GETTING DOWN TO FACTS II

Technical Report

Adequacy and State Funding Formulas: What Can California Learn From the Research and National Context?

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About: The *Getting Down to Facts* project seeks to create a common evidence base for understanding the current state of California school systems and lay the foundation for substantive conversations about what education policies should be sustained and what might be improved to ensure increased opportunity and success for all students in California in the decades ahead. *Getting Down to Facts II* follows approximately a decade after the first *Getting Down to Facts* effort in 2007. This technical report is one of 36 in the set of *Getting Down to Facts II* studies that cover four main areas related to state education policy: student success, governance, personnel, and funding.

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PACE Policy Analysis for California Education

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For decades, school finance reform in many states has been driven by (or reacted to) litigation arguing that schools need additional funding. In the 1970's and 80's, school finance cases prompted reforms to increase equity, equalizing dollars per pupil across districts. In the 1990's, the focus began shifting to educational outcomes, with a recognition that equal dollars do not always buy equal outcomes because some districts face higher costs than others. Thus, the courts, and resulting policies, have asked what dollar amount is sufficient, or "adequate", in any given district, to provide the level of educational quality that the state requires.

This report provides an overview of the large literature that has developed to measure "adequacy", or the per-pupil cost of providing K-12 education in districts with varying characteristics, and the implications for the design of school finance systems. In general, the cost of an *adequate education* can be defined as the minimum amount of money that a school district must spend in order to achieve a targeted educational outcome, such as students achieving a particular score on state tests. Costs generally differ across school districts for reasons that are outside the control of local school officials or state governments, such as the number of children with "special needs". Other factors may include cost-of-living differences that increase the amount of money needed to attract good teachers in some regions, or the diseconomies of scale associated with very small districts. All else equal, districts with higher costs will need to spend more than districts with lower costs in order to achieve any given outcome and it is thus appropriate for school funding formulas to make adjustments for these cost factors.

However, while it is relatively straightforward to define adequacy in this way, and it is fairly uncontroversial to argue that costs vary across districts, there is usually less agreement on what an adequate dollar amount might be for a given district. Moreover, while adequacy court cases have led to a large number of studies that use sophisticated methods to determine adequate funding levels, the *actual* level of funds available to districts in many states may vary significantly from those recommendations.

Section I briefly reviews the methods used to measure the costs of adequacy. Section II discusses specific factors that may impact costs, with associated estimates of the size of marginal impacts, to the extent that there is research available, or notes when the literature is inconclusive. Section II also highlights how other states, particularly those most similar to California (see BOX 1), address various cost factors in their funding systems. I also briefly discuss some of the costs that are *not* usually included in adequacy studies but that clearly impact the overall cost to a state of providing an adequate education to all students. Section III moves to discussion of how states might structure their funding systems in order to pay for the costs of adequacy, again with a focus on the systems in states most similar to California. Section IV summarizes the implications for California.

BOX 1: Comparing California to "similar" states

Although the discussion in Sections II and III provides information on the range of policy options across states, it is likely to be most useful to examine some states more closely than others. California is 'most similar' to Texas, New York, Illinois, Ohio and Florida in terms of overall size (see Table 1) and the variation across districts (e.g., most of these states have one or two districts that are substantially larger than all the other districts). When possible, those states are highlighted throughout this report. Because there are clearly differences in the cost of living across these states, all base and overall funding numbers are adjusted using the Comparable Wage Index created by Lori Taylor and the National Center for Education Statistics, indexed to California (i.e., California's dollar numbers are not adjusted; all other states are adjusted to their CA-equivalent levels). It is also worth keeping in mind that while these other states serve similarly large populations, there may be significant differences in *how* they have chosen to serve those students and how their students are performing (see Tables 2 and 3).

Table 1. Comparison State Population Characteristics, 2016

	Enrollment	Number of Districts	Population per square mile	Personal Income per student[1]	Percent of low-income students	Percent of English-language learners	Percent of students with disabilities
California	6,226,814 (1)	1028 (3)	251.96 (12)	$337,666 (16)	58.7 (7)	22.3 (1)	11.1 (45)
Texas	5,289,235 (2)	1207 (1)	106.66 (27)	$232,936 (44)	58.7 (8)	15.6 (3)	8.6 (51)
Florida	2,746,269 (3)	67 (42)	384.38 (9)	$273,882 (19)	58.4 (9)	9.2 (11)	13.1 (30)
New York	2,640,250 (4)	691 (6)	418.99 (8)	$450,075 (4)	50.9 (19)	6.8 (21)	16.6 (3)
Illinois	2,060,433 (5)	865 (4)	230.58 (13)	$290,636 (22)	54.1 (14)	9.3 (9)	14.4 (17)
Ohio	1,792,382 (6)	1041 (2)	284.24 (11)	$235,856 (34)	45.1 (30)	2.7 (44)	14.7 (15)

National (incl. D.C.) rankings in parentheses
Source: National Education Association (Rankings & Estimates: Rankings of the States 2016 and Estimates of School Statistics 2017)
[1] Cost-adjusted; rankings based on unadjusted values

Table 2. Comparison State School Characteristics, 2016

	Student-teacher ratio	Average teacher salary[1]	School revenue per pupil[1]	Instruction as percentage of current expenditures	NAEP Percent at or Above Proficient (2015)			
					Gr 4 Math	Gr 8 Math	Gr 4 Reading	Gr 8 Reading
California	22.53	$77,179	$10,484	59.5%	29.2	27.1	27.8	28.4
Texas	15.23	$48,882	$10,064	61.4%	44.0	32.3	30.6	28
Florida	16.11	$40,717	$8,067	60.9%	42.0	26.1	38.5	30.3
New York	12.65	$81,255	$24,342	70.1%	34.9	30.9	35.7	32.8
Illinois	16.69	$56,991	$12,856	58.7%	36.6	32.2	35.5	35.1
Ohio	16.02	$47,560	$10,760	58.9%	44.6	35.4	37.8	35.5

Source: National Education Association (Rankings & Estimates: Rankings of the States 2016 and Estimates of School Statistics 2017)

[1] Cost-adjusted

Table 3. Comparison Districts Characteristics, 2013-14

	District	Total Revenue per Pupil[1]	State Revenue per pupil[1]	% of Revenue from State Sources	Total Enrollment	Percent FRL	Percent LEP	Student-teacher ratio	Student-admin ratio	Student-instructional staff ratio	Number of schools
Major Urban											
CA	Los Angeles	$13,106	$8,167	62%	653,826	75%	27%	23.6	228.1	8.4	1011
TX	Houston	$10,070	$2,109	20%	211,552	80%	26%	18.7	193.7	8.6	288
FL	Maimi-Dade	$8,102	$3,326	34%	356,233	74%	20%	17.4	NA	9.7	542
NY	New York City	$25,134	$9,456	39%	966,332	72%	NA	15.7	NA	15.3	1590
IL	Chicago	$12,735	$4,863	35%	396,641	85%	17%	17.0	241.1	8.6	654
OH	Cleveland	$19,799	$13,648	58%	38,562	87%	7%	15.6	153.0	5.1	100
Suburban											
CA	Woodland	$9,765	$5,671	58%	9,991	66%	28%	23.2	325.9	12.5	17
TX	Desoto	$7,948	$4,257	54%	9,404	66%	6%	16.4	227.1	8.3	13
FL	Flagler	$9,042	$11,729	38%	12,754	57%	2%	16.6	219.9	7.3	17
NY	Mount Vernon	$28,021	$3,473	42%	8,456	69%	8%	13.8	219.1	5.7	16
IL	Belvidere	$10,630	$4,737	45%	8,304	42%	11%	17.3	NA	14.3	12
OH	Hamilton City	$9,991	$5,934	59%	10,033	71%	5%	19.8	234.9	10.5	12
Rural											
CA	Klamath-Trinity	$15,378	$7,536	49%	1,042	85%	0.1%	19.1	140.4	5.4	9
TX	Roosevelt	$10,360	$6,234	57%	1,053	75%	3.5%	11.8	115.1	5.0	4
FL	Franklin	$10,251	$2,628	21%	1,285	99%	1.6%	15.7	116.8	7.2	5
NY	Salmon River Central	$25,876	$21,882	87%	1,555	73%	0.0%	11.4	207.3	3.7	4
IL	North Greene	$9,771	$6,352	60%	965	69%	0.0%	14.9	241.3	9.7	4
OH	Northwest Local	$10,477	$9,004	72%	1,556	78%	0.0%	15.8	194.5	7.0	3

Source: Common Core of Data; [1] Cost-adjusted

Defining the Cost of Adequacy

A number of studies have now been conducted in various states, some intended for academic audiences and some commissioned by courts, legislatures or special interest groups, all designed specifically to provide information about the costs of providing a high-quality K-12 education. As mentioned, the cost of education is the minimum amount of money that a school district must spend in order to achieve a given educational outcome. Thus, costs are specifically linked to outcomes, and *costs* can differ from *spending* if districts choose to spend more than the minimum necessary to obtain a stated objective. The cost of an *adequate education* is thus the minimum cost to achieve a targeted outcome that has been deemed "adequate" by analysts, policymakers or, in some cases, a state constitution. For the rest of this paper, general references to costs of education imply the costs to achieve an adequate outcome target, however that is defined by the state[1].

