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California Postsecondary Education Commission

Public Higher Education Performance Accountability Framework Report: Goal — College Readiness Measure: High School Proficiency Levels

This report examines the preparation of California public high school graduates to do college-level work, based on high school coursework and state and national testing. A companion report examines the proficiency of adults enrolled in basic skills education programs operated by California’s public schools and the state’s community colleges. This is the first in a series on this accountability measure and is presented as part of the Commission’s “Performance Accountability Framework” for California postsecondary education.

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The Commission advises the Governor and the Legislature on higher education policy and fiscal issues. Its primary focus is to ensure that the State’s educational resources are used effectively to provide Californians with postsecondary education opportunities. More information about the Commission is available at www.cpec.ca.gov.

Commission Report 07-26

Summary of Findings

The Commission examined information on four measures of college readiness: SAT and/or ACT test scores, A–G course completion, CST-Algebra I test scores, and college preparatory level math and science course completion. While large numbers of California public high school students are engaged in college preparatory coursework and test-taking, the data show higher rates of participation for Asian and White high school students than for Latino and African American students relative to their overall high school populations. Females also fare better than males in most of these measures.

In 2004-05, 45% of California high school seniors took SAT or ACT exams, with 68% of total Asian seniors, 41% of White, 39% of African American, and 27% of total Latino seniors taking the exams. Fifty-three percent of 12th grade females took the SAT or ACT but only 38% of 12th grade males did.

There were also significant differences in college preparatory course-taking by ethnicity, with larger shares of Asian high school students relative to their overall high school population, enrolled in A–G courses and college-preparatory math and science classes than other ethnic groups. Larger percentages of the total female population than male population of high school students were enrolled in A–G courses (40% female, 31% male) as well as college-preparatory math (32% females, 28% males) and college-preparatory science (20% females, 18% males) courses. The different participation rates noted here for ethnic groups and, to a smaller extent by gender, for college preparation point to a gap in elementary and secondary school academic achievement.

The Commission reviewed other potential indicators of college readiness before choosing these four. However, we note that there are many different measures that could be combined to form an index for measuring college readiness. No single or universal definition of “college readiness” exists. Therefore, these four measures only offer a partial view of college readiness in California public high schools. However, they do cover important components of high school preparation for college: college preparatory course taking and nationally accepted college readiness exams.

Findings

Background

The Commission examined statewide data on California public high school students and recent graduates, where appropriate, on four measures of college readiness. For each of these measures, the Commission examined the most recent year of information available, though these years differ among the four measures. The areas examined were:

- The proportions of high school students who took the SAT Reasoning Test and ACT exams in 2004–05, and their scores.
- The percentages of 2007 10th and 11th graders who scored “proficient” or “advanced” on the California Standards Test (CST) Algebra I exam.
- The total numbers of 2005–06 high school graduates who had completed A–G courses.
- The total numbers of 2006–07 9th through 12th graders who took college preparatory level math and science courses.

Study Limitations

This study examines four measures of progress towards college readiness in California public high schools. Many factors that could not be included here greatly impact the outcomes shown. Important factors include the availability of the college preparatory high school courses examined here, and the levels of preparation and resources provided to students taking these courses and the “high stakes” exams. Non-educational factors impacting student success include the various, well-documented economic and societal challenges facing many communities in the state.

A second limitation of this study is that comparable national SAT and ACT data from only public schools broken down by ethnicity and gender could not be obtained.

Public Higher Education Accountability Framework

The public’s investment in higher education should be measured by outcomes. As the California’s independent higher education planning and coordinating body, the Commission is in a unique position to assess performance without bias or conflict of interest. Under State law, the Commission is the only public agency with the data needed to assess student success across the University of California, California State University and California Community College systems. The Commission uses these data, coupled with other relevant State and national higher education data, to compile the performance assessment presented here. The Commission has put a priority on improving public confidence in the administration and delivery of public postsecondary education by increasing public knowledge of student outcomes, transparency of higher education decision making, and efficient achievement of a well educated and prepared workforce and population.

Finally, the outcomes data available for this report did not allow for geographic or other contextual examinations of the results, nor could this study measure differential accessibility to resources that can improve performance in these courses and tests. As such, the results shown here are as much indicative of the challenges facing many communities — more broadly improving educational access and success — as they are of the specific measures themselves. For future studies, the Commission will explore further ways college readiness can be measured in order to get a more comprehensive perspective.

