

Student Progress Under California State University's Executive Order 1110

A Systemwide Analysis of Outcomes
in 2018/19

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Contents

Introduction	1
Overview of Findings	2
Overview of Methodology and Data	3
Cohort demographics and distribution by placement	4
Placement	5
Course categorization scheme	6

Findings	7
Credit accumulation during the first year of enrollment	9
Completion of General Education requirements in the first year	15
Student progress toward A2 and B4 completion, by semester	17
Course completion by course type	24

Conclusion	28
Appendix	29

LIST OF BOXES	
Box 1 — Cohort demographics at a glance	5
Box 2 — California State University placement categories, based on multiple measures	6

LIST OF FIGURES

Figure 1. Written Communication and Mathematics/Quantitative Reasoning placement status, CSU entering first-year students 2018	8
Figure 2. Percentages of students by race/ethnicity and Mathematics/Quantitative Reasoning placement I to IV, CSU entering first-year students 2018	9
Figure 3. Average baccalaureate units attempted and earned during the first year of college, by Mathematics/Quantitative Reasoning placement status, CSU entering first-year students 2018	11
Figure 4. Average baccalaureate units earned during the first year of college by students' race/ethnicity, by Mathematics/Quantitative Reasoning placement status, CSU entering first-year students 2018	13
Figure 5. Average baccalaureate units earned during the first year of college by declared major, by Mathematics/Quantitative Reasoning placement status, CSU entering first-year students 2018	14
Figure 6. Percentages of students meeting the General Education A2 requirement by the end of the first year by Written Communication Categories II to IV placement, CSU entering first-year students 2018	15
Figure 7. Percentages of students meeting the General Education B4 requirement by the end of the first year by Mathematics/Quantitative Reasoning Categories II to IV placement, CSU entering first-year students 2018	16
Figure 8. Percentages of students by type of Written Communication courses taken in the first semester, CSU entering first-year students 2018 placed in Categories II to IV	18
Figure 9. Percentages of students by type of Mathematics/Quantitative Reasoning courses taken in the first semester, CSU entering first-year students 2018 placed in Categories II to IV	20
Figure 10. B4 course-taking pathways of CSU entering first-year students 2018/19	23
Figure 11. Completion rates by course type and placement category for courses meeting the A2 requirement taken by students placed in Written Communication Categories II to IV, CSU entering first-year students 2018	25
Figure 12. Completion rates by course type and placement category for courses meeting the B4 requirement taken by students placed in Mathematics/Quantitative Reasoning Categories II to IV, CSU entering first-year students 2018	27

LIST OF TABLES

Table 1. Second semester A2 completion for students who did not complete the A2 requirement by the end of the first semester, CSU entering first-year students 2018 in placement II to IV	19
Table 2. Second semester B4 completion for students who did not complete the B4 requirement by the end of the first semester, CSU entering first-year students 2018 in placement II to IV	21

Introduction

WestEd is undertaking a multiyear series of implementation studies intended to inform the California State University (CSU) system about the implementation of Executive Order 1110 (EO 1110). A major policy adopted by the CSU Chancellor's Office in 2017, EO 1110 requires CSU campuses to eliminate non-credit developmental courses in Written Communication (WC) and Mathematics/Quantitative Reasoning (QR), change the process for how students are placed into WC and QR courses, and improve how students are supported to succeed. WestEd's first EO 1110 report,¹ issued in 2019, illustrates the variation in course models and instructional approaches adopted by campuses in response to this major policy change. This second report looks at the progress of nearly 60,000 students during the first year of implementation of the policy, the 2018/19 academic year.

This report is situated in the California state policy context regarding the importance of understanding how students make their way into, and through, postsecondary education options. Elapsed time, student indebtedness, market-ready skill building, economic returns to education, and the opportunity costs of postsecondary education all factor into the policy context. Consistent with this context, through its Graduation Initiative 2025 (GI 2025), the CSU system, over the past several years, has placed a major emphasis on improving graduation rates and reducing time to degree for its diverse student body, with a particular focus on reducing the gap in graduation rates between traditionally underrepresented students and their peers. EO 1110 is one part of this larger strategy and is focused on helping students succeed in their entry-level WC and QR courses in their first year of enrollment. The policy is intended to support students to complete these entry-level General Education courses in their first year of study, which sets them up to take courses in their major in a timely fashion. In addition, since students are no longer required to take non-credit developmental courses, per EO 1110, they are theoretically able to earn more baccalaureate-level units from the beginning, which can help reduce their time to degree.

¹ College-Ready in the California State University System: Campus Experiences Implementing EO 1110, available from <https://www.wested.org/resources/college-ready-csu-system/>.

This report looks at how students are faring under the new policy, and includes an analysis of credit accumulation and of students' progression toward General Education WC and QR requirements, both key metrics for the system in meeting the GI 2025 goals. The report also looks at how course completion rates differ based on the different types of courses and supports offered. Findings from the first year provide an overview of how students in the new placement categories are faring with regard to their credit accumulation and progress toward meeting the WC and QR requirements (also referred to as the A2 and B4 requirements, respectively)² and allow for comparison across placement categories and across the different types of course offerings. With the recent conversations in the CSU system on potential admissions policy changes around QR, these data also shed some additional light on the variation in progress toward the B4 requirement, controlling for earlier preparation patterns in math.

Given that the 2018/19 academic year was the first year of EO 1110 implementation, it is too early to fully understand the impact of the new policy, but this analysis provides a picture of how students in the different placement categories progressed during this first year. Future reports will include comparisons with cohorts of students who entered the CSU system as first-year students in the 2017/18 and 2019/20 academic years. The lessons learned from these studies are intended to serve as resources for planning, redesign, and long-term data collection in subsequent years.

Overview of Findings

This report represents a first look at how students are progressing under the new EO 1110 policy. The report focuses on relative progress of students in the different placement categories (defined in Box 2, on page 6) and through the different types of course offerings. General observations on the systemwide outcomes in the first year of full implementation include:

- The vast majority of students were placed in Category II in both WC (74 percent) and QR (63 percent).
- Higher percentages of Black/African American and Hispanic/Latino students were placed in Category III or IV, relative to their representation in the student body as a whole. Black/African American and Hispanic/Latino students comprised 55 percent of the cohort overall, but comprised 71 percent of the population of students placed into QR Category IV.
- There were statistically significant differences in the outcomes for students in the four placement categories, in terms of both overall units accumulated and completion of the General Education requirements. Students in Category IV accumulated fewer units, on average, and had higher attrition rates and lower rates of completion of the A2 and B4 requirements than students in other placement categories.

² Under the CSU systemwide General Education requirements, Written Communication is identified as the A2 subarea requirement and Mathematics/Quantitative Reasoning as the B4 subarea requirement.

- Approximately 73 percent of fall 2018 entering first-year students systemwide had completed the B4 requirement by the end of the 2018/19 academic year; this percentage is an increase from the three previous academic years, when approximately 63 percent of entering first-year students completed the B4 requirement in their first year.
- The differences across placement categories in terms of students' completing the General Education requirement in their first year were more pronounced in QR than in WC.
- For both WC and QR, lack of completion in the first semester was strongly related to what happened in the second semester. The majority of students who attempted but did not complete either the A2 or B4 course in the first semester did not enroll in an A2 or B4 course in the second semester.
- Students who were successful in the first semester stretch courses tended to be successful in the second semester stretch courses. This was particularly true in WC, where 84 percent of students who completed the first semester stretch course completed the A2 requirement in the first year.

Systemwide outcomes tell only one part of the story in a system as large and diverse as the CSU system. Course structures and supports described in this report are necessarily broad and cannot capture the nuanced differences from campus to campus. It will be important for CSU faculty to understand how their own students are faring under this new policy, and, in particular, whether students are having success under the various supported course structures currently in place.

Overview of Methodology and Data

The findings in this report are based on WestEd researchers' analysis of data on course enrollment, provided by the CSU Chancellor's Office, and on a course categorization scheme developed by WestEd staff. The analytic sample for this study consists of 59,790 students — those who were entering the CSU system as first-year students in fall 2018 and who were enrolled in any of the CSU campuses except San Bernardino and San Luis Obispo. Those two campuses were excluded because they include a winter term, and patterns of credit accumulation at those campuses are not exactly comparable to patterns at the other CSU campuses. Overall credits attempted and accumulated are based on data provided by the CSU Chancellor's Office for all courses taken by entering first-year students during the 2018/19 academic year. Individual courses included in this analysis include WC or QR courses that either met the A2 or B4 General Education requirement or served as prerequisite or first semester stretch courses leading up to the A2 or B4 requirement.

The analyses address the following questions about enrollment and completion in the first year of the study:

1. What were the average number of baccalaureate credits attempted and the average number accumulated during the first year of enrollment by students in each of the placement categories (I to IV)?
 - Did the averages vary by racial and gender characteristics?
 - Did the averages vary by STEM and non-STEM majors?
2. What percentage of entering first-year students in 2018/19 placed in each of the Written Communication Categories II to IV completed the A2 requirement in their first year? What percentage of entering first-year students in 2018/19 placed in each of the Mathematics/Quantitative Reasoning Categories II to IV completed the B4 requirement in their first year?
3. What were the different paths that students took toward meeting the A2 or B4 requirements in their first year? What percentage of students attempted and completed each different course type (using WestEd's course categorization) in the first semester?³
4. For students in each of Categories II to IV, what were the completion rates for each different course type?

All findings of significance in this report represent statistically significant differences based on the statistical test that was conducted. This report's appendix displays the frequencies and percentages of students represented in the figures included in the body of the report, and, for continuous variables such as average units earned, also provides the mean, median, and mode. Notes under figures in the report include references to the corresponding appendix table(s).

Cohort demographics and distribution by placement

Box 1 shows the breakdown of the 59,790 students in the cohort by gender, race/ethnicity, and declared major. Of the entering first-year students in 2018/19, 58 percent were female, and about 51 percent were Hispanic/Latino. More than 39 percent of the cohort had declared a STEM or health-related STEM major upon entry.

³ See the "Course categorization scheme" section beginning on page 6 for information on how WestEd researchers categorized the course types for addressing research questions 3 and 4.

Box 1 — Cohort demographics at a glance

57.8% Female

Race/Ethnicity⁴

- 51.2% Hispanic/Latino
- 18.6% White
- 17.8% Asian
- 7.4% Multiple/Unknown
- 4.4% Black/African American
- 0.6% Other

Declared Majors

- 33.3% Not STEM
- 32.0% STEM (excludes Health-Related STEM)
- 14.5% Undeclared
- 13.1% Business
- 7.1% Health-Related STEM

Note: The "Other" category includes American Indian, Alaska Native, Native Hawaiian, and Other Pacific Islander students. The numbers of students by demographic characteristics are presented in Tables A1–A3 in the appendix.

Placement

The EO 1110 policy changed the way in which incoming students were placed into entry-level WC and QR courses. The new policy replaced the previously used placement exams with a series of multiple measures to determine student placement in one of four placement categories in each of the two content areas. The placement categories are described in Box 2.

⁴ Note that this analysis uses the IPEDS Race/Ethnicity reporting categories. CSU uses a slightly different method to report race/ethnicity, in which any students who are non-U.S. citizens with an "F," "J," or "other" visa, or who are non-U.S. citizens with no visa or undetermined status, are put into their own category as International Students/Non-Resident Alien Students.

Box 2 — California State University placement categories, based on multiple measures

Category I: Has fulfilled the General Education Subarea A2 or B4 requirement.

- Student has met the CSU GE Breadth Subarea A2 and/or B4 requirement via Advanced Placement I (AP) examination, International Baccalaureate (IB) examination, or transferable course.

Category II: Placement in a General Education Subarea A2 or B4 course.

- Student has met examination standards and/or multiple measures–informed standards.

Category III: Recommend placement in a supported General Education Subarea A2 or B4 course.

- Based on new multiple measures, student needs additional academic support.
- Participation in the Early Start Program⁵ is recommended and may be highly advisable for some students, particularly STEM majors.

Category IV: Require placement in a supported General Education Subarea A2 or B4 course or the first term of an applicable stretch course.

- Based on new multiple measures, student needs additional academic support.
- Participation in the Early Start Program is required.

Note: Placement categories for WC and QR courses are determined by a combination of student grades and test scores. For a detailed description of the various ways in which a student can be placed into the different categories, see <http://csustudentsuccess.org/multiple-measures>.

Course categorization scheme

EO 1110 calls upon campuses to eliminate their non-credit developmental courses and to develop or revise entry-level WC and QR courses that provide additional supports for students. In the first report in this series, WestEd researchers categorized the range of strategies and approaches that campuses are using to provide additional supports to students in entry-level courses.⁶ Although there is variation throughout the system, the research team found four broad categories of courses:

- Traditional single-semester courses;
- Single-semester courses with additional supports provided for students placed in Categories III and IV — variations may include a separate one-unit support module, embedded support with additional hours per week built into the course structure, or peer support and tutorials offered through supplemental instruction;

⁵ The Early Start program provides incoming first-year students the opportunity to enroll in WC or QR courses, with additional supports provided, in the summer prior to the term for which they have been admitted.

⁶ For a more complete explanation of the course categorization scheme, see Appendix B of *College-Ready in the California State University System: Campus Experiences Implementing EO 1110*, available from <https://www.wested.org/resources/college-ready-csu-system>.

- Multiterm sequences that use either a two-semester stretch model (in which the content of the traditional one-semester General Education course is “stretched” over two semesters) or a prerequisite model (in which students enter into a General Education course after completing a first term prerequisite); and
- Small-unit support courses, which typically are one-unit support modules that provide additional support or review of basic skills for students designated as needing additional assistance.

