Texas College, Career, and Military Readiness Indicator Study: Exploring the Validity of College Readiness Indicators and Sub-Indicators

White Paper

Kristina L. Zeiser and Molly Cain

April 2026

AIR®
Advancing Evidence.
Improving Lives.

Contents

Exhibits

Executive Summary

Study Description

Building on previous research examining the predictive validity of Texas's College, Career, and Military Readiness (CCMR) indicators, this study explores whether sub-indicators—which take into account the subject areas through which graduates demonstrate college readiness—offer stronger predictions of postsecondary success across student groups. Previous studies explored the extent to which measures of CCMR in Texas are predictive of positive outcomes in college and the workforce up to 6 years after high school graduation (Zeiser & Cain, 2025; Zeiser et al., 2025). While these studies explore the extent to which *existing* CCMR measures predict positive outcomes after high school, the Texas Education Agency (TEA) sought to investigate whether CCMR *sub-indicators* may more accurately predict graduates' success after high school. For example, while one existing measure of college readiness indicates whether high school graduates achieved a score of three or higher on an Advanced Placement (AP) examination (exam) or a score of four or higher on an International Baccalaureate (IB) exam, sub-indicators could take into account whether students met requirements for this indicator through their core subject areas (mathematics [math], reading/language arts [RLA], science, or social studies).

To fill this gap in research, TEA contracted with the American Institutes for Research® (AIR®) to analyze data, including data on the academic subjects through which students met college readiness indicator requirements, and to explore whether college readiness sub-indicators are more predictive of successful college outcomes within 1 year after high school than established college readiness measures. This study also examines whether college readiness sub-indicators may disproportionately influence the percentage of economically disadvantaged and emergent bilingual students who meet college readiness requirements, and whether relationships between college readiness sub-indicators and college outcomes differ across student populations.

Using data from the Education Research Center at the University of Texas at Austin, this study examines indicators and sub-indicators of college readiness among high school graduates during the 2022–23 school year. It focuses on three college readiness indicators: AP/IB exams, OnRamps courses, and dual-credit courses. Using course-level data from the University of Texas at Austin and the Texas Higher Education Coordinating Board and AP and IB exam-level data from the College Board and International Baccalaureate, we constructed college readiness sub-indicators based on the subjects through which students met these college readiness indicator requirements: math or RLA; other core subject areas (science and social studies); or other

subject areas, including foreign languages and career and technical education (CTE). For each indicator, we first report the number and percentage of graduates who met the indicator requirements, the number and percentage of high schools where students met requirements, the extent to which students who met the indicator requirements also met other CCMR indicator requirements, and differences by economic disadvantage and emergent bilingual status. We then estimate hierarchical linear probability models to assess how well college readiness indicators and sub-indicators predict three college outcomes within a year after high school graduation (college enrollment, college enrollment without enrollment in developmental courses, and achievement of a first-year grade point average [GPA] of 2.5 or higher), controlling for student characteristics and completion of other CCMR indicators.

Results

Passing AP and IB Exams

- In school year 2022–23, 20% of high school graduates met the AP/IB CCMR indicator requirements, representing students from 1,276 high school campuses—about 64% of Texas high schools.
- Although graduates must pass only one AP exam (with a score of 3 or higher) or IB exam (with a score of 4 or higher) to meet CCMR indicator requirements, more than half (59%) of graduates who met requirements passed more than one exam. Notably, more than one fifth (22%) passed six or more exams.
- The majority of passed AP/IB exams were in core subject areas: math (10%), RLA (21%), social studies (37%), and science (15%). Among the non-core subjects, the majority of passed exams were in foreign languages (53%), CTE (23%), or fine arts (20%).
- Emergent bilingual students and economically disadvantaged students were not only less likely overall to meet AP/IB indicator requirements, but those who did were more likely than their peers to qualify through passing non-core subject exams.
- Graduates who met AP/IB CCMR indicator requirements by passing exams in non-core subject areas had a higher rate of enrolling in a public 2-year or 4-year college (52%) than graduates who met requirements by passing exams in core subject areas (46% for both sub-indicators). Further analyses, however, uncovered that this is likely because graduates who pass AP/IB exams in core subject areas are more likely to enroll in colleges outside Texas.
- Across the sub-indicators, graduates who passed AP/IB exams in math and RLA had the highest rate of enrolling in college and achieving a GPA of 2.5 or higher (39%). Rates of enrolling in college without taking developmental courses were similar across subject areas (ranging from 38% to 39%).

Completing OnRamps Courses

- In school year 2022–23, 5% of graduates met OnRamps CCMR indicator requirements, representing students from 553 high school campuses—about 28% of Texas high schools.
- More than half of the graduates who met the indicator requirements completed only one OnRamps course (63%), while another 19% completed two courses.
- The majority of OnRamps courses completed were math (37%) or science (28%) courses, followed by social studies (15%) and RLA (14%). All graduates who completed a non-core subject OnRamps course also passed at least one OnRamps course in a core subject area.
- Emergent bilingual graduates and economically disadvantaged graduates were less likely than their peers to meet OnRamps CCMR indicator requirements. Among those who did, however, the distribution of subject areas was similar across student groups.
- Rates of college enrollment and enrollment without developmental coursework were somewhat higher among graduates who met OnRamps CCMR indicator requirements by passing science or social studies courses. After examining supplemental data for graduates in 2021–22, we confirmed that this is likely because graduates who passed OnRamps courses in math or RLA were more likely to enroll in colleges outside Texas.
- Rates of achieving a first-year GPA of 2.5 or higher were similar across the sub-indicators, with approximately one third of graduates who passed OnRamps courses achieving this outcome regardless of subject area.

Earning Dual-Credit Hours

- In school year 2022–23, 24% of graduates met dual-credit CCMR indicator requirements, representing students from 1,742 high school campuses—about 87% of Texas high schools.
- Although graduates only need to earn 9 dual-credit hours (or 3 hours in a math or RLA course), 61% of those who qualified completed 13 or more dual-credit hours during high school.
- Seventy-six percent of dual-credit hours earned were in a core subject area: social studies (31%), RLA (28%), math (12%), and science (4%). The remaining 24% of the dual-credit hours earned were in non-core subjects, most of which (70%) were in CTE courses.
- Emergent bilingual graduates and economically disadvantaged graduates were less likely than their peers to meet dual-credit CCMR indicator requirements.
- Across student populations, most graduates who met dual-credit CCMR indicator requirements earned at least 3 dual-credit hours in math or RLA.

- Across all three college outcomes, success rates among graduates who met dual-credit CCMR indicator requirements were highest among those who met requirements by completing 3 credit hours in math or RLA (for example, 41% enrolled in college with a first-year GPA of 2.5 or higher) and lowest among those who met requirements by completing 9 credit hours in non-core subject areas (for example, 27% enrolled in college with a first-year GPA of 2.5 or higher).

Policy Implications

Access to college credit opportunities during high school is uneven across Texas. While 92% of high schools had at least one graduate who met CCMR indicator requirements tied to earning college credit, access varied widely by program opportunity. Only 28% of high schools had students meeting OnRamps indicator requirements, compared to 64% for the AP/IB indicator and 87% for the dual-credit indicator. As policymakers consider revising CCMR indicator requirements, it will be important to account for these differences to avoid unintentionally disadvantaging students in schools with fewer program offerings.

CCMR policies and school guidance practices could encourage more students to pursue advanced coursework beyond the minimum requirements. A third of students who met AP/IB indicator requirements passed four or more exams, not just one exam, and more than half of dual-credit students earned 13 or more credit hours—well beyond the 9-hour requirement. This suggests that when these opportunities are available, students engage with them deeply. To support broad access and maximize student potential, schools should encourage students—especially those from families less familiar with college pathways—to pursue rigorous coursework beyond the minimum necessary to meet CCMR benchmarks.

Advising policies and practices should consider that students who met CCMR requirements in core subject areas were more successful in the first year of college. Among graduates who met AP/IB CCMR indicator requirements, 39% of graduates who passed an exam in math or RLA and 33% of graduates who passed an exam in a non-core subject area achieved a first-year GPA of 2.5 or higher. Similarly, 41% of graduates who earned at least 3 credit hours in math or RLA and 27% of graduates who earned 9 or more credit hours in non-core subject areas achieved a first-year GPA of 2.5 or higher. To the extent that students under-represented in higher education are more likely to meet CCMR requirements through non-core subject areas, current practices may perpetuate existing gaps in college success.

Introduction

Passage of the Every Student Succeeds Act (ESSA) in 2015 drew increased focus in public schools on preparing students for life after high school. While state accountability systems before ESSA focused largely on student achievement test scores and high school graduation, ESSA encouraged states to monitor the opportunities that schools provide to students that prepare them for college and entry into the workforce. As of 2025, 42 states have incorporated college and career readiness measures in their accountability systems, with advanced course-taking (including Advanced Placement [AP], International Baccalaureate [IB], and dual credit) among the most common indicators across states (Hyslop, 2025).

Measures of college, career, and military readiness (CCMR) in Texas resemble the measures used by other states within their accountability systems. As of January 1, 2024, the Texas Education Code includes 10 CCMR indicators as part of the Texas A–F Accountability System (Texas Education Agency, 2024).[1] These indicators include six measures of college readiness, three measures of career readiness, and one measure of military readiness (see Exhibit 1). Two of the indicators (one college-ready indicator and one career-ready indicator) are designed specifically for students who receive special education services; however, graduates who received special education services may also meet other CCMR indicator requirements. Besides defining CCMR measures, the Texas Education Code specifies that the commissioner may periodically review the indicators for reliability and validity to ensure that the CCMR indicators are, in fact, predictive of students' success in college and the workforce.

Exhibit 1. Readiness Standard, Outcome, and CCMR Indicators in the Texas A–F Accountability System for Districts and High Schools

Readiness standard	Outcome	CCMR indicators
College ready	Advanced Placement (AP)/International Baccalaureate (IB)	Earn a score of at least 3 on AP examinations or 4 on IB examinations.
	Texas Success Initiative (TSI)	Meet TSI criteria (SAT/ACT/TSI assessment/college preparatory course) in English language arts (ELA), reading, and mathematics (math).
	Dual credit	Earn dual credit (9 hours or more in any subject, or 3 hours or more in ELA or math).
	Associate degree	Earn an associate degree.

[1] The CCMR indicators are established in the Texas Education Code, Section 39.053(b).

Readiness standard	Outcome	CCMR indicators
	OnRamps	Complete an OnRamps course in any subject and be eligible to earn college credit.
	Advanced diploma[a]	Graduate under an advanced diploma plan and be identified as a student receiving special education services.
Career ready	Align industry-based certification (IBC)	Complete a program of study and earn an aligned IBC.
	Certificate	Earn a Level 1 or Level 2 certificate.
	Workforce readiness[a]	Graduate with a completed individualized education program and workforce readiness indicator (graduation type codes 04, 05, 54, or 55) and be identified as a student in special education.
Military ready	Enlisted	Enlist in the Armed Forces or the Texas National Guard.

Note. CCMR = College, Career, and Military Readiness. The industry-based certification (IBC) indicator refers to the aligned IBC and a program-of-study completer that will be phased in with the graduating class of 2026. The military-ready indicator was excluded from this analysis because accountability calculations cannot be conducted until data can be obtained directly from the U.S. Armed Forces.

[a] Both advanced diploma and workforce readiness indicators are specific to students receiving special education services.

In August 2024, the Texas Education Agency (TEA) contracted with the American Institutes for Research® (AIR®), a nonprofit, nonpartisan social science research organization, to conduct a series of studies to examine the extent to which CCMR indicators and experiences during the first year of college predict successful college and workforce outcomes up to 6 years after high school graduation (Zeiser & Cain, 2025; Zeiser et al., 2025). Key findings from this previous research include:

- Students who met college readiness indicator requirements during high school were more likely to enroll in college in the first year after high school graduation (ranging from 65% to 79%) and more likely to complete a bachelor's degree within 6 years of high school graduation (ranging from 39% to 54%) than students who did not meet any CCMR indicator requirements (30% enrolling in college and 4% completing a bachelor's degree).
- Besides increased degree completion rates, graduates who completed college degrees and who met college readiness indicator requirements during high school accumulated fewer college credit hours each semester on average. This suggests that many of these graduates transitioned from high school to college having already accumulated college credits that counted toward their degrees.
- Students who met CCMR requirements during high school were also more likely to experience career success over time. Specifically, within 5 years of high school graduation, graduates who completed a Level 1 or Level 2 certificate during high school (41%), completed an associate degree during high school (35%), met dual-credit indicator

requirements (32%), or completed an aligned, industry-based certification (32%) were more likely to earn a self-sufficiency standard wage than students who did not meet any CCMR indicator requirements (28%).

Although this research uncovered that students who met CCMR indicator requirements were more likely to experience success after high school than students who did not meet CCMR indicator requirements during high school, analyses did not account for the fact that graduates may meet multiple CCMR indicator requirements simultaneously. Previous analyses also did not explore whether refined college readiness indicators may better predict college success. For example, the dual-credit indicator includes both (a) graduates who earned at least 3 college credit hours during high school in mathematics (math) or reading/language arts (RLA) courses and (b) graduates who earned at least 9 college credit hours during high school in any subject area. To date, research has not explored variation in outcomes among students who meet CCMR indicators in different ways, which could inform future refinements to CCMR indicators to ensure encouragement of opportunities during high school that are most predictive of college success.

To fill this gap in the research, TEA contracted AIR to explore whether different measures of college readiness indicators (sub-indicators) are more predictive of successful college outcomes within 1 year after high school graduation than established college readiness measures. This study also examines the prevalence of CCMR indicators across Texas high schools and different student populations, whether college readiness sub-indicators may disproportionately influence the percentage of economically disadvantaged and emergent bilingual students who meet college readiness requirements,[2] and whether relationships between college readiness sub-indicators and college outcomes differ across student populations.

In the sections that follow, we describe the study's research questions and the data and analyses we used to explore the prevalence and predictive validity (or the extent to which measures successfully predict college success) of college readiness indicators and sub-indicators. We present study findings separately for each college readiness indicator. The study concludes with a summary of the study limitations and implications for policy and practice.

[2] Graduates who received special education services represent another population of graduates for whom changes to existing CCMR indicators may have implications. We do not, however, examine the prevalence of CCMR indicators or the implications of potential revisions for this population of graduates because (a) we are not proposing CCMR sub-indicators designed specifically for students who received special education services, and (b) the binary indicator for receipt of special education services does not adequately capture the range of student abilities or how these abilities might shape students' high school experiences and college success. Nonetheless, our analyses included control variables to identify graduates who received special education services and graduates who met requirements for one of the CCMR indicators designed for students who received special education services.

A. Study Overview and Research Questions

To explore the prevalence and predictive validity of college readiness indicators and sub-indicators, we address the following research questions (RQs) separately for three focal college readiness indicators:

1. What percentage of high school graduates met, and in what percentage of high schools across Texas did graduates meet, the college readiness indicator?
2. To what extent did graduates who met college readiness indicator requirements also meet additional CCMR indicator requirements?
3. To what extent did the prevalence of the college readiness indicator differ by economic disadvantage and emergent bilingual status?
4. To what extent do graduates vary in the manner in which they met college readiness indicator requirements (for example, by subject area)?
5. To what extent do college readiness indicators and sub-indicators predict successful college outcomes within 1 year of high school graduation?
6. Are relationships between college readiness indicators and sub-indicators and college outcomes consistent across student populations, including economic disadvantage and emergent bilingual status?

Data and Sample

To address these research questions, we analyzed linked longitudinal data files from the Education Research Center (ERC) at the University of Texas at Austin for high school graduates in the 2022–23 school year (377,360 graduates), which represents the most recent year of ERC data available for both CCMR indicators and outcomes during the first year of college after high school. For this study, data from the University of Texas at Austin and the Texas Higher Education Coordinating Board (THECB) have been supplemented with data from the College Board and the International Baccalaureate (IB), which enable us to examine AP and IB examination (exam) scores and associated subject areas. Besides existing CCMR indicators, data from TEA enabled us to measure the subject areas associated with dual-credit courses graduates passed during high school and student characteristics such as economic disadvantage, emergent bilingual status, and receipt of special education services. The University of Texas at Austin provided course-level information about OnRamps course completion to the ERC through TEA. College enrollment and course performance data for students who enrolled in a public college in Texas were provided by THECB, enabling us to measure college enrollment, completion of developmental courses, and GPA during the first year of college after high school graduation. Additional information about ERC data and the measures included in this study is provided in Appendix A.

