Early Childhood Programs as an Economic Development Tool: Investing Early to Prepare the Future Workforce

by Timothy Bartik
Senior Economist
W.E. Upjohn Institute for Employment Research

High-quality early childhood programs provide sizable benefits to state and local economies. For each $1 invested in high-quality early childhood programs, a state economy will get a $2 to $3 return on investment, measured by increased jobs or earnings for state residents. Such benefits are similar in magnitude to what states would get from investing in well-designed business incentives. Benefits come mainly from the effects on child participants, who are more likely to be educated, trained, and employed as adults. In addition, when stable, affordable, high-quality child care is available, parents are able to improve their productivity by putting in more work hours, missing fewer work days, experiencing less stress, and/or pursuing education. Ensuring that early childhood programs are of high quality is key to fully realizing their benefits. Although it can be a challenge to finance early childhood programs up front, states can capitalize on several substantial short-term benefits that these programs produce. Over the long term, these programs will pay for themselves.

Many rigorous and reliable studies have demonstrated that early childhood programs produce very high returns on investment. For every $1 spent on high-quality early childhood programs, $8 to $16 is returned to society, largely through reduced future costs of crime and government assistance.[1] But if there is any case to be made for early childhood programs as *economic development* programs, then these programs need to provide economic development benefits, which I define as per capita earnings for state and local residents. My research specifically analyzes how investments in early childhood programs benefit state and local economies through increased per capita earnings. Using this approach, I can directly compare the track record of early childhood investments to conventional economic development programs such as business tax incentives.

Early childhood programs are a policy area in which it makes sense to have state governments take a strong role. Many of the economic development benefits of early childhood programs are returned to the state. In this chapter, I describe three highly effective early childhood programs and calculate the economic development benefits that they produce for state economies. I address commonly asked questions about how these benefits are distributed, how they contribute to the entire state economy, and how they compare to the benefits of well-designed business incentives. I discuss the short- and long-term benefits of these programs, and offer some options for how states can capitalize on short-term benefits. I then overview which elements of early childhood programs determine quality, and present some considerations for Wisconsin.

Many of the economic development benefits of early childhood programs are returned to the state.

Which Early Childhood Programs are Considered?

My analysis focuses on three well-studied early childhood programs: (1) universal prekindergarten (pre-K) education, (2) the Abecedarian early childhood program, and (3) the Nurse-Family Partnership home visiting program. These three programs have been rigorously evaluated and have long-term follow-up data available, which allowed me to reasonably calculate their economic development benefits. What's more, these are model early childhood programs, which allowed me to estimate which best practices of early childhood programs have economic development benefits. Below is a brief description of each program.

Universal Pre-K. The pre-K program examined in this study is modeled after the effective Chicago Child-Parent Center and Perry Preschool programs.[2,3,4,5] The program would provide free pre-K education to all four-year-olds for three hours per day during the school year. It would have a class size of 20 children, a lead teacher who is certified, and a paraprofessional teacher's aide. The program would be universally available to all four-year-olds, but not mandatory. The analysis assumes that 70% of all four-year-olds actually participate.[6]

Abecedarian Program. The Abecedarian early childhood program was operated as a random-assignment experiment from 1972 to 1977 in Chapel Hill, North Carolina. Disadvantaged families received five years of free full-time and full-year child care and pre-K education (from 7:30 a.m. to 5:30 p.m., five days a week, 50 weeks a year). The program targeted high-risk families (e.g., single parents, low income, low education). Services began when the child was six weeks of age and continued until the child entered kindergarten. The program also included home visits every other week. The child care incorporated educational goals from the very beginning, but with a highly individualized curriculum. Child-staff ratios were small, ranging from 6 infants to 2 teachers in the first year to 14 preschoolers to 2 teachers in the fourth and fifth years. Teachers for children ages 0-2 were high school graduates, teachers for children ages 3-5 were college graduates, and salaries were comparable to those of public school teachers.[7,8,9]

Nurses have proven more effective as home visitors than paraprofessionals because of their credibility with mothers and their health care knowledge.

