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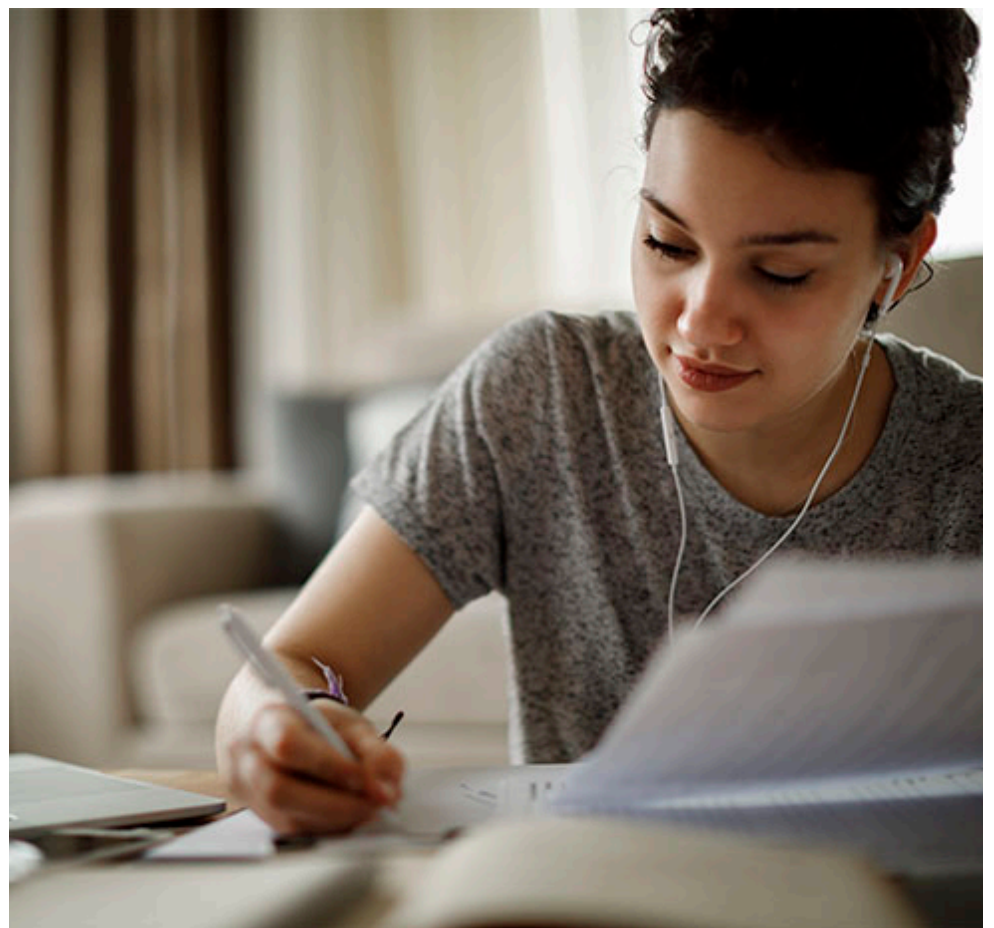
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A New Era of Student Access at California's Community Colleges



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Technical appendices to this report are available on the PPIC website.

Until recently, the vast majority of California’s community college students—hundreds of thousands of students each year—started in remedial courses that slowed down or halted their academic progress. Attrition was high, particularly for Latino and African American students. Few students went on to complete the gateway courses necessary to transfer to a four-year college (known as transfer-level courses).

After years of important but piecemeal reforms, in 2017 a landmark law (AB 705) transformed placement and remediation at the state’s community colleges. Students are no longer asked to prove they are ready for gateway courses. Instead, colleges must prove if students are *not* ready.

We examine how AB 705 transformed student access, outcomes, and racial equity in fall 2019, the deadline for implementation. We find:

- **Access to college composition is nearly universal, and most students enroll in gateway math.** In fall 2019, 96 percent of students who took an English course for the first time enrolled in college composition, and 78 percent of first-time math students took transfer-level math (statistics, pre-calculus, and others). In contrast, only 38 percent had access to transfer-level English in fall 2015, and only 21 percent had access to transfer-level math.
- **Increased access allows many more students to complete gateway courses.** About 57,000 more students passed college composition with a C or better in fall 2019 than in fall 2015, and roughly 31,000 more students completed transfer-level math. Altogether, 61 percent of first-time English students achieved this milestone in fall 2019, and 40 percent did so in math. While there is still a ways to go, these rates are more than double what they were four years ago.
- **Corequisites are more effective than traditional remediation.** Most colleges now offer a corequisite model where students receive additional academic support while enrolled in the transfer-level course. Overall, students in corequisites are much more likely—by about 30 or more percentage points—to complete a gateway course in one term than students who start in remedial education are to complete the course in one year.
- **Progress is across the board, but equity gaps persist.** Completion of transfer-level courses has risen by about 20 to 25 percentage points for all racial/ethnic groups. However, Latinos and African Americans continue to see lower completion rates than their peers, even in corequisite courses. At most colleges, Latinos are now more equitably represented among students completing transfer-level courses than they were four years ago, but African Americans remain substantially underrepresented, especially in math.

- **When access is restricted, African American and Latino students are left out—especially in math.** Colleges with relatively lower levels of access have larger racial inequities in transfer-level enrollment, particularly in math. Several policies could be contributing to these disparities, such as requiring enrollment in remediation, requiring that students meet multiple criteria (e.g., GPA *and* course grade threshold) for placement into gateway courses, and using reading and writing samples, math problems, and self-assessments to help determine students’ college readiness. In some cases, automating placements may help colleges reduce enrollment in remedial coursework.

Overall, our findings show that when given the opportunity, students can succeed in college-level courses. However, we also identify areas of concern that may limit student access and success, including certain placement methods, instructional approaches, and the availability of nonacademic supports. This last point is particularly important as the COVID-19 pandemic and economic fallout continue to affect nearly every aspect of students’ lives. Ongoing monitoring and evaluation of these areas will be critical to ensure that students have the opportunities and support they need to succeed.

An overview of this report’s findings and recommendations is available [here](#).

Introduction

California’s community colleges are a critical entry point to higher education for more than 2 million students. Because of the system’s sheer size and the diversity of its student body, the community colleges play an integral role in promoting economic mobility among underserved Californians. Yet improving student outcomes has long been a challenge: only about half of students (49%) earn a degree or certificate, or transfer to a four-year college within six years.¹

Remedial, or developmental, education has historically been one of the largest obstacles to student success. Until recently, the vast majority of California’s community college students—hundreds of thousands of students each year—were placed in remedial courses that slowed down or halted their academic progress. The goal of developmental education is to prepare students who may not be ready for college-level work. But attrition was high, particularly for Latino and African American students who were more likely to be placed in these courses. Overall, few students starting in remedial courses went on to complete the gateway courses necessary to transfer to a four-year college (known as transfer-level courses).

Passed in 2017, [Assembly Bill \(AB\) 705](#) represents a landmark reform that aimed to broaden access to transfer-level courses and improve equity in student outcomes (see text box on page 7).² Under AB 705, community colleges are required to give students the right to take the courses that give them the best chance of advancing toward their academic goals. Colleges are also required to use information like high school GPA or coursework as the primary criteria for placement recommendations—an approach known as “multiple measures” placement. Follow-up legislation (AB 1805) further mandates that colleges inform students of placement policies and their right to access transfer-level courses.

AB 705 builds on a decade of earlier reform efforts, prior legislative investment, and research on improving assessment and placement in the community colleges.³ For many years, the [Multiple Measures Assessment Project \(MMAP\)](#) and the [Common Assessment Initiative](#) have been working to improve placement accuracy at California’s community colleges.⁴ Research stemming from these initiatives helped establish that high school performance was a better predictor of student success in college than scores on standardized placement tests. In addition, the legislature made significant investments to provide funding to colleges that chose to implement evidence-based reforms to their assessment and placement policies, curricular structures, and student services through the Basic Skills Initiative (BSI) and the Basic Skills and Student Outcomes Transformation program (BSSOT). Supported by these investments, colleges across the state experimented with multiple measures placement and corequisite remediation, a promising curricular approach where students receive additional academic support while enrolled in the transfer-level course.

Research on the impact of earlier reforms on students’ academic outcomes helped pave the way for AB 705. A growing body of evidence demonstrates that completion of transfer-level English and math early in a student’s career is associated with higher rates of degree completion and transfer to a four-year college (Jenkins and Bailey

¹ California Community Colleges [Student Success Card](#) 2019.

² The legislation’s rationale notes that placement policies have “serious implications for equity” and cites this goal: “to ensure that students are not placed into remedial courses that may delay or deter their educational progress unless evidence suggests they are highly unlikely to succeed in the college-level course.”

³ For research on the use of standardized placement tests in California’s community colleges see: Bunch et al. (2011); Melguizo et al. (2014); Regional Educational Laboratories (2011); Rodriguez, Cuellar Mejia, and Johnson (2016); and Venezia, Bracco, and Nodine (2010). For more on the predictive validity of placement tests see: Bahr et al. (2019); Belfield and Crosta (2012); Fulton (2012); Hodara and Cox (2016); Scott-Clayton (2012); and Scott-Clayton, Crosta, and Belfield (2014). For research on attrition and inequities in developmental education see: Bailey, Jeong, and Cho (2010), and Cuellar Mejia, Rodriguez, and Johnson (2016).

⁴ See also the work of the [Student Transcript-Enhanced Placement Study \(STEPS\)](#), which conducted a pilot study of multiple measures at Long Beach City College and subsequently helped to launch the work of the Multiple Measures Assessment Project.

2017; Cooper et al. 2017; Hayward and Booth 2010). Additionally, recent research finds that four-year transfer rates among students who started directly in transfer-level math courses are significantly higher than among students who started in a remedial course—49 percent versus 15 percent (Johnson and Cuellar Mejia 2020).

The goal of this study is to help inform and improve colleges' placement policies and curricular practices under AB 705 and AB 1805 in an effort to further improve student outcomes and close racial equity gaps. We use data from the California Community Colleges (CCC) Chancellor's Office Management Information System (COMIS) to examine access, outcomes, and racial equity in transfer-level English and math at the 114 colleges in the system.⁵ We also conduct a comprehensive scan of colleges' documents, websites, catalogs, and class schedules to identify the placement policies and corequisite offerings in place during fall 2019, the deadline for AB 705 implementation. Finally, through 38 interviews with college faculty, staff, and administrators, we gain insights into the implementation process, the factors behind a college's decision to implement a given placement and corequisite approach, and how the reforms affected equity.⁶

Beginning with English, we provide a descriptive portrait of how access to transfer-level courses changed over time. We examine the ways in which colleges modified their assessment and placement systems in response to AB 705 to determine how policies may have affected access. We also analyze transfer-level course outcomes and provide an overview of corequisite courses. At each stage, we examine findings across racial/ethnic groups to highlight equities and inequities in access and outcomes, and we highlight the variation that exists across colleges. We then provide a similar analysis for transfer-level math, which includes an assessment of different math pathways (statistics and algebra-based). Next, we examine compliance with the transparency requirements put forth in AB 1805. Finally, we draw from our interviews to shed light on how the COVID-19 pandemic has affected the implementation of AB 705. The report concludes with recommendations derived from this research.

A glossary of terms is available at the end of this report.

⁵ Currently, there are 116 community colleges in the system including Calbright College, a fully online college, and the newly created Madera Community College.

⁶ See [Technical Appendix A](#) for more information about our research methods, including our COMIS data analysis, college scan, and interviews. The technical appendices also contain detailed information about the interview sample characteristics and outcomes with respect to the systemwide average.

Landmark legislation transforms placement policies

Assembly Bill 705 was passed in 2017 and enacted on January 1, 2018. While this is not the first piece of legislation intended to improve developmental education, it is by far the most important one to date as no other reform has ever achieved the impressive gains in access and racial equity that we present in this report. Under AB 705, community colleges are mandated to maximize the likelihood that students will start and complete transfer-level (or degree-appropriate) coursework in English and math/quantitative reasoning within a one-year timeframe. Colleges are also required to use high school information (e.g., GPA, coursework, and/or grades in specific math/English courses) as the primary criteria for placement recommendations. Finally, the law stipulates that colleges may use self-placement or guided self-placement if a student's high school records are not available or difficult to obtain and use.

Assembly Bill 1805 was passed in 2018 and enacted on January 1, 2019, as follow-up legislation to AB 705. This law mandates that colleges inform students of their right to access transfer-level (or degree-appropriate) coursework in English and math as well as credit-bearing English as a Second Language coursework. It also requires that colleges inform students of the multiple measures placement policies developed by the college. This placement information is to be communicated in language that is easily understandable and “prominently featured” in the college catalog, orientation materials, assessment website, and any written communication provided by a counselor to a student about placement course options. Colleges are also mandated to publicly post placement results by English and math course level and disaggregated by race/ethnicity. With these stipulations, the law aims to provide more transparency and accountability over placement policies in an effort to improve student outcomes and close equity gaps.

English: Access, Outcomes, and Racial Equity

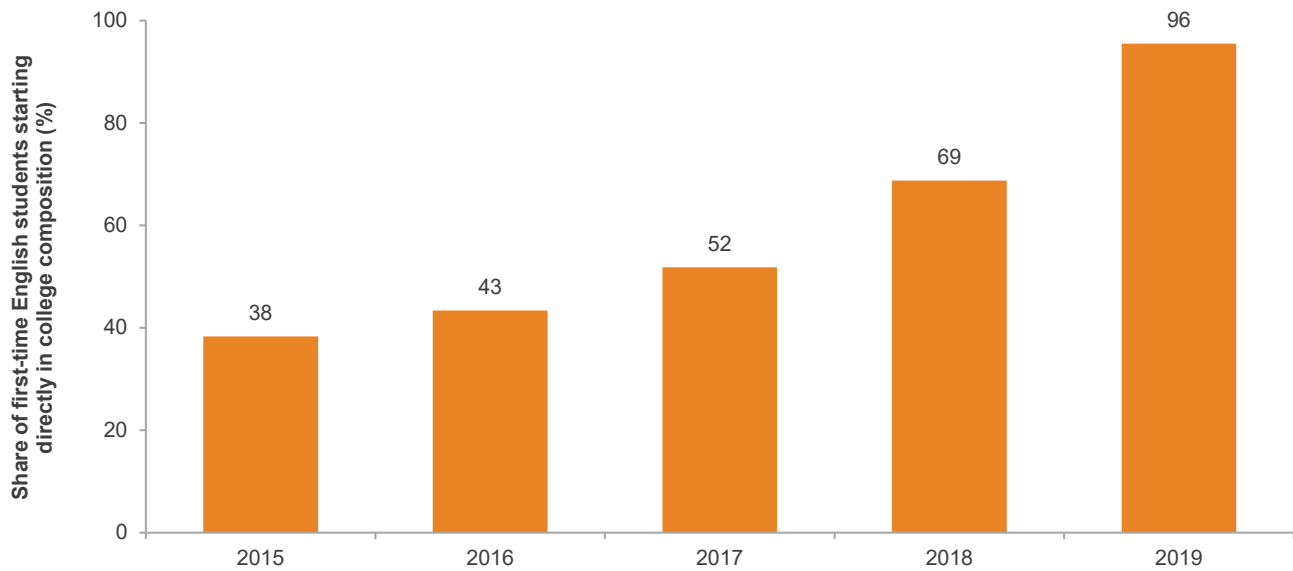
We begin this section by analyzing trends in access to college composition—the gateway course that fulfills English composition general education requirements for transfer—overall and across racial/ethnic groups. Next, we examine how colleges modified their assessment and placement systems under AB 705 and whether these policies have contributed to equitable or inequitable access to college composition. We then explore how student outcomes have changed under AB 705, including a detailed examination of corequisite courses and whether these courses are helping students pass college composition and narrowing equity gaps.

Access to College Composition Is Now Nearly Universal

By fall 2019, the deadline for implementation of AB 705, direct access to college composition became nearly universal across the community college system. Indeed, 96 percent of students who took an English course for the first time in fall 2019 enrolled directly in a college composition course. This is a very dramatic change relative to where the system was just four years prior, when only 38 percent of students began in a transfer-level course (Figure 1).

FIGURE 1

Access to college composition was almost universal in fall 2019



SOURCE: Authors' calculations using COMIS data.

NOTES: Fall of each year. All 114 community colleges included. The number of first-time English takers (the denominator) remained stable during this period averaging 162,500 students. See the glossary of terms at the end of this report for definitions.

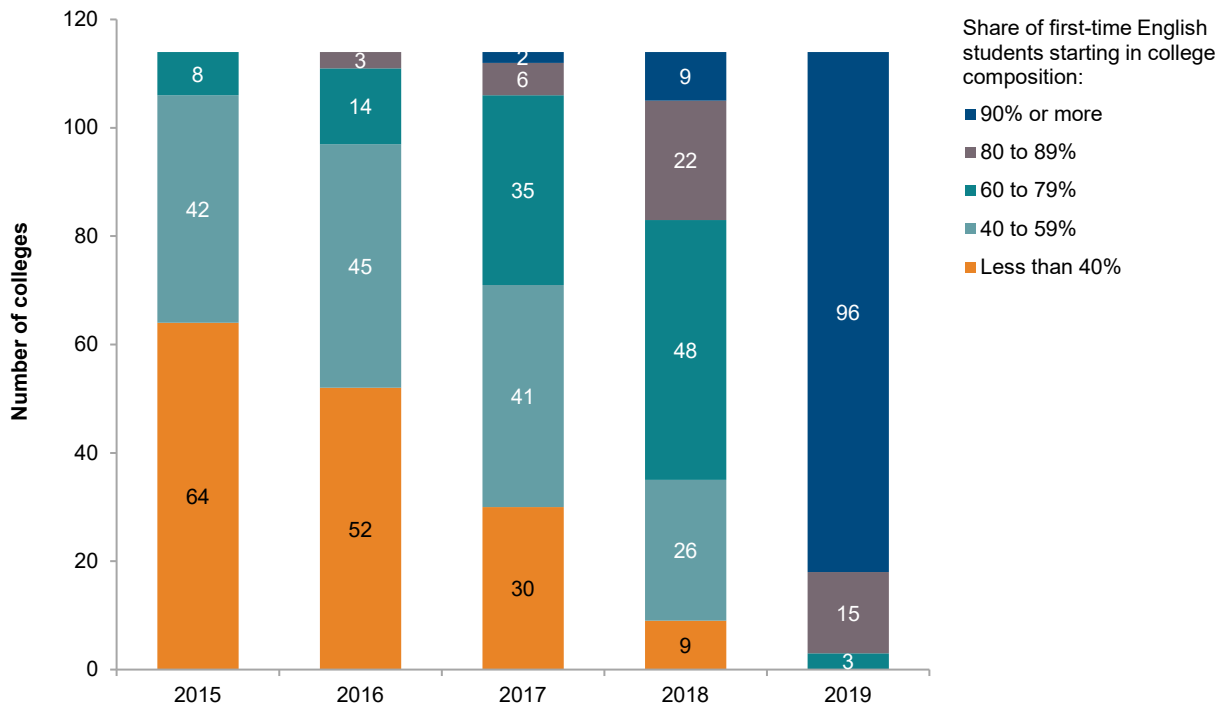
For colleges that were early in implementing placement reforms, the transition to compliance with AB 705 mandates was straightforward. For other colleges, especially those who had placed the vast majority of students in developmental courses, the increase in access between fall 2018 and fall 2019 was substantial. In Victor Valley College, for example, the share of first-time students starting directly in college composition went from 17 percent in fall 2018 to 97 percent in fall 2019, and in San Bernardino Valley College, the share jumped from 23 percent to 96 percent. For about a quarter of all community colleges, the increase in transfer-level enrollment among first-time English students was at least 40 percentage points between fall 2018 and fall 2019.

In stark contrast to previous years, there is now much less variation in access to transfer-level courses across colleges (Figure 2).⁷ In fall 2019, 96 of the system's 114 colleges enrolled 90 percent or more of first-time English students in a college composition course—with 32 colleges enrolling all first-time students directly in college composition (see [Technical Appendix Table B1](#)).

⁷ It should be noted that part of the variation in the 2016–18 period was due to the fact that some colleges were starting to experiment with placement changes.

FIGURE 2

Access to college composition has expanded across the system



SOURCE: Authors' calculations using COMIS data.

NOTES: Fall of each year. All 114 community colleges included. See the glossary of terms at the end of this report for definitions.

Remedial English Enrollment Has Declined Significantly

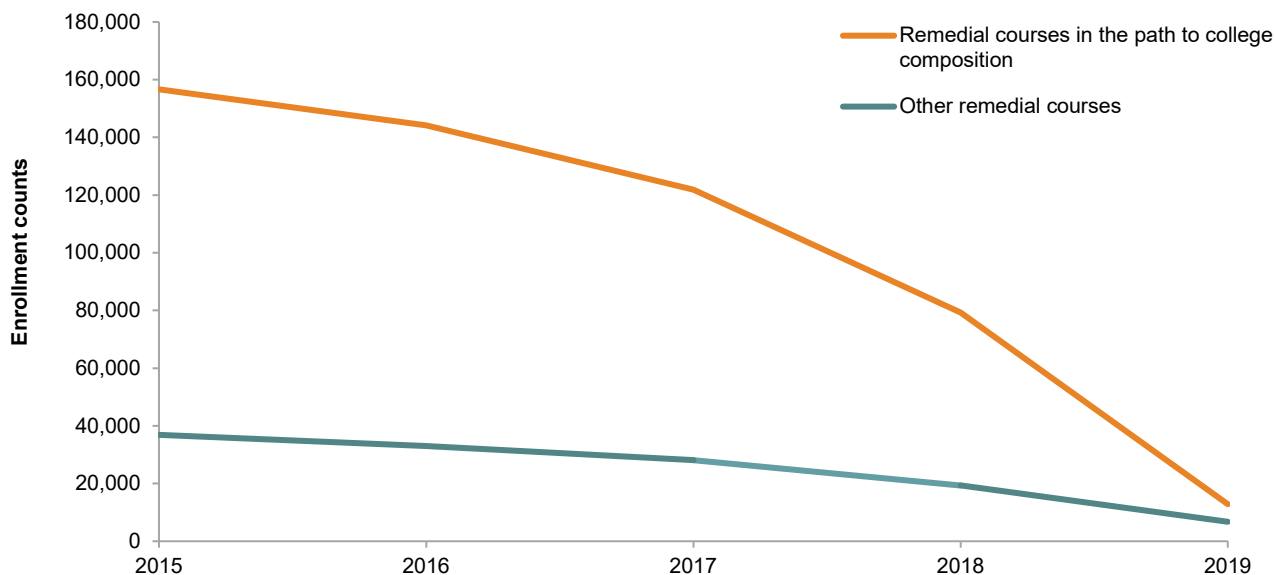
Under AB 705, colleges can continue to offer developmental courses. However, students cannot be required to enroll in these courses unless they are highly unlikely to succeed in the transfer-level course and the developmental course will increase their likelihood of success. Colleges that decide to continue requiring remedial courses will have two years to collect data in order to validate that placement decision (i.e., to prove that it is effective).

Not surprisingly, with the implementation of AB 705 there has been a substantial reduction in remedial course offerings (Hern 2019). In fact, the number of developmental English courses offered systemwide has decreased more and more each year since 2014. Years ago, some colleges began eliminating courses four and three levels below transfer level and experimenting with compressed courses and one-term accelerated courses (Cuellar Mejia, Rodriguez, and Johnson 2016, 2018). In 2016, many colleges also used funding from the BSSOT grants to begin to experiment with placement and corequisite remediation reforms, which helped increase direct access to college composition. Throughout this time, however, these efforts were largely limited in reach, starting as pilot initiatives and expanding slowly.

It was not until AB 705 went into effect that the vast majority of colleges adopted these measures at scale and the decline in remedial course offerings became more dramatic, with some colleges eliminating remedial English courses altogether. In 2015, overall enrollment in developmental English courses was about 157,000; in fall 2019 it was less than a tenth of that, at about 13,000 (Figure 3). Most colleges in the system have seen this level of decline in remedial English enrollments.

FIGURE 3

There has been a dramatic decline in remedial English enrollments across the system



SOURCE: Authors' calculations using COMIS data.

NOTES: We restrict the universe of developmental English courses to those that under the previous system were a prerequisite for college composition. Other below-transfer-level enrollments include writing or reading labs/workshops worth less than two units but also standalone reading courses, which are not prerequisites to college composition. About a third of all below-transfer-level enrollments in fall 2019 were in these lab-type courses. English as a second language (ESL) courses are not included because they comprise a distinct pathway to college composition for non-native English speakers.

Why did some colleges decide to eliminate remedial English offerings? Our interviews with English faculty at six colleges that decided to do away with remediation indicated that these decisions were partly motivated by data showing that many students in those courses were not making it to college composition, scant evidence that students benefited from the courses, and concerns that counselors could potentially underplace students if the courses continued to be offered.⁸

Our interviews also shed light on motivations for continuing to offer developmental English courses. Eight of the fifteen English faculty members we spoke with felt there was still a population of students who need standalone remedial support, including students with disabilities and students who feel they need to “build skills” or that they need a “bridge” course before taking college composition. Even then, two of these English faculty members said that they expected the number of developmental English sections to slowly decline and eventually “go away.” In a few instances, however, we learned of colleges experimenting with redesigned remedial courses (e.g., integrated reading/writing and accelerated preparation for college English), or considering bringing back or increasing the number of remedial sections. At one college, the decision to increase developmental English offerings starting summer and fall 2020 was partly in response to the COVID-19 pandemic. Specifically, during the college’s First Year Experience program, staff and administrators believed that students felt “underprepared for college, especially since the high schools have suddenly transitioned to online learning” and students should have the option of more preparation before taking college composition.

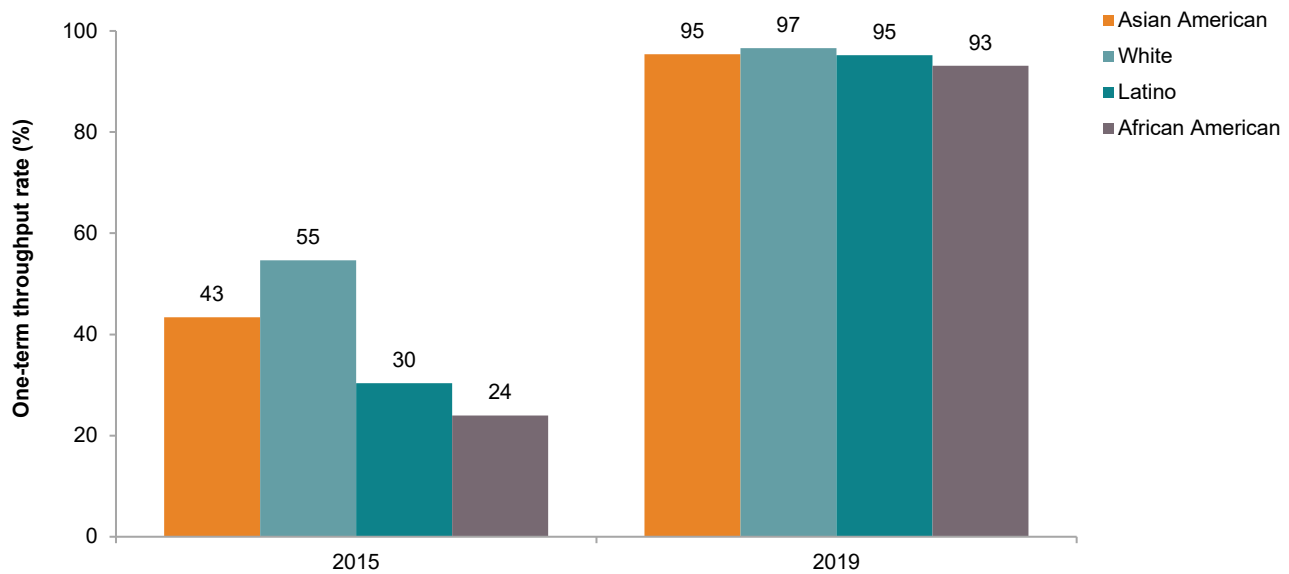
⁸ See Valentine and Goldrick-Rab (2017) for a meta-analysis of the research evaluating the effectiveness of developmental education.

Equity Gaps in Access to College Composition Have Narrowed Dramatically

One of the most immediate and notable outcomes of AB 705 has been the dramatic improvement in equitable access to college composition. In fall 2019, access gaps between racial/ethnic groups (measured by the difference in the share of first-time English students starting directly in college composition) were virtually eliminated. Between fall 2015 and fall 2019, the gap between white and Latino students decreased from 24 percentage points to 1 percentage point; the gap between white and African American students dropped from 31 percentage points to 4 percentage points (Figure 4).⁹

FIGURE 4

Racial/ethnic gaps in access to college composition narrowed dramatically in fall 2019



SOURCE: Authors' calculations using COMIS data.

NOTES: Fall of each year. All 114 community colleges included. These four groups represented 93 percent of first-time English students in 2015 and 89 percent in 2019. There were 83,100 Latino students, 38,600 white students, 18,700 Asian American students, and 9,200 African American students in fall 2015. Meanwhile, there were 90,000 Latino students, 30,900 white students, 18,200 Asian American students, and 8,200 African American students in fall 2019. See the glossary of terms at the end of this report for definitions.

An examination of two additional equity measures supports these findings (see [Technical Appendix Table B2](#)).¹⁰ First, we look at the proportionality index, which indicates whether a subgroup of students is represented equitably among those starting in college composition relative to its representation among all first-time English students, with a score of 1 indicating equitable representation.¹¹ The proportionality index shows that in fall 2015 white (1.43) and Asian American (1.13) students were overrepresented in college composition, relative to their share of first-time English students, while African American (0.79) and Latino (0.63) students were significantly underrepresented. By fall 2019, all groups had reached parity, with the proportionality index for all groups hovering around 1.

⁹ The access rate for Latino students is not statistically different from the access rate of white students at the 0.95 confidence interval (i.e., $p \leq 0.050$). The same is true for the access rate of African American students.

¹⁰ For more information on equity measures see [Sosa \(2017\)](#), [CCCCO \(2017\)](#), [CCCCO \(2014\)](#), and [Royal and Flammer \(2015\)](#).

¹¹ A score between 0.85 and 0.99 in the proportionality index indicates near equity, and a score of 0.85 or below indicates below equity ([Royal and Flammer 2015](#)).

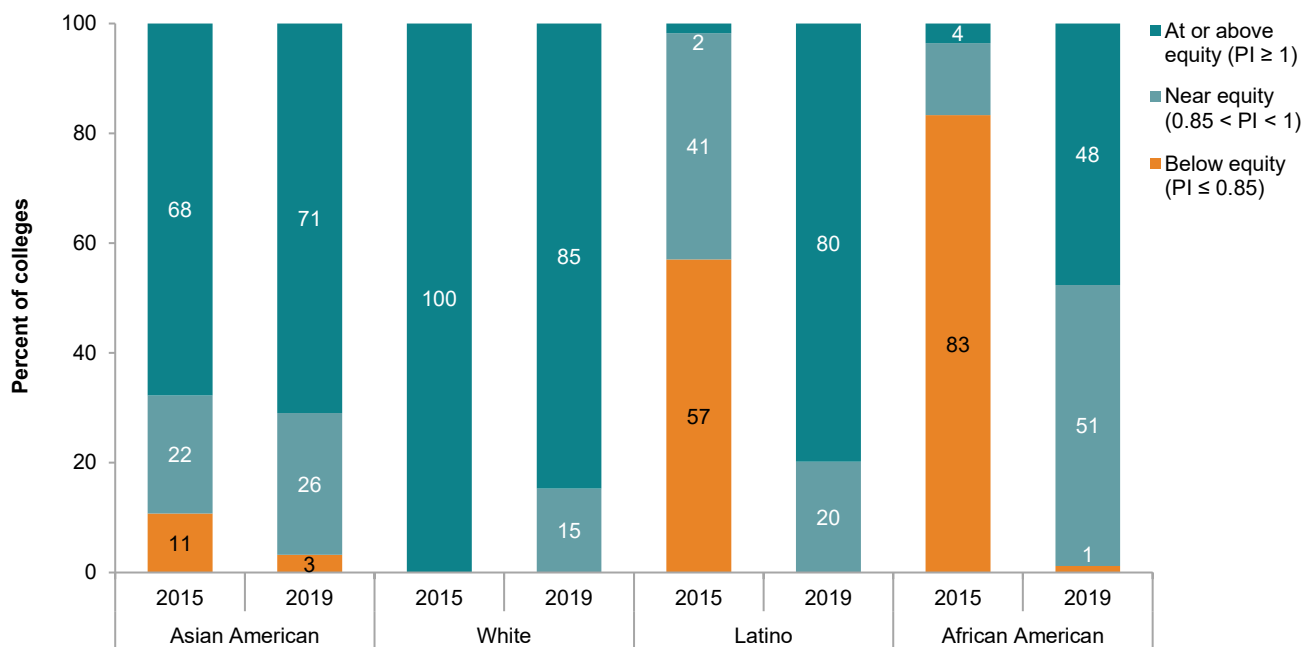
Next, the “80 percent rule” examines whether subgroups’ access rates are within 80 percent of the rate for a given group, usually the highest-performing group.¹² In fall 2015, Latinos (55%) and African Americans (44%) were well below the access rate of their white peers; meanwhile the access rate for Asian American students was 79 percent of the access rate for white students. By fall 2019, all groups were accessing college composition at nearly the same rate, with Asian American and Latino students accessing the course at 99 percent of the access rate for whites, and African Americans at 96 percent.

At the vast majority of colleges, Latino and African American students were equitably represented—or nearly so—among students enrolling directly in college composition in fall 2019 (Figure 5). When we examine all three equity measures by college, excluding colleges with subgroup samples of less than 20 students, we find that in fall 2019 only two colleges continued to have inequities in two or more of the measures for African Americans; three colleges saw inequities in two or more measures for Asian American students.

Given the overall levels of access at colleges four years ago and the small number of colleges with lingering inequities, this finding is encouraging and confirms that colleges across the state are making great strides in closing equity gaps in access to college composition.

FIGURE 5

Latino and African American students were more equitably represented in college composition courses across the system in fall 2019



SOURCE: Authors’ calculations using COMIS data.