Measures

This study focuses on the three college readiness indicators for which we could measure subject-area variation in how graduates met CCMR requirements: meeting criteria for college credit based on (in other words, passing) AP/IB exams, completing OnRamps courses, and earning dual-credit hours during high school. For each of these college readiness indicators, we explored course-level and exam-level data to identify patterns regarding the number of assessments or college credits completed and the subject area(s) associated with students' CCMR-related achievements. Based on these data, we developed college readiness sub-indicators that more precisely measure students' completion of requirements for CCMR indicators within the four core subject areas (math, RLA, science, and social studies) or solely in non-core subject areas (for example, career and technical education courses or foreign languages). Definitions for indicators and sub-indicators are listed in Exhibit 2.

Exhibit 2. College Readiness Indicators and Sub-Indicators

Outcome	Indicator	Sub- indicators
Advanced Placement (AP)/ International Baccalaureate (IB)	Earn a score of at least 3 on AP examinations (exams) or 4 on IB exams.	• Earn a score of at least 3 on AP exams or 4 on IB exams in mathematics (math) or reading/language arts (RLA). • Earn a score of at least 3 on AP exams or 4 on IB exams in a science or social studies course (but not in math or RLA). • Earn a score of at least 3 on AP exams or 4 on IB exams in a subject that is not math, RLA, science, or social studies.
Dual credit	Earn dual credit (9 hours or more in any subject, or 3 hours or more in ELA or math).	• Earn 3 hours or more in a math or RLA subject. • Earn 9 hours or more, including at least one course in science or social studies, but not in math or RLA. • Earn 9 hours or more in non-core subject areas (that is, excluding science, social studies, math, or RLA).
OnRamps	Complete an OnRamps course in any subject and be eligible to earn college credit.	• Complete an OnRamps course in math or RLA and be eligible to earn college credit. • Complete an OnRamps course in science or social studies (but not in math or RLA) and be eligible to earn college credit.

Note. All students who completed an OnRamps course in a non-core subject also completed an OnRamps course in math, RLA, science, or social studies. Therefore, we do not propose a sub-indicator for students who met OnRamps indicator requirements solely through the completion of non-core courses.

To assess the extent to which college readiness indicators and sub-indicators are predictive of college success, this study examines three college outcomes: college enrollment in the year after high school graduation, enrolling in college without enrolling in developmental courses, and achieving a first-year GPA of 2.5 or higher. For this study, we examine enrollment in a public college or university within the state of Texas because data needed to measure the remaining

outcomes are not available for graduates who enroll in private colleges or colleges in other states.[3] Students must have enrolled in college in either fall 2023 or spring 2024 to be counted as enrolling in college within 1 year of high school graduation; students who enrolled in college in summer 2023 but did not enroll in college during the school year are not counted as enrolling in college.

Among students who enrolled in a public 2-year or 4-year college in Texas during the 2023–24 school year, we examined whether students enrolled in developmental courses and calculated their first-year GPA. First, we identified students who took one or more developmental courses in summer 2023, fall 2023, or spring 2024. To calculate first-year GPA, we averaged grade points earned in all completed courses (excluding developmental courses) in the fall 2023 and spring 2024 semesters, weighted by the number of credit hours earned.[4] Values range from 0.0 to 4.0, with higher values indicating higher academic achievement. Based on previous research showing that college students with a first-year GPA of 2.5 or higher were more likely to complete a bachelor's degree than their peers with lower GPAs (Zeiser et al., 2025), we measured the percentage of students who achieved a cumulative GPA of 2.5 or higher in college in the first academic year after high school graduation. For each of these outcomes, students who did not enroll in college during the 2023–24 school year are identified as not achieving the successful college outcome.

To account for differences in student background characteristics when estimating relationships between CCMR indicators and college outcomes, we also measured three student demographic characteristics: economic disadvantage, emergent bilingual status, and receipt of special education services (see definitions of these terms in Appendix A). Besides the three focal college readiness indicators described in Exhibit 2, statistical models also included binary indicators to identify students who met other CCMR indicator requirements during high school:

- Completed an associate degree;
- Met Texas Success Initiative Assessment (TSIA) indicator requirements;
- Met one or more career readiness indicator requirements; or
- Met one or more indicator requirements designed for students who received special education services.

[3] Please note that previous research found that students who met requirements for the AP/IB CCMR indicator were more likely to enroll in a college outside the state of Texas than other groups of graduates, including students who met requirements for the dual-credit CCMR indicator and students who did not meet any CCMR indicator requirements (Zeiser et al., 2025). Data provided in Appendix Exhibit B1 further illustrate that, among graduates in the 2021–22 school year, college enrollment rates that include National Student Clearinghouse data that allow us to capture out-of-state enrollments and enrollment in most private colleges varied across the CCMR indicators and sub-indicators. As a result, college enrollment rates are likely under-reported in this paper, which focuses on within-state college enrollment, and this under-reporting may not be consistent across all graduates.

[4] For students who enrolled in college for one semester, their first-year GPA is measured as the GPA during the single semester of enrollment.

Methods

To address RQ 1–RQ 4, we examined descriptive statistics such as the percentage of graduates who met CCMR indicator and sub-indicator requirements, the distribution of graduates across the number of AP/IB exams passed/OnRamps courses or dual-credit hours they successfully completed, and the distribution of passed exams/completed OnRamps courses/dual-credit hours completed by subject area. For each focal college readiness indicator, we also examined the percentage of graduates who also met additional CCMR indicator requirements. While analyses for RQ 1–RQ 3 relied on the population of graduates who met original CCMR indicator requirements, analyses for RQ 4–RQ 6 excluded a relatively small number of graduates for whom course-level and exam-level data did not align with the CCMR indicator.[5] In addition, for RQ 4–RQ 6, we limited the sample to schools in which at least one student met CCMR indicator requirements (a proxy measure for access to the educational opportunity) to explore the prevalence of the CCMR indicator within schools in which students *could have* met CCMR indicator requirements.[6]

To examine relationships between CCMR indicators and measures of college success (RQ 4 and RQ 5), we estimated hierarchical linear probability models (accounting for the nesting of students within high schools) for each college readiness indicator and sub-indicator and for each of the three college outcomes. For each model, we excluded students who graduated from schools in which zero students met focal college readiness indicator requirements,[7] and so the number of schools and graduates included in analyses varies based on the prevalence of the CCMR indicator. To account for the fact that many graduates meet multiple CCMR indicator requirements during high school, our statistical models estimating relationships between college readiness indicators and sub-indicators and college outcomes include controls for students' completion of other CCMR indicators, as described above. Models also included control variables to account for students' economic disadvantage status, emergent bilingual status, and receipt of special education services. For each focal college readiness indicator, we compare predicted outcomes associated with the existing indicator to outcomes associated with sub-indicators to determine whether sub-indicators better capture variation in college outcomes among students with different types of accomplishments during high school. Additional information about the statistical analyses can be found in Appendix A.

[5] For example, although students may take OnRamps and dual-credit courses over the summer to meet CCMR indicator requirements, data on completion of summer courses were not available in the ERC system. Therefore, the sub-indicators we created based on the subject area of completed courses excluded students who solely met CCMR indicator requirements through the completion of summer courses.

[6] Although it is possible that opportunities may exist in schools in which zero students met CCMR indicator requirements (for example, an AP course is offered, but zero students passed the exam with a score of 3 or higher), we expect this occurrence to be rare.

[7] These students are removed from statistical models because not meeting requirements for the CCMR indicator in these schools represents the absence of the educational opportunity rather than the absence of college readiness.

An overview of study limitations related to methods and data coverage is provided in Box 1. In the sections that follow, we illustrate findings associated with the study's research questions separately for each of the three focal college readiness indicators.

Box 1. Study Limitations

Before describing the study findings, it is important to highlight a few key limitations of this study. A more detailed description of these limitations is provided after the presentation of study findings. In general, study limitations relate to data coverage and analysis methods.

- **Not all college enrollees are counted in college outcomes.** Course-level data that enable us to measure first-year GPA and developmental course-taking are available only for students who enroll in public 2-year and 4-year colleges in Texas. Therefore, graduates who enroll in independent (or private) colleges in Texas or in colleges outside the state are excluded from analyses in this paper. Importantly, previous analyses demonstrated that students who met AP/IB CCMR indicator requirements were more likely to enroll in a college outside Texas than students who met other CCMR indicator requirements (Zeiser et al., 2025). Data measuring graduates' enrollment in colleges outside Texas, however, are not available for high school graduates from the 2022–23 school year. In Appendix Exhibit B1, we provide data for graduates in 2021–22 to demonstrate the extent to which rates of enrollment in out-of-state and private colleges differed by completion of CCMR indicators.
- **Statistical analyses do not account for all predictors of college success.** Although the statistical models predicting college outcomes account for students' economic disadvantage status, emergent bilingual status, and the completion of other CCMR indicators, they do not account for other demographic or academic characteristics that may explain differences in college outcomes. As a result, observed differences in college outcomes between students who do and do not meet CCMR indicator or sub-indicator requirements may partially reflect unobserved differences between these groups rather than the indicators themselves.
- **Outcomes measure short-term rather than long-term college success.** Although first-year GPA and developmental course-taking are predictive of successful college degree completion, because this paper focuses on the 2022–23 cohort of high school graduates, we cannot directly measure the extent to which CCMR indicators predict college degree completion for these graduates.

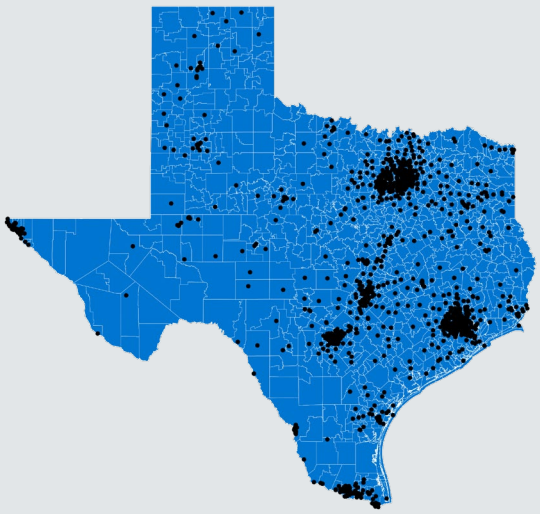
B. Findings

AP/IB Exam Scores

AP/IB Indicator Fast Facts (RQ 1–RQ 3)

In the 2022–23 school year, 76,882 students across 1,276 schools met AP/IB CCMR indicator requirements (see Exhibit 3), representing 20% of high school graduates across Texas. Students met AP/IB CCMR indicator requirements in 64% of the 2,002 public high schools across the state.

Exhibit 3. Locations of Texas High Schools in Which at Least One Graduate Met AP/IB CCMR Indicator Requirements



Note. AP = Advanced Placement; IB = International Baccalaureate; CCMR = college, career, and military readiness. White lines in the map represent school districts and black dots in the map represent the location of high schools in which at least one graduate met AP/IB CCMR indicator requirements.

Among students who met the AP/IB CCMR indicator requirements,

- 64,950 students (84%) also met TSIA indicator requirements.
- 30,334 students (39%) also met dual-credit indicator requirements.
- 10,162 students (13%) also met at least one career readiness indicator requirement.
- 9,388 students (12%) also met the OnRamps indicator requirements.
- 2,892 students (4%) also met associate degree indicator requirements.
- 655 students (1%) also met at least one CCMR indicator requirement designed for students receiving special education services.

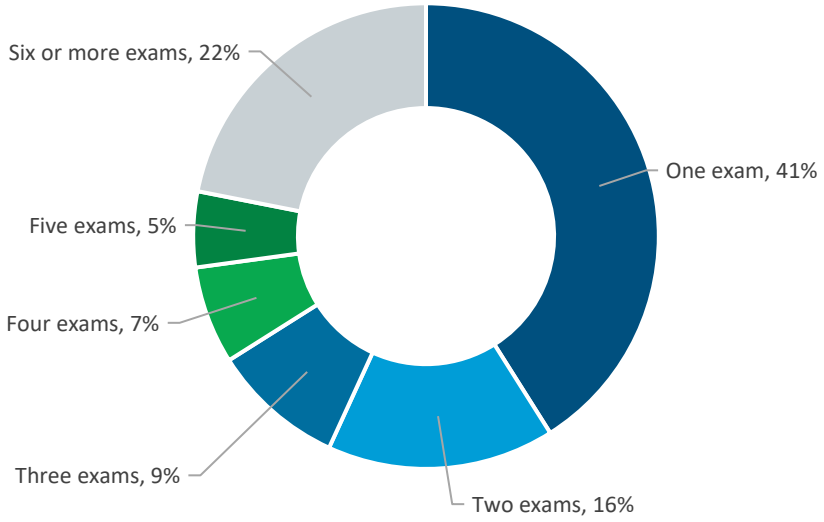
Among graduates of high schools in which the AP/IB indicator requirements were met,

- 22% of graduates met AP/IB indicator requirements.
- 14% of graduates who were economically disadvantaged met AP/IB indicator requirements, compared with 31% of graduates who were not economically disadvantaged.
- 13% of graduates who were emergent bilingual met AP/IB indicator requirements, compared with 23% of graduates who were not emergent bilingual.

Variation among graduates who met AP/IB indicator requirements (RQ 4)

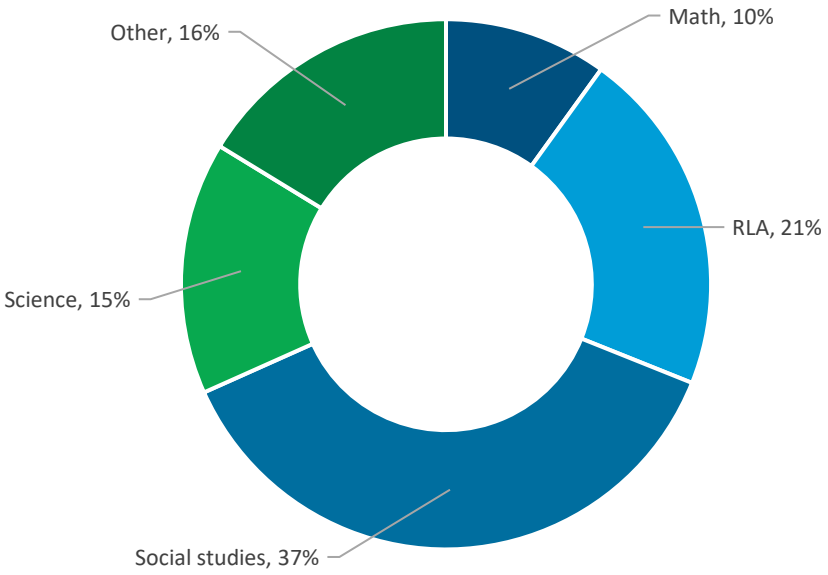
Although the AP/IB CCMR indicator requirements only specify that graduates pass one AP exam with a score of 3 or higher or an IB exam with a score of 4 or higher, **most graduates who met requirements for this indicator passed more than one exam**. Among graduates in school year 2022–23 who met AP/IB indicator requirements, 59% passed more than one exam, and more than one fifth (22%) passed six or more exams (see Exhibit 4). Among the passed exams, more than one third were associated with social studies (37%), almost one third were associated with math (10%) or RLA (21%), and almost one third were associated with science (15%) or another subject (16%; Exhibit 5).

Exhibit 4. Number of Passed AP/IB Exams Among Graduates in School Year 2022–23 Who Met AP/IB CCMR Indicator Requirements



Note. Percentages are based on the 76,825 graduates who met AP/IB CCMR indicator requirements and for whom exam-level data were available.

