



# Investing Today for Tomorrow: The Costs and Benefits of Early Childhood Care and Education

*Special Report*

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High quality early childhood care and education more than pays for itself when the cost of successful programs are weighed against short-and long-term outcomes that benefit children, families, communities, and taxpayers, available cost-benefit studies suggest.

Early childhood programs deemed “best practices” require a substantial investment. When outcomes among low-income children and families are considered, however, these programs appear to be a bargain, returning \$4 to \$7 in benefits for every \$1 invested in them.

Quality is the key. Favorable cost-benefit ratios are seen only among programs that embrace a high level of quality, which is associated with outcomes such as better school performance, lower rates of crime and delinquency, and higher incomes after children reach adulthood.

## Cost Of Early Childhood Services

High quality early childhood care and education is not inexpensive and one of the challenges policymakers face is not being deterred by “sticker shock.”

However, the cost of early childhood services can be misleading when compared to other education programs if key characteristics of the programs and the methodology used to calculate the costs are not fully considered.

How costs are calculated varies among studies. Some involve average expenditures by a funding source; some use market prices paid by consumers; others try to estimate the actual costs of delivering the service or program. Different methods of calculating costs make it difficult to compare figures. Some studies lack detail, making comparison even more difficult or impossible.

Such limitations may result in a program appearing more expensive than others, not because it uses more resources but because costs were calculated using a different method.

Most often, costs are expressed as cost per child of the service. It is important to fully understand what such cost estimates reflect, particularly when comparing programs. For example, does a cost estimate include overhead costs, such as facility and insurance costs? If the cost is reported as a per child estimate, how many hours of service does the estimate reflect?

## Range Of Reported Costs

A review of eight early childhood programs considered best practices finds costs ranging from a low of \$6,083 per child in the Prenatal/Early Infancy Project (PEIP) to \$13,612 per child in the Early Childhood Initiative (ECI) in Allegheny County.

Other best practices programs include the Abecedarian Program, Chicago Child-Parent Centers (CPC), Nurse Family Partnership (NFP), Parent-Child Home Program (PCHP), and Improved Child Care Quality – a study of child care quality in 401 centers that served infants, toddlers, and preschool children in California, Colorado, Connecticut, and North Carolina.

In general, the more detailed the examination of costs, the more accurate the picture. This is particularly true when comparing programs that may vary in the range of services provided and in the number of hours families participate.

Expressed as per child costs alone, best practices early childhood programs may seem very expensive. However, such costs reflect the large number of hours during which children and their families participate in the program and the length of the program. Calculated on an hourly basis, the costs appear more modest, ranging from \$5.24 for ECI to \$11.42 per hour, the cost of the home visiting component of the Perry Preschool Program.

The one exception is the PEIP, which has an hourly cost of \$152.09. The highly hourly rate reflects the fact that it was an intensive home visiting intervention delivered by registered nurses.

## Comparisons To Public Education

Studies suggest the cost of many high-quality early childhood care and education programs compares favorably to the cost paid for public education.

At \$5.24 to \$11.42 an hour, many best practices early childhood programs fall within the cost range of public education, which is estimated to be \$2.91 to \$9.70 an hour. Even the early childhood programs with the highest per child costs fall within or close to public school cost range. For example, ECI’s \$13,612 per child cost is only slightly over the cost range of public education, estimated to be between \$3,932 and \$13,096 per child, and public education costs

are for fewer hours per day, fewer months per year, and fewer teachers per child.

### Cost Drivers

Certain characteristics of high-quality programs tend to drive up the cost of early childhood services. These include a more highly educated staff, who typically demand higher salaries; more favorable staff-child ratios, which require more staff; and lower turnover, which results in more experienced and expensive staff and higher payrolls.

Other factors also escalate program costs. For example, costs are much higher for providers operating below 100% capacity. Also, buildings and renovations may be needed.

### Cost Of Quality

The cost of improving the quality of early childhood care and education ranges from 10% to 30%, depending on how much improvement is necessary.

Specifically, studies find that a cost increase of less than 10% is required to raise the quality level of a program from poor to mediocre. An additional 10% increase is required to improve the quality from mediocre to "good." Improving the quality of a program from good to excellent raises the cost by a little more than 10%.

Features that determine the quality of young children's experiences in child care, preschool, and kindergarten include interactions with caregivers, teachers, and other children; activities, such as language stimulation; and health and safety issues. Other characteristics determine the quality of the context in which early education and care takes place. These include child-adult ratios, class or group size, and the education and training of caregivers.

The level of quality is critical. Studies suggest only high-quality programs are capable of producing the educational gains and other benefits that make early childhood services attractive.

### Benefits Of Early Childhood Services

High quality early childhood education and care has been found to help many at-risk children avoid poor outcomes, such as school drop-out and arrest. Although the benefits cross economic and social classes, the most significant gains are almost always reported among children from families with the least formal education and lowest levels of income.

Gains in measures of intellectual performance, at least in the short term, were reported in a RAND Corporation study of nine early childhood programs.<sup>1</sup> The study noted, for example, that IQ scores for early childhood participants were significantly higher than those of students who were not enrolled in the programs. Children who took part in quality early childhood programs were much more likely to

perform better in school than those who did not.