NOTES: Fall of each year. We exclude colleges with less than 20 first-time course takers in a given racial/ethnic group. Specifically, 114 colleges are included for Latino students, 111 for white students, 93 for Asian American students, and 84 for African American students. Because the number of colleges is different for each group, we use percent of colleges instead of number of colleges on the y-axis. See the glossary of terms at the end of this report for definitions.

¹² Even though in some instances Asian American students are the highest-performing group, we use white students as the reference group for consistency with past reports.

In our interviews, English faculty, staff, and administrators overwhelmingly agreed that AB 705 was a powerful force in removing the structural barriers that were leading to inequitable outcomes. Specifically, there was a consensus that the removal of standardized placement tests and multiple levels of remediation—and the subsequent implementation of multiple measures placement policies—have helped increase student access and racial equity. Previously, colleges relied on disaggregated data to make the case for reform, noting that talking about the “equity impacts [showed] urgency” and the importance of moving forward with changes to placement and remediation. Nowadays, researchers and leaders of reform efforts do not have to spend time convincing others that the assessment and placement process was “fraught with equity issues,” as one institutional researcher put it, adding that “AB 705 has been effective in this way.”

Overall, our analysis finds that access to college composition is now nearly universal across the community college system—a stark difference from just a few years ago. However, there remain a small number of colleges where access is more restricted and racial equity gaps are larger. In the next section, we examine the association between placement policies and access levels across colleges.

How Are Placement Policies Affecting Student Access?

In this section, we aim to uncover key aspects of colleges’ placement policies that resulted in relatively lower levels of access to college composition. For the purposes of this analysis, we defined “lower-access” colleges as those where 90 percent or less of first-time English students enrolled in college composition—this group consists of 21 colleges.¹³ We compare the placement policies at lower-access colleges with those of colleges offering “universal-access” to college composition (32 colleges). Universal-access colleges have 100 percent of first-time English students enrolling directly in college composition (see [Technical Appendix Table C2](#) for descriptive statistics for both groups).¹⁴ Finally, to provide more context for these two groups we also compare their placement policies to the systemwide average where relevant (see [Technical Appendix Table C3](#) for a detailed comparison of these three groups across the key variables in this analysis).¹⁵

An important difference between universal- and lower-access colleges lies in how placement policies will be used in the ultimate placement decision. For example, at universal-access colleges all students are taking college composition, and placement policies are used to help students determine whether to take this course with or without support. At lower-access colleges, on the other hand, the placement process involves a decision between college composition (with or without support) and prerequisite remedial courses—this decision is high stakes because, as we will see later in the report, it significantly affects students’ likelihood of completing the required composition course.

Prior to the adoption of AB 705, studies found that California’s community colleges used a variety of measures to assess students’ readiness for transfer-level English and math courses, but all relied heavily on standardized placement tests (Bunch et al. 2011; Melguizo et al. 2014; Regional Educational Laboratories 2011; Rodriguez, Cuellar Mejia, and Johnson 2016; Venezia, Bracco, and Nodine 2010).¹⁶ At a time when the use of multiple measures was supposed to be the law, we found that at most 40 percent of colleges reported using high school records to inform the placement process (Rodriguez, Cuellar Mejia, and Johnson 2016). In fact, the second-most

¹³ We selected this cutoff because these colleges were one standard deviation below the systemwide mean of 96; the standard deviation is six.

¹⁴ There was not a statistically significant difference in the racial/ethnic composition of the two groups of colleges.

¹⁵ It is important to highlight that while our lower-access and universal-access groups represent only 21 and 32 colleges out of a 114-college system, the number of colleges in these two subgroups is still larger than the community college systems in over 30 states (NCES 2019), compared to the total number of public two-year colleges in each of the 50 states and Washington, DC. See [Table 317.20](#) in the Digest of Education Statistics 2018.

¹⁶ California was not alone in its heavy reliance on standardized placement tests—as documented by Fields and Parsad (2012) and Rutschow and Mayer (2018)—the same was true nationally. Over the last several years, however, this reliance has begun to decrease in favor of using multiple measures (Rutschow and Mayer 2018).

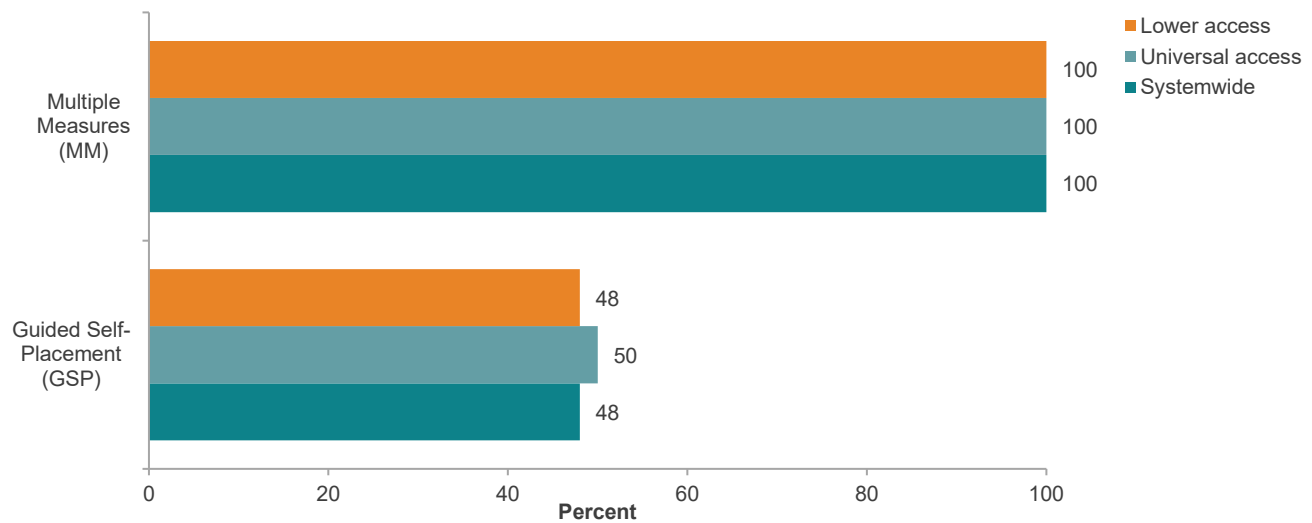
common measure used for placement in English was the Early Assessment Program (EAP) score, which is a measure based on performance on the state’s K–12 standardized tests. Prior to AB 705, it was relatively common for colleges to use high school records (or other placement measures) only after a student challenged the results of the placement test.

As anticipated, after the implementation of AB 705, none of the 114 community colleges used a standardized placement test and 100 percent of colleges used a multiple measures placement system—defined as a placement system where high school records are the primary measure used for placement (Figure 6).¹⁷ We find that generally multiple measures are used for all students who have the necessary placement data, including high school grades and course-taking, even if the data are self-reported. As would be expected given the mandate, lower-access colleges (100%) use GPA as a measure for placement into college composition at about the same rate as colleges with universal access (97%) (Figure 7). The vast majority of all colleges (90%), as well as universal-access (93%) and lower-access (94%) colleges, also use self-reported high school data to inform placements.

Guided self-placement (GSP) is a system that was included in AB 705 as an alternative approach that colleges could use in the event that they could not access students’ high school information (e.g., for students who did not graduate from a US high school or for whom there is a long delay in college enrollment). As part of this process, a college may provide students with course descriptions, sample course materials, and questions intended to help them self-assess their preparedness to read and write at a certain level. Guided self-placement is meant to be a holistic approach that helps students select courses that align with their educational goals and abilities (Academic Senate for CCC 2018; Perez 2019).

FIGURE 6

All colleges use multiple measures for English placement, and about half use guided self-placement



SOURCE: Authors’ calculations using PPIC scan of CCC placement policies (fall 2019).

NOTES: The systemwide bar includes all 114 colleges. There were 32 colleges that offered universal access to college composition and 21 colleges where access to college composition was relatively lower (90% or less of first-time English students starting directly in college composition) in fall 2019. See [Technical Appendix Table C3](#) for full data details.

¹⁷ AB 705 defines multiple measures in the same way. One of the first steps taken by the Chancellor’s Office and the CCC Board of Governors in response to AB 705 was to stop the use standardized placement tests for English and math (Hope and Stankas 2018). Standardized placement tests are still allowed for placement into English as a second language (ESL) courses (Perez and Stankas 2018)

Multiple Measures Placement

During the summer of 2018, the Chancellor’s Office provided colleges with research-based placement thresholds—known as the default placement rules—as guidance on how they could use high school records to inform placement decisions.¹⁸ In English, the placement rules rely solely on high school GPA and recommend that all students, regardless of prior GPA, should be provided with access to college composition; they also recommend or strongly recommend that colleges provide students with concurrent remedial support, depending on GPA (see [Technical Appendix](#) Table C4 for the default placement rules).

While colleges are not required to follow the Chancellor’s Office’s default placement rules, these rules are meant to provide colleges with minimum thresholds for compliance with AB 705. Colleges that choose to innovate and establish local placement rules (e.g., placing students in an accelerated course one level below transfer, if their GPA is below 1.9) must provide evidence that this placement meets or exceeds the success rate benchmarks provided in the default placement rules (Hope and Stankas 2018). Next, we discuss the key differences that emerged in the way universal- and lower-access colleges adopted or deviated from these rules, as well as how additional multiple measures are used.

Overall, the placement rules used by lower-access colleges suggests they are more restrictive than those used by the system as a whole. First, lower-access colleges (38%) are much less likely to use the Chancellor’s Office default rules than the system as a whole (73%) or universal-access colleges (88%). Second, lower-access colleges are significantly more likely to use rules that are stricter than the default rules. For example, one-third of lower-access colleges require placements into developmental English courses or use higher GPA cutoffs for accessing college composition, compared to only 8 percent systemwide; no universal-access colleges have stricter rules. Third, compared to universal-access colleges (3%), lower-access colleges (29%) are more likely to deviate in other ways from the default rules. For instance, this group of colleges tends to recommend developmental coursework for students in the lowest placement band instead of it being optional. As would be expected, placement rules are an important leverage point for improving access and outcomes in college composition. Our descriptive examination of one-term throughput in college composition suggests that colleges following the default placement rules have on average a higher throughput rate (62%) than those with stricter placement rules (57%).

High school course-taking. In general, having more information about a student’s academic history is thought to improve the accuracy of course placements. Given this, one of the most surprising findings on the use of multiple measures in English is that compared to universal-access colleges (and the system as a whole), lower-access colleges are much more likely to use information about students’ highest English course completed (76% versus 44%) (Figure 7). They are also more likely to use the grade students received in that course (67% versus 38%) to inform the placement process. At one lower-access college, for example, the multiple measures of achievement are used conjunctively—meaning that students need to meet two or more high school achievement metrics in order to access college composition (e.g., GPA of 2.0–2.49 *and* grade in last English class of B- or higher *and* self-reported reading skills of “good” or “excellent”). Students not meeting all of these benchmarks are placed in developmental English.¹⁹

It is important to note that the conjunctive approach to placement is not only more restrictive than the default placement rules, but it is also not aligned with AB 705 and [Title 5 regulations](#) governing California education

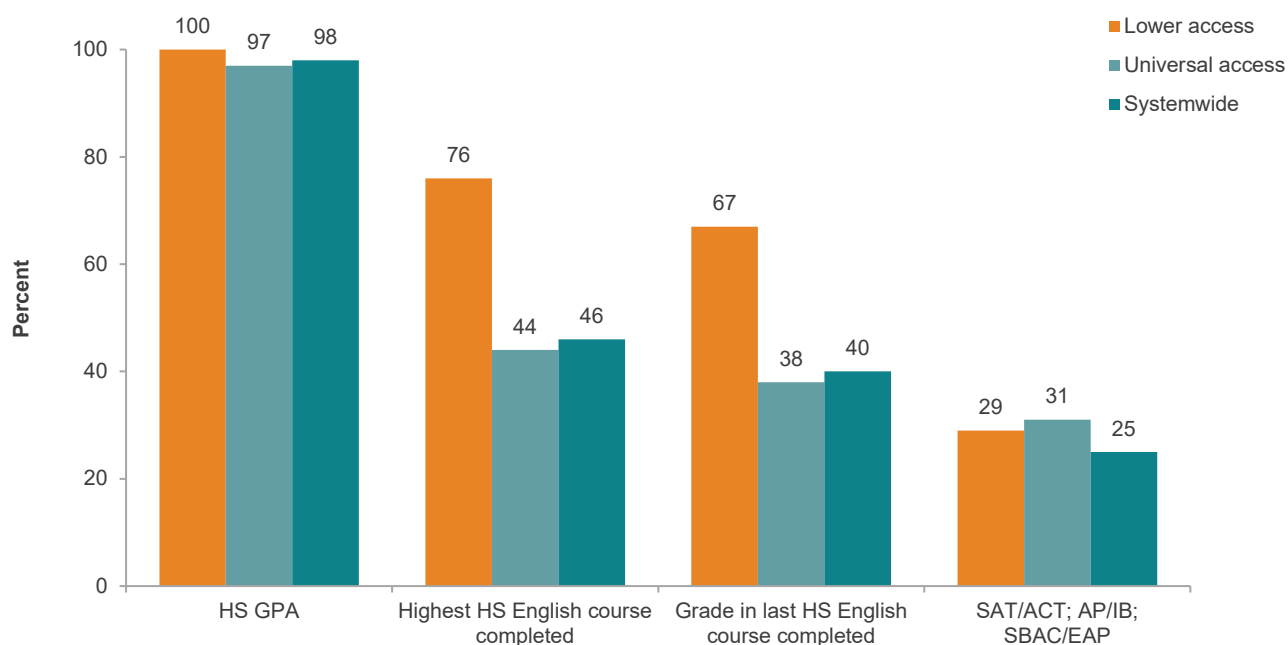
¹⁸ The default rules were developed by the Multiple Measures Assessment Project team based on an analysis of CalPass Plus data. For more information, see the [MMAAP Summary of Methodology for English and Math Phase II Rule Sets and AB 705 Adjustments](#).

¹⁹ Without completing the placement process, all students at this college are automatically eligible for the one-level-below developmental English course. The AB 705 implementation plan for this college indicates that they are gathering data on the students placed into the one-level-below transfer course. They indicate that their placement method still allows all students to complete college composition within two terms. Per AB 705 guidance, the college has two years to validate placements into developmental English.

code. First, AB 705 and Title 5 regulations indicate that multiple measures should be used disjunctively, such that placement uses the “best of” multiple measures, and low performance on one measure (e.g., grade in last English course) may be offset by higher performance on another (e.g., cumulative GPA). Additionally, this is consistent with the finding that lower-access colleges are less likely to be fully adopting the Chancellor’s Office default placement rules, which base placement recommendations for college composition solely on GPA (see [Technical Appendix Table C4](#)). This finding suggests that colleges should take a closer look at the mechanisms through which additional placement variables may be contributing to lower placements to determine whether their use is justified and to identify the types of adjustments needed to improve equity.

FIGURE 7

Nearly all colleges use high school GPA, and lower-access colleges tend to use additional high school data



SOURCE: Authors’ calculations using PPIC scan of CCC placement policies (fall 2019).

NOTES: The systemwide bar includes all 114 colleges. There were 32 colleges that offered universal access to college composition and 21 colleges where access to college composition was relatively lower access (90% or less of first-time English students starting directly in college composition) in fall 2019. See [Technical Appendix Table C3](#) for full data details.

Guided Self-Placement

Overall, we find that 48 percent of colleges used GSP in addition to multiple measures.²⁰ Universal-access (50%) and lower-access (48%) colleges are about equally likely to use GSP (Figure 6).²¹ The majority of colleges use GSP for students without high school data (87%), those who delayed college entry (69%), or for international

²⁰ Note that this number is much lower than the share of colleges who self-identified as using “Guided or Self-Placement” in the AB 705 Implementation Survey conducted by the RP Group in spring 2020 (48% versus 86%) (MMA 2020). See next footnote for details on this difference.

²¹ In this study we define a GSP placement system as one that primarily relies on students’ self-evaluations of readiness for different levels of English and math coursework. GSP approaches primarily provide students with course descriptions, samples of course-specific tasks/assignments, self-assessments of academic and study skills, and the opportunity to meet with a faculty/counselor to select the appropriate course placement. We found that in many of the AB 705 and GSP plans submitted to the Chancellor’s Office, colleges identified their placement system as guided self-placement even when it relied primarily or exclusively on high school records. We found this was especially common when colleges indicated that students “self-place” themselves into the English course of their choice. For this study, colleges that primarily use high school records for placement, even when self-declared as GSP, are categorized as using only multiple measures; those that primarily rely on the use of course descriptions, reading/writing samples and assignments, and/or self-assessments are categorized as GSP.

students (65%). We find that lower-access and universal-access colleges differed in the GSP measures used to inform the placement process.

Self-assessment of academic skills and study habits. Self-assessments provide students the opportunity to rate their academic skills and study habits (see [Technical Appendix](#) Figures C1 and C2). The vast majority of colleges in the system use this measure for guided self-placement and it is by far the most commonly used measure. Among colleges that use guided self-placement, this measure was used by 90 percent of lower-access colleges and 88 percent of universal-access colleges to help students self-place into the English sequence (Figure 8). As an example of what self-assessment entails, at the college with the lowest access level (70%), students are asked to respond (hardly ever/sometimes/most of the time) to a series of statements that include:

- “I comprehend and respond to challenging readings with confidence and ease”
- “I write sentences with correct grammar, spelling, punctuation, and appropriate language”
- “I attend my obligations (such as class or work) regularly and punctually”

Given the high rate at which lower-access colleges use these self-assessments of academic and study skills, and the high-stakes decision students make about enrolling in prerequisite developmental courses based on these assessments, it is important to gather data and conduct research to examine potential biases in the questions and determine if these or similar questions could unintentionally lead students to underplace themselves.

High school course-taking. While the vast majority of universal-access (94%) and lower-access (100%) colleges use guided self-placement for students without high school information or for students who delayed their college entry (63% and 60%, respectively), the majority of lower-access (60%) colleges still ask students to report high school information. In contrast, only 6 percent of universal-access colleges do so. Among the lower-access colleges where this happens, we find that the GSP questionnaires colleges developed typically begin by asking students to report their overall high school GPA and performance in their last English course (see [Technical Appendix](#) Figure C1). Subsequent questions gather information about students’ self-assessment of academic and study skills.

While gathering information about high school course-taking appears counterintuitive for students without high school information, the prominence of this measure suggests it may be used for students who delayed their college entry.²² If this is the case, colleges may want to limit GSP to students who truly do not have high school information, such that students who are able to self-report, even if they delayed college entry, should be given the opportunity to be placed using the multiple measures process instead of being routed to guided self-placement. In fact, research by the [Multiple Measures Assessment Project](#) finds that high school GPA data are still highly predictive after a delay in college entry of 10 or more years, especially when compared to the average predictive validity of Accuplacer, the most common placement exam under the previous system (Hayward and Hetts 2018).

Reading and writing samples. For guided self-placement, colleges often provide students with reading and writing samples to help them get a better sense of the type of reading and writing done at different course levels. Along with the samples, students are typically asked to answer a multiple-choice question where they rate their ability or confidence for reading and/or writing at a given level (see [Technical Appendix](#) Figures C3 and C4 for an example of what this looks like in a lower-access college versus a universal-access college). Colleges then generally tally responses and use the information (sometimes along with other measures, like self-assessments) to inform placement recommendations. Compared to universal-access colleges (19%), lower-access colleges (50%) were much more likely to use reading and writing samples to help students place themselves into the English

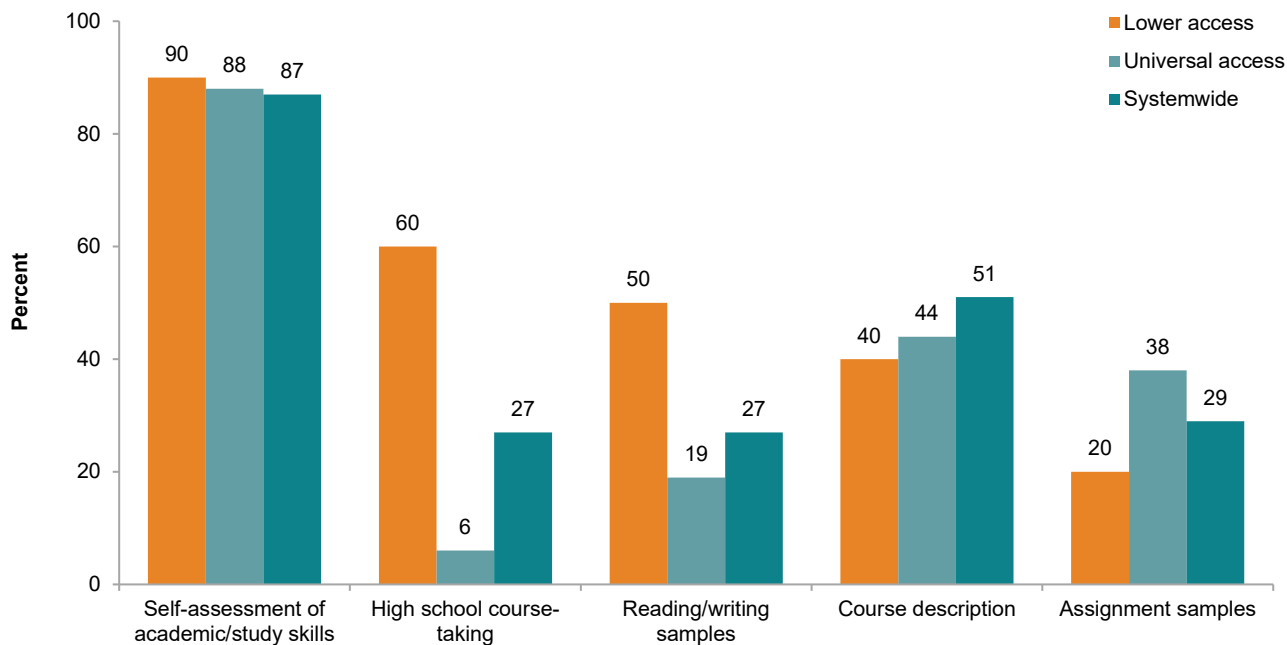
²² It is worth noting that at least one college specified that responding to the high school information is not required (see [Technical Appendix](#) Figure 3B).

sequence. Interestingly, the use of assignment samples (e.g., providing students with a sample writing prompt) was more common at universal-access colleges (38%) compared to lower-access colleges (20%).

These findings suggest that the use of sample assignments may be helpful, but the use of reading/writing samples, even if they are not part of an official reading and/or writing test, should be more closely examined. It is possible that these measures are perceived as a test, since they resemble reading comprehension assessments that are used in tests, and they could elicit test anxiety that affects performance because students did not expect or prepare for an assessment. Indeed, in an interview, a Guided Pathways regional coordinator in a large urban area raised important concerns that colleges were using reading and writing samples and placement bands in ways that look similar to the former placement tests. The Chancellor’s Office guidance and Title 5 regulations aimed to address this concern by indicating that guided self-placement cannot “incorporate sample problems or assignments, assessment instruments, or tests, including those designed for skill assessment, unless approved by the Chancellor” (Perez 2019). However, for the first year of AB 705 implementation, the Chancellor’s Office granted provisional approval to all guided self-placement methods while colleges gather data to evaluate their effectiveness.

FIGURE 8

Universal-access colleges were less likely to use reading/writing samples and high school course-taking for English placement



SOURCE: Authors’ calculations using PPIC scan of CCC placement policies (fall 2019).

NOTES: The sample is limited to the group of colleges using guided self-placement. The systemwide bar includes 55 of the 114 colleges. Among the group of colleges using guided self-placement, there were 16 colleges that offered universal access to college composition and 10 colleges where access to college composition was relatively lower (90% or less of first-time English students starting directly in college composition) in fall 2019. See [Technical Appendix Table C3](#) for full data details.

Crosscutting Issues

Below, we examine how universal-access and lower-access colleges compare along dimensions that apply to both multiple measures and guided self-placement.

Corequisite and prerequisite remedial placement. As part of the transformation of developmental education, the vast majority of colleges introduced corequisite remediation. Compared to lower-access colleges, universal-

access colleges were significantly more likely to offer corequisite remedial support (94% versus 71%) and more likely to require corequisite placements (25% versus 10%). In both cases, the vast majority of colleges only recommended or made the corequisite support course optional: students could choose whether to take the concurrent support course and were often encouraged to speak to a counselor or academic advisor to help make this decision (see more below).

With respect to prerequisite remedial placements, we find that among lower-access colleges, forty-three percent made prerequisite remediation optional for everyone, while another 19 percent made the courses recommended for the lowest placement band. At nearly a quarter of lower-access colleges (24%), students in the lowest placement band were required to enroll in remedial courses.²³ As with corequisite support, when students needed help deciding whether or not prerequisite remediation was a better route, they were encouraged to seek the help of counselors and advisors to help make the decision.

Role of counselors and advisors. A third of colleges in the state require meetings with counselors and advisors to complete the placement process, with lower-access colleges (38%) slightly more likely to require meetings than universal-access colleges (31%). Both placement processes also used counselors and advisors as one of several ways to gather self-reported placement information. Under guided self-placement, while most colleges used an online portal to gather self-reported data, universal-access colleges were on average more likely to use counselors and advisors as one of the ways to gather placement data (44%) than lower-access colleges (20%).²⁴ Under multiple measures, the opposite was true: universal-access colleges (13%) were less likely to gather self-reported data through appointments with counselors and advisors than lower-access colleges (52%).²⁵ The findings suggest that counselors may be more helpful in expanding access to college composition for guided self-placement, and less so for multiple measures placement.

The finding that universal-access colleges are more likely to use counselors to gather placement data under GSP is likely an indication that counselors at these colleges are playing an important role in helping students decide between standalone and corequisite college composition. We learned in our interviews that students are often encouraged to speak to a counselor to make a decision on the level of support needed, taking into account educational goals as well as academic and non-academic commitments. Counselors also help students conduct self-assessments and identify additional supports; the latter may be especially important for students who delayed college entry or who may need special services (e.g., veterans and students with disabilities).

On the other end of the spectrum, however, the finding that lower-access colleges are more likely to gather high school data via counselors and advisors suggests these meetings could play a role in higher remedial enrollments when used in multiple measures placement. This can happen, for example, if counselors and advisors are not familiar with corequisite courses and recommend that students needing additional academic support begin in a developmental course. Our interviews suggest that this issue can occur especially if counselors and advisors work in multiple colleges with different placement policies and course structures. To avoid these potential downfalls, colleges might consider automating placements using multiple measures for all students who have high school information. In this kind of system, these students would automatically receive a placement that is compliant with AB 705, and counselors and advisors would primarily help students identify additional services and supports.

²³ It is important to remember that requiring students to enroll in developmental courses is not consistent with AB 705, unless this decision is based on evidence collected locally that proves that doing so will improve students' chances of completing a transfer-level course within a year.

²⁴ Most universal-access (56%) and lower-access (70%) colleges used an online portal to gather GSP data.

²⁵ The use of counselors (52%) was the most common way to gather self-reported multiple measures data at lower-access colleges; this was followed by an online portal (48%). Among universal-access colleges the most common way was through CCCApply or an online portal (47% each). Counselors (13%) were a distant third.

Overall, we find that certain placement policies, including the use of reading and writing samples and high school course-taking, may be contributing to lower levels of access. Direct access to college composition has major consequences for student success and equitable outcomes. For example, we find that on average 53 percent of first-time English students at lower-access colleges passed college composition in one term, compared to 65 percent in universal-access colleges. In the next section, we further explore student outcomes and equity in college composition.

More Students Are Successfully Completing College Composition

In fall 2019, 61 percent of first-time English takers completed college composition in one term (also known as the one-term throughput rate). This stands in stark contrast to just four years prior when 27 percent of first-time English students were able to achieve this important early milestone. In all, 57,000 additional students successfully completed college composition in one term in fall 2019 relative to fall 2015.

Figure 9 shows that throughput rates in English started to increase in fall 2016, driven by a group of colleges that implemented early reforms to broaden access to college composition (MMAAP 2017). The pace of growth accelerated in fall 2018 as more colleges followed suit (Cuellar Mejia, Rodriguez, and Johnson 2019). However, it was not until fall 2019, the deadline for all colleges to move with AB 705 implementation, that large gains happened in the majority of the colleges (in 34 colleges, throughput rates grew more than 20 percentage points).

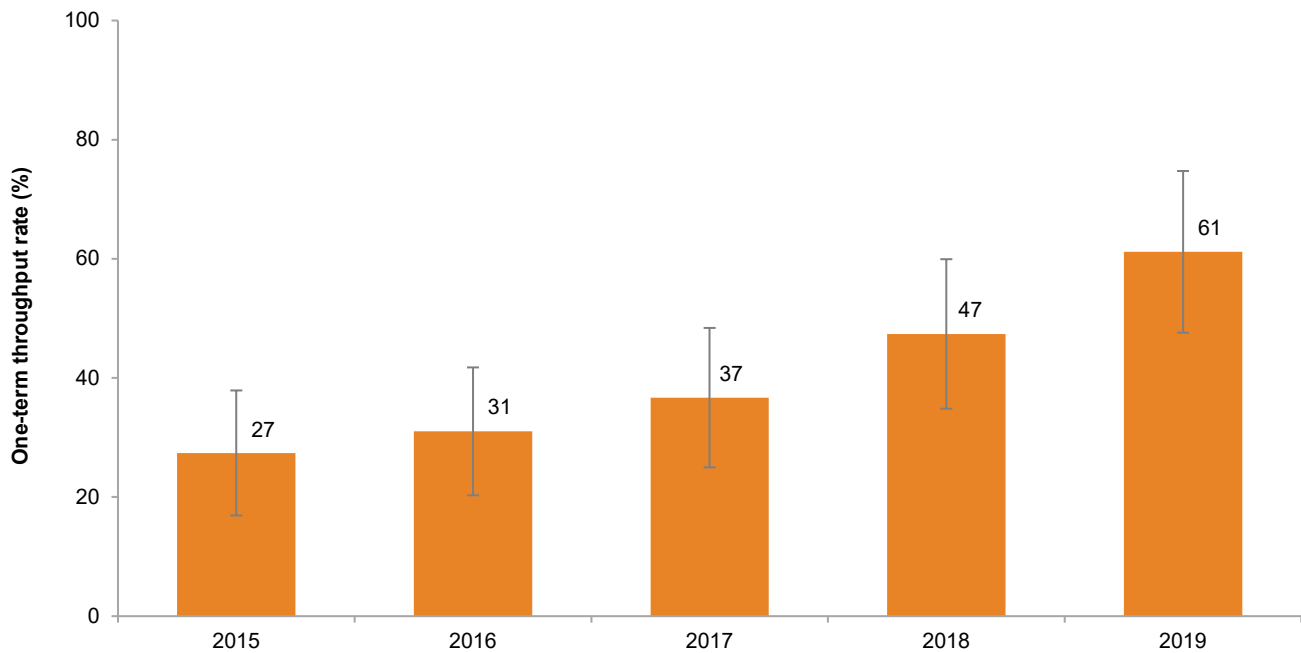
Not only have throughput rates grown significantly since 2015, but now there is also less variation across colleges. The vertical lines in Figure 9 show one-term throughput rates one standard deviation above and below the systemwide average. The smaller vertical line in 2019 relative to years prior shows that there was less variation in one-term throughput rates across colleges (just in the last year the standard deviation went from 14 to 9 percentage points). Looking at the difference between the college with the lowest throughput rate and the college with the highest rate is another way to measure variation across colleges. The range was 55 percentage points in fall 2015 and 47 percentage points in fall 2019. While there is still a good deal of variation across colleges, the range is notably smaller than before.

Given the prevalence of developmental course enrollment prior to fall 2019, we acknowledge that most students in 2015 would not have been able to complete college composition in one term. To account for this, we calculate one-year and fall-to-fall throughput rates. We find that 48 percent of first-time English students in fall 2015 successfully completed college composition within a year and 55 percent did so by the end of fall 2016. In both cases, the rate of successful completions is still lower than the one-term throughput rate observed in fall 2019.

The dramatic change in successful completions among first-time English students provides descriptive evidence suggesting that the structural restriction of access to college composition prior to AB 705 was dramatically suppressing student outcomes.

FIGURE 9

In fall 2019, six out of ten first-time English students completed college composition on their first attempt



SOURCE: Authors' calculations using COMIS data.

NOTES: Fall of each year. All 114 community colleges included. The number of first-time English takers (the denominator) remained stable during this period at around 165,000 students. Vertical lines are error bars use to display one standard deviation above and below the systemwide rate. See the glossary of terms at the end of this report for definitions.

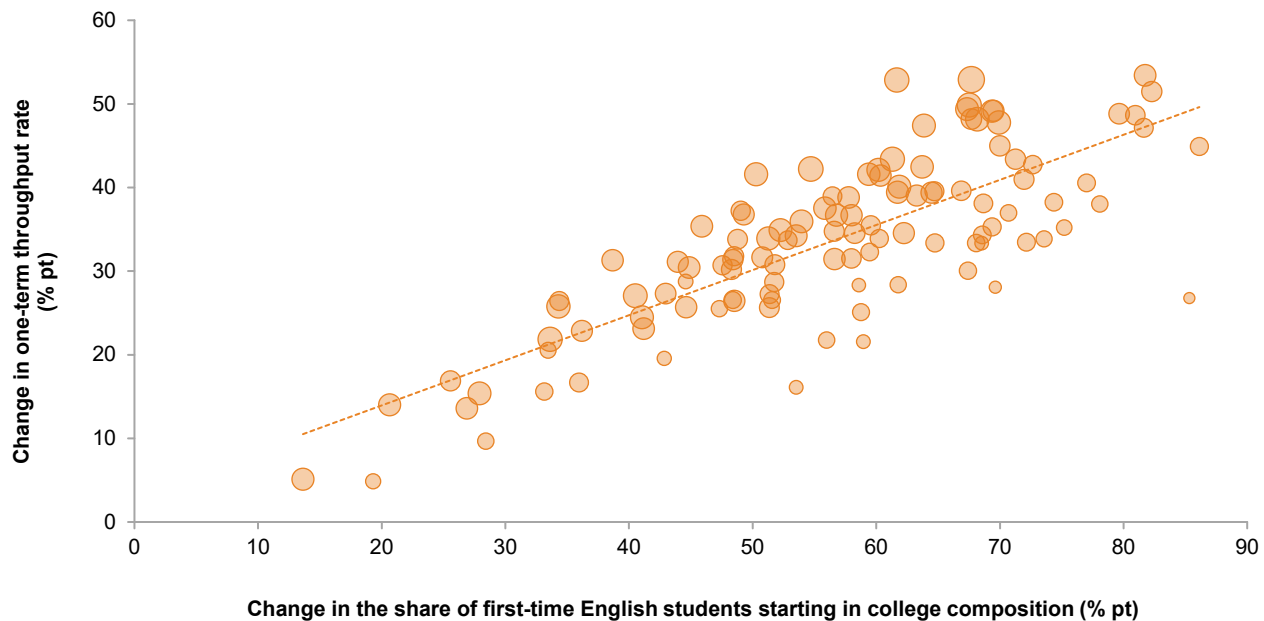
In addition, there is a positive relationship between changes in access to college composition and changes in throughput rates (Figure 10): a 10 percentage point increase in the share of first-time English students starting directly in college composition is associated with a 5.4 percentage point increase in the college's one-term throughput rate.²⁶ In fact, the relationship is so strong that 62 percent of the variation in throughput improvement can be explained by increases in access. Given the complexity of factors affecting educational outcomes, it is an important finding that a single variable, within the direct control of colleges, is associated so strongly with improvements in completion of college composition.

