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California School District Revenue and Student Poverty

Moving Toward a Weighted Pupil Funding Formula

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Summary

The achievement gap between economically disadvantaged students and their more affluent peers has raised many questions about whether California's school finance system provides disadvantaged students with enough revenue to meet the state's academic goals. This report examines how revenue is currently allocated among California school districts. On average, unified school districts in which all of the students are economically disadvantaged receive about 36 percent more revenue per pupil than districts that do not have any economically disadvantaged students. This additional revenue comes primarily from state and federal programs that offset somewhat lower funding from local sources. However, despite this overall positive trend between revenue and economic disadvantage, there is a great deal of revenue variation among school districts with the same level of poverty, violating a key principle that a finance system should treat similar districts equitably.

Governor Brown has proposed a new funding system that would reduce this variation in state revenue and provide districts that have many disadvantaged students with substantially more revenue. His January 2013 proposal includes a weighted pupil formula (WPF) that would provide all students with the same base level of funding and then extend additional funding to certain subgroups of students. His proposal would allocate 35 percent more revenue to each student who participates in the free or reduced price lunch program or is an English Learner (EL). This "weight" for disadvantaged students would be augmented by a "concentration" grant given to those districts in which more than half of the students are classified as disadvantaged. With the addition of this concentration factor, districts serving only disadvantaged students would receive 53 percent more revenue from the WPF than districts with no disadvantaged students. Even if this proposal is implemented, school districts would continue to receive federal funds and funding from a few state categorical programs excluded from the WPF proposal, thus directing even more revenue to disadvantaged students.

The redirection of revenue from the current system to a WPF raises questions about the appropriate base funding and additional weight given to disadvantaged students, particularly in light of California's recent budget cuts and the state's academic goals. This report addresses these questions through a review of the research assessing how funding is related to academic outcomes in California and through an examination of the additional funding three other large states provide to their economically disadvantaged students. This assessment demonstrates how uncertain the link between resources and outcomes is and, unfortunately, offers no conclusive evidence of a "right" weight for student disadvantage in a WPF. This uncertainty, however, does not relieve our state government from setting school funding goals and policy. The governor has offered his proposals, and now the legislature must decide how to best allocate the projected increases in K–12 funding. Understanding how that proposal will change the current distribution of funding may guide those decisions.

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A technical appendix to this paper is available on the PPIC website:
www.ppic.org/content/pubs/other/213HRR_appendix.pdf

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Abbreviations

ADA	Average daily attendance
API	Academic Performance Index
ASES	After school education and safety (Proposition 49)
CALPADS	California Longitudinal Pupil Achievement Data System
CDE	California Department of Education
CSR 9	Grade 9 class size reduction
CSR K–3	Kindergarten through grade 3 class size reduction
EIA	Economic Impact Aid
EL	English Learner
FRPM	Free or reduced price meals
IDEA	Individuals with Disabilities Education Act
LAO	Legislative Analyst's Office
LAUSD	Los Angeles Unified School District
LCFF	Local Control Funding Formula
LEA	Local education agency
NCES	National Center for Education Statistics
OLS	Ordinary least squares
QEIA	Quality Education Investment Act
ROCP	Regional occupational center or program
SELPA	Special education local plan area
TIIBG	Targeted instructional improvement block grant
WPF	Weighted pupil funding formula

Introduction

California's school finance system has been criticized for being too complex, if not irrational, and for failing to meet the needs of a large proportion of students. Several research groups and government committees have suggested that a well-performing finance system should provide enough resources for all students to succeed, and that to do so, it must adjust for important cost differences between districts due to socioeconomic differences in subgroups of students or other district characteristics, and also that it should accomplish these cost adjustments in a transparent way.[1] These proposals have percolated in the policy environment over the past several years but, recently, were more specifically addressed by the governor.

Governor Brown has proposed replacing the vast majority of California's school finance system with a weighted pupil funding formula (WPF). Under a WPF, school districts receive a specified level of base funding per pupil plus additional funding for certain subgroups of students. This additional funding is often referred to as a weight and is specified as a percentage of the base funding. The governor's proposal includes weights for disadvantaged students—those who qualify for free or reduced price lunch or who are ELs—and for students in certain grade levels. In January 2012, the proposed weight for disadvantaged students was 37 percent, and a "concentration factor" in the formula provided even more funding for those districts in which more than half of the students were disadvantaged. In the governor's May budget revision, the proposed weight was lowered to 20 percent. Most recently, in January 2013, the proposed weight is 35 percent, and the concentration factor is also maintained.

The proposed formula would direct substantially more funding to economically disadvantaged students. Districts in which all of the students are economically disadvantaged would receive an average of 53 percent more revenue than districts with no economically disadvantaged students. Taking all revenue sources into account, this difference would increase to 77 percent. In addition to providing more revenue for disadvantaged students, the governor's WPF formula would reduce some of the variation in the current revenue received by districts with the same share of disadvantaged students: Districts with the same poverty levels would receive the same amount of additional funding per pupil. The WPF would also create more equitable funding among unified, elementary, and high school districts.

One goal of the WPF is to reduce the academic achievement gap between disadvantaged and more affluent students. Test scores of economically disadvantaged students tend to systematically lag behind the test scores of students from higher income families. As shown in Figure 1, the Academic Performance Index (API) of schools tends to decline as the percentage of students eligible for the free or reduced price lunch program increases. Each dot in the figure represents an elementary school. The top line depicts the average relationship between a school's API score and its percentage of economically disadvantaged students, as measured by the percentage of students participating in the lunch program in 2010–11.[2] (The API score is essentially a weighted average of the various state tests that the students in each school take each spring, most highly weighted by English language arts and mathematics.)[3] The lower line in the figure depicts the

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[1]See Joint Committee to Develop a Master Plan for Education (2002); Sonstelie and Richardson, eds. (2001); *Getting Down to Facts* (2007; Bersin, Kirst, and Liu (2008); Governor's Committee on Education Excellence (2007); Legislative Analyst's Office (2006); Rose et al. (2008); Reinhard et al. (2008); and Rose, Sonstelie, and Weston (2010).

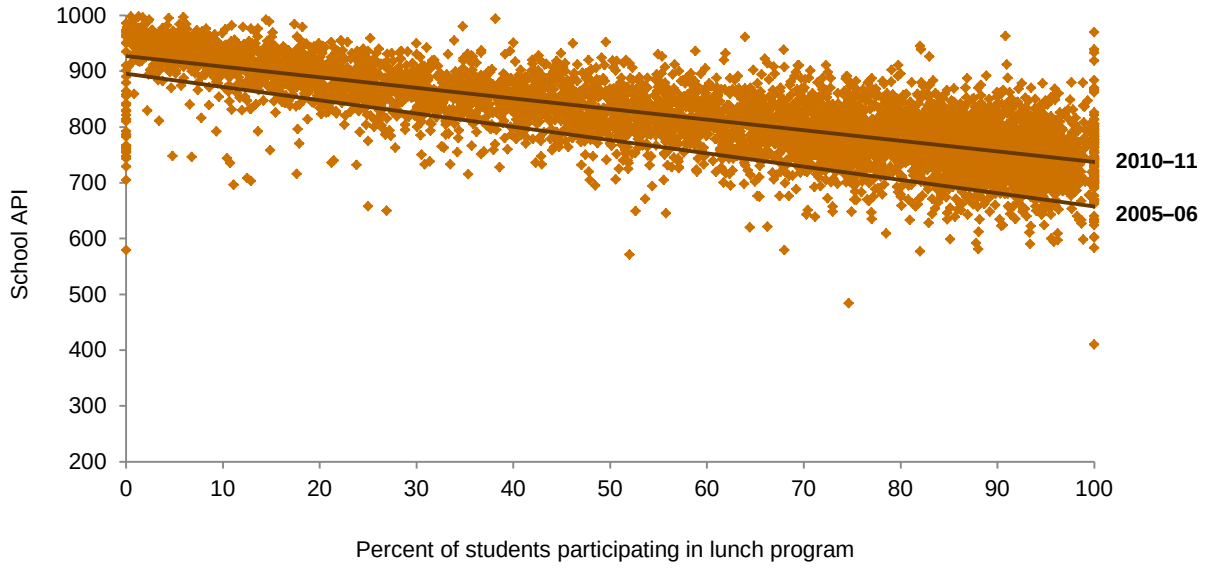
[2] The average line is determined by a regression of API scores on the percent of students eligible for the free or reduced price lunch program.

[3] The API is the centerpiece of the state's accountability system. The federal accountability system focuses on two important components of the API: the percent of students in a school who are proficient in English Language Arts and the percent who are proficient in the math assessments. Proficiency rates decline in both subjects as the percentage of students in poverty increases (see Technical Appendix). Rose et al. (2008) show how the API score and the percent proficient are highly correlated. They derive an equation using the percent proficient to predict the API score.

average relationship in 2005–06, demonstrating the degree to which schools have made progress toward the goal of an 800 API.

Although Figure 1 plots only elementary schools, this same relationship between API and disadvantaged students is present in middle schools and high schools (see Technical Appendix). Nor is this achievement gap a unique problem within the education system of California; it is pervasive throughout the nation.[4]

FIGURE 1
Elementary school API by percent of economically disadvantaged students, 2010–11



SOURCE: California Department of Education: 2011 Growth API Data File and 2010 Free/Reduced Meals Program and CalWORKs data files.

NOTES: Data include 5,646 elementary schools. Each dot represents one school in 2010–11. Alternative and special education schools are excluded, as are 84 schools without a valid free and reduced price lunch count and 139 schools without a valid API score. Charter schools are included. The top line represents the average relationship between API and student disadvantage in 2010–11. The bottom line presents this same relationship in 2005–06.

It would seem likely that a variety of factors may influence the relationship between family income and student achievement. Substandard local schools may indeed be one factor; but even within the same schools, the relationship between test scores and levels of family income persists, suggesting that influences outside of the school's control may also be responsible. As Miller (1995) points out, many poor students face myriad challenges in addition to those at school. They generally have less financial, social, and health capital than more affluent students, challenges that are difficult for schools alone to overcome. Poor students are also more likely to be exposed to negative stressors that may affect cognitive and emotional development, such as pollution and crime (Wilson 1987; Brooks-Gunn et al. 1993; Dupéré et al. 2010). Gándara (2012) reiterates these concerns and discusses the need for wrap-around services (e.g., health and social services) to treat the many dimensions of student poverty.

They determine that API=524 + (2.70 X English proficiency rate) + (2.14 X math proficiency rate). This comes from an OLS regression with an R-square of 0.97. For 90 percent of elementary schools, the predicted API is within 3 percent of the schools actual API.

[4] Reardon (2011) finds that the income achievement gap is almost twice the size of the black-white test gap. Furthermore, in the long-run, the income achievement gap has grown by more than 30 percent since 1970.

The underlying intent of a WPF is to provide districts with the additional revenue necessary to implement supplemental programs (e.g., extended instructional time, smaller group instruction, and additional pupil supports) to help disadvantaged students overcome some of the obstacles related to poverty. And the primary goal of this paper is to better understand the potential implications of the governor's current proposal by examining the relationship between student poverty and per-pupil funding. Although the state funds some programs that explicitly allocate revenue based on poverty rates, many other programs implicitly direct revenue in a way that provides more to districts with a high proportion of economically disadvantaged students. We examine school district revenue from state, federal, and local sources to determine the current implicit weight related to student poverty from each of these sources, separately and in the aggregate. Analyzing the current distribution of revenue from these sources will show how some state and federal sources amplify the explicit weight in the proposed WPF while other sources diminish the effective weight. Throughout this report, our calculations rely heavily on the PPIC School Finance Model (2013), developed by Rose, Sonstelie, and Weston. This unique dataset and analytical model, posted on the PPIC website, allows users to simulate the effect of various funding formulas for allocating state revenue to California's school districts. After providing this baseline information, we describe how the broad strokes of the governor's 2013 proposed weights compare to the current implicit weight. It is likely that school finance reform and the parameters of the governor's proposal will be debated in the months ahead, and our description of the current system and initial comparisons should provide a useful benchmark in such discussions. To further inform these discussions, we examine the research focusing on the links between revenue and achievement, and we review the experiences of three other large comparable states: Florida, New York, and Texas.

