Funding Landscape for Preschool with a Highly Qualified Workforce

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I. Introduction

The purpose of this paper is to consider the potential implications of funding state pre-K programs through some version of the school funding formulas used in K-12 with particular attention to how this might facilitate more adequate compensation for a highly qualified workforce. State pre-K often receives less funding per child, even prorated for length of day, than does K-12 though it is difficult to assess this precisely because of a lack of good information about all funding sources for state pre-K (Barnett, Friedman-Krauss, Gomez, Horowitz, Weisenfeld, & Squires, 2016). This funding constraint is likely one reason that 20 states do not require all state pre-K teachers to have a four-year-college degree and 8 do not require specialized training in early childhood as called for by a recent report from the Institute of Medicine and National Research Council (Barnett, et al., 2016; Allen & Kelly, 2015). State pre-K teacher salaries tend to be substantially less than those of their elementary school counterparts where data are available for comparison (Barnett et al., 2016).

The main finding of our report is that use of the school funding formula is associated with greater adequacy and stability in funding, which argues for its wider use in pre-K financing. Higher adequacy in general is likely to translate into higher teacher salaries as most states have policies setting reasonable limits on class size and ratio and the workforce accounts for most of the cost (Barnett et al., 2016). We also have compiled a list of 10 state pre-K programs that already are funded as part of the state K-12 funding system, and these programs tend to have higher levels of adequacy and effort than do other programs. However, it is also the case that state school funding formulas used to calculate funding for their respective public K-12 systems vary meaningfully, resulting in a wide distribution of results regarding adequacy, equity, and effort in funding. These factors must be kept in mind when advocating for using school financing formulas to fund pre-K.

In this paper, we begin with background descriptions of the pre-K and K-12 funding landscapes, providing ways to compare and contrast their delivery. We then present data on measures of adequacy, equity, and effort in state K-12 funding systems in order to provide a backdrop on how utilization of school funding formulas would impact pre-K. Then we give an overview of state pre-K programs, with a focus on adequacy of current funding mechanisms. We next focus on some exemplars – states that are using school funding formulas for pre-K and what that means in terms of adequacy and effort. Lastly, we apply estimates of K-12 spending per pupil to pre-k in order to answer the questions of what funding changed would result if each state applied its own K-12 formula to state pre-K.

II. Background on Pre-K and K-12 Funding in the US

Preschool education is provided by a complex patchwork of public and private organizations funded by fee-paying parents and all three levels (federal, state, local) of government. Within this preschool patchwork, the private sector and the federal government play much larger roles in provision and funding than is the case for K-12 education. Somewhat more than half of three –and four-year olds attend a preschool program, and 59 percent of those attend a public program (U.S. Department of Commerce, Bureau of the Census, 2015). Within this age group, overall participation rates and access to public programs are substantially higher at age four than age three (Barnett et al, 2016). Public programs include the federally funded Head Start program, state-funded pre-K, preschool special education, and local public school programs that are not part of a state-funded pre-K program. Head Start is somewhat unusual in being a

direct federal to local program that bypasses state government. Public funds also support participation in private programs through child care subsidies that are expenditure based (e.g., Child Care and Development Funds, Child and Adult Care Food Program) and tax based (e.g., tax credits and deductions including the federal Child and Dependent Care Tax Credit Tax Credit). By our estimates (see Table 1) just over half of the $23.9 billion in public funds for early care and education come from the federal government, with most of the rest coming from states, and as little as 13 percent from local government. The estimated local percentage is the most uncertain of all these figures as local school spending is not systematically reported by grade level, and most state pre-K programs do not require a local financial contribution. The biggest unknown in our estimates is how much is spent on preschool special education, as this could be much higher than we have estimated here, and we do not know how much is paid by local school districts for preschool special education. In addition to the unknown costs of preschool special education, the local contribution to preschool programs more generally is largely unreported to states and difficult to estimate. Local public school support for preschool education includes not only funding for children served entirely at local discretion and not reported as part of state pre-K, but also the value of administration and support services and facilities that serve children in state funded pre-K, which are not reported as part of pre-K funding.

Government roles in operating and funding K-12 differ dramatically from the preschool patchwork, as public schools enroll 90 percent of students at the K-12 level. The public schools receive less than 10 percent of their funding from the federal government. State and local governments contribute about 45 percent each. Local revenue comes overwhelmingly from property taxes (80%). State funding primarily comes from general revenue consisting of individual and corporate income taxes, sales taxes, fees, property taxes, and other sources. Sources of state revenue vary substantially by state. An exploration of how pre-K reliance on a school funding formula might alter the revenue sources for pre-K beyond expanding access to local revenue is beyond the scope of this paper. Differences in revenue sources can have impacts on the equity (fairness) of funding. However, identifying the incidence of various taxes supporting education at the state and local levels is more complex than simply identifying the intended payer (e.g., Fullerton & Metcalf, 2002; Oates & Fischel, 2016).

Funding shares by level of government vary substantially among the states. The federal share ranges from less than five percent in Connecticut and New Jersey to more than 15 percent in Louisiana, Mississippi, and South Dakota, reflecting the federal government's emphasis on equalizing spending for children in poverty (U.S. Department of Education, 2016). In a few states the local share is less than 20 percent, and it rises to as much as 60 percent (D.C. and Hawaii are exceptions as each has just one district). We provide state-by- state information on the percentage of public K-12 revenue from each level of government later in the report (Table 3) when we discuss K-12 funding in more detail.

III. Pre-K Funding for State Programs – the Current Landscape

Turning our focus to state pre-k programs, we summarize the basic information about how programs are funded and the associated revenue sources in Table 2. Most state pre-K programs are funded through discretionary grants with expenditures primarily determined by annual/biennial appropriations from general revenue (82.5%). That is to say, total state level funding and state funding per child for pre-K typically are set annually or biennially through the state legislature's regular budgetary process. State pre-K funding levels have rarely been set based on formal technical analyses that determine the cost of providing a well-defined high

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quality program to the eligible population (adjusted for a realistic take-up rate). In most states funding per child is "set" implicitly through the state's determination of a total appropriation together with annual enrollment rather than based on an explicit analysis of the cost per child to provide a specific program or to meet the needs of specific children. If enrollments rise or fall, this can lead to changes in funding per child even with stable total funding. To prevent this, states may cap enrollment explicitly or a fixed level of funding per student can be set so that enrollment goes up or down depending on funding for the program (e.g., this has occurred in New York's Universal Pre-K Program). When there is no explicit, technical approach to determining the amount needed to adequate pay for pre-K for each child or to determine the eligible population, it is difficult to see how elected officials can make informed decisions about the funding required to adequately serve the intended population.

There are exceptions to the implicit, primarily political, process for determining state (and local) funding levels for pre-K, in lieu of an explicit process for determining a per child funding level adequate to meet specific goals for preschool education of specific children. One example is provided by New Jersey's "Abbott" pre-K program, which arose from litigation and court order. In this program, funding per child initially was based on the actual costs of providing a program defined by court order and state regulation in each of 31 communities and which the state was required to fund for all children in the communities who sought enrollment (the only eligibility requirement is age). After nearly a decade, the state calculated system-wide average funding amounts for three types of programs based on historical cost data (as explained later in the paper). The Abbott program is entirely state funded with no local share. Another example is shown by several other states that tie their state funded pre-K programs' standards to federal Head Start standards (e.g., Delaware, Minnesota, Oregon, Pennsylvania, Washington, Wisconsin); either implicitly or explicitly, federal Head Start spending per child in those states seems to influence the determination of state funding per child for these programs. Although none of these states fund "state Head Start" at a level equal to federal funding per child, the funding per child is above the national average for all of these states.

State pre-K programs are heavily reliant on state general revenues (exclusive of federal transfers for public programs including Medicaid) that primarily are generated by sales taxes, individual income taxes, corporate income taxes, other taxes, and charges and fees (these last often support the revenue generating university, hospital, or toll road). The revenue mix varies by state as, for example, some states do not have an individual income tax. Fluctuations in these revenues and in the demands of other programs for revenue (including growing entitlements for health care state and pension costs) can be expected to affect state funding for pre-K. Six states (Arizona, Georgia, Missouri, North Carolina, South Carolina, and Washington) have dedicated revenue sources; funds from these sources are specifically reserved for use in pre-K. Typically, dedicated revenue for pre-K has been from state lotteries or so-called sin taxes (e.g., beer tax), but some states have used other sources including an addition to the state sales tax (e.g., South Carolina) and tobacco settlement funds (e.g., Connecticut and Kansas). The advantage of a dedicated revenue stream is that it is less likely to be "raided" to meet competing needs and the program need not rely on an annual appropriation. Therefore, having a dedicated revenue source can provide a more stable funding base to the extent that this reduces competition from other programs and, particularly, if these dedicated sources of revenue are more resistant to fluctuations in the economy than are the sources of general revenue. During the "great recession" of 2008-2009, funding for state pre-K programs declined in total and per child as state revenues declined, and this seems to have been equally true where revenues had been thought to be more recession proof because they were dedicated lottery funds (e.g., Georgia).

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State pre-K has virtually no required financial support from the local level and relatively little voluntary support, though the latter is difficult to estimate from existing data (Barnett et al., 2016; Barnett & Hustedt, 2011). For the 2014-15 school year states reported spending $6.2 billion on state pre-K and could document just $366 million in required local funds and $96 million in non-required local funds. There are states that have specific requirements for local revenue. These exceptions include Maine, Oklahoma, and West Virginia, whose pre-k programs are financed within the K-12 formula and where state grants for each local provider are determined in part by the availability of locally controlled funds including federal Title I funds (e.g., Alabama). Some states require a substantial local match for pre-K (e.g., Arkansas), but do not specify that this is to be provided by local government. A number of state approaches can be viewed as essentially offering local public schools an incentive to provide preschool programs (including through partnerships with private providers) but without setting a specific amount to be paid by local government (e.g., Maine).

As for the distribution of state funds to the local or individual center level, approximately 72 percent of state funding is allocated via discretionary grants. Whenever funding is discretionary rather than mandatory, either the amount per child or the number of children that can be enrolled (or both) can vary based on upturns or downturns in the economy as well as changes in a legislature's priorities. These discretionary grants have no mechanisms that automatically ensure growth in funding to keep pace inflation or the number of children seeking enrollment or actually enrolled. As already noted, funding levels are rarely based on any realistic, technical assessment of adequacy. Rather, grants are based on available revenue and what lawmakers decide they are willing to allocate in the current year. Some grants are allocated differentially within a state, based on a formula that takes into account student and district needs. Others provide a single fixed amount per child or classroom regardless of any differences in the needs of the population served or geographic variations in the costs of providing a program.

IV. The K-12 Funding Formula as an Alternative Approach to Funding Pre-K

In contrast to the way the majority of states fund pre-K, a very different approach to federal-state-local funding has evolved for K-12 public education. The most obvious differences from state pre-K funding is that K-12 funding tends to be less reliant on state revenue, which in some states is the only source of funding for their pre-K programs. On average, the federal government contributed 8.6 percent, state government 46.7 percent, and local government 44.7 percent in 2013-14 (see Table 3). The percentages have varied over time but have been similar over the last decade except for a modest bump in the federal share during the Great Recession. There is substantial variation behind this national average. Although most states assign substantial responsibility for public education K-12 to local government, the local share of responsibility for funding varies greatly from state to state.