The total cost for a given district can be considered as the sum of two components: base cost and marginal costs. **Base cost** refers to the cost for a minimum-need district to achieve the targeted outcome; that is, a district with relatively low levels of poverty, few English Learners, etc. Base cost may vary across time or across states because of differences in targeted outcomes (e.g., if states raise their performance standards, the base cost will increase) or differences in regional price levels (e.g., southern states may have lower base costs than northeastern states), but in a given year and state, the base cost represents the minimum per-pupil spending necessary within that state.[2]

Marginal costs refer to the additional costs associated with specific student or district characteristics (such as poverty, English Learners and special education), above and beyond the base cost in a district with none of these special needs. For example, suppose that the marginal cost of a student in poverty is determined to be ten percent. If the base cost for a student with no special needs is $8,000 per pupil, then the cost for a poor student is $8,800, or ten percent more. Many state aid formulas try to account for marginal costs by assigning extra weight, and thus extra revenue, to students in certain categories. If the marginal cost of a student in poverty is determined to be ten percent, then the formula weight for each poor student could be set at 0.1 and this generates ten percent more revenue for that student, relative to the revenue allocated for a non-poor student.

[1] That is, 'cost' may vary across states, for reasons discussed below, and 'cost' does not imply adequacy has actually been achieved.

[2] A handful of states have funding systems based not on per-pupil amounts but on number of positions (teachers, staff, etc.). While the position count is, in turn, generally associated with pupil counts (e.g., an assumption of one teacher per X students), the funding formula does not always translate into per-pupil allocations in a straightforward way. For the purposes of this report, the focus is on states and systems that use per-pupil formulas.

BOX 2: School Funding Formulas

Every state has a slightly different system for determining the amount of money available to each district, as well as determining how much of that amount is funded by local versus state sources. To determine the total amount available, the vast majority of states use per-pupil formulas based on a) a foundation dollar amount per pupil and b) a count of pupils. In an adequacy framework, the foundation amount represents base costs. Marginal costs at the school or district level, such as grade levels served or salary costs, can be incorporated into the formula by adjusting the foundation amount (e.g., elementary districts have a different base/foundation amount than high school districts). Marginal costs at the student level, such as income or English Learners, are often incorporated by adjusting the count of pupils (i.e., pupil weights). The total amount for each district is then calculated by multiplying the adjusted per-pupil foundation amount by the adjusted pupil count. A separate formula may then be used to determine how payment of that amount will be split between the state and local districts (see Section III). Finally, some costs can also be addressed outside the formula (see BOX 3).

Methods to Estimate the Cost of Adequacy

If policymakers wish to design a school finance system that reflects the costs of achieving state performance standards, they will need estimates of both base and marginal costs. Researchers attempting to estimate these costs have used one of four methodological approaches:

- "Professional judgment" studies organize from one to several teams of educators within a state and ask them to design an educational program that will achieve the state's educational goals (for example, how many and what types of adults should be in each school, what technology or other materials are needed, etc.). Once team members have identified the required set of inputs, researchers determine how much money will be needed to fund those inputs; typically, the panels themselves are not required to consider how much their suggested program will cost.[3]
- The "evidence-based" approach is similar except that the source of expert opinion is not panels of professionals but research evidence on strategies that have been proven effective. The resulting model is then reviewed by panels of professionals.
- The "successful schools" approach starts by identifying a set of high- performing schools (with performance generally based on the state's educational goals). Estimates of the cost of providing a high-quality education are then based on the lowest level of per-pupil spending among this set of successful schools.
- Finally, the cost function, or "econometric", approach utilizes data on per-pupil school expenditures, student performance, and various characteristics of students and school districts, from all school districts within a state, to estimate an equation that best fits

[3] See Chambers, Levin and DeLancey (2007) and Levin et al (2018) for a description of a traditional professional judgment study conducted in California. Sonstelie (2007) describes a modification of the professional judgment approach, applied in California, in which surveys are used to reach a much larger sample of professionals and those professionals are given specific budgets.

the available data using regression techniques. The resulting cost function can then be used to predict the cost of any given level of performance by multiplying the cost function coefficients by the actual values of the student and district characteristics while setting the performance variables equal to the desired level.[4]

As noted by Aportela, Picus, Odden and Fermanich (2014), most recent adequacy studies have used multiple approaches and/or integrated components of other approaches; for example, a professional judgment study may use the successful schools approach to validate findings, or an evidence-based study may use panels to validate and tailor recommendations to the context in a specific state.

How Much Does an Adequate Education Cost?

Unfortunately, across the many existing adequacy studies, there is little consensus about the actual dollar amounts necessary to achieve targeted goals. For example, in a summary of studies specifically undertaken to provide policymakers with adequate cost estimates[5], Baker, Taylor and Vedlitz (2008) find that, "even after adjustments for inflation and regional cost differences, the estimates differ by more than 300 percent across states, and by as much as 66 percent within a single state. (p7)" Looking at studies completed more recently, Aportola et al (2014) suggest a similar amount of variation.

However, although it is extremely difficult to draw conclusions about "the" cost of an adequate education in a global sense, there is still much we can learn from the existing research. Regardless of methodology, there are certain variables that all analysts agree contribute to the cost of providing a given level of education. Although there may be variation in estimates of *how much* these factors impact costs, the literature can provide policymakers with an idea of the reasonable range. Further, in some cases, variation in estimates across studies can be traced to specific choices or aspects of the analysis in predictable ways and this can provide policymakers with useful information to consider. [6] The rest of this section is organized by the specific factors that are likely to raise or lower the cost of providing an adequate education.

What Affects the Base Cost?

Recall that *base cost* refers to the cost for a low-need district to achieve the targeted outcome. Theoretically, within a given state, the primary determinant of the base cost will be the performance goal. In practice, actual estimates of base cost may also depend on the method used to generate the estimates.

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[4] Each of these methods has benefits and drawbacks; see Duncombe, Lukemeyer and Yinger, 2004, and Baker, Taylor and Vedlitz, 2004, for a full discussion of the advantages and disadvantages of each of these methods.

[5] This excludes studies intended primarily for an academic audience or that estimate costs for only a subset of a state's districts or schools.

[6] On the other hand, some of the variation is a function of how costs are reported; for example, some studies provide an average cost, i.e., cost for a district with average characteristics, but not a base cost for a district with lowest needs. These differences simply complicate attempts to synthesize the results but do not really have any policy implications.

Performance goal. In order to estimate the cost for all students to achieve an adequate education, policymakers must first determine what is considered 'adequate performance'. An obvious reason for variation in adequacy estimates across states, or even within states over time, is differences in the goals and performance measures used. A state that considers an adequate education to be one where at least 60% of students can achieve a passing score on state tests will have lower costs than if the target is 80% of students passing; it could also have different costs than a state that has the same nominal target (60% passing) but has a completely different state test. For many years, the stated target in California was a score of 800 on the Academic Performance Index (API), based on the Standardized Testing and Reporting (STAR) results; with the move to the Common Core standards, the Smarter Balanced assessments and the more comprehensive approach of the new accountability system, the base cost of adequacy in California has almost certainly increased in recent years.

Methodology. Baker et al. (2008) show that, in general, the lowest base cost estimates come from studies using the cost function methodology, and then successful schools, while higher estimates tend to come out of professional judgment studies, with evidence-based studies generally somewhere in between. The authors are careful to point out that theirs may not be an apples-to-apples comparison because of differences in how the various studies report their results as well as differences in how analysts how defined adequacy (see *Performance goal* above) and other variations in the specific state contexts. However, they do highlight certain aspects of each method that may contribute to systematically lower/higher estimates. For example, it is perhaps not surprising that cost functions provide lower estimates than other methods because baseline costs in a cost function study truly represent *minimum* costs: per-pupil cost in a district with the lowest levels of student and district needs. In contrast, reported "baseline" costs in successful schools studies typically are the average expenditures in high-performing schools; while these schools may have lower levels of student needs than other schools, they may still be higher than the *minimum*. Estimates in professional judgment studies might be expected to be higher because they use more expansive definitions of performance; whereas cost function and successful schools studies require quantifiable measures of student performance, professional judgment panels may be given a description of performance that is more qualitative or comprehensive, which in turn may lead to higher cost estimates. Evidence-based studies also tend to use broader definitions of achievement but the models are generated from research findings and thus might be expected to result in less generous allocations than practitioners might desire.

