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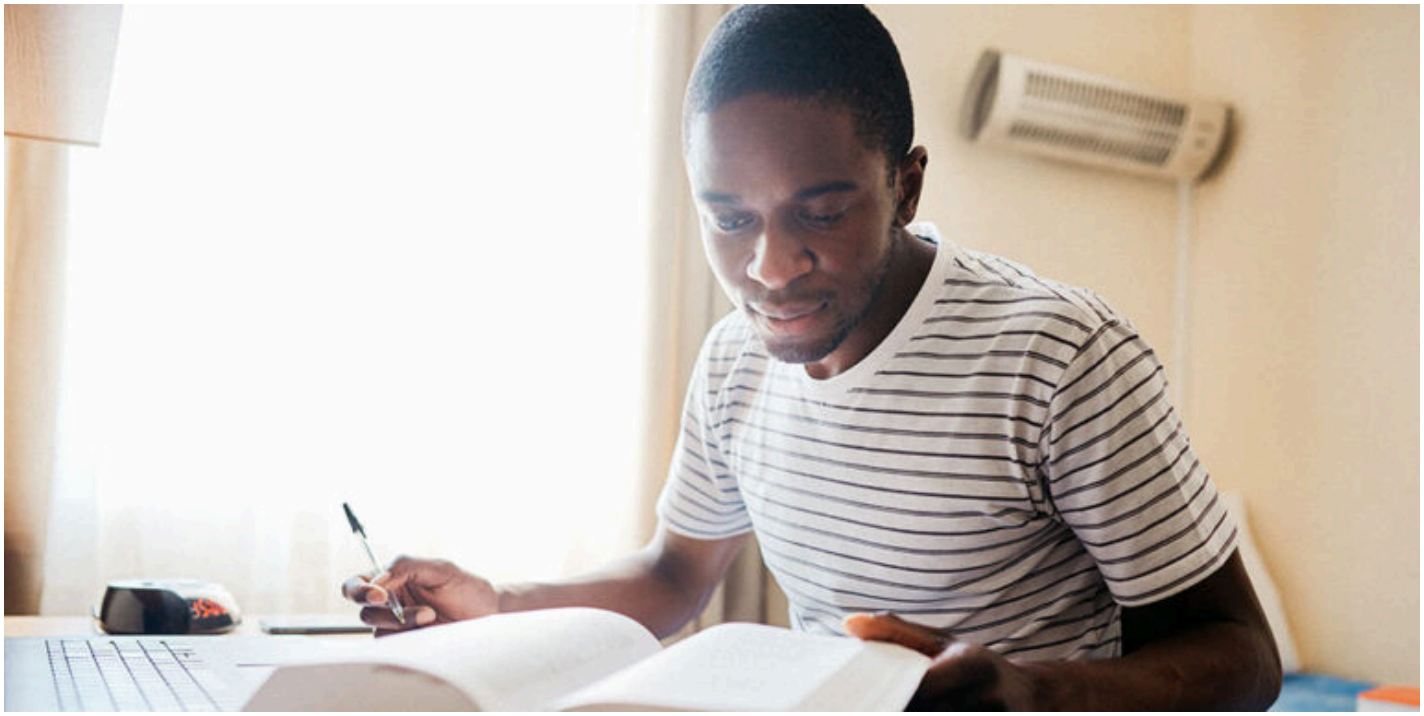

REPORT · OCTOBER 2023

Tracking Progress in Community College Access and Success

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Table of Contents

Key Takeaways

In 2019, landmark legislation (Assembly Bill or AB 705) transformed the community college landscape in California, dramatically increasing direct access to introductory transfer-level courses in English and math. Three years later, however, it has become clear that this was only the first step in truly overhauling the transfer pathway. In this report, we examine student outcomes through the fall 2022 term, shedding light on both the immense progress made and necessary areas of future reform.

- **Outcomes among first-time English students have remained stable after substantial initial growth in both access and course completion.** Overall, from fall 2018 to fall 2022, the share of first-time English students starting directly in college composition increased from 68 percent to 99 percent, and the share of first-time English students successfully completing the course in one term rose from 47 percent to 59 percent. Much of this progress occurred in fall 2019, the first term of systemwide implementation of AB 705.
- **Outcomes among first-time math students improved in fall 2022 after stalling in the two years prior.** From fall 2018 to fall 2022, direct access to transfer-level math increased from 40 percent to 96 percent, while one-term course completion rose from 24 percent to 51 percent. Gains were largest in fall 2019 and in fall 2022.
- **As colleges approach universal access to transfer-level courses, their focus must shift to proactively utilizing other strategies to produce strong and equitable completion rates.** About four in ten first-time English students and half of first-time math students do not pass the transfer-level course in one term. Equity gaps in completion remain almost as high as they were in 2019: in transfer-level math, the white-Black gap in one-term course completion is 22 percentage points and the white-Latino gap is 17 points. Expanded access has been driving progress thus far, but moving forward, other strategies—both inside and outside the classroom—will be necessary.
- **Some colleges have increased completion rates and reduced equity gaps.** Institutional engagement and collaboration, including a systemwide growth mindset, effective student supports and resources, and a commitment to data-driven decision-making, are key to student success, according to our interviews. Targeted initiatives, such as those aimed to support Black students, can also be effective when they are designed to address specific student needs.
- **Outcomes among corequisite students vary widely across colleges.** In fall 2022, one-term completion rates in corequisite models—which enroll students directly in transfer-level courses with concurrent academic support—declined in college composition and transfer-level math, and statewide enrollment in these courses remains relatively low. However, many colleges have seen success with corequisites, especially among Black and Latino students, highlighting their potential promise.
- **Longer-term outcomes held steady through the pandemic.** Three-year outcomes, including transfer rates, degree attainment, and unit accumulation, for first-time math students in fall 2019, the first cohort to be affected by AB 705, are similar to those of earlier students. This is a positive finding since recent students' experiences have been disrupted by the pandemic, which caused an overall decline in community college enrollment, persistence, and success.

Recent legislation in California (AB 1705) aims to address uneven implementation of AB 705, persistent equity gaps, and produce stronger success rates. Additional systemwide and campus-level reforms to better support students in completing introductory transfer-level courses will help realize the full potential of AB 705 and ensure that all students are a step closer to achieving their academic goals.

Introduction

Remedial education reform has transformed the landscape at California Community Colleges (CCC), which serve 1.8 million students, most of whom are from low-income and historically underrepresented backgrounds. In 2019, landmark legislation, Assembly Bill (AB) 705, led to a dramatic rise in direct enrollment and achievement in transfer-level English and math courses for all student groups (Cuellar Mejia et al. 2020; Brohawn, Newell, and Fagioli 2021). These gateway courses are a critical early milestone in the transfer pathway, which provides students with an opportunity to pursue a four-year degree and improves their chances at economic mobility (Johnson and Cuellar Mejia 2020). Indeed, the benefits of obtaining a bachelor's degree are well-documented, including higher lifetime earnings, greater job stability, and improved social mobility (Cuellar Mejia et al. 2023). Prior to the reform, the vast majority of community college students were required to take remedial courses with high attrition rates; these courses slowed down or halted students' academic journeys.

While AB 705 has led to substantial progress, more work was needed. An analysis of first-year outcomes showed that the implementation of AB 705 was uneven across colleges, especially in math. At one in five colleges, a third or more of first-time math students in fall 2020 were still either required or allowed to enroll in below-transfer-level courses (Cuellar Mejia et al. 2021; Hern, Snell, and Henson 2020). What's more, many of those students had already taken such courses in high school and had often passed them (Park, Ngo, and Melguizo 2019).

In September 2022, Governor Newsom signed into law Assembly Bill 1705 to support a comprehensive and equitable implementation of AB 705 (see text box). To achieve this, the legislature appropriated $64 million in one-time funding in the 2022 Budget Act to establish the California Community College Equitable Placement, Support, and Completion funding allocation. These funds are intended to assist colleges in developing corequisite support models, providing professional development and technical assistance, aligning concurrent student support services, and creating innovative course sequences that reduce possible exit points for students (Lowe 2023).

The importance of this investment should not be overlooked. As we will show in this report, initial increases in successful completion of transfer-level math and English—courses that satisfy general education requirements for transfer to the University of California (UC) and California State University (CSU)—have been, for the most part, driven by increases in direct access to these courses. As we approach universal access, additional improvements in completion will need to come from changes within the classroom as well as a broader set of student supports.

Currently, there are still several areas where more information is needed to understand the reach and potential of the changes brought on by AB 705. In this report, we tackle two of them.

First, little is known about the reform's longer-term effects. Ultimately, completing introductory transfer-level English and math is just one step along the transfer pathway. Evaluating the impact of AB 705 on students' trajectories beyond this early momentum point is essential. To this end, we use longitudinal student-level data to provide a descriptive comparison of longer-term outcomes—including unit accumulation, degree attainment, and transfer to a four-year institution—among student cohorts before and after AB 705. In

interpreting these outcomes, it is important to keep in mind that the pandemic, which hit the country during the first year of AB 705 implementation, disrupted student enrollment, housing, and finances, changing the college experience in significant and meaningful ways. Although this limits our ability to causally interpret changes beyond fall 2019, our analysis of post-2019 outcomes provides an important look at how different student groups have fared under our new reality.

Second, racial/ethnic equity gaps in successful completion of transfer-level math and English courses persist and continue to be one of the biggest challenges that colleges face. We employ a case study analysis to begin to fill gaps in current research and uncover the strategies and initiatives that might be effective in promoting success among underrepresented groups. Specifically, we interviewed officials at 10 colleges that have narrowed Latino-white or Black-white racial equity gaps in successful completion of transfer-level math courses. For simplicity, we focus on promoting success in transfer-level math completion, since historically math has been a greater obstacle for students, but many of the takeaways are equally relevant for success in transfer-level English.

This report begins by describing trends in short-term outcomes under AB 705, including direct enrollment in transfer-level English and math, course completion, corequisite course success, and racial equity gaps.[1] We then tackle the two key areas of research noted above, namely longer-term student outcomes and strategies for improving racial equity gaps. Finally, we conclude with recommendations drawn from this research.

1. In our previous set of reports on AB 705 implementation, we looked at data through fall 2020. In this report we include fall 2021 and fall 2022 outcomes, extending our pool of student cohorts affected by AB 705 to four (those starting in 2019–2022).

Assembly Bill 1705

Signed into law in 2022, AB 1705 expands upon the provisions established in AB 705 and addresses the issues underlying its uneven and ultimately inequitable implementation across the state (Cuellar Mejia et al. 2021). In short, the law explicitly requires community colleges to not only place students directly into transfer-level English and math courses but also to ensure that students actually enroll and are supported in those courses.

Primarily, the law states that all students pursuing a certificate, degree, or transfer program, with few exceptions for certain populations and cases, shall be placed and enrolled in transfer-level English and math courses that satisfy a requirement related to students' declared goals.[2] Additionally, colleges shall not require students to repeat coursework that they have already successfully completed in previous schooling and shall not enroll students in noncredit coursework as a replacement for transfer-level courses. If colleges do place and enroll students in courses that do not satisfy degree or transfer requirements, in any prerequisite coursework in non-STEM programs, or in unexempted prerequisite courses in STEM programs, they must provide sufficient local research showing that these students are highly unlikely to succeed in transfer-level courses and that their current placement will improve their ability to complete transfer-level courses within an acceptable time frame.

