

# Proposal 1: Expanding Preschool Access for Disadvantaged Children

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## Introduction

Poverty has little association with the cognitive abilities of nine-month-old children (Fryer and Levitt 2013).<sup>1</sup> By the start of kindergarten, however, not only do poor children perform significantly worse on tests of cognitive ability than children from higher-income families, but teachers also report that these children have much more difficulty paying attention and exhibit more behavioral problems (Duncan and Magnuson 2011).<sup>2</sup> The poverty gap in school readiness appears to be growing as income inequality widens (Reardon 2011).

### THE POLICY LANDSCAPE

One popular proposal to narrow this gap is to expand formal educational opportunities to poor children under the age of five. Stark gaps in preschool participation by family socioeconomic status mirror the achievement gaps described above. The most recent data available show that only about 50 percent of four-year-old children in families in the lowest income quintile are enrolled in preschool. Among families in the top income quintile, on the other hand, the preschool enrollment rate of four-year-olds is considerably higher, at 76 percent. Nearly all (88 percent) of preschool participants in the lowest-income families are enrolled in public programs.<sup>3</sup>

Poor children can currently attend preschool for free through two programs: the federally funded Head Start program, which targets children in families with incomes less than 130 percent of the federal poverty level; and state-funded public programs, which may also serve middle-class children. As

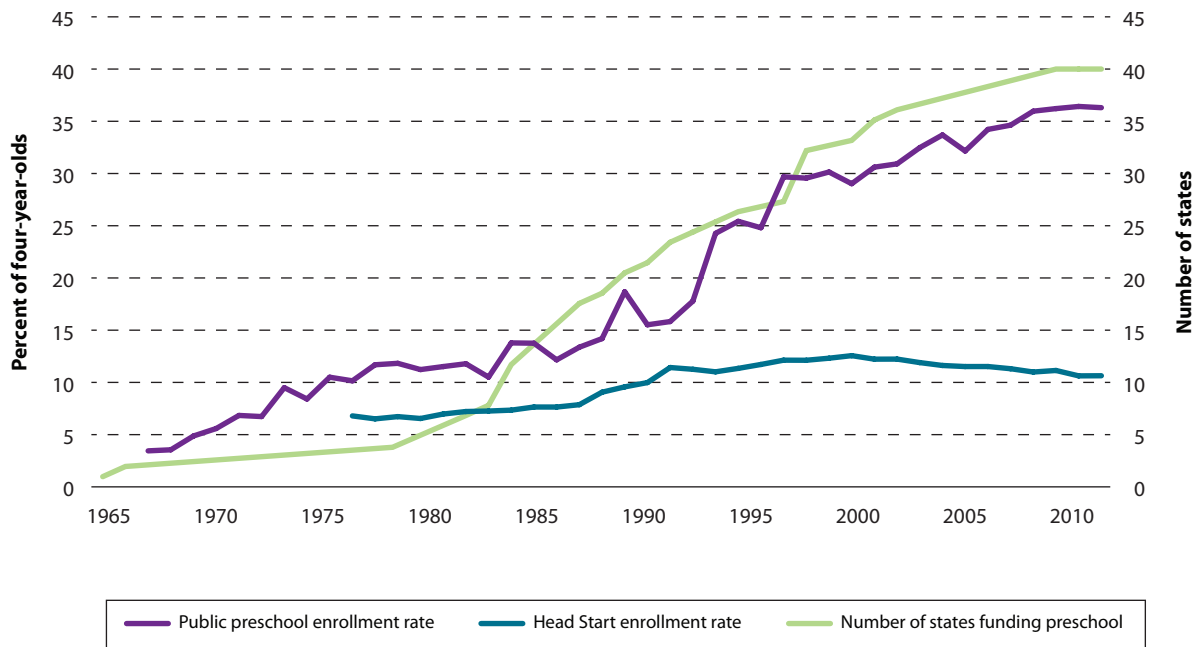
shown in figure 1-1, only about 10 percent of four-year-old children nationwide participate in Head Start, a rate that has stayed roughly constant for the past twenty years. Essentially all the growth in public preschool enrollment over time has come from the expansion of state-funded programs, which grew from four states in 1980 to forty states today.

Even so, many state programs have weak standards, as shown in figure 1-2. During the 2011–12 school year, only 9 percent of all four-year-olds nationwide—roughly 31 percent of those enrolled in state-funded preschools—were enrolled in programs that met at least eight common quality benchmarks related to curriculum, teacher education, class size, and support services.<sup>4</sup> The average Head Start program meets only five of these benchmarks (Espinosa 2002).