Measuring Student Disadvantage

One of the primary purposes of a weighted student formula is to address cost differences across districts and equitably allocate funds. In the case at hand, Governor Brown is proposing to provide more resources to students who have typically struggled to meet state standards. He identifies these students as either a student who qualifies for free or reduced price lunch or who is classified as an EL.[5]

An alternative approach for addressing the needs of these students is to allocate funds based directly on the share of students who fail to achieve proficiency on state assessments or based on a district's API. One concern with this method is that districts would then have no fiscal incentive to increase student achievement because it would result in the loss of funds. The state can achieve the same goal by targeting student characteristics that are related to student achievement but that districts cannot directly affect. As Figure 1 shows, economic disadvantage is negatively related to achievement. Because districts cannot control the incomes of families in the district, a measure of low family income is a good candidate to use for allocating revenue to students with low achievement. Schools with high shares of ELs also have lower test scores than schools with small EL populations, suggesting that weights for EL students may also direct revenue to schools with lower test scores.[6] In this section we review these possible measures of student disadvantage, discussing current data limitations in their use and comparing them to alternative measures.

Poverty

There are two main ways to estimate family income in school districts: participation in the National School Lunch Program,[7] which uses income levels to determine eligibility, and poverty estimates from the Census Bureau.[8]

To be eligible for free lunches, students must be in families below 130 percent of the federal poverty line. Students from families exceeding this level but still below 185 percent of the poverty line are eligible for reduced price lunches. In 2010, the poverty level for a family of four was $22,314. Thus, the income threshold for free lunch would be $29,008 for such a family, and $41,281 for reduced price lunch.

An alternative measure of economic disadvantage is the Census Bureau's estimate of the number of children ages 5 through 17 within a district who live in families at or below the federal poverty line.[9] This measure of economic disadvantage is highly correlated with the measure of the percentage of a district's students eligible for free or reduced price lunch. Figure 2 plots districts based on these two measures. Each circle represents a school district. The diameter of the circle indicates its size, with the largest circle being Los Angeles Unified School District (LAUSD), which enrolls approximately 10 percent of the state's students. The ascending line shows the average relationship between the two measures of poverty. The Census poverty rate in a district is about one-third the of the subsidized lunch rate. Because the two measures are so closely related, either measure could result in a similar distribution of revenue across school districts. A WPF that allocated an additional $1,000 per student participating in the subsidized lunch program would be similar to a program that allocated $3,000 for each student living in poverty according to

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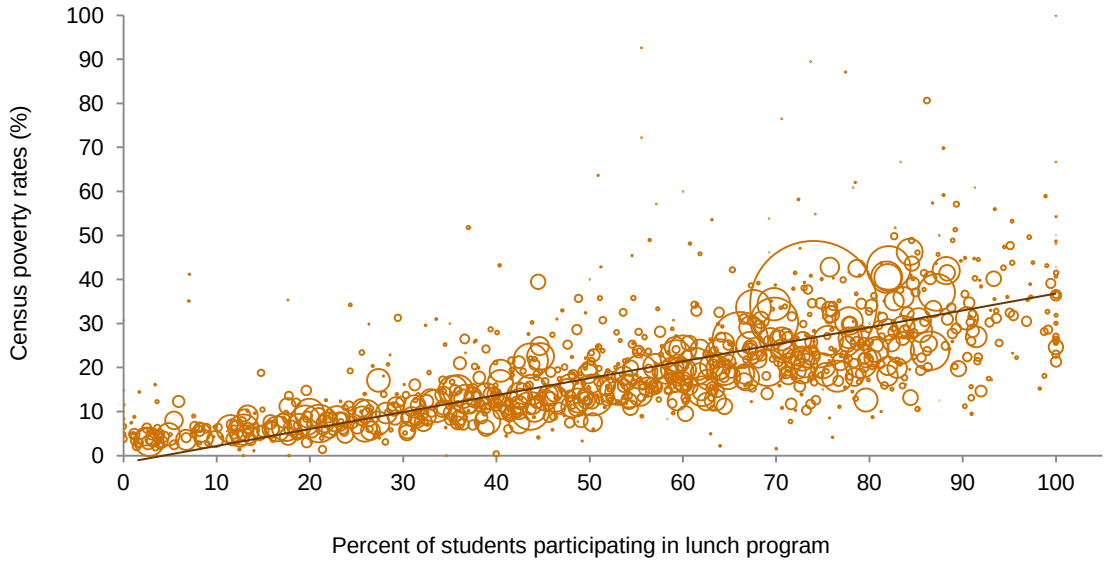
[5] The governor's proposal also includes an unduplicated count of foster youth. Foster youth are automatically eligible for free school meals (per the Healthy Hunger-Free Kids Act of 2010, see www.childsworld.ca.gov/PG2864.htm).
[6] Rose et al. (2008).
[7] Throughout this paper, we use "subsidized lunches," "free or reduced price lunch," "economically disadvantaged", and FRPM interchangeably.
[8] The Standardized Testing and Reporting (STAR) data files also provide some demographic characteristics of students and schools, including the percent economically disadvantaged and levels of parent education. However, these measures are only available for tested students (grades 2–11) who provide this information and do so accurately. In 2010–11, approximately 16 percent of students did not provide parent education.
[9] See www.census.gov/did/www/saipe/methods/schools/data/2010.html for how the Census Bureau estimates these numbers. These counts are also used to allocate Title I funds.

Census data. Although districts would receive similar amounts, the students who benefited may be different depending on the restrictions placed on the use of those funds within the district.

FIGURE 2
Relationship between Census poverty rates and free or reduced price lunch rates



SOURCE: PPIC School Finance Model (2013).

NOTES: Districts farther away from the average line tend to be very small districts. The overall correlation between Census poverty rates and subsidized meals (FRPM) participation is 0.64. The correlation in elementary districts is 0.60, in high school districts 0.80, and in unified districts 0.71.

Each measure has its advantages and weaknesses. First, there are concerns about the accuracy of subsidized meal counts because they rely on students actually participating in the program rather than on the number of students eligible for the program. Some researchers and advocates express concern about stigma from the program that may lead to under-enrollment, particularly in the upper grade levels.[10] High schools do have lower participation rates, but these rates may be the result of higher income rather than reflections of potential stigma. Child poverty rates measured in the Census data are lower for children 12–17 years old than for children 6–11 years old (Addy and Wight 2012a,b). Second, in an effort to reduce paperwork, the federal government allows some exemptions from traditional reporting, so some school district counts may not accurately reflect exact annual numbers of students.[11] Finally, Matsudaira, Hosek, and Walsh (2012) find evidence that schools respond to fiscal incentives associated with program enrollment, which may lead to current differential efforts across California schools and districts to enroll students in the program. The authors' evidence suggests that the share of eligible students who enroll in the program would likely increase if it became a factor in a WPF.

Similar concerns arise for the Census estimates of poverty in small and rural areas. The state's main compensatory program, Economic Impact Aid (EIA), uses the Census estimate of the number of poor students within the district to allocate funds to districts; but for rural districts, the measure of poor students is an

[10] See New America Foundation (2013).
[11] For more information, see U.S. Department of Agriculture fact sheet at www.fns.usda.gov/cnd/governance/prov-1-2-3/Prov1_2_3_FactSheet.htm.

adjusted count of students who receive free meals.[12] A final disadvantage of Census estimates is that, unlike subsidized meal participation, they are not available at the school level.

English Learners

Nearly 25 percent of students in California are ELs.[13] Like students from low socioeconomic backgrounds, ELs demonstrate lower average academic performance than other students. In addition, many ELs face multiple challenges because they are members of low-income families. The Department of Finance (Schweizer 2012) estimates that 75 percent of EL students also qualify for the subsidized lunch program; Reinhard et al. (2008) estimate that 85 percent of EL students in elementary schools participate in the subsidized lunch program. In terms of academic performance, Reinhard et al. (2008) demonstrate that elementary students who are both EL and poor have lower proficiency rates on the California Standards Tests than do students who are either poor or EL.

Including ELs in a WPF poses two main challenges. First, there is the issue of perverse fiscal incentives. Districts use a universal state policy to identify ELs, but districts have some leeway in their reclassification policy. By linking funding to EL status, there is concern that students who attain English proficiency on the California Standards Tests may not be reclassified. The governor's current proposal addresses this issue by limiting the number of years an EL student may receive additional funding. A second challenge is the treatment of reclassified students. Some argue that despite mastering English, reclassified students may need continuing support. Including reclassified students in a WPF may remove some of the perverse fiscal incentives associated with reclassification.

Concentrated Poverty

Governor Brown's funding proposal increases the weight for disadvantaged students in school districts where more than 50 percent of the students participate in the free or reduced price lunch program. Concentrated poverty has been variously defined by members of the research community. The U.S. Census Bureau defines "poverty areas" as census tracts with poverty rates of 20 percent or more (i.e., 20 percent of the residents live in households at or below the federal poverty line), but researchers typically use a 40 percent poverty rate to define concentrated poverty.[14] The National Center on Education Statistics (1996) used this standard threshold of 40 percent to define high-poverty schools for subsidized meal enrollment. Other researchers use a threshold of 50 percent or create quartiles of poverty. Although researchers have applied this similar 40 percent threshold to subsidized meal participation, a 40 percent threshold in the Census poverty rate would be similar to using a 90 percent threshold in the free and reduced price lunch program (as shown in Figure 2).[15]

Our Measure

Throughout this report, we use the percentage of students enrolled in the subsidized lunch program as our measure of economic disadvantage. We choose this measure because it is available at the school level, which allows us to exclude some schools from our district-level measure (such as independent charter schools) and

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[12] Rural districts are defined by National Center for Education Statistics (NCES) locale codes 41 (rural, fringe), 42 (rural distant), and 43 (rural, remote). The free meal count is multiplied by 0.4071. In districts where there is a Census count but no free meal enrollment, the count for EIA funding is 0 (any ELs would be counted).

[13] See Hill (2012) for a discussion of California's ELs and current policy considerations surrounding reclassification.

[14] U.S. Census Bureau (2011); see Wilson (1987) and Ellwood (1988).

[15] The relationship between Title I and FRPM varies based on district type, and observations are weighted by district size. The 40 percent Title 1 threshold ranges from 75 percent to 100 percent. For unified districts weighted by average daily attendance (ADA), it is approximately 90 percent.

maintain consistency with our measure of district average daily attendance, which is used to compute per-pupil district revenue.[16]

This measure differs from the governor's definition of disadvantaged students, which also includes EL students who do not participate in the subsidized lunch program.[17] Because we do not have access to individual student data through the state's longitudinal data system (CALPADS), we cannot identify these additional students. Although we could estimate the number of EL students in a district who are not poor based on the statewide average, there is likely a great deal of variation around that average and so we prefer to use a more conservative estimate of student disadvantage in this report. Although the specific estimates in the remainder of this report would change if we could include non-poor EL students in our measure of disadvantage, the trends we find would not.

This report focuses on how revenue is related to the share of economically disadvantaged students in school districts, because this is one factor for which the governor's proposal provides additional weight. Our prior work has explored other cost differences that a funding system may want to adjust for, namely differences in labor costs.[18] But because current funding formulas do not adjust for such differences, we do not focus on them in this report.

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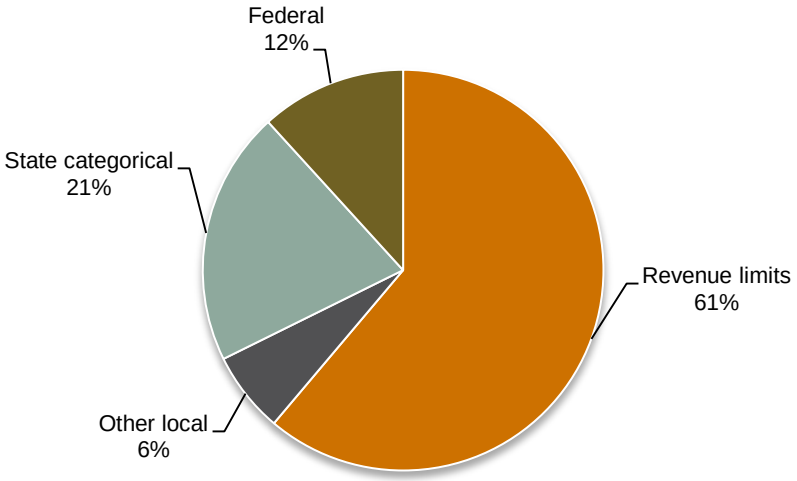
[16] See Instruction Manual for the PPIC School Finance Model (2013) for detailed data and methods.
[17] The governor's proposal also includes an unduplicated count of foster youth. Foster youth are automatically eligible for free school meals, so their inclusion would not change our measure of disadvantage.
[18] Rose et al. (2008) and Reinhard et al. (2008).