Additionally, AB 1705 further clarifies colleges' obligations to provide extra academic support for students enrolled in transfer-level courses who need or desire such support. Such supports include "tutoring, support-enhanced transfer-level mathematics and English courses, concurrent low-unit credit or similar contact hour noncredit corequisite coursework for transfer-level mathematics and English, or other academic supports."[3] The new law also states that a community college can require students to enroll in additional concurrent support if it is determined that the support will increase students' likelihood of passing transfer-level math or English.

Trends in Access and Course Completion

In fall 2019, the first term of systemwide AB 705 implementation, the number of students starting in and successfully completing transfer-level math and English courses increased significantly. The pandemic then had a substantial negative impact on community college enrollment, leading to large drops among transfer-intending students (Alesi Perez et al. 2022). In this section, we examine trends in AB 705–related outcomes, including direct enrollment into and successful completion of transfer-level English and math courses among first-time students in each discipline through fall 2022.

Initial Enrollment Declines Could Be Easing

The pandemic led to dramatic drops in community college enrollment. Yet after two years of significant declines, first-time enrollment in English and math courses finally showed some positive signs in fall 2022.

2. Several exceptions to transfer-level placement and enrollment into mathematics and English coursework are outlined, including for students who did not graduate from US high schools, students with documented disabilities in educational assistance classes, students in adult education programs, and most notably, students whom the college has determined are highly unlikely to succeed in the transfer-level course and would actually benefit from pre-transfer-level coursework in order to complete the transfer requirement within a one-year time frame.
3. AB 1187, also passed in 2022, ensures that "supervised tutoring for foundation skills and for degree-applicable and transfer-level courses…is eligible for state apportionment funding."

Enrollment increased 8 percent among first-time English takers and 1 percent among first-time math takers between fall 2021 and fall 2022 (Figure 1). Still, for both groups, first-time enrollment was down 14 percent and 29 percent, respectively, compared to fall 2018.

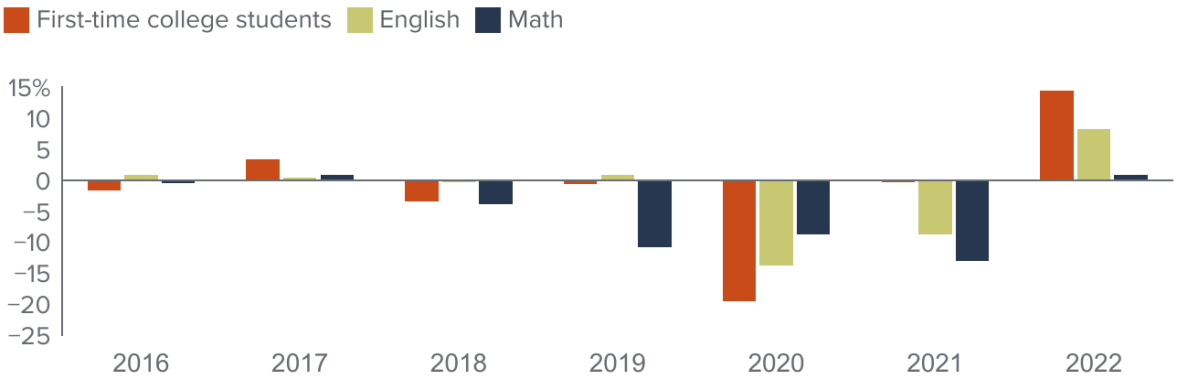
First-time math enrollment started declining before the pandemic, in fall 2018 (4%), and the decline intensified in fall 2019 (11%), which coincided with the first term of systemwide implementation of AB 705. Students delaying math enrollment amid changing placement policies likely drove this decline.[4] During this period, first-time English enrollment remained mostly unchanged.

In 2020, reductions in the number of first-time college students led to declines in first-time English and math enrollment. In fall 2020, the number of first-time college students was down 20 percent and the size of English and math cohorts declined as well.[5] In fall 2021, however, the number of first-time English and math students declined again (9% and 14%, respectively), while the number of first-time college students did not change. This was driven by first-time English and math enrollment falling significantly more among continuing students than among students in their first term in the community college system (see Technical Appendix Table B1).[6]

Figure 1

Enrollment finally showed some positive signs in fall 2022

Annual change in the number of first-time students in the discipline (%)



SOURCE: Authors' calculations using MIS data.
NOTES: Fall of each year. 2016 corresponds to the change between 2015 and 2016. First-time college students are all the students who enrolled for the first time in a credit course as non-special admit (i.e., non-dual enrollment) students in a California community college in the fall of the selected year.

The decline in enrollment from pre-pandemic levels to fall 2022 varied across student groups (Figure 2). Relative to 2018, first-time math enrollment declined the most among Black students (36%) and the least

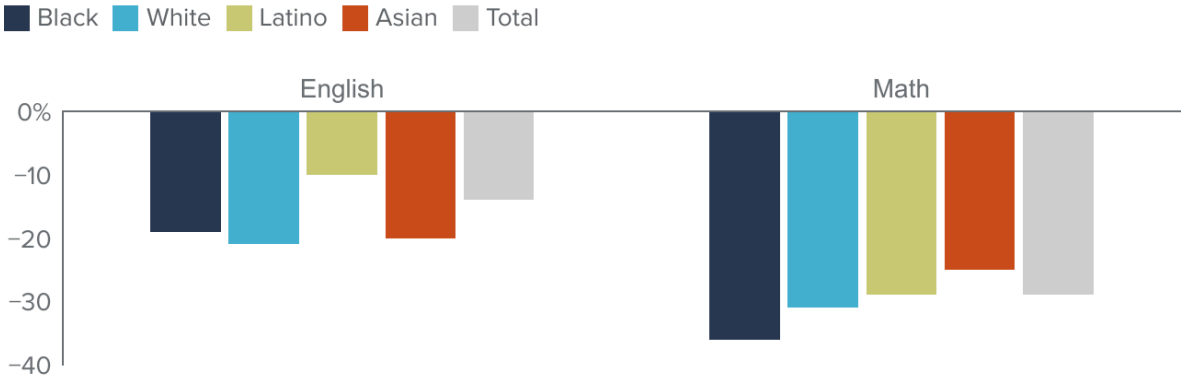
4. The number of first-time credit students who declared a transfer goal—or about 60 percent of all new students taking credit courses—is a proxy for the pool of students most likely to take a math course at some point in their college journey. Among these students, 53 percent took a math course in their first term in fall 2018 (pre-AB 705) compared to 46 percent of students in fall 2019 and fall 2020.
5. The decline between fall 2020 and fall 2021 was 17 percent among degree/transfer-intending students. Eighty percent of both first-time English students and first-time math students stated a goal of degree or transfer.
6. Consistently over the last three years, the share of first-time English students and first-time math students who were also first-time college students has gone up (see Technical Appendix Figure B1).

among Asian students (25%). Meanwhile, first-time English enrollment declined about 20 percentage points among white, Black, and Asian students, while Latino students only saw a 10 percent decline.

Figure 2

First-time enrollment is down significantly for all races, especially in math

Percent change in the number of first-time students in the discipline, fall 2018 vs. fall 2022



SOURCE: Authors' calculations using MIS data.

Progress in Completion of College Composition Has Leveled Off

Between fall 2018 and fall 2019, the share of first-time English students starting directly in transfer-level English, or college composition, increased from 68 percent to 95 percent. Three years later, direct access to college composition reached 99 percent, with only about 800 students starting in a below-transfer-level course.[7]

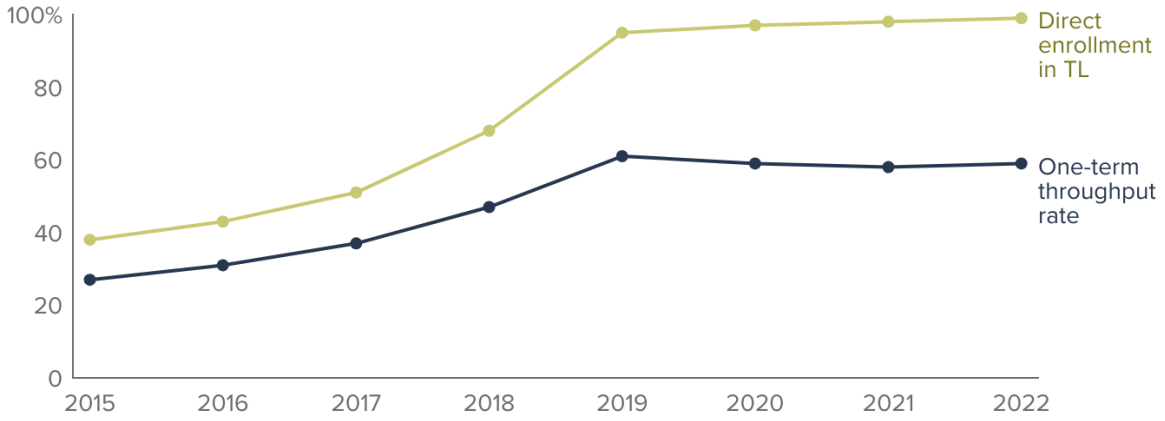
The one-term throughput rate, or the share of first-time English students who successfully completed college composition in one term, increased 14 percentage points from 47 percent in fall 2018, peaking at 61 percent during the first term of systemwide implementation in fall 2019. Since then, it has stabilized at 59 percent (Figure 3).

The *one-year* throughput rate, the outcome that AB 705 specifically calls to maximize, has declined slightly from 66 percent among the fall 2019 cohort to 63 percent among the fall 2021 cohort.[8] Nevertheless, it is still higher than the 60 percent rate among the fall 2018 cohort. Before AB 705, many first-time English students started one level below transfer level, and thus, a relatively high proportion completed college composition in their second term. After AB 705, with most students starting directly in college composition, their chances of completing the course in one term have significantly improved (Figure 3, second tab).[9]

7. First-time English students enrolled in a below-transfer-level course in only 24 of the 115 physical colleges in the system.
8. Section (d) (1) (A) establishes that a community college district or college shall maximize the probability that a student will enter and complete transfer-level coursework in English and mathematics within a one-year timeframe.
9. For readers viewing the PDF version of this report, please refer to the online version to access multiple tabs in the charts.

Figure 3

After a steep increase in fall 2019, the one-term throughput rate for college composition has remained relatively stable



SOURCE: Authors' calculations using MIS data.
NOTES: Direct enrollment in TL is the share of first-time English students who started directly in a college composition course. One-term throughput rate is the share of first-time English students who successfully completed college composition in one term.