A study of the Chicago Child-Parent Centers suggest quality early childhood programs tend to keep children in school. High school graduation rates were higher among students who had been involved in the centers than children who did not have quality early learning experiences.<sup>2</sup>

The extensive High/Scope Perry Preschool Study suggests that early childhood programs influence important social and economic outcomes.<sup>3</sup> For example, fewer arrests were reported among adult men who had participated in the program as children compared to men who had not and 59% of the program participants received welfare assistance as adults compared to 80% of the adults who had no early childhood services.

Studies of ECI in Allegheny County report cognitive gains and improved social and emotional development. At the time they enrolled, 14% of the children met criteria for special education and 18% met criteria for a mental health diagnosis. After three years in the program, they had made significant gains and scored in the "normal range of development."<sup>4</sup>

### Cost- Benefit Assessment

A full accounting of early childhood care and education considers program costs and the benefits to children and communities, which in most cases result in savings of tax dollars.

The private and social costs of failing children early in their lives can be high.<sup>5</sup> For example, the lifetime costs associated with a single high school dropout have been estimated as high as \$350,000.<sup>6</sup> In such cases, even modest improvements may justify the costs of programs that prevent such outcomes.

Only a limited number of programs have undergone cost-benefit analysis. Even the more rigorous assessments have shortcomings. Several fail to take into account all of the program's outcomes that might influence cost-benefit ratios. For example, the study of the Chicago Child-Parent Centers did not consider child health outcomes, and the assessment of the Perry Preschool Program did not consider how the program affected the caregivers' education, parenting skills, well-being, and health.

Evidence of how cost effective high quality early childhood programs can be is found among several programs that are considered best practices and have undergone thorough evaluation.

### The Abecedarian Project

The Abecedarian Project, one of the longest running and most carefully controlled early childhood studies, involved 111 low-income children in Chapel Hill, N.C. who were considered to be at risk of poor intellectual and social

development. About half of the group were randomly assigned to a high quality childcare setting and the other half were placed in a child care setting, but did not receive the same intervention.

The center-based preschool program had teacher/child ratios ranging from 1:3 for infants and toddlers to 1:6 for older children. The center was open five days a week. The curriculum, emphasized language development and addressed the needs of children in all developmental domains, including social, emotional, and cognitive development. Children in the program also received medical and nutritional services.

At the age of 21, cognitive functioning, academic skills, educational attainment, employment, parenthood, and social adjustment of 104 of the original 111 infants were measured. Participants scored significantly higher on mental test scores than the control group. Their reading and math achievement scores were consistently higher. More than twice as many of the participants – 35% – had graduated from or were attending a four-year college at the age of 21.

Such outcomes contributed significant savings of school funds due to a diminished need for special education services, and higher lifetime earnings among program participants.

**Program Cost:** about \$13,000 per child in 2002 dollars.

**Estimated Cost-Benefit Ratio:** about \$4 in benefits for every \$1 invested.

### **Perry Preschool Program**

Low-income, 3-4 year-old African-American children from Ypsilanti, MI, and their families participated in this program. The study, which was experimental in design and used random assignment, followed participating children through age 27.

The intervention included 2 ½ hours of preschool, five days per week for three-quarters of the year and weekly 90-minute home visits by preschool teachers. Most children were in the program for two years.

Outcomes included gains in children's cognitive development, education, and well-being. For example, higher IQs were seen in the short term. Participating children were less likely to need special education and they had higher rates of high school graduation. The program did not effect teen pregnancy. At age 27, participants had decreased crime and delinquency rates and lower welfare participation. They also had higher income levels than non-program participants.

**Program Costs:** about \$12,100 per child in 1996 dollars; \$11.09 an hour for center-based care; \$11.42 an hour for home visitation component.

**Estimated Cost-Benefit Ratio:** about \$4 in benefits for every \$1 invested.

### **Prenatal / Early Infancy Project (PEIP)**

First-time, high-risk mothers and their children from Elmira, N.Y. were enrolled in this project before their 30<sup>th</sup> week of pregnancy. The study design was experimental with random assignment.

Home visiting by a registered nurse was the main element of the intervention. The nurse paid visits to the home until the children were 2 years old.

Reported child outcomes include decreased emergency room visits and mixed crime and delinquency results. Outcomes among mothers included fewer incidents of child abuse, lower rates of criminal activity, and decreased substance abuse.

**Program Costs:** about \$6,100 per child in 1996 dollars.

**Estimated Cost-Benefit Ratio:** about \$5 in benefits for every \$1 invested when the participants were high risk mothers and children.

### **Chicago Child-Parent Centers (CPC)**

The Child-Parent Center (CPC) Program, the oldest federally funded program after Head Start, has been in the Chicago public school system since 1966.

Children who are enrolled can participate in up to six years of comprehensive language-based intervention; one-two years of preschool, kindergarten, and up to three years of extended services in elementary school. The program includes family support. CPCs encourage parent involvement and sites have a parent room and a full-time parent-community representative.

