



NEARLY THERE:

Large Scale Improvements in Math
Implementation of AB 705



AUGUST 2022

SUMMARY

[AB 705](#) (Irwin 2017) continues to drive large-scale changes in placement and remediation in California's community colleges. The law requires colleges to rely on high school grades for placement and restricts colleges from requiring remedial¹ courses if these courses do not improve students' timely completion of math and English requirements for transfer to a university. In the language of the law, the placement policies at a college must "maximize the probability that a student will enter and complete transfer-level² coursework in English and mathematics within a one-year timeframe."

[Research](#) shows that one-year completion³ of transfer-level math and English is maximized when students begin in transfer-level courses instead of remedial ones.

In November 2021, citing extensive research on the impact of AB 705, the California Community Colleges Chancellor's Office determined that AB 705 standards require colleges to place and enroll the vast majority of students into transfer-level English and math/quantitative reasoning courses, with limited exceptions. In a [memo](#) that "resets California Community Colleges work to fully implement AB 705," **colleges were instructed to reach this goal by fall 2022.**

This brief gauges AB 705 implementation at this crucial juncture by analyzing the fall 2022 class schedules across the 115 California community colleges. Since colleges had already changed their English offerings to achieve this goal in fall 2020, we focus solely on math because implementation has lagged and been the most uneven in math.

We found that with the recent "reset" from the state Chancellor's office, the California community college system has made remarkable progress in AB 705 math implementation with opportunities for improvement in addressing persistent uneven and inequitable access to transfer-level sections and effective support.

¹ In this report, "remedial" refers to courses that do not earn general education credit for a baccalaureate degree.

² "Transfer-level" refers to courses that earn general education credit upon transfer to a university.

³ Completion of transfer-level courses is the number of students completing introductory transfer-level coursework in a given timeframe divided by the number of students enrolled for the first time in the discipline in a given term. Students beginning in remedial or transfer-level coursework are included. For example, if 200 students enroll in math for the first time in fall 2020, and 100 complete a transfer-level math course in one year, the completion rate is $100/200=50\%$.

→ Large shift toward stronger AB 705 math implementation

- In fall 2022 math class schedules, 93% of introductory sections⁴ are at the transfer level, up from 75% in fall 2020.
- Nearly $\frac{3}{4}$ of colleges statewide hit our benchmark for strong implementation⁵.
- The weakest levels of implementation are less common.

→ Math offerings better aligned with students' goals

- Sections of transfer-level statistics and quantitative reasoning have increased to match student need.
- More transfer-level sections of quantitative reasoning are offered outside of the math department.
- Five colleges have specialized transfer-level math options for non-transferable programs.

→ Pockets of weak implementation resulting in geographic and racial inequity

- In every geographic region, at least $\frac{1}{3}$ of colleges eliminated remedial math for their general student population, but varying levels of weak implementation across regions continue to create inequitable access to transfer-level courses.
- Black and Hispanic students statewide are more likely to attend colleges with weaker implementation than White and Asian students.
- The group of colleges with the largest concentrations of Black and Hispanic students are more likely to create math class schedules that do not hit the strong implementation benchmark.

→ Uneven and inequitable access to effective academic support

- 18% of colleges offer more remedial math sections than introductory transfer-level sections with concurrent support, down from 66% in fall 2020, mostly due to a decrease in remedial offerings, not an increase in concurrent support offerings.
- Colleges serving the largest share of the state's Black and Hispanic students are more likely to favor remedial sections over concurrent supports for transfer-level sections.
- On average, 28% of introductory transfer-level sections have concurrent support with large differences across colleges. Only nine colleges offer concurrent support with quantitative reasoning courses taught outside the math department.

⁴ Introductory courses can be remedial courses or transfer-level courses. Introductory transfer-level courses do not have a transfer-level prerequisite. For example, in California community colleges, calculus is not an introductory transfer-level course, but statistics and college algebra are.

⁵ The benchmark for strong implementation in our reports is 90% of introductory sections at transfer-level. Because of the state Chancellor's office directive to place and enroll the vast majority of students into transfer-level coursework in math and English for fall 2022, in this brief, we consider colleges to be on the continuum of weak implementation if they do not hit the 90% benchmark.

BACKGROUND

In 2017, [Assembly Bill 705](#) (Irwin) became law and mandated placement and remediation reforms with the goal of improving student completion of math and English courses that are integral to associate and baccalaureate degree requirements.

During the first year of mandatory implementation (2019-2020), greater access to transfer-level courses produced large [completion gains](#)⁶ in English and math for every group examined, including [Black and Hispanic](#) students, students [over the age of 35](#), [low-income](#) students, students with [disabilities](#), [STEM](#) students with weaker math preparation, [foster youth, and veterans](#). For most of these groups, completion of transfer-level math doubled.⁷ [Overall](#), 67% of students completed transfer-level English in one year, up from 49% in 2015-2016, and 50% completed transfer-level math, up from 26%.

In our [Getting There](#) series⁸, we examined class schedules over several years as a window into AB 705 implementation, and we found that implementation was uneven across the state, particularly in math.

Colleges continued to offer large numbers of remedial math sections, even when their [local placement validation studies](#) showed that students enrolled in remedial courses were less likely to complete math required for transfer when compared to similar students who bypassed remediation. We found racial inequity in access to transfer-level math courses, which another [study](#) associated with disproportionately lower transfer-level math completion rates for Black and Hispanic students.

Acknowledging uneven implementation and persistent equity gaps, the state Chancellor's office ended the implementation phase-in period and directed colleges to not only place, but also enroll, all students who are U.S. high school graduates into transfer-level coursework if their program of study requires math or English. In a [memo](#) that "resets California Community Colleges work to fully implement AB 705," colleges were instructed to implement this change for fall 2022.