Current Revenue and Student Poverty

California's current school finance system directs relatively more revenue per pupil to districts with relatively higher shares of economically disadvantaged students, although not entirely explicitly by design. Some state and federal funding programs have this specific goal in mind, whereas other programs achieve these same ends unintentionally. Although some revenue programs temper these effects, the net effect of directing more revenue to disadvantaged students persists. In this section, we analyze the relationship between revenue and poverty in state, federal, and local revenue sources. We also determine the current implicit weight for disadvantaged students in total funding and decompose that weight based on the different sources of revenue.

California's school district revenue is derived from four main sources: revenue limits (a combination of property taxes and general purpose state aid), other local sources (such as parcel taxes, leases, and fees), state categorical programs, and federal programs.[19] In 2010–11, these sources provided an average of $9,100 per pupil.[20] Figure 3 shows the division of this funding from these four revenue sources.

FIGURE 3
Sources of school district revenues



SOURCE: Education Data Partnership, 2010–11 statewide total of district general fund revenues.

NOTES: Figure includes special education revenues.

For historical reasons, overall funding varies systematically based on the type of school district (unified, elementary, or high school) and the size of the district. Past equalization efforts established funding targets based upon district type and size, and those differences have remained. We focus our analysis in this report on unified districts, because these districts serve all grade spans and include about two-thirds of all students in the state (Table 1). We present corresponding results for elementary and high school districts in the Technical Appendix.

[19] School districts receive a variety of funds for other purposes (e.g., bond revenue for capital outlay and facilities). These funds are not represented in our figures or analysis. Throughout this report, we focus on revenue used for regular operating expenses.
[20] Education Data Partnership, School District General Fund Revenues, Statewide Totals and Averages, 2010–11

TABLE 1
District and student counts by type of local education agency

Local education agency	Number	Number of students	Percent of students
Elementary	545	1,132,610	19
High school	82	548,817	9
Unified	335	3,936,253	66
Independent charter schools	643	258,037	4
County Offices of Education	58	68,251	1
TOTAL	1,663	5,943,968	100

SOURCE:PPIC School Finance Model (2013).

NOTES: Data are 2010–11.Percent totals may not add due to rounding. Number of students is average daily attendance. Dependent charter school students are included in their authorizing district's total.

Revenue Limits

Revenue limits represent the single largest source of revenues for school districts, accounting for about 66 percent of a district's budget. Each school district has a unique per-pupil base revenue limit based on historical spending patterns.[21] That base level is then multiplied by a district's average daily attendance (ADA) and adjusted for several factors to derive the district's revenue limit entitlement. The school district's share of local property taxes is first applied to the entitlement, and the state then provides funding for any shortfall between the property taxes and the entitlement. Districts with more property taxes than their revenue limit entitlement are allowed to keep the excess taxes and are generally known as "excess tax" or "basic aid" districts.[22] In 2010–11, 126 districts in the state, including 33 unified districts, had excess taxes totaling $590 million, ranging from $7 to $30,000 per pupil.[23] If excess taxes were spread across all students, the allotment would come to about $105 per pupil.

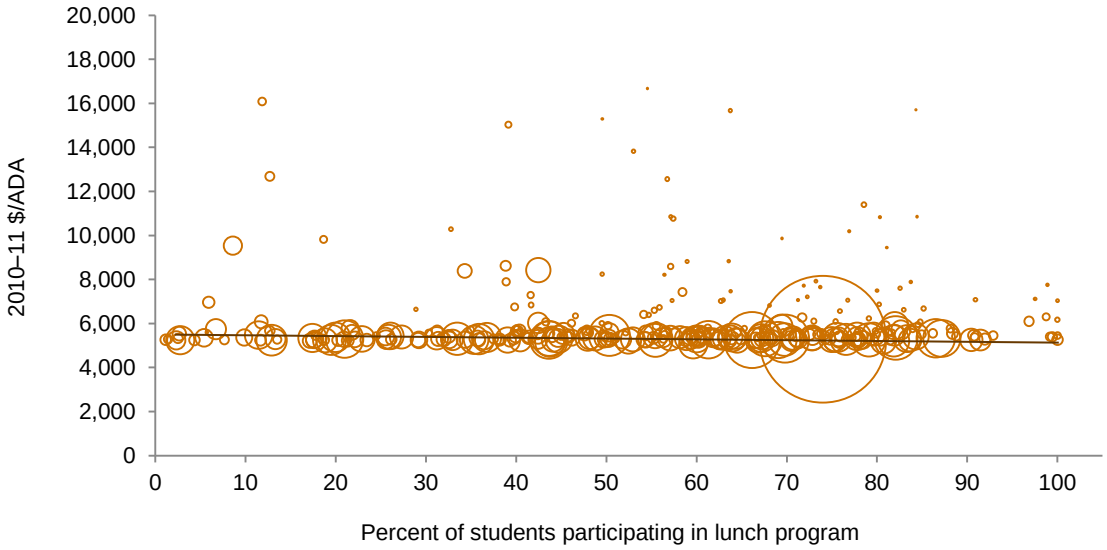
By design, revenue limits have been nearly equalized across school districts of the same type.[24] For unified districts in 2010–11, revenue limit funds averaged $5,410 per pupil (or $5,338 excluding excess taxes). Nonetheless, some districts have extremely high revenue limits. These districts tend to be small and often receive supplemental funding through the Necessary Small Schools adjustment to offset their potential lack of economies of scale.[25] The district with the highest revenue limit in the state is a unified district serving 14 students with revenue limit funds of $39,265 per pupil and no excess taxes.

The equalization of base revenue limits means that there is very little relationship between a district's revenue limit funding and its percentage of disadvantaged students, although districts with more poor students do receive slightly less funding per pupil. Figure 4 depicts this relationship. Each circle represents a district based

[21] See Weston (2010) for more information about revenue limits.
[22] The term "basic aid" stems from funding policies that allocate a minimum amount of basic state funding to districts, even if the district exceeded its revenue limit with property taxes. Section 6 of Article IX of the California Constitution requires a minimum of the greater of $120 of state aid per pupil or $2,400 per district. Prior to 2003, this minimum had to be met by revenue limit state aid. Following the budget trailer bill AB 1754 (Chapter 227, Statutes of 2003), this minimum amount of state aid could be met by any state funds, including categorical programs. This resulted in a statewide reduction of $17.8 million to basic aid districts (California Department of Education, 2003).
[23] Most basic aid districts are elementary school districts (80 of 126).
[24] Within each type, districts are further divided into two size categories, small and large. District base revenue limits are then equalized within each type-size category. See Weston (2010).
[25] A separate revenue limit entitlement is calculated for district ADA in Necessary Small Schools. These schools must have fewer than 96 elementary ADA of fewer than 286 high school ADA and reside in a district with fewer than 2,501 ADA. In addition, they must meet geographic and topographic criteria specified in Education Code 42283.

on its size, and the horizontal line represents the average relationship. [26] For districts with no disadvantaged students, average revenue limit funding was $5,612 per pupil. At the other end of the spectrum, districts in which 100 percent of the students were economically disadvantaged averaged $5,258 per pupil, about $354 per pupil less. This small, but negative gap in revenue limit funds between high-poverty and low-poverty districts is primarily driven by excess property taxes. When those taxes are excluded, base funding for districts with no economically disadvantaged students is $5,324 per pupil and districts with 100 percent disadvantaged students receive $25 more per pupil.[27]

FIGURE 4
Revenue limit funds in unified districts, 2010–11



SOURCE: PPIC School Finance Model (2013).

NOTES: Figure excludes three districts serving 74 students and receiving more than $20,000 in revenue limit funds per pupil.

Local Funds

Although Proposition 13 limits the amount of *ad valorem* local property taxes a school district can receive, school districts are able to supplement their budgets with other local funds, including parcel taxes, fees, and leases. In 2010–11, unified districts raised an average of $363 per pupil in local funds.[28] Schools and districts can also raise private funds from education foundations, parent teacher associations, and booster clubs; however, we do not have current data on these types of contributions, so we exclude them from our analysis.[29]

As in the case of revenue limit funding, local funds per pupil decline as student poverty increases (Figure 5). Districts with no disadvantaged students raise approximately $575 in local funds per pupil, while districts with 100 percent low-income students raised $372 less per pupil.

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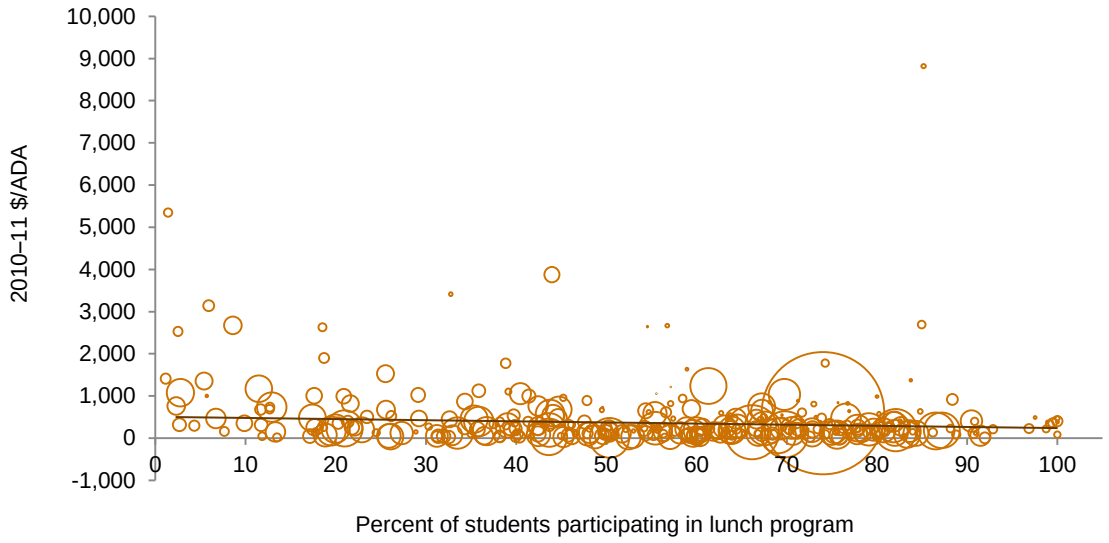
[26] We use OLS regressions of district per-pupil revenue in this category on the proportion of free or reduced price lunch students in the district to compute these average relationships. We weight these regressions by district ADA. We use this same model throughout this section but change the revenue category based on the area we are analyzing.
[27] This difference is not statistically significant.
[28] We include only local funds raised for the district's general fund. School districts also raise local funds for capital projects.
[29] These revenues are not typically reported through the Standardized Account Code Structure to the state and are instead reported via IRS Form 990. See Brunner and Sonstelie (2003) and Brunner and Imazeki (2004) for information and analysis of voluntary contributions.

FIGURE 5
Other local revenue in unified districts, 2010–11



SOURCE: PPIC School Finance Model (2013).

State Categorical Programs

In addition to providing funding assistance through the revenue limit system, the state assists schools through categorical programs that support specific programs and purposes. Weston, Sonstelie, and Rose (2009) describe the more than 60 state categorical programs and their distribution across the state by district characteristics, including district type, size, percent of low-income students, percent of ELs, and population density.

Some categorical programs explicitly target disadvantaged students. The state's main compensatory program, Economic Impact Aid (EIA), provides on average $319 per economically disadvantaged student (as defined by Census poverty estimates) and per EL. Students who meet both criteria are counted twice and granted twice the funding. Districts in which half or more of the students qualify for EIA receive 50 percent more funding per EIA pupil. Several other categorical programs also target disadvantaged students, including programs and services for foster youth, pregnant minors, and students who receive supplemental instruction because they have failed the high school exit exam or other state tests or have been retained.