In this context, President Obama proposed to expand access to preschool education while simultaneously leveling up preschool quality nationwide (Office of the Press Secretary 2013). The White House proposal would provide block grants to states to offer free preschool education to four-year-old children from low- and moderate-income families, provided that these preschool programs score highly on the quality standards checklist presented on the vertical axis in figure 1-2.<sup>5</sup> State and local governments are not waiting for federal action. Most notably, New York City mayor Bill DeBlasio campaigned on the promise of funding universal pre-kindergarten (pre-K), and in March 2014 New York governor Andrew Cuomo and the state legislature agreed to a five-year, \$1.5 billion plan to offer high-quality full-day pre-K—not just in New York City, but across the state.

FIGURE 1-1.

## Percent of Four-Year-Olds Enrolled in Public Preschool Programs and Number of States Funding Preschool Programs, 1965–2011



Sources: Barnett et al. 2012; The Inter-university Consortium for Political and Social Research (ICPSR) n.d.; Martin et al. 2013; National Bureau of Economic Research (NBER) n.d.; Office of Head Start (OHS) various years; National Center for Health Statistics (NCHS) 2005; authors' calculations.

Note: Data on the public preschool enrollment rate come from the Current Population Survey, October supplement. For 1968–1992, data are derived from ICPSR (n.d.). For 1993–2011, data are derived from NBER (n.d.). The Head Start enrollment rate is the Head Start enrollment of four-year-olds (calculated as total national Head Start enrollment multiplied by the share of enrollment comprising four-year-olds) in a given year divided by the number of children born in the United States four years prior. Data on Head Start enrollment come from the OHS (various years). Data on the number of children born for 1990–2007 (corresponding to the number of children age four for 1994–2011) come from Martin and colleagues (2013). Data on the number of children born for 1974–1989 (corresponding to the number of children age four for 1978–1993) come from NCHS (2005). Data on the number of states funding preschool come from Barnett and colleagues (2012).

Evidence on the impacts of early education is broadly supportive of policy efforts in early education. The research on early education has shown it improves participants' outcomes across a variety of dimensions: higher school attendance rates, fewer failing grades, less grade retention, a higher likelihood of graduating from high school, and less involvement in criminal activity. Improvements in these areas account for many of the economic benefits of preschool programs. However, important questions remain regarding access—the benefits versus the costs of expanding public preschool options beyond lower-income children—and exactly how quality would be best defined from a policy perspective. This policy memo is directed primarily toward state and local policymakers who want to strengthen the public preschool options in their area while considering budgetary trade-offs.

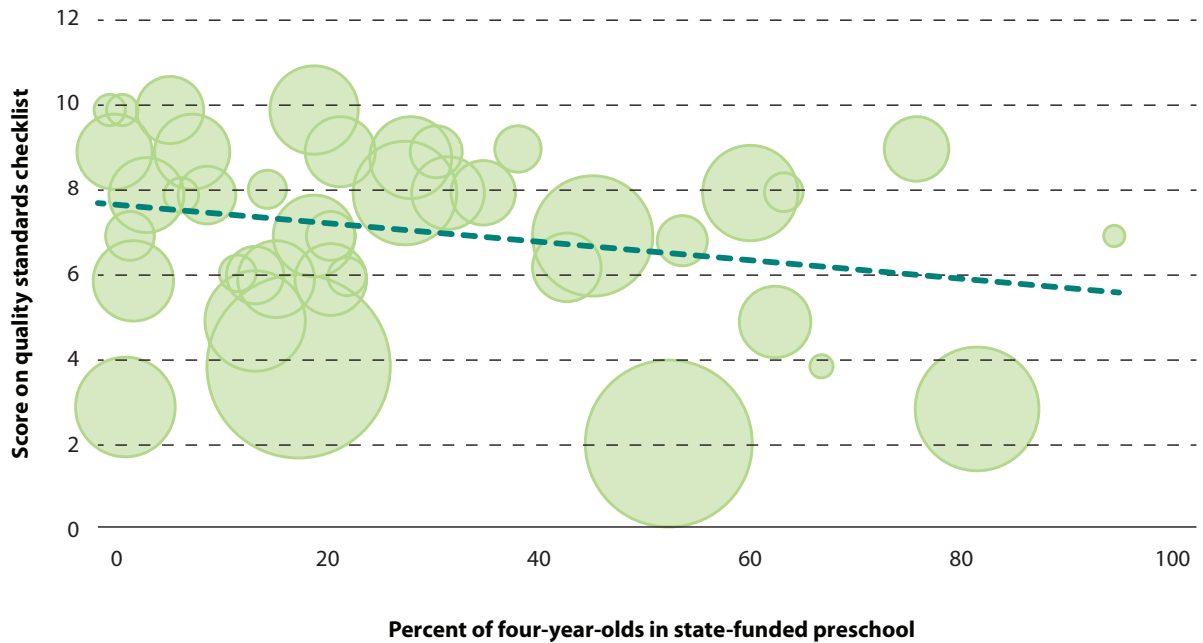
## The Challenge

Given that there are several ways to expand preschool access, the policy challenge is to design an expansion program that is cost-effective. Cost-effectiveness requires that policymakers consider the likely benefits of a particular intervention in a given setting.

