Mathematics Course Taking Among California 12th Grade Students

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Just Equations Conference—The Mathematics of Opportunity
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UCDAVIS SCHOOL OF EDUCATION

Background on Project

- A partnership with California Department of Education and all three public postsecondary systems (California State University, Community Colleges, and the University of California) to evaluate college and career readiness among California youth
- Tracking students from K-12 into and through postsecondary destinations
- Addressing disparities by student characteristics and by institutional types
- A close examination of students' high school course taking, particularly Mathematics and English

Research Questions

- What college and/or career preparatory math coursework are California seniors enrolling in?
- How do these 12th grade course enrollment patterns differ by student race/ethnicity and socioeconomic status?
- Do these 12th grade course enrollment patterns differ for CSU applicants compared to all high school students?

Data

Population: 12th graders enrolled in a California public high school in 2015-2016

California Department of Education

California Longitudinal Pupil Achievement Data System (CALPADS)

- Participated in Smarter Balanced Assessments in 11th grade (2014-2015)
- Course-taking histories
- Demographic information (race/ethnicity, socioeconomic disadvantage)

California State University

- Student-level application data (Summer 2016-Fall 2017)

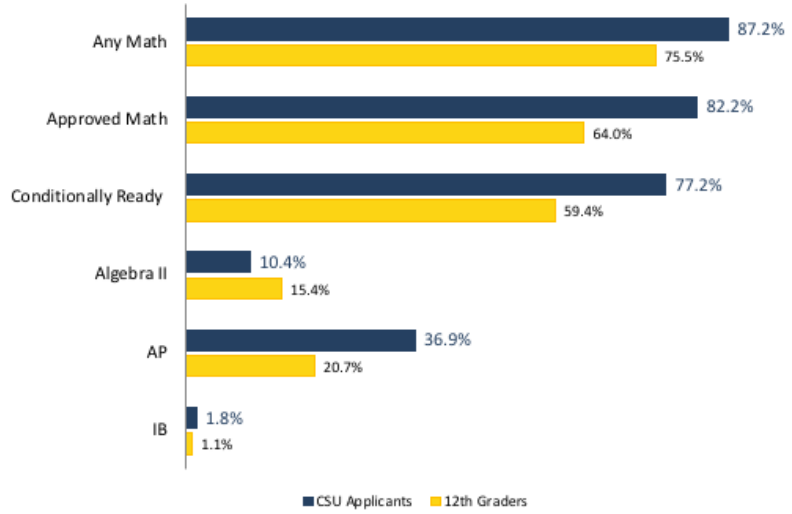
12th Grade Math Course Categories

	Out of all 12th graders	Out of those who take Any Math
Any Math	75.5%	
Approved Math	64.0%	84.8%
Conditionally Ready	59.4%	78.6%
Algebra II	15.4%	20.4%
AP and IB	21.8%	28.8%
N	364,585	275,305

A higher proportion of CSU applicants enroll in rigorous math courses in 12th grade as compared to all CA students

KEY FINDING

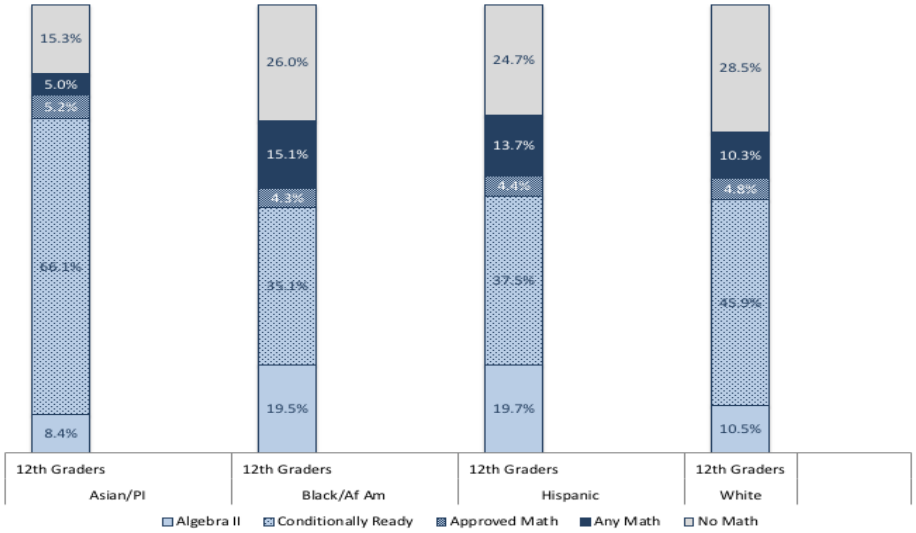
Differences in 12th grade math course-taking between all 12th graders and CSU applicants



Substantial disparities in 12th grade math course-taking by student background characteristics: race/ethnicity and socioeconomic status