Exhibit 5. Subject Area Associated With Passed AP/IB Exams Among Graduates in School Year 2022–23 Who Met AP/IB CCMR Indicator Requirements

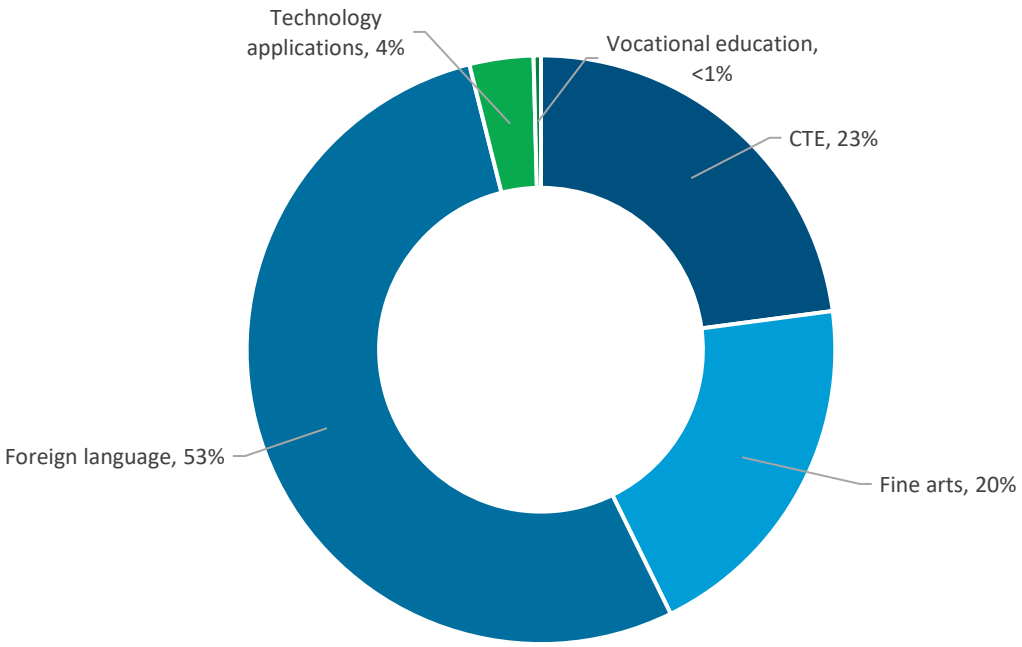


Note. RLA = reading/language arts. Percentages are based on the 270,598 exams passed by 76,825 graduates who met AP/IB CCMR indicator requirements and for whom exam-level data were available.

Among the exams in "other" non-core subject areas, more than half (53%) were associated with a foreign language, and one fifth (20%) were associated with fine arts (see Exhibit 6). Almost one quarter of passed exams in a non-core subject area were associated with career and technical education (CTE) courses (23%), another 4% were associated with technology applications,[8] and less than 1% were associated with vocational education or other subject areas.

[8] In the 2021–22 school year, the percentage of the exams passed in other subject areas that were associated with technology applications was somewhat larger (9%), while the percentage associated with CTE courses was somewhat smaller (18%).

Exhibit 6. Subject Area Associated With Passed AP/IB Exams in a Non-core Subject Area Among Graduates Who Met AP/IB CCMR Indicator Requirements in School Year 2022–23



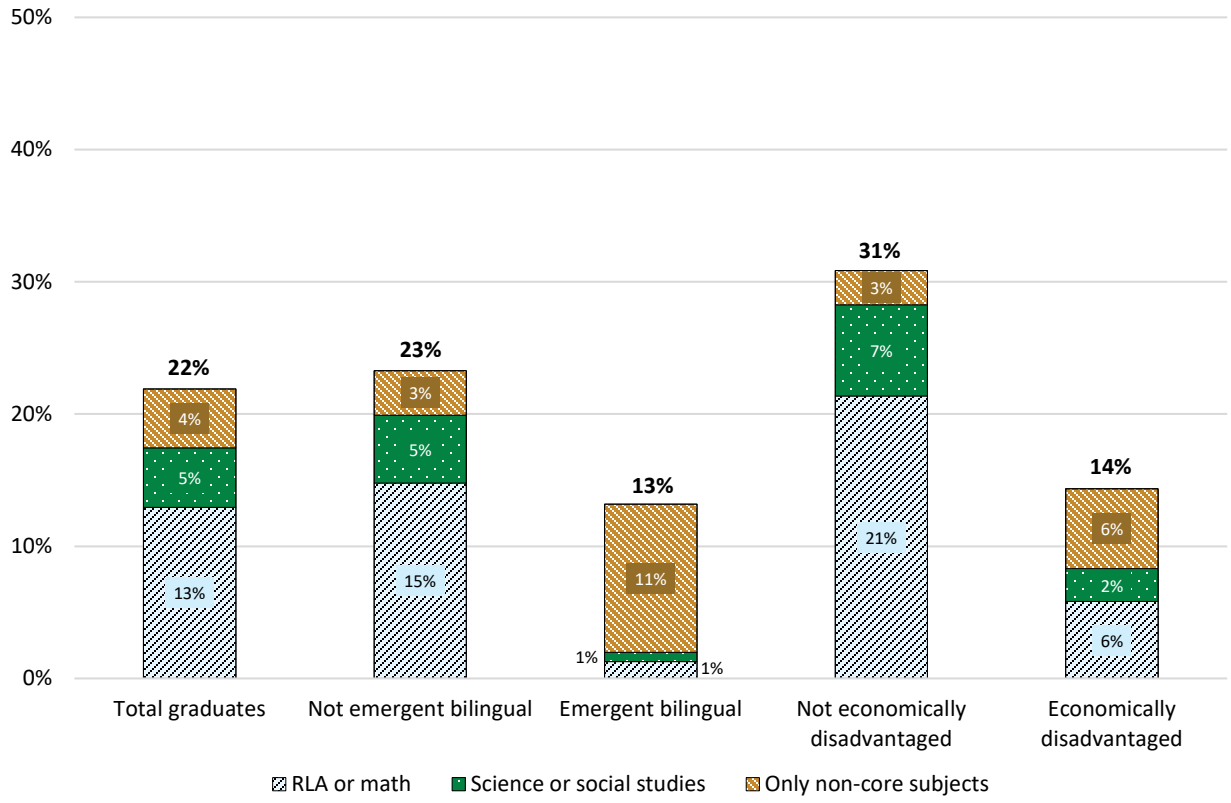
Note. CTE = Career and technical education. Percentages are based on the 44,036 exams passed in non-core subject areas by 76,825 graduates who met AP/IB CCMR indicator requirements and for whom exam-level data were available.

Based on the variation in the subject areas in which graduates passed AP and IB exams, we explore, in the section that follows, whether the subject in which graduates passed AP/IB exams (math or RLA, science or social studies, or a non-core subject area) is associated with graduates' college outcomes in the school year immediately after high school graduation. For these AP/IB sub-indicators, students are classified into the "science and social studies" indicator only if they did not pass an exam in math or RLA, and graduates are classified into the "non-core subject" indicator only if they did not pass an exam in any of the four core subject areas.

Exhibit 7 shows that both the overall rates of meeting the AP/IB CCMR indicator requirements and the subject associated with passed AP/IB exams vary across different student populations. **Among all graduates of high schools in which at least one graduate met AP/IB CCMR indicator requirements, 22% of graduates met AP/IB CCMR indicator requirements, with more than half (13%) meeting the requirements by passing a math or RLA exam**, 5% meeting the requirements by passing a science or social studies exam (but not exams in math or RLA), and 4% passing an exam only in a non-core subject area. In contrast, **13% of emergent bilingual graduates met AP/IB CCMR indicator requirements, and nearly all these graduates (11% of emergent bilingual graduates) met the requirement by passing the exam in a non-core**

subject area. Another way to interpret this finding is that, among all high school graduates, almost two out of every 10 graduates who met AP/IB indicator requirements did so solely through non-core subject areas, compared with about eight out of every 10 emergent bilingual graduates who met AP/IB CCMR indicator requirements. At the end of this section, we explore whether relationships between AP/IB sub-indicators and college outcomes vary based on economic disadvantage and emergent bilingual status.

Exhibit 7. Percentage of Graduates in School Year 2022–23 Who Met AP/IB CCMR Indicator Requirements Broken Down by Subject Area, Overall and for Selected Student Subgroups



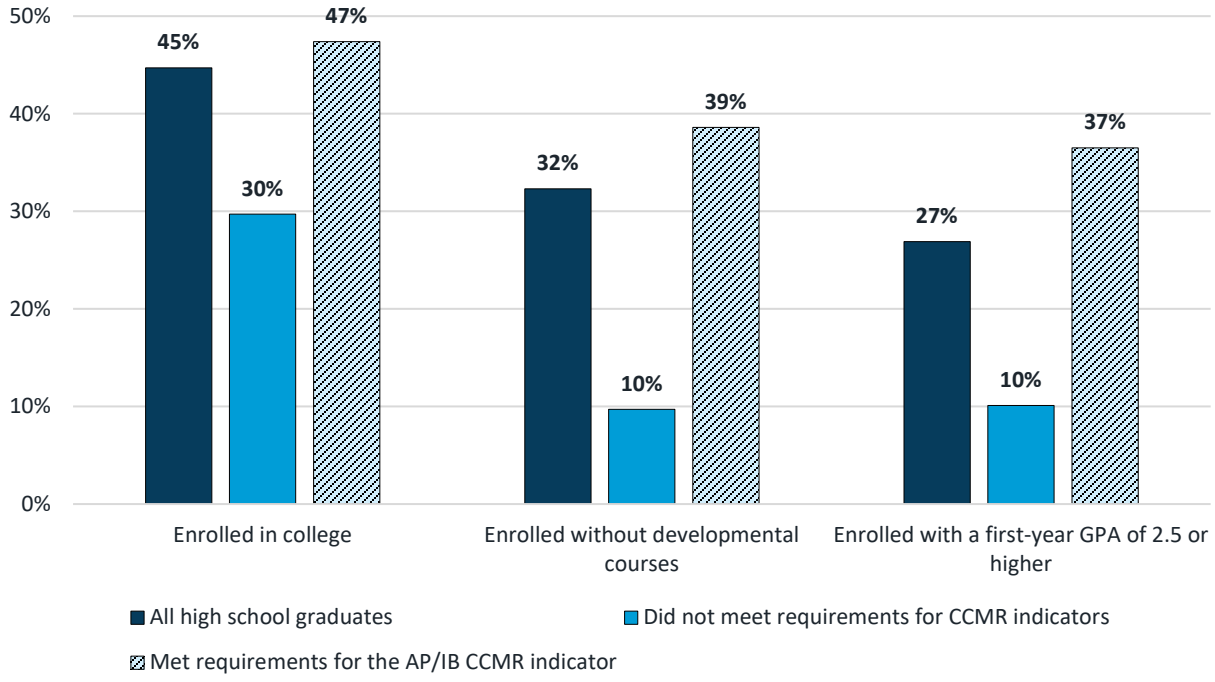
Note. RLA = reading/language arts. Percentages are based on the 350,717 graduates of high schools in which at least one graduate met AP/IB CCMR indicator requirements and for whom exam-level data were available. Percentages are based on the following sample sizes: 47,953 graduates who were emergent bilingual, 302,764 graduates who were not emergent bilingual, 190,080 graduates who were economically disadvantaged, and 160,637 graduates who were not economically disadvantaged. Categories based on subject area are mutually exclusive such that graduates who passed AP/IB exams in science and social studies did not pass AP/IB exams in math or RLA, and graduates who passed AP/IB exams only in non-core subjects did not pass any exams in core subject areas.

To what extent do college readiness indicators and sub-indicators predict college outcomes? (RQ 5)

Within the subset of high schools in which at least one graduate met AP/IB CCMR indicator requirements, 45% of graduates enrolled in a public college in Texas within a year of high

school graduation, 32% enrolled without taking developmental courses, and 27% achieved a first-year GPA of 2.5 or higher (see Exhibit 8). After controlling for the completion of other CCMR indicators and student demographic characteristics, **graduates who met AP/IB CCMR indicator requirements had a somewhat higher rate of enrolling in a public college in Texas (47%) than the average across all graduates, while graduates who did not meet any of the CCMR indicator requirements had a lower college enrollment rate (30%)**. Thirty-nine percent of graduates who met AP/IB CCMR indicator requirements enrolled in college without enrolling in developmental courses in the first year, indicating that the remaining 8% enrolled in college and enrolled in developmental courses. Similarly, 37% of graduates who met AP/IB CCMR indicator requirements achieved a first-year GPA of 2.5 or higher, indicating that the remaining 10% enrolled in college and achieved a first-year GPA below 2.5. Among graduates who did not meet any CCMR indicator requirements, 10% achieved a first-year GPA of 2.5, indicating that the remaining 20% enrolled in college and achieved a first-year GPA below 2.5.

Exhibit 8. College Outcomes for High School Graduates, Graduates Who Did Not Meet Any CCMR Indicator Requirements, and Graduates Who Met AP/IB CCMR Indicator Requirements



Note. CCMR = college, career, and military readiness; AP = Advanced Placement; IB = International Baccalaureate; GPA = grade point average. Percentages are based on the 350,717 graduates of high schools in which at least one graduate met AP/IB CCMR indicator requirements and for whom exam-level data were available. The percentage for all high school graduates is a raw percentage; percentages for graduates who did not meet CCMR indicator requirements and for graduates who met AP/IB CCMR indicator requirements are adjusted values based on results of hierarchical linear probability models that account for the nesting of graduates within high schools and statistically control for meeting requirements for other CCMR indicators, emergent bilingual status, economic disadvantage status, and receipt of special education services. More information about the methods can be found in Appendix A, and model results can be found in Appendix Exhibit B2.

In Exhibit 9, we illustrate the predicted college outcomes for different subgroups of graduates based on the CCMR sub-indicators that take into account the subject areas associated with AP/IB exams. After controlling for student demographic characteristics and the completion of other CCMR indicators, 46% of graduates who met AP/IB CCMR indicator requirements through exams in core subject areas enrolled in a public college in Texas. Likewise, rates of enrolling in college without enrolling in a developmental course in the first year were similar for these two indicators: 39% of graduates who passed AP or IB exams in math or RLA and 38% of graduates who passed AP or IB exams in science or social studies. For both AP/IB CCMR sub-indicators, the remaining 7% to 8% of graduates enrolled in a Texas public 2-year or 4-year college and took at least one developmental course in their first year.

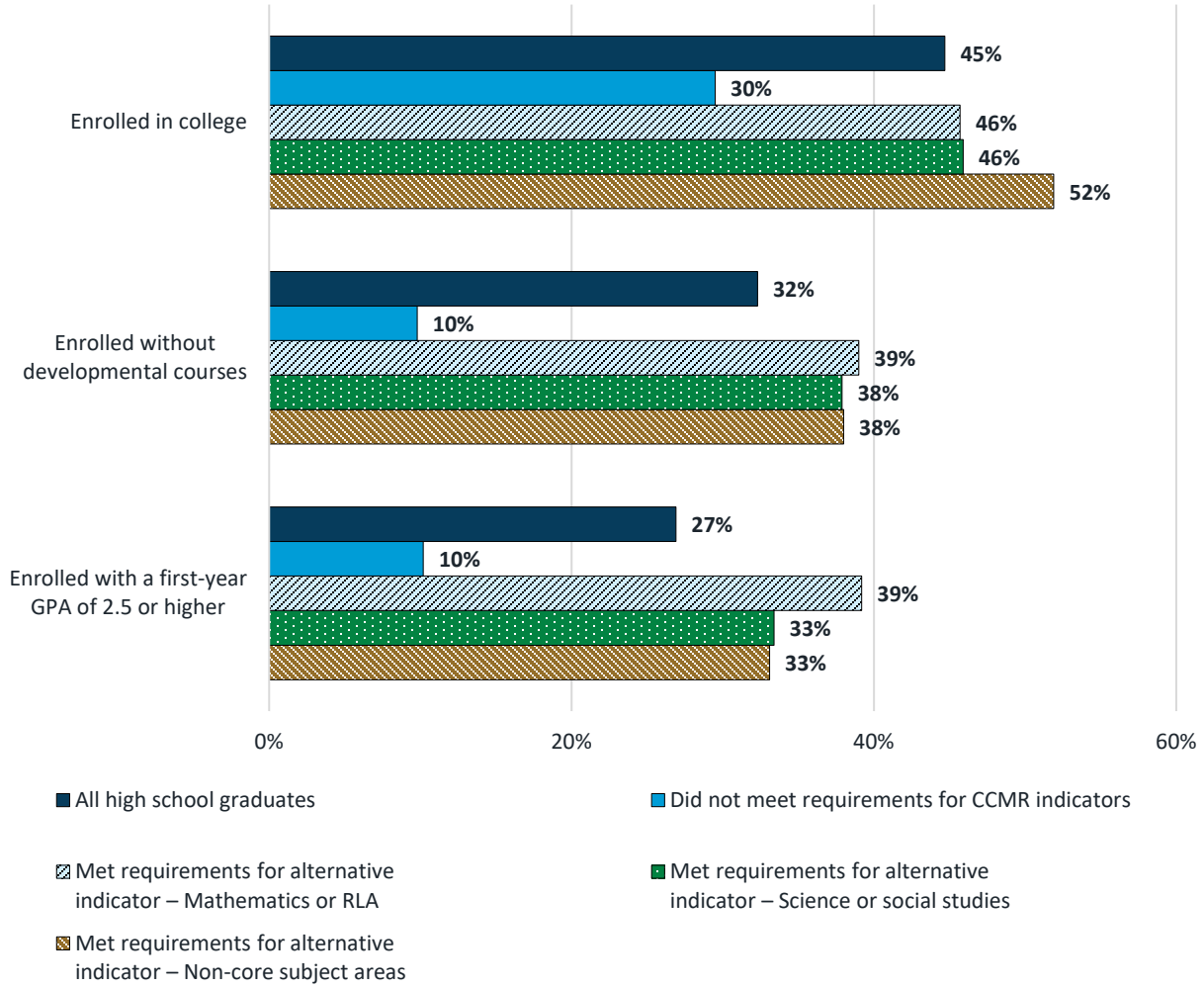
Across the AP/IB CCMR sub-indicators, graduates who met indicator requirements through exams in non-core subject areas had the highest rate of enrolling in a public college in Texas (52%). It is important to note, however, that previous analyses that focused on graduates in school year 2021–22 found that 25% of graduates who met AP/IB CCMR indicator requirements enrolled in a college outside Texas in the year after high school graduation (Zeiser et al., 2025). Therefore, the higher college enrollment rate for this group of graduates may reflect that graduates who pass AP/IB exams in core subject areas may be more likely to enroll in a college outside Texas.[9] Findings presented in Exhibit 9 also show that 38% of graduates who passed AP or IB exams only in non-core subject areas enrolled in college without developmental courses in the first year, indicating that the remaining 14% enrolled in developmental courses. Therefore, despite the higher rate of enrolling in a public 2-year or 4-year college in Texas, graduates who met the AP/IB CCMR requirement through non-core subject areas were more likely than graduates who met the AP/IB CCMR requirement through core subjects to require developmental courses during the first year of college.