The size of the bubbles in Figure 10 represents each college's throughput rate in fall 2019, which allows us to highlight the fact that throughput rates remained relatively low at some colleges, despite important increases in access and throughput (small bubbles on the right side of the figure). Conversely, other colleges saw relatively small increases in access and throughput rates, but their fall 2019 throughput rates were on the higher end (large bubble at the bottom left of the figure).

²⁶ We focus on the changes between fall 2015 and fall 2019 to account for the group of colleges that started broadening access to college composition prior to fall 2019. We use 2015 as baseline year because access to college composition was fairly stagnant until that point.

FIGURE 10

There is a strong relationship between increases in access and increases in throughput rates in college composition



SOURCE: Authors' calculations using COMIS data.

NOTES: Change between fall 2015 and fall 2019. All 114 community colleges included. The size of the bubbles represents the college's throughput rate in fall 2019.

Despite the strong relationship between increases in access and increases in throughput, we can see in Figure 10 a group of colleges that performed substantially better or substantially worse than what is predicted given their increase in access (i.e., colleges that deviate the most from the regression line). Studying these colleges could lead to important information. For example, were colleges that outperformed better at narrowing racial equity gaps? Or perhaps these colleges implemented more successful corequisite models? Or were their results driven by the student populations they serve? Future follow-up studies should take a closer look at these colleges and the factors behind their results.

Completion Rates Rose for All Groups, But Equity Gaps Remain

First-time English students of all racial/ethnic groups saw increases in the number of students successfully completing college composition, and gains were particularly strong among African American students (2,500 additional students, or 186% growth between fall 2015 and fall 2019) and Latino students (33,780 additional students, or 203% growth).²⁷ As a result, there was an important change in the racial/ethnic makeup of the pool of students successfully completing college composition, with more equitable representation of Latinos and African Americans, as we discuss below. The fact that successful completions of college composition among Latino and African American students doubled is a big step forward for the system on the path to greater equity.

As Figure 11 shows, all racial/ethnic groups saw remarkable increases in one-term throughput rates between fall 2015 and fall 2019: 38 percentage points among Asian American students, 36 percentage points among Latino students, 33 percentage points among African American students, and 29 percentage points among white students.

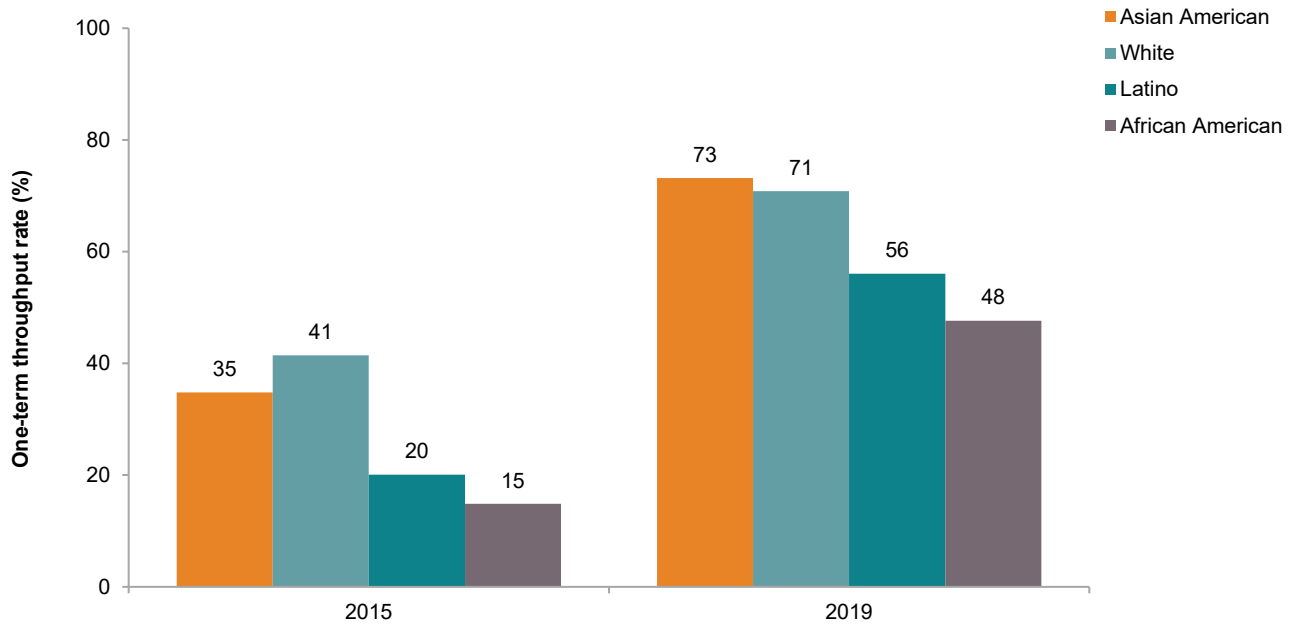
²⁷ This is not surprising considering the significant and disproportionate impact that previous placement policies had for these underrepresented student groups.

The rates for Latino and African American students in fall 2019 exceed the rates for white and Asian American students in fall 2015.

White and Asian American students continue to be more likely to succeed than their Latino and African American peers. However, since the rise in throughput rates was higher for Latino and African American students than for white students, the gaps in one-term throughput rates between white and Latino students and between white and African American students have narrowed somewhat.

FIGURE 11

Throughput rates for college composition rose over 20 percentage points for all racial/ethnic groups



SOURCE: Authors' calculations using COMIS data.

NOTES: Fall of each year. All 114 community colleges included. These four groups represented 93 percent of first-time English students in 2015 and 89 percent in 2019. There were 83,100 Latino students, 38,600 white students, 18,700 Asian American students, and 9,200 African American students in fall 2015. Meanwhile, there were 90,000 Latino students, 30,900 white students, 18,200 Asian American students, and 8,200 African American students in fall 2019. See the glossary of terms at the end of this report for definitions.

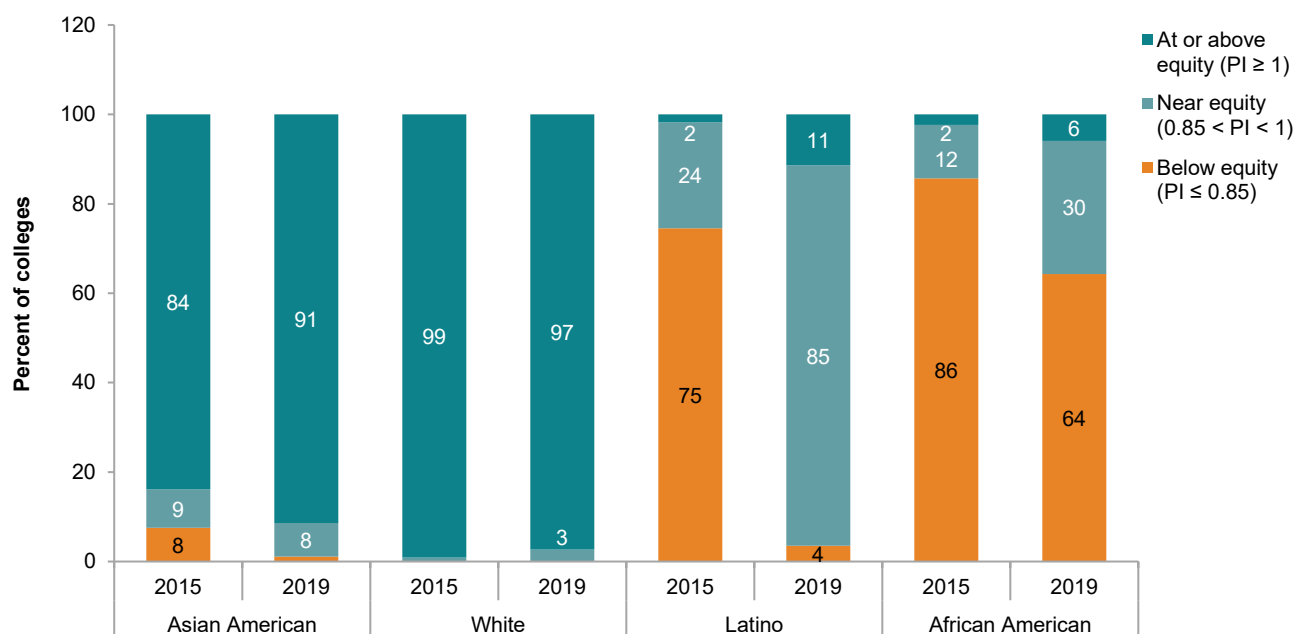
To further explore the change in equity gaps, we examine how the proportionality index changed relative to fall 2015. Here, the proportionality index compares a group's representation among students who successfully completed college composition to the group's representation among first-time English takers; the closer this index is to 1, the more equitable achievement is. In fall 2015, Latino students represented 38 percent of successful completions and 52 percent of all first-time English students, for a proportionality index of 0.73. By fall 2019, Latino students represented 50 percent of successful completions and 55 percent of all first-time English takers, for a proportionality index of 0.92. The index also improved for African American students (from 0.54 to 0.78), but African American students continued to be significantly underrepresented among the group of students successfully completing college composition in fall 2019. The 80 percent rule shows the same trend. In fall 2015, Latinos (48%) and African Americans (36%) were well below the one-term throughput rate of their white peers. By fall 2019, all groups experienced great improvements that put Latino students at 79 percent of the rate of their white peers and African American students at 67 percent ([Technical Appendix Table B3](#)).

Most colleges have seen improvements in equity, but there remain a number of colleges where inequities are a big concern, particularly for African American students. As shown in Figure 12, outcomes were “near equity” for Latino students in 85 percent of colleges in fall 2019 (the proportionality index was between 0.85 and 1). This was the case in only 24 percent of colleges in fall 2015. In fact, by this measure, 11 percent (13 colleges) completely closed gaps for Latino students in one-term throughput rates in fall 2019. These colleges included: Antelope Valley, Barstow, Lake Tahoe, Mendocino, Moreno Valley, Ohlone, Siskiyous, Solano, and Southwestern.²⁸ At 4 percent of colleges, outcomes for Latino students were below equity (index was equal to or less than 0.85).

Looking at outcomes for African American students, the percentage of colleges at “near equity” went from 12 percent in fall 2015 to 30 percent in fall 2019, far less than was the case for Latino students. The majority of colleges were “below equity,” with African Americans still significantly underrepresented among successful completions. There were only a handful of colleges where African American students were equitably represented. In these colleges, throughput rates for African American students were higher than the state average (58% versus 48%), but, with the exception of Palomar College, their overall one-term throughput rates were lower than the state average (56% versus 61%).²⁹ Smaller sample sizes do pose a more significant challenge in evaluating equitable outcomes for African Americans across colleges (Royal and Flammer 2015).

FIGURE 12

Equitable representation of Latino students in course completions improved substantially, but progress was much less widespread for African American students



SOURCE: Authors’ calculations using COMIS data.

NOTES: Fall of each year. We exclude colleges with less than 20 first-time course takers in a given racial/ethnic group. Specifically, 114 colleges are included for Latino students, 111 for white students, 93 for Asian American students, and 84 for African American students. Because the number of colleges is different for each group, we use percent of colleges instead of number of colleges on the y-axis. See the glossary of terms at the end of this report for definitions.

²⁸ At these nine colleges, Latinos represented on average near half of first-time English students, ranging from 24 percent to 76 percent. In the four colleges not listed, throughput rates were significantly lower than the statewide average. Of course, lack of equity gaps when all groups are not performing well is not a desirable outcome.

²⁹ At Palomar College, African American students represented 2 percent of first-time English students.

Our faculty and staff interviews shed light on why racial equity gaps persist—in fact, interviewees acknowledged that the work on equity is not over. English faculty members shared that they felt not all students were getting the academic and student supports they need to be able to stay in the classroom. To make progress on this front, faculty members highlighted the need for culturally relevant pedagogy as well as curricular materials and activities to help students become “invested in the topics discussed in class.” The importance of connecting to the course and feeling like part of the classroom community came across in our interviews with both English and math faculty.

What does this look like in practice? One college that implemented English reforms early on established a variety of equity-minded initiatives in spring 2018, including one that made classroom-level data available to individual faculty members. At this college, English faculty analyzed the data through faculty-led inquiry groups, which provided opportunities to collaborate on developing a curriculum and classroom practices that were more responsive to the needs of students.³⁰ Our interviews also suggest that it can be difficult to come to terms with the fact that the courses may be failing the students, rather than the other way around. One faculty member at a large urban college commented that some faculty still believe poor student outcomes are because “students don’t care.” This faculty member felt that facing institutional racism and unconscious bias—and “becoming anti-racist”—is imperative to move forward. The importance of addressing these challenges were shared by community college students who published an [anti-racism plan of action](#) and the Chancellor’s Office administrators who hosted a webinar in August 2020 on how campus leaders can help nurture an anti-racist campus culture (Student Senate for CCC 2020; CCCCCO 2020).

Beyond the classroom, faculty also identified the need to address other barriers students face. For example, students often deal with mental health issues, balancing work and school, basic needs, and other challenges associated with poverty that directly affect their ability to complete assignments and succeed in their courses. One interviewee noted that English faculty at her college often refer students to counselors because faculty members have not been trained to address these issues. Some colleges have begun to embed counselors into courses or faculty will invite counselors to join classes for special presentations about student services.

Overall, there has been tremendous progress in the share of first-time English students completing college composition—and colleges with the largest increases in access generally see the largest increases in throughput rates. While we saw earlier that equity gaps in access narrowed significantly, disparities in throughput rates across racial/ethnic groups appear somewhat more persistent. Most colleges made great strides in achieving near-equitable representation of Latino students among students who successfully completed college composition, but only a few dozen colleges saw equitable or near-equitable representation for African American students. In the next section, we explore student outcomes in corequisite courses, including features that may help narrow persistent racial equity gaps.

Corequisite Courses Are Key to Supporting Student Success

As the number of students enrolling directly into college composition has increased, the vast majority of colleges are offering corequisite remediation to maximize students’ chances of successfully completing the transfer-level course. In fall 2019, 101 colleges offered corequisite courses to support college composition students, and 20 percent (32,500 students) of all first-time English takers in the system enrolled in these courses. Continuing

³⁰ The July 2020 *CAPacity Gazette* features similar faculty-led inquiry groups that are taking place in De Anza College and San Francisco City College (CAP 2020a). These equity initiatives are typically joint efforts between department faculty leaders and institutional research.

students also benefitted from corequisite courses: overall, at least 43,800 students enrolled in a college composition course with corequisite support in fall 2019.

More and more research shows that corequisite remediation in both English and math are more effective than traditional remediation (Boatman 2012; Cho et al. 2012; Jenkins et al. 2010; Logue, Watanabe-Rose, and Douglas 2016; Logue, Douglas, and Watanabe-Rose 2019; Ran and Lin 2019). In particular, Ran and Lin (2019) provide strong causal evidence that corequisite remediation leads to higher completion rates in gateway courses across a system of diverse colleges. This study finds that students placed into corequisite remediation were 15 percentage points more likely to pass a gateway math course and 13 percentage points more likely to pass a gateway English course within one year of enrollment than otherwise similar students placed into prerequisite remedial courses.³¹

Our descriptive examination of corequisite remediation in California’s community colleges is consistent with research from other states and our previous findings on colleges that implemented reforms early (Cuellar Mejia, Rodriguez, and Johnson 2019). Among first-time English students who started in a corequisite model in fall 2019—these are students who largely would have been required to start in developmental coursework in the past—58 percent completed the college composition course on their first try. Meanwhile, the average one-year throughput rate for students who started in any developmental English course in fall 2018 was 29 percent.³² Even if we allow students in developmental courses until the end of the following fall (fall to fall) to complete college composition, the completion rate among these students is still 20 percentage points lower than the one-term throughput rate among corequisite students.

Across colleges, one-term throughput rates among corequisite students ranged from 25 percent to 85 percent, while one-year throughput rates for students who started in remedial courses ranged from 9 to 49 percent. Despite this wide variation, in every college the one-term throughput rate for students who started in a corequisite model in fall 2019 was higher than the one-year throughput rate of students who started in developmental education in fall 2018. Moreover, in 68 percent of the colleges that offered corequisites, the gains in throughput surpassed 25 percentage points.

Despite Gains, Equity Gaps Persist

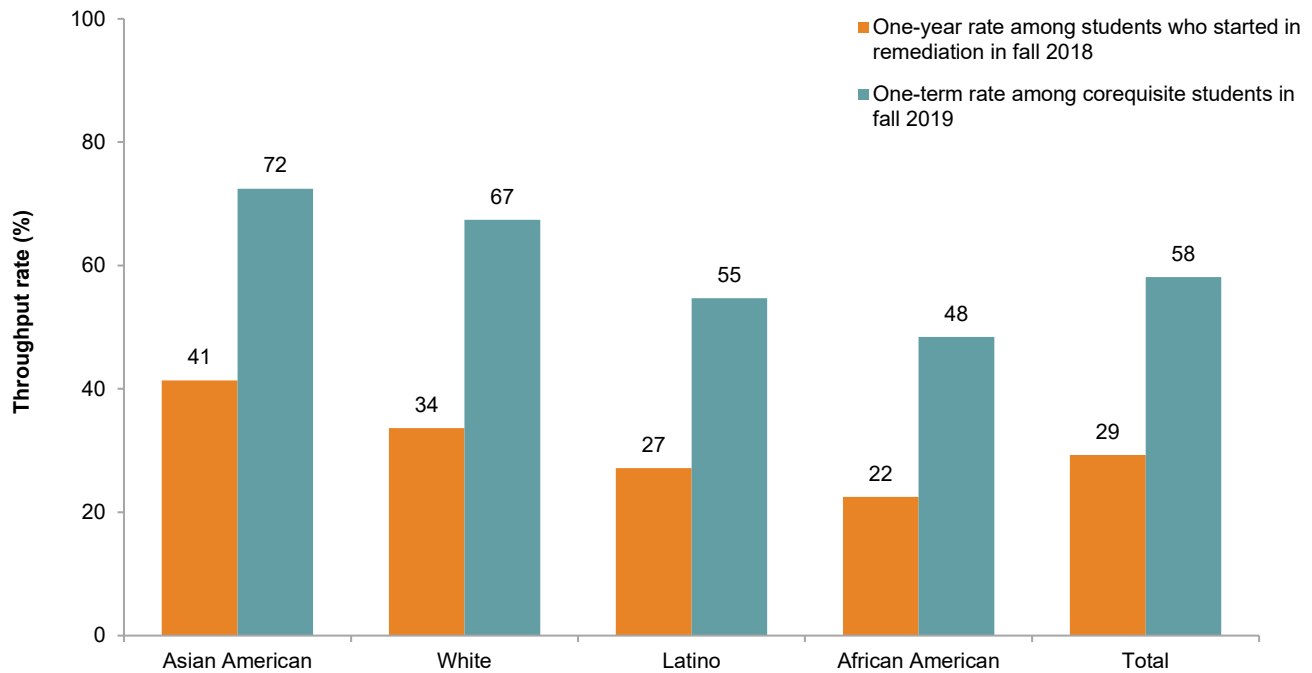
As can be seen in Figure 13, among all racial/ethnic groups, first-time English students in corequisite courses were much more likely to pass college composition than those who started in traditional remediation. Though the data show sizeable progress across racial/ethnic groups, there are still considerable equity gaps, with lower throughput rates among Latino and African American students. However, it is worth noting that both Latino and African American students in corequisite courses outperformed the highest-achieving group under traditional remediation. In other words, students with the poorest outcomes in corequisite courses were still more successful in a single term than students with the best outcomes in developmental courses were in an entire year.

³¹ According to the authors of the aforementioned study, because they focus on students at the margin of the college readiness threshold (in Tennessee, American College Testing, ACT, continues to be used with a single cutoff statewide defining a college readiness threshold), their study does not provide evidence on how corequisite remediation affects students who score further below cutoff and presumably have greater academic needs.

³² There is likely a large selection effect in that some students who were highly successful in development education previously now enroll directly in college composition without support. Thus, the success of students in corequisites is even more remarkable.

FIGURE 13

Corequisite models see remarkable gains in student outcomes relative to traditional remediation



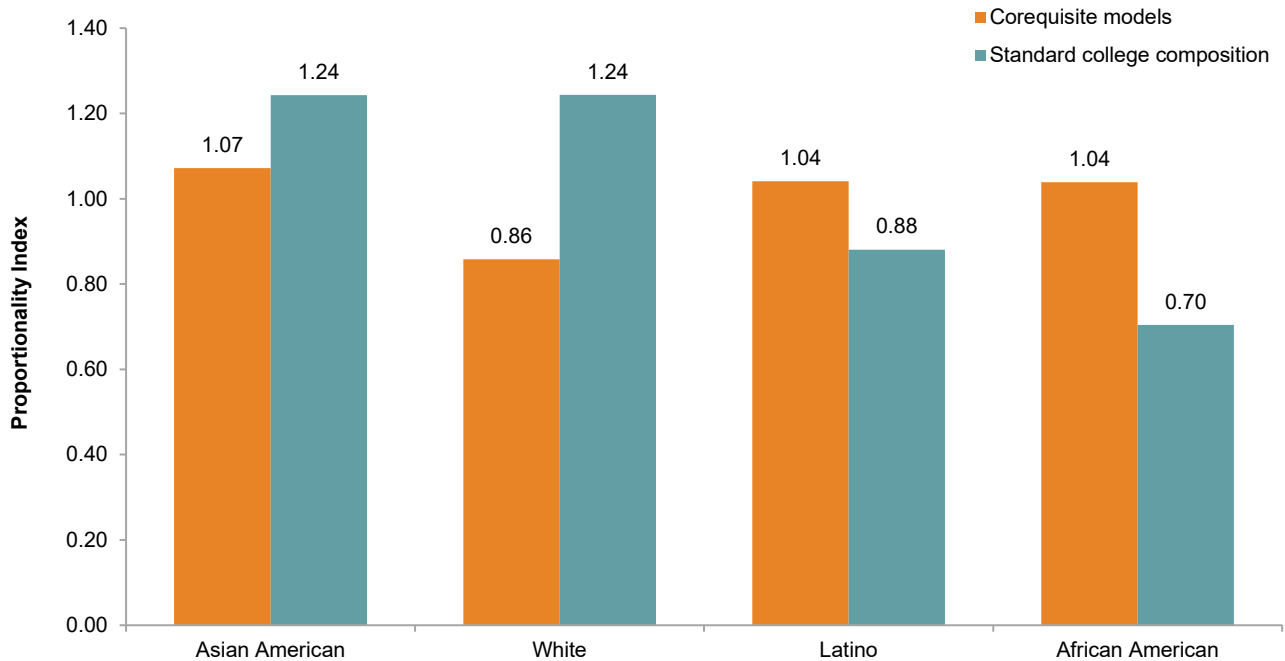
SOURCE: Authors' calculations using COMIS data.

NOTES: Fall 2019. 101 colleges offered a corequisite model in fall 2019. The figure includes 98 of those colleges. Two colleges were excluded because their enrollment in the corequisite course was not available through the COMIS data, and one college was excluded because of concerns with the accuracy of its data. A total of 32,500 first-time English students enrolled in corequisite models in fall 2019, and 41,500 students started in a developmental English course in fall 2018.

Compared to the racial/ethnic distribution of students in standard college composition courses, corequisite models had a higher share of Latino students (60% versus 52%) and African American students (6% versus 5%) ([Technical Appendix Table B4](#)). The good news is that both Latino and African American students are more equitably represented in successful completions of college composition when enrolled in corequisite models. In [Figure 14](#), we see that the proportionality index—comparing each racial/ethnic group's share of successful completions with its share of first-time English students—for corequisite models is relatively close to 1 for both Latino and African American students. In contrast, the proportionality index for standard college composition shows that Latino and African American students are considerably underrepresented, whereas white and Asian American students are overrepresented. The two other equity measures, the 80 percent rule and the percentage point gap, confirm that both Latino and African American students are seeing better results in corequisite models compared to standard college composition. However, achievement gaps for African Americans remain ([Technical Appendix Table B5](#)).

FIGURE 14

In corequisite models, Latino and African American students are more equitably represented in successful completions of college composition



SOURCE: Authors' calculations using COMIS data.

NOTES: Fall 2019. 101 colleges offered a corequisite model in fall 2019. The figure includes 98 colleges. Two colleges were excluded because their enrollment in the corequisite course was not available through the COMIS data, and one college was excluded because of concerns with the accuracy of its data. A total of 32,500 first-time English students enrolled in corequisite models and 100,700 students in standard college composition. We define above equity as PI of 1 or greater; near equity as PI between 0.85 and 0.99; and below equity as a PI lower than or equal to 0.85.

In our analysis of individual colleges, we find that the corequisite models in colleges such as Norco, Sacramento City, and San Diego Mesa are remarkably better for African American students than the norm. In these colleges, course success rates among African American first-time English students were significantly higher than in most colleges and not much different from rates for their white peers. These colleges are examples that it is possible to achieve much more equitable results for African American students.

We interviewed one of these colleges and learned that certain features of the corequisite course's pedagogy and curriculum, as well as the professional development provided to faculty, may be contributing to more equitable outcomes. First, we learned that the pedagogy and curriculum for the corequisite course were developed based on best practices used in the accelerated English course. Additionally, English faculty at this college have engaged in a series of equity-focused professional development opportunities offered in the department and campus-wide. These include workshops on topics ranging from culturally sensitive teaching, equitable grading and classroom practices, building personal relationships with students, and implicit bias. Faculty have also engaged in paid teaching teams/communities where faculty volunteer to meet once a week to learn from each other's experiences and share best practices. These practices align with what we heard in other interviews regarding effective instructional strategies for corequisite courses (see textbox below).

Interview Insights: Features of successful English corequisites

Our faculty interviews helped illuminate some of the features of a successful corequisite course. Below we summarize themes from interviews with 20 faculty at 15 colleges that offered corequisite courses during fall 2019. Importantly, several of the key features faculty highlighted were attributed to the trainings offered by the [California Acceleration Project](#) (CAP) to support faculty teaching corequisites and accelerated English courses. In fact, faculty described having honed their skills in accelerated English classrooms, which embedded CAP's principles of design and transferring these skills to the corequisite setting.

Instruction: English faculty indicated that one of the principal ways a corequisite course supports success in college composition is that it often provides extra time with the instructor, as is the case in linked and enhanced courses. This time facilitates more one-on-one targeted support and provides opportunities for faculty to get to know students better and to show “authentic care” for them. Another strategy was scaffolding instruction—breaking assignments into discrete parts, with support for each task—in a way that is individualized and makes no assumptions about what students can and cannot do. Faculty shared that being “thoughtful about unconscious biases” and embracing equity-minded teaching practices was also important. The instructor’s attitude and mindset—having “faith in student capacity” and believing that students can succeed—were also considered key in improving student outcomes.

Just-in-time remediation: Faculty shared that just-in-time remediation was helpful in supporting success in college composition, especially when done in collaboration with embedded tutors. In this approach, faculty and tutors work together to identify students who need extra help, and the extra time in the corequisite allows them to provide targeted guidance for assignments (e.g., developing a thesis or working on grammar) and to give students low-stakes, formative assessments. This one-on-one attention and the ability to check students’ work on the spot help to address areas that need development early, before they become a larger barrier to course success.

Collaborative classroom setting: A classroom setting that facilitates discussion and collaboration among students—where instructors and tutors are floating around the classroom to facilitate and lend support—was identified as an important feature of corequisite courses. In some instances, interviewees noted that they literally changed the classroom furniture and added whiteboards to allow students to actively engage in the writing process in groups (e.g., brainstorming for a writing assignment). In this way “writing becomes a community practice,” which in turn helps with student engagement because faculty are not lecturing. Importantly, faculty members noted that the community students create in the classroom sometimes leads to the creation of study groups led by their embedded tutors in the campus writing center.

Culturally relevant and rigorous curriculum: Faculty consistently identified the importance of having a relevant and rigorous curriculum as an important feature of the corequisite course. This point was framed as having a high-challenge and high-support course that includes thought-provoking and relevant content. Faculty create these opportunities by using thematic units that incorporate issues that are academic and also culturally relevant. This strategy was considered especially important in helping address equity gaps. The trainings provided by CAP’s community of practice provide faculty opportunity to develop these courses.

Affective domain: Across the board, faculty identified addressing the affective domain—which consists of strategies to help students acquire the skills needed to be a successful college student—as an important strategy for student success. These skills include study skills, time management, goal setting, and seeking college services and supports. Faculty embedded these skills into the curriculum through reflective writing assignments, activities that involve campus resources (e.g., visiting the writing center or library), and class presentations from student services and academic services personnel (e.g., librarians or Disabled Students Programs and Services tutors). Because many students in corequisite courses are also first-time/first-generation college students, faculty noted that helping students develop these skills could be particularly useful in addressing equity gaps. Some colleges are expanding this strategy to the standalone college composition courses as well.

Professional development: Faculty indicated that implementing these strategies successfully requires professional development and ongoing support from communities of practice. These opportunities—which are sometimes paid and open to full- and part-time faculty—are especially important now because faculty find themselves needing to teach students with more varied academic skills and backgrounds. Professional development opportunities from the college, department, and organizations like CAP can help faculty feel “capable of changing their teaching styles” and allow faculty to share successful strategies and lessons learned. Importantly, professional development has also been used to help promote equity-focused, data-driven change at the faculty and classroom levels. Interviewees from colleges that did not have communities of practice voiced a strong interest in this form of ongoing training and support; funding and administrative support were identified as barriers to not having them on their campus.

Characteristics of Corequisite Courses

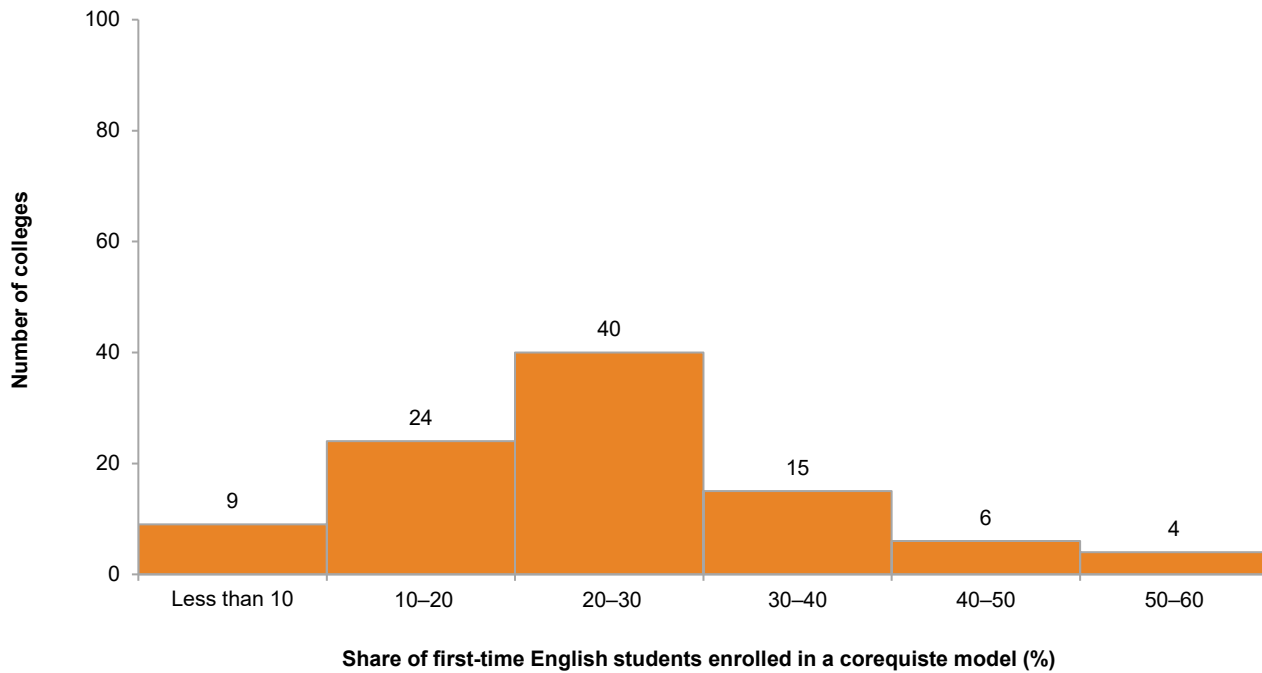
AB 705 did not specify or require colleges to use a standard format for corequisite remediation. In this section we describe how corequisite models varied across colleges in a number of features including the scale and timing of implementation, type of support, placement into the corequisite, and unit load. Unfortunately, we do not have detailed systemwide information regarding other important implementation features—such as instructional approach, faculty preparedness/training, and other embedded supports—that can affect course quality and student success.

Scale of implementation

Among colleges that offered corequisite remediation, an average of 23 percent of first-time English takers who started directly in college composition enrolled in a corequisite model. But this share varied widely across colleges (Figure 15). In 15 colleges, 13 percent or less of first-time English students (one standard deviation below the mean) enrolled in college composition with corequisite support. At the other end of the spectrum, in 16 colleges more than 36 percent of their students (one standard deviation above the mean) enrolled in corequisite models, with four colleges enrolling more than half of their first-time students. There is a positive, but weak, correlation between the share of first-time English students in corequisite models and the college’s overall one-term throughput rate.

