



# CALIFORNIA EDUCATIONAL OPPORTUNITY REPORT

# 2007

**UC/ACCORD**  
ALL CAMPUS CONSORTIUM ON RESEARCH FOR DIVERSITY

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INSTITUTE FOR DEMOCRACY,  
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California Educational Opportunity Report 2007

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The 2007 California Educational Opportunity Report:  
**The Racial Opportunity Gap**

UC ACCORD & UCLA IDEA

## I. Introduction

In August 2007, California's Superintendent of Public Instruction Jack O'Connell called for greater public attention to the racial achievement gap in education. Highlighting evidence that white and Asian students in California consistently outperform their African American and Latino peers, O'Connell urged a state wide focus on eliminating this gap. Some commentators responded to O'Connell's statement by arguing that the persistent racial gap in achievement scores is a product of cultural differences that must be addressed if the gap is to be closed.<sup>1</sup> This cultural argument suggests that the problem of low test scores resides within the African American and Latino communities; it fails to account for the fact that California students *generally* have lower test scores than students across the nation. Notably, white students in California also perform well below white students in almost all other states.

In response to O'Connell's call, the *2007 Educational Opportunity Report* examines California's poor and unequal educational achievement in light of the conditions in California's public schools. As the latest in a series of reports on educational opportunities in California,<sup>2</sup> this report uses the most recent state data available to:

- \* Document, for every high school, the relationships among California's educational infrastructure, rates of high school completion, and enrollment in the state's public four-year colleges and universities;
- \* Examine the educational infrastructure of the state's middle schools;
- \* Investigate the opportunities provided in schools serving different racial groups—schools that serve a majority of white and Asian students; schools that serve a majority of African American, Latino, and American Indian students; and schools that are intensely segregated and enroll over ninety percent of African American, Latino, and American Indian students;
- \* Analyze the math pipeline through middle school and high school and the flow of students through it—including how well students are being prepared to succeed in high-stakes accountability measures;
- \* Show the changes in graduation rates for the Class of 2006, overall and for different groups of high schools.



## Five key findings emerge from these analyses:

- \* **A national opportunity gap.** California lags behind most other states in providing fundamental learning conditions as well as in student outcomes.
- \* **A racial opportunity gap.** Within California, African American and Latino students are far more likely to attend schools that lack fundamental learning conditions than their white and Asian peers.
- \* **A restricted flow through the “mathematics pipeline.”** The flow of students through California’s middle school and high school math curriculum is slowed by students’ lack of access to reasonably-sized classrooms, rigorous coursework, and well-trained teachers.
- \* **Systemic problems.** Inadequacy and inequality are found throughout California. The state’s educational problems are most severe in schools serving the highest proportions of African American and Latino students.
- \* **Worse outcomes for the Class of 2006.** The consequences of poor learning conditions were greater for young people in the Class of 2006 in part because they were the first class to face the California High School Exit Exam’s “diploma penalty.” In 2006, California graduated a smaller proportion of its 9<sup>th</sup> grade cohort than the proportion of any cohort of 9<sup>th</sup> graders graduating since 1997.

In essence, we expose two significant *opportunity* gaps that mirror California students’ academic performance: the gap between learning opportunities in California and other states and the gap in learning opportunities between schools within the state. We conclude that understanding and eliminating California’s racial achievement gap will require simultaneous attention to these two substantial gaps in educational opportunity.

## The remainder of the report is organized in six sections:

- \* Achievement, graduation, and college preparation
- \* California’s racially disparate schools
- \* Inadequate and unequal learning conditions and opportunities
- \* Unequal outcomes mirror unequal opportunities
- \* Restricted flow through California’s K-12 mathematics pipeline
- \* Conclusion



## Additional Analyses of Educational Opportunity in California

We supplement the analyses reported here in two accompanying reports—*African American Educational Opportunity Report, 2007* and *Latino Educational Opportunity Report, 2007*. These reports reveal that California’s racial gaps occur in concert with considerable racial isolation. Although California high schools are extraordinarily diverse, half of all African American high school students are concentrated in a relatively small number (107) of predominantly minority schools. Another 90 California high schools enroll especially high concentrations of English Learners who speak Spanish as a first language. These two groups of schools experience more severe opportunity problems than the rest of the state’s high schools.

We also provide our analyses separately for each Congressional, State Senate, and State Assembly district in California, as well as for each high school and middle school.

## II. California’s Persistent Low Achievement, Graduation, and College-Going

Many California public school students achieve at high levels, enroll in challenging courses, and graduate high school ready for college, the workplace, and civic life. In the last few years, California schools have made some notable gains. We have seen modest increases in the proportion of California’s students scoring proficient on the California’s Standards Tests since those tests were implemented in 2002-2003. We have seen a growing number of students enrolling in rigorous math classes in California’s middle schools and high schools.<sup>3</sup> And between 1997 and 2005, California steadily increased the proportion of 9<sup>th</sup> graders who graduated high school.

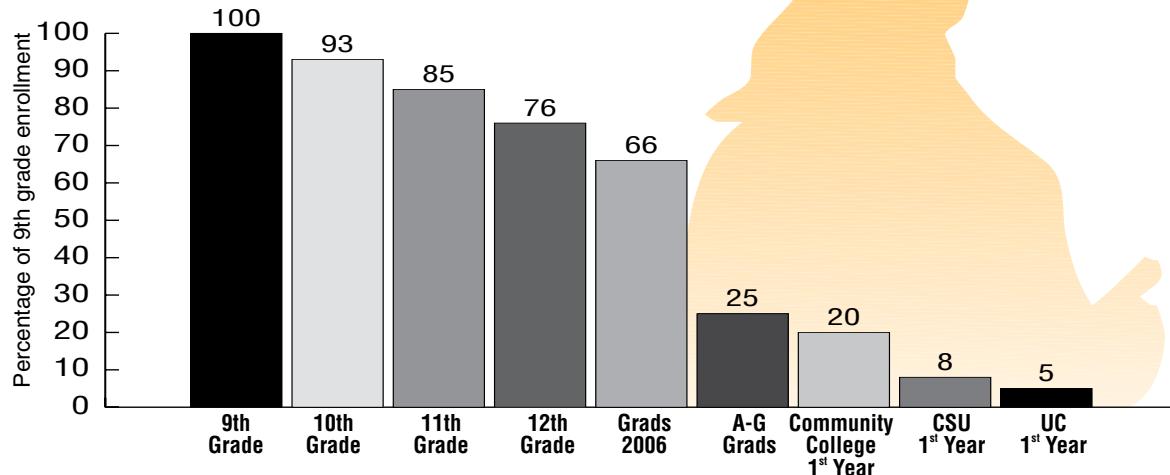
Yet despite this recent progress, California lags behind almost all other states in key markers of student achievement and rates of high school graduation and college enrollment. The 2007 results of the National Assessment of Educational Progress, or NAEP, are particularly sobering. NAEP is commonly referred to as the “nation’s report card” because it allows state-by-state comparisons of student achievement at grades 4 and 8 in reading and mathematics. California’s 4<sup>th</sup> graders rank 48<sup>th</sup> of all states in reading and 46<sup>th</sup> in mathematics. California’s 8<sup>th</sup> graders rank 47<sup>th</sup> in reading and 45<sup>th</sup> in mathematics.<sup>4</sup>

Although surveys suggest that almost all California students enter high school with aspirations to graduate and enroll in college, few California students achieve these goals.<sup>5</sup> More than 520,000 students enrolled as 9<sup>th</sup> graders in Fall 2002. Four years later, fewer than 350,000 Californians graduated from high school. That means the Class of 2006 shrunk to two-thirds of its original size. Not since 1997 has California failed to graduate such a high percentage of its 9<sup>th</sup> grade enrollment. The historically low graduation level in 2006 can be explained in part by California’s decision to fully implement its Exit Exam policy in June 2006. This policy meant that the state denied diplomas to students who had not passed the Exit Exam but had fulfilled all other graduation requirements.<sup>6</sup> As a consequence, California’s graduation rate now has fallen far below the national average.<sup>7</sup>



# California

## Class of 2006: Pathway to College



Produced by **UCLA/IDEA** and **UC/ACCORD**

The number of 2006 California high school graduates who completed the sequence of courses necessary for enrollment in California's four-year public universities was only one-quarter the size of the 520,000 students in the original class. And, only slightly more than one student for every eight in the original cohort enrolled at a California State University or University of California campus in the fall of 2006. According to data from the College Board, California ranks 48<sup>th</sup> among the states in the percentage of its senior class that matriculates into a four-year college the following year. Only Mississippi and Arizona have lower rates of sending high school seniors to four-year universities.<sup>8</sup> In part, California's poor ranking on this measure reflects the strength of California's community college system. A number of California seniors enroll in community colleges, and some later transfer to four-year colleges. Nonetheless, California still ranks well below most other states in the percentage of high school graduates who receive a bachelor's degree within six years.<sup>9</sup>

Some argue that California's low rates of educational achievement are a product of the state's large number of students from low-income families, students of color, and students learning English. However, California's white middle class students perform well below comparable white students across the nation. For example, California's white 8<sup>th</sup> graders' NAEP math scores are well below white 8<sup>th</sup> graders in most states, and their reading scores rank behind white students in all but two states.<sup>10</sup> Similarly, California's non-poor 8<sup>th</sup> graders rank below non-poor students in all but six states in both reading and math.<sup>11</sup> In sum, California has an education *crisis* that applies across the state and affects all students from all groups.