Researchers used this course categorization scheme to examine the different paths that students took toward meeting the A2 and B4 requirements, and to review completion rates, by placement category, for the different General Education course types.

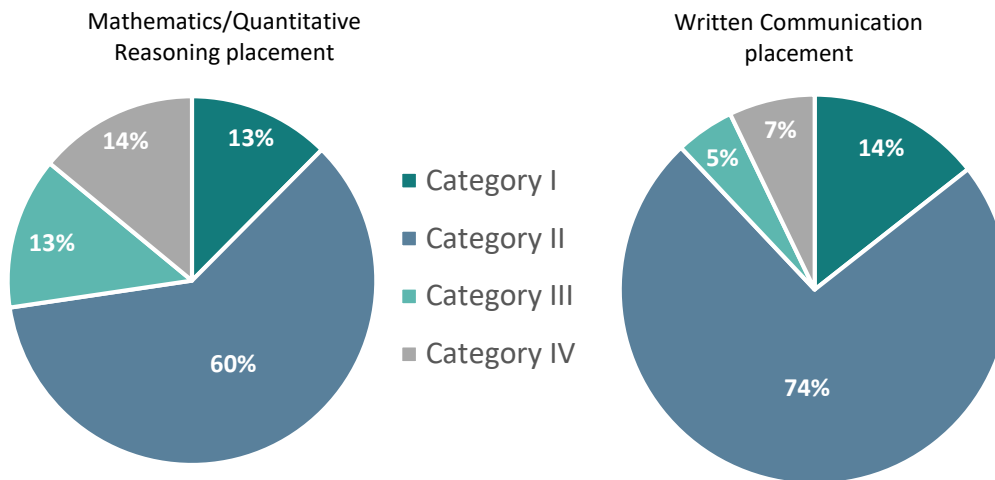
Findings

The majority of students were placed in Category II in both content areas; about 27 percent of entering first-year students in 2018 were placed in QR Category III or IV, and about 12 percent were placed in WC Category III or IV.

Figure 1 shows student placement status as of fall 2018 in both Written Communication (WC) and Mathematics/Quantitative Reasoning (QR).⁷

⁷ For placement status variables, researchers used the augmented indicators provided by the CSU Chancellor's Office, which incorporate AP flag for Quantitative Reasoning from ETS, B4 Self flag from summer course-taking prior to fall entry, and early start GE B4 credit. Placement status, therefore, is as of entry in fall 2018.

Figure 1. Written Communication and Mathematics/Quantitative Reasoning placement status, CSU entering first-year students 2018

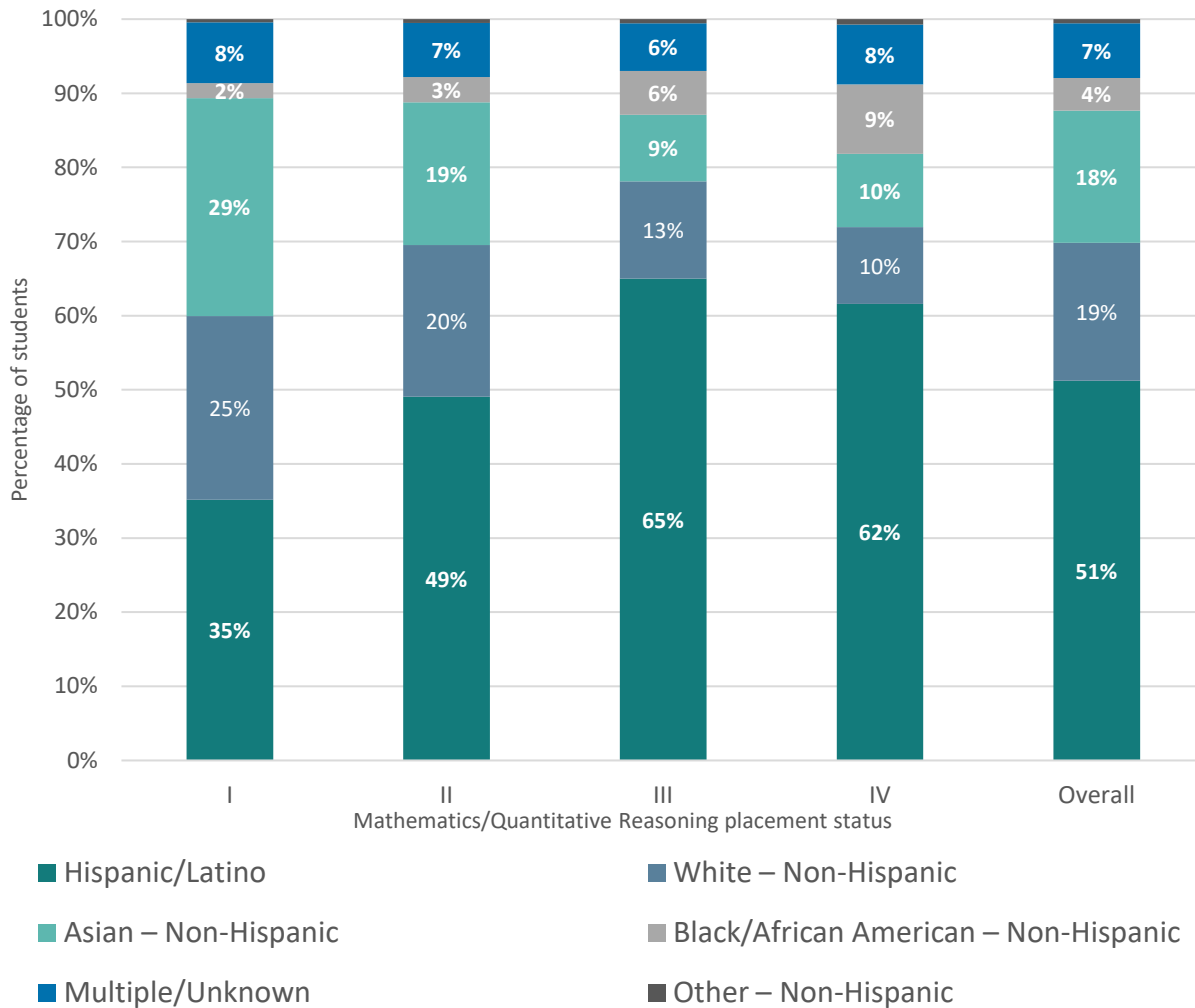


Note: There were 59,790 CSU entering first-year students in 2018. The numbers of students by QR and WC placement categories are presented in Tables A4 and A5 in the appendix.

There were differences in the racial/ethnic composition of students in the different placement categories, compared to the composition of the cohort as a whole.

The percentages of Hispanic/Latino and Black/African American students placed into QR Categories III and IV were much greater than their representation in the cohort as a whole (Figure 2). For example, Hispanic/Latino and Black/African American students comprised 55 percent of the cohort overall, but comprised 71 percent of the population of students placed into QR Category IV. (QR placement status was chosen for this and other analyses of differences across placement categories because there is a greater distribution of students among the four categories in QR than in WC.)

Figure 2. Percentages of students by race/ethnicity and Mathematics/Quantitative Reasoning placement in Categories I to IV, CSU entering first-year students 2018



Note: There were 59,790 CSU entering first-year students in 2018. The numbers of students by race/ethnicity and QR Categories I to IV are presented in Table A6 in the appendix.

Credit accumulation during the first year of enrollment

To analyze credit accumulation in the first year of enrollment, researchers examined the average number of baccalaureate credits attempted and earned by students placed in QR Categories I through IV. Because some students did not continue to take courses in the second semester, attrition can impact the average number of credits attempted and earned. Researchers examined credit accumulation first for all students in the cohort, and then also for the subset of students who were continuously enrolled (i.e., who attempted some units in both the fall and spring semesters in the 2018/19 academic year).

The average numbers of baccalaureate units attempted and earned during the first year of college decreased with each subsequent level (from I to IV) of QR placement status.

Analyzing full-year credit accumulation for all students who started in the fall 2018 cohort is important because it is consistent with the CSU system's objective that the math requirement be fulfilled completely, successfully, and efficiently by entering first-year students. The campuses serve all entering first-year students who enroll in at least one course, and these students are considered part of the entering cohort for analytic purposes. However, in the second semester, some students may enroll in fewer units than in the first semester, or may choose not to re-enroll at their campus at all. From the perspective of the initial starting cohort from fall 2018, this will lower the number of units attempted and earned. It is important to understand how and whether these enrollment averages differ across the different placement categories, and the extent to which student attrition helps to explain the pattern.

Of all students in the cohort, those placed in Category I earned an average of about 27 baccalaureate units per student during their first year of college, significantly more than the average earned by students in other placement categories (Figure 3). The differences between placement categories in earned baccalaureate units stayed significant throughout the cohort, with students placed in Category II averaging about 25 units, students placed in Category III averaging about 23 units, and students placed in Category IV averaging about 20 units.⁸ The difference between the average units completed by students placed in Category I and Category IV represents the equivalent of close to two courses (7 units). While the differences between units *attempted* by students in each of the four categories were smaller than the differences between units *earned* in each category, the gap between the average numbers of baccalaureate units attempted and earned during the first year of college increased with QR placement status, from fewer than 2 units for students placed in Category I to more than 5 units for students placed in Category IV.⁹

Figure 3 also presents the average baccalaureate units earned and attempted during the first year for the subset of students who were continuously enrolled during their first year of college. As expected, for these students, the averages are higher, since students who did not attempt any units in at least one of the semesters are not included in the estimate. The decrease observed in the average units attempted and earned by QR placement status is less pronounced for students who were continuously enrolled. For these students, the difference between the average units completed for Category I students and for Category IV students represents the equivalent of more than one course (5 units). Again, the differences between units attempted by students in each of the four categories were smaller than the differences between units earned (about two units between Category I and Category IV).

The differences shown in Figure 3, between the full cohort of students and those who were continuously enrolled, can likely be attributed to differences in attrition by placement category. For example, while the percentage of all students in QR Category I who were not continuously enrolled was only 3 percent,

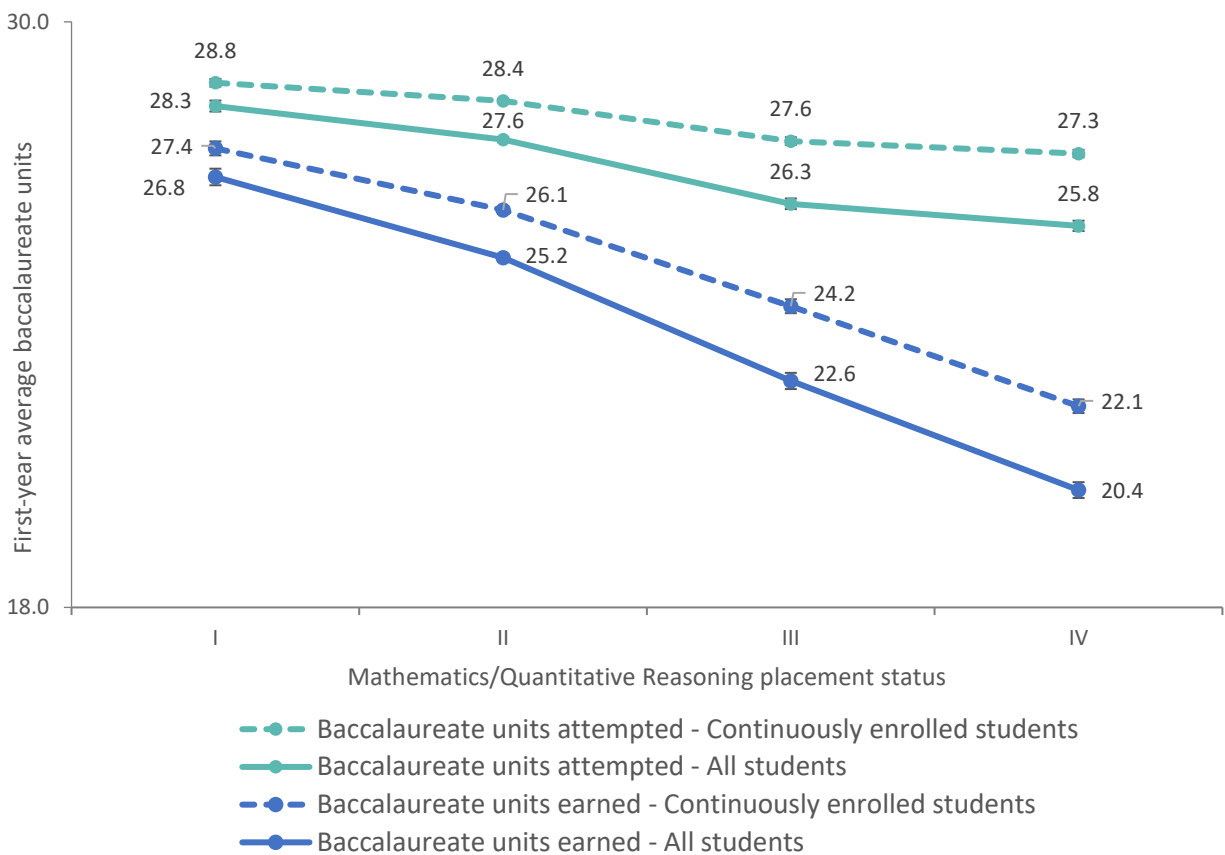
⁸ All pairwise differences were tested using Least Squares Means (SAS GLM Procedure) and adjusted for multiple comparisons using a Bonferroni correction.