A useful organizing framework for the policy evidence is to consider the quality of a possible preschool intervention against the quality of the environment in which a child would otherwise be placed. A preschool program with a developmentally appropriate curriculum, nurturing student–teacher interactions, and parental support might be beneficial in preparing disadvantaged children for school, but less beneficial for children from an already otherwise enriched environment. Even a lower-quality preschool program can have an impact on children from the most disadvantaged backgrounds.

FIGURE 1-2.

## Relationship between Quality and Access in State-Funded Preschool Programs, 2011–12 School Year



Source: Barnett et al. 2012.

Note: Bubble size represents the number of children born in the state four years prior. The dashed line represents the regression fit, weighting by this figure; the unweighted fit is substantively similar. The quality standards checklist gives equal weight to each of ten factors: (1) program has comprehensive early learning standards; (2) teachers are required to have a bachelor's degree; (3) teachers are required to have specialized training in preschool; (4) assistant teachers are required to have a Child Development Associates (CDA) degree (or equivalent); (5) teachers are required to attend at least fifteen hours per year of in-service; (6) the maximum class size is twenty students; (7) staff to child ratios are 1:10 or better; (8) program offers vision, hearing, health, and one support service; (9) program offers at least one meal; (10) program offers site visits.

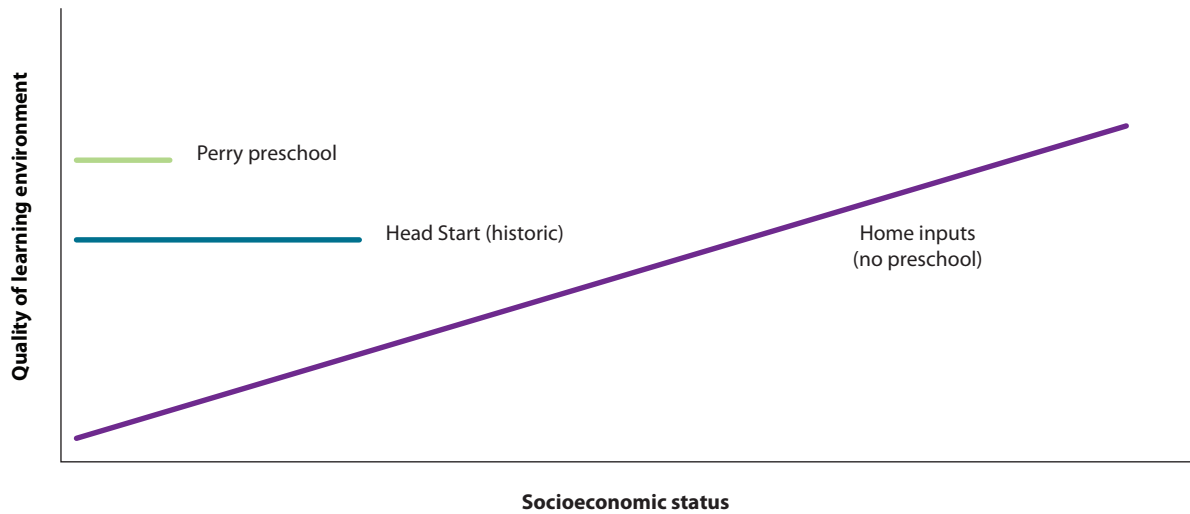
This organizing framework is illustrated graphically in figure 1-3. On the horizontal axis is an index measure of a child's socioeconomic status, which can be thought of as a combination of family income, educational attainment of the adults in the home, and so on. On the vertical axis is the quality of the child's learning environment. Considering home inputs alone, as shown by the purple line, there is a positive relationship between the child's socioeconomic status and the quality of the child's learning environment.<sup>6</sup>

One line of evidence on the longer-run impacts of preschool participation derives from programs of the first variety—programs that are very high quality and serve very disadvantaged populations. Arguably the most famous of these is the Perry Preschool program, drawn in light green in figure 1-3. Perry Preschool was a two-year intervention in the early 1960s involving half-day school attendance and weekly home visits for extremely disadvantaged three- and four-year-old African American children living in Ypsilanti, Michigan.

Perry (along with other high-quality, targeted preschool interventions, such as the Abecedarian and Nurse-Family Partnership) provides excellent evidence because it was a randomized controlled experiment that collected follow-up data on participants for decades. Early findings from Perry showed initial increases in IQ scores for the treatment group, although these gains faded to zero by the time participants reached age ten (Gramlich 1986; Schweinhart et al. 2005). Despite no difference in measured IQ by late childhood, the Perry treatment students performed statistically significantly better in school: they were absent fewer days, were less likely to have been assigned to special education, had fewer failing grades and higher high school grade point averages, were more likely to graduate from high school, and generally reported more-positive attitudes toward schooling. These improvements persisted into adulthood, when the treatment group was statistically significantly more likely to be employed and less likely either to have been arrested or to have received transfer payments such as cash welfare or Supplemental

FIGURE 1-3.

