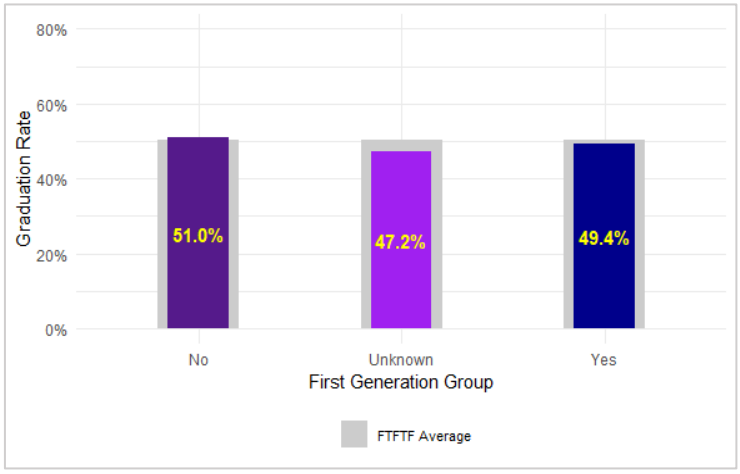
has worsened over time. Despite this, the current regression analysis found high school GPA to be non-significant.



A key methodological difference may explain this finding: the previous study used a categorical GPA variable in regression modeling, whereas the present study retained GPA as a continuous variable. This decision was made to avoid artificial distinctions, which can exaggerate effects. Since high school GPA tends to be right-skewed, a follow-up study should explore alternative analytical approaches—such as log or quadratic transformations or logistic regression with splines—to assess whether different methods yield a significant relationship between high school GPA and graduation rates.

A key practical implication of the current study's findings is that SFSU GPA is a stronger predictor of graduation than high school GPA, explaining more variance in graduation outcomes. While high school GPA reflects past academic performance, it does not fully account for factors such as academic adaptation, college rigor, or university support systems. In contrast, SFSU GPA serves as a direct measure of college success, making it a more relevant indicator of a student's likelihood to graduate.

Six-Year Graduation Rates by First Generation Group

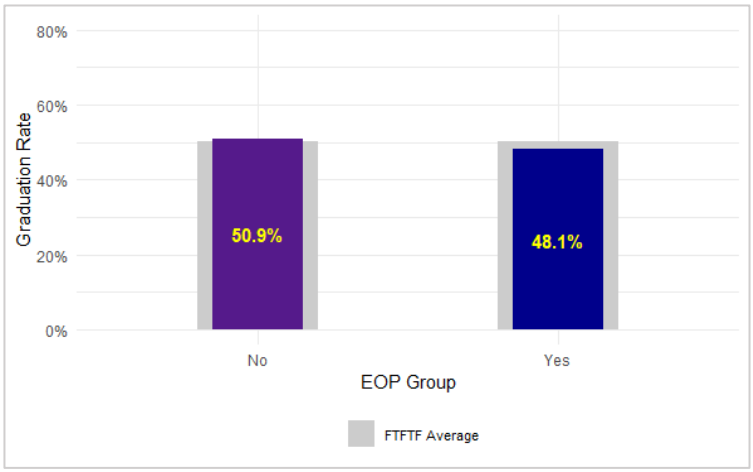


Approximately 37% of the study sample (1,487 students) consists of first-generation students, whose 6-year graduation rate is 49.4%, falling short of the FTFTF average.

In the 2010 cohort, first-generation status (Yes or No) was not statistically significant. However, descriptively, first-generation students had a slightly higher graduation rate (55%) compared to their non-first-generation counterparts (54.3%). In contrast, the present study found a 1.6 percentage point gap favoring non-first-generation students. Yet, the statistical analysis confirms that first-generation status remains insignificant when accounting for other key factors.

Although not statistically significant, the regression analysis for the 2018 cohort study suggests a reversed effect, indicating a higher likelihood of graduation for first-generation students. See Statistical Test Results part for the implications of this reversed effect.

