

Decades of Evidence Demonstrate That Early Childhood Programs Can Benefit Children and Provide Economic Returns

Motivated by the growing knowledge of the importance of the first five years of life for promoting lifelong health and well-being, especially for children at greatest risk of poor outcomes, RAND researchers have conducted a series of reviews to assess and summarize the evidence for early childhood programs.

Their latest synthesis confirms earlier findings that programs, such as home visiting, parent education, and early care and education (ECE)—alone or in combination—can have a positive influence on children’s development in multiple domains. The updated research also bolsters earlier findings that effective programs can largely pay for themselves, especially in the long term.

The findings should increase the confidence on the part of policymakers, funders, program implementers, and other stakeholders that effective early childhood programs can be a worthwhile investment, benefiting participating children and their families, as well as society as a whole. This brief discusses those findings and other highlights from *Investing Early: Taking Stock of Outcomes and Economic Returns from Early Childhood Programs*.

The Latest Study Expands and Updates the Series

This research builds on earlier RAND studies spanning nearly two decades, including *Investing in Our Children and Early Childhood Interventions: Proven Results, Future Promise*.¹ This latest study is the most comprehensive and up-to-date, examining far more programs with scientifically sound evaluation evidence than previous reports: 115 programs in total, 25 of which also had accompanying formal economic evaluations (i.e., a cost analysis, cost-effectiveness analysis, or benefit–cost analysis [BCA]). Drawing on this evidence base, the study addressed the following questions:

¹ Lynn A. Karoly, Peter W. Greenwood, Susan S. Sohler Everingham, Jill Hoube, M. Rebecca Kilburn, C. Peter Rydell, Matthew Sanders, and James Chiesa, *Investing in Our Children: What We Know and Don’t Know About the Costs and Benefits of Early Childhood Interventions*, Santa Monica, Calif.: RAND Corporation, MR-898-TCWF, 1998. As of November 1, 2017: www.rand.org/pubs/monograph_reports/MR898; Lynn A. Karoly, M. Rebecca Kilburn, and Jill S. Cannon, *Early Childhood Interventions: Proven Results, Future Promise*, Santa Monica, Calif.: RAND Corporation, MG-341-PNC, 2005. As of November 1, 2017: www.rand.org/pubs/monographs/MG341.

Key findings:

- An updated comprehensive review of rigorous evaluations of early childhood programs confirms and strengthens RAND researchers’ findings from previous syntheses showing that many early childhood programs can improve a range of outcomes for children.
- Of the 115 programs reviewed, 102 had a positive effect on at least one child outcome.
- Among programs with an economic evaluation, the typical return is \$2 to \$4 for every dollar invested.

- What program approaches to providing services for families and children from the prenatal period to school entry have been rigorously evaluated?
- What outcomes did these programs improve in the short or long term?
- What are the costs and benefits of effective programs and returns to government or society?

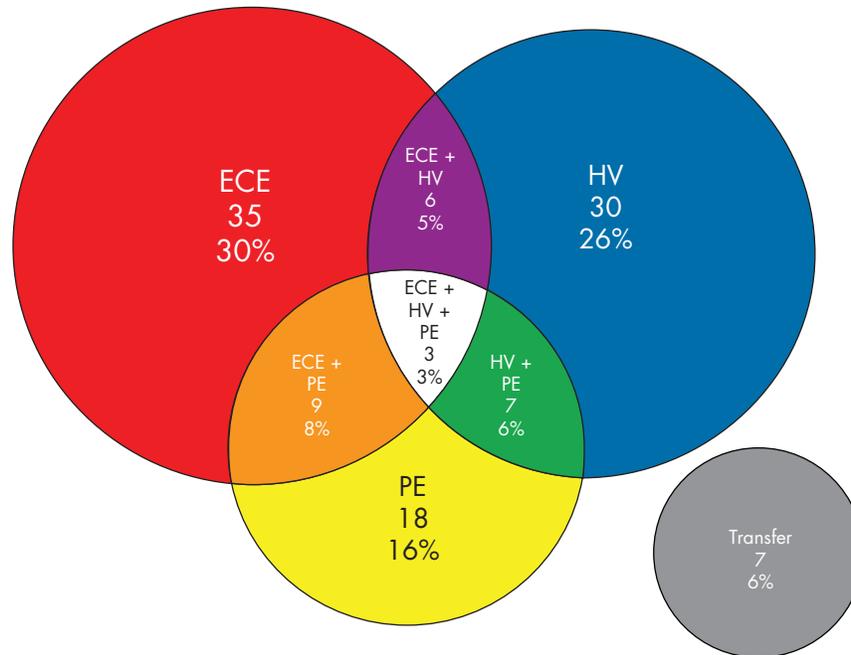
Answers to these questions, based on the larger body of evaluations now available, provide richer information about the research base for investing early and provide greater confidence in findings related to early childhood program effectiveness and economic returns.

