

# 2011 CALIFORNIA EDUCATIONAL OPPORTUNITY REPORT



## Data and Definitions: A Technical Appendix

## Introduction:

UCLA IDEA researchers use several sources of data in the Educational Opportunity Report series. Primarily we use data collected from our study of California public high school principals, an investigation that illuminates how the recession and education budget cuts have affected students and public schools in the state. We also use several public databases. School-level data on conditions and outcomes in California public schools are drawn from the California Basic Educational Data System (CBEDS). For most of the data requiring state- or national-level comparisons, we use the National Center for Education Statistics (NCES). Economic indicators are based on data from the California Employment Development Department (CEDD) and the U.S. Census Bureau 2005-2009 American Community Survey.

## UCLA IDEA's Principal Study:

Our principal study, conducted between July 4 and Labor Day of 2010, consisted of both survey and interview methods. We surveyed California high school principals, aiming to assess the impact of budget cuts on conditions in the state's public high schools as well as the effects of the economic crisis on high school students. We conducted follow-up interviews with a subset of these principals in order to illuminate survey responses, in particular the effects of changing conditions on students.

### Survey Creation:

At the beginning of the study period, we created an online survey of 54 questions intended for California high school principals. The questions asked principals to assess the impacts of budget cuts at their schools and gauge the wellbeing of their students in relation to the economic crisis. Most questions were multiple choice, such as this example: "To what extent have budget cuts for technology and technology maintenance impacted student access to

computers and online resources at your school?" Possible answers for this question ranged from "No negative impact" to "Significant negative impact."

### Survey Sampling:

Our research team used the 2010 California Public School Directory to collect all the email addresses of public high school principals in the state. Then each principal was emailed a link to the online survey. Throughout July and August, after an initial wave of principals had responded, researchers sent second and third emails to principals who had not yet completed the survey. We also placed recruitment phone calls to targeted groups of non-responders in order to ensure that we collected a representative sample. In total, 277 principals, representing 22% of all high school principals in California, completed the survey.

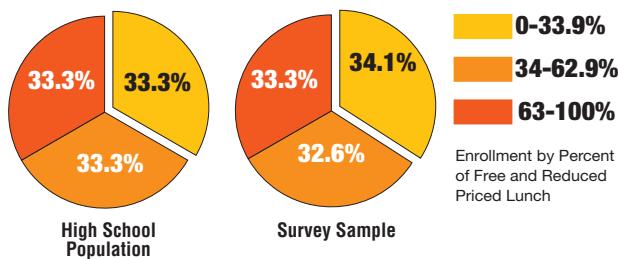
The schools that these 277 principals lead reflect the demographic and geographic diversity of California high schools. The survey sample is evenly distributed between schools enrolling low, medium, and high proportions of students from low-income families, as determined by the percentage of students receiving free or reduced price lunch. (See chart below.) It includes roughly the same percentage of high schools with low, medium, and high proportions of Latino, African American, and American Indian students (who are underrepresented in state universities) as the state as a whole. (See chart below.) Also, 7% of high school students in the state are enrolled in charter schools and our survey sample mirrored this percentage for charters. Finally, the geographic distribution of schools in the survey was representative of those statewide. Schools in the survey pool were from 45 of the 58 counties in Northern, Central, and Southern California.

### Interview Sampling:

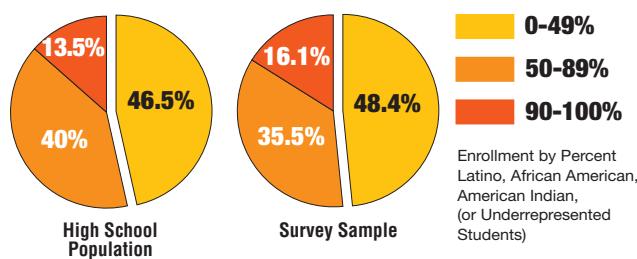
From the pool of 277 principals who completed the survey, our research team recruited principals to participate in follow-up interviews. This recruitment process began with the survey

## Survey Sample Characteristics

### Free and Reduced Lunch



### Under represented Minority Students



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

itself, which asked principals to indicate days and times when an interview would be convenient. Many interviews were scheduled in this way. As the interview pool grew, we analyzed the characteristics of the schools connected to the principals, noting whether schools serving certain demographics were over- or underrepresented. In particular, we examined racial breakdowns of the schools, free and reduced price lunch rates, and geographic location. These on-going analyses guided us to focus additional recruitment efforts on principals of schools that were underrepresented in our pool.