⁹ Ratios for units attempted to units earned for all students, by placement category, are included in Table A9 in the appendix.

this percentage increased to 5 percent for students placed in QR Category II, to 8 percent for students placed in QR Category III, and to 10 percent for students placed in QR Category IV.

CSU considers a student who earns 15 or more units per semester, and 30 or more units per academic year, to be “on track” to graduate in four years. While the average credit accumulation is below that threshold in all QR placement categories, an analysis of the mode shows that the most frequent outcome for units earned by students in Category I and Category II was 30, while the most frequent outcome for units earned by students in Category III and Category IV was 27.

Figure 3. Average baccalaureate units attempted and earned during the first year of college, by Mathematics/Quantitative Reasoning placement status, CSU entering first-year students 2018

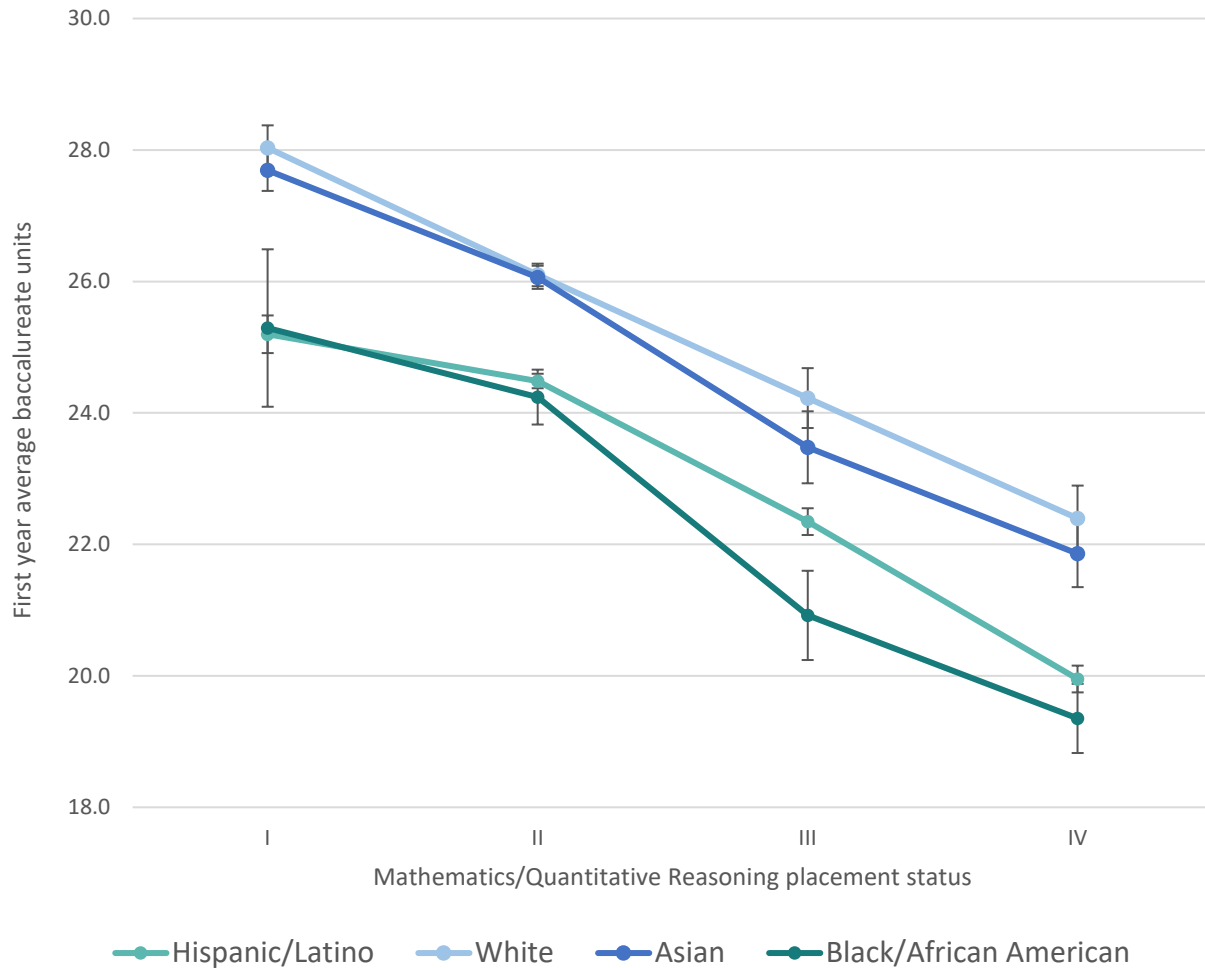


Note: “All students” refers to all 59,790 CSU entering first-year students in fall 2018; “Continuously enrolled students” refers to students who attempted at least one credit in both the fall 2018 and spring 2019 terms. Least Squares Means were computed using SAS GLM Procedure, and the pairwise comparisons were adjusted for multiple comparisons using a Bonferroni correction. The error bars on the graph indicate the 95 percent confidence limits interval. The numbers of students and average baccalaureate units attempted and earned by QR placement category (All students and Continuously enrolled students) are presented in Tables A7–A12 in the appendix. Tables A13–A18 provide additional detail on credits attempted and earned by semester for students who enrolled in at least one unit in that semester.

Although the numbers of units attempted were comparable across race/ethnicity categories, the average number of baccalaureate units earned during the first year of college varied by race/ethnicity within QR placement status.

The average numbers of baccalaureate units earned by White and Asian students were significantly higher than the average numbers of units earned by Black/African American students and Hispanic/Latino students (Figure 4). The differences were most pronounced for students placed in Category IV.

Figure 4. Average baccalaureate units earned during the first year of college by race/ethnicity, by Mathematics/Quantitative Reasoning placement status, CSU entering first-year students 2018

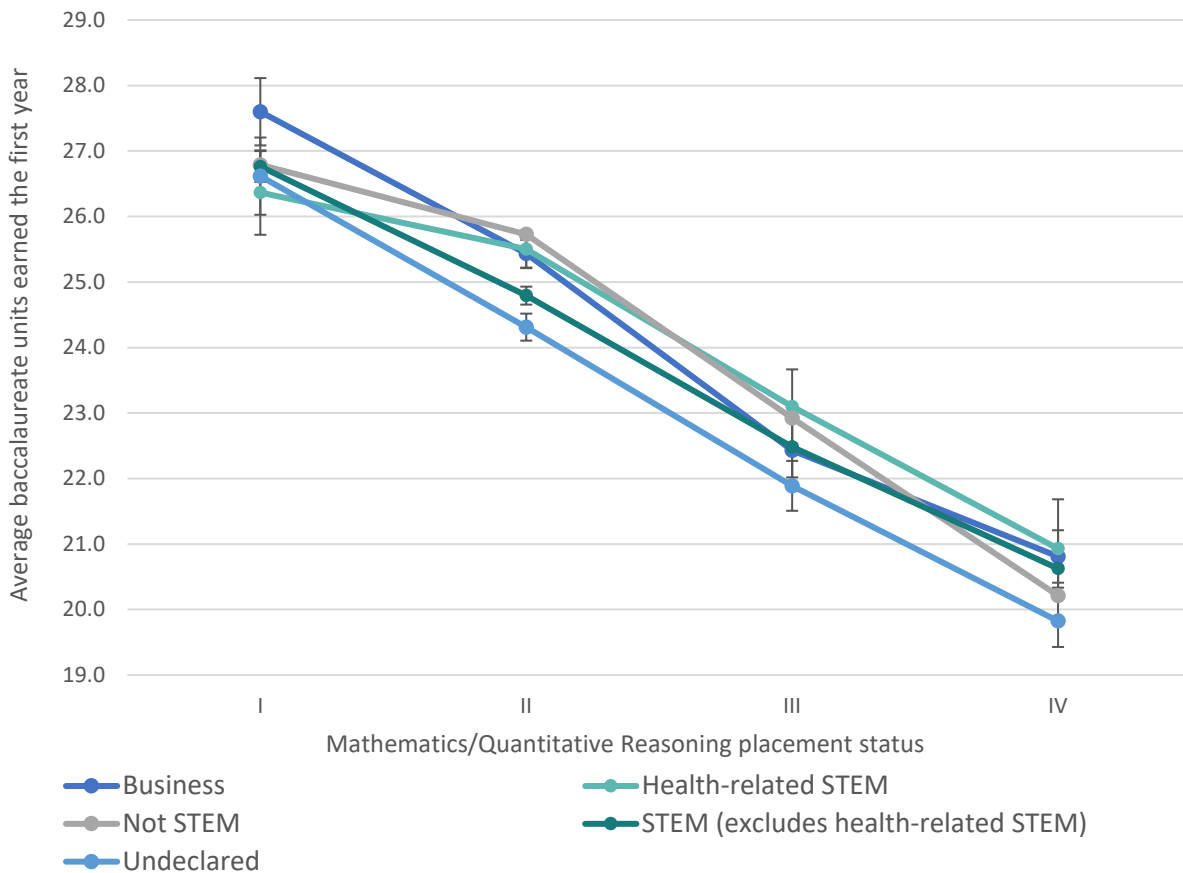


Note: There were 59,790 CSU entering first-year students in 2018. White, Asian, Black/African American, and Other categories refer to Non-Hispanic students. The categories Multiple/Unknown and Other were included in the model but, for readability, are not presented here. Least Squares Means and confidence intervals were computed using SAS GLM Procedure, and the pairwise comparisons were adjusted for multiple comparisons using a Bonferroni correction. The error bars indicate the 95 percent confidence limits interval. The numbers of students and average baccalaureate units attempted and earned by race/ethnicity and placement are presented in Tables A19–A21 in the appendix. Tables A22–A24 in the appendix include information on credits attempted and earned for students who were continuously enrolled in both semesters, by race/ethnicity and QR placement status.

Across all levels of QR placement status, the average number of baccalaureate units earned during the first year of college generally did not vary significantly based on declared major.

Most differences in average number of baccalaureate units between declared majors were not significant in Categories I, III, and IV (Figure 5). Of note is that students with undeclared majors earned the fewest units, on average, of students in each of the four placement categories. These differences were statistically significant in Category II, where students with an undeclared major earned significantly fewer units than students in all other majors. For Categories III and IV, these differences were only significant between undeclared majors and those majors with the highest numbers of units earned.

Figure 5. Average baccalaureate units earned during the first year of college by declared major and by Mathematics/Quantitative Reasoning placement status, CSU entering first-year students 2018



Note: There were 59,790 CSU entering first-year students in 2018. Least Squares Means and confidence intervals were computed using SAS GLM Procedure, and the pairwise comparisons were adjusted for multiple comparisons using a Bonferroni correction. The error bars indicate the 95 percent confidence limits interval. The numbers of students and average baccalaureate units attempted and earned by major and placement are presented in Tables A25–A27 in the appendix. Tables A22–A24 in the appendix include information on credits attempted and earned for students who were continuously enrolled in both semesters, by declared major and QR placement status.

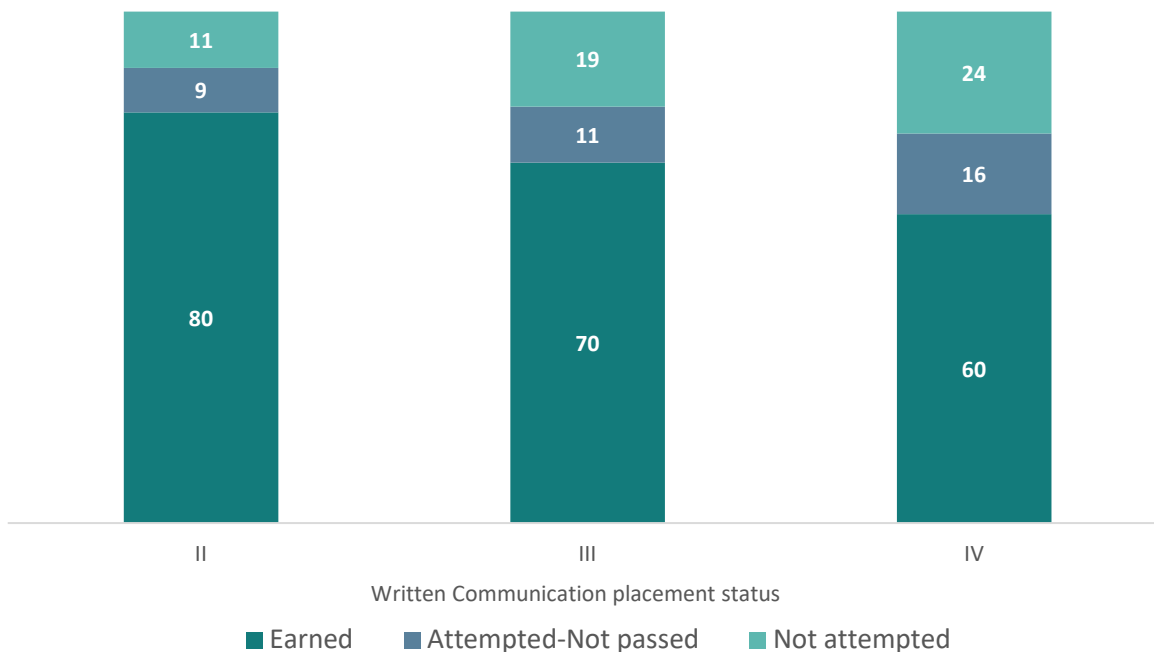
Completion of General Education requirements in the first year

One of the goals of the EO 1110 policy is to encourage more students to complete the A2 and B4 General Education requirements in the students' first year of college. Since all students designated as Category I have, by definition, already met the requirements, WestEd researchers analyzed progress toward these requirements for students in Categories II, III, and IV only. The differential progress of the students — across the categorization levels — is the key finding with direct implications for how students progress toward greater credit attainment, as well as toward degree attainment several years down the line.