This brief⁹ gauges AB 705 implementation at this crucial juncture by analyzing the fall 2022 class schedules across the 115 California community colleges. We focus solely on math where implementation has been slower and inconsistent.

⁶ These gains describe completion of transfer-level English or math within a year of the student's first enrollment in the discipline and include students beginning in remedial or transfer-level coursework.

⁷ [Completion dashboard](#), Timeframe to Completion = 1 year, Starting Course Level = All, 2017-18 vs. 2019-20.

⁸ For the full *Getting There* series, search under Publications on the [CAP website](#).

⁹ This brief is a follow-up to our more extensive [Still Getting There](#) report on fall 2020 class schedules in English and math. That report contains a more in-depth look at the research behind AB 705 reforms.

FINDINGS

→ Large shift toward strong AB 705 math implementation

Colleges with strong AB 705 implementation offer all or most of their introductory math sections at the transfer-level. This ensures that the vast majority of students will begin in transfer-level math, which research¹⁰ shows is an important step toward realizing AB 705's goal of maximizing their likelihood of completing math requirements for transfer. The reset on AB 705 implementation for fall 2022 produced a remarkable increase in strong AB 705 implementation.

Transfer-level sections now comprise a larger share of introductory math sections statewide than in previous years. For fall 2022, 93% of introductory math sections are now at the transfer-level, up from 75% two years ago. (Figure 1)

It is now more common to see a college with 100% transfer-level math. In fall 2022, half of the state's colleges (57) had phased out remedial math sections as an option for their general student population¹¹, compared to only 3 colleges in fall 2020.

In total, nearly $\frac{3}{4}$ of colleges (85) hit our benchmark for strong implementation with 90% or more of introductory sections at the transfer-level, up from 15% of colleges in fall 2020 (17 colleges). (Figure 2)

Figure 1

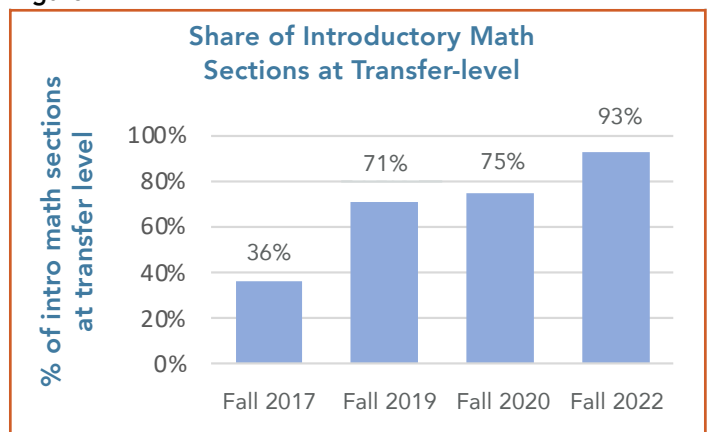
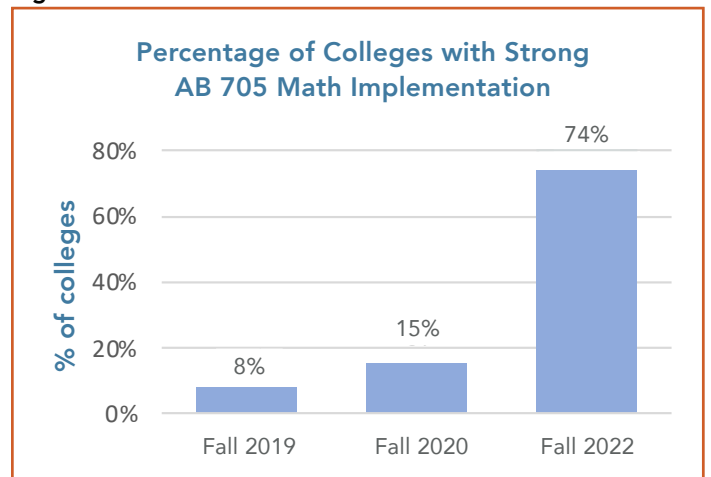


Figure 2



¹⁰. [PPIC 2020](#), [PPIC 2021](#), [RPGGroup 2021](#)

¹¹. These colleges may still offer lower levels of remedial math for some special populations. In our analysis we did not count non-credit remedial math in adult education programs, e.g., for GED preparation, or very low levels of remedial math offered through a college's Disabled Students and Services Program that are designed for students with disabilities who are unable to substantially benefit from regular college classes even with appropriate support services or accommodations per California Code of Regulations § 56028.

For colleges that are not strong implementers, there are varying degrees of weak implementation, but the weaker levels of implementation are now less common. Only 12 colleges have transfer-level sections comprising less than 80% of introductory math offerings, compared to 69 colleges in fall 2020. Only 5 of these colleges have the weakest levels of implementation, with less than 70% of introductory sections at the transfer-level, compared to 33 colleges two years ago.