States have developed school funding systems that operate primarily based on formulas that provide local districts with state funds based on the number of children enrolled as a means of meeting their obligations to support the education of every child in the context of this joint state and local decision-making. Although this approach has been employed for about 100 years, it has evolved over time, with trends toward setting the formula amount based on an assessment of what is adequate to comply with state standards and policies and the use of per student weights to recognize differences in the needs of students (Verstegen, 2014). K-12 funding also is commonly provided outside the formula for such specific purposes as transportation and facilities, and some states address differences in student needs outside the formula through

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categorical funding. Given the joint responsibilities for funding, a mix of state and local government decisions determine both the amount of funding provided for each child in K-12 and the sources of revenue that support that funding. The sole constant is that the federal share is relatively small.

Ideally, state K-12 funding formulas: (1) provide a basic level of assured funding for every child enrolled based on a determination what is required to provide each child with a constitutionally adequate education; (2) adjust state funding amounts provided to local districts for differences in the needs of children, differences in local capacity to raise revenue, and geographic differences in costs; and, (3) automatically adjust funding for changes in overall cost (e.g., inflation) as well as the number of students served.

Of course, reality often departs from the ideal. K-12 school funding formulas often do not guarantee adequate or equitable funding (Baker, Farrie, Luhm, & Sciarra, 2016). States have faced numerous lawsuits regarding the extent to which they meet their constitutional obligations (Baker & Welner, 2011). Scholars have pointed to both perceived shortcomings in the K-12 approach and avenues to address shortcomings in that approach (Baker & Welner, 2011). Yet, despite their flaws the K-12 formula might be a better approach to funding pre-K for most, if not all, states that do not already use this approach even in their current imperfect instantiations. To investigate this, we review the states' K-12 funding formulas and what is known about how they perform relative in three respects: adequacy, equity, and effort.

Pullout --What is a K-12 Public School Funding Formula? How does it work?

State school funding formulas essentially distribute state revenue for public K-12 education to local school districts. They may also impose constraints on local school district revenue or expenditure. Most are (in theory) designed to increase adequacy and equity of expenditures by taking into account state requirements and differences among students and districts. Adequacy typically is pursued by ensuring a specified level of funding for every pupil with additional funding to recognize that some students have greater needs than others. Equity typically is pursued by adjusting funding to take into account that some districts have less capacity to raise revenue or higher costs than others.

The most common form of school financing formula is the foundation program, used by 46 states alone or in combination with another approach (Verstegen, 2016). Hawaii is a single school district with full state funding. North Carolina provides a flat amount to all districts to which they may add. Vermont and Wisconsin guarantee a tax base. The foundation program, establishes a level of guaranteed per-pupil revenue (the foundation level) at a set minimum property tax rate. State aid to a district is calculated as the difference in the foundation level and what the locality raises from the property tax. The two main issues to consider with a foundation program are how to set the foundation level and whether or not to allow districts to exceed foundation funding. The guaranteed tax base ensures that the tax rate (effort) of a local district will generate equal revenue regardless of its local property wealth.

In the large majority of states funding for public K-12 education is determined by formula according to some version of the following process:

1. Set a foundation level of funding per pupil. This is a minimum level of funding to educate a typical student in the state. This amount may be determined through a formal process seeking to determine what is adequate to meet the state's requirements as set forth in legislation and regulation. The foundation level may be derived through a formal

cost study using one of the established methodologies for determining the cost of an adequate education (Cost Function, Evidence-Based, Professional Judgment, or Successful Schools). In other cases, it is determined more informally based on historical spending levels among "successful districts" in the state or somewhat more arbitrarily based on the availability of funds and legislative and public will.

2. Weight the students. Almost all state school funding formulas use weights to take into account the higher costs of educating students with specified needs. The weights can appear arbitrary and often are based on historical precedent. Most states provide weights for students with disabilities, and many provide weights for English language learners and students in poverty, and some provide weights for other categories of students, such as gifted and talented students or those who are pregnant. Some states also provide additional weights for certain grade levels that are costlier, but as an illustration of how these vary, some states heavily weight early elementary grades (K-2) to provide reduced class sizes and additional reading instruction in those grades, whereas other states place more weight on high school grades due to higher cost of providing a variety of course offerings.
3. Count the students. Some states take single-day counts of students in attendance, which is easy to administer but can be rife with potential problems related to absences or transfers. Thus, most states take some average of periods in order to get a more accurate read of student count.
4. Account for regional variation. The large majority of states make adjustments based upon regional variation within a state in the costs to educate a student. Most states take into account economies of scale, providing additional per-student or categorical funding for districts that are small and remote. Some states also take into account regional cost variation directly by employing regional price indices.

Once all student weights and regional cost adjustments are applied to adjust the initial foundation level of spending per pupil, the result is multiplied by the number of students to derive the total level of formula funding for each district. To this figure is added any funding allocated outside of the formula in the form of "categorical funds" dedicated for such services as transportation, building construction, and school meals.

A complete explanation of each state's formula is beyond the scope of this paper. Verstegen (2015) provides a description of each state's funding formula on a website. Additional summary information on the use of funding formulas for public education can be obtained from Fazekas (2012) and Verstegen (2011 & 2014).

V. The K-12 School Funding Formula -- Adequacy, Equity, and Effort

To analyze public K-12 financing for the purpose of estimating the results of applying this approach to state-funded pre-k, we first assess how well the K-12 funding system in each state performs with respect to adequacy, equity, and effort. These measures offer a way to judge the overall effectiveness of state K-12 funding formulas and how this varies from state to state. This information provides a basis for judging how each state's pre-K program would fare if funded by the formula their state uses for K-12. Later in the paper, we present estimates of the additional revenue each state would have to allocate to pre-K if it applied the K-12 formula to pre-K.

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Adequacy is easier to define than it is to measure, and how it should be estimated is subject to intense debate (Baker & Welner, 2011; Gronberg, Jansen, & Taylor, 2011; Hanushek & Lindseth, 2009). When we speak of adequacy, we speak of the amount of funding needed to provide some benchmark level of education services in the expectation of producing desired outcomes for students. Debates over the causal impacts of funding and the resources or services required to meet state requirements as set forth in educational standards, other regulations and legislation, and broader constitutional obligations are far from settled, though there is evidence that increased funding aimed at improving adequacy has improved educational outcomes for disadvantaged students (Baker & Welner, 2011; Lafortune, Rothstein, & Schanzenbach, 2016). For purposes of this paper, we adopt the simple perspective that more spending per pupil, adjusted for cost of living, is better, while acknowledging that states may vary in the efficiency with which these funds are employed.

To obtain estimates of general expenditure per pupil that can be applied to pre-K we remove estimated spending on special education. For pre-K, special education expenditure is separately funded, and it is not included in our measures of pre-K spending. For K-12, spending on special education, on average, accounts for approximately 24 percent of K-12 current expenditure. Special education enrollment varies dramatically by state, ranging from 8.6 percent to 17.5 percent. Spending per child in special education also seems to vary substantially across states. Unfortunately, we find no recent reliable estimates of special spending per pupil, so we have relied on data from the Center for Special Education Finance for 1999-2000[1]. We adjust these estimates with the Bureau of Economic Analysis' index of Regional Price Parities[2] to estimate spending per pupil normalized for relative cost of living in each state.

For equity, or fairness, we provide a measure of intrastate distribution of funds. Equity in education is generally discussed in two ways: horizontal equity and vertical equity. Horizontal equity refers to how students with similar characteristics and backgrounds are funded relative to one another. Vertical equity refers to how students with differing characteristics and backgrounds are treated relative to one another in order to mitigate the effects of those differences on educational outcomes. For the purposes of this paper, we focus solely on vertical equity as it pertains to income as most state pre-K programs are focused on improving vertical equity. We provide estimates of the ratio of funding per pupil in higher poverty (> 30 percent of pupils) districts to per pupil funding in districts with no children in poverty. The higher the ratio (above one), the greater is vertical equity. As will be seen, for a considerable number of states this ratio is less than one, indicating that formulas generate less funding for higher poverty school districts.

Effort refers to how much of a state's capacity to spend is devoted to K-12 spending. We report two measures of effort: K-12 state spending as a fraction of state expenditure and K-12 current expenditure as a fraction of personal income in the state. We include both measures because they offer somewhat different perspectives. The first compares K-12 spending to the state's overall public spending. The second compares K-12 spending to the taxpayers' financial capacity.

Table 4 shows presents the information we have obtained for adequacy, equity, and effort of school funding by state. The table ranks states on these measures from best to worst and, in

[1] http://www.csef-air.org/publications/csef/state/statepart2.pdf

[2] http://www.bea.gov/newsreleases/regional/rpp/rpp_newsrelease.htm

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addition, color codes the measures on a relative scale ranging from strong (dark green) to weak (red) to make it easier for the reader to visually capture patterns across the states. Perhaps the first and most obvious conclusion is there is a wide variation in K-12 formula performance for each of the measures. For example, adjusted spending per pupil ranges from $16,068 (Alaska) to $5,434 (Florida). The ratio of spending per pupil in a 30 percent poverty district versus a zero percent poverty district ranges from 1.59 (Alaska) to 0.56 (Nevada). State K-12 spending as a percentage of total spending ranges from 32 percent (Indiana) to 10 percent (West Virginia). K-12 spending as a percentage of each $1,000 of personal income ranges from 11 percent (DC) to 38 percent (New York). Some states, like New Jersey, perform at a high standard across the board, but for the most part state formulas are neither strong nor weak across all measures.

VI. Measures of Adequacy, Equity, and Effort in State Pre-K

Adequacy and Effort

When assessing the adequacy of current funding for state pre-K programs, we face the same difficulties as with K-12. Pre-K spending per pupil, for most states, is not based on a technical analysis of what is required to provide an adequate preschool education. Rather than attempt to estimate the minimum amount needed for each state's program to meet their own standards or a common set of standards, we compare pre-K to K-12 spending per pupil in each state. This might be considered a measure of relative adequacy (and effort). Table 5 presents these ratios of pre-K spending per pupil to K-12 regular education spending per pupil. Once again, the results are color-coded with dark green indicating the highest ratios and dark red the lowest. On this measure of adequacy, we see a wide range of results. For example, North Carolina spends 1.05 times as much for pre-K per pupil as it does per regular K-12 per pupil. Kansas spends a small fraction (0.28) for a pre-K per pupil compared to a K-12 pupil. Seven states -- Idaho, Montana, New Hampshire, North Dakota, South Dakota, Utah, and Wyoming -- have no state pre-K programs and so could be included as zero.

With this high-level view of pre-K funding adequacy by state, the next logical step is to analyze factors that could explain differences among states. We investigated two potential influences on these ratios: the mechanism by which each program is financed, and the share of students in each program receiving less than full-day services. Table 6 presents the results. The first two columns of data separate adequacy ratios into two groups based on whether or not the state uses the school funding formula to finance its pre-K program. There are 10 states (including D.C.) that we classify as using school funding formulas, 34 states we classify as using other funding schemes (formula and non-formula discretionary grants, state Head Start, and scholarships), and seven states with no state pre-K programs. As summarized at the bottom of the table the mean and median ratios for the school funding formula programs are 0.67 and 0.59, respectively. For the non-school funding formula programs, these are 0.59 and 0.53, respectively. Using a 2-tailed t-test, we find the differences in the means is not statistically significant ($p = 0.34$).