To focus on the so-called “achievement gap” as the reason for California’s poor educational performance draws attention away from other critically important education gaps. One is a *national opportunity gap* that relegates nearly all California students to schools with fewer fundamental resources and learning opportunities that students across the nation enjoy. The second is a *racial opportunity gap* within California that is characterized by consistent patterns of unequal opportunities experienced by students from traditionally underserved groups—African American, Latino, American Indian, and poor students.

In the sections that follow, we examine the evidence about these two opportunity gaps. Our analyses reveal clear *patterns* among the distribution of learning resources and opportunities, and the demographic characteristics of schools. These analyses make clear that the racial composition of schools is implicated in the inadequate and unequal educational opportunities that California students experience. These inadequacies and inequalities affect the likelihood that African American, Latino, and American Indian students will thrive academically and persist in their schooling.

### **III. California's Racially Disparate Schools**

California’s public secondary schools (including middle schools and high schools) serve an extraordinarily racially diverse student body. Forty-five percent of California’s secondary students are white or Asian, Pacific Islander, or Pilipino.<sup>12</sup> Fifty-three percent are Latino, African American, or American Indian—the three groups that are underrepresented in California’s higher education system.<sup>13</sup>

Despite this considerable diversity, most of California’s African American and Latino students are quite isolated from white and Asian students.

- \* Less than one-third of the state’s African American students and approximately one-quarter of Latino students attend secondary schools with majority white and Asian enrollments.
- \* Approximately three-quarters of African American and Latino students are enrolled in secondary schools where the majority of students are from underrepresented groups, and a sizeable portion of these students attend intensely segregated minority schools—schools where 90-100% of the students are from underrepresented groups.

These patterns have resulted in California being one of the nation’s most racially segregated states for African American and Latino students.<sup>14</sup> By contrast, the vast majority of California’s white and Asian students attend secondary schools where less than half of the students are from underrepresented groups.

- \* Fewer than 2% of white and Asian students are enrolled in intensely segregated minority schools.

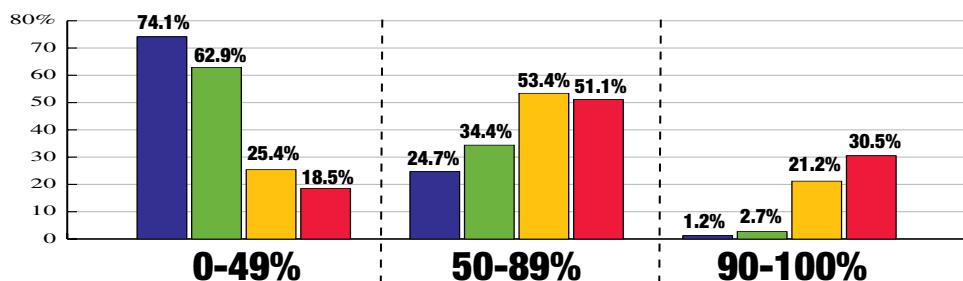


The following graphs display the percentages of middle and high schools students from different racial and ethnic groups in schools of varying composition.

## Racial Composition of California Middle Schools 2005–2006

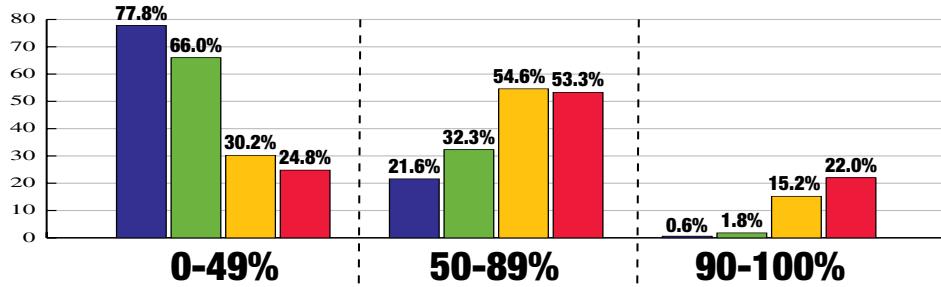
█ White   █ Asian   █ African American   █ Latino

Percent Underrepresented Students (2005-2006)



## High Schools 2005–2006

Percent Underrepresented Students (2005-2006)



Source: California Basic Education Data System, available at [www.cde.ca.gov/ds/sd/cb/](http://www.cde.ca.gov/ds/sd/cb/)

Intensely segregated minority schools are far more likely than other secondary schools to serve high concentrations of low-income students and students learning English.

- \* Almost all (95%) of the intensely segregated middle schools enroll a majority of low-income students. In 70% of these middle schools, at least one-third of all students are English Learners.

In contrast, few middle schools with small proportions of underrepresented students have low concentrations of low-income students and English Learners.

- \* Only 13% of predominantly white and Asian schools enroll a majority of low-income students, and only 2% enroll one-third or more English Learners.

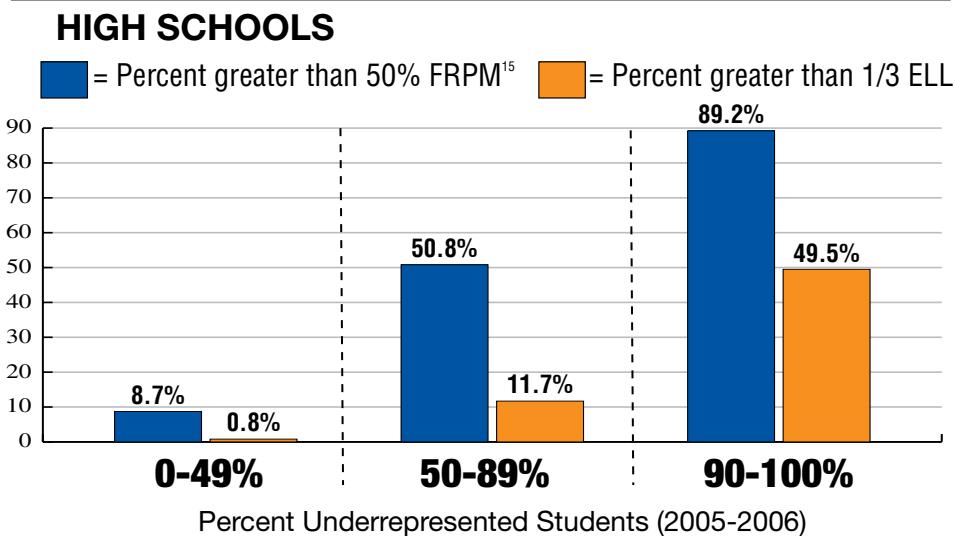
As the graph below displays, similar patterns are found at the high school level.

Intensely segregated high schools are more than 10 times as likely as high schools where underrepresented students are in the minority to have high concentrations of low-income



students, and 60 times as likely to enroll more than one-third English Learners than schools where most students are white and Asian.

## Concentrations of Low-Income Students and English Learners 2005-2006



Source: California Basic Education Data System, available at [www.cde.ca.gov/ds/sd/cb/](http://www.cde.ca.gov/ds/sd/cb/)

## IV. Inadequate and Unequal Learning Conditions and Opportunities

We now turn to analyses of the resources and opportunities provided in California's secondary schools. We find that almost all California students experience fewer educational opportunities than students across the nation. Their schools are more often overcrowded, and they have less access to teachers and counselors than their peers in most other states. Within California, secondary schools where the majority of students are from underrepresented groups are those most likely to face these critical opportunity problems. These shortages are particularly burdensome for students from low-income families that do not have a history of college-going. Without qualified adults available at their schools, such students often lack information and support to navigate toward graduation and college preparation.<sup>16</sup>

### *Overcrowded Schools*

California's secondary schools are larger, on average, than schools in every other state except Florida.<sup>17</sup> Many of California's middle schools and high schools are among the largest secondary schools in the nation.