Nurse-Family Partnership Program. The Nurse-Family Partnership home visiting program provides first-time mothers from disadvantaged backgrounds with 30 nurse visits, starting from when they are pregnant until their child turns two. On average, about 7 visits occur prior to the child's birth and 23 occur after, with each visit lasting about 75-90 minutes. The visits have three goals: (1) healthier prenatal care, (2) more responsive parenting, and (3) improved life chances for the mother (e.g., better spacing and planning of subsequent pregnancies; help for the mother in completing her education and finding work; and more constructive involvement of the father in the family). First-time mothers are targeted on the theory that they will be more receptive. Nurses have proven more effective as home visitors than paraprofessionals because of their credibility with mothers and their health care knowledge.[10,11,12]

What are the Economic Development Benefits of these Programs?

I define state economic development benefits as the increase in earnings per capita of state residents. I consider how these early childhood programs affect the future earnings of state residents above and beyond program costs. Costs and benefits are calculated in terms of their present value, which represents past or future dollars in today's terms, adjusting for both changes in prices and for the discount that people impose on dollars in the future versus dollars today.

The economic development effects are calculated for operating these programs at full scale. For universal pre-K, "full scale" means sufficient space for all four-year-olds whose parents choose the program. Based on the experience of states that offer voluntary universal pre-K, such as Oklahoma, about 70% of all four-year-olds would enroll in a universal pre-K program. This universal pre-K program would have the largest number of participants of the three programs I consider. I estimate that if such a program were operational throughout the United States, it would have slightly less than 3 million participants.

The other two programs are targeted at disadvantaged families. For them, "full scale" means sufficient slots for all disadvantaged families. Therefore, fewer children would participate nationwide: about 600,000 children for the Abecedarian program and 400,000 children for the Nurse-Family Partnership program.

The three programs differ in spending per participant. The Abecedarian program, which provides free, high-quality, full-day and full-year child care for five years, is the most expensive. The net cost of the program per child is over $60,000 (after adjusting for cost savings from reduced spending on other child care and pre-K). In comparison, the net cost per child for the other two programs is much less: $10,000 for the Nurse-Family Partnership program and $5,000 for universal pre-K (in present dollars). Combining enrollment size and costs, full-scale universal pre-K and Abecedarian programs would be far bigger than a full-scale Nurse-Family Partnership program. The Abecedarian program is bigger because of its high costs per participant, and universal pre-K because of its many participants. The Nurse-Family Partnership program has modest overall costs because of its smaller number of participants and lower cost per participant.

All three of these early childhood programs have healthy ratios of state economic development benefits to costs. My analysis finds that for each dollar invested, these programs create a return on investment of around $2 to $3 in increased earnings to state residents. More specifically:

- High-quality universal pre-K has a return of $2.78 per dollar invested.
- An Abecedarian child care program has a return of $2.25 per dollar invested.
- The Nurse-Family Partnership program has a return of $1.85 per dollar invested.

For each dollar invested, these programs create a return on investment of around $2 to $3 in increased earnings to state residents.

I emphasize again that these "returns on investment" of $2 to $3 only consider the benefits of these programs for increasing the earnings of state residents. Benefits for former participants who move outside the state are disregarded. And benefits for state residents from lower crime are also not counted. My focus is on only the "economic development" benefits for state residents.

Because these three programs are of dramatically different scales, the sizes of their effects on a state's economic development are quite different.

- Adopting a full-scale Abecedarian program would increase the present value of state residents' earnings by 1.7%.
- Adopting a full-scale state universal pre-K program would increase the present value of state residents' earnings by 0.75%.
- Adopting a full-scale Nurse-Family Partnership program would increase the present value of state residents' earnings by slightly more than 0.1%.

Keep in mind that an increase of 1% or 2% in state per capita earnings is a large number. The long-term effects on the total U.S. economy would amount to an estimated hundreds of billions of dollars per year. My estimates are deliberately conservative. For instance, I do not include the benefits that could potentially occur when the higher earnings realized by state residents are then saved and reinvested into the economy. This means that these economic development benefits have the potential to become even larger over time.

These results suggest that you get what you pay for. Early childhood programs of modest scale are unlikely to have large overall economic development benefits. If state policymakers want large effects from investing in children, they need to make large investments in evidence-based programs with a high payoff.