Most of the Early Childhood Programs Studied Used One of Four Approaches

We identified four primary approaches to early childhood education based on our conceptual framework for how early interventions contribute to child outcomes—that is, through child development inputs, parenting capacity, or both. Nearly 80 percent of the 115 programs we reviewed used primarily a single approach, and the rest used a combination (Figure 1). The four approaches are

- *ECE*: services delivered to children in a group setting, such as preschool or a formal play group, to promote child development

Figure 1. Most Programs Take a Single Approach, but Some Use Combinations



NOTE: PE = parent education. HV = home visiting.

- *home visiting*: individualized services provided primarily to parents in a home-based setting to promote parents’ skills and knowledge
- *parent education*: group or individualized services delivered to parents in a non-home-based setting to improve parents’ skills and knowledge
- *government transfers*: cash or in-kind benefits (such as vouchers for food, child care, or health care) provided directly to families.

Most of the programs reviewed targeted low-income households, although some programs provided services universally. The majority provided services for less than a year (typical of ECE programs, for example), while about 20 percent (mostly involving home visiting alone or in combination with another approach) offered services for three years or more.

Most Programs Reviewed Improved at Least One Child Outcome

Nearly all of the 115 program evaluations we reviewed used randomized control trials to compare outcomes for those participating in a given program with those who are not. The evaluations examined 3,183 child outcomes, and more than three-quarters of these outcomes were in three domains: behavior and emotion (29 percent), cognitive achievement (26 percent), and child health (21 percent). The remaining outcome domains captured other aspects of child development, educational performance, and adolescence and adult-

hood (e.g., those pertaining to crime, the labor market, family formation, and use of social services).

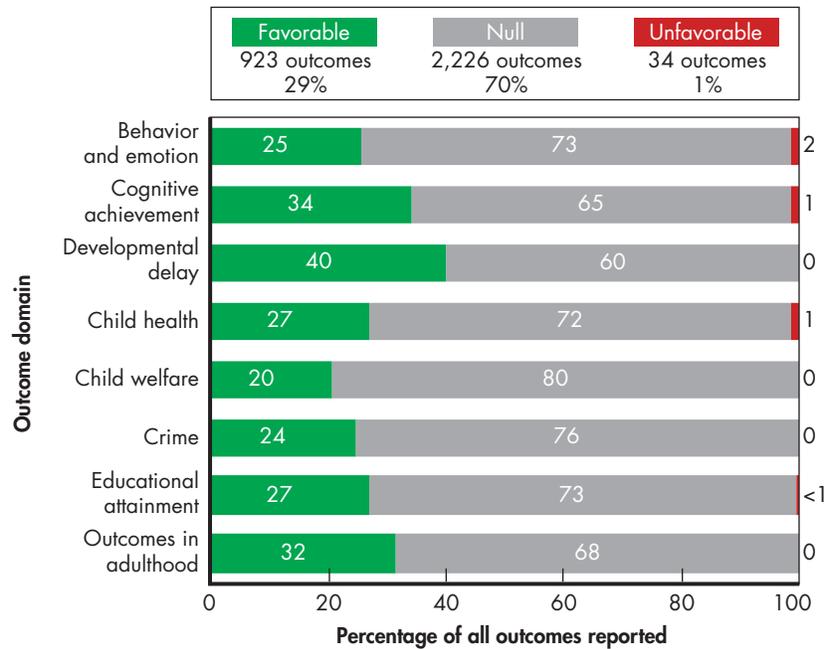
Of the 115 programs, 102 had a positive effect on at least one child outcome, and nearly one in three of the reported child outcomes across all the programs were improved (see Figure 2). Early childhood programs have long been considered one of the few policy areas in which evidence demonstrates that they work, so it might come as a surprise that only about one-third of all outcomes measured were demonstrably favorable. However, statistically, one would expect about one in 20 outcomes to improve at random; the fact that this analysis shows improvement in roughly six of 20 outcomes indicates that the positive impacts are not simply due to chance.

Sizes of the Improvements in Child Outcomes Vary

Prior work by RAND and other researchers has demonstrated that the impacts of early childhood programs can be sizable. For example, RAND’s 2005 study found an average effect size of 0.33 for early cognitive skills measured near the beginning of elementary school for nine programs using a combination of approaches and 0.21 for six single-approach programs. These effect size magnitudes are consistent with the range of 0.1 to 0.4 that other meta-analyses of various types of early childhood programs have found.

This new study adds to the evidence base by assessing the effect sizes for several commonly measured health outcomes: birth outcomes, body mass index (BMI), and substance use.

Figure 2. Almost One in Three Child Outcomes Were Improved



NOTE: Percentages are based on the total number of outcomes within domains.