Findings related to first-year GPA also differed depending on the subject areas associated with passed AP/IB exams (see Exhibit 9). Thirty-nine percent of graduates who met AP/IB CCMR indicator requirements by passing exams in math or RLA achieved a first-year GPA of 2.5 or higher, indicating that the remaining 7% enrolled in college but achieved a GPA below 2.5. By comparison, one third (33%) of graduates who met AP/IB CCMR indicator requirements in other subject areas achieved a first-year GPA of 2.5 or higher. These findings indicate that the

[9] Because data for out-of-state college enrollment were not available for graduates in the 2022–23 school year, we were not able to include out-of-state enrollments in our outcome measure. However, in Appendix Exhibit B1, for each of the CCMR indicators and sub-indicators included in this study, we list rates of (a) enrollment in a public 2-year or 4-year college in Texas for 2022–23 graduates; (b) enrollment in a public 2-year or 4-year college in Texas for 2021–22 graduates; and (c) college enrollment for 2022–23 graduates, including data from the National Student Clearinghouse, which captures out-of-state public college enrollment as well as enrollment in several private colleges. These findings confirm that college enrollment rates were highest among graduates in 2021–22 who met AP/IB indicator requirements by passing exams in math and RLA when out-of-state college enrollments were included in the outcome measure.

remaining 13% of graduates who passed AP/IB exams in science or social studies and 19% of graduates who passed AP/IB exams in non-core subject areas enrolled in college but achieved a GPA below 2.5.

Exhibit 9. College Outcomes for High School Graduates, Graduates Who Did Not Meet Any CCMR Indicator Requirements, and Graduates Who Met AP/IB CCMR Sub-Indicator Requirements



Note. CCMR = college, career, and military readiness; AP = Advanced Placement; IB = International Baccalaureate; GPA = grade point average; RLA = reading/language arts. Percentages are based on the 350,717 graduates of high schools in which at least one graduate met AP/IB CCMR indicator requirements and for whom exam-level data were available. The percentage for all high school graduates is a raw percentage; percentages for graduates who did not meet CCMR indicator requirements and for graduates who met the AP/IB CCMR indicator requirements are adjusted values based on results of hierarchical linear probability models that account for the nesting of graduates within high schools and statistically control for meeting other CCMR indicator requirements, emergent bilingual status, economic disadvantage status, and receipt of special education services. More information about the methods can be found in Appendix A, and model results can be found in Appendix Exhibit B2.

Are relationships between CCMR measures and college outcomes consistent across student populations? (RQ 6)

Detailed findings by emergent bilingual status and economic disadvantage status are presented in Appendix Exhibit B2. Among graduates who were not emergent bilingual and graduates who were not economically disadvantaged, those who met the AP/IB CCMR indicator requirements solely in non-core subject areas were more likely to enroll in a public college in Texas (by 5–7 percentage points) than graduates who met the AP/IB CCMR indicator by passing a math or RLA exam. College enrollment rates were similar among emergent bilingual and economically disadvantaged students who met AP/IB CCMR indicator requirements regardless of the subject area through which they met indicator requirements. This pattern of findings likely reflects that higher rates of out-of-state college enrollments among graduates who meet AP/IB CCMR indicator requirements are largely concentrated among graduates who were not emergent bilingual and graduates who did not come from economically disadvantaged families.

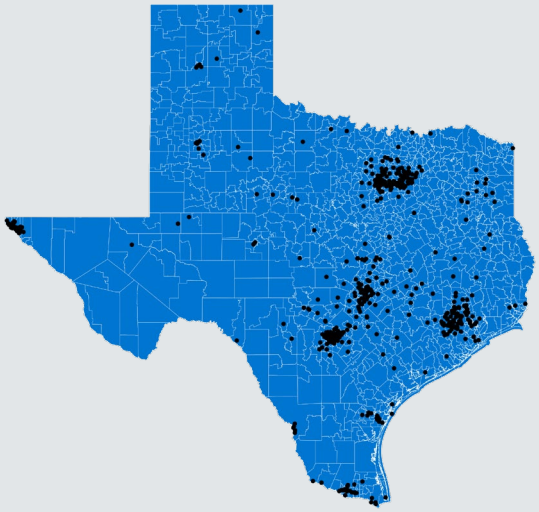
For outcome of college enrollment without development course-taking, rates were similar across the CCMR sub-indicators among graduates who were not emergent bilingual (between 39% and 40%) and graduates who were not economically disadvantaged (between 37% and 38%). However, rates of enrolling in college without taking developmental courses were about 6 percentage points lower for graduates who met requirements solely in non-core subject areas than for graduates who met indicator requirements by passing a math or RLA exam among graduates who were emergent bilingual (30% vs. 36%) and graduates who were economically disadvantaged (38% vs. 44%).

For all the student populations we examined, rates of achieving a first-year GPA of 2.5 or higher were highest among graduates who met AP/IB indicator requirements in math or RLA (ranging from 36% among emergent bilingual graduates to 43% among economically disadvantaged graduates). Although success rates were similar across the remaining subject areas for graduates who were not emergent bilingual and graduates who were not economically disadvantaged (between 34% and 35%), success rates were lower for graduates who met AP/IB requirements solely in non-core subject areas among emergent bilingual graduates (27%) and economically disadvantaged graduates (32%).

OnRamps Indicator Fast Facts (RQ 1–RQ 3)

In school year 2022–23, 18,047 students across 553 schools met OnRamps CCMR indicator requirements (see Exhibit 10), representing 5% of high school graduates across Texas. Students met OnRamps CCMR indicator requirements in 28% of the 2,002 public high schools across the state.

Exhibit 10. Locations of Texas High Schools in Which at Least One Graduate Met OnRamps CCMR Indicator Requirements



Note. CCMR = college, career, and military readiness. White lines in the map represent school districts and black dots in the map represent the location of high schools in which at least one graduate met OnRamps CCMR indicator requirements.

Among students who met OnRamps CCMR indicator requirements,

- 14,277 students (79%) also met TSIA indicator requirements.
- 11,792 students (65%) also met dual-credit indicator requirements.
- 9,388 students (52%) also met AP/IB indicator requirements.
- 3,265 students (18%) also met at least one career readiness indicator requirement.
- 484 students (3%) also met associate degree indicator requirements.
- 148 students (1%) also met at least one CCMR indicator requirement designed for students receiving special education services.

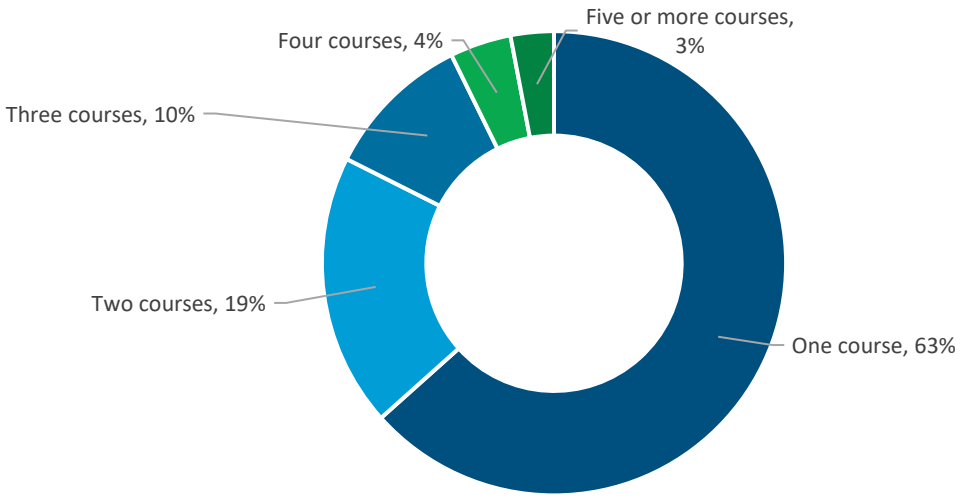
Among graduates of high schools in which the OnRamps indicator requirements were met,

- 9% of graduates met OnRamps indicator requirements.
- 7% of graduates who were economically disadvantaged met OnRamps indicator requirements, compared with 12% of graduates who were not economically disadvantaged.
- 3% of graduates who were emergent bilingual met OnRamps indicator requirements, compared with 10% of graduates who were not emergent bilingual.

Variation among graduates who met OnRamps indicator requirements (RQ 4)

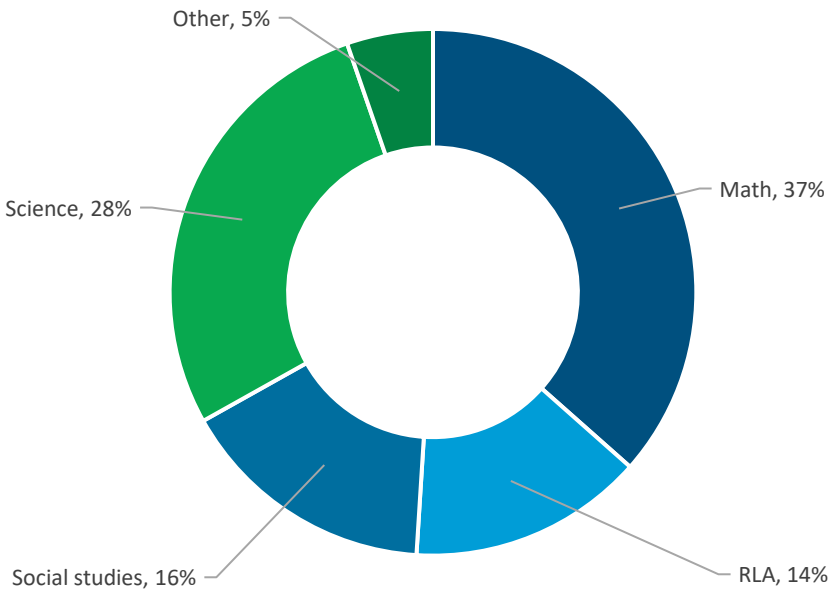
Almost two thirds (63%) of the graduates in school year 2022–23 who met OnRamps CCMR indicator requirements completed only one OnRamps course (see Exhibit 11). About one fifth of these graduates (19%) completed two OnRamps courses, 10% completed three OnRamps courses, 4% completed four OnRamps courses, and 3% completed five or more OnRamps courses. Among the completed courses, more than one third (36%) were associated with math, more than one quarter (28%) were science courses, 14% were RLA courses, 16% were social studies courses, and 5% were in another subject area (see Exhibit 12). In contrast to the pattern observed for AP/IB exams, all students who completed an OnRamps course in a non-core subject area also completed at least one OnRamps course in a core subject area. Because course-level OnRamps data did not provide additional information about courses in "other" subject areas, we did not look more closely at the subject areas comprising the other non-core subject areas.

Exhibit 11. Number of Completed OnRamps Courses Among Graduates in School Year 2022–23 Who Met OnRamps CCMR Indicator Requirements



Note. CCMR = college, career, and military readiness. Percentages are based on the 17,495 graduates who met OnRamps CCMR indicator requirements and for whom course-level data were available.

Exhibit 12. Subject Area Associated With Completed OnRamps Courses Among Graduates in School Year 2022–23 Who Met OnRamps CCMR Indicator Requirements

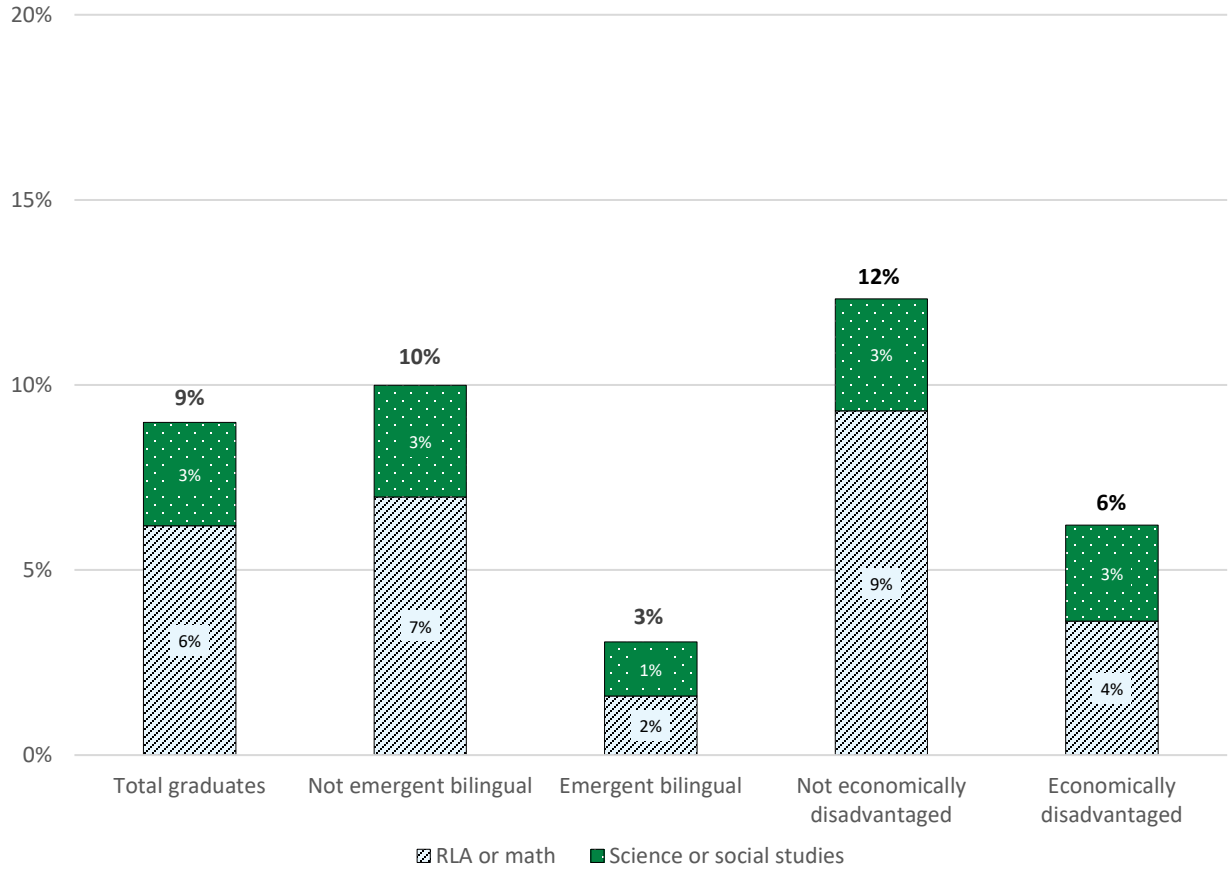


Note. CCMR = college, career, and military readiness; RLA = reading/language arts. Percentages are based on the 29,369 OnRamps courses completed by 17,495 graduates who met OnRamps CCMR indicator requirements and for whom course-level data were available.