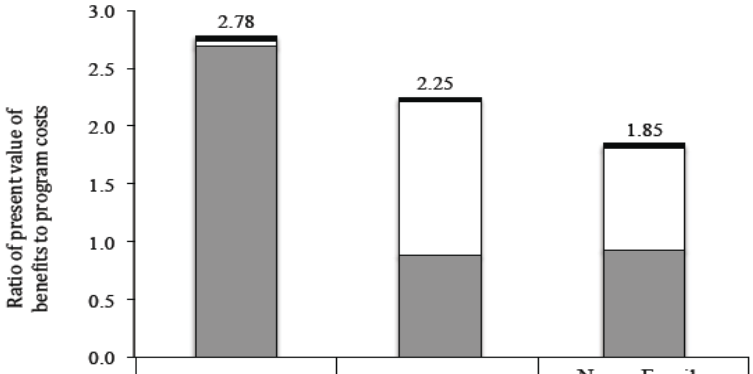
How Are the Economic Development Benefits Distributed?

Three aspects of these programs cause the increased state per capita earnings. Figure 1 graphically shows the breakdown of the various "transmission mechanisms," (i.e., spending, parents, and child participants) through which these programs provide economic development benefits to a state's residents.

As adults, children in early childhood programs have greater odds of being educated, employed, and trained in a specific occupation.

1) **Employment effects on child participants.** The most important economic development benefits come from the impact of early childhood programs on their former participants. As adults, children in these programs have greater odds of being educated, employed, and trained in a specific occupation. What's more, they have improved job skills and work attitudes. Many of these former child participants will stay in the same state or local economy as adults. The result is a local economy with a higher-quality labor supply. A higher-quality labor supply will attract more and better jobs to an area, leading to higher local per capita earnings.

Figure 1. State Economic Development Benefits of Early Childhood Programs, Divided among Various Mechanisms for Causing Such Effects.



	Universal Pre-K	Abecedarian	Nurse-Family Partnership
Spending	0.04	0.04	0.04
Parents	0.05	1.33	0.88
Former child participants	2.69	0.88	0.93

Adapted from *Investing in kids: Early childhood programs and local economic development* (p. 82). Adapted with permission. *Source:* Author's calculations. *Note:* For each early childhood program, this figure shows the ratio of effects on state residents' earnings to costs, in present values. The earnings effects are divided among three mechanisms for achieving such effects: 1) effects of spending more money on early childhood programs, 2) effects on parents of participants in these programs, and 3) effects on former child participants in these programs when they grow up and enter the labor force.

2) **Increased education or labor supply of parents.** With access to stable, affordable, high-quality child care, parents are able to improve their labor productivity by putting in more work hours, missing fewer work days, experiencing less stress, and/or pursuing education. Implementing early childhood programs positively affects the labor supply of parents, but the parental effects are generally smaller than effects on children. Not surprisingly, programs that provide more child care or that target families have larger effects on parents. The Abecedarian program provides five years of full-time and full-year free child care, and the Nurse-Family Partnership's program model emphasizes improving the life chances of mothers. Thus, roughly half of the benefits of these programs accrue through parents. In contrast, universal pre-K is too limited in scope and time (three hours a day for the school year for four-year-olds) to dramatically affect parents' earnings.

Roughly half of the benefits from the Abecedarian and Nurse-Family Partnership programs accrue through parents.

3) **Stimulation of the state economy.** Government spending on these programs leads to *multiplier effects*: early childhood programs will buy local supplies, pre-K teachers or other employees of early childhood programs will buy local goods and services, and so forth. Multiplier effects have political appeal in that the economic benefits are immediate. However, increased government spending on early childhood programs would require raising taxes, unless private or federal funding is available. Once one accounts for both taxes and spending, the multiplier effects of early childhood programs are modest. Most of the stimulative effects of spending are offset by the increased taxes.

For both the parents and former child participants in these programs, only a portion of increased earnings occur because of increased educational attainment. Even after educational attainment is accounted for, these programs appear to have additional benefits to the labor quality of parents and children that increase employment rates and earnings. In addition, although the effects of these programs on children's standardized test scores tend to fade out over time, positive effects on employment continue into adulthood.

The key to early childhood programs' long-term benefit is their effectiveness in improving not only hard skills, but also soft skills.