FIGURE 15

At most colleges, between 10 and 40 percent of first-time English students enrolled in corequisites



SOURCE: Authors' calculations using COMIS data.

NOTES: Fall 2019. 101 colleges offered a corequisite model in fall 2019. The figure includes 98 colleges. Two colleges were excluded because their enrollment in the corequisite course was not available through the COMIS data, and one college was excluded because of concerns with the accuracy of their data.

There are many reasons why colleges may have had a lower share of students in corequisite models. For example, over half of colleges implemented placement policies that made the corequisite models recommended or optional instead of required. During the first semester of implementation, it is also possible that colleges were not able to provide sufficient sections to meet the student demand.

Our interviews indicated that decisions about the number of corequisite sections offered in fall 2019 were often based on historical data and faculty availability.³³ Another common practice was to use placement data of the incoming class—by examining the GPA distributions of the incoming class, colleges estimated student demand for different levels (e.g., maybe 30% of incoming students fall in the corequisite GPA band and 70% in the performance band for standalone college composition).³⁴ At a medium-sized urban college, this decision was based on faculty interest and availability to teach the courses. One interviewee noted, “We started with four [of 18 sections] because we had four instructors who were planning and were very motivated.” Moving forward, this college expected the number of sections to increase because faculty had the capacity to offer a few more sections and because the college was going to incorporate the enhanced English course into the Puente Project.³⁵

³³ Specifically, interviewees noted that their colleges used historical English enrollment data, typically, comparing fall-to-fall or spring-to-spring enrollments or examining prior enrollment in developmental coursework was a common practice.

³⁴ The vast majority of colleges gather this data via student self-reports, either through the CCC central application system (CCCApply) or a college-developed online assessment and placement tool. Only 14 percent of colleges gather this data directly through data-sharing agreements with local high schools and/or CalPASS Plus (see [Technical Appendix Table C3](#))

³⁵ The [Puente Project](#) is a state-funded initiative administered by the University of California for high schools and colleges that provides disadvantaged students with mentoring and counseling aimed at increasing college enrollment and transfer rates.

For the most part, interviewees perceived that their college was generally able to meet student demand for corequisite courses in fall 2019, with waitlists that were nonexistent or similar to previous years. At a couple of colleges, however, interviewees expressed concern that they were unable to meet demand because of space constraints and not having enough faculty members. At one of these colleges, waitlists for the corequisite and the college composition courses had over 600 students combined. The English faculty at this large urban college voiced concern that some of the students on the waitlists may have left the college altogether because some students did not appear enrolled in other courses and they did not enroll at the other college in the district.

Timing of implementation

More than 40 colleges offered at least a couple of sections of corequisite support as of fall 2018—this includes colleges that were in the piloting stage, colleges that started out at full scale, and colleges that moved from pilot to full scale. We found that the course success rates in corequisite models among first-time students was slightly higher in the colleges that started to offer corequisite remediation prior to fall 2019 (61% for early implementers versus 58% for other colleges).

It is interesting to note that colleges that had an increase in one-term throughput rates larger than predicted based on their increase in access (see Figure 10) were more likely to have started offering corequisite models prior to fall 2019 (9 of the 21 colleges). In contrast, only one of these colleges had an increase in one-term throughput rates smaller than predicted based on their increase in access. Colleges that implemented corequisite models early on likely had more time to plan and refine their models, and to engage in professional development activities.

Type of corequisite support

Among the colleges that offered corequisite remediation in fall 2019, it is possible to identify at least three different models of corequisite support, drawn from models implemented around the country (Daugherty et al. 2018; Dana Center 2018).³⁶

- **Linked:** Students enroll in designated sections of the transfer-level course as well as a one- to three-unit linked support course. All students in these designated sections take the corequisite support course. Usually, the transfer-level and corequisite courses are taught by the same instructor, and in most cases the two courses are scheduled back to back. The linked model was the most prevalent corequisite approach used in the system (83 colleges).
- **Commingled:** Inspired by the Accelerated Learning Project at the Community College of Baltimore County, the commingled model is a specific type of linked corequisite model in which the transfer-level course includes a mix of students—those who are taking college composition without support and those who enroll in the linked support class. We found that only three colleges, Cerro Coso, Cypress, and Santa Barbara City, exclusively offered the commingled model. However, several other colleges offered a small number of their linked sections in a commingled format (Cosumnes River, Coalinga, Evergreen Valley, LA Trade-Tech, Reedley, Sacramento City, and West LA).
- **Enhanced:** In this model, instead of registering for two linked courses, students receive additional support by enrolling in a higher-unit version of the college composition course. Systemwide, 15 colleges offered

³⁶ Some consider stretch models to be corequisites, but we do not include them, given that stretch courses are completed over two terms while corequisites are completed in only one. This distinction is important because stretch models have transition points that could lead to attrition; corequisites eliminate this problem by enabling students to complete the transfer-level course in a single term (CAP 2020b). The stretch model used most widely in California is known as Statway, which is part of WestEd's [Carnegie Math Pathways \(CMP\)](#). In its standard format, Statway is a two course "stretch" model that covers topics common to introductory college statistics and embeds remediation that is needed for success. CMP is offered at 16 schools in California. In 2018, CMP released Statway Corequisite and Quantway Corequisite, which incorporate the pedagogical strategies that are the trademark of CMP. Six schools across the country have implemented these courses.

this model. The group of colleges using this approach include Skyline, San Mateo, Fullerton, and Modesto campuses, all of which started offering these courses prior to fall 2019.

On average, the rate of successful completions was higher in the colleges that offered the linked model compared with the colleges that implemented the enhanced model (60% versus 52%).³⁷

Several of the interviewed colleges indicated that they opted for the enhanced model to overcome registration challenges inherent in the linked approach (in the enhanced model, students only register for one course instead of two separate courses). However, because the new enhanced course is designed to meet the college composition transfer requirement, colleges that opt for the higher-unit version of college composition need to apply for and secure University of California (UC) and California State University (CSU) transfer articulation, known as Intersegmental General Education Transfer Curriculum (IGETC) approval. Colleges that offered the linked approach indicated that this requirement and the long timeframe needed to submit prior approval were among the reasons why they did not consider offering the enhanced course approach.

According to our interviews, colleges using linked or enhanced courses centered their decision-making on the desire to have the same instructor teach both courses and the ability to offer course continuity.³⁸ Interviewees often voiced a preference for linked and enhanced courses, indicating that the commingled model would generally not work for their colleges because it requires a small class size (e.g., only a subset of students in the college composition course take the support course). They also commented that there might be stigma associated with the commingled approach because it involves pulling out certain students for the support component.

Our scan of college websites and catalogs, together with our interviews, also revealed that some colleges departed from the standard models described above.³⁹

Placement into the corequisite

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. Importantly, our review noted that there are differences in how colleges interpret AB 705's mandates on these issues.

In our scan of colleges' placement policies, we identified 54 colleges where enrollment in the corequisite was recommended rather than required. In the vast majority of these colleges, the corequisite was recommended to any student with a GPA below 2.6 (Figure 16).

Among the 35 colleges that did require students to enroll in college composition with corequisite support, 11 colleges did so only for students in the lowest GPA band (e.g., 1.9 or lower) and 14 colleges required the corequisite for anybody with a GPA below 2.6.⁴⁰

³⁷ The difference was statistically significant at the 0.95 confidence interval (i.e., $p \leq 0.050$).

³⁸ Having the same instructor teach both the corequisite and composition course is thought to be helpful because it ensures continuity of the learning and helps faculty provide just-in-time remediation targeted to individual student needs.

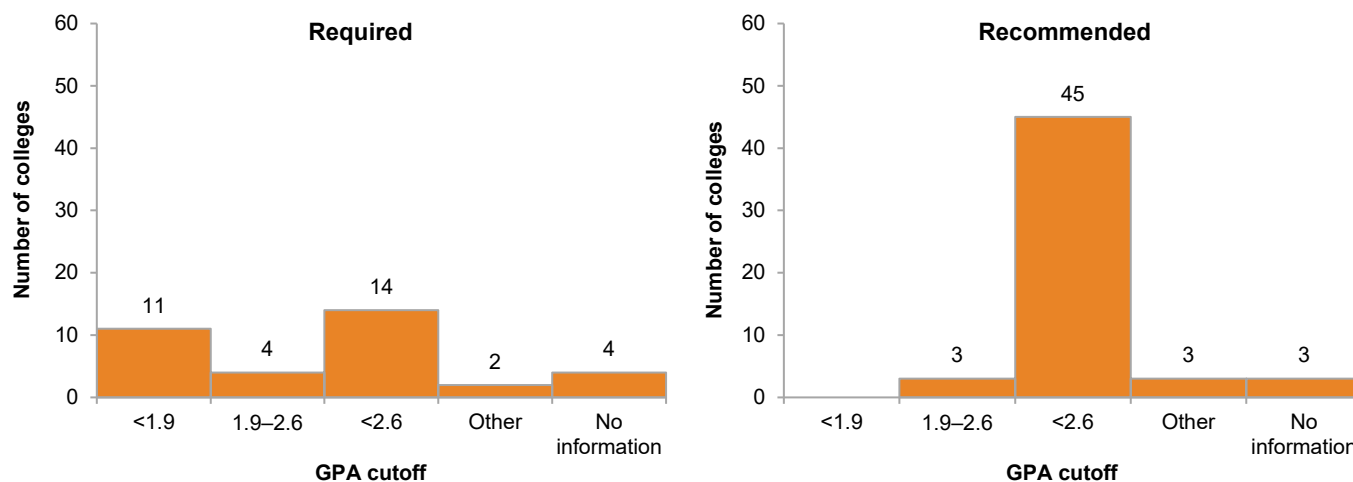
³⁹ For example, five colleges (Diablo Valley, Irvine Valley, Oxnard, LA Mission, and East LA) offered corequisite support tailored for multilingual students as an option. However, with the exception of Diablo Valley, enrollment in these sections was very low. At College of Marin, students had the choice between a 2-unit support course and a non-credit one. De Anza and Napa Valley offer a stretch model, where college composition and a linked support course are taught as part of a two-term sequence. Three colleges (San Bernardino, Rio Hondo, and Southwest LA) used a tier-based system where students were placed in a lower-unit corequisite or a higher-unit corequisite depending on students' high school GPA. American River required students to enroll in a 0.5-unit writing class and a 0.5-unit reading class in addition to their 2-unit corequisite. Irvine Valley required a 0.5-unit one-on-one writing conference in addition to a 2-unit corequisite. Finally, Santa Barbara City College offered a linked corequisite course and four optional support courses (a writing lab, a support course tailored for multi-literacy English Transfer program students, a noncredit lab course, and reading support).

⁴⁰ Only a few colleges use GPA cutoffs that differed from the Chancellor's Office default placement rules.

In some cases, our review identified practices that diverge from the Chancellor’s Office guidance and statewide research on placement in relation to AB 705’s standard of maximizing student completion. At four colleges, students with a GPA below 1.9 were placed one level below transfer level (either in a remedial course or a stretch course). In addition, our course scan identified a handful of colleges that note they could “place,” “direct,” or “highly recommend” the course below transfer level or prominently feature the developmental course as an option. According to AB 705 (Section 78218): “a community college district or college shall not require students to enroll in remedial English or math coursework that lengthens their time to complete a degree unless placement research that includes consideration of high school GPA and coursework shows that those students are highly unlikely to succeed in transfer-level coursework in English and math.”

FIGURE 16

Most colleges recommend, rather than require, that students enroll in the corequisite course



SOURCE: Authors’ calculations using college scan and AB 705 implementation plans.

NOTE: Fall 2019. Includes 101 colleges. “Other” includes colleges where the rules differed from the Chancellor’s Office default rules, and “No information” means that we could not find information about the college’s placement on its website on AB 705 implementation plans.

Interestingly, in 3 of the 13 colleges with the highest rates of successful completions (70% or higher), students with GPAs below 1.9 were placed in either a stretch course or a remedial course one level below transfer. In addition, the corequisite course was required for anyone with a GPA between 1.9 and 2.6, making the pool of students in the corequisite course more restrictive than in most colleges. Student-level data on placement and/or students’ high school GPA are not available, which poses a challenge when comparing success rates across colleges.

Among colleges we interviewed, three in four colleges offered the corequisite as a recommended course. These colleges indicated that their interpretation of the law and guidance was that the course could not be required. However, according to the law, “a community college district or 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, but only if it is determined that the support will increase their likelihood of passing the transfer-level English or mathematics course.” Note that while placement into remediation requires placement research, placement into transfer-level with required corequisite support has a lower bar of “determining if support will increase likelihood of passing.”

Given that in the majority of colleges the corequisite is recommended rather than required, it is reasonable to expect wide variation across colleges in who ends up enrolling and who is successfully completing the transfer-level course with support. This amplifies the variation that already exists in terms of the academic background and preparation of the student populations that different colleges serve.

Unit load

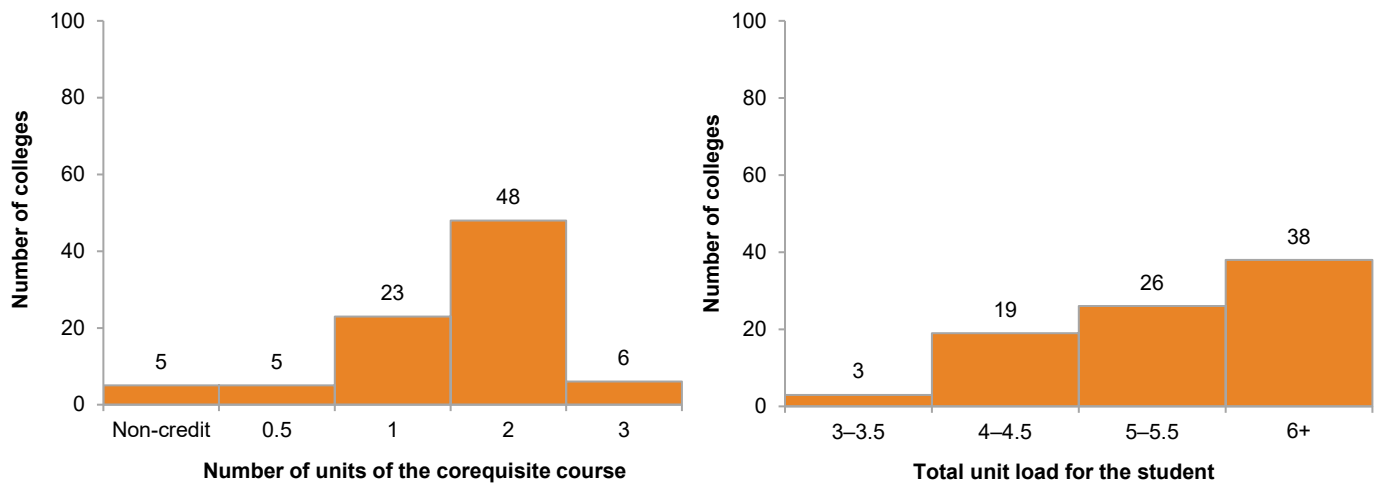
In the 86 colleges that offered the linked course, the typical support course was two units, but the unit load ranged from 0.5 to 3 units across colleges (Figure 17). Five colleges made the support course non-credit. The most common total unit load (i.e., college composition course plus corequisite course) was six units.

There was also variation in the unit load among the colleges that offered the enhanced course. In nine of the fifteen colleges, the enhanced course was worth five units; in five colleges, the enhanced course was two units more than the regular college composition course; while in the other four colleges it was only one additional unit. In four colleges, the load was four units (one more than the regular college composition course). In two colleges the enhanced course was 0.5 units more than the regular course.

We did not find that the rate of successful completions systematically varied with the unit load of the corequisite support course.

FIGURE 17

Most colleges offer a two-unit support course



SOURCE: Authors’ calculations using COMIS data.

NOTES: Fall 2019. Includes the 86 colleges that offered the linked model. There were at least a couple of colleges where students were required to enroll in a 0.5-unit writing lab in addition to the corequisite course. Also, there are three colleges that offered a higher-unit and a lower-unit corequisite course for students in different GPA bands. In those cases we used the units in the course where more students enrolled.

Our interviews revealed that decisions on the unit load were often guided by perceptions of how much support students need, student cost considerations, and potential student course load. To start, a corequisite that has more units would naturally provide more class time with the instructor—we often heard that one of the key “value adds” of corequisites is the opportunity to have more time to scaffold reading/writing development, engage in collaborative learning activities, provide support on the affective domain, and the like. Still, other colleges were cautious about having high unit-load courses because of the cost implications for students. At one college, the non-credit support option was motivated by the desire to keep student costs low because students do not have to pay for non-credit

courses. Finally, some decisions were also guided by the work done by the math department. In some cases, the math department was also increasing the number of support credits, and so English needed to help balance the course load (i.e., not add too many units to the corequisite) so as to not overwhelm students who may be taking corequisite courses in both disciplines in the same term. In fact, this was mentioned as a possible reason why some students may be choosing (or were being encouraged) to enroll in math and English courses in separate terms.

Overall, corequisite courses played a key role in improving student outcomes in college composition. Students in corequisite courses were substantially more likely to complete college composition in one term than students starting in remediation were to complete the course in one year. Importantly, Latino and African American students saw more equitable representation in successful completions when enrolled in corequisite models. Nevertheless, we continue to see equity gaps in throughput rates, with Latinos and African Americans less likely to complete college composition than their Asian American and white peers. Our interviews highlighted several features of corequisite courses that, when implemented consistently, may help narrow equity gaps. Future research will need to further evaluate the impact of specific elements of corequisite courses, like delivery method, unit load, and instructional approaches, on student success and equity. Next, we turn our focus to transfer-level math.

Math: Access, Outcomes, and Racial Equity

In this section, we begin by analyzing how access to transfer-level math (including statistics, liberal arts math, college algebra, pre-calculus, applied calculus, and others) has changed over time overall and across racial/ethnic groups. Next, we examine how colleges modified their assessment and placement systems under AB 705 and whether these policies contributed to equitable or inequitable access to transfer-level courses. We then explore how student outcomes have changed under AB 705, including a detailed examination of corequisite courses and whether these courses are helping students pass transfer-level courses and narrowing racial equity gaps. Note that while in English there is a single transfer-level course (college composition), in math there are several possible transfer-level courses students may take, depending on their major or program of study. Accordingly, throughout this section we analyze two different math pathways: statistics and liberal arts math (SLAM) and the algebra-based pathway (known as BSTEM, or business, science, technology, engineering, and math).

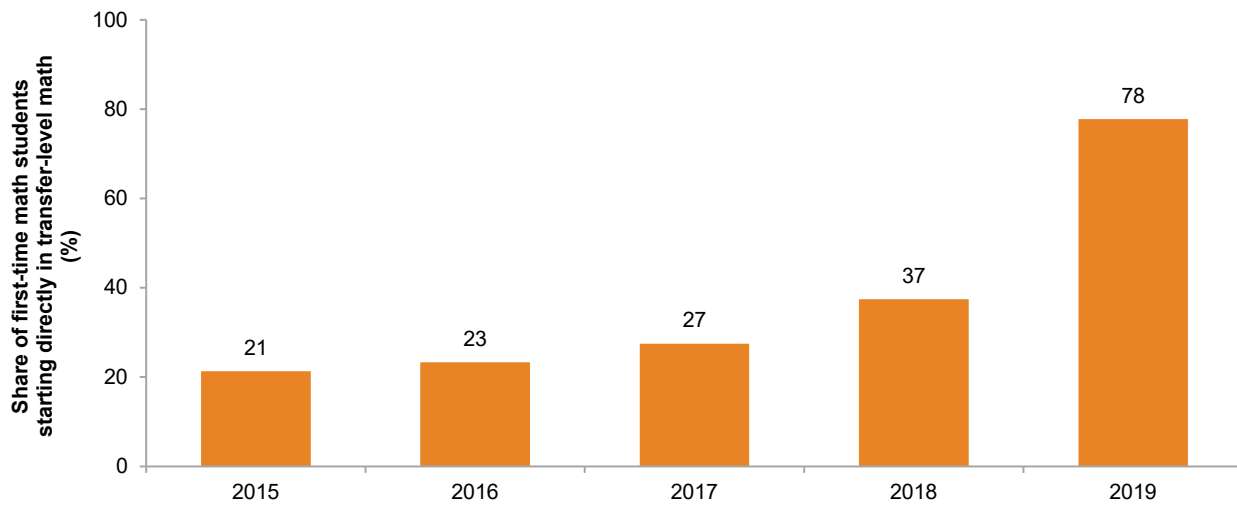
Access to Transfer-Level Math More than Doubled

Across the community college system, access to transfer-level math more than doubled between fall 2018 and fall 2019 (Figure 18). In fall 2019, 78 percent of first-time math students enrolled in an introductory transfer-level math course.⁴¹ In contrast, only 37 percent did so in fall 2018 and 21 percent did so in fall 2015. These gains mean that in the last year alone, the number of first-time math students enrolling directly in transfer-level courses increased by 83 percent, or 47,000 additional students. These substantial gains between fall 2018 and fall 2019 are due to the fact that, unlike in English, relatively few colleges implemented placement reforms for math prior to fall 2019.

⁴¹ This number only includes introductory transfer-level math courses (e.g., college algebra, trigonometry, pre-calculus, statistics, and others that have intermediate algebra as a prerequisite). This number excludes intermediate algebra or equivalent courses because they do not transfer to four-year universities. However, it must be noted that while intermediate algebra and equivalent courses are not transfer-level, they are technically college-level because they meet associate degree and other local math competency requirements.

FIGURE 18

Access to transfer level-math more than doubled between 2018 and 2019



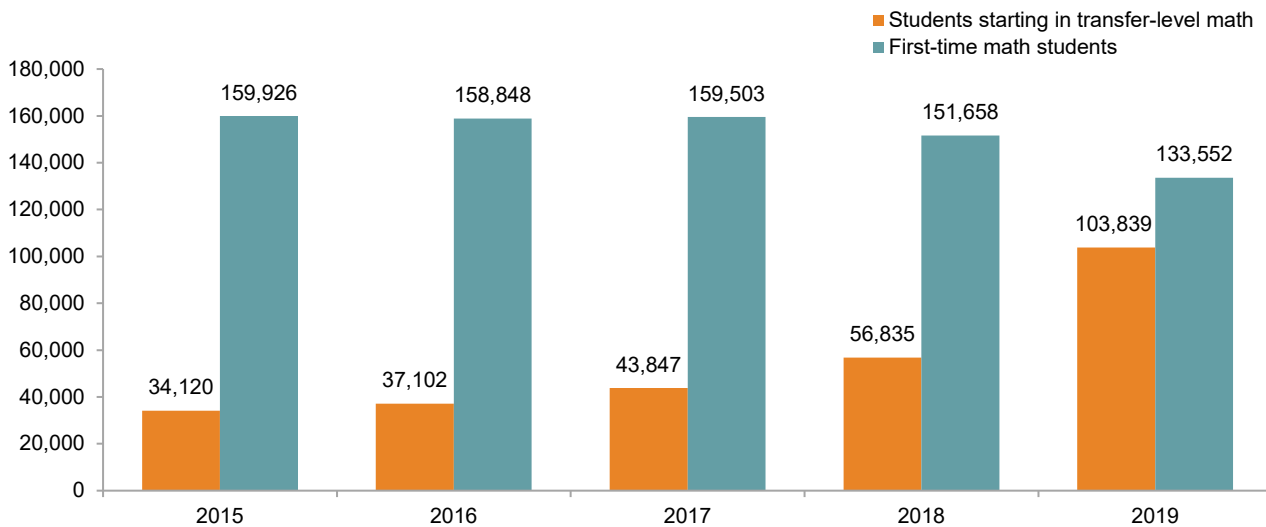
SOURCE: Authors' calculations using COMIS data.

NOTES: Fall of each year. All 114 community colleges included. Many students can satisfy the lower-division math requirement by completing a transfer-level course in statistics or quantitative reasoning. Throughout this report, any reference to transfer-level math includes those courses as well. See the glossary of terms at the end of this report for definitions.

It is worth noting that more students may be delaying their first math enrollment. After remaining stable between 2015 and 2017 at about 159,000, the number of first-time math takers declined 5 percent and 12 percent in 2018 and 2019, respectively (Figure 19). This was a general trend across the system.⁴² See the textbox below for possible reasons for these shifts.

FIGURE 19

In recent years, fewer students have been enrolling in math courses



SOURCE: Authors' calculations using COMIS data.

NOTE: Fall of each year. All 114 colleges included. See the glossary of terms at the end of this report for definitions.

⁴² Only 23 colleges saw this number remain the same or increase between fall 2018 and fall 2019. In 13 colleges, the annual decline was at least 30 percent.

The puzzle of declining first-time math enrollments

There are many potential explanations for why math enrollments declined. One set of explanations has to do with student choice. Previously, most students were placed into a one-size-fits-all developmental math pipeline that was algebra-based. Over the last few years, as more colleges have begun to use multiple math pathways, many more students have had access to transfer-level math options aligned with their program of study. Under these circumstances, students may have delayed math enrollment if they were undecided about their major. Another possibility is that with the decline in traditional math remediation, students' uncertainty about their ability to pass transfer-level math may have discouraged enrollment, particularly when other concurrent support options were not available.

Also, colleges may have had difficulty enrolling continuing students who were previously placed in developmental math. Without a clear and intentional capacity-oriented message from the college, continuing students may have been confused about the sudden shift from being told they need to enroll in remediation one year to being told they can take transfer-level math the next. Finally, delayed math enrollments may stem from some students being encouraged not to take math and English corequisites together, as we learned in our interviews. At some colleges, these courses could add up to a full course load, leaving students with little or no opportunity to take other courses.

The second set of explanations has to do with colleges' decisions about the math class schedule. College administrators may have struggled with enrollment management decisions given the huge transformation in the math program under AB 705. One possibility is that there simply were not enough transfer-level sections offered to meet demand. Math sections may also have been reduced due to staffing. Our interviews suggest that faculty availability was a challenge to scaling reform efforts. Previously, most community college math faculty taught developmental math. One college, among the first to dramatically reduce developmental math offerings several years ago, indicated that faculty who previously taught only developmental math were apprehensive about teaching higher-level courses. A related issue is the dramatic shift statewide toward more statistics sections to serve popular majors. Most departments did not have enough faculty with training in statistics to teach these sections. Finally, it is possible that intentional decisions were made to reduce math sections since many students can now meet math requirements by taking one transfer-level math course. Previously, most students were placed into remediation and thus required to take up to four additional math courses before enrolling in the transfer-level course appropriate to their major.

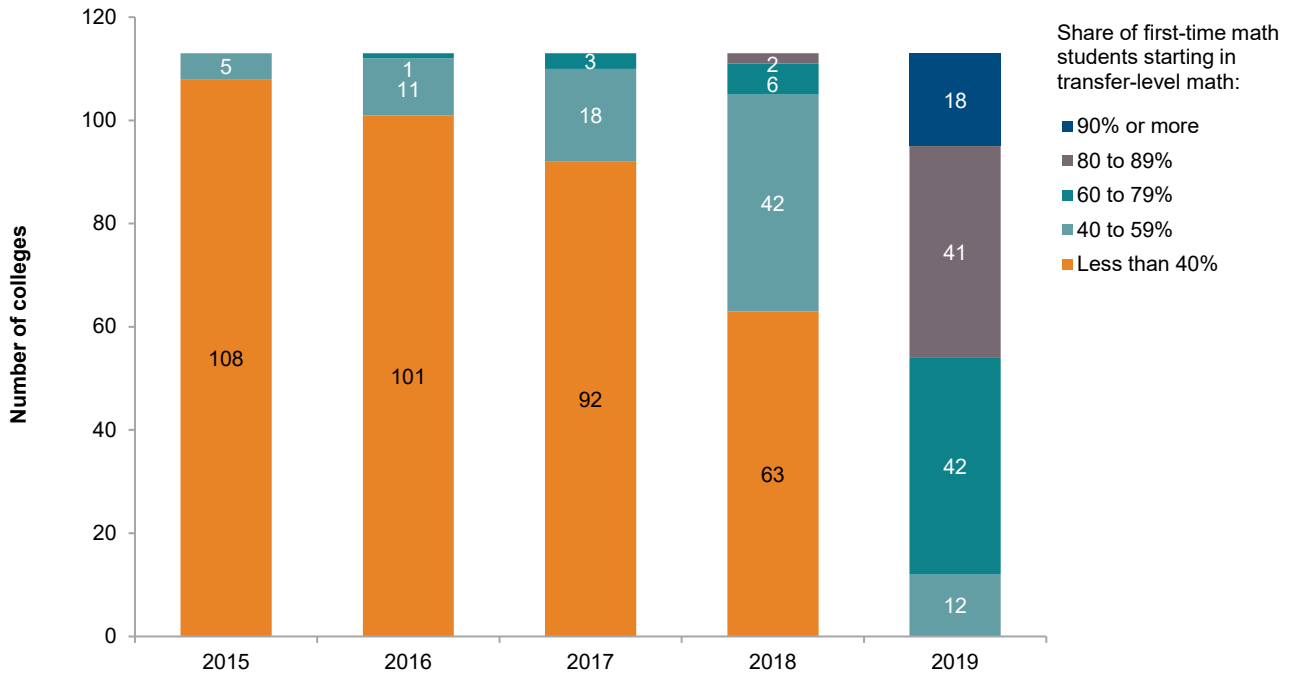
Despite the impressive systemwide progress, there was a considerable amount of variation across California's community colleges (Figure 20). In fall 2019, 18 colleges enrolled 90 percent or more first-time math students directly in a transfer-level math course; in two colleges, all first-time math students enrolled directly in a transfer-level course.⁴³ On the other end of the spectrum, in 12 colleges fewer than 60 percent of first-time math students enrolled directly in a transfer-level course. This is clearly an improvement from fall 2018, when 105 colleges had

⁴³ By contrast, in English, 95 colleges enrolled 90 percent or more first-time English students in college composition, with 32 colleges providing universal access. The differences may also arise because college composition is a requirement for both the associate degree and transfer, while transfer-level math is only required for students who intend to transfer.

fewer than 60 percent of first-time math takers enrolling directly in transfer-level math. It is important to note that lower access to transfer-level math may persist at some colleges in part because AB 705 allows for placements into intermediate algebra or equivalent courses for students whose goal is to complete an associate degree or certificate. However, most first-time math students intend to transfer, which requires taking a transfer-level math course.⁴⁴

FIGURE 20

Access to transfer-level math has expanded, but there is a lot of variation across colleges



SOURCE: Authors' calculations using COMIS data.

NOTE: Fall of each year. 113 colleges included. One college was excluded because of potential inconsistencies in its data. See the glossary of terms at the end of this report for definitions.

Remedial Math Enrollment Has Declined Significantly

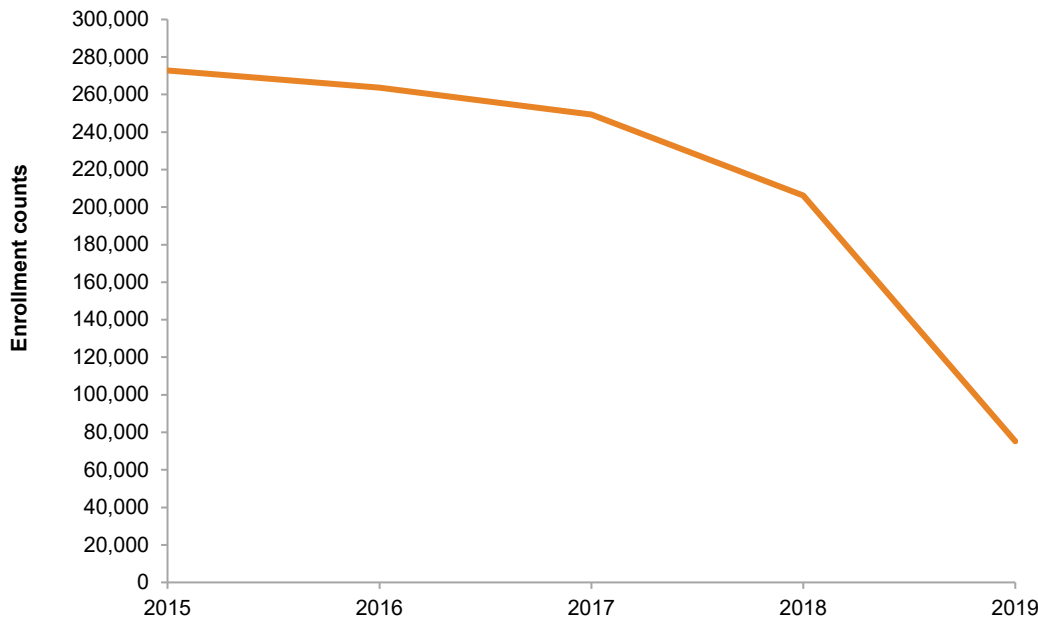
Across the system, overall enrollment in developmental math declined 64 percent between fall 2018 and fall 2019, going from about 273,000 to 75,200 (Figure 21). These declines are primarily due to reductions in or the elimination of the lowest-level math courses. In the past, students typically enrolled in up to four levels of developmental math courses, including arithmetic, pre-algebra, elementary algebra, and intermediate algebra. Now the vast majority of developmental math offerings are elementary algebra, intermediate algebra, and/or accelerated math courses, including compressed algebra and pre-statistics.⁴⁵ Prior research has found that accelerated math courses do help improve the likelihood of students completing a transfer-level math course, compared to the traditional four-level sequence, but most students in such courses still do not complete the transfer-level course, and racial equity gaps remain (Rodriguez et al. 2017).

⁴⁴ Among first-time math students in fall 2019, 70 percent declared a transfer goal.

⁴⁵ Compressed algebra combines intermediate and elementary algebra into one course that a student can take in one term.

FIGURE 21

Enrollment in developmental math courses dropped substantially



SOURCE: Authors' calculations using COMIS data.

NOTE: Fall of each year; 114 colleges included.

