

2024 INSTRUCTIONAL ANNUAL PROGRAM PLANNING WORKSHEET

CURRENT YEAR: 2024

CLUSTER: STEM

LAST YEAR CPPR COMPLETED: 2022

CURRENT DATE: [Click here to enter a date.](#)

PROGRAM(S): MATHEMATICS

AREA OF STUDY: STEM

NEXT SCHEDULED CPPR: 2027

The Annual Program Planning Worksheet (APPW) is the process for:

- reviewing, analyzing and assessing programs on an annual basis
- documenting relevant program changes, trends, and plans for the upcoming year
- identifying program needs, if any, that will become part of the program's [Resource Plan](#), which can be downloaded from this [SharePoint folder](#). Please review the [Resource Allocation Rubric](#) when preparing the resource plan.
- highlighting specific program accomplishments and updates since last year's APPW
- tracking progress on a Program Sustainability Plan if established previously

Note: Degrees and/or certificates for the *same* program *may be consolidated* into one APPW.

This APPW encompasses the following programs of study (degrees and/or certificates):

A.S.T Mathematics

General Program Update

Describe changes and improvements to the program, such as changes to the mission, purpose, or direction. In particular, indicate any changes that have been made to address equity gaps.

The mission, purpose, and direction of the Cuesta College Mathematics Division has fundamentally changed, as has the mission of the California Community College (CCC) System, with the implementation of AB 1705 in the Summer of 2023. We can no longer offer our students the option of taking pre-transfer level math courses, regardless of what they feel would be best in pursuit of their individual educational goals. This, combined with the elimination of pre-transfer level English courses, means that the California Community College System, the largest system of higher education in the country, will no longer provide remediation to students who may desperately need it. This, at a time when students are still recovering from missed learning during the pandemic, will have devastating consequences on our students, particularly our minoritized students, for years to come. The primary focus of the Math Division in the 2022-2023 academic year has been to mitigate these consequences as best we can. For example, the division fast tracked the development of Math 227, College Mathematics for Technical Fields. This was to provide students, such as students in Nursing and

Allied Health or CTE programs, with a course that would give them the mathematical skills to be successful in their education pursuits. Also, the Mathematics Division worked to develop two non-credit support courses for students underprepared to take transfer level math courses. Unfortunately, it appears the opportunity for students to take non-credit math and English support courses has also been outlawed by AB 1705. In this oppressive environment, it has been extraordinarily difficult to maintain faculty morale within the Mathematics Division. We have all had students who would benefit from, and are interested in, taking pre-transfer level math courses that we can no longer legally teach. It is exceeding difficult to get the, often tear-filled, question, "What am I supposed to do now?" from students who can no longer take the math course they need and want, and to have no answer to that question.

Program Sustainability Plan Update

Was a Program Sustainability Plan established in your program's most recent Comprehensive Program Plan and Review?

Yes ☐ If yes, please complete the Program Sustainability Plan Progress Report below.

No ☒ If no, you do not need to complete a Progress Report.

If you selected yes, please complete the Program Sustainability Plan Progress Report below after you complete the Data Analysis section. That data collection and analysis will help you to update, if necessary, your Program Sustainability Plan.

Data Analysis and Program-Specific Measurements

Your responses to the prompts for the data elements below should be for the entire program. If this APPW is for multiple degrees and/or certificates, then you MAY want to comment on each degree and/or certificate or discuss them holistically for the entire program being sure to highlight relevant trends for particular degrees and/or certificates if necessary. Responses in this document need only reference the most recent year's available data.

A. General Enrollment (Insert Aggregated Data Chart)

Insert the data chart and explain observed differences between the program and the college.

Math Enrollment (Excluding CMC and Dual Enrollment for all Data)

SLOCCCD Program Review Data - Enrollment

Department:
Mathematics

Course:
All

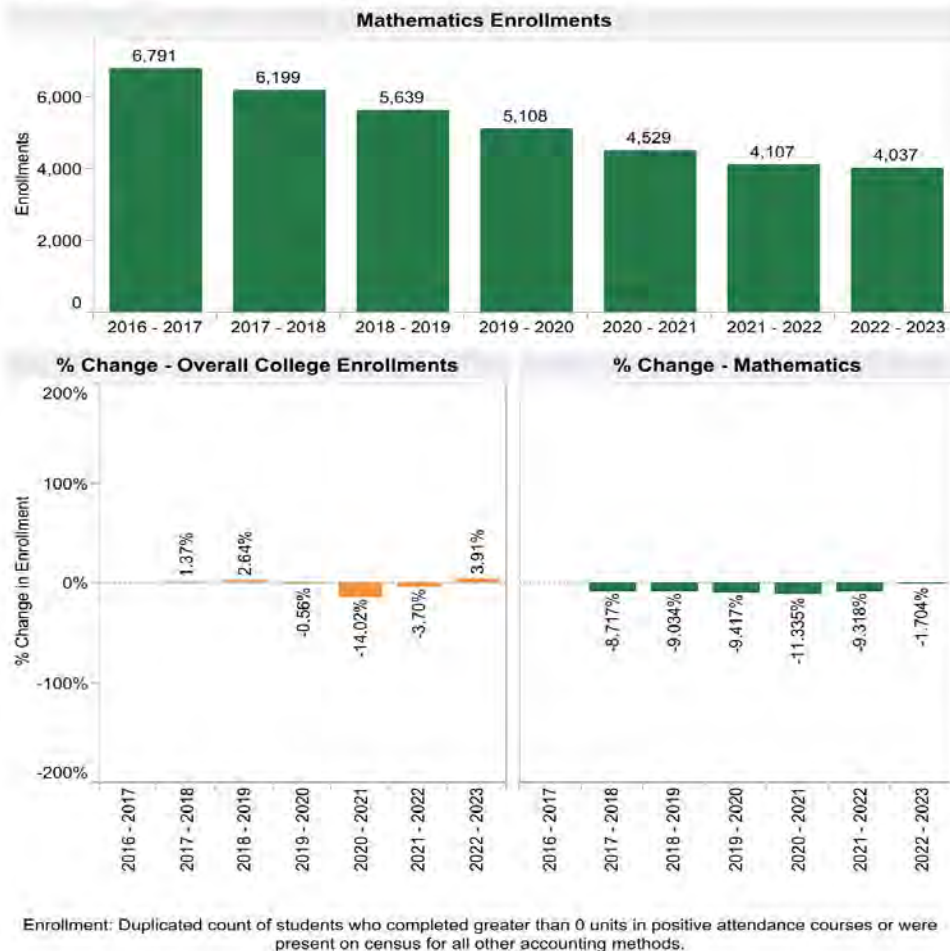
Dual Enrollment:
Not Dual Enrollment

Prison:
Not CMC:Prison

Region:
All

TERM

All



It appears that overall math enrollments began to stabilize in 2022-2023 with a decline of just 1.7% compared to a decline of 11.3% in 2020-2021. This is likely since so many pre-transfer level courses have already been eliminated, the rate of decline in overall math courses is decreasing. That will likely change in 2023-2024 since there will be no enrollments in pre-transfer level courses during that academic year, and in 2022-2023 we still had 259 pre-transfer enrollments. It should also be noted that compared to an increase of 3.9% for overall college enrollment, math enrollment is still lagging.

DE Math Enrollment

SLOCCCD Program Review Data - Enrollment

Department:
Mathematics

Course:
All

Dual Enrollment:
All

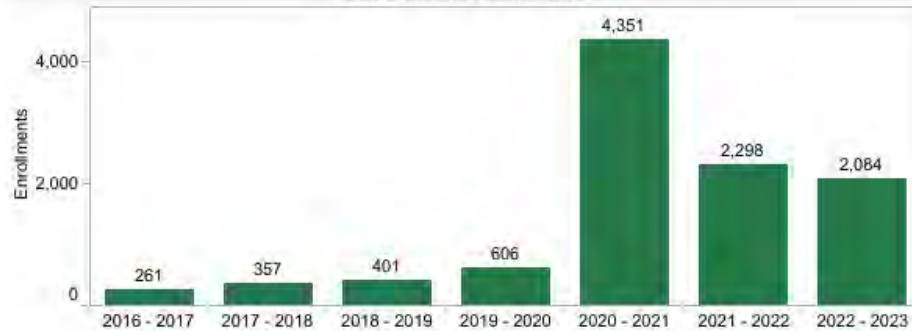
Prison:
All

Region: Distance Learning

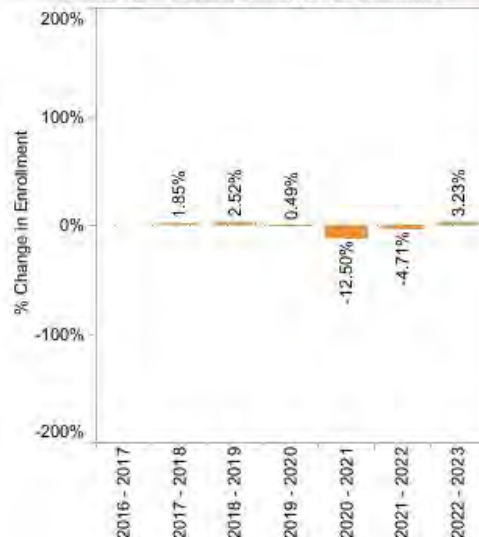
TERM

All

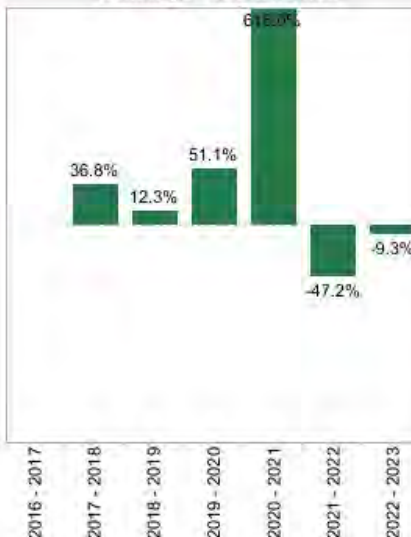
Mathematics Enrollments



% Change - Overall College Enrollments



% Change - Mathematics



Enrollment: Duplicated count of students who completed greater than 0 units in positive attendance courses or were present on census for all other accounting methods.

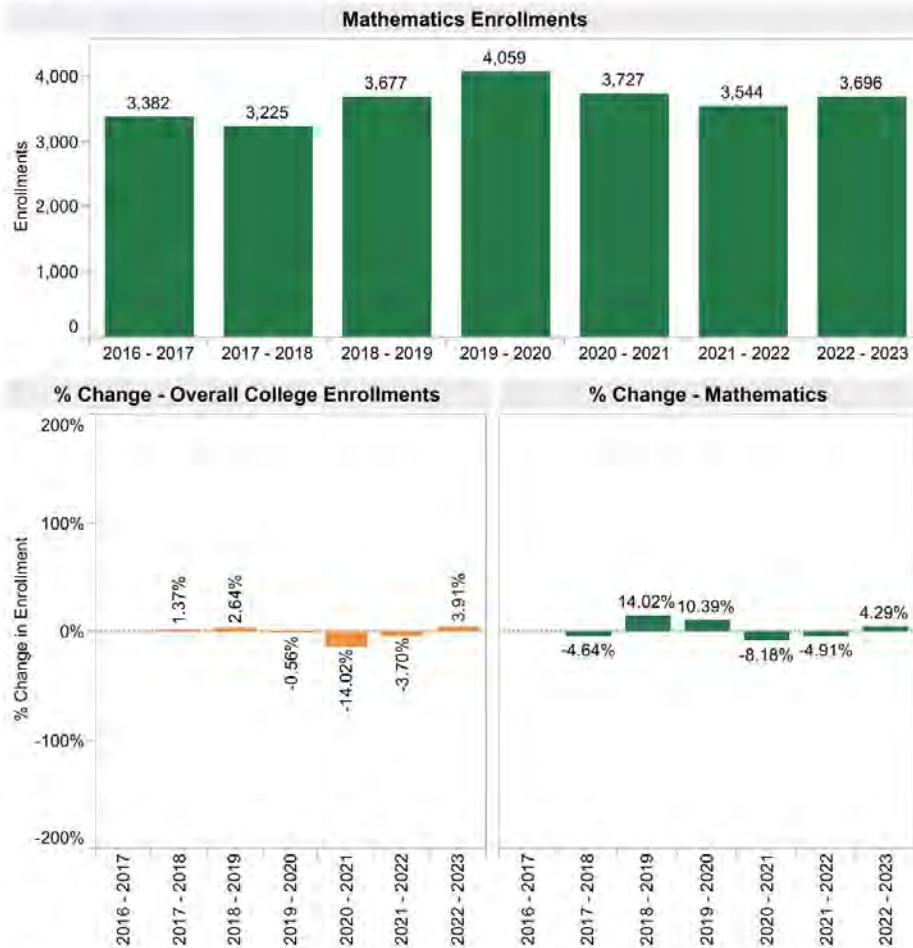
After 2020-2021 DE math enrollments of course declined dramatically and in 2022-2023. That decline stabilized in 2022-2023 with a decline of 9.3% from 2021-2022. This enrollment represents 48% of total math enrollments. As we debate the appropriate ratio of online to face-to-face courses moving forward, it will be important to not just consider student preference, but to consider what is best for student learning and success rates. For example, in our student success rate analysis found later in this document, there are significant differences between success rates for online vs face-to-face in our Calculus I courses.

Transfer Level Math Enrollment

SLOCCCD Program Review Data - Enrollment

Department: Mathematics Course: Multiple values Dual Enrollment: Not Dual Enrollment Prison: Not CMC:Prison

Region: All TERM All



Enrollment: Duplicated count of students who completed greater than 0 units in positive attendance courses or were present on census for all other accounting methods.

The previous two tables showing first, the significant decline in Math Enrollment overall, then the increase in Transfer Level Math Enrollment, particularly in the 2019-2020 academic year, are a good summary of the impacts of AB705. Taken with the table below that shows the dramatic decrease in Pre-Transfer Level Math Enrollment, we can see that AB705 was successful in getting

students to enroll directly into transfer level courses. Certainly, the spike in transfer level enrollment in 2019-2020 can be attributed to students being given the opportunity to choose to enroll in transfer level math without pre-requisites. Note that the Cuesta College Mathematics Division supported this opportunity for our students and worked hard to help students who might be underprepared for transfer level math to still be successful in these courses.

