RESEARCH BRIEF OCTOBER 2025

common app

First-generation status in context

Part four: Enrollment, persistence, and completion by first-generation status

First-generation status in context, part four: Enrollment, persistence, and completion by first-generation status

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Introduction

College aspirants rely on their family, friends and others to navigate the many choices on the path to earning a degree. Yet college aspirants whose parents did not earn a college degree must forge their own path through higher education. These “first-generation” college students often learn-by-doing as they decide on high school classes, standardized tests, college applications, financial aid packages, college majors, and how to spend their time and resources once enrolled.

The rewards of earning a degree can be enormous, from well-paying, rewarding work to sharing hard-won knowledge with younger family members. Yet the costs of trying and failing to earn a college degree can be equally severe, with long-term financial consequences. Identifying and removing persistent barriers to degree completion faced by first-generation college students is critical for socioeconomic mobility more broadly.

Despite the growing presence of first-generation applicants, both on the Common App platform and in college classrooms across the U.S., up-to-date data on first-generation college success and outcomes is only intermittently available. This research brief seeks to provide a timely pulse-check on first-generation college outcomes among first-year applicants, and illuminate where our higher education system can evolve to better support these students.[1]

In prior briefs in our "First-generation status in context" series, we've shown how the number of college applicants considered first-generation has changed both over time and by first-generation definition used (part 1), characterized the resources and college application experiences of first-generation applicants across definitions (part 2), and further investigated differences within first-generation status by considering multiple parents' education levels rather than only using the highest educated parent (part 3).

In this fourth research brief, we now extend our analysis beyond college application using data from the National Student Clearinghouse **to examine how first-generation students enroll, persist, and earn degrees in higher education**.[2] We consider how first-generation students fare at each step on the path to a college degree following application, focusing for now on just one definition of first-generation status as a case study: applicants whose parent(s) had not earned a Bachelor's degree or higher.

Using this definition, do we see first-generation applicants enroll at rates similar to their peers? Once enrolled, do they earn degrees at similar rates? For those who don't earn a degree, do they tend to drop-out in the early stages of their college journey, or after several years of sustained effort? Are these outcomes different for first-generation applicants with strong pre-college academic records, or for first-generation applicants who are also low-income?

These key indicators of postsecondary enrollment, persistence, and completion, disaggregated by first-generation status and low-income status, speak directly to essential questions in the Education-to-Workforce Indicator Framework regarding students' successful transitions to, and completion of, valuable credentials after high school. In answering these questions, we hope to provide the field with insights about the needs and pivotal support opportunities for first-generation students through the college experience.

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[1] While first-generation applicants are also an important part of the transfer student population, this brief focuses on first-time, first-year Common App applicants during this time period.

[2] This report is based on research funded by the Gates Foundation. The findings and conclusions contained within are those of the authors and do not necessarily reflect positions or policies of the Gates Foundation.

Contents

Key findings

1. **About 90% of Common App applicants enrolled in college** within six years, and this holds true for both continuing- and first-generation students.
    a. Still, first-generation applicants are slightly more likely to have **delayed first enrollments** and/or **enroll in 2-year programs**.
    b. **Academic preparation may explain some of these different enrollment patterns**, which mostly vanish for first-generation applicants with strong pre-college academic records.
    c. First-generation applicants who are also low-income have greater rates of delayed and/or 2-year institution enrollment.
2. **First-generation students have lower completion rates than their continuing-generation peers**: Four years after starting at a 4-year institution, **about half of first-generation students** had earned a Bachelor's degree, compared to **68% of continuing-generation students** – an 18 percentage point gap.
    a. **First-generation student graduation rates do not "catch up" to continuing-generation rates when instead looking out to six years after enrolling.** While six-year completion rates increase for all students, up to 69% for first-generation and 86% for continuing-generation students, the gap remains at 17 percentage points.
    b. Put a different way, **rates of enrolling and not earning a Bachelor's degree are twice as high for first-generation applicants** in comparison to their continuing-generation peers – and disparities persist even when focusing more specifically on students with higher academic preparation and higher income.
        i. Focusing on only applicants with **strong pre-college academic records**, we find that the size of graduation gaps decreases (8-9 percentage points compared to 17-18 percentage points for all applicants). Still, the persistent gap suggests that first-generation students face barriers beyond high school academic preparation.
        ii. Similarly, **gaps persist for first-generation applicants who are NOT low-income**, 76% of whom earn bachelor's degrees

within six years, compared to 88% of continuing-generation peers, a 12 percentage point gap.

c. Differences in graduation rates for first-generation and continuing-generation students **cannot be explained away by differences in the four-year institutions at which they enroll**.

   i. Even when comparing graduation rates for first-generation and continuing-generation students **starting at the exact same institutions, first-generation students were 10 percentage points less likely to earn a Bachelor's degree** within six years.

   ii. **Graduation gaps are smallest at institutions with higher instructional expenditures per student** (10 percentage points) and largest at institutions with lower instructional expenditures per student (17 percentage points), suggesting a **strong relationship between first-generation student success and higher levels of student instructional support**.

3. **Ultimately, almost a third of first-generation students who do not earn a degree were enrolled across four or more separate academic years**, indicating heavy financial and time investment towards a degree they would not complete. This insight makes clear that a substantial portion of the first- and continuing-generation graduation gap accrues even among students well into their college experience.

Data and definitions

Applicant sample restrictions, defining first-generation, "top-quartile" and "low-income" applicants

Before we dive into results, it is crucial to discuss the nuances of our study sample and the important terms and demographics we analyze here. This analysis covers over **785,300** domestic Common App applicants in the 2016-2017 application season. More specifically, this analysis includes any domestic applicant (U.S. citizens or permanent residents, whether applying from the U.S. or abroad) who indicated they planned to enroll in college in the 2017-2018 academic year, provided information on their first-generation status, and submitted at least one application using the Common App.[3]

Given the many relatively novel outcomes examined in this research brief, we focus on just one definition of first-generation status: an applicant whose parent(s) do not have a bachelor's degree or higher. Future research briefs in this series may extend the analyses shown here for additional first-generation and parental education groupings, following our prior work.

Throughout this brief, we provide results for a subset of our applicant population: those who demonstrate high levels of pre-college academic achievement on their application, referred to in shorthand as "top quartile" applicants. We include an applicant in the "top quartile" subset if they meet at least one of two criteria: reporting SAT/ACT test scores in the top quartile of all test-takers for the 2016-2017 test cycle (based on national percentile cut points), and/or GPAs in the top quartile of all GPAs submitted on the Common App in the 2016-2017 application season.[4]

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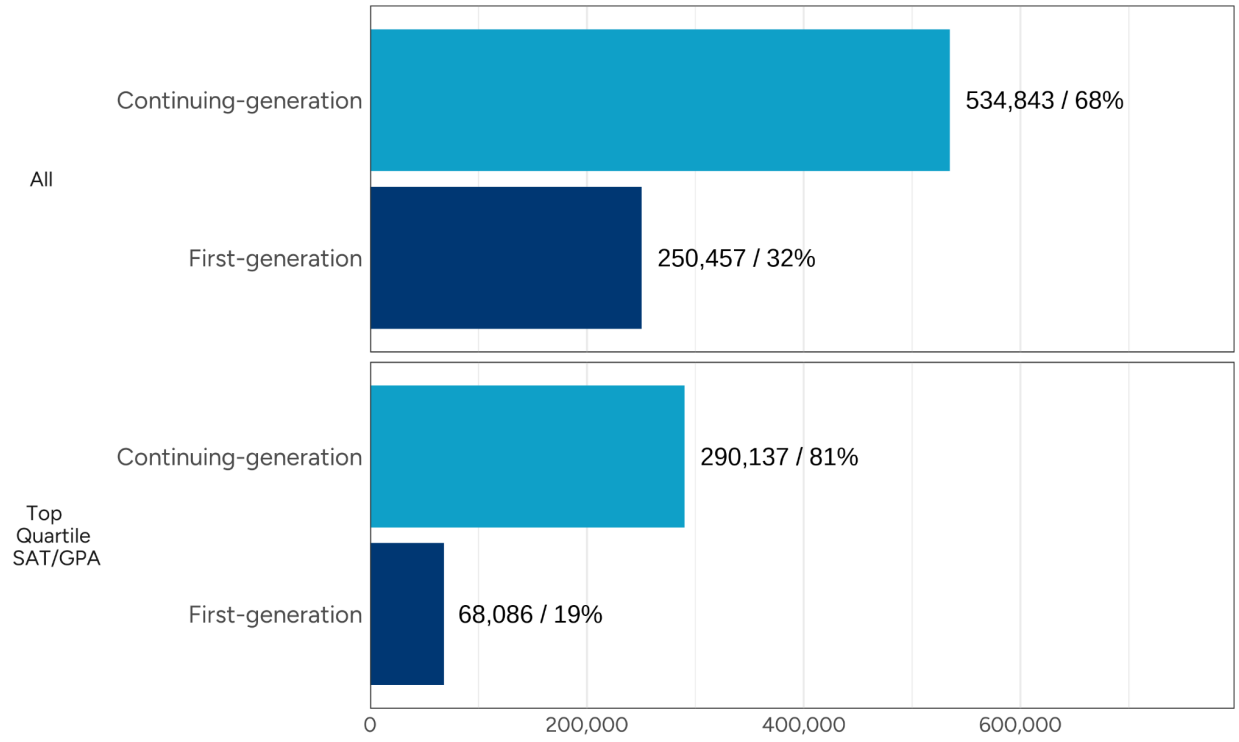
[3] During the 2016-2017 application season, Common App had just over 700 active member institutions, in comparison with over 1,100 in the 2024-2025 season. Common App's member institutions and applicant pool have continued to diversify, with better coverage of public institutions and growth in Minority Serving Institutions (MSIs). For more on Common App's member institutions over time, see our research brief Growth and change: long-term trends in Common App membership. Note also that our applicants imperfectly represent the broader college-going or college-applying population (see, for example, Odle & Magouirk, 2023).

[4] GPA top quartile thresholds differentiate between weighted and unweighted GPAs across distinct scales. Alternative specifications using either SAT or ACT "college-ready" benchmark scores reveal similar results. For more on these alternative benchmarks see Benchmarks – SAT Suite | College Board or ACT Scores for Higher Education Professionals

We caution that GPA and test scores are only two of many ways applicants demonstrate their accomplishments and potential. We provide “top quartile” outcomes to test whether first-generation outcome disparities persist even among students who have demonstrated strong academic records, while acknowledging this category does not fully capture “college readiness”.

Figure 1 shows the count and percentage of our applicant sample who are first-generation and continuing-generation, within our all applicant sample (top two bars) and top quartile sample (bottom two bars). Note that more than a quarter of applicants meet the “top quartile” threshold, reflecting that Common App applicants in this cycle do not represent the full population of college aspirants. We can also see that first-generation applicants are underrepresented among top quartile applicants (32% of the whole sample, yet only 19% of the top quartile group), reflecting prior research on socioeconomic disparities in students’ academic experiences throughout K-12 enrollment.