Six-Year Graduation Rates by Educational Opportunity Program Group

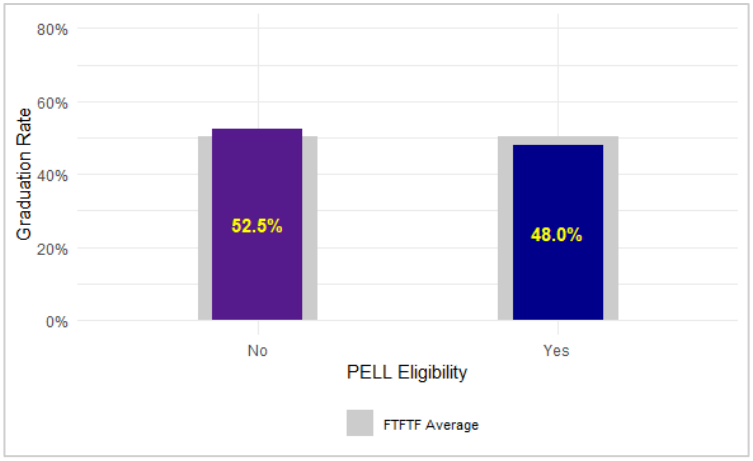


The 6-year graduation rate for students in the EOP group (795 students) is 48.1%, which falls below the FTFTF average. Compared to the 2010 cohort (EOP group size = 350), where the graduation rate was 53.7%, the rate has declined. Moreover, the gap between the EOP participating and not-participating groups has widened; in the 2010 cohort, the difference was only 0.8 percentage points.

In the 2010 cohort, EOP participation was not a statistically significant factor, and the 2018 cohort study confirmed the same results.

Although not statistically significant, the regression analysis for the 2018 cohort study suggests a reversed effect, indicating a higher likelihood of graduation for the EOP group. See Statistical Test Results part for the implications of this reversed effect.

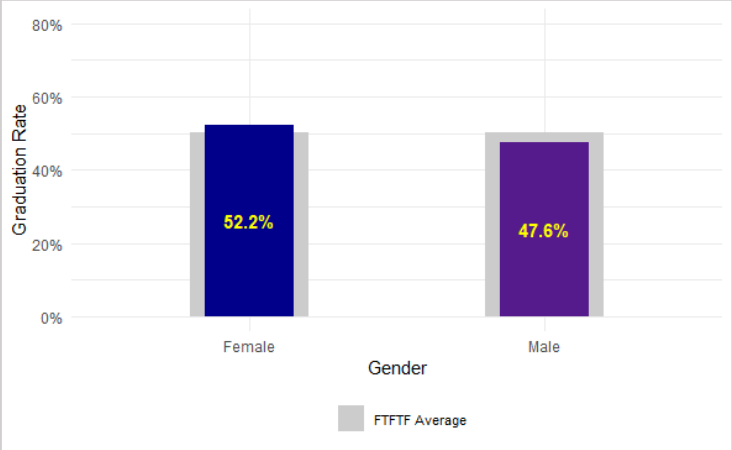
Six-Year Graduation Rates by PELL Eligibility Status



Approximately 48% of the study sample (1,945 students) are PELL grant-eligible, with a 6-year graduation rate of 48%, falling below the FTFTF average. A notable gap of 4.5 percentage points exists between PELL-eligible and non-eligible students. In the 2010 cohort study, PELL eligibility was not a statistically significant factor, and the gap between the two groups was narrower, with graduation rates of 55.1% for non-eligible students and 53.4% for eligible students, compared to the current study.

Although not statistically significant, the regression analysis for the 2018 cohort study suggests a reversed effect, indicating a higher likelihood of graduation for Pell eligible students. See Statistical Test Results part for the implications of this reversed effect.

Six-Year Graduation Rates by Gender



The female group's 6-year graduation rate exceeds both the overall rate (the FTFTF average of 50.4%) and the male group's rate.