Pre-Transfer Level Math Enrollment (Math 003, 007, 123, 127, 128)

SLOCCCD Program Review Data - Enrollment

Department:
Mathematics

Course:
Multiple values

Dual Enrollment:
All

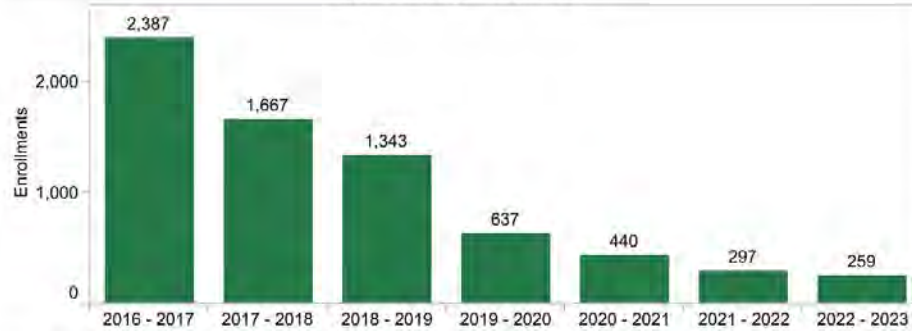
Prison:
All

Region: All

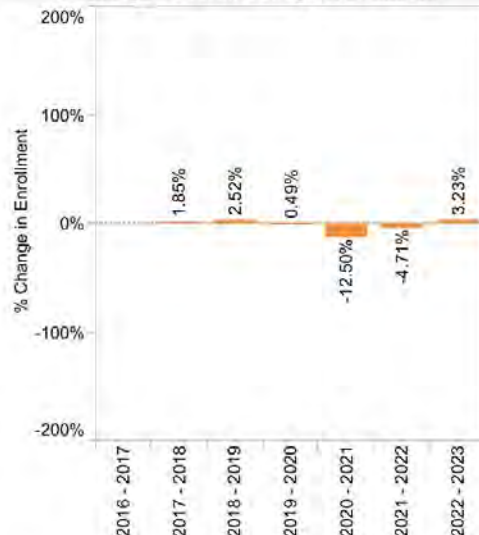
TERM

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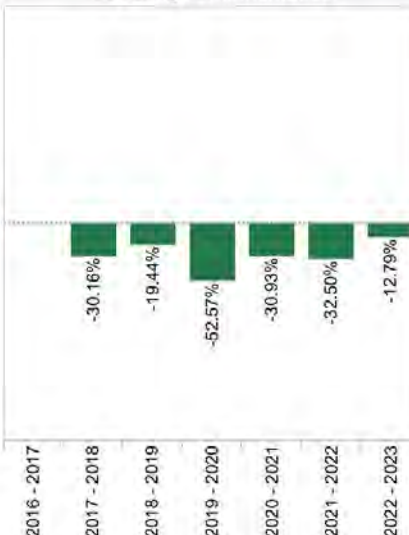
Mathematics Enrollments



% Change - Overall College Enrollments



% Change - Mathematics



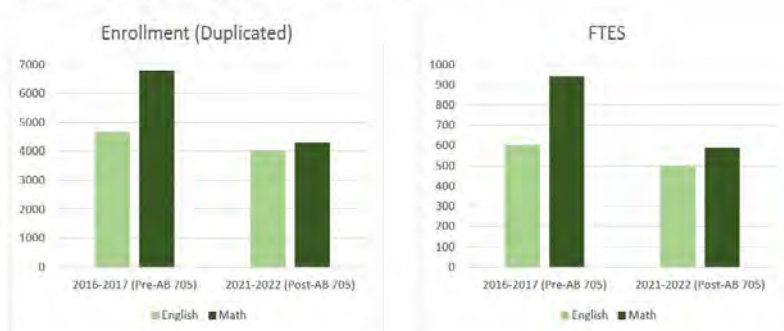
Enrollment: Duplicated count of students who completed greater than 0 units in positive attendance courses or were present on census for all other accounting methods.

In 2017 students were still placing into pre-transfer level classes based on multiple measures and an assessment test. In Fall 2018, MMAP placed more students at higher levels of math using their high school grades and coursework, so we saw a drop in pre-transfer enrollment, and the implementation of AB705 in Fall 2019 caused a significant drop because the only pre-transfer enrollment were students who enrolled by choice. With the passage of AB1705 we eliminated all pre-transfer classes except for Math 127 and 128, the Intermediate Algebra level classes, in 2021. 2022/2023 was the last academic year we offered any pre-transfer classes

The students who enrolled in pre-transfer level math classes were mainly those requiring Nursing and other CTE certificates and programs, since those are the students that could complete their math requirement with Math 127, Intermediate Algebra. About 10% are high school students trying to either get ahead so they can take AP Calculus in high school or are making up a class. There are also students who want more preparation for a college or precalculus algebra class either because they don't feel confident to start at that level or because they tried and were unsuccessful. We also have returning students who want to start at Beginning or Intermediate Algebra and possibly go on to take more advanced classes for their own personal goals. The many students that have taken this path and are now succeeding in our Calculus courses cannot imagine why future students won't be afforded the opportunities that have allowed them to achieve their educational goals. We hope that one day the state legislature and the chancellor will understand that they have eliminated important opportunities for these members of our community who want and need them and whose educational goals do not fit the narrowly defined transfer goals that recent legislation has determined should be the only mission of our college.

AB 705 (and AB 1705) have contributed to the overall enrollment declines at Cuesta College.

- Because students are no longer taking foundational pre-transfer courses in English and Math, and more students are completing transfer requirements with a single course attempt, the number of enrollments (and thus, FTES) in these disciplines has declined:
 - English: 601 FTES → 500 FTES (17% decrease)
 - Math: 941 FTES → 586 FTES (38% decrease)

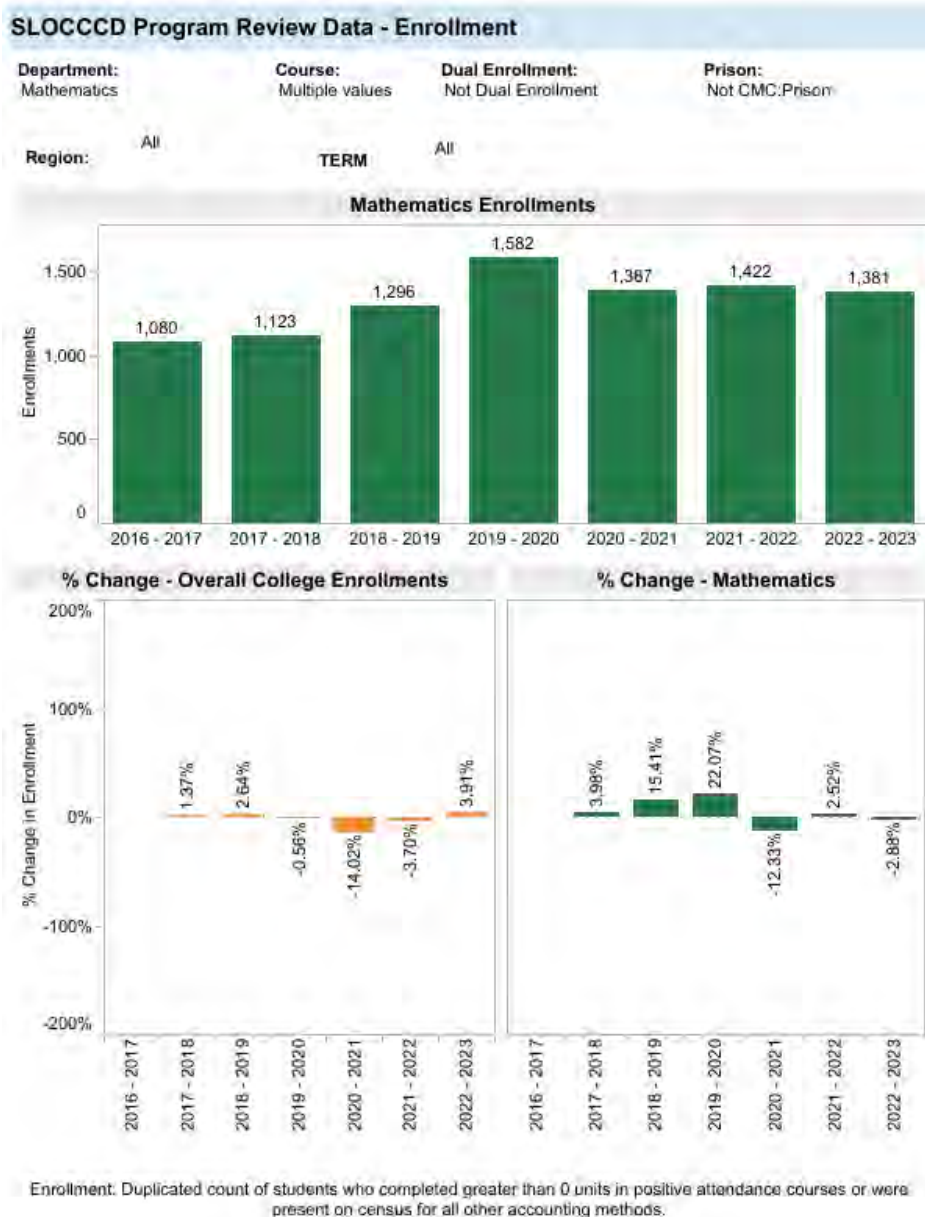


- The number of sections offered have decreased from 2016-2017 ("pre-AB 705") to 2021-2022 ("post-AB-705"), and the decrease is attributed to sections of foundational pre-transfer courses that are no longer being offered:
 - English: 192 sections → 158 sections
 - Math: 223 sections → 155 sections
- These enrollment declines were exacerbated by the pandemic, but can't be entirely explained by the pandemic. The declines in all other disciplines, excluding English and Math, across this same time period were smaller:
 - All Other: 6128 FTES → 5741 FTES (9% decrease)
- Finally, between 2016-2017 and 2019-2020 (post-AB 705, but pre-pandemic), FTES in English and Math decreased while the college grew:
 - English & Math: 1,543 FTES → 1,304 FTES (15% decrease)
 - All Other: 6,127 FTES → 6,677 FTES (9% increase)

Prepared by Dr. Jason Curtis, Vice President of Instruction and Dr. Ryan Cartnal, Executive Director of Institutional Effectiveness & Research
February 2023

This information provided by Dr. Jason Curtis and Dr. Ryan Cartnal summarizes the impact AB 705 has had on FTES in both math and English, and subsequently, on the college as a whole.

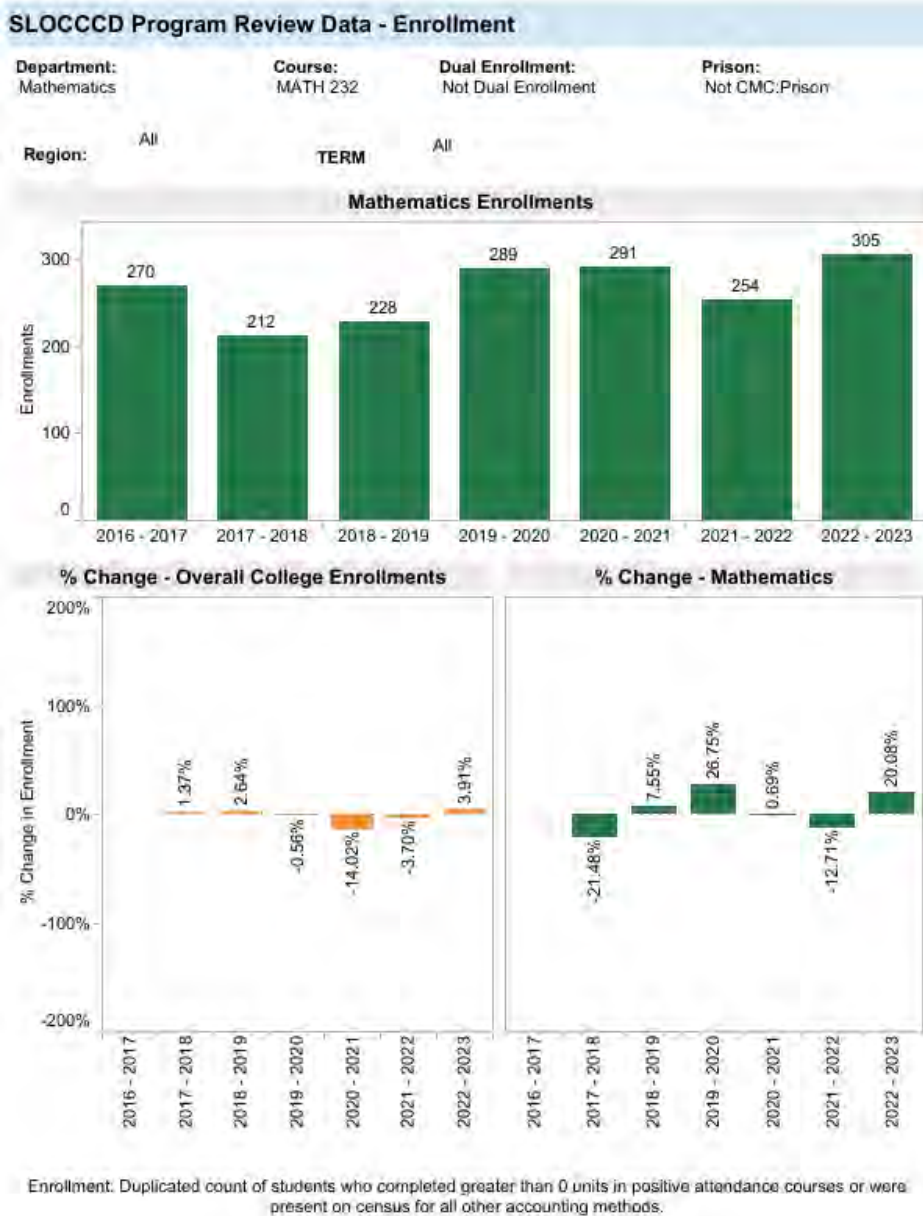
Statistics Enrollment (Math 247 and 236)



Statistics enrollment has remained relatively constant over the past three years, with a small decline of 2.7% in 2022-2023. Math 247 saw a significant increase in enrollment in the 2019-20 academic year, after the passing of AB705, which allowed all students to enter transfer-level math and English courses without satisfying the prerequisite courses. This one-year jump was likely due to a backlog of students who were working their way

through the prerequisite courses suddenly being able to jump ahead and complete their transfer-level math courses. There was a decline after the 2019-20 year, similar to the decline seen in total college enrollment, but enrollment remains higher than pre-AB705.