It is worth noting that although several states have commissioned adequacy studies using one the four methods discussed here[7], their recommendations may or may not ultimately impact policy. Aportola et al (2014) list forty-one adequacy studies conducted since 2003 and consider the recommendations in seven as "implemented" (with an additional four considered "partially implemented"). In some cases, the way recommendations are translated into actual policy is not straightforward and can be difficult to discern. For example:

- In New York, the base foundation amount in 2016-17 was $6,334 ($6502 cost-adjusted), based on a recent cost analysis using the successful schools methodology. That analysis

[7] See Education Commission of the States (ECS) State Policy Database, https://b5.caspio.com/dp.asp?AppKey=b7f93000695b3d0d5abb4b68bd14&id=a0y70000000CboQAAS

is updated periodically; between updates, the foundation amount is adjusted annually with the Consumer Price Index.

- In Illinois, the Foundation level has been set at $6,119 ($5685 cost-adjusted) per pupil since FY2010. The state commissioned a successful schools study in 2001 that appears to provide (loosely) the rationale for that level. However, in many years, appropriations from the Legislature and Governor have not been sufficient to fully fund the General State Aid program and payments have been prorated accordingly.[8]
- In Texas, the state has been sued numerous times over the last two decades, with plaintiffs arguing that the system is inadequate, inequitable and imposes unconstitutional limits on districts' "meaningful discretion" to set their own local tax rates. In 2004, two different cost function studies were submitted to the court (on opposite sides of one of those suits). Most recently, after education spending cuts in 2011 led to another suit, the legislature increased funding in 2013 and the Texas Supreme Court declared the system constitutional in 2016. The base foundation amount is $5,140 ($4842 cost-adjusted) per pupil for FY2017, set by the Legislature as part of their general appropriations legislation; however, this amount seems unrelated to any of the adequacy studies conducted in that state.

California's base cost ($7,189 in 2016-17)[9] is higher than any of the states of similar size and demographics; however, as discussed below, California does not provide funds for as many additional costs (on top of the base) as other states and does not allocate as many funds outside the formula. Thus, the total revenue per pupil is still similar or lower than others.[10] Moreover, using a professional judgement approach, Levin et al (2018) suggest that the current base is too low to support adequacy in all districts.

[8] In 2017, Illinois adopted an entirely new funding formula, using an evidence-based model. However, all references to Illinois in this report describe the system in place previously.

[9] Although, technically, California's "base grant" is lowest for K-3, the relative weight given for K-3 pupils means that the 4-6 grade span is actually the lowest base; see section on grade level costs below.

[10] It is assumed that the reader is familiar with the basic framework of California's Local Control Funding Formula; for details, see Bruno (2018), and Koppich and Humphrey (2018).

Table 4. Comparison State Funding Formulas

	California	Texas	Florida	New York	Illinois	Ohio
Pupil count	ADA	ADA	ADA	ADM	ADA (best 3-month average)	ADM
Base Amount[1]	7189	4842	3444	6502	5685	4972
Compensatory / Low-income	Pupil weight (0.2) with additional weight (0.5) if targeted concentration (FRL, EL, foster youth) above 55%	Pupil weight for FRL (0.20)	NA	Part of Pupil Need Index = [0.65x(FRL + Census Poverty Count) + 0.5xEL + Sparsity]/Total enrollment, applied to base	Per-pupil grant ($355) if concentration < 15%; if concentration >15%, formula increasing w/ concentration ([294.25 + (2,700 (DCR)2)] X low-income pupils) (not equalized)	Per-pupil grant ($272) equalized by the poverty index (square of the ratio of the individual district's poverty percentage to the statewide poverty percentage)
English Learners	Pupil weight (0.2) with additional weight (0.5) if targeted concentration (income, EL, foster youth) above 55%	Pupil weight (0.1)	Pupil weight (0.194)	Part of Pupil Need Index = [0.65x(FRL + Census Poverty Count) + 0.5xEL + Sparsity] / Total enrollment, applied to base	Per-pupil grant based on grade level and level of service (5-10 classes per week or 10+)	Per-pupil grant based on 3 categories ($1515, 1126, 758) (wealth equalized)
Special education	Census-based; allocations based on history	Pupil weights based on disability (1.7 to 5.0)	Pupil weights based on service level (2.607, 4.376); supplement for small (<10K) districts with <3 ESE students	Pupil weights (1.41; 0.5 for students in 1st year after leaving special ed); additional aid for High Cost students	Grant for certified ($9000) & non-certified ($3500) personnel; reimbursement for excess costs of private tuition, special facilities	6 categories based on disability, $ amount per child (wealth equalized)
School / district size	Alternative funding for Necessary Small Schools (elementary schools < 97 ADA, high schools < 287 ADA)	Pupil weights for small districts (<1600), based on area (0.00025 if <300 sq miles; 0.00040); mid-size districts (<5000) (0.000025), weights decrease as enrollment approaches limit	Pupil weight for small (28-100) high schools more than 28 miles from nearest high school and accountability grade of C or better	Alternative funding for districts with fewer than 8 teachers	NA	NA
Grade levels	Pupil weights for K-3 (0.088), grades 7-8 (0.03), and 9-12 (0.22)	Per-pupil grant ($275) per high school student	Pupil weights for K-3 (0.103), 9-12 (0.001)	NA	Affects state aid but not costs: required tax rate differs by grade level	Per-pupil grant for K-3: $184 (wealth equalized) + $121 (not equalized)

Density	NA	Combined with small- and mid-size adjustment	Grant for districts with less than 24,000 FTE based on sparsity index (FTE within certain area) (wealth equalized)	Part of Pupil Need Index, Sparsity count = (25.0−Base Year Enrollment per Square Mile)/50.9	NA	NA
Geographic variation	NA	Cost of education index applied to base	District cost differential applied to base	Regional Cost Index (9 labor force regions) applied to base	NA	NA
Gifted and Talented	NA	Pupil weight (0.12), capped at 5% of district ADA	Pupil weight (0.16) for AP and IB students who score well on exams	NA	NA	Per-pupil grant ($5.05) + Grant for Coordinators ($37,370) per 3300 students + Grant for Specialists ($37,370) per 1100 tudents
Career/Tech	NA	Pupil weight (0.35)	Pupil weights based on extent of participation (0.001 - 0.5) + grant for teacher bonuses	Grant ($3900) per participating student (wealth equalized)	Varies, based on historical allocations	Per-pupil grant, 5 categories based on industry (wealth equalized)
Declining enrollment	Grant to ensure districts have a minimum level of state aid based on amounts received in 2012-13.	Grant to ensure districts funded at up to 98% of prior year ADA	Grant = (25 percent of decline in unweighted FTE) x (prior-year base funding)	Districts can use the higher of the base year adjusted pupil count or a two-year average	Pupil count is greater of the prior year best three months average daily attendance (B3MADA) or the last three years' average B3MADA	Districts guaranteed total foundation funding equal to foundation funding in FY15
Transportation	Varies, based on historical allocations	Allotment based on linear-density formula (average number of students traveling regular bus routes each day divided by approved route miles)	Per-pupil grant adjusted for sparsity, additional grant for disabled students	Partially reimbursed, based on wealth and sparsity (wealth equalized)		Districts receive better of per-mile or per-rider formula based on previous year usage (wealth equalized)
Misc	Pupil weight (0.2) for foster youth with additional weight (0.5) if targeted concentration (income, EL, foster youth) above 55%	Pupil weight (2.41) for pregnancy services	0.25-0.5 for early graduates			Wealth equalized components = multiplied by State Share Index which is based on the property wealth and the income of the residents of the district.

[1] Cost-adjusted

What Do We Know About Marginal Costs?

Marginal costs are the additional costs associated with specific student or district characteristics (such as students in poverty or being located in an area with high costs of living), above and beyond the base cost in a district with none of these special needs. For many marginal cost factors, the literature generates estimates relative to students or districts without those costs; for example, the marginal cost of a student in poverty might be reported as ten percent more than for a student who is not in poverty. In a state where poverty is funded through the finance formula, such an estimate can be translated directly to an add-on weight of 0.1 for each poor student which then generates ten percent more revenue for that student. States may also choose to allocate funding for marginal costs outside of the finance formula (see BOX 3). As will be clear in the discussion below, there is a lot of variation in which marginal cost factors states include in their funding systems, and how they structure those allocations; it is important to note that the research does not always support observed policy choices. It is also worth noting that for each of the factors discussed below, there are usually a multitude of issues to consider; this report attempts to briefly summarize research findings and what other states are doing but detailed discussion is beyond the scope here though where possible, the reader is referred to other sources for that discussion. Finally, although this section addresses individual cost factors in relative isolation, it is important to keep in mind that most districts receive funding for multiple factors so it may be very difficult to parse out the impact of any one factor in the resulting distribution of revenue overall (see Box 5).