Other categorical programs are more broadly concerned with students or teachers in general (for example, focusing on instructional materials or supporting professional development). One of the largest categorical programs ($1.3 billion) is devoted to K–3 class size reduction. Since 2009, school districts have been allowed complete discretion over most categorical programs, and the Legislative Analyst's Office (2012) has reported that most districts have scaled back or even eliminated many of these programs, including adult education and arts education.[30] Economic Impact Aid, however, was not granted such flexibility.

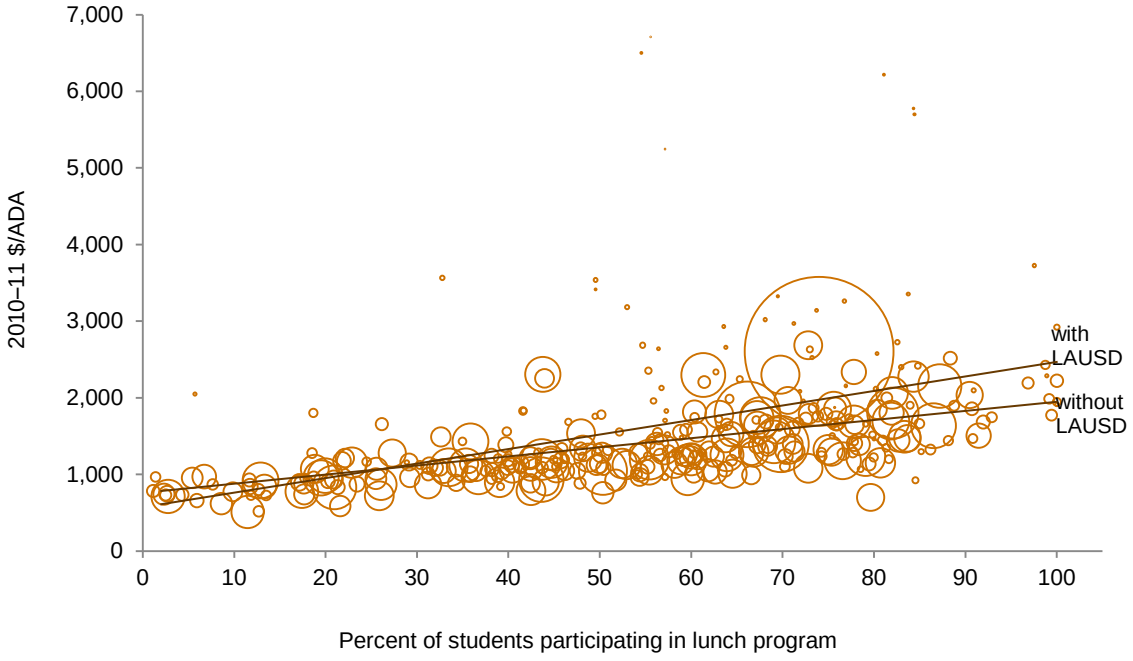
California's special education program is the largest categorical program in the state ($4.3 billion). Special education funding is not given directly to districts, but rather, is allocated to 124 Special Education Local Plan Areas (SELPAs) throughout the state. Each SELPA (which consists of groups of independent charters, districts, and county offices of education) is responsible for coordinating special education services across its member districts. The special education funding for each SELPA is allocated in proportion to its ADA, but the SELPA

[30] See Weston (2011) for a discussion of categorical flexibility and the distribution of categorical funds across districts.

then decides how to distribute the funding to its members. We exclude the special education program from our calculations because there is no information available on how the funding of the regional SELPAs is allocated to their member districts.[31] We exclude other regional programs as well, including the Regional Occupation Centers and Programs (ROCP) and teacher credentialing block grant programs that fund regional vocational education and professional development for new teachers, respectively.[32]

Reflecting this history of compensatory programs for at-risk students, categorical funds per pupil increase as a district's poverty rates increase (Figure 6). On average, districts with no disadvantaged students receive $507 per pupil in categorical funds. Districts in which all students are economically disadvantaged receive an additional $1,783 per pupil on average, for a total of $2,290 in categorical funds per pupil, or more than four times the funding per pupil as districts with few disadvantaged students.[33] The rising lines in the figure (with/without LAUSD) represent this average relationship, but they miss an important point. Not all districts are located directly on the lines. For a given rate of economic disadvantage, categorical revenue can vary remarkably from district to district. For example, looking at all districts (top line), consider the districts in which 60 to 70 percent of the students are disadvantaged. Although the average relationship is $1,577 per pupil in districts in which 60 percent of the students are disadvantaged, and $1,755 per pupil in districts in which 70 percent of the students are disadvantaged, categorical funding ranges from $991 to $3,324 per pupil.

FIGURE 6
State categorical revenue in unified districts, 2010–11



SOURCE: PPIC School Finance Model (2013)

[31] We also exclude the special education program because it is excluded from programs that would be consolidated into a WPF.
[32] ROCPs (with the exception of joint-powers agreement ROCPs) and teacher credentialing are now flexible programs, with the administrative district receiving all program funding. The extent to which administrative districts are still providing these programs and services or sharing revenue is unclear.
[33] If special education were not excluded from state categorical funds in our analysis, the additional funding for disadvantaged students would be $1,932 instead of $1,783. The small magnitude of this change is not surprising given that special education funds are allocated primarily on an equal per pupil basis. Because the base level of funding rises by $694 when special education is added, the implicit weight drops in percentage terms from 350 percent to 160 percent. The exclusion of ROCP and the teacher credentialing block grant does not dramatically affect the implicit weights: when included, base categorical funds are $557 per pupil and districts in which all students are disadvantaged receive $1,781 more pupil.

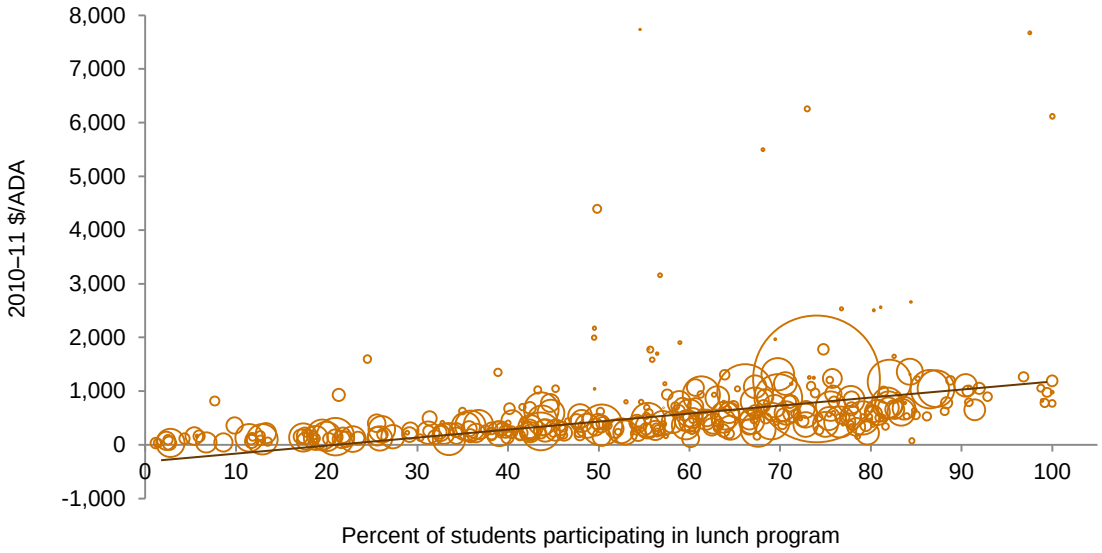
The size of the districts has implications for determining the average relationship between categorical funds and student disadvantage. LAUSD receives much more categorical funding per pupil than other districts with similar levels of disadvantaged students, and because the average is weighted by ADA, LAUSD has a large effect on the average relationship. When LAUSD is excluded from the analysis, the gap between districts with all disadvantaged students and none decreases to $1,278 from $1,783 per pupil.

Federal Funds

The federal government provides funding for a variety of programs. Like the state's assortment of programs, many of the federal programs target disadvantaged students, including Title I and the National School Lunch Program. Other major programs include special education and vocational education.[34] Some school district boundaries include federal land, such as national parks, forests, and military bases, which cannot generate local property taxes. In such cases, school districts receive federal in-lieu property taxes, which do not offset revenue limit state aid.

As in the case of the state's categorical programs, high-poverty school districts receive much more federal funding than low-poverty school districts (Figure 7).[35] The lowest poverty district, with about 1 percent of students in the lunch program, receives approximately $31 per pupil. At the other extreme, districts in which 100 percent of students are disadvantaged receive $1,188 in federal funds per pupil. Of course, just as in the case of the state's categorical programs, funding varies substantially around the average.

FIGURE 7
Federal funds in unified districts, 2010–11



SOURCE: PPIC School Finance Model (2013).

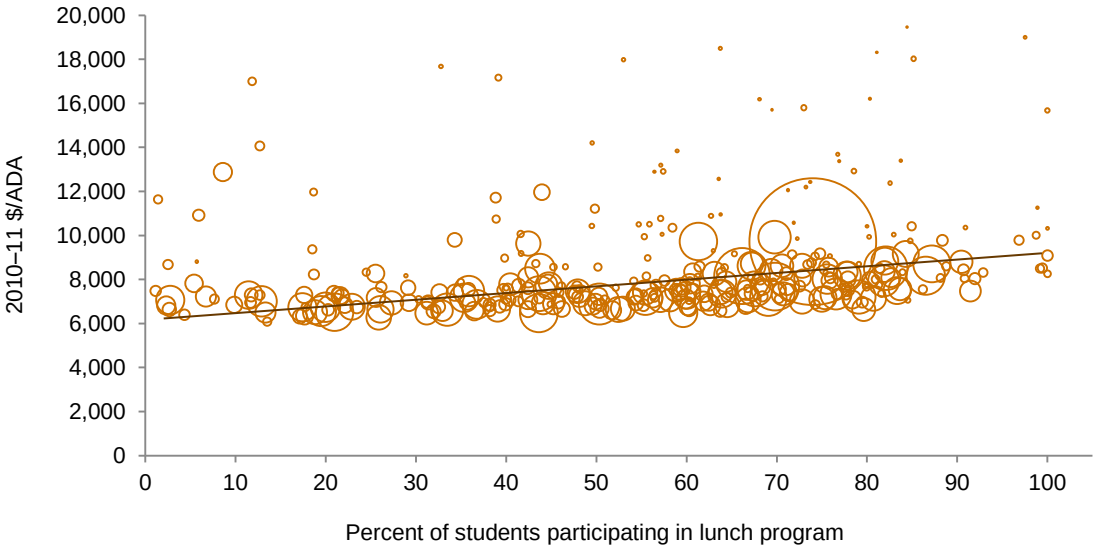
Total Revenue

Each of the four funding components discussed above has a unique relationship with student disadvantage. Excess property taxes and local funds decline as poverty rates increase, but state categorical and federal funds

[34] We exclude the Individuals with Disabilities Education Act (IDEA) entitlements for special education from our analysis.
[35] This same approach is evident in 2005–06, prior to a large increase in the Title I program allocations through stimulus programs.

increase as poverty rates rise by more than enough to offset the effect of these local funds. Districts with no disadvantaged students receive total funding of $6,567, on average. At the other extreme, districts with 100 percent disadvantaged students receive $8,934. Essentially, the base revenue of $6,567 is increased by approximately $2,372 per disadvantaged student (Figure 8). This additional revenue represents 36 percent additional funding, and this percentage is what we refer to as the current implicit weight for economically disadvantaged students. However, there is still much variation around this average. About one-third of students are in districts within $500-per-pupil of this average. At the other extreme, about one-third of students are in districts $1,000-per-pupil more or less than the average.

FIGURE 8
Total revenue in unified districts, 2010–11



SOURCE: PPIC School Finance Model (2013).

NOTES: Figure excludes seven districts (total ADA of 843) receiving more than $20,000 per pupil. The maximum funding per pupil is approximately $47,000 per pupil in a coastal district serving 14 students.