In total, we recruited 78 principals to interview. This sample includes a roughly even distribution of principals from schools with low, medium, and high proportions of low-income students. (See chart below.) Also, it includes a slightly higher proportion of principals from schools with 0-49% underrepresented students and 90-100% underrepresented students than the state as a whole. (See chart below.) The 78 principals we surveyed lead schools in 28 counties across Southern, Central, and Northern California.

### Conducting the Interviews:

Graduate students in UCLA's Principal Leadership Institute conducted half of the principal interviews, while our research team interviewed the other half. These interviews were audio-recorded and conducted over the phone, lasting about 30 minutes. Interview questions asked principals to elaborate on their survey responses. For example, if a principal had reported that budget cuts had negatively impacted professional development, we asked her or him to describe the impact and its consequences. Documents indicating which interview questions to ask a given principal were electronically generated and given to each interviewer.

### Survey Analysis:

We analyzed the survey data using a series of frequency tables and cross-tabulations by several categories of schools. We examined the differences in survey responses by free and reduced lunch concentrations, whether a school was in

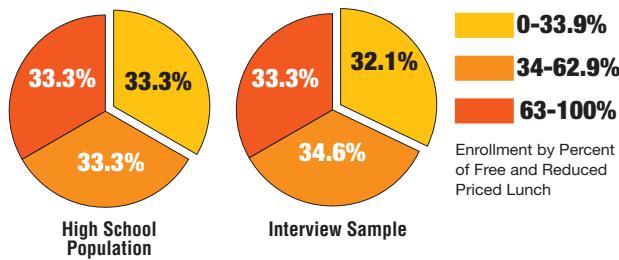
a basic aid district or had other local revenue greater than \$1,000 per pupil, and whether the school was located in a low or high unemployment neighborhood. (See UCLA IDEA's *Free Fall: Educational Opportunities in 2011*, page 14, for an explanation of basic aid.) We looked for different patterns across these categories of schools to examine principal responses to questions about how budget cuts are disproportionately impacting schools.

### Interview Analysis:

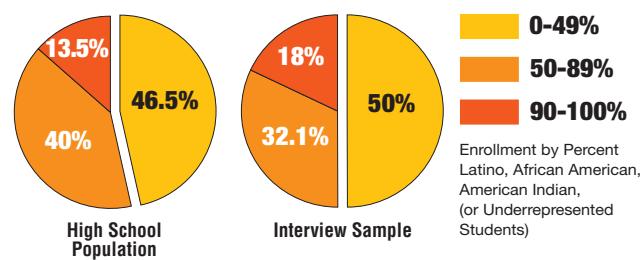
We transcribed the audio recordings of each interview, resulting in 78 transcripts, which we then loaded into an online qualitative research program. In the program, each interview transcript was linked with demographic information about the high school of a given principal, including the proportion of underrepresented minority students and students receiving free and reduced price lunch, geographic location, school size, and whether the school was in a basic aid district. We coded these transcripts with more than 100 codes. Some of the overarching categories of the codes included: money matters, the principal's role, school conditions, stressors on students from the economy, and impacts on students. The coding scheme also included a floating codes category to capture compelling quotes, impacts on special populations, equity matters, and mentions of the economic crisis. We ensured that each researcher applied the codes in a consistent manner by coding several common transcripts and discussing our results. Once we had achieved inter-rater reliability, we coded the 78 transcripts, with two team members coding each one. After we had coded all the transcripts, we used functions within the research program to analyze code co-occurrence, or instances where two or more codes were applied to the same passage. We also used the software to investigate trends related to certain demographic or geographic types of schools. Finally, the research program helped us collect similar types of quotes, which we then analyzed by hand.