Measures of College Readiness

SAT and ACT scores, A–G courses, college preparatory math and science, and CST-Algebra I proficiency were examined through data obtained from the California Department of Education.

The SAT and ACT are standardized tests taken by high school students throughout the country who desire to enter college. They are used primarily for the purposes of college admissions and are seen as indicators of the likelihood a student will be successful in college.

A–G requirements are the high school courses that are required for entrance into a University of California (UC) or California State University (CSU) campus. “A–G” courses fall into the following categories: History and Social Science, English, Mathematics, Laboratory Science, Language other than English, Visual and Performing Arts, and College Preparatory Electives. Students must complete courses from each category in order to meet the requirements for admittance into the CSU and the UC.

College preparatory math and science courses are upper-level high school courses in these subject areas, as defined by the California Department of Education. Specifically these courses are designated under the following categories: Intermediate Algebra, Advanced Math, First Year Chemistry, and First Year Physics. Data from the CST-Algebra I for 10th and 11th graders for the 2006–07 academic year were also examined. Only scores of students who tested at “proficient” and “advanced” are included here; they are combined for this measure. The CST-Algebra I scores are examined because a high level of proficiency in algebra is seen as a good indicator of the ability of high school students to later perform college-level math.

SAT and ACT Examination scores, 2004–05

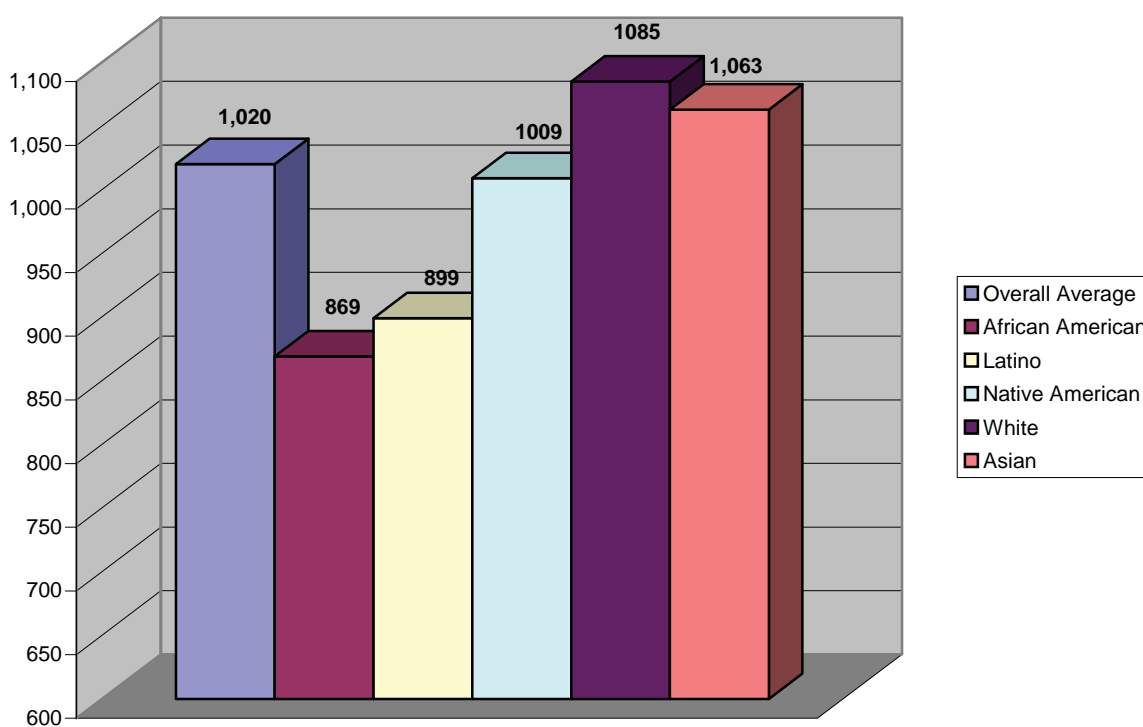
- A total of 146,877 public California high school students took the SAT and 40,383 took the ACT Examination.
- 35.9% of the total 12th grade enrollment population took the SAT and 9.9% took the ACT.
- A total of 65,209, or 31.4% of male 12th graders took the SAT, while 81,668 or 40.4% of female 12th graders did. For the ACT, a total of 14,244 males, or 6.8% of all male 12th graders, took the test, compared to 25,614, or 12.7% of female 12th graders.
- 31,276 Asians, 57% of the total Asian 12th grade enrollment, took the SAT, compared to 32,727, or 20% of Latinos, and 9,568, or 28% of African American 12th graders. For Whites, a total of 50,672, or 32.6% of White 12th graders took the SAT.
- The average overall score for all SAT test takers, as a group, was 1,020. By gender, the average score varied by about 50 points. Males had an average score of 1,050 while females had an average score of 997.
- Whites had an overall average SAT score of 1,085 and Asians had a score of 1,063, Latinos had an overall average score of 899 and African Americans had an average score of 869. SAT scores are shown in Display 1 below.