- \* 36 middle schools enroll more than 2,000 students. 120 high schools enroll more than 3,000 students. Nationally, the average middle school enrolls 605 students and the average high school enrolls 751 students.<sup>18</sup>



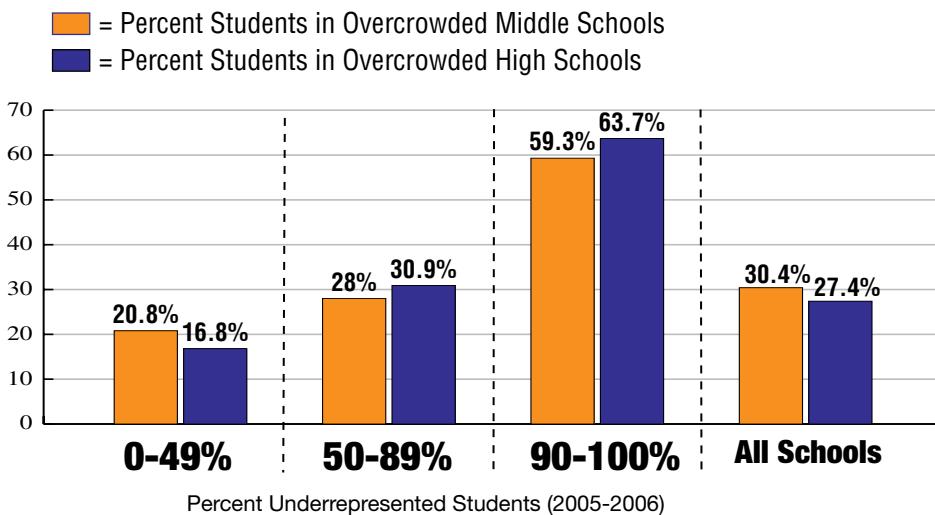
Many California schools are overcrowded, but minority students are most affected.

- \* More than one-fourth of California middle and high school students attend schools that the state has defined as overcrowded. This includes almost two-thirds of students in intensely segregated minority schools.

Overcrowding creates unsafe environments and makes teaching and learning more difficult. Schools may need to teach students in auditoriums, gymnasiums, storage rooms, and other areas never intended to be used for instructional purposes.<sup>19</sup> Schools with too little space may not be able to maintain specially equipped rooms such as science labs or libraries because these spaces need to be “flexible” for teaching multiple subjects. Overcrowding has led some California school districts to employ policies such as year-round, multi-track school calendars in order to keep some portion of the teachers and students off campus and “on break.” Some of these calendars provide students with fewer days of instruction than are provided to other California students.

The graphic below displays the relationship between race and overcrowding in California schools.

## **Secondary School Racial Composition and Overcrowding 2005–2006**



Source: California Basic Education Data System, available at [www.cde.ca.gov/ds/sd/cb/](http://www.cde.ca.gov/ds/sd/cb/)

### ***Limited Access to Counselors***

Counselors provide students and their families with information, guidance, and support as students navigate through secondary schools and toward their postsecondary opportunities. Such counseling is particularly important for students whose families lack both knowledge of available opportunities and how students might take advantage of them. Immigrants and students learning English may be especially dependent on the support of knowledgeable counselors.<sup>20</sup>



On average, however, California's high schools provide 1 counselor for every 556 students compared with a national average of 1 counselor for every 229 students. The American School Counselor Association ranked California last of all states in providing high school students with access to counselors.<sup>21</sup>

Eight in nine California high school students attend schools that provide less access to counselors than the national average.

- \* Students attending intensely segregated minority schools are most likely to attend schools with fewer counselors than the national average.
- \* Middle school students in California have less access to counselors than high school students. On average, California's middle schools provide 1 counselor for every 753 students.

### ***Limited Access to Qualified Secondary Teachers***

California secondary teachers are responsible for more students than secondary teachers in any other state. Middle school teachers teach 49% more students than the national median. High school teachers teach 42% more students than the national median.<sup>22</sup>

**Student to Teacher Ratio in Secondary Schools  
2003 - 2004**

	U.S. Median	CA Median
<b>Middle Schools</b>	15.8	23.5
<b>High Schools</b>	15.4	21.8

Source: National Center for Education Statistics (NCES), available at <http://nces.ed.gov/>

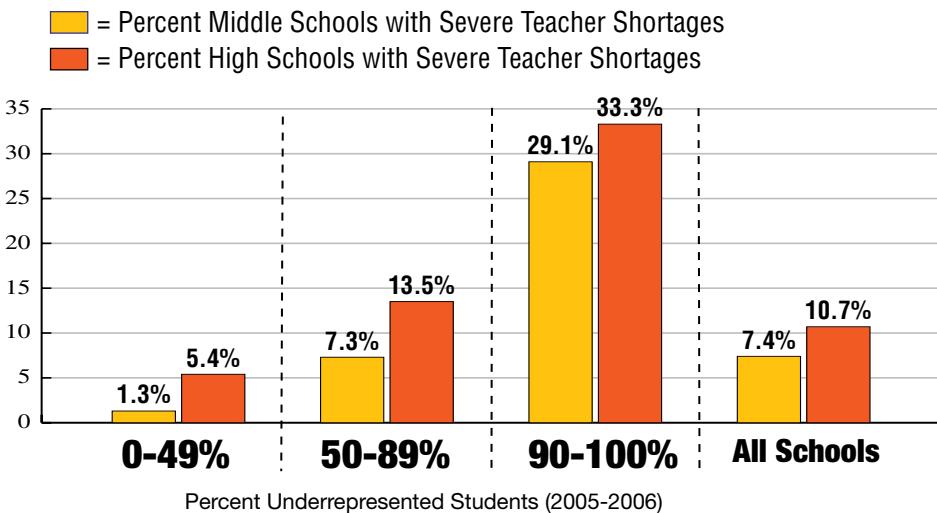
Qualified secondary teachers are an essential resource, and California has an insufficient supply. Poorly qualified teachers have less content area knowledge, rely heavily on lecturing, and are often unprepared to have students engage in higher-order thinking and work. Schools with a severe shortage of qualified teachers, where more than 20% of the teachers lack full credentials, have high levels of teacher turnover; moreover, these schools do not have enough experienced and qualified teachers to mentor new and less prepared ones.<sup>23</sup>

As the graph below displays, a severe shortage of qualified teachers is rarely found in secondary schools that enroll a majority of white and Asian students. By contrast, these shortages are common in schools with large concentrations of underrepresented students.

- \* 29% of intensely segregated minority middle schools have severe teacher shortages; they are 22 times more likely to experience such shortages than are middle schools where fewer than half of students are from underrepresented groups.



## School Racial Composition and Teacher Shortages 2005–2006



Source: California Basic Education Data System, available at [www.cde.ca.gov/ds/sd/cb/](http://www.cde.ca.gov/ds/sd/cb/)

### *Limited Access to High-Quality College Preparatory Curriculum*

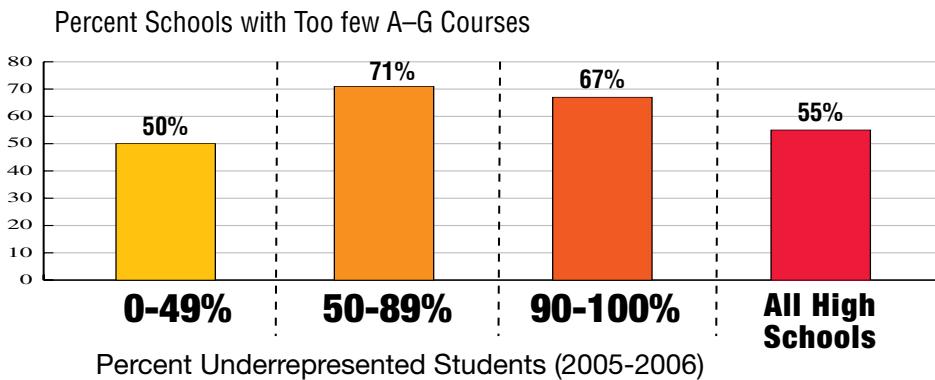
The California State University and the University of California have the same basic course requirements for admission, commonly referred to as the “A-G Requirements.” To be eligible to attend any public four-year university in the state, a student must take a minimum of 15 A-G courses—approximately two-thirds of their high school courses. Accordingly, to provide every student with the opportunity to satisfy these college eligibility requirements, California high schools must ensure that *at least* two-thirds of their courses meet the A-G Requirements. In schools with high rates of college-going, it is common for more than three-quarters of the school’s courses to satisfy the A-G Requirements.<sup>24</sup>

Nearly a million (995,436) California high school students attend schools that do not offer enough A-G courses for all students to take the college preparatory curriculum.

- \* Half of the high schools serving majority white and Asian students lack sufficient courses.
- \* More than two-thirds of the high schools with a majority of underrepresented students face this problem.