The percentage of students meeting the A2 requirement in the first year varied with WC placement.

About 80 percent of students placed in WC Category II met the A2 requirement in the first year (Figure 6). In contrast, 60 percent of students placed in WC Category IV met the A2 requirement by the end of the year. Nearly a quarter of students placed in WC Category IV at entry had not yet attempted a course classified as meeting the A2 requirement by the end of the academic year.

Figure 6. Percentages of students meeting the General Education A2 requirement by the end of the first year, by Written Communication Categories II to IV placement, CSU entering first-year students 2018

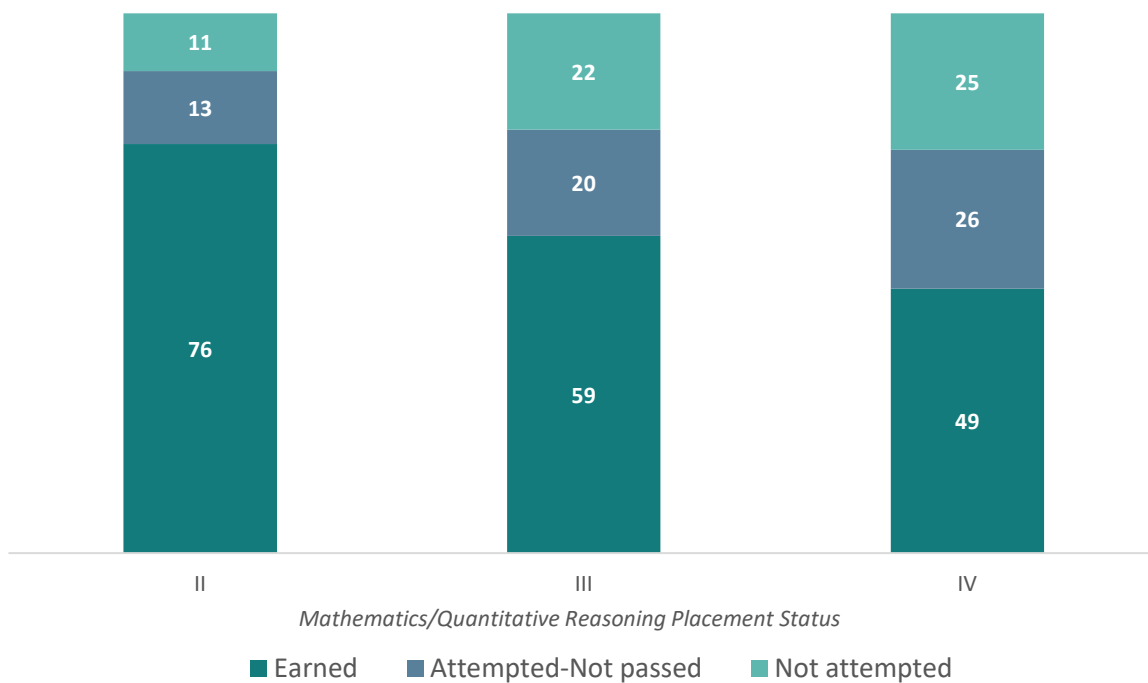


Note: There were 51,177 CSU entering first-year students placed in WC Categories II to IV in 2018, including 43,987 in Category II, 2,921 in Category III, and 4,263 in Category IV. The numbers of students by WC placement status and WC placement category are presented in Table A28 in the appendix.

The percentage of students meeting the B4 requirement in the first year varied with QR placement.

About three quarters of students placed in QR Category II met the B4 requirement in the first year (Figure 7). In contrast, about 50 percent of students placed in QR Category IV met the B4 requirement by the end of the year, a wider gap than for the A2 requirement. Similar to the WC requirement, one quarter of students placed in QR Category IV at entry had not yet attempted a course classified as meeting the B4 requirement by the end of the academic year. This pattern is particularly notable in QR courses because students with a gap between high school and college-level math often struggle with conceptual and procedural fluency. Recency — the strategy of ongoing work in course content — mitigates some risk for students. Individual campuses may wish to review these data for their own cohorts, to determine strategies for advising students about the importance of taking math courses early in their college career.

Figure 7. Percentages of students meeting the General Education B4 requirement by the end of the first year, by Mathematics/Quantitative Reasoning Categories II to IV placement, CSU entering first-year students 2018



Note: There were 52,357 CSU entering first-year students placed in Mathematics/Quantitative Reasoning Categories II to IV in 2018, including 36,009 in Category II, 7,963 in Category III, and 8,385 in Category IV. The numbers of students by QR placement status and QR placement category are presented in Table A29 in the appendix.

Based on additional data provided by the CSU Chancellor's Office,¹⁰ overall percentages of students completing the A2 and B4 requirements were higher in 2018/19 than in previous years. When students who enroll having already met the requirement (i.e., Category I students in 2018) are included, the percentage of entering first-year students meeting the A2 requirement in the first year increases from 79 percent in 2017 to 81 percent in 2018. The increase is more significant for QR, for which approximately 63 percent of entering first-year students in each of the three previous years completed the B4 requirement in their first year of college, compared with approximately 73 percent of entering first-year students in 2018/19.

Student progress toward A2 and B4 completion, by semester

As part of the EO 1110 policy, campuses are encouraged to support students in completing the General Education requirements in the students' first year. To understand the different paths that students have taken toward meeting the A2 or B4 requirement in their first year, researchers examined students' first semester course-taking patterns, then looked at academic year outcomes based on first semester outcomes. This analysis only included students in Categories II through IV (by definition, students in Category I have already completed the requirements). The analysis groups courses into three primary categories:

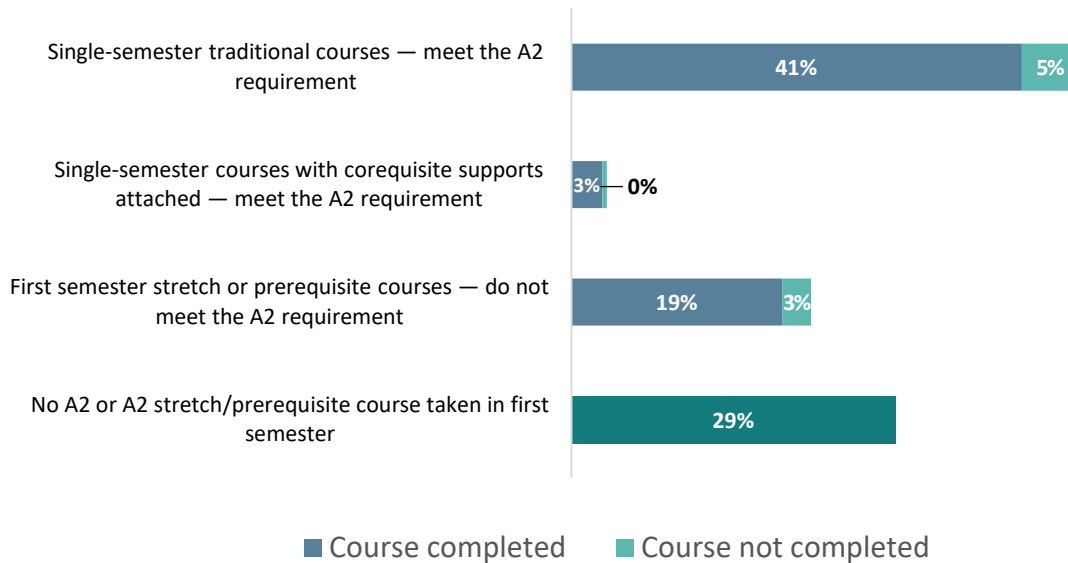
- Single-semester traditional courses that meet the A2 or B4 requirement;
- Single-semester courses that meet the A2 or B4 requirement and that have corequisite supports attached; and
- First semester stretch or prerequisite courses (including those that offer corequisite supports) that do not meet the A2 or B4 requirement.

Written Communication courses

Most of the WC courses taken by students in Categories II through IV in the fall of 2018 were either single-semester traditional courses or first semester stretch or prerequisite courses (Figure 8). A small percentage of students enrolled in A2 single-semester courses with corequisite supports attached. This finding was not surprising given that many campuses had previously developed two-semester stretch models and therefore did not need to develop new corequisite support models in WC. Completion rates in the three types of courses were comparable, at about 88 percent. As a result, among first-year students placed in Categories II to IV (i.e., students who had yet to meet the A2 requirement), approximately 44 percent completed an A2 course in the first semester, and another 19 percent completed the first semester of a stretch or prerequisite course. Another 29 percent did not attempt either an A2 course or an A2 stretch or prerequisite course in the first semester.

¹⁰ Data provided via email communication from Tanya Figueroa, Assistant Director of Program Analytics, CSU Chancellor's Office.

Figure 8. Percentages of students by type of Written Communication courses taken in the first semester, CSU entering first-year students 2018 placed in Categories II to IV



Note: There were 51,177 CSU entering first-year students placed in WC Categories II to IV in 2018. The numbers of students by WC placement category and type of WC course taken in the first semester are presented in Table A30 in the appendix.

Table 1 shows the academic year outcomes for the students who did not complete the A2 requirement in the first semester, based on their first semester outcomes. Overall, 61 percent of the 28,914 students who had yet to complete their A2 requirement at the end of the first semester completed it during the second semester. Notably, 84 percent of those who completed the first semester stretch or prerequisite course completed the A2 requirement in the second semester. Additionally, 58 percent of the students who did not attempt an A2 course or an A2 stretch or prerequisite course in the first semester completed the requirement in the second semester. In contrast, less than 20 percent of students who attempted but did not complete an A2 course in the first semester completed the requirement in the second semester. The majority (62%) of students who attempted but did not complete an A2 course in the first semester did not attempt the course a second time.

Among students who attempted but did not complete an A2 stretch or prerequisite course in the first semester, 10 percent completed the A2 requirement by the end of the year by attempting and completing an A2 course, while the large majority (79 percent) did not attempt an A2 course in the second semester.

Table 1. Second semester A2 completion for students who did not complete the A2 requirement by the end of the first semester, CSU entering first-year students 2018 placed in Categories II to IV

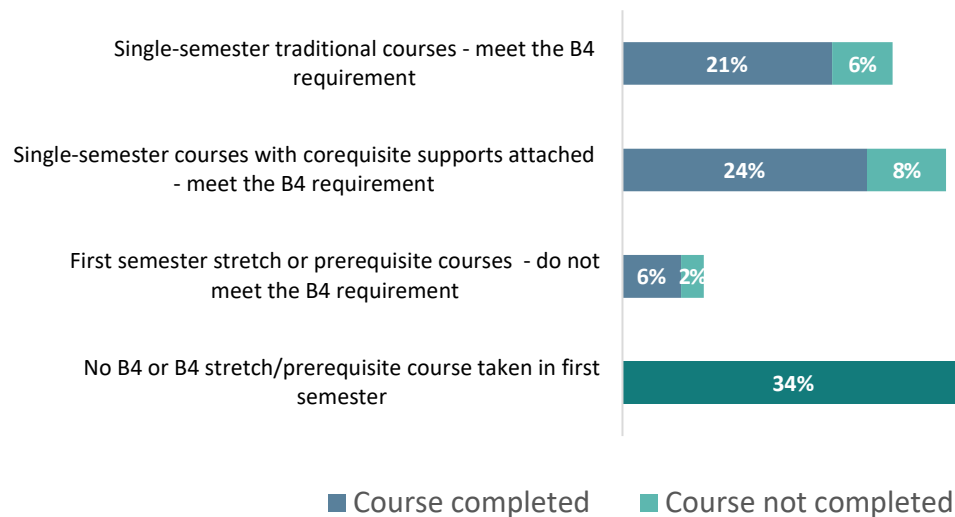
First semester A2 result	Second semester Number of students	Second semester Did not attempt an A2 course	Second semester Attempted but did not complete an A2 course	Second semester Completed an A2 course
Completed a first semester A2 stretch or prerequisite course	9,779	5%	10%	84%
Attempted but did not complete a first semester A2 stretch or prerequisite course	1,317	79%	11%	10%
Attempted but did not complete an A2 course in the first semester (including those with corequisite support)	2,815	62%	19%	19%
No A2 or A2 stretch or prerequisite course taken in the first semester	15,003	32%	9%	58%
All A2 non-completers after the first semester	28,914	28%	11%	61%

Note: There were 28,914 CSU entering first-year students in 2018 in WC Categories II to IV who had not completed their A2 requirement by the end of the first semester. The 79 percent of students who attempted but did not complete a first semester A2 stretch or prerequisite course and who did not attempt an A2 course in the second semester includes 10 percent who repeated and completed the first semester stretch or prerequisite course in the second semester, and 13 percent who repeated but did not complete the course. The 32 percent of students who did not take an A2 or A2 stretch or prerequisite course in the first semester and who did not attempt an A2 course in the second semester includes 2 percent who took and completed the first semester stretch or prerequisite course in the second semester. Percentages may not add up to 100 percent due to rounding.

Mathematics/Quantitative Reasoning courses

The corequisite-supported course model was more common in QR than in WC. Among students placed in Categories II through IV (those who had yet to meet the B4 requirement), almost a third took single-semester courses with corequisite supports in QR during the first semester, while only 8 percent took courses designated as first semester stretch or prerequisite courses (Figure 9). About a quarter of the students placed in Categories II through IV took B4 single-semester traditional courses, and another 34 percent of students did not attempt any type of B4 course or B4 stretch or prerequisite course in the first semester. Completion rates in the three types of courses were approximately 78 percent for single-semester traditional courses, 76 percent for single-semester courses with corequisite supports, and 72 percent for first semester stretch or prerequisite courses. As a result, 21 percent of first-year students in QR placement II to IV completed a traditional B4 course in the first semester, and another 24 percent completed a single-semester B4 course with corequisite supports.