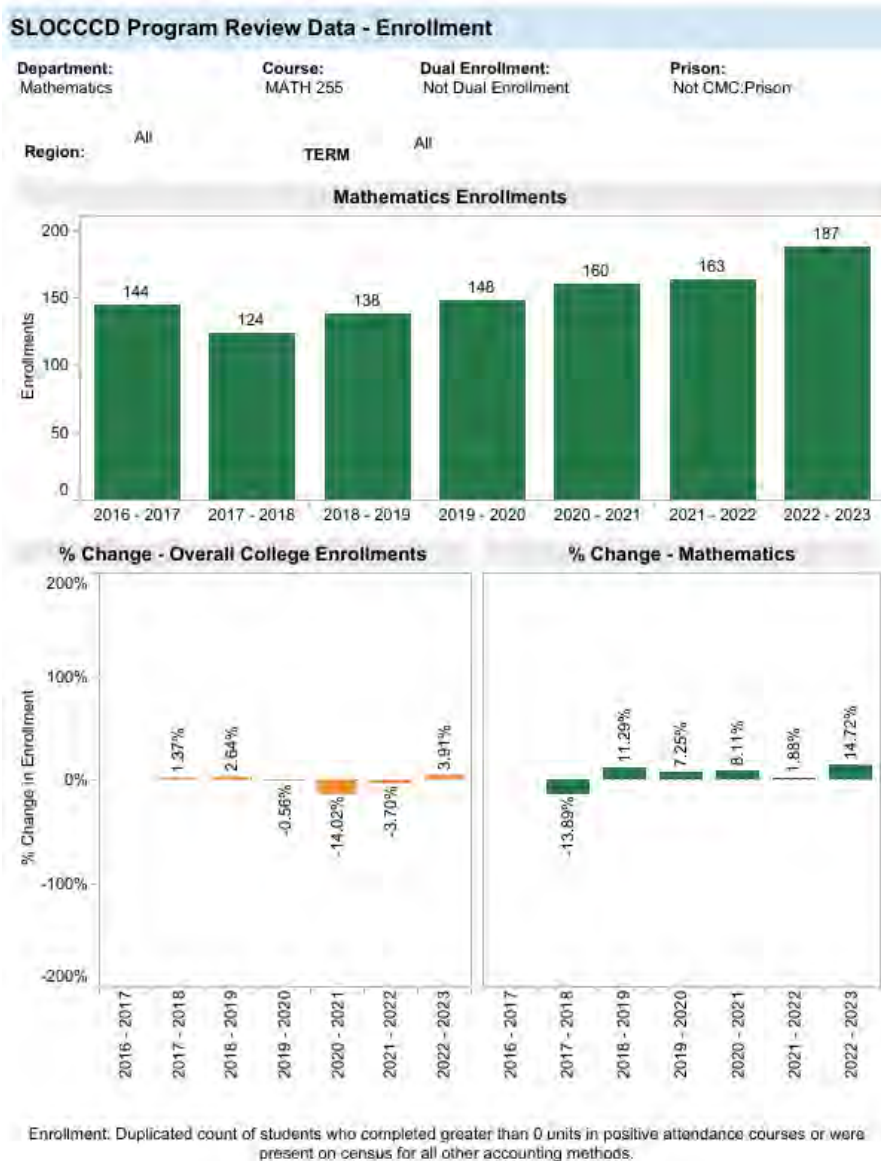
College Algebra, Math 232



Overall, Math 232 increased in enrollments after it was designated as a prerequisite option for Math 255. The increase in business associate degrees of transfer at Cuesta may have also impacted enrollments. There will likely be a decrease in enrollments in college algebra moving forward once our campus implements the mandate from the chancellor's office to remove the college algebra prerequisite for Business Calculus and allow open enrollment. We plan to continue to provide students the choice to take

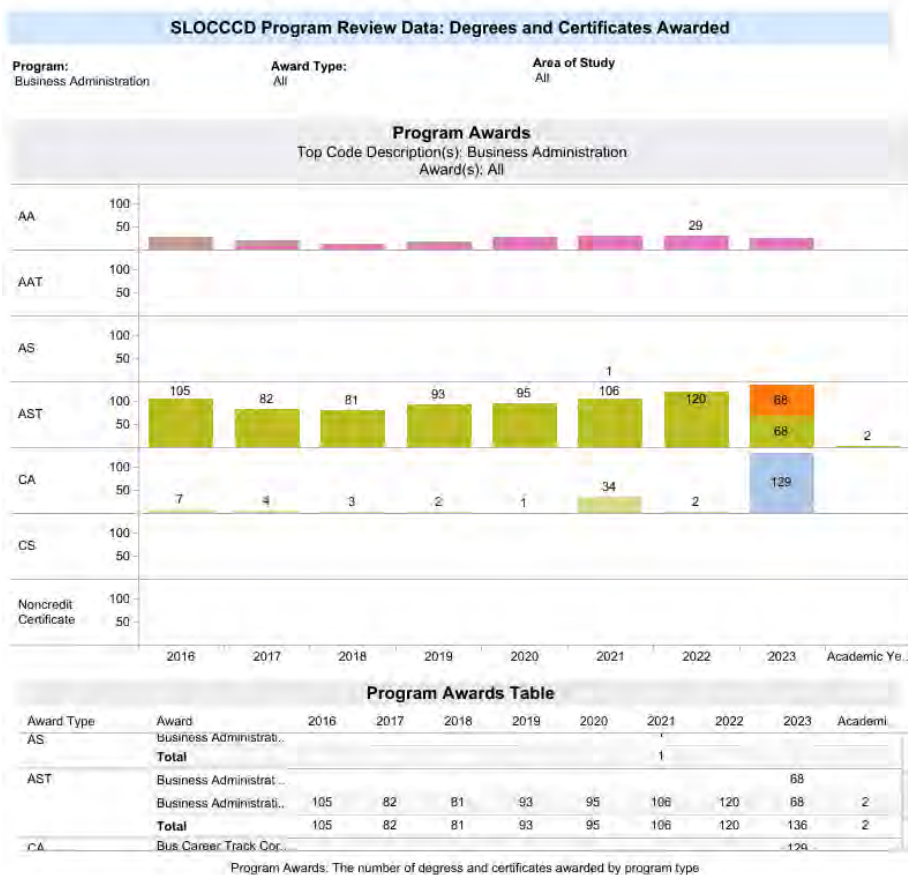
Math 232 after it is removed as a prerequisite for Math 255, until the Chancellor's Office forces us to stop offering the course.

Business Calculus: Math 255

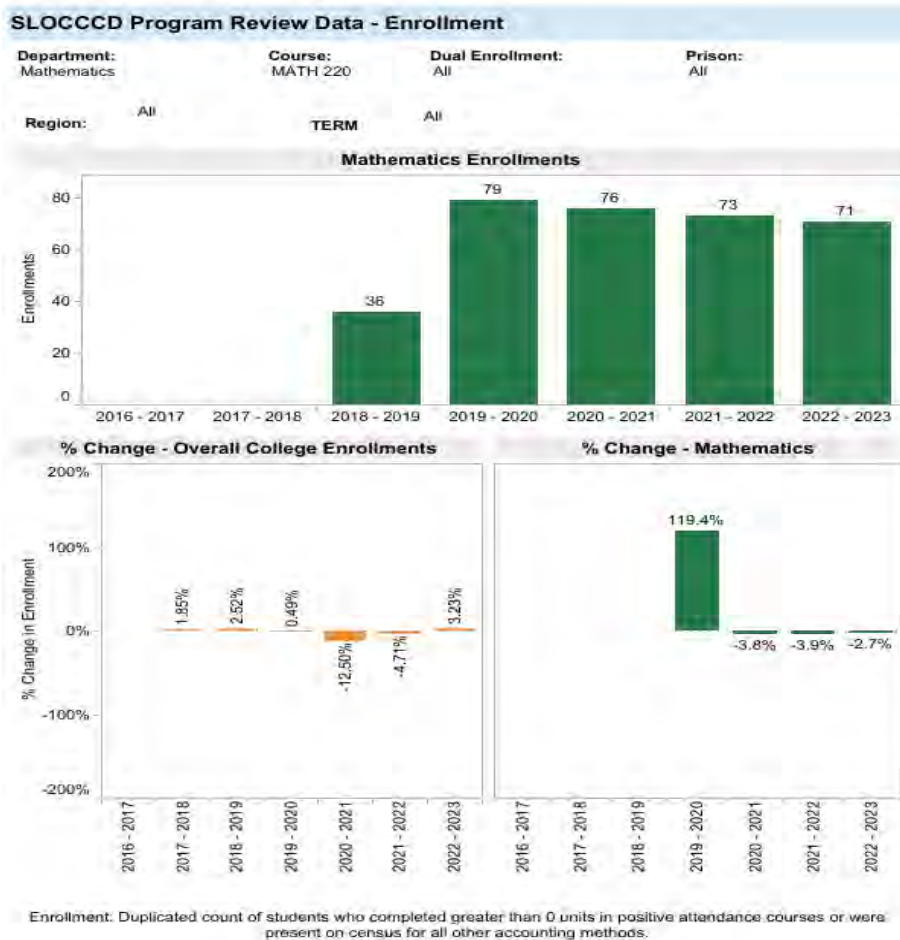


Business Calculus has seen an increase in enrollments. This seems to be in line with the increasing number of Associates Degrees of Transfer awarded at Cuesta in Business (see graph below). Although business calculus is not a math requirement for the AST, most students who intend to transfer into a business program need business calculus. The number of students enrolling in Math 255 will increase

once our campus implements the chancellor's mandate to remove the college algebra prerequisite for business calculus, as more students will have the option to directly enroll into the course. As we offer more sections, we will likely revive offering a spring section on the North County Campus, which will also help support students completing the business AS-T entirely on NCC. Ideally, we would continue to offer more sections of Math 255 spring semester so that students can take a course like statistics in the fall to be better prepared to enter a demanding 3-unit math course.



Math 220 Enrollment



After the second section of Math 220 was added in 2019-2020, enrollments declined slightly but indicate that the Math Division should continue to offer the same number of sections currently offered.

Math 290 Enrollment



Math 290 saw significant growth of 37.5% in 2022-2023 and the division expects this growth to continue.