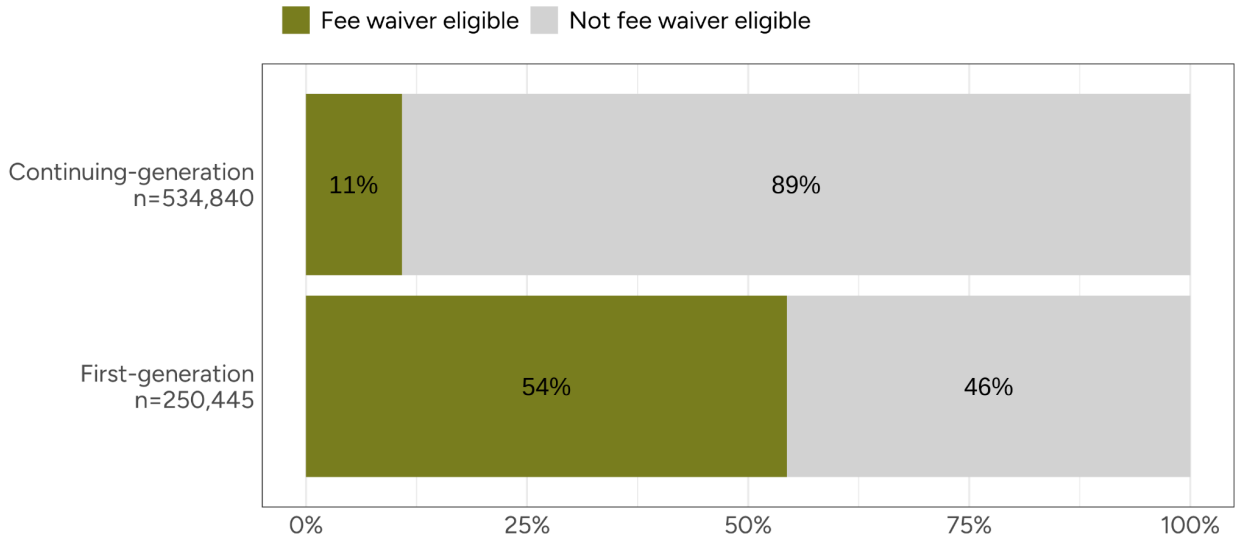
Figure 1. First-generation status counts and proportion
Among all domestic applicants planning to enroll in AY 2017-18, and top-quartile applicants



Finally, we show results exploring outcomes for applicants by their economic background, using self-reported Common App fee waiver eligibility as a rough proxy for low-income status.[5] While first-generation applicants are about five times as likely to be low-income when compared to their continuing-generation peers (11% versus 54%), there remains a wide range of economic experiences within categories: not all first-generation applicants are low-income and not all continuing-generation applicants are high-income.[6] In this cohort of Common App applicants, slightly over half of first-generation applicants were eligible for a fee waiver, compared to just 11% of continuing-generation applicants.

[5] More information on exact eligibility criteria descriptions are available online.
[6] For a deeper look into first-generation status and family income, see Common App's second brief in this series, First-generation status in context, part two, as well as research from Firstgen Forward.

Figure 2. Share of applicants reporting eligibility for Common App fee waiver, by first-generation status
Among all domestic applicants planning to enroll in AY 2017-18 [7]



Enrollments and degrees considered in this analysis

We use data from the National Student Clearinghouse (NSC) StudentTracker service to follow Common App applicants over the following six years through enrollment, persistence, and degree completion. NSC's data allows us to observe applicant trajectories through most U.S. institutions, including those that do not use Common App for applications.

NSC's record-level data provides information on over 98% of U.S. higher education enrollments during this time period. In addition to the small number of institutions outside NSC's coverage (e.g., institutions outside the U.S.), this research brief does not capture enrollment and degree outcomes for students who have blocked their records under the Family Educational Rights and Privacy Act (FERPA). As a result, **our estimates of enrollment and degree rates may be slightly lower than actual enrollment and degree rates** for the applicants in this study.[8]

[7] Note that the slightly lower applicant count reflects a few applicants for whom fee waiver eligibility information is not available
[8] About 4% of student records are blocked nationally. For more information on coverage and blocks by state and demographic groups, see this report from the National Student Clearinghouse.

Enrollment by first-generation status

We begin our analysis by showing how applicants enroll in higher education after applying via Common App. Figure 3 compares enrollment patterns between first and continuing-generation applicants during two time intervals: at any time between Fall 2017 through Spring 2023 (the last enrollment data we observe in our data), and in Fall 2017 specifically.[9]

Looking first at enrollments between Fall 2017 and Spring 2023, only a small percentage of applicants (8%) never enrolled in an NSC institution over the next six years, regardless of first-generation status, as shown in the first column of Figure 2. This finding is quite striking - over 90% of Common App college applicants became college students within six years.[10]

Differences emerge, however, when we consider the *level* and *timing* of these enrollments. All applicants in our sample indicated they intended to enroll in a 4-year institution in Fall 2017.[11] Therefore, while enrolling in a two-year college or any time following Fall 2017 is still a positive outcome, it does represent a divergence from the applicant's initial plan. Ninety percent of continuing-generation applicants enroll in a 4-year institution at any point, compared to 83% of first-generation applicants. Almost 10% of first-generation applicants enroll at a 2-year institution but no 4-year institutions during the time period observed.

Focusing on enrollments in Fall 2017, we see that first-generation applicants are more likely to not be enrolled (17%) or be enrolled in a 2-year institution (12%), compared to continuing-generation applicants (14% not enrolled, 4% enrolled in 2-year).

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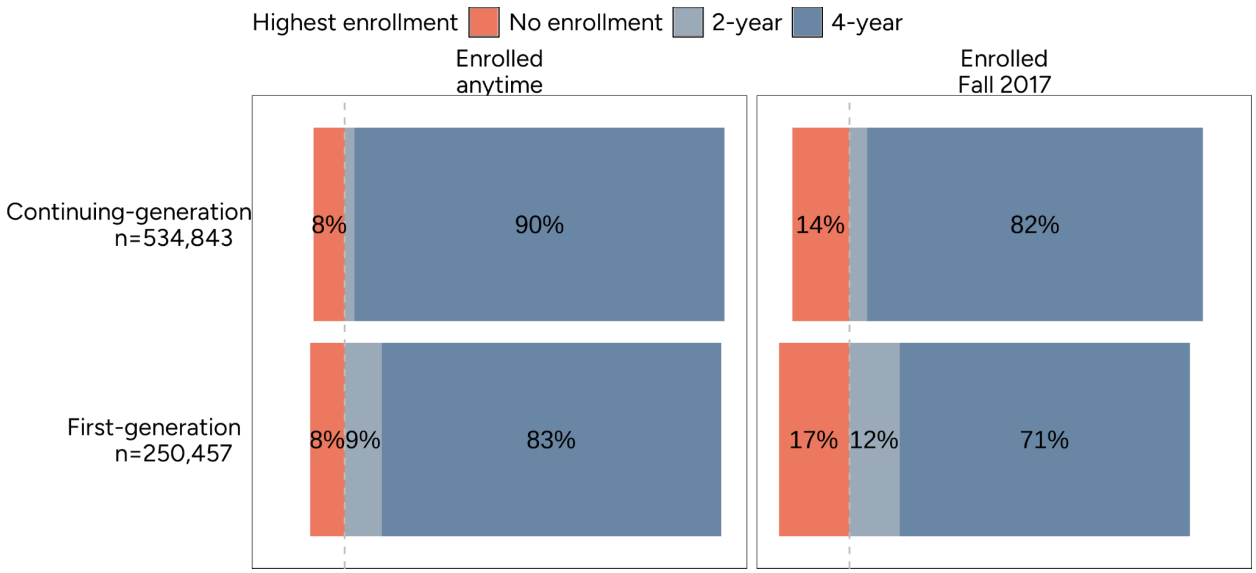
[9] Each applicant is counted once per bar, so applicants who enrolled in a 4-year institution are counted within the 4-year category, even if they also enrolled in a 2-year institution during the same time period.

[10] Comparison to prior work is challenging given most analyses calculate enrollment for all high school students rather than college applicants, but prior nationally representative work on 2002 high school sophomores found lower rates of enrollment (as would be expected given the denominator includes non-high school graduates and non-applicants), and larger disparities between first and continuing-generation applicants than we find here (Cataldi et al 2018).

[11] We follow 2018 Carnegie Classifications to define enrollments at "4-year" or "2-year" institutions, incorporating information from IPEDS for certain institutions lacking Carnegie Classifications, aligning with NSC's institutional sector classification methodology. As mentioned previously, some applicants without enrollment records may in reality be enrolled outside NSC's record coverage or have their records blocked.

Figure 3. Enrollment outcomes by first-generation status

Among 785,300 domestic applicants planning to enroll in AY 2017-18

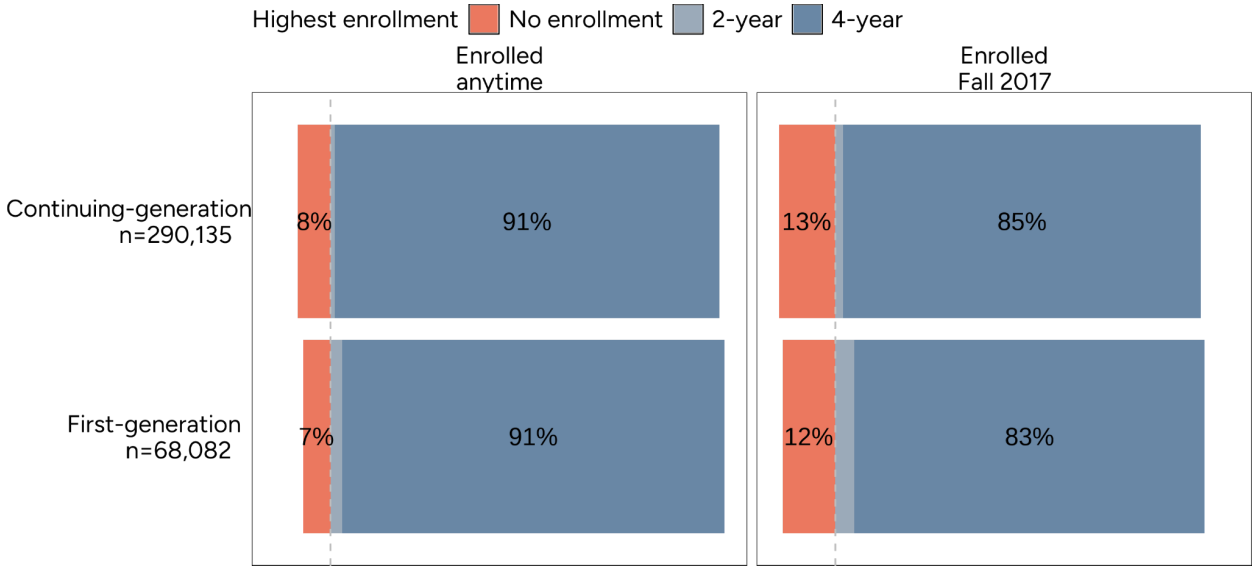


Why are first-generation applicants slightly more likely to enroll at 2-year institutions, especially during the first term after application, and, more likely to have delayed first enrollments in comparison to their continuing-generation peers? One possibility is academic preparation: a higher proportion of first-generation applicants may need additional coursework, including at 2-year institutions, prior to 4-year enrollment.[12] When we examine outcomes within our top quartile applicants, shown in Figure 4, the differences between first and continuing-generation applicants mostly disappear, suggesting that pre-college academics are an important factor in the enrollment level/timing differences we observe in Figure 3.