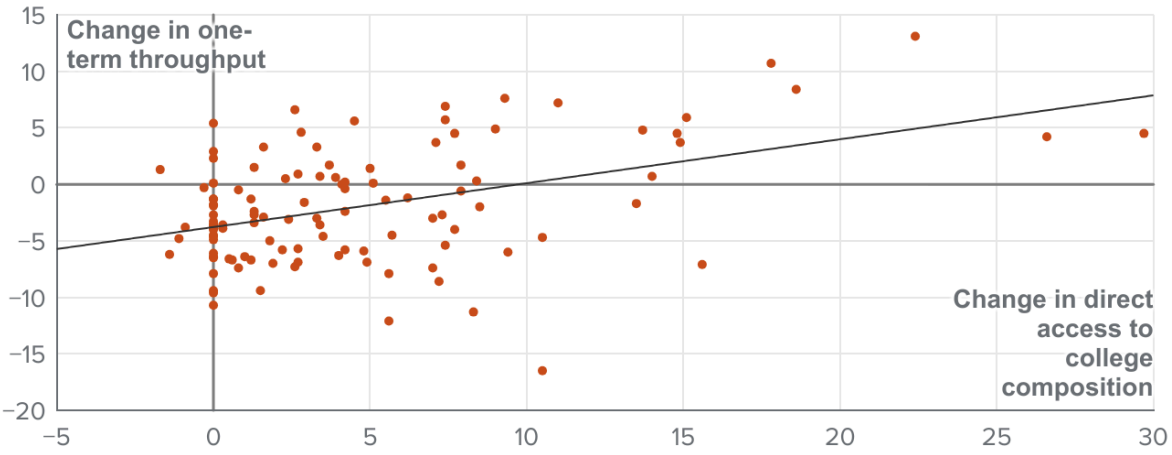
Figure 4 helps us to visualize the relationship between changes in direct enrollment in college composition and changes in successful completion. Between 2019 and 2022, only 19 percent of the variation in throughput improvement can be explained by increases in direct access to college composition (Figure 4, first tab). This sits in contrast to what we see between 2018 and 2019, when about 76 percent of the variation in throughput improvement could be explained by increases in direct access to college composition (Figure 4, second tab).

Since 95 percent of first-time English students in fall 2019 started directly in college composition, additional increases in access have had a diminished role in improving course completion rates after the initial implementation of AB 705. In other words, with little room for additional improvements in access, increases in throughput have been limited since fall 2019.[10]

10. Incredibly, out of 115 colleges, only one, Porterville, saw an increase in its one-term throughput rate between fall 2019 and fall 2022 (from 55% to 61%) without an increase in access (100% of the campus's students have started in college composition since fall 2019). Monterey and Orange Coast were the only two colleges where increases in one-term throughput exceeded the expected growth based on their increases in access.

Figure 4

On average, increased access is the main driver of growth in one-term throughput



SOURCE: Authors' calculations using MIS data.
NOTES: Percentage point change, fall 2019 vs fall 2022. Each dot is a college. The black diagonal line is the trend line. The correlation coefficient between changes in direct access to college composition and changes in one-term throughput is 0.44, which means that the coefficient of determination or R2 is 0.19.

Moving forward, changes within the classroom together with more holistic student supports may be needed to significantly improve systemwide completion of college composition (Grubb and Gabriner 2013). Our previous research shows that students who are not successful within the new system are struggling with more than just reading and writing, highlighting the potential importance of non-course-specific supports and services, which could include financial aid support and personalized advising. These "unsuccessful" students earned a lower proportion of the units they enrolled in than successful students and had a lower average GPA, excluding college composition (Cuellar Mejia et al. 2022).

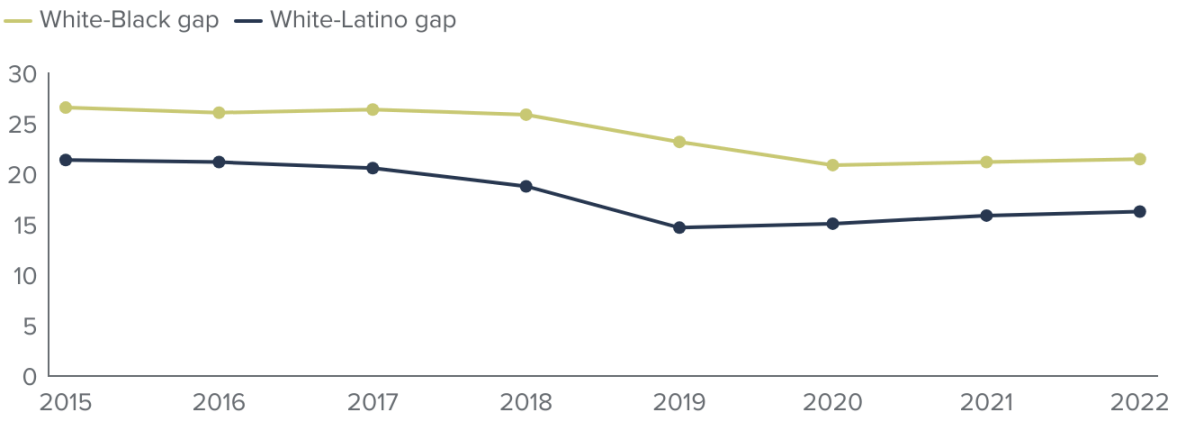
Reducing racial equity gaps is also key, as disparities in successful completion remain stubbornly high. In fall 2022, the white-Black and white-Latino gaps in one-term throughput rates were 22 and 16 percentage points, respectively (Figure 5).[11] However, it is worth noting that these gaps are smaller than the gaps observed before AB 705 (26 and 19 percentage points, respectively). Between 2018 and 2019, the white-Latino gap declined 4.1 percentage points, but it has increased 1.6 percentage points since 2019. On the other hand, the white-Black gap decreased 2.7 percentage points in the first term of AB 705 implementation and narrowed an aditional 1.7 percentage points between 2019 and 2022.

11. Since 2019, Asian first-time English students have a higher one-term throughput rate than white students (Figure 5, second tab). In fall 2022, the white-Asian gap was -3 percentage points. This means that there are even bigger Asian-Latino and Asian-Black gaps.

Figure 5

Racial gaps in throughput rates for college composition are lower than before AB 705, but they are still pronounced

Difference in one-term throughput rate among groups, percentage points



SOURCE: Authors' calculations using MIS data.
NOTES: Fall of each year.

Success in corequisite courses for college composition varies widely

One way colleges may be able to promote student success and reduce racial equity gaps is by implementing effective corequisite models, which enroll students directly in transfer-level courses with concurrent academic support. Before AB 705, Latino and Black students were more likely to start in remedial English courses and less likely to complete college composition than their white and Asian peers. Given the unprecedented increase in direct access to transfer-level courses, an initial decline in completion rates among those starting directly in transfer-level courses was expected.

However, the hope is that well-designed corequisites can address students' need for additional academic support, helping colleges promote higher rates of completion and narrow racial/ethnic gaps. The CCC Chancellor's Office has not issued guidance or required validation of the effectiveness of corequisites to date, but research has consistently shown that corequisites can produce higher completion rates than prerequisite remediation (Boatman 2012; Cho et al. 2012; Jenkins et al. 2010; Logue, Watanabe-Rose, and Douglas 2016; Logue, Douglas, and Watanabe-Rose 2019; Cuellar Mejia et al. 2020, Ran and Lin 2022). The California Community College Equitable Placement, Support, and Completion's one-time funding allocation is intended to support colleges in this endeavor.

This funding is much needed as the potential promise of corequisite courses has yet to be fully realized in California's community colleges. Fewer than one in five first-time English students (18%, or 24,700 students) started in a corequisite course in fall 2022, despite the one-term throughput rate only reaching 59 percent, a signal that a larger proportion of students may need additional support.

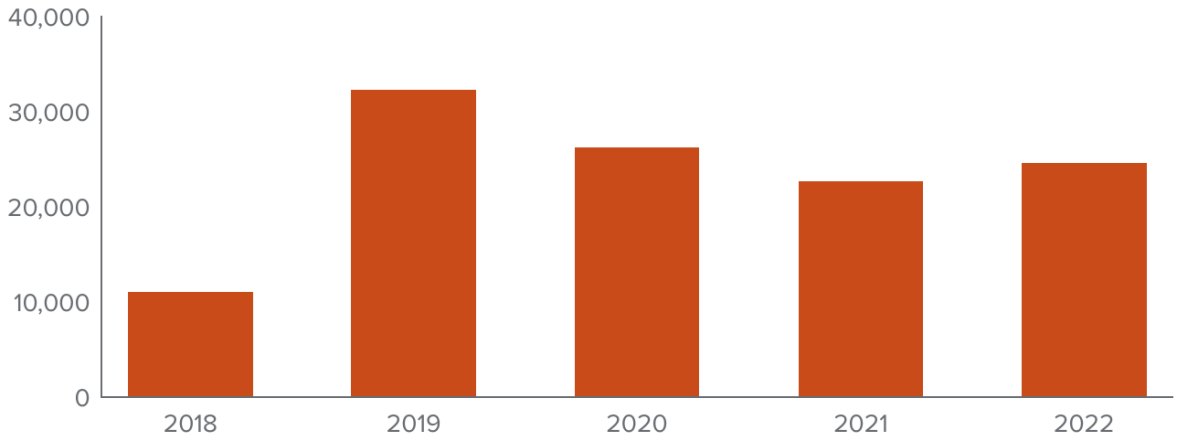
After initially peaking at over 32,300 students, or 20 percent of first-time English students, enrollment in corequisite courses declined significantly during the pandemic, by 19 percent between 2019 and 2020 and

14 percent between 2020 and 2021 (Figure 6). These declines in corequisite enrollment were larger than the total declines in the number of first-time English students (14% between 2019 and 2020, and 9% between 2020 and 2021), and about the same in magnitude as the overall decline in the number of first-time college students.

We cannot definitively determine the root cause of this decline in corequisite enrollment since it was likely brought on by a combination of factors. It could be the case that colleges improved or modified their identification of students who would benefit the most from extra support, in turn, changing their placement policies. Additionally, pandemic disruptions could have directly affected corequisite enrollment through several mechanisms, including heightened reluctance among students to commit to extra course time and units, and disruptions may have disproportionately affected enrollment and persistence among students with greater academic needs who would have been more likely to be placed in corequisite support courses. At the same time, colleges may have reduced their corequisite offerings during the pandemic due to the perceived challenges of maintaining their effectiveness in an online setting, a possibility that faculty shared in interviews during our previous research on this topic (Cuellar Mejia et al. 2021; Cuellar Mejia et al. 2022). In fact, we do have some indication of reductions in corequisite offerings: four colleges stopped offering corequisite courses altogether in fall 2020.[12]

Figure 6

The number of first-time English students in corequisite courses was 24 percent lower in fall 2022 than in fall 2019



SOURCE: Authors' calculation using MIS data.
NOTES: Includes students in enhanced courses. Fall of each year.