To examine sub-indicators for the OnRamps CCMR indicator, we explored whether the subject in which graduates completed the OnRamps course (in math or RLA compared with science or social studies) is associated with graduates' college outcomes in the school year after high school graduation. For these OnRamps sub-indicators, students are classified into the "science and social studies" indicator only if they did complete an OnRamps course in math or RLA.

In Exhibit 13, we show that both the overall rates of meeting the OnRamps CCMR indicator requirements and the subject associated with completed OnRamps courses vary across different student populations. **Among all graduates of high schools in which at least one graduate met OnRamps CCMR indicator requirements, 9% of graduates met OnRamps CCMR indicator requirements, with more than half (6% of graduates) meeting the requirement by completing an OnRamps course in RLA or math.** Graduates who were emergent bilingual were least likely to meet OnRamps CCMR indicator requirements (3% of graduates), while graduates who were not economically disadvantaged were most likely to meet these requirements (12%). **Across all student populations we examined, graduates were more likely to meet the OnRamps CCMR indicator through RLA or math courses (ranging from 2% to 9% of graduates across subgroups) than through the completion of OnRamps courses in science or social studies (ranging from 1% to 3% of graduates across subgroups).**

Exhibit 13. Percentage of Graduates in School Year 2022–23 Who Met OnRamps CCMR Indicator Requirements Broken Down by Subject Area, Overall and for Selected Student Subgroups



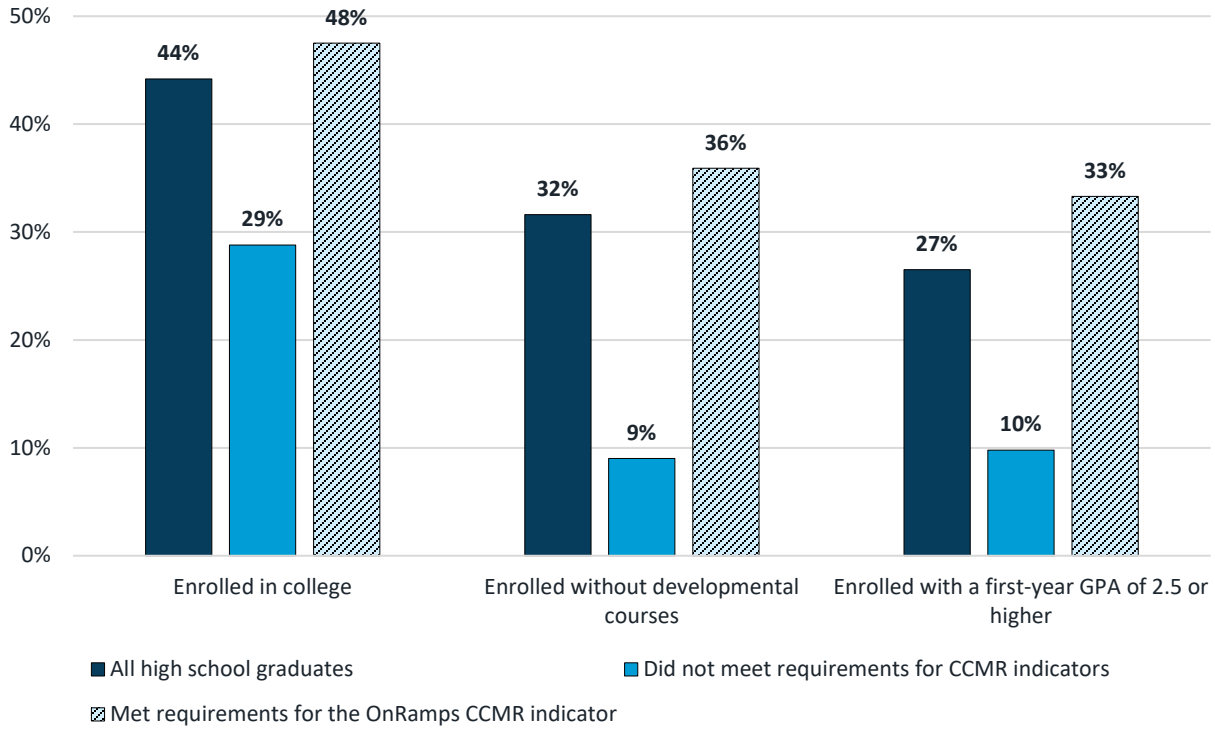
Note. CCMR = college, career, and military readiness; RLA = reading/language arts. Percentages are based on the 194,665 graduates of high schools in which at least one graduate met OnRamps CCMR indicator requirements and for whom course-level data were available. Percentages are based on the following sample sizes: 28,254 graduates who were emergent bilingual, 166,411 graduates who were not emergent bilingual, 106,322 graduates who were economically disadvantaged, and 88,343 graduates who were not economically disadvantaged. Categories based on subject area are mutually exclusive such that graduates who completed at least one OnRamps course in science and social studies did not complete an OnRamps course in math or RLA.

To what extent do college readiness indicators and sub-indicators predict college outcomes? (RQ 5)

Within the subset of high schools in which at least one graduate met OnRamps CCMR indicator requirements, 44% of graduates enrolled in a public college in Texas within a year of high school graduation, 32% enrolled without taking developmental courses, and 27% achieved a first-year GPA of 2.5 or higher (see Exhibit 14). After controlling for the completion of other CCMR indicators and student demographic characteristics, **graduates who met OnRamps CCMR indicator requirements had a somewhat higher rate of enrolling in a public college in Texas**

(48%) than the average across all graduates, while graduates who did not meet any of the CCMR indicator requirements had a lower college enrollment rate (29%). Thirty-six percent of graduates who met OnRamps CCMR indicator requirements enrolled in college without enrolling in developmental courses in the first year, indicating that the remaining 12% enrolled in college and enrolled in developmental courses. Similarly, 33% of graduates who met OnRamps CCMR indicator requirements achieved a first-year GPA of 2.5 or higher, indicating that the remaining 15% enrolled in college and achieved a first-year GPA below 2.5. In contrast, 10% of graduates who did not meet CCMR indicator requirements achieved a first-year GPA of 2.5 or higher or enrolled in college without enrolling in developmental courses, indicating that the remaining 18% enrolled in college achieved a first-year GPA below 2.5 or enrolled in developmental courses during the first year of college.

Exhibit 14. College Outcomes for High School Graduates, Graduates Who Did Not Meet Any CCMR Indicator Requirements, and Graduates Who Met OnRamps CCMR Indicator Requirements

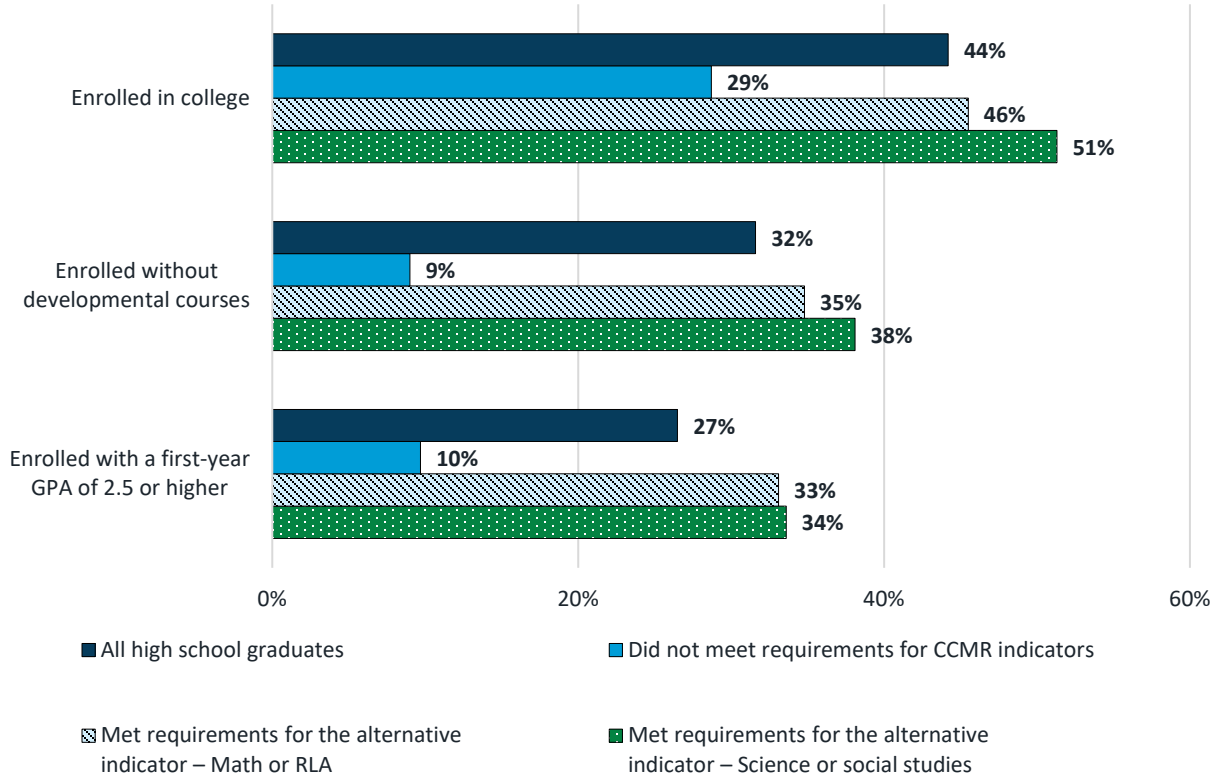


Note. CCMR = college, career, and military readiness; GPA = grade point average. Percentages are based on the 194,665 graduates of high schools in which at least one graduate met OnRamps CCMR indicator requirements and for whom course-level data were available. The percentage for all high school graduates is a raw percentage; percentages for graduates who did not meet CCMR indicator requirements and for graduates who met OnRamps CCMR indicator requirements are adjusted values based on results of hierarchical linear probability models that account for the nesting of graduates within high schools and statistically control for meeting other CCMR indicator requirements, emergent bilingual status, economic disadvantage status, and receipt of special education services. More information about the methods can be found in Appendix A, and model results can be found in Appendix Exhibit B3.

In Exhibit 15, we illustrate the predicted college outcomes for different subgroups of graduates based on the CCMR sub-indicators that take into account the subject areas associated with OnRamps courses. After controlling for student demographic characteristics and the completion of other CCMR indicators, 46% of graduates who met OnRamps CCMR indicator requirements by completing courses in math or RLA enrolled in a public 2-year or 4-year college in Texas, compared with 51% of graduates who completed OnRamps courses in science or social studies only. This pattern is similar to the findings for the AP/IB CCMR sub-indicators, and it likely indicates that graduates who meet OnRamps CCMR indicator requirements in math or RLA subject areas may be more likely to enroll in a college outside the state of Texas (see Appendix Exhibit B1).

Rates of enrolling in college without enrolling in a developmental course in the first year were also somewhat higher for graduates who met OnRamps CCMR indicator requirements in science or social studies courses (38%) than for graduates who completed OnRamps courses in math or RLA (35%). These findings indicate that 13% of graduates who completed OnRamps courses in science or social studies and 11% of graduates who completed OnRamps courses in math or RLA enrolled in developmental courses during the first year of college. Findings were similar for the first-year GPA college outcome: 34% of graduates who met OnRamps CCMR indicator requirements in science or social studies courses and 33% of graduates who completed OnRamps courses in math or RLA achieved a first-year GPA of 2.5 or higher. These findings indicate that 17% of graduates who completed OnRamps courses in science or social studies and 13% of graduates who completed OnRamps courses in math or RLA achieved a first-year GPA below 2.5.

Exhibit 15. College Outcomes for High School Graduates, Graduates Who Did Not Meet Any CCMR Indicator Requirements, and Graduates Who Met OnRamps CCMR Sub-Indicator Requirements



Note. CCMR = college, career, and military readiness; GPA = grade point average; RLA = reading/language arts. Percentages are based on the 194,665 graduates of high schools in which at least one graduate met OnRamps CCMR indicator requirements and for whom course-level data were available. The percentage for all high school graduates is a raw percentage; percentages for graduates who did not meet CCMR indicator requirements and for graduates who met OnRamps CCMR indicator requirements are adjusted values based on results of hierarchical linear probability models that account for the nesting of graduates within high schools and statistically control for meeting other CCMR indicator requirements, emergent bilingual status, economic disadvantage status, and receipt of special education services. More information about the methods can be found in Appendix A, and model results can be found in Appendix Exhibit B3.

Are relationships between CCMR measures and college outcomes consistent across student populations? (RQ 6)

Detailed findings by emergent bilingual status and economic disadvantage status are presented in Appendix Exhibit B3. Among graduates who were not emergent bilingual and graduates who were not economically disadvantaged, those who met the OnRamps CCMR indicator requirements by completing a course in science or social studies were more likely to enroll in a public college in Texas (by 6–7 percentage points) and enroll in college without taking developmental courses (by 3–4 percentage points) than graduates who met the OnRamps CCMR indicator by completing a math or RLA OnRamps course. In contrast, these outcomes

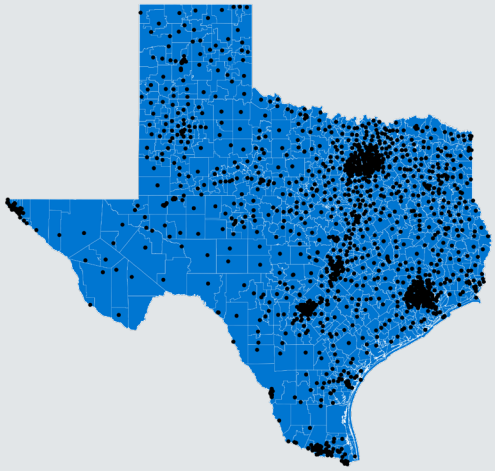
were similar among emergent bilingual and economically disadvantaged students who met OnRamps CCMR indicator requirements regardless of the subject area through which they met indicator requirements. This finding may reflect that graduates who were not emergent bilingual and those who were not from economically disadvantaged families were more likely to enroll in an out-of-state college, particularly among graduates who met OnRamps CCMR indicator requirements by completing a math or RLA course.

Among graduates who met OnRamps CCMR indicator requirements by completing a science or social studies course, the percentage of graduates who achieved a first-year GPA of 2.5 or higher was similar across student populations (ranging between 33% and 34%). Among graduates who met OnRamps CCMR indicator requirements by completing a math or RLA course, the percentage of graduates achieving this outcome was somewhat higher among economically disadvantaged graduates (37%) and somewhat lower among graduates who were not economically disadvantaged (32%).

Dual-Credit Indicator Fast Facts (RQ 1–RQ 3)

In the 2022–23 school year, 88,989 students across 1,742 schools met dual-credit CCMR indicator requirements (see Exhibit 16), representing 24% of high school graduates across Texas. Students met dual-credit CCMR indicator requirements in 87% of the 2,002 public high schools across the state.

Exhibit 16. Locations of Texas High Schools in Which at Least One Graduate Met Dual-Credit CCMR Indicator Requirements



Note. CCMR = college, career, and military readiness. White lines in the map represent school districts and black dots in the map represent the location of high schools in which at least one graduate met dual-credit CCMR indicator requirements.

Among students who met dual-credit CCMR indicator requirements,

- 63,755 students (72%) also met TSIA indicator requirements.
- 30,334 students (34%) also met AP/IB indicator requirements.
- 11,792 students (13%) also met OnRamps indicator requirements.
- 9,484 students (11%) also met associate degree indicator requirements.
- 3,265 students (4%) also met at least one career readiness indicator requirement.
- 148 students (less than 1%) also met at least one CCMR indicator requirement designed for students receiving special education services.