Our interviews with math faculty shed light on the motivations for continuing to offer developmental math (seven of the nine colleges we interviewed continued to offer these courses). These reasons ranged from the community college system's open-access mission to the need to provide pathways into BSTEM degrees, which was frequently mentioned.⁴⁶ Nevertheless, there was no consensus on whether continuing to offer developmental math was the right call. For example, one faculty member indicated there was a small group of students for whom corequisite math support may not be sufficient—this person added, however, that remedial offerings should be very restricted, otherwise students will enroll regardless of whether or not they need them. Faculty at two colleges where intermediate algebra and BSTEM corequisites were offered questioned the decision to offer remediation—sharing that pre-calculus with corequisite support is a better option for students who need to develop algebra skills.⁴⁷

Several math faculty also indicated that another motivation for keeping developmental courses was that intermediate algebra (or an equivalent math course) continued to be one of the minimum requirements for the associate degree. On this point, it is important to note that as of fall 2019, Title 5 stipulates that students may also meet the math competency requirement with a course that is equivalent or above the level of intermediate algebra, if the courses have elementary algebra as a prerequisite.⁴⁸ The last point is illustrated well by a math faculty member at college with relatively high access to transfer-level math, who commented that students often do not realize that statistics is actually better for the associate degree because it gives them the option to transfer to a four-year college if they choose to do so at a later point. At two colleges, we learned of concerted efforts to get all non-STEM students out of

⁴⁶ In the California Master Plan for Higher Education, the [mission statement](#) for California's community colleges includes providing remedial instruction to students who need it to succeed in postsecondary education.

⁴⁷ Indeed, a recent randomized controlled trial of statistics pathways at the City University of New York finds that statistics corequisite students were equally likely to pass other STEM courses compared to their peers in the remedial algebra group—suggesting that the remedial algebra path may not be a necessary prerequisite to ensure successful completion a STEM courses (Logue, Douglas, and Watanabe-Rose 2019).

⁴⁸ See Title 5 Section 55063 for more details.

intermediate algebra and into transfer-level statistics instead—these efforts are facilitated by the fact that statistics is now an open-access course at many colleges.

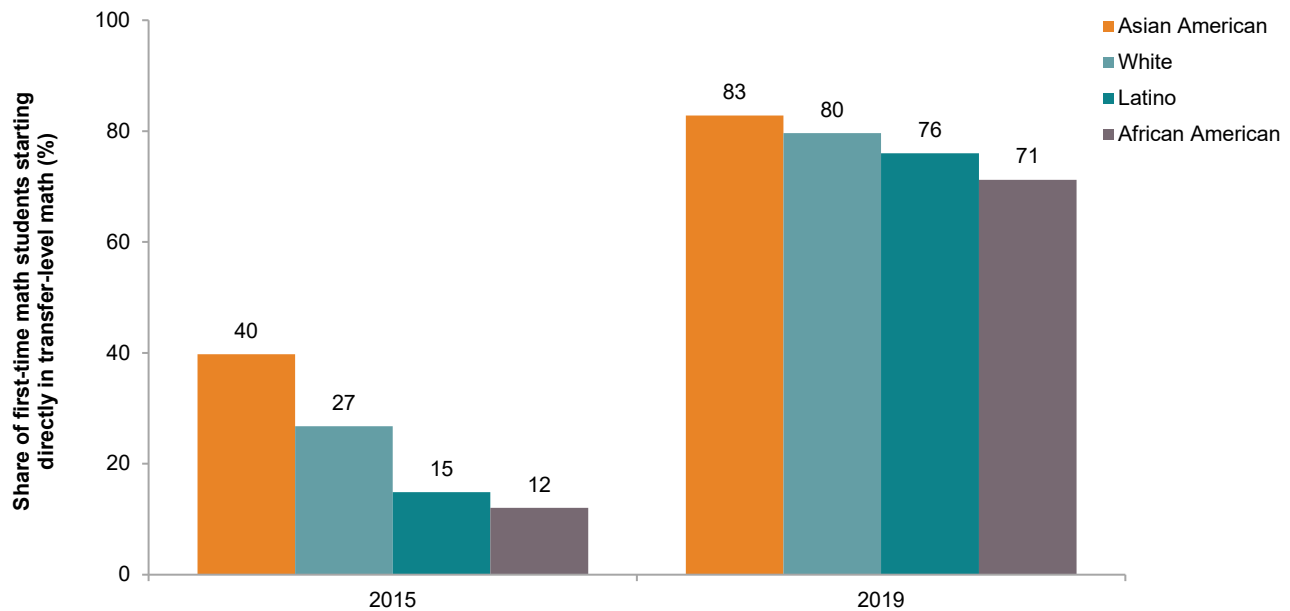
Our interviews also highlighted strong motivations for not offering developmental math courses. Indeed, two of the colleges that we interviewed eliminated remediation (i.e., all math courses below transfer level, including intermediate algebra or equivalent courses) and developed corequisite courses in different math pathways instead. These decisions were largely driven by the data showing dismal outcomes for developmental math sequences. Interviewees noted that the data showed developmental math was not helping students; instead it was “weeding students out.” Importantly, faculty acknowledged that they were not personally at fault. Rather, it was the “system they created” that produced these outcomes.

Long-standing Structural Racial Inequities in Math Access Have Narrowed

One of the most remarkable effects of AB 705 is that access to transfer-level math has become more equitable across the system. Specifically, the gap in access to transfer-level math between white and Latino students dropped from 12 percentage points in fall 2015 to 4 percentage points in fall 2019. The access gap between white and African American students also declined but a gap of 8 percentage points remained in fall 2019 (Figure 22).⁴⁹ It is worth noting that in fall 2019 equity gaps across racial/ethnic groups in access to transfer-level courses were larger in math than in English (Figure 4).

FIGURE 22

Racial/ethnic gaps in access to transfer-level math courses narrowed substantially in fall 2019



SOURCE: Authors’ calculations using COMIS data.

NOTES: Fall of each year. All 114 community colleges included. These four groups represented 93 percent of first-time math students in 2015 and 89 percent in 2019. There were 82,000 Latino students, 39,000 white students, 19,100 Asian American students, and 9,100 African American students in fall 2015. Meanwhile, there were 70,000 Latino students, 27,000 white students, 16,200 Asian American students, and 6,300 African American students in fall 2019. See the glossary of terms at the end of this report for definitions.

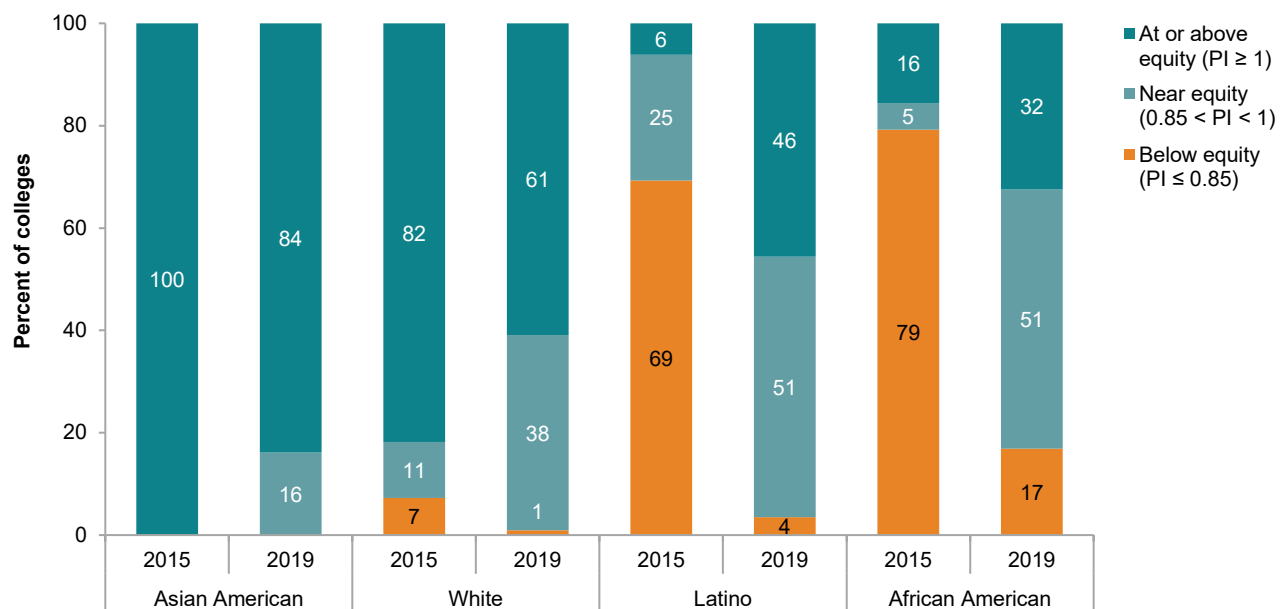
⁴⁹ It is worth mentioning that the access rate for Latino students is statistically different from the access rate of white students at the 0.95 confidence interval (i.e., $p \leq 0.050$). The same is true for the access rate of African American students.

Examining the proportionality index, we find that in fall 2015 white (1.26) and Asian American (1.86) students were overrepresented among those starting in transfer-level math, relative to their share of first-time math takers, while African American (0.56) and Latino (0.70) students were significantly underrepresented. By fall 2019, Latino (0.98) and African American (0.92) students were more equitably represented in students starting directly in transfer-level math. The findings also hold with the 80 percent rule: we find that in fall 2015, Latino (56%) and African American students (45%) were far from being within 80 percent of the access rate of their white peers. By fall 2019, both groups were accessing transfer-level math at rates above 80 percent, compared to their white peers, at 95 and 89 percent respectively (Technical Appendix Table B7).

It is important to emphasize that significant progress has been made in improving equitable access to transfer-level math across the system. However, there are a number of colleges where African American students continue to be significantly underrepresented among first-time math students starting directly in a transfer-level math course (see Figure 23).

FIGURE 23

Colleges have made tremendous progress in improving equitable access for Latino and African American students



SOURCE: Authors' calculations using COMIS data.

NOTES: Fall of each year. We exclude colleges with less than 20 first-time course takers in a given racial/ethnic group. Specifically, 114 colleges are included for Latino students, 110 for white students, 93 for Asian American students, and 77 for African American students. See the glossary of terms at the end of this report for definitions.

Moreover, when we examine all three equity measures by college, excluding colleges with subgroup samples of less than 20, we find that 15 colleges continued to have inequities in two or more of the equity measures for African Americans in fall 2019. In these colleges, access rates for African American students averaged 55 percent (ranging from 28 to 75 percent) compared to 71 percent systemwide.

In general, we find that colleges with lower levels of access overall also tended to have higher racial/ethnic disparities. In the 15 colleges where equity remains a concern, overall access rates averaged 70 percent, which is 8 percentage points below systemwide average.

In the case of Latino students, there were only four colleges where Latino students continue to have inequitable access to transfer-level math. Three of these colleges were among the eight colleges with the lowest access rates in fall 2019, overall and among Latino students.

In our interviews, math faculty, staff, and administrators directly attributed the impressive gains in equitable access to transfer-level math to AB 705. The elimination of the standardized placement test and the reductions in remedial offerings/requirements opened access to many more historically underrepresented students who previously would have been placed in developmental math. As with English, interviewees consistently indicated that gains in successful completions were primarily driven by the changes to assessment and placement policies that led to large gains in direct access to transfer-level courses. Importantly, as we discuss in more detail in the next section, faculty at several colleges also highlighted that “AB 705 took down a structural barrier for STEM.”

The relatively small number of colleges with persisting inequities is encouraging and confirms that colleges across the state are making important progress toward closing racial equity gaps in access to transfer-level math.

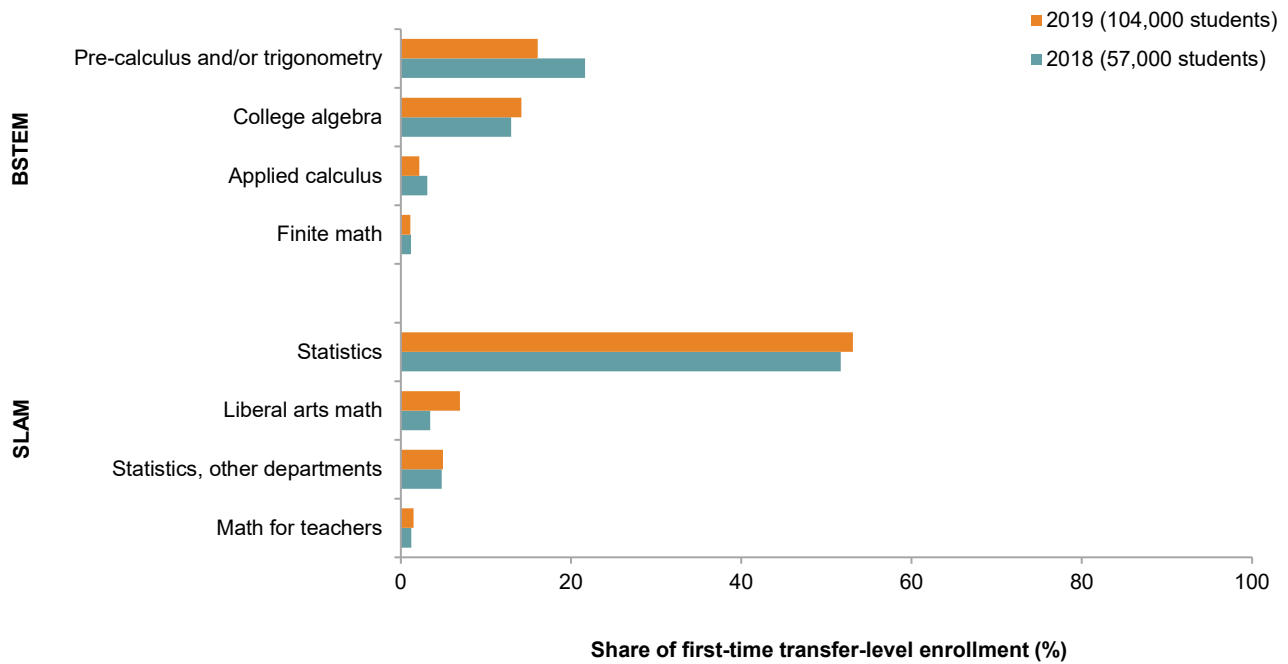
Access to Multiple Math Pathways Grows

Until recently, the developmental pipeline at colleges across the state was algebra-based. This meant that the vast majority of students were placed into a math pathway that prepared students for calculus even if they intended to pursue a liberal arts major. Over the last few years, however, as more colleges have begun to implement multiple math pathways, many more students have had access to transfer-level math options aligned with their major or program of study. In fact, across the state, the vast majority of colleges (92%) use intended program of study as one of the measures informing math placements.

In fall 2019, about two-thirds of first-time math students who enrolled directly in a transfer-level course went into a statistics or liberal arts math (SLAM) course, which is higher than the share who did so in fall 2018 (67% versus 61%) (Figure 24). This is consistent with what is expected in the framework of multiple math pathways since these courses fulfill math requirements for the most popular majors. This is also consistent with the fact that many colleges have made these courses open access—meaning that a student may enroll in a transfer-level SLAM course, sometimes with corequisite support, regardless of high school grades or course-taking.

FIGURE 24

Two-thirds of students are going into the SLAM pathway



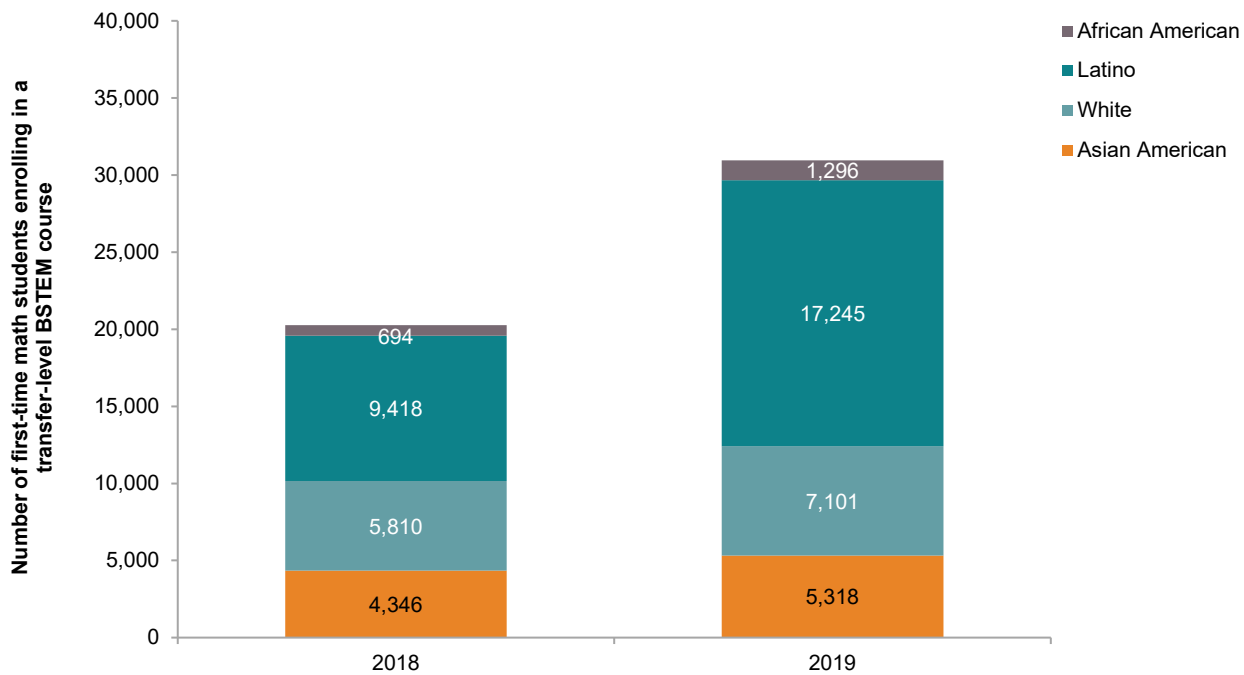
SOURCE: Authors' calculations using COMIS data.

NOTES: Fall of each year. All 114 colleges included. Only introductory transfer-level courses are included. SLAM includes statistics offered in any department, liberal arts math, and math for teachers. BSTEM includes finite math, college algebra, pre-calculus, trigonometry, and applied calculus (i.e., calculus for business, social sciences, behavioral sciences, management, life sciences, and economics).

However, it is important to highlight that between fall 2018 and fall 2019, 12,700 additional first-time math students (a 57% increase) enrolled in a business, science, technology, engineering, and math (BSTEM) pathway (Figure 25). Of these additional students, 62 percent were Latino and 5 percent were African American. Consequently, both Latino and African American students gained representation in first-time math enrollments in transfer-level BSTEM courses in fall 2019 relative to fall 2018: the share of Latino students increased from 43 percent to 50 percent while the share of African American students increased from 3 percent to 4 percent.

FIGURE 25

The BSTEM pathway saw a large increase in direct enrollment in a transfer-level course



SOURCE: Authors' calculations using COMIS data.

NOTES: Fall of each year. All 114 colleges included. Only introductory transfer-level courses are included. BSTEM includes finite math, college algebra, pre-calculus, trigonometry, and applied calculus (i.e., calculus for business, social sciences, behavioral sciences, management, life sciences, and economics).

In our interviews, several colleges that implemented reforms to math placement early on indicate that these reforms have helped increase and diversify the pipeline into BSTEM—a pipeline where historically Latino and African American students have been vastly underrepresented. One faculty member stated that “we had heard that broadening access would reduce success and we see the opposite, we actually now have a pipeline to STEM and it has diversity ... now the STEM pathways actually reflect the demographics of our campus.” The dean overseeing math, science, and engineering at this college indicated that the college has also experienced increased demand for higher-level BSTEM courses because more students are making it through the pathway. For other colleges that may start to see increased student demand for these courses, she recommended making sure that engineering and physics, for example, are scheduled in a way so that students can take both courses.

Overall, there has been a dramatic increase in access to transfer-level math, with more first-time math students taking a course appropriate for their program of study. Encouragingly, we find evidence that expanded access has helped diversify the algebra-based math pathway (BSTEM). While colleges have made important strides in narrowing racial equity gaps in access, overall disparities are somewhat larger than in English. And as we saw in English, there remain some colleges where access is more restrictive and racial equity gaps are more concerning. In the next section, we examine the association between placement policies and access levels across colleges.

How Are Placement Policies Affecting Student Access?

In this section, we aim to compare key aspects of colleges' placement policies that contribute to higher and lower levels of access and equity in transfer-level math (see [Technical Appendix Table C6](#) for a detailed comparison of these three groups across the key variables in this analysis). Our analysis indicates there are a number of colleges that will need to refine their placement and curricular structures to comply with the law and improve equity in access.

For the purposes of this analysis, we define “higher-access” colleges as those where 90 percent or more first-time math students enrolled in transfer-level math (18 colleges) and “lower-access” colleges as those where 65 percent or fewer first-time math students enrolled in transfer-level math (23 colleges).⁵⁰ The higher- and lower-access colleges were selected because they were one standard deviation above and below, respectively, the mean access rate systemwide (see [Technical Appendix Table C5](#) for descriptive statistics for both groups).⁵¹ As would be expected, colleges with lower levels of access to transfer-level math courses are also where racial/ethnic gaps are the largest.⁵²

It is important to highlight that, with the exception of two colleges that offer universal access, the math placement process is leading to a high-stakes decision between transfer-level math (with or without support) and prerequisite remedial courses. This decision is high stakes because, as we will discuss later in the report, where the student enters the math sequence significantly affects their likelihood of completing the required transfer-level math course (see [Figures 29 and 36](#)).

Multiple Measures Placement

As was the case in English, prior to the implementation of AB 705, colleges across the system relied heavily on placement tests and only about two-thirds of colleges reported using high school information to inform the math placement process (Rodriguez, Cuellar Mejia, and Johnson 2016). By fall 2019, no college used a standardized placement test and 100 percent of colleges used multiple measures ([Figure 26](#)). As would be expected given the stipulations of the law and the Chancellor's Office math default placement rules, the vast majority of higher- and lower-access colleges use high school GPA (both 100%) and information about the highest math course completed (94% and 91%, respectively) for placement. The majority of both higher-access (94%) and lower-access (91%) colleges use self-reported high school records, with less than half using high school transcripts.

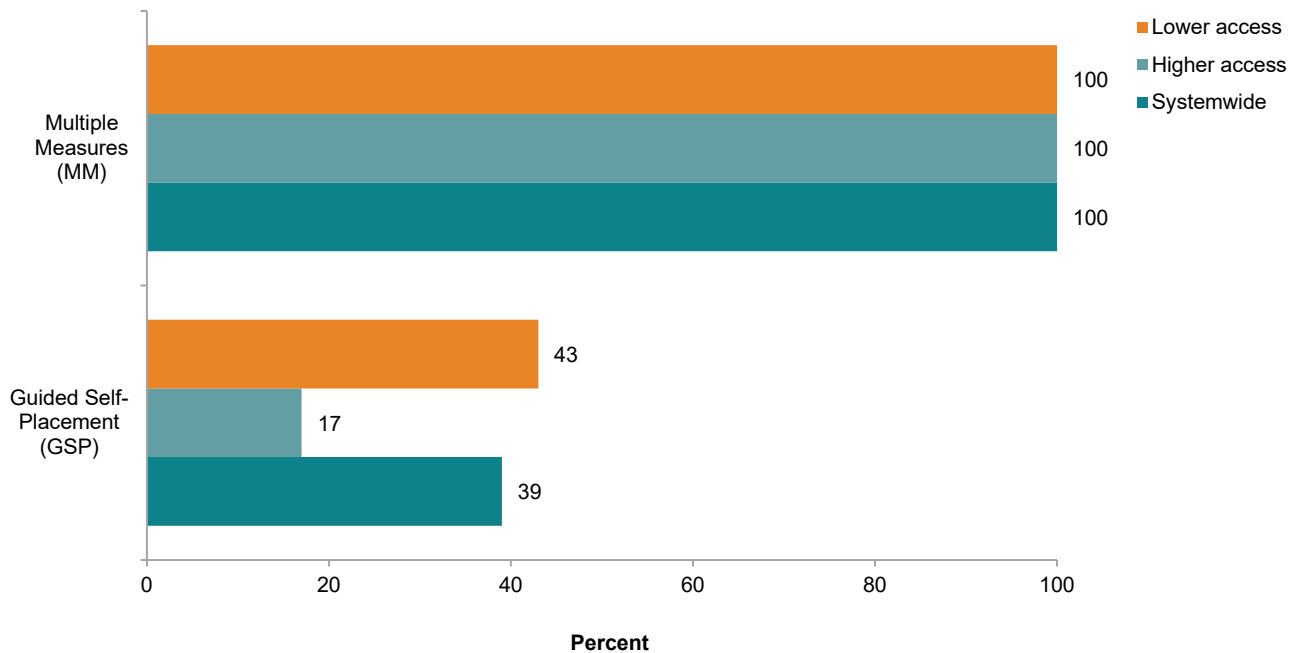
⁵⁰ As with English, even with this reduced subsample, the number of colleges used in this analysis is larger than the community college systems in over 30 states. See [Table 317.20](#) in NCES (2018).

⁵¹ The CCC systemwide mean is 78, with a standard deviation of 13.

⁵² African American first-time math students were underrepresented in transfer-level courses in the lower-access colleges but they were equitably represented in the higher-access colleges. It is worth noting that there was not a statistically significant difference in the racial/ethnic composition of the two groups of colleges.

FIGURE 26

All colleges use multiple measures placement, and many also use guided self-placement



SOURCE: Authors' calculations using PPIC scan of CCC placement policies.

NOTES: The systemwide figures include all 114 colleges. We define "higher access" as colleges that have a share of first-time math students starting in transfer-level math greater than or equal to 90 percent (n=18). "Lower access" colleges have a share of first-time math students starting in transfer-level math less than or equal to 65 percent (n=23). See [Technical Appendix Table C6](#) for full data details.

As in English, the use of the Chancellor's Office default placement rules in math is not mandatory, but this guidance provides colleges with minimum placement thresholds to inform placements into the BSTEM and SLAM pathways. As seen in [Technical Appendix Table C4](#), the default rules rely solely on high school GPA and prior math coursework. They recommend that all students enroll in transfer-level SLAM or BSTEM courses, and that colleges provide students in the lower placement bands with concurrent remedial support.⁵³ In general, GPA tends to carry the most weight in placement decisions. In SLAM, only GPA is used for placement recommendations, while in BSTEM, if the GPA is high enough (3.4 or higher), it is recommended that students enroll in a standalone transfer-level course.⁵⁴ Prior math coursework is generally only used for students with lower GPAs. Importantly, if colleges choose to place students at a lower level, they have two years to provide evidence that this placement meets or exceeds the throughput benchmarks provided in the default placement rules (Hope and Stanskas 2018). As we will discuss in the next section, important differences emerge with respect to how lower- and higher-access colleges deviate from the default placement rules as well as which additional measures are used and how they are used.

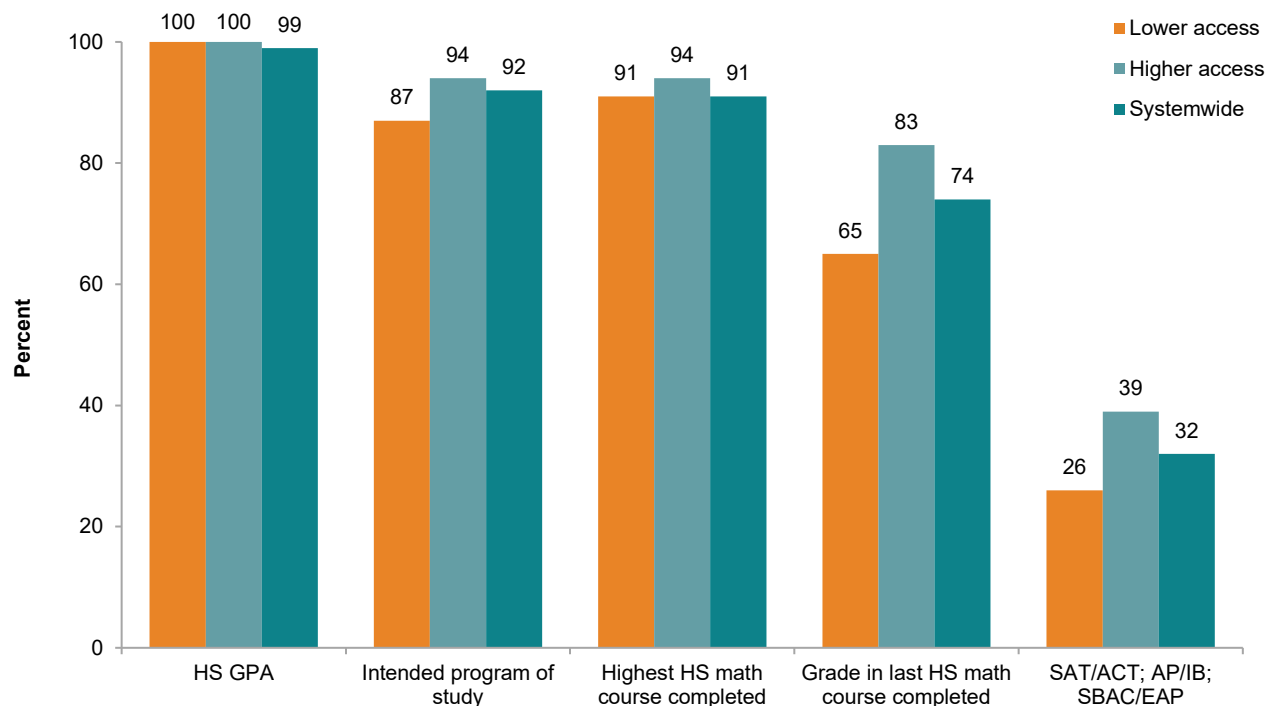
Use of other academic achievement measures. Higher-access colleges were more likely to use additional information about prior academic achievement to inform the math placement process. Specifically, higher-access colleges (83%) were significantly more likely to use students' grade in their last math course than lower-access colleges (65%). Higher-access colleges were also more likely to use the SAT/ACT, AP scores, and/or the Early Assessment Program (EAP) as part of the placement process (39% versus 26%) (Figure 27). This finding suggests

⁵³ Note that the "recommended" or "strongly recommended" statements in the default placement rules are directed at colleges, not students. Namely, they recommend or strongly recommend that colleges provide concurrent remedial support to students in the lower GPA bands. Also, the Chancellor's Office could not mandate that colleges make the concurrent supports required, but colleges can require the courses if they choose to do so.

⁵⁴ The assumption is that the student has completed intermediate algebra or the equivalent prior to enrolling in the course.

that higher-access colleges are likely using multiple achievement measures in a disjunctive (either/or) approach. This method would enable students to access transfer-level courses in more than one way (e.g., placement into statistics could be determined by a GPA of 2.0 or higher *or* B or higher in high school Algebra II *or* EAP of standard exceeded). This is in contrast to a conjunctive (both/and) approach, which would make access to transfer-level math more restrictive. Under this approach, students would need to meet two or more achievement metrics in order to access a transfer-level math course (e.g., GPA of 2.0 or higher *and* B or higher in high school intermediate algebra). In addition, an examination of placement rules and our interviews with faculty both indicate that colleges are using prior math coursework to direct students interested in STEM programs to developmental math if a student has not successfully completed intermediate algebra. In contrast, at several higher-access colleges—including the college with the highest throughput rate in the system—all students, even those without intermediate algebra, are allowed to enter directly into transfer-level STEM math with corequisite support.

FIGURE 27
Many colleges use a range of high school records, in addition to GPA



SOURCE: Authors' calculations using PPIC scan of CCC placement policies.

NOTES: The systemwide figures include all 114 colleges. We define "higher access" as colleges that have a share of first-time math students starting in transfer-level math greater than or equal to 90 percent (n=18). "Lower access" colleges have a share of first-time math students starting in transfer-level math less than or equal to 65 percent (n=23). See [Technical Appendix Table C6](#) for full data details.

Multiple measures placement rules. One of the starkest differences that emerges between higher- and lower-access colleges is the placement rules they use to determine access to transfer-level math. While just about half of all colleges (44%) and higher-access colleges (50%) use the default placement rules, only three in ten lower-access (30%) colleges use them. In fact, half of lower-access (52%) colleges use placement rules that are stricter than the default placement rules, while only 6 percent of higher-access colleges do. Lower-access colleges are much more likely to require developmental math courses for students in the lowest placement band. In addition,

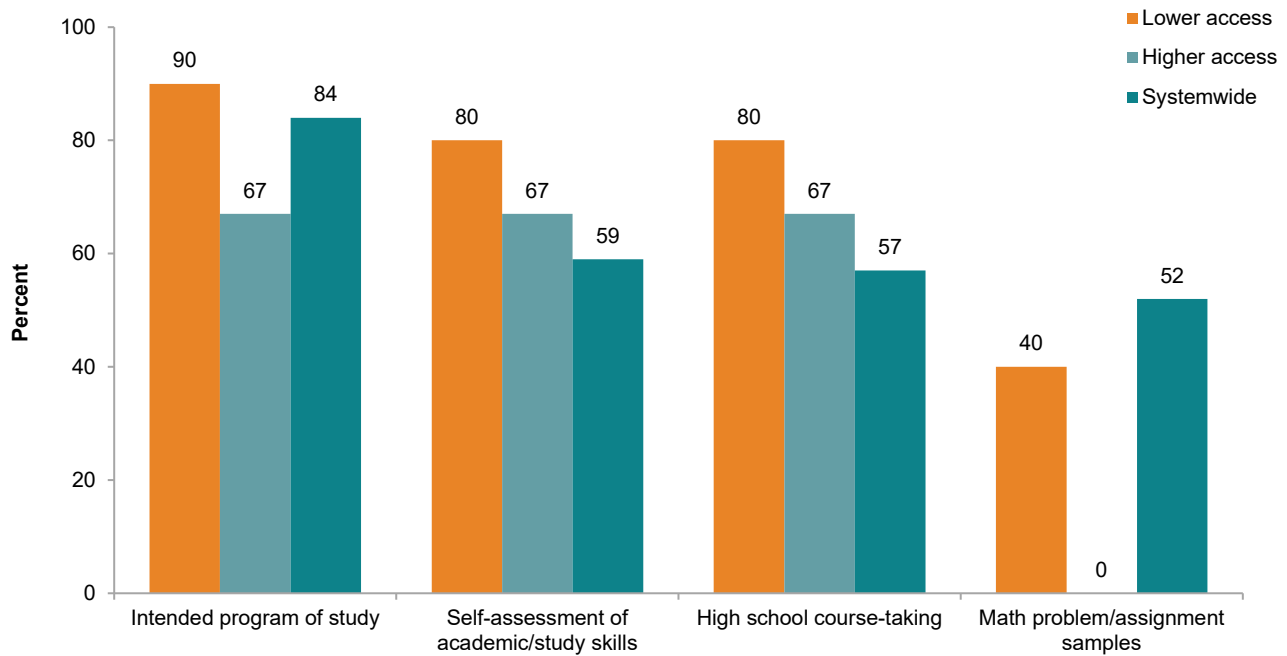
compared to lower-access (9%) colleges, higher-access (28%) colleges are more likely to deviate in other ways from the default placement rules. For example, a college may recommend developmental math to students falling under certain placement bands instead of making it entirely optional (e.g., BSTEM students who did not complete algebra 2). This finding suggests that offering some flexibility on the placement rules is helpful—but only if it allows colleges to provide greater access and if it improves the provision of curricular supports (e.g., required corequisites). When colleges use this flexibility to require developmental math, it makes access more restrictive and inequitable—which in turn affects student outcomes. Indeed, our descriptive examination of one-term throughput in transfer-level math finds that the highest throughput rates are found at the two colleges with placement rules that are less restrictive than the Chancellor’s Office default rules (57%), followed by colleges using the default rules (44%); the lowest throughput rates occur at colleges with placement rules that are more strict than the default rules (37%). Under AB 705, the burden now rests on colleges to demonstrate that any developmental course requirements are indeed maximizing the likelihood that students complete the transfer-level course within one year.