- The margin of approximately 200 points between highest and lowest average SAT test scores for California public high school students clearly shows a race/ethnicity gap in performance on this nationally-used measure of preparation for college.

DISPLAY 1 Percentage of each population total who took SAT, 2004–05

	Total	Male	Female	African American	Latino	White	Asian
SAT	35.9%	31.4%	40.4%	28.0%	20.0%	32.6%	57.0%

DISPLAY 2 Average Overall SAT Scores at California Public Schools 2004–05



A–G Requirements

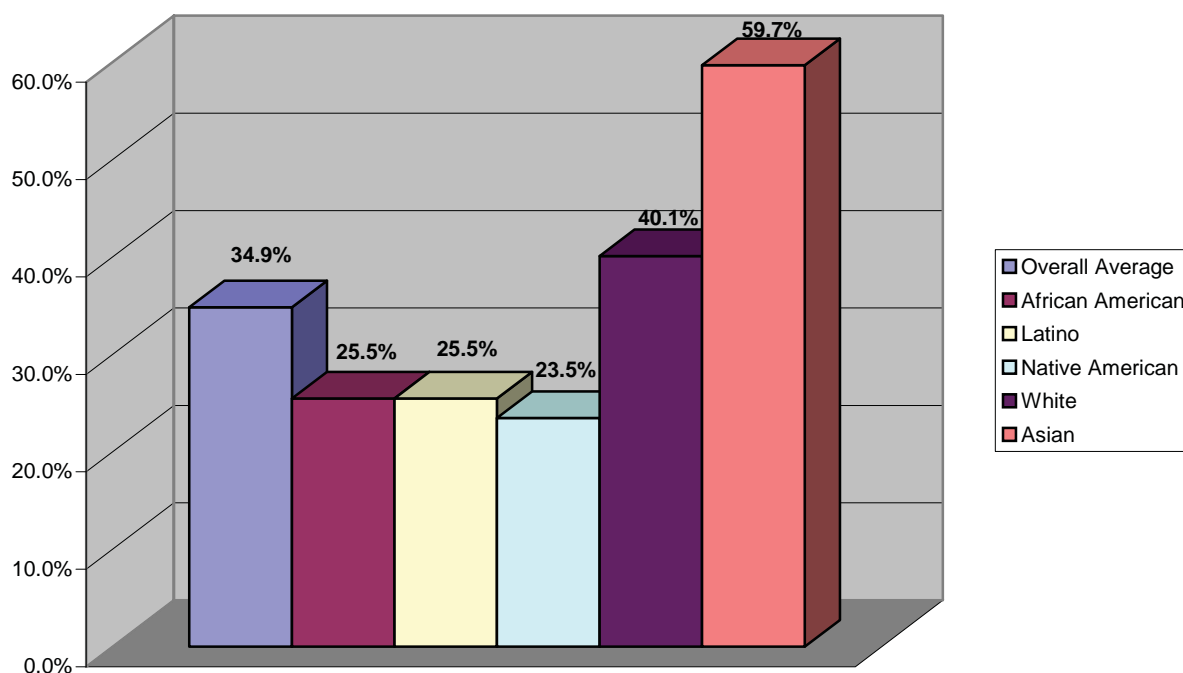
- Of 349,105 students who graduated in academic year 2005–06, 125,087 (35.8%) completed A–G courses.
- 72,060 (39.9%) of the total female graduate population completed A–G courses, compared to 53,027 (31.4%) of the total male population.
- By ethnicity, 22,930 (59.7%) of Asian high school graduates, and 55,571 (40.1%) White graduates completed A–G courses.
- In stark contrast, only 31,764 (25.5%) of the total population of Latino high school graduates; 6,460 (25.5%) of African American high school graduates; and 666 (23.5%) of Native American high school graduates completed A–G courses.

[Note: Information was not available on the grade point averages of students in these classes.]