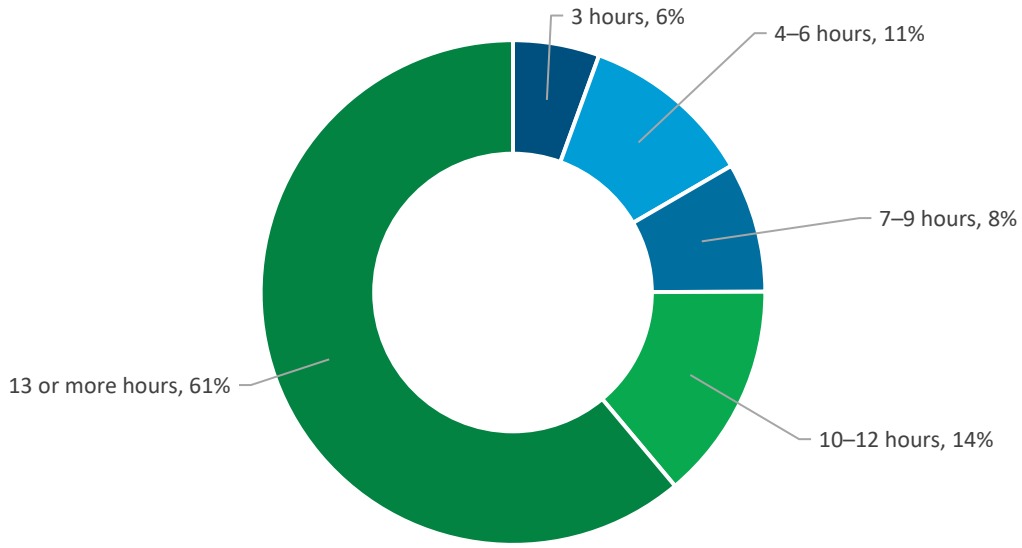
Among graduates of high schools in which the dual-credit indicator requirements were met,

- 24% of graduates met dual-credit indicator requirements.
- 19% of graduates who were economically disadvantaged met dual-credit indicator requirements, compared with 29% of graduates who were not economically disadvantaged.
- 9% of graduates who were emergent bilingual met dual-credit indicator requirements, compared with 26% of graduates who were not emergent bilingual.

Variation among graduates who met dual-credit indicator requirements (RQ 4)

Although the dual-credit CCMR indicator requires that students earn no more than 9 college credit hours (and only 3 college credit hours if they are in a math or RLA subject), **most graduates who met requirements for this indicator (61%) earned 13 or more college credit hours during high school** (see Exhibit 17). Among graduates in 2022–23 who met dual-credit indicator requirements, only 6% earned 3 credit hours, 11% earned between 4 and 6 credit hours, 8% earned between 7 and 9 credit hours, and 14% earned between 10 and 12 credit hours.

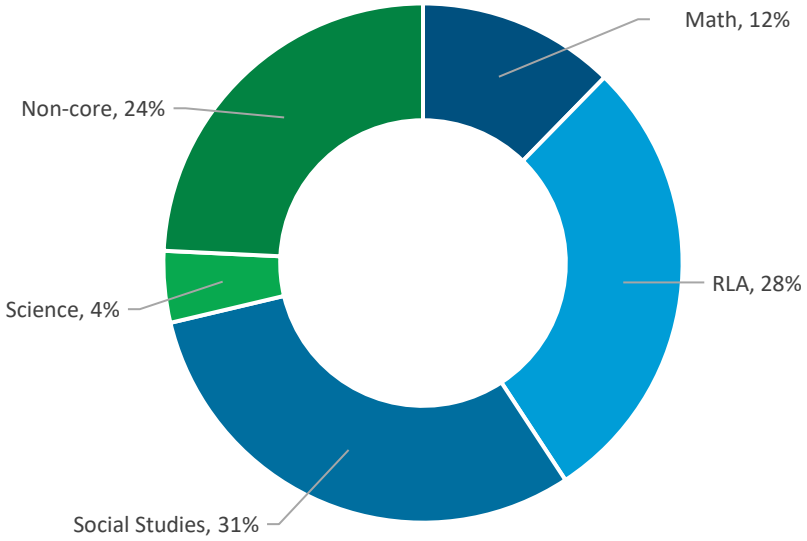
Exhibit 17. Number of College Credit Hours Earned Among Graduates in School Year 2022–23 Who Met Dual-Credit CCMR Indicator Requirements



Note. CCMR = college, career, and military readiness. Percentages are based on the 86,985 graduates who met dual-credit CCMR indicator requirements and for whom course-level data were available.

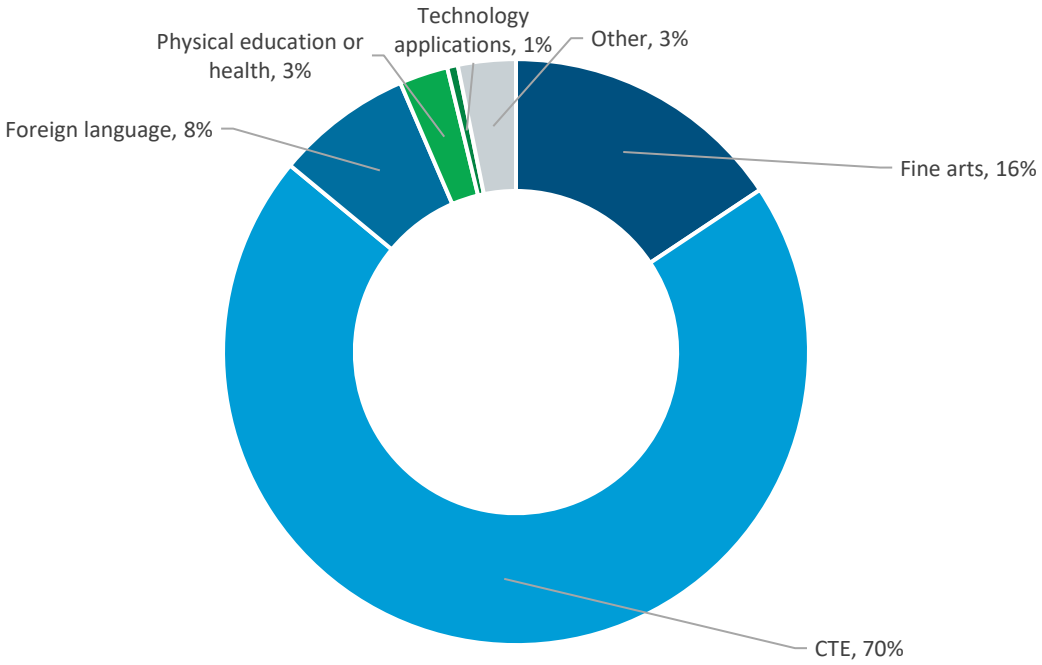
In Exhibit 18, we illustrate the distribution of college credit hours earned by graduates who met the requirement of the dual-credit CCMR indicator across subject areas. **Almost one third of college credit hours (31%) were in a course related to social studies, and nearly another third (28%) were in an RLA course.** Twelve percent of dual credits were earned in math, 4% of dual credits were earned in a science course, and **almost one quarter of credits earned (24%) were in a non-core subject area**. In Exhibit 19, we show the distribution of the 457,000 credits earned in non-core subject areas, with most credit hours associated with CTE courses (70%), followed by fine arts (16%), foreign language (8%), physical education and health (3%), technology applications (1%), and other subjects (3%).

Exhibit 18. Subject Area Associated With Dual-Credit Hours Earned Among Graduates in School Year 2022–23 Who Met Dual-Credit CCMR Indicator Requirements



Note. CCMR = college, career, and military readiness; RLA = reading/language arts. Percentages are based on the 1,884,851 credit hours earned by 86,985 graduates who met dual-credit CCMR indicator requirements and for whom course-level data were available.

Exhibit 19. Subject Area Associated With College Credit Hours Earned in a Non-core Subject Area Among Graduates in School Year 2022–23 Who Met Dual-Credit CCMR Indicator Requirements



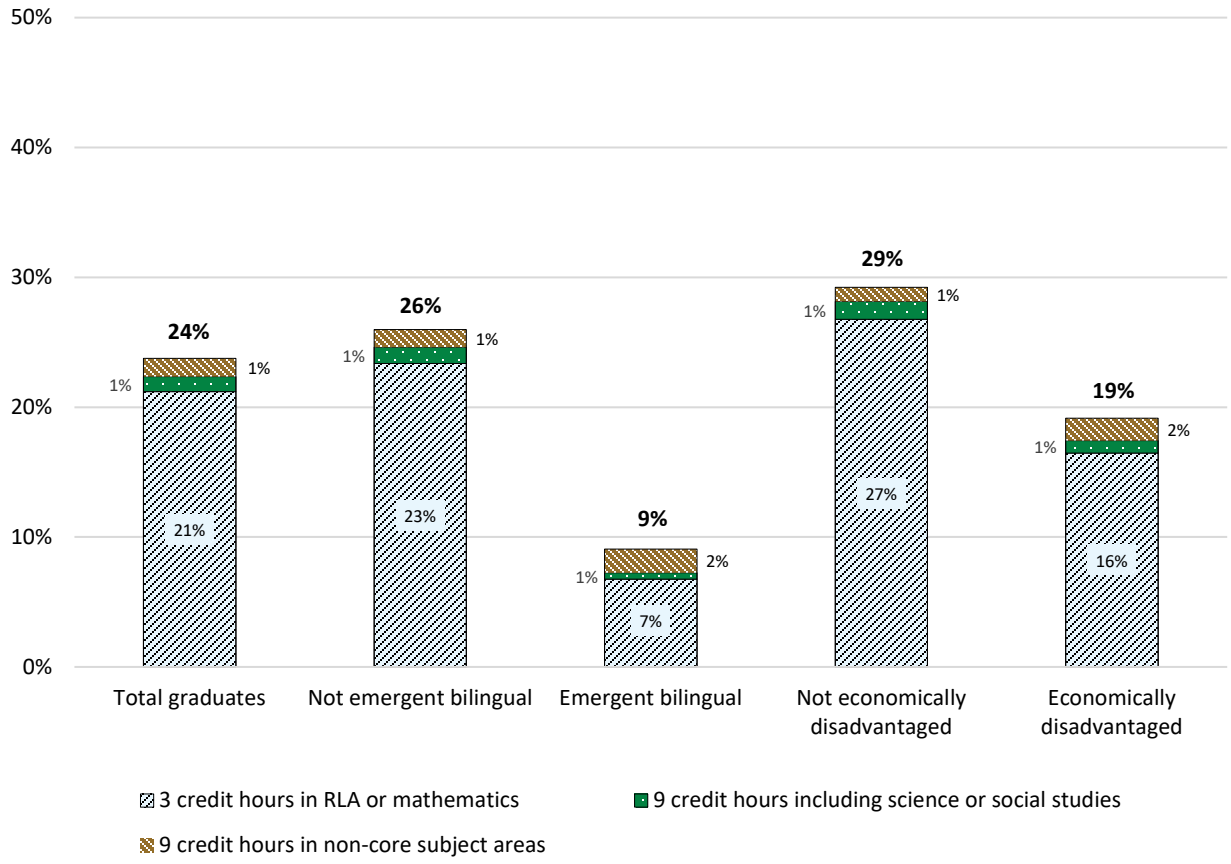
Note. CCMR = college, career, and military readiness. Percentages are based on the 457,000 credit hours earned in non-core subject areas by 86,985 graduates who met dual-credit CCMR indicator requirements and for whom course-level data were available.

In the following section, we explore whether graduates' college outcomes differ based on the subject areas in which students earned dual-credit hours. For this analysis, we created mutually exclusive categories of graduates based on whether they earned (a) at least 3 college credit hours in math or RLA; (b) at least 9 college credit hours, including a science or social studies course (but no credit hours in math or RLA); or (c) at least 9 college credit hours, with all earned credits associated with non-core subject areas.[10] Among graduates who earned 9 or more college credit hours associated with non-core subject areas, 94% of the college credits earned were associated with CTE courses.

[10] We also explored the feasibility of a sub-indicator identifying graduates who earned between 3 and 8 college credit hours, not including math or RLA courses, but we found that only 730 graduates (representing less than 1% of graduates) fit this description. We therefore did not include this group of graduates in our analyses of the dual-credit CCMR indicator. Within this subset of graduates, 54% of the credits earned were associated with CTE courses, 34% were associated with a social studies course, and 5% were associated with a science course.

In Exhibit 20, we show that both the overall rates of meeting the dual-credit CCMR indicator requirements and the manner in which requirements were met vary across different student populations**. Among all graduates of high schools in which at least one graduate met dual-credit CCMR indicator requirements, 24% of graduates met dual-credit CCMR indicator requirements, with most of these graduates (21% of graduates) meeting the requirement by earning at least three credit hours in math or RLA.** Emergent bilingual graduates were least likely to meet dual-credit CCMR indicator requirements (9% of graduates). Among emergent bilingual graduates who did meet the indicator requirements, about one in five (2% of all emergent bilingual graduates) did so by completing nine or more credit hours in non-core subject area.

Exhibit 20. Percentage of Graduates in 2022–23 Who Met Dual-Credit CCMR Indicator Requirements by Subject Area, Overall and for Selected Student Subgroups

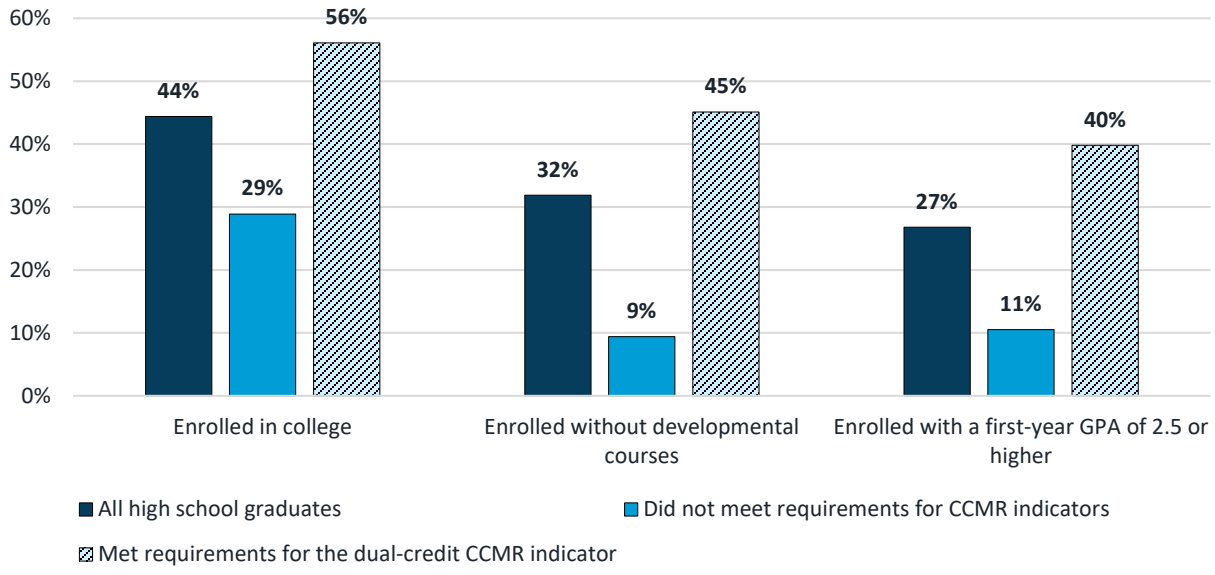


Note. CCMR = college, career, and military readiness; RLA = reading/language arts. Percentages are based on the 365,948 graduates of high schools in which at least one graduate met dual-credit CCMR indicator requirements and for whom course-level data were available. Sample sizes for the different student populations include 47,864 graduates who were emergent bilingual, 318,084 graduates who were not emergent bilingual, 198,128 graduates who were economically disadvantaged, and 167,820 graduates who were not economically disadvantaged. Categories based on subject area are mutually exclusive such that graduates who earned nine credit hours including science and social studies did not earn credit hours in math or RLA, and graduates who earned nine credit hours only in non-core subjects did not earn any credit hours in core subject areas.