Guided Self-Placement

As with English, guided self-placement is an approach that is typically used to help determine math placements when high school records are not accessible. In math, a college typically provides students with course information, sample math assignments, and questions to help students self-assess their preparedness for different levels of math (see examples in [Technical Appendix](#) Figures C1 and C2). As with multiple measures, guided self-placement frequently uses a student’s intended program of study to inform placements (84% of colleges that use GSP for math do so). Overall, this process is meant to be a more holistic placement approach for selecting courses that align with students’ educational goals and incoming math skills (Academic Senate for CCC 2018). Across the system, 39 percent (44 of 114) of colleges use a guided self-placement policy in addition to multiple measures to determine math placements (Figure 26). Importantly, we do find some variation in the use of GSP among higher- and lower-access colleges. Specifically, we find that compared to higher-access (17%) colleges, lower-access (43%) colleges are more than twice as likely to use guided self-placement. Across the state and within our higher- and lower-access college groups, we find that GSP is most often used for students who do not have high school data, who delayed college enrollment, or who graduated from a high school outside of the United States. Among colleges using GSP, we summarize the differences in how the GSP process is used for math in higher- and lower-access colleges (Figure 28).

FIGURE 28

Compared to higher-access colleges, lower-access colleges are more likely to use a variety of GSP measures



SOURCE: Authors' calculations using PPIC scan of CCC placement policies.

NOTES: The sample is limited to the group of colleges using guided self-placement. The systemwide figures include 44 of the 114 colleges. Among the group of colleges using guided self-placement, there were 3 colleges we define as "higher access" (have a share of first-time math students starting in transfer-level math greater than or equal to 90%) and 10 colleges we define as "lower access" (have a share of first-time math students starting in transfer-level math less than or equal to 65%). See [Technical Appendix Table C6](#) for full data details.

Self-assessment of academic skills and study habits. Compared to higher-access colleges, lower-access colleges were more likely to use self-assessments of academic skills and study habits as a measure to help students self-place into the math sequence (67% versus 80%) (Figure 28). This difference is noteworthy because the types of questions used touch on math confidence and anxiety, and may lead to students underplacing themselves. As an example, at one of the lower-access colleges, part of the self-assessment asks students to agree/disagree with the following statements ([Technical Appendix Figure C1](#)):

- "I have confidence in my ability to succeed in math or statistics without the need of extra support"
- "I am able to balance the challenge of a math or statistics course with the other obligations in my life"
- "I have previously been successful in math"

As is the case in English, given how common self-assessments are and the high-stakes nature of the decision students are making, it will be critical that colleges gather data and conduct research on these questions to assess whether they may unintentionally be leading students to underplace themselves. For instance, a student with family or work obligations may feel inclined (or be encouraged) to place into remedial math if they perceive that a lower-level class will allow them to more easily balance school with work/family obligations. This may happen if some of the terms used in the questions trigger anxiety or dampen student confidence (see Belmi et al. 2020 on how socioeconomic differences affect student confidence).⁵⁵

⁵⁵ Also see Kosiewicz and Ngo (2020) on how greater proportions of historically underrepresented students enroll in the lowest-level math courses using self-placement relative to a test-based system.

Use of high school course-taking. We find that even when the vast majority of lower-access colleges use GSP for students who delayed college entry (100%) or those without high school data (70%), the majority of lower-access (80%) colleges still also ask students to self-report high school information (Figure 27). In contrast, only two-thirds of higher-access colleges do so. As with English, we find that this happens because GSP questionnaires developed by colleges typically begin by asking students to report their overall high school GPA and performance in their last math course (see [Technical Appendix](#) Figure C1). Subsequent questions then go on to ask students to self-assess their skills. While gathering information about high school course-taking appears counterintuitive for students without high school information, the prominence of this measure suggests it is most relevant for students who delayed their college entry.⁵⁶ If this is the case, this finding suggests that colleges may want to limit GSP to students who truly do not have high school information, such that students who are able to self-report, even if they delayed college entry, should be given the opportunity to be placed using multiple measures. This approach is supported by research by the [Multiple Measures Assessment Project](#) finding that high school GPA data are still highly predictive of student performance after a delay in college entry of ten or more years (Hayward and Hetts 2018).

Use of sample math assignments or problems. One of the most remarkable differences in the use of GSP surfaces in the way colleges use sample math assignments or problems. Specifically, four out of ten lower-access colleges (40%) use sample math assignments or math problems, while none of the higher-access colleges do (Figure 28). These problems and sample assignments are akin to the type of problems students would see in a typical math assignment or test. At one college, for example, students are asked to work out the math problems and then compare them to the solutions provided (see [Technical Appendix](#) Figure C5). In our interviews, we heard concerns from a district administrator and a Guided Pathways regional coordinator that the use of these sample problems could be leading students into developmental math, even if those placements are optional, because their use might resemble a placement test—the use of these tests has been banned by the system because research has shown that they are an inaccurate indication of students’ ability to succeed in college courses. As with English, the Chancellor’s Office guidance and Title 5 regulations aimed to address this issue by indicating that GSP policies cannot “incorporate sample problems or assignments, assessment instruments, or tests, including those designed for skill assessment, unless approved by the Chancellor” (Perez 2019). However, for now colleges are being granted provisional approval while they gather data to examine the validity of this process.

Crosscutting Issues

Below, we analyze how higher- and lower-access colleges in transfer-level math compare along dimensions that apply to both multiple measures and guided self-placement.

Corequisite and prerequisite remedial placement. As part of their AB 705 reforms, 97 colleges offered corequisite remediation as a means for supporting students going directly into transfer-level math courses in fall 2019. Not surprisingly, while nearly all higher-access colleges offered corequisite remediation, about three-quarters of lower-access colleges offered corequisites. Half of all higher-access colleges (50%) required placements into corequisite remediation, and over a quarter recommended corequisite remediation for students falling below a certain threshold; only 6 percent made these courses optional. Among lower-access colleges, just over one-quarter recommended (26%) or required (26%) corequisite remediation and about one in ten made them optional (9%). According to our interviews, when corequisites were optional or recommended, and the final decision to enroll rested with the student, students were generally encouraged to speak to a counselor or advisor to receive help deciding on whether or not to take corequisite support.

⁵⁶ It is worth noting that at least at one college, it was specified that responding to the question about high school information is not required (see [Technical Appendix](#) Figure 3B).

Across the system, only two colleges eliminated traditional prerequisite remediation courses. In stark contrast, just over half of all lower-access colleges required enrollment in remedial math for some students, especially for BSTEM students who had not completed intermediate algebra—only one higher-access college required remedial math for BSTEM students. More than half of higher-access colleges and just over one-quarter of lower-access colleges made remedial math offerings optional and open to all students who felt they could benefit from more time to “brush up” on math skills before taking a transfer-level course. When prerequisite remediation was optional or recommended, students often made these decisions with input from counselors or advisors.

Role of counselors and advisors. Counselors and advisors are important to the math placement process at many colleges across the system. When students are presented with multiple course options, counselors can help students make sense of placement data (e.g., self-assessment survey results and course options) and help students determine whether corequisite or prerequisite remediation might better meet their needs, or if additional curricular support is needed at all. Importantly, counselors also connect students with other academic and non-academic supports that aim to facilitate student success (e.g., math tutoring and workshops, financial aid, student mental health, and others). Finally, counselors play another key role by helping students select the math course best aligned with their program of study and educational goals.⁵⁷

Overall, we find that a third of colleges require meetings with counselors to complete either the multiple measures and/or GSP process, with lower-access (35%) colleges slightly more likely to require meetings than higher-access colleges (22%). The majority of colleges recommend counselor meetings or make them optional, and interviewees shared that this is primarily because of the limited number of counselors.

Both multiple measures and GSP systems use counselors and advisors to gather and process information. Under GSP, we find that lower-access (40%) colleges are slightly more likely than higher-access colleges (33%) to use counselors or advisors to gather self-reported GSP data. For multiple measures, similar shares of lower-access colleges (30%) and higher-access colleges (28%) gather placement data via an appointment with a counselor or advisor.

Across the system, placement documents and our interviews often highlighted the role of counselors and advisors in helping students decide on the right math pathway or the type of curricular support necessary. For instance, we learned that counselors have worked together with faculty and other college staff on the implementation of AB 705 as well as the integration of Guided Pathways and math pathways into the placement process. They have also been instrumental in helping students choose between the supported or standalone transfer-level math courses. In order to make the student and counselor interactions as effective as possible, interviewees at two colleges—one that was an early implementer and one that implemented reforms recently—shared that it is of paramount importance for counselors to have “a seat at the table” when making changes to course sequences and placement policies.

Several faculty and staff at higher-access colleges indicated that providing training opportunities for counselors, especially around implicit bias and how to place special populations (e.g., students with disabilities), was also helpful in reducing prerequisite math enrollments and increasing corequisite offerings. Additionally, our interviews indicated that counselors and advisors at higher-access colleges sometimes play an important role in helping students access standalone transfer-level math courses. At one college, for example, all students were eligible to register for the corequisite course, but meetings with counselors were required to access the standalone math course. At another college, a meeting with a counselor was required to access higher-level math courses (e.g., calculus). Because generally counseling is not required at both of these colleges, the fact that it is required if students want a higher placement could be leading to inequities in who ultimately enrolls in higher-level math courses.

⁵⁷ See Purnell and Burdman (2020) for more information about students’ experiences choosing math pathways, including the role of counselors in this process.

Several math faculty and staff, including the one counselor we interviewed, voiced concern about the pervasiveness of traditional remedial math offerings and enrollments in these courses, suggesting that counselors and advisors may be playing a role in getting students to enroll in “optional” or “recommended” developmental math courses. Some of the concern centered on counselors’ and advisors’ perceptions that certain students (e.g., students with disabilities, returning students) would be better served by intermediate algebra, or that certain majors (e.g., nursing) require this course, even when this is not the case. Counselors and advisors are not helped by the fact that many of these colleges also feature the remedial math option prominently in their placement charts—for example by including it visually as part of the math sequence. Some interviewees said their colleges are moving away from this practice and will only include a small note in the sequence chart that indicates remedial course options are available. In the placement documents we reviewed, we found that colleges are also making great strides in creating appealing and clear visuals and communications for counselors and students to ensure students take the math course needed for their major/career interest and to reduce unnecessary enrollments in prerequisite remediation.

Overall, we find that certain placement policies, including requiring remedial placements and the use of sample problems and self-assessments, may be contributing to lower levels of access in transfer-level math. In the next section, we describe how broadening access to transfer-level math courses has had important implications for student success and equitable outcomes. For example, the average one-term throughput rate in lower-access colleges was 29 percent in fall 2019, compared to 50 percent in higher-access colleges.

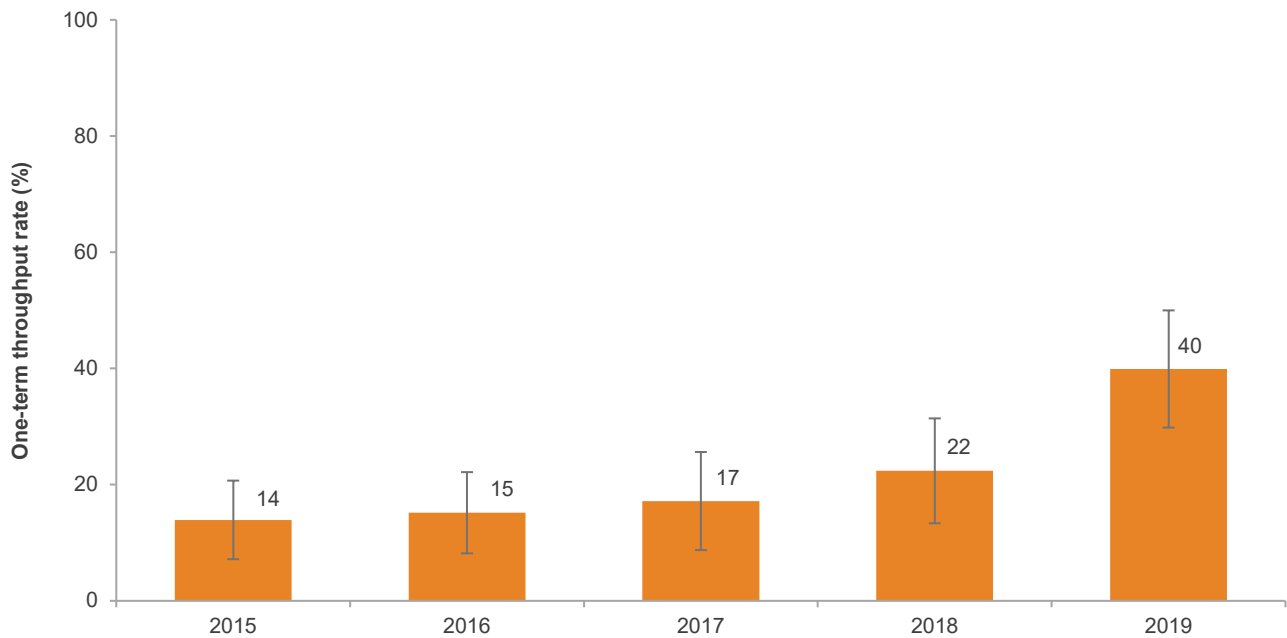
More Students Are Successfully Completing Transfer-Level Math

In fall 2019, 53,300 students out of the 133,500 students who took any math course for the first time successfully completed transfer-level math, for a one-term throughput rate of 40 percent. This is a dramatic improvement from where the system was just four years ago, when only 14 percent of first-time math takers successfully completed a transfer-level math course in one term (Figure 29). This low one-term throughput rate prior to AB 705 is not surprising since the vast majority of students’ first math course was developmental. Relative to fall 2015, 31,000 additional students successfully completed a transfer-level math course (139% increase) in fall 2019.

In contrast to English, early implementation of placement reforms was not as common in math. There were only a handful of colleges that significantly broadened access to transfer-level courses leading up to fall 2019. Because large increases in access to transfer-level math occurred between fall 2018 and fall 2019, it is not surprising that the biggest growth in throughput rates happened between fall 2018 and fall 2019. Notably and in contrast to what the data show in English, the level of variation in one-term throughput rates across colleges remained constant (i.e., the size of the error bars is the same).

FIGURE 29

Four in ten first-time math students successfully completed a transfer-level math course in fall 2019



SOURCE: Authors' calculations using COMIS data.

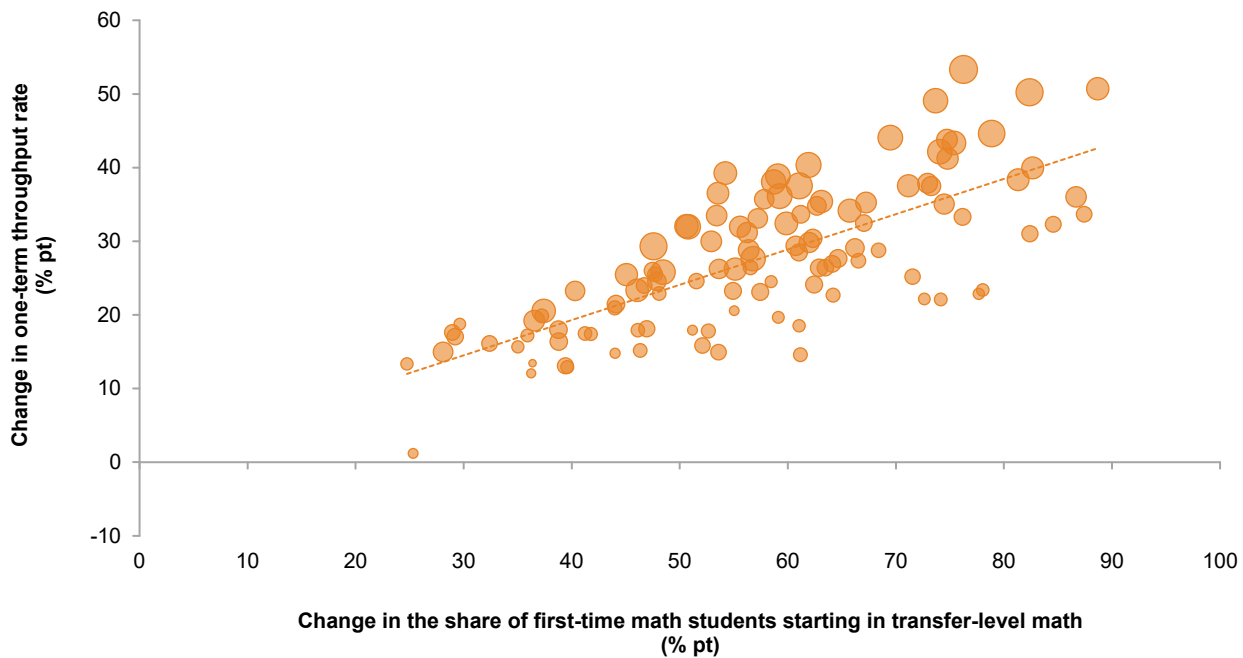
NOTES: Fall of each year. All 114 community colleges included. Vertical lines are error bars used to display one standard deviation above and below the systemwide rate. See the glossary of terms at the end of this report for definitions.

As mentioned for English, given the prevalence of developmental course enrollment prior to fall 2019, we acknowledge that most students would not have been able to complete a transfer-level course in one term. To account for this, we calculate one-year and fall-to-fall throughput rates. We find that 22 percent of first-time math students in fall 2015 successfully completed a transfer-level math course within a year and 27 percent did so fall-to-fall. In both cases, the rate of successful completions is still lower than the one-term throughput rate observed in fall 2019 (see [Technical Appendix Figure B2](#)).

As Figure 30 shows, there is a positive relationship between changes in access and changes in throughput. A 10 percentage point increase in the share of students starting directly into transfer-level math is associated with a 4.8 percentage point increase in the college's throughput rate for transfer-level math. More importantly, the relationship is so strong that 55 percent of the variation in throughput improvement can be explained by increases in access. As we mentioned in our analysis for college composition, it is an important finding that a single variable, within the direct control of colleges, is associated so strongly with improvements in completion of transfer-level math.

FIGURE 30

There is a strong association between increases in access to transfer-level math and increases in successful completions



SOURCE: Authors' calculations using COMIS data.

NOTES: Change between fall 2015 and fall 2019. All 114 community colleges included. The size of the bubbles represents the college's throughput rate in fall 2019.

The difference in the size of the bubbles in Figure 30 (i.e., college's throughput rate in fall 2019) is more noticeable here than in English (Figure 10), which is consistent with the fact that in fall 2019 there was more variation in one-term throughput rates in math than in English.

Overall, the change that transpired in fall 2019 is remarkable. Compared to fall 2015, one-term throughput rates increased by at least 30 percentage points at 45 colleges. And what is more, at 29 colleges at least 50 percent of first-time math students successfully completed transfer-level math, which has been deemed one of the largest obstacles to students' college success (Cooper et al. 2017; Attewell et al. 2006; Johnson and Cuellar Mejia 2020). Notably, all colleges had one-term throughput rates above 14 percent, the statewide average in fall 2015. However, there were still 19 colleges with throughput rates below 30 percent in fall 2019 (one standard deviation below the statewide average).

Because completion in one term is not the end goal, we examined how one-term throughput for first-time math students in fall 2019 compared to one-year and fall-to-fall throughput rates for first-time math students in fall 2018 in each college. In all but 18 colleges, the one-term throughput rate was higher than the one-year throughput rate; moreover, in 52 colleges the one-term throughput rate was higher by at least 10 percentage points. In 79 colleges the one-term rate was at least the same as the fall-to-fall throughput rate.

In our interviews, some faculty indicated that AB 705 is making failure "more visible" and that this is leading to lower faculty morale and a feeling that students are not being served well by the reforms. Indeed, as colleges have increased direct access to transfer-level courses, the number of students failing these classes becomes painfully obvious; previously, the number of students dropping out due to attrition in traditional developmental sequences was less visible. The vast majority of students who started below transfer never reached the transfer-level

classroom so faculty expressed that they did not feel the sense of responsibility for these students as they do now. Some faculty interviewees also worried that AB 705 may be pushing more students out of college altogether. Faculty with this point of view attributed low course-success rates to students being underprepared for college-level work and felt that the old system of remediation is needed to better prepare students. However, it is important to note that before AB 705 there was a much larger number of community college students who dropped out before they ever gained access to transfer-level coursework in math and English.

Other faculty, however, felt positively about AB 705 reforms. In our interviews, they often cited higher throughput rates and large increases in the number of students completing the important milestone of transfer-level math. These faculty viewed AB 705 reforms as an opportunity to examine how aspects of the curriculum and instruction, and even their own class policies, may be contributing to discouraging outcomes for some students. Others acknowledged that challenges students face outside of their classroom affect their academic performance, including housing and food insecurity, mental health issues, and the need to balance family, work and school.

Faculty who felt positively about AB 705 identified changing the “faculty mindset” as a challenge to implementing developmental education reforms. One math faculty member at a college that eliminated math remediation, for example, shared that there are some faculty who, even when presented with data on improved outcomes, find it difficult to believe students can be successful. More broadly, our interviews with both English and math faculty highlighted that there are faculty members who strongly believe traditional remediation serves a purpose, especially to help meet the open-access mission of the college and to support the needs of students with a wide range of skills. However, the research thus far suggests that diverse groups of students—including Latino students, African American students, low-income students, students with disabilities, and students with the lowest high school GPAs—have higher throughput if they start directly in transfer-level courses (with and without support) (Hayward et al. 2019; Logue et al. 2019; Cuellar Mejia, Rodriguez, and Johnson 2019). Given the poor track record of traditional remediation, under AB 705 colleges will need to provide evidence that continued enrollments in developmental education help students complete transfer-level courses within one year.

All Groups Saw Progress, but Racial Equity Remains a Big Concern

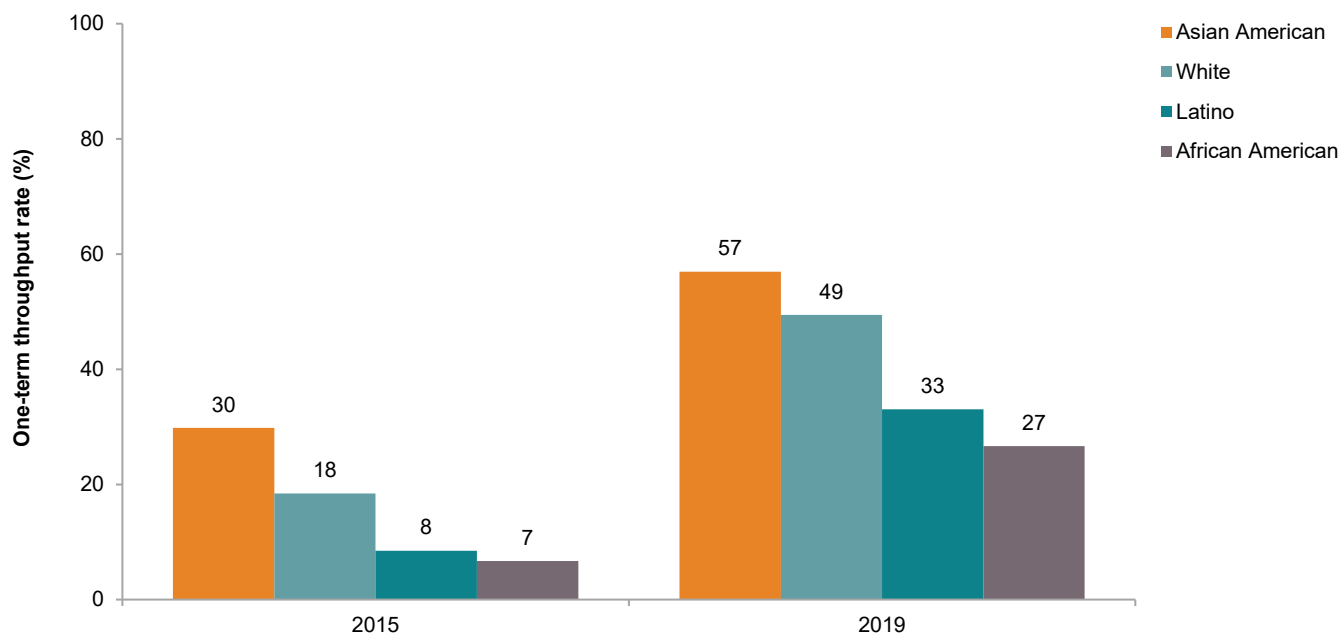
All racial/ethnic groups saw substantial increases in the number of successful completions, and gains were particularly strong among African American students (177% increase or 1,077 students) and Latino students (232% increase or 16,146 students).⁵⁸ Comparing throughput rates from 2015 and 2019, white students saw the largest percentage point increase of 31 percentage points, from 18 percent to 49 percent (Figure 31). The increase in throughput rates for other racial/ethnic groups was 27 percentage points for Asian American students, 25 points for Latino students, and 20 points for African American students.

Notably, this means that throughput rates were higher for both Latino and African American students in fall 2019 than for white students in fall 2015. However, the larger increase in completion among white students meant that racial/ethnic disparities in throughput rates widened. The white-Latino gap increased from 10 percentage points in fall 2015 to 16 percentage points in fall 2019. Likewise, the white–African American gap increased from 12 to 23 percentage points.

⁵⁸ In fall 2019, 23,091 Latinos and 1,687 African Americans successfully completed transfer-level math. Note that there were 3,188 students who completed the course successfully but did not report their race/ethnicity, which is a substantial increase from previous years.

FIGURE 31

One-term throughput rates in math increased more for white students, widening equity gaps



SOURCE: Authors' calculations using COMIS data.

NOTES: Fall of each year. All 114 colleges included. There were 82,000 Latino students, 39,000 white students, 19,100 Asian American students, and 9,100 African American students in fall 2015. Meanwhile, there were 70,000 Latino students, 27,000 white students, 16,200 Asian American students, and 6,300 African American students in fall 2019. See the glossary of terms at the end of this report for definitions.

Examining the proportionality index, we find that in fall 2019 Latino students and especially African American students continued to be underrepresented in successful completions of transfer-level math among first-time math takers. However, it is important to highlight that there has been improvement relative to fall 2015. Latino students represented 31 percent of successful completions and 51 of all first-time math students in fall 2015 for a proportionality index of 0.61. By fall 2019, Latino students represented 43 percent of successful completions and 52 percent of all first-time math takers for a proportionality index of 0.83. Recall that the closer to 1 this index is, the more equitable achievement is. In turn, the proportionality index for African American students improved from 0.48 to 0.67 during the same period.

Using the 80 percent rule, we also see equity gaps narrow for Latino and African American students, though there are still sizable disparities. In fall 2015, the throughput rate for Latino students was 46 percent that of white students, and the rate for African Americans was 36 percent that of white students. By fall 2019, both Latino (67%) and African American (54%) students were successfully completing transfer-level math at a closer rate to their white peers, though both groups are still far from reaching the 80 percent threshold.

The distinction between these three measures helps illustrate two aspects of the equity implications of AB 705. The percentage point gap helps identify that implementation of AB 705 has had a stronger positive effect for white students, increasing the gap in throughput rates between these students and Latino and African American students. However, the narrowing of the equity gaps as measured by the proportionality index and the 80 percent rule captures, in part, the remarkable positive effect that implementation has had raising the completion rates of transfer-level math for African American and Latino students.

Examinations of college-level variation using the proportionality index reveal that in fall 2019 Latino students were equitably or near equitably represented in successful completions of transfer-level math in substantially more colleges than they were in fall 2015 (Figure 32). At colleges like Siskiyou, West Hills Coalinga, Mendocino, Ventura, Merritt, Reedley, and Lemoore, improvements were substantial enough that Latino students were equitably represented in transfer-level math successful completions. Moreover, at these colleges the one-term throughput rate for Latino students was significantly higher than the statewide average throughput rate for Latino students. At Cuyamaca, Los Medanos, Columbia, Oxnard, and Porterville, Latino students were also equitably represented in successful completions, but that was already the case in fall 2015. It is relevant to highlight that in eight of these 12 colleges, the share of first-time math students enrolling directly into transfer-level math was between 10 and 22 percentage points higher than the statewide access rate for Latinos of 76 percent, which underscores the strong relationship between increases in access and the narrowing of racial equity gaps in successful completions.

In contrast, African American students were still underrepresented in successful completions of transfer-level math at the majority of colleges (81%) in fall 2019. However, it is worth highlighting that the proportionality index for African American students increased significantly in 34 of the 77 colleges with more than 20 first-time African American math students—even though most colleges still have a ways to go to achieve equitable outcomes for these students.

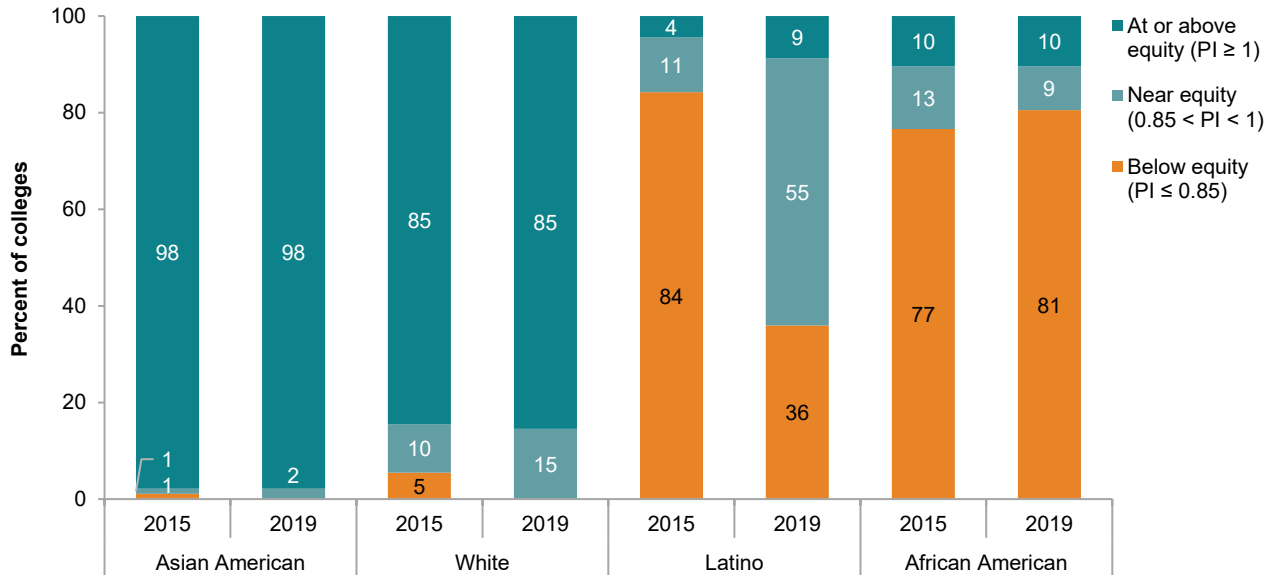
In 19 percent of colleges (15 colleges) outcomes for African Americans were equitable or near equitable in fall 2019, slightly below the percentage in fall 2015. In 12 of these colleges, the average one-term throughput rates for African American students was between 11 and 37 percentage points above the statewide average (27%). However, the number of African American students in these colleges was very low, between 20 and 54 students.

Our interviewees highlighted the roles of a collaborative learning environment, “productive struggle,” and an equity-centered teaching approach that addresses the affective domain and faculty unconscious biases in helping to support more equitable outcomes.⁵⁹

⁵⁹ Productive struggle is a strategy used by many acceleration and corequisite faculty that encourages students to make mistakes as they work on an assignment. One of the goals is for students to learn as they identify and correct mistakes. With productive struggle, faculty serve as coaches who facilitate the learning process and intervene as necessary. See [Hern and Snell \(2013\)](#) for more information.

FIGURE 32

In the vast majority of colleges, African American students continue to be underrepresented in successful completions of transfer-level math



SOURCE: Authors' calculations using COMIS data.

NOTES: Fall of each year. We exclude colleges with fewer than 20 first-time course takers in a given racial/ethnic group. Specifically, 114 colleges are included for Latino students, 110 for white students, 93 for Asian American students, and 77 for African American students. See the glossary of terms at the end of this report for definitions.