In addition to the decline in enrollment, one-term throughput rates among corequisite students also dropped from 58 percent in fall 2019 to 52.5 percent in fall 2022. Even though students have in all colleges a better chance of completing college composition if they start in a corequisite model than if they start in a below-transfer-level course, low completion rates in corequisite courses at some colleges are concerning

12. These colleges were Moreno Valley, Solano, Southwest LA, and Yuba.

(see Technical Appendix B3).[13] In 25 percent of the colleges that offered corequisite models in fall 2022, first-time English students in such courses had one-term completion rates below 47 percent (Figure 7).[14]

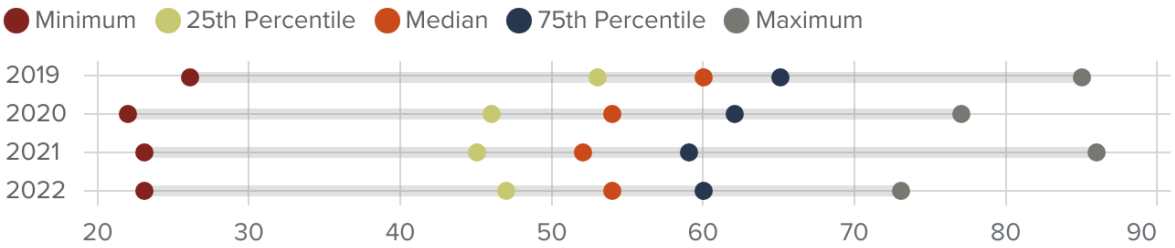
Despite the low throughput rates for corequisite students at some colleges, other colleges achieved notable success with their corequisite models: 25 percent of colleges had one-term throughput rates of at least 60 percent (i.e., equal to or higher than the median one-term throughput rate systemwide). At 10 of these colleges, corequisite students had one-term throughput rates equal to or higher than students in standalone transfer-level courses (also known as unsupported sections).

In all, Figure 7 shows that there is large variation in corequisite outcomes across colleges. However, it is worth noting that we see similar, albeit slightly lower, variation in one-term throughput rates among standalone sections (Figure 7, second tab).[15]

Figure 7

Low throughput rates among corequisite students at some colleges are concerning

One-term throughput of first-time English students in corequisite courses, %



SOURCE: Authors' calculations using MIS data.
NOTES: Fall of each year. Only colleges with at least 30 students in the corequisite course are included. These statistics are calculated for 98 colleges in 2019, 91 in 2020, 92 in 2021 and 92 in 2022.

At some colleges, corequisite models contribute to more equitable outcomes in transfer-level English. At one in four colleges that offered corequisites between fall 2019 and fall 2022, the corequisite courses produced higher one-term completion rates among Latino and Black students than standalone courses. This was true at five of the nine community colleges in the Los Angeles Community College District, which serves a large proportion of the state's Latino and Black students and has struggled with low completion

13. The one-year throughput rate for students who started in a below-transfer-level course in 2019 was only 25 percent.
14. AB 1705 states that "A community college may require students to enroll in additional concurrent support, including additional language support for ESL students, during the same term that they take a transfer-level English or mathematics course, if it is determined that the support will increase the student's likelihood of passing the transfer-level English or mathematics course." It may be the case that some colleges with low success rates in corequisite courses have later deemphasized their enrollment in favor of standalone courses or other supports in an attempt, from their perspective, to maximize throughput rates. However, it must also be noted that wide variation in corequisite course design and student needs likely accounts for at least part of the variation in corequisite outcomes across colleges. Thus, even when colleges deem corequisites to be ineffective at their campus, such outcomes may be explained by how their specific corequisite courses were designed, who was targeted to enroll in such courses, and what types of supports students received in the corequisite classroom.
15. The interquartile range, which tells us how far apart the first and third quartile are and indicates how spread out the middle 50 percent of the data is, was 12 percentage points among first-time English students in corequisite models and 11 percentage points among first-time English students in unsupported sections in fall 2022.

rates in English. In the Inland Empire, Crafton Hills offered a corequisite in English for the first time in fall 2022 and students in the corequisite model achieved one of the highest completion rates in the state (73%).[16] Black and Latino students accounted for nearly three-quarters of enrollment in the corequisite and outperformed their Black and Latino counterparts in the standalone course by 15 percentage points.

Many of the colleges with successful corequisite outcomes have higher overall throughput rates, so this relative success with corequisites could reflect college-specific actions, policies, practices, and/or unique student compositions.[17] However, there are also many colleges with high throughput rates among students in standalone sections and significantly lower rates among corequisite students.[18] Thus, there may be something to learn from colleges with relatively strong corequisite outcomes, especially where corequisite courses are performing just as well as standalone sections, even if students in these colleges have different characteristics and academic backgrounds than average. More work is needed to understand why corequisite courses for college composition at some colleges are seeing high throughput rates, including uncovering how these courses are designed, how students are placed into such courses, and what resources are provided to students and instructors alike.[19]

Gains in Transfer-Level Math Completion Continued in 2022

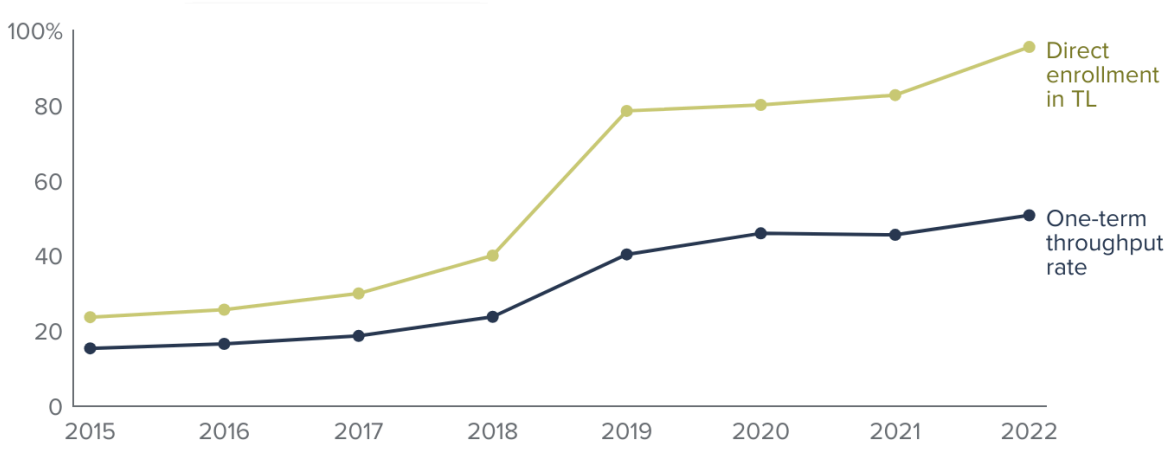
Between fall 2018 and fall 2019, the share of first-time math students enrolling directly in a transfer-level math course (i.e., a course that satisfies general education requirements for transfer to UC or CSU) almost doubled from 40 percent to 79 percent. By fall 2021, this share only inched up to 83 percent. As we can see in Figure 8, however, access jumped 13 percentage points in fall 2022, with 96 percent of students starting in a transfer-level math course. This means that only about 5,000 students started in a below-transfer-level math course.

Between fall 2021 and fall 2022, the systemwide improvement in the share of first-time math students starting directly in transfer-level math was remarkable; indeed, the increase was at least 25 percentage points in 20 colleges. What's more, the number of colleges in which every first-time math student started in transfer level increased from 7 to 69 in that timeframe. Still, in 10 percent of colleges, fewer than 83 percent of students (the average rate in fall 2021) started directly in a transfer-level course in fall 2022.

16. In Crafton Hills, only 9 percent of its first-time English students (81 students) enrolled in the corequisite model. Also, it is worth noting that the one-term throughput rate of all corequisite students was 12 points higher than their counterparts in non-support courses.
17. In fall 2022, half of the colleges in the top 25 percent of one-term throughput rates for corequisites were also among the top 25 percent in one-term throughput rates for standalone courses.
18. For the most part, these gaps are large. For example, at 15 of the 28 colleges in the top 25 percent of one-term throughput rates in standalone courses, corequisite success rates are more than 10 percentage points less than standalone course success rates.
19. There is wide variation in how colleges place students into corequisite courses. Whether or not corequisites are recommended or required—and the GPA bands that are used to make these determinations—affects students' likelihood of enrolling in these courses. Even when the decision to enroll in the support course is up to the student (e.g., the course is optional or recommended), the choice may be affected by how colleges present the option.

Figure 8

There was a large increase in access to transfer-level math in 2022 and a less than proportional increase in one-term throughput



SOURCE: Authors' calculations using MIS data.
NOTES: Direct enrollment in TL is the share of first-time math students who started directly in a transfer-level course. One-term throughput rate is the share of first-time math students who successfully completed a transfer-level math course in one term.

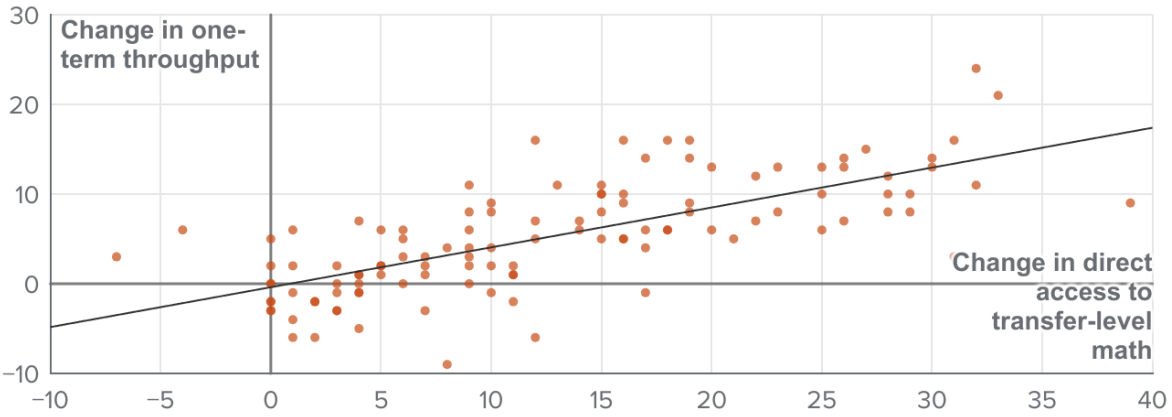
The one-term throughput rate increased 17 percentage points to 40 percent during the first term of systemwide implementation of AB 705 (fall 2019) and continued to grow, even throughout the pandemic, reaching 51 percent in fall 2022. However, the gap between the share of students enrolling directly in transfer-level math courses and the share successfully completing these courses widened significantly between fall 2019 and fall 2022.

If we look at *one-year* throughput, the rate went up 16 percentage points to 50 percent in fall 2019, compared to 34 percent among those who started before AB 705 took effect (Figure 8, second tab). The rate then inched up to 53 percent in fall 2020 and stayed the same in fall 2021. Despite the undeniable improvements that the system has witnessed in the span of a few years, the fact that about half of students do not complete this important milestone in a reasonable time frame is indicative of the work that lays ahead.

The relationship between increases in access and increases in successful completion of transfer-level math differs somewhat from the pattern we saw for college composition because progress in broadening access to transfer-level math was more gradual. Half of the variation in one-term throughput improvement between fall 2021 and fall 2022 can be explained by increases in direct enrollment in transfer-level math courses; this is lower than the 65 percent of the variation in improvement explained by increases in access between fall 2018 and fall 2019 (Figure 9), but still quite high. Yet in contrast to English, substantial room for improvement in access even after the initial implementation of AB 705 meant that colleges still had an opportunity to increase one-term throughput rates in math by expanding access through their placement policies.

Figure 9

Increased access accounted for about half of the progress in throughput among first-time math students from 2021 and 2022



SOURCE: Authors' calculations using MIS data.
NOTES: Percent point change, fall 2021 vs fall 2022. Each dot is a college. The black diagonal line is the trend line. The correlation coefficient between changes in direct enrollment in transfer-level math and changes in one-term throughput is 0.72, which means that the coefficient of determination or R2 is 0.51.