BOX 3: Funding costs inside or outside the funding formula

When states provide districts with additional funding for differential costs, they can allocate that funding through the funding formula, such as by adjusting the foundation amount or using students weights, or they can provide it outside the formula via categorical programs. Categorical grants have a long history in California; prior to the adoption of the LCFF, we had over 60 different categorical programs, each with its own set of requirements and restrictions.

Providing funds for marginal cost factors via the funding formula may be a more stable, predictable funding flow, since the funding formula is usually prioritized in budget decisions. It also can be more transparent, since marginal costs are often factored in through add-on weights that provide a clear and consistent connection between the base amount and additional dollars. Formula funding is also equalized, meaning the state share is calculated in order to provide more aid to lower-wealth districts, and allocations are thus typically more progressive (see Section III for further discussion). However, one prominent concern about formula funding is the difficulty in ensuring that those additional dollars are spent on the factors that are generating the dollars. That is, formula funds are allocated to districts as a total sum and it is up to districts to decide how to use them. While this provides districts with flexibility to decide the best way to serve their students, it also allows more opportunity for the potential "mis-use" of those funds. This has been one of the concerns raised about the transition to LCFF: because funds for at-risk students are rolled into the formula allocation, it is

more difficult to follow the money and ensure it is being used on the students it is intended to help (see BOX 4).

The benefits and drawbacks of categorical funding largely mirror those of formula funding. On the plus side, it is easier to track funds specifically allocated through categorical programs and, therefore, to hold districts accountable for how the funds are spent. However, that same accountability can tie the hands of districts who might use those funds more effectively if given the local flexibility to do so. And while categorical *expenditures* (how money is spent) may be more transparent, categorical *allocations* are often less transparent than formula allocations, with dollar amounts that may appear arbitrary or unconnected to costs. Related to this, non-formula funding is typically not equalized and is often much less progressive, even regressive, than formula funding (i.e., wealthier districts may receive more funding than less wealthy districts) (Chingos and Blagg, 2017). Finally, the strings associated with categoricals typically create more paperwork and increase administrative workloads.

There is no research that examines whether allocating funds through the formula or through categoricals has any impact on student performance or other outcome variables. The choice has therefore largely been based on policy priorities about local control, equity, efficiency, and transparency. See Smith, Gasparian, Perry and Capinpin (2013) for a fuller discussion of categorical use across states. In the discussion throughout this section, it is worth keeping in mind the variation across states in the percentage of state funding allocated through and outside the formula; for example, in California, that percentage under the LCFF is now close to 90% but it is only 67% in New York.

Student socio-economic background (family income/poverty). Researchers have long acknowledged that student background affects academic performance and, therefore, costs. Imazeki (2007) synthesizes the estimates of the marginal cost for student poverty from 16 costing-out studies and finds that in add-on pupil weight terms, the estimates for poverty range from 0.30 to 1.22. Baker et al. (2008) find a similar range in their synthesis of 13 adequacy studies (some of which overlap with the studies in Imazeki, 2007). One explanation for the wide range is that estimates of marginal cost may depend on base costs; e.g., studies that establish a higher base cost typically report lower weights for marginal factors. It is worth noting that the Getting Down to Facts cost studies done specifically for California (Chambers et al. 2007, Sonstelie 2007, and Imazeki 2007) all establish pupil weights for poverty of at least 30%.

Almost all of the 37 states that provide additional funding for low-income students do so using a pupil weight, with weights ranging from 5% (Mississippi) to 97% (Maryland), with the majority falling in the mid-20's, with an average of about 29% (Verstegen, 2015; Parker and Griffith, 2016). The LCFF weight of 0.20 for low-income students therefore puts California on the lower end nationally but not dramatically so. In addition, as mentioned above, the base is higher in California, plus there is additional weight for concentration, discussed below. It should also be noted that several states have additional funding for compensatory education based on student performance, or a combination of income and student performance.

- Example: Texas adds 0.2 of the Adjusted Basic Allotment (ABA) for each student eligible for the national free- or reduced-price lunch program. The ABA is the Basic Allotment adjusted with a Cost-of-Education Index that, technically, also includes a component based on the district's percentage of low-income students; however, that Index was calculated in 1990 and has not been updated so it is unclear whether it reflects current costs associated with student poverty. The state also refers to the funds generated with the 0.2 weight as compensatory education and there are specific requirements detailing how districts must use the additional funds on students who are at risk of dropping out, determined by performance on the state tests. Districts are held accountable through a process that includes district and campus improvement plans, and the funds can be tracked in the accounting system (equivalent to the SACS system in California, which does not currently allow for tracking of weighted funds within LCFF allocations). In this sense, although the funds are *generated and allocated* through the formula, based on poverty counts, they are actually treated more like categorical funds because districts must meet regulatory requirements for their use (see BOX 4).[11]

BOX 4: How do we know where the dollars are going?

As mentioned in BOX 3, allocating funds through categorical programs have one big advantage over formula funding: it is generally easier to track exactly where the funds are going. For example, for decades, Californians have been able to see exactly how much money was spent on English Learners because districts were given specific pots of money that they could only spend on English Learners. That is, technically, we largely tracked *spending* on certain students by tracking the *revenue* allocated for those students, knowing that districts would be obligated through regulations to show that they were using the revenue for the intended purposes.

With the shift from categoricals to unrestricted LCFF funding, many advocates have raised concerns that although certain dollars are generated by and intended for certain students, there is no longer any way to 'see' whether districts are actually spending those dollars on those students. Given that so many other states use the same weighted-formula approach, it is reasonable to ask how they hold districts accountable for this. However, in many states, there is no specific policy for this: districts are simply held accountable for ensuring all students are achieving through the overall accountability system (and all states have accountability systems that report performance for high-risk sub-groups).

Texas is one state that allows tracking of some targeted formula funds through the accounting system; it should be possible to allow similar tracking through the SACS system in California. Another policy that may help address concerns about whether dollars are going to intended students is to track and report spending down to the school site. For example, Ohio and Texas report school-level expenditures per pupil as part of their annual reports. The federal

[11] The Texas approach also has the benefit of targeting low-performing students but not creating perverse incentives by connecting funds directly to that performance.

government began requiring states to collect and report school-level expenditure data in 2009; most recently, the *Every Student Succeeds Act (ESSA)* requires this information to be included on state and district report cards. There are several California districts that do this locally already. However, as discussed in Atchison et al. (2017), there are numerous challenges to creating and reporting these school-level measures, including how to attribute central and shared expenses, using actual versus average teacher salary data, and developing systems to collect and track the data.

English Learners. Imazeki (2007) also summarizes estimates of the marginal cost for English Learners; they range from 0.24 to 1.01. In addition, Jimenez-Castellanos and Topper (2012) summarize much of the adequacy cost research and find significant variation in estimates of the costs for ELs, equivalent to add-on weights of 0.39 to over 2.0.

Roughly 45 states provide extra support for English Learners but the size and form of that support are much more varied than for poverty; e.g., several states establish a dollar amount per EL pupil, rather than a percentage weight, while others establish a total state appropriation for ELs that is distributed proportionally to districts, and some states use a combination of approaches. However, pupil weights are the most common method of allocation (20 states), with those weights ranging from 10% in Texas to 99% in Maryland, with an average of about 38.7% (Verstegen, 2015).

- Example: New York adjusts the base foundation amount with a Pupil Needs Index that incorporates poverty (using a weighted combination of the number of free- and reduced-price lunch applicants and the Census count of persons age 5-17 from families with income below the poverty level) at 0.65, English Learner count at 0.5, and a sparsity factor for districts with enrollment per square mile less than 25.
- Example: Ohio allocates a set dollar amount per English Learner, with three categories of students. The Category 1 allocation is $1500 for students who have been enrolled in U.S. schools for 180 days or less; the Category 2 allocation is $1125 for students enrolled in U.S. schools for more than 180 days; and the Category 3 allocation is $750 for students who are mainstreamed and not included in the first two categories. [Note: the base foundation amount is $6010 in FY18 so these amounts are equivalent to weights of 0.25, 0.187 and 0.125]

Do multiple student characteristics increase costs? Having separate weights for poverty and for English Learners raises questions about how to handle students who fall into both categories. Gandara and Rumberger (2007) conclude that although English Learners may require *different* resources than low-income students, it is not clear that they need *more*. This is consistent with the conclusions of Rose, Sengupta, Sonstelie and Reinhard (2008) that while low-income students and EL students each require additional resources (relative to students who are neither), students who are both do not require additional resources on top of that. Their data also suggest that it is poverty more than language ability that drives the additional costs. This suggests that in a formula with weights for both poverty and ELs, students who are both should only receive the weight for poverty, as occurs under the current LCFF. However,

this does make California an outlier: among the other states that provide funding for both low-income students and English learners, most of them 'double-count' students who fall into both categories, although some states do cap the total possible weight (from all categories) assigned to a given student or, as in New Jersey, use a lower EL weight for students who are both low-income and EL, relative to students who are EL but not low-income.

