

## Introduction

Early childhood education has emerged as a priority for state and national policymakers, even in the face of declining education budgets elsewhere. For example, 30 states increased funding for early childhood education in 2013, and 25 governors addressed the issue in 2013 state of the state speeches.<sup>1</sup> At the federal level, the Obama Administration proposed a \$75 billion increase in early education funding; while this proposal stalled,<sup>2</sup> the federal government increased spending in Early Head Start by \$1 billion last year.<sup>3</sup> Pennsylvania has likewise worked to expand early education investments over the past decade, including the establishment of a dedicated funding stream for pre-K in 2004-05.<sup>4</sup>

IN 2013...



—including Pennsylvania—  
increased funding for early childhood education

Source: Education Commission of the States. *State Pre-K Funding: 2013-14 Fiscal Year.*

This focus is warranted from a research perspective, especially as it relates to low income students. Reardon (2011) notes “students in the bottom quintile of family socioeconomic status score more than a standard deviation below those in the top quintile on standardized tests of math and reading when they enter kindergarten,” and this gap persists through high school.<sup>5</sup> With 20 percent of Pennsylvania’s children living in families earning below the federal poverty level,<sup>6</sup> and with more than 300,000 students attending schools in areas of concentrated poverty, there is substantial need for investment in early childhood education programs.<sup>7</sup>

This PACER brief examines the research and policy base surrounding early childhood education.

## Questions & Answers about Early Childhood Education

### 1. What does research say about the connection between early childhood education and academic outcomes?

The long-term academic benefits of high quality early childhood education (ECE) are well-understood. Some of the most rigorous educational research studies ever conducted have provided ample evidence that enrollment in model preschool programs has positive, long-term effects on a range of academic achievement measures for disadvantaged students. More recently, larger-scale studies on statewide

ECE programming that have not utilized such rigorous methods have nevertheless documented significant short-term and longer-term educational effects. The recent national Head Start Impact Study found that some, but not all, of these effects “wash out” for disadvantaged students who do not continue to enjoy an enriched educational environment. While these results are sometimes erroneously used to discredit the effects of high quality early childhood education, the complexity of the findings are seldom noted in these discussions. In the final analysis, when taken together the preponderance of rigorous evidence clearly indicates that high quality early childhood education programming results in long-term academic benefits. Table 1 summarizes the results of the most important studies examining the outcomes of early childhood education.

**Table 1.** Short, Mid-Term and Longer-Term Outcomes of Early Childhood Education

Intervention and Relevant Research	Short/Mid-Term Educational and Other Desirable Outcomes	Longer-Term Educational and Other Desirable Outcomes
<p>Model Preschool Programs. Three rigorous studies on model preschool programs found positive impact of ECE on educational outcomes and longer term outcomes. **The critique of these studies is that these are model programs with high level of program fidelity and therefore are difficult to replicate.</p>		
<p>Carolina Abecedarian Project: An Experimental Study of ECE Interventions for Impoverished Children (Campbell &amp; Ramey, 1994)</p>	<p>Positive effects through age 12 on:</p> <ul style="list-style-type: none"> <li>• Intellectual development</li> <li>• Academic achievement</li> </ul>	<p>Positive effects through age 21 on:</p> <ul style="list-style-type: none"> <li>• Intellectual capacity</li> <li>• College attendance and persistence</li> </ul>
<p>The Chicago Child-Parent Center (CPC) Program (Pre-K-3) (Reynolds, 1994; Reynolds et al, 2001)</p>	<p>Positive effects on:</p> <ul style="list-style-type: none"> <li>• Reading achievement</li> <li>• Math achievement</li> <li>• Adjustment to school</li> <li>• Special education replacement</li> </ul>	<p>Positive effects through age 20 on:</p> <ul style="list-style-type: none"> <li>• High school completion</li> <li>• Years of completed education</li> <li>• Lowered rates of arrest, violent arrest and school dropout</li> </ul>
<p>High/Scope Perry Preschool Project (Weikart, Bond &amp; McNeil, 1978) (Schweinhart et al, 2005)</p>	<p>Positive effects on:</p> <ul style="list-style-type: none"> <li>• Achievement tests in 1<sup>st</sup>-5<sup>th</sup> grades</li> <li>• Lowered rates of special education placement and grade retention</li> </ul>	<p>Positive effects at age 40 on:</p> <ul style="list-style-type: none"> <li>• Earnings</li> <li>• Job retention</li> <li>• High school graduation</li> <li>• Lowered crime rates</li> </ul>
<p>Statewide Preschool Programs. Positive impact of state preschool programs on children’s literacy, language, and math skills were found in a number of states from kindergarten up to elementary grades. **Not all state evaluation studies use the most rigorous research designs because the intervention is typically universal and it is therefore difficult to find a good comparison group.</p>		
<p>New Jersey Abbott Preschool Program: High quality Pre-K to high poverty children.</p>	<p>Positive effects on:</p> <ul style="list-style-type: none"> <li>• Language, literacy and mathematics skills (Frede et al, 2007)<sup>8</sup></li> </ul>	<p>Positive effects through 5<sup>th</sup> grade on:</p> <ul style="list-style-type: none"> <li>• All state subject assessments</li> <li>• Grade promotion rates</li> <li>• Lowered special education placement (Barnett et al 2013)<sup>9</sup></li> </ul>
<p>Bright from the Start: Georgia Universal Pre-K program</p>	<p>Positive effects on:</p> <ul style="list-style-type: none"> <li>• Overall math skills</li> <li>• Phonemic awareness</li> <li>• Expressive Language</li> <li>• Letter and word recognition (Henry &amp; Rickman, 2005)<sup>10</sup></li> </ul>	<p>N/A</p>