[12] Prior work has found that first-generation applicants have lower rates of taking advanced courses in high school in comparison to their continuing-generation peers (Cataldi et al., 2018)

Figure 4. Enrollment outcomes for top quartile applicants by first-generation status

Among 358,217 "top quartile" domestic applicants planning to enroll in AY 2017-18



Another possible explanation may be financial: anticipating financial aid can be difficult, especially for the subset of first-generation students whose parents never enrolled in higher education.[13] Some applicants may decide to work and save up for college expenses prior to enrolling, and/or may opt for 2-year pathways due to comparatively lower tuition on average. Figure 5 shows applicants' Fall 2017 enrollment status by joint fee waiver eligibility and first-generation status.[14]

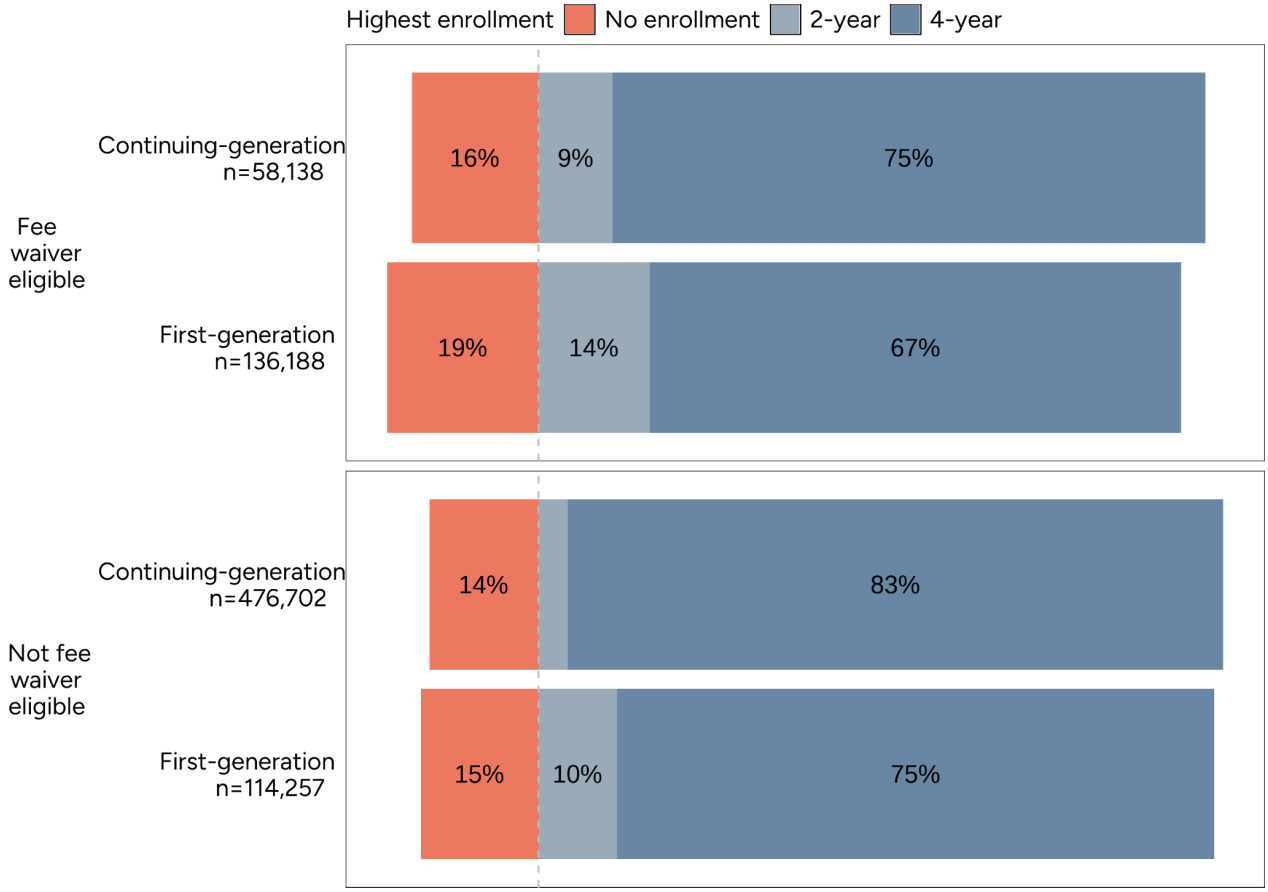
We find that being both first-generation and fee waiver eligible (second bar) is associated with higher rates of not enrolling immediately and first enrolling in 2-year institutions. Additionally, first-generation students **not** eligible for a fee waiver still have lower enrollment rates at 4-year institutions than their continuing-generation peers, 75% compared to 83%. However, higher rates of first enrolling in 2-year institutions explain most of this gap. These findings together suggest that financial constraints may exacerbate challenges first-generation applicants encounter more generally, and that first-generation students seem to have considerations beyond just the financial that affect their enrollment decisions.

[13] See for example Goldrick-Rab, 2016, Taylor & Bicak, 2020

[14] Highest enrollment outcomes over six years by joint first-generation and fee waiver status, as well as within top quartile applicants, are available in Appendix

Figure 5. Enrollment outcomes in Fall 2017 by fee waiver and first-generation status

Among 785,300 domestic applicants planning to enroll in AY 2017-18



Year-by-year persistence and graduation rates

Having explored enrollment patterns, we now consider applicants' trajectories once enrolled, documenting rates of enrollment, graduation, and non-enrollment by academic year.

In this section, we restrict our analysis to those applicants enrolled in a 4-year institution in Fall 2017, tracking their enrollments at 4-year institutions and Bachelor's degree attainment.[15] For each academic year following enrollment, we

[15] For these analyses, we do not show enrollments at 2-year institutions nor Associate's degree attainment. During this time period, Common App's institutional members were exclusively 4-year institutions, meaning the applicants shown in this analysis, (who used Common App to apply to 4-year institutions), are likely not representative of 2-year / Associate's degree pathways more generally.

track each student's highest status by academic year.[16] If the applicant is enrolled at a 4-year institution at any time during the academic year, even if they stop out partway through the academic year, they are counted within the "Enrolled in 4-year" category. If a student earns a degree during an academic year, they are counted as "Earned a Bachelor's degree" even though they were likely also enrolled during the same time period. Once an applicant earns a Bachelor's degree, they are counted in this category for all subsequent years.

First, we examine rates of persistence over years 1, 2, and 3 (pre-graduation years for those graduating on-time in 4-year institutions). **First-generation students are more than twice as likely to not be enrolled at any point in year 2 compared to continuing-generation students (13% versus 5%) and almost three times as likely to not be enrolled in year 3 (19% versus 8%)**.

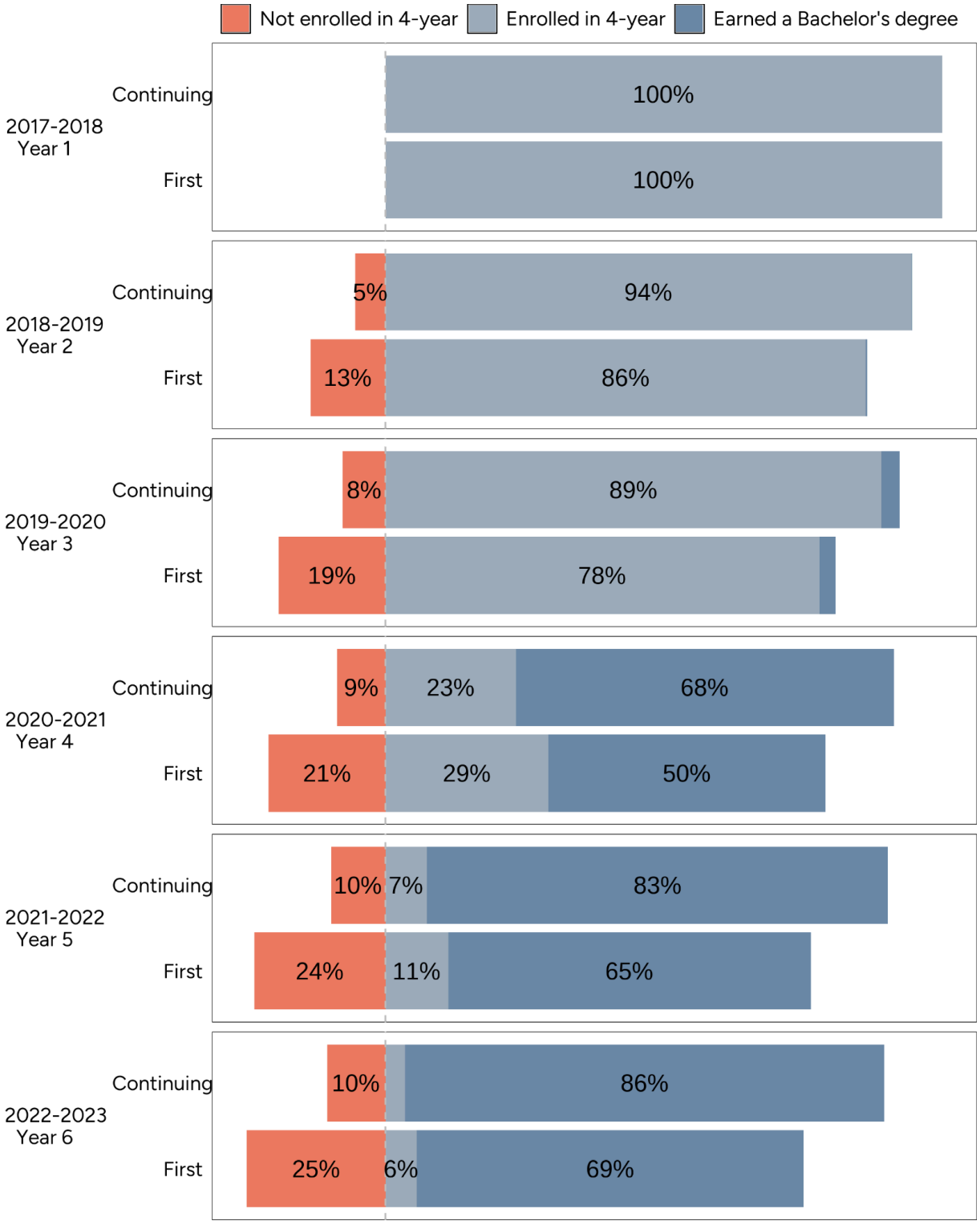
Next, we turn to years 4, 5, and 6, and focus on the percent of students who earn Bachelor's degrees. **By the end of year 4, about half of first-generation applicants had earned a Bachelor's degree, compared to 68% of continuing-generation students, an 18 percentage point gap**. By the end of year 6, graduation rates had increased for all students, up to 69% for first-generation students (catching up to the continuing-generation year 4 graduation rate), and 86% of continuing-generation students, leaving the graduation gap largely unchanged at 17 percentage points. Allowing for longer timelines to graduation does not reduce the graduation gap between first and continuing-generation students.