Table 2 shows how the revenue in each funding area contributes to the overall poverty weight. Of the additional average $2,372 per pupil that districts receive for disadvantaged students under the current system, $1,783 comes from state categorical funds. In other words, of the 36 percent overall weight for poverty, state categorical aid contributes to 27 percentage points. Federal aid provides an additional $1,316 per disadvantaged student and makes up 20 points.[36] This potential 47 percent additional funding is reduced by the negative 11 percentage points from revenue limits and local funds. Focusing on the subset of revenue controlled by the state (revenue limit funds and state categorical programs) shows that state policies direct more revenue to disadvantaged students—about $1,429 even after taking into account the offsetting effect of excess taxes.[37]

[36] This $1,316 in federal funds per disadvantaged student is the OLS coefficient with a base of -$128 per pupil. With this base and slope, districts with 100 percent disadvantaged pupils average $1,188 per pupil as discussed in the Federal Funds section.
[37] Excess local property taxes are not included in the Proposition 98 guarantee. Excluding them means that the state-controlled implicit weight is 27 percent because the revenue limit entitlement has no statistically significant relationship to student poverty.

TABLE 2
Disaggregating the implicit weight for unified districts with base funding of $6,567 per pupil

Funding category	Additional funding per disadvantaged students ($)	Additional funding as a percent of total base (%)
TOTAL	2,372	36
Revenue limits	-354	-5
Local funds	-372	-6
State Categorical Funds	1,783	27
Federal Funds	1,316	20

SOURCE: Author's calculations based on PPIC School Finance Model (2013).

NOTES: Individual weights may not sum to the total weight due to rounding. All relationships are statistically significant at the 0.05 level.

Our analysis to this point has focused on unified districts. Table 3 displays the disaggregation of implicit weights for elementary and high school districts, and then all districts combined. As in the case of unified districts, categorical and federal funding is much higher in elementary and high school districts with more disadvantaged student, although the magnitude is less than in unified districts. Because base funding is higher in elementary and high school districts, the weights represent smaller percentages of total funding. Several other differences emerge as well. Revenue limits and other local funding is much more negatively related to poverty for elementary and high school districts. Although each of the categories of funding has a statistically significant relationship, overall they tend to cancel each other out. There is no statistically significant relationship between total funds per pupil and student disadvantage in elementary and high school districts.

TABLE 3
Disaggregating the implicit weights for elementary and high school districts

Funding category	Additional funds per poor student ($)	Additional funding as a percent of total base (%)	Additional funds per poor student ($)	Additional funding as a percent of total base (%)	Additional funds per poor student ($)	Additional funding as a percent of total base (%)
	Elementary base of $7,248		High school base of $8,648		All districts base of $7,061	
TOTAL	326	4	-643	-7	1,437	20
Revenue limits	-612	-8	-1,493	-17	-719	-10
Local funds	-1,004	-14	-968	-11	-570	-8
Categorical funds	1,003	14	1,095	13	1,541	22
Federal funds	938	13	723	8	1,184	17

SOURCE: Author's calculations based on PPIC School Finance Model (2013).

NOTES: Individual weights may not sum to the total weight due to rounding. Although all relationships between individual funding streams and student poverty are significant at the 0.05 level, the overall relationship between total funding and student poverty are statistically insignificant for elementary and high school districts. All relationships are statistically significant for all districts.

The different overall results by district type are not surprising given that elementary and high school districts differ from unified districts in systematic ways.[38] First, elementary districts tend to be smaller. Of the 98 districts in the state that have fewer than 100 pupils (10 percent of all districts), all but six are elementary districts. Nearly 75 percent of elementary districts have fewer than 2,500 pupils, compared to 43 percent of high school districts and 35 percent of unified districts. Smaller districts are more likely to have excess property taxes,

[38] Elementary and high school districts may also be ineligible for certain programs restricted to specific grade levels, such as adult education and ROCP or K–3 class size reduction, respectively. Unified districts are eligible for all programs.

higher base revenue limits, funding for "necessary small schools," and more per-pupil categorical aid that translate into more funding per pupil.[39]

In the case of high school districts, there are only 82 statewide, and they serve less than 10 percent of the state's students. High school districts were historically spending more per pupil, and so their revenue limits are substantially higher than elementary and unified districts. In addition, there are few incentives for these districts to unify, and there may be other historical reasons related to funding as to why these high school districts remain separate districts. High school students are less likely than elementary and unified students to be in poor families. Child poverty rates are much higher for children younger than age 6 and in the age group of 6–11 compared to children age 12 and older (Addy and Wight 2012a,b), which are reflected in the lower Title I and free or reduced price lunch counts in high school districts relative to elementary and unified districts. There are only six high school districts in California with more than 80 percent of their students eligible for the lunch program, compared to 179 elementary and unified districts. This lack of high-poverty high school districts, coupled with their smaller number, weakens the power of our analysis, and thus it is not surprising that we find no overall relationship between funding and student disadvantage.

When we examine the relationship between funding and student disadvantage for all districts, we find that the overall implicit weight is 20 percent. As we have noted, there is no statistically significant relationship between total funding and student disadvantage in elementary and high school districts that is likely to be related to historical reasons. This aggregate statewide implicit weight is driven by the much larger weight in unified districts and the relative proportion of statewide enrollment that unified districts serve.

[39] Many categorical programs are flat grants or have minimum grants. For example, Economic Impact Aid provides $319 per pupil, on average. However, districts or charter schools with fewer than 10 EIA-eligible pupils receive $8,676. In this case, the minimum grant provides at least $878 per EIA-eligible pupil.

Governor Brown's Proposals

In January 2012, Governor Brown proposed replacing the majority of California's school finance system with a weighted pupil formula. Under his proposal, revenue limits and most categorical programs would be consolidated into a new funding stream that would be allocated based on the average daily attendance of a district and the number of disadvantaged students within the district (i.e., those students who are either participating in the subsidized lunch program or are ELs). The weight designated for disadvantaged students in the governor's January proposal was 37 percent. The formula added even more funding for these students in the districts in which more than 50 percent of the students were disadvantaged.[40] This additional funding, often referred to as the concentration factor, increased as the proportion of disadvantaged students increased. At the extreme, districts in which 100 percent of the students were disadvantaged would receive double the weight for the disadvantaged students, or 74 percent more than the base funding for each disadvantaged student.

In May 2012, the governor revised his proposal after consulting with statewide education organizations, school districts, education interest groups, and policymakers. The revised proposal reduced the weight for disadvantaged students to 20 percent and maintained a concentration factor. In addition, the May proposal included grade-level weights whereby students in grades K–3 and 9–12 received 11 and 19 percent more, respectively, than the base grant allotted for grades 4–6. A final provision of the May proposal maintained two current categorical programs that had been previously scheduled for consolidation: home-to-school transportation and the Targeted Instructional Improvement Block Grant (TIIBG), which funds court-ordered and voluntary desegregation plans.

The legislature did not accept either of the governor's proposals. After further consultation with the education community, Brown included a revision of his school finance reform proposals in his January 2013 budget. The new proposal, called the Local Control Funding Formula (LCFF), is very similar to the May 2012 proposal.[41] The LCFF includes a weight for disadvantaged students—still defined as an unduplicated count of students participating in the subsidized lunch program and ELs—of 35 percent and a concentration factor based on this weight.[42] Under this new weighted formula, the concentration factor gives disadvantaged students a weight of 41 percent in districts in which 60 percent of the students are disadvantaged, a weight of 48 percent in districts in which 80 percent of the students are disadvantaged, and weight of 53 percent in a district in which all students are disadvantaged. The new proposal also preserves weights for grades K–3 and 9–12 to maintain small class sizes in the primary grades and career-technical education in high school. Although TIIBG and home-to-school transportation continue to be excluded from the consolidated programs, the proposal allows these programs' funds to be used for any general purpose.

In May 2012, we published two reports analyzing the effects of Governor Brown's 2012 proposals on each school district in California.[43] The goal of this paper is not to analyze the specific details of the new proposal, as those have just been released at the time of this writing. Rather, the purpose of this report is to consider how

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[40] For districts in which fewer than 50 percent of the students are disadvantaged, revenue per pupil would be $B + (0.37 \times B \times D)$, where B is base revenue per pupil and D is the percentage of disadvantaged students. For districts in which more than 50 percent of the students are disadvantaged, revenue per pupil would be $B + (0.37 \times B \times 2 \times D^2)$.

[41] See California Department of Finance (2013b) for the January 2013 proposal.

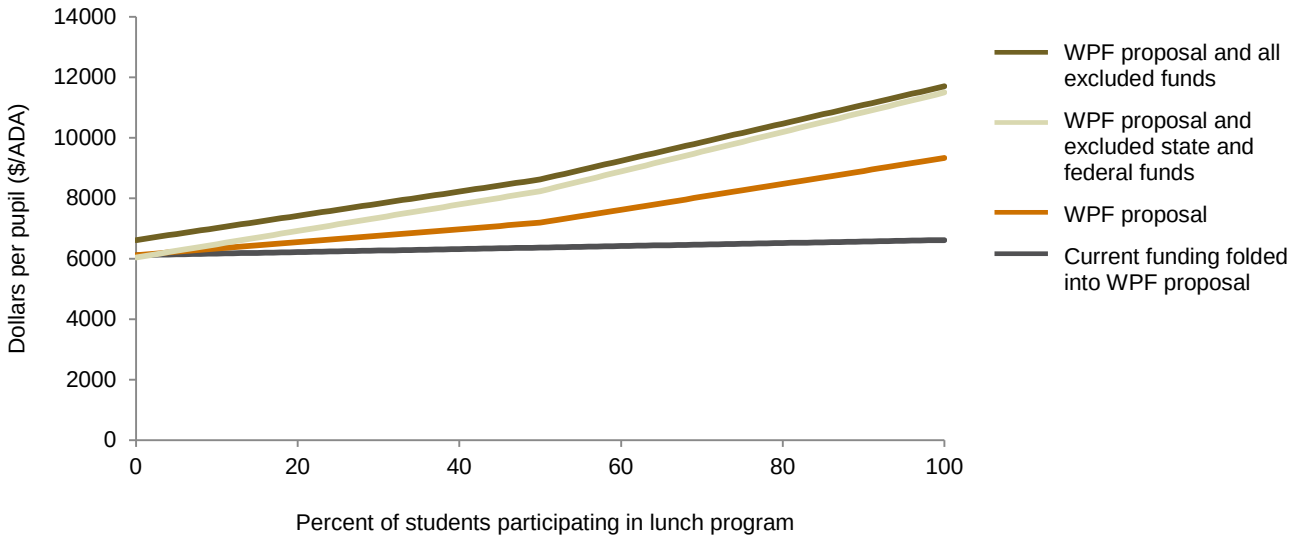
[42] The concentration factor is slightly different in the January 2013 proposal compared to prior proposals. In the new proposal, for districts in which fewer than 50 percent of the students are disadvantaged, revenue per pupil is $B + (0.35 \times B \times D)$, where B is the base revenue per pupil and D is the percentage of disadvantaged students. For districts in which more than 50 percent of the students are disadvantaged, revenue per pupil is $B + (0.35 \times B \times D) + (0.35 \times B \times (D - 0.5))$

[43] See Rose, Sonstelie, and Weston (2012a and 2012b) for an analysis of the January and May proposals, including district by district comparisons.

the weights proposed in the new weighted student formula are related to the current implicit weights , and so we analyze the governor's most recent proposal using several simplifying assumptions to highlight the effects of the choice of weights and the concentration factor.

The January 2013 proposal would direct substantially more revenue to school districts with large shares of disadvantaged students. Figure 9 compares funding under the January 2013 proposed formula to current total funding in the subset of programs that would be folded into the governor's new weighted pupil funding proposal. The navy grey line plots the average relationship between poverty and current revenue in the current set of programs that would be consolidated.[44] Although not shown, actual district per pupil revenue is scattered about this line. In this subset of programs, unified districts with no economically disadvantaged students currently receive an average of $6,118, and districts with 100 percent economically disadvantaged students currently receive about $498 more per pupil, on average, suggesting an implicit weight of 8 percent. This is significantly less than the $1,429 per disadvantaged student from all current state-controlled sources, because many of the excluded programs are highly related to poverty.

FIGURE 9
Modeling Governor Brown's 2013 proposal



SOURCES: PPIC School Finance Model (2013); Governor's Budget Proposal Summary, 2013–14 (available at www.dof.ca.gov/documents/FullBudgetSummary_web2013.pdf).

NOTES: "Brown's proposal" excludes the following: special education, after-school education and safety (Prop 49), Quality Education Investment Act, TIIBG, home-to-school transportation, lottery, mandates, state meals, federal funds, and local funds. The proposal includes two regional programs excluded from ROCPs and the teacher credentialing block grant.