Do higher concentrations of high-cost students increase costs? Most adequacy studies report a single weight for all poor or EL students. An alternative approach is for the weight to vary with the concentration of disadvantaged students in a school or district. This approach may be based on evidence that peer effects matter, i.e., that poor students in schools with low concentrations of poverty perform at higher levels than similar students in schools with high concentrations of poverty. The research is less clear on the threshold where concentration begins to matter (thus the point above which we would want to give additional funding), nor the magnitude of the effect, so it is unclear how much the weight should increase as concentration increases. California provides an additional weight of 0.5 per low-income or English Learner student in districts with concentrations above 55%. Very few other states have such adjustments, although there is a small trend toward doing so. One version of this is that some states only apply their formula allocations once the poverty or EL population crosses a certain threshold (Parker and Griffith, 2016).

- Example: Illinois provides a lump-sum amount ($355 in FY16) per low-income student in districts with concentrations below 15%; for districts with concentrations above 15%, the allocation follows the formula: [$294.25 + (2700 x concentration^2)]. [Note: the base foundation amount is $6119 so this is equivalent to a starting weight of 0.058 and increasing up to 0.49 for a district with 100% low-income students]

The additional concentration weight in California means that the *average* marginal weight for poverty across California districts is closer to 0.29, and almost 0.35 for districts above the 55% threshold, thus putting California nearer to, or even slightly above, the national average. On the other hand, California does not double-count students who fall into multiple high-need categories and other states have additional funding for other cost factors that may be correlated with poverty.

Student disabilities. The general adequacy literature is not particularly helpful for thinking about the cost of educating students with disabilities; as noted by Harr et al (2007), most studies either do not address the issue or the methods are ill-equipped to capture the diversity of needs within this population. Chaikind, Danielson and Brauen (1993) and Griffith (2015) both note that comparisons of costs for special education have changed little over the years, consistently reported as roughly twice that of regular education, on average. They also point out that costs can vary dramatically across different types of disabilities.

The lack of research evidence may help explain the diversity of state policies. While all states provide additional funding for special education, the amount and mechanisms for doing so vary widely. In many states, there are at least a few different categories of disabilities, with correspondingly different adjustments. Add-on pupil weights are the most common approach (20 states). Seven other states join California in using a Census-based approach, which provides

a fixed dollar amount per pupil or ADA; this method assumes a relatively even distribution of disabilities across localities but also avoids creating incentives for classification. Illinois and five other states base funding on instructional units (i.e., teachers) while eight states reimburse districts for some percentage of actual costs (Verstegen, 2015). In California, special education was largely unchanged when LCFF was adopted and is one of the few large categorical programs handled outside the LCFF. Although there are some advantages to the current system, allocations are based on historical patterns (and thus not transparent and often inequitable) and the program is generally in need of an overhaul; see Ehlers and Kuhn (2013), Hill et al. (2016), and Warren and Hill (2018) for detailed discussion.

- Example: Texas uses 10 different weights ranging from 1.1 to 5.0, depending on where students receive their education (i.e., mainstreamed, off-campus, residential care, etc.)

School/district size (enrollment) or Sparsity. The research on school size is mixed; Andrews, Duncombe and Yinger (2002) synthesize much of this research and conclude that the optimal size for elementary schools is 300-500 students, and 600-900 students for high schools. They also conclude that costs are higher in very small districts (fewer than 500 students). There is relatively little research on whether very large districts have similarly higher costs. Given that school funding is typically determined on a per-pupil basis, larger districts will always receive more *total* funding but it is unclear whether their *per-pupil* costs are actually any different than smaller districts.

31 other states include adjustments for school size, district size, or both; most commonly seen is additional funding for very small districts, though the definition of 'small' varies across states (Verstegen 2015). California's Necessary Small Schools allowance guarantees a specified amount for districts with elementary schools below 100 ADA or high schools below 286 ADA. The analysis in Levin et al (2018) suggests that this is inadequate, given that their finding that small rural districts are the most 'underfunded'.

- Example: Texas adjusts the Basic Allotment for any district with less than 1600 in average daily attendance, with a weight that decreases as actual ADA approaches 1600. There is a slightly higher weight (also decreasing with ADA) for districts greater than 300 square miles in geographic size. There is also an adjustment (decreasing with ADA) for mid-sized districts which are those with ADA between 1600 and 5000.

Grade levels/Structure. Many states provide different funding levels for districts serving different grade levels (elementary, middle or high school) or for different grade spans (elementary, high school or unified). Although secondary students have traditionally been considered more costly than elementary students, more states in recent years have also given additional weight to the earliest grades (i.e., kindergarten through third grade). Although there is some research on differences in costs across grade levels, there is no strong consensus for which grade levels need more resources than others. On the one hand, there is a growing research base supporting the idea that it is worthwhile to invest more in the early grades; for example, by reducing class size. However, much of the research on class size has focused solely on the lower grades so we do not know if additional resources for early grades are necessarily *more* cost-effective than additional resources for later grades. For high school grades, a case

could be made for higher weights because more teachers are needed to cover a multi-period structure, because material costs are higher, and because additional resources are needed to ensure students pass exit exams. But there is no work that compares the relative effectiveness of investment for different levels.

State policies are equally varied: some states give the highest weight to high school students (such as New York and Texas); some have higher weights for high school and middle grades (like New Jersey), some have higher weights for K-3 and high school (such as Florida), and one (Georgia) reduces funding as students age (i.e., kindergarten had highest weight and high school had smallest) (Griffith, 2005; Verstegen, 2015). California's formula is a bit unusual in that the 'official' base grant increases with grade span (K-3 < 4-6 < 7-8 < 9-12)[12] but there are also explicit weights of 0.104 for grades K-3 (intended to cover costs of smaller classes) and 0.026 for grades 9-12 (originally based on costs for career technical education). The implicit weights end up being 0.088 for K-3, 0.03 for 7-8, and 0.22 for 9-12, relative to the base in grades 4-6. Although somewhat dated, the summary of weights nationally provided in Griffith (2005) suggests that compared to states with higher weights for K-3 and/or high school, California's weight for K-3 is a little low but the weight for 9-12 is quite similar to others.

- Example: Texas does not use weights for grade-level differences but provides a flat grant of $275 per ADA in grades 9–12.
- Example: Florida uses weights of 0.103 for K-3 and 0.001 for 9-12.

Input costs (teacher labor costs). A number of states account for differences across districts in the cost of attracting and retaining teachers. The case for doing so comes from a large literature on teacher mobility and attrition that suggests that when salaries are not high enough to compensate for high costs of living or lack of area amenities, teacher turnover is higher and recruitment is more difficult (see Imazeki and Goe, 2009, for a summary). Although there is no existing research that directly examines whether states with adjustments for geographic variation in teacher costs have fewer problems with teacher attrition than states that do not have these adjustments, most costing out studies acknowledge these different salary needs in determining adequate levels of funding for different districts.

Teacher cost adjustments generally take one of three forms: cost of living adjustments (Colorado, Nevada), 'comparable wage cost' adjustments (Texas, Florida, New York), or adjustments for teacher characteristics (Arizona, Oregon, Utah, New Mexico). **Cost of living adjustments** are often based on housing costs, though they may also be calculated using a larger basket of goods. **'Comparable wage' adjustments** account for variation in both cost of living and area amenities; they are calculated by measuring the variation in non-teacher wages across localities. Adjustments for **teacher characteristics** try to compensate districts that have more experienced or educated teachers, as this leads to higher-than-average salary costs.

Economic theory favors the use of a comparable wage adjustment, rather than cost of living. Because workers value certain amenities, and seek to avoid 'disamenities', cost of living measures will tend to overestimate the wage differential needed to actually attract and retain

[12] The differences in official base grants reflect differences in average revenue limit rates by district type in 2013-14 when LCFF was adopted, adjusted each year for cost of living.

teachers in high-cost of living locations and underestimate it in low-cost of living locations. It should also be noted that research has found very little connection between teacher education or experience (beyond the first few years) and student outcomes. Thus, policies that compensate districts for having more experienced or educated teachers may create perverse incentives, for example, encouraging districts to hire teachers with Masters degrees but who are not necessarily contributing to higher student performance. California does not currently have any kind of adjustment for these geographically-based input costs[13], which could mean that districts in high-wage areas are underfunded. At the same time, the analysis in Levin et al (2018) suggests it is rural areas in California that are the most underfunded and these districts would receive the least benefit from a comparable wage adjustment. Other states that use comparable wage adjustments also tend to have funding streams specifically for sparsely populated districts which may help address this concern.