Finally, we consider the outcomes of students who did not earn degrees during years 4, 5, and 6. In year 3, 19% of first-generation students were not enrolled at any time. That proportion continues to grow over years 4, 5, and 6, although at a slower pace than years 2 and 3, up to 25%. These late stop outs have invested significant time and resources without earning a degree. Indeed, **among all first-generation students who had not earned a Bachelor's degree six years after enrolling, 34% were enrolled in a 4-year institution across four or more distinct academic years** (analysis not shown).

[16] We define "academic year" as spanning August 1st through July 31st. Alternate timings do not change results.

Figure 6. Outcomes by academic year, all applicants

Among 614,156 domestic applicants enrolled in a 4-year institution in Fall 2017

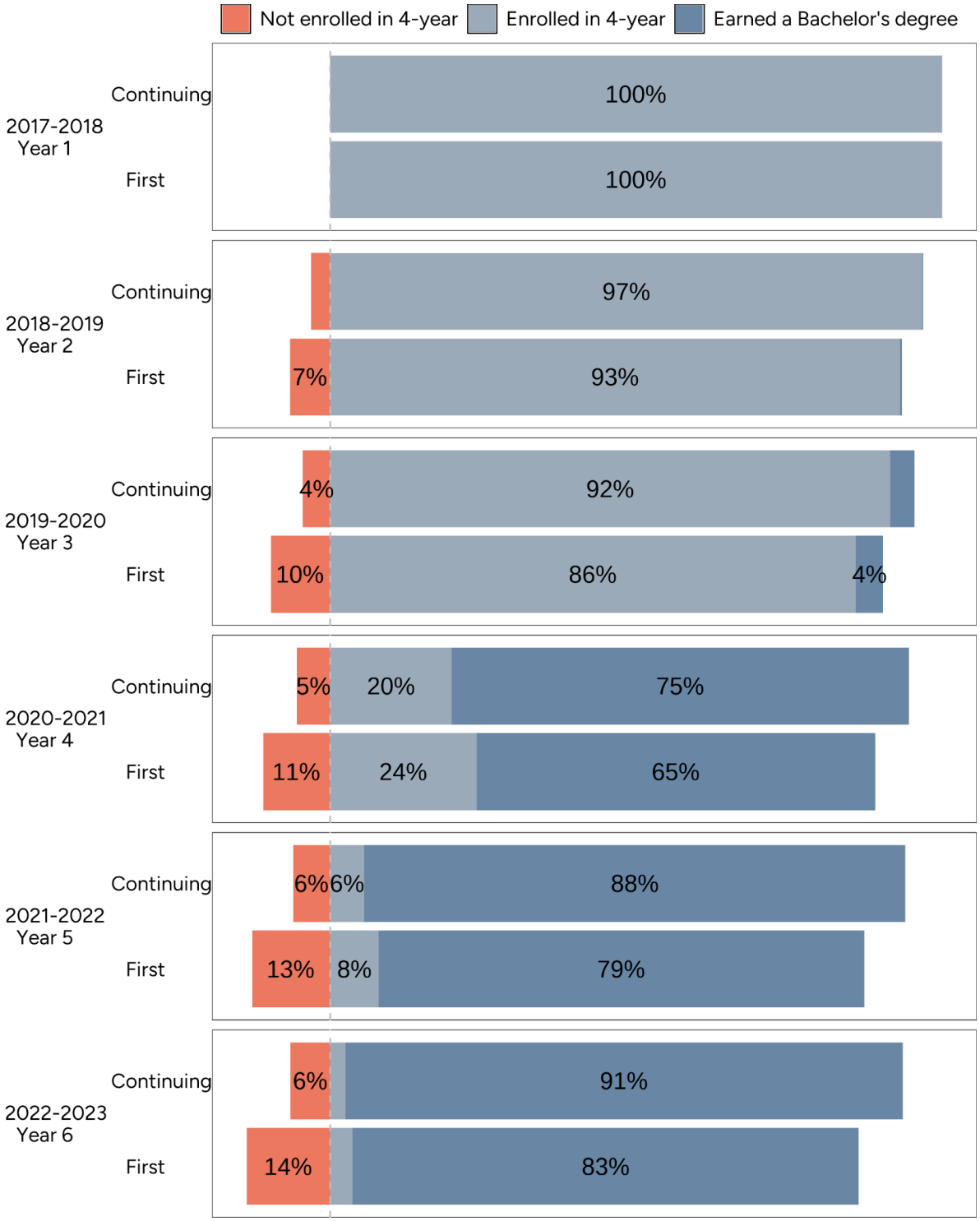


Year-by-year persistence and graduation rates by additional student characteristics

Do differences in pre-college academic preparation explain the divergent degree outcomes we see in Figure 6, or do first-generation applicants with strong pre-college records also face greater obstacles once enrolled compared to their continuing-generation peers? Figure 7 restricts the analysis to top quartile applicants. Gaps between top-quartile first-generation and continuing-generation applicants are much smaller, but still remain even among these high-achieving students. Four years after enrolling, 65% of first-generation applicants had graduated, compared to 75% of continuing-generation applicants. Graduation rates increase in the final two years, but again the gap only shrinks slightly, down to eight percentage points.

First-generation top quartile applicants are about two times more likely to be not enrolled than their continuing-generation counterparts in any given academic year. By the end of the sixth year, 6% of continuing-generation applicants were not enrolled with no degree, versus 14% of first-generation applicants. Again, many students without a degree invested significant time, **with 42% of top quartile first-generation students who did not earn a Bachelor's degree having enrolled in four or more academic years** (analysis not shown). While higher academic achievement prior to enrolling is associated with more positive outcomes for first-generation students, these high-achievers still do not catch up with continuing-generation peers, suggesting barriers beyond high school preparation remain.

Figure 7. Outcomes by academic year, top quartile applicants
Among 302,672 **top quartile** domestic applicants enrolled in a 4-year institution in Fall 2017

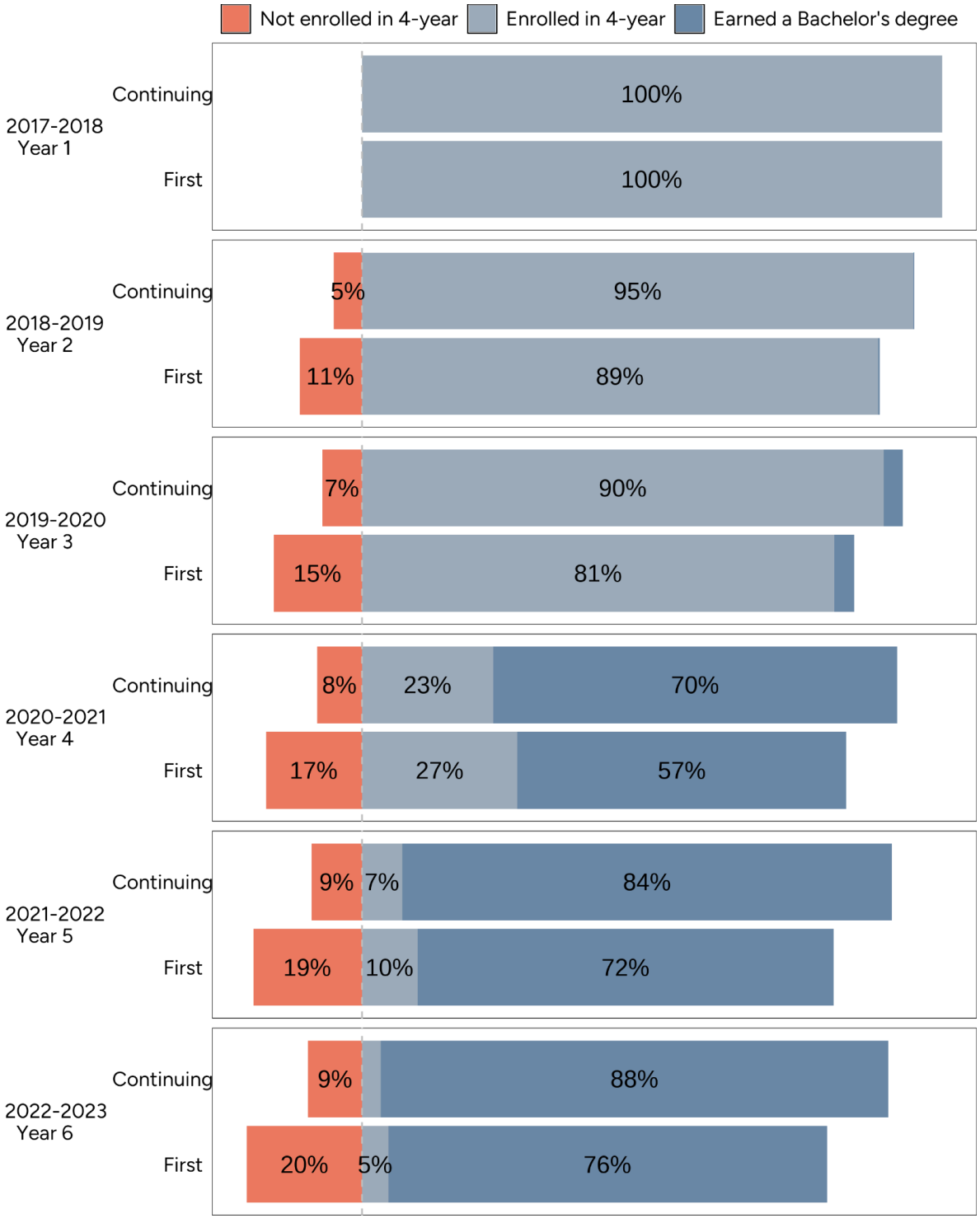


Looking at these trends, could it be the case that the disparities in degree completion for first-generation applicants are driven primarily by financial constraints? Substantial prior research, including our own, has also shown strong overlap between first-generation status and low-income status. Students with limited budgets may struggle to find both financial resources and time to keep up their academic progress, work part or even full-time, commute, buy course materials, pay rent, and other necessities. If we see that disparities disappear for first-generation students who are above the rough income threshold proxied by fee waiver eligibility, it would suggest that their persistence is mostly constrained by lower financial resources. To explore this possibility, we restrict our analysis to only applicants who are **not** fee waiver eligible, in Figure 8.[17] Ostensibly, any descriptive difference remaining between first- and continuing-generation students is likely to be driven by barriers more specific to first-generation status itself, rather than financial concerns.