The orange line shows revenue per pupil under the governor's proposal, with a few simplifying assumptions. We assume that the base level of funding would be $6,118 per pupil, the same as amount as districts with no disadvantaged students currently receive, on average, in the programs to be consolidated in the new formula.

[44] Because the specifics of the governor's new proposal are unclear, we assume that the list of programs that would be included in the new proposal is similar to the list of programs that were included in prior proposals. This includes revenue limits, excess taxes, and all state categorical programs with the exception of special education programs, home-to-school transportation, TIIBG, apprenticeship, after-school education and safety (Prop 49), lottery, mandates, the Quality Education Investment Act (court settlement), and the state meals program. We assume that the governor's proposal also includes two regional programs not included in our total categorical funding: ROCPs and teacher credentialing funding. There is uncertainty about how to treat adult education revenue since the governor has proposed providing apprenticeship funding programs and $300 million in adult education to community colleges to provide adult education. The $300 million from adult education is less than half of the current appropriation. For the purposes of this paper, we include adult education funds.

The current total revenue in the subset of programs that would be consolidated in the governor's new program is not high enough to support a base of $6,118 and a weight of 35 percent. To achieve that combination of base and weight, the state would need to increase spending by $5.1 billion (approximately $1,290 per student) in unified districts. Statewide, the total cost is nearly $8 billion ($1,260 per student). In computing the total amount necessary, we assume that no district receives less than it current receives in the consolidated programs. To stay within current funding levels and maintain a 35 percent weight, a lower base would be required. This would shift the orange line down and make it flatter. Although a base of $5,150 would maintain funding within the current amount of total spending, too many districts would lose revenue under this scenario, a result not tenable with the governor's plans to hold districts harmless. A higher base would shift the orange line up and also make it steeper. Although the governor proposes a base higher than $6,118 when fully implemented, we settle on that number for the sake of comparison. This assumption about base funding ignores, to some degree, the grade-level weights in the new formula; but it would be accurate if the grade distribution among unified school districts were similar, regardless of the district's poverty level. In this example, we also make the simplifying assumption that there are no EL students, so that disadvantaged students are entirely defined by the percentage of students in the subsidized lunch program. In the Technical Appendix, we present the results from this section using the governor's definition of disadvantage by adding 25 percent of a district's EL students to the measure of disadvantage. This expanded definition of disadvantage has little effect on the estimates.

The gap between the orange and navy blue lines shows where that money would be infused into the system. Districts with many disadvantaged students would receive the bulk of the additional funds; districts with no disadvantaged students would receive none of it. For districts in which fewer than 50 percent of the students are disadvantaged, a weight of 35 percent would provide an additional $2,141 per disadvantaged pupil, in contrast to the current implicit weight of 8 percent ($498 per pupil). This supplemental revenue would be even more dramatic in districts with high concentrations of poverty where, based upon the proposed formula, the weights for disadvantaged students might be as high as 52.5 percent ($3,212 per pupil)—more than six times the amount currently provided to those districts for disadvantaged students.

Another key feature of the governor's proposal is that it would eliminate the variation in the current subset of programs included in the formula by positioning all districts on the same average line. Because the variation in the revenue of these current programs is not purposefully linked to major cost differences across districts, reducing that variation creates a more rational, equitable system.[45] The WPF may also eliminate inequities among districts of different types and sizes by creating a single formula for base funding, rather than relying on the historical differences in revenue limits.

In addition to the funding included in the new WPF, districts would still be entitled to their federal and local funding as well as funds from the state categorical programs currently excluded from the proposal. Considering all funding sources in conjunction with the governor's proposal prompts two important observations. First, it reintroduces some of the funding variation, because districts with the same level of poverty receive different levels of federal aid and revenue from the excluded state categorical programs. Second, because these federal and excluded state funding sources tend to provide more funding per pupil to districts with more disadvantaged students, taking into account these sources of revenue increases the revenue targeted to disadvantaged students. The tan line in Figure 9 adds federal funding and excluded state categorical programs to the WPF. The dark brown line adds in other local funding as well.

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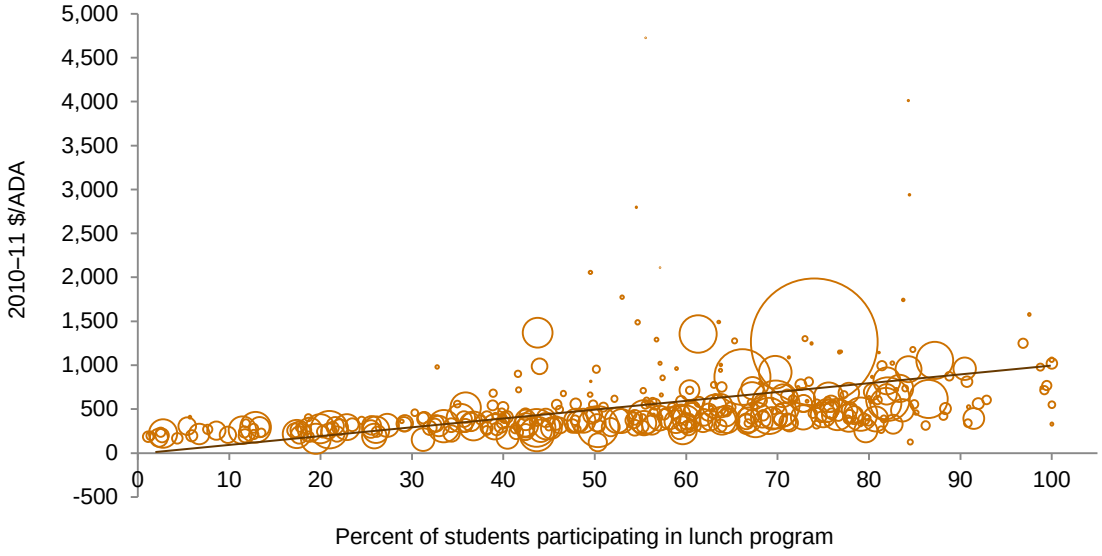
[45] During the February 16, 2012, California Senate Budget and Fiscal Review Committee hearing, some senators favored the idea of including cost adjustments to account for regional differences in labor costs. Rose et al. (2008) and Rose, Sonstelie, and Weston (2010) provide a rationale for including such adjustments. However, because the current variation in funding is not explicitly related to such costs, it is difficult to justify.

In Figure 7, we showed the relationship between federal funding and student poverty. Districts with many economically disadvantaged students receive much more federal funding per pupil than districts with few disadvantaged students. Of the statewide total implicit weight of 36 percent for poverty, federal funds account for 20 percentage points. In Table 2, we demonstrated the large positive relationship that also exists between state categorical aid and student disadvantage. Of the statewide total implicit weight of 36 percent for poverty, state categorical funds account for 27 percentage points. Yet the state programs that contribute most to this weight are currently excluded from the WPF—for a variety of reasons. First, the governor has chosen to keep home-to-school transportation and TIIBG as a separate add-on program. Second, several programs cannot be consolidated into a WPF because they are the result of statewide propositions that would require going back to the voters, including the state lottery (Proposition 37, 1984, and Proposition 20, 2000) and the After School Education and Safety program (ASES, Proposition 49, 2002). The Quality Education Investment Act (QEIA) is the result of a legal settlement and is similarly excluded. Third, some additional programs are excluded, such as the state meals program, student assessments, and statewide high-speed internet.

When taken together, these excluded state categorical programs are highly related to student disadvantage, as shown in Figure 10.[46] Unified districts with no disadvantaged pupils receive, on average, $49 per pupil from these excluded programs. Districts in which all pupils are disadvantaged receive $977 per pupil from these excluded programs.

FIGURE 10
State funds excluded from the WPF, 2010–11



SOURCE: PPIC School Finance Model (2013).

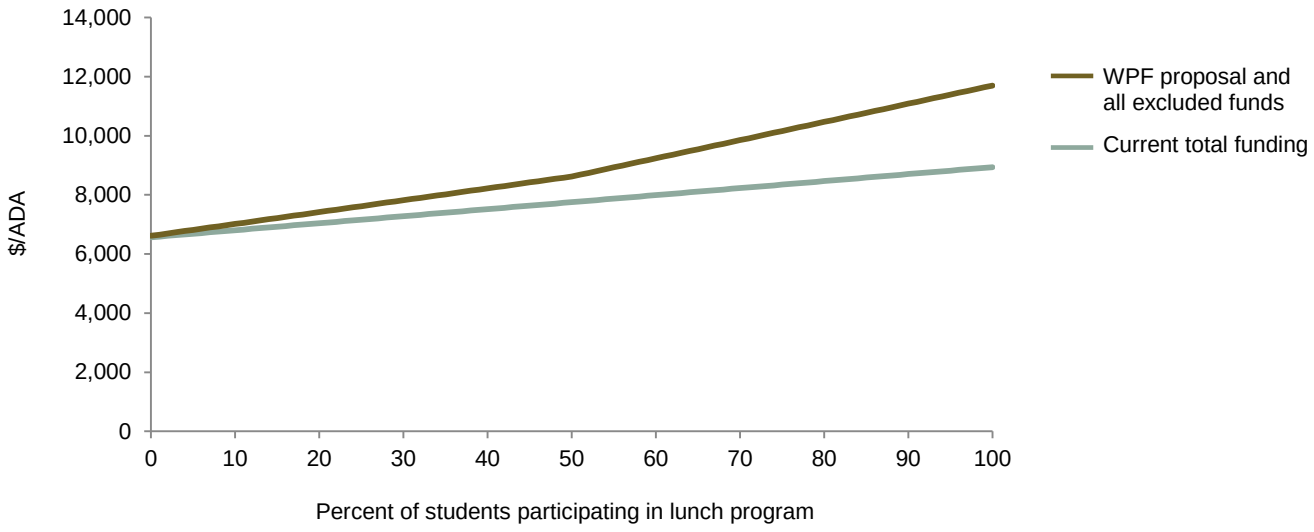
NOTES: Excluded state categorical programs are ASES, home-to-school transportation, lottery, mandates, QEIA, state meals, and TIIBG. The governor's January 2013 proposal also excludes American Indian Early Childhood Education, which is included in the figure. Statewide, it amounts to less than $0.10 per pupil.

The tan line in Figure 9 shows that adding the federal funding and the excluded state categorical program to the weighted student formula produces a much higher effective weight. The higher effective weight is evident even after accounting for local funding. Taking all sources of revenue into account, districts in which all of the

[46] The correlation coefficient is 0.56. Statewide, districts with no disadvantaged students receive $94 per pupil from these programs and districts in which all students are disadvantaged receive $775 more per pupil. See Technical Appendix for regression results for these and other large programs.

students are disadvantaged would receive $11,700 per pupil, approximately 77 percent more than in districts with no disadvantaged students. Figure 11 shows the difference between the average current level of funding related to poverty (teal line) and the average total revenue that would occur with the governor's new proposal when all sources of funding are accounted for, not just those included in the WPF formula (dark brown line).

FIGURE 11
Current funding and the 2013 WPF proposal including other state, local, and federal funds



SOURCE: PPIC School Finance Model (2013); 2013–14 Governor's Budget Proposal Summary (available at www.dof.ca.gov/documents/FullBudgetSummary_web2013.pdf)

Considerations About the Weight

Some concern has been voiced about the weight in the new funding proposal. In this section, we focus on three main issues: the trade-off between the base and the weight, the concentration factor, and potential spending restrictions on supplemental funds.

As discussed above, the weight is specified as a percentage of the base. Thus, when the base increases, the total funding for districts with disadvantaged students also increases. If the base is equal to $6,100, a 35 percent weight results in an additional $2,135 per disadvantaged student. If the base is $8,000 per pupil, the same 35 percent weight results in $2,800 per disadvantaged student, an increase of $655 per student. Much of the research that estimates the needs of disadvantaged students focuses on a fixed dollar amount necessary to provide the additional resources and programs for low-income students and ELs. Thus, it may make sense during the transition to a new system to have both the base and supplemental grant grow as funds become available. However, once the base and supplemental grants reach a targeted level, it may no longer be necessary for the supplements to grow along with the base funding. If anything, as the base program becomes more robust, the need for supplemental programs may actually decline.