Calculus: Math 265A, 265B, 283, 287

SLOCCCD Program Review Data - Enrollment

Department:
Mathematics

Course:
Multiple values

Dual Enrollment:
Not Dual Enrollment

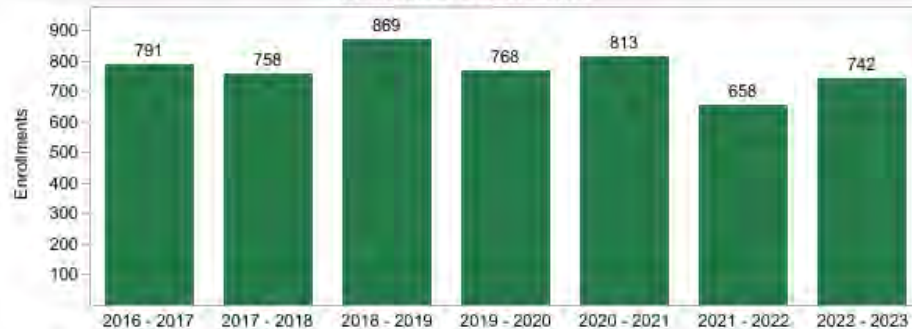
Prison:
Not CMC/Prison

Region: All

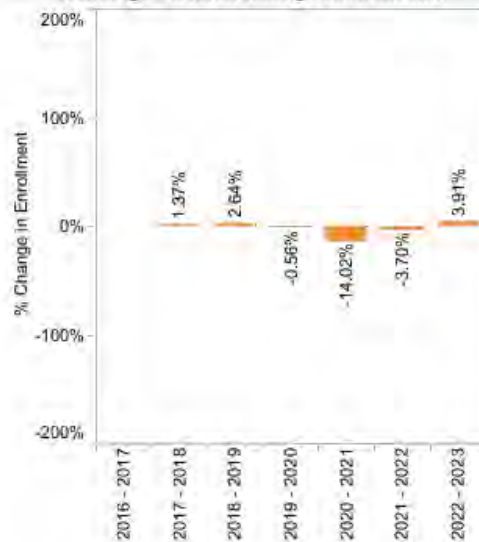
TERM

All

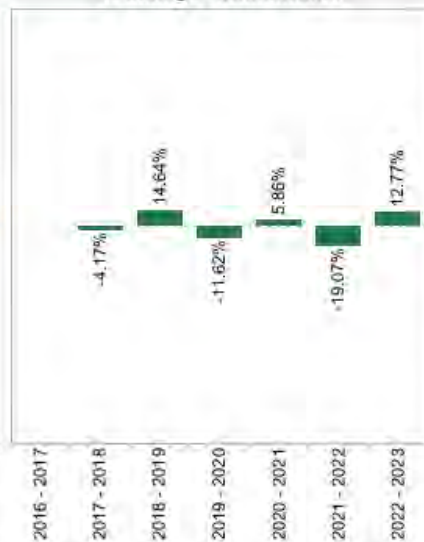
Mathematics Enrollments



% Change - Overall College Enrollments



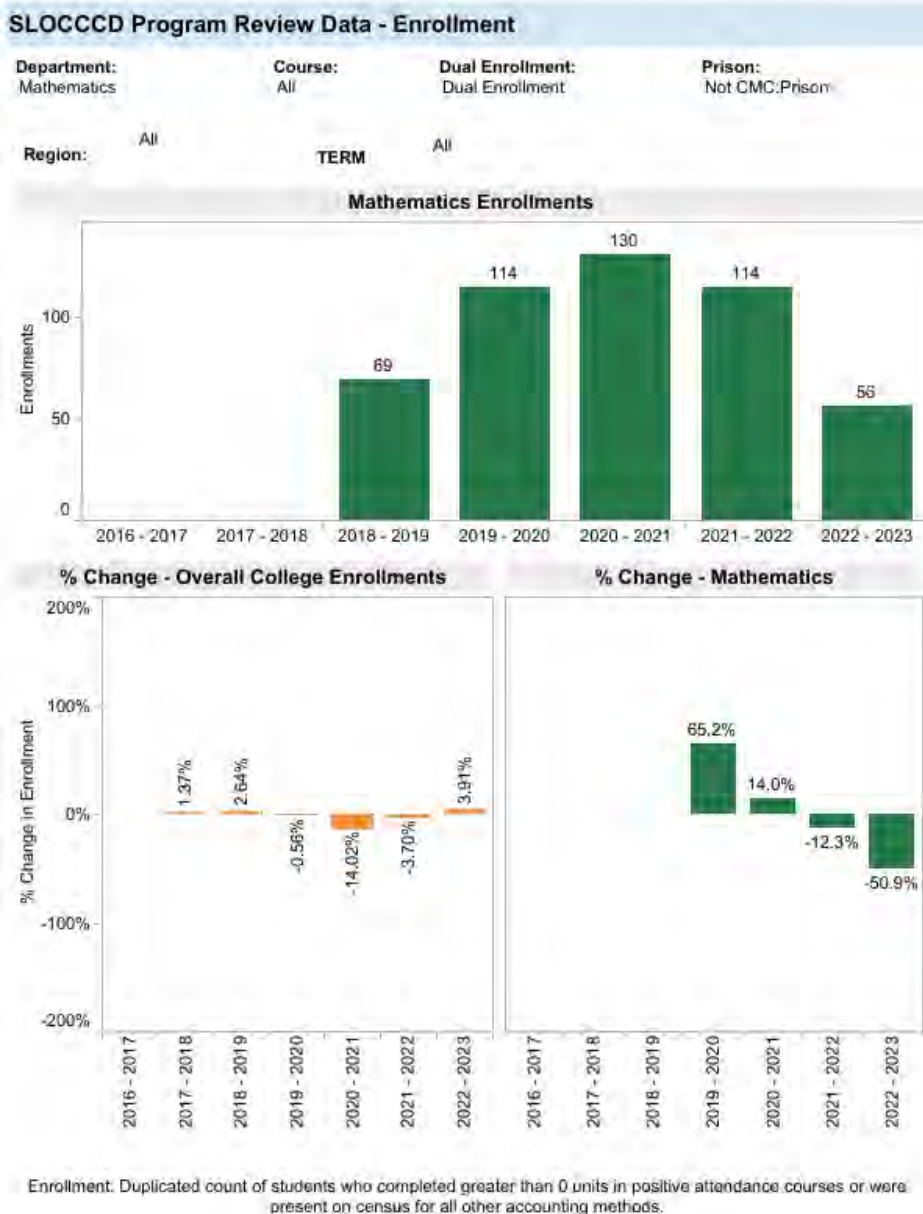
% Change - Mathematics



Enrollment: Duplicated count of students who completed greater than 0 units in positive attendance courses or were present on census for all other accounting methods.

With the implementation of AB705 and AB1705, more students are enrolling in transfer-level math courses, so the 12.77% increase is unsurprising. What else is unsurprising is the decline in successful course-completion for these courses (shown later in this document).

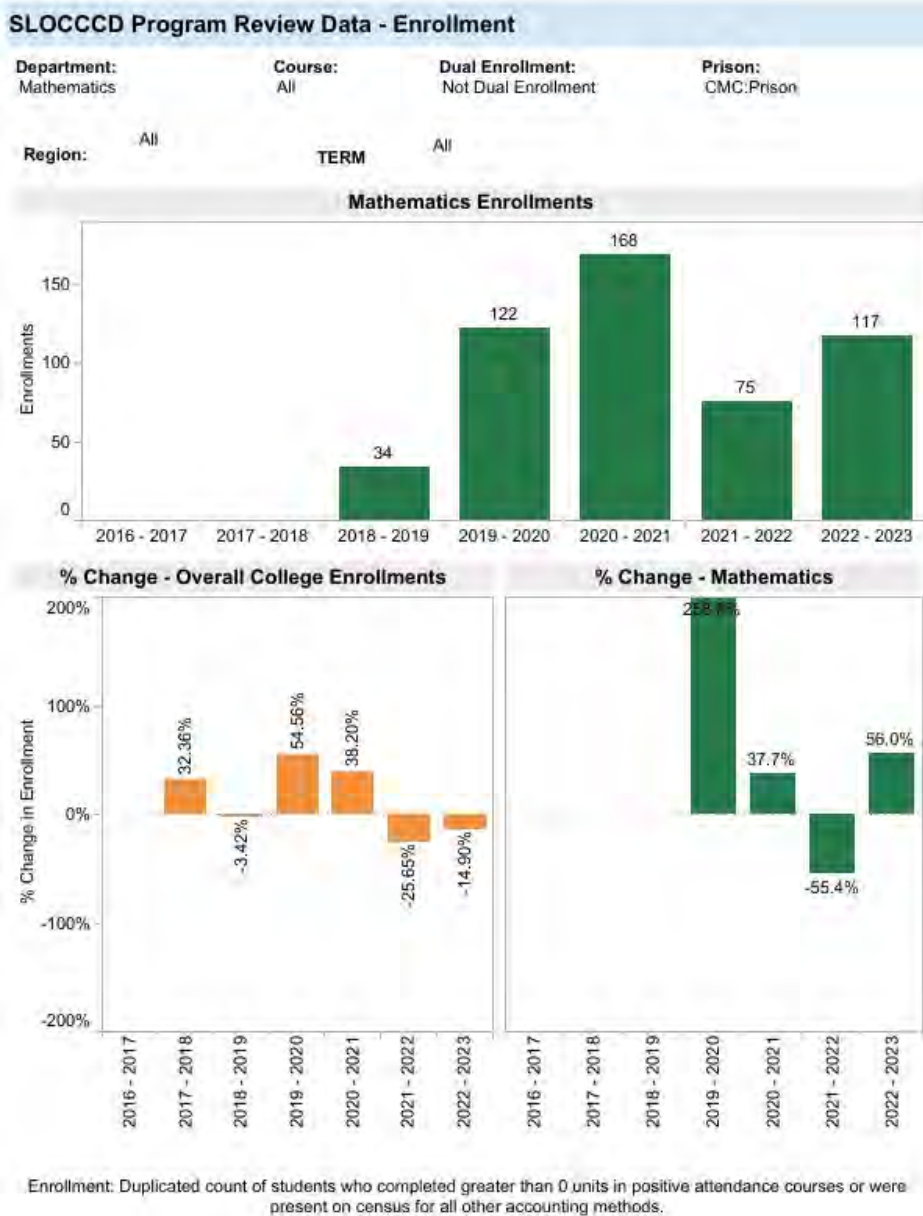
Dual Enrollment



There was a significant decline in math dual enrollment of 50.9% from 2021-2022 to 2022-2023. There are two major factors in this decline. The primary reason is that Kelly Bellew who taught Math 242 and Math 247 as dual enrollment courses at Nipomo High School in 2021-2022 moved to Paso Robles High School and NHS did not have an instructor who met minimum qualifications who could take over as the dual enrollment instructor. PRHS requested that Kelly teach a Math 230 dual enrollment course in 2022-2023, but their Board

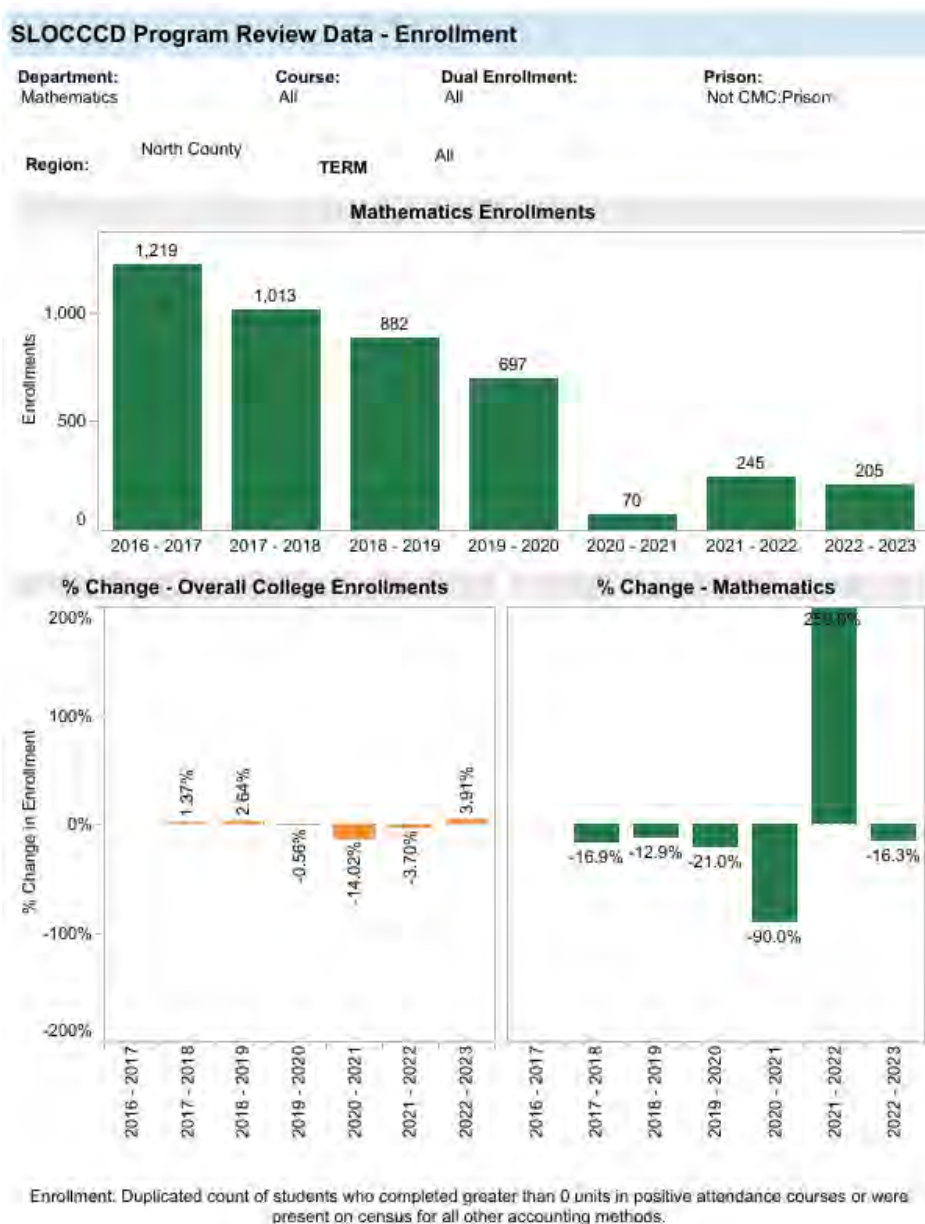
had not yet approved the high school course, so we were unable to coordinate the evaluation in time. We are scheduled to evaluate that course in Spring 2024 and hope it can be offered as a dual enrollment course in 2024-2025. The second factor in the decline of dual enrollment was that the Math 265B course at PRHS was not offered in 2022-2023 due to issues with prerequisite requirements. We hope to resolve those issues this Spring, and PRHS has indicated they hope to have sufficient demand for the course in 2025-2026.

CMC Enrollment



After the peak enrollment in 2020-2021, math enrollments at CMC declined in 2021-2022 due to CMC closing the West half of the facility, which roughly cut the population of students in half. Since the initial dramatic decline, enrollments increased by 50% in 2022-2023 as course offerings on East Campus were increased. It is difficult to predict what will happen to enrollments in 2023-2024 given all the changes that are occurring at CMC.

North County Enrollment

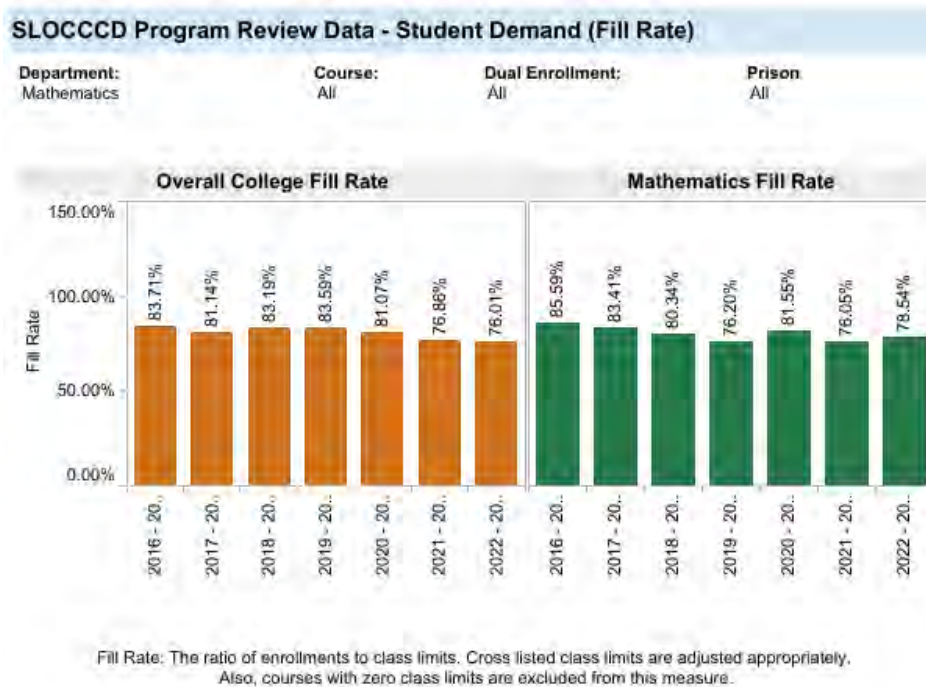


The decline in enrollment in Math classes on the North County Campus, which started before the pandemic hit, has continued. Since most of the classes offered on the NC campus have historically been pre-transfer level classes, the passage of AB705 and AB1705 resulted in us no longer being able to offer those classes. This left us with very few classes on the schedule. Additionally, due to the pandemic, there was a significant increase in Distance Education classes offered by the Math department, and we lost even more students because many of our students are now choosing to take their classes

remotely. Consequently, our NC mathematics enrollment has decreased from 1,219 in 2016-2017 to only 206 in 2022-2023. Even when compared to the previous post-pandemic year, enrollment decreased from 245 to 206, a 16% reduction. We are trying each semester to figure out which classes have the greatest likelihood of attracting students. In addition to Math 247: Statistics and Math 230: Math for Humanities, which we have always offered, we now offer Math 232: College Algebra, instead of Math 242: Precalculus. Also, we started offering Math 220: Math for Elementary School Teachers and the new Math 227: College Math for Technical Fields this year. So far, they are not proving to be as much of a draw for students as we expected, but our hope is still that they will grow over time. We are also considering offering Math 255: Business Calculus next year.