Once again, while the gaps between first and continuing-generation applicants shrink somewhat in comparison to Figure 6, where we do not take income into account, they still remain. First-generation students are twice as likely to not be enrolled in each academic year, and to not have earned a bachelor's degree within six years (24% compared to 12% of continuing-generation). Alongside financial constraints, this evidence suggests there are likely additional challenges first-generation students face absent from the experience of their continuing-generation peers.

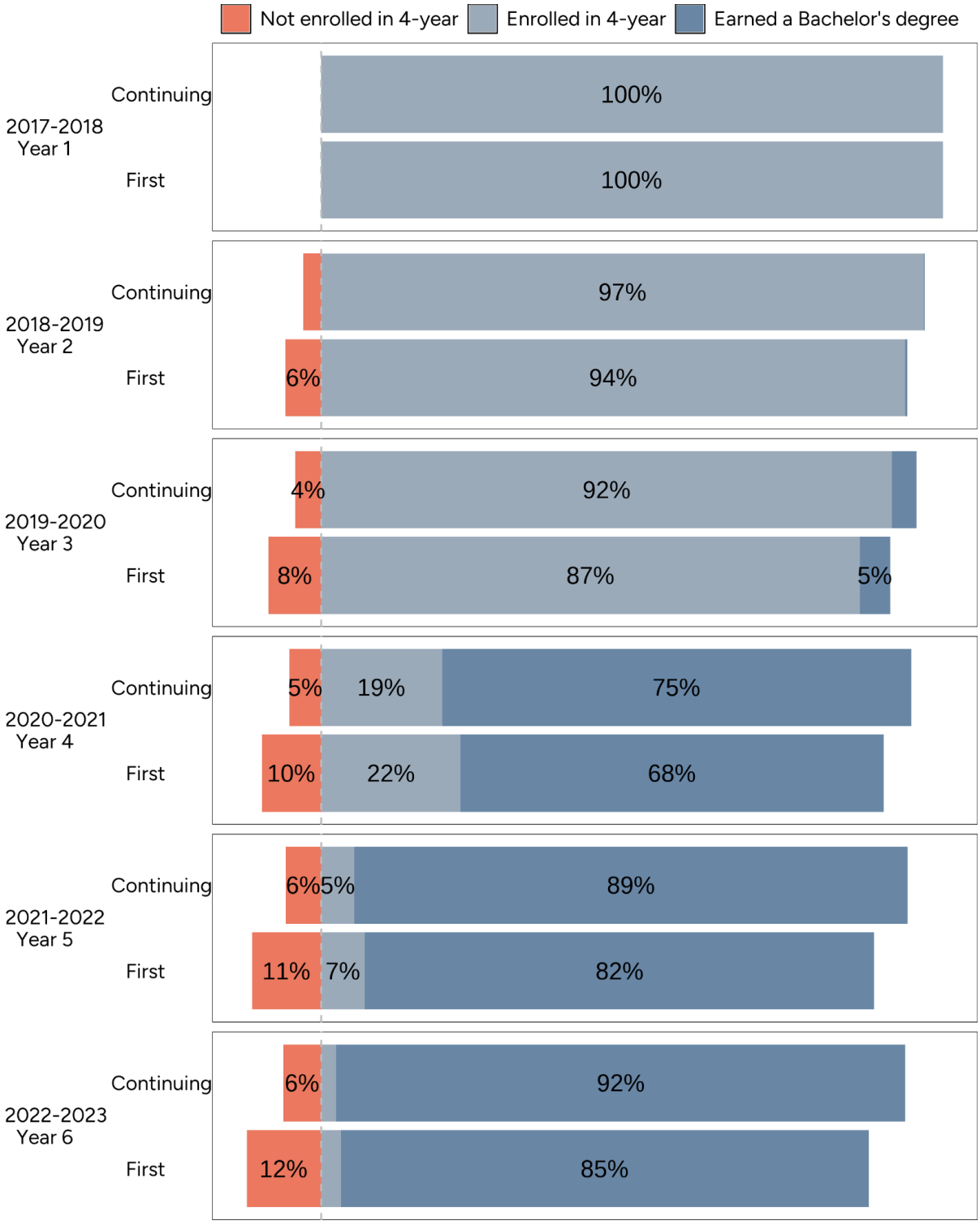
[17] Parallel outcomes for fee waiver eligible applicants are available in the Appendix.

Figure 8. Outcomes by academic year, applicants not eligible for fee waiver
Among 479,668 domestic applicants **not eligible for a fee waiver** enrolled in a 4-year institution in Fall 2017



In Figure 9, we combine the concepts of Figures 7 and 8 to explore outcomes for the subset of first-generation applicants who enter college both well-prepared academically and not eligible for a fee waiver. Again, while rates of completion increase, there remain gaps between first and continuing-generation applicants at each stage, with 85% of first-generation applicants earning Bachelor's degrees within six years compared to 92% of continuing-generation, top quartile applicants.

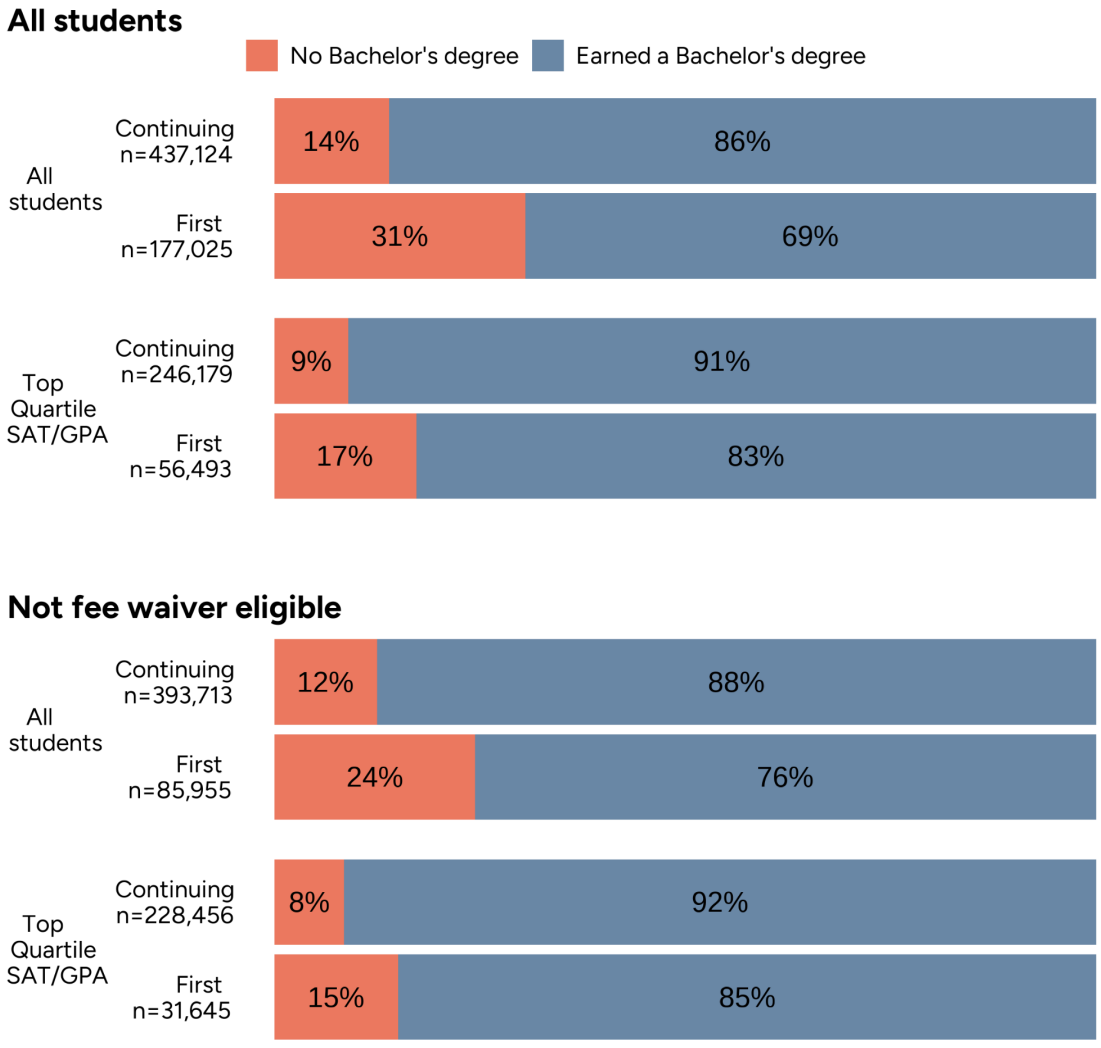
Figure 9. Outcomes by academic year, top quartile, not fee waiver eligible applicants
Among 260,101 **top quartile** domestic applicants **not eligible for a fee waiver** enrolled in a 4-year institution in Fall 2017



In summary, we find that even among relatively better prepared applicants, academically and financially, first-generation status remains associated with higher rates of not earning a Bachelor's degree within six years of enrolling.

Figure 10 shows a summary of outcomes six years after enrolling, displayed in Figures 6-9, combining the count of applicants still enrolled and not enrolled without a degree into one "no degree" category. Across characteristics, first-generation students' rates of not earning a degree are twice as high as their continuing-generation counterparts, whether considering all students (31% versus 14%), or only those who are fee waiver ineligible and top quartile (15% versus 8%).

Figure 10. Six-year non-completion rates by first-generation status
Among 614,156 domestic applicants enrolled in a 4-year institution in Fall 2017



It is worth noting that the COVID-19 pandemic started in March 2020, year 3 for this cohort. Many campuses closed to in-person instruction and support, shaping the year 4 and onward trajectories of this cohort, first and continuing-generation alike. Other research has found that COVID-19 more severely impacted students from less privileged backgrounds, including first-generation students, many of whom gained family care-taking responsibilities, lost income from campus jobs and/or struggled to find time and space for remote work.[18] While our findings cannot clearly delineate the impact of COVID-19, the greater enrollment loss of first-generation students in years 4, 5, and 6 remains important to address regardless.