Figure 9. Percentages of students by type of Mathematics/Quantitative Reasoning courses taken in the first semester, CSU entering first-year students 2018 placed in Categories II to IV



Note: There were 52,357 CSU entering first-year students placed in QR Categories II to IV in 2018. The numbers of students by QR placement category and type of QR course taken in the first semester are presented in Table A31 in the appendix.

Table 2 shows the academic year outcomes for the students who did not complete the B4 requirement in the first semester, based on their first semester outcomes. Students who were not successful in the QR courses studied in this analysis in their first semester generally were not successful in those courses in their second semester. Overall, only 44 percent of the 28,980 students who had yet to complete their B4 requirement at the end of the first semester completed it during the second semester. Of the students who attempted but did not complete a B4 course (either traditional or corequisite supported) in the first semester, approximately three quarters did not complete the requirement in the second semester, and a majority (54%) did not even attempt the course a second time. Of the students who did not attempt a B4 course in the first semester, about half (52%) did complete the requirement in the second semester. These patterns reinforce the general finding that students who demonstrate challenges in course completion early in their college experience have substantial difficulty catching up and progressing.

Of the students who completed a stretch or prerequisite course in the first semester, 59 percent went on to complete the B4 requirement in the second semester, and 20 percent did not attempt a second semester B4 course. Among students who attempted but did not complete a B4 stretch or prerequisite course in the first semester, approximately 7 percent completed the B4 requirement by attempting and completing a B4 course by the end of the year, while a majority (88 percent) did not attempt a B4 course in the second semester.

Table 2. Second semester B4 completion for students who did not complete the B4 requirement by the end of the first semester, CSU entering first-year students 2018 placed in Categories II to IV

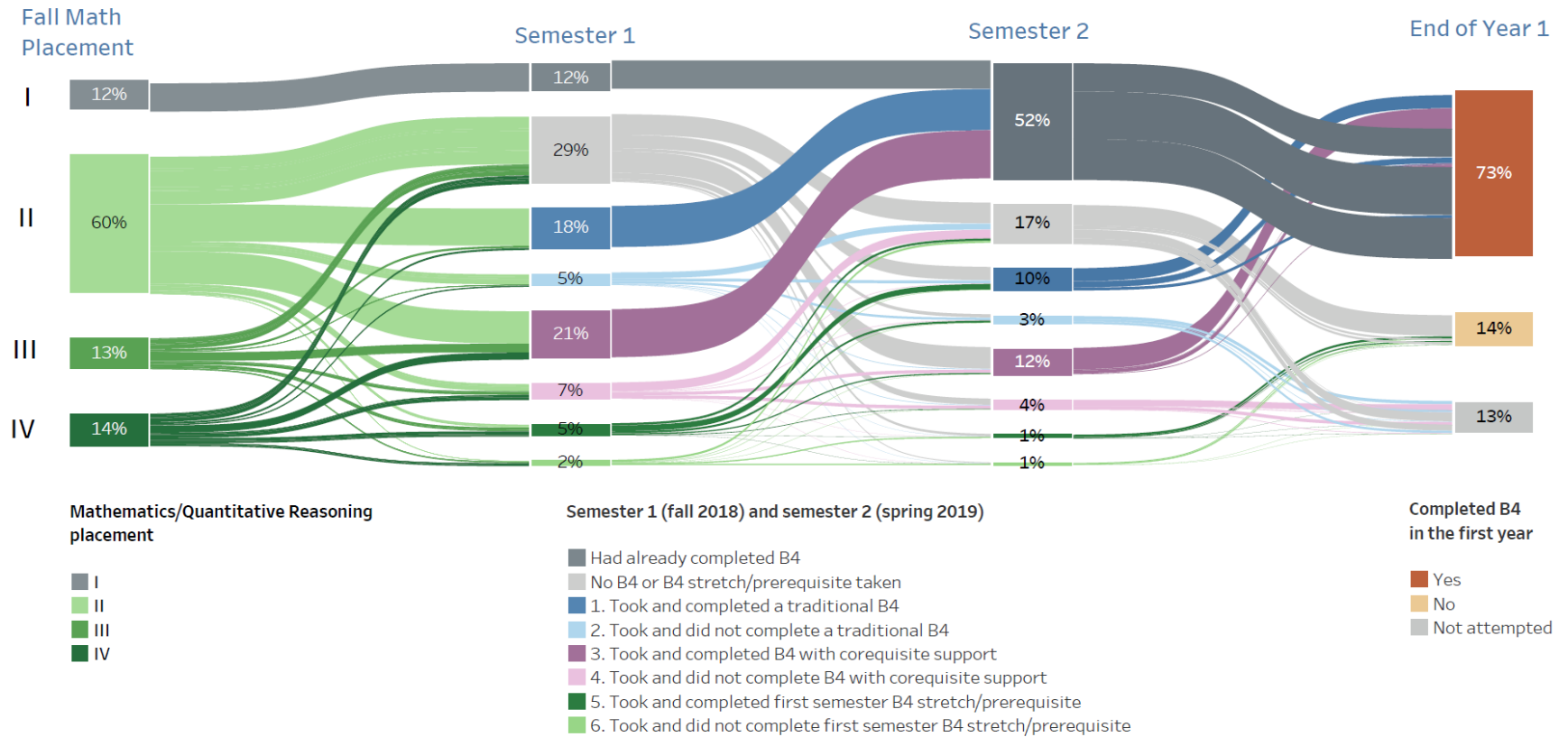
First semester B4 result	Second semester Number of students	Second semester Did not attempt a B4 course	Second semester Attempted but did not complete a B4 course	Second semester Completed a B4 course
Completed a first semester B4 stretch or prerequisite course	3,015	20%	21%	59%
Attempted but did not complete a first semester B4 stretch or prerequisite course	1,172	88%	5%	7%
Attempted but did not complete a B4 course in the first semester (including those with corequisite support)	7,184	54%	22%	24%
No B4 or B4 stretch or prerequisite course taken in the first semester	17,609	35%	14%	52%
All B4 non-completers after the first semester	28,980	40%	16%	44%

Note: There were 28,980 CSU entering first-year students in 2018 in QR Categories II to IV who had not completed their B4 requirement by the end of the first semester. The 88 percent of students who attempted but did not complete a first semester B4 stretch or prerequisite course and who did not attempt a B4 course in the second semester includes 23 percent who repeated and completed the first semester stretch or prerequisite course in the second semester, and 22 percent who repeated but did not complete the course. The 35 percent of students who did not take a B4 or B4 stretch or prerequisite course in the first semester and who did not attempt a B4 course in the second semester includes 3 percent who took and completed the first semester stretch or prerequisite course in the second semester, and 1 percent who repeated but did not complete the course. Percentages may not add up to 100 percent due to rounding.

Figure 10 provides a visual representation of how students in the different QR placement categories moved through the different course types over the 2018/19 academic year. The representation is in the form of a Sankey diagram, a visualization tool used to see the flow of individuals over time and choice points. Applied in this context, the diagram shows the placement categories (I to IV) at the start of the first college semester (left side) and a variety of paths that students follow until the conclusion of the first year (right side). A few observations based on Figure 10 reinforce the insights that have been provided throughout this report. For example, students placed in Categories III and IV, in general, follow many more diverse paths as they enter the first semester experience than do students placed in Category II. This tendency can be seen in the multiple strands, of varying sizes, that lead to a wide variety of outcomes for students placed in those categories, compared to the more concentrated strands for students placed in Category II. As time progresses, taking and not completing a course in the first semester increases the likelihood of not completing the General Education requirement in the second semester — a pattern that has been described earlier in this report — which is illustrated by the relatively thick color bands across paths showing progress in the first semester. As a corollary, the variation in path increases in the second semester — denoted by relatively thinner strands at the bottom of the chart — and illustrates the convergence into more and less successful completion paths by the end of the first year. These data,

particularly when disaggregated at the campus level, can shed additional light on the differential progress that students make from their initial placement, and may point out contrasts among the variety of supported strategies that are being offered to students — stretch, as contrasted with corequisite, models, for example.

Figure 10. B4 course-taking pathways of CSU entering first-year students 2018/19



Note: Percentages may not add up to 100 percent due to rounding.

Course completion by course type

WestEd researchers conducted an additional analysis to understand whether there are differences in completion rates for different types of courses that meet the A2 and B4 requirements. Using WestEd's course categorization scheme (see the previous "Course categorization scheme" section), researchers looked at the overall completion rates, by placement category, for courses that met the A2 or B4 requirement and that were designated as:

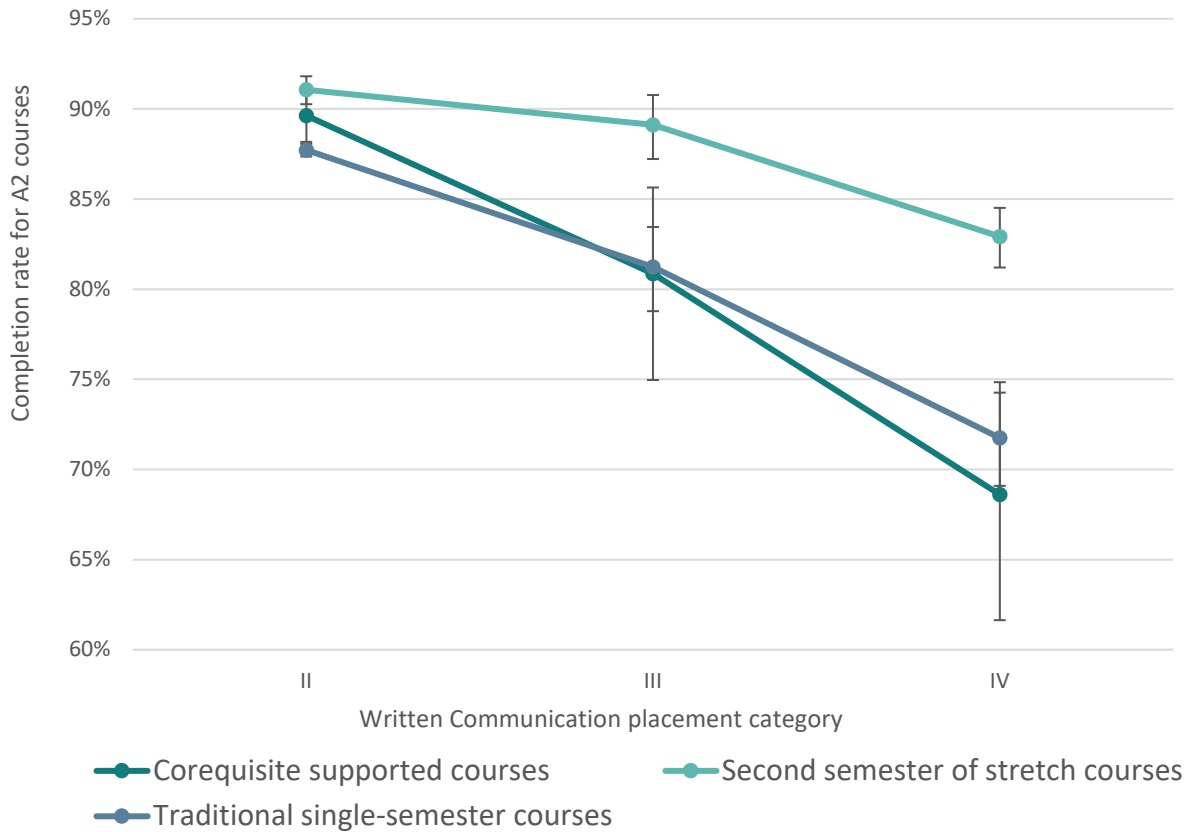
- Traditional single-semester courses;
- Corequisite supported courses; or
- Second semester of stretch courses.

Because a few first semester stretch/prerequisite courses were designated as meeting the B4 requirement, those are included in the B4 analysis as well. Courses designated as corequisite support courses or first semester stretch/prerequisite courses and that *do not* meet the A2 or B4 requirement are not included in the following analysis. For each course type and student placement category, completion rates are calculated as the number of course records with a passing grade, divided by the total number of course records (attempts).

The differences in completion rates between A2 courses classified as second semester of a stretch course and other A2 courses increased with placement type, and were the largest for students placed in WC Category IV.

For A2 courses, no differences in completion rates between corequisite supported courses and traditional single-semester courses were significant, independent of the placement category (Figure 11). The completion rates of courses classified as second semester of stretch courses were significantly higher than for the other course types for students placed in WC Categories III and IV, but the difference was not significant for students placed in Category II.