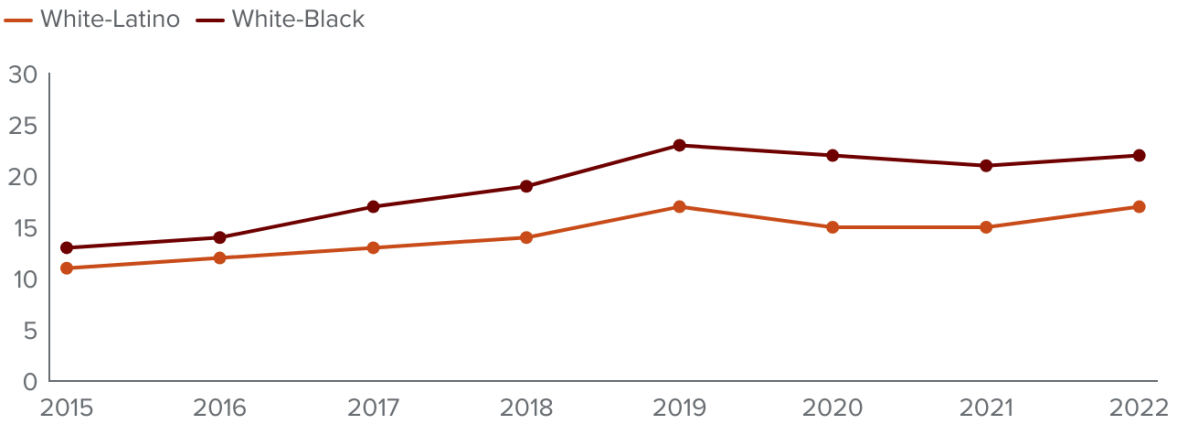
In all, the one-term throughput rate for transfer-level math was 10 percentage points higher in fall 2022 than in fall 2019, an increase that was consistent among Asian, Latino, Black and white students alike (Figure 10, second tab). However, racial gaps have not changed much after increasing in the first year of AB 705 implementation. Both the white-Latino and white-Black gap in throughput rates peaked in fall 2019 and have since fluctuated +/-2 percentage points each year. As of fall 2022, there was a 22 percentage point gap between the one-term throughput rate of white and Black students and a 17 percentage point gap between the one-term throughput rate of white and Latino students (Figure 10).[20]

20. Back in fall 2015, the white-Black gap was 13 percentage points in math and 27 percentage points in English; in fall 2019 the two converged to their fall 2022 levels. A similar pattern holds true for the white-Latino gap.

Figure 10

Racial gaps in one-term throughput of transfer-level math peaked in 2019 and have not changed much since

Difference in one-term throughput rate among groups, percentage points



SOURCE: Authors' calculations using MIS data.
NOTES: Fall of each year.

Corequisite courses for transfer-level math show mixed success

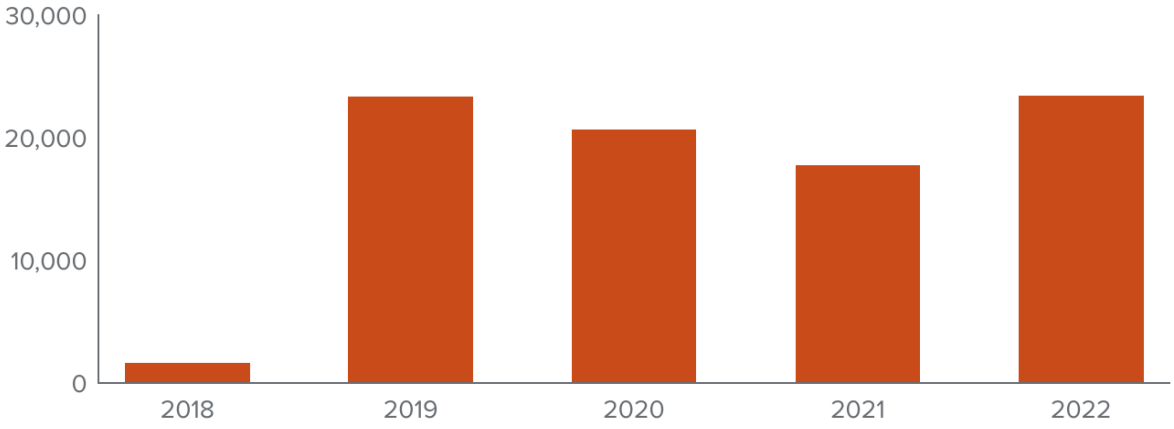
In fall 2022, 20 percent of first-time math students (23,400 students) took a corequisite course. After two years of decline, enrollment in corequisite courses for transfer-level math increased in fall 2022. In fall 2020 and fall 2021, enrollment declined 11 and 14 percent, respectively; the number of first-time math students in corequisite courses then increased 32 percent in fall 2022, returning enrollment levels to 2019 levels, when corequisite offerings expanded significantly.[21]

21. However, in proportional terms, corequisite students represented a higher share of first-time math students in fall 2022 than in fall 2019 (20% vs. 16%, Figure 11) because the number of first-time students declined 20 percent in that time period.

Figure 11

After a two-year decline, the number of first-time math students in corequisite courses is back to fall 2019 levels

Number of first-time math students enrolled in corequisite support courses



SOURCE: Authors' calculation using MIS data.
NOTES: Includes students in enhanced courses. Fall of each year.

The one-term throughput rate among first-time math students in corequisite courses fell to 46 percent in fall 2022, lower than it was the previous two years and 1 percentage point higher than it was in fall 2019. Completion rates among corequisite students, however, vary widely across colleges (Figure 12 and Technical Appendix B4). In a quarter of the colleges that offered corequisites in math, less than 39 percent of corequisite students successfully completed the transfer-level course in one term. At the other extreme, in a quarter of colleges with corequisites, more than 60 percent of students who started in a corequisite model in fall 2022 successfully completed the transfer-level course in one term. This means there was a 20 percentage point gap in completion rates between the colleges with the lowest and highest throughput rates (interquartile range).[22]

When we look at the performance of students in standalone sections, we see a smaller, but still substantial, interquartile range (11 percentage points). In colleges that are “low performing” according to their throughput rates in standalone sections (those in the bottom 25th percentile), less than 51 percent of students successfully completed the course in one term in fall 2022. Meanwhile, in “high performing” colleges (those in the top 75th percentile), more than 62 percent successfully completed the course.

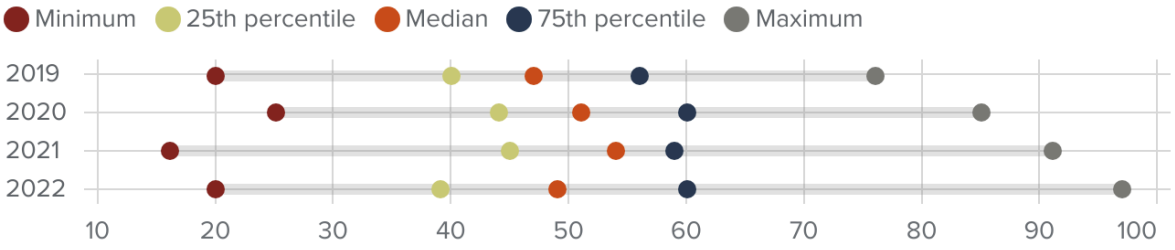
Figure 12 also shows that fall 2022 marked a shift, with most colleges’ first-time math students enrolled in corequisites seeing worse throughput rates than in the two years prior.

22. The interquartile range is the middle half of the data that lies between the upper and lower quartiles. In other words, the interquartile range includes the 50 percent of data points that are above the 25th percentile and below the 75th percentile.

Figure 12

There is a lot of variation in one-term throughput among first-time math students

One-term throughput of first-time math students in corequisite courses, %



SOURCE: Authors' calculations using MIS data.
NOTES: Fall of each year. Only colleges with at least 30 students in the corequisite course are included. These statistics are calculated for 91 colleges in 2019, 88 in 2020, 87 in 2021, and 93 in 2022.

At the same time, there are some colleges that are experiencing relative success with their corequisite support courses in math. In fall 2022, 26 colleges had one-term corequisite completion rates above 55 percent (which is the median one-term throughput rate of first-time math students in standalone sections).[23] A dozen of these colleges had corequisite completion rates above 62 percent (the 75th percentile in standalone sections). Furthermore, 19 colleges that offered at least one corequisite course from fall 2019 to fall 2022 saw higher one-term completion rates among Latino and Black students in corequisites than in standalone courses during that time.

Disparities between colleges highlight both the need for improvement and the untapped potential of corequisite models. They also shed light on the variation in approaches taken in either expanding or deemphasizing corequisite offerings and enrollment. For example, at Los Angeles Southwest College, corequisite courses in SLAM (Statistics and Liberal Arts Math) were adopted in 2022, accounting for 30 percent of its fall enrollment of first-time math students, almost all of whom were Latino or Black. About 55 percent of Latino and Black corequisite students successfully passed the course, 12 percentage points higher than one-term throughput rates among the college's Latino and Black students in standalone courses from 2019–2022. Interestingly, at Ohlone College, enrollment in corequisite courses, primarily offered for BSTEM (Business, Science, Technology, Engineering, and Mathematics), has decreased from 2019 to 2022, accounting for a peak of 9 percent, and then only 3 percent, of first-time math enrollment. However, throughput rates in Ohlone College's corequisites are the highest in the state; rates are increasingly higher than those among their students in standalone transfer-level courses and are especially high among Black and Latino students (84% completion rate in corequisites compared to 56% in standalone courses from 2019 to 2022).[24]

Like in English, much more research is needed to understand why math corequisites may be seeing success and growth in some contexts and not in others, including determining the impact of differences in

23. Based on colleges with at least 30 students in the corequisite course.
24. It should be noted that only 6 percent of Ohlone College's Black and Latino first-time math students were enrolled in corequisite courses over that span.

student composition across colleges, as well as variation in school-determined factors such as course design and placement practices. For example, at some colleges, corequisite courses are optional or open access, meaning any student can enroll despite their placement recommendation; this makes comparisons across colleges difficult given the potentially wide variation in the types of students enrolling in such courses. Still, relatively positive outcomes at several colleges suggest that corequisite courses can potentially promote success and narrow equity gaps when implemented effectively.

Trends in Longer-Term Outcomes

Given the transformational nature of AB 705, it is important to evaluate its potential impact on students' trajectories beyond the completion of introductory transfer-level courses. In this section, we examine three-year outcomes among first-time math students in the fall 2019 cohort, making comparisons to earlier student cohorts prior to the systemwide implementation of AB 705. We also examine differences between students who did and did not start in a transfer-level course.[25] We narrow our population of interest to first-time math students because math completion has historically proven to be a bigger obstacle for students than college composition (Johnson and Cuellar Mejia 2020; Cohen and Kelly 2019).

We evaluate three-year outcomes—transfer rates, degree completion, and unit accumulation—from the moment students take their first math course, which is not always their first term in the community college system, though about 64 percent of first-time math students are also in their first term.[26] Our analysis provides an indication of how AB 705 might have influenced outcomes after that critical point in students' transfer journey. In making these longer-term comparisons, however, it is important to keep in mind the effects the pandemic had on student enrollment, causing substantial declines not just in the number of first-time math and English students, but subsequently, in the number of such students persisting and eventually reaching key milestones along the transfer pathway.