## Framework for Considering the Impact of Preschool, Historic Context



Nutrition Assistance Program benefits (formerly known as the Food Stamp Program).<sup>7</sup>

Considering the improvements in long-term outcomes from a monetary standpoint, every \$1.00 spent on the program translated into \$8.00 worth of benefits (Heckman et al. 2010). The high rate of return to Perry Preschool may represent an upper bound on the return to preschool investment today, because (as illustrated in figure 1-3) it represented such a large increase in the quality of the participants’ learning environments.

Another line of evidence derives from Head Start, the long-standing federal preschool program. Head Start is considered to be lower quality than Perry Preschool, and although it is targeted to low-income children, it serves a large number of children who are not subject to such extreme levels of disadvantage. As represented by the blue line in figure 1-3, the long-term Head Start evidence spans cohorts of preschool-age children between 1968 and 1990, a period of expansion in other preschool opportunities for low-income children (see figure 1-1). Although experimental evidence is not available from this period, there are several careful quasi-experimental studies that demonstrate impressive impacts of Head Start on both short- and long-term outcomes. For example, Head Start has been shown to have a substantial positive effect on vocabulary test scores during elementary school and to cause a child to be less likely to repeat a grade (Currie and Thomas 1995; Deming 2009). While test score gains fade to a fraction of their initial levels by ages eleven to fourteen, there is evidence that some Head Start participants are less likely to have ever been charged with a crime or to be a teenage parent,

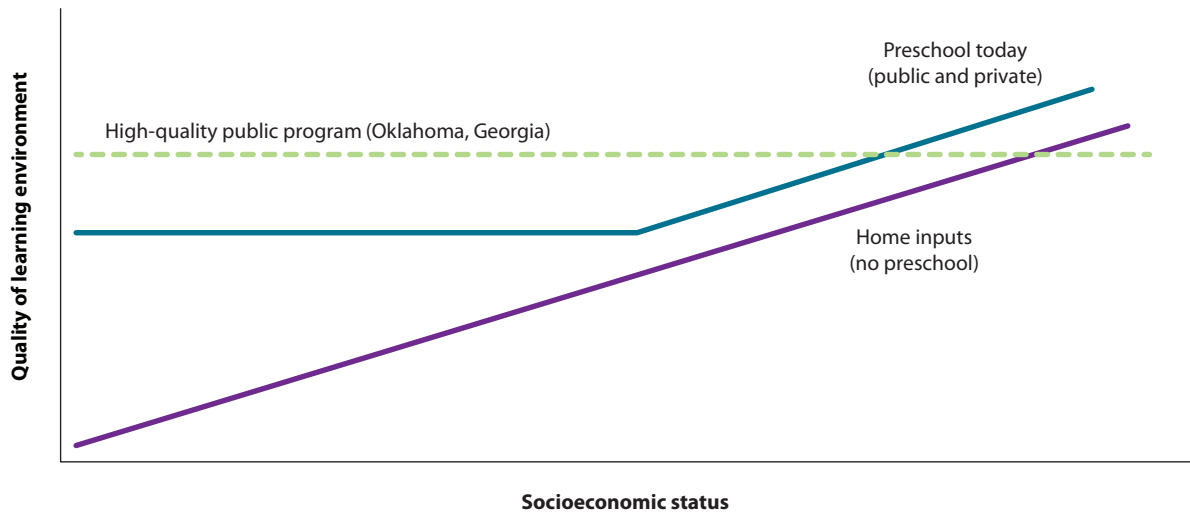
and are more likely to complete high school and attend college (Deming 2009; Garces, Thomas, and Currie 2002).<sup>8</sup>

One criticism of Head Start is that it is low quality on average, and exhibits variable quality across locations. While it is considered lower quality than the Perry program, figure 1-3 illustrates that Head Start is nonetheless a higher-quality environment than what the participant would experience in the absence of the program, either at home or in the type of child care that is typically available to low-income parents (Currie 2001). Since Head Start represents a less dramatic increase in the quality of a child’s environment than Perry Preschool, its long-term impacts are more muted but still positive.

Figure 1-1 shows that more children across the income distribution are attending preschool today than ever before. However, preschool quality varies across socioeconomic status, as illustrated in the conceptual diagram in figure 1-4. Against the backdrop of increasing preschool enrollment, the first randomized evaluation of Head Start was conducted in 2002; the results sharply differ from the earlier quasi-experimental research. While four-year-old Head Start participants in the Head Start Impact Study saw faster improvements in language and literacy skills over the course of their Head Start year, these relative gains were gone by the end of kindergarten; by the end of third grade, there remained only suggestive evidence of a positive impact of Head Start on reading scores. Furthermore, in no follow-up year did the Impact Study treatment students outperform the control students in math skills, grade retention, or teacher reports of student behavior (Puma et al.

FIGURE 1-4.