## School Racial Composition and Access to the College Preparatory Curriculum 2005–2006

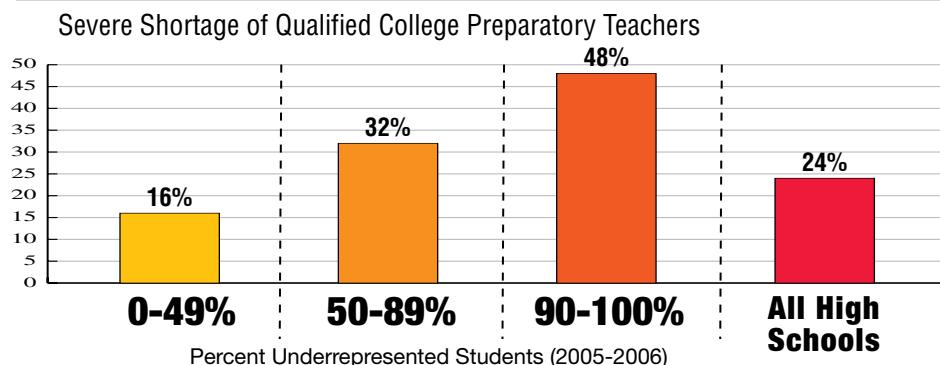


Source: California Basic Education Data System, available at [www.cde.ca.gov/ds/sd/cb/](http://www.cde.ca.gov/ds/sd/cb/)

Sometimes schools offer college preparatory courses without providing high-quality instruction in those courses. For example, in one-quarter of California's high schools, more than 20% of college preparatory courses are taught by teachers teaching outside their subject area expertise. More than 300,000 California students attend schools facing this problem. Again, this problem is not shared equally.

- \* Intensely segregated minority high schools are three times as likely to have large numbers of teachers teaching college preparatory courses without the appropriate credential as are high schools where less than half of the students are underrepresented.

## High School Racial Composition and Access to Qualified College Preparatory Teachers



Source: California Basic Education Data System, available at [www.cde.ca.gov/ds/sd/cb/](http://www.cde.ca.gov/ds/sd/cb/)



## V. Unequal Outcomes Mirror Unequal Opportunities

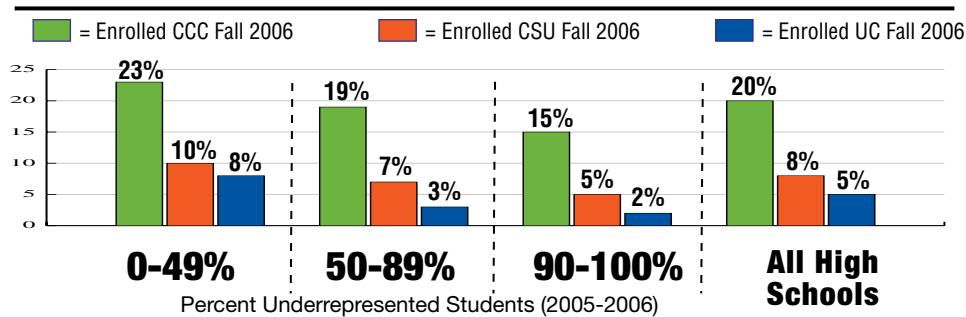
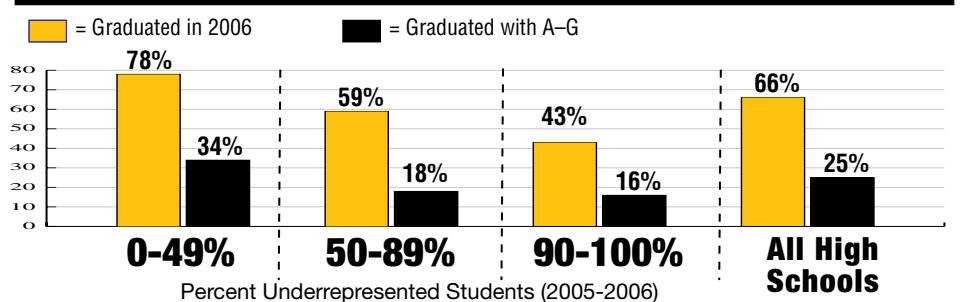
The unequal academic outcomes produced by California's schools strongly mirror the unequal educational opportunities present in those schools. High schools enrolling different proportions of underrepresented students yield dramatically different rates of progress to high school graduation and college.

- \* Students in predominantly white and Asian high schools were twice as likely as students in intensely segregated minority schools to complete the course sequence required for admission into California State Universities and University of California campuses.

These differences translate into comparable differences in college enrollment.

- \* Students in predominantly white and Asian high schools were over twice as likely (17% to 7%) as those in intensely segregated minority schools to matriculate into four-year California public universities in Fall 2006.

### High School Racial Composition, Graduation, College Eligibility, and College-Going



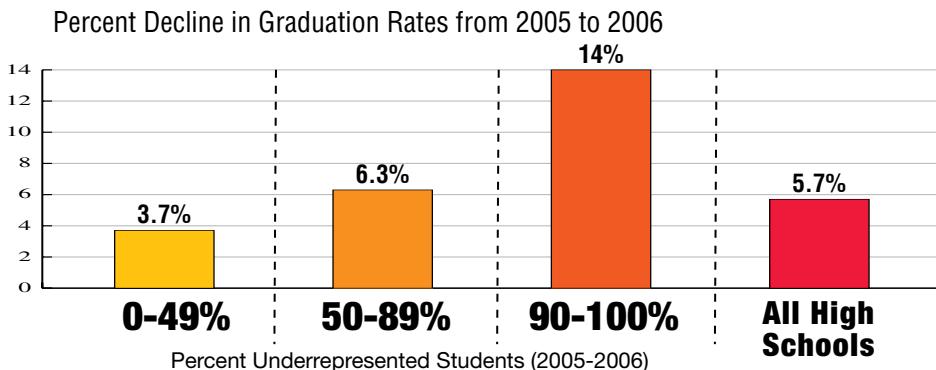
Source: California Basic Education Data System, available at [www.cde.ca.gov/ds/sd/cb/](http://www.cde.ca.gov/ds/sd/cb/);

California Postsecondary Education Commission, available at [www.cpec.ca.gov](http://www.cpec.ca.gov)

These patterns of disparate graduation and college-going rates across these three groups of schools are longstanding. However, the proportions of graduates fell across the board in the Class of 2006. The decline was steepest for the intensely segregated minority high schools where the graduation rate fell by 14% from 2005 to 2006. In comparison, the graduation rate decreased by 3.7% in the group of high schools with the smallest proportion of underrepresented students.



## High School Racial Composition and the 2006 Decline in Graduation



Source: California Basic Education Data System, available at [www.cde.ca.gov/ds/sd/cb/](http://www.cde.ca.gov/ds/sd/cb/)

### *Intensely segregated minority schools are far more likely to face state sanctions*

Over the last decade, California's Legislature has adopted a set of standards and tests of student proficiency that many have praised as among the most rigorous in the nation.<sup>25</sup> Following the requirements in No Child Left Behind (NCLB), the California Legislature has enacted accountability measures that tie punitive consequences to these standards and tests. Schools are designated as "Program Improvement" (PI) schools if they fail to meet the state's test-score-increase goals for two or more consecutive years.<sup>26</sup>

Unfortunately, as the analyses in the previous sections make clear, California has not invested in the conditions necessary for schools to achieve these high standards and meet the requirements of the state's tough accountability mechanisms. In 2006, 43% of California's middle schools and 15% of California's high schools were identified by the state and federal government as low-performing and in need of serious improvement.

- \* California's intensely segregated minority middle schools are more than six times as likely (89% to 14%) as majority white and Asian middle schools to be designated as PI schools.

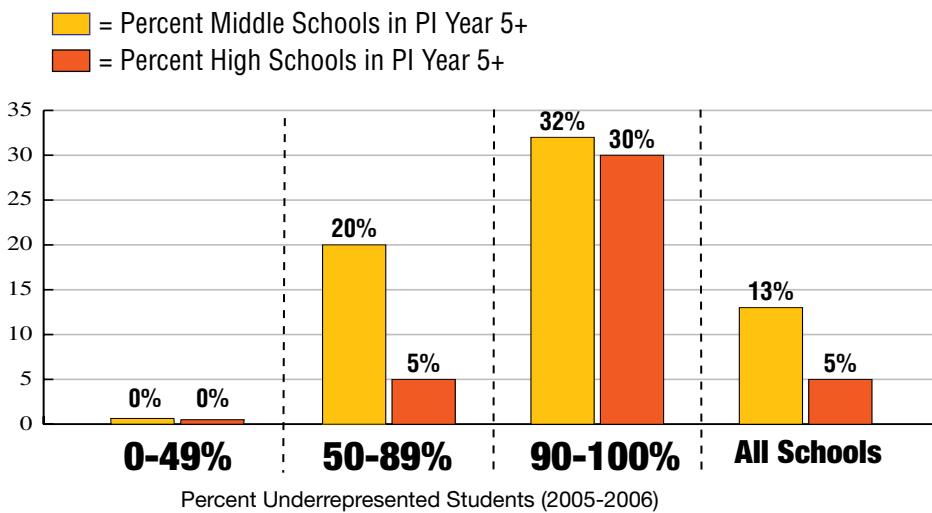
Although a smaller proportion of high schools in either category have been designated as PI, the disparity is even more pronounced in intensely segregated minority high schools.