The next step is to adjust ratios for hours per day. Many pre-K programs offer at least some portion of their students only half-day services, so this should be taken into account when looking at spending per pupil. After prorating for hours per day, we see the mean and median ratios for the school funding formula programs are both 0.99. For the non-school funding formula programs, these are 0.78 and 0.74, respectively. Using a 2-tailed t-test, we find that difference in

means between formula and nonformula states is statistically significant ($p = 0.01$). This result is consistent with the view that using the school funding formula to finance pre-K spending is associated with higher spending and greater adequacy.

We also present in this table a look at state spending alone. The prior measures looked at total (federal, state, and local) spending per pupil (admittedly not completely measured in all states). We also look at state effort for pre-K measured as total dollars spent for pre-K versus K-12. We find that states using the school funding formula exert significantly more effort for pre-K relative to K-12. The average and median levels of pre-K/K-12 are 3.8% and 3.9%, respectively. This is compared to ratios for non-school funding formula of 2.2%, and 1.9%, respectively. Using a 2-tailed t-test, we find that the difference in means is statistically significant ($p = 0.04$). Clearly, we cannot ascribe causation. States with a greater public will to provide pre-K at a high standard to more of the population may be more likely to use the K-12 formula.

Table 7 provides more information on the programs that we have identified as using the K-12 school funding formula to fund their pre-K programs. This table gives more background information about program features, such as length of day and percent of the population enrolled at ages three and four, as well as about the share of state and local funding done at the state level. Also included is spending per pupil adjusted by the cost of living in each state (relative prices). This data helps to clarify one point about the school funding formula. The application of school funding formulas, although beneficial for adequacy in funding on average, yields many different effects on spending in each state. This should be expected given the wide variation in performance of state funding formulas we displayed earlier.

Equity

Most state preschool programs have no explicit provisions to adjust funding per child for equity. The obvious exceptions are states that use their K-12 formulas. However, in most states pre-K programs address equity in basic design by limiting eligibility for pre-K to children from low-income families and to those with other risks to school success. In some states this would make weights for vertical equity unnecessary, but this is not always the case. For example, Florida awards the same amount per pupil for every pre-K student in its universal program serving the vast majority of the state's four-year-olds.

Given the focus on eligibility as means to address equity, we examine share of the population of four-year-olds in each state served in a public pre-K program as compared to the share of the population of four-year-olds that would be considered at-risk. This is, admittedly, a rather limited way of analyzing equity as it assumes at-risk four-year-olds are the first to be enrolled in pre-K, and it ignores equity for states that enroll vast majority of children and do not limit eligibility based on income or other risk factors (e.g., Georgia, Florida, Vermont, West Virginia, and Wisconsin). Nevertheless, it does offer some insight into the coverage of at-risk four-year-olds by each state, recognizing that the vast majority of children from high-income families would attend pre-K regardless of whether it is publicly supported. The results of this analysis are presented in Table 8. We tally pre-K enrollment for four-year-olds across state pre-K programs, special education, and Head Start. For the at-risk population, we use an estimate of the percentage of four-year-olds at or below 150 percent of the federal poverty level (FPL) in each state. Once again, the results are color-coded, with darker green signifying greater coverage and darker red signifying lower coverage. There are large differences across states. Some (e.g., Georgia, Florida, Oklahoma, Vermont, West Virginia) have universal or very large pre-K programs so that enrollment of four-year-olds in pre-K programs greatly exceeds the percentage of four-year-olds at-risk. At the other end of the spectrum, in 19 states enrollment is less than

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required to serve all children under 150% FPL, and to these states can be added 5 others that offer no pre-K. The index suggests that there are very large underserved populations in some states including Delaware (-18%), Indiana (-18%), Nevada (-21%), and Oregon (-17%).

For the states with the highest percentage of children enrolled, we can say something about equity beyond coverage. These are DC, Florida, Georgia, Iowa, Oklahoma, Vermont, Wisconsin, and West Virginia. All except Florida and Georgia use the school funding formula to fund pre-K. Their vertical equity can be assessed from the data in Table 4. Georgia and Florida provide the same amount of state pre-K funding to all students. In these two states, local public school contributions may affect spending per child across different communities, but private providers receiving only state funds serve many children.

VII. Does Using the K-12 School Funding Formula Affect Funding Growth?

As shown in Tables 6 and 7, utilization of a school funding formula for pre-K appears to be associated with adequacy, although states independently decide on daily schedule (part- or full-day provision). Another, potential benefit of applying the school funding to pre-K is that it might increase the stability and growth in funding over time. Table 9 and Charts 1 and 2 demonstrate how, for programs financed via school funding formulas, real spending per pupil has grown steadily over the period from school year 2005-2006 to 2014-2015, the 10-year period for which we have enough data on spending per pupil to conduct an analysis. This is in direct contrast to programs financed otherwise, which, on average, have yet to regain ground lost following the Great Recession. In Table 8 and Chart 1, real spending per pupil is indexed at 100 in 2005-06. Over the ensuing nine-year period, the ten state programs financed with school financing formulas posted 2.8 percent annualized growth. The average annualized growth rate of all other programs was just 0.7 percent during the same period. Chart 2 shows the growth rates for these 10 school funding formula-based pre-K programs, also indexed at school year 2005-2006 = 100.

VIII. Exemplars of the Use of Formulas to Fund Pre-K

We now take a closer look at a few of the 10 states that utilize school funding formulas for their pre-K programs to examine how pre-K funding is impacted in more detail. These states are Maine, Oklahoma, and West Virginia, plus New Jersey as it uses a unique formula within the public education system. In all three of the K-12 formula states, funding for pre-K is allocated exactly the same way it is allocated for K-12. That is to say, the state sets a guaranteed or foundation level of spending per child for K-12 that is applied to pre-K as well.

In Maine, the foundation level is set based on empirical studies of the cost of adequate education. It is noteworthy that preschool students receive a weight of 1.10 as a grade level compared to others. However, as the program is designated at only two hours per day, the state funding level for pre-K is quite low relative to that for K-12. Maine's school funding formula also has factors to increase financial resources to children in low-income districts and for districts with higher percentages of English Language Learners. Yet, in Maine, spending per pupil in districts with 30 percent poverty is just 86 percent of the level reported in no-poverty districts. This ratio ranks 39th out of the 50 states. Overall, this information raises questions about the adequacy and

equity of funding for pre-K, though access to funding through the state formula also made it possible for districts to rapidly expand enrollment even during difficult economic times. In Maine, the approach is highly dependent on the state funding acting as an incentive for local school district initiative.

Oklahoma differs from Maine in setting its foundation level based on how much the Oklahoma legislature decides it can allocate to education in a given year. In Oklahoma, the recession had a significant impact on tax revenue. Oklahoma state tax revenue in recent years has only just recently climbed back to levels seen in 2009. Even with the Oklahoma legislature increasing the portion of funding of total tax revenue going to education, the Oklahoma Board of Education reduced the foundation level of funding per pupil from $3,275 in 2009 to $3,050 in 2015. Total spending per pupil nevertheless increased slightly as foundation levels were supplemented by adjustments for such population factors as grade level, special education, and income. Moreover, as districts can draw down state dollars for a full school day program and most choose to do so, both state funding per child and total funding per child in Oklahoma a relatively high, particularly when the relatively low cost of living in that state is taken into account.

West Virginia approaches state education financing differently from the two prior examples. Instead of setting a general foundation level, funding is determined based on targets for staff per pupil. In West Virginia, though, there are very few adjustments to account for student or district variables, which essentially means most students and all districts are treated the same in terms of financial needs. However, at the preschool level in addition to state and local public education dollars, West Virginia facilitates substantial collaboration and blending of funding streams between the state program and various federal programs. West Virginia does this by allowing local district providers to collaborate with Head Start and TANF in their delivery of the state pre-K program. This blending has allowed West Virginia to offer full-day programming to 85% of its pre-K students while state funding covered only half-day programming. In the 2014-15 school year, this blending of funds lifted spending per pupil from around $5,600 per student to $9,600 per student. Overall, West Virginia manages to provide a relatively high level of state funding and one of the highest levels of total funding per child in pre-K while having near universal coverage, despite being a very low-income state.

As should be clear, the impacts of a school funding formula depend on the details, and it is possible to generate funds for pre-K using a formula approach that differs in its details from that used for K-12. One example of such a non-school-funding-formula program is New Jersey's Abbott preschool program, which resulted from the Abbott v. Burke school funding case (Sciarra & Hunter, 2015). In 2015, this program served approximately 43,600 three- and four-year-olds in high-quality pre-k classrooms at approximately $15,300 per child (Barnett et al., 2016). The underpinning of this cost per child dates back to 2009, when the NJ Department of Education used cost information taken by a detailed, line-item data audit of the Abbott preschool program to determine the cost of providing high-quality preschool. In essence, the court ordered the provision of high quality preschool education to meet the individualized needs of children in 31 districts serving high poverty populations. Initially, expenditures were based on budgets submitted with plans to meet these needs that differed within and across districts and which were reviewed and approved at the classroom level. After nearly a decade of experience with this process, the state created a formula that provided more uniform funding based on an analysis of that historical data. This led to a formula that provided funding per child of $11,506 for students

served in school buildings, $12,934 for students served by private providers under contract to districts, and $7,146 for students served by Head Start[3]. The higher level of private providers recognizes that they do not have access to facilities funds outside the formula, whereas public school buildings are paid for outside the formula. These per pupil funding levels have continued to be the basis for funding after adjustments for annual inflation. The relatively high level of funding provided is directly attributable to its derivation based on the actual costs of providing high levels of service determined as needed to meet specific needs. As all of the districts involved have higher than average concentrations of low-income students, it is apparent that if such a formula were to be applied more generally it would require additional adjustments for equity. Somewhat along these lines, New Jersey funds preschool programs in school districts with lower concentrations of low-income students at much lower levels.

IX. Impact of the School Funding Formula on Pre-K Teacher Compensation

Low levels of wages and benefits is a longstanding problem for the early childhood workforce (Allen & Kelly, 2015; Hall-Kenyon, Bullough, MacKay, & Marshall, 2014). Clearly, teachers in public education K-12 have higher wages and benefits (Barnett et al., 2016). And although there is a good deal of variability in the results of school funding formulas, they would generate more expenditure for pre-K than most current approaches which ought to lead to higher salaries and benefits in pre-K.

Table 10 presents data that allows us to assess the potential impact of the K-12 school funding formula on pre-K teacher wages. This table contains data for 24 state pre-K programs that do not require salary parity by law or regulation and serve at least five percent of their state's four-year-old population. Only five states have broad salary parity policies that apply to all teachers (Hawaii and Missouri require equivalent salaries and benefits in all settings; New Jersey, Oklahoma, and Tennessee require salary parity but do not require the same benefits for teachers in state pre-K outside the public schools). The data we use is median annual salary data for pre-K teachers working in any center-based program but excluding special education, as collected by the Bureau of Labor Statistics (BLS). This salary data is adjusted for relative prices in each state, using the Regional Price Parity index from the Bureau of Economic Analysis. We use this data in lieu of data on teachers in state pre-K programs, as this more specific data is not available for many states. However, by narrowing the states examined to those with programs covering at least five percent of four-year-olds, we eliminate those in which very few of the teachers in the median BLS salary data are state pre-K teachers. Table 10 also reports the ratio of median pre-K to kindergarten teacher salary, as reported by the BLS. We include only programs without explicit salary parity policies in order to focus on the impact of funding mechanism *per se* on salary. The data in this table give evidence of the positive effect school funding formulas on pre-K wages. The median price-adjusted wage in a school funding formula state is $43,531 versus $36,047 for the other states. As a ratio to kindergarten wages, pre-K wages are substantially higher in school funding formula states (median 0.83 versus 0.71 in other states). Looking at the averages of the school funding formula states versus the other states, we characterize the results as suggestive keeping in mind the small number of states. Based on simple two-tailed t-tests, differences in the

[3] Head Start providers receive their full federal funding as well, so the amounts shown here are not total funding per pupil for Head Start

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means are not statistically significant at conventional levels for either the difference in ratios of pre-K to K salaries ($p = .10$) or the difference in average annual salaries adjusted for relative prices ($p = 0.08$).