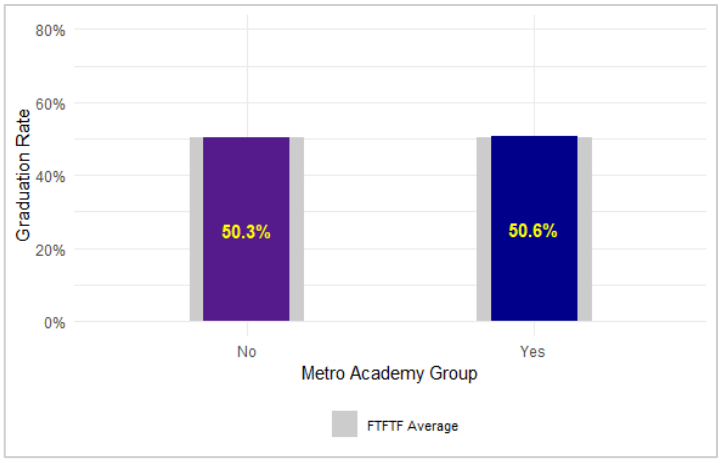
The gap from the FTFTF graduation rate is as follows: +1.8% for the female group and -2.8% for the male group, resulting in a total gender gap of 4.6 percentage points.

In the 2010 cohort study, gender was a significant factor, with female students graduating at a rate 2.1 percentage points higher than the overall FTFTF graduation rate, while male students had a graduation rate 3.1 percentage points lower, resulting in a total gender gap of 5.2 percentage points. However, in the current study, gender was not found to be a significant predictor once other variables were accounted for. This suggests that the gender gap observed in the descriptive results may be influenced by other underlying factors rather than gender itself.

A plausible lurking variable that could explain this shift may be the major selection, as certain fields of study may have different retention and graduation patterns that indirectly contribute to the gender gap. Some overlapping factors might mask or exaggerate the true effect of gender when not properly controlled for in the analysis.

Although not statistically significant, the regression analysis for the 2018 cohort study suggests a reversed effect, indicating a higher likelihood of graduation for male students. See Statistical Test Results part for the implications of this reversed effect.

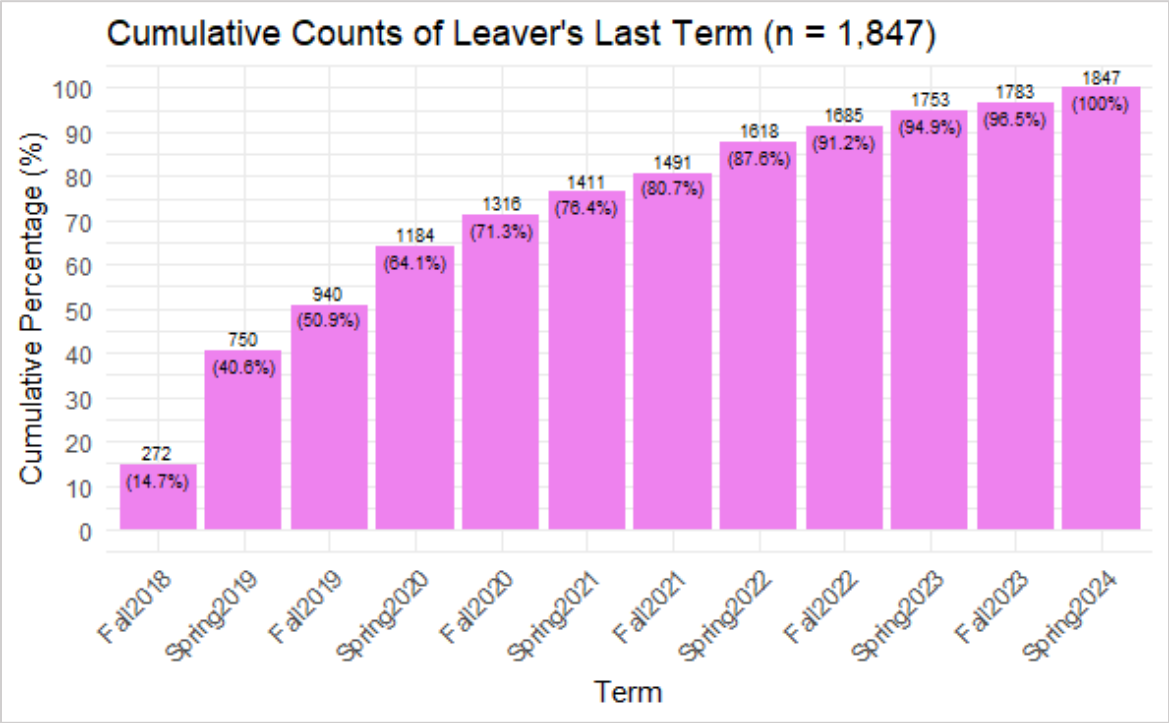
Six-Year Graduation Rates by Metro Academy Group



For the 745 students who participated in the Metro Academy, there is little difference in outcomes between Metro participants and their non-Metro counterparts, as well as between Metro participants and the overall FTFTF average. In contrast, the 2010 cohort study revealed a noticeable gap in the 6-year graduation rates. Metro participants had a graduation rate of 59%, compared to 54.3% for non-participants and 54.4% for the FTFTF average. These differences highlighted a stronger performance among Metro students at the time.