KEY FINDING

Differences in 12th grade math course-taking by student race/ethnicity



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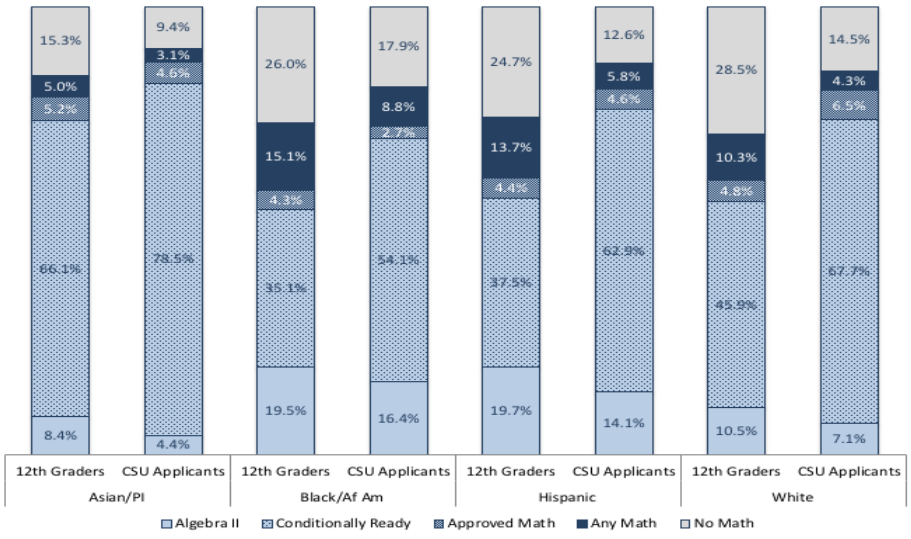
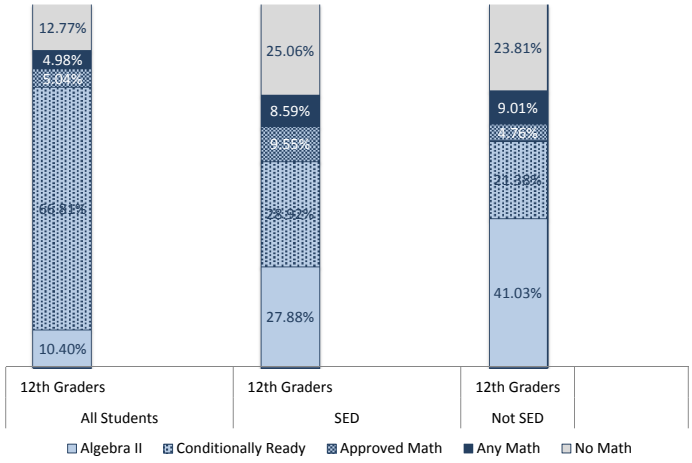


Differences in 12th grade math course-taking by student socioeconomic status



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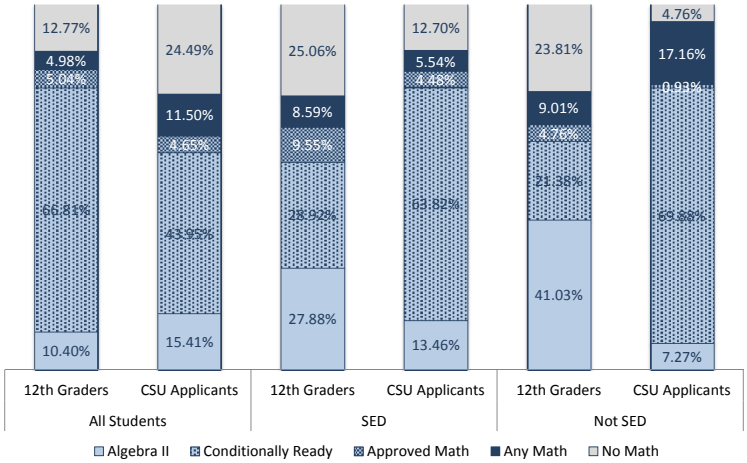
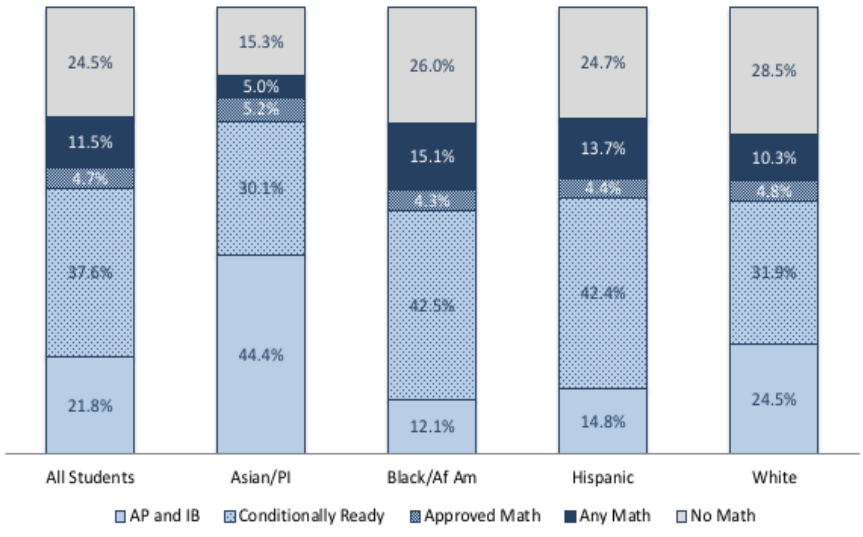