Graduation rates by first-generation status and starting institution

As we demonstrate above, student finances and academic preparation – alone or combined – cannot explain the entirety of difficulties that first-generation students face throughout enrollment on their way to completion. That being said, how might the institutions that first-generation students enroll in factor into this story? Could at least some of the difference in first-generation and continuing-generation student outcomes be attributed to the possibility that these students are enrolling at fundamentally different institutions, with likewise different average student outcomes? Put another way: would first-generation and continuing-generation students have more equivalent outcomes if they were attending institutions with equivalent supports and resources? Our data do not allow us to pinpoint an exact cause of the disparities between first-generation and continuing-generation students' completion rates. Nevertheless, we can explore associations between college characteristics and first-generation completion rates, with the caveat that these are observational, not directly causal, patterns.

To examine these questions, we explore whether first-generation and continuing-generation graduation gaps still exist among students enrolling in institutions with the highest levels of student instructional supports. The intuition here is essentially: if first-generation students are generally enrolling in institutions with lower levels of supports, while continuing-generation students are generally enrolling in institutions with higher levels of supports, the graduation gaps we observe above across the whole population could just be a result of this difference, rather than key differences about first-generation students, themselves. By comparing first-generation and continuing-generation students at institutions with the same levels of support, we can see if gaps persist even then.

[18] See for example, Jack (2024) and Davis et al. (2022)

We focus on this concept specifically because instructional expenditure has been linked to higher graduation rates for students from underrepresented groups.[19] Higher instructional expenditure may allow an institution to have smaller classes, hire and support full-time instructors, and engage in more interactive teaching styles – all of which may support the success of first-generation students, specifically. That being said, we caution that expenditure does not directly measure learning and teaching quality, and many institutions face budget constraints beyond their control. Institutions with higher expenditures should also not be interpreted as a stand-in for an institution's quality, as many complex factors contribute to a college's mission, impact, and fit for students.

Beginning this analysis, we first characterize the colleges where applicants enrolled by grouping institutions according to their average level of instructional expenditures per student as provided by the Integrated Postsecondary Education Data System (IPEDS), a database managed by the U.S. Department of Education's National Center for Education Statistics (NCES).[20, 21] In Figure 11, we show how these varying levels of instructional expenditures per student (along the x-axis) relate to the average percent of students starting at these institutions who had earned a Bachelor's degree within the following six years (along the y-axis). Point sizes are scaled to the proportion of first or continuing-generation students who are enrolled in institutions in each instructional expenditure category.

At the top right, we see that the six-year graduation rates for institutions in the highest expenditure category (institutions with greater than $20,000 of

[19] See Leasor & Stange (2025) for a compelling overview of higher education expenditures and student outcomes which incorporates findings from Deming & Walters (2017), Webber & Ehrenberg (2010), Webber (2012), and others

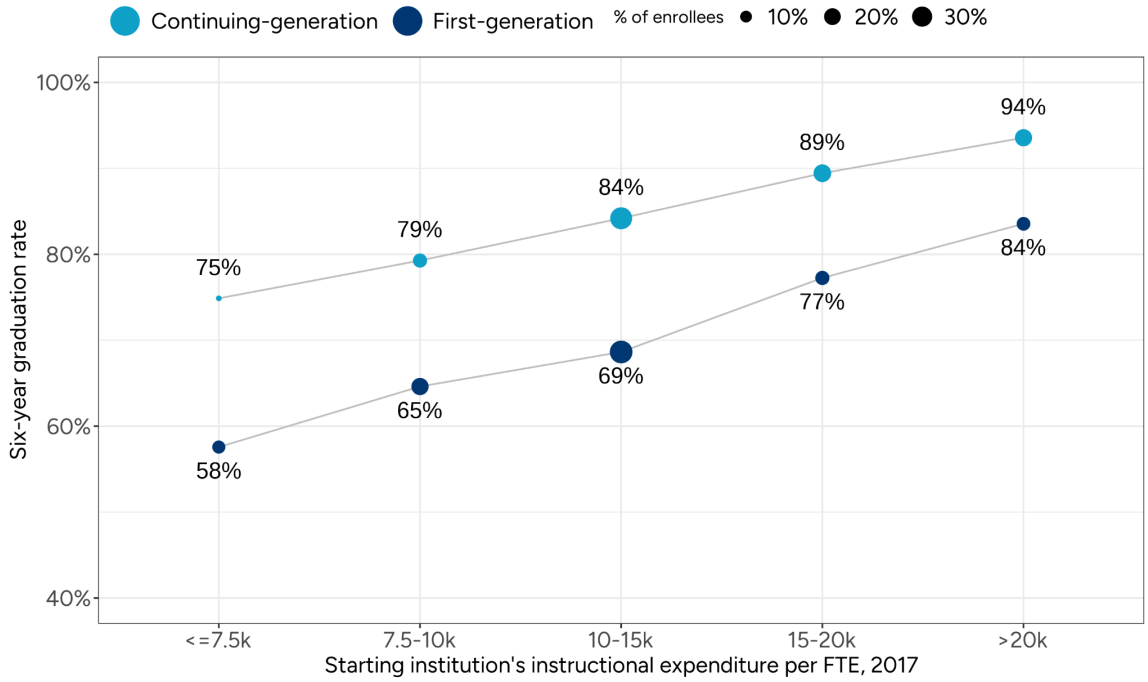
[20] More specifically, we use the "Instruction expenditures per Full-Time Equivalent (FTE)" variable. The Cost of Education report from NCES provides this definition of instruction: "'Instruction' includes expenses related to colleges, schools, departments, and other instructional divisions of the institution and expenses for departmental research and public service that are not separately budgeted. It also includes expenses for both credit and noncredit activities and excludes expenses for academic administration where the primary function is administration". We use this variable from the 2017-2018 collection year. It also notes that Public and Private institutions have different accounting standards. Note also that "FTE" and instructional expenditure includes graduate students, although our analysis only includes outcomes for undergraduate students. Cost of Education 2023: Postsecondary Institution Expenses provides additional information. Instruction expenses are listed in 2017-2018 dollars.

[21] While graduation rates are often used as a college quality metric, research has found that this measure largely reflects *who* attends a college rather than *what* a college does: when a college serves a high proportion of students who receive Pell grants, tend to enroll part-time, or have other characteristics associated with needing additional support their graduation rates tend to be lower. de Castro Galvao et al. (2024), or Pike & Robbins (2019)

instructional expenditures per student) are 94% for continuing-generation students and 84% of first-generation students. Even within these high expenditure institutions, we see a ten percentage-point gap for first-generation students. The middle of Figure 11 shows institutions with more moderate expenditures per student (~$10,000-15,000 per student), where the largest proportion of students enroll. For these moderate expenditure institutions, the gap in six-year graduation rates between first-generation and continuing-generation students expands to 15 percentage points. Moving to the lower expenditure institutions (less than $7,500), the size of the gaps again increase slightly to 17 percentage points (58% graduation rate for first-generation compared to 75% for continuing-generation).

Figure 11. Six-year graduation rates by applicants' starting institutions' instructional expenditure

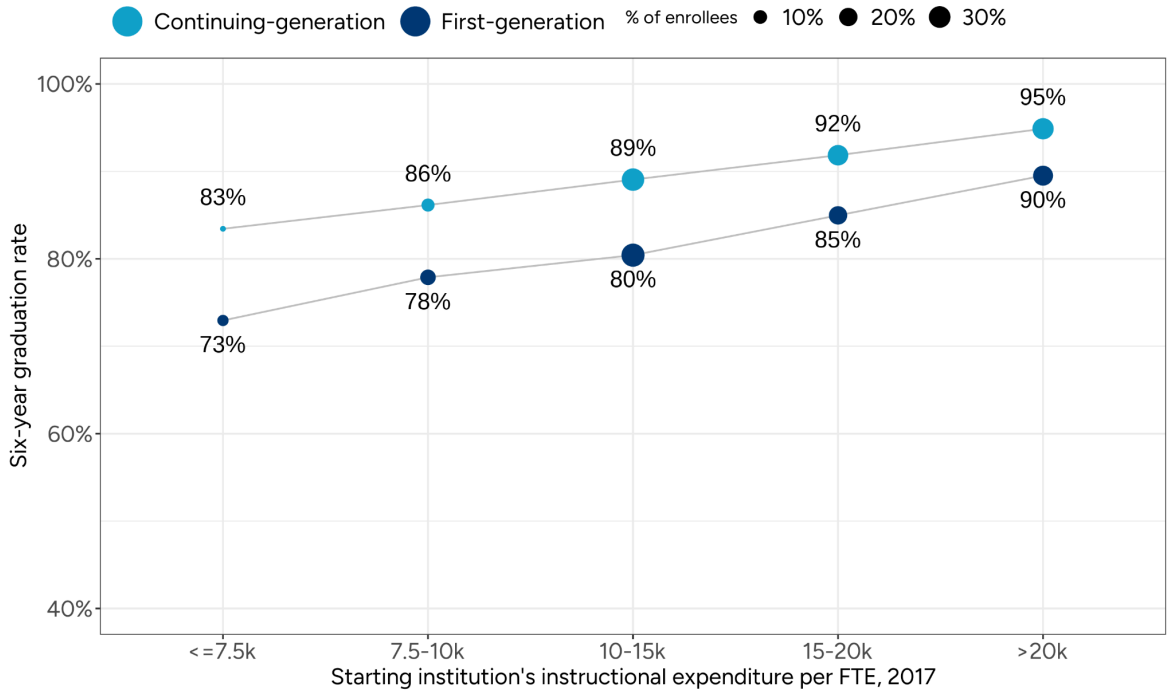
Among 614,156 domestic applicants enrolled in a 4-year institution in Fall 2017, and their institutions' instructional expenditure per full-time equivalent enrollment



To what extent do differences in pre-college academic achievement explain these graduation gaps, even within similarly resourced institutions? We again turn to the subgroup of top-quartile applicants in Figure 12. Within this high-achieving subset, graduation rates are substantially higher for all students, but a five percentage point difference still remains even for top-quartile applicants in the highest expenditure institutions. This difference doubles as we move down the expenditure categories to the lowest expenditure category, with 83% of continuing-generation students graduating compared to 73% of first-generation students.

Figure 12. Six-year graduation rates by top-quartile applicants' starting institutions' instructional expenditure

Among 306,051 top quartile domestic applicants enrolled in a 4-year institution in Fall 2017, and their institutions' instructional expenditure per full-time equivalent enrollment



In short, we do see that institutions that have higher instructional expenditures tend to have higher graduation rates on average. More importantly for this study, we see that first-generation students appear to experience slightly greater benefits from higher expenditures than their continuing-generation peers, with the graduation gap between these student populations shrinking substantially among higher expenditure institutions. Put a different way, this offers some suggestive, descriptive evidence that first-generation students may reap important benefits from institutions' spending towards instructional supports – and, conversely, encounter greater struggles at institutions with reduced supports.

Nevertheless, even the best prepared first-generation applicants in the highest support institutions still graduate at appreciably lower rates than their continuing-generation peers (a 5 percentage point difference per Figure 12), suggesting that barriers remain for first-generation students beyond their academic preparation or institutional support. Indeed, top-quartile first-generation applicants in the highest expenditure category schools still only graduate at roughly the same

rate as top-quartile continuing-generation applicants in institutions spending in some cases as little as half as much per student (89%).