B. **General Student Demand (Fill Rate) (Insert Aggregated Data Chart)**

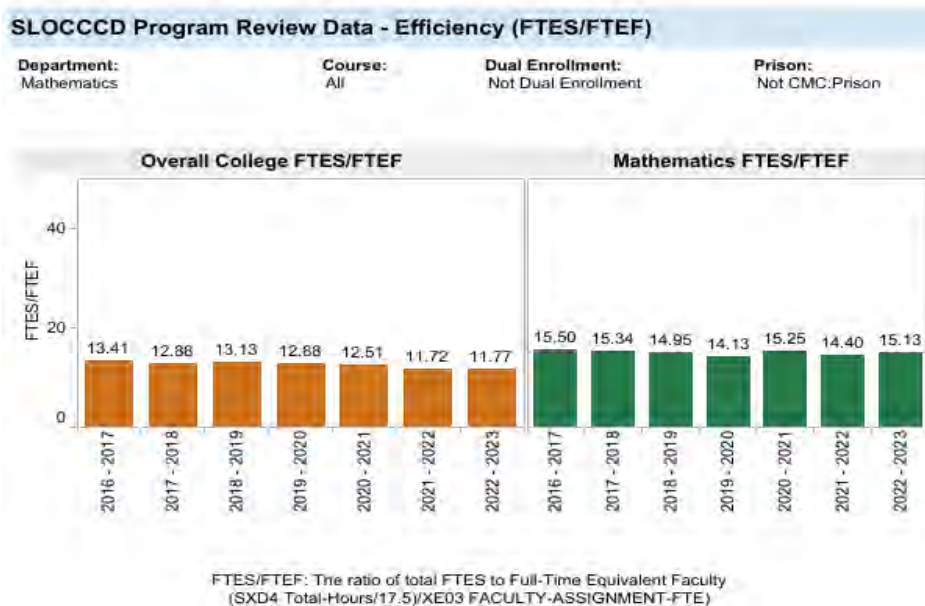
Insert the data chart and explain observed differences between the program and the college.



Although fill rates exceeded the fill rates for the college in 2022-2023, there are challenges in creating a schedule that meets the rapid changes in demand for the different types of math courses due to AB 1705. The Math Division has tried to offer the correct ratio of online courses vs face-to-face courses, but based on changing enrollment patterns it has been difficult to determine what that ratio should be. It is also difficult to predict

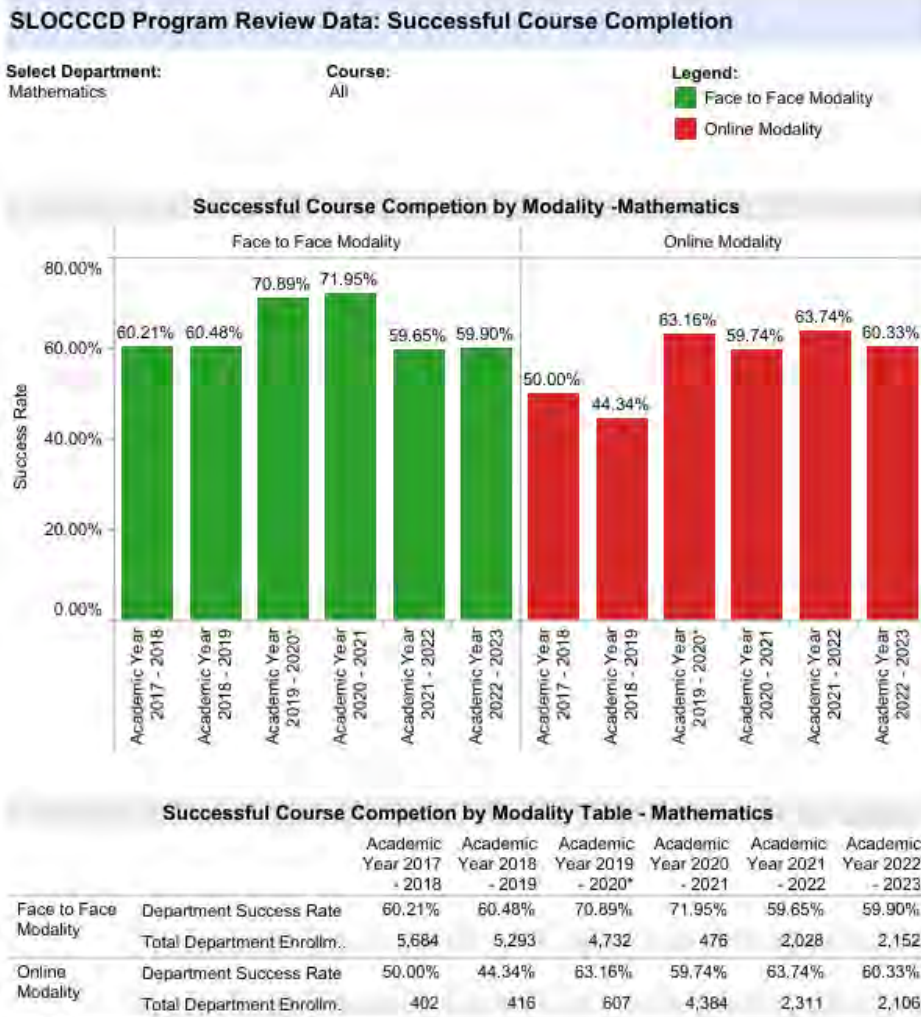
what math courses students will enroll in when they no longer can enroll in pre-transfer level courses. For example, returning students who may have been interested in pursuing a degree in a STEM field may no longer pursue that field, or even return to college, since they no longer have access to algebra courses. Students who did not master algebra in high school due to online learning during the Covid pandemic might decide that, since remediation is no longer an option, they are intentionally excluded from a college education. It is very difficult to predict which courses students will choose based on AB 1705, which is why we have seen some instability in our fill rates.

C. General Efficiency (FTES/FTEF) (Insert Aggregated Data Chart)



Despite the challenges with scheduling and implementation of AB 1705, the Mathematics Division significantly exceeds the overall college's efficiency levels. In 2020-2021 the math division efficiency was 24% higher than the overall college, in 2021-2022 it was 23% higher, and in 2022-2023 it increased to 29% higher than the overall college. Although efficiency has not been a driving factor in college planning since the college is currently funded by the hold harmless provisions of the Student-Centered Funding Formula, it will be imperative that efficiency is maximized once the hold harmless provisions end. The Mathematics Division will continue to maximize efficiency through effective scheduling and course development.

D. Student Success—Course Completion by Modality (Insert Data Chart)



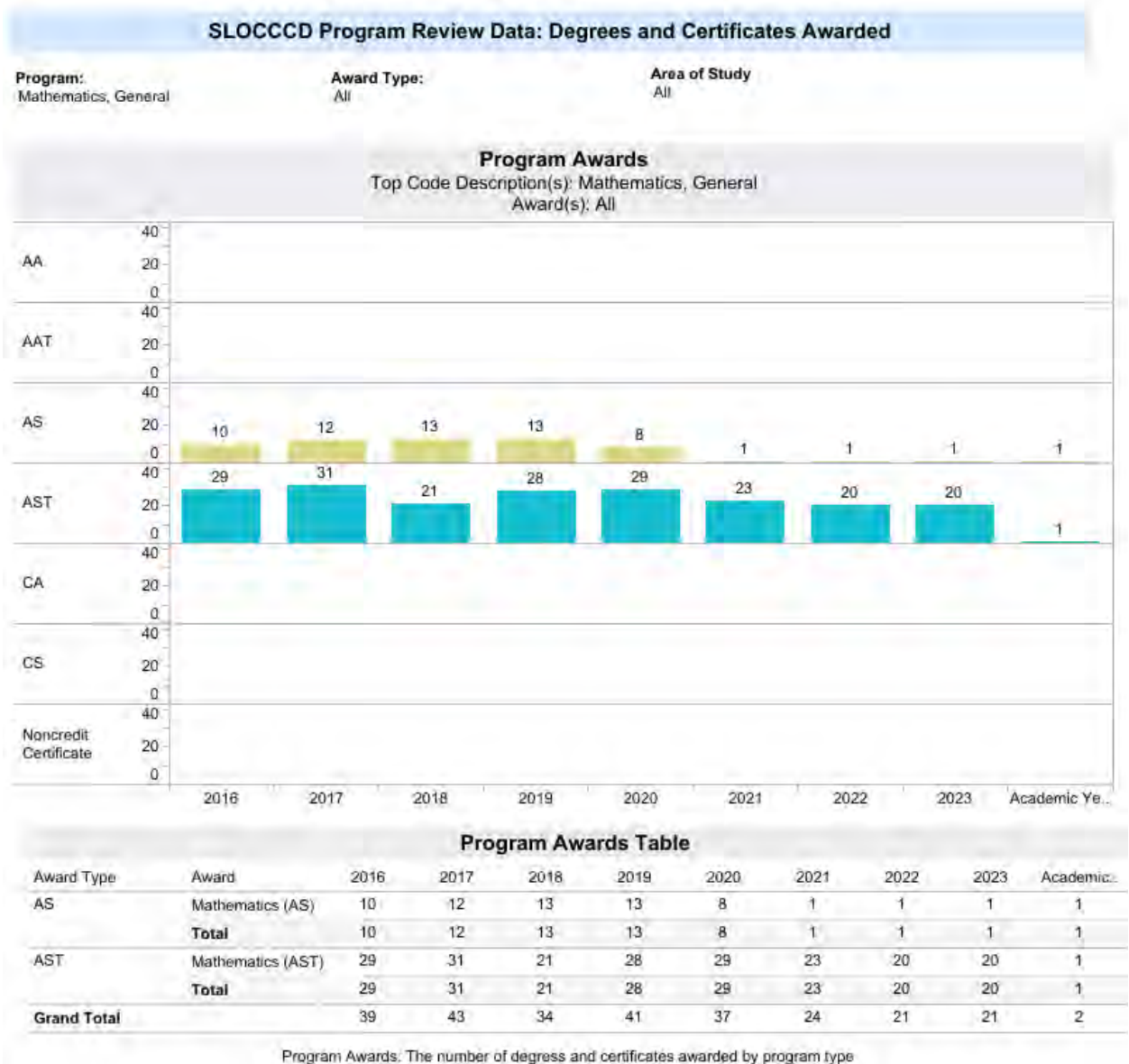
Prior to 2019-2020, we offered Math 123, 127, 232, and 247 online. After the acute stage of the pandemic, the Mathematics Division significantly increased online offerings, in line with the rest of the college. This is indicated by the jump from 606 students online in 2019 to 2,298 in 2021-2022. We maintain online offerings of Math 229, Math 230, Math 242, Math 255, Math 265A, and Math 265B that make it challenging to compare to years prior to 2020 without encountering several lurking variables.

One point worth noting is that division-wide, we continue to experience significant issues with

academic dishonesty in online courses that have online assessments. With the rise of ChatGPT and other AI engines, academic dishonesty has increased significantly. In response to these concerns, we shifted our STEM track courses to utilizing face-to-face, proctored exams between 2021-2022 and 2022-2023. While success rates dropped slightly in response to this change, it was a necessary change to preserve the academic integrity and the mission statement of Cuesta College. Math 242, the last STEM track course to have online assessments, will be shifting to having proctored face-to-face exams in Fall 2024 and there may be another slight drop in success rates with this change.

Our division continues to demonstrate a significant need for a proctoring center. Online students are disproportionately impacted by limited proctoring center hours and would benefit from more hours of availability to accommodate for their commutes, work schedules, and health.

E. Degrees and Certificates Awarded (Insert Data Chart)

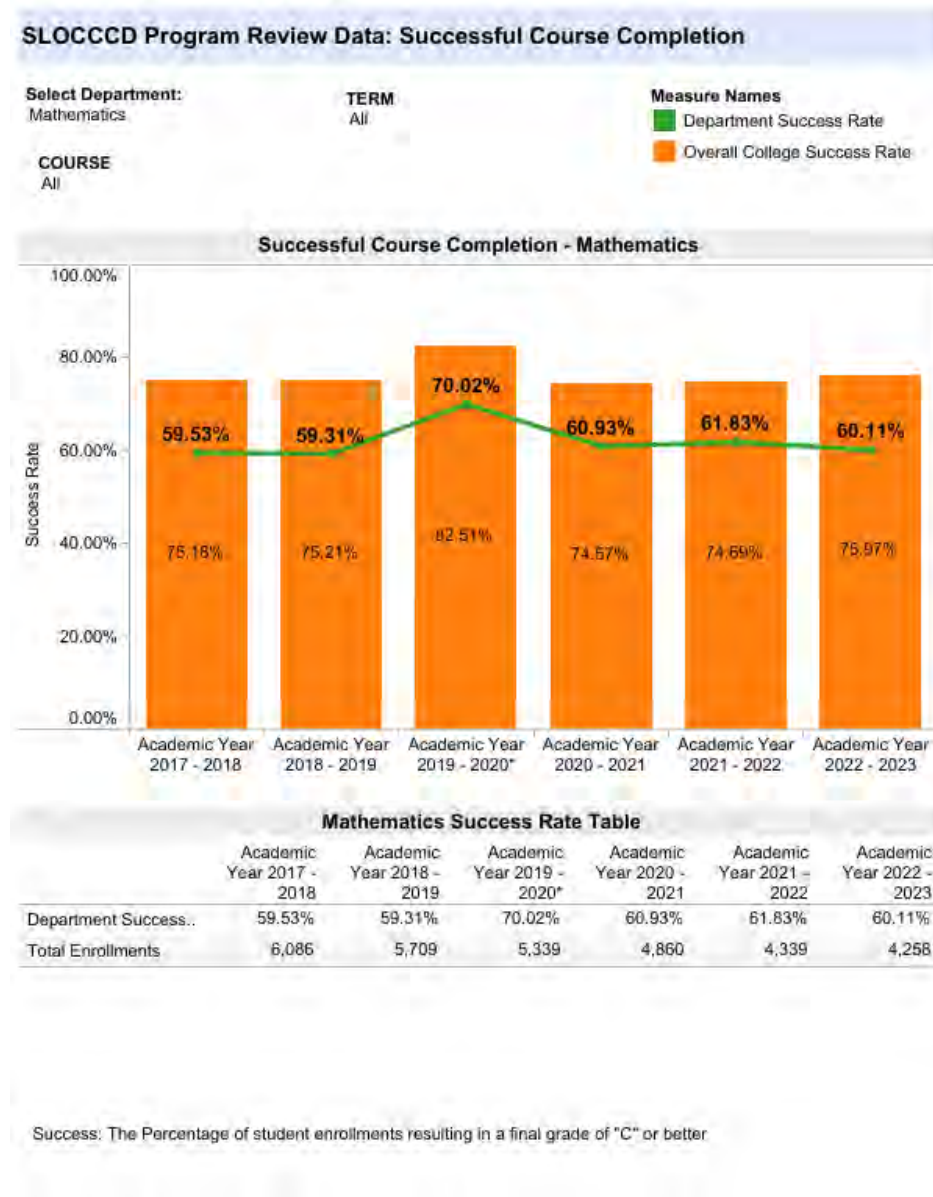


Cuesta College gave out the following associate degrees (by year): 1289 (2021), 2530 (2022), and 1748 (2023), with most of these being our local AA Liberal Arts degrees. Every one of the awarded degrees requires students to take at least one mathematics course, which is one of the primary missions of the Math division. For our Mathematics degree, new students are only able to earn the AS-T degree, but there are a few lingering local AS Math degrees that are still awarded due to catalog rights. To compare years, we should only look at Mathematics AS-T degrees awarded (by year): 29 (2020), 23 (2021), 20 (2022),

and 20 (2023). For 2022 and 2023, our Math AS-T degree accounts for approximately 7% of all AS-Ts awarded by Cuesta College. As noted in last year's APPW, our fill rates for Math 283 and 287 had been declining (46%) in 2021 – 2022 Academic year but the data for 2022-2023 showed an increase of 33% however we are not noticing the same pattern in degrees awarded. It is possible that other courses outside of math are the reason we are not seeing growth in our degrees. Hopefully with additional support of Guided Pathways we may see more students pursuing an AS-T in mathematics.