## Interview Sample Characteristics

### Free and Reduced Lunch



### Under represented Minority Students



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

## **Public Databases: Data Definitions**

The definitions below provide more information on key terms and data sources used for the analyses in this report.

### **A-G Courses:**

See “college preparatory courses.”

### **Advanced mathematics:**

Advanced mathematics is a designation of the California Department of Education that refers to courses beyond Algebra II/Intermediate Algebra. We calculate enrollment in advanced math courses using 2008-2009 CBEDS School Information Forms (SIF), sections A, D, and E. Schools are designated as experiencing a problem if the total number of students enrolled in these courses is less than 50% of the school's 11th and 12th graders. We calculate the enrollment in courses beyond Algebra II/Intermediate Algebra using 2008-2009 CBEDS School Information Forms, sections A, D, and E (<http://www.cde.ca.gov/ds/sd/cb/filessifae.asp>). Schools are designated as experiencing a problem if the total number of students enrolled in these courses is less than 50% of the school's 11th and 12th grade enrollment. Please see <http://www.cde.ca.gov/ds/dc/cb/subjects.asp> for a full list of courses.

### **Advanced Placement mathematics:**

Advanced Placement (AP) Statistics and two AP Calculus courses (called “Calculus AB” and “Calculus BC”) are the AP math courses. We divide the number of 12th graders at a given high school in 2008-09 by the number of 9th graders enrolled at the same school in 2005-06. Data from the 2005-2006 CBEDS School Information Form, section B (<http://dq.cde.ca.gov/DataQuest/downloads/sifenr.asp>) are used to calculate the number of 9th graders for each school in 2005-2006. We then use data from the CBEDS Professional Assignment Information Form (PAIF) (<http://www.cde.ca.gov/ds/sd/filespaif.asp>) to calculate the number of students enrolled in AP math. Schools are designated as experiencing a problem if the total enrollment of students in AP mathematics is less than 10% of 9th-grade student enrollment in 2005-2006.

### **Advanced science:**

Advanced science refers to chemistry and physics courses that require college preparatory math. We calculate the enrollment in physics and chemistry courses using 2008-2009 CBEDS School Information Form, sections A, D, and E (<http://www.cde.ca.gov/ds/sd/sd/filessifae.asp>). Schools are designated as experiencing a problem if the total number of students enrolled in these courses is less

than 50% of the school's 11th and 12th grade enrollment. Advanced science includes the following courses: physics, coordinated/integrated science IV, AP physics B, AP physics C, International Baccalaureate (IB) physics and advanced physics, chemistry, coordinated/integrated science III, AP chemistry, and IB chemistry and advanced chemistry.

### **Affluence:**

Using the U.S. Census Bureau, 2005-2009 American Community Survey, we constructed a measure of affluence that reports the percentage of households earning \$125,000 or more annually which is more than two times the state median household income of \$60,392. We calculate the School Neighborhood Affluence Rate for the percent of households earning more than \$125,000 a year that live in census tracts within a one-mile radius of the school address. To calculate affluence for assembly, congressional, and senate districts we use the census tracts embedded in the legislative district.

### **Algebra (8<sup>th</sup> Grade):**

Taking algebra in 8th grade puts students on track for taking AP Calculus by 12th grade. We calculate the percent of 8th graders enrolled in algebra by using STAR 2009 (<http://star.cde.ca.gov/star2009/ResearchFileList.asp?rf=True&ps=True>). Data from the 2008-2009 CBEDS School Information Form, section B (<http://dq.cde.ca.gov/DataQuest/downloads/sifenr.asp>) are used to calculate the number of 8th graders for each school.

### **CST English Language Arts (ELA):**

We calculate the percentage of 11th graders who scored proficient or above in English Language Arts in the California Standards Test (CST) using STAR 2009 (<http://star.cde.ca.gov/star2009/ResearchFileList.asp?rf=True&ps=True>). Data from the 2008-2009 CBEDS School Information Form, section B (<http://dq.cde.ca.gov/DataQuest/downloads/sifenr.asp>) are used to calculate the number of 11th graders for each school.