Tracking Leavers Using National Student Clearinghouse Data

In the study sample, consisting of 4,066 FTFTF students from the Fall 2018 cohort, 2,018 students had not graduated within six years. Among these, 171 students were enrolled at SFSU in Fall 2024, leaving 1,847 students classified as "leavers." The chart below summarizes the last terms these students attended SFSU.



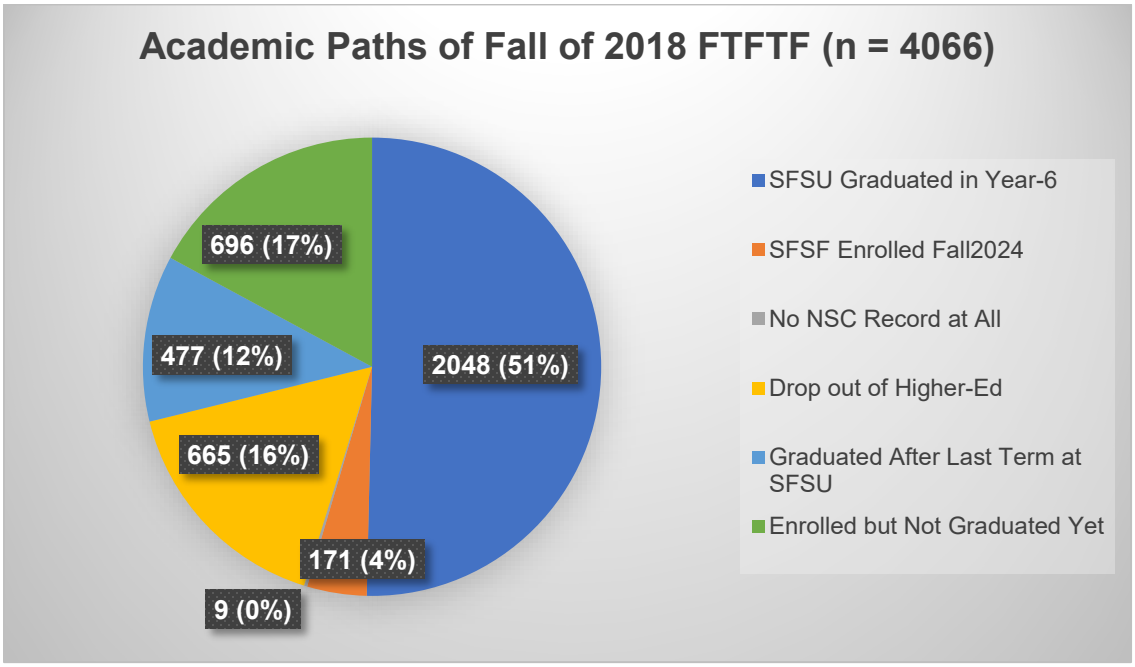
Nearly half of the leavers (23% of the FTFTF cohort) left by the end of Fall 2019. By the following semester, an additional 13% of leavers had exited, bringing the total to over 64% of all leavers by Spring 2020 (29% of the FTFTF cohort).

Tracking students who leave SFSU becomes increasingly challenging when it comes to monitoring their progress toward earning a degree. The National Student Clearinghouse (NSC) provides a valuable resource for this purpose, as it collects enrollment and graduation data from both 2-year and 4-year colleges. By examining NSC data, we can capture a snapshot of these leavers' statuses, including whether they remain in higher education and are pursuing a college degree.