Figure 3

Implementation Strength Across Colleges		
% of Intro Math Sections at Transfer-level	Number of Colleges	
	Fall 2020	Fall 2022
90-100%	17	85
80-89%	28	18
70-79%	36	7
60-69%	21	2
50-59%	10	1
40-49%	2	2

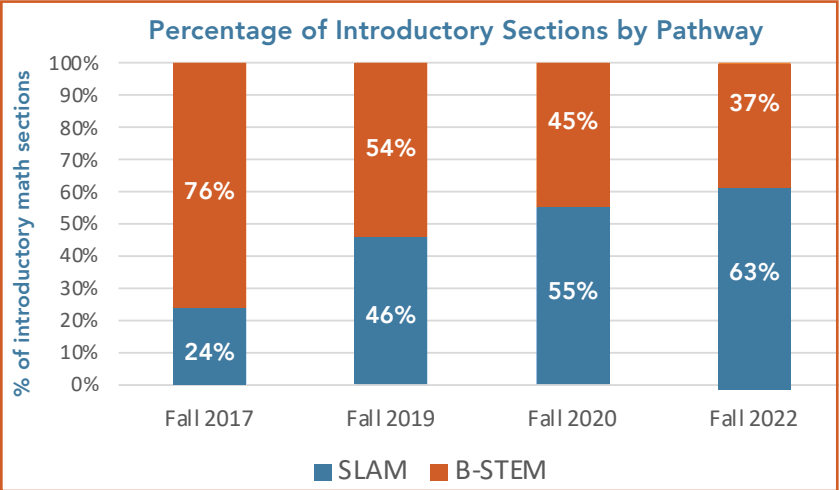
Despite amazing progress, 30 colleges have not transitioned to a class schedule that would accomplish the state Chancellor’s office directive to enroll the vast majority of students into transfer-level coursework.

➔ **Math offerings better aligned with students’ goals**

As colleges replace remedial sections with transfer-level math in response to AB 705 reforms, ideally, students should have transfer-level math options that are aligned with their interests and programs, and, when possible, transfer-level quantitative reasoning courses should be offered within the discipline associated with their major. [Research](#) suggests that diversifying math options increases transfer-level math completion, and pass rates are higher for students who take a quantitative reasoning course in the department of their major, such as statistics offered in the Psychology department.

In fall 2022, colleges have shifted class schedules to include more sections of statistics, liberal arts math, and other quantitative reasoning courses to better meet the needs of the estimated [64%](#) of students in programs that do not require calculus.¹² (Figure 4)

Figure 4



¹² In Figure 4, SLAM refers to statistics and liberal arts math and includes other quantitative reasoning courses, both in the math and in other disciplines. These courses are taken by students in majors that do not require calculus, e.g., Humanities or Social Science majors. B-STEM refers to Business, Science, Technology, Engineering and Math and includes courses for majors that involve calculus.

There is also some progress in offering more transfer-level quantitative reasoning courses in departments outside of math. In fall 2022, 17% (1006 sections) of transfer-level math sections are sections of quantitative reasoning in departments outside of math, up from 14% (888 sections) in fall 2020. These departments include Accounting, Architecture, Biotechnology, Business, Computer Information Systems, Computer Science, Data Science, Economics, Philosophy, Psychology, Social Science, Sociology, and Statistics.

Per AB 705 and the state Chancellor's office guidance, most students in non-transferable career education programs should be starting in transfer-level math or quantitative reasoning courses if their program requires math.¹³ Part of the upswing in transfer-level sections of statistics, liberal arts math, and other quantitative reasoning courses may be in response to accommodating students who do not intend to transfer but need math to satisfy local general education requirements for their program. For non-transferable programs with specific math needs, five colleges offer specialized transfer-level math options, such as Citrus College's MATH 144 *Technical Mathematics* taken by students in the automotive program.

There is early evidence that the AB 705 focus on transfer-level math completion did not harm, and may be beneficial to, students who do not intend to transfer. The two colleges that eliminated remedial courses in fall 2019 experienced large increases in certificate and degree awards for non-transferable programs two years later. At [Pasadena City College](#), a large urban college, 2,197 more students in non-transferable programs received a certificate or degree in 2020-2021 relative to 2015-2016, a 60% increase. At Porterville College, a small rural college, it was 213 more students, a 45% increase.¹⁴ At these two colleges, math options for students in programs that do not require calculus are the same for students who intend to transfer and for those who do not.

"When crafting AB 705, the mission was to remove the barriers to a quality education for every Californian."

Assemblymember Jacqui Irwin, author of AB 705
[California Community Colleges Board of Governors Leadership Award](#)

¹³ AB 705 allows an exemption for programs with math requirements that are not met with transfer-level course work. An example is the Water Treatment and Distribution program at Clovis which requires a remedial math course, WTD 114 Water Mathematics, to meet program requirements. We did not include program-specific remedial math courses taught outside of the math department in our analysis.

¹⁴ State Chancellor's office [Datamart](#).

→ Pockets of weak implementation resulting in geographic and racial inequity

Geographic inequity

Students should have the same opportunity for success at their local community college as they would at other colleges. When implementation is strong within a region, students have equitable access to, and are equally likely to enroll in, transfer-level math regardless of which college they attend.

In fall 2022, the region that comes closest to this ideal is the South-Central Coast, where $\frac{3}{4}$ of colleges are offering only transfer-level math, and the remaining colleges are strong implementers, with 90% or more introductory sections at the transfer-level.