- Example: Florida adjusts the base foundation amount with a District Cost Differential which is a three-year average of the Florida Price Level Index (FLPI). The FPLI is calculated using wage and employment data for hundreds of occupations and captures the relative cost of hiring comparable workers across localities in a given year. Florida also has a grant for smaller districts based on a sparsity index (FTE within a designated area).

What Other Factors Affect Funding Allocations and State Education Spending?

The literature on education costs tends to focus on current spending at the district level. However, there are some components of school funding allocations that are not typically identified as separate cost factors in studies of adequacy costs. There are also expenditures that may not be attached to specific districts. These are worth briefly mentioning because they still affect overall spending for K-12 schools[14]. These include:

- *Gifted and Talented programs*: Adequacy, by definition, focuses on a minimum standard for student outcomes, so there is typically no discussion of gifted students as a "cost" factor; however, 33 states provide some amount of additional funding to districts for gifted education programs. That makes California now somewhat unusual, since GATE funding was absorbed into the LCFF base and is no longer recognized explicitly. Similar to other student populations, some states (11) allocate funding for gifted programs through the funding formula, with weights that range from less than 0.03 to 0.6, but categorical grants (sometimes competitive) are more common (18 states) (Verstegen 2015, Woods 2016). Texas provides funding equivalent to a weight of 0.12 but this is limited to no more than 5% of students. Ohio provides a small flat grant per-pupil in ADA plus funding for Gifted Coordinators and Specialists based on a set staff-pupil ratio.
- *Career and Technical Education (CTE):* CTE is one arena where the federal government provides targeted funding but many states also provide additional funding to schools. All of the research on the costs of adequacy focuses on academic achievement, usually

[13] Rose and Sengupta (2007) provide a detailed discussion of what such an adjustments might look like in California.

[14] There are also costs associated with facilities and capital investment; see Brunner and Vincent (2018) for a full discussion.

measured by tests of academic achievement or graduation and retention rates; CTE, and any associated outcomes, are generally not considered in that literature as generating separate costs. We therefore know little about what an "adequate" level of funding might be. In the 37 states that have specific funding for CTE, it is allocated through one of the three mechanisms: a) student-based formulas, where funds are based on the number of CTE students; b) unit-based formulas in which allocations are based on a particular set of inputs (staff or equipment) needed to deliver CTE services; or c) cost-based formulas that reimburse districts, fully or partially, for actual reported costs. Although some student-based formulas could also be integrated with an overall funding formula (such as Texas, which uses a weight of 0.35 for students receiving 'work-based learning instruction'), CTE is allocated as categorical funding in the majority of states (Parker and Woods, 2017). Although California has the Career Technical Education Incentive Grant Program which requires a district match, most CTE categorical programs were rolled in the LCFF base and the higher weight for grades 9-12 was intended to help cover CTE costs; however, CTE is not explicitly part of the formula (see LAO 2017 for a summary of issues regarding how California handles CTE).

- *Transportation:* In all but a handful of states, school transportation is supported by the state but usually outside the general funding formula. A few states provide a lump sum, based on the share of students in a district; much more common (24 states) are full or partial reimbursement formulas where states provide allocations based on actual expenditures. For example, New York reimburses between 6.5 and 90% of approved expenses. 8 states use a density formula, such as in Texas where the allocation is based on the number of students traveling on regular routes each day, divided by the approved route miles. Some states also use some combination of these methods and/or have separate transportation funding policies for special education students. California's Home-to-School Transportation categorical program was kept separate from the LCFF but the allocations are based on 2012-13 allocations (which themselves were based on historical allocations and unrelated to costs); see Kapphahn 2014 for a full discussion of the relevant issues.
- *Teacher pensions:* Another important component of current expenditures that has a growing role in district costs is teacher pensions. The employer contribution is part of teacher compensation and thus can be incorporated into adequacy studies as part of base costs or teacher salaries. However, the unfunded liability of many pension funds can pose a significant cost that varies substantially across states and is not easily addressed. See Koedel and Gassmann (2018) for a full discussion of rising pension costs in California.
- *Declining enrollment / hold-harmless / transitional funding:* When funding is tied to the number of pupils, rapid declines in enrollment can create challenges for districts since many fixed costs cannot adjust as quickly as allocations might. Similarly, changes in overall funding policy can mean abrupt changes in district allocations, if not phased in. To ease these transitions, many states use a rolling average for enrollment counts, or the greater of the current or recent years. Most states also have policies that limit how much a district's total allocation can fall in a given year, as well as having hold-harmless provisions when funding policies change. Thus, in any given year, the allocation to a given district may still look quite different from the amount generated by the specified formula. For example, in Florida, districts with declining enrollment receive a supplement equal to 25% of the

decline multiplied by the prior-year base funding while Texas guarantees that districts will be funded at up to 98% of the previous year's ADA.

- *State- and county-level offices:* Unfortunately, there are no comprehensive sources on expenditures for educational units above districts and no research on what "adequate" funding might be for such units. According to the Legislative Analyst's Office (2018), the CDE has an annual budget of around $270 million (quite similar to the $280 million budget of the Texas Education Agency). Other state offices include the State Board of Education (budget of $2.6 million), the Commission on Teacher Credentialing ($25 million), and the Office of Public School Construction ($9 million from bond financing). The 58 county offices of education are also funded through the LCFF; in 2016-17 they received approximately $1 billion. Where data were available, Table 4 shows the budgets for state or county units in similar states. Of the comparison states highlighted in this report, New York's 37 Boards of Cooperative Education Services (BOCES) are most similar to California's county offices of education, providing similar services and receiving $1.08 billion in 2016-17.

Who Pays for Adequacy?

The previous section focused primarily on the factors that influence costs and, to the extent available, the magnitude of that influence. There are also important considerations for policymakers about how to raise revenue to ensure that each district has sufficient resources to meet their specific costs. In particular, discussions of school finance that apply an adequacy lens tend to focus on the *amount* of money each district receives but politically, any attempt to argue that funding for California schools is not currently 'adequate' will surely be met with questions about where additional revenue should come from. As can be seen in Table 5, the share of revenue from federal, state and local sources varies across states and in many states, can vary substantially across districts. Thus, in this section, I discuss the structure of state equalization aid formulas, and local revenue options, both of which can impact a district's mix of state and local revenue and their flexibility to pursue adequacy goals. As in the previous section, examples from the systems in five similar states (Texas, New York, Florida, Illinois and Ohio) are discussed in detail to highlight the various policy options.

Caveat #1: California has unique restrictions on local capacity. In California, discussions of school funding tend to make little or no distinction between funding provided by the state and funding raised from local property taxes. This may be because in practice, the distinction is basically irrelevant for districts: apportionments from the state include monies from both the state and local sources, and the restrictions of Prop 13 mean that California districts have virtually no discretion to impact their local property tax revenues (at least the revenues that are used in funding the LCFF). The limited options districts do have for raising money locally (such as parcel taxes and private contributions) represent a tiny fraction of total revenues, dwarfed by the centralized funding system. Thus, the state funding systems used in other states, and the associated options for raising local revenue for schools, are largely currently impossible in California. Nonetheless, any discussion of funding schools at adequate levels should consider all the options for raising the revenue to do so. Such discussion can highlight considerations for any future discussions of changes to Prop 13 or other revenue restrictions

Caveat #2: Any changes to school revenues in California must meet constitutional obligations to preserve equity. It is important to remember that the primary reason states have adopted complicated formulas for calculating the state share of education spending is to achieve greater equity in resources across districts, often as mandated by the courts. Decades ago, state funding to districts was almost entirely distributed as flat grants, one set dollar amount per pupil to all districts, regardless of local needs and costs. This naturally meant that districts with greater ability to raise revenue locally were able to provide more for their students. Over time, states reformed their systems to try to equalize student experiences across districts, with the state paying a correspondingly larger share of educational expenditures overall. Any expansion of local ability to raise revenue must be accompanied by careful consideration of mechanisms to ensure that such local discretion does not lead to substantial inequities across districts.