## Framework for Considering the Impact of Preschool, Current Policy Context



2012). While it is possible that the prior nonexperimental Head Start research yielded upward-biased estimates, it may also be the case that the continued growth in state-funded programs and in maternal employment (and use of other nonparental child care) has diminished Head Start’s potential impact. In other words, Head Start may not represent the same increase in the quality of a child’s environment today as it did in the past when there were fewer preschool alternatives. Indeed, the majority (roughly 60 percent) of children in the Head Start Impact Study control group attended some other formal education or child-care setting (Puma et al. 2012).<sup>9</sup>

A recent experimental evaluation of the state-funded pre-K program in Tennessee—where preschool or center-based child-care participation rates at age four in the control group were lower (27 percent) and program quality was higher—has yielded results that are slightly more positive.<sup>10</sup> The Tennessee program, which was primarily targeted toward youth from low-income households, yielded higher scores for participants on tests of literacy, language, and math at the end of the pre-K year; participants were rated by their kindergarten teachers as being more ready for school (Lipsey et al. 2013a). While the difference in measured cognitive abilities of the treatment and control groups disappeared by the end of kindergarten, former pre-K participants were much less likely to have been retained in kindergarten and had slightly stronger school attendance records subsequent to the pre-K year (Lipsey et al. 2013b).

As was the case with Head Start, the only evidence on longer-term outcomes of state-funded preschool programs is nonexperimental. Much of this research has to date focused

on programs in two states—Georgia and Oklahoma—that meet essentially all of the same standards as the Tennessee program but serve much higher shares of the four-year-old population (see box 1-1).

The introduction of a high-quality, universal preschool program is illustrated in figure 1-4 by the light green dashed line. In this framework, enrolling in the high-quality public preschool improves the quality of the learning environment experienced by low-socioeconomic status children, albeit by less than the full distance from no preschool, because many of these children would be enrolled in some preschool program even in the absence of the new, high-quality option. Yet for higher-socioeconomic status children the improvement in learning environment represented by the introduction of high-quality preschool is smaller, and in some cases may even be negative.<sup>11</sup>

The empirical results of the high-quality programs in Oklahoma and Georgia line up well with the conceptual framework illustrated in figure 1-4. By comparing children just old enough to enter preschool to those who just miss the entry age cutoff (a regression discontinuity approach), studies have found that the Oklahoma preschool program raises short-term test scores (Gormley and Gayer 2005; Wong et al. 2008).<sup>12</sup> Where reported, effect sizes for disadvantaged students (minorities and low-income children) are in the range of those found in the Tennessee study (Gormley and Gayer 2005). Subsequent analyses find that the positive impacts of the Georgia and Oklahoma preschool programs on disadvantaged children are still measurable when the students reach fourth and eighth grades (Cascio and Schanzenbach 2013; Fitzpatrick 2008). Students in Georgia and

Oklahoma who are more advantaged, however, do not display sustained test score improvements from access to high-quality, universal preschool.

The lack of test score impacts for more-advantaged students in Georgia and Oklahoma, and the similarity of initial impacts in these states and in Tennessee, suggest that a universal, high-quality program may yield no academic gains above and beyond a targeted one, though it comes at an additional cost.<sup>13</sup> Consequently, one might wonder what the optimal mix should be between quality and access. For example, could some of the gains from high-quality targeted programs, like that in Tennessee, be achieved for disadvantaged students at a similar cost in higher-access, lower-quality programs, such as through positive spillovers from the presence of higher-income children?

Unfortunately, though quality and access matter considerably for the cost of operating a pre-K program, we have limited policy evidence to address questions about their impacts on potential benefits. For example, there is limited evidence of short-term benefits from higher-access, lower-quality programs. Likewise, while the regression discontinuity design has now been applied in multiple states to estimate the short-term cognitive impacts of preschool, and effect sizes do not appear to be strongly related to quality (see Wong et al. 2008), state-specific estimates are somewhat uncertain, and states differ along other dimensions—most importantly in terms of how nonparticipants spent the year in the absence of preschool.

**BOX 1-1.****Case Study on Universal Pre-Kindergarten in Georgia and in Oklahoma**

Georgia was the first state to offer free pre-K for all four-year-olds. Georgia's program, which began in fall 1995, is funded by state lottery proceeds and serves the four-year-old population through a combination of half-day and full-day programs operated out of both public schools and private centers. In fall 1998 Oklahoma became the second state to offer universal public pre-K. Oklahoma's pre-K program differs from Georgia's in several respects: it is funded through not just state, but also local and federal tax revenues; it operates almost exclusively out of public schools; and it serves a higher share of the four-year-old population (74 percent to Georgia's 59 percent, according to the most recent estimates). These differences aside, both programs meet most common quality benchmarks, scoring high (8 or 9) on the National Institute for Early Education Research scale (figure 1-3).