Why do these employment benefits persist? Nobel prize-winning economist James Heckman argues that the key to early childhood programs' long-term benefit is their effectiveness in improving not only hard skills, but also soft skills.[13] Hard skills are skills such as math and literacy, typically measured by standardized tests. Soft skills are character skills and social skills, including self-confidence, how someone gets along with peers and authority figures, and the ability to plan. This is particularly important for businesses because soft skills are at least as important as hard skills in determining worker productivity, and such skills are increasingly demanded by employers.[14] The development of soft skills and hard skills early in life leads to greater success in each subsequent grade, which then further accelerates the development of both soft skills and hard skills. As Heckman says, "skills beget skills."

How Do the Benefits from Early Childhood Programs Help the Entire Local Economy?

Do early childhood programs really benefit local and state economic development? Won't former child participants of these programs move away as adults? And how will better employment outcomes for participants translate into better outcomes for the economy as a whole?

Americans are not as mobile as we sometimes think. Over three-fifths of all Americans remain in their childhood state for most of their working life, and over half remain in their childhood metropolitan area for most of their working life. These percentages do not decline much for smaller or more economically distressed metropolitan areas. Thus, a large proportion of former childhood participants will stay in their home city or state, and they are more likely to do better as adults.

In addition, the entire local economy benefits from substantial spillover effects that result from increasing the average level of local skills. Having more highly skilled workers in an area allows employers to introduce new technologies more easily, and increases the overall competitiveness and productivity of local industries. For example, even if I am highly skilled, the productivity and competitiveness of my employer will be reduced if my co-workers are not skilled, or the workers at my employer's suppliers are not skilled. Therefore, what my employer can afford to pay me in wages will depend not only on my own skills, but also on the skills of other local residents.

How Do the Returns from Early Childhood Programs Compare with Business Incentives?

The returns from high-quality early childhood programs to state economic development are comparable to well-designed business incentives. Well-designed business incentives can produce a return of $3.14 for each dollar invested. The returns from high-quality early childhood programs range from $1.85 for a quality nurse home visiting program to $2.78 for universal pre-K.

However, the returns on investment for early childhood programs are higher if looked at nationally than at the state level. Nationally, they range from $2.47 for nurse home visiting to $3.79 for universal pre-K. These national economic development benefits are higher because they count the increase in skills and earnings of program participants who as adults move to other states.

In contrast, well-designed business incentives have a return of only $0.65 for each dollar invested when looked at nationally. Even well-designed business incentives reap part of their state returns by taking away jobs from other states. These programs benefit a state's earnings in part by reducing earnings in other states. But early childhood programs increase national economic productivity by improving the quality of America's workforce.

What Are the Long-Term vs. Short-Term Economic Benefits of These Programs?

The economic development benefits of early childhood programs are mostly long-term. Most of the benefits do not begin to show up until former child participants enter the labor force, and they are not fully realized until former participants enter their prime earnings years—at least 20 years later.

Taking a long view, high-quality early childhood programs will be self-financing. They have been found to significantly reduce criminal justice, special education, and other remedial education costs. They also reduce usage of welfare programs and increase tax revenue for the state and local economy.

Taking a long view, high-quality early childhood programs will be self-financing.

However, in the short run, these positive effects are insufficient to cover costs. These programs will require sufficient investment to have large effects on the future workforce. Because these programs have high costs in the short-run, but reap benefits in the long-run, this raises the issue of whether our political system can mobilize support for enacting these programs.

One way to mobilize support for early childhood programs is to identify the possible short-term benefits. For instance:

1) Free child care and other services to parents increase parental labor supply, which can increase spending and stimulate the state economy.

2) High-quality early childhood programs have been shown to significantly reduce the percentage of children in K-12 special education. Savings in the costs of special education and other remedial education services in elementary

school will have shorter time horizons. Special education placement for one student can cost $10,000 per year, for up to 13 years when students are in the K-12 system. After 10 years, early childhood programs may be able to cover between 50% and 150% of their annual costs through reduced special education costs alone.

3) Early childhood programs can help attract parents to a local area and raise local property values. For example, we know from numerous, rigorous studies that parents and homebuyers are willing to pay higher prices for homes that are assigned to schools with higher elementary test scores. I estimate that for each $1 in annual spending on high-quality pre-K, local property values will go up by $13. Property value effects would be even greater, up to $80 per $1 invested, if parents fully understood how much early childhood education increased their child's future earnings.