- \* California's intensely segregated minority high schools are more than 19 times as likely (58% to 3%) as majority white and Asian schools to be designated as PI schools.

Some of these California middle and high schools face serious sanctions because they have been in Program Improvement status for at least five years. NCLB requires districts to close or "reconstitute" such schools.<sup>27</sup> As the graph below shows, almost a third of intensely segregated minority middle and high schools are "PI 5" schools that face these sanctions. Notably, no majority white and Asian high schools are in this stage of Program Improvement.<sup>28</sup>



## School Racial Composition and “Program Improvement 5” Status 2005–2006



Source: California Basic Education Data System, available at [www.cde.ca.gov/ds/sd/cb/](http://www.cde.ca.gov/ds/sd/cb/)

## VI. Restricted Flow Through California’s K-12 Mathematics Pipeline

One clear consequence of the state’s combination of high standards and low opportunity is the restricted flow of students through California’s math pipeline—the sequence of mathematics instruction that impacts students’ college opportunities and life chances. Students’ success in these math courses, according to many analysts, also holds the key to the state’s future well-being.<sup>29</sup>

California’s math standards, adopted in 1997 and then pushed forward with legislation supporting new textbooks in 2001-2002, called for students to take more and more rigorous math classes. This framework, combined with the state requiring Algebra for graduation and the implementation of the California High School Exit Exam, have prompted an increase in secondary math enrollment overall, and in 8<sup>th</sup> graders taking Algebra.<sup>30</sup>

### *Middle-school obstructions in the math pipeline*

The results of the 8<sup>th</sup> grade math NAEP suggest that California’s standards and accountability reforms alone are not sufficient to promote math proficiency. In 2007, the average NAEP math score for California 8<sup>th</sup> grade students was 270, placing California behind 44 other states, and below the national average of 280. Fewer than 1 in 4 California 8<sup>th</sup> graders scored at the proficient or advanced level. More than 40% of California 8<sup>th</sup> graders scored “below basic”—the lowest level.<sup>31</sup> As noted earlier in this report, California’s sub-par performance on the math NAEP holds for all students and all sub-groups—including white and non-poor students.

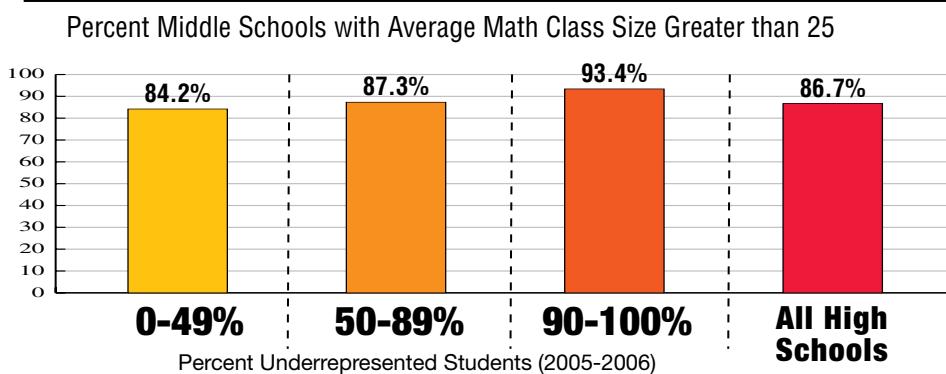
Among the complex mix of factors underlying this outcome are three middle school conditions known to undermine learning—large math classes, lack of access to rigorous mathematics coursework, and shortages of teachers trained in mathematics.<sup>32</sup>



**Math class size.** The state's Quality Education Investment Act (QEIA) of 2006<sup>33</sup> calls for secondary schools to limit class size to 25. Although this standard is a move in the right direction, California is far from reaching it, and it would still leave California students with less access to teachers than most students across the nation.

- \* California ranks last among all the states in the average number of students in its secondary math classrooms.
- \* 93% of intensely segregated minority middle schools enroll more than 25 students per math class.

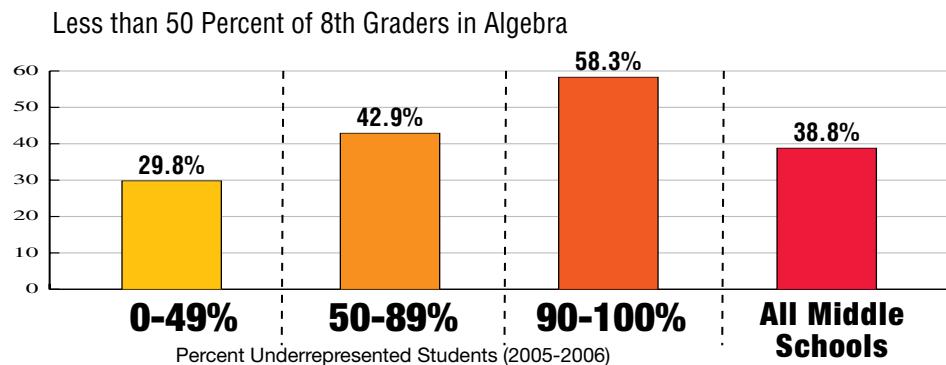
## Middle School Racial Composition and Math Class Size 2005–2006



Source: California Basic Education Data System, available at [www.cde.ca.gov/ds/sd/cb/](http://www.cde.ca.gov/ds/sd/cb/)

**Rigor of coursework.** California's curriculum framework in math encourages schools to enroll all students in Algebra by 8<sup>th</sup> grade.<sup>34</sup> However, 57% of California's middle schools enroll fewer than half of their 8<sup>th</sup> graders in Algebra or its equivalent. More than 600,000 students attend such schools. This problem cuts fairly evenly across all groups of California middle schools.

## Middle School Racial Composition and 8<sup>th</sup> Grade Enrollment in Algebra 2005–2006



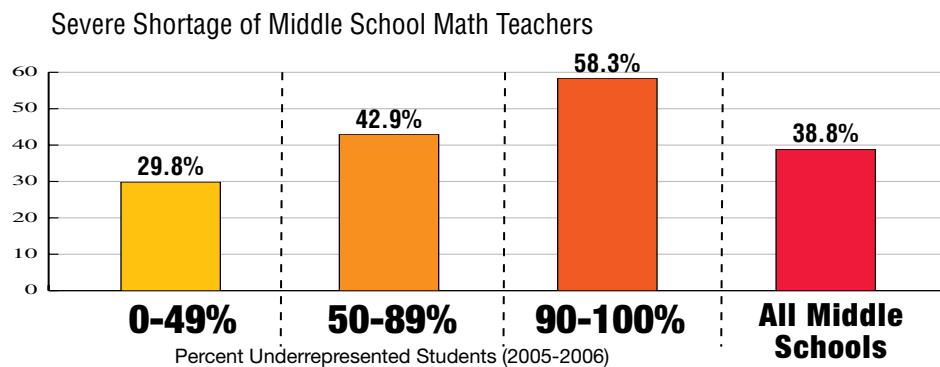
Source: California Basic Education Data System, available at [www.cde.ca.gov/ds/sd/cb/](http://www.cde.ca.gov/ds/sd/cb/)



**Math teacher preparation.** California state law allows middle school math teachers to hold either a credential in mathematics or a “multiple subjects” credential. And, in more than one-third of California middle schools, the majority of math teachers lack specialized mathematics credentials.

However, California’s high math standards require teachers with a strong grasp of the subject matter and a deep understanding of how to convey key mathematical concepts to adolescents. Without sufficient math specialists, middle schools have difficulty mounting high-quality mathematics programs. This shortage of middle school math teachers impacts more than 400,000 students statewide, but it is twice as likely to occur in intensely segregated minority middle schools as in majority white and Asian middle schools.