Those children who participated enjoyed a range of favorable outcomes. They had much better language, listening, word analysis, vocabulary, and math skills than a comparison group of children in alternative early childhood programs. Children in CPCs had higher reading and math achievement from 6-15 years of age, and lower rates of grade retention and special education placement. They scored higher on a life skills competency test at age 14, were less likely to drop out of school, and were less likely to be involved in the juvenile justice system.<sup>7,8</sup>

**Program Costs:** about \$9,700 per child in 1998 dollars. The total represents about \$6,700 a year for children in the preschool program and in the half-day kindergarten program, and about \$3,000 per year above the cost of the regular school program for follow-on services.

**Cost-Benefit Ratio:** about \$7 in benefits for every \$1 invested.

### **Conclusions**

High quality early childhood care and education is associated with many of the outcomes parents as well as

policy-makers desire – improved school readiness, better school performance, higher graduation rates, lower crime and delinquency, and decreased welfare dependency.

The price of such outcomes tends to give pause when program costs alone are considered. Programs considered best practices, for example, range in cost from about \$6,000 per child per year to more than \$13,000 per child – about twice the cost of Head Start.

Such cost reporting can be misleading, however.

The way costs are expressed is important. This is particularly true when comparing early childhood programs to other services. The more detailed assessment of costs, the more accurate the financial picture. For example:

- Comparing per child costs alone may not take into account significant cost drivers such as the number of hours during which children and their families participate in the program, and the length of the program.
- Calculated on an hourly basis, the costs of best practices early childhood programs appear more modest, ranging from about \$5 an hour to \$11 an hour.
- In fact, studies suggest the cost of many high quality early childhood care and education programs fall within the cost range of public education, which is estimated between about \$3 an hour to nearly \$10 an hour.

Only through cost-benefit analysis can the net benefit of early childhood programs be completely understood. This type of analysis measures costs against short- and long-term outcomes that benefit children, families, communities, and likely result in savings in public spending for schools, human services, criminal justice, and other services.

- When cost-benefit ratios are calculated, best practices early childhood programs return \$4 to \$7 in benefits to families and communities for every \$1 that was invested in them.

Such benefits are reported mostly among low-income children and families and are only produced by high quality programs, which typically have highly educated and experienced staff, favorable staff-child ratios, higher payrolls, and lower teacher turnover.

Studies suggest that mediocre and poor quality early childhood services have little or no effect on cognitive and social development, health, school success, crime and delinquency, and other key child outcomes.

The economics of early care and education is a complicated, developing field of study that requires a true

accounting of program cost, careful comparisons with other education services, and estimates of the dollar value of outcomes that will not be realized for several years. Few programs have undergone such rigorous analysis.

High quality early childhood programs that have been carefully studied demonstrate that both children and taxpayers stand to gain when communities have the foresight and will to invest in tomorrow's benefits today.

### References

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Available on the Internet at [www.nieer.org/resources/research/AbecedarianStudy.pdf](http://www.nieer.org/resources/research/AbecedarianStudy.pdf)

*This Special Report, written by Jeffery Fraser, is based on the above-referenced report. It is not intended to be an original work, but a summary for the convenience of our readers. References noted in the text follow:*

<sup>1</sup> Karoly, L.A., Greenwood, P.W., Everingham, S., Hoube, J., Kilburn, M.R., Rydell, C.P., Sander, M., & Chiesa, J. (1998). *Investing in Our Children: What We know and Don't Know About the Costs and Benefits of Early Childhood Interventions*. 182 pp. Santa Monica, CA: RAND Distribution Services.

<sup>2</sup> Fuerst, J.S. and Fuerst, D. (1993). Chicago experience with an early childhood program: The special case of the Child Parent Center Program. *Urban Education* 28(1, Apr): 69-96.

<sup>3</sup> Schweinhart, L.J., Barnes, H.V., and Weikart, D.P. (1993). *Significant Benefits: The High/scope Perry Preschool Study Through Age 27. (Monographs of the High/scope Educational Research Foundation, 10)*. Ypsilanti, MI: High/Scope Press.

<sup>4</sup> Bagnato, S.J. (2002). *Quality Early Learning—Key to School Success: A First-Phase Program Evaluation Research Report for Pittsburgh's Early Childhood Initiative (ECI)*. Pittsburgh, PA: Children's Hospital of Pittsburgh, SPECS Evaluation Research Team.

<sup>5</sup> Teague (1998), 518.

<sup>6</sup> Cohen (1998).

<sup>7</sup> Reynolds, A.J., Miedel, W.T., & Mann, E.A. (March 2000). Innovation in early intervention for children in families with low incomes – lessons from the Chicago Child-Parent Centers. *Young Children*, 84-88

<sup>8</sup> Reynolds, A.J., Temple, J.A., Robertson, D.L., Mann, E.A. (2001). Long term effects of an early childhood intervention on educational achievement and juvenile arrest: A 15-year follow-up of low-income children in public schools. *JAMA*, 285, 2339-2346.

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