F. **General Student Success – Course Completion (Insert Aggregated Data Chart)**

Math Successful Course Completion



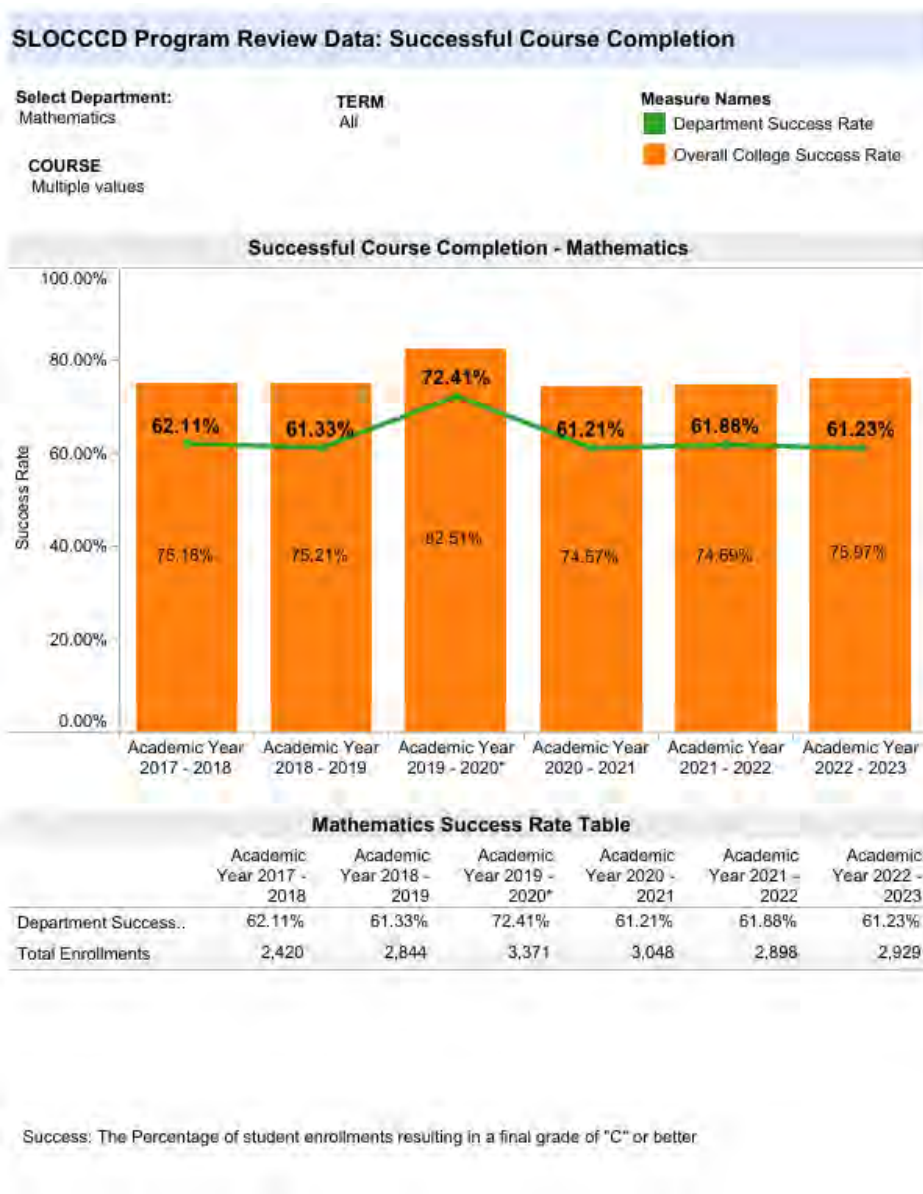
The success rates for Mathematics have remained relatively steady from 2017-2018 through 2022-2023, between 59-62%, with the exception of the Spring 2020 semester where the school awarded large numbers of EW's due to the abrupt shift online with the pandemic. Historically, the Mathematics student success rate has consistently been approximately 13-15% below the

overall college success rate, and that trend has continued.

For Fall 2018 the new MMAP matrix was used for placement, and in Spring 2019 we transitioned to AB 705 placement which allowed open access to all first-tier transfer level math courses. It is impressive that the first year MMAP and AB 705 were implemented, 2018-2019, the success rates remained similar to the previous year, given that the bulk of students in 2018-2019 were starting directly in transfer level courses. Then, as part of the mandates within AB 705 and AB 1705, the Mathematics Division began a process of eliminating developmental courses from our course offerings. Math 003 and Math 126 were last offered in 2018-2019. Math 126B and Math 123 were last offered the following year in 2020-2021. Math 007 was last offered the next year in 2021-2022. Math 127 was last offered spring semester of 2023.

In the past, we relied upon these developmental courses to refresh the algebra skills of incoming students and help to prepare them for more challenging transfer level courses. Yet our success rate remained relatively steady these past three years. Given the increase in underprepared students in our courses, both in foundational math skills and college study skills, this is a testament to the extensive work done by Math faculty and the Success Center staff to support our students with the sweeping changes that resulted with AB 1705. However, our enrollment also significantly declined over the last three years, so it could be that some underprepared students, and especially re-entry students, facing the loss of developmental courses they needed to prepare them for transfer level mathematics, simply chose not to take a math course and either changed their academic program of study or left the college altogether. We know this to be true in a number of cases anecdotally.

Successful Course Completion Math 220, 229, 230, 232, 242, 247 (Tier 1)

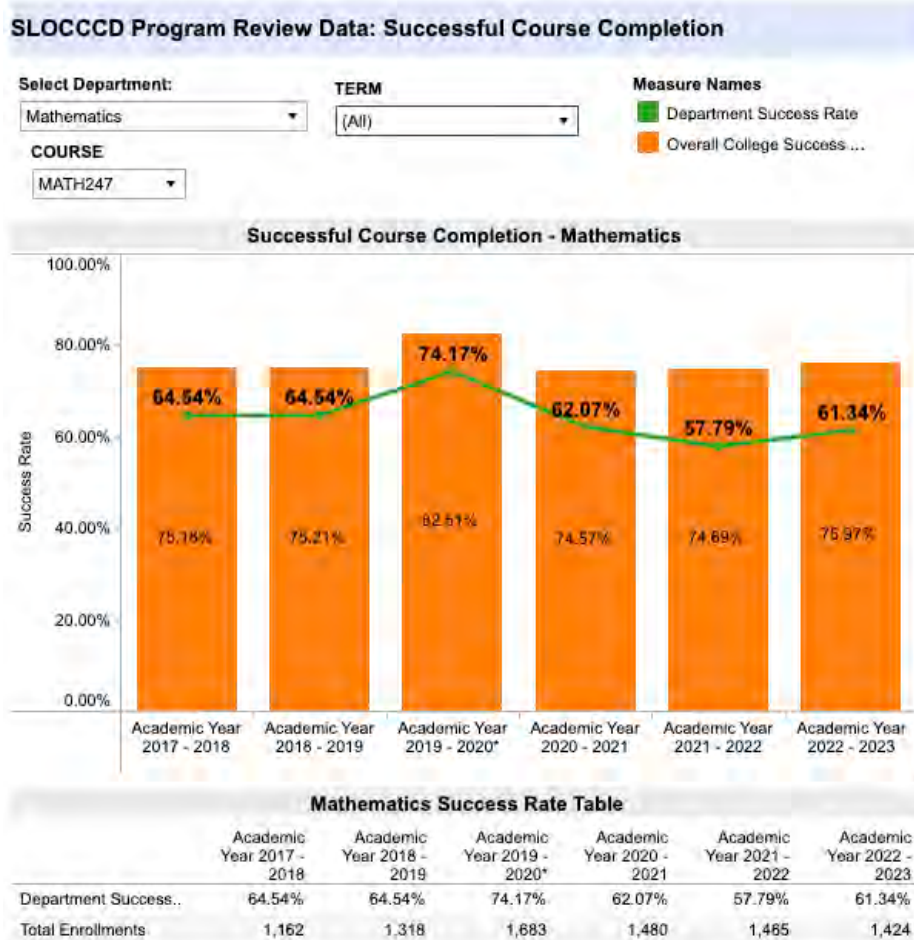


The success rate for our first-tier transfer level courses stays at a nearly constant rate between 61% and 63% whereas the success rate for the division stays at a nearly constant rate between 59% and 62%. This is not counting 2019-2020 where the Covid-19 lockdowns mucked up the data in spring 2020. There is a gap of roughly 13% between the division rate and the overall college rate. Math is hard and we expect to see this gap. Even though AB705 and Covid-19 lockdowns have dealt our math division higher numbers of unprepared students in our first-tier

transfer level courses, the nearly constant success rate is a bit of a surprise.

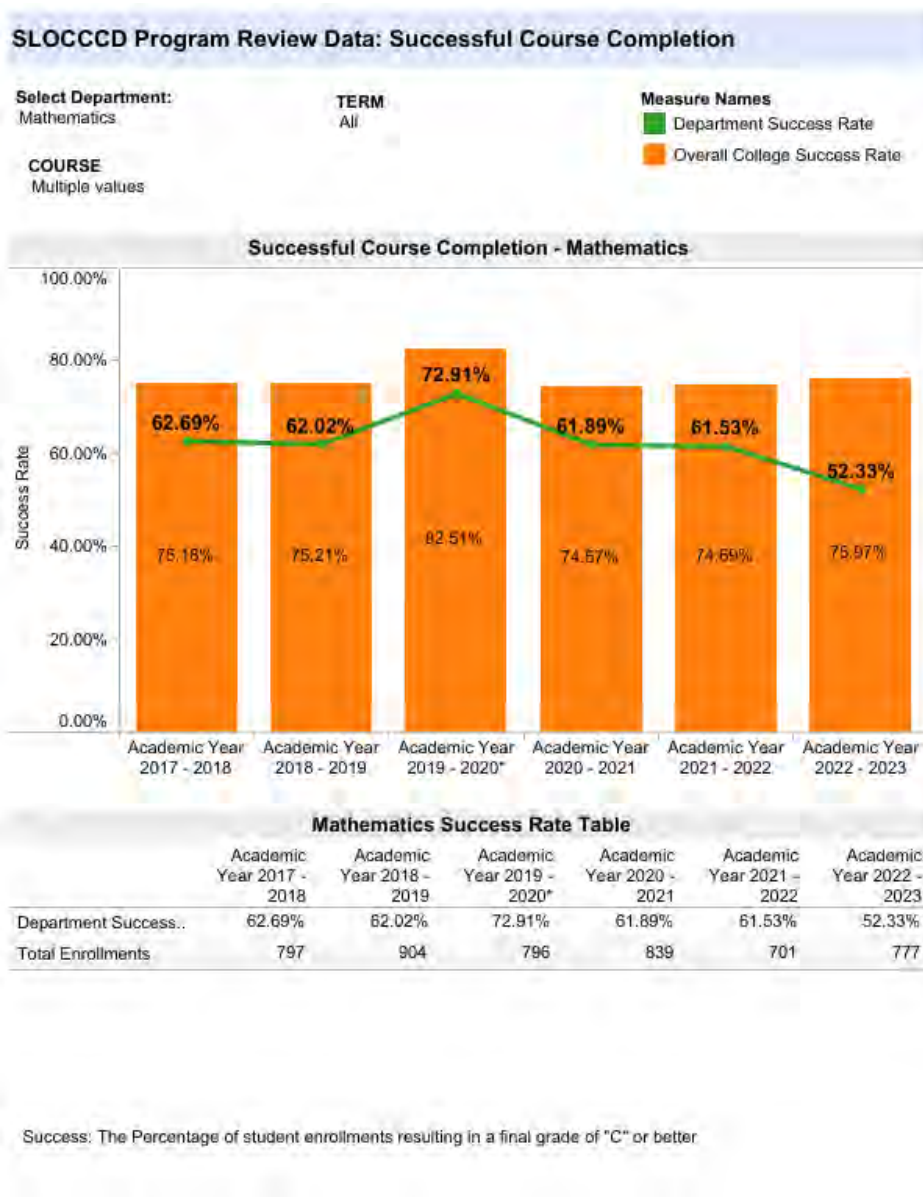
Also, with the implementation of AB1705 (essentially, the state outlawing algebra classes at community colleges), we expect to see a drop in the success rates for our first-tier transfer level courses. Although to this point, success rates have remained stable in these courses. This could be a function of students who truly need pre-transfer level math and English courses deciding that they no longer belong in college and dropping out, or never enrolling in the first place. These students may not decrease our success rates, since they are no longer counted, but they are no less important to us as the Math Division.

Successful Course Completion Math 247



Statistics success rates increased by about 6% in 2022-23 over 2021-22, yet still remain slightly lower than 2021 and earlier (excluding the pandemic year 2019-20). The success rates were expected to decrease after the implementation of AB705 in 2019, due to students being able to enroll in transfer level math classes without satisfying any prerequisite requirements. Given this drastic change in population enrolling in Math 247, the success rates remain surprisingly stable after 2020 vs before 2019. In fact, 2021-2022 was the only school year where Statistics had a lower success rate than the math division. Covid-19 lockdowns mucked up the data for 2019-2020. Statistics success rates were around 65% pre-pandemic and lower post-pandemic. There are more underprepared students due to AB705 and Covid-19 lockdowns. There are more online Statistics classes, and many of these online students would be more successful in face-to-face courses.