As an additional robustness check, we also employ a regression approach that essentially allows us to compare graduation rates between continuing-generation and first-generation students attending the **exact same institutions**.[22] We find that even when starting at the exact same institution, first-generation applicants are, on average, still around 10 percentage points less likely to earn a Bachelor's degree after six years. If we run this exact same analysis focusing only on top quartile students, that difference shrinks to 6 percentage points (roughly mirroring the intention and results of Figure 12 above) but nonetheless still remains. In other words, while institution choice and academic preparation may each explain some portion of the graduation gaps we observe more generally, they are not the sole sources of these disparities.

Conclusion

To summarize the many findings we've covered in this research brief, we found that first-generation applicants are slightly more likely to have delayed transitions from high-school to college and are substantially more likely to have no degree six years after enrolling, echoing findings from earlier studies.[23] Indeed, we find that many talented first-generation college students are leaving college with no degree in hand despite spending four, five, or six years taking classes. While having a stronger pre-college academic record and having greater economic resources are associated with better outcomes for first-generation students, we find that even these "more advantaged" first-generation students are still two times more likely to not earn a degree within six years of enrolling than their continuing-generation peers.

These results point to an important and urgent insight: despite decades of concerted efforts to understand and better serve first-generation students, today's students are still encountering disproportionate challenges on their pathways to

[22] Estimates from models regressing six-year graduation rates by first-generation status with starting institution fixed-effects. Note that these estimates for within-institution graduation rate differences may not be representative of institutions that are almost exclusively first-generation or continuing-generation due to regression weighting procedures.
[23] While different samples and first-generation definitions make direct comparison difficult, see for example Cataldi et al., (2018), Redford et al., (2017), Toutkoushian et al., (2019) which use data from the Education Longitudinal Study of 2002 - which tracks high school sophomores from 2002 onward, and/or the Beginning Postsecondary Students Longitudinal Study 2004/09 which tracks students starting college in 2004. A more recent estimate comes from the FirstGen Forward fact sheet using data from the Beginning Postsecondary Students Longitudinal Study 2012/17

degrees. Nevertheless, our hope is that these insights can help highlight the margins and levers where we usefully marshal attention and action among all those working to support student success in higher education.

Individual institutions can consider how the trends shown here may align with their own students' experiences. We highlight here that while the first few years of enrollment see notable attrition for first-generation students, about a third of first-generation non-degree earners had enrolled in four, five, and even six separate academic years. Institutions may want to consider strategies to both get potential early stopouts back on track and also students who may need extra support close to the finish line. To close the last stretch of graduation gaps, institutions may also want to consider the role of students' financial constraints, pre-college readiness, advising, and first-generation student belongingness. Learning from first-generation students themselves via surveys and qualitative research may offer additional insights to institution-specific barriers.[24]

Our results also importantly indicate that higher instructional expenditure per student is associated with higher graduation rates for all students, and first-generation students in particular. These findings suggest that heightened investments in instruction and other student support is just that – an investment that appears to bear meaningful dividends in catalyzing first-generation student potential and success. We hope these proof points add to the careful conversations happening around university budgets and similar federal policies in this changing higher education funding landscape. And while not directly measured in our research, these findings also indicate that other programs that support high numbers of first-generation students, including Pell grants, TRIO programs, place-based Promise programs, Supplemental Nutrition Assistance Programs (SNAP), and other basic needs assistance programs also have a role to play in providing complementary resources and guidance.

What are first-generation college aspirants and their families, teachers, counselors, and other supporters to take away from this research? We hope these readers can see some reflection of their experiences here, that the challenges of being first in one's family are shared by many and are structural in nature. While we focus on disparities to identify opportunities for higher education to better serve students, we do find many talented first-generation students earning degrees, with almost 70% earning a bachelor's degree within six years of enrolling.

[24] See for example, this national survey of first-generation students: First in the Family Make Their Mark in College

While our descriptive, national-level research cannot provide specific guidance to individual students, a few takeaways remain. Applicants may consider exploring multiple potential colleges, comparing financial aid offers, and checking prospective colleges' support services, both general and first-generation specific. We encourage enrolled students to seek support from their community, and see what resources may be available to weather difficult moments on their pathway to a degree – especially as students proceed through the pivotal final years of their enrollment, on which many institutions focus additional intensive support programs.

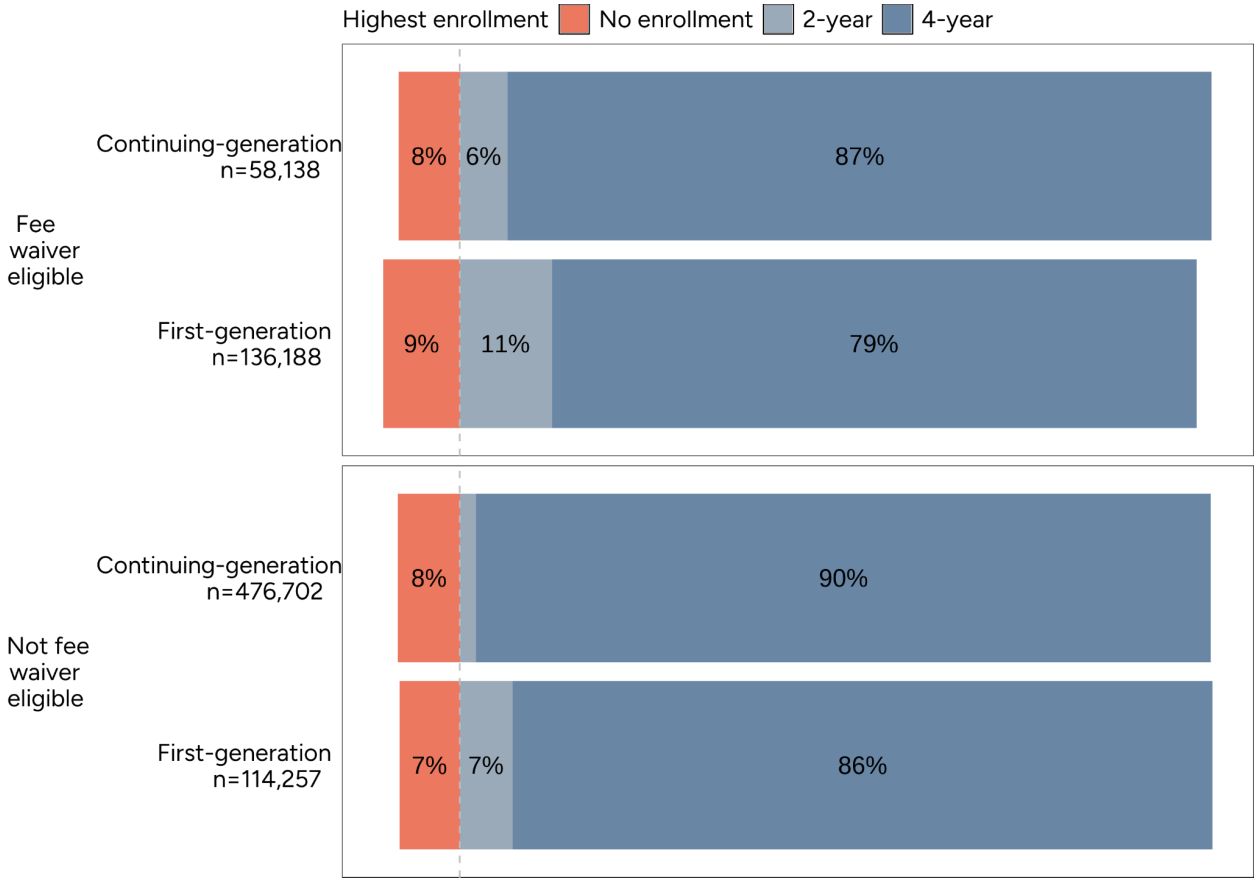
As readers of our prior briefs in our *First-generation status in context* series will recall, first-generation status is a complex construct, and more work remains to be done to understand how to best support these students in higher education. What remains clear, however, is the ambition and talent of today's first-generation applicants, and how sharing their experiences can help shift our higher education system for the better. We will continue to report on trends for this important student population.

Appendix

Enrollment outcomes

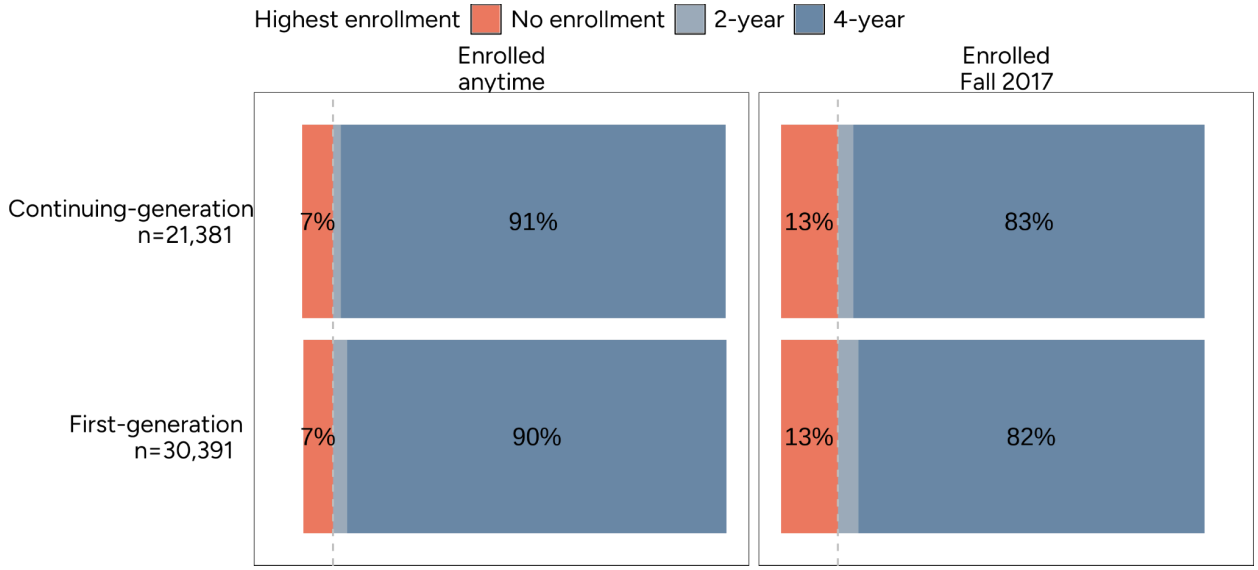
Appendix Figure 1. Highest Enrollment outcomes at any time over following six years by fee waiver and first-generation status