There is a growing body of evidence on the impacts of these programs on children's readiness for kindergarten. When tested at age five, children who attended Oklahoma pre-K for a full academic year outperformed their counterparts who just missed being able to attend the program given their birthdays (Gormley and Gayer 2005; Wong et al. 2008). Comparable estimates do not yet exist for Georgia, but Fitzpatrick (2008) found that cohorts of children eligible to attend Georgia's pre-K program (those aged four in fall 1995 and later) performed better on tests in fourth grade than did ineligible cohorts, both in absolute terms and relative to cohorts of children aged four before and after fall 1995 in other states. However, the positive impacts of the Georgia program on fourth-grade test scores were confined to disadvantaged children. Using a similar approach to estimate the test score impacts of both the Georgia and Oklahoma programs, Cascio and Schanzenbach (2013) similarly find a positive impact on fourth-grade scores for children from lower-income families. They also find a positive impact on eighth-grade test scores for lower-income children, but it is smaller than the impact on fourth-grade scores.

The apparent successes of the Georgia and Oklahoma programs in improving children's school readiness have fueled recent calls for government-funded preschool expansion. However, we think that research findings do not necessarily support universal programs in all scenarios. The impacts on test scores are largest for economically disadvantaged children, particularly in later grades. This pattern of findings is sensible given that children from higher-income families will have more and better options for school enrollment at age four (figure 1-4). Indeed, evidence suggests that for every ten children from higher-income families who enrolled in the Georgia or Oklahoma programs, four or five would otherwise have been enrolled in a private preschool program. There is little research evidence to suggest that children from higher-income families or the families themselves benefit in any way beyond saving on child-care expenses (Cascio and Schanzenbach 2013). While worthy, the goal of reducing the child-care costs for middle-class families could potentially be achieved in a lower-cost way. Thus, given the policy evidence, only if state or local budget conditions permit would we recommend consideration of a widely accessible program, and even then we urge policymakers to learn as much as possible about the alternatives to the proposed program for any newly targeted children.

## THE ROLE OF SUBSTITUTION

It is challenging to design a state preschool program—even one targeted toward low-income children—that does not induce a lot of switching from another preschool to the public program. The largest impact per unit cost comes from moving low-income children from attending no preschool to attending some preschool. Many low-income children would otherwise attend another program such as Head Start or center-based care; the additional educational impact of attending a high-quality state preschool program will be more muted for these children.

As a high-quality program becomes less targeted toward low-income children and enrolls more middle-income children, the share of new enrollees who otherwise would have attended preschool grows. The additional educational impact of switching from a high-quality, private preschool to a high-quality, public preschool is likely to be close to zero. The number of switchers and the cost of the program can be limited somewhat by charging tuition to higher-income families who enroll in the program.

## ENSURING HIGH QUALITY

While “high quality” is a concept easily understood in theory, it is more difficult to measure and enforce in practice. One way to judge a state’s overall preschool quality is to use the criteria established by the National Institute for Early Education Research (NIEER); NIEER measures how many of ten benchmarks regarding the level of inputs are met by a state’s preschool policy. (This index is represented on the vertical axis of figure 1-2.) There are drawbacks to this approach because these benchmarks are only rough proxies for the classroom practices that are thought to make a high-quality program. For example, a state’s policy meets two benchmarks if it has a class-size cap of twenty and a maximum student–teacher ratio of 10:1. The state policy meets three more benchmarks based on the training level of teachers: one if the head teacher is required to hold a bachelor’s degree, a second if the teacher is required to have specialized pre-K training, and a third if assistant teachers are required to hold at least an Associate degree in child development. While on average these characteristics may be positively associated with higher-quality programs, they are not necessarily the causal pathway to a high-quality classroom experience.

For example, it may not actually improve preschool classrooms to replace teachers who have no bachelor’s degrees but years of experience with teachers who have bachelor’s degrees but no experience. Thus, changing a policy to meet the NIEER benchmark may not actually result in an improved classroom experience for preschool children. In a similar spirit, many states have adopted Quality Rating and Improvement Systems

that rates individual programs within a state along a variety of dimensions, most of them having to do with input measures. While such measures are only rough proxies for the classroom environment, they do provide important information to families deciding among various preschool options.

A 2013 review of the evidence by a panel of experts for the Society for Research in Child Development concluded that the most important aspects of quality in preschool education are stimulating and supportive interactions between teachers and students, and effective use of a developmentally focused, intensive curriculum (Yoshikawa et al. 2013). There are promising methods to identify the programs and classrooms that perform well on these measures, such as classroom observations using the Classroom Assessment Scoring System (CLASS), which measures the degree to which teachers interact with their students in a manner that stimulates learning in an emotionally supportive environment. Recent work by Sabol and colleagues (2013) has shown that preschool classroom observations of the interactions between teachers and students using CLASS are more predictive of test-score gains than are other inputs measures such as teacher education or class size. A drawback of this approach is that it is relatively costly to implement.