Longer-Term Outcomes Did Not Meaningfully Change

The three-year transfer rate was largely unchanged: among first-time math students, it increased from 18.7 percent for the 2018 cohort to 20.4 percent for the 2019 cohort (Figure 13).[27] However, the actual number of students transferring decreased by 3 percent due to there being 11 percent fewer first-time math students in 2019 than in 2018.[28] A small decrease in the number of transfers is a positive finding given that this cohort

25. This section presents descriptive statistics. However, we also calculated regression-adjusted estimates to control for variation in student demographics and characteristics across cohorts. In these regressions we include controls for gender, race, age, prior dual enrollment status, CPG/PELL Grant recipient, special program status (Puente, Mesa, Umoja, etc.), first-time student status, transfer goal, full-time status, community college GPA in the first term of enrollment (as a proxy for academic preparedness), college fixed effects, and time trends. We performed several robustness checks with different models and controls. Our regression-adjusted estimates are primarily used to confirm our takeaways from the descriptive analysis. See Technical Appendix A for more details.
26. It is worth noting that 53 percent of first-time math students in fall 2019 were also first-time English students.
27. Our regression-adjusted estimates find no change in transfer rates between pre–AB 705 cohorts (fall 2015 to 2018) and the fall 2019 cohort. When we add a time trend to account for increases in transfer rates over time, we find a slight negative decline in transfer rates (less than 1 percentage point). Overall, our regression results reinforce our broader conclusion that three-year transfer rates have yet to meaningfully change as a result of AB 705.
28. The decline in the number of first-time math students was partially due to many students deciding to delay enrollment amid changes to placement policies.

experienced an extra year of the pandemic's repercussions compared to the fall 2018 cohort (Alesi Perez et al. 2022). Another positive trend is that the demographic make-up of students who transferred did not change much (see Technical Appendix Table B1).[29] It is important to note that transfer rates were already increasing gradually prior to the implementation of AB 705, likely the result of a combination of policies, programs, and initiatives that both community colleges and four-year institutions are undertaking to streamline the transfer pathway and increase the number and diversity of transfer students in their institutions. These efforts range from increasing outreach, to guaranteeing future transfer admission for eligible students, to expanding existing transfer programs to more colleges (Cuellar Mejia et al. 2023).

In terms of degree attainment, first-time math students in the fall 2019 cohort were slightly less likely to earn an ADT (Associate Degree for Transfer, which guarantees admission to CSU) or a local AA/AS (associate of arts/associate of science) degree in three years compared to the fall 2018 cohort. This is consistent with the overall decline in the number of associate degrees awarded between academic years 2020–21 and 2021–22.[30] Despite this small decline, the associate degree attainment rate for the fall 2019 cohort was equal to that of the fall 2017 cohort and earlier cohorts.[31]

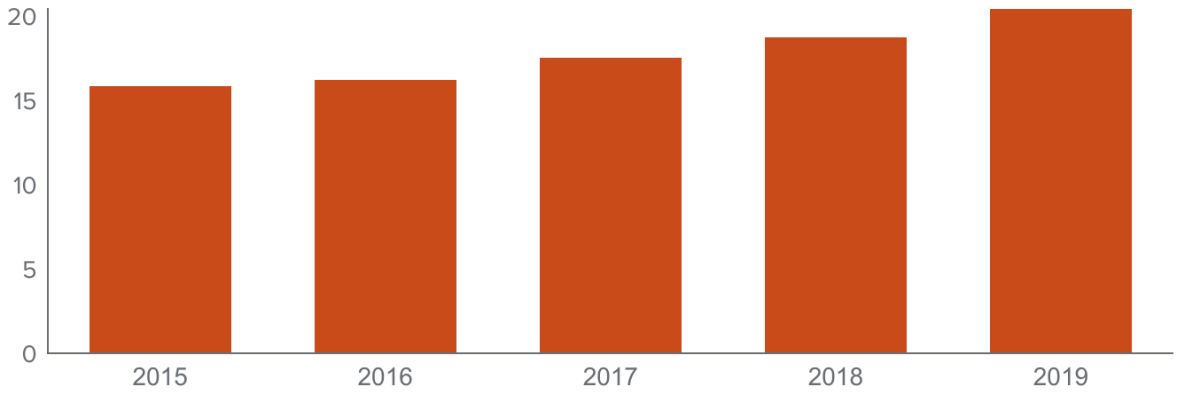
In terms of unit accumulation, there was a nominal increase in the number of transferable units earned by the typical student in the fall 2019 cohort compared to the typical student in previous cohorts.[32] The median first-time math student in the fall 2019 cohort earned 31 transferable units three years after taking their first math course, two more units than the median student in the 2018 cohort.[33]

29. This is also true for students who earned an Associate Degree for Transfer.
30. According to the Student Success Metrics, the number of ADTs earned declined by 7.3 percent, from 62,922 in 2020–21 to 58,351 in 2021–22. Meanwhile, the number of local degrees earned declined 2 percent, from 86,658 to 85,027.
31. Our regression-adjusted results find a slightly larger decrease in ADT attainment (2–3 percentage points) and local AA/AS attainment (4–5 percentage points) among the fall 2019 cohort.
32. These are transferable units to the University of California and/or to the California State University systems on the basis of articulation agreements. About three in four are units in courses that are transferable to both UC and CSU. The count includes units articulated for a general education requirement or a major requirement as well as elective unit courses.
33. Our regression-adjusted estimates actually find a slight decrease in the number of transferable units earned (0.2-0.5 units) among the fall 2019 cohort.

Figure 13

Transfer rates among first-time math students increased slightly

Share of first-time math students successfully transferring within three years of taking their first math course



SOURCE: Authors' calculations using MIS data.
NOTES: Fall of each year. To enter our transfer pool, students must have earned at least 12 units before transferring and been enrolled in a community college in the academic year before transfer.

Racial Equity Gaps in Transfer Remained Similar

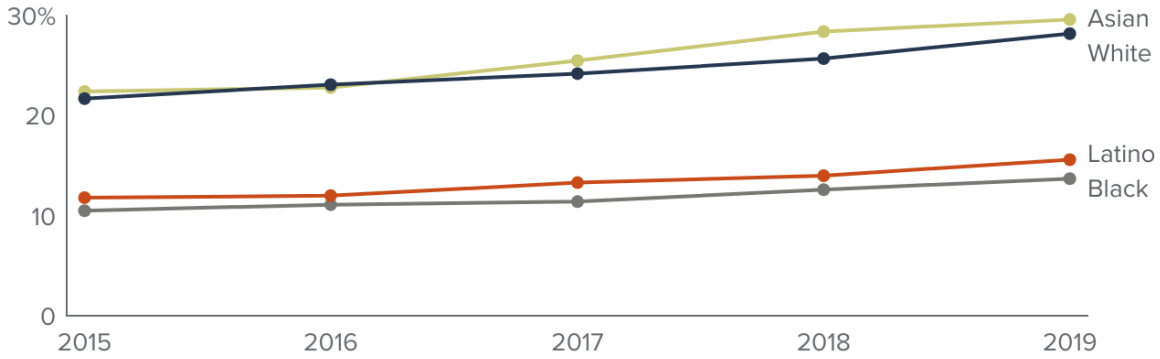
How did racial equity gaps in longer-term outcomes among the 2019 cohort of first-time math students compare to outcomes among previous cohorts? Compared to fall 2018 students, three-year transfer rates increased slightly for all major racial and ethnic groups.[34] However, Black students—who have the lowest transfer rate (13.7%)—saw the smallest increase (1.1 percentage points), while white students—who have the second-highest rate (28.2%)—saw the largest increase (2.5 percentage points). This meant that the white-Latino and the white-Black gaps in three-year transfer rates among first-time math students increased by about 1 percentage point (Figure 14). A larger increase in transfer rates among white students may seem inconsistent with the fact that Latino and Black students disproportionately experienced the largest gains in direct access to transfer-level math as a result of AB 705 reforms. However, such results are not surprising considering that Black and Latino students were disproportionately represented among transfer-intending students who did not persist during the pandemic (Alesi Perez et al. 2022).

34. Recall that these transfer rates are calculated from the moment that students take their first math course.

Figure 14

The white-Latino and white-Black gaps in transfer rates increased about 1 percentage point

Share of first-time math students successfully transferring within three years of taking their first math course



SOURCE: Authors' calculations using MIS data.
NOTES: Fall cohorts. To enter our transfer pool, students must have earned at least 12 units before transferring and been enrolled in a community college in the academic year before transfer.

A Higher Share of Students Are Making Progress toward Transfer

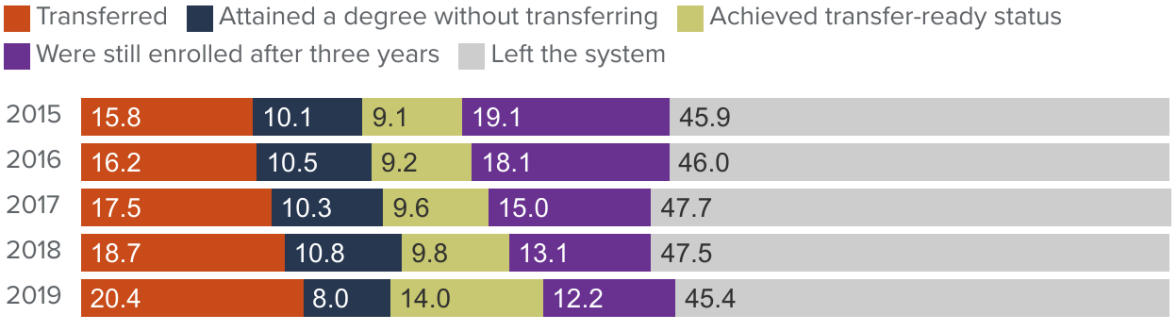
Figure 15 provides a more comprehensive outlook of three-year outcomes among first-time math students. As a result of early implementation of AB 705 and other reforms, the share of students who transferred, earned a degree, or achieved our proxy for "transfer ready" status has increased over time.[35] Most notably, the share of students achieving transfer-ready status increased by 4.2 percentage points when comparing the fall 2018 cohort to the fall 2019 cohort. On one hand, this points toward the positive impact that AB 705 has had on streamlining the transfer process, making it easier for students to access and complete transfer-level courses in a shorter timeframe. On the other hand, the share of students who "stopped out" (i.e., left the system)—students who did not transfer, were not ready to transfer, and were no longer enrolled three years after taking their first math course—has remained practically unchanged. This suggests that AB 705 may *not* be improving longer-term outcomes among students who were already struggling to make progress along the transfer pathway.

35. We define transfer-ready students as those that either completed an AA/AS degree or completed at least 50 transferable units, obtained a transfer-level GPA of at least 2.0, and completed at least one math and English transfer-level course.

Figure 15

A higher share of students achieved "transfer ready" status

Three-year outcomes among first-time math students by student cohort, percent



SOURCE: Authors' calculations using MIS data.
NOTES: Fall cohorts. To enter our transfer pool, students must have earned at least 12 units before transferring and been enrolled in a community college in the academic year before transfer. We define "transfer-ready" students as those that either completed an AA/AS degree or completed at least 50 transferable units, obtained a transfer-level GPA of at least 2.0, and completed at least one math and English transfer-level course.