Figure 11. Completion rates by course type and placement category for courses meeting the A2 requirement taken by students placed in Written Communication Categories II to IV, CSU entering first-year students 2018

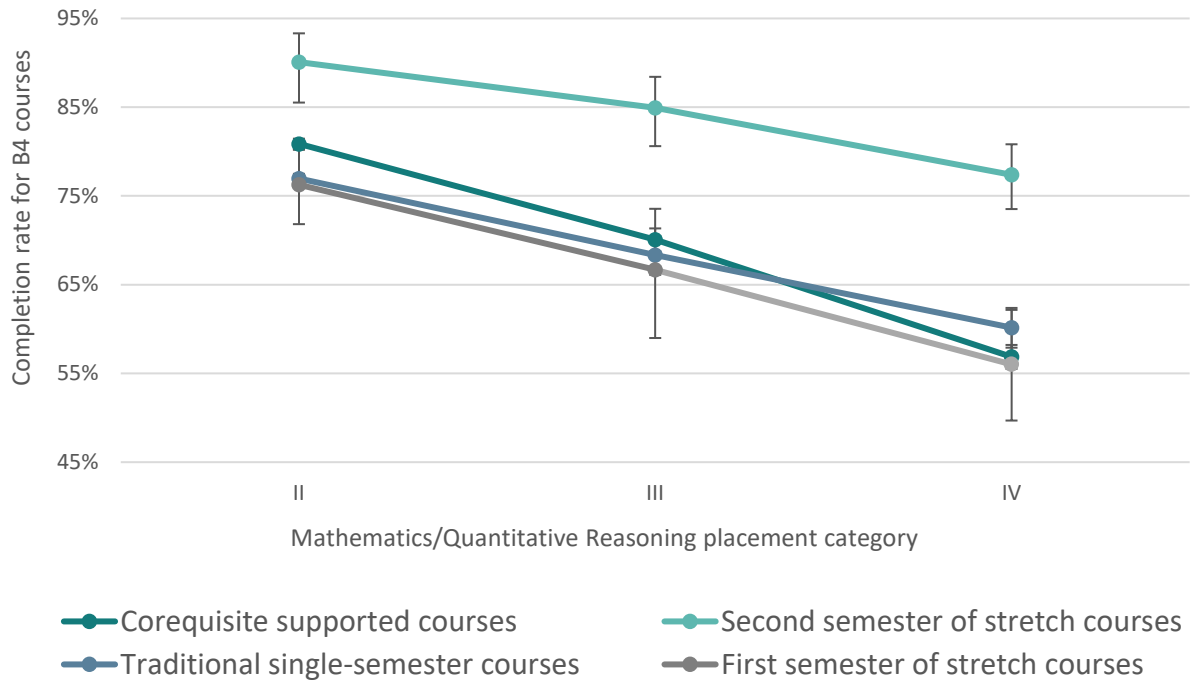


Note: Least Squares Means and confidence intervals were computed using SAS GLM Procedure, and the pairwise comparisons were adjusted for multiple comparisons using a Bonferroni correction. The error bars indicate the 95 percent confidence limits interval. The completion rates and numbers of course records for courses meeting the A2 requirement taken by students in each placement category are presented in Table A32 in the appendix.

B4 courses classified as second semester of stretch courses had higher completion rates than other types of courses for all three placement categories.

While completion rates for second semester stretch courses were higher across all three placement categories (Figure 12), relatively few students took these courses, compared to the other course types. For example, about 5 percent of the records of courses attempted by students placed in Category IV were in courses designated as second semester stretch courses, while about 67 percent were in courses designated as corequisite supported courses. Six campuses offered a true stretch model in QR, and only two used it as their primary approach to providing additional support. Since relatively small numbers of second semester stretch courses are offered in QR systemwide, it is difficult to know the overall impact of these higher completion rates. Individual campuses that offer a two-semester sequence for QR may be able to better determine the added value of the extra course for students if they look at the completion rates for those courses, combined with the completion rates for the first semester prerequisite/stretch courses. Differences in completion rates between the other types of B4 courses were not significant.

Figure 12. Completion rates by course type and placement category for courses meeting the B4 requirement taken by students placed in Mathematics/Quantitative Reasoning Categories II to IV, CSU entering first-year students 2018



Note: Least Squares Means and confidence intervals were computed using SAS GLM Procedure, and the pairwise comparisons were adjusted for multiple comparisons using a Bonferroni correction. The error bars indicate the 95 percent confidence limits interval. The completion rates and numbers of course records for courses meeting the B4 requirement taken by students in each placement category are presented in Table A33 in the appendix. A small number of courses designated as first semester stretch courses allowed students to meet the B4 requirement upon completion.

Conclusion

This second report in WestEd's multiyear implementation study of EO 1110 is WestEd's first analysis of student outcomes under the new policy. This analysis of data on entering first-year students in the CSU system under the new EO 1110 policy provides a general overview of systemwide outcomes in the first year, in terms of placement status, credit accumulation, and completion of the A2 and B4 requirements. The report provides a snapshot of the progress of entering first-year students in 2018/19 and demonstrates some of the differences in outcomes for students in different placement categories. The findings clearly show that a higher percentage of students completed their Written Communication (WC) and Mathematics/Quantitative Reasoning (QR) General Education requirements in their first year than was the case in previous years. Determining the extent to which this change leads to improved graduation rates and/or faster time to degree will require following this group of students over the next several years. As much as the findings may be encouraging, disparities between groups — by levels of previous preparation and by race/ethnicity — are still prevalent. As GI 2025 continues within the CSU system, these disparities remain a central issue. Therefore, before and after EO 1110, issues such as course access, course design, differentiated instructional support, financial aid, and general student support services have remained among the key areas for discussion. If the signal from this report is that first semester progress becomes the jumping off point for subsequent efficient progress, surely the work ahead is to examine systematic milestones toward four-year and six-year graduation patterns, controlling for the initial placement of the students in their WC and QR work. Additional analyses will provide helpful insights as well.

Notably, this analysis provides a systemwide overview of student progress; it is unable to capture the nuances and differences on individual campuses. Variation in offerings, and in students' responses to those offerings across the 23 campuses, is an important dynamic in watching EO 1110 unfold. Campus-level analysis of these data will be important for campus administrators and faculty to understand how the specific course revisions and academic supports on each campus are working for each campus's unique student body. Do these patterns seem more prevalent on campuses with large residential populations? What about the patterns on the more impacted campuses? How have faculty — with a historic and deep commitment to providing foundational instruction in math — modified course designs to support students in their B4 sequence? Unpacking the types of analysis presented in this report at the campus level would shed light on patterns that can be attached to the more granular interventions that campus teams are putting into practice.

Future reports in this series will include comparing the progress of this cohort of students to the progress of the cohorts of 2017 and 2019 entering first-year students. These future analyses will examine whether there are differences in student progress across these cohorts, both in terms of A2 and B4 completion and in terms of overall credit accumulation under the new policy. A final report will include a comprehensive assessment of the implementation of the multiple measures system, including an evaluation of the measures for predictive validity in credit accumulation.

Appendix

The tables in this appendix provide additional detail on each of the findings discussed in the main report. Each table corresponds to a figure presented in the body of the report. The analytic sample for this study consists of 59,790 students: those who were entering the CSU system as first-year students in fall 2018 and who were enrolled in any of the CSU campuses except San Bernardino and San Luis Obispo. Those two campuses were excluded because they include a winter term and patterns of credit accumulation that are not exactly comparable to the other CSU campuses.

Table A1. Number and percentage of students in cohort by gender

Gender	Number of students	Percent
Female	34,582	58%
Male	25,208	42%
Total	59,790	100%

Note: Variables described in Table A1 are represented in Box 1 of the main report.

Table A2. Number and percentage of students in cohort by race/ethnicity

Race/ethnicity	Number of students	Percent
Hispanic/Latino	30,630	51%
White	11,116	19%
Asian	10,654	18%
Multiple/Unknown	4,419	7%
Black/African American	2,645	4%
Other	326	1%
Total	59,790	100%

Note: White, Asian, Black/African American, and Other categories refer to Non-Hispanic students. Variables described in Table A2 are represented in Box 1 of the main report.

Table A3. Number and percentage of students in cohort by declared major

Concentration group	Number of students	Percent
Not STEM	19,903	33%
STEM (excludes health-related STEM)	19,135	32%
Undeclared	8,675	15%
Business	7,857	13%
Health-related STEM	4,220	7%
Total	59,790	100%

Note: Variables described in Table A3 are represented in Box 1 of the main report.

Table A4. Number and percentage of students in cohort by QR placement categories

QR placement	Number of students	Percent
I: Has fulfilled the GE Subarea B4 requirement.	7,433	12%
II: Placement in a GE Subarea B4 course.	36,009	60%
III: Recommend placement in a supported GE Subarea B4 course.	7,963	13%
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	8,385	14%
Total	59,790	100%

Note: Variables described in Table A4 are represented in Figure 1 of the main report.

Table A5. Number and percentage of students by WC placement categories

WC placement	Number of students	Percent
I: Has fulfilled the GE Subarea A2 requirement.	8,613	14%
II: Placement in a GE Subarea A2 course.	43,987	74%
III: Recommend placement in a supported GE Subarea A2 course.	2,921	5%
IV: Require placement in a supported GE Subarea A2 course or the first term of an applicable stretch course.	4,269	7%
Total	59,790	100%

Note: Variables described in Table A5 are represented in Figure 1 of the main report.

Table A6. Number and percentage of students in cohort by race/ethnicity and QR Category I to IV

Race/ethnicity	QR placement								Total students
	I		II		III		IV		
	N	%	N	%	N	%	N	%	
Hispanic/Latino	2,614	35%	17,674	49%	5,177	65%	5,165	62%	30,630
White	1,841	25%	7,364	20%	1,044	13%	867	10%	11,116
Asian	2,185	29%	6,923	19%	715	9%	831	10%	10,654
Multiple/Unknown	609	8%	2,620	7%	512	6%	678	8%	4,419
Black/African American	151	2%	1,242	3%	470	6%	782	9%	2,645
Other	33	0%	186	1%	45	1%	62	1%	326
Total	7,433	100%	36,009	100%	7,963	100%	8,385	100%	59,790

Note: White, Asian, Black/African American, and Other categories refer to Non-Hispanic students. N is number of students and % is percent. Variables described in Table A6 are represented in Figure 2 of the main report.

Table A7. Number of students and average baccalaureate units attempted in academic year of 2018/19 by QR placement category — All students in cohort

QR placement	Number of students	Min	Mean	Median	Mode	Std Dev	Max
I: Has fulfilled the GE Subarea B4 requirement.	7,433	0	28.3	29	30	4.4	44
II: Placement in a GE Subarea B4 course.	36,009	0	27.6	28	30	4.7	46
III: Recommend placement in a supported GE Subarea B4 course.	7,963	0	26.3	27	27	5.4	46
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	8,385	0	25.8	27	27	5.7	52
Total	59,790	0	27.2	28	30	5.0	52

Note: Variables described in Table A7 are represented in Figure 3 of the main report.

Table A8. Number of students and average baccalaureate units attempted in academic year of 2018/19 by QR placement category — All students in cohort

QR placement	Number of students	Min	Mean	Median	Mode	Std Dev	Max
I: Has fulfilled the GE Subarea B4 requirement.	7,433	0	26.8	28	30	6.3	44
II: Placement in a GE Subarea B4 course.	36,009	0	25.2	27	30	7.3	45
III: Recommend placement in a supported GE Subarea B4 course.	7,963	0	22.6	25	27	8.2	41
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	8,385	0	20.4	23	27	9.0	52
Total	59,790	0	24.4	27	30	7.8	52

Note: Variables described in Table A8 are represented in Figure 3 of the main report.

Table A9. Comparison of average baccalaureate units attempted and earned in academic year of 2018/19 by QR placement category — All students in cohort

QR placement	Number of students	Baccalaureate units earned in year one	Baccalaureate units attempted in year one	Ratio
		Mean	Mean	
I: Has fulfilled the GE Subarea B4 requirement.	7433	26.8	28.3	95%
II: Placement in a GE Subarea B4 course.	36,009	25.2	27.6	91%
III: Recommend placement in a supported GE Subarea B4 course.	7,963	22.6	26.3	86%
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	8,385.00	20.4	25.8	79%
Total	59,790	24.4	27.2	89%

Note: Variables described in Table A9 are represented in Figure 3 of the main report.

Table A10. Number of students and average baccalaureate units attempted in academic year of 2018/19 by QR placement category — Continuously enrolled students

QR placement	Number of Students	Min	Mean	Median	Mode	Std Dev	Max
I: Has fulfilled the GE Subarea B4 requirement.	7,201	0	28.8	29	30	3.5	44
II: Placement in a GE Subarea B4 course.	34,141	0	28.4	29	30	3.3	46
III: Recommend placement in a supported GE Subarea B4 course.	7,291	0	27.6	28	27	3.4	46
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	7,545	0	27.3	27	27	3.5	52
Total	56,178	0	28.2	28	30	3.4	52

Note: Variables described in Table A10 are represented in Figure 3 of the main report.

Table A11. Number of students and average baccalaureate units earned in academic year of 2018/19 by QR placement category — Continuously enrolled students

QR placement	Number of students	Min	Mean	Median	Mode	Std Dev	Max
I: Has fulfilled the GE Subarea B4 requirement.	7,201	0	27.4	28	30	5.3	44
II: Placement in a GE Subarea B4 course.	34,141	0	26.1	27	30	6.0	45
III: Recommend placement in a supported GE Subarea B4 course.	7,291	0	24.2	26	27	6.6	41
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	7,545	0	22.1	24	27	7.6	52
Total	56,178	0	25.5	27	30	6.4	52

Note: Variables described in Table A11 are represented in Figure 3 of the main report.

Table A12. Comparison of average baccalaureate units attempted and earned in academic year of 2018/19 by QR placement category — Continuously enrolled students

QR placement	Number of students	Baccalaureate units earned in year one	Baccalaureate units attempted in year one	Ratio
		Mean	Mean	
I: Has fulfilled the GE Subarea B4 requirement.	7,201	27.4	28.8	95%
II: Placement in a GE Subarea B4 course.	34,141	26.1	28.4	92%
III: Recommend placement in a supported GE Subarea B4 course.	7,291	24.2	27.6	88%
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	7,545	22.1	27.3	81%
Total	56,178	25.5	28.2	91%

Note: Variables described in Table A12 are represented in Figure 3 of the main report.