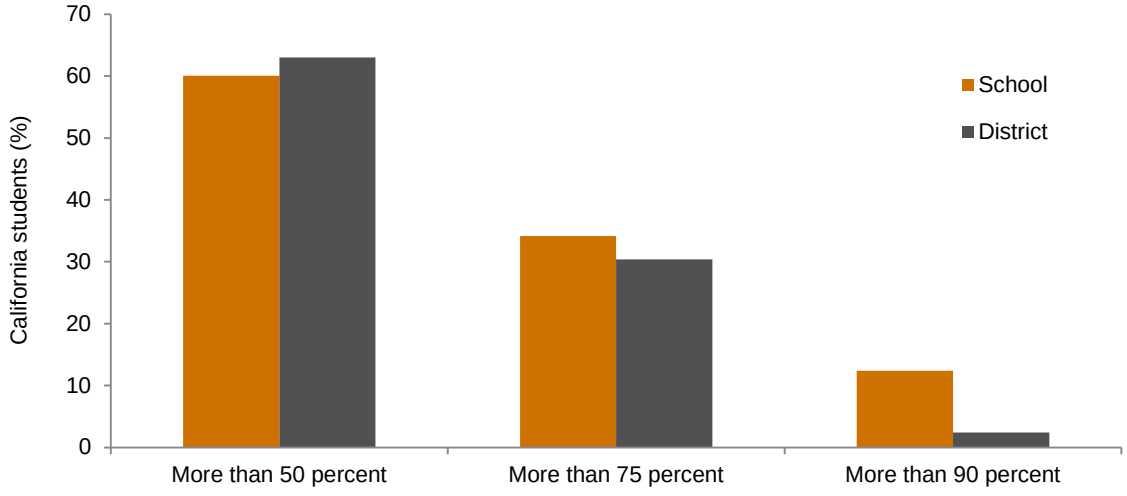
Many in the policy and education community have also raised concerns about the concentration factor that provides even more funds to districts in which more than 50 percent of the students are disadvantaged. Studies have generally shown that attending a high-poverty school has a strong negative effect on a student's

achievement, even after controlling for the student's own socioeconomic background.[47] In fact, the literature provides some support for directing even more resources to communities with concentrated poverty.

Nonetheless, certain aspects of the concentration factor as currently proposed warrant some discussion. The first is the threshold that defines concentrated poverty. As previously noted, the standard threshold for concentrated poverty is approximately 90 percent for subsidized lunches. The current proposed threshold of 50 percent is much lower, and a majority of districts and students meet this threshold: 554 districts (58 percent), educating more than 60 percent of all students (Figure 12). This may argue for a higher level of base funding rather than a concentration factor.

A second point of concern with the concentration factor is that it applies to district levels of disadvantaged students rather than school levels. In California, poverty is not always equally distributed across schools within a district. In 2010–11, 591 schools (serving 6 percent of the student population) had more than 50 percent of their students participating in the subsidized lunch program, but these schools were located in districts that did not meet the 50 percent threshold. Under a district-level concentration grant, these schools would be ineligible for the concentration factor funding. Conversely, more than 9 percent of the student population attends one of 716 low-poverty schools located in high-poverty districts. Figure 12 depicts the percent of students in schools and districts at various thresholds of student disadvantage.

FIGURE 12
Concentrations of students eligible for subsidized school meals, 2010–11



SOURCES: 2010 Free and Reduced Price Meals/CalWORKs School Level File, California Department of Education; PPIC School Finance Model (2013).

NOTES: Figure excludes 1,904 non-regular public schools (e.g. alternative, juvenile, special education schools) that enroll 393,669 students.

A third concern is that funds intended for disadvantaged students may not actually reach them. Reviews of Title I, a federal program that provides funding to help low-achieving students in high-poverty schools, find

[47] For example, see Levine et al. (1979); National Center for Educational Statistics (1996); Jencks and Mayer (1990); Brooks-Gunn et al. (1993); Duncan et al. (1994); Clarke (1992); Crane (1991); Dupéré et al. (2010); Caldas and Bankston (1997); and Kennedy, Jung, and Orland (1986). Because school attendance zones are highly related to neighborhood boundaries, some of these studies focus on the negative effects of neighborhood poverty on school outcomes.

evidence of some substitution effects (van der Klaauw, 2008; Gordon, 2004; Matsudaira, Hosek, and Walsh 2012). Specifically, overall school funding does not increase significantly with the receipt of Title I funds, suggesting that districts may be reducing or redistributing state and local funds intended for Title I schools. Many stakeholders, including the civil rights community in California, have expressed concern that without regulatory oversight to ensure that funds reach targeted students, districts will feel pressured to distribute these funds more equally across schools, continuing current intra-district disparities.[48] However, the governor's proposal is centered on the notion that local districts and boards can best tailor their programs to their students and that the state's role is no longer prescriptive. Rather, this increased funding and flexibility will be coupled with an improved state accountability system that demands improved outcomes for low-income students and ELs.

The changing weights for student disadvantage in each iteration of the WPF proposal have led many to wonder what the right weight for disadvantaged students might be. However, the proposals were primarily driven by the considering the tradeoff between the base and weight, the programs to consolidate into the new formula, and by the total funds available under Proposition 98 today and over time.[49] By increasing the base or adding weights for certain grade levels, the weight for disadvantaged students must necessarily be reduced to stay within the state's budget constraints. With the passage of Proposition 30 and an improving state economy, the Department of Finance projects that Proposition 98 funding will increase by more than $2,500 per pupil over the next four years.[50] The legislature will need to decide how to allocate this new money—specifically, whether to restore (or increase) base funding or to direct the new funds toward disadvantaged students. To help guide those decisions, we turn next to the adequacy literature in California and funding formulas in other states.

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[48] See Campaign for Quality Education (2012), Barondess, Hahnel, and Stewart (2012), and Fensterwald (2012).
[49] Proposition 98 (1988) is a series of complex formulas that determine the annual minimum funding that schools and community colleges receive from local property taxes and the state's general fund. See the LAO webcast primer for more information.
[50] California Department of Finance (2013a).

The Link Between Resources and Student Outcomes

The current focus on providing economically disadvantaged students with additional funding comes at a time when narrowing the test score gap has become a major policy priority. Yet, it also comes at a time when schools have experienced several years of budget cuts and have been forced to reduce regular education programs to their core, or even pare away at that core. In real terms, funding in 2010–11 has fallen to 2003–04 levels. Some members of the education community argue that restoring funding to an adequate level in core programs for all students should occur before directing additional funds to disadvantaged students. Although policy discussions will surely focus on this issue, it is critical to understand that researchers have little evidence of how much funding is necessary to enable any student to meet the state's standards, let alone how much additional funding is necessary for disadvantaged students. This lack of an answer is not for lack of trying. A research endeavor entitled *Getting Down to Facts* included several attempts to address this question for California.[51] These attempts drew upon various methods, each with advantages and disadvantages.

Two of these research projects used statistical analyses to address the issue of adequate funding (Imazeki 2006; Duncombe and Yinger 2007, 2011). They use data from all California school districts and describe the current relationship between spending and test scores. Imazeki uses 2004–05 data and concludes that districts with no disadvantaged students may require $5,832 per pupil ($6,726 adjusted for inflation through 2011) and that students who qualify for the subsidized lunch program may require an additional 30 percent; Spanish speaking ELs may require an additional 8 percent, and non-Spanish speaking ELs may require even 24 percent more. Given these findings, Imazeki concludes that 90 percent of districts would need resources ranging from $6,678 to $11,011 per pupil ($7,702–$12,700 in 2011), meaning that some districts would receive 65 percent more funding than others.[52]

Duncombe and Yinger reach similar conclusions with respect to the additional funding for disadvantaged students. They suggest that students who are eligible for the lunch program may need 23 percent more funding, and those with limited English proficiency may need 32 percent more. For medium size districts, they project that closing the API gap between the 10 percent of districts with the highest proportion of poor students and the 10 percent with the lowest proportion would require an additional $1,600 per pupil ($1,873 adjusted for inflation) above what the poorest districts are currently receiving. They estimate that the current spending difference between these poor and more affluent districts is only $321 per pupil ($376 adjusted for inflation)—much less than the gap we find in total revenue between such districts. This difference may stem from the fact that they do not weight their regressions by enrollment of the district, whereas we do. One key point to bear in mind about both of these studies is that the suggested weights for disadvantaged students are determined from a particular base funding level. If that base were higher, the additional weight in percentage terms could be lower.

It would be convenient to assume that if the state would spend at the levels suggested in these reports, then all students would achieve the state's academic goals. However, many criticize the approaches used in these studies as fundamentally flawed (see Hanushek, 2006, and Costrell et al., 2008). These studies essentially use the spending levels of districts that achieve test-score standards to extrapolate how much spending other districts would need to reach the standards. Interpreting the relationship between spending

[51] Loeb, Bryk, and Hanushek (2007) provides an overview of this project.
[52] Throughout our examples, we adjust for inflation using the CPI-U.

and test scores in these statistical models as a causal one requires numerous assumptions that may not be justified. Costrell et al. conclude:

> The underlying difficulty is that even after controlling for a host of variables (including labor market prices, student and school characteristics, among other variables) there is still a great deal of variation across districts in their outcomes for students, in districts with the same expenditures. There are a number of reasons for these differences that draw the regression-based approaches into question. In particular, we have little or no way of knowing how much of this variation is driven by unobserved cost or price differences, by mismanagement, or by a focus on goals other than the student achievement measures used in the cost functions (p. 220).

Given the difficulties in using current spending patterns as a guide for how much spending is needed, other researchers have taken an alternative approach to addressing the question of how much funding is adequate. These researchers have solicited the opinions of practitioners who are dealing with the implications of the state's funding and accountability system on a daily basis. The most extensive study, Sonstelie (2007), gathered opinions from 586 superintendents, principals, and teachers in a unique way to estimate the relationship between spending and achievement. To help elucidate the optimal mix of resources at the lowest cost, Sonstelie conducted budget simulation exercises with these professionals. He presented them with a description of a hypothetical school, a list of school resources with their prices, and a budget, and then asked them to allocate their resources in a way that would maximize API scores. Each participant completed two simulations with different budgets. The budgets varied from exercise to exercise, and the hypothetical schools varied across participants in terms of their student demographics and, in particular, socioeconomic status. The participants then predicted the API scores of the schools they had constructed.

From the various budgets and API predictions, Sonstelie mapped out a relationship between funding and API scores. Based on the opinions of the practitioners, Sonstelie estimated that districts in the 5th percentile of poverty need $8,538 to achieve an 800 API, and districts in the 95th percentile of poverty need $11,080, about 30 percent more (adjusted for inflation, the range is $10,144–$13,164).[53] Not only did these practitioners believe that economically disadvantaged students need additional revenue, they also thought that the current levels of funding at the time of the experiment were inadequate even for districts with no student poverty. They believed that spending in the latter districts should be about 25 percent higher than the average spending level in 2003–04.[54]

The governor's proposal (given our example of $6,118 in base funding and the additional state, federal, and local funds) would yield about $7,100 per pupil in districts at the 5th percentile of economic disadvantage and about $10,700 per pupil for those at the 95th percentile. With a higher base of $7,850, the districts in the 95th percentile would achieve the benchmark recommended by the practitioners in Sonstelie's study, but revenue for districts in the 5th percentile of student disadvantage would be about $8,950 per pupil, about 12 percent lower than the practitioners recommended.

Although the practitioners' opinions led to a specific benchmark, the uncertainty in their opinions highlights the need to exercise caution in assigning a price tag to student achievement. The recommendations of these

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[53] Sonstelie uses the percentage of students in poverty as opposed to the percentage eligible for the subsidized lunch program, so this difference represents different funding needs between districts with 3 percent of students in poverty versus 40 percent. The high correlation between poverty and participation in the subsidized lunch program means that a similar funding difference would likely emerge if these estimates were based on the latter measure of economic disadvantage.