Determining the State and Local Contributions

In almost every state, base state aid[15] is allocated using either a *Foundation* formula or a *Guaranteed Tax Base* formula (or a mix of the two).[16,17] Foundation formulas ensure that each district receives some minimum foundation amount of per-pupil revenue. The state also assumes (or requires) that each district levies a minimum tax rate; if local revenue raised at that rate is less than the foundation amount, then state aid makes up the difference[18]. Thus, state aid is defined as:

> State aid per pupil = Foundation amount per pupil – (required tax rate*assessed property wealth per pupil)

California essentially has a foundation system in which the LCFF determines the foundation amount, and the 'required tax rate' is determined by Prop 13 and the state formulas for allocation of property tax revenue.[19]

With a Foundation approach, any increase in the tax rate above the required rate will raise more revenue in higher-wealth districts, which may raise equity concerns. Guaranteed Tax Base (GTB) systems can address this: for any chosen tax rate, the state guarantees that each district receives the revenue it would raise if it had the guaranteed tax base. If the actual tax base is below the guarantee, state aid makes up the difference. Thus, state aid is defined as:

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[15] For a description of the general construction of state aid formulas, see Picus, Goertz and Odden (2015).

[16] While it is unlikely that California will move to a GTB system anytime in the foreseeable future, discussion is included here so policymakers can understand how other states' systems differ from our own.

[17] To be clear: the formulas discussed in the previous section were about determining how much *total* money a district would need to have available to meet targeted outcomes; once that cost is determined, the formulas in this section are about how much of that cost is *funded* by the state versus local sources.

[18] The foundation amount here may be different for every district, if it has been adjusted for costs as discussed in Section II.

[19] Note that although Prop 13 sets the *total* tax rate on property across California at one percent, the *effective* rate for school districts is less than that because revenue is shared with other local governments. Due to the complexities of the property tax revenue allocation formula, the effective tax rates for districts ranged from 0.1 to 0.6 in 2001 (Sonstelie, 2001).

State aid per pupil = Tax rate*(guaranteed wealth per pupil- actual property wealth per pupil)

In this system, low-wealth districts are given proportionately more state aid so that any two districts that levy the same property tax rate are guaranteed the same revenue, regardless of their actual tax base.[20] By allowing districts to set their own tax rates, a GTB system gives districts more control over their level of funding. However, this flexibility can result in larger disparities in per-pupil spending across districts, if districts choose to tax themselves at very different rates (though setting the wealth guarantee high can mitigate this). So pure GTB formulas tend to give local districts more discretion over their funding levels but may be less equalizing overall, while pure foundation formulas are more restrictive but more equalizing. To get the best of both worlds, states that use GTB formulas typically use them in combination with a foundation (Odden and Picus, 2014).

- Example: Texas has a multi-tiered system where the first tier is a foundation, setting a minimum floor for spending. The second tier is a GTB for districts with property wealth less than a set amount. If districts choose to levy tax rates higher than the rate required for the foundation part of the formula (Tier I), the additional revenue is equalized with a GTB formula (Tier II). There is a maximum tax rate districts are allowed to levy, and districts with property wealth above a state-set cutoff are subject to 'recapture', meaning any revenue above the limit must be shared with other districts. Thus, the Texas system sets both a floor (through the foundation) and a ceiling (through the tax rate cap) on general revenues but districts do have some discretion to choose their funding level in between.

[20] Guaranteed tax base programs are also called power-equalizing, wealth-equalizing, percentage-equalizing or guaranteed yield formulas. Although there may be slight differences in the way the formula is calculated, these are algebraically the same.

Table 5. Comparison State Aid Formulas

	California	Texas	Florida	New York	Illinois	Ohio
Type of State Aid Formula	Foundation	Tier I: Foundation Tier II: GTB	Foundation	Foundation	Foundation	Foundation
Measure of fiscal capacity	Property wealth	Property wealth	Property wealth	Property wealth, income	Property wealth	Property wealth, income
Local revenue sources	Property tax, parcel tax, sales tax (1 county)	Property tax	Property tax	Property tax	Property tax	Property tax, income tax
Required Property Tax Rate	1%	1%	Varies, 4.6% avg	1.57%	3.00% Unit 2.30% Elementary 1.05% High School	2%
% Revenue from Local Sources	32.7	49.5	47.1	56.8	66.9	47.7
% Revenue from State Sources	57.7	41.1	40.5	38.0	24.8	44.5
% Revenue from Federal Sources	9.7	9.4	12.4	5.2	8.3	7.8
Formula funding as share of all state revenue	90.0%	95.1%	71.7%	67.2%	66.2%	73.1%
Budget for State Education Department (millions)	270.0	280.0	NA	NA	75.4	33.4
Budget for Regional Units (millions)	1000.0	567.0	NA	1,200	NA	220.0

How can the aid formula ensure adequacy? One of the main advantages of a foundation system is that it sets a minimum floor for district spending; as long as districts levy at least the required tax rate, they will always have at least the foundation amount.[21] This is clearly compatible with an adequacy approach to school finance since it is fairly straightforward to ask if the foundation amount is 'adequate'. GTB systems are more complicated: states can ensure a minimum per-pupil amount by requiring a minimum tax rate and setting the guaranteed tax base to raise the desired revenue, but historically, states using GTB systems have not functioned in this way. This is perhaps one reason why the majority of states have moved to foundation systems (or combination systems).

How to measure fiscal capacity? Traditional formulas for state aid use district property wealth as the primary measure of district fiscal capacity. This follows from the long history of local districts funding schools through property taxes. However, a handful of states now combine property values with other measures, the most common of which is income[22] (Griffith 2013). This can help address situations where property values are relatively high but household incomes are not (for example, in resort locations or areas where property values are increasing much faster than incomes). By incorporating income into the formula for computing the local share, more state aid may be directed to districts with lower-income households than otherwise.[23]

- Example: In New York, the district share of education spending (called the Expected Minimum Local Contribution) is based on a measure of fiscal capacity that compares district income and property value per pupil to the state averages of those variables. These two components are weighted equally and then there is a non-linear relationship between the measure of district fiscal capacity and the state aid share (i.e., as fiscal capacity increases above certain thresholds, the state aid share falls and at a faster rate).

Local Revenue Options within the State Aid Formula

Within standard aid formulas, there are two ways that districts may raise more revenue than the foundation or guaranteed amount. One is if property values are high enough that local revenue exceeds the foundation or guaranteed amount when the required tax rate is levied. In California, if a district's local property tax revenue exceeds their LCFF allocation, they are allowed to keep the excess without limitation (these are the 'Basic Aid' districts); thus, in these districts, general spending can be higher than the LCFF allocation. In some states, districts can keep local revenues that exceed the foundation but only up to a certain limit (i.e., there is a cap on total spending). As noted above, Texas not only sets a limit but actually takes away revenue above the limit and re-distributes it to other districts.

[21] In some states, such as Illinois, the required tax rate is not mandated but state aid is still allocated as if each district levies the required rate. Thus, technically, districts may actually raise less than the expected local revenue but that is purely by the choice of the local district.

[22] Also, Tennessee and Virginia use sales tax base.

[23] It is important here to distinguish between *state aid* and *total funding*; the inclusion of income as a measure of fiscal capacity may impact the former with no impact at all on the latter.

The other way that districts might raise revenue above the guaranteed amount is by levying a tax rate higher than the minimum required rate. In California, as long as Proposition 13 is in effect, districts cannot choose a higher tax rate; thus, for all but the highest property wealth districts, the foundation amount is a de facto ceiling. In several states, districts may elect (either by school boards or voter referendum) to levy a tax rate greater than the rate required in the formula but there may be caps on how high the levy can be.

Local Revenue Options Outside the Formula

Because other states generally have more flexibility to raise revenue via property taxes, there are few studies of alternative sources of revenue. In California, local districts have three options available to them: sales taxes, parcel taxes, or private contributions. One additional option, a local income tax, is used in a small number of other states.

- *Sales taxes* require a two-thirds vote and must be passed at the county level; it is perhaps not surprising that San Francisco (the only place where city, county and district boundaries are one and the same) is the only locality to have passed such a tax for schools (Mariposa and San Jose are the only other counties to even try) (Perry and Edwards, 2009).
- Unique to California, *parcel taxes* also require a two-thirds vote (though there have been recent attempts to reduce that threshold to 55%[24]) and about ten percent of districts have passed one (Chavez and Freedberg, 2013). Parcel taxes assess a flat fee on every parcel of property, regardless of value (which would be prohibited under Prop 13), though one variation levies the fee based on square footage. Districts that are able to pass them tend to be smaller, more affluent and more homogeneous, and are often seen as expanding inequities, although Chavez and Freedberg (2013) points out that parcel taxes generally represent a fairly small share of total spending in the districts that have them (an average of 6%).
- *Private contributions* also tend to be viewed as contributing to inequities across schools and districts, since wealthier communities raise more, the amount raised through private donations can sometimes be substantial, and the amount has increased steadily over the last two decades. However, it still amounts to a very small share (less than 1%) of overall spending (Weston et al., 2015). It is worth noting that Weston et al. (2015) calculates that the most affluent schools and districts would have to raise more than 20 times what they are currently receiving in order to offset the additional revenue that poorer districts receive through the LCFF formula.
- One additional option would be to allow *local income taxes*, as they do in Maryland, Iowa, Kentucky, Ohio, and Pennsylvania. It is likely that such a tax would face many of the same hurdles in California as local sales taxes, with the added concerns of higher volatility and open questions about equity and administrative issues. Such a local tax could also impact residential location decisions and property values.

