

Benefit-Cost Studies of Four Longitudinal Early Childhood Programs: An Overview as Basis for a Working Knowledge

There have been four studies that have most frequently been cited in the early childhood literature as showing strong, positive rates-of-return for their investments. While examining very different programs, they share the following common characteristics:

- The programs that were evaluated were of very high quality, with an emphasis upon being comprehensive in their approach and sufficiently intensive to be able to address underlying child and family needs.
- The programs were subject to rigorous evaluations with a strong counterfactual, in all but one case involving a randomized design.
- The studies tracked children's progress over a substantial period of time.
- The studies examined multiple effects on children and families, including educational impacts but including other societal impacts, as well.

Thus studies also have been ongoing and have been subject to various updates and re-analyses. As a result, there often are different reports on an individual study which cite different rates of return for the particular program under study.

The following Table and Chart provide thumbnail information about each of the four programs and the findings from the most recent evaluation of the costs and benefits reported from the study. It further breaks down, for each study, the returns from investment into three categories: economic benefits to participant in increased net earning, economic benefits to society in the reduced costs of crime to victims of crime, and economic benefits to taxpayers and government in reduced social costs and increased taxes.

These different returns still are not strictly comparable. Different studies had data that enabled them to look for different social impacts; and no study looked for all potential impacts. Different studies used different methodologies for determining program cost and for assessing different impacts, such as the savings to taxpayers from increased earnings. Studies used different dividend discount rates. The findings from the studies reported in the Table and Chart should not be used to compare the relative merits of one program over another.

What is important is that the actual programs that were studied occurred over a three decade span, one in the 1960s, one in the 1970s, and one in the 1980s. The finding of positive returns across such a span of time and a diversity of high quality programs itself suggests the strong potential for comprehensive, high quality early childhood programs to produce positive economic returns.

Benefit-Cost Table for Four Longitudinal Early Childhood Programs:

**Chicago Child-Parent Centers, High/Scope Perry Preschool Project,
Elmira Prenatal/Early Infancy Project, Abecedarian Early Childhood Intervention**

Program Name	Program Description	Program Investment per Child (2002 real \$)	Returns on Investment, Total, Society, and Taxpayer
Chicago Child-Parent Centers	The Chicago Child-Parent Centers involved low-income, three year old children (93% African American and 7% Hispanic) from 1983 to 1986. The main interventions were a pre-school program, full-day kindergarten, family support services, and a school-aged program extending to the early elementary grades. The average length of time spent in the preschool program was 1.55 years. Children have been followed to age 20, with a non-experimental comparison group of children who only received full-day kindergarten.	<p>\$7,428 per participant for 1.5 years in the pre-school program.</p> <p>All aspects of the program yielded positive cost benefits to society, but the preschool program showed the highest rate of return and its cost benefits are shown here.</p>	<p>Average total return on investment per participant of \$52,711 (\$7.10 for every \$1 invested)</p> <p>Breakout of return \$3.27 savings to participant in increased net earnings .92 savings to society, primarily in reduced tangible costs to crime victims \$2.91 savings to taxpayers and government \$ 1.07 increased tax revenues \$ 1.07 reduced criminal justice costs \$.69 reduced remedial education costs \$.07 other savings \$7.10</p> <p>Dividend discount rate employed = 3%</p>
High/Scope Perry Preschool Project	The High/Scope Perry Preschool Project included 3 and 4 year-old low-income African American children with measured borderline mentally-retarded IQs in Ypsilanti, Michigan from 1962 to 1964. The interventions involved a 2 1/2 hour preschool program, five days a week for nine months a year, along with weekly home visits from the preschool teachers for 1 1/2 hours each. Children have been followed to age 27. The program incorporated an experimental design, with children randomly assigned to treatment and control groups.	<p>\$15,895 per participant for one year.</p> <p>Most participants attended for two years, but the cost benefits are based upon one year of participation.</p>	<p>Average total return on investment per participant of \$138,486 (\$8.74 for every \$1 invested.)</p> <p>Breakout of return \$1.58 savings to participant in increased net earnings \$4.66 savings to society in reduced costs to victims of crime \$2.51 savings to taxpayers and government \$.72 increased tax revenues \$ 1.04 reduced criminal justice costs \$.51 reduced education costs (remedial and adult education less increased college costs) \$.24 reduced welfare payments and benefits \$8.74</p> <p>Dividend Discount rate employed = 3%</p>

