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Technical Appendices

Improving School Accountability in California

S. Eric Larsen, Stephen Lipscomb, and Karina Jaquet

Contents

Supported with funding from The William and Flora Hewlett Foundation

Appendix A. Data and Methodology

Data for the study come from the Adequate Yearly Progress (AYP) reports for the years 2002 through 2009 and the AYP alternative methods reports for the years 2005 to 2009.[1] All data files and reports are maintained by the California Department of Education (CDE), and may be accessed at www.cde.ca.gov. Although school districts (called local education agencies or districts) and schools were not required to meet AYP requirements in 2002, we include data from 2002 to project trends in student achievement because CDE both collected and reported it as in future years.

AYP reports include proficiency rates in English language arts (English) and math for all students within a school or district. In addition, the reports include proficiency rates for each subgroup[2] that is "numerically significant" within a school or district. A subgroup is considered numerically significant at a school or district if it includes either 100 students or 50 students making up 15 percent or more of the total enrollment.

If a school or district used alternative methods to meet AYP requirements, this information is included in the AYP alternative methods report, as are the specific alternative methods used by that school or district to meet AYP. Tables 1 and 4 in the main report provide information on AYP requirements and methods.

Our school and district analysis samples include only schools and districts with a full panel of data from 2002 to 2009. We further exclude schools and districts with fewer than 100 valid scores in a given year, because different AYP reporting requirements apply to them. The samples include high schools, middle schools, junior high schools, elementary schools, unified districts, high school districts, and elementary districts. We exclude adult education, alternative, county community, community day, continuation, juvenile hall, opportunity, special education, and state special schools. We also exclude county offices of education, common administration districts, and schools chartered by the state board of education. Our final sample includes 6,551 schools and 780 districts. These schools and districts enrolled more than 95 percent of California students between 2002 and 2009.

We project student proficiency rates in math and English for each district, school, and subgroup within each school or district for the years 2010 through 2014. In our first specification we assume that each year between 2010 and 2014 the annual percentage-point increase in student proficiency rates in math and English within each district, school, or subgroup will be the same as the average annual percentage-point increase in student proficiency rates in math and English within that district, school, or subgroup between 2002 and 2009. Specifically, we model proficiency rates as follows:

$$y_{agst} = s_{ags} + \beta_{ags}t + \varepsilon_{agst} \quad (1a)$$

$$y_{agdt} = d_{agd} + \gamma_{agd}t + \varepsilon_{agdt} \quad (1b)$$

Equations 1a and 1b describe similar models, but apply separately to schools and districts (s signifies schools and d signifies districts). Because the models are defined analogously, the rest of this paragraph describes just Equation 1a. The outcome, y_{agst}, is the proficiency rate that applies to assessment a (i.e. English or math) for student group g during year t (2002 to 2009). Schools can have up to 11 different student groups: their

[1] We refer to school years by the year in which students are assessed (i.e. 2008–09 = 2009).
[2] The ten subgroups are African American, American Indian, Asian, Filipino, Hispanic, Pacific Islander, white, economically disadvantaged, English language learner, and disabled students.

schoolwide population and as many as 10 subgroups. We run separate regressions for each unique *a,g,s* combination. The explanatory variables include an assessment-by-group-by-school fixed effect, s_{ags}, and a linear time trend specific to each *a,g,s* combination. The variable ε_{agst} is an unobserved error term. Estimates are obtained using ordinary least-squares regression.

Proficiency rates increased significantly between 2008 and 2009 due to the introduction of the California Modified Assessment (CMA) for students with disabilities. Between 2008 and 2009, proficiency rates for students with disabilities increased 5.9 percentage points in ELA and 4.2 percentage points in math. Because students with disabilities are part of the overall school population and individual subgroups as well, the introduction of the CMA resulted in increases in proficiency rates for all students and all subgroups. We therefore assume that the introduction of the CMA resulted in a permanent shift in proficiency rates. For each district, school, and subgroup, we assume this shift is equivalent to the difference between the actual value for test *a* and the predicted value for test *a.* This shift is applied to both the linear model described by Equations 1a and 1b and log models described by Equations 2a and 2b.