### **College preparatory courses:**

College preparatory (A-G) courses are those that high school students must take in order to be eligible for admission to either the California State University or the University of California. These courses are grouped in seven subject-matter categories that correspond to letters of the alphabet. (For more information about A-G courses, visit <http://www.ucop.edu/a-gGuide/ag/welcome.html>.) Students must earn at least a C in a minimum of 15 of these courses, or about two thirds of their total coursework. In accordance with this ratio, we identify schools where fewer than 67% of the courses meet A-G requirements. Such schools offer too few college preparatory courses for all students to enroll in a college preparatory curriculum. We calculate our findings on

A-G courses by using the CBEDS Professional Assignment Information Form (PAIF) (<http://www.cde.ca.gov/ds/sd/df/filespaif.asp>).

### **English Learners:**

English learners are those students who are learning English as a second language. Schools classify students as English learners based on the California Department of Education's definition: "a K-12 student who, based on objective assessment, has not developed listening, speaking, reading, and writing proficiencies in English sufficient for participation in the regular school program." (See <http://www.cde.ca.gov/sp/el/er/>) This variable is calculated using language census data (<http://www.cde.ca.gov/ds/dc/lc/>).

### **Free and Reduced-Price Meals (FRPM):**

The federal FRPM program provides free or reduced price meals to qualifying students. Student eligibility for FRPM is based on family income. FRPM is the only indicator available to measure concentrations of poverty at the school level. Following standard convention when discussing results from the National Assessment of Educational Progress (or NAEP), we refer to students who are not eligible for free or reduced meals as middle class. For the economic criteria for eligibility and participation in the program, see <http://www.fns.usda.gov/cnd/>.

### **High schools:**

California high schools typically enroll students in grades 9-12. In this report, we also include schools that are designated as high schools or state special schools and enroll students in the following grade spans: K-12, 1-12, 2-12, 3-12, 4-12, 5-12, 6-12, 7-12, 8-12, 9-12, 10-12.

### **Intensely segregated schools:**

This term refers to schools that enroll 90-100% African American, Latino, and American Indian students. While we borrow the term from Gary Orfield and Chungmei Lee's 2006 report, Racial Transformation and the Changing Nature of Segregation, our definition is different. Orfield and Lee use "Intensely Segregated Minority Schools" to refer to schools that enroll 90-100% African American, Latino, American Indian, and Asian American students.

### **Middle school class size:**

We report on middle school math and science classes that are enrolling more than 25 students. We calculate the percent of science and math classes that enroll more than 25 students using the CBEDS Professional Assignment Information Form (PAIF) (<http://www.cde.ca.gov/ds/sd/df/filespaif.asp>) for each California middle school.

### **Middle schools:**

California middle schools typically enroll students in grades 6-8. In this report, we include schools that enroll students in the following grade spans: 6-8 and 7-8.

### **National Assessment of Educational Progress (NAEP):**

NAEP is a nationally conducted academic assessment commonly referred to as "the nation's report card." Collected by the National Center for Education Statistics (NCES), NAEP data allows for state-by-state comparisons of student achievement at grades 4 and 8 in reading, mathematics, and science.

### **NCLB math proficiency:**

This term refers to the math achievement goals established by No Child Left Behind (NCLB). We calculate projections of whether schools will meet the NCLB math proficiency standards by 2014 by finding the percentage of students per school who tested at the proficient level on the California Standards Test in math in 2008-2009. This information was gathered from CBEDS Adequately Yearly Progress data at: <http://www.cde.ca.gov/ta/ac/ay/aypdatafiles.asp>. These projections assume that schools will maintain their current percentage of proficient students over the next several years.