Substantial disparities exist in the most advanced math course taking (AP and IB) by student background characteristics: race/ethnicity and socioeconomic background

KEY FINDING

Differences in 12th grade math course-taking by student race/ethnicity



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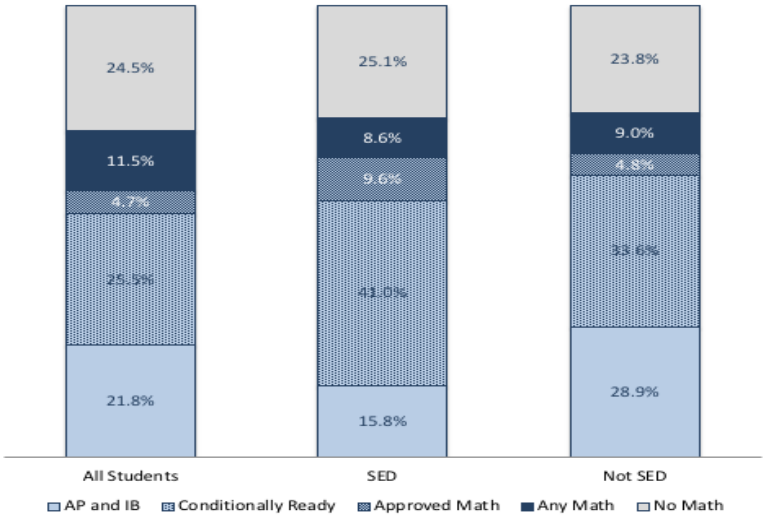
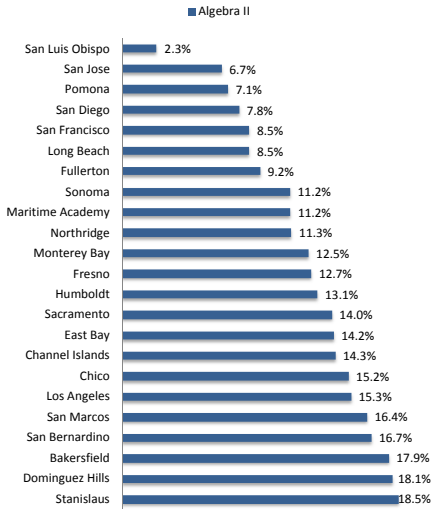


Substantial variation in 12th grade math course taking among CSU applicants by CSU campus

KEY FINDING

Percent of CSU applicants taking Algebra II in 12th grade (by CSU campus)



Next Steps

- Explore patterns of course-taking by school characteristics
- Explore the impact of course-taking on postsecondary outcomes
  - College entry
  - College performance
  - College completion

Thank you!

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4th Year QR RATIONALE

1. **ASCSU:** "*In an era where people are increasingly concerned with quantitative literacy, strong quantitative reasoning skills form a foundation for future success in college and careers. Success of incoming students is maximized when students have had continued exposure to mathematics/quantitative reasoning. Since it has been demonstrated that mathematics skills decline with lack of practice, it is important that students continue practicing and developing quantitative abilities throughout their academic careers.*" http://www.calstate.edu/acadsen/Records/Resolutions/2015-2016/documents/3244.shtml

2. *In 2014, over 40% of US states required a fourth year of mathematics for admission for their public university system, over 60% of states require 3 years for high school and 9 states require 4 years of math for a high school diploma.* https://www.calstate.edu/AcadSen/Records/Reports/documents/QRTF.FinalReport.KSSF.pdf (http://ecs.force.com/mbdata/mbprofall?Rep=HS01).

3. The Intersegmental Committee of Academic Senates (ICAS) has recommended 4 years for CSU/UC admission since 2010. http://icas-ca.org/Websites/icasca/images/ICAS-Statement-Math-Competencies-2013.pdf

4. Taking a class past Algebra II triples the chances of being assessed as ready for college level math. http://www.csuchico.edu/~rford/ResearchReports/CollegeReadiness2011.pdf

5. "Of all pre-college curricula, the highest level of mathematics one studies in secondary school has the strongest continuing influence on bachelor's degree completion. Finishing a course beyond the level of Algebra 2 (for example, trigonometry or pre-calculus) more than doubles the odds that a student who enters postsecondary education will complete a bachelor's degree." Adelman, C. (1999) (http://www.ed.gov/pubs/Toolbox/toolbox.html)

https://nces.ed.gov/pubs2017/2017002.pdf