[54] Chambers et al. (2006) conducted a professional judgment exercise as well. Their method did not include budget simulations, but the resulting message was similar. The more conservative estimates suggested that average funding levels needed to about 50 percent higher than they were in 2003–04, and schools with higher shares of disadvantaged students needed even more revenue. For example, elementary schools with 89 percent of their students eligible for the lunch program (the 90th percentile) needed 34 percent more revenue per pupil than schools with average poverty levels of 57 percent.

professionals were guided by what they *thought* rather than *knew* for sure. Sonstelie highlights this lack of certainty by describing the large margins of error around the estimates (i.e., the confidence intervals). For example, in an elementary school in which 52 percent of the students participate in the lunch program (the state average at that time), the predicted budget for students to reach an 800 API was $7,430—but the 90 percent confidence interval ranged from $6,403 to $8,368 per pupil. These margins of error actually increase as the percentage of students in the lunch program is further from the state average.

Two themes emerge from these numerous studies of school resources and student achievement. First, most studies that set out to estimate the relationship between revenue and achievement suggest that more money is needed and disadvantaged students need even more. The fact that each study arrives at a specific dollar amount makes these values appealing targets for policymakers. The second theme is, perhaps, more important. Although it would be comforting to rely on those values as a recipe for student success, each study faces several technical and fundamental challenges. The reality is that we don't know how additional funding will translate into outcomes. In fact, recent trends in revenue and test scores demonstrate the tenuous link between them. Although school funding has fallen since 2007, API scores have continued to rise. As Figured 1 showed, the "average" line is moving up over time, and more so for economically disadvantaged students. The average API growth in schools with 90 to 100 percent of their students participating in the subsidized lunch program was 78 points, compared to a growth of 34 points in schools with zero to 10 percent of their students in the lunch program. Growth is likely limited in the schools with more affluent students because those schools are nearing the ceiling of the API scores. Although real learning gains may explain some of the increase in API scores, some scholars suggest that test familiarity may also contribute to the gains and that policies allowing more alternative test forms for special education students may be driving some of the gains at the lower end of the test score distribution (McRae 2012).

Uncertainty over the link between spending and outcomes does not relieve our state government of setting school funding goals and policy. And it may well be that the more accepting policymakers can be about this uncertainty, the more productive the discussions about an appropriate funding level can become. Moreover, although the state and federal accountability systems have certainly focused attention on the API scores and proficiency rates, a more holistic approach is probably needed to address the larger questions of what we want our schools to look like and how much that might cost.

California's current funding levels are adequate for many students to succeed under current accountability systems. Of all California students tested, 55 percent of elementary school students, 46 percent of middle school students, and 30 percent of high school students are in schools that achieve an 800 API. Despite this achievement, many parents and community leaders expect, even demand, more from schools than just high test scores. They want students to be well-rounded in all subjects, to have opportunities for enrichment activities, to be civically engaged, and to be thoughtful and productive members of society. Some would suggest that "successful" students are still being left behind when comparing their education to what students receive in other states. Compared to the nation, California has about 25 percent fewer certificated staff per pupil. Although California teaching ratios in elementary grades are similar to the national average, staffing ratios in California high schools are about 43 percent lower than the national average (EdSource 2012). Resource shortfalls like these suggest that California will need to carefully consider the tradeoff between base funding for all students and supplemental funding for disadvantaged students. At the end of the day, the choices will reflect the value judgments of the public and their legislators.

Weights in Other States

Given the uncertain results in the literature on the appropriate weight for student disadvantage, we turned to the practices of several other large states to see how they approached this issue. Understanding the practices of other states can be quite difficult since each state is unique and many have school finance systems as complex (if not more so) than California's. However, a number of researchers have undertaken such comparisons.[55]

In a survey of the nation, Verstegen (2011) finds that 34 states provide additional funding for low-income or other at-risk students, ranging from categorical programs targeting these students to explicit weights in a weighted pupil formula. To better understand the differences among other state systems, we examined three states more closely: Florida, New York, and Texas. We chose these states because they are the next three largest in size after California and have comparable percentages of disadvantaged students.

Florida

Florida educates approximately 2.6 million students in 67 countywide school districts. The Florida Education Finance Program, established in 1973, is the state's primary mechanism for allocating state aid.[56] Funding is determined based on a count of students and adjusted for many factors, including a district's local property tax base, population density, cost of living, and certain program costs such as those that differ by grade level, special education, or career technical education. The funding mechanism for these program costs operates much like a WPF, where student counts are weighted by the program cost factors. Florida weights funding for ELs at 16.1 percent but does not provide a similar adjustment for low-income students.

Just as in California, Florida funds a variety of categorical programs within the main funding formula but funds class size reduction outside the formula. Although there is no funding allocation based on family income, Florida does target at-risk students through programs that include supplemental instruction and juvenile justice education, which are correlated with family background characteristics.

Unlike school districts in California, school districts in other states, including Florida, are able to levy their own property taxes, and thus state funds constitute a smaller share of total funding than in California. In Florida, the majority of district funds come from local sources, with the state providing approximately one-third of total revenue. When federal funds are added to state and local funds, there is a slight positive trend toward providing more revenue to disadvantaged students, but the weight is not statistically significant.[57]

New York

New York educates about 2.8 million students in nearly 700 districts. In 2007, the state reformed its school finance formula by consolidating approximately 30 separate funding streams into a single foundation

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[55] See National Center for Education Statistics (2001); Hightower, Mitani, and Swanson (2010), Verstegen (2011); Baker & Corcoran (2012).
[56] Information provided in this section is derived from the Florida Department of Education (2011).
[57] These are preliminary findings based on the authors' calculations using the Common Core of Data (Local Education Agency Fiscal and Universe surveys 2009) from the National Center on Education Statistics. Results vary depending on whether the dependent variable is revenues or current expenditures per pupil and whether one controls for regional cost differences within and across states.

formula.[58] The reform package included a four-year phase-in of the new formula. However, due to budget constraints, state aid amounts were frozen to 2008–09 levels through 2011–12. Starting in 2012–13, only 1.7 percent of state aid is distributed through the new formula.

The new foundation formula calculates a per-pupil entitlement that is based on a base funding level per pupil and that is adjusted for several factors, including pupil needs and regional costs. The entitlement is met first by the district's expected minimum contribution with any gap filled by state aid. The pupil need index adjusts funding based on the percent of students with additional needs and enrollment density.[59] It is complex, but essentially Title I students and students participating in the subsidized lunch program receive a weight of 65 percent of base funding and ELs receive an additional 50 percent of base funding.

Like Florida, a majority of school district revenue in New York comes from local rather than state sources: 52 percent from local sources, 40 percent from the state. Local sources vary dramatically per pupil, and state aid equalizes revenue across districts. Taken together, the overall implicit weight in New York is zero, although federal funds generally flow to districts with many disadvantaged students. Baker and Corcoran (2012) document the issue of local wealth inequities in New York and other states.

Texas

Nearly 5 million students attend school in more than 1,200 Texas school districts.[60] Like New York, Texas uses a foundation formula that allocates base funding with adjustments for various cost factors, including the special needs of students. Like California, Texas's school finance system is very complex. The part of the foundation formula that resembles a WPF is known as the Tier I entitlement. Districts receive an additional 20 percent for students in the lunch program and 10 percent of base funds for ELs. Students who meet both criteria generate both adjustments. In addition to low-income students, Texas provides additional funds for special education students, pregnant minors, gifted and talented students, students with parents in the military, and students in career-technical education. Although state revenues generally target districts with higher levels of disadvantaged students, these revenues do not seem to compensate for differences in local revenues. However, with the addition of federal funds, total revenue per pupil is similar.[61]

In sum, the preliminary evidence from other large and diverse states reflects a wide range of explicit weights for disadvantaged students, ranging from zero in Florida to 65 percent in New York. However, this evidence does little to shed light on an appropriate weight for disadvantaged students in California, for two primary reasons. First, it is difficult to make an apt comparison between California and these other states when the sources of revenue are so different. Local sources constitute a much larger share of total funding in these other states compared to California, where the state provides the majority of revenue. Furthermore, local property tax differences in California are essentially neutralized by Proposition 13 and the revenue limit system. In this respect, state aid—particularly in New York—simply compensates for or reduces the differences in local revenue. Any implicit weight for student disadvantage is largely the result of federal funds that target disadvantaged students. By contrast, state funds in California target districts with many disadvantaged students, leading to a system where districts with more disadvantaged students

[58] Information about New York's school funding comes from the New York State Department of Education (2012) and authors' calculations using the Common Core of Data.
[59] The sparsity count portion of the pupil needs index provides additional funding for districts with fewer than 25 pupils per square mile.
[60] Information about Texas's school finance system is derived from the Texas Education Agency (2011) and authors' calculations using the Common Core of Data.
[61] Current expenditures per pupil are positively and significantly related to student disadvantage.

receive more revenue. Second, although total spending per pupil in California is comparable to total spending in Florida and Texas, it is not comparable to New York.[62] In New York, the average per-pupil expenditure is twice that of California at nearly $19,000 per pupil. This level of funding may be sufficiently large to address the needs of low-income students and ELs. And despite comparable levels of funding in Florida and Texas, average teacher salaries in these states are much lower than in California, which may yield different levels of services. We explore these issues and examine other state systems in more detail in a forthcoming publication.

[62] In 2009–10, current expenditures per pupil were $8,741 in Florida, $8,746 in Texas, $9,375 in California, and $18,618 in New York (Dixon 2012). These numbers are not adjusted for regional costs, which would typically put California's spending below Florida and Texas.

Conclusion

California policymakers are taking seriously the challenge of reforming the state's school finance system. The governor's series of reform proposals are in keeping with many of the principals of good school finance reform. A weighted pupil formula would create a more transparent system by allocating most state funding through a very explicit and simple formula. It recognizes that some students, namely economically disadvantaged students, may need additional resources and directs additional revenue to them. Although California's current system provides additional per pupil revenue to districts with more disadvantaged students, substantial variation exists around the average allocation. A WPF would reduce that variation, providing the same amount of revenue to all districts with the same measure of poverty, thus reducing the inequities in the current system.

Although the fundamental elements of the formula adhere to these sound principles, achieving consensus on a new WPF faces a specific and difficult challenge: agreeing on the appropriate weights for disadvantaged students. The weights and concentration factor in the January 2013 proposal allocate to disadvantaged students substantially more resources than districts currently receive for these students. Districts serving only disadvantaged students would receive per pupil revenue that is 53 percent higher than per pupil revenue in districts which have no disadvantaged students. Federal revenue and state revenue in programs not folded into the WPF and local funds would add to the revenue provided through the WPF. Districts in which all of the students are disadvantaged would receive an average of $2,368 per pupil from these sources. This amount is substantially higher than the additional $497 that districts with no disadvantaged students would receive from these additional sources, thus augmenting the effective weight for disadvantaged students. With a base of $6,118, the overall average weight for disadvantaged students would be about 77 percent. Such a high weight at the expense of base revenue may alienate districts with fewer disadvantaged students. The latter districts have seen their budgets erode in recent years, and thus the development of a specific and transparent plan for transitioning to a new system that includes an adequate base funding level will be critical in gaining broad support for this reform.

Although it would be reassuring to know what combination of base funding and weights would close the achievement gap, prior research has not shed much light on this issue. Policymakers nonetheless need to address a number of related questions. For example, what kind of fiscal structures would prove most beneficial for the full spectrum of students, what educational programs and activities should schools offer, and what is it going to cost? The professionals in Sonstelie's study present visions of schools they think would provide both exciting and productive work environments for teachers and students. These constructs offer a good starting point for discussions.

Although the momentum toward developing a more rational finance system is certainly in keeping with the suggestions of prior research, the state will ultimately need to come to terms with the fact that improving school finance, in and of itself, is not likely to eliminate test score gaps. Although infusing the system with more funding is arguably an ingredient in the recipe for success, *how* the money is used may be just as important. The *Getting Down to Facts* research emphasized that extensive companion reforms would also be needed. In particular, the summary report highlights the importance of reforms to "attract and retain high quality teachers and administrators" (Loeb, Bryk, and Hanushek 2007, p. 63). The emphasis on high-quality teachers is not surprising, given the growing body of research pointing to their importance.[63] School funding decisions can

[63] For example, see Sanders and Rivers (1996) and Rivkin, Hanushek, and Kain (2005).

play an invaluable role in this process. Resource levels, working conditions, and compensation systems are surely all part of the environment that attracts high-quality teachers.

An honest appraisal of the uncertainties involved in relating funding and student outcomes is important. The lack of answers, however, is no excuse for avoiding the hard work of improving our current finance system. A strong finance system is an essential component of a strong education system.

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