Students Starting in a Transfer-Level Course Have Better Outcomes

There are marked differences in transfer rates, ADT attainment, and unit accumulation depending on students' starting level. Unsurprisingly, across all three measures, students who start directly in a transfer-level math course, either with or without corequisite support, had substantially better long-term outcomes than students starting in a below-transfer-level course.[36] For each measure, those starting in a standalone transfer-level course (i.e., unsupported sections) were more successful than corequisite students who, in turn, were more than twice as successful as students starting in below-transfer-level math courses.

Among the 2019 cohort, the three-year transfer rate of students beginning in transfer-level math was 25.3 percent for those in standalone courses, 17.7 percent for those in corequisite support sections, and only 8 percent for those starting in a math course below transfer level (Figure 16).[37]

In terms of ADT completion, 15.2 percent of first-time math students in standalone transfer-level courses and 11.3 percent of students in corequisite models earned an ADT, compared to only 4.8 percent of students who started in a below-transfer-level course.[38] As with transfer rates, students who received additional support were more than twice as likely to achieve longer-term success (in this case, attainment of an associate degree) if support was provided via a corequisite instead of a below-transfer-level prerequisite course. This same pattern emerges when comparing the number of transferable units earned within three

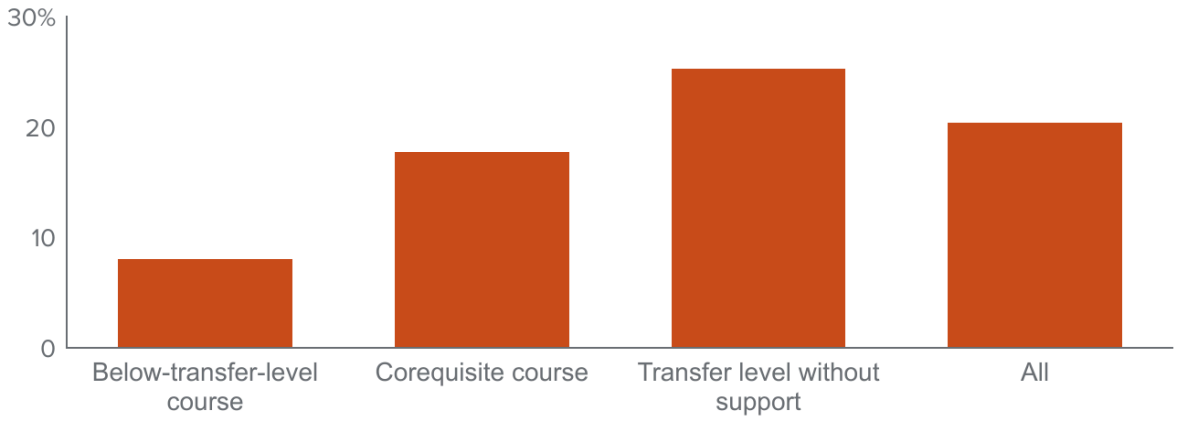
36. Research shows that completing transfer-level math during a student's first year is associated with better longer-term outcomes (Belfield, Jenkins, and Fink 2019). Prerequisite remediation severely limits students' ability to complete transfer-level math and English courses in their first year.
37. From a proportionality perspective, those starting in a transfer-level math course comprised 79 percent of first-time math enrollments in the fall 2019 cohort and 92 percent of the cohort's successful transfers three years later. On the other hand, students starting below transfer level comprised 21 percent of first-time math enrollments but only 8 percent of the cohort's transfers.
38. We focus on the ADT here because it is now the more prevalent degree, but the results for traditional AA/AS attainment are consistent.

years by a typical student across the three groups: 38 units (standalone transfer-level course), 29 units (corequisite), and 14 units (below transfer level).

Figure 16

Students who start in a transfer-level course have better chances of transferring

Share of first-time math students who transferred within three years of taking their first math course, fall 2019 cohort



SOURCE: Authors' calculations using MIS data.

Transfer rates among first-time math students who started in transfer-level courses declined 6.8 percentage points, from 30.5 percent among the fall 2018 cohort to 23.7 percent among the fall 2019 cohort. However, since the number of students enrolling directly in transfer-level math courses increased by 75 percent, which coincided with a large decline in the share of students enrolling in below-transfer-level courses (from which three-year transfer rates are considerably lower), the overall transfer rate still increased slightly from the fall 2018 cohort to fall 2019 (Table 1). Altogether, there were 36 percent more students transferring within three years among those who started in a transfer-level math course in the fall 2019 cohort than in the 2018 cohort.

Table 1

Transfer rates of students who started in transfer-level math are lower for the fall 2019 cohort than previous cohorts

Fall 2016-2019 cohorts

Year	Share of first-time math students enrolling directly in TL (%)	3-year transfer rate among all first-time math students (%)	3-year transfer rate among students who started in TL (%)	Annual change in number of first-time TL students who transferred in 3 years (%)	Share of transfers who started in TL (%)
2016	25.7	16.2	29.8	7	47
2017	30.0	17.5	31.2	23	54
2018	40.1	18.7	30.5	26	65
2019	78.6	20.4	23.7	36	92

SOURCE: Authors' calculations using MIS data.
NOTES: Outcomes measured three years from first math enrollment. TL refers to transfer level.

At this point, we cannot accurately assess how much of the decline in transfer rates among students who started directly in transfer-level courses was pandemic-induced, and how much was the result of expanded access to transfer-level math and English courses, which altered and diversified the composition of students taking such courses. As more data become available and we move further away from the pandemic, it will be important to continue assessing the impact of AB 705 and AB 1705 on longer-term outcomes to determine whether transfer rates among students who started directly in transfer-level courses eventually return to the levels that existed before the pandemic and before AB 705.

Moreover, improvements in gateway completion are important but are likely not sufficient to single-handedly produce dramatic increases in transfer rates. Students hoping to transfer continue to face numerous challenges in transitioning to a four-year institution (Bustillos 2017; Cooper et al. 2020; Fink 2021). These challenges include inadequate transfer advising; insufficient transparency about whether community college credits transfer to a four-year institution (i.e., credit mobility); differing requirements for UC, CSU, and private institutions; lack of financial aid alignment between community colleges and four-year institutions; and limited access to resources and support services.

Efforts to improve the transfer pathway are ongoing. In 2021, Governor Newsom signed into law Assembly Bill (AB) 928, the Student Transfer Achievement Reform Act, to streamline the process by which California community college students may transfer to a four-year university. In conjunction with AB 928 and other reforms that are taking shape (UC and CSU dual admission pilot programs, for example), future improvements will require continued collaboration from all higher education institutions to make the transfer process less onerous for students (Cuellar Mejia et al. 2023).

Improving Racial Equity under AB 705: Case Study Analysis

Despite the progress brought on by AB 705, large racial/ethnic gaps remain in successful completion of transfer-level courses in English and math. Addressing these disparities is of critical importance and should be the focus of continued reform. Promisingly, some community colleges are demonstrating higher rates of success among Black and Latino students, raising completion rates and reducing equity gaps between them and their Asian and white peers.

In this section, we present key takeaways from a qualitative analysis highlighting colleges that have demonstrated promising student outcomes for both Black and Latino student populations in transfer-level math after the implementation of AB 705. This analysis sought to better understand the implementation of AB 705 at these colleges, the specific practices used to improve math outcomes for Black and Latino students, and the strategies used to support students during the COVID-19 pandemic. Similar to the above section, we focus on math because historically, transfer-level math has been a larger obstacle for students than college composition.

Specifically, we used student-level data to identify and select ten community colleges to serve as case studies. Five community colleges were selected for having relatively high and equitable one-term throughput rates among Black students, and another five were selected for having similarly positive outcomes among Latino students. We developed our selection criteria from our quantitative analysis, by examining (1) the level of change in one-term throughput rates in transfer-level math in 2021, compared to before the pandemic (2019) and before AB 705 (2018); (2) the transfer-level math access rate in 2021; and (3) the proportionality index and the white-Black and white-Latino equity gaps in throughput rates.[39] Additionally, to ensure high-performing colleges had sufficient enrollment to justify their selection, we considered the size of each college's cohort of first-time math students, the level of change in its first-time math enrollment as a result of the pandemic, and the share of its first-time math students who were Black or Latino.

Taken together, the colleges selected reflect cases where throughput rates for Black or Latino students, specifically, are relatively high, where increases in completion rates among these groups after AB 705 are substantial, and where equity gaps have narrowed and are smaller than the state average.

For this component of the project, we collected a total of 61 documents for analysis; documents included strategic master plans, student equity plans, student support websites, course catalogs, and AB 705 reports and presentations developed by student services. In conjunction with the document analysis, we also conducted a total of 45 interviews with administrators, staff, and faculty across the ten campuses. See Technical Appendix C for more details about the qualitative research design and results from this analysis.[40]

39. The proportionality index indicates whether a subgroup of students is represented equitably among those successfully completing transfer-level math in one term, relative to the subgroup's representation among all first-time math students who started at transfer level. For our case studies, we selected colleges that had a high proportionality index for Black or Latino students, meaning such students were equitably (or over-) represented among successful completers, compared to their white counterparts.
40. For confidentiality purposes, we do not identify our ten case-study colleges by name. Some of our case-study analyses are available upon request. Contact authors for more details.

Common Elements of Effective Reform

The following takeaways shed light on key elements of effective reform and the approaches taken by these colleges to improve student success and equity in gateway courses, providing valuable insights on how colleges across the state can potentially address persistent disparities.

Strong support for AB 705 at all levels

Across all of our case-study campuses, we observed that successful implementation of AB 705 necessitated, first and foremost, robust support for the legislation from senior leadership. Strong leadership from college presidents and AB 705 coordinators has been instrumental in not only embracing the potential positive impact of AB 705 on student success, but also guiding the transition in assessment and placement procedures, ensuring course sequence alignment, and maintaining momentum for shifts in student support services.

Leadership commitment from these schools came from the president, academic vice presidents, and deans as well as from individuals in student services offices and departments, and institutional research staff. Faculty leaders also played a large role in the success of these efforts through their designation as AB 705 coordinators, leadership in the academic senate, or assistance in curriculum development. Through our interviews, we learned that the more vocal the support of senior leadership, the more confidence AB 705 coordinators and mathematics chairs had in developing plans to increase the availability of transfer-level courses.

Interestingly, not all ten case-study colleges named someone as a formal AB 705 coordinator. While some institutions had designated faculty in this role, others took a more decentralized approach in working to implement the legislation.

In each of the ten colleges, the path toward creating more opportunities for students to access and succeed in transfer-level math did not go uncontested or without critiques of the legislation. In addition to senior leadership's strong support for AB 705, we observed that campus leadership also needed to promote a shift in how faculty, student services, and other departments thought about their work, students, and institutional goals.