To what extent do college readiness indicators and sub-indicators predict college outcomes? (RQ 5)

Within the subset of high schools in which at least one graduate met dual-credit CCMR indicator requirements, 44% of graduates enrolled in a public college in Texas within a year of high school graduation, 32% enrolled without taking developmental courses, and 27% achieved a first-year GPA of 2.5 or higher (see Exhibit 21). After controlling for the completion of other CCMR indicators and student demographic characteristics, the college enrollment rate of graduates who met dual-credit CCMR indicator requirements (56%) was almost twice as large as the college enrollment rate among graduates who did not meet any of the CCMR indicator requirements (29%). Forty-five percent of graduates who met dual-credit CCMR indicator requirements enrolled in college without enrolling in developmental courses in the first year, indicating that the remaining 11% enrolled in college and took at least one developmental course. Similarly, 40% of graduates who met dual-credit CCMR indicator requirements achieved a first-year GPA of 2.5 or higher, indicating that the remaining 16% achieved a first-year GPA below 2.5.

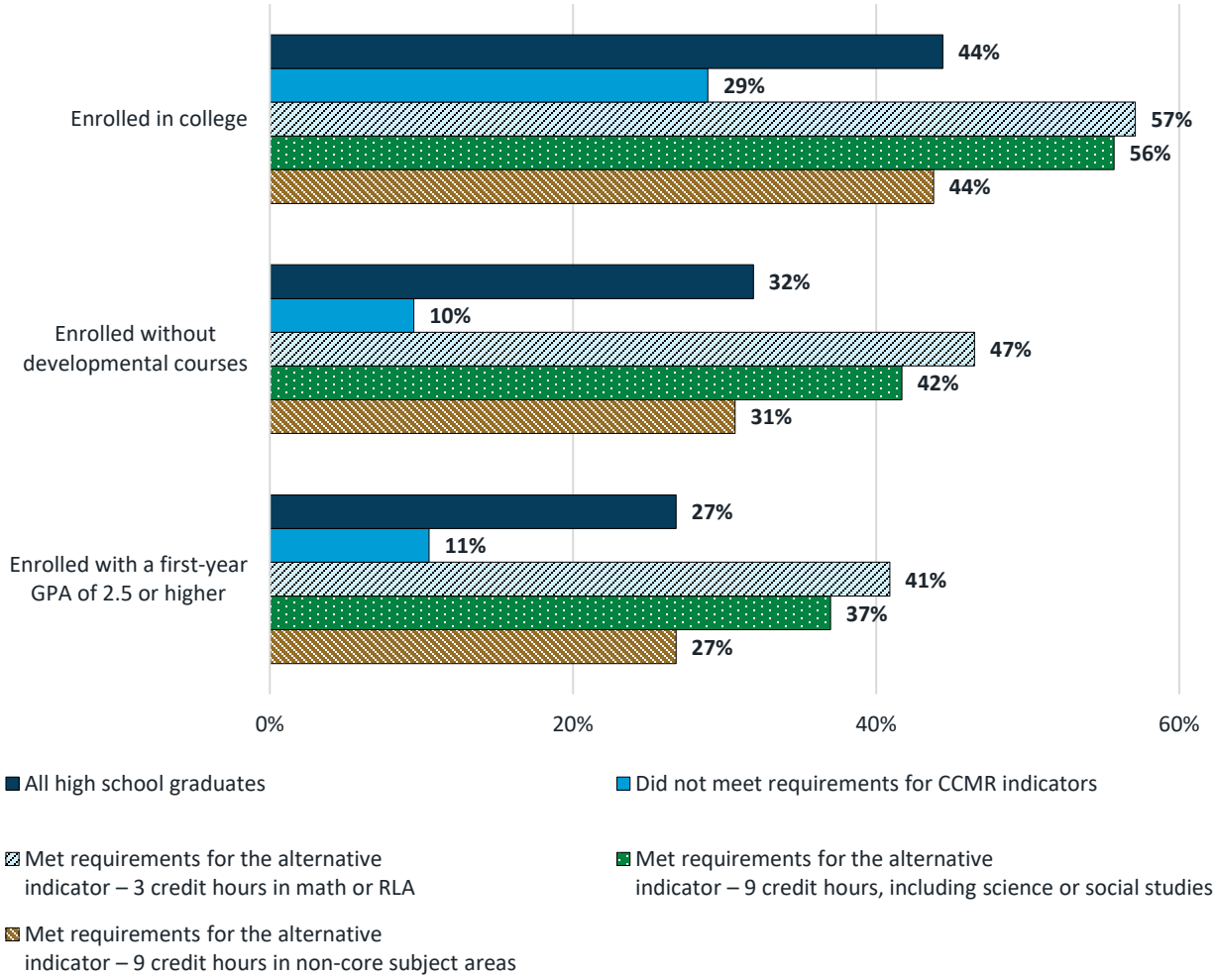
Exhibit 21. College Outcomes for High School, Graduates Who Did Not Meet Any CCMR Indicator Requirements, and Graduates Who Met Dual-Credit CCMR Indicator Requirements



Note. CCMR = college, career, and military readiness; GPA = grade point average. Percentages are based on the 365,948 graduates of high schools in which at least one graduate met dual-credit CCMR indicator requirements and for whom course-level data were available. The percentage for all high school graduates is a raw percentage; percentages for graduates who did not meet CCMR indicator requirements and for graduates who met dual-credit CCMR indicator requirements are adjusted values based on results of hierarchical linear probability models that account for the nesting of graduates within high schools and statistically control for meeting requirements for other CCMR indicators, emergent bilingual status, economic disadvantage status, and receipt of special education services. More information about the methods can be found in Appendix A, and model results can be found in Appendix Exhibit B4.

In Exhibit 22, we illustrate the predicted college outcomes for different subgroups of graduates based on the CCMR sub-indicators that consider the subject areas associated with dual-credit courses. In contrast to findings associated with the AP/IB and OnRamps indicators, **graduates who met dual-credit CCMR indicator requirements by earning at least 3 credit hours in math or RLA consistently had more positive college outcomes than graduates who met CCMR indicator requirements by completing courses in other subject areas.** More than half of graduates who earned at least 3 college credit hours in math or RLA (57%) or who earned at least 9 college credit hours, including science or social studies (56%), enrolled in a public 2-year or 4-year college in Texas, compared with 44% of graduates who earned at least 9 college credit hours in non-core subject areas. Graduates who earned at least 3 college credit hours in math or RLA were also more likely to enroll in college without taking developmental courses (47%), compared with graduates who met this requirement by completing at least 9 college credit hours including credits in science or social studies (42%) and graduates who met dual-credit CCMR indicator requirements solely through non-core subject areas (31%). Similarly, graduates who earned at least 3 college credit hours in math or RLA were more to achieve a first-year GPA of 2.5 or higher (41%) compared with graduates who completed at least 9 college credit hours including credits in science or social studies (37%) and graduates who met dual-credit CCMR indicator requirements solely through non-core subject areas (27%).

Exhibit 22. College Outcomes for High School Graduates, Graduates Who Did Not Meet Any CCMR Indicator Requirements, and Graduates Who Met Dual-Credit CCMR Sub-Indicator Requirements



Note. CCMR = college, career, and military readiness; GPA = grade point average; RLA = reading/language arts. Percentages are based on the 365,948 graduates of high schools in which at least one graduate met dual-credit CCMR indicator requirements and for whom course-level data were available. The percentage for all high school graduates is a raw percentage; percentages for graduates who did not meet CCMR indicator requirements and for graduates who met dual-credit CCMR indicator requirements are adjusted values based on results of hierarchical linear probability models that account for the nesting of graduates within high schools and statistically control for meeting requirements for other CCMR indicators, emergent bilingual status, economic disadvantage status, and receipt of special education services. More information about the methods can be found in Appendix A, and model results can be found in Appendix Exhibit B4.

Are relationships between CCMR measures and college outcomes consistent across student populations? (RQ 6)

Detailed findings by emergent bilingual status and economic disadvantage status are presented in Appendix Exhibit B4. Across the student populations we examined, graduates who met the dual-credit CCMR indicator requirements by completing 3 credits in math or RLA had consistently higher rates of college enrollment than graduates who met requirements solely through non-core subject areas. However, the difference was more pronounced among graduates who were economically disadvantaged (18 percentage points) than among graduates who were not economically disadvantaged (10 percentage points). For the outcomes of enrolling in college without enrolling in developmental courses and achieving a first-year GPA of 2.5 or higher, the pattern of findings across student populations mirrored the pattern observed among all high school graduates.

Limitations

Several study limitations should be considered when interpreting the findings presented in this report. First, we caution against comparing results across the CCMR indicators, as analyses for each focal college readiness indicator are limited to the subset of schools in which at least one graduate met the indicator requirements. Therefore, the analytic samples for OnRamps, dual credit, and AP/IB indicators differ, and findings are not directly comparable across indicators. The study's primary goal was to explore variation among sub-indicators within college readiness measures, not to compare the outcomes across CCMR indicators.

Second, this study relies on college enrollment data from Texas public 2-year and 4-year colleges and does not capture enrollment in private or independent colleges or colleges in other states. Additionally, course-level data used to measure first-year GPA and developmental course-taking are available only for students who enroll in public 2-year and 4-year colleges in Texas. National Student Clearinghouse (NSC) data that would capture college enrollment outside Texas were not available for graduates in school year 2022–23. Data for graduates in 2021–22, however, show that the inclusion of NSC data substantially increased college enrollment rates for graduates who met AP/IB CCMR indicator requirements (from 58% to 88%), with a larger increase for graduates who passed an AP/IB exam in math or RLA (from 59% to 93%) than for graduates who passed an AP/IB exam in a non-core subject (from 54% to 72%; see Appendix Exhibit B1). Therefore, findings from this study—particularly for the AP/IB CCMR indicator—may underestimate the positive relationship between meeting CCMR requirements and college enrollment, and the impact of data limitations on developmental course-taking and GPA outcomes remains unclear.

Third, the study findings are correlational and do not establish causal relationships. Although the statistical models predicting college outcomes account for students' economic disadvantage status, emergent bilingual status, and completion of other CCMR indicators, they do not account for other demographic or academic characteristics that may explain differences in college outcomes. Unmeasured student characteristics and experiences (such as students' academic engagement and motivation, parental involvement, peer-group experiences) may influence students' activities related to CCMR indicators and their college success. As a result, observed differences in college outcomes may reflect both the effects of meeting CCMR indicator requirements and underlying differences between students.

Finally, because this study focuses on the most recent cohort of high school graduates for whom data are available in the ERC, it measures short-term rather than long-term college success. Although first-year GPA and developmental course-taking are predictive of successful college degree completion, this study does not examine college persistence or degree completion.

C. Policy Recommendations and Suggestions for Future Research

The findings of this study have several implications for education policy and future research. First, student opportunities to meet CCMR indicator requirements are not universally available. Graduates met OnRamps indicator requirements in 28% of high schools across Texas, compared with 87% of high schools for the dual-credit indicator. Therefore, future efforts to revise existing CCMR measures should consider that revisions may disproportionately affect students attending schools with fewer available opportunities.

Second, this study illustrates the importance of validating CCMR indicators by focusing on more than a single outcome measure. College enrollment rates that take into account only within-state college enrollment may mask important differences in college outcomes, as some graduates who meet CCMR indicator requirements may be more likely to enroll in a college outside Texas. By comparing within-state enrollment rates to more detailed measures of graduates' first-year experiences in college (such as developmental course-taking and first-year GPA), this study provides a more complete picture of how meeting requirements for different CCMR indicators relates to first-year college success. Future assessments of the validity of CCMR indicators should also account the ways in which graduates' college decisions, such as enrolling in out-of-state or private institutions, can limit the availability of college outcome data and potentially bias conclusions about college success.

Third, findings reveal substantial variation in how graduates engage in opportunities to meet CCMR indicator requirements. Many graduates "exceed thresholds" by passing multiple AP/IB

exams or earning 13 or more college credit hours during high school. In fact, we found that less than 1% of graduates completed between 3 and 8 college credit hours during high school, and so we were unable to examine whether completion of fewer than 9 college credit hours was positively related to college outcomes. To support broad access and maximize student potential, schools should encourage students—especially those from families less familiar with college pathways—to pursue rigorous coursework beyond the minimum needed to meet CCMR benchmarks. In addition, future research should examine whether students who exceed CCMR thresholds experience greater levels of college success.

Finally, despite lower rates of meeting the AP/IB and dual-credit CCMR indicator requirements, graduates who were emergent bilingual and graduates who were economically disadvantaged were disproportionately more likely to meet these indicator requirements through their involvement in non-core subject areas. Because analyses revealed that graduates who met CCMR indicator requirements through non-core subject areas were more likely to take developmental courses and less likely to earn a first-year GPA of 2.5 or higher, encouraging students to meet CCMR requirements through non-core subject areas may unintentionally reinforce existing gaps in college success.

References

Hyslop, A. (2025). *Let's measure ready: A 50-state analysis of college, career, military, and civic readiness indicators* [Research report]. Urban Institute.

Texas Education Agency. (2024). *2024 accountability manual for Texas public school districts and campuses*. https://tea.texas.gov/texas-schools/accountability/academic-accountability/performance-reporting/2024-accountability-manual-full.pdf

Zeiser, K. L., & Cain, M. (2025). *Texas college, career, and military readiness indicator study: Examining time to a self-sufficiency standard wage*. American Institutes for Research. https://www.air.org/sites/default/files/2025-09/TEA-Texas-College-Career-Military-Readiness-White-Paper-508-July-2025.pdf

Zeiser, K., Cain, M., & Luu, J. (2025). *Texas college, career, and military readiness indicator study: College and career readiness school models and immediate postsecondary education and workforce outcomes* [Unpublished report]. American Institutes for Research.

Zeiser, K., Cain, M., Luu, J., & Dracopoli, M. (2025). *Texas college, career, and military readiness indicator study: Examining credit accumulation.* American Institutes for Research. https://www.air.org/sites/default/files/2025-11/TEA-Texas-College-Career-Military-Readiness-Examining-Credit-White-Paper-508-September-2025.pdf

Appendix A. Data and Measures

Data Sources and Study Sample

The study used de-identified, student-level administrative data from Texas that were available through the Texas Education Agency (TEA) and the data repository at the Texas Education Research Center at the University of Texas at Austin. Data used in this study included public education information from prekindergarten through grade 12 schools collected by TEA, information from public 2-year and 4-year colleges collected by the Texas Higher Education Coordinating Board (THECB), OnRamps program data from the University of Texas at Austin, assessment-level data for Advanced Placement (AP) exams from the College Board, and International Baccalaureate (IB) examination-level data from International Baccalaureate. The TEA data contained files that included the College, Career, and Military Readiness (CCMR) indicators completed by each high school graduate in Texas in school year 2022–23, as calculated by TEA staff, and student demographic information including economic disadvantage status, emergent bilingual status, and receipt of special education services. Course-level data provided by TEA enabled us to calculate the total number of college credits earned during high school and the subject area associated with dual-credit courses. Data from the College Board (for AP examinations) and from International Baccalaureate (for IB examinations) enabled us to measure the number of examinations that students successfully completed (a score of 3 or higher for AP examinations and 4 or higher for IB examinations) as well as the subject area associated with each passed examination. Besides college enrollment, course-level data from THECB enabled us to identify students who enrolled in a developmental course during the first year after high school graduation and to calculate students' first-year grade point average.

In this paper, we focused on all 377,360 students who graduated from public high schools across Texas in the 2022–23 school year. For each of the three focal college readiness measures (AP/IB examinations, OnRamps course completion, dual-credit completion), analyses estimating relationships between focal college readiness indicators and college outcomes excluded schools in which zero graduates met focal college readiness indicator requirements.

Measures

Definitions of terms used throughout this report are presented below.

College enrollment. The student enrolled in at least one college course at a public 2-year or 4-year college in Texas in fall 2023 or spring 2024.

College enrollment without developmental course-taking. The student did not attempt any courses identified as developmental during the first year of college, including summer 2023, fall 2023, or spring 2024. This outcome has a value of 0 for high school graduates who did not enroll in college within a year of high school graduation.

***Economic disadvantage*.** Students were identified as economically disadvantaged if they fell into one of the three following categories: (a) students who qualify for free or reduced-price lunch through the National School Lunch Program, (b) students who receive public assistance services through the Temporary Assistance for Needy Families (TANF) or the Supplemental Nutrition Assistance Program (SNAP), or (c) students identified as economically disadvantaged through locally developed income survey forms (e.g., migrant students, runaway students, students experiencing homelessness).