Arkansas Better Chance Program (ABC): State-Funded Pre-K	Positive effects on: <ul style="list-style-type: none"> <li>• Language</li> <li>• Math</li> <li>• Early literacy</li> </ul> (Hustedt, Barnett & Jung, 2008) <sup>11</sup>	Positive effects through 3 <sup>rd</sup> grade on: <ul style="list-style-type: none"> <li>• Receptive vocabulary</li> <li>• Math</li> <li>• Literacy</li> <li>• Grade promotion</li> </ul> (Jung et al, 2013) <sup>12</sup>
Oklahoma's State-Funded Universal Preschool	Positive effect on: <ul style="list-style-type: none"> <li>• Reading skills</li> <li>• Math skills</li> <li>• Writing skills</li> <li>• Attentiveness in school</li> </ul> (Gormley et al, 2008) <sup>13</sup>	N/A
New Mexico Statewide Pre-K	Positive Effect on: <ul style="list-style-type: none"> <li>• Language</li> <li>• Literacy</li> <li>• Math</li> </ul> (Hustedt 2008, 2010) <sup>14</sup>	N/A
<p>National ECE Program (Head Start). The Head Start Impact Study was conducted with a nationally representative sample of 84 grantee/delegate agencies and included nearly 5,000 newly entering, eligible three- and four-year-old children who were randomly assigned to either: (1) a Head Start or (2) a control group that did not have access to Head Start but could enroll in other early childhood programs or non-Head Start services selected by their parents (U.S. Department of Health and Human Services, 2010).<sup>15</sup> Strong short-term academic/cognitive effects washed out to some degree by 1<sup>st</sup> grade.</p>		
	Positive Effect During Head Start on: <ul style="list-style-type: none"> <li>• Vocabulary</li> <li>• Spelling</li> <li>• Letter word identification</li> <li>• Pre-academic skills</li> </ul>	Positive Effect in 1 <sup>st</sup> grade on: <ul style="list-style-type: none"> <li>• Vocabulary</li> <li>• Oral comprehension</li> </ul>
<p>Meta-Analysis of 123 Rigorous ECE Studies. A recent meta-analysis of rigorous early education interventions confirmed the positive effects on children's cognitive outcomes and, to a lesser extent, socio-emotional outcomes (Camilli et al 2010).<sup>16</sup></p>		
	Positive effect on Kindergartners on: <ul style="list-style-type: none"> <li>• Reading achievement</li> <li>• Math achievement</li> <li>• Grades</li> <li>• Academic track</li> <li>• Lowered special education placement</li> </ul>	Positive but reduced effect on: <ul style="list-style-type: none"> <li>• Reading achievement</li> <li>• Math achievement</li> </ul> Positive, not reduced effect on: <ul style="list-style-type: none"> <li>• Grades</li> <li>• Academic Track</li> <li>• Lowered special education placement</li> </ul>