X. Potential impacts of the K-12 School Funding Formula on Pre-K Funding

In this section of the paper, we estimate the additional expenditures from state and local (school districts) governments that would result from applying each state's K-12 school funding formula to pay for universal pre-K for four-year-olds. This analysis is built upon two comparisons. The first is to take data on average K-12 spending per pupil, excluding spending on special education and compare these spending levels to estimates for spending per pupil for pre-K, all by levels of government. The second is to take four-year-old enrollments in pre-K, as a share of the total four-year-old population in each state, and compare these to a target of 80 percent enrollment. Once we have the estimates of added pre-K expenditures, we present these a percentage of direct government expenditure at each level of government. The data are displayed in Tables 11a-d, with the additional expenditure by state and local governments reported in Table 11d.

Here follows a more in-depth description of our procedures for estimating added expenditure from use of the formula, broken into three steps:

1. Calculate the difference in spending per pupil between K-12, excluding special education, and current pre-K spending per pupil. Note the pre-K spending per pupil is only looking at state pre-K programs. This gives an estimate on how much spending per pupil would change if state pre-K were to be funded using the K-12 school funding formula. These measures are calculated separately for state, local, and federal government spending; the differences are presented in Table 11b. These figures are not prorated based on providing a half-day rather than a full day, and they most likely underrepresent local funding and locally controlled federal funding, which is not reported at all for some states. Negative figures for state (and federal) spending per pupil in Table 11b indicate states in which the pre-K is spending more state (and federal) money per child for pre-K than would be allocated on average under the K-12 formula. This can reflect recognition in the state's approach to pre-K funding and expenditure that the population served by state pre-K is more disadvantaged and tends to reside in lower income communities than the average child. It also reflects the proportionally larger federal role in early education and the potential for states to draw on federal early childhood dollars.
2. Calculate the difference in share of the population of four-year-olds currently served in state pre-k versus what is desired. For the purposes of this analysis, we define universal coverage as 80 percent. Convert this share of population to number of pupils. These figures are reported in Table 11c, the last column being the increase in enrollment under universal coverage (Target less Enrollment).
3. First, multiply the difference in spending per pupil calculated in step one by number of pupils by students already covered in programs. This provides the change in total funding for pupils already enrolled. Second, add to that dollar amount the product of K-12 spending per pupil and the number of uncovered pupils. The sum of these two figures produces estimates of increases in spending, by level of government,

generated by financing pre-K with a K-12 school funding formulas for universal, full-day enrollment. These results are presented in Table 11d.

As can be seen, the additional expenditures potentially generated by K-12 formulas applied to pre-K are quite large relative to current public expenditure on state-funded pre-K in every state, with a few exceptions. These exceptions are states that have, or are near, universal pre-K already (though not all of these offer a full school day to every child currently). A large share of the increase is from local government. The local government figures provide an indication of the potential for the use of the K-12 formula to expand expenditures and, in particular, of the extent to which current approaches to funding pre-K, which do not currently rely on local public schools, overlook a substantial source of revenue to support expenditures. Oklahoma, Vermont, and West Virginia are examples of states that already are already use the school funding formula to fund universal pre-K and so do heavily rely on expenditures from local as well as state government in amounts similar to those we estimate (though they do not necessarily enroll 80 percent). When viewing these figures, keep in mind that current local expenditures for pre-K are not fully accounted for by current reporting systems. Also, some four-year-old children are served through other programs including federal Head Start so that state pre-K may not need to serve 80 percent in each state for all four-year-olds to be offered pre-K.

Finally, these estimates are designed to indicate the maximum expenditure that would be generated under a shift to the school funding formula in each state to serve 4-year-olds. Obviously, this also implies an equal amount of revenue requiring either raising new revenue or reducing expenditures elsewhere in state and local government. Our estimates suggest that in most states these maximums are only a fraction of 1 percent for state and for local government with the exceptions almost all states that current provide little or no state pre-K.

XI. Summary

In this paper, we have reviewed the adequacy and equity of funding for state-funded pre-K programs, reviewed the adequacy and equity (and effort) of publicly K-12 education systems, and investigated how use of the K-12 school funding formula might impact pre-K. We find evidence that when states currently use K-12 school funding formulas to fund pre-K there are some advantages. In particular, the use of the school funding formula in pre-K is associated with (a) higher pre-K funding relative to a state's K-12 per pupil funding, and (b) more stability and growth in real spending per pupil over time. In addition, there is suggestive evidence that teacher salaries are higher in states that use the school funding formula when we examine this using an approach that might be expected to underestimate impacts because it examines salaries of all pre-K teachers whether or not they are employed in state pre-K.

Our report also makes clear that state school funding formulas are not without their own problems and differ substantially across states with respect to adequacy, equity, and effort. However, for the most part current approaches to funding pre-K have not used formal approaches to determine adequacy, do not have explicit adjustments for equity (but deal with this through eligibility), and reflect less effort than the K-12 school financing formula. Clearly, moving to the school funding formula for pre-K financing has the potential to increase the adequacy of funding, improve equity and increase effort, all of which could facilitate improvements in workforce compensation.

Adequacy and equity might be most substantially increased in states that do not currently rely on local public schools for funding. Although some might fear that this could lead to a

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decline in mixed delivery using the private sector, it is evident that some formula states make extensive use of private providers (e.g., West Virginia and Wisconsin), and the only state in which this would be prohibited is Hawaii (which is entirely state funded and does not allow any public funding for private education programs). If there is a desire to ensure that private providers are strong part of a state pre-K system funded by the K-12 formula, then there is no impediment in the rest of the states. However, policies may be required to encourage and facilitate district partnerships with private providers and modifications may be required to the K-12 formula to recognize differences in access to education funds outside the formula including funding for transportation and facilities (as in New Jersey's pre-K formula).

Finally, K-12 funding formulas offer useful models for desirable ways to approach funding, even if these are sometimes honored more in the breach, regardless of whether pre-K is brought into the K-12 formula formally. There is plenty of room to improve K-12 funding formulas. Nevertheless, a major strength of the formula approach in addition to those already noted is that it is more transparent than the alternatives typically used for funding pre-K. Optimally, a formal process would be engaged in to determine an adequate level of funding for pre-K and this figure would be used to determine a pre-K weight in the state public education funding formula. In addition, adjustments might be made to take into account partnerships with child care and Head Start that would provide more federal money per child (at least for those eligible) than is typically available for school age children. The District of Columbia, Connecticut, New Jersey, and West Virginia are states to which one can look for examples of innovative approaches that could enhance the use of federal funds in a K-12 funding formula approach to pre-K.

XII. Tables and Charts

Table 1. Funding for early care and education at ages three and four by level of government, 2015.

Program	Level of Government: Federal amt., bn.	Federal % total	State amt., bn.	State % total	Local amt., bn.	Local % total	Total amt., bn.	Total % total
Head Start [1]	$6.6	50%					$6.6	28%
Title II-VI [2]	$0.1	1%					$0.1	0%
CCDF+TANF [3]	$1.0	8%					$1.0	4%
SSBG [4]	$0.1	1%					$0.1	1%
CACFP [5]	$2.3	18%					$2.3	10%
Tax Subsidies [6]	$1.6	12%					$1.6	6%
State Pre-K [7]	$0.7	5%	$6.1	80%	$0.7	21%	$7.5	31%
Preschool Special Ed. [8]	$0.3	2%	$1.6	20%	$1.0	33%	$2.9	12%
Local Pre-K [9]	$0.4	3%			$1.4	45%	$1.8	7%
Sum	$13.1		$7.7		$3.1		$23.9	

1 Data accesses from Head Start Program Information Report at https://eclkc.ohs.acf.hhs.gov/hslc/data/pir, NIEER calculations

2 Budget data available at http://www2.ed.gov/about/overview/budget/budget17/17action.pdf,
NIEER Estimate for spending on ECE based upon ratio derived from estimated Title I spent on ECE/Total Title I available

3 CCDF data available at https://www.cfda.gov/?s=program&mode=form&tab=step1&id=a055c31de8018a7cbf9a19e3c25ae4cc, TANF data available at
http://www.hhs.gov/about/budget/fy2017/budget-in-brief/acf/mandatory/index.html, NIEER calculations to adjust for share going to ECE

4 Data available at http://www.acf.hhs.gov/sites/default/files/ocs/ssbg_2014_annual_report_final_508_compliant.pdf

5 Data available at https://www.cfda.gov/?s=program&mode=form&tab=step1&id=2a12fb2d62445c49f23c0566bda65791; NIEER calculations

6 Estimate based on testimony before H.O.R. by Kay Brown, Director at GAO. Link at http://www.gao.gov/assets/670/660685.pdf

7 Barnett et al, 2016. The State of Preschool 2015: State Preschool Yearbook. New Brunswick, NJ: NIEER.

8 Federal IDEA data available at data available at http://www2.ed.gov/about/overview/budget/budget17/17action.pdf,
State and local enrollment data based on US DOE data available at http://www2.ed.gov/about/reports/annual/osep/2015/parts-b-c/37th-arc-for-idea.pdf,
Cost data estimates based on data from The Special Education Expenditure Project at http://csef.air.org/, State and local shares based on
Parrish and Chambers (1996)

9 Enrollment estimate based on data on preschool data collected by The Office for Civil Rights available at
http://www2.ed.gov/about/offices/list/ocr/docs/crdc-2013-14.html, NIEER estimates for cost

Table 2. State pre-K state and local funding mechanism and revenue sources, 2015.

Funding Mechanisms

	# States Represented	Amount, millions	Share of Total
Discretionary Grants	31	$3,161	46.6%
School Funding Formula	10	$1,798	26.5%
Discretionary Formula Grants	14	$1,736	25.6%
Scholarships	1	$41	0.6%
Tax Credits	2	$34	0.5%
SIBs	2	$20	0.3%
sum		$6,783	

Revenue Sources

	# States Represented	Amount, millions	Share of Total
State General Appropriations	42	$5,595	82.5%
Property Taxes	18	$579	8.5%
State Lottery	3	$405	6.0%
Other Local Taxes	16	$91	1.3%
State Tobacco Settlements	3	$51	0.8%
State Sin Tax	1	$33	0.5%
SIBs	2	$18	0.3%
State Sales Tax	1	$7	0.1%
State Gambling Funds	1	$4	0.1%
sum		$6,783	

All data from Barnett el al. (2016).