DISPLAY 3 A–G Course Completions for Each Population Total, 2005–06

	Total	Male	Female	African American	Latino	Native American	White	Asian
Completions	125,087 (35.8%)	53,027 (31.4%)	72,060 (39.9%)	6,460 (25.5%)	31,764 (25.5%)	666 (23.5%)	55,571 (40.1%)	22,930 (59.7%)

DISPLAY 4 Percent Ethnicity Completing A–G Courses, 2005–06



College Preparatory Math and Science, 2006–07

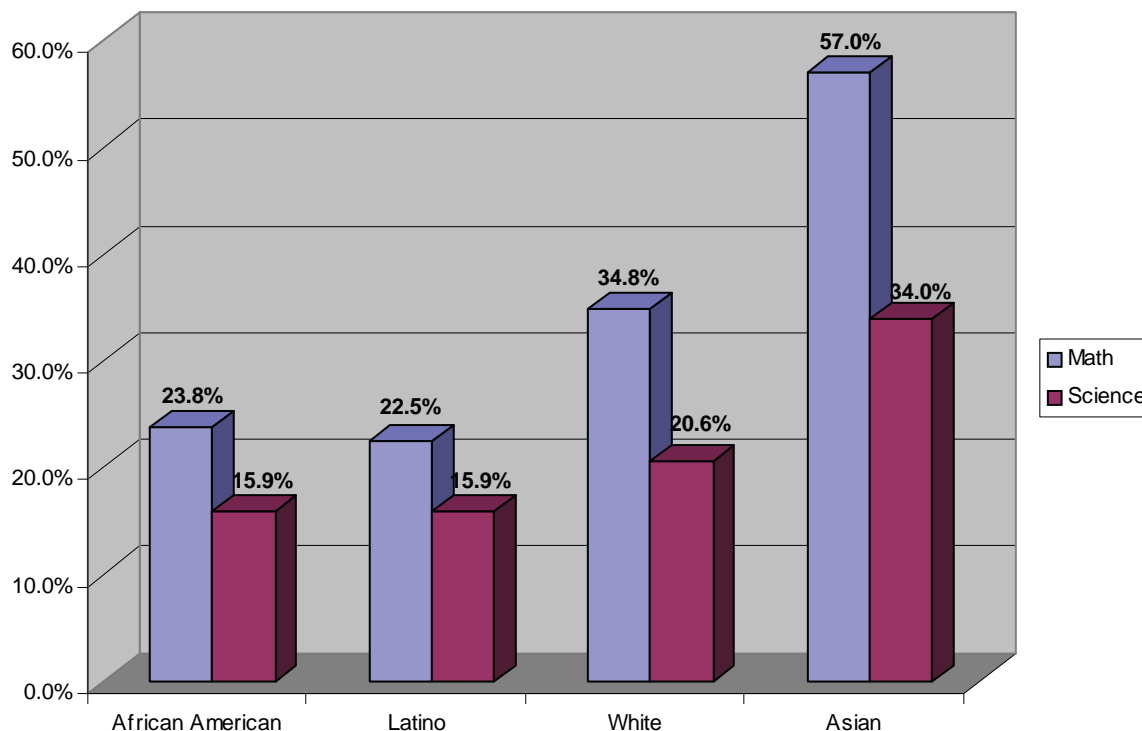
- Of a total of 1,997,181 high school students, 30.2% were enrolled in some type of college preparatory math course, while 18.7% were enrolled in a college preparatory science course.
- 32.3% of female 9th through 12th graders were enrolled in college preparatory math and 19.7% were enrolled in a college preparatory science course. Comparatively, 28.1% of male 9th through 12th graders were in college preparatory math and 17.7% took a science college preparatory course.
- African Americans had a total of 38,862 (23.8%) of the 9th through 12th grade African American population in college preparatory math courses and 25,980 (15.9%) in college preparatory science courses. Latinos had a total of 197,439 (22.5%) in college preparatory math and 129,223 (15.9%) in college preparatory science.
- 96,814 of the total Asian 9th through 12th grade students (57%) took college preparatory level math and 57,721 (34%) took college preparatory science courses.

- Of White students, 227,728 of their total (34.8%) enrolled in college preparatory math courses and 134,337 (20.6%) enrolled in college preparatory science courses.