## A New Approach

Since the impact of preschool expansions hinges on both the level of quality of the preschool program and on how much preschool improves the quality the child’s experience relative to what the child would be doing otherwise, policymakers must carefully consider the existing context in order to design and implement an effective preschool program.

### NO PROGRAM: START A HIGH-QUALITY, TARGETED PROGRAM

In states where there is currently no public preschool, the evidence suggests a targeted high-quality program may yield a strong return. Therefore, a better investment may be in a smaller, higher-quality program rather than in a larger, low-quality program, especially if there are substantial numbers of low-income children who are not currently enrolled in a preschool program. If substantial numbers of children are already enrolled in Head Start, switching into a higher-quality state program may still improve children’s educational outcomes. Though we expect these gains to be lower for Head Start children than for children who would not otherwise have attended any preschool, there is evidence that Head Start has shifted its emphasis toward children ages three and under as state-funded preschool programs have expanded (Bassok 2012). Some children newly enrolled in state programs may

then be attending Head Start at age three instead of age four, and thus be receiving two years of government-funded early education instead of just one. For states with strong Head Start programs, it would be useful to work closely with the existing Head Start program to ensure the highest possible return on the overall public investment.

#### **EXISTING LOWER-QUALITY PROGRAM: IMPROVE QUALITY**

In states with programs that score poorly on quality measures—such as California, Florida, Ohio, and Texas—the best plan may be to increase the quality of the program before expanding access to more students. Adopting state standards in line with the NIEER quality benchmarks may be a first step to increasing quality. For example, requiring head teachers to have a bachelor's degree, providing health screening and referrals, introducing site visits to monitor quality, and requiring a student-teacher ratio of 10:1 or higher are all markers of quality used by NIEER. It is important to note that these quality benchmarks are only rough proxies for the learning environment experienced by the child. As a result, meeting more of the NIEER quality benchmarks may not substantially improve a child's classroom experience. In other words, meeting the benchmarks might be necessary—but perhaps not sufficient—to achieve a high-quality program. Another promising approach would be to ensure that preschools have implemented a developmentally focused, intensive curriculum with integrated, in-classroom professional development as recommended in the Society for Research in Child Development report (Yoshikawa et al. 2013).

#### **EXISTING HIGHER-QUALITY PROGRAM: EXPAND ACCESS**

In states with existing high-quality programs that reach only a small share of four-year-olds, efforts should focus on expanding access to the programs. It is important to understand that while the state's cost of expanding access is the same for all children, the potential educational impacts of the expansion will depend on what the newly enrolled children would have been doing otherwise. To the extent that new enrollees are moving from lower-quality Head Start programs, day care, or no preschool, the impacts would be expected to be larger. However, we would expect the education impacts on new enrollees switching from high-quality private preschools to be more muted. Some of this substitution (and cost) could be offset by charging tuition to higher-income families. Nonetheless, there are documented benefits of program expansion even when a high fraction of children switch from private to public preschool. For example, public preschool expansions decrease families' out-of-pocket spending on child care.

#### **WINNERS AND LOSERS**

As described above, the largest gains will be expected when low-income children are moved from no preschool to a high-quality preschool. From an academic perspective, the gains will be expected to be smaller (or even zero) for higher-income children who switch into a public program from a comparable private preschool program. Nonetheless, for reasons that include the importance of peer interaction and political popularity, the best policy may be a universal program.

The social benefits to enhancing public preschool options may far outweigh the costs of investing in both the expansion costs and quality improvements. For example, beyond any academic benefits the available evidence suggests that high-quality preschool can have longer-term benefits for society through reductions in crime, teenage pregnancy, and dependence on public assistance. Narrowing the early educational gap between low-income and higher-income children is an important step toward reducing income inequality over time.

## Questions and Concerns

### *Should we take money away from Head Start to invest in state preschool instead?*

The existing evidence on preschool is all drawn relative to a baseline with the existing Head Start program. We don't know whether the impacts would be similar if resources were shifted from Head Start to state programs. State expansions of preschool programs would be better combined with a national effort to improve the effectiveness of Head Start. Gordon and Mead (2014) outline policies to improve Head Start.

### *What are the benefits of expanding the program to three-year-olds?*

There are several reasons to think that expanding a preschool program to the most disadvantaged three-year-olds would have a larger impact on learning than expanding a preschool program to the more advantaged four-year-olds for the same price. For example, the strong results found in the Perry Preschool program described in the text were from a two-year intervention starting at age three. The Head Start Impact Study finds positive short-term impacts on achievement levels of three-year-olds; similar to the impact findings for four-year-olds, however, the impacts are substantially diminished by third grade.



***Do we get a large gain from expanding from a half-day to a full-day program?***

There is limited evidence on the impact of moving from a half- to a full-day preschool program. There appears to be a persistent, positive impact of full-day preschool; because evidence of that impact is largely drawn from an intervention that also increased the length of the school year, it needs to be interpreted with some caution (Robin, Frede, and Barnett 2006). There is also evidence from the Head Start Impact Study that full-day programs have a larger impact on cognitive skills than half-day programs (Walters 2014). Experts in this area caution that the impact does not come from additional time alone, but stress the importance of ensuring that the curriculum and instruction is aligned to make the most of the extra time.