If a subgroup within a school or district is large enough to be significant under NCLB during the years 2007–2009, we assume that it will be large enough to be significant in the years 2010 through 2014, and project achievement for this group. The final step is to calculate which schools and districts we expect to meet their Annual Measurable Objectives each year between 2010 and 2014. We first apply the appropriate proficiency target rate for each type of school and district to determine passage via the standard method. Then we apply the rules for each of three alternative methods—Two-Year Average, Three-Year Average, and Safe Harbor—in turn.[3]

In our second specification, we model proficiency rates under the assumption that student achievement follows a log, rather than linear, trend:

$$y_{agst} = s_{ags} + \beta_{ags}\ln(t) + \varepsilon_{agst} \quad (2a)$$

$$y_{agdt} = d_{agd} + \gamma_{agd}\ln(t) + \varepsilon_{agdt} \quad (2b)$$

The log trend assumes that the rate of proficiency growth will diminish to 2014. While the resulting projected Annual Measurable Objective passage rates are necessarily lower, the main finding is similar: Safe Harbor usage grows as reliance on the standard method falls.

[3] CDE has detailed information about proficiency timetables by type of district and school at www.cde.ca.gov.

Appendix B. Additional Projections

TABLE B1
Characteristics of districts in 2009 by projected Annual Measurable Objective status in 2014

	Constant Growth		Slowing Growth	
2009 Averages	Projected to Make AMOs	Not Projected to Make AMOs	Projected to Make AMOs	Not Projected to Make AMOs
Proficiency (%)				
English language arts	**63.6**	**51.1**	**73.9**	**53.1**
Mathematics	**64.4**	**52.4**	**73.5**	**54.5**
Subgroup populations (%)				
African American	**2.1**	**4.9**	**1.4**	**4.3**
American Indian	2.2	2.0	1.9	2.1
Asian American	5.3	6.2	6.6	5.8
Filipino	**1.2**	**2.3**	**0.7**	**2.1**
Latino	**31.9**	**46.6**	**17.7**	**44.5**
Pacific Islander	**0.4**	**0.6**	0.4	0.6
White	**55.5**	**36.1**	**69.8**	**39.4**
Economically disadvantaged	**40.9**	**55.9**	**26.6**	**53.7**
English learners	**20.6**	**31.6**	**10.9**	**29.8**
Students with disabilities	**10.4**	**11.1**	10.6	10.9
Other school and district data				
Valid subgroups	**6**	**7**	**4**	**7**
Tested students	**1357**	**6171**	**512**	**5030**
Unified districts (%)	24.2	48.3	12.5	43.4
Elementary districts (%)	66.9	41.5	76.3	47.0
High school districts (%)	8.8	10.2	11.3	9.6
Sample size	260	520	80	700

NOTE: Students are tested in grades 2–8 and 10. Values for which we reject a t-test of the null hypothesis of zero difference between the two averages at $p < 0.05$ are in bold type.

FIGURE B1
Percentage of districts meeting Annual Measurable Objectives, 2002–2009