The estimated average effect size, based on a meta-analysis, was small (0.05) but varied for each domain:

- *birth outcomes*: The size of the improvement in birth outcomes is very small (0.03). This is in line with other recent research that found that lifestyle and other interventions during pregnancy had little effect on birth outcomes.
- *BMI*: The early childhood programs in the set of programs reviewed do not have an effect on BMI at later ages.
- *substance use*: The average effect size on substance use outcomes at older ages was modest (0.15). However, given that early childhood programs serve very young children, the effects were relatively large compared with those of substance use programs that provide services during adolescence.

ECE programs had larger effects than other program approaches for the three health outcome categories combined, though its 0.12 pooled effect size is at the low end of the 0.1-to-0.4 range mentioned earlier for outcomes more generally.

Most Programs with Economic Evaluations Have Positive Economic Returns, but Those Results Might Not Apply Universally

Although the researchers found more early childhood programs with economic evaluations than in prior reviews (25 of 115 programs, 19 of which included formal BCAs), economic evaluations still are not routinely conducted.

The available evaluations show that costs ranged from about \$150 per family for a parent education program to nearly \$48,800 per family for an ECE program that also provided home visiting and other comprehensive services (all in 2016 dollars). The range in costs is almost as large among programs that use the same approach. For example, the six home visiting programs with cost estimates ranged from about \$720 to \$10,200 per family. Much of the difference is due to the intensity and duration of services, as well as differences in local prices for personnel, facilities, and other resources.

The available BCAs demonstrate that early childhood education programs can pay for themselves. For the 19 programs with BCAs, the benefit–cost ratios are typically in the range of \$2 to \$4 for every \$1 invested, although higher (and lower) ratios are possible. Positive economic returns are evident for three of the four main program approaches identified and many of the combination approaches. The researchers also found favorable economic benefits for both less and more resource-intensive programs and for programs using both targeted and universal approaches (that is, approaches targeting specific populations, such as low-income families, and approaches available to all families in the program area).

Such estimates demonstrate the proof of the principle that early childhood programs can more than pay for their costs through immediate and downstream benefits. However, such estimates come with considerable uncertainty, given that they are based on estimates of program impact that are uncertain, that some beneficial outcomes cannot be expressed

in monetary terms, and that later benefits cannot be observed without longer-term follow-up.

The Research Creates a Path for Policymakers and a Road for Researchers

The research has several implications for policymakers, practitioners, researchers, and others engaged with early childhood programs.

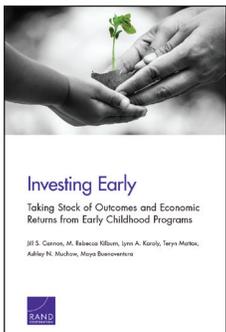
For policymakers and practitioners, research on early childhood program effectiveness and economic returns can help inform how decisionmakers in the public and private sectors set policy with respect to such programs and how practitioners implement them. The findings have implications for both policy and practice:

- Policymakers can be highly confident that well-designed and well-implemented early childhood programs can improve the lives of children and their families.
- With a diverse set of early childhood programs that have rigorous evidence of effectiveness, decisionmakers can integrate other criteria, such as the fit with the desired population to be served and community assets, when selecting programs to implement.
- Program implementers adopting or expanding evidence-based models should pay attention to the quality of replication and the effects of scale-up in order to realize the returns on early childhood program investments.
- New approaches to universal programs raise the possibility that they might complement rather than substitute for targeted programs.

- Because benefits from early childhood programs can take years to be realized, it might be challenging to implement funding mechanisms, such as social impact bonds, that seek shorter-term payoffs.

For researchers, the synthesis of research evidence points to opportunities and challenges for the research community to further advance understanding of early childhood program effectiveness and economic impact. The findings have implications for ongoing dissemination of the research evidence:

- Decisionmakers would benefit from head-to-head comparisons of the effectiveness of early childhood programs.
- The next generation of research needs to get inside the black box of effective programs to identify critical design components.
- Early childhood programs can improve a range of outcomes, so evaluations should collect outcomes across a range of domains.
- Outcomes for two generations—both participating children and parents—should be captured in early childhood program research.
- More studies need to conduct longer-term follow-up to determine whether early program impacts are sustained.
- Incentivizing cost data collection, as well as standardization of BCA methods, would facilitate comparisons of economic returns across programs.



This brief describes work done in RAND Labor and Population and documented in *Investing Early: Taking Stock of Outcomes and Economic Returns from Early Childhood Programs*, by Jill S. Cannon, M. Rebecca Kilburn, Lynn A. Karoly, Teryn Mattox, Ashley N. Muchow, and Maya Buenaventura, RR-1993-RWJF, 2017 (www.rand.org/t/RR1993). To view this brief online, visit www.rand.org/t/RB9993. The RAND Corporation is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest. RAND's publications do not necessarily reflect the opinions of its research clients and sponsors. RAND® is a registered trademark. © RAND 2017

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