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Table 3. Percentage distribution of public K-12 revenue by source and state, 2014

	Revenue from Federal Sources (%)	Revenue from State Sources (%)	Revenue from Local Sources (%)
United States	8.6	46.7	44.7
Alabama	10.8	54.8	34.4
Alaska	12.1	67.2	20.7
Arizona	13.3	38.4	48.3
Arkansas	10.7	77.4	11.9
California	10.6	55.0	34.4
Colorado	7.5	43.5	49.1
Connecticut	4.0	39.4	56.6
Delaware	7.0	59.8	33.2
District of Columbia*	10.1	89.9	-
Florida	11.9	40.1	47.9
Georgia	10.1	44.0	45.9
Hawaii	10.6	87.3	2.0
Idaho	11.2	63.3	25.5
Illinois	7.6	36.7	55.7
Indiana	7.7	62.8	29.5
Iowa	7.4	52.4	40.2
Kansas	7.3	57.4	35.3
Kentucky	11.4	54.9	33.7
Louisiana	15.3	41.5	43.2
Maine	7.0	39.6	53.4
Maryland	5.8	44.3	49.9
Massachusetts	4.8	40.0	55.2
Michigan	8.9	57.5	33.6
Minnesota	5.7	69.0	25.3
Mississippi	14.9	50.2	34.9
Missouri	8.8	42.0	49.2
Montana	11.8	48.0	40.2
Nebraska	8.1	32.7	59.2
Nevada	9.1	63.1	27.8
New Hampshire	5.5	34.1	60.4
New Jersey	4.2	40.3	55.5
New Mexico	12.9	69.6	17.5
New York	5.5	40.6	53.9
North Carolina	11.4	58.3	30.3
North Dakota	10.2	58.9	30.9
Ohio	7.5	42.2	50.3
Oklahoma	11.4	49.5	39.1
Oregon	7.9	51.6	40.4
Pennsylvania	6.6	37.2	56.3
Rhode Island	8.1	37.9	54.0
South Carolina	9.7	46.4	43.9
South Dakota	13.9	30.8	55.3
Tennessee	11.9	46.8	41.3
Texas	10.7	39.0	50.3
Utah	8.8	53.7	37.5
Vermont	6.1	89.4	4.5
Virginia	6.7	39.7	53.6
Washington	8.0	60.5	31.5
West Virginia	10.0	58.1	31.9
Wisconsin	7.5	51.9	40.6
Wyoming	6.4	54.5	39.1

Adapted from U.S. Census Bureau. (2016). *Public Education Finances: 2014* . "Table 5. Percentage of Distribution of Public Elementary-Secondary School System Revenue by Source and State: Fiscal Year 2014."
Retrieved from https://www2.census.gov/govs/school/14f33pub.pdf
* Note U.S. Census Bureau categorizes D.C. as a locality, but for the purposes of this table we have categorized it as a state

Table 4. K-12 spending: measures of adequacy, equity, and effort, 2014.

	ADEQUACY		EQUITY		EFFORT			
	K-12 Total Spending per Pupil, Ex-SPED and Adjusted for Relative Cost [1]		K-12 Spending per Pupil: 30% Poverty Dist. vs. 0% Poverty Dist. [2]		K-12 State Expenditure as a Share of Total State Expenditure [3]		K-12 Current Expenditure per $1000 of Personal Income [4]	
	amt	rank	ratio	rank	%	rank	ratio	rank
Alabama	$8,990	28	0.92	34	20.5%	18	21.87	34
Alaska	$16,068	1	1.59	1	14.1%	45	35.63	2
Arizona	$7,311	43	0.90	37	18.3%	26	16.02	50
Arkansas	$8,324	37	1.00	21	15.1%	39	24.15	17
California	$7,201	46	1.03	16	21.3%	17	19.22	43
Colorado	$8,110	39	1.02	17	25.4%	7	18.14	47
Connecticut	$12,295	9	0.98	23	14.2%	44	26.34	9
Delaware	$10,781	14	1.49	2	24.1%	10	25.34	14
District of Columbia	N/A	N/A	N/A	N/A		N/A	11.30	51
Florida	$5,434	50	0.94	30	19.2%	21	17.96	48
Georgia	$7,211	45	1.12	8	24.3%	9	25.64	13
Hawaii	$8,740	31	N/A	N/A	15.0%	41	22.33	30
Idaho	$6,215	49	0.86	43	24.0%	11	19.29	41
Illinois	$10,086	19	0.76	45	14.6%	42	27.25	8
Indiana	$10,284	16	1.10	10	32.0%	1	21.91	33
Iowa	$9,371	25	0.93	31	16.6%	33	24.15	17
Kansas	$8,692	33	1.05	13	25.9%	5	22.34	29
Kentucky	$7,774	41	1.00	20	17.4%	30	23.13	26
Louisiana	$9,099	26	1.15	7	18.9%	22	21.31	37
Maine	$11,653	11	0.87	41	17.0%	31	26.06	12
Maryland	$9,538	23	0.95	27	18.8%	23	23.96	21
Massachusetts	$12,496	8	1.11	9	12.0%	48	24.80	16
Michigan	$10,201	18	0.98	23	26.9%	4	22.83	27
Minnesota	$9,728	22	1.27	5	28.2%	3	23.29	23
Mississippi	$8,437	36	0.98	22	16.3%	34	22.65	28
Missouri	$9,938	20	0.86	42	22.8%	14	21.52	36
Montana	$9,795	21	0.74	46	15.7%	37	24.05	20
Nebraska	$11,232	13	1.05	11	14.4%	43	27.43	7
Nevada	$7,351	42	0.56	49	19.6%	19	19.22	43
New Hampshire	$12,880	6	0.88	40	22.2%	16	25.15	15
New Jersey	$14,785	3	1.22	6	23.6%	12	30.39	4
New Mexico	$8,720	32	0.93	33	18.3%	26	23.24	24
New York	$15,280	2	0.91	36	19.3%	20	38.04	1
North Carolina	$7,913	40	1.05	12	22.4%	15	20.36	40
North Dakota	$9,493	24	0.65	47	15.8%	36	19.28	42
Ohio	$10,304	15	1.27	4	16.8%	32	24.07	19
Oklahoma	$8,131	38	1.04	14	15.6%	38	17.53	49
Oregon	$10,212	17	0.94	29	17.9%	29	22.20	31
Pennsylvania	$11,354	12	0.97	26	18.7%	24	26.10	11
Rhode Island	$12,917	5	0.93	31	13.4%	47	26.28	10
South Carolina	$8,592	34	0.97	25	18.4%	25	23.84	22
South Dakota	$8,582	35	0.82	44	14.0%	46	18.39	46
Tennessee	$6,939	47	1.03	15	18.3%	26	20.74	39
Texas	$7,296	44	0.95	27	25.0%	8	21.84	35
Utah	$6,693	48	1.27	3	25.7%	6	22.03	32
Vermont	$12,524	7	0.88	39	31.7%	2	33.99	3
Virginia	$8,939	29	0.91	35	15.1%	39	20.91	38
Washington	$8,838	30	1.01	18	23.4%	13	18.93	45
West Virginia	$11,856	10	0.89	38	9.8%	50	27.98	6
Wisconsin	$9,071	27	1.01	19	16.1%	35	23.17	25
Wyoming	$12,993	4	0.65	48	10.0%	49	28.67	5

1 Spending per pupil adapted from U.S. Census Bureau (2016). SPED adjustment data adapted from Parrish et al. (2003) retrieved at http://www.csef-air.org/publications/csef/state/statepart2.pdf, and Department of Education National Center for Education Statistics (2016) at http://nces.ed.gov/programs/digest/d15/tables/dt15_204.70.asp?current=yes. Relative cost adjustments made using Regional Price Parities index from Bureau of Economic Analysis (2016), retrieved http://www.bea.gov/newsreleases/regional/rpp/2016/pdf/rpp0716.pdf

2 Adapted using poverty level by district data from U.S. Census Bureau (2015) Small Area Income and Povery Estimates, retrieved at https://www.census.gov/did/www/saipe/data/schools/.

3 K-12 state spending data from U.S. Census Bureau (2016). Total state expenditure data retrieved from U.S. Census Bureau, Department of Commerce: State and Local Government Finances (2016), at http://www.census.gov/govs/local/.

4 Expenditure data from U.S. Census Bureau, Department of Commerce: State and Local Government Finances (2016), at http://www.census.gov/govs/local/. Personal income data from Bureau of Economic Analysis (2016) data on State Personal Income, at http://www.bea.gov/regional/index.htm.

Table 5. Pre-K spending per pupil relative to K-12 spending per pupil, 2014.

	Pre-K Spending per Pupil	K-12 Spending per Pupil, ex-Special Ed.	Pre-K/K-12
Alabama	$6,666	$8,315	0.80
Alaska	$6,270	$15,029	0.42
Arizona	$3,413	$7,082	0.48
Arkansas	$4,372	$7,935	0.55
California	$5,441	$7,788	0.70
Colorado	$3,827	$8,090	0.47
Connecticut	$10,184	$13,254	0.77
Delaware	$7,100	$10,668	0.67
District of Columbia	$17,509	$21,764	0.80
Florida	$2,304	$5,276	0.44
Georgia	$3,880	$7,482	0.52
Hawaii	$7,671	$11,503	0.67
Idaho	-	$5,943	-
Illinois	$3,735	$10,815	0.35
Indiana	$2,875	$10,195	0.28
Iowa	$3,595	$9,301	0.39
Kansas	$2,262	$8,146	0.28
Kentucky	$7,679	$7,416	1.04
Louisiana	$4,658	$9,061	0.51
Maine	$5,966	$11,501	0.52
Maryland	$8,247	$10,369	0.80
Massachusetts	$3,847	$13,184	0.29
Michigan	$6,447	$10,096	0.64
Minnesota	$7,824	$9,291	0.84
Mississippi	$3,762	$7,928	0.47
Missouri	$3,211	$9,562	0.34
Montana	-	$10,561	-
Nebraska	$5,711	$11,073	0.52
Nevada	$3,424	$7,257	0.47
New Hampshire	-	$13,583	-
New Jersey	$12,149	$15,909	0.76
New Mexico	$4,722	$8,154	0.58
New York	$6,617	$16,482	0.40
North Carolina	$7,793	$7,409	1.05
North Dakota	-	$10,859	-
Ohio	$4,000	$10,185	0.39
Oklahoma	$7,782	$7,982	0.97
Oregon	$8,648	$9,888	0.87
Pennsylvania	$5,630	$11,476	0.49
Rhode Island	$9,641	$13,436	0.72
South Carolina	$3,574	$8,122	0.44
South Dakota	-	$8,491	-
Tennessee	$6,687	$6,509	1.03
Texas	$3,639	$7,417	0.49
Utah	-	$6,041	-
Vermont	$6,589	$13,754	0.48
Virginia	$5,887	$9,225	0.64
Washington	$8,232	$9,064	0.91
West Virginia	$9,898	$10,698	0.93
Wisconsin	$6,018	$9,233	0.65
Wyoming	-	$13,386	-

Pre-K spending per pupil data from Barnett et al. (2016).
K-12 spending per pupil data from U.S. Census Bureau (2016), SPED adjustment data adapted from Parrish et al. (2003) and U.S. Department of Education, National Center for Education Statistics (2016).

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Table 6 Ratios of spending of Pre-K to K-12 (ex-special education), prorated and grouped by school funding formula and non-school funding formula, 2014.