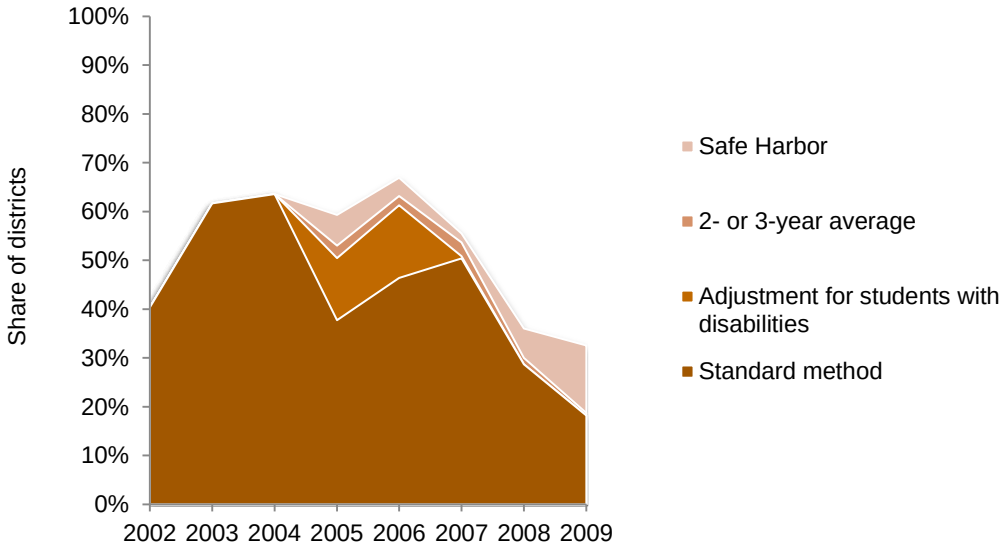
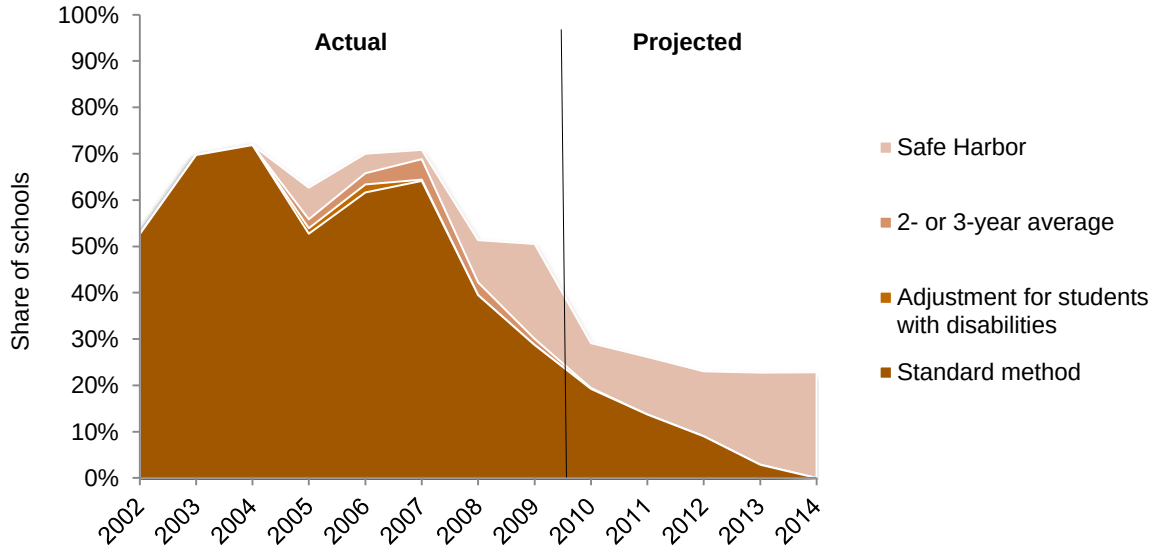
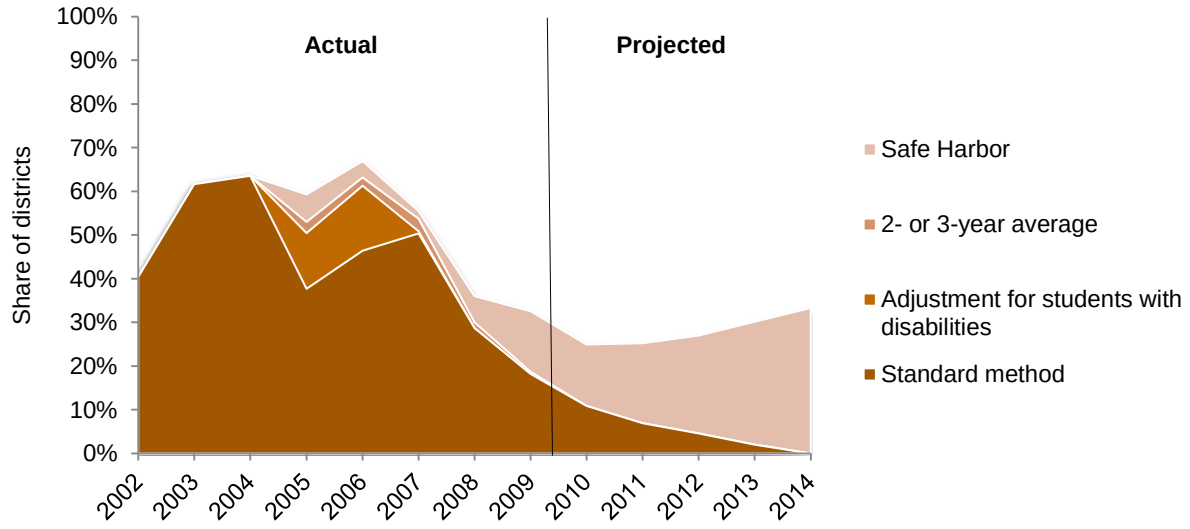