Among 785,300 domestic applicants planning to enroll in AY 2017-18



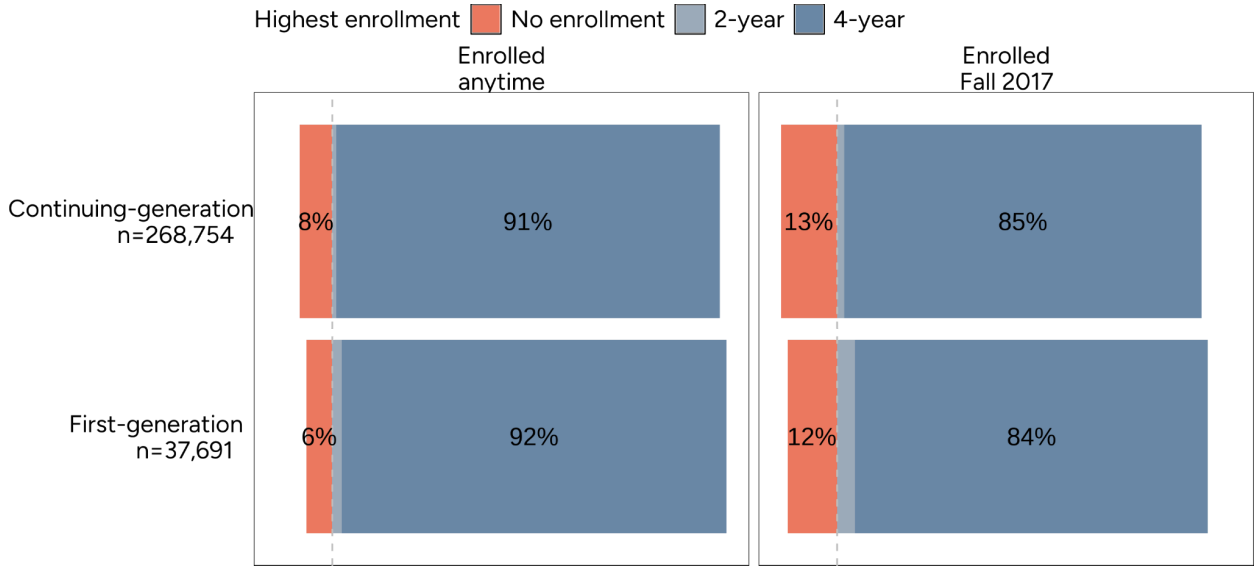
Appendix Figure 2. Enrollment outcomes for top quartile and fee waiver eligible applicants by first-generation status

Among 51,772 **top quartile** and **fee waiver eligible** domestic applicants planning to enroll in AY 2017-18



Appendix Figure 3. Enrollment outcomes for top quartile and not fee waiver eligible applicants by first-generation status

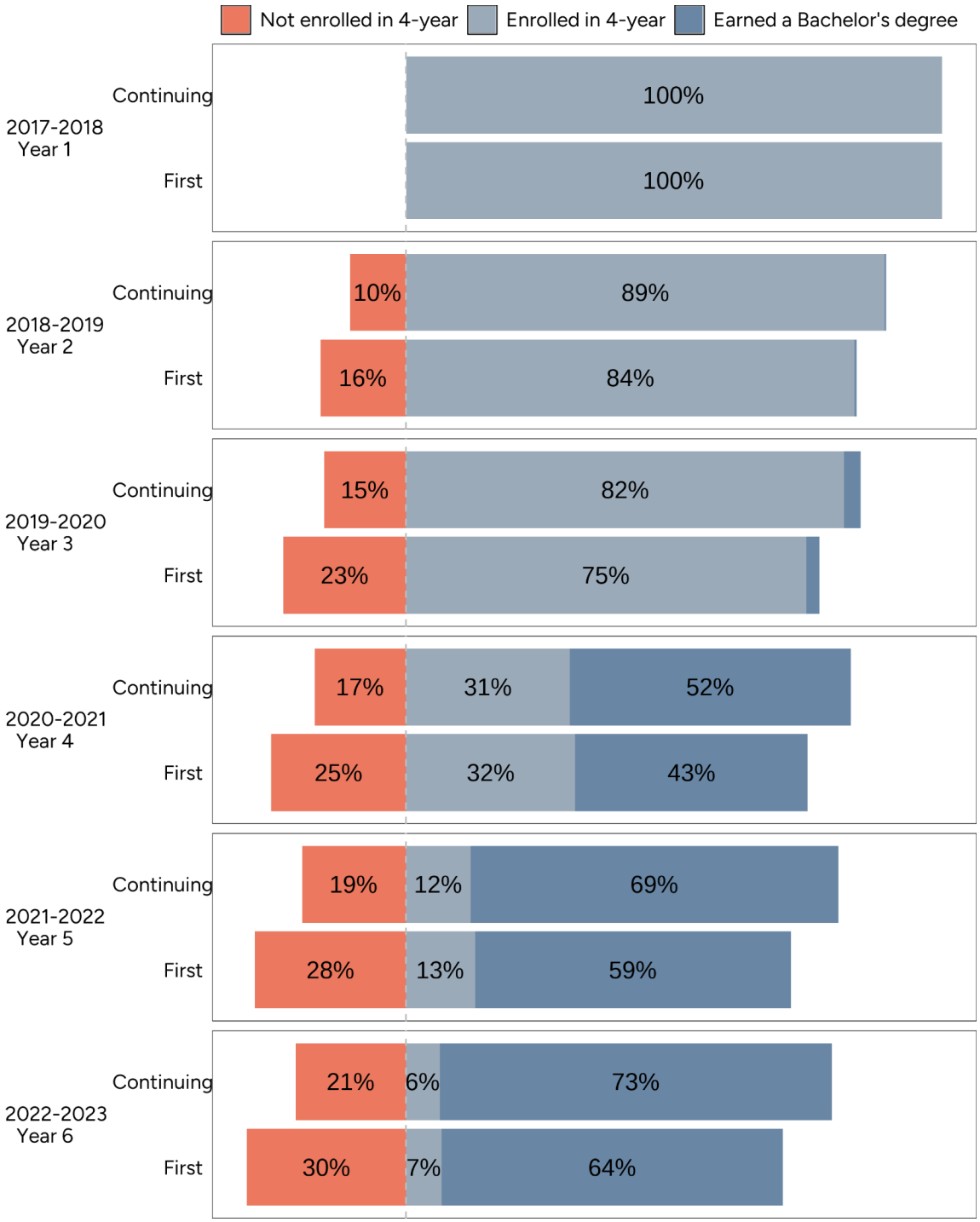
Among 306,445 **top quartile** and **not fee waiver eligible** domestic applicants planning to enroll in AY 2017-18



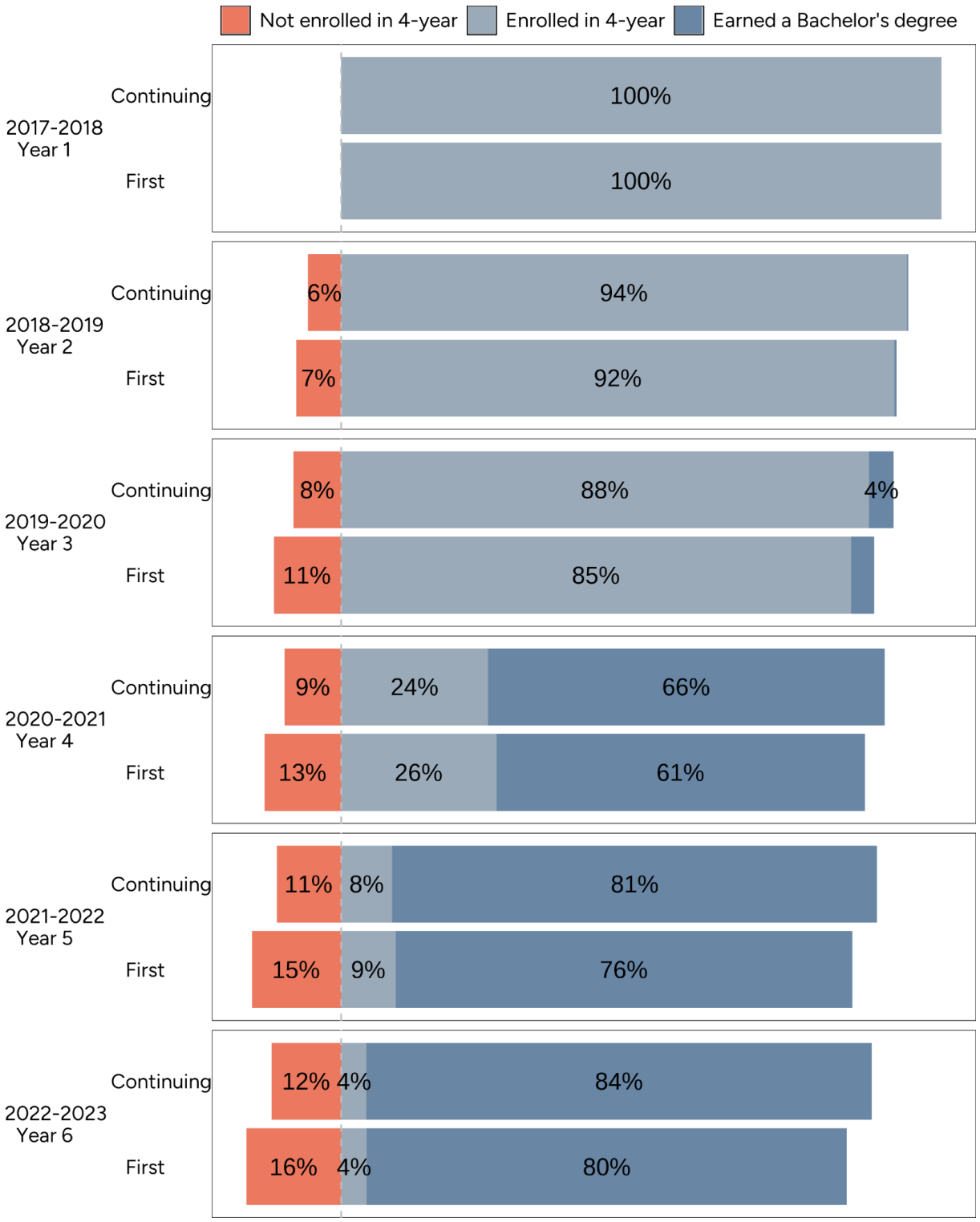
Year-by-year persistence and graduation rates

Appendix Figure 4. Outcomes by academic year, applicants eligible for fee waiver

Among 134,481 **fee waiver eligible** domestic applicants enrolled in a 4-year institution in Fall 2017



Appendix Figure 5. Outcomes for top quartile applicants eligible for fee waiver
Among 42,571 **top quartile** and **fee waiver eligible** applicants enrolled in a 4-year in Fall 2017



Appendix Figure 6. Six-year non-completion rates for fee waiver eligible applicants

Among 134,481 fee waiver eligible domestic applicants enrolled in a 4-year institution in Fall 2017