## 2. What is the relationship between Early Childhood Education programs and other desired outcomes?

Early childhood education can mitigate negative social and other factors, in addition to improving academic outcomes. A meta-analysis of 123 rigorous studies of early childhood interventions found that children who attended a preschool program also exhibited desired social-emotional outcomes such as higher self-esteem and lower aggressive or antisocial behaviors.<sup>17</sup>

In addition, the High/Scope Perry Preschool Project also found desirable non-cognitive outcomes among program participants. By age 40, former participants had committed fewer crimes and were

more likely to hold a job, earn higher salaries, and own a home. Similarly, those who participated in the Chicago Child-Parent Center Program had significantly lower rates of juvenile arrest, violent arrest, and school dropout compared to the control group. Finally, participants in the Abecedarian project were more likely to attend college and less likely to be teenage parents.

### **3. What are commonly-cited markers of “high-quality” ECE programming?**

Nationwide, an increasing number of states have outlined standards for high quality early learning programs as a way to denote provider compliance and focus investments.<sup>18</sup> According to the National Association for the Education of Young Children (NAEYC), as of January 2012, 26 states have a quality rating system based on either state benchmarks or an existing accreditation system.<sup>19</sup>

In identifying effective programming, Barnett (2011) cited programs with highly educated, better paid teachers; smaller class sizes; and low child-to-teacher ratios as important criteria. Below we list other commonly-studied indicators of early childhood program effectiveness.

- **Teacher credentials:** Research finds that a Bachelor’s degree or credential in early childhood education are not, alone, strong markers of teacher effectiveness.<sup>20</sup> Compensation, working conditions, and ongoing professional development are additional components that significantly influence teacher effectiveness in addition to pre-service education.<sup>21</sup>
- **Accountability system:** Attention to instruction through on-going evaluation, supervision, and coaching are identified as key for program effectiveness. Further, systems that clearly articulate program goals and provide teachers with the support to meet them facilitate effective teaching.<sup>22</sup>
- **Curriculum:** Curriculum that focuses on specific learning goals—cognitive, social, emotional, and physical—is found to be most effective.<sup>23</sup>
- **Duration:** Robin, Frede, and Barnett (2006) found that an extended day and extended year of preschool programs produced greater learning gains.

### **4. What types of programs are offered in Pennsylvania?**

Pennsylvania offers various state or federally-funded early education and child care programs, such as Nurse-Family Partnership, Parents as Teachers, Head Start/Early Head Start, School-Based Pre-K, and Pennsylvania Pre-K Counts. According to a 2013 OCDEL report, about 35 percent of children under the age of five participate in one of these programs.<sup>24</sup>

State lawmakers have made incremental investments in high quality early childhood education programs aimed at increasing access for disadvantaged children. Focusing on early education investments within the state Department of Education appropriation, the Pennsylvania Pre-K Counts program provides high-quality programs to preschool children whose families fall below 300 percent of the federal poverty guidelines, or are at risk of school failure because of special needs issues or language barriers.<sup>25</sup> The state also provides funding for Head Start Supplemental Assistance, providing services

to three- and four-year-olds with family incomes within 130 percent of the federal poverty level. The state’s Early Intervention funding provides assistance to children birth-to-five with developmental delays, as required by federal law. Table 2 provides a breakout of the children projected to be served by these programs for the 2013-14 school year.

**Table 2.** Publicly-funded early education programs provided in PA Department of Education Appropriation, 2013-14

Purpose	Eligibility	2013-14 Appropriation (in thousands)	Children Served (projected)
<b>Program: Pre-K Counts</b>			
High-quality early childhood education	Children below 300 percent of federal poverty level and at least one other risk factor	\$87,284	14,027
<b>Program: Early Intervention</b>			
State support services for preschool students	Children three to five with disabilities or developmental delays	\$236,675	50,844
<b>Program: Head Start Supplemental Assistance</b>			
Early learning services	At-risk students within 130 percent of federal poverty level	\$39,178	5,590

Source: Pennsylvania Office of the Budget (2014). Governor’s Executive Budget 2014-15