## Middle School Racial Composition and Shortage of Math Teachers 2005–2006



Source: California Basic Education Data System, available at [www.cde.ca.gov/ds/sd/cb/](http://www.cde.ca.gov/ds/sd/cb/)

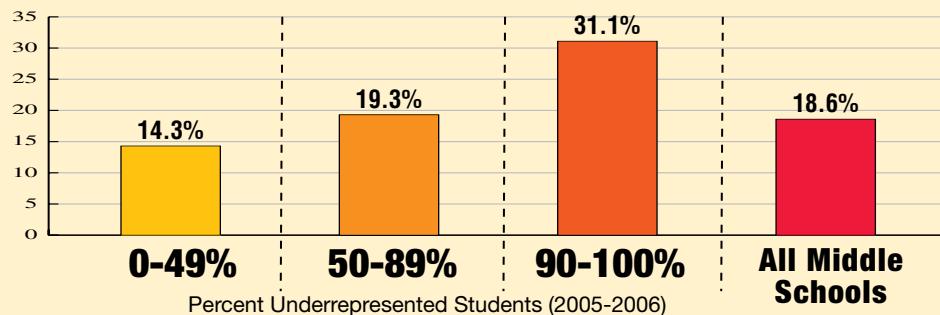
97% of all California middle schools experience at least one of the above problems (overcrowded classrooms, insufficient access to rigorous coursework, shortages of prepared teachers) that limit students’ access to high-quality mathematics instruction.

Some middle schools in the state face all three of these problems, making it extremely difficult for them to mount a quality mathematics program and for the students enrolled in these schools to meet the state’s standards. More than 200,000 California students are enrolled in such middle schools and, as such, experience the combined impact of overcrowded math classes, insufficient access to algebra, and too few qualified math teachers. Intensely segregated minority middle schools are more than twice as likely as majority white and Asian middle schools to face all of these math problems.



## Middle School Racial Composition and Multiple Math Pipeline Problems 2005–2006

Three Problem Middle Schools



Source: California Basic Education Data System, available at [www.cde.ca.gov/ds/sd/cb/](http://www.cde.ca.gov/ds/sd/cb/)

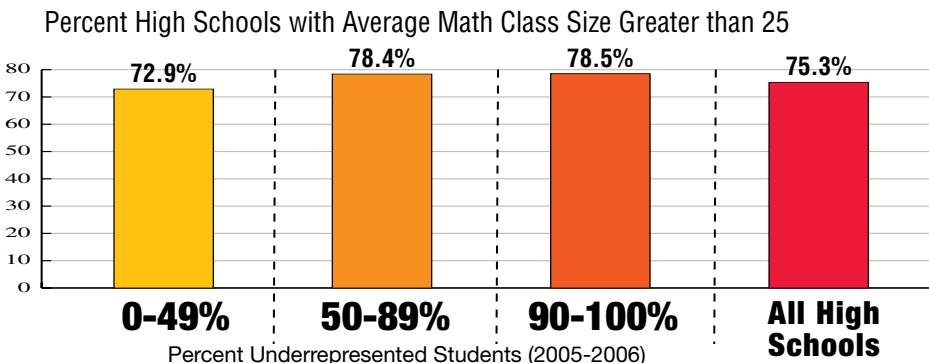
Given the prevalence of these problems, it is no surprise that so many California students leave middle school insufficiently prepared for the rigor of high school math.

### *High school obstructions in the math pipeline*

With access to intensive support at the high school level, many students with inadequate middle school preparation might still be able to meet the state's rigorous math standards. But, the lack of opportunities for high-quality math instruction in California's middle schools continues in California's high schools. The poor preparation of the state's middle school students combines with poor math preparation at the high school level and both leave many students at the end of their schooling without core academic skills in mathematics.<sup>35</sup>

**Math class size.** As noted above, California's secondary math classes are the largest in the nation. More than 75% of California high schools average more than 25 students per math class—this is more than the state recommends in its QEIA, and far more than the national average. One and one-half million California high school students attend schools with such overcrowded math classes. This problem is more common in schools where the majority of students are from underrepresented groups.

## High School Racial Composition and Math Class Size



Source: California Basic Education Data System, available at [www.cde.ca.gov/ds/sd/cb/](http://www.cde.ca.gov/ds/sd/cb/)

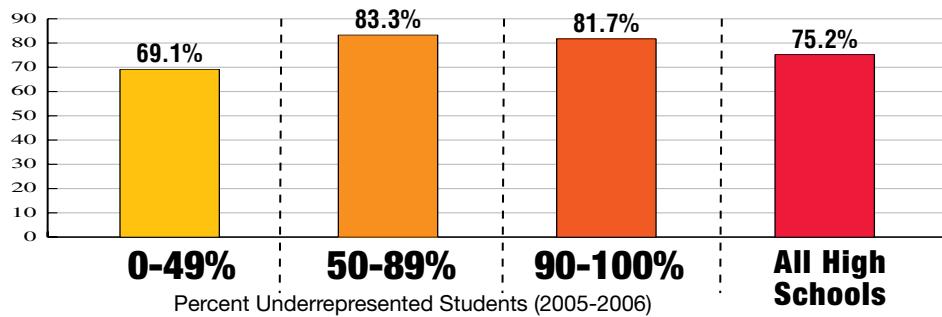


**Rigor of coursework.** In the last four years, the proportion of California high school students taking higher-level math classes has increased. According to a widely-acclaimed U.S. Department of Education study, enrolling in a rigorous high school curriculum is key to increasing students' chances of earning a bachelor's degree.<sup>36</sup> The study also found that of all the high school courses, the highest level of mathematics taken is the most important for college success. The study also reported that taking rigorous high school courses had a greater impact on African American and Latino students than on white students.

Despite the recent increases, the proportion of students enrolling in such rigorous math classes remains quite small in most California high schools. In 75% of California high schools, less than one-quarter of 10<sup>th</sup>, 11<sup>th</sup>, and 12<sup>th</sup> grade students enroll in courses that the state designates as "higher level" math classes. Students in schools serving majority African American and Latino students are more likely than those in majority white and Asian schools to experience this problem.

## High School Racial Composition and Enrollment in Advanced Math Classes 2005–2006

Schools with Less than 25 Percent Students Enrolled in Advanced Math



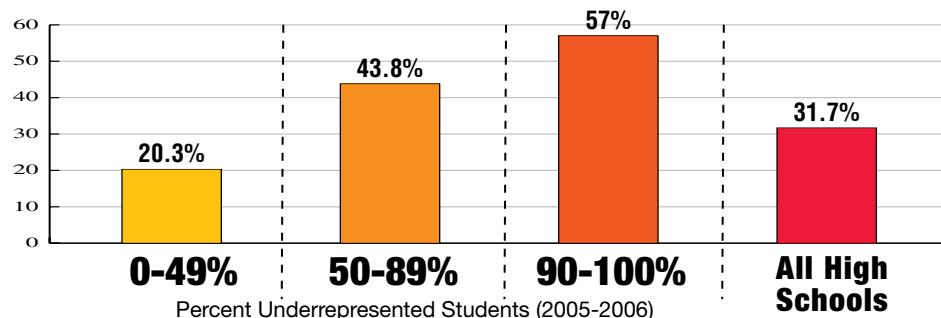
Source: California Basic Education Data System, available at [www.cde.ca.gov/ds/sd/cb/](http://www.cde.ca.gov/ds/sd/cb/)

**Math teacher preparation.** High-quality math instruction at the high school level requires a deep understanding of the subject matter. Yet, almost one-third of California high schools face severe shortages of fully certified math teachers, and, as such, fail to meet NCLB requirements. In these schools, more than 20% of the college preparatory math classes are taught by teachers without state credentials to teach mathematics. This problem impacts more than one-half million California students. Schools serving predominantly African American and Latino students are almost three times as likely as majority white and Asian schools to face this problem.



## High School Racial Composition and Math Teacher Shortages 2005–2006

Severe Shortage of High School Math Teachers



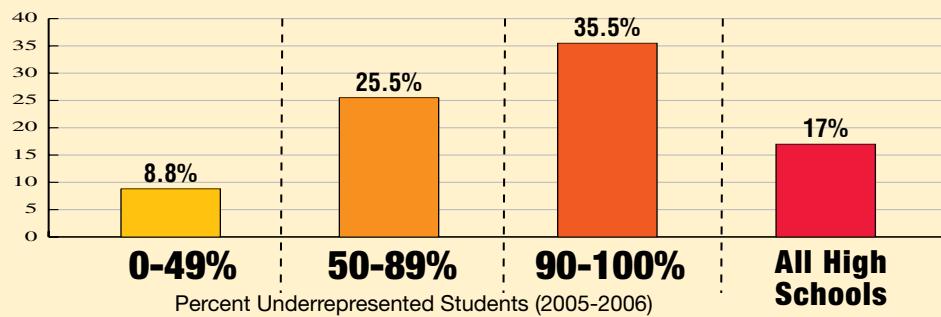
Source: California Basic Education Data System, available at [www.cde.ca.gov/ds/sd/cb/](http://www.cde.ca.gov/ds/sd/cb/)

As is the case with middle schools, 97% of California's high schools face at least one of the three math problems that create serious challenges for student learning—large class sizes, few students enrolled in advanced math, and shortages of qualified math teachers.