However, it is important to acknowledge that NSC data does not provide a complete or entirely accurate picture. Some records may be missing, and the accuracy of reported enrollment statuses cannot always be fully verified. For example, NSC matches full names and student IDs when processing data requests. If a student changes their name, gaps may appear in the dataset. Additionally, some colleges do not participate in Census-based reporting, which affects the consistency and reliability of enrollment data. More specifically, analyses of enrollment records from Census-based reporting institutions are more reliable because invalid enrollments, such as

withdrawals, can be explicitly filtered out. In contrast, results may be inflated when institutions that do not participate in Census-based reporting are included, as their data may contain unfiltered invalid enrollments.

The following pie chart summarizes the academic paths of all students from the Fall 2018 FTFTF cohort since their entrance to SFSU.



Out of 2,018 students who had not graduated by the six years' time window, 171 enrolled at SFSU in the subsequent year, leaving 1,838 students classified as "leavers." These leavers can be categorized based on the analysis of NSC data as follows:

- 9 cases fall under "No NSC Record at All." This can occur if students changed their names or left SFSU before the university's Fall 2018 Census data was reported to the NSC.
- Among the 2,018 students who had not graduated within six years, a substantial portion (665 students, or about one-third) dropped out of higher education entirely. These students either showed no enrollment records beyond SFSU or only had records marked as withdrawals or leaves of absence. This suggests a key area for intervention—identifying at-risk students early and providing retention-focused support.
- A notable group of 696 students (approximately 34%) continued their education at other institutions without graduating yet, while 477 students (24%) completed their degrees elsewhere. This highlights that while SFSU lost these students, they remained engaged in higher education.

The complete set of enrollment records consists of Census-reported enrollments (i.e., only valid enrollment records) from 1,008 students and enrollments that may include invalid records from

350 students. The institution type is summarized in the following tables. It's important to note that the sum of students in each category (e.g., 173 + 376 + 1 for "Graduated") does not necessarily correspond to the number of students reported as graduated or enrolled after their last term at SFSU. This discrepancy arises because students may enroll in and graduate from multiple colleges.

Institution Type	Enrolled (Census)	Enrolled (Other)	Graduated
2-Year	644	301	173
4-Year	612	73	376
Less-Than-2-Year	4	*NA*	1
Private	191	8	85
Public	919	342	401

Top 20 Colleges Where Students Enrolled After Their Last Terms at SFSU

Rank	Institution Name	Count	2010 Cohort
1	CITY COLLEGE OF SAN FRANCISCO	114	Rank #1 (90)
2	SAN FRANCISCO STATE UNIVERSITY	112	See Note Below
3	SKYLINE COLLEGE	43	Rank # 2 (37)
4	CSU - LONG BEACH	41	Rank #3 (27)
5	CSU - FULLERTON	40	Not Listed
6	CSU - SAN JOSE	36	Rank #9 (17)
7	CSU - SACRAMENTO	35	Rank #5 (24)
7	CONTRA COSTA COLLEGE	35	Not Listed
7	DIABLO VALLEY COLLEGE	35	Rank #6 (19)
10	AMERICAN RIVER COLLEGE	32	Not Listed
11	UNIVERSITY OF SAN FRANCISCO	31	Not Listed
12	SANTA MONICA COLLEGE	30	Not Listed
13	CHABOT COLLEGE	25	Rank #9 (17)
14	EL CAMINO COLLEGE	24	Not Listed
15	ARIZONA STATE UNIVERSITY	22	Not Listed
15	DE ANZA COLLEGE	22	Rank #11 (15)
15	MERRITT COLLEGE	22	Not Listed
18	COLLEGE OF SAN MATEO	21	Rank #6 (19)
18	LONG BEACH CITY COLLEGE	21	Not Listed
18	PASADENA CITY COLLEGE	21	Not Listed
18	SACRAMENTO CITY COLLEGE	21	Rank #17 (16)

Note: The "Leaver" dataset includes cases where NSC data indicates that students were enrolled at SFSU after their last term, as recorded in the IR database. These cases arise because the IR

retention and degree data are structured to align with official reports submitted to the Chancellor's Office. As a result, students who re-enroll at SFSU according to NSC records may not appear in the IR data framework—for instance, those returning as non-matriculated students. Additionally, many cases involve students who enrolled in a single summer term immediately following their last recorded term but did not return afterward. To ensure consistency across internal reporting and external accountability, these cases were classified as "Leavers" in both descriptive and regression analyses.