Outcomes by Math Pathway

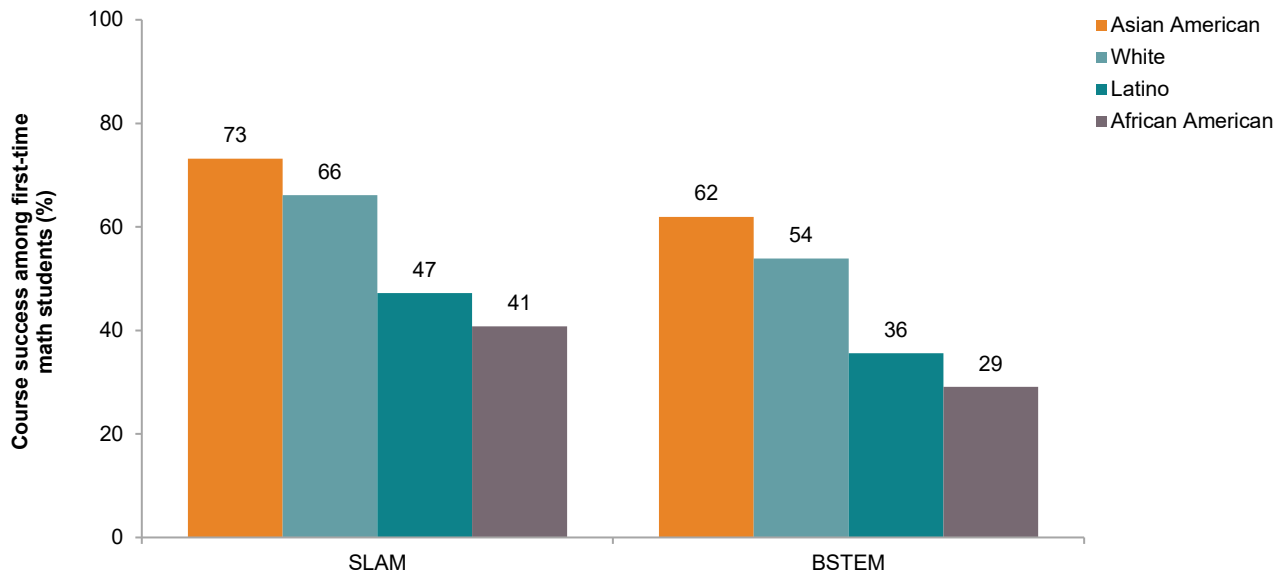
In the past few years, California's community colleges have been active in diversifying their math offerings. Indeed, the majority of colleges in the system are embracing multiple math pathways in the context of AB 705 implementation. In this study we group transfer-level math courses in two different pathways: the statistics and liberal arts pathway (SLAM) and the algebra-based pathway for BSTEM majors that require calculus.⁶⁰

Among the 104,000 first-time math students who started in a transfer-level math course, 51 percent successfully completed it in their first attempt. The rate of successful completions was higher among those in SLAM, compared to students in the BSTEM pathway: 55 percent versus 45 percent. Within each pathway, course success rates among first-time math students varied across racial and ethnic groups during fall 2019 (Figure 33). For all racial/ethnic groups, the rate of successful completions was higher among those in the SLAM pathway than among those in the BSTEM pathway. But the white-Latino gap (18 percentage points) and the white-African American gap (25 percentage points) in success rates in both pathways were of the same order of magnitude.

⁶⁰ More information on multiple math pathways in California's community colleges can be found at [Just Equations](#).

FIGURE 33

Both SLAM and BSTEM pathways see similar equity gaps in course success rates



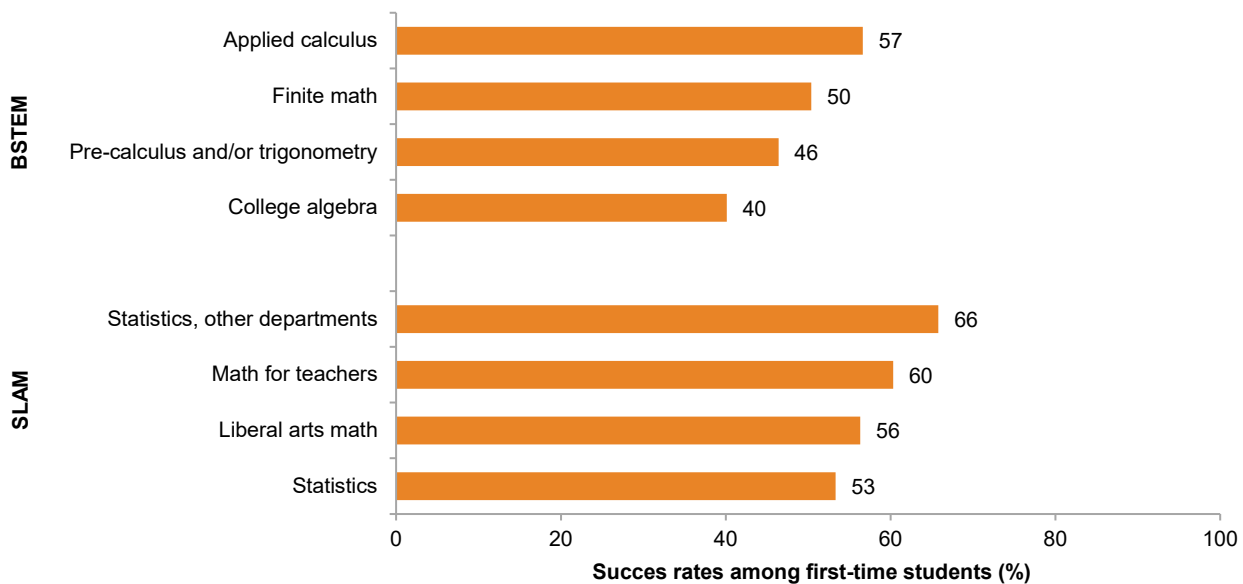
SOURCE: Authors' calculations using COMIS data.

NOTES: Fall 2019. All 114 colleges included. See the glossary of terms at the end of this report for definitions.

Course success rates among first-time math students also varied across courses within both pathways (Figure 34), with the lowest rate observed in college algebra (40%) and the highest observed in statistics courses offered outside of math departments (66%).

FIGURE 34

First-time students in the SLAM pathway saw higher rates of successful completions



SOURCE: Authors' calculations using COMIS data.

NOTES: Fall 2019. All 114 colleges included. First-time math students who successfully completed an introductory transfer-level math course with a C or better as a share of all first-time math students enrolled in the course.

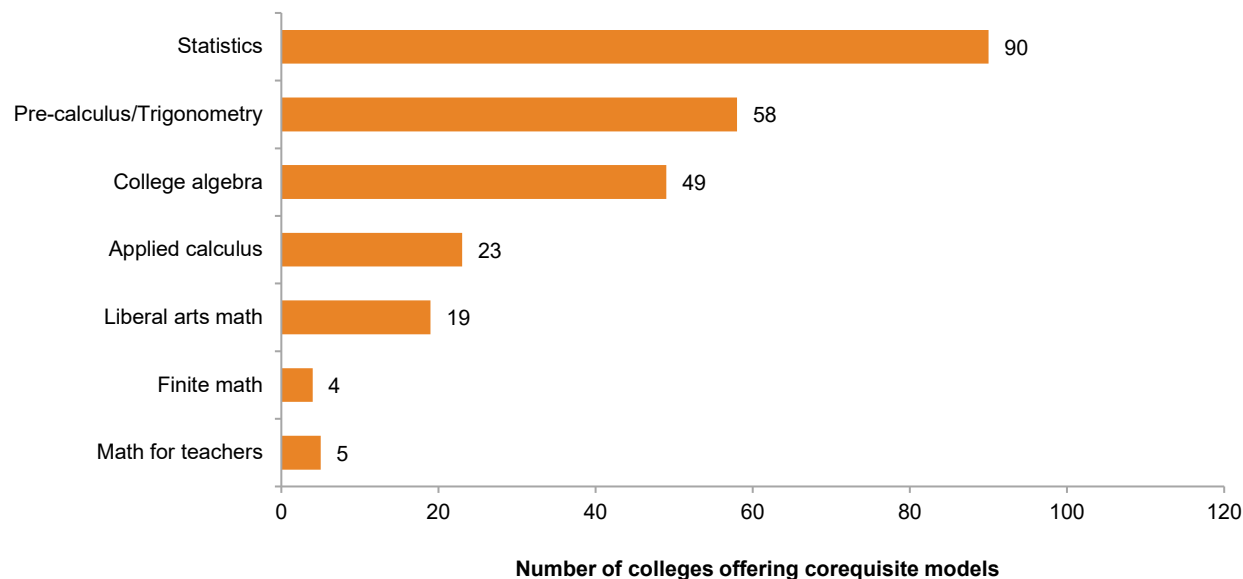
Overall, there has been remarkable progress in the share of first-time math students completing a transfer-level course—and colleges with the largest increases in access generally see the largest increases in throughput rates. Student outcomes tend to be better in transfer-level courses in the SLAM pathway compared to the BSTEM pathway. In addition, disparities in throughput rates across racial/ethnic groups are persistent. The share of colleges where Latinos are significantly underrepresented in successful completions of transfer-level math has dropped from 84 percent in 2015 to 36 percent in 2019—a very positive development, though there is still a ways to go. However, the share of colleges where African Americans are significantly underrepresented increased slightly (77% in 2015, 81% in 2019). In the next section, we explore student outcomes in corequisite courses, including challenges and strategies for narrowing persistent equity gaps.

The Role of Corequisite Courses in Improving Outcomes

Prior to fall 2019, only a few colleges offered corequisite math courses (Cuellar Mejia, Rodriguez, and Johnson 2019; Hern 2019). By 2019, 95 of the 114 colleges offered at least one transfer-level math course with corequisite support. Considering that about two-thirds of the 104,000 first-time math students who started at the transfer level did so in a statistics or liberal arts math course, it is not surprising that the majority of colleges (90) offered corequisite support for their statistics courses (Figure 35).

FIGURE 35

The majority of colleges offered at least one corequisite math course, most commonly for statistics



SOURCE: Authors' calculations using PPIC's scan of college websites, catalogues, and class schedules.

NOTES: Fall of each year. 95 colleges included.

Despite the fact that most colleges offered at least one corequisite course, systemwide only 18 percent of all first-time math students enrolled in a corequisite model (23,600 students). Of course, continuing students also benefitted from corequisite courses: overall, at least 44,100 students enrolled in a corequisite model in fall 2019.

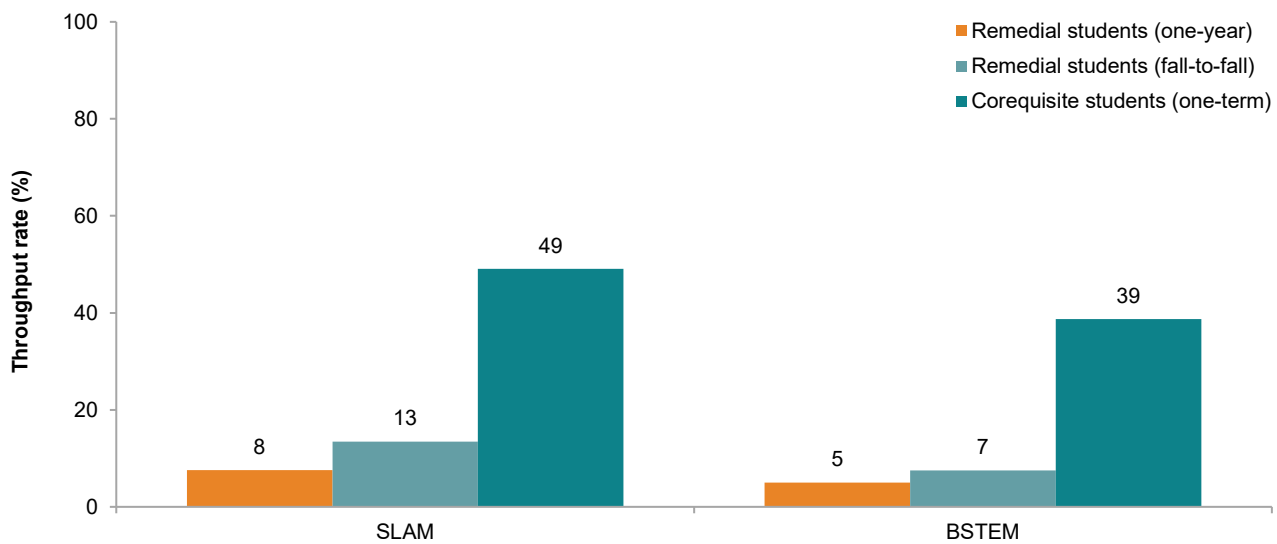
As with English, research has consistently found that corequisite remediation in math is effective at increasing students' chances of gateway course completion. In particular, there is strong experimental evidence of the

positive impacts of corequisite remediation for statistics pathways (Meiselman and Schudde 2020; Logue, Watanabe-Rose, and Douglas 2016; Logue, Douglas, and Watanabe-Rose 2019; Ran and Lin 2019).⁶¹

Our descriptive examination of the implementation of corequisite remediation across California’s community colleges is consistent with the existing research from other states. As Figure 36 shows, the gains from corequisite models compared to traditional remediation are impressive in both the SLAM and the BSTEM pathways and across all racial/ethnic groups. Among first-time math students who started in a corequisite model in the SLAM pathway, 49 percent successfully completed transfer-level math in one term. Meanwhile, 8 percent of students who started in a developmental math course in fall 2018 completed a SLAM transfer-level course within one year and 13 percent did so as of fall 2019. Similarly, 39 percent of first-time math students who started in a BSTEM corequisite model in fall 2019 successfully completed a transfer-level course in one term. Meanwhile, only 5 percent of students who started in developmental math in fall 2018 completed an algebra-based transfer-level course within one year and 7 percent did so as of fall 2019.⁶²

FIGURE 36

The gains from corequisite models compared to traditional remediation are remarkable



SOURCE: Authors’ calculations using COMIS data.

NOTES: 90 colleges are included in the calculations for the SLAM pathway (49,000 remedial students and 14,850 corequisite students) and 85 colleges are included in the calculations for the BSTEM pathway (47,500 remedial students and 9,800 corequisite students). Remedial students are first-time math students in fall 2018 who started in a developmental math course. Remedial students are restricted to students who declared a transfer goal.

⁶¹ Using state administrative data from Texas and a regression discontinuity design, Meiselman and Schudde (2020) examined whether taking corequisite math, as opposed to the traditional developmental math sequence, improved student success on academic and labor market outcomes for community college students. Overall, their results demonstrate that the corequisite model for remedial math dramatically increased students’ chances of completing college-level gateway math courses within one year (by 64 percentage points). Evidence from Tennessee suggests that students placed into corequisite remediation were 15 percentage points more likely to pass gateway math within one year of enrollment than similar students placed into prerequisite remediation (Ran and Lin 2019). Since most of California’s community colleges are implementing math pathways in conjunction with corequisite remediation, it is a challenge to identify the effects of these two approaches separately. Ran and Lin (2019) were able to disentangle the effects of these two approaches and found that the positive effects of corequisite reform in Tennessee in math, relative to prerequisite remediation, were largely driven by efforts to guide students not interested in a STEM program to take statistics, math for liberal arts, or other types of math that align with their program requirements.

⁶² Please note that to account for associate degree students who do not have an intent to transfer and for whom successfully completing intermediate algebra was enough, in this analysis we restricted the sample to remedial students who declared a transfer goal. We used their informed education goal in the student success COMIS file (SS01) if available.

Throughput rates for corequisites in both pathways varied greatly across colleges and so did the gains from implementing the corequisite model relative to traditional remediation. Examination of the variation across colleges reveals that in every college the one-term throughput rate for students who started in a corequisite model in fall 2019 was higher than the one-year throughput rate of students who started in developmental education in fall 2018. This is true in both SLAM and BSTEM pathways. In SLAM, the gains in throughput rates from corequisite models surpassed 25 percentage points in 88 percent of the colleges that offered corequisites in this pathway. In BSTEM, this was the case in 80 percent of the colleges that offered corequisites in the BSTEM pathway.

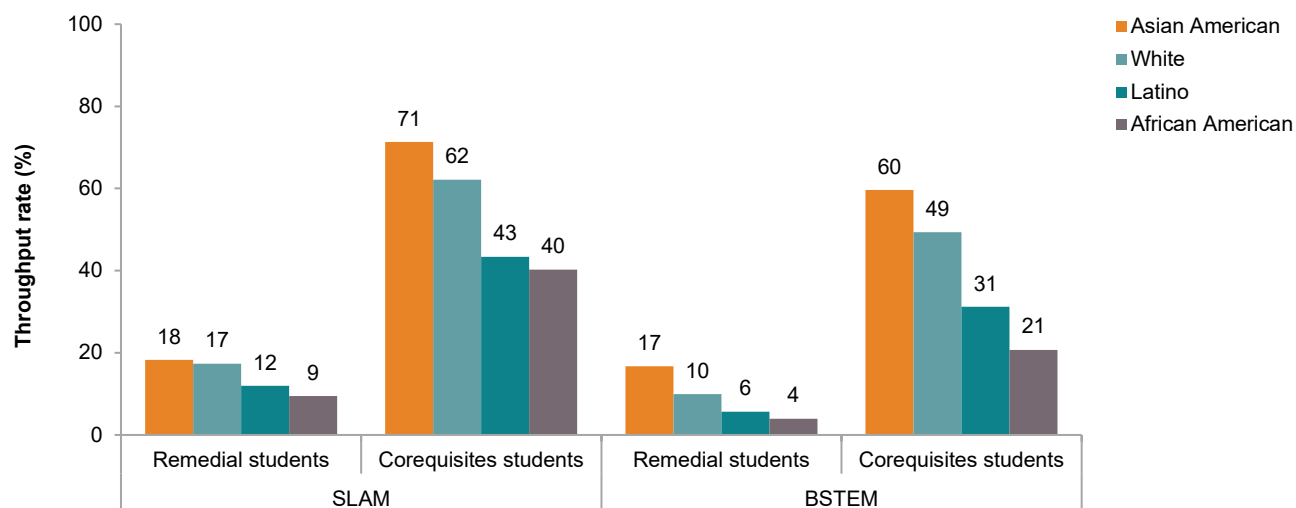
Across the board, faculty shared in interviews that the overall throughput rate at their college had improved in fall 2019, with only some or no declines in course pass rates. Most interviewees did not view declines in the pass rate as a reason to return to the prerequisite remediation model. In fact, many we spoke with reached the opposite conclusion as colleges began to compare remedial and corequisite outcomes. For instance, at one college we learned that because statistics with corequisite support had a throughput rate that was twice as high as that of pre-statistics, the college decided to eliminate the pre-statistics choice. We also learned that at colleges that continued to offer intermediate algebra for the BSTEM pathway, the number of sections being offered is relatively small and declining over time as students opt for the BSTEM course with corequisite support.

Progress Is Widespread, but Equity Gaps Remain

As can be seen in Figure 37, among all racial/ethnic groups, first-time math students in corequisite courses were much more likely to pass transfer-level math in one term than those who started in traditional remediation are to pass transfer-level math by the end of the following fall (fall-to-fall). This is true for students in both pathways. Students were five times more likely to successfully complete a transfer-level course in the BSTEM pathway and four times more likely to successfully complete a transfer-level course in the SLAM pathway when enrolled in a corequisite model compared to students who started in a developmental course.

FIGURE 37

All racial/ethnic groups see substantial gains in corequisite courses relative to traditional remediation



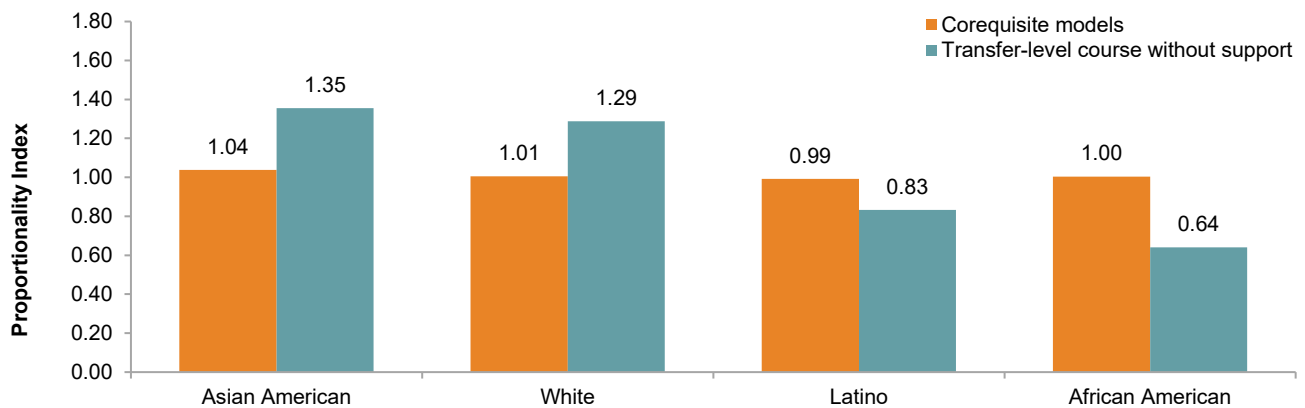
SOURCE: Authors' calculations using COMIS data.

NOTES: 90 colleges are included in the calculations for the SLAM pathway (49,000 remedial students and 14,850 corequisite students) and 85 colleges are included in the calculations for the BSTEM pathway (47,500 remedial students and 9,800 corequisite students). In the figure we are comparing the one-term throughput rate of corequisite students in fall 2019 versus the fall-to-fall throughput rate of those students who started in a remedial course in fall 2018. Remedial students are restricted to students that declared a transfer goal.

Compared to the racial/ethnic distribution of students in the standard transfer-level math courses in the SLAM pathway, corequisite models had a higher share of Latino (58% versus 50%) and African American students (6% versus 4%). The good news is that both Latino and African American students are more equitably represented in successful completions of transfer-level math when enrolled in corequisite models as indicated by the proportionality index (Figure 38). Looking at the two other equity measures, the 80 percent index and the percentage point gap, confirms that both Latino and African American students are seeing better results in the corequisite model compared to the standard transfer-level course. However, achievement gaps remain: success rates in corequisite models among Latino and African American students are 70 percent and 65 percent of the success rate of their white peers ([Technical Appendix Table B9](#)). In the BSTEM pathway, Latino students are more equitably represented in successful completions in the corequisite model than when taking the course without support. However, the same is not true for African Americans (Figure 39).

FIGURE 38

Latino and African American students are more equitably represented in successful completions of SLAM courses in corequisite models

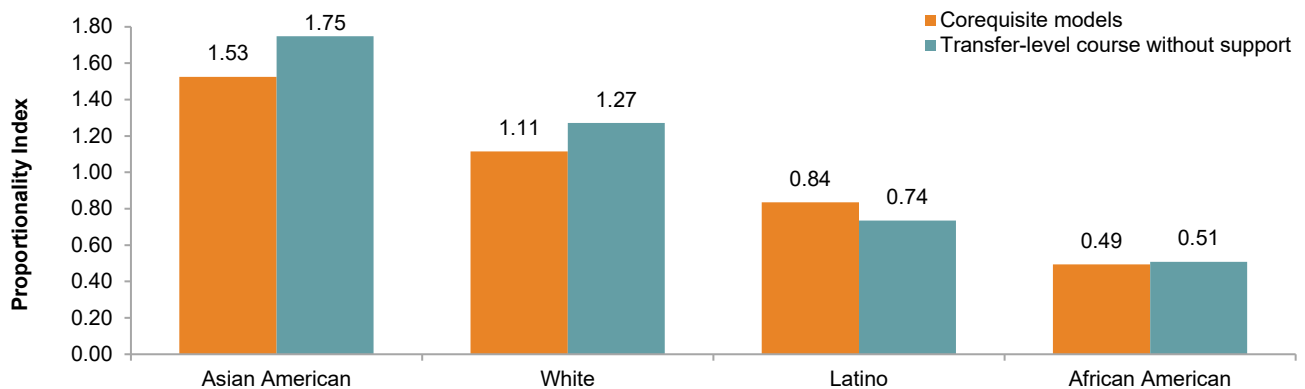


SOURCE: Authors' calculations using COMIS data.

NOTE: Fall 2019. 95 colleges are included. Above equity means a PI of 1 or greater, near equity means a PI between 0.85 and 0.99, and below equity means a PI equal to or lower than 0.85.

FIGURE 39

Latino students are more equitably represented in successful completions of BSTEM courses in corequisite models



SOURCE: Authors' calculations using COMIS data.

NOTE: Fall 2019. 95 colleges are included. Above equity means a PI of 1 or greater, near equity means a PI between 0.85 and 0.99, and below equity means a PI equal to or lower than 0.85.

Interview Insights: Challenges to improving outcomes in math corequisites

When it came to the features of successful corequisite math courses, we found that math and English faculty shared similar strategies (see text box on page 29). Specifically, our interviews with math faculty found that all the corequisite features identified in English were also perceived as important in supporting success in transfer-level math (e.g., having the same instructor, just-in-time remediation, collaborative classroom setting, relevant and rigorous curriculum, addressing the affective domain, and professional development). Additionally, when it comes to supporting more equitable outcomes, faculty believed that addressing the affective domain, building community inside the classroom, and using equity-centered teaching practices (e.g., fewer high-stakes assessments and professional development on unconscious bias) went a long way in supporting the success of historically underrepresented students.

However, relatively low outcomes and persistent equity gaps suggest that these strategies may not be implemented widely and consistently across the system. With only a few exceptions—among them Cuyamaca and Citrus—in the nine colleges we interviewed for math we learned that even within the same institution, whether or not a college adopts strategies for successful corequisite courses depends largely on whether or not instructors have participated in professional development opportunities (e.g., CAP conferences, early implementer college site visits). Partly a result of the lack of professional development, the corequisite may sometimes be disconnected from the transfer-level course (e.g., not practicing “backward design” where the content and learning goals of the parent and support course are aligned)—this may especially be the case if the courses are not linked and a different instructor teaches the corequisite. Or in some cases, the corequisite may look like a traditional developmental math course that focuses on developing discrete algebra-based skills.

Additionally, in math there are additional challenges associated with having to significantly increase statistics offerings. Many faculty are teaching statistics for the first time, and shifting from a lecture to an activity- or collaboration-based teaching approach can be difficult and requires robust training and practice. Several faculty members also indicated that teaching to a range of prior abilities and math skills in a corequisite BSTEM math course can be a great challenge and these courses can be daunting for students who have not taken algebra 2.

In math, we also learned that faculty mindsets can be one of the biggest challenges to reform—even with data on improved outcomes, math faculty do not always believe the corequisite approach is the right thing to do. As a result, faculty leaders we spoke to found it challenging to convince some faculty that students can be successful without traditional remediation. One faculty member worried that if faculty feel forced into a new way of doing things, they may have a bias against the students, whom they perceive as underprepared.

Nevertheless, some faculty have realized that the issues interfering with student success “are not math skills, but ‘being a student’ skills.” In the past, the vast majority of students coming into the transfer-level math course were not freshmen. They had been in college one or more years and taken one or more developmental math courses. Now, transfer-level courses are getting more first-time college students. Some colleges are addressing this by trying to explicitly address issues like time management, notetaking, and study strategies (Hern and Snell 2013). However, we learned math faculty are generally not trained in these areas. As has been previously noted, supporting faculty to teach in a new way will require continuous professional development opportunities and communities of practice that center on equity.

Characteristics of Corequisite Courses

Below we describe the variation that exists across colleges in the scale of implementation, type of support, placement, and unit load of their corequisite offerings. We do not analyze timing of implementation because, unlike in English, few colleges implemented placement reforms in math prior to fall 2019.

Scale of implementation

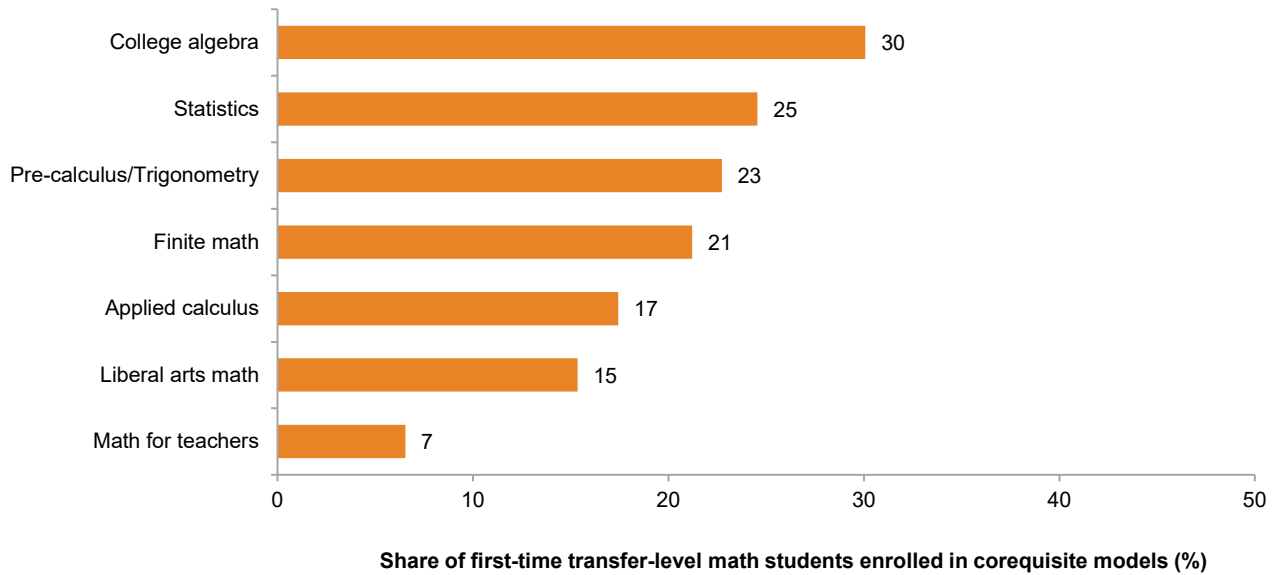
There was important variation across colleges in the share of first-time students enrolled in corequisite models, which ranged from 4 percent to 62 percent. There were 10 colleges where 7 percent or less of their first-time math students (one standard deviation below the statewide average) enrolled in a corequisite model. Conversely, there were 16 colleges where 33 percent or more of their students (one standard deviation above) did so. The average one-term throughput rate in the first group was significantly lower (35%) than the average rate in the second group (46%). The higher throughput rate in the second group is partially because colleges with higher shares of students in corequisite models had on average a lower share of their first-time math students starting in a developmental math course (13% versus 25%) and partially because these colleges had a higher share of students enrolled in the SLAM pathway (61% versus 49%). As Figure 34 shows, success rates in SLAM courses are higher than in BSTEM courses.

Another potentially important factor behind differences in enrollment in corequisite models is whether the college required, recommended, or made it optional for students to enroll in these courses based on their high school GPA. Even though we do not have student-level data on how students were placed into corequisites, our examination of colleges' placement policies reveals that colleges with the highest shares of first-time math students enrolled in corequisite models were more likely to have required enrollment in corequisite models. Indeed, in half of these 16 colleges, enrollment in the corequisite course was required, compared to only one college among the colleges with the lowest shares of first-time students.

We also looked at corequisite enrollment relative to students starting directly in transfer-level math by specific course (Figure 40). Over half of first-time math students who started in transfer-level math in fall 2019 took a statistics course, and 25 percent of these students enrolled in corequisite models. College algebra was the second-most common course among first-time math students starting in a transfer-level course (19%), 30 percent of whom enrolled in a corequisite model in fall 2019. In addition, 16 percent of first-time math students took a pre-calculus or trigonometry course, 23 percent of whom enrolled in a corequisite model. There is not a clear relationship between the scale of corequisite implementation and the overall rate of successful completions, which is not surprising considering the plethora of factors that could be in play. For example, a college where 30 percent of first-time math takers are enrolled in developmental courses and 10 percent are in corequisite models is very different from a college where no students are enrolled in development courses and 10 percent are in corequisite models. In other words, the students who enroll in corequisite models are potentially very different across colleges.

FIGURE 40

College algebra students were more likely to enroll in corequisite models compared to students in other transfer-level courses



SOURCE: Authors' calculations using COMIS data and PPIC's scan of college websites, catalogues, and class schedules.

NOTE: Fall 2019. See Figure 35 for the number of colleges offering corequisites in each subject.

As with English, our interviewees noted that the decision on the number of corequisite sections to offer in fall 2019 was generally based on data and faculty availability. One data source came from historical course success data and comparisons of fall-to-fall or spring-to-spring enrollments. Interviewees also noted drawing on the placement data of the incoming class. For example, by examining the distribution of students in different GPA bands, colleges are able to get a good sense of the range of placements they might expect in corequisite and standalone math courses. Given that demand for specific transfer-level math courses also depends on students' majors, some colleges examined the reported majors of incoming students to inform their decisions about how many corequisite sections to offer.

Type of support

A total of 262 corequisite support courses were offered in fall 2019.⁶³ In the vast majority of colleges, specific sections of the transfer-level course were hard-linked to specific sections of the support course. The support and the respective transfer-level courses consist of the same cohort of students and are scheduled at consecutive times and taught by the same faculty.

There were a half-dozen colleges, including the colleges in the San Diego District, Chaffey, Las Positas, and Mendocino, where their support course were not linked. There were also five colleges that offered enhanced courses (Bakersfield, L.A. Mission, L.A. Trade-Tech, Shasta, and West L.A.); enrollments in these courses represented 2.7 percent of first-time enrollment in corequisite models.

The linked and enhanced corequisite models are similar on the important factors of same instructor and opportunity for blended remedial support. In our interviews, faculty emphasized that using a single instructor

⁶³ This count included only corequisite courses for introductory-level transfer-level courses. This does not include corequisite support courses for intermediate algebra or for calculus I and other higher-level courses.

could weave the course together more seamlessly and provide ample opportunities for just-in-time remediation. Faculty also shared that the cohorts created in linked models (also true in the enhanced courses) were generally most conducive to group work, collaboration, and community building. Interestingly, faculty also indicated that the need to articulate enhanced courses to secure transferability to a CSU and UC and the potential stigma associated with Accelerated Learning Program (ALP)/commingled courses—where students are pulled out of the course to receive corequisite support—helped inform colleges’ decision to go with linked models.

Similar to English, typical corequisite math courses incorporate key features that were common in previous developmental education reforms, such as accelerated or pre-statistics courses.⁶⁴ These include collaborative learning activities, productive struggle, just-in-time remediation, and attention to the affective domain. Compared to English, there seemed to be more variation in the way faculty do and do not adopt these strategies in corequisite courses. For example, while most colleges spoke of addressing the affective domain, we learned that whether or not this happens depends a lot on the instructor teaching the corequisite course because math faculty are not necessarily trained in this area. Providing this level of support requires ample professional development opportunities. And while some colleges have made great strides in developing in-house training and communities of practice where faculty are able to develop and hone their skills, at many other colleges, individual instructors have to seek their own training opportunities.

Placement into the corequisite

Across the system, half of colleges only recommend or make the corequisite course optional, and only 38 percent require placement into a corequisite math course.⁶⁵ One math faculty commented on why many colleges do not require the corequisite support course in math, stating that “we do not have proof that these courses work.” At this college, they were hoping to gather data on all GPA bands to assess if the course is indeed better for students with lower GPA bands. If this is the case, they will consider making the course required.

