



# CALIFORNIA EDUCATIONAL OPPORTUNITY REPORT

## **Educational Opportunities in Hard Times:**

The Impact of the Economic Crisis on Public Schools and Working Families



# Data and Definitions: A Technical Appendix

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## ***Introduction:***

Three sources supply much of the data used in this report. First, UCLA IDEA's research team conducted interviews with a representative sample of public school principals from across the state. The study produced qualitative data that showed how the recession and education budget cuts have affected California students and public schools. Much of the quantitative data comes from two public databases. For most of the data requiring state- or national-level comparisons, we use data from the National Center for Education Statistics (NCES). For school-level data on conditions and opportunities to learn, we use information from the California Department of Education (CDE) California Basic Educational Data System (CBEDS).

## ***Qualitative Data (Principal Interview Study):***

To illuminate the current, “real time” effects of the recession on California children and public schools from July to December 2009, we conducted a study consisting of interviews with a representative sample of public school principals from across the state (IDEA's principal interview study). Principals were selected over other school personnel because of their daily interaction with students and families as well as their programmatic responsibilities.

## ***Sampling:***

At the beginning of the research project, the research team conducted a randomized, stratified sampling of California schools based on data from the California Department of Education's 2006-07 public school database. The initial sample of schools was selected on the basis of school size, school type (elementary, middle, and high), geographic location (north, central, and southern), student race/ethnicity (0-49%, 50-89%, and 90-100% African American, Latino, and Native American students), and student socio-economic status (low, medium, and high proportions of students receiving free and reduced price lunch--FRPL). Schools were classified as low, medium, or high poverty based on the proportion of students enrolled in the FRPL. This designation accounted for the under enrollment of middle and high school students in FRPL. We sorted by school type (elementary, middle, or high school) and then created deciles based on the proportion of FRPL students in California elementary, middle, and high schools respectively. Schools in deciles 1-3 were designated “low poverty,” schools in deciles 4-7 were designated “medium poverty,” and schools

in deciles 8-10 were designated “high poverty.” The resulting sample reflected the diversity present in the state's schools. Using this information, the team called schools across the state and set up phone interviews with the school's principals. In order to ensure the principals' confidentiality, interviews were assigned random numbers.

## ***Interview Structure:***

The interviews lasted from 30 minutes to an hour and followed a structured interview protocol that addressed: 1) the impact of the economic crisis on students and families; 2) the response of schools to student and family needs; 3) the effects of budget cuts on educational programs; and 4) the response of schools to these cuts.

## ***Interviewers:***

Two sets of interviewers were involved in the project. A group of graduate students studying to become principals conducted a subset of the interviews. For these interviews, one student took notes electronically as another asked questions from the pre-established protocol. The IDEA research team conducted the other interviews. These interviews were either conducted by a pair of researchers or by one researcher who audio recorded and then transcribed the interview. In total, 87 principals were interviewed.

## ***Coding:***

After the interviews had been completed, the notes and transcripts were systematically coded. The research team began this process by generating a list of preliminary codes designed to capture and quantify patterns related to various sets of themes. The team tested the codes by analyzing several interviews. Each member of the research team then coded a common interview to ensure inter-rater reliability—that all team members used the codes in the same way.

## ***Analysis:***

After the coding process was complete, a tabulation of the occurrence of codes was created. The codes for each site were combined with demographic data on each specific school to discover if specific patterns were present across different types of schools. All principal names mentioned in the report are pseudonyms.

## Quantitative Data:

The definitions below provide more information on key terms and data sources used for the analyses in this report. The italicized portions of some definitions highlight technical information on how we calculate our statistics using these databases.

### 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 2007-2008 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 11<sup>th</sup> and 12<sup>th</sup> graders. We calculate the enrollment in courses beyond Algebra II/Intermediate Algebra using 2007-2008 CBEDS School Information Forms, sections A, D, and E (<http://www.cde.ca.gov/ds/sd/cb/filesifae.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 11<sup>th</sup> and 12<sup>th</sup> grade enrollment. Please see [www.cde.ca.gov/ds/sd/cb/documents/asgnodelist08.doc](http://www.cde.ca.gov/ds/sd/cb/documents/asgnodelist08.doc) 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 12<sup>th</sup> graders at a given high school in 2007-08 by the number of 9<sup>th</sup> graders enrolled at the same school in 2004-05. Data from the 2004-2005 CBEDS School Information Form, section B (<http://dq.cde.ca.gov/DataQuest/downloads/sifenr.asp>) are used to calculate the number of 9<sup>th</sup> graders for each school in 2004-2005. We then use data from the CBEDS Professional Assignment Information Form (PAIF) (<http://www.cde.ca.gov/ds/ss/cb/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 9<sup>th</sup> grade student enrollment in 2004-2005.