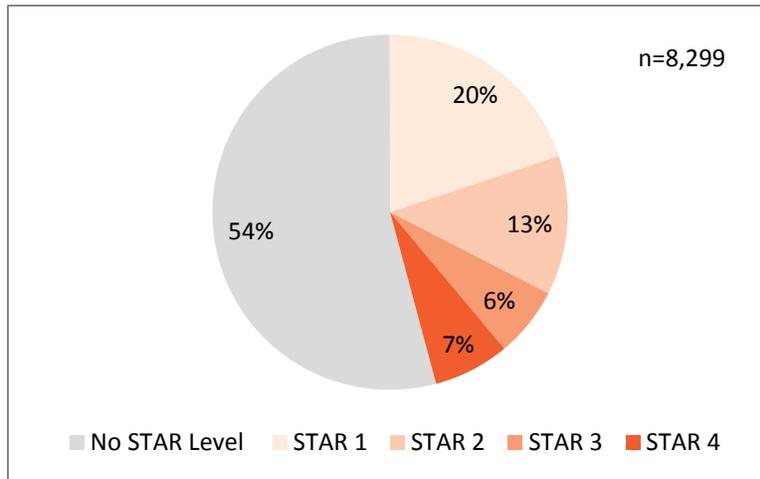
## 5. How are early childhood education providers in Pennsylvania rated?

Pennsylvania has made a focused effort to raise the quality of the existing infrastructure of early childhood education providers through the Keystone STARS rating system. Program ratings are based on four areas: staff qualifications and professional development, learning program, leadership/management, and family/community partnerships, and are scored on a scale of 1 (low) to 4 (high). Keystone STARS criteria was largely drawn from the NAEYC standards for accreditation.

Fewer than one in five school districts in Pennsylvania offer pre-kindergarten;<sup>26</sup> as a result, the state’s early education offerings are supplemented by an array of private providers. Pennsylvania’s Office of Child Development and Early Learning (OCDEL) lists more than 8,200 certified child care providers as of December 2013.<sup>27</sup> Notably, this list does not include district-run programs and the federal Head Start program.<sup>28</sup>

As shown in Figure 1, the majority of programs in the state have not applied for a STARS rating. Among those rated, a plurality of providers are rated as STAR 1. Approximately 13 percent of programs were rated STAR 3 or STAR 4.

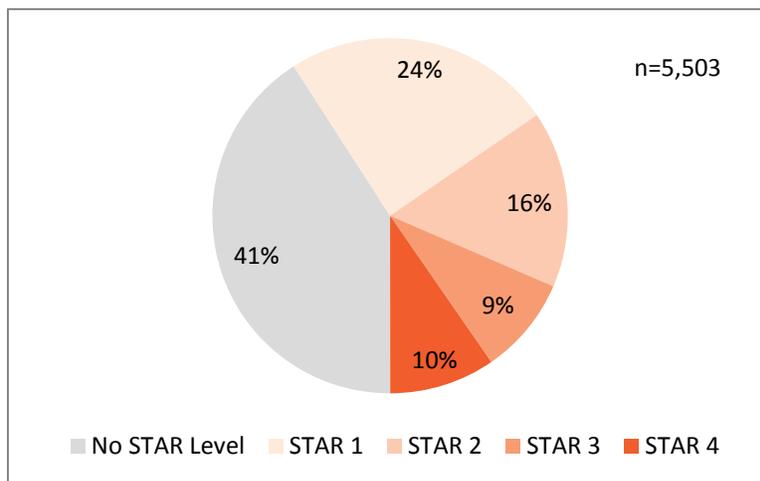
**Figure 1.** Keystone STARS Rating Levels



*Source: OCDEL Public Data File on PA preschool programs Dec. 2013*

However, when narrowing the sample to only Child Care Centers and Group Child Care Homes – providers that serve seven or more students – we find approximately 60 percent have received at least a STAR 1 rating.