It is important to highlight that there were important differences in the corequisite math placements for the BSTEM and SLAM pathways. Most often, SLAM corequisites were open access or only determined based on a minimum GPA threshold (e.g., less than 3.0 GPA; see [Technical Appendix Table C4](#) for the Chancellor’s Office default rules). BSTEM corequisites, on the other hand, were more likely to require a minimum GPA as well as a minimum prior math course and grade (e.g., 2.6 GPA and enrolled in high school calculus *or* less than 2.6 GPA and C or better in algebra 2). Also, it is important to note that BSTEM pathways were more likely to require prerequisite remediation for students, especially those who had not completed algebra 2 in high school.

Unit load

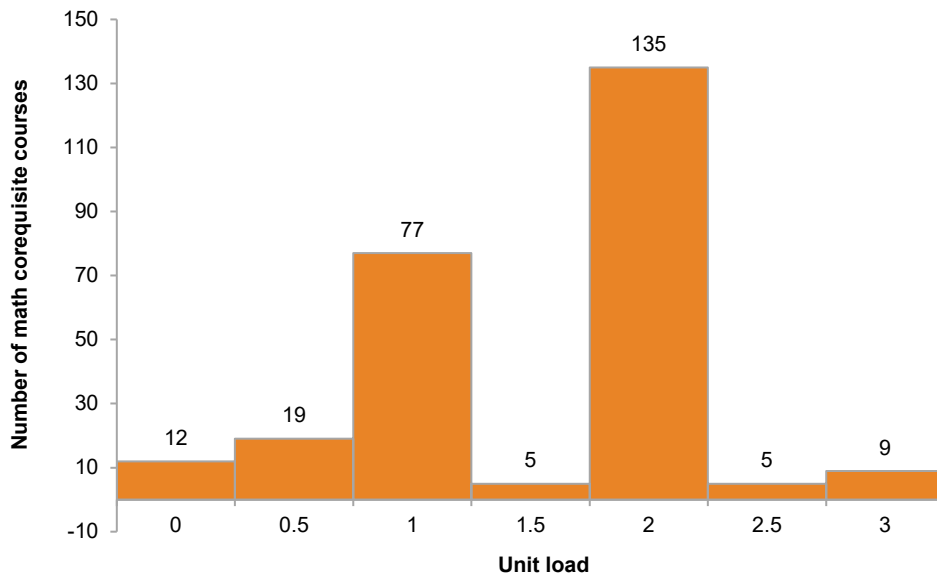
In terms of the unit load for students, 50 of the 95 colleges that offered corequisite courses assigned a two-unit load to their corequisite course. The vast majority of corequisite courses were either two units or one unit (Figure 41). Eight colleges offered at least one non-credit corequisite course for statistics or college algebra. There was not a significant difference in unit load of the corequisite course between courses in the SLAM and BSTEM pathways. It is worth noting that only 14 colleges had a corequisite that was more than two units. This means that most colleges are adhering to the AB 705’s call for minimizing the effect on financial aid and unit requirements for students’ degrees.

⁶⁴ See, for example, Rodriguez, Cuellar Mejia, and Johnson (2017) and Cuellar Mejia, Rodriguez, and Johnson (2018) for in-depth studies of math and English acceleration in California’s community colleges.

⁶⁵ Six percent of colleges did not have information about whether the corequisite was required or not.

FIGURE 41

In most colleges students took a two-unit support course with their transfer-level math course



SOURCE: Authors' calculations using COMIS data.

NOTES: Fall 2019. Includes 262 courses offered in 90 colleges. Only linked courses are included.

Overall, our analysis of corequisite remediation in math paints a similar picture to what we saw in English: these courses are an important part of achieving progress in student outcomes. The vast majority of colleges that offered corequisite courses saw throughput rates improve by over 25 percentage points, compared to traditional remediation. However, throughput rates are still relatively low, particularly among Latinos and African Americans as well as in the BSTEM pathway. Our interviews highlight that more professional development and other supports may be needed to assist faculty in making the transition to teaching corequisite courses and statistics, employing more effective instructional strategies, and helping students develop the skills they need to succeed in college.

Transparency of the Placement Process Is Inconsistent

Our findings indicate that increased access to transfer-level English and math courses has been a critical step in improving student outcomes in these courses. Yet while AB 705 has led to much broader access, there is still a considerable amount of variation across colleges in their specific placement policies.

Assembly Bill 1805 aims to provide more transparency and accountability over colleges' placement policies in an effort to improve equitable access. To achieve this, the law mandates that colleges inform students of their rights to access transfer-level English and math coursework and of the multiple measures policies developed by the college. In addition to making these policies readily available, colleges must publicly post placement results broken out by math/English course level and disaggregated by race/ethnicity. Our comprehensive scan of college

placement policies begins to shed light on the first component of AB 1805 as the first round of our college scan relied solely on publicly available college documents and websites during the summer and fall of 2019.⁶⁶

For both English and math, we saw important gaps in the type of public information available on college documents and websites, with half or more colleges missing key pieces of information about their placement policies ([Technical Appendix](#) Tables C3 and C6). In the multiple measures approach, we observed the most prominent gaps in providing students specific information about the placement rules used to determine access to transfer-level courses (54% missing in math, 45% missing in English). With guided self-placement, the most prominent gap was that the majority of colleges did not provide details about the specific measures that would be used to inform course placements (66% missing in GSP measures in math and 56% missing in English). The diverging patterns in transparency across disciplines and placement systems suggests that, systemwide, math placement policies are less accessible and transparent than English placement policies (see Burdman and Purnell 2020 for more on how math placement policies could benefit from more transparency and consistency on college websites).⁶⁷

In addition, many colleges restricted detailed placement information only to students with a student identification number. In the vast majority of colleges that used an online portal to self-report data, a student was required to sign on to the student portal to learn more about multiple measures or guided self-placement (over 75% across placement systems and disciplines). This included but was not limited to the opportunity to self-report placement data, to access the self-assessments of academic/study skills and sample assignments or problems, and to receive placements. This suggests that at these institutions a prospective student is unable to make an informed decision about whether or not to apply and enroll at a given college based on that institution’s placement policies and their likelihood of accessing transfer-level math and English courses.

The lack of transparency likely affects students’ chances of accessing transfer-level courses, especially in math. This case is illustrated by examining how access to transfer-level math varies across the state ([Figure 42](#)). We find that about half of colleges with lower access levels in math are within a 10- to 25-mile commute of several colleges that would significantly improve students’ likelihood of accessing transfer-level courses. For example, in the Los Angeles region the college with the lowest access in math (42%) is within a 10-mile radius of a college where access to transfer-level math is 84 percent and within a 25-mile radius of a college with 100 percent access. In English, we find that the lowest-access college (70%) is within a 10-mile radius of a college where access to college composition is 97 percent and within a 25-mile radius of a college with universal access.⁶⁸ These cases of uneven access emerge within and across districts and are especially present in large metropolitan areas (e.g., see the LA region in [Figure 42](#)). Importantly, we also observe instances where students attending rural, lower-access colleges did not have a viable option for attending a nearby college with higher levels of access.

If the placement policies, rules, and access rates into transfer-level courses had been accessible, clear, and transparent, as required by AB 1805, a student planning to attend a lower-access college could in theory have chosen to attend another college that provides a better chance of completing the transfer-level course. This finding points to the importance of providing resources, training, and support to colleges so that they improve their placement websites and publicly available placement documents. The move to online instruction as a result of the pandemic presents an important opportunity to make progress on this front. With students “virtually” being able

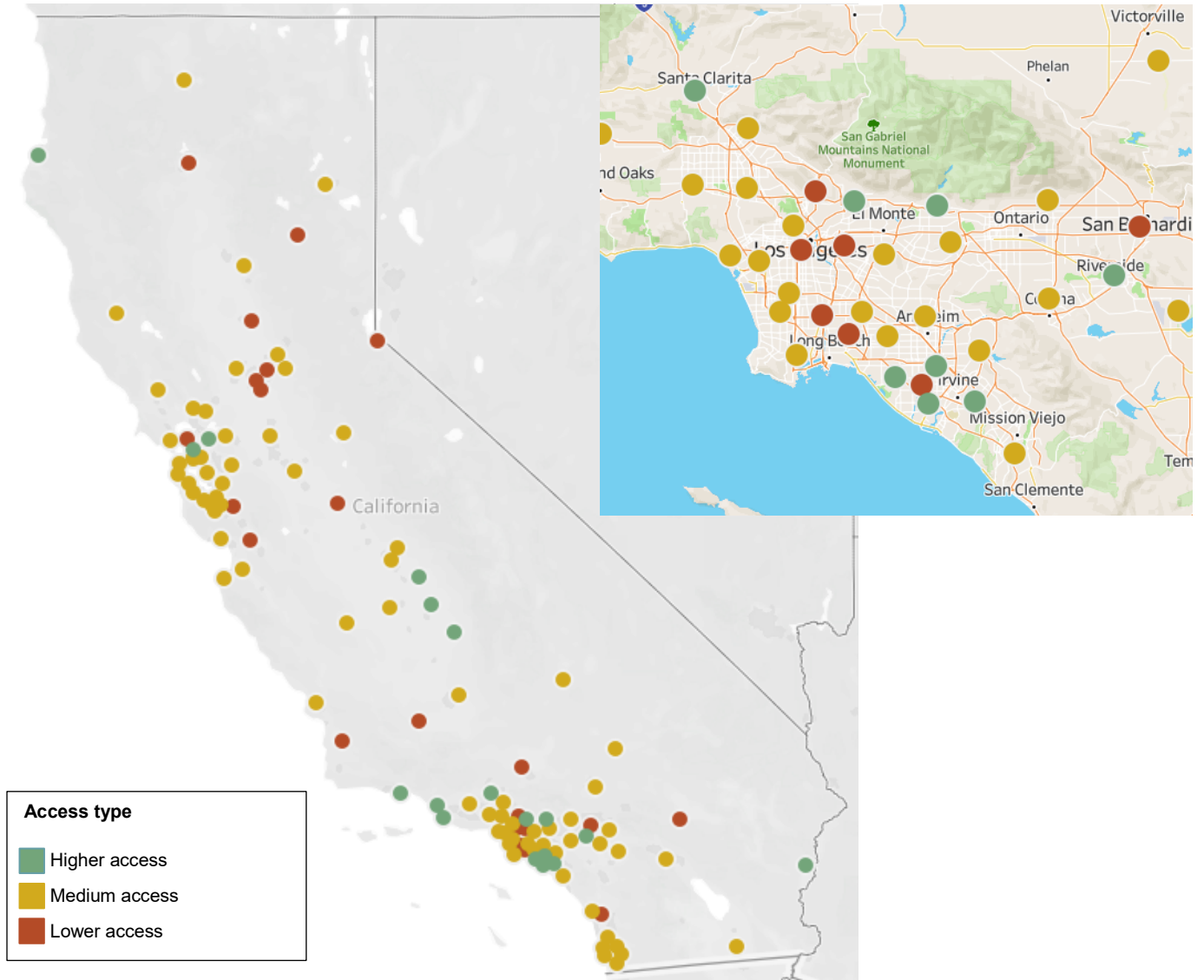
⁶⁶ Ultimately, to gather comprehensive details on placement information, we relied on the AB 705 and Guided Self-Placement Implementation Plans that colleges submitted to the Chancellor’s Office during summer 2019.

⁶⁷ No consistent patterns were found when comparing the rate of missing information for placement rules and GSP measures used at lower-access and higher-access (or universal-access) colleges in math and English (see [Technical Appendix](#) Tables C3 and C6 for more details).

⁶⁸ The map illustrating how access to college composition varies across the state is found in [Technical Appendix](#) Figure C6.

to attend any college in the system, future research will need to explore how a student’s college enrollment decisions are influenced by the placement policies and access rates of the colleges they attend.

FIGURE 42
Access to transfer-level math varies across the state’s community colleges



SOURCE: Authors’ calculations using COMIS fall 2019 data.

NOTES: See [Technical Appendix Table B6](#) for detailed access data disaggregated by college. Transfer-level math access types are defined as follows: higher = 90 percent or higher; medium = 89 to 66 percent; lower = 65 percent or less. The higher/lower categories were determined as being one standard deviation above/below the mean. The systemwide average is 78 with a standard deviation of 13.

The Effects of the COVID-19 Pandemic

Spring 2020 was a semester like no other. The public health and economic crises brought forth by the COVID-19 pandemic have posed many challenges for faculty, staff, and students across the system. When the pandemic hit, colleges were well on their way to completing their first year of AB 705 implementation. Our faculty, staff, and administrator interviews helped shed light on the way the pandemic disrupted the implementation of placement and curricular reforms, and potential implications moving forward.

Uncertain Effects on Incoming Students

By the time the COVID-19 pandemic was under way, the math and English assessment and placement processes at most colleges across the state no longer required face-to-face in-person contact. This move toward an online and/or mostly automated placement process happened gradually over the last several years, starting with the Multiple Measures Assessment Project pilot colleges, and accelerated with the AB 705 implementation deadline in fall 2019. First, in large part due to AB 705, colleges across the system no longer relied on proctored placement tests in campus testing centers. Second, many colleges collected multiple measures and guided self-placement data through a primarily online process using CCCAssess, college-developed online portals, or automated data transfers from local high school districts, Cal-PASS Plus, or the statewide Multiple Measures Placement Service.

Placement decisions based on the data gathered online are largely automated, and we found that only one-third of colleges require meetings with a counselor or advisor. For students who do need to meet with a counselor, the transition to an online environment may help or hinder access to transfer-level courses depending on a student's ability to access the necessary technology. Our interviewees shared that there will be important equity implications given that the most vulnerable students are also the least likely to have access to the necessary technology.

For the fall 2020 entering-college cohort, the interruption of the high school senior year will likely not have a direct effect on placement recommendations as the cumulative GPA used for placements stops at the end of 11th grade (e.g., spring 2019 for most students).⁶⁹ Still, it is likely that for these students, the academic and non-academic stresses brought about by the pandemic will influence the type of supports they need once in college (e.g., corequisites, tutoring, financial aid, food pantry, and mental health services, among others). Counselors play an important role in connecting students to these supports during the assessment and placement process. Moving forward, it will be imperative that remote counseling sessions are widely available. Starting with the spring and fall 2021 cohorts, colleges will need to consider ways to address the fact that GPAs can be affected by courses that were offered on a credit/non-credit basis in spring 2020.

Furthermore, there is concern that students may not be ready for college because of the interruption to education experienced by recent graduating seniors and future cohorts. In a recent national survey on how COVID-19 affected K–12 schools, two-thirds of instructors reported that they had only been able to cover half or less of the material they would have covered had they not transitioned to distance learning (Hamilton et al. 2020). At one college we interviewed, this concern was already prevalent during summer and fall 2020. Namely, we learned that first-year experience program counselors asked for more developmental course offerings because of the disruption caused by the pandemic on students' senior year of high school. Ultimately, given the many uncertainties involved, it will be critical to continue to monitor changes in colleges' placement policies and resulting

⁶⁹ The interruption of SAT/EAP/AP exams will likely not affect the placement process as these assessments were generally only supplementary, for example if students feel their GPA or prior coursework did not place them at the right level. Students who intended to use their senior year to improve their GPA or math and English course grade, however, may be affected.

enrollment in English and math courses, especially for future cohorts as they will have spent a longer period of time in online learning.

Finally, the pandemic has also brought about a recession, and recessions generally affect the demand for community colleges. Thus it is possible that student demand for community college courses will rise over the next few years. This demand will likely come both from adults seeking retraining and also from students attending community college to save money or be closer to family during this time of economic and public health instability, but who may have otherwise attended a four-year college (Kurlaender et al. 2020). Given their profiles, adults seeking retraining would be ideal candidates for guided self-placement, while the four-year college-bound students who have completed the college-preparatory curriculum in high school (e.g., A–G courses) would virtually automatically qualify for transfer-level math and English placements using multiple measures.

Challenges for Corequisite Courses

As a result of the pandemic, faculty and students were forced to make a sudden transition to online learning in a matter of days, oftentimes with little or no prior experience. Our faculty interviews helped shed light on this experience in relation to the shift to corequisite courses and the effects on faculty and students.

For the bulk of our interviews, faculty often spoke about the successful features of corequisite courses in the context of a face-to-face teaching environment. Now that colleges have moved completely online as a result of the pandemic, faculty also talked about how they have been able to replicate some of these activities online. Namely, interviewees shared that they are continuing to provide just-in-time remediation by reviewing student posts and in virtual one-on-one meetings. Some faculty members believed that having all academic supports move online may actually facilitate the accessibility of just-in-time supports beyond what is provided in the classroom (e.g., tutoring, workshops, etc.). Collaborative learning is now conducted using Canvas discussion forums and Zoom breakout rooms, where faculty and embedded tutors facilitate group activities and ask students to collaborate and comment on each other’s work.⁷⁰ When making the transition to online instruction, faculty noted that it has been especially important to provide a clear structure and expectations for the course by, for example, identifying the goals and purpose of activities, organizing courses into modules with step-by-step lessons, setting clear due dates (sometimes with flexibility), and using grading rubrics. Frequent instructor-initiated communication was also considered essential, particularly since it allowed faculty to identify opportunities to intervene and connect students to campus resources.

However, faculty also voiced concerns that the pandemic may lead to a “step back on equity” as the most vulnerable students may be the most adversely affected due to lack of access to the appropriate technology or because they need to balance work and family responsibilities. Indeed, in several instances our interviews illuminated ways the pandemic amplifies the inequities that were already present. One faculty illustrated this point well in stating that:

Access to technology was a huge issue. It has always been an issue, but this situation really exacerbated it. Many students didn’t have a computer at home that was adequate for the work we were doing. Some had a computer but were sharing it with multiple family members who were suddenly also working/going to school from home. Other students lacked access to reliable internet and could not, of course, go to the public places like libraries or coffee shops where they usually were able to get WiFi. Our campus eventually got laptops for students to borrow, but it took a few weeks. We also set up a parking lot with WiFi, but again, it took several weeks and because there were no bathrooms accessible for students, it wasn’t really a great solution to the problem.

⁷⁰ Canvas is an online course management system and Zoom is video conferencing software used by many faculty for online learning.

Additionally, several faculty members indicated that they faced challenges retaining some students, especially those with caretaking responsibilities or who faced financial struggles due to job loss—their own or a family member’s. In the latter case, the loss of income could mean that the student needs to work more hours or find a second job to help make ends meet. One faculty member observed that the students who struggled the most during these difficult times were typically at the intersection of multiple challenges—for example, they might lack access to technology while also working increased hours.

Importantly, the effects of the pandemic on faculty should not be overlooked. Faculty members felt stressed as well and were sometimes dealing with the same types of challenges as their students: balancing work and child care, home-schooling children, loss of employment by partners, health issues, and so on. Also, because some faculty were developing online courses from scratch, this sometimes meant little sleep as they created completely new resources and graded papers while home-schooling their own children. Additionally, we learned that there were challenges associated with maintaining faculty morale, especially when instructors felt like they were doing everything they could to support and retain students but still saw high attrition rates.

There are some potential bright spots and opportunities for learning from this situation as well. The online transition may help colleges develop and refine an efficient and effective mode of delivering corequisite courses. Earlier in this report, we mentioned a college that had more than 600 students on its waitlist due to capacity constraints. This college is already considering ways to expand online course offerings to ensure that students who need the corequisite course have an opportunity to take it. Also, some faculty members viewed the opportunity to move student services online (e.g., counseling, tutoring, writing center, mental health, basic needs supports, etc.) as an opportunity to reach more students, especially those who cannot access services during regular business hours. At one college, we learned that moving math workshops online after the pandemic actually resulted in higher participation rates as students were eager to take advantage of the additional assistance.

Conclusion and Recommendations

In fall 2019, AB 705 led to substantial gains in access to gateway courses at California’s community colleges on a scale that had never been seen before—and that would have been difficult to imagine just three or four years ago. Moreover, the nation’s largest system of higher education made great strides in eliminating longstanding inequities in access as historically underrepresented students saw dramatic gains. This is particularly true in English: access to college composition is now nearly universal across the system.

Coupled with reforms to student support, expanded access helped more students complete gateway courses, a key milestone in transferring to a four-year college. In fall 2019, 57,000 more students achieved this milestone in English and 31,000 more students did so in math, compared to just four years ago. Importantly, students in all racial/ethnic groups are completing these courses at substantially higher rates.

Even with this remarkable progress, the work is not over. Our research identifies several areas of concern that may be limiting equitable access and completion rates—especially in math, where disparities are larger and outcomes are poorer. In addition, the placement and curricular reforms at the heart of this report should not be viewed in isolation. With the COVID-19 pandemic and resulting economic instability upending nearly every aspect of students’ lives, colleges will need to be more vigilant than ever in providing the academic and non-academic supports that will help students succeed. As colleges contend with these challenges and refine their implementation of AB 705, we offer the following recommendations to help ensure that all students, regardless of their background or zip code, have the same opportunity to benefit from this historic change.

Assessment and Placement

Colleges have made tremendous progress in expanding access to gateway courses. But there remain some campuses with lower levels of access—and when access is restricted, it is African American and Latino students who are left out.⁷¹ Our analysis identifies several practices that may limit access. Given the disparate outcomes between students who start in remedial versus transfer-level coursework—and between students who take transfer-level coursework with or without corequisite support—initial course placement is a high-stakes decision.

Monitor placement into traditional remediation. While most colleges significantly reduced remedial courses in fall 2019, some continue to offer a considerable number of sections or are even developing new ones, particularly in math.⁷² In interviews, faculty shared several motivations for keeping these courses, including the need to serve special populations like students with disabilities and, amid the pandemic, concern about whether students whose high school education has been disrupted are college ready. Indeed, students themselves may want to take remedial courses because they are uncertain of their abilities or because they may perceive these courses to be more manageable, especially when they need to balance multiple responsibilities outside of school. However, the association between high remedial enrollments and larger inequities in access to gateway courses is concerning. Under AB 705, colleges that require students to enroll in remedial coursework have two years to show these placements improve students’ chances of passing a transfer-level course in a year. Colleges should also assess cases where enrollments are recommended or optional. If these offerings do not help students make timely academic progress, they need to be revised or replaced with alternatives that are more equitable.

⁷¹ It is important to note that many of the colleges being examined as lower access in this report would have been above average, often substantially so, just a few years ago.

⁷² Enrollment in remedial coursework is higher in math (73,000 students enrolled in fall 2019) than in English (15,300 students).

Ensure placement criteria broaden—rather than limit—access. Generally, having more information about a student’s academic background improves the accuracy of course placements. However, what matters most is not the quantity of measures but how these measures are used. One important distinction is whether multiple placement criteria are used conjunctively (both/and) or disjunctively (either/or). For example, at one lower-access college, students had to meet multiple criteria to enroll in college composition: a high school GPA of 2.0–2.49 *and* a grade in their last English class of B- or higher *and* self-reported reading skills of “good” or “excellent.” In contrast, in a disjunctive approach, students would be able to access college composition if they met *any* of these criteria (i.e., low performance on one measure would be offset by high performance on another). This is more aligned with the intent of AB 705. Moving forward, colleges should examine whether and how the use of additional placement criteria help to support student access and successful completion of transfer-level coursework. If placement criteria do not support these goals, colleges will need to make adjustments to improve access and equity.

Refocus advising and counseling. Advisors and counselors play a critical role in supporting students and connecting them to the appropriate services. Yet our findings suggest that in some cases relying on advisors and counselors to gather placement data may contribute to higher remedial enrollments. Colleges should consider automating the placement process for all students with high school information, regardless of how long ago they graduated from high school, and reserving meetings with advisors and counselors for discussing available services and supports. With the intersection of AB 705 and Guided Pathways, colleges have an opportunity to amplify these reforms if they refocus advising and counseling to help students identify the right major and associated math pathway, as well as the academic and non-academic supports—tutoring, writing center, mental health services, food pantries, and others—that give students the best chance of success. This shift is critical, especially as the pandemic highlights deep inequities and the need for holistic student services. Moving forward, colleges will need to ensure that academic advisors and counselors are well integrated into reform efforts. Engaging advisors and counselors in training sessions with English and math faculty could be beneficial, especially if they address issues of implicit bias and how to place and support special populations.

Review the use of reading/writing samples and math problems. Colleges with lower levels of access were more likely to use reading samples, writing samples, and math problems as part of the placement process for students who do not have readily available high school records (a process known as guided self-placement). However, these samples and problems can resemble the placement tests prohibited by AB 705 and may evoke test anxiety in students who are not expecting a skills assessment. Previous studies flagged these methods as a possible mechanism routing students into remedial courses (Cuellar Mejia, Rodriguez, and Johnson 2019; Rodriguez, Cuellar Mejia, and Johnson 2018). The Chancellor’s Office guidance disallows sample problems or assignments in placement (Perez 2019), though it has granted provisional approval to use these methods. Colleges will need to critically evaluate any measures that resemble a test and use this evidence to ensure placement methods comply with the intent of AB 705.

Evaluate self-assessments of academic and study skills. Self-assessments of academic and study skills were common in the guided self-placement process for colleges with lower levels of access in math. These self-assessments could lead students, especially those with low levels of confidence or with family or work obligations, to take developmental coursework even when they could be successful in transfer-level courses. Moving forward, it will be critical to ascertain whether these assessments are consistent with Title 5 regulations governing California education code, and if they are, to examine the potential biases that may be present in the questions and revise as necessary.

Provide more clarity about the placement process. The majority of colleges did not provide detailed information about their assessment and placement systems on their websites or in public documents. This lack of

transparency likely left students unable to make a well-informed decision about whether attending a given college would affect their chances of taking gateway courses. This was especially true in math—here, the campus students attend plays a critical role in whether or not they have access to transfer-level math. To improve clarity and equity around placement policies and course access, colleges and the system office will need to work together to ensure full compliance with AB 1805.

Curriculum, Instruction, and Support

By fall 2019, the vast majority of California’s community colleges introduced corequisite remediation to help students who may benefit from additional academic support. This curricular model plays an important role in reducing equity gaps and helping more students complete gateway courses. Nevertheless, completion rates are still lower among African American and Latino students, with larger disparities in math. One reason may be that some students who could benefit from corequisite support are not getting it: while most colleges offered corequisite courses, only about 20 percent of first-time English students and 18 percent of first-time math students enrolled in corequisite models. Our interviews also suggest that strategies for effectively teaching corequisite courses may be inconsistently implemented.

Encourage placement into corequisite courses. In fall 2019, 34 percent of first-time English students and 47 percent of first-time math students who enrolled in a transfer-level course without support did not successfully complete the course—higher than in previous terms. Some of these students could likely have succeeded with additional corequisite support. Colleges should find mechanisms to ensure that students who could benefit from extra support enroll in corequisite remediation. This could be accomplished by offering more corequisite courses, requiring corequisite support for more students, and helping counselors and advisors make a stronger case to students about the advantages of corequisite remediation.

Gain a better understanding of how to serve students of varying academic backgrounds. With more students enrolling directly in transfer-level courses, colleges may need to find new ways to support students with the varying levels of academic preparation. At the end of the day, colleges need to meet students where they are and provide the curriculum and assistance they need to achieve their goals. Beyond corequisite courses, it is essential that colleges proactively evaluate the impact of other forms of support (e.g., case management counseling for students with GPAs below 2.0). With the COVID-19 pandemic illuminating the range of challenges that students face inside and outside the classroom, assessing the effectiveness of academic and non-academic supports that can address issues like college readiness, food insecurity, homelessness, and mental health will also be imperative.

Prioritize addressing equity gaps, especially in math. AB 705 has resulted in a significant increase in the number of students successfully completing transfer-level courses across all racial/ethnic groups. But achieving more equitable outcomes for African American and Latino students will require a sustained, multi-pronged approach. This is all the more important as the pandemic has exacerbated existing inequities for students lacking access to technology, facing job loss, or struggling to meet their basic needs. As discussed above, on the placement front, this work will require evaluations of how required or optional developmental courses are contributing to inequities in completing transfer-level courses, particularly in math. In the classroom, it will be important to transform day-to-day pedagogical strategies and curricular materials so coursework is engaging and accessible for all students. Another priority is professional development to support faculty members and advisors in adjusting to the widespread changes under AB 705 and cultivating a belief that all students can succeed. Communities of practice focused on equity that include training on implicit biases and the opportunity to use course-level data disaggregated by race/ethnicity to improve teaching and learning may help with these efforts.

Assess the quality of different corequisite models. Implementation of corequisite remediation varied across colleges on a number of dimensions, including delivery method and unit load. Instructional approach and the availability of embedded supports like tutoring can also affect the quality of these courses. For example, whether the corequisite course is taught by the same faculty member as the transfer-level course, or whether instructors provide students with frequent, low-stakes practice opportunities with challenging material, are potentially important features of creating an effective learning community. A better understanding of the key characteristics that make some corequisite courses more successful than others is essential.

To build on the progress that has already been made, a commitment to evidence-based continuous improvement is essential. The dramatic changes brought on by AB 705 give colleges an opportunity to reimagine placement, curriculum, and instruction in ways that better support student success. To this end, colleges will need to collect and analyze enrollment and outcomes data to fine-tune their placement policies, course offerings, and academic and non-academic supports. This means evaluating whether traditional remediation should be offered, even if these courses are optional. It also means examining why some students are not succeeding in the transfer-level course with and without support, understanding the barriers, and developing new solutions.

We hope the findings and recommendations in this report help colleges appreciate the tremendous progress that they have made and provide guidance as they review and refine placement policies in an effort to further improve student outcomes and close equity gaps. Moving forward, college officials, faculty, the Chancellor's Office, the Academic Senate, researchers, and others will need to play a critical role in supporting and motivating colleges, monitoring and evaluating progress, and ensuring accountability so that all students have the same opportunity to succeed in college.

GLOSSARY OF TERMS

Access: Because we do not have placement information at the student level, we use the share of first-time English or math students enrolling directly in transfer-level English or math courses as a proxy for access to these courses. It is important to note that students who qualify for transfer-level courses may elect to start in developmental courses due to personal preference or on the basis of institutional or counselor recommendations.

College composition: We identify the introductory college composition course in each college using the C-ID ENGL 100 descriptor. This course fulfills English composition general education requirements for an associate degree as well as for transfer to a four-year institution.

Corequisite remediation: This curricular model involves students enrolling directly into gateway transfer-level courses and receiving academic support alongside their regular course. Corequisite remediation is an umbrella term with many variations. Most colleges in California have implemented *linked* corequisite courses. In this approach, students enroll in designated sections of the transfer-level course as well as in a one- to three-unit linked support course designed to help them with the transfer-level assignments. Other colleges are instead offering *enhanced* courses. In this model, students receive additional support by enrolling in a higher-unit version of the transfer-level course. Throughout the report we use corequisite courses and corequisite models interchangeably.

Course success rate: The proportion of first-time English or math students who started in a transfer-level course and successfully completed it with a C or better in their first attempt. This calculation does not include students who took the course but had previous math enrollments. This is different from the one-term throughput rate because it is conditional on taking the transfer-level course, and it is different from how course success rate is typically defined because it is restricted to students who took the course for the first time.

Developmental English courses: We restrict the universe of developmental English courses to those that, prior to AB 705 implementation, were required in order to take college composition for those students deemed unprepared for college-level work. Once we identified the introductory college composition course in each college, we looked for it in the course description section of the college catalog and proceeded backward through the prerequisites to the lowest level of remedial coursework that was part of each college's pathway to college composition. Corequisite courses attached to transfer-level sections or support courses offered in tutoring and learning centers are not included in this count.

Developmental math courses: We traced all courses that lead up to intermediate algebra, which until recently was a prerequisite for every introductory transfer-level math course. Corequisite courses attached to transfer-level sections or support courses offered in tutoring and learning centers are not included in this count.

First-time English students (or first-time English takers): We define cohorts of students based on the term in which they took their first credit-bearing English course—college composition or any developmental education course identified in our scan—anywhere in the system. First-time English takers are not necessarily students who are in their first enrollment at a California community college. About 68 percent of first-time math students in fall 2019 were also first-time college students (and 13% of first-time students started in the previous summer term). Dual enrollment students are not included.

First-time math students (or first-time math takers): We define cohorts of students based on the term in which they took their first credit-bearing math course—a transferable course, or any developmental education or intermediate algebra course identified in our scan—anywhere in the system. First-time math takers are not necessarily students who are in their first enrollment at a California community college. About 61 percent of first-time math students in fall 2019 were also first-time college students (and 12% of first-time students started in the previous summer term). Dual enrollment students are not included.

Intermediate algebra: This is a college-level course that meets the competency requirement for an associate degree. However, it is not a transferable course to the University of California or California State University. This means that a student whose first math course was intermediate algebra is counted as starting below transfer level. This is why we use the term transfer-level math as opposed to college-level math. For the purposes of this study, we focus only on outcomes related to transfer-level math completion.

One-term throughput rate: The proportion of first-time English students (or first-time math students) who successfully complete college composition (or a transfer-level math course) with a grade of C or better in their first attempt. The denominator includes students who took developmental or transfer-level courses for the first time. Accordingly, throughput reflects both whether students are getting into the gateway course and whether they are passing it. In some parts of the report, we also calculate one-year throughput rates, which give students fall, spring, and summer terms to successfully complete the transfer-level course, as well as fall-to-fall throughput rates, which give students fall, spring, summer, and the following fall terms to successfully complete the transfer-level course.

Percentage point gap: This measure is the difference between the throughput rate for a given group and the average for the overall population. The detection of disproportionate impact in the point gap method uses a margin of error that is adjusted by the cohort size of the subgroup.

Proportionality index (PI): This measure compares a group's representation with respect to an educational outcome relative to its representation in the entire cohort of analysis. Above equity means a PI of 1 or greater; near equity means that the PI is between 0.86 and 0.99; and below equity means a PI of 0.85 or lower. It is important to highlight that sample sizes pose a challenge when using the proportionality index (Royal and Flammer 2015). For this reason we exclude colleges with fewer than 20 first-time course takers in a given racial/ethnic group.

Transfer-level math: We identified introductory transferable math courses (specifically college algebra, trigonometry, pre-calculus, finite math, applied calculus, statistics, liberal arts math, and math for teachers) offered by each college's math department. In addition, we identified other statistics and quantitative reasoning courses offered by other departments that meet transfer requirements to the UC or CSU systems (e.g., statistics for the behavioral sciences, probability and statistics for the social sciences, and biostats).

80 percent rule: This measure compares the percentage of each disaggregated subgroup attaining an outcome to the percentage attained by a reference subgroup. Throughout this report, the reference group used is white students.

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