### 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 2007-2008 CBEDS School Information Form, sections A, D, and E (<http://www.cde.ca.gov/ds/sd/cb/filesifae.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 11<sup>th</sup> and 12<sup>th</sup> 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.

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

Taking algebra in 8<sup>th</sup> grade puts students on track for taking AP Calculus by 12<sup>th</sup> grade. We calculate the percent of 8<sup>th</sup> graders enrolled in algebra by using STAR 2008 (<http://star.cde.ca.gov/star2008/viewreport.asp?rf=True&ps=True>). Data from the 2007-2008 CBEDS School Information Form, section B (<http://dq.cde.ca.gov/DataQuest/downloads/sifenr.asp>) are used to calculate the number of 8<sup>th</sup> graders for each school.

### California High School Exit Exam (CAHSEE):

The CAHSEE is an English language arts and mathematics test students must pass to graduate from high school. Students take this test starting in 10<sup>th</sup> grade, and repeat the test in later years if necessary. To calculate the passing rate for the Class of 2008, we aggregate the number of 10<sup>th</sup> graders who passed the English language arts section of the test in 2005-06 and 11<sup>th</sup> graders who passed it in 2006-07, and then divide this number by the total enrollment of 10<sup>th</sup> graders in 2005-06. We follow a similar process for students passing the math section.

### 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/agGuide/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). The CDE files can be accessed at <http://www.cde.ca.gov/ds/ss/cb/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/sd/lc/fileselsch.asp>).

**Food stamp data:**

Data from the California Department of Social Services (CDSS) was used in the calculation food stamp participation by county. These data are from the CDSS monthly report of food stamp participation and benefit issuance by county (DFA 256 available online at <http://www.dss.cahwnet.gov/research/PG352.htm>). The reports show the total number of households receiving federal or state food stamp benefits. To isolate the impact of the crisis on the food needs of households in the state, we report data on households not receiving any other form of public assistance.

**Foreclosure rates:**

Data from RAND Business and Economic Statistics division on the total number of foreclosures for all homes from January through September 2009 by county and zip code were used in this report. (<http://ca.rand.org/stats/economics/economics.html>) To calculate the actual foreclosure rate we compared the total number of foreclosures for a given geographic area to the total number of housing units for that area. Data on the total number of housing units was gathered from the 2000 Census data. More recent estimates of housing units by zip code were not available.

**Free and Reduced-Price Meals/Lunch (FRPM/L):**

The federal FRPM (or FRPL) 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://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/ss/cb/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 and mathematics.

**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 2007-2008. 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 2007-2008 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 2008 from 9<sup>th</sup> grade to graduation and college enrollment. For each high school, we use CBEDS data to report the number of students who were enrolled as 9<sup>th</sup> graders in fall 2004, 10<sup>th</sup> graders in fall 2005, 11<sup>th</sup> graders in fall 2006, 12<sup>th</sup> graders in fall 2007,

and graduated in spring 2008. 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 2008. 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 9<sup>th</sup> graders in fall 2004. 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. The 9<sup>th</sup> grade cohort on whom we base the pathway to college ratio often includes both first-time 9<sup>th</sup> 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 9<sup>th</sup> graders in fall 2004, 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 2010 “Quality Counts” report. Because spending information is not reported at the school level, each public school is assigned the 2006-2007 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 2006-2007 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.

### 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.

### 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 2007-2008 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/ss/cb/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) 2007-2008 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) 2006-2007 data.

### Teachers:

**Fully credentialed teachers:** Fully credentialed teachers are those who hold the licensure required by the state. We use the 2007-2008 CBEDS Professional Assignment Information Form (PAIF) data files (<http://www.cde.ca.gov/ds/ss/cb/filespaif.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-8<sup>th</sup> grade multiple-subject teaching credential or a secondary math credential. However, in light of the growing trend of teaching algebra in 8<sup>th</sup> 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 2007-2008 CBEDS Professional Assignment Information Form (PAIF) data file (<http://www.cde.ca.gov/ds/ss/cb/filespaif.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 2007-2008 CBEDS Professional Assignment Information Form (PAIF) data (<http://www.cde.ca.gov/ds/ss/cb/filespaif.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.

data at the census tract level were provided upon special request by CEDD and are based on estimates of seasonally unadjusted unemployment data at the census tract level. These data are calculated by applying each 2000 census tract ratio to the county labor force data.

### **Underrepresented students:**

Underrepresented students are Latino, African American and American Indian students. These students are underrepresented in the University of California system. In this report, we present data for three types of schools: 1) schools composed of less 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