For each $1 in annual spending on high-quality pre-K, local property values will go up by an estimated $13.

Moving from Analysis to Next Steps

In my book, I examine several strategies that can help garner support for early childhood investments. Of these options, I note two that are promising:

- Establish systems that regularly rate the scope, quality, and costs of state and local early childhood programs in a comparable way. Promote these quality rating systems to potential property owners. Such rating systems and promotion efforts would improve family awareness of the importance and quality of early childhood programs. As a result, high-quality early childhood programs would be more likely to increase property values in the short run.
- Support demonstration projects and experiments that add or link adult employment assistance, training programs, and other parental assistance programs to early childhood programs. We may find that even more comprehensive programs offer higher returns. Examine what works and what doesn't work, and which potential synergies there are in combining such efforts.

What Features of Early Childhood Programs Create the Strongest Effects?

In order to realize the high returns on investment that early childhood programs can provide to state and local economies, the programs must adhere to high quality standards and best practices. What do we mean by high quality? In my analysis, I estimate how much the program's return on investment would be affected by a number of education standards and best practices.

Class size. Studies suggest that class size is the key driver of quality, rather than the ratio of students to adults.[15,16,17] I estimate that lowering a pre-K class size from 20 to 15 students would increase state economic development benefits by 83% of the original costs per participant. In other words, the original return on investment for pre-K of $2.78 per dollar invested would go up to $3.61 per dollar invested. After accounting for class size, lowering the student-to-adult ratio (by

adding a classroom aide, for example) does not seem to increase student progress in kindergarten classrooms or in child care centers for three- and four-year-olds.

Staff credentials. Specialized staff training and education in early childhood development tends to have positive effects on child outcomes.[18] However, early childhood research shows mixed results for the effects on children of increasing the general educational credentials of staff, such as requiring a bachelor's degree.[19,20,21,22,23] These effects may depend on several factors, such as the quality of the school granting the credentials, the specific major studied, and whether programs have sufficient funding to recruit and retain teachers with higher degrees. For example, increasing educational credential requirements may help increase teacher quality if accompanied by sufficiently high salaries to compete with public school teachers, but such credential requirements may be counterproductive if pre-K teacher salaries are so low that teacher turnover is high.

Teacher-student interactions. In two studies, pre-K classes in which teachers interacted with children more frequently to develop conceptual and thinking skills, and to provide higher-quality feedback, had modestly greater test score gains.[24,25] Such test score gains predict modestly greater economic development benefits. Obtaining improvements in teacher-student interactions might require some improvements in training and management quality. My economic estimates indicate that such changes could likely be made at a low enough cost that the overall benefits of the program would increase.

Time intensity of services. Adding a second year of pre-K (e.g., adding age 3 to age 4) is likely to translate into significant state economic development benefits that exceed costs, although the benefit-cost ratio is not as large as for a single year of pre-K.[26] In contrast, having children spend more hours per day in pre-K increases economic development benefits,[27] but not enough to offset the increased costs. However, moving from a half-day to a full-day pre-K program may increase access to the program for some families, by providing full-day child care.

Targeted or universal eligibility. Targeting pre-K programs to those children most in need is likely to yield higher state economic benefits per dollar spent than universal eligibility. However, the evidence suggests that the benefits of pre-K are almost as strong for children from working- and middle-class families as they are for children from low-income families.[28] It seems likely that pre-K's benefits for the middle class are extensive enough that broadening pre-K services beyond a lower-income target group will have net economic development benefits.

Evidence suggests that the benefits of pre-K are almost as strong for children from working- and middle-class families as they are for children from low-income families.

Institution of delivery. No strong evidence exists that the quality of pre-K education is affected by which institutions deliver it, whether public or private. Oklahoma's near-universal pre-K system is mostly delivered through its public schools.[29] Georgia's extensive pre-K system is largely delivered through payments to private pre-K providers.[30] Both systems have significant evidence of success in improving educational outcomes. What is more important than the institutions that deliver pre-K is whether the program operates with sufficiently high quality standards for all service providers.