### **Overcrowded schools:**

We define overcrowded schools as those with population densities equal to or greater than 175% of the California Department of Education's recommended per-acre pupil population density. Elementary schools with 100 students or more per acre and middle and high schools with 75 or more students per acre are overcrowded. Student enrollment data from 2008-2009 and school acreage information provided by CDE are used to determine whether or not schools meet this definition of overcrowding. For more information about California Department of Education's recommended per-acre pupil population density, see <http://www.cde.ca.gov/ls/fa/co/overcrowdedschools.asp> .

### **Pathway to college:**

This term refers to the progress of the Class of 2009 from 9th grade to graduation and college enrollment. For each high school we use CBEDS data to report the number of students who were enrolled as 9th graders in fall 2005, 10th graders in fall 2006, 11th graders in fall 2007, 12th graders in fall 2008, and graduated in spring 2009. CBEDS data are also used to report how many students graduated having fulfilled the A-G requirements. (See "college preparatory courses.") We then use data from the California Post-Secondary Education Commission (CPEC) to report the number of students from each high school enrolled in California community colleges and universities in fall 2009. For each high school (and at the

state, legislative or congressional district level), we present the graduation and A-G data in relation to the size of the original cohort of 9th graders in fall 2005. This ratio is called the College Opportunity Ratio (COR), a three-number figure. The first number is always 100, representing a given group of 100 ninth graders. The second number tells how many of these students graduated four years later. The third number indicates how many graduated with the A-G requirements to enter a California State University or University of California. It is important to note that there are many different methods for determining graduation rates. Our method of presenting a ratio, like all others presently used in California, is imperfect. For example, we top-code 10th grade, 11th grade, and 12th grade enrollment at 9th grade enrollment levels if these exceed the initial 9th grade enrollment in fall 2005. Similarly, the 9th grade cohort on whom we base the pathway to college ratio often includes both first-time 9th graders and students who have been held back from the previous cohort. It would be more accurate to base the graduation and progress to college rates on only those students who were first-time 9th graders in fall 2005, but California's current data reporting systems do not allow us to follow students in this manner.

### **Per-pupil spending:**

This term refers to the amount of money spent per student enrolled in a California school. We compare this figure to the national average using National Center for Educational Statistics (NCES) data. We also refer to the cost-adjusted per pupil expenditures for the state of California. This figure comes from Education Week's 2011 "Quality Counts," which reports on 2008 funding data. Because spending information is not reported at the school level, each public school is assigned the 2007-2008 average per-pupil expenditure from its school district. This expenditure is then adjusted for the local cost of education based on the Comparable Wage Index (CWI) published by NCES (<http://nces.ed.gov/pubSearch/pubsinfo.asp?pubid=2006865>). We then compare the cost-adjusted per-pupil expenditures to the 2007-2008 national average per-pupil expenditure.

### **Program Improvement schools:**

Program Improvement schools are those that fail to meet NCLB and state requirements for "adequate yearly progress" (AYP) of students' standardized test scores for two consecutive years. For additional information about Program Improvement status determinations, see <http://www.cde.ca.gov/ta/ac/ay/tidetermine.asp>. Using data from the California Department of Education (<http://www.cde.ca.gov/ta/ac/ay/tidatafiles.asp>), we report the percentage of schools designated as Program Improvement schools for the 2010-2011 school year.

### **Public schools:**

According to the California Department of Education, state public schools comprise elementary schools, middle schools, junior high schools, high schools, K-12 schools, alternative schools, continuation schools, county community schools, community day schools, county youth authority schools, juvenile hall schools, opportunity schools, special education schools, and state special schools. We do not include county community, community day, county youth authority, juvenile hall, and opportunity schools when we report on school demographics, conditions, and outcomes.

### **SAT:**

The SAT is a standardized test that assesses postsecondary preparation. We focus on the percentage of 12<sup>th</sup> graders who took the SAT in 2008-2009. We calculate this percentage by using data on SAT test-taking from CDE (<http://www.cde.ca.gov/ds/sp/ai/>) for each California high school. Data from the 2008-2009 CBEDS School Information Form, section B (<http://dq.cde.ca.gov/DataQuest/downloads/sifenr.asp>) are used to calculate the number of 12th graders for each school.