However, these three math problems converge in one out of every six California high schools, affecting 398,426 students. Here, too, students attending intensely segregated minority schools are affected disproportionately. Students in these schools are more than four times as likely as students in predominantly white and Asian schools to experience all three of these problems.

## High School Racial Composition and Multiple Math Pipeline Problems 2005–2006

Three Problem High schools



Source: California Basic Education Data System, available at [www.cde.ca.gov/ds/sd/cb/](http://www.cde.ca.gov/ds/sd/cb/)

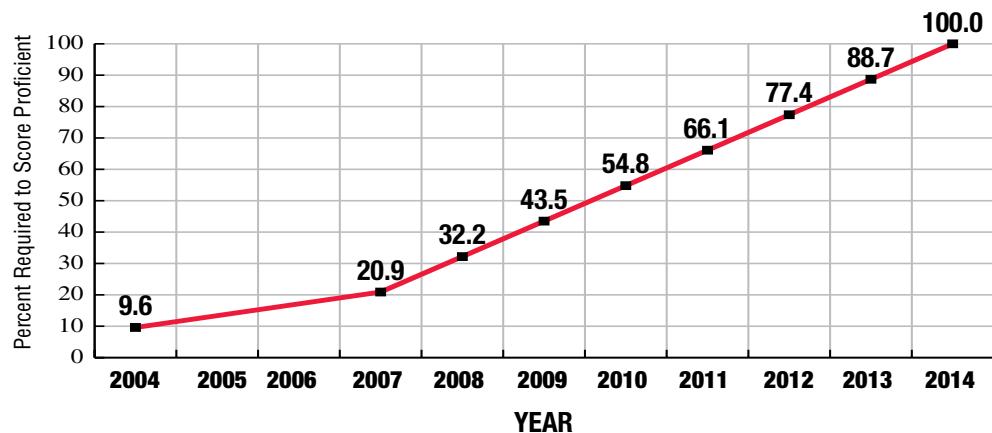
Almost all students in California's Class of 2006 attended a school with at least one of these math problems sometime during their middle and high school years. Yet, because middle schools with poor resources often feed into high schools with poor resources, a sizeable number of students in the Class of 2006 experienced a convergence of math problems both in middle school and in high school. California lacks a longitudinal data system that would allow us to say with certainty how many students faced how many problems for how many years. What is clear, however, is that many California students, and particularly those



attending predominantly African American and Latino schools, did not have sufficient opportunities to prepare for, and reach the state's goals in mathematics instruction.

One important consequence of these inadequacies and inequalities in the math pipeline is that few if any California secondary schools are on track to meet the goal of promoting universal proficiency. NCLB calls for all students to reach proficiency in mathematics and English/Language Arts by 2014. In the years leading up to 2014, high schools must demonstrate that they are moving toward this goal by enabling more and more of their students to achieve proficiency on standardized tests. For example, in 2007, high schools are required to show that at least 21% of their students have attained proficiency in mathematics. By 2010, 55% of students must attain proficiency.

## NCLB's Rising Standards 2005–2006 High Schools



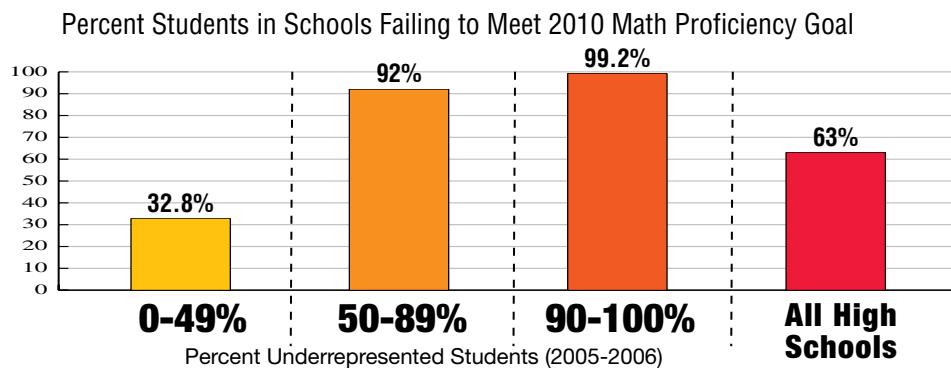
Source: California Basic Education Data System, available at [www.cde.ca.gov/ds/sd/cb/](http://www.cde.ca.gov/ds/sd/cb/)

This accountability framework assumes that California schools have the capacity to continually improve student performance. However, the prevalence and distribution of math problems in the state's middle and high schools that we described above calls that assumption into question.

In fact, only about one in three California high school students attend schools that currently meet the math achievement goal for 2010. And, as the graphic below shows, less than 1% of those California students enrolled in intensively segregated minority schools are in schools that already meet this goal.



## High School Racial Composition and Failure to Meet 2010 Math Proficiency Goal



Source: California Basic Education Data System, available at [www.cde.ca.gov/ds/sd/cb/](http://www.cde.ca.gov/ds/sd/cb/)

Many California high schools have increased the proportion of students scoring proficient in math over the last two years, and these schools hope to sustain their improvement. But, it won't be enough for California high schools to continue to increase at their current rates (a very challenging prospect indeed). California's accountability scheme within NCLB requires that the yearly increases that schools make in the proportion of students that attain proficiency grow larger and larger over time. So, at their current rates of progress, nearly every high school in the state will be a failing school by 2014. By that year, less than 5% of California high school students would attend schools that achieved the math proficiency target. In fact, more than half of California students attend high schools that would need *more than 50 years* beyond 2014 to attain NCLB's math goal—*even if* these schools continue to improve every year at the rates they have demonstrated over the last two years.



## VII. Conclusion

In August 2007, State Superintendent of Public Instruction Jack O'Connell called for Californians to address what he called the state's "racial learning gap." The fact that California's African American and Latino students perform below their white and Asian peers on standardized tests is well documented and their progress to graduation and college lags behind white and Asian students as well. We agree that these disparities deserve attention and public action.

To close the so-called racial learning gap, Californians need to address the gaps that this report highlights. The fact that California public schools offer fewer of the fundamental conditions all students need to learn is compounded by the fact that California's fundamental conditions for learning are not equally distributed. These two gaps combine in many harmful ways. For example, California's worst-in-the-nation student-to-teacher ratio and its unequal distribution of qualified teachers means that students in intensely segregated minority schools more often experience very large classes taught by unqualified teachers.

Closing these gaps requires that Californians look beyond the rhetoric of "accountability" and "standards" in isolation, and focus on the opportunities for learning that students experience in their classrooms. California has enacted educational standards designed to produce a highly educated workforce for a technology-based economy and a well-informed citizenry. But achieving these standards is not a simple matter of motivating teachers and students (through "carrots" and/or "sticks") to "try harder." California has not invested in its schools at a level commensurate with its standards, and our educational infrastructure is incapable of providing the opportunities these goals demand.

Further, the quality of education students receive is strongly related to their race or ethnicity and that of their classmates—replicating the inequalities historically associated with racial segregation. Truly closing the gaps that divide California's students will require directing new resources to those students who are most deprived of fundamental learning conditions. It is a necessary step if the state is serious about making California's learning standards accessible to all, regardless of race.