[24] The recent court ruling in *California Cannabis Coalition v. City of Upland* also raises the possibility that parcel tax initiatives may require only a majority if proposed by citizens groups.

- Example: In Ohio school districts may vote to adopt a local income tax; as of January 2018, 190 districts had them, with rates ranging from 0.25 percent to 2 percent (Ohio Department of Taxation)

Clearly, any policies that make it easier for schools and districts to raise money through the above mechanisms (such as lowering vote thresholds) would allow for potentially more revenue for schools, as would changes to Prop 13. A detailed discussion of these options is beyond the scope of this report but see Loeb 2001 and Perry and Edwards (2009) for additional analysis.

Other State Funding Issues - Proposition 98

In addition to Proposition 13, California has another ballot initiative contributing to a unique policy environment that complicates comparisons with other states, and that is Proposition 98. Prop 98 sets a minimum guarantee for school spending but the nature of that guarantee depends on a complex set of circumstances; in some years (under Test 1), it requires a minimum share of General Fund revenue flow to schools and in other years (under Test 2 or 3), the binding constraint is the total amount of money, from both General Fund and local property taxes, spent in the previous year. This greatly complicates considerations of how changes to local revenue might impact the total amount of money actually available to schools. For example, under Test 2 or 3, increases in property tax values may raise the amount of local revenue available without actually increasing funding for education; instead, the additional local revenue simply frees up General Fund revenue for other state budget items (Kaplan, 2016). Theoretically, under Test 1, increases in local revenue should increase overall education funding because General Fund education spending would have to meet the 40% requirement; however, the complexity of Prop 98 formulas makes it very difficult to forecast the actual impact of policy changes that may impact local revenues. See Kapphahn and Kuhn (2017) for a detailed discussion of how local revenue interacts with Prop 98 as well as several other Prop 98 issues.

BOX 5: The whole often looks different than the sum of the parts

Section II focused on the individual factors that can influence the cost of providing an adequate education, and the ways that a state funding formula could try to account for those costs. Section III focused on how the actual revenue available to districts is split between state and local sources. It is important to keep in mind that the total revenue received by a given district will reflect the different combinations of individual costs factors included in the aid formula, as well as available local revenue (usually determined by property wealth) and the equalization formula. For example, Table 3 shows the revenue and characteristics of representative urban, suburban and rural districts in each of the comparison states, revealing clear differences in the overall funding levels and state aid, as well as how resources are spent.

Separate analysis of student poverty and total district expenditures (which incorporate the impact of the state funding formula, the equalization aid formula and local revenue outside the formulas) shows that this relationship can look quite different from what is allocated through just the weights discussed in Section II. Specifically, a linear regression of poverty on district current expenditures per pupil predicts that in California, a district with 100% students in poverty spent 4% more per pupil in 2013-14 than a district with zero students in poverty; the difference was 7% in Florida and 9% in Texas. However, in New York, Ohio and Illinois, there was a *negative* relationship between spending and student poverty. The most recent data available for this cross-state comparison analysis is from 2013-14 Common Core of Data, before the implementation of LCFF. Using more recent data just for California suggests that the difference has risen to 30%, implying that school spending is significantly more progressive under LCFF.

Conclusion

Prior to the adoption of the Local Control Funding Formula, California had one of the most irrational, least transparent funding systems in the country. There is no question that with LCFF, we have gone to the other extreme and we now have, in many respects, one of the *least* complicated school funding structures in the country. But although the majority of the monies allocated to districts can now be largely explained in a straightforward way, it is still an open question whether the *amount* being allocated is "adequate".

This report does not attempt to answer that question but has attempted to show how California's system fits within the larger context of both the research literature measuring the costs of adequacy, and school finance policies nationally. With respect to specific components of the LCFF and other programs that determine the total allocations to districts:

- With the move to the Common Core standards, the Smarter Balanced assessments and the more comprehensive approach of the new accountability system, the base cost of adequacy in California has almost certainly increased in recent years so the increased base allocation relative to a few years ago is presumably getting us closer to 'adequate'; whether it actually *is* adequate is unclear/unknown. Although California's base allocation is higher than any of the states of similar size, we do not provide funds for as

many additional costs as other states so, on average, California schools, on average, receive similar or lower total funding per-pupil than in comparable states.

- The LCFF weight of 0.20 for low-income students or English Learners puts California on the lower end nationally but is within the range found in the research; moreover, between the 0.20 base weight and the additional 0.5 weight in districts above the 55% threshold, the weight experienced by the average district in California is quite close to the national average. On the other hand, most other states allow 'double counting' for students who are both low-income and English Learners (although there is no research directly supporting that practice), and other states have additional funding for other cost factors that may be correlated with poverty.
- Special education was largely unchanged when LCFF was adopted and is one of the few large categorical programs handled outside the LCFF. Although there are some advantages to the current system, allocations are based on historical patterns (and thus not transparent and often inequitable) and the program is generally in need of an overhaul.
- The research is not clear whether or how much more students need when in different grade levels; arguments for higher costs at both younger grades and in high school could be plausibly supported, though there is little evidence on the magnitude of such costs nor the relative impact of investing in some grades more than others. Compared to states with higher weights for K-3 and/or high school, California's weight for K-3 is a little low but the weight for 9-12 is quite similar to others.
- California currently has no adjustment in the formula for differential labor costs, suggesting that districts in high-wage areas may be underfunded. At least three of the states most comparable to California in size (TX, NY and FL) all provide additional funding for districts with higher teacher labor costs, using adjustments based on wages for comparable workers. To address equity considerations, such an adjustment should also be accompanied by a larger adjustment for small district size or sparsity.
- Similar to special education, California's Home-to-School Transportation categorical program was kept separate from the LCFF but the allocations are based on historical allocations unrelated to costs.
- Other states typically have separate funding streams for gifted and talented programs and career technical education, so California's decision to include these in the LCFF base makes us an outlier; however, there is little research to suggest any one particular funding approach nor a particular allocation level.
- Allocating funding through a formula like the LCFF has clear advantages in terms of stability, transparency, flexibility and equity, but allocating funds through categorical programs may have the benefit of stricter regulatory accountability. Policies that may help address concerns about whether dollars are going to intended students, without returning to categorical regulations, include tracking and reporting spending down to the school site, or revising the Standardized Accounting System to allow tracking of targeted expenditures explicitly.

Given this context, any argument that funding for California schools is not currently 'adequate' should start with a direct investigation of adequacy and costs here, such as begun with Levin (2018). In addition, any such argument should expect to be met with questions

about where additional revenue should come from. While the Local Control Funding Formula determines how much money is allocated to each district, not every dollar comes from the state's General Fund. This report has also provided an overview of the mechanisms used in other states to determine how education funding is split between state coffers and local sources of revenue, and possible implications for California:

- While local property taxes still are the primary source of education funding in most states, state constitutional requirements to ensure equitable resources for all students (enforced by courts) have led to increases in the amount of state aid nationally. Such aid is determined through aid formulas that work to ensure the funding available to any district is unrelated to local wealth.
- California has a foundation funding system, which is compatible with an adequacy framework because the LCFF sets a minimum floor for district revenue, and meets equity requirements since the LCFF allocation has no connection to district wealth. The share of the LCFF allocation funded through local property taxes is largely driven by Proposition 13 which determines the statewide property tax rate and restricts changes in property values. The distribution of state aid across districts is thus a function of both the LCFF formula and local property wealth.
- In other states, local districts can raise additional revenue by electing to increase local property tax rates (though there may be caps on the size of increases). Because of Proposition 13, this is not currently possible in California.
- One option California districts do have, that no other states use, is the parcel tax. California districts can also raise revenue through sales taxes and private donations. All of these options raise equity concerns.
- An additional option, used in a few other states, is a local income tax; however, income is a more volatile base and also may raise equity concerns.
- *Any* expansion of local ability to raise revenue must be accompanied by careful consideration of mechanisms to ensure that such local discretion does not lead to substantial inequities. In California, discussions of such options also must consider how they would interact with Proposition 98.

There are clearly still aspects of California's school finance system that need attention, particularly those programs that fall outside the LCFF. For those who would argue that school funding levels are inadequate, there are also clearly challenges to raising that additional revenue, particularly given the unique restrictions of California's policy environment. While it is important that we continue to strive toward a more equitable, adequate and effective system, we should do so carefully, by building on the lessons that can be drawn from the research and from the experience of other states.

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