Emergent bilingual. Students were identified as emergent bilingual if they were deemed limited English proficient by the Language Proficiency Assessment Committee, according to criteria established in 19 Texas Administrative Code, Section 89.1225.

First-year grade point average (GPA). This is the average of grade points earned in all completed courses (excluding developmental courses) in the fall 2023 and spring 2024 semesters, weighted by credit hours. Values range from 0.0 to 4.0, with higher scores indicating higher academic achievement. For this study, we created a binary indicator with a value of 1 for students whose first-year GPA was greater than or equal to 2.5, and a value of 0 for students whose first-year GPA was below 2.5. This outcome has a value of 0 for high school graduates who did not enroll in college within a year of high school graduation.

Received special education services. Students were identified as receiving special education services if they participated in a special education instructional or related services program or a general education program using special education support services, supplementary aids, or other special arrangements.

Methods

To estimate predicted outcomes for (a) students who did not meet any of the CCMR indicator requirements and (b) students who met college readiness indicator and sub-indicator requirements, we estimated hierarchical linear probability models. For each focal college readiness indicator (AP/IB examinations, OnRamps course completion, dual-credit completion), we first limited the analysis to students attending schools in which at least one student met the indicator requirements and for whom examination-level or course-level data were available to measure sub-indicators. Statistical models included binary variables for key demographic characteristics (economic disadvantage status, emergent bilingual status, and receipt of special education services) and to identify students who met additional CCMR indicator requirements; for example, when AP/IB examinations are analyzed as the focal college readiness indicator, the statistical model controls for whether students also met OnRamps and/or dual-credit CCMR indicator requirements. Additional binary variables indicate whether graduates met requirements for the (a) TSIA indicator, (b) associate degree indicator, (c) one of the career readiness indicators (completing an aligned industry-based credential or a Level 1 or Level 2 certificate), or (d) one of the CCMR indicators designed for students with disabilities (advanced diploma or workforce readiness). Statistical models for analyses for the existing CCMR indicator (Equation 1) and the CCMR sub-indicators (Equation 2) are provided below, using AP/IB examinations as an example.

Equation 1: $Y_{ij} = \beta_{0ij} + \beta_1 AP\_IB_{ij} + \sum \beta_2 CCMR_{ij} + \beta_3 EconDis_{ij} + \beta_4 EmergBil_{ij} + \beta_5 SpecEd_{ij} + \varepsilon$

Equation 2: $Y_{ij} = \beta_{0ij} + \beta_1 AP\_IB\_MRLA_{ij} + \beta_2 AP\_IB\_SSS_{ij} + \beta_3 AP\_IB\_NonCore_{ij} + \sum \beta_4 CCMR_{ij} + \beta_5 EconDis_{ij} + \beta_6 EmergBil_{ij} + \beta_7 SpecEd_{ij} + \varepsilon$

where

- AP_IB_{ij} is the original measure for the AP/IB CCMR indicator for student *i* in school *j*;
- $CCMR_{ij}$ is a vector of binary variables indicating whether student *i* in school *j* met other CCMR indicator requirements (as defined above);
- $EconDis_{ij}$, $EmergBil_{ij}$, and $SpecEd_{ij}$ are binary indicators for economic disadvantaged status, emergent bilingual status, and receipt of special education services, respectively, for student *i* in school *j*;
- $AP\_IB\_MRLA_{ij}$ is the CCMR sub-indicator for students who met AP/IB indicator requirements by passing an examination in mathematics or reading/language arts;

- $AP\_IB\_SSS_{ij}$ is the CCMR sub-indicator for students who met AP/IB indicator requirements by passing an examination in science or social studies; and
- $AP\_IB\_NonCore_{ij}$ is the CCMR sub-indicator for students who met AP/IB indicator requirements by passing an examination only in non-core subject areas.

With the exception of the focal college readiness indicators, control variables were centered around school-level means. We estimated the predicted outcome for students who met focal college readiness indicator requirements, controlling for background characteristics and the completion of additional CCMR indicators, by estimating marginal means when the original CCMR indicator in Equation 1 has a value of one and other variables in the model are set to zero (which represents the school-level mean). To estimate predicted outcomes for the CCMR sub-indicators, we calculated marginal means separately for each of the three sub-indicators (for example, when $AP\_IB\_MRLA_{ij}$ equals one and $AP\_IB\_SSS_{ij}$ and $AP\_IB\_NonCore_{ij}$ equals zero) when other variables in the model are set to zero. To estimate predicted outcomes for graduates who did not meet any CCMR indicator requirements, we estimated Equation 1 and Equation 2 with non-centered CCMR indicators and calculated the marginal mean when all CCMR indicators are given a value of zero (indicating that CCMR requirements were not met) and centered demographic variables are set at zero (representing school-level means). Finally, to explore whether relationships between CCMR indicators and college outcomes varied across subpopulations, we included interaction terms between each focal CCMR indicator (the original indicator in Equation 1 and the sub-indicators in Equation 2) and non-centered binary demographic variables (economic disadvantage status and emergent bilingual status), in separate models and estimated marginal means to interpret these interactions.

Appendix B. Supporting Tables

Exhibit B1. College Enrollment Rates for High School Graduates in School Years 2022–23 and 2021–22 by CCMR Indicator, With and Without Inclusion of NSC Data in 2021–22

CCMR Indicator	College enrollment in public 2-year and 4-year colleges in Texas		College enrollment, including NSC data
	2022–23	2021–22	2021–22
AP/IB CCMR Indicator			
Original CCMR indicator	58.1%	58.1%	87.6%
CCMR sub-indicator: Met mathematics or RLA requirements	57.9%	58.6%	93.2%
CCMR sub-indicator: Met science or social studies requirements	61.1%	60.8%	88.9%
CCMR sub-indicator: Met non-core subject area requirements	55.5%	54.4%	72.0%
OnRamps CCMR Indicator			
Original CCMR indicator	62.3%	62.9%	88.5%
CCMR sub-indicator: Met mathematics or RLA requirements	62.1%	62.2%	90.4%
CCMR sub-indicator: Met science or social studies requirements	62.8%	64.2%	84.6%
Dual-Credit CCMR Indicator			
Original CCMR indicator	64.8%	64.8%	84.8%
CCMR sub-indicator: Met mathematics or RLA requirements	66.3%	66.3%	87.1%
CCMR sub-indicator: Met science or social studies requirements	63.3%	61.4%	81.2%
CCMR sub-indicator: Met non-core subject area requirements	43.9%	42.5%	51.4%

Note. CCMR = College, Career, and Military Readiness; AP = Advanced Placement; IB = International Baccalaureate; RLA = reading/language arts; NSC = National Student Clearinghouse. Percentages are based on all high school graduates in 2022–23 and 2021–22 who met requirements for each original indicator and sub-indicator. Data from the NSC are available only for graduates in 2021–22 and capture both out-of-state college enrollment and enrollment in private and independent colleges in Texas that provide data to the NSC.

Exhibit B2. Predicted Values of College Outcomes for Graduates Who Did Not Meet CCMR Indicator Requirements and for Graduates Who Met Requirements for the AP/IB CCMR Indicator and Sub-Indicators

College outcome measure	Original CCMR indicator		CCMR sub-indicators			
	Predicted outcome: No CCMR indicators	Predicted outcome: Met requirements	Predicted outcome: No CCMR indicators	Predicted outcome: Met requirements in mathematics or RLA	Predicted outcome: Met requirements in science or social studies	Predicted outcome: Met requirements only in non-core subject areas)
All high school graduates						
College enrollment	0.297	0.474	0.295	0.457	0.459	0.519
College enrollment without developmental courses	0.097	0.386	0.098	0.390	0.379	0.380
First-year GPA of at least 2.5	0.101	0.365	0.102	0.392	0.334	0.331
Graduates who were not economically disadvantaged						
College enrollment	0.319	0.451	0.314	0.446	0.446	0.497
College enrollment without developmental courses	0.114	0.374	0.112	0.379	0.367	0.380
First-year GPA of at least 2.5	0.129	0.373	0.129	0.396	0.338	0.336
Graduates who were economically disadvantaged						
College enrollment	0.277	0.520	0.281	0.519	0.511	0.524
College enrollment without developmental courses	0.084	0.412	0.087	0.444	0.422	0.378
First-year GPA of at least 2.5	0.080	0.370	0.083	0.427	0.358	0.322
Graduates who were not emergent bilingual						
College enrollment	0.309	0.481	0.307	0.469	0.470	0.535
College enrollment without developmental courses	0.106	0.397	0.107	0.399	0.388	0.403

College outcome measure	Original CCMR indicator		CCMR sub-indicators			
	Predicted outcome: No CCMR indicators	Predicted outcome: Met requirements	Predicted outcome: No CCMR indicators	Predicted outcome: Met requirements in mathematics or RLA	Predicted outcome: Met requirements in science or social studies	Predicted outcome: Met requirements only in non-core subject areas)
First-year GPA of at least 2.5	0.107	0.376	0.108	0.397	0.339	0.350
Graduates who were emergent bilingual						
College enrollment	0.217	0.434	0.217	0.432	0.439	0.436
College enrollment without developmental courses	0.045	0.307	0.041	0.355	0.345	0.299
First-year GPA of at least 2.5	0.068	0.284	0.065	0.363	0.332	0.271

Note. AP = Advanced Placement; IB = International baccalaureate; CCMR = College, Career, and Military Readiness; RLA = reading/language arts; GPA = grade point average. Predicted outcomes represent marginal means from hierarchical linear probability models that account for the nesting of students within high schools and statistically control for students' demographic characteristics (economic disadvantage status, emergent bilingual status, and receipt of special education services) and whether graduates also met other CCMR indicator requirements (OnRamps, dual credit, the Texas Success Initiative Assessment, associate degree, at least one career readiness indicator, or at least one indicator designed for students who received special education services). Results are based on the 350,717 graduates of high schools in which at least one graduate met AP/IB CCMR indicator requirements and for whom exam-level data were available.

Exhibit B3. Predicted Values of College Outcomes for Graduates Who Did Not Meet CCMR Indicator Requirements and for Graduates Who Met Requirements for the OnRamps CCMR Indicator and Sub-Indicators

College outcome measure	Original CCMR indicator		CCMR sub-indicators		
	Predicted outcome: No CCMR indicators	Predicted outcome: Met requirements	Predicted outcome: No CCMR indicators	Predicted outcome: Met requirements in mathematics or RLA	Predicted outcome: Met requirements in science or social studies
All high school graduates					
College enrollment	0.288	0.475	0.287	0.455	0.513
College enrollment without developmental courses	0.090	0.359	0.090	0.348	0.381

College outcome measure	Original CCMR indicator		CCMR sub-indicators		
	Predicted outcome: No CCMR indicators	Predicted outcome: Met requirements	Predicted outcome: No CCMR indicators	Predicted outcome: Met requirements in mathematics or RLA	Predicted outcome: Met requirements in science or social studies
First-year GPA of at least 2.5	0.098	0.333	0.097	0.331	0.336
Graduates who were not economically disadvantaged					
College enrollment	0.303	0.450	0.301	0.433	0.497
College enrollment without developmental courses	0.102	0.344	0.101	0.334	0.370
First-year GPA of at least 2.5	0.123	0.327	0.122	0.324	0.335
Graduates who were economically disadvantaged					
College enrollment	0.275	0.522	0.276	0.515	0.531
College enrollment without developmental courses	0.080	0.391	0.081	0.388	0.394
First-year GPA of at least 2.5	0.079	0.360	0.080	0.373	0.342
Graduates who were not emergent bilingual					
College enrollment	0.301	0.483	0.300	0.464	0.523
College enrollment without developmental courses	0.100	0.368	0.099	0.357	0.392
First-year GPA of at least 2.5	0.105	0.337	0.105	0.335	0.341
Graduates who were emergent bilingual					
College enrollment	0.214	0.480	0.214	0.482	0.479
College enrollment without developmental courses	0.035	0.313	0.035	0.313	0.314
First-year GPA of at least 2.5	0.057	0.340	0.058	0.353	0.325

Note. CCMR = College, Career, and Military Readiness; RLA = reading/language arts; GPA = grade point average. Predicted outcomes represent marginal means from hierarchical linear probability models that account for the nesting of students within high schools and statistically control for students' demographic characteristics (economic disadvantage status, emergent bilingual status, and receipt of special education services) and whether graduates also met other CCMR indicator requirements (Advanced Placement/International Baccalaureate examinations, dual credit, the Texas Success Initiative Assessment, associate degree, at least one career readiness indicator, or at least

one indicator designed for students who received special education services). Results are based on the 192,349 graduates of high schools in which at least one graduate met OnRamps CCMR indicator requirements and for whom course-level data were available.

Exhibit B4. Predicted Values of College Outcomes for Graduates Who Did Not Meet Requirements for CCMR Indicators and for Graduates Who Met Requirements for the Dual-Credit CCMR Indicator and Sub-Indicators

College outcome measure	Original CCMR indicator		CCMR sub-indicators			
	Predicted outcome: No CCMR indicators	Predicted outcome: Met requirements	Predicted outcome: No CCMR indicators	Predicted outcome: Met requirements in mathematics or RLA	Predicted outcome: Met requirements in science or social studies	Predicted outcome: Met requirements only in non-core subject area)
All high school graduates						
College enrollment	0.289	0.561	0.289	0.571	0.557	0.438
College enrollment without developmental courses	0.094	0.451	0.095	0.465	0.417	0.307
First-year GPA of at least 2.5	0.105	0.398	0.105	0.409	0.370	0.268
Graduates who were not economically disadvantaged						
College enrollment	0.315	0.551	0.315	0.556	0.551	0.455
College enrollment without developmental courses	0.114	0.445	0.115	0.454	0.423	0.312
First-year GPA of at least 2.5	0.132	0.418	0.133	0.426	0.396	0.305
Graduates who were economically disadvantaged						
College enrollment	0.270	0.586	0.270	0.605	0.571	0.427
College enrollment without developmental courses	0.080	0.468	0.080	0.490	0.415	0.302
First-year GPA of at least 2.5	0.085	0.386	0.085	0.404	0.350	0.243
Graduates who were not emergent bilingual						
College enrollment	0.299	0.569	0.300	0.578	0.565	0.441
College enrollment without developmental courses	0.102	0.458	0.103	0.471	0.424	0.310

College outcome measure	Original CCMR indicator		CCMR sub-indicators			
	Predicted outcome: No CCMR indicators	Predicted outcome: Met requirements	Predicted outcome: No CCMR indicators	Predicted outcome: Met requirements in mathematics or RLA	Predicted outcome: Met requirements in science or social studies	Predicted outcome: Met requirements only in non-core subject area)
First-year GPA of at least 2.5	0.110	0.404	0.110	0.415	0.374	0.272
Graduates who were emergent bilingual						
College enrollment	0.209	0.520	0.209	0.553	0.509	0.394
College enrollment without developmental courses	0.036	0.402	0.036	0.440	0.363	0.268
First-year GPA of at least 2.5	0.068	0.337	0.068	0.363	0.345	0.236

Note. CCMR = College, Career, and Military Readiness; RLA = reading/language arts; GPA = grade point average. Predicted outcomes represent marginal means from hierarchical linear probability models that account for the nesting of students within high schools and statistically control for students' demographic characteristics (economic disadvantage status, emergent bilingual status, and receipt of special education services) and whether graduates also met other CCMR indicator requirements (Advanced Placement/International Baccalaureate examinations, OnRamps, the Texas Success Initiative Assessment, associate degree, at least one career readiness indicator, or at least one indicator designed for students who received special education services). Results are based on the 365,623 graduates of high schools in which at least one graduate met dual-credit CCMR indicator requirements and for whom course-level data were available.

About the American Institutes for Research®

Established in 1946, the American Institutes for Research® (AIR®) is a nonpartisan, not-for-profit institution that conducts behavioral and social science research and delivers technical assistance both domestically and internationally in the areas of health, education, and the workforce. With headquarters in Arlington, Virginia, AIR has offices across the U.S. and abroad. For more information, visit www.air.org.

AIR® Headquarters
1400 Crystal Drive, 10th Floor
Arlington, VA 22202-3289
+1.202.403.5000 | **AIR.ORG**

29948_04/26