Table A13. Number of students and average baccalaureate units attempted in first semester 2018/19 by QR placement category — Students with at least one unit attempted during the first semester

QR placement	Number of students	Min	Mean	Median	Mode	Std Dev	Max
I: Has fulfilled the GE Subarea B4 requirement.	7,425	3	14.3	15	15	2.0	26
II: Placement in a GE Subarea B4 course.	35,949	3	14.2	15	15	1.9	29
III: Recommend placement in a supported GE Subarea B4 course.	7,949	3	13.9	14	15	2.0	26
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	8,367	2	13.9	14	15	2.1	29
Total	59,690	2	14.1	14	15	2.0	29

Note: Variables described in Table A13 are based on the subgroup “Students with at least one unit attempted during the first semester.” Table A13 provided for information purposes; no corresponding figure in report.

Table A14. Number of students and average baccalaureate units attempted in second semester 2018/19 by QR placement category — Students with at least one unit attempted during the second semester

QR placement	Number of students	Min	Mean	Median	Mode	Std Dev	Max
I: Has fulfilled the GE Subarea B4 requirement.	7,206	2	14.5	15	15	2.1	24
II: Placement in a GE Subarea B4 course.	34,157	1	14.2	15	15	2.1	25
III: Recommend placement in a supported GE Subarea B4 course.	7,292	1	13.8	14	15	2.1	25
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	7,549	1	13.7	14	12	2.3	24
Total	56,204	1	14.1	15	15	2.1	25

Note: Variables described in Table A14 are based on the subgroup “Students with at least one unit attempted during the first semester.” Table A14 provided for information purposes; no corresponding figure in report.

Table A15. Number of students and average baccalaureate units earned in first semester 2018/19 by QR placement category — Students with at least one unit attempted during the first semester

QR placement	Number of students	Min	Mean	Median	Mode	Std Dev	Max
I: Has fulfilled the GE Subarea B4 requirement.	7,425	0	13.6	14	15	3.0	26
II: Placement in a GE Subarea B4 course.	35,949	0	13.0	14	15	3.5	26
III: Recommend placement in a supported GE Subarea B4 course.	7,949	0	12.0	13	12	4.0	26
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	8,367	0	10.9	12	12	4.5	29
Total	59,690	0	12.7	13	15	3.8	29

Note: Variables described in Table A15 are based on the subgroup “Students with at least one unit attempted during the first semester.” Table A15 provided for information purposes; no corresponding figure in report.

Table A16. Number of students and average baccalaureate units earned in second semester 2018/19 by QR placement category — Students with at least one unit attempted during the second semester

QR placement	Number of students	Min	Mean	Median	Mode	Std Dev	Max
I: Has fulfilled the GE Subarea B4 requirement.	7,206	0	13.7	15	15	3.4	24
II: Placement in a GE Subarea B4 course.	34,157	0	12.9	14	15	3.8	25
III: Recommend placement in a supported GE Subarea B4 course.	7,292	0	11.9	13	12	4.2	21
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	7,549	0	10.9	12	12	4.7	23
Total	56,204	0	12.6	13	15	4.0	25

Note: Variables described in Table A16 are based on the subgroup “Students with at least one unit attempted during the first semester.” Table A16 provided for information purposes; no corresponding figure in report.

Table A17. Comparison of average baccalaureate units attempted and earned in first semester 2018/19 by QR placement category and semester — Students with at least one unit attempted during the first semester

QR placement	Number of students	Baccalaureate units earned first semester	Baccalaureate units attempted first semester	Ratio
		Mean	Mean	
I: Has fulfilled the GE Subarea B4 requirement.	7,425	13.6	14.3	95%
II: Placement in a GE Subarea B4 course.	35,949	13.0	14.2	92%
III: Recommend placement in a supported GE Subarea B4 course.	7,949	12.0	13.9	86%
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	8,367	10.9	13.9	79%
Total	59,690	12.7	14.1	90%

Note: Variables described in Table A17 are based on the subgroup “Students with at least one unit attempted during the first semester.” Table A17 provided for information purposes; no corresponding figure in report.

Table A18. Comparison of average baccalaureate units attempted and earned in second semester 2018/19 by QR placement category and semester — Students with at least one unit attempted during the second semester

QR placement	Number of students	Baccalaureate units earned second semester	Baccalaureate units attempted second semester	Ratio
		Mean	Mean	
I: Has fulfilled the GE Subarea B4 requirement.	7,206	13.7	14.5	95%
II: Placement in a GE Subarea B4 course.	34,157	12.9	14.2	91%
III: Recommend placement in a supported GE Subarea B4 course.	7,292	11.9	13.8	86%
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	7,549	10.9	13.7	79%
Total	56,204	12.6	14.1	89%

Note: Variables described in Table A18 are based on the subgroup “Students with at least one unit attempted during the second semester.” Table A18 provided for information purposes; no corresponding figure in report.

Table A19. Number of students and average baccalaureate units attempted in academic year 2018/19 by race/ethnicity and QR placement category — All students in cohort

QR placement	Race/ethnicity	Number of students	Min	Mean	Median	Mode	Std Dev	Max
I: Has fulfilled the GE Subarea B4 requirement.	Hispanic/Latino	2,614	3	27.5	28	30	4.5	44
	White	1,841	0	29	30	30	4.4	43
	Asian	2,185	0	28.5	29	30	4.2	42
	Multiple/Unknown	609	6	28.8	30	30	4.4	40
	Black/African American	151	12	27.9	28	30	4.7	40
	Other	33	12	28.5	29	31	3.8	33
II: Placement in a GE Subarea B4 course.	Hispanic/Latino	17,674	0	27.2	28	30	4.7	45
	White	7,364	0	28	29	30	5	43
	Asian	6,923	0	28	29	30	4.4	46
	Multiple/Unknown	2,620	0	27.7	29	30	4.9	40
	Black/African American	1,242	0	27.4	28	30	5	42
	Other	186	0	27.7	28	30	4.7	38
III: Recommend placement in a supported GE Subarea B4 course.	Hispanic/Latino	5,177	0	26.2	27	27	5.3	41
	White	1,044	0	26.8	28	30	5.3	46
	Asian	715	0	26.7	28	30	5.4	44
	Multiple/Unknown	512	0	26.3	28	30	5.9	36
	Black/African American	470	6	25.7	27	30	5.7	38
	Other	45	9	25.6	27	27	6.8	34
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	Hispanic/Latino	5,165	0	25.7	27	27	5.6	44
	White	867	0	26.3	28	30	5.7	52
	Asian	831	0	26.3	27	27	5.4	39
	Multiple/Unknown	678	0	26.1	27	28	5.7	45
	Black/African American	782	0	25.6	27	27	5.8	46
	Other	62	0	24.7	26	24	7.1	35
Total		59,790	0	27.2	28	30	5.0	52

Note: White, Asian, Black/African American, and Other categories refer to Non-Hispanic students. Variables described in Table A19 are represented in Figure 4 of the main report.

Table A20. Number of students and average baccalaureate units earned in academic year 2018/19 by race/ethnicity and QR placement category — All students in cohort

QR placement	Race/ethnicity	Number of students	Min	Mean	Median	Mode	Std Dev	Max
I: Has fulfilled the GE Subarea B4 requirement.	Hispanic/Latino	2,614	0	25.2	27	30	7.1	44
	White	1,841	0	28	29	30	5.6	43
	Asian	2,185	0	27.7	29	30	5.2	42
	Multiple/Unknown	609	0	27.3	29	31	6	40
	Black/African American	151	0	25.3	27	30	7	36
	Other	33	0	27.7	29	31	5.7	32
II: Placement in a GE Subarea B4 course.	Hispanic/Latino	17,674	0	24.5	27	30	7.5	45
	White	7,364	0	26.1	28	30	7	43
	Asian	6,923	0	26.1	28	30	6.6	45
	Multiple/Unknown	2,620	0	25.3	27	30	7.4	40
	Black/African American	1,242	0	24.2	27	30	8	42
	Other	186	0	24.7	27	30	7.9	38
III: Recommend placement in a supported GE Subarea B4 course.	Hispanic/Latino	5,177	0	22.3	25	27	8.2	40
	White	1,044	0	24.2	27	27	7.6	40
	Asian	715	0	23.5	26	30	8.1	41
	Multiple/Unknown	512	0	22.9	25	30	8.5	35
	Black/African American	470	0	20.9	24	26	9.1	36
	Other	45	0	21.4	24	21	9.6	34
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	Hispanic/Latino	5,165	0	20	22	27	9.1	41
	White	867	0	22.4	25	27	8.5	52
	Asian	831	0	21.9	24	30	8.5	39
	Multiple/Unknown	678	0	20.8	24	28	9.1	43
	Black/African American	782	0	19.4	21	27	9.3	40
	Other	62	0	20.1	23	24	8.6	32
Total		59,790	0	24.4	27	30	7.8	52

Note: White, Asian, Black/African American, and Other categories refer to Non-Hispanic students. Variables described in Table A20 are represented in Figure 4 of the main report.

Table A21. Comparison of average baccalaureate units attempted and earned in academic year 2018/19 by race/ethnicity and QR placement — All students in cohort

QR placement	Race/ethnicity	Number of students	Average baccalaureate units earned	Average baccalaureate units attempted	Ratio
			Mean	Mean	
I: Has fulfilled the GE Subarea B4 requirement.	Hispanic/Latino	2,614	25.2	27.5	92%
	White	1,841	28.0	29.0	97%
	Asian	2,185	27.7	28.5	97%
	Multiple/Unknown	609	27.3	28.8	95%
	Black/African American	151	25.3	27.9	91%
	Other	33	27.7	28.5	97%
II: Placement in a GE Subarea B4 course.	Hispanic/Latino	17,674	24.5	27.2	90%
	White	7,364	26.1	28.0	93%
	Asian	6,923	26.1	28.0	93%
	Multiple/Unknown	2,620	25.3	27.7	91%
	Black/African American	1,242	24.2	27.4	88%
	Other	186	24.7	27.7	89%
III: Recommend placement in a supported GE Subarea B4 course.	Hispanic/Latino	5,177	22.3	26.2	85%
	White	1,044	24.2	26.8	90%
	Asian	715	23.5	26.7	88%
	Multiple/Unknown	512	22.9	26.3	87%
	Black/African American	470	20.9	25.7	82%
	Other	45	21.4	25.6	84%
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	Hispanic/Latino	5,165	20.0	25.7	78%
	White	867	22.4	26.3	85%
	Asian	831	21.9	26.3	83%
	Multiple/Unknown	678	20.8	26.1	80%
	Black/African American	782	19.4	25.6	76%
	Other	62	20.1	24.7	81%
Total		59,790	24.4	27.2	89%

Note: White, Asian, Black/African American, and Other categories refer to Non-Hispanic students. Variables described in Table A21 are represented in Figure 4 of the main report.

Table A22. Number of students and average baccalaureate units attempted in academic year 2018/19 by race/ethnicity and QR placement category — Continuously enrolled students

QR placement	Race/ethnicity	Number of students	Min	Mean	Median	Mode	Std Dev	Max
I: Has fulfilled the GE Subarea B4 requirement.	Hispanic/Latino	2,509	15	28.1	28	30	3.5	44
	White	1,783	12	29.5	30	30	3.4	43
	Asian	2,142	17	28.8	29	30	3.6	42
	Multiple/Unknown	590	13	29.2	30	30	3.5	40
	Black/African American	145	19	28.6	28	30	3.6	40
	Other	32	23	29.0	29	31	2.3	33
II: Placement in a GE Subarea B4 course.	Hispanic/Latino	16,689	9	28.1	28	30	3.2	45
	White	6,931	6	28.9	29	30	3.3	43
	Asian	6,695	6	28.5	29	30	3.4	46
	Multiple/Unknown	2,470	12	28.6	29	30	3.3	40
	Black/African American	1,177	15	28.3	28	30	3.4	42
	Other	179	17	28.3	28	30	3.4	38
III: Recommend placement in a supported GE Subarea B4 course.	Hispanic/Latino	4,748	10	27.4	27	27	3.3	41
	White	955	10	28.1	28	30	3.4	46
	Asian	666	9	27.8	28	30	3.6	44
	Multiple/Unknown	466	12	27.8	28	30	3.6	36
	Black/African American	417	12	27.3	27	30	3.5	38
	Other	39	14	27.9	28	27	3.7	34
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	Hispanic/Latino	4,627	6	27.2	27	27	3.5	44
	White	779	14	27.8	28	30	3.5	52
	Asian	767	9	27.4	28	27	3.5	39
	Multiple/Unknown	614	6	27.5	28	28	3.6	45
	Black/African American	703	14	27.1	27	27	3.5	46
	Other	55	12	26.7	27	24	3.8	35
Total		56,178	0	28.2	28	30	3.4	52

Note: White, Asian, Black/African American, and Other categories refer to Non-Hispanic students. Variables described in Table A22 are represented by race/ethnicity and QR placement based on the subgroup “Continuously enrolled students.” Table provided for information purposes; no corresponding figure in report.