DISPLAY 5 Percent Enrolled within Each Population in College Prep Math and Science Courses, 2006–07

	Total	Male	Female	African American	Latino	White	Asian
Math	30.2%	28.1%	32.3%	23.8%	22.5%	34.8%	57.0%
Science	18.7%	17.7%	19.7%	15.9%	15.9%	20.6%	34.0%

DISPLAY 6 Percent of Ethnicity Enrolled in a College Prep Math or Science Course, 2006–07



California Standards Test (CST)

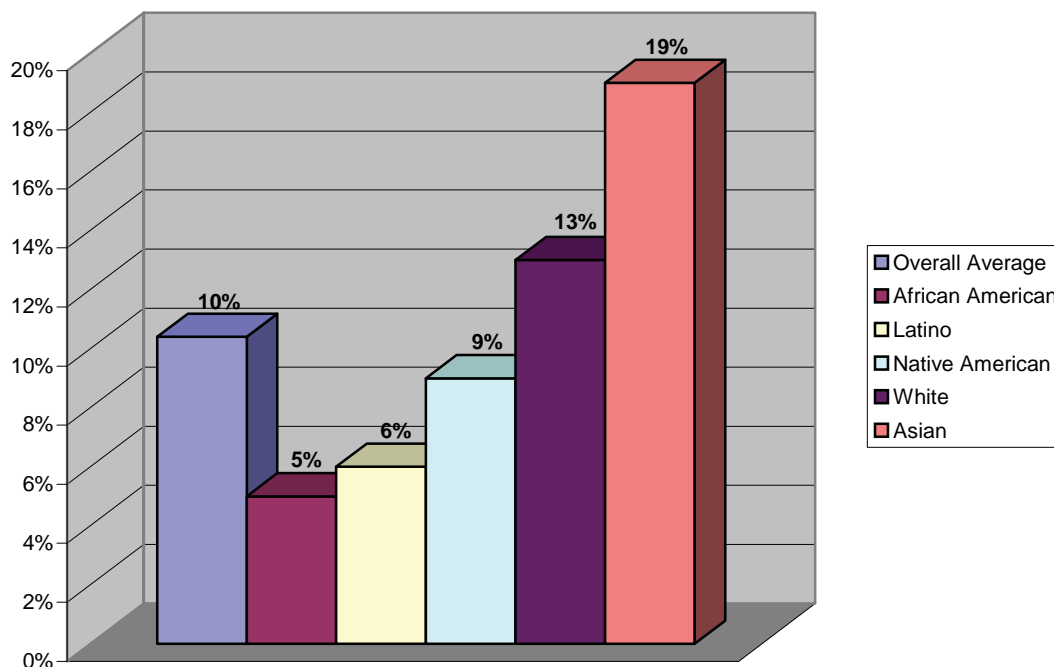
- Overall 8% of 10th graders who took the test scored as proficient or higher, while 5% of 11th graders scored proficient or higher in Algebra I.
- Eight percent of males who took the test scored as proficient or higher in the 10th grade and an additional 5% tested at or above proficient in the 11th grade. Similarly, 8% of females tested at or above proficient in the 10th grade, as did an additional 5% in 11th grade.

- For African American students, 5% scored proficient or above in the 10th grade and 3% more in the 11th grade. For 10th grade Latino students, 6% were proficient or higher, with an additional 4% testing at this level in the 11th grade.
- Nineteen percent of Asian students who took the CST-Algebra I test were proficient or higher in the 10th grade and 12% more achieved this level in the 11th grade.
- Thirteen percent of White students scored at or above proficient on this test in 10th grade, and another 8% in the 11th grade.
- Of the Native Americans who took the test in the 10th grade, 9% scored proficient or advanced and 6% more scored at this level in the 11th grade.

DISPLAY 7 Percentage of Each Population Proficient in Algebra I in 10th and 11th Grade, 2007

	Total	Male	Female	African American	Latino	White	Asian
10th Grade	8%	8%	8%	5%	6%	13%	19%
11th Grade	5%	5%	5%	3%	4%	8%	12%

DISPLAY 8 Proficiency in Algebra I among 10th Graders, by Ethnicity, 2007



Analyses of Findings

For all four of these measures, the data show that large numbers of California public high school students are engaged in coursework and test-taking that will prepare them for college. The data show pat-

terns of differential achievement by race and ethnicity and, to a lesser extent, by gender. According to the data, Asian and White high school students take college preparatory courses in decidedly greater numbers in proportion to their overall populations than do Latino and African American students. Asian students also measurably outperform other ethnic groups as test takers and, for the mandatory CST-Algebra I exam, in terms of test scores.