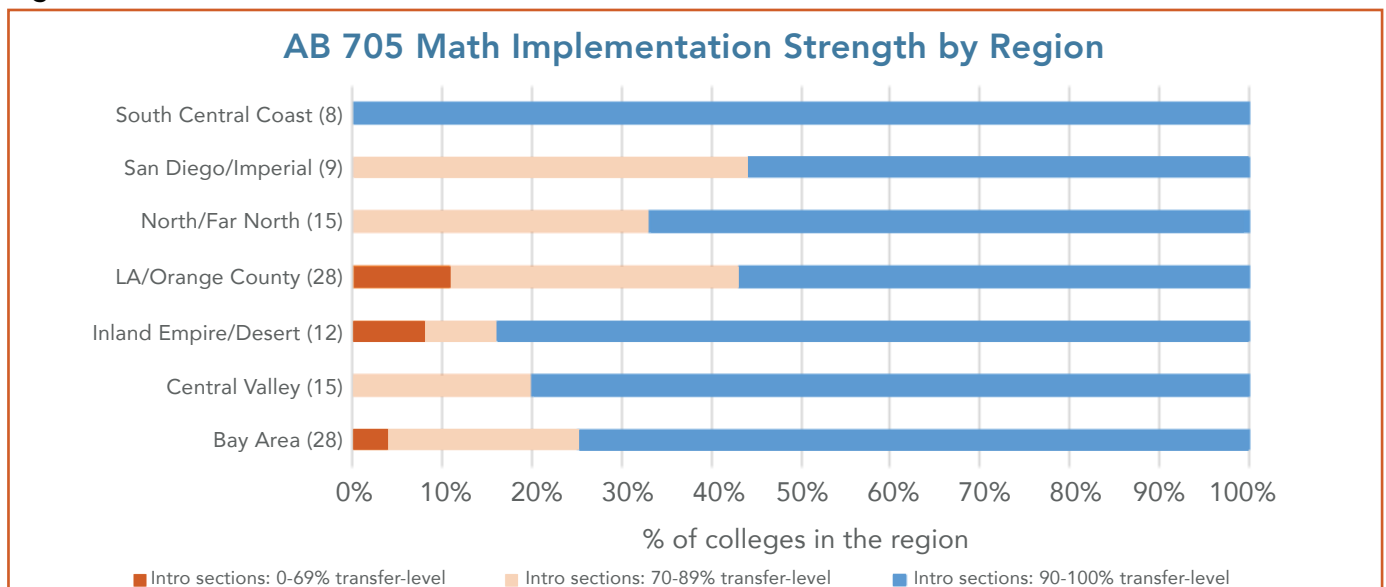
In every region, more than $\frac{1}{3}$ of the colleges have responded to the state Chancellor's office's call for equitable placement and enrollment into transfer-level math by offering only transfer-level math. (Figure 5)

While more than half of the colleges in every region hit the benchmark for strong implementation, the lowest levels of implementation occur in 3 of 7 regions. (Figure 6)

Figure 5

Strongest Level of Implementation	
% of colleges offering only transfer-level math	
Bay Area (28)	50%
Central Valley (15)	47%
Inland Empire/Desert (12)	58%
LA/Orange County (28)	36%
North/Far North (15)	60%
San Diego/Imperial (9)	44%
South Central Coast (8)	75%

Figure 6



Implementation varies the most among the LA/Orange County colleges. 57% (16 colleges) hit the benchmark for strong implementation. The remaining 12 colleges have varying levels of weaker implementation, with 9 (32%) offering from 70% to 89% of introductory sections at the transfer-level and 3 (11%) offering less than 70%.

"We must not leave a student's success up to the off-chance they are at a community college that believes in their ability to succeed in transfer-level coursework."

[AB 1705 Student Letter of Support](#)

Implementation that varies to this degree across a region can have unacceptable consequences for students at an individual college. For example, two colleges in the Los Angeles Community College District offer less than half of their introductory sections at the transfer-level. Both colleges serve a large share of the state's Black students and have the largest percentages of [homeless](#) students in the LA area. Colleges with strong implementation are only 12 to 25 miles away, but it can take at least an hour by bus to reach one of these colleges. Students at these weak implementer colleges will be much more likely to enroll in remedial math and, as a result, much less likely to complete math requirements for transfer than if they attended one of the 16 colleges in the region where all or almost all students will begin math at the transfer-level.

In the Inland Empire, one college continues to offer many remedial sections, with only 59% of their introductory sections at that transfer-level, and none with concurrent support. Students at this college would have to travel over 50 miles to attend another college. The closest college enrolls all students into transfer-level math, with concurrent support if needed, but 50 miles is a hefty commute for those strapped for time and money. Students at this college are at a real disadvantage because 10 of the 12 colleges in this region are strong implementers, with 7 ensuring that students begin in transfer-level math by offering only transfer-level math.