## (Endnotes)

- 1 See, for example, *A way to close the achievement gap between white and minority students in California*, editorial in the San Francisco Chronicle, Tuesday, August 21, 2007.
- 2 In 2006, ACCORD and IDEA released two reports: *The 2006 California Educational Opportunity Report: Roadblocks to College* and *Removing the Roadblocks: Fair College Access for All California Students*. These reports analyzed how well California's K-12 public schools prepared their diverse students for college, and they compared California's high schools with high schools across the nation. The reports concluded that all California students face significant roadblocks on their pathway to college, and students attending schools with the highest concentrations of Latino and African American students face these problems most often. The accompanying reports on African American and Latino students, as well as the reports for each legislative district and each California high school are available online at [www.EdOpp.org](http://www.EdOpp.org).
- 3 Ed Source. (2007). *Higher Standards + Support = More Students Taking Tougher Math*. Mountain View, California: Ed Source. Available online at <http://www.edsource.org>
- 4 United States Department of Education: National Center for Education Statistics. (2007). *National Assessment of Educational Progress*. Available online at <http://nces.ed.gov/nationsreportcard/naepdata/>
- 5 Parents and Students for Great Schools. (2007). *Now That We Have the Facts: California Parents and Students Voice Their Demands for Public Education*. Available online at [www.caljustice.org/cfj\\_live/images/stories/07\\_reports/Education%20Survey.pdf](http://www.caljustice.org/cfj_live/images/stories/07_reports/Education%20Survey.pdf) and Baldasare, M. et al. (2007). *Californians and Higher Education*. San Francisco, CA: The Public Policy Institute of California.
- 6 Rogers, J. (2007). Constructing Success: Accountability, Public Reporting, and the California High School Exit Exam. *Santa Clara Law Review* 47:755-80.
- 7 The National Center for Educational Statistics (NCES) reported that California's graduation rate was only marginally lower than the national average in 2005. NCES calculates graduation, what it calls an Average Freshman Graduation Rate by dividing the number of graduates by the average of the number of students enrolled as 8<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> graders five, four, or three years before. In 2005, NCES reported a national average graduation rate of 74.7% and a California average of 74.6%. While NCES has not yet reported graduation rates for the Class of 2006, we expect that California's graduation rate will now fall roughly 4 percentage points below the national average.
- 8 College Board. (2007). *Higher Education Landscape*. Available online at <http://www.collegeboard.com/highered/res/hel/hel.html>.
- 9 National Center For Higher Education Management Systems. (2007). *Completion: Bachelor's degrees awarded per 100 high school graduates 6 years earlier*. Available online at <http://www.higheredinfo.org/dbrowser/index.php?submeasure=85&year=2005&level=nation&mode=data&state=0>.
- 10 United States Department of Education: National Center for Education Statistics. (2007). *National Assessment of Educational Progress*. Available online at <http://nces.ed.gov/nationsreportcard/naepdata/>
- 11 United States Department of Education: National Center for Education Statistics. (2007). *National Assessment of Educational Progress. The Nation's Report Card*. Available online at [http://nces.ed.gov/nationsreportcard/naepdata/http://nationsreportcard.gov/math\\_2007/m0005.asp](http://nces.ed.gov/nationsreportcard/naepdata/http://nationsreportcard.gov/math_2007/m0005.asp)
- 12 Hereinafter, we use the shorthand "Asian" to refer to students designated as Asian, Pacific Islander, or Pilipino.
- 13 Hereinafter, we use the shorthand "Underrepresented" to refer to students designated as African, American, Latino, and American Indian. These groups are underrepresented in the University of California system.
- 14 Orfield, G. and Lee, C. (2007, August). *Historic Reversals, Accelerating Resegregation, and the Need for New Integration Strategies*. Los Angeles, California: Civil Rights Project/ Proyecto Derechos Civiles, University of California, Los Angeles.
- 15 Free and Reduced Price Meals (FRPM) is the only indicator available to measure concentrations of poverty at the school level. See *California Educational Opportunity Reports Data Sources and Definitions*. Available online at [www.EdOpp.org](http://www.EdOpp.org).



- 16 McDonough, P. (2004). Counseling Matters: Knowledge, assistance, and organizational commitment in college preparation. In William G. Tierney, Zoë B. Corwin & Julia E. Colyar (Eds.) *Preparing for College: Nine Elements of Effective Outreach*. Albany, NY: SUNY Press.
- 17 United States Department of Education: National Center for Education Statistics. Available online at <http://nces.ed.gov>
- 18 Table 5. – Average public school size (mean number of students per school), by instructional level and by state: School year 2000-2001; Available online at [nces.ed.gov/pubs2002/overview/table5.asp](http://nces.ed.gov/pubs2002/overview/table5.asp)
- 19 Oakes, J. (2002). Education Inadequacy, Inequality and Failed State Policy: A synthesis of expert reports prepared for *Williams v. State of California*. Los Angeles, CA: UCLA/IDEA. Available online at [www.idea-gseis.ucla.edu](http://www.idea-gseis.ucla.edu).
- 20 McDonough, P. (2004). Counseling Matters: Knowledge, assistance, and organizational commitment in college preparation. In William G. Tierney, Zoë B. Corwin & Julia E. Colyar (Eds.) *Preparing for College: Nine Elements of Effective Outreach*. Albany, NY: SUNY Press.
- 21 The American School Counselor Association analyzed the most recent available data (covering the school year, 2004-05) from the National Center for Educational Statistics' Common Core of Data. Available online at <http://www.schoolcounselor.org/content.asp?contentid=460>.
- 22 We report here on NCES' most recent published data (from 2003-2004) on student-teacher ratio. See: Table C-8. Median public school student/teacher ratio, by instructional level: United States and other jurisdictions, school year 2003-2004. Available online at <http://nces.ed.gov/>
- 23 Darling-Hammond, L. (2004). Inequality and the Right to Learn: Access to Qualified Teachers in California's Public Schools. *Teachers College Record*, 106, No. 10.
- 24 We provide data about the percentages of A-G courses and rates of college-going separately for each high school in the on-line version of this report. Available online at [www.EdOpp.org](http://www.EdOpp.org)
- 25 Finn, C., Petrilli M. and Julian, L. (2006). *The State of State Standards*. New York, NY: The Fordham Foundation. See also: Cronin, J. et al. (2007). *The Proficiency Illusion*: New York, NY: The Fordham Foundation.
- 26 NCLB requires that state and school districts annually review the academic progress of all schools receiving federal Title I funds and to identify those schools that do not make annual progress toward 100% proficiency by 2014. Schools are identified as Program Improvement (PI) schools after two consecutive years of not making adequate yearly progress (AYP). California determines AYP for high schools by considering the following four measures: 1) The percentage of students scoring at the "proficient" or "advanced" level on the California Standards Tests for English-language arts and mathematics; 2) The percentage of students participating in those tests; 3) The graduation rate for high schools; 4) California's own accountability measurement of progress, the Academic Performance Index (API).
- 27 United States Department of Education. No Child Left Behind Act: Part A Sec. 1116.b.8.B. Available online at [www.ed.gov/policy/elsec/leg/esea02/pg2.html#sec1116](http://www.ed.gov/policy/elsec/leg/esea02/pg2.html#sec1116)
- 28 We report here on the number of California middle schools and high schools in at least their fifth year of Program Improvement in the 2006-2007 school year.
- 29 For discussion of the need for California to improve its math instruction to sustain its competitive advantage in STEM related industries, see: California Council on Science and Technology and Center for the Future of Teaching and Learning (2007). *Critical Path Analysis of California's Science and Mathematics Teacher Preparation System*. Sacramento, California.
- 30 Ed Source. (2007). *Higher Standards + Support = More Students Taking Tougher Math*. Mountain View, California: Ed Source. Available online at [www.edsource.org](http://www.edssource.org)
- 31 National Center for Educational Statistics. (2007). *Mathematics 2007 State Snapshot Report: California Grade 8 Public Schools*. Available online at <http://nces.ed.gov/nationsreportcard/pdf/stt2007/2007495CA8.pdf>
- 32 Darling-Hammond, L. (1997). *The Right to Learn: A blueprint for creating schools that work*. San Francisco, CA: Jossey-Bass.



- 33 The Quality Education Investment Act (QEIA) was created through Senate Bill (SB) 1133 (Chapter 751, Statutes of 2006). The legislation provided approximately \$3 billion for use by schools ranked as either decile 1 or 2 in the state's Academic Performance Index to reduce class sizes, improve teacher and principal training, and hire more school counselors.
- 34 The introduction to California's math framework states: "A goal of this framework is to prepare all students to study Algebra by 8th grade." California Department of Education (2006). *Mathematics Framework for California Public Schools: Kindergarten through grade 12*. Sacramento, CA. Available online at <http://www.cde.ca.gov/ci/ma/cf/documents/math-front-intro.pdf>.
- 35 For example, more than 1 in 3 (37%) of the Fall 2006 first-year students in the California State University system required remediation in mathematics. See California State University, CSU Analytic Studies Development (2007). *Fall 2006 Regularly Admitted First-Time Freshmen Remediation Campus and Systemwide*. Available online at [http://www.asd.calstate.edu/remediation/06/Rem\\_Sys\\_fall2006.htm](http://www.asd.calstate.edu/remediation/06/Rem_Sys_fall2006.htm).
- 36 C. Adelman. (2006). *The Toolbox Revisited: Paths to Degree Completion from High School Through College*. Washington, DC: United States Department of Education.

**Cover Art- Mural at Esperanza****Elementary School (LAUSD)****Paul Botello**

Assisted by Ray Sanchez,  
Daniel Molina, Silvia  
Guadalupe Santos, Luis  
Fernando Mojica.

Date: 1995

Location: Esperanza School

Born and raised in East Los Angeles, Paul Botello's work can be found in the permanent collections of Armand Hammer Museum, Los Angeles, CA and Laguna Art Museum, Laguna Beach, CA. He has been featured in both national and international exhibitions.

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