Female high school students included in this research took college preparatory courses in greater proportion relative to their overall population than male students. Larger percentages of female high school students compared to the overall female high school population took SAT and ACT college entrance exams than did males; however, male students had a higher average score on SAT exams than females. It should also be noted that as the percentage of students taking either test goes up, the average score goes down. For future studies, a regression analysis that takes this relationship into account and examines any statistical deviation from it may provide a better indicator when analyzing test scores. There were no differences in the gender representations of students scoring at or above proficient on the CST-Algebra I exam in 10th and 11th grades.

Policy Considerations

State and national experts agree that California's economy will become increasingly dependent upon higher skilled workers in the future and that most of that preparation will occur in some form of education and training after high school. Differential achievement in high school in preparation for college as measured here is an impediment to the economic and civic health of the state as well as societal advancements towards educational equality within gender and ethnic groups.

To address this problem the State and its educational institutions have undertaken many efforts to improve the preparation — and performance — of middle school and high school students. The CSU and UC have several academic preparation initiatives designed to improve the outcomes of high school students, with many of these programs focusing on educationally disadvantaged and underachieving students. Display 9 on the next page summarizes several of these programs.

Since 2004, the CSU and UC have been required to evaluate the effectiveness of their academic preparation programs and the results have been generally favorable. However, as the achievement gaps remain, further efforts both inside and outside of education are likely needed to address this situation.

While this study's findings for the four measures show differential progress towards college readiness by ethnicity, and often gender, they only present a partial picture when looked at in a broader societal context. The many factors affecting the academic performance of students that cannot be accounted for here should be taken into consideration when viewing these results. Various economic and social issues facing various groups should also be understood in relation to the findings presented here.

DISPLAY 9 UC and CSU Targeted Academic Preparation Programs for High School Students

The California Academic Partnership Program (CAPP) – This intersegmental program works with K-12 schools with academic performance below the state average, with low college-going rates, and with high percentages of students from groups underrepresented in California higher education. CAPP awards grants to partnerships of schools for projects that focus on developing and evaluating practices and programs that have demonstrated success.

Gaining Early Awareness and Readiness For Undergraduate Programs (GEAR UP) – This intersegmental program provides low-income middle school students the skills, support, and academic preparation needed to enter and succeed in high school and postsecondary education. It works through partnerships of schools, universities, the private sector, and community organizations.

Mathematics, Engineering, Science Achievement (MESA) – This intersegmental program serves educationally disadvantaged K-16 students, emphasizing participation by students from groups with low eligibility rates for four-year colleges.

Early Assessment Program (EAP) – This CSU program assesses 11th grade students' readiness for college-level English and mathematics, to help identify additional preparation needed in these subjects while they are still in high school. The assessment supplements the California Standards Test with additional multiple-choice questions and a written essay.

Early Academic Outreach Program (EAOP) – This UC program assists elementary through high school students who show college potential. EAOP provides counselors and helps these students participate in challenging academic programs.

The California State Summer School for Mathematics and Science (COSMOS) – This UC program provides UC faculty and researchers to work with high school students who excel in mathematics and science.

The Puente Project – This UC program provides teaching, counseling and mentoring to increase the number of educationally underserved students who enroll in, and get degrees from, baccalaureate institutions. The program encourages students to return to the community as mentors and leaders to future generations.

UC College Prep Initiative (UCCP) – This program provides high school students with online college preparatory courses with the goal of helping them achieve eligibility or competitive eligibility for admission to UC and other top universities.

APPENDIX

Methodology

This report examines college preparation levels of California public high school graduates.

Only students enrolled in California public high schools are included due to the lack of available data about students attending non-public high schools.

Data for SAT and ACT scores, A–G requirements and college preparatory math and science course completion were obtained using the California Department of Education’s DataQuest system.

It should be noted that overall totals for students taking the SAT and ACT are not additive; some students may have taken both tests. Unduplicated counts for each test could not be obtained

A–G data is reported to CDE by individual high schools, which could affect the reporting from year to year.

Scores for the SAT and ACT tests are reported for 2004–05 year. ACT test results for 2005–06 were not available at the time of publication.

Comparable national SAT and ACT for only public schools broken down by ethnicity and gender could not be collected from the College Board or the CDE.

Data for the California Standards Test measure were obtained through the STAR program data reported by the CDE. Data were available for grades 7–11 but only grades 10 and 11 were used in this report because of the focus on college preparation in high school that take place primarily in these levels of high school.