	Pre-K Funding Mechanism	For Non-SFF Programs --Ratio of Spending per Pupil - Pre-K/K-12 ex-SPED	For SFF Programs -- Ratio of Spending per Pupil - Pre-K/K-12 ex-SPED	For Non-SFF Programs --Ratio of Spending per Pupil - Pre-K/K-12 ex-SPED Prorated	For SFF Programs -- Ratio of Spending per Pupil - Pre-K/K-12 ex-SPED Prorated	For Non-SFF Programs -- Ratio of State Spending Only - Pre-K / K-12 Ex-SPED	For SFF Programs -- Ratio of State Spending Only - Pre-K / K-12 Ex-SPED
Alabama	Discretionary Grant	0.80		0.80		1.3%	
Alaska	Discretionary Grant	0.42		0.89		0.2%	
Arizona	Discretionary Grant	0.48		0.48		1.3%	
Arkansas	Discretionary Grant	0.55		0.55		3.4%	
California	Discretionary Grant	0.70		0.92		2.3%	
Colorado	School Funding Formula		0.47		0.95		1.7%
Connecticut	Formula Grant	0.77		0.77		4.6%	
Delaware	State Head Start	0.67		1.33		0.8%	
D.C.	School Funding Formula		0.80		0.80	N/A	
Florida	Discretionary Grant	0.44		0.87		6.7%	
Georgia	Discretionary Grant	0.52		0.52		5.6%	
Hawaii	Formula Grant	0.67		0.67		0.2%	
Idaho	-						
Illinois	Discretionary Grant	0.35		0.60		3.4%	
Indiana	Formula Grant	0.28		0.42		0.0%	
Iowa	School Funding Formula		0.39		0.64		3.9%
Kansas	Formula Grant	0.28		0.56		0.9%	
Kentucky	School Funding Formula		1.04		1.04		2.5%
Louisiana	Discretionary Grant	0.51		0.51		2.1%	
Maine	School Funding Formula		0.52		1.04		2.2%
Maryland	Formula Grant	0.80		1.20		2.3%	
Massachusetts	Discretionary Grant	0.29		0.39		0.3%	
Michigan	Formula Grant	0.64		0.67		3.2%	
Minnesota	Scholarship	0.84		1.26		0.2%	
Mississippi	Discretionary Grant	0.47		0.47		0.2%	
Missouri	Discretionary Grant	0.34		0.35		0.4%	
Montana	-						
Nebraska	Formula Grant	0.52		0.77		4.2%	
Nevada	Discretionary Grant	0.47		1.18		0.2%	
New Hampshire	-						
New Jersey	Formula Grant	0.76		0.78		7.8%	
New Mexico	Discretionary Grant	0.58		1.16		1.9%	
New York	Formula Grant	0.40		0.50		4.7%	
North Carolina	Discretionary Grant	1.05		1.05		2.0%	
North Dakota	-						
Ohio	Discretionary Grant	0.39		0.79		0.7%	
Oklahoma	School Funding Formula		0.97		1.22		6.5%
Oregon	State Head Start	0.87		1.40		2.7%	
Pennsylvania	Discretionary Grant	0.49		0.56		2.1%	
Rhode Island	Formula Grant	0.72		0.72		0.4%	
South Carolina	Formula Grant	0.44		0.59		2.2%	
South Dakota	-						
Tennessee	Formula Grant	1.03		1.03		3.0%	
Texas	School Funding Formula		0.49		0.98		6.5%
Utah	-						
Vermont	School Funding Formula		0.48		0.94		1.6%
Virginia	Discretionary Grant	0.64		0.64		1.4%	
Washington	Discretionary Grant	0.91		1.24		1.2%	
West Virginia	School Funding Formula		0.93		0.99		5.1%
Wisconsin	School Funding Formula		0.65		1.28		4.2%
Wyoming	-						
Average --->		0.59	0.67	0.78	0.99	2.2%	3.8%
Median --->		0.53	0.59	0.74	0.99	1.9%	3.9%
2-Tailed T-Test P-Value --->		0.34		0.01		0.04	

Pre-K spending data and prorating from Barnett et al. (2016).
K-12 spending data from U.S. Census Bureau (2016), SPED adjustment data adapted from Parrish et al. (2003) and U.S. Department of Education, National Center for Education Statistics (2016).

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Table 7. Data on state pre-K programs funded with the K-12 school funding formula, 2014-2015.

State	Pre-K Spending per Pupil	Pre-K Spending per Pupil, Adjusted for Relative Prices	K-12 Spending per Pupil, Ex-SPED	Spending per Pupil Ratio: Pre-K/K-12	Hours/Day	% Half Day	Prorated Spending per Pupil Ratio: Pre-K/K-12	Enrollment 3s, % population	Enrollment 4s, % population	State Share of State + Local Revenue: Pre-K	State Share of State + Local Revenue: K-12
Colorado	$3,827	$3,745	$8,090	0.47	min 2.0	N/A	0.95	7.9%	23.3%	64%	47%
District of Columbia	$17,509	$14,876	$21,764	0.80	6.5	N/A	0.80	63.6%	86.3%	N/A	N/A
Iowa SVPP	$2,877	$3,186	$9,301	0.31	3	100%	0.62	1.6%	57.1%	-	57%
Kentucky	$7,679	$8,619	$7,416	1.04	min 2.5	N/A	1.04	8.1%	25.8%	79%	62%
Maine	$5,966	$6,106	$11,501	0.52	min 2.0	N/A	1.04	0.0%	36.2%	46%	43%
Oklahoma	$7,782	$8,656	$7,982	0.97	6	20%	1.22	0.0%	74.8%	54%	56%
Texas	$3,639	$3,764	$7,417	0.49	3	100%	0.98	7.3%	47.8%	100%	44%
Vermont Act 62	$7,050	$7,036	$13,754	0.51	2	100%	1.03	21.4%	68.8%	-	95%
West Virginia	$9,898	$11,197	$10,698	0.93	min 3.0	7%	0.99	11.4%	68.0%	-	65%
Wisconsin 4K	$5,999	$6,457	$9,233	0.65	2.5	N/A	1.30	0.8%	62.6%	62%	56%

Pre-K data from Barnett et al. (2016).
K-12 spending data from U.S. Census Bureau (2016), SPED adjustment data adapted from Parrish et al. (2003) and U.S. Department of Education, National Center for Education Statistics (2016).

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Table 8. Share of four-year-olds at or below 150% federal poverty level compared to enrollment, as a share of cohort, of four-year-olds in state-funded, special education, and Head Start pre-K, 2015.

	Four-Year-Olds Enrollment in Head Start, Special Education, and State-Funded Pre-K, as a % of 4s Population	Estimated Share of Four-Year Old Population Below 150% Federal Poverty Level	Difference	Rank
Alabama	29%	39%	-10%	37
Alaska	23%	26%	-3%	26
Arizona	21%	38%	-17%	40
Arkansas	56%	41%	15%	15
California	31%	34%	-3%	28
Colorado	37%	25%	12%	18
Connecticut	34%	22%	12%	17
Delaware	13%	31%	-18%	43
District of Columbia	86%	37%	49%	3
Florida	85%	37%	48%	4
Georgia	63%	37%	26%	10
Hawaii	15%	21%	-6%	31
Idaho				
Illinois	41%	30%	11%	19
Indiana	15%	33%	-18%	42
Iowa	68%	26%	42%	6
Kansas	35%	29%	6%	21
Kentucky	40%	37%	3%	25
Louisiana	45%	41%	4%	24
Maine	55%	29%	26%	11
Maryland	48%	21%	27%	9
Massachusetts	18%	23%	-5%	29
Michigan	40%	34%	6%	22
Minnesota	14%	23%	-9%	36
Mississippi	38%	46%	-8%	35
Missouri	20%	31%	-11%	39
Montana				
Nebraska	39%	27%	12%	16
Nevada	14%	35%	-21%	44
New Hampshire				
New Jersey	40%	24%	16%	14
New Mexico	51%	42%	9%	20
New York	64%	33%	31%	8
North Carolina	30%	37%	-7%	33
North Dakota				
Ohio	22%	32%	-10%	38
Oklahoma	88%	36%	52%	2
Oregon	15%	32%	-17%	41
Pennsylvania	26%	29%	-3%	27
Rhode Island	21%	29%	-8%	34
South Carolina	56%	37%	19%	13
South Dakota				
Tennessee	33%	38%	-5%	30
Texas	57%	36%	21%	12
Utah				
Vermont	94%	24%	70%	1
Virginia	28%	24%	4%	23
Washington	20%	26%	-6%	32
West Virginia	72%	37%	35%	7
Wisconsin	72%	26%	46%	5
Wyoming				

Pre-K enrollment data from Barnett et al. (2016).
Data on poverty share retrieved from Annie E. Casey Kids Count Data Center (2016) at http://datacenter.kidscount.org/data/tables/46-children-below-150-percent-poverty?loc=1&loct=2#detailed/2/2-52/false/573/any/327,328

Table 9 and Chart 1. Average of real spending per pupil for pre-K programs funded with and without K-12 school funding formula, indexed 2005-2006 = 100.

	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	annualized growth	standard deviation
SFF	100	102	104	110	120	118	121	122	124	129	2.8%	3.3%
All other	100	105	111	112	107	105	106	101	100	106	0.7%	4.3%

SFF = Average of School Funding Formula Pre-K Programs; All Other = Average of all non-SFF pre-K programs
Barnett et al. (2016).

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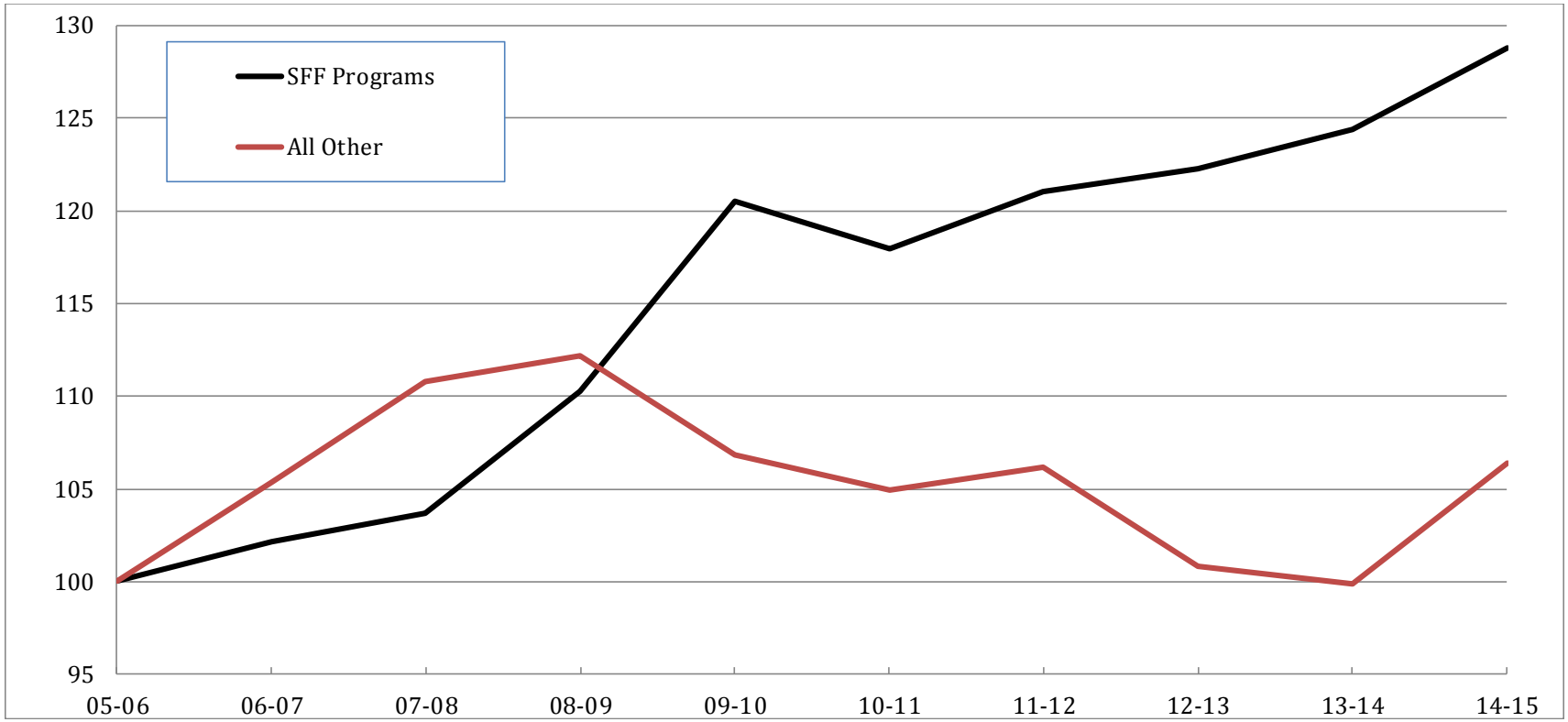

Chart 2. Real spending per pupil for pre-K programs funded with and without K-12 school funding formula, indexed 2005-2006 = 100.