Considerations for Wisconsin

Wisconsin currently offers universal access to pre-K for four-year-olds, with funding allocated through the public schools. Districts may provide pre-K programs through the public school system or contract them out to Head Start agencies, private centers, or other community-based programs. These pre-K programs serve about two-thirds of the state's four-year-olds and 14% of three-year-olds. Wisconsin's pre-K system meets five out of ten quality benchmarks that were assessed in 2010-11 by the national State Preschool Yearbook.[31] The state's public pre-K programs appear to have a solid infrastructure and strong quality standards. Less standardized information is available about child care and home visiting programs in the state, and the levels of access and quality for these programs may vary widely. More could be done to develop a coherent system of quality standards, training, accountability, and support for these areas.[32] (For more information on the state of early childhood education in Wisconsin, see the National Institute for Early Education Research State Preschool Yearbook at nieer.org/yearbook, and the Wisconsin Council on Children and Families report at wccf.org/pdf/ece_planning_system_11-2009.pdf.)

One move toward improving quality in Wisconsin child care programs was the establishment of the YoungStar quality rating system.

One move toward improving quality in Wisconsin child care programs was the establishment of YoungStar in 2010. YoungStar is a statewide quality rating and improvement system used to evaluate participating child care providers. The system is meant to promote higher quality standards for state-funded, licensed child care providers and to provide standardized, quality-based decision criteria to help parents choose a program that is best for their children.[33] Further expanding, refining, and utilizing this program to improve child care quality in the state and to better inform parents and the public about the quality of programs could be one step toward underscoring the short-term benefits of investing in early childhood. (For more information, see the Wisconsin Policy Research Institute Report at wpri.org/Reports/Volume25/Vol25No2/Vol25No2.pdf.)

Given that Wisconsin already has universal pre-K for 4-year olds, along with efforts to improve ratings of child care quality, what are some options for moving forward? As outlined above, we know that more intensive early childhood programs can pay off for targeted groups, such as parenting assistance for first-time disadvantaged mothers (the Nurse-Family Partnership program), and comprehensive child care and preschool programs for low-income families (the Abecedarian program).

But such highly targeted programs run the risk of not providing broad enough benefits to a wide range of children. This is not simply an issue of political support. It is also an issue of advancing state economic development. Advancing state economic development requires affecting labor force quality for a sufficiently large share of the state's labor force, not simply helping the poor.

In keeping with Wisconsin's tradition of local control, one approach to combine targeting with broader assistance is to leave much of this up to local decisionmakers; the need for parenting assistance, child care assistance, and additional preschool may vary greatly in different areas of the state. If such local

programs are subject to regular rigorous evaluation, over time these programs may have increasing impact, which will generate both better economic returns and stronger public support.

One option for flexibly funding local early childhood efforts is North Carolina's effective Smart Start program. Under this model, state funds would be provided to local early childhood coordinating offices, perhaps organized at the county or intermediate school district level, that would provide a range of targeted services. For example, decisions would be made locally about parenting assistance programs, initiatives to improve local child care quality and provide additional child care assistance, and expansion of slots or funding for 3-year-old pre-K for families whose income or characteristics suggest that such services would be particularly helpful. Some local areas might choose to focus funding on low-income children in programs similar to the Abecedarian program, whereas other local areas might choose to devote the funds to more widespread assistance. A Wisconsin program of similar per capita scale to North Carolina's Smart Start would provide around $100 million annually in state grants to local early childhood offices for providing targeted services.

Evaluations of North Carolina's Smart Start program suggest that it has been effective in improving educational outcomes. For example, a Duke University study was able to conduct a rigorous evaluation of Smart Start by exploiting the fact that the Smart Start program was gradually phased in, with some counties having high early funding, and other counties not getting program grants until later on.[34] This study found that the appropriate number of years later, 3rd grade test scores increased in targeted counties, and special education enrollment rates declined. The estimated effect of Smart Start was to increase average overall 3rd grade test scores by the equivalent of what students learn in 2 months. This is a remarkable effect on average test scores for all county children when we consider that the program typically only provides targeted services to a minority of the most at-risk students in each county. The predicted future earnings effects of this test score boost are such that each dollar invested in Smart Start would be returned manyfold. (For more elaboration on these calculations, see http://investinginkids.net/2011/03/18/new-evidence-for-large-state-and-local-returns-from-investments-in-preschool-and-child-care-duke-university-study-of-north-carolina%E2%80%99s-programs/.)