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Elmira Prenatal/Early Infancy Project	PEIP involved primarily non-minority first-time mothers and their children from Elmira, New York, in 1972. The women entered the study prior to their 30 th week of pregnancy and the main intervention was a home visiting program by registered nurses, who provided parent education, social support, and referral to social services. The program continued until children were age two. The program incorporated an experimental design, with families randomly assigned to treatment and control group. The analysis broke out findings by higher risk and lower risk participants, based on education and income status. These children have been followed to age 15.	<p>\$7,109 per participant for period from prenatal to age two.</p> <p>Cost benefits are shown both for higher risk parents and lower risk parents,</p>	<p>Higher risk group Average total return on investment per participant of \$49,217 (\$6.92 for every \$1 invested).</p> <p>Breakout of return \$.16 savings to participant in increased net earnings \$.82 savings to society in reduced costs to victims of crime \$5.95 savings to taxpayers and government \$ 1.26 increased tax revenues \$ 1.55 reduced criminal justice costs \$ 3.12 reduced welfare payments \$.02 reduced emergency room visit costs \$6.92</p> <p>Lower risk group Average total return on investment per participant of \$10,165 (\$1.43 for every \$1 invested).</p> <p>Breakout of return \$.26 savings to participant in increased net earnings \$.21 savings to society in reduced costs to victims of crime \$.96 savings to taxpayers and government \$.25 increased tax revenues \$.41 reduced criminal justice costs \$.28 reduced welfare payments \$.02 reduced emergency room visit costs \$1.43</p> <p>Dividend discount rate employed = 4%</p>
Abecedarian Early Childhood Intervention	The Abecedarian Intervention involved children deemed at risk of intellectual and social development, based largely upon parental risk factors (education,	\$35,864 in marginal program cost at the Frank Graham Child Development Center for entire program involvement.	<p>Average total return on investment per participant of \$143,674 (\$4.01 for every \$1 invested)</p> <p>Breakdown of return \$2.44 savings to participant in increased net earnings</p>

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<i>Program Name</i>	<i>Program Description</i>	<i>Program Investment per Child (2002 real \$)</i>	<i>Returns on Investment, Total, Society, and Taxpayer</i>
	IQ, and SES), in North Carolina in 1972. The majority of children were African American. The main intervention was intensive, full-time preschool services from infancy to five years of age. The program incorporated an experimental design, with families randomly assigned to treatment and control group. The children have been followed to age 21.	<p>Marginal cost is based upon annual marginal cost of \$7565 per year, with the program costing \$13,900 but parents in the control group already expending \$6,435 for child care)</p> <p>Costs were determined to be higher is replicated in a public school setting, at \$41,916</p>	<p>(estimated for this table as 75% of overall earnings gain)</p> <p>\$1.57 savings to taxpayers and government</p> <p>\$.81 increased tax revenues (25% of earnings gain)</p> <p>\$.01 reduced welfare (AFDC/TANF) payments</p> <p>\$.25 reduced special education and other K-12 education costs</p> <p>\$.50 reduced smoking-related and other health care costs</p> <p>(not included are costs of increased higher education participation \$.23)</p> <p>\$4.01</p> <p>Dividend discount rate employed = 3%</p>

Notes:

As much as possible, this table was constructed from the original studies themselves, simply updating the tables to reflect inflation between the study reports and 2002. All costs and benefits are inflation-adjusted and based upon 2002 dollars. The Abecedarian report did not break out increased revenue by benefits to participant vs. benefit to taxpayer. The 25% -- 75% break was used in the table, based in part on other studies and relates to the employees' share of social security and federal and state taxes.

Studies are not strictly comparable for a number of reasons. First, the dividend discount rate is shown for each analysis, and even a difference of 1% has a significant impact upon overall return rates. Second, different studies had data for different outcomes that could be translated to different cost savings (e.g. Abecedarian was the only study that identified major health savings because it looked at smoking rates of participants, but Abecedarian did not have data in other areas). None had data that would enable a full examination of potential cost benefits, and many had small sample sizes that would identify statistically significant effects that were very pronounced.

The specific original sources used for this table are as follows:

Chicago Child-Parent Centers:

Reynolds AJ, Temple JA, Robertson DL, Mann EA (2001). Age 21 Cost-Benefit Analysis of the Title I Chicago Child-Parent Center Program.

High/Scope Perry Preschool Project:

Schweinhart, LJ, Barnes HV, Weikart DP (1993). *Significant benefits: The High/Scope Perry preschool study through age 27*. High/Scope Press: High Scope Educational Research Foundation: Ypsilanti MI.

Elmira PEIP:

Olds, DL, Henderson CR, Phelps C, Kitzman H, and Hanks C (1993). Effect of prenatal and infancy nurse home visitation on government spending. *Medical Care* Vol. 31(2) pp. 155-174.

Abecedarian:

Masse, LN, Barnett SW (2002). A benefit cost analysis of the Abecedarian early childhood intervention. National Institute for Early Education Research, New Brunswick NJ