Successful Course Completion Math 265A, 265B, 283, 287 (Calculus)



With the implementation of AB1705, a drop in the success rates for MATH 265A, 265B, 283, and 287 comes as no surprise. Corequisite courses have been suggested. The California Master Plan stipulates

“The California Community Colleges have as their primary mission providing academic and vocational instruction for older and younger students through the first two years of undergraduate education (lower division). In addition to this primary mission, **the Community Colleges are authorized to provide remedial instruction**, English as a Second Language courses,

adult noncredit instruction, community service courses, and workforce training services.”

Perhaps this has fallen out of fashion what with AB705 and AB1705. Time will tell how this all works out but the drop in successful completions is telling.

The decline in success rates in our calculus course are driven in our decline in success rates for Math 265A, Calculus I, as discussed below.

Successful Course Completion Math 265A

SLOCCCD Program Review Data: Successful Course Completion

Select Department:
Mathematics

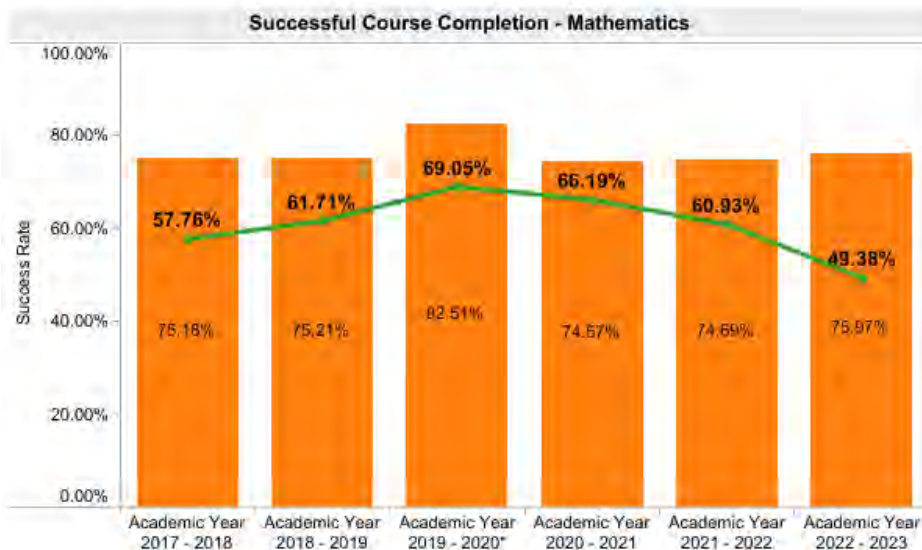
TERM
All

Measure Names

Department Success Rate

Overall College Success Rate

COURSE
MATH265A



Mathematics Success Rate Table

	Academic Year 2017 - 2018	Academic Year 2018 - 2019	Academic Year 2019 - 2020*	Academic Year 2020 - 2021	Academic Year 2021 - 2022	Academic Year 2022 - 2023
Department Success..	57.76%	61.71%	69.05%	66.19%	60.93%	49.38%
Total Enrollments	323	410	323	357	344	405

Success: The Percentage of student enrollments resulting in a final grade of "C" or better

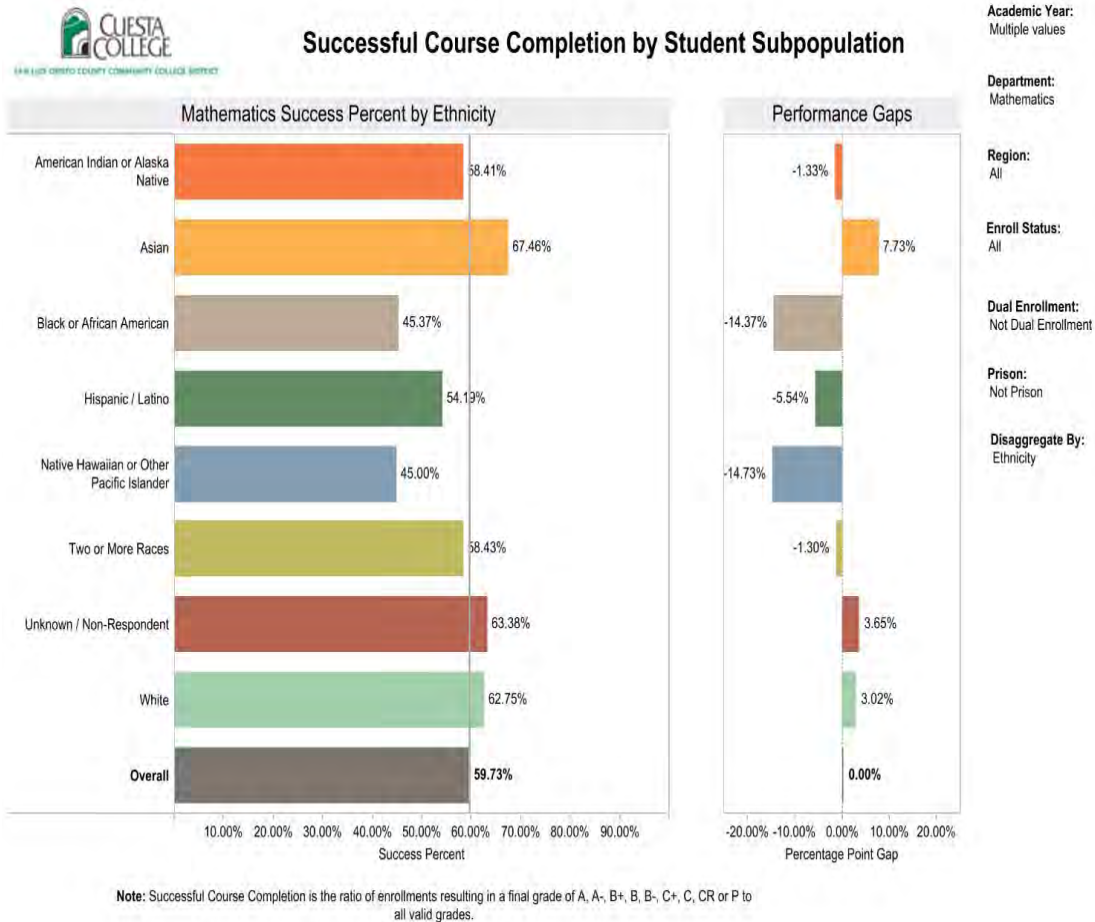
The dramatic decline in success rates in Calculus I from 60.9% in 2021-2022 to 49.4% in 2022-2023 is troubling to the Math Division. After further analysis, we determined this decline was driven primarily by a decline in success rates in online Math 265A courses. This decline could be impacted by the requirement that students who take online calculus courses must take face-to-face exams. Based on this data, the Math Division reduced the number of online Calculus I courses.

- G. Review the **Disaggregated Student Success** charts; include any charts that you will reference. Describe any departmental or pedagogical outcomes that have occurred as a result of programmatic discussion regarding the data presented.

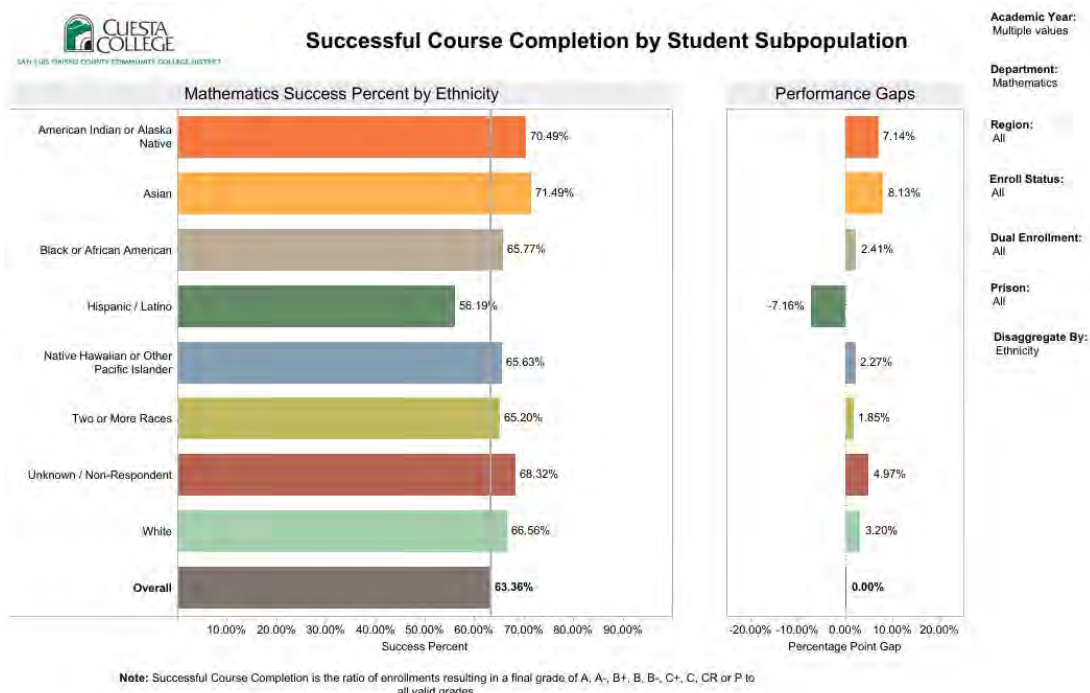
The following are some questions you might want to consider:

- What specific groups are experiencing inequities? What patterns do you notice in the data? How have the equity gaps changed since the previous academic year?
- What professional opportunities are your program faculty participating in to address closing equity gaps?
- What strategies, policies and/or practices in your program have you implemented or what could be improved to better support students who experience equity gaps?

Successful Course Completion Before Full AB705 Implementation (2016-2017, 2017-2018, 2018-2019)



Successful Course Completion After Full AB705 Implementation and Partial Implementation of AB 1705 (2019-2020, 2020-2021, 2021-2022, 2022-2023)



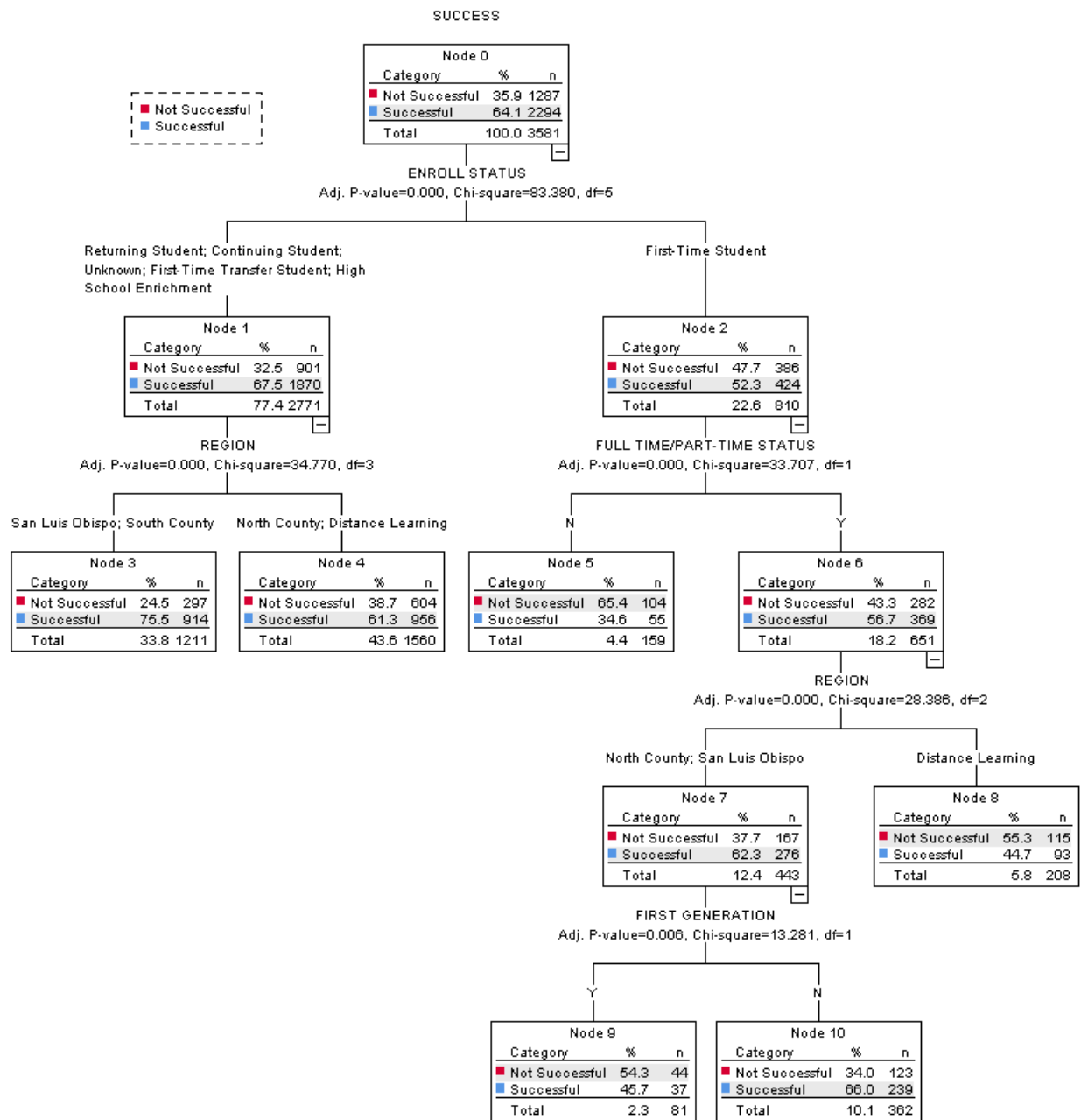
After implementation of AB 705, the success rates went up in all categories until the year 2021, specially among Native Hawaiian or other Pacific Islanders, with an increase of 17.5 percentage points, for a total average increase of 5.7 percentage points.

Considering the years 2022 and 2023 and compared to the year 2021, the success rates decreased slightly for Asian (a decrease of 0.26 percentage points), Hispanic/Latino (a decrease of 1.57 percentage points), White (a decrease of 0.49 percentage points), and overall (a decrease of 0.5 percentage points), while they increase for the rest, with special mention of the Black or African-American population, which experience an increase of 15.77 percent points.