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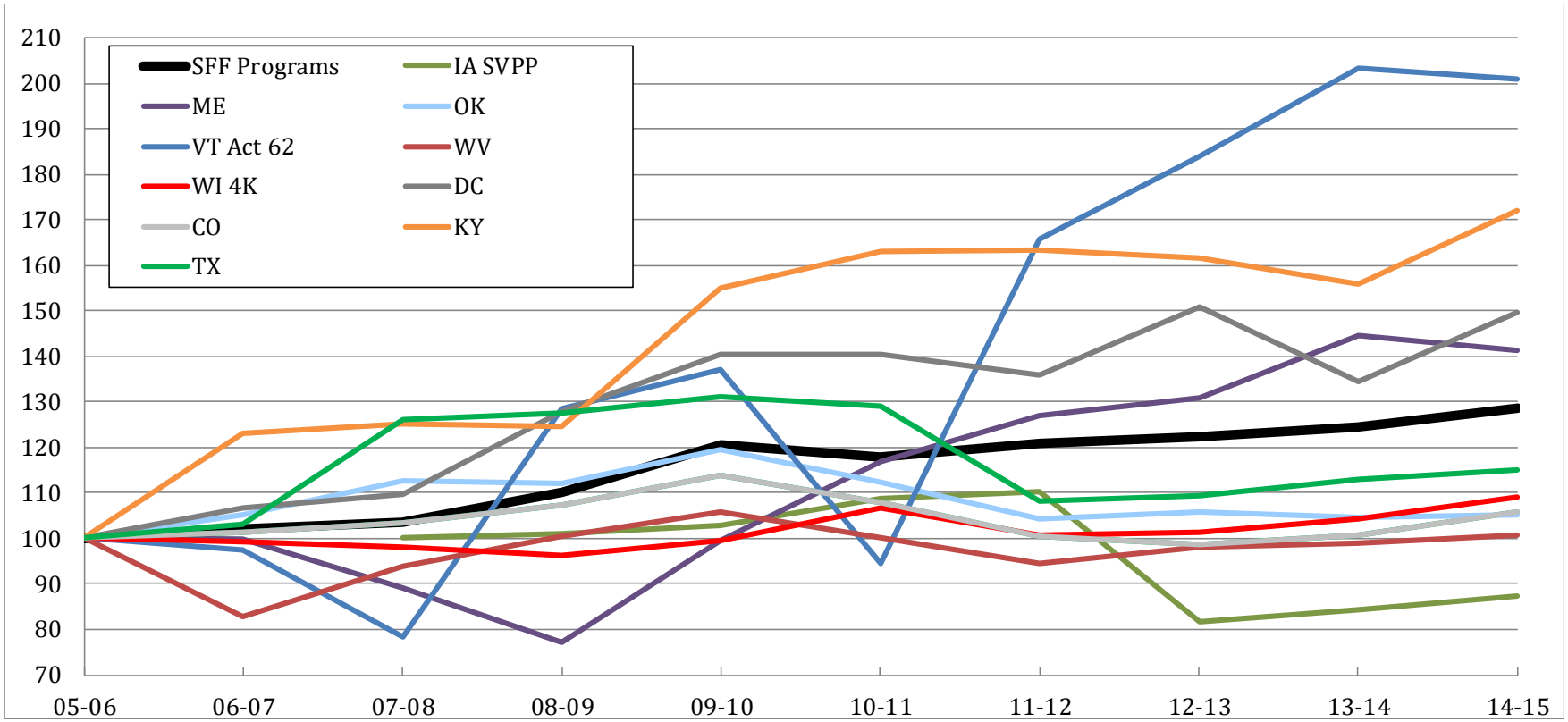

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Table 10. Pre-K teacher salaries for programs without salary parity policies – Estimating the impact of the school funding formula, 2015.

Program	Funding Mechanism	Median Pre-K Annual Salary Adjusted for Relative Prices	Ratio of Pre-K/K Annual Salary
Alabama	Discretionary Grant	$30,673	0.56
Arizona Quality First Scholarships	Discretionary Grant	$40,762	0.98
Arkansas	Discretionary Grant	$46,423	0.89
California	Discretionary Grant	$34,657	0.61
Colorado	School Funding Formula	$43,601	0.96
Connecticut School Readiness	Formula Grant	$46,359	0.71
Delaware	State Head Start Program	$34,339	0.59
District of Columbia	School Funding Formula	$47,349	1.07
Florida	Discretionary Grant	$36,093	0.78
Georgia	Discretionary Grant	$37,443	0.64
Illinois	Discretionary Grant	$36,000	0.75
Kansas State Pre-K	Formula Grant	$46,311	0.94
Maine	School Funding Formula	$40,768	0.80
Michigan	Formula Grant	$32,781	0.59
Nebraska	Formula Grant		0.99
New York	Formula Grant	$43,036	0.83
Oregon	State Head Start Program	$34,691	0.60
Pennsylvania Pre-K Counts	Discretionary Grant	$35,943	0.69
South Carolina 4K	Formula Grant	$53,083	0.94
South Carolina CDEP	Formula Grant	$53,083	0.94
Vermont EEI	Discretionary Grant	$39,152	0.74
Vermont Act 62	School Funding Formula	$39,152	0.74
Washington	Discretionary Grant	$33,140	0.62
Wisconsin 4K	School Funding Formula	$43,531	0.83
Average	School Funding Formula Programs	$42,880	0.88
Average	Other Programs	$36,573	0.75
Median	School Funding Formula Programs	$43,531	0.83
Median	Other Programs	$36,047	0.71
	2-Tailed T-Test P-Value	0.08	0.10

Salary data from U.S. Bureau of Labor Statistics (2016) Occupational Employment Statistics for 2015, retrieved at http://www.bls.gov/oes/.

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Table 11a. Spending per pupil for state-funded pre-K and K-12. Both the pre-K and K-12 spending levels are broken down into their federal, state, and local funding sources, 2014.

	K-12 Spending per Pupil				State-Funded Pre-K Spending per Pupil			
	Total	State	Local	Federal	Total	State	Local	Federal
Alabama	$8,315	$4,557	$2,861	$898	$6,666	$5,333	$1,333	$0
Alaska	$15,029	$10,100	$3,111	$1,819	$6,270	$6,270	$0	$0
Arizona	$7,082	$2,720	$3,421	$942	$3,413	$3,413	$0	$0
Arkansas	$7,935	$6,142	$944	$849	$4,372	$4,077	$0	$295
California	$7,788	$4,283	$2,679	$826	$5,441	$4,694	$12	$734
Colorado	$8,090	$3,519	$3,972	$607	$3,827	$2,506	$1,321	$0
Connecticut	$13,254	$5,222	$7,502	$530	$10,184	$8,106	$1,016	$1,062
Delaware	$10,668	$6,379	$3,542	$747	$7,100	$7,100	$0	$0
Florida	$5,276	$2,116	$2,527	$628	$2,304	$2,304	$0	$0
Georgia	$7,482	$3,292	$3,434	$756	$3,880	$3,880	$0	$0
Hawaii	$11,503	$10,042	$230	$1,219	$7,671	$7,671	$0	$0
Idaho	$5,943	$3,762	$1,515	$666	$0	$0	$0	$0
Illinois	$10,815	$3,969	$6,024	$822	$3,735	$3,161	$574	$0
Indiana	$10,195	$6,402	$3,007	$785	$2,875	$2,588	$288	$0
Iowa	$9,301	$4,874	$3,739	$688	$3,595	$2,987	$609	$0
Kansas	$8,146	$4,676	$2,875	$595	$2,262	$2,262	$0	$0
Kentucky	$7,416	$4,071	$2,499	$845	$7,679	$3,835	$1,019	$2,825
Louisiana	$9,061	$3,760	$3,914	$1,386	$4,658	$2,561	$88	$2,010
Maine	$11,501	$4,555	$6,142	$805	$5,966	$2,732	$3,234	$0
Maryland	$10,369	$4,593	$5,174	$601	$8,247	$3,572	$4,675	$0
Massachusetts	$13,184	$5,274	$7,277	$633	$3,847	$1,140	$0	$2,706
Michigan	$10,096	$5,805	$3,392	$899	$6,447	$6,447	$0	$0
Minnesota	$9,291	$6,411	$2,351	$530	$7,824	$7,824	$0	$0
Mississippi	$7,928	$3,980	$2,767	$1,181	$3,762	$1,778	$1,985	$0
Missouri	$9,562	$4,016	$4,704	$841	$3,211	$3,211	$0	$0
Montana	$10,561	$5,069	$4,245	$1,246	$0	$0	$0	$0
Nebraska	$11,073	$3,621	$6,556	$897	$5,711	$2,759	$588	$2,364
Nevada	$7,257	$4,579	$2,017	$660	$3,424	$2,388	$0	$1,036
New Hampshire	$13,583	$4,632	$8,204	$747	$0	$0	$0	$0
New Jersey	$15,909	$6,411	$8,830	$668	$12,149	$12,149	$0	$0
New Mexico	$8,154	$5,675	$1,427	$1,052	$4,722	$3,996	$0	$726
New York	$16,482	$6,692	$8,884	$907	$6,617	$6,617	$0	$0
North Carolina	$7,409	$4,320	$2,245	$845	$7,793	$4,601	$646	$2,546
North Dakota	$10,859	$6,396	$3,355	$1,108	$0	$0	$0	$0
Ohio	$10,185	$4,298	$5,123	$764	$4,000	$4,000	$0	$0
Oklahoma	$7,982	$3,951	$3,121	$910	$7,782	$3,709	$3,177	$896
Oregon	$9,888	$5,102	$3,995	$781	$8,648	$8,648	$0	$0
Pennsylvania	$11,476	$4,269	$6,461	$757	$5,630	$5,630	$0	$0
Rhode Island	$13,436	$5,092	$7,256	$1,088	$9,641	$9,641	$0	$0
South Carolina	$8,122	$3,769	$3,565	$788	$3,574	$1,981	$1,591	$3
South Dakota	$8,491	$2,615	$4,695	$1,180	$0	$0	$0	$0
Tennessee	$6,509	$3,046	$2,688	$775	$6,687	$5,219	$1,468	$0
Texas	$7,417	$2,892	$3,731	$794	$3,639	$3,584	$0	$56
Utah	$6,041	$3,244	$2,265	$532	$0	$0	$0	$0
Vermont	$13,754	$12,296	$619	$839	$6,589	$6,589	$0	$0
Virginia	$9,225	$3,662	$4,945	$618	$5,887	$3,742	$2,145	$0
Washington	$9,064	$5,484	$2,855	$725	$8,232	$7,599	$0	$633
West Virginia	$10,698	$6,215	$3,413	$1,070	$9,898	$6,071	$101	$3,726
Wisconsin	$9,233	$4,792	$3,749	$693	$6,018	$3,802	$2,216	$0
Wyoming	$13,386	$7,295	$5,234	$857	$0	$0	$0	$0
D.C.	$21,764	$19,566	N/A	$2,198	$17,509	$16,431	N/A	$1,078

K-12 spending per pupil data adapted from U.S. Census Bureau (2016).
Pre-K spending per pupil and enrollment data from Barnett et al. (2016).
State and local government expenditure data, in Table 11d, is Direct Expenditure data reported by U.S. Census Bureau, Department of Commerce (2016), in the 2013 State & Local Government database.