Conclusion

In sum, investments in high-quality early education programs produce state economic development benefits equaling two to three times program costs. These economic development benefits are of similar magnitude to the benefits of well-designed business incentive programs. Society will repeatedly benefit from adopting innovations that raise net incomes. The dilemma for policymakers is that most of the benefits of early childhood programs are realized many years after the initial investments have been made. Policymakers can help offset up-front costs through capitalizing on the short-term benefits of early childhood programs from reduced special education spending and increased property values. Policymakers

The economic development benefits of quality early childhood programs are of similar magnitude to the benefits of well-designed business incentive programs.

could also redistribute existing funding from less cost-effective programs to more effective early childhood investments. They should keep in mind that programs will only produce high payoffs if they are of high quality, and should work to ensure and promote quality in existing early childhood programs.

Timothy Bartik has been a Senior Economist with the well-respected and independent W.E. Upjohn Institute for Employment Research since 1989. He received his Ph.D. in economics from the University of Wisconsin-Madison. Dr. Bartik's research focuses on state and local economic development and local labor markets, and he is one of the country's leading experts on evaluations of economic development policies being implemented in states across the country. He has published 4 books, 70 journal articles and book chapters, and 28 policy reports on regional economics, public finance, urban economics, and labor economics. His most recent book, Investing in Kids: Early Childhood Programs and Local Economic Development*, analyzes how investments in early childhood programs affect state and local economies, and how that compares to other economic development strategies. Dr. Bartik has received several grants to support his research and writing. He is a popular speaker having given presentations at the National Governors Association, the Midwest Council of State Governments, the National Association of State Development Agencies, and in most states in the Midwest.*

This chapter was adapted from the following publications:

Bartik, T. J. (2011). The economic development effects of high-quality early childhood programs. In *Investing in kids: Early childhood programs and local economic development* (Chapter 4, pp. 77-112). Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

Bartik, T. J. (2011). Design matters: What features of business incentive programs and early childhood programs affect their economic development benefits? In *Investing in kids: Early childhood programs and local economic development* (Chapter 5, pp. 113-158). Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

Bartik, T. J. (2011). Bringing the future into the present: How policymakers should deal with the delayed benefits of early childhood programs. In *Investing in kids: Early childhood programs and local economic development* (Chapter 7, pp. 175-218). Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

Endnotes

[1] Rolnick, A. J., & Grunewald, R. (2003). Early childhood development: Economic development with a high public return. *Fedgazette, 15*(2). Minneapolis: Federal Reserve Bank of Minneapolis. Retrieved from http://www.minneapolisfed.org/publications_papers/pub_display.cfm?id=3832

[2,7] Galinsky, E. (2006). *The economic benefits of high-quality early childhood programs: What makes the difference?* Washington, DC: Committee for Economic Development. Retrieved from http://familiesandwork.org/site/research/reports/ced.pdf

[3] Reynolds, A. J., Temple, J. A., Robertson, D. L., & Mann, E. A. (2002). Age 21 cost-benefit analysis of the Title I Chicago Child-Parent Centers. *Educational Evaluation and Policy Analysis, 24,* 267-303.

[4] Temple, J. A., & Reynolds, A. J. (2007). Benefits and costs of investments in preschool education: Evidence from the Child-Parent Centers and related programs. *Economics of Education Review, 26,* 126-144.

[5] Schweinhart, L. J., Montie, J., Xiang, Z., Barnett, W. S., Belfield, C. R., & Nores, M. (2005). *Lifetime effects: The High/Scope Perry Preschool study through age 40.* Ypsilanti, MI: High/Scope Press.

[6] Karoly, L. A., & Bigelow, J. H. (2005). *The economics of investing in universal preschool education in California.* Santa Monica, CA: RAND Corporation.

[8] Ludwig, J., & Sawhill, I. (2007). *Success by ten: Intervening early, often, and effectively in the education of young children* (Hamilton Project Discussion Paper No. 2007-02). Washington, DC: Brookings Institution.

[9] Ramey, C. T., & Campbell, F. A. (1991). Poverty, early childhood education, and academic competence: The Abecedarian experiment. In A. C. Huston (Ed.), *Children in poverty: Child development and public policy* (pp. 190-221). Cambridge: Cambridge University Press.