FIGURE B2
Actual and projected rates of schools meeting their AMOs (assuming slowing growth)



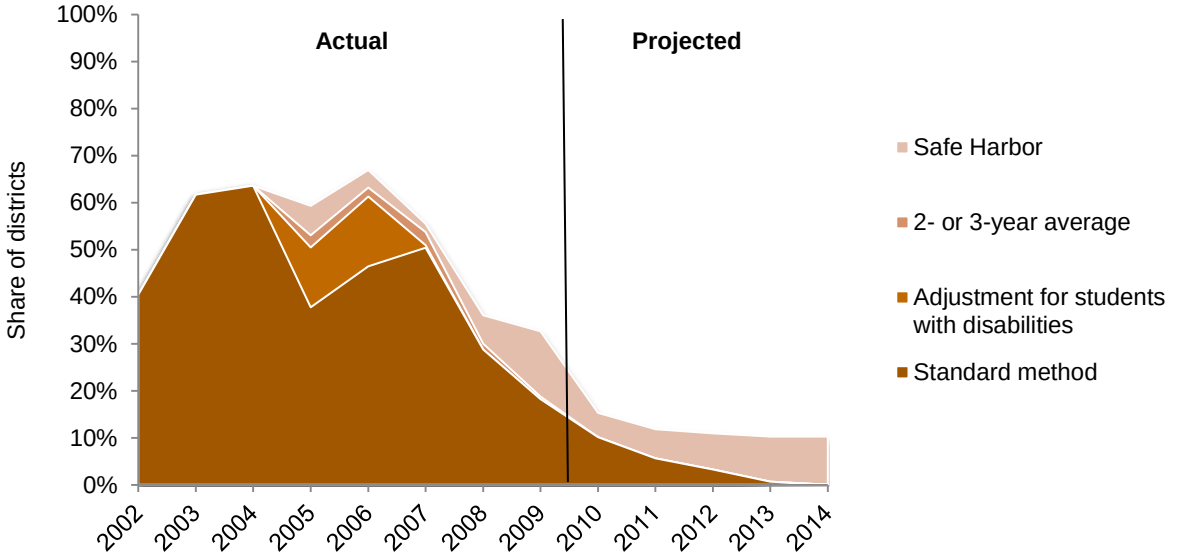
NOTE: See Appendix A for a detailed description of our projection methodology.

FIGURE B3
Actual and projected rates of districts meeting their AMOs
(assuming constant growth)



NOTE: See Appendix A for a detailed description of our projection methodology.

FIGURE B4
Actual and projected rates of districts meeting their AMOs
(assuming slowing growth)



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PUBLIC POLICY INSTITUTE OF CALIFORNIA
500 Washington Street, Suite 600
San Francisco, California 94111
phone: 415.291.4400
fax: 415.291.4401
www.ppic.org

PPIC SACRAMENTO CENTER
Senator Office Building
1121 L Street, Suite 801
Sacramento, California 95814
phone: 916.440.1120
fax: 916.440.1121