With a growth mindset, institutions embraced the notion that some longstanding practices, customs, and processes needed to be changed

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An organizational growth mindset

To facilitate the implementation of AB 705, shifting to an organizational growth mindset was a common theme identified by our interview participants. A growth mindset, as opposed to a fixed mindset, centers innovation, improvement, and continuous learning in everyone's daily work. For staff, faculty, and administrators in our interviews, many embraced learning how they could improve student success by collaborating with different offices and departments, incorporating new teaching practices, and developing

new ways to learn about their students' needs. With a growth mindset, institutions embraced the notion that some longstanding practices, customs, and processes needed to be changed. Adopting a growth mindset also helped administrators, faculty, and staff recognize that making these changes would require considerable time, resources, trust, and cross-collaboration to identify and implement new strategies.

Sustainable financial support and resources

Campuses also highlighted the necessity of having material resources and financial support for organizational restructuring. For example, some campuses created new positions, such as the AB 705 coordinators mentioned above, to lead the design and implementation of AB 705 and to serve as point persons for AB 705 legislation. Through our interviews, we learned that faculty often took on AB 705 coordinator positions and received reassigned time from their courses to focus on developing new teaching strategies, courses, and course schedules. AB 705 coordinators and mathematics deans also communicated that AB 705–related work needed to be a shared responsibility among other mathematics faculty. At most campuses, faculty received paid time to develop and incorporate new curricula, attend conferences, and collaborate with other staff, faculty, and administrators.

The majority of our interview participants highlighted the importance of professional development opportunities hosted by their campuses and different organizations across the state and nation. Such experiences were crucial in helping faculty and staff grow and adapt to the new norms, practices, and standards brought on by AB 705. Funding and external grants were also important in securing the necessary resources for departments and students to be successful. For example, in an effort to directly address their students' financial needs, one college in the San Joaquin Valley utilized COVID-19 funds to provide free college for three semesters and clear any outstanding debt among students during the pandemic.

A culture of data-driven decision making

Colleges also frequently cited the importance of embracing data-driven decision-making in successful AB 705 implementation. For many campuses, institutional research offices were integral stakeholders that informed many decision-making processes related to AB 705 by identifying courses that students struggled to complete and disparities in course success between demographic groups. By analyzing such data, community colleges pinpointed persistent barriers to student success and figured out ways to eliminate these barriers. This approach also enabled colleges to monitor the effects of their AB 705 strategies and make necessary adjustments. We observed that the strong use of data and institutional research not only improved the decision-making process but also enhanced the ongoing evaluation of implemented changes.

Moving data beyond the institutional research office and into the hands of faculty working with students was crucial.

Interestingly, we learned that many of the case-study colleges found value in prioritizing their data findings. When anecdotal evidence was offered as a counterpoint, the objective, quantitative data typically spoke

louder and more convincingly. Moving data beyond the institutional research office and into the hands of faculty working with students was crucial. One college in the Central Coast, for example, participated in a "Cultural Curriculum Audit," providing an opportunity to present faculty with course-specific success data. Many colleges also emphasized the use of longitudinal success data, as opposed to solely focusing on course success rates.

Communities of practice

Recent research finds that whether a student passes a gateway math course depends more on who their instructor is than any other factor, including their prior academic preparation and demographics (Dadgar et al. 2023). Such results suggest that instructional practices can reduce racial disparities in outcomes. At our case-study colleges, communities of practice were essential, creating spaces for groups of faculty, staff, and administrators to focus on problems of practice in instruction, identify promising strategies, and build communities to support continuous improvement.[41] Many of our interview participants were part of communities of practice within their departments, at their campuses, in their districts, and in external organizations. Fundamentally, faculty at these colleges seemed to embrace the necessity of breaking through silos and encouraging stronger collaboration to interrogate the policies, procedures, and processes that hinder student success. Faculty at one college participated in a community of practice facilitated by the local California State University and two other local community colleges, which provided an opportunity to examine local student data and find ways to support students inside and outside of the classroom.

Insights from Colleges with Successful Outcomes among Black Students

Among the campuses identified as having strong results among Black students, there was an acknowledgment that Black students, and their success, were institutional priorities and shared commitments. At a time when our nation wrestled with a history of racism, anti-Blackness, and white supremacy, all campuses were interrogating which systems, practices, and procedures could be a hindrance to the success of Black students and were focused on creating new structures to help promote their success. Furthermore, most of these colleges have specifically highlighted the need to support Black students in their Student Equity Achievement Plans. Three out of our five case-study colleges were listed as sponsors (individually and as part of their districts) for the statewide Black Student Success Week hosted by the California Community Colleges. This acknowledgment and active participation signaled an awareness of the specific challenges Black students face and reaffirmed a commitment to address these disparities.

All our case-study colleges also had an Umoja program on campus. The Umoja Community Programs were first recognized as official statewide success programs in 2008 and have continued to "enhance the cultural and educational experiences of African American and other students" through curriculum and pedagogy, student services, and leadership development. It is important to note, however, that while there are shared values, missions, and goals across all Umoja programs, there are also differences in each campus program's history, organizational structures, and practices. For instance, one of the colleges in our study has a longstanding tradition with Umoja. On the other end of the spectrum, at another college, the Umoja program

41. A problem of practice is an area that a school identifies that focuses on the instructional core, is directly observable, is actionable, and connects to a broader strategy of improvement.

(known as Ujima) was just launched in 2022. Nevertheless, at all our case-study colleges, there were concentrated efforts to support staff leading the Umoja programs and to create more program collaborations with other initiatives.

Our interviewees also identified the integration of promise programs as a key contributor to the success of Black students. In California, promise programs are committed to making the first two years of community college free for students. Through the statewide California Promise program, colleges could provide more structured financial support to students during their first two years, in turn, helping them achieve early academic milestones like completion of transfer-level math.

Insights from Colleges with Successful Outcomes among Latino Students

In contrast to what we found among colleges with positive outcomes among Black students, our case-study colleges with positive outcomes among Latino students cited broader campus-level approaches as critical to improving student success. At these colleges, there did not seem to be a direct focus on developing support mechanisms in the context of AB 705 for the Latino population. Instead, most campuses acknowledged that Latinos accounted for a large share of their students and argued that by virtue of developing broader campus-level efforts, their plans were inherently developed to support Latino students. As such, none of our interviewees was able to speak to specific interventions instituted during the pandemic for their Latino students that were separate from efforts to support all students. Some participants described their campus as embracing a “rising tide lifts all boats” approach to improving student outcomes. The idea is that if all students are supported, then by function of that support, all student populations and groups will also succeed.

Some of our interviewees, however, did highlight the importance of programs like MESA in supporting Latino students. Mathematics, Engineering, Science Achievement, or MESA, was established over 40 years ago with the direct intent of working with “underserved and underrepresented students majoring in calculus-based STEM fields who seek to transfer to a four-year institution.” As one MESA coordinator described, these programs can offer students a wide range of services, going further than simply providing academic support. For example, at one institution, MESA also provides students with professional development opportunities, such as field experiences in their preferred industry. Additionally, one college designed a support group specifically as a resource for Latino students. This program operates like an affinity group that aims to put on cultural events and set up a pathway of dedicated Latino counselors. The program includes a system for flagging students who are struggling so that an affiliated counselor can reach out directly.

Conclusion

AB 705 has dramatically transformed the community college landscape in California—expanding access to a key early milestone in the transfer pathway—but more work is needed to ensure that students can succeed in gateway transfer-level courses and make meaningful academic progress. Promisingly, Governor Newsom signed AB 1705 into law in September 2022, and the legislature appropriated $64 million in one-time

funding to better support a comprehensive and equitable implementation of AB 705. The results presented in this report shed light as to why this investment is so critical.

Below we present three recommendations that we believe are key as the state moves forward.

As California's community colleges approach universal access to transfer-level courses, using evidence-based strategies to improve completion rates and racial equity must be the next priority. The implementation of AB 705 led to a steep increase in direct access to transfer-level English and math courses that translated into a significant rise in the number and share of students successfully completing this important milestone. However, completion rates remain relatively low overall—only 59 percent of first-time English students and 51 percent of first-time math students successfully complete these courses in one term. Furthermore, racial equity gaps are large and have yet to be meaningfully reduced. In transfer-level math, the one-term course completion rate for white students is 22 percentage points higher than for Black students and 17 points higher than for Latino students.

Since the initial implementation of AB 705 in fall 2019, increases in access have been the main driver of improvements in successful completion of transfer-level courses. But as colleges approach universal access, they need to find new ways to further advance student success. As part of this effort, colleges must prioritize identifying and implementing supports that effectively address the academic and non-academic needs of their students. This is an inherently challenging task and will likely require a range of initiatives, including providing professional development and technical assistance for instructors, as well as improving concurrent student support services.

Implementing well-designed corequisites should also play an important role—but not the only one. Currently, we find mixed evidence of their effectiveness, with some colleges seeing success with corequisite models and other colleges not seeing promising outcomes. Considering the legislature's recent approval of a one-time funding stream for corequisite models, professional development, and student services to support the comprehensive implementation of AB 705, the community college system should monitor how funding is allocated and the subsequent impact on student outcomes.

Successful college initiatives can help inform additional campus-level reform. Our qualitative work identifies common elements of equity-focused reform that have helped some colleges improve outcomes and racial equity for Black and Latino students, such as an organizational growth mindset and the provision of effective and targeted supports for students and instructors alike. The need for, and impact of, targeted initiatives, however, seem to vary. Our case studies suggest that when targeted student populations are smaller, strategies that highlight and address specific needs can be effective, especially when they are well-resourced and contextualized to the experiences of students at their particular campus. At the same time, institution-wide strategies may be helpful when populations are large. Overall, colleges should base their approach on the specific students they serve, including developing initiatives or affinity groups centered on supporting specific populations of underrepresented students.

Many colleges that we interviewed cited several high-touch, holistic, and student-centered programs that they believe have specifically benefited students of color at their campus, including promise programs, Umoja, and MESA. It should be noted, however, that other colleges, including those with persistently low throughput rates and high equity gaps, have also adopted these or similar initiatives. Accordingly, *what*

programs successful colleges are implementing may be less important than *how* they are implementing and leveraging them to effectively address the needs of specific groups of students. To this end, expanding communication and collaboration across programs and colleges may be necessary to eliminate statewide equity gaps in gateway course completion that have thus far limited the potential impact of AB 705.

More research is needed to understand the longer-term effects of AB 705 and identify further areas of reform for the transfer pathway. The pandemic has confounded our ability to isolate the impact of AB 705 on degree completion and transfer for students who took their first math or English course in fall 2019, the first term of statewide implementation. On one hand, given that the pandemic severely reduced enrollment and persistence, it is encouraging that we did not see a meaningful negative impact on three-year transfer rates, degree attainment, and unit accumulation compared to earlier cohorts. These very early results suggest that AB 705 may have buffered the impact of the pandemic on transfer, but they could also suggest that significantly broadening access to gateway math and English alone will not guarantee dramatic gains in longer-term academic success.

As more years of data become available, we will be able to examine the outcomes of students for whom the pandemic had a lesser impact. Moreover, once the state's cradle-to-career data system is up and running, we will have information on the academic preparation of community college students (i.e., high school performance measures), which will give us the opportunity to examine more thoroughly the effect of AB 705 reforms on academic momentum, degree completion, and transfer.

California's community colleges have taken a momentous stride forward and have given students a better chance of succeeding in their academic goals. In the coming years, additional efforts to support students in completing not only the early milestones for transfer but also every other step along the way will help amplify the impact of AB 705 and further promote student success.

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