Table A23. Number of students and average baccalaureate units earned in academic year 2018/19 by race/ethnicity and QR placement category — Continuously enrolled students

QR placement	Race/ethnicity	Number of students	Min	Mean	Median	Mode	Std Dev	Max
I: Has fulfilled the GE Subarea B4 requirement.	Hispanic/Latino	2,509	0	26.0	27	30	6.1	44
	White	1,783	0	28.6	30	30	4.5	43
	Asian	2,142	0	28.1	29	30	4.5	42
	Multiple/Unknown	590	0	27.8	29	31	5.5	40
	Black/African American	145	3	26.0	27	30	6.2	36
	Other	32	19	28.6	29	31	2.8	32
II: Placement in a GE Subarea B4 course.	Hispanic/Latino	16,689	0	25.5	27	30	6.1	45
	White	6,931	0	27.2	28	30	5.5	43
	Asian	6,695	0	26.7	28	30	5.6	45
	Multiple/Unknown	2,470	0	26.3	28	30	6.0	40
	Black/African American	1,177	0	25.3	27	30	6.6	42
	Other	179	0	25.4	27	30	7.1	38
III: Recommend placement in a supported GE Subarea B4 course.	Hispanic/Latino	4,748	0	23.8	25	27	6.6	40
	White	955	1	25.7	27	27	5.7	40
	Asian	666	0	24.8	26	30	6.6	41
	Multiple/Unknown	466	0	24.6	26	30	6.6	35
	Black/African American	417	0	22.8	25	26	7.6	36
	Other	39	3	24.3	25	21	6.4	34
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	Hispanic/Latino	4,627	0	21.7	24	27	7.6	41
	White	779	0	24.1	26	27	6.8	52
	Asian	767	0	23.1	25	30	7.3	39
	Multiple/Unknown	614	0	22.4	24	28	7.8	43
	Black/African American	703	0	21.1	23	27	7.9	40
	Other	55	0	21.9	24	24	7.0	32
Total		56,178	0	25.5	27	30	6.4	52

Note: White, Asian, Black/African American, and Other categories refer to Non-Hispanic students. Variables described in Table A23 are represented by race/ethnicity and QR placement based on the subgroup “Continuously enrolled students.” Table provided for information purposes; no corresponding figure in report.

Table A24. Comparison of average baccalaureate units attempted and earned in academic year 2018/19 by race/ethnicity and QR placement — Continuously enrolled students

QR placement	Race/ethnicity	Number of students	Average baccalaureate units earned	Average baccalaureate units attempted	Ratio
			Mean	Mean	
I: Has fulfilled the GE Subarea B4 requirement.	Hispanic/Latino	2,509	26.0	28.1	93%
	White	1,783	28.6	29.5	97%
	Asian	2,142	28.1	28.8	98%
	Multiple/Unknown	590	27.8	29.2	95%
	Black/African American	145	26.0	28.6	91%
	Other	32	28.6	29.0	99%
II: Placement in a GE Subarea B4 course.	Hispanic/Latino	16,689	25.5	28.1	91%
	White	6,931	27.2	28.9	94%
	Asian	6,695	26.7	28.5	94%
	Multiple/Unknown	2,470	26.3	28.6	92%
	Black/African American	1,177	25.3	28.3	89%
	Other	179	25.4	28.3	90%
III: Recommend placement in a supported GE Subarea B4 course.	Hispanic/Latino	4,748	23.8	27.4	87%
	White	955	25.7	28.1	91%
	Asian	666	24.8	27.8	89%
	Multiple/Unknown	466	24.6	27.8	88%
	Black/African American	417	22.8	27.3	84%
	Other	39	24.3	27.9	87%
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	Hispanic/Latino	4,627	21.7	27.2	80%
	White	779	24.1	27.8	87%
	Asian	767	23.1	27.4	84%
	Multiple/Unknown	614	22.4	27.5	81%
	Black/African American	703	21.1	27.1	78%
	Other	55	21.9	26.7	82%
Total		56,178	25.5	28.2	91%

Note: White, Asian, Black/African American, and Other categories refer to Non-Hispanic students. Variables described in Table A24 are represented by race/ethnicity and QR placement based on the subgroup “Continuously enrolled students.” Table provided for information purposes; no corresponding figure in report.

Table A25. Number of students and average baccalaureate units attempted in academic year 2018/19 by concentration grouping and QR placement — All students in cohort

QR placement	Concentration grouping	Number of students	Min	Mean	Median	Mode	Std Dev	Max
I: Has fulfilled the GE Subarea B4 requirement.	Business	828	6	28.8	30	30	4.1	40
	Health-related STEM	527	3	27.1	28	31	4.3	36
	Not STEM	1,500	6	28.2	29	30	4.5	43
	STEM (excludes health-related STEM)	3,949	0	28.4	29	30	4.4	44
	Undeclared	629	9	27.9	29	30	4.3	36
II: Placement in a GE Subarea B4 course.	Business	4,908	0	27.9	29	30	4.7	44
	Health-related STEM	2,628	0	27.4	28	30	4.4	44
	Not STEM	11,732	0	27.8	29	30	4.6	44
	STEM (excludes health-related STEM)	11,606	0	27.6	28	30	4.8	46
	Undeclared	5,135	0	26.8	28	30	5.0	43
III: Recommend placement in a supported GE Subarea B4 course.	Business	756	0	26.3	28	28	5.8	40
	Health-related STEM	681	0	26.3	27	30	5.4	46
	Not STEM	4,013	0	26.5	27	30	5.4	44
	STEM (excludes health-related STEM)	1,006	0	26.3	27	28	5.2	41
	Undeclared	1,507	0	25.7	27	27	5.4	41
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	Business	1,365	0	25.9	27	27	5.7	46
	Health-related STEM	384	6	26.4	27	26	5.2	40
	Not STEM	2,658	0	25.6	27	25	5.9	43
	STEM (excludes health-related STEM)	2,574	0	26.2	27	27	5.6	52
	Undeclared	1,404	0	25.4	27	27	5.4	41
Total		59,790	0	27.2	28	30	5.0	52

Note: Variables described in Table A25 are represented in Figure 5 of the main report.

Table A26. Number of students and average baccalaureate units earned in academic year 2018/19 by concentration grouping and QR placement — All students in cohort

QR placement	Concentration grouping	Number of students	Min	Mean	Median	Mode	Std Dev	Max
I: Has fulfilled the GE Subarea B4 requirement.	Business	828	0	27.6	29	30	5.9	40
	Health-related STEM	527	0	26.4	27	31	5.5	36
	Not STEM	1,500	0	26.8	28	30	6.5	43
	STEM (excludes health-related STEM)	3,949	0	26.8	28	30	6.4	44
	Undeclared	629	0	26.6	28	30	6.1	36
II: Placement in a GE Subarea B4 course.	Business	4,908	0	25.4	27	30	7.3	44
	Health-related STEM	2,628	0	25.5	27	30	6.5	44
	Not STEM	11,732	0	25.7	28	30	7.1	44
	STEM (excludes health-related STEM)	11,606	0	24.8	27	30	7.4	45
	Undeclared	5,135	0	24.3	26	30	7.5	43
III: Recommend placement in a supported GE Subarea B4 course.	Business	756	0	22.4	25	24	8.4	40
	Health-related STEM	681	0	23.1	25	28	8.0	40
	Not STEM	4,013	0	22.9	25	30	8.3	40
	STEM (excludes health-related STEM)	1,006	0	22.5	24	24	7.9	40
	Undeclared	1,507	0	21.9	24	27	8.2	41
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	Business	1,365	0	20.8	24	27	8.9	40
	Health-related STEM	384	0	20.9	23	27	8.5	37
	Not STEM	2,658	0	20.2	23	25	9.1	38
	STEM (excludes health-related STEM)	2,574	0	20.6	23	27	9.0	52
	Undeclared	1,404	0	19.8	22	25	8.9	41
Total		59,790	0	24.4	27	30	7.8	52

Note: Variables described in Table A26 are represented in Figure 5 of the main report.

Table A27. Number of students and average baccalaureate units attempted and earned in academic year 2018/19 by concentration grouping and QR placement — All students in cohort

QR placement	Concentration grouping	Number of students	Average baccalaureate units earned	Average baccalaureate units attempted	Ratio
			Mean	Mean	
I: Has fulfilled the GE Subarea B4 requirement.	Business	828	27.6	28.8	96%
	Health-related STEM	527	26.4	27.1	97%
	Not STEM	1,500	26.8	28.2	95%
	STEM (excludes health-related STEM)	3,949	26.8	28.4	94%
	Undeclared	629	26.6	27.9	95%
II: Placement in a GE Subarea B4 course.	Business	4,908	25.4	27.9	91%
	Health-related STEM	2,628	25.5	27.4	93%
	Not STEM	11,732	25.7	27.8	92%
	STEM (excludes health-related STEM)	11,606	24.8	27.6	90%
	Undeclared	5,135	24.3	26.8	91%
III: Recommend placement in a supported GE Subarea B4 course.	Business	756	22.4	26.3	85%
	Health-related STEM	681	23.1	26.3	88%
	Not STEM	4,013	22.9	26.5	86%
	STEM (excludes health-related STEM)	1,006	22.5	26.3	86%
	Undeclared	1,507	21.9	25.7	85%
IV: Require placement in a supported GE Subarea B4 course or the first term of an applicable stretch course.	Business	1,365	20.8	25.9	80%
	Health-related STEM	384	20.9	26.4	79%
	Not STEM	2,658	20.2	25.6	79%
	STEM (excludes health-related STEM)	2,574	20.6	26.2	79%
	Undeclared	1,404	19.8	25.4	78%
Total		59,790	24.4	27.2	89%

Note: Variables described in Table A27 are represented in Figure 5 of the main report.

Table A28. Number and percentage of students attempting/completing the A2 requirement in academic year 2018/19 by WC placement status and WC placement category

WC placement category	WC placement status						
	Not attempted		Attempted-Not passed		Earned		Total
	Number of students	Percent	Number of students	Percent	Number of students	Percent	Number of students
II	4,860	11%	3,821	9%	35,306	80%	43,987
III	543	19%	320	11%	2,058	70%	2,921
IV	1,019	24%	672	16%	2,578	60%	4,269
Total	6,422		4,813		39,942		51,177

Note: Variables described in Table A28 are represented in Figure 6 of the main report.

Table A29. Number and percentage of students attempting/completing the B4 requirement in academic year 2018/19 by QR placement status and QR placement category

QR placement category	QR placement status						
	Not attempted		Attempted-Not passed		Earned		Total
	Number of students	Percent	Number of students	Percent	Number of students	Percent	Number of students
II	3,856	11%	4,858	13%	27,295	76%	36,009
III	1,716	22%	1,565	20%	4,682	59%	7,963
IV	2,120	25%	2,159	26%	4,106	49%	8,385
Total	7,692		8,582		36,083		52,357

Note: Variables described in Table A29 are represented in Figure 7 of the main report.

Table A30. Number and percentage of students by WC placement category and type of WC course taken in the first semester

	Type of A2 course		Course completed		Course attempted but not completed	
	N	%	N	%	N	%
Single-semester traditional courses — meet the A2 requirement	23,445	46%	20,837	41%	2,608	5%
Single-semester courses with corequisite supports attached — meet the A2 requirement	1,633	3%	1,426	3%	207	0%
First semester stretch or prerequisite courses — do not meet the A2 requirement	11,096	22%	9,779	19%	1,317	3%
No A2 or A2 stretch/prerequisite course taken in first semester	15,003	29%				
Total first-time freshmen in Written Communication placement II to IV	51,177	100%	32,042	63%	4,132	8%

Note: N is number of students and % is percent. Variables described in Table A30 are represented in Figure 8 of the main report.

Table A31. Number and percentage of students by QR placement category and type of QR course taken in the first semester

Mathematics/Quantitative Reasoning courses taken	Type of B4 course		Course completed		Course attempted but not completed	
	N	%	N	%	N	%
Single-semester traditional courses — meet the B4 requirement	13,900	27%	10,783	21%	3,117	6%
Single-semester courses with corequisite supports attached — meet the B4 requirement	16,661	32%	12,594	24%	4,067	8%
First semester stretch or prerequisite courses — do not meet the B4 requirement	4,187	8%	3,015	6%	1,172	2%
No B4 or B4 stretch/prerequisite course taken in first semester	17,609	34%				
Total first-time freshmen in Mathematics/Quantitative Reasoning placement II to IV	52,357	100%	26,392	50%	8,356	16%

Note: N is number of students and % is percent. Variables described in Table A31 are represented in Figure 9 of the main report.

Table A32. Completion rates and numbers of course records for courses meeting the A2 requirement by student's WC placement category, academic year 2018/19

WC placement category	A2 Course category	Number of course records	Completion rate
II	Corequisite supported courses	1,880	90%
	Second semester of a stretch course	5,260	91%
	Single semester/quarter traditional course	34,027	88%
III	Corequisite supported courses	209	81%
	Second semester of a stretch course	1,186	89%
	Single semester/quarter traditional course	1,076	81%
IV	Corequisite supported courses	188	69%
	Second semester of a stretch course	1,985	83%
	Single semester/quarter traditional course	1,161	72%

Note: Variables described in Table A32 are represented in Figure 11 of the main report.

Table A33. Completion rates and numbers of course records for courses meeting the B4 requirement taken by student's QR placement category, academic year 2018/19

QR placement	B4 Course category	Number of course records	Completion rate
II	Corequisite supported courses	17,543	81%
	First semester of a stretch course	396	76%
	Second semester of a stretch course	232	90%
	Single semester/quarter traditional course	24,253	77%
III	Corequisite supported courses	4,874	70%
	First semester of a stretch course	159	67%
	Second semester of a stretch course	325	85%
	Single semester/quarter traditional course	1,728	68%
IV	Corequisite supported courses	5,200	57%
	First semester of a stretch course	241	56%
	Second semester of a stretch course	504	77%
	Single semester/quarter traditional course	1,835	60%

Note: Variables described in Table A33 are represented in Figure 12 of the main report.