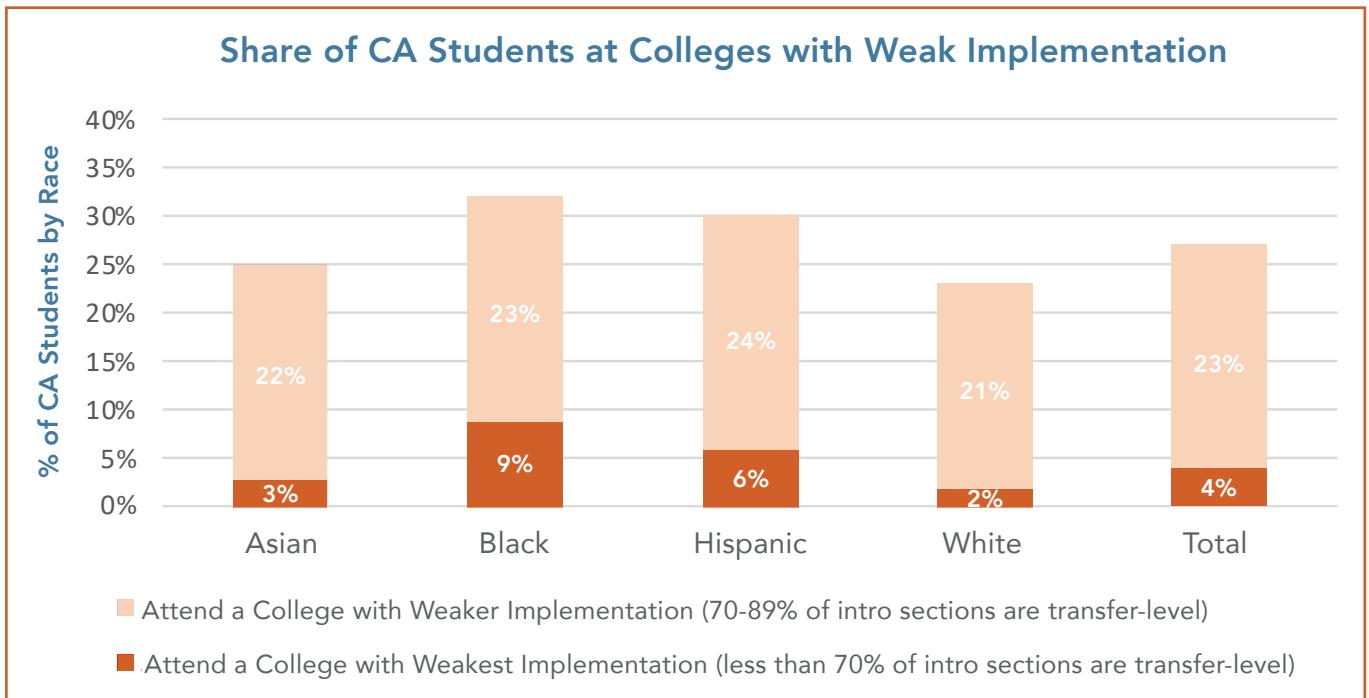


Racial inequity

When a placement system is equitable, Black and Hispanic students place and enroll in transfer-level math at the same rate as other groups. California community college research¹⁵ consistently shows that direct enrollment into transfer-level math expedites transfer-level math completion within a one-year timeframe for all racial and ethnic groups examined. When Black and Hispanic students begin in remedial math courses, local [placement validation studies](#) documented widespread and disproportionately lower transfer-level math completion for these groups.

Students who attend colleges with weak implementation are more likely to enroll in remedial courses. A larger percentage of the state's Black (32%) and Hispanic (30%) students attend the 30 colleges that do not meet the strong implementation benchmark, compared to Asians (25%) and Whites (23%). There is also a disproportionate representation of Black and Hispanic students at the colleges with the weakest levels of implementation. These colleges serve 9% of the state's Black students and 6% of Hispanics, compared to only 3% of Asians and 2% of Whites. In other words, a Black student is 4.5 times more likely to attend a college that continues large-scale remedial course offerings than a White student, and a Hispanic student is 3 times more likely. (Figure 7)

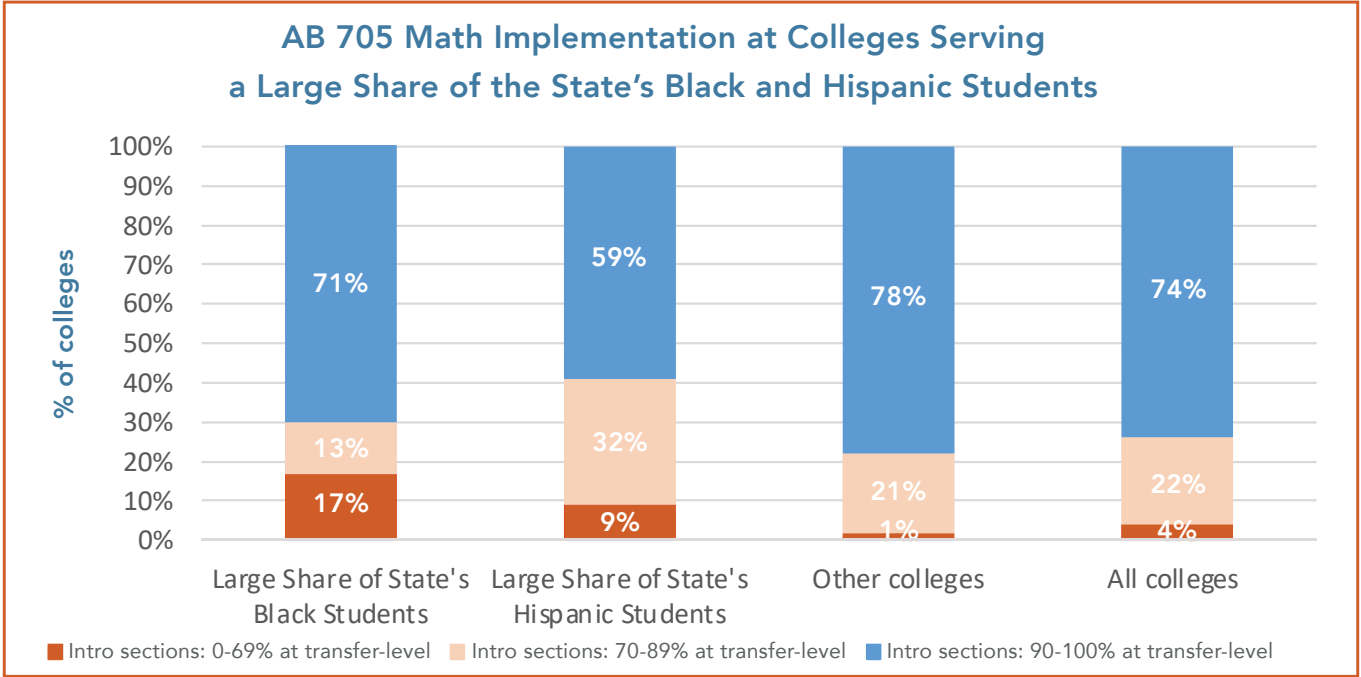
Figure 7



¹⁵. [RPGGroup 2018](#), [PPIC 2020](#), State Chancellor's office Transfer Level Gateway [Completion Dashboard](#)