Top 20 Colleges Where Students Graduated After Their Last Term at SFSU

Rank	Institution Name	Count	2010 Cohort
1	SAN FRANCISCO STATE UNIVERSITY	39	See Note Below
2	CSU - FULLERTON	30	Rank #7 (9)
3	CSU - LONG BEACH	27	Rank #1 (25)
4	SAN JOSE STATE UNIVERSITY	20	Rank #4 (17)
5	CSU - SACRAMENTO	19	Rank #3 (19)
5	UNIVERSITY OF SAN FRANCISCO	19	Rank #15 (6)
7	UNIVERSITY OF CALIFORNIA - BERKELEY	14	Not Listed
8	CALIFORNIA STATE UNIVERSITY- NORTHRIDGE	11	Rank #5 (12)
8	SAN DIEGO STATE UNIVERSITY	11	Rank #2 (23)
8	UNIVERSITY OF CALIFORNIA-SANTA BARBARA	11	Rank #15 (6)
11	CSU - FRESNO	10	Not Listed
11	CITY COLLEGE OF SAN FRANCISCO	10	Rank #12 (7)
13	CALIFORNIA STATE POLY TECHNIC - POMONA	9	Not Listed
13	UNIVERSITY OF CALIFORNIA-DAVIS	9	Not Listed
15	UNIVERSITY OF CALIFORNIA - IRVINE	8	Rank #15 (6)
15	UNIVERSITY OF CALIFORNIA-SANTA CRUZ	8	Not Listed
17	ARIZONA STATE UNIVERSITY	7	Rank #18 (5)
18	DIABLO VALLEY COLLEGE	6	Not Listed
18	LONG BEACH CITY COLLEGE	6	Not Listed
18	PASADENA CITY COLLEGE	6	Not Listed
18	SANTA MONICA COLLEGE	6	Not Listed
18	UNIVERSITY OF CALIFORNIA-SAN DIEGO	6	Rank #10 (8)

Note: The "Leaver" dataset includes cases where NSC data indicates that students graduated from SFSU after their last term, as determined by the IR database. These cases arise because IR retention and degree data are structured to align with official reports (following the corresponding census schedule) submitted to the Chancellor's Office. Consequently, students who are recorded as having graduated from SFSU in the NSC may not be included in the Year 6 graduation count in the IR data—this reflects cases of delayed graduation (e.g., summer). To maintain data integrity across both internal reporting and external accountability, these cases were classified as "Leavers" in descriptive and regression analyses.

Among students who enrolled after leaving SFSU, the majority attended public institutions, with nearly equal distributions between two-year and four-year colleges. The most common transfer destinations were local community colleges, particularly City College of San Francisco (114 enrollments), followed by several CSU campuses, including Long Beach, Fullerton, and San José State. This trend suggests that many students sought more affordable or flexible educational options after leaving SFSU, possibly to accommodate financial constraints or personal circumstances.

Overall, the number of students transferring to and graduating from selected destination institutions has increased compared to the 2010 cohort study. Many institutions saw a rise in SFSU leavers enrolling post-departure, including City College of San Francisco (114 vs. 90 in the previous cohort), Skyline College (43 vs. 37), CSU Long Beach (41 vs. 27), and CSU Fullerton (40, previously unlisted).

Notably, there has been a marked increase in students transferring to and graduating from Southern California institutions, many of which were not in the top 20 transfer destinations in the 2010 cohort analysis. This shift may be partly attributed to the impact of COVID-19, which led to campus closures, expanded online learning options, and increased remote flexibility. As a result, students may have found it easier to enroll in institutions outside the Bay Area without the need to relocate, making Southern California universities a more viable option than in previous years. Additionally, some students may have moved closer to family during the pandemic and chosen to continue their education at institutions near their new residences.

The present study also found a rise in students graduating from private universities and UC campuses, such as UC Berkeley, UC Santa Barbara, and UC Irvine. Future research could explore the factors contributing to this trend. One potential avenue is examining whether specific academic programs or institutional resources at UCs and private universities attract SFSU leavers at higher rates. Additionally, investigating the role of financial aid opportunities, scholarships, or transfer articulation agreements could help determine whether increased accessibility played a role in this shift. Another important question is whether the rise of online and hybrid learning post-COVID has made these institutions more viable transfer destinations, particularly for students who might not have considered them due to geographic limitations. Finally, future studies could assess whether students leaving SFSU increasingly see transferring as a strategic step toward earning a degree from a more prestigious institution, leveraging SFSU as a transitional phase in their academic careers. Understanding these factors would provide valuable insights into student decision-making and inform policies to better support transfer and degree completion pathways.