***Besides academic achievement, what other areas are affected by preschool programs?***

There are a variety of outcomes that have been shown to be positively impacted by preschool. Children have had better school outcomes across a variety of dimensions: higher attendance rates, fewer failing grades, less grade retention, a higher likelihood of graduating from high school, and less involvement in criminal activity. Improvements in these areas account for many of the economic benefits of preschool programs.

***Do we expect a large impact on mothers' employment?***

Another benefit to free preschool that is often mentioned is that it may enable more mothers to become employed by reducing the opportunity cost to working. Nonetheless, the best estimates are that this impact will be relatively small. For example, if free preschool reduces the cost of child care by around \$5,000 per year, and if a mother with a high school diploma or less would earn about \$25,000 per year, then preschool reduces the cost of working by about 20 percent. Based on labor supply estimates, this would imply a relatively modest 0.8 to 1.6 percentage-point increase in labor supply.

## Conclusion

By the time they reach kindergarten, disadvantaged children already show an achievement gap relative to their higher-income peers. In an attempt to level the playing field for low-income youth, some have called on policymakers to invest in early childhood education by expanding high-quality preschool access to a greater number of American families. Indeed, research has shown that expanding access to high-quality preschool programs can be a cost-effective way to narrow the achievement gap and help low-income children build skills. However, the impact of the program depends critically on a child's education in the absence of the intervention. Children with ample developmental and educational support—such as those enrolled in private preschool programs—will benefit far less from expanded access to preschool relative to those without access to high-quality preschool.

In this policy memo we provide guidelines for policymakers seeking to maximize the impact of investment in early childhood education. Our framework calls for the establishment of a high-quality program in areas where programs do not exist, improved preschool quality in those states and localities with subpar programs, and expanded access in areas where high-quality programs already exist. The available evidence suggests that expansion of early education programs along these lines will lead to improved educational outcomes for disadvantaged children, in addition to a host of other social benefits such as lower crime, reduced teenage pregnancy, and a lessened reliance on the social safety net.

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## Endnotes

1. See Fryer and Levitt (2013). That paper's primary goal is to explore the emergence of achievement gaps by race rather than by income.
2. Duncan and Magnuson (2011) estimate a 1.3 standard deviation difference in math and reading test performance at the start of kindergarten between children in the lowest and highest quintiles of the family income distribution. The corresponding gaps in teacher ratings of attention and behavior are 0.75 and 0.25 standard deviations, respectively.
3. These are the authors' calculations from the 2011 October Current Population Survey School Enrollment supplement (NBER n.d.). The lowest family income quintile has a maximum annual income of \$17,500, while the top family income quintile has a minimum annual income of \$125,000.
4. The 2011–12 school year is the most recent with data available; data are from the NIEER.
5. The proposal defines low- and moderate-income families as those with income at or below 200 percent of the federal poverty level. The Preschool for All initiative has other elements as well, including incentives for states to implement full-day kindergarten, a shift in the focus of Head Start toward three-year-olds, and an expansion of the Early Head Start program, which serves younger children.
6. For illustrative purposes this is drawn as a straight line, but the actual relationship may be curved.
7. Recent work by Heckman, Pinto, and Savelyev (2013) finds that the Perry program induced changes in personality skills, which in turn explain a large portion of the improvement in adult outcomes. In a re-analysis of the Perry data, Anderson (2008) finds that the positive impacts were found for girls but not boys. Heckman et al. (2010) dispute the finding, and contend that the positive benefit-to-cost ratios found in Perry are for both boys and girls.
8. Ludwig and Miller (2007) take a different approach, comparing children in counties that barely qualified for and barely missed qualifying for special grant-writing assistance for Head Start at the program's inception. They find evidence that Head Start reduces child mortality, and they find suggestive evidence that it increases educational attainment.
9. In terms of benefit-to-cost ratios, the two programs appear to be roughly equivalent, resulting in about \$8.00 worth of benefits for each \$1.00 spent (Deming 2009; Heckman et al. 2010). The reason is that Head Start is relatively low cost.
10. In particular, the Tennessee program meets nine of the quality benchmarks represented in figure 1-2, whereas the average Head Start program meets only five (Espinosa 2002). Below we discuss the potential limitations of using inputs to proxy for quality.
11. This is not to suggest that preschool makes some children worse off overall. High-socioeconomic status families who choose to enroll their children in the public program experience a reduction in out-of-pocket preschool spending that offsets the decline in the learning environment.
12. To our knowledge, similar estimates for Georgia do not exist.
13. Recent results from a high-quality prekindergarten program in Boston does find substantial short-term impacts on the test scores of higher-income children (Weiland and Yoshikawa 2013).

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