

Identifying Barriers and Opportunities for Broadening Computing Participation among Underrepresented High School Students in California

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Abstract



As efforts to broaden participation in computing and provide equitable computer science education to all students increase across the country, within states, and within cities and districts, this research aims to investigate whether existing efforts have increased equity. This research analyzes three years of computer science access, enrollment, and success data across the state of California to: (a) examine whether racial, gender, and socioeconomic equity in CS access, enrollment and success has improved; (b) identify persistent barriers to racial, gender and socioeconomic equity, and (c) inform statewide strategies to ensure equity in computer science across California. Findings indicate despite several promising trends, including an increase in CS access and participation across California, racial, gender and SES gaps remain in access to CS courses, participation, and success. Additional statewide policies and practices are needed to ensure equity in CS across California.



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Research Questions

Across the state of California, in the past 3 years:

1. Has access, participation, and success in computer science education increased among students from underrepresented backgrounds? Have equity gaps in access, participation, and success decreased?
2. What barriers remain to achieving equity in computer science education and what strategies, policies, and practices might be implemented to further improve equity?

Methodology

Collected and analyzed publicly available data from (1) the **California Department of Education**: Public School and District Data (2014-17), Primary Enrollment Data (2014-2017), and Computer Science Enrollment Data (2014-17); and (2) the **College Board**: AP Program Participation and Performance Data (2014-2018)

Discussion of Findings

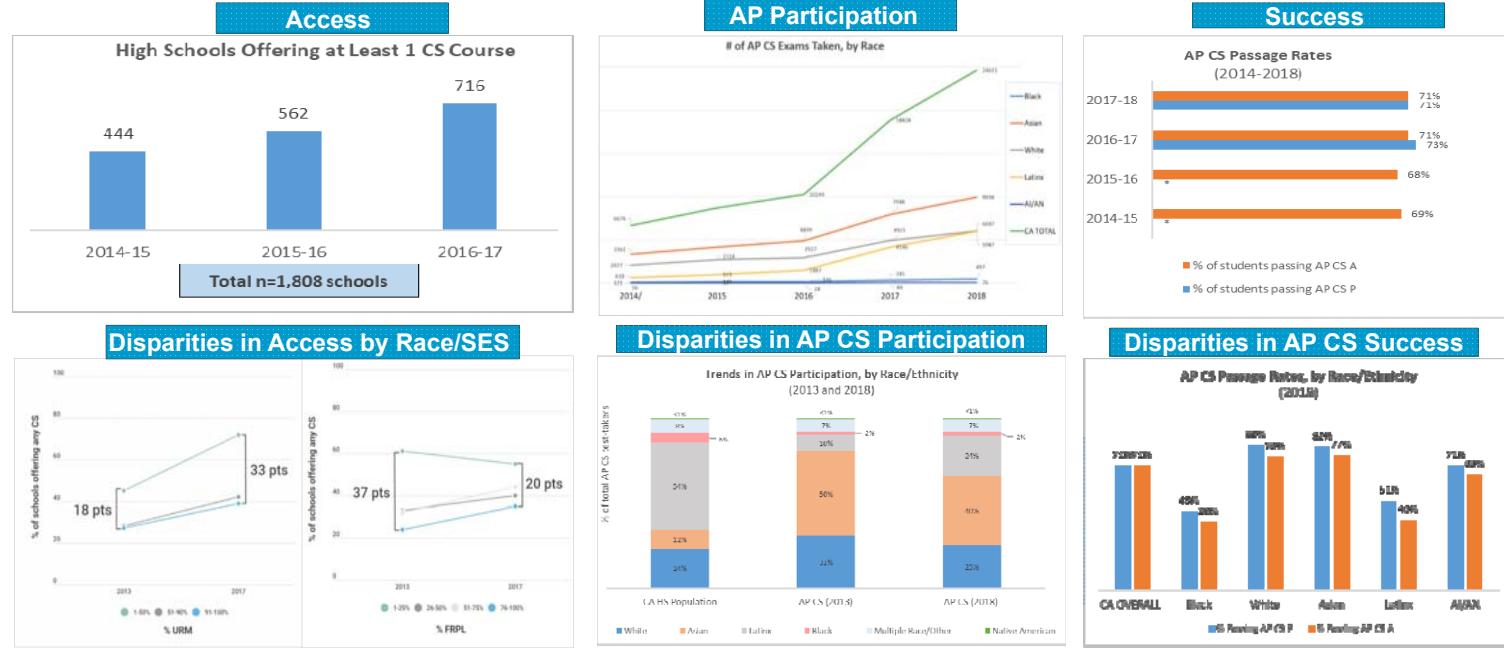
ACCESS: The number of high schools offering CS has grown from 444 to 716 high schools (from 26% to 40% of all CA high schools). **Gaps remain in CS course access** between high-URM and low-URM schools and high-income and low-income schools.

ENROLLMENT: Enrollment in intro CS courses has tripled from 2014 to 2017, and **enrollment in AP CS has nearly quadrupled since 2014**. Latinx students have increased in their percentage of AP CS test-takers, due largely to the AP CS P exam, but Black, Latinx, and Native American students remain underrepresented in CS courses relative to their population.

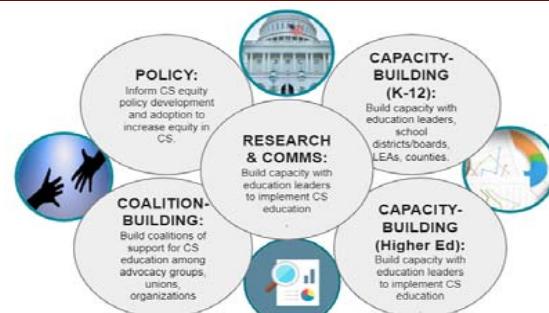
SUCCESS: AP CS passage rates have remained consistent at around 70% for the past four years. However, there are significant **gaps of over 40 percentage points in passage rates** between Black and Latinx students and their White and Asian peers.

While there are promising trends in the increase of high schools offering CS and students enrolling in CS, racial and socioeconomic equity gaps remain stubbornly persistent.

FINDINGS: Computer Science Education Trends in CA



A STATEWIDE THEORY OF CHANGE



References

- California Department of Education (2018). Public School and District Data (2013-2017)
- California Department of Education (2018). Primary Enrollment Data (2013-2017)
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- College Board. (2018). Advanced Placement Program Participation and Performance Data 2014-18.
- Martin, McAlear & Scott (2015). Path Not Found: Disparities in Access to Computer Science Courses in California's Schools.