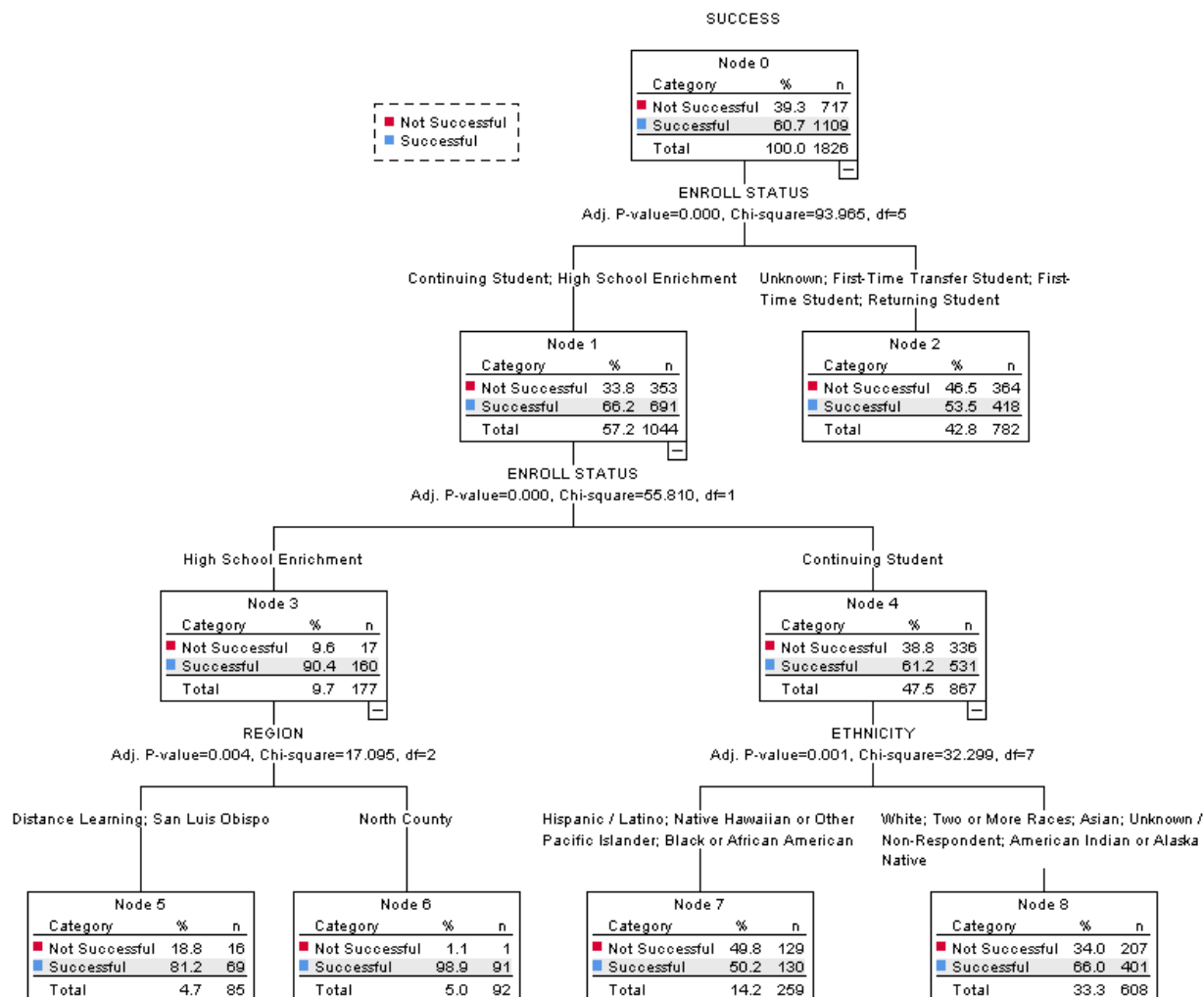
It is not possible to know what produced the increases in success rates after implementation of AB 705, but it might be correlated to the fact that we progressively returned to *normality*, with a more regular variety of classes (on campus, online, synchronous, asynchronous, late-start, etc.) able to better accommodate students in the learning modality they thrive the most at.

	Before	After Until 2021	After Until 2023		Difference Until 2021	Difference Until 2023	Differenc e 23-21
American Indian or Alaskan	58.41	62.07	70.49		3.66	12.08	8.42
Asian	67.46	71.75	71.49		4.29	4.03	-0.26
Black or African American	45.37	50	65.77		4.63	20.4	15.77
Hispanic/Latino	54.19	57.76	56.19		3.57	2	-1.57
Native Hawaiian or other Pacific Islander	45	62.50	65.63		17.5	20.63	3.13
Two or more races	58.43	64.58	65.2		6.15	6.77	0.62
Unknown/ non respondent	63.38	66.08	68.32		2.7	4.94	2.24
White	62.75	67.05	66.56		4.3	3.81	-0.49
Overall	59.73	63.86	63.36		4.13	3.63	-0.5

Test Sample - Math 247



Test Sample - Math 265A



In Fall 2023, the Math Division had a division wide Equity Retreat to discuss our desegregated equity data including the provided data trees. Based on this data we felt the best way to close the indicated equity gaps was to focus on first generation students in our first-tier math courses and to work to close the gaps between Latinx students and their peers on our STEM courses.

The Mathematics Division has continued its work towards closing and addressing these equity gaps. The division has been working closely with our STEM Student Success Team (SST) on several events and activities designed to make our students, particularly our Latinx students, feel more welcome. For example, these activities have included a Fall Welcome Event, cohort building registration event, and a meet and greet where students could have one-on-one conversations with representatives from different divisions, MESA and LSAMP. The division continues to be an active participant in the LSAMP (Louis Stokes Alliance for Minority Participation in STEM). The LSAMP program is a grant funded program that is part

of the C6 LSAMP alliance of eight community colleges who together are building a community to support underserved students in STEM. The goal of the alliance is to help students succeed and transfer to a four-year university in a STEM field. The program provides both academic and non-academic support systems such as:

- Tutoring: Embedded tutors are placed in the following gateway courses Physics 208A, Chemistry 201A, Math 242 and Math 265A.
- Transfer support: In addition to providing transfer workshops, the program also provides one on one support with all the steps of the transfer process.
- Scholarship and internship support: In addition to providing workshops on applying to scholarships and internships, we also provide one-on-one support in finding and applying to these types of opportunities.
- Research opportunities: In addition to guiding students to research opportunities, the program also provides funding for on campus research internships.
- Social Support and Community: Participants in the program have biweekly group luncheon gatherings on Friday afternoons.
- Professional Development and Networking: The program provides opportunities to attend conferences and mentorship workshops which include industry partners.
- Non-academic support: In addition to workshops, the program refers students to basic needs resources at Cuesta.

The following are some of Cuesta's LSAMP program's continued activities:

- Supported students in attending the HACU annual conference.
- Participated in the annual C6 Student Research Symposium at Cal Poly.
- Placed embedded tutors in chemistry and physics and math courses.
- Supported LLN (Latina Leadership Network) in the Día de los Muertos celebration.
- Gathered in community every other week on Fridays.
- Hosted multiple C6 workshops related to academic and professional success.

One of the major successes of the program so far is that students who have traditionally been underserved in STEM have a space where they feel welcomed, supported and celebrated.

Programs and Curriculum Review PROGRESS

- A. For the following questions, please refer to the 5-year update calendar in the [Curriculum Review Worksheet](#) (or classic template if your last CPPR was conducted before 2023) from your most recent CPPR.

List those programs of study (degrees and/or certificates) and courses that were scheduled for major or minor modification during the ____ year in the 5-year calendar of the Curriculum Review Worksheet.

[Click here to enter text.](#)

From the list generated in #1, identify those programs of study and courses that underwent the scheduled modifications during the ____ year. Complete the table below for those items only.

Program of Study OR Prefix and Course #	Major/Minor Modification (select one)	Date completed (semester and year)

From the list generated in #1, identify those programs of study and courses that did **not** undergo the modifications for which they were scheduled during the ____ year. Complete the table below for those items only.

Program of Study OR Prefix and Course #	Past Due Date for Modification	Briefly state why modification was not completed on schedule	Re-scheduled date for modification (must be within 1 year)

- B. For the following questions, please refer to Part A, #3 of the previous year's APPW (please also refer to any APPW completed since your most recent CPPR which have incomplete curriculum updates that aren't already referenced in the previous year's APPW).

List those programs of study and courses that are listed in previous APPW that were listed under #3. Complete the table below for those items only. If there were no courses included under #3 of previous APPW, please type "N/A" in the first row of the table.

Program of Study OR	Past Due Date for	Re-scheduled date for	Completed
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Prefix and Course #	Modification	modification	(yes or no)

From the list generated in #1, identify those programs of study and courses that did **not** undergo the modifications for which they were scheduled during the ____ year. Complete the table below for those items only. You may leave this table blank if you wrote “N/A” for the previous table.

Program of Study OR Prefix and Course #	Past Re-scheduled Due Date for Modification	Briefly state why modification was not completed as rescheduled	Second re-scheduled date for modification (must be within 6 months)

OTHER RELEVANT PROGRAM DATA (OPTIONAL)

Provide and comment on any other data that is relevant to your program such as state or national certification/licensure exam results, employment data, etc. If necessary, describe origin and/or data collection methods used.

PROGRAM OUTCOMES ASSESSMENT CHECKLIST AND NARRATIVE

CHECKLIST

- ☒ SLO assessment cycle calendar is up to date.
- ☒ All courses scheduled for assessment have been assessed in eLumen.
- ☐ Program Sustainability Plan progress report completed (if applicable).

NARRATIVE

Briefly describe program changes, if any, which have been implemented in the previous year as a direct result of the Program or Student Services Learning Outcomes Assessment. *If no program changes have been made as results of Program or Student Services Learning Outcomes Assessment, indicate: NONE.*

None

PROGRAM PLANNING / FORECASTING FOR THE NEXT ACADEMIC YEAR

Briefly describe any program plans for the upcoming academic year. These may include but are

not limited to the following: *(Note: you do not need to respond to each of the items below).*
If there are no forecasted plans for the program, for the upcoming year, indicate: NONE.

- A. New or modified plans for achieving program-learning outcomes and addressing equity gaps
- B. Anticipated changes in curriculum, scheduling or delivery modality
- C. Levels, delivery or types of services
- D. Facilities changes
- E. Staffing projections
- F. Other

A. There are no new plans regarding program learning outcomes. Please see the Disaggregated Student Success section on what the division has done and will continue to do to close equity gaps.

B. The primary change to curriculum is the elimination of all pre-transfer level mathematics courses from the course schedule as of the Summer 2023 semester. As recently as Fall of 2018, the Math Division had 67 sections of pre-transfer level math courses. In Fall of 2023, we have none. This represents the biggest curriculum change the division has ever experienced.

One step the division has taken to mitigate the negative impacts of AB705 and AB1705 is to continue utilizing ALEKS based support courses for students who are underprepared for transfer level math courses. ALEKS is a computer-based system that first evaluates what basic skills students need to work on, and then provides guided examples to help students work on those skills. Once students show proficiency in that subject, the program will move on to the next topic that students need to work on. The Mathematics Division has continued to purchase ALEKS course codes utilizing Lottery funds so that we can provide the courses to students free of charge. The use of ALEKS codes has grown as faculty, counselors and academic success coaches become more aware of which students can benefit from the courses.

In Fall 2023, the division offered Math 227, College Mathematics for Technical Fields in both the face-to-face and online modalities. The Mathematics Division will be discussing the outcomes for this course to determine if it needs to be modified to better support our students. For example, the division was recently notified that Psych Tech students no longer have a math requirement so we will need to modify our Math 227 course offerings on the North County Campus.

The division is also developing a new course, Math 248: Foundations of Data Science. Data Science is a rapidly expanding field of study, and this course will introduce Cuesta College students to the fundamental concepts of the field. The division has worked closely with faculty from Cal Poly in the modification of a course outline of record that was presented to the Curriculum Committee in early March 2023. We currently have a faculty member that has successfully applied for a sabbatical to research best practices for our Data Science course. We are on track to offer Math 248 in the Fall of 2025.

The Mathematics Division will continue to adjust the ratio between face-to-face and online math courses in consultation with the Dean, based on what faculty determine is best for student learning, student enrollment patterns and the divisions commitment to academic integrity. Given the massive changes in the number of online math courses offered due to the pandemic; 606 online enrollments in 19-20, 4351 in 20-21, 2298 in 21-22, and 2084 in 22-23, it is difficult to predict when these numbers will stabilize, and at what level. One

observable pattern in online math enrollments in 21-22 was that non-STEM online courses filled more quickly than STEM online courses relative to the corresponding face-to-face courses. In 22-23, this pattern was not as obvious, which shows the volatility in student demand. To help support the divisions commitment to academic integrity, we continue to increase the number of courses that require face-to-face or proctored exams. Although limited proctoring services have started to be provided again, the division will continue to work with other divisions and the Academic Senate to find a college wide proctoring solution that is like what the college provided in the Fall of 2022.

D. There are not any anticipated facilities changes for the division, since we were able to get the two North County Classrooms upgraded to the technology standards established for Cuesta College classrooms.

E. Given the decline in FTES based on AB705 and AB1705, the Mathematics Division continues to see a decline in the number of full-time faculty in the division. There continues to be a significant difference between the number of courses offered in the Fall semester versus the Spring semester. Currently, the larger number of courses demanded in the Fall semester can be accommodated by our part-time faculty, but the division will need to make sure this is still the case moving forward.

PROGRAM SUSTAINABILITY PLAN PROGRESS REPORT

This section only needs to be completed if a program has an existing Program Sustainability Plan. Indicate whether objectives established in your Program Sustainability Plan have been addressed or not, and if improvement targets have been met.

Area of Decline or Challenge	Identified Objective (Paste from PSP)	Planning Steps (Check all that apply)	Has the Improvement Target Been Met?
Enrollment		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one
Student Demand (Fill Rate)		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one
Efficiency (FTES/FTEF)		☐ Identified ☐ Resources Allocated	Select one

		☐ Implemented	
Student Success – Course Completion		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one
Student Success – Course Modality		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one
Degrees and Certificates Awarded		☐ Identified ☐ Resources Allocated ☐ Implemented	Select one

If Program Sustainability Plan is still necessary, provide a brief description of how you plan to continue your PSP and update your PSP to remove any objectives that have been addressed and include any new objectives that are needed.