[10] Olds, D. L. (2002). Prenatal and infancy home visiting by nurses: From randomized trials to community replication. *Prevention Science, 3,* 153-172.

[11] Olds, D. L., Kitzman, H., Cole, R., Robinson, J., Sidora, K., Luckey, D. W., … Holmberg, J. (2004). Effects of nurse home-visiting on maternal life course and child development: Age 6 follow-up results of a randomized trial. *Pediatrics, 114,* 1550-1559.

[12] Olds, D. L., Robinson, J., Pettitt, L. M., Luckey, D. W., Holmberg, J., Ng, R. K., … Henderson, C. R. (2004). Effects of home visits by paraprofessionals and by nurses: Age 4 follow-up results of a randomized trial. *Pediatrics, 114,* 1560-1568.

[13] Heckman, J. J. (2005). Interview. *The Region, 19*(2), 18-29.

[14] Prising, J. (2011). The changing world of work and its impact on jobs in the future. In Bogenschneider, K. & Slack, K. S. (Eds.), *Positioning Wisconsin for the jobs of the future* (Briefing Report No. 30, pp. 11-17). Madison, WI: Wisconsin Family Impact Seminars.

[15] Krueger, A. B. (2003). Economic considerations and class size. *Economic Journal, 113*(485), F34-F63.

[16] Schanzenbach, D. W. (2007). What have researchers learned from Project STAR? *Brookings Papers on Education Policy, 9,* 205-228.

[17,18,21,25] Travers, J., & Goodson, B. D. (1980). *Research results of the National Day Care Study, Volume 2.* Report for the Department of Health, Education, and Welfare. Cambridge, MA: Abt Associates.

[19] Early, D. M., Maxwell, K. L., Burchinal, M., Alva, S., Bender, R. H., Bryant, D., … Zill, N. (2007). Teacher's education, classroom quality, and young children's academic skills: Results from seven studies of preschool programs. *Child Development, 78,* 558-580.

[20,24] Mashburn, A. J., Pianta, R. C., Hamre, B. K., Downer, J. T., Barbarin, O. A., Bryant, D., … Howes, C. (2008). Measures of classroom quality in prekindergarten and children's development of academic, language, and social skills. *Child Development, 79,* 732-749.

[22] Barnett, W. S. (2004). Maximizing returns from prekindergarten education. *Proceedings, 2005,* 5-18. Cleveland, OH: Federal Reserve Bank of Cleveland.

[23] Kelley, P., & Camilli, G. (2007). *The impact of teacher education on outcomes in center-based early childhood education programs: A meta-analysis* (NIEER Working Paper). New Brunswick, NJ: National Institute for Early Education Research, Rutgers University.

[26] Reynolds, A. J. (1995). One year of preschool intervention or two: Does it matter? *Early Childhood Research Quarterly, 10,* 1-31.

[27] Robin, K. B., Frede, E. C., & Barnett, W. S. (2006). *Is more better? The effects of full-day vs. half-day preschool on early school achievement* (NIEER Working Paper). New Brunswick, NJ: National Institute for Early Education Research, Rutgers University.

[28] Barnett, W. S. (2006). *Universal or targeted preschool? The case for universal preschool.* Education Sector Debates. Washington, DC: Education Sector.

[29] Gormley, W. T., Gayer, T., Phillips, D., & Dawson, B. (2005). The effects of universal pre-K on cognitive development. *Developmental Psychology, 41,* 872-884.

[30] Levin, H. M., & Schwartz, H. L. (2007). Educational vouchers for universal pre-schools. *Economics of Education Review, 26,* 3-16.

[31] Barnett, W. S., Carolan, M. E., Fitzgerald, J., & Squires, J. H. (2011). *The state of preschool 2011: State preschool yearbook.* New Brunswick, NJ: National Institute for Early Education Research, Rutgers University. Retrieved from http://nieer.org/yearbook

[32] Wisconsin Council on Children and Families (2009). *Wisconsin's early care and education landscape: Planning for a coherent system*. Madison, WI: Author. Retrieved from http://www.wccf.org/pdf/ece_planning_system_11-2009.pdf

[33] Grunewald, R., & Bezruki, D. (2012). *The economic power of early childhood education in Wisconsin.* Hartland, WI: Wisconsin Policy Research Institute. Retrieved from http://www.wpri.org/Reports/Volume25