**Figure 2.** Keystone STARS Rating Levels for Child Care and Group Child Care Homes



## **6. How does Pennsylvania compare with neighboring states in ECE offerings and reach?**

Despite increasing investments, a significant gap remains between Pennsylvania’s early childhood population and available programs. The Annie E. Casey Foundation estimates 151,000 Pennsylvania children, or 51 percent of all children ages 3 and 4, were not enrolled in preschool as of 2011.<sup>29</sup> The rate is higher for low-income children: 61 percent of children in families below 200 percent of the federal poverty level are not in preschool.<sup>30</sup>

Table 3 provides data on the budgetary allotments of state Pre-K programs for Pennsylvania and large, neighboring states. Data is drawn from the Education Commission of the States' analysis of the 2012-13 and 2013-14 appropriations by the 50 states and the District of Columbia. Pennsylvania and neighboring states have increased their state Pre-K Funding for the fiscal year 2013-14, ranging from an increase of 2.4 to 43 percent.

**Table 3.** Change in Total State Pre-K Funding from FY 2012-13 to FY 2013-14 States

	FY 2012-13	FY 2013-14	Change in Dollars	Change in Percentage
Pennsylvania	\$120,062,000	\$126,462,000	\$6,400,000	5.3%
New Jersey	\$632,772,823	\$648,070,242	\$15,297,419	2.4%
Ohio	\$23,268,341	\$33,268,341	\$10,000,000	43%
New York	\$385,000,000	\$410,034,734	\$25,034,734	6.5%
Total State Pre-K Spending	\$5,252,386,877	\$5,616,027,973	\$363,641,096	6.9%

Source: Education Commission of the States, 2013<sup>31</sup>

Data from the National Institute for Early Education Research's *2012 State Preschool Yearbook* provides insight into how state early education funding translates to access and reach. For background purposes, Table 4 shows the number of enrollees and the percentage of eligible children reached by early childhood education programs for Pennsylvania's state-funded programs and figures for neighboring states. This data represents 2011-12, prior to increased investments.

**Table 4.** Three- or Four-Year-Olds Enrolled in Publicly-Funded Pre-K in Pennsylvania and Neighboring States, 2011-12

	Pennsylvania	New Jersey	Ohio	New York
3-year olds	5%	19%	1%	0%
4-year olds	14%	28%	2%	44%
Total state programming enrollment	28,790	51,540	5,700	102,568

Source: 2012 State of Preschool Enrollment<sup>32</sup>

Pennsylvania's 2011-12 enrollment rates in publicly-funded programs lags far behind New Jersey and New York, and is well ahead of Ohio.

## Conclusion

Education outcomes are strongly correlated with poverty. This “income achievement” gap appears in the earliest levels of education. Research consistently links quality early childhood education programs with positive short- and long-term benefits, and public investments are increasingly seen as a necessary first step towards minimizing the adverse effects of poverty in the beginning stages of a child’s development, particularly for at-risk students. While Pennsylvania has taken significant steps to invest in higher-quality public programs, there remains a considerable gap between availability and access.

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- <sup>26</sup> Governor's Corbett's Executive Budget 2014-15.
- <sup>27</sup> Pennsylvania groups child care facilities into four categories, which includes all programs that participate in the Department of Public Welfare Programs. It includes various providers such as district-run programs and programs for low-income children to Federal programs like Head Start:
- Both **Child Care Centers** and **Group Home** serve seven or more children unrelated to the child care operator, are required to obtain state certification in health and safety, and may voluntarily participate in an accreditation system.
  - **Family Home** serves between four and six children unrelated to the caregiver, is required to obtain state certification in health and safety, and voluntarily participate in an accreditation system.
  - **Relative/Neighbor Care** is the last type of program identified and has no state or accreditation oversight.
- There are 8,299 facilities that offer preschool programming, excluding relative/neighbor care. About 56% of the facilities listed are Child Care Centers; 34% are Family Homes, and 10% are Group Homes.
- <sup>28</sup> Pennsylvania groups child care facilities into four categories, which includes all programs that participate in the Department of Public Welfare Programs: Both Child Care Centers and Group Home serve seven or more children unrelated to the child care operator, are required to obtain state certification in health and safety, and may voluntarily participate in an accreditation system. Family Home serves between four and six children unrelated to the caregiver, is required to obtain state certification in health and safety, and voluntarily participate in an accreditation system. Relative/Neighbor care is the last type of program identified and has no state or accreditation oversight. There are 8,299 facilities that offer preschool programming, excluding relative/neighbor care. About 56 percent of the facilities listed are Child Care Centers; 34 percent are Family Homes, and 10 percent are Group Homes.
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