### **Students per counselor:**

This term refers to the number of students per counselor in a given high school. The number of high school students per counselor is calculated by dividing a high school's total enrollment by the number of full-time counselors at the school. Enrollment data are obtained from the 2008-2009 CBEDS School Information Form, section B (<http://dq.cde.ca.gov/DataQuest/downloads/sifenr.asp>), and counselor data are obtained from the CBEDS Professional Assignment Information Form (PAIF) (<http://www.cde.ca.gov/ds/sd/df/filespaif.asp>). Within each California public high school, the number of students per counselor is compared to the national high school average, a statistic we obtain from National Center for Educational Statistics (NCES) 2008-2009 data.

### **Students per teacher:**

This term refers to the number of students per teacher in a given high school. This figure is usually much lower than the average class size because there are typically multiple classes (Special Education, for instance) that are very small. We calculate students per teacher by dividing a high school's total enrollment by the number of full-time teachers at the school. For each California public high school, the number of students per teacher is compared to the national high school average, a statistic we obtain from National Center for Educational Statistics (NCES) 2008-2009 data.

## Teachers:

**Fully credentialed teachers:** Fully credentialed teachers are those who hold the licensure required by the state. We use the 2008-2009 CBEDS Professional Assignment Information Form (PAIF) data files (<http://www.cde.ca.gov/ds/sd/df/filespaf.asp>) to determine whether or not teachers are fully credentialed. Schools in which 20% or more of the teachers lack a full credential are designated as experiencing a severe shortage of qualified teachers.

**Middle school math teachers:** According to No Child Left Behind (NCLB) and state standards, qualified middle school math teachers are those holding a kindergarten-8th grade multiple-subject teaching credential or a secondary math credential. However, in light of the growing trend of teaching algebra in 8th grade, we argue that middle schools need a critical mass of "math specialists" at each school. We designate schools as having a severe shortage of qualified middle school teachers if fewer than half of their math teachers hold a secondary credential in mathematics. We use the 2008-2009 CBEDS Professional Assignment Information Form (PAIF) data file (<http://www.cde.ca.gov/ds/sd/df/filespaf.asp>) to generate this variable.

**Qualified high school teachers:** High school teachers are designated as qualified by No Child Left Behind (NCLB) and state standards if they hold subject matter credentials matching the courses they teach. We report on the number of college preparatory courses taught by teachers who lack the appropriate credentials. This indicator is calculated in two steps. First we compile the list of college preparatory courses taught at each high school. Then we use the 2008-2009 CBEDS Professional Assignment Information Form (PAIF) data (<http://www.cde.ca.gov/ds/sd/df/filespaf.asp>) to determine whether the teachers for these courses hold the appropriate subject matter credential. Schools in which 20% or more of the college preparatory teachers lack the appropriate credential are designated as experiencing a severe shortage of qualified college preparatory teachers. Similarly, schools in which at least 20% of the college preparatory math teachers lack the appropriate math credential are designated as experiencing a severe shortage of qualified college preparatory math teachers.

## Underrepresented students:

Underrepresented students are Latino, African American and American Indian students. These students are underrepresented in the University of California system. In our Educational Opportunity series, we present data for three types of schools: 1) schools composed of fewer than 50% underrepresented students; 2) schools composed of 50 to 89% underrepresented students; and 3) intensely segregated schools where 90-100% of the students are from underrepresented groups.

## Unemployment rate:

This figure is reported at the census tract, county, and state level throughout the report. The data represents the percentage of unemployed individuals out of the total labor force and is seasonally unadjusted. The California Employment Development Department (CEDD) provides monthly estimates of unemployment data at the county and state level (<http://www.labormarketinfo.edd.ca.gov/?pageid=1006>). Unemployment data at the census tract level was provided upon special request by CEDD. The census tract data are based on estimates of seasonally unadjusted unemployment data for September 2007 and 2010. We created School Neighborhood Unemployment Rates based on census tracts found within a one-mile radius of each high school.

The full report can be accessed online at:

**www.edopp.org**

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