Table 11b. Difference in spending per pupil, K-12 minus state-funded pre-K. Spending differences are broken down into their federal, state, and local funding sources, 2014.

	Difference in Spending, K-12 - Pre-K			
	Total	State	Local	Federal
Alabama	$1,650	-$776	$1,527	$898
Alaska	$8,760	$3,830	$3,111	$1,819
Arizona	$3,669	-$694	$3,421	$942
Arkansas	$3,563	$2,065	$944	$554
California	$2,347	-$411	$2,667	$92
Colorado	$4,262	$1,013	$2,651	$607
Connecticut	$3,070	-$2,884	$6,485	-$531
Delaware	$3,568	-$721	$3,542	$747
Florida	$2,972	-$189	$2,527	$628
Georgia	$3,602	-$588	$3,434	$756
Hawaii	$3,831	$2,371	$230	$1,219
Idaho	$5,943	$3,762	$1,515	$666
Illinois	$7,080	$808	$5,450	$822
Indiana	$7,320	$3,815	$2,720	$785
Iowa	$5,706	$1,887	$3,131	$688
Kansas	$5,884	$2,414	$2,875	$595
Kentucky	-$263	$237	$1,480	-$1,980
Louisiana	$4,403	$1,200	$3,827	-$623
Maine	$5,535	$1,823	$2,908	$805
Maryland	$2,121	$1,021	$499	$601
Massachusetts	$9,337	$4,133	$7,277	-$2,074
Michigan	$3,649	-$642	$3,392	$899
Minnesota	$1,467	-$1,413	$2,351	$530
Mississippi	$4,166	$2,202	$782	$1,181
Missouri	$6,350	$804	$4,704	$841
Montana	$10,561	$5,069	$4,245	$1,246
Nebraska	$5,362	$862	$5,968	-$1,468
Nevada	$3,833	$2,191	$2,017	-$375
New Hampshire	$13,583	$4,632	$8,204	$747
New Jersey	$3,760	-$5,737	$8,830	$668
New Mexico	$3,431	$1,679	$1,427	$325
New York	$9,866	$75	$8,884	$907
North Carolina	-$384	-$281	$1,599	-$1,701
North Dakota	$10,859	$6,396	$3,355	$1,108
Ohio	$6,185	$298	$5,123	$764
Oklahoma	$200	$241	-$56	$14
Oregon	$1,240	-$3,546	$3,995	$781
Pennsylvania	$5,846	-$1,361	$6,461	$757
Rhode Island	$3,796	-$4,548	$7,256	$1,088
South Carolina	$4,548	$1,788	$1,975	$785
South Dakota	$8,491	$2,615	$4,695	$1,180
Tennessee	-$178	-$2,173	$1,221	$775
Texas	$3,777	-$691	$3,731	$738
Utah	$6,041	$3,244	$2,265	$532
Vermont	$7,166	$5,708	$619	$839
Virginia	$3,338	-$80	$2,800	$618
Washington	$833	-$2,115	$2,855	$92
West Virginia	$799	$145	$3,311	-$2,657
Wisconsin	$3,216	$990	$1,533	$693
Wyoming	$13,386	$7,295	$5,234	$857
D.C.	$4,255	$3,135	N/A	$1,120

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Table 11c. Estimate for change in enrollment under universal pre-K coverage, by state, 2014.

	Share of 4-Yr Old Population		Difference	Level of 4-Yr. Old Population	
	Enrollment in Pre-K	Target	Target-Enrollment	Enrollment in Pre-K	Target-Enrollment
Alabama	12.0%	80.0%	68.0%	7,243	41,094
Alaska	3.1%	80.0%	76.9%	319	7,983
Arizona	5.5%	80.0%	74.5%	4,850	66,138
Arkansas	38.5%	80.0%	41.5%	14,735	15,846
California	17.5%	80.0%	62.5%	87,794	313,633
Colorado	23.3%	80.0%	56.7%	15,913	38,736
Connecticut	23.1%	80.0%	56.9%	8,976	22,176
Delaware	7.5%	80.0%	72.5%	843	8,171
Florida	76.5%	80.0%	3.5%	166,522	7,663
Georgia	58.8%	80.0%	21.2%	80,430	29,054
Hawaii	2.1%	80.0%	77.9%	365	13,596
Idaho	0.0%	80.0%	80.0%	0	23,154
Illinois	27.0%	80.0%	53.0%	43,387	84,943
Indiana	0.5%	80.0%	79.5%	415	67,587
Iowa	61.1%	80.0%	18.9%	24,384	7,520
Kansas	20.0%	80.0%	60.0%	8,134	24,326
Kentucky	25.8%	80.0%	54.2%	14,229	29,961
Louisiana	31.9%	80.0%	48.1%	19,732	29,738
Maine	36.2%	80.0%	43.8%	4,797	5,793
Maryland	36.0%	80.0%	44.0%	26,631	32,549
Massachusetts	7.2%	80.0%	72.8%	5,238	52,700
Michigan	32.0%	80.0%	48.0%	37,112	55,592
Minnesota	1.0%	80.0%	79.0%	735	55,431
Mississippi	4.1%	80.0%	75.9%	1,641	30,210
Missouri	3.9%	80.0%	76.1%	2,961	57,675
Montana	0.0%	80.0%	80.0%	0	12,276
Nebraska	30.5%	80.0%	49.5%	8,020	13,021
Nevada	3.0%	80.0%	77.0%	1,085	28,243
New Hampshire	0.0%	80.0%	80.0%	0	13,195
New Jersey	28.6%	80.0%	51.4%	30,703	55,202
New Mexico	30.0%	80.0%	50.0%	8,397	13,990
New York	48.7%	80.0%	31.3%	111,973	71,994
North Carolina	21.5%	80.0%	58.5%	26,851	72,946
North Dakota	0.0%	80.0%	80.0%	0	9,681
Ohio	4.8%	80.0%	75.2%	6,654	104,987
Oklahoma	74.8%	80.0%	5.2%	40,085	2,776
Oregon	10.0%	80.0%	70.0%	4,674	32,608
Pennsylvania	12.0%	80.0%	68.0%	17,093	97,222
Rhode Island	2.8%	80.0%	77.2%	306	8,434
South Carolina	46.9%	80.0%	33.1%	28,102	19,878
South Dakota	0.0%	80.0%	80.0%	0	11,817
Tennessee	19.3%	80.0%	60.7%	15,648	49,222
Texas	47.8%	80.0%	32.2%	189,796	127,999
Utah	0.0%	80.0%	80.0%	0	51,220
Vermont	83.9%	83.9%	0.0%	5,038	0
Virginia	17.9%	80.0%	62.1%	18,250	63,291
Washington	8.0%	80.0%	72.0%	7,128	64,314
West Virginia	68.0%	80.0%	12.0%	13,779	2,438
Wisconsin	63.7%	80.0%	16.3%	44,364	11,338
Wyoming	0.0%	80.0%	80.0%	0	7,813
D.C.	86.3%	86.3%	0.0%	6,637	0

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Table 11d. Estimates for additional expenditures generated by K-12 formula applied to universal pre-K at age 4 for a full school day, by state 2014.

	Additional Expenditure (Revenue) by Level of Government			Additional Expenditure as a Percentage of Expenditure by Level of Government	
	Total	State	Local	State	Local
Alabama	$354	$182	$129	0.8%	0.6%
Alaska	$123	$82	$26	0.8%	0.5%
Arizona	$486	$177	$243	0.7%	0.9%
Arkansas	$178	$128	$29	0.9%	0.3%
California	$2,649	$1,307	$1,074	0.7%	0.4%
Colorado	$381	$152	$196	0.7%	0.7%
Connecticut	$321	$90	$225	0.4%	1.3%
Delaware	$90	$52	$32	0.7%	1.0%
Florida	$535	-$15	$440	0.0%	0.5%
Georgia	$507	$48	$376	0.1%	0.9%
Hawaii	$158	$137	$3	1.2%	0.1%
Idaho	$138	$87	$35	1.3%	0.7%
Illinois	$1,226	$372	$748	0.6%	1.0%
Indiana	$692	$434	$204	1.6%	0.8%
Iowa	$209	$83	$104	0.5%	0.7%
Kansas	$246	$133	$93	1.1%	0.7%
Kentucky	$218	$125	$96	0.5%	0.7%
Louisiana	$356	$136	$192	0.5%	0.9%
Maine	$93	$35	$50	0.5%	1.1%
Maryland	$394	$177	$182	0.6%	0.6%
Massachusetts	$744	$300	$422	0.6%	1.3%
Michigan	$697	$299	$314	0.7%	0.7%
Minnesota	$516	$354	$132	1.3%	0.4%
Mississippi	$246	$124	$85	0.8%	0.7%
Missouri	$570	$234	$285	0.9%	1.1%
Montana	$130	$62	$52	1.1%	1.4%
Nebraska	$187	$54	$133	0.7%	1.0%
Nevada	$209	$132	$59	1.5%	0.5%
New Hampshire	$179	$61	$108	1.0%	2.0%
New Jersey	$994	$178	$759	0.3%	1.6%
New Mexico	$143	$93	$32	0.7%	0.4%
New York	$2,291	$490	$1,634	0.4%	0.9%
North Carolina	$530	$308	$207	0.8%	0.5%
North Dakota	$105	$62	$32	1.3%	0.9%
Ohio	$1,110	$453	$572	0.8%	1.1%
Oklahoma	$30	$21	$6	0.1%	0.0%
Oregon	$328	$150	$149	0.7%	0.8%
Pennsylvania	$1,216	$392	$739	0.6%	1.2%
Rhode Island	$114	$42	$63	0.6%	1.4%
South Carolina	$289	$125	$126	0.5%	0.6%
South Dakota	$100	$31	$55	0.8%	1.6%
Tennessee	$318	$116	$151	0.5%	0.5%
Texas	$1,666	$239	$1,186	0.2%	0.9%
Utah	$309	$166	$116	1.2%	1.0%
Vermont	$36	$29	$3	0.6%	0.1%
Virginia	$645	$230	$364	0.6%	1.0%
Washington	$589	$338	$204	0.9%	0.5%
West Virginia	$37	$17	$54	0.2%	0.9%
Wisconsin	$247	$98	$110	0.4%	0.4%
Wyoming	$105	$57	$41	1.4%	0.9%
D.C.	$28	$21	N/A	0.1%	N/A

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