Appendix

Modeling Approach

Step 1: Train a Logistic Regression Model on 70% of the Data (Training Set)
Overfitting can mislead the model by capturing noise instead of meaningful patterns, leading to poor generalization. Step 1 helps prevent overfitting by implementing a Train-Test Split, where 70% of the data is used to train the model on all available factors.

Step 2: Evaluate Model Performance Using the Remaining 30% (Test Set)
Step 2 assesses how well the model generalizes to unseen data. We compute key model fit indices, such as accuracy, precision, recall, F1-score, and AUC, to provide a comprehensive evaluation of the model's predictive performance. A detailed discussion of these results is presented in the Appendix.

Step 3: Apply LASSO for Feature Selection
A model that is overly complex and includes many less relevant factors can mislead the analysis by capturing noise, reducing interpretability, and ultimately hindering accurate predictions. LASSO (Least Absolute Shrinkage and Selection Operator) helps mitigate this issue by serving as a regularization technique that enhances predictive accuracy, selectively eliminating less relevant factors while retaining only those that meaningfully contribute to graduation prediction.

LASSO works by shrinking coefficients toward zero, effectively removing variables that do not enhance predictive performance. It automatically forces some factor coefficients to zero, leaving only the most informative predictors for inclusion in the final model.

It is important to note that statistical significance and predictive importance are not always the same—a variable can be useful for prediction without being statistically significant in the traditional sense ($p < 0.05$). In this study, all 20 original variables were retained by LASSO, indicating that none were entirely irrelevant for predicting 6-year graduation.

Step 4: Refit the Final Logistic Regression Model for Interpretation
The final logistic regression model is refitted to assess statistical significance and compute odds ratios (ORs), which serve as effect size estimates. The ORs help determine which factors have the strongest association with 6-year graduation.

Although LASSO regression with penalization also produces coefficient estimates and odds ratios, we refit the model using traditional logistic regression to ensure that the reported estimates more accurately reflect the present dataset. This approach allows for a clearer interpretation of both predictive power and statistical significance.

Model Performance Metrics and Interpretation

1. Accuracy (0.774)

Accuracy measures the overall proportion of correctly classified instances—both positives (Graduated) and negatives (Not Graduated)—out of all cases. An accuracy of 77.4% indicates that the model correctly classifies approximately three-fourths of the observations.

While accuracy is a useful metric, it may not be a reliable indicator of performance if the dataset is imbalanced (i.e., when one class significantly outweighs the other), as is the case in the Leaver Study. Therefore, accuracy should be considered alongside sensitivity and specificity to assess how well the model distinguishes between the two groups.

2. AUC (0.835)

The Area Under the Curve (AUC) of 0.835 suggests that the model has an 83.5% chance of correctly distinguishing between Graduated (positive) and Not Graduated (negative) cases. AUC values between 0.8 and 0.9 are considered very good, indicating that the model has strong discriminatory power in classifying students based on graduation outcomes.

3. Specificity (0.843) vs. Sensitivity (0.700) in the Context of Allocating Resources to At-Risk Students

In this model, "Graduated" is defined as the positive class, and Not Graduated as the negative class. Since the goal is to allocate resources to at-risk students (i.e., those predicted as Not Graduated), specificity and sensitivity provide key insights into the model's effectiveness in targeting students for intervention.

- High Specificity (0.843) → Effectiveness in Identifying At-Risk Students

The relatively high specificity (True Negatives out of Actual Negatives) suggests that the model is effective at correctly identifying students who will not graduate, minimizing the risk of mistakenly classifying them as "Graduated" (false positives). This ensures that at-risk students are correctly identified and included in the intervention pool, helping to direct resources where they are needed.

- Lower Sensitivity (0.700) → Potential Resource Misallocation

The lower sensitivity (True Positives out of Actual Positives) indicates that some students who will actually graduate are incorrectly classified as at-risk (false negatives). This means that some students who do not need intervention may still be included in the at-risk group, potentially leading to resource misallocation.