Examining the class schedules at colleges where Black and Hispanic students are concentrated helps explain the inequity shown in Figure 6. It is more common for colleges with the largest Black and Hispanic student populations¹⁶ to have math class schedules that do not hit the strong implementation benchmark. In the group of colleges serving a large share of the state's Black students, 30% are not strong implementers, and this is true for 41% of colleges serving a large share of the state's Hispanic students, compared to 22% of other colleges. A larger percentage of colleges with large Black student populations are among the weakest implementers (17%), compared to 9% of colleges with large Hispanic student populations and 1% of other colleges. (Figure 8)

Figure 8



At colleges that offer remedial courses in fall 2022, these courses are optional for most students.¹⁷ Students have access to transfer-level coursework through the college placement process, but these colleges do not ensure that students follow their placement advisement.¹⁸ [Research](#) shows that when remedial courses are optional, Black and Hispanic students are more likely to choose them and thus less likely to complete transfer milestones. For this reason, it is an equity imperative that colleges phase out remedial courses and offer other forms of support to students who want or need it when they take transfer-level coursework.

¹⁶. Large Black student population means at least 1.5% of the state's Black community college students (at least 1,850 Black students) attend the college. There are 24 such colleges. Large Hispanic student population means at least 1.25% of the state's Hispanic community college students (at least 12,690 Hispanic students) attend the college. There are 22 such colleges. Because Hispanic students are more evenly distributed across the state's colleges, the benchmark for "larger share" is lower to generate a sample of 20-25 colleges.

¹⁷. According to the AB 705 Improvement Plans submitted by colleges in March 2022, only 2 colleges require remedial courses for some subpopulation of their students.

¹⁸. Our previous [Still Getting There report](#) summarizes the qualitative research documenting the many ways that colleges implicitly and explicitly steer students into remedial courses.

→ Uneven and inequitable access to effective academic support

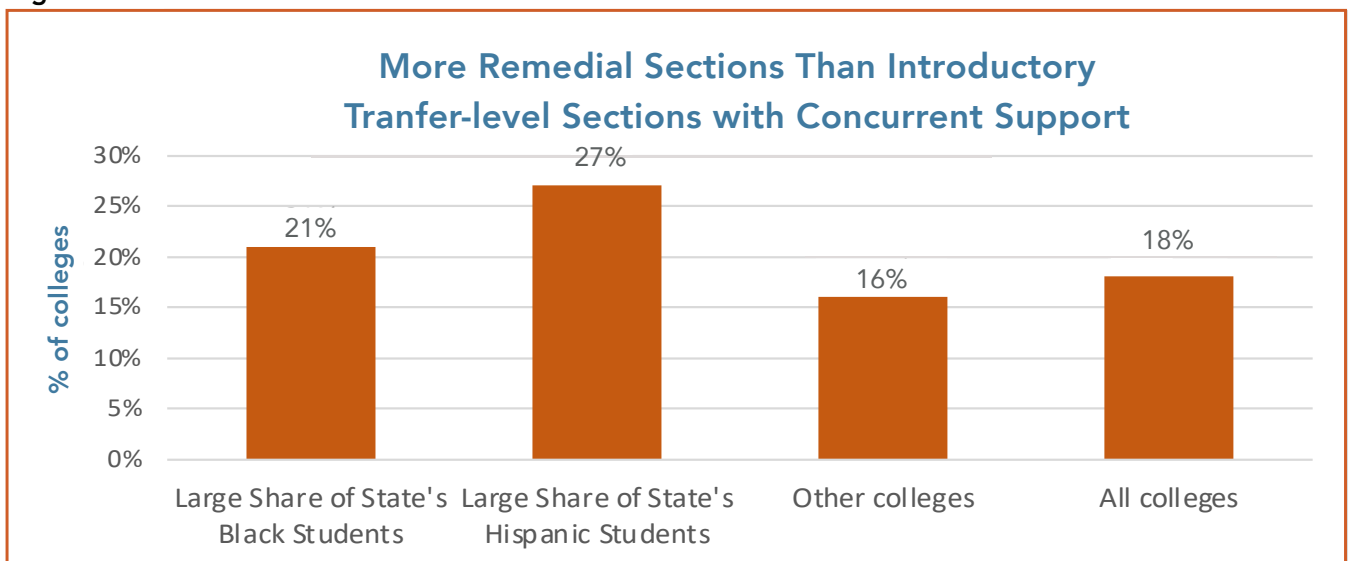
Statewide [research](#) shows that transfer-level math courses with concurrent support, such as embedded lab hours or a corequisite support course¹⁹, produce better and more equitable transfer-level math completion than remedial courses. When a college offers more remedial math sections than introductory transfer-level sections with support, students who want or need extra help are less likely to receive support that improves their chances of completing transfer-level math.

The percentage of colleges with more remedial sections than supported transfer-level sections decreased dramatically, from 66% in fall 2020 to 18% in fall 2022. This decrease is largely due to the progress in moving away from a failed system of remediation rather than a large upswing in the number of introductory transfer-level sections with concurrent support. Remedial math sections comprise only 7% of introductory math sections in Fall 2022, down from 25% in Fall 2020. But the progress in moving toward more concurrent support for transfer-level courses is slower. The percentage of supported introductory transfer-level math sections rose slightly, from 24% in fall 2020 to 26% in fall 2022. Introductory transfer-level BSTEM math sections are more likely to include support (31%) than introductory transfer-level SLAM sections (24%).

But racial and geographic inequity in access to effective supports persist.

It is more common for a college with a large Black and/or Hispanic student population to favor remedial sections over supported transfer-level sections when compared to other colleges. (Figure 9)

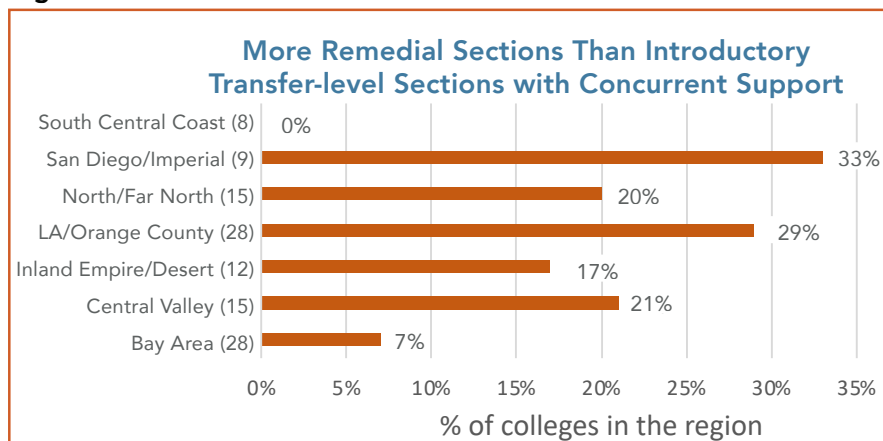
Figure 9



¹⁹. Tutoring is not included in our analysis as concurrent support. For example, San Joaquin Delta's Math 101 is described as corequisite support for 23 BSTEM courses in 6 departments, but there was only one section offered. Therefore, we viewed this as tutoring and did not count it as support for any specific course.

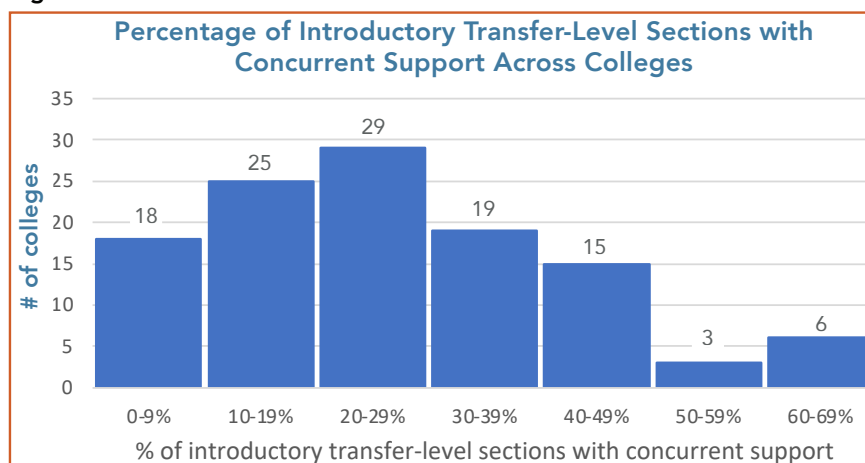
There are also large differences across and within regions. One in 3 colleges in the San Diego and Imperial counties offer more remedial sections than transfer-level sections with support. In the LA/Orange counties region, this is true at 8 of 28 colleges, and 5 of those are the LA Community College District. In the Bay Area, this is true at only 2 of 28 colleges, but both colleges are in the same college district. These pockets within a region contribute to geographic inequity in access to effective supports for students in the area. (Figure 10)

Figure 10



Class schedules show large differences in the degree to which colleges have embraced the concept of concurrent support. On average, colleges attach concurrent support to about 28% of introductory transfer-level sections. Seven colleges do not offer distinct sections of transfer-level math with concurrent support. At the other extreme, 6 colleges provide concurrent support for about $\frac{2}{3}$ of introductory transfer-level math sections. (Figure 11) Nine colleges offer concurrent support with transfer-level quantitative reasoning courses in disciplines other than math, such as Decision Science, Economics, Psychology, and Sociology.

Figure 11



It is important to note that students may be receiving support that is not captured by our analysis, such as in-class tutors or access to a math support center. In addition, if all students taking a course received the same support, such as all sections of a course had embedded lab hours, we viewed this as the standard version of the course and did not count these sections as supported.²⁰

²⁰ This impacted our analysis somewhat. For example, one college embedded lab hours in all sections of its introductory transfer-level sections; another college embedded lab hours in all sections of Statistics but did not have embedded lab hours or corequisite support for any introductory transfer-level BSTEM courses. Both colleges were coded as a 0, meaning no distinct sections with concurrent support. At the other extreme, one college embedded lab hours in all its Statistics sections but one; therefore, this college was recognized in our coding as offering a large percentage of transfer-level sections with support.

CONCLUSION

With the recent “reset” from the state Chancellor’s office, the California community college system has made remarkable progress in AB 705 math implementation. Fall 2022 math class schedules reflect a notable shift away from remedial sections and toward transfer-level sections, with 57 colleges eliminating remedial courses altogether. Nearly $\frac{3}{4}$ of colleges statewide, and at least half of the colleges in every region, are strong implementers. With weakest levels of implementation now rare, most students will have greater access to transfer-level math courses, and these math courses are better aligned with their interests and goals.

However, the work to fully implement AB 705 is not done. Colleges serving a large share of the state’s Black and Hispanic students continue to be weaker implementers and lag in providing effective academic supports. Geographic differences within a region and across regions can have negative consequences for students when they attend their local college.

At the 58 colleges that offer remedial courses in fall 2022, these courses are optional for most students. But remedial courses are bad options. They hamper student progress toward a college degree, and they contribute to inequitable math outcomes because Black and Hispanic students are more likely to choose to take remedial courses when given the option.

When colleges allow or require students to enroll in remedial courses — courses that their own placement validation reports show led to disproportionately lower transfer-level math completion — the intent and promise of AB 705 is undermined.

This is the primary reason the state needs [AB 1705](#) (Irwin, Medina 2022). AB 1705 clarifies issues impeding implementation of AB 705 and supports the state Chancellor’s office “reset” on the work to fully implement this historic legislation.

AB 1705 also requires colleges to provide access to concurrent support for students who want or need it when enrolled in introductory transfer-level math and English courses. The system needs this push to address the uneven and inequitable access to concurrent supports seen in fall 2022 class schedules.

At the time of writing this report, the enacted 2022-23 California state budget includes \$64 million in one-time funding to support colleges in AB 705 implementation with the goal of achieving equitable placement and completion of transfer-level math and English. This funding will help colleges do the work to address the issues highlighted in this brief that are contributing to lower and more inequitable transfer-level math outcomes.

In particular, this work includes

- Phasing out remedial math courses for the general student population by fall 2023.
- Developing or expanding transfer-level quantitative reasoning options, including options for non-transferable programs and general education. Offer quantitative reasoning courses in a wider range of disciplines.
- Offering concurrent support, if students need or want it, for all introductory transfer-level math and quantitative reasoning courses, including those in departments outside of math. Minimizing the impact of concurrent support on student financial aid by embedding lab hours into some transfer-level sections for students who need or want more time with their instructor to receive just-in-time support.
- Engaging faculty in creating equity-minded and welcoming classroom experiences for students enrolled in transfer-level math or quantitative reasoning coursework.

With AB 1705 amendments to AB 705, the state is poised to realize the full promise of this historic legislation.

Placement and remediation practices historically drove low and racially inequitable completion rates of math and English milestones to post-secondary credentials. A future is within reach where the CA community college system has fully dismantled structural barriers at the gate to a college degree and re-envisioned academic support to be more effective in helping students succeed. **We are nearly there.**

“Significant progress has been made, but it is clear that additional work remains to ensure students in California are not enrolling in courses that delay their success and add unnecessary costs. Being unnecessarily placed into remedial education can have an enormous impact on a student’s educational trajectory and future opportunities. We owe it to students to stay focused on the evidence-based reforms that data show will lead them to succeed.”

Assemblymember Jacqui Irwin, author of AB 705
[The Institute for College Access and Success press release, April 2022](#)

GLOSSARY OF TERMS

Transfer-level math courses: courses that earn quantitative reasoning credit for a CSU baccalaureate degree; includes courses taught in the math department as well as other departments, e.g., statistics taught in the Psychology department

Remedial math courses: pre-transfer-level math courses that do not earn quantitative reasoning credit for a CSU baccalaureate degree, such as intermediate algebra or pre-statistics, includes non-credit courses that are not explicitly part of a separate adult education program

Introductory courses: remedial courses plus the first course in a student's program of study that is a transfer-level math or quantitative reasoning course, which can include transfer-level courses in other departments. Introductory transfer-level courses do not have a transfer-level math prerequisite

Supported introductory transfer-level sections: sections of an introductory transfer-level course with extra contact hours, embedded lab hours, or a link to a corequisite course; does not include tutoring

SLAM math: introductory math or quantitative reasoning courses for majors or programs that do not require calculus, e.g., pre-statistics, statistics, liberal arts math, also includes introductory transfer-level courses in other departments that earn CSU quantitative reasoning credit

B-STEM math: introductory math courses for majors that require calculus, e.g., remedial algebra, college algebra, trigonometry, precalculus, also includes introductory transfer-level courses in other departments for majors that require calculus

Percentage of introductory sections at the transfer-level: the number of introductory transfer-level course sections divided by the number of introductory course sections

Strong implementation: 90% or more of introductory courses are transfer-level

Weak implementation: less than 90% of introductory courses are transfer-level

Weakest implementation: less than 70% of introductory courses are transfer-level

Transfer-level completion: the percentage of first-time math students who complete an introductory transfer-level course in a given time period

METHODOLOGY AND DATA COLLECTION

Fall 2022 class schedules from the 115 comprehensive California community colleges were analyzed between June 1 and July 8, 2022. We counted the number of introductory sections, which included sections of remedial math courses and introductory transfer-level math and quantitative reasoning courses, then calculated the percentage of introductory sections at the transfer-level, which is the number of introductory transfer-level course sections divided by the number of introductory course sections.

Count of remedial sections: The number of sections of pre-transfer-level math courses and non-credit courses that were not explicitly part of a separate adult education program. Remedial sections counts did not include the following: concurrent support courses or tutoring courses, pre-transfer-level math taught within a career technical program, e.g., WTD 114 Water Mathematics taught in the Water Treatment and Distribution Program, GED preparation or low-level non-credit courses taught within an adult education program, or very low levels of remedial math offered through a college's Disabled Students and Services Program for students unable to substantially benefit from regular college classes even with appropriate support services or accommodations per California Code of Regulations § 56028.

Counts of introductory transfer-level sections: The number of sections of the first course in a program of study that earns quantitative reasoning credit for a baccalaureate degree from Cal State University system. We used ASSIST.org to identify departments within the college with transfer-level quantitative reasoning courses. These departments included Accounting, Architecture, Biotechnology, Business, Computer Information Systems, Computer Science, Data Science, Economics, Philosophy, Psychology, Social Science, Sociology, and Statistics.

Counts of supported transfer-level sections: The number of introductory transfer-level math or quantitative reasoning sections associated with concurrent support. This includes sections with embedded lab hours or linked to a corequisite section. If all sections of a course received the same support, such as all sections of a course had embedded lab hours, we viewed this as the standard version of the course and did not count these sections as supported. Tutoring is not included in our analysis as concurrent support. For example, San Joaquin Delta's Math 101 is described as corequisite support for 23 BSTEM courses in 6 departments, but there was only one section offered. Therefore, we viewed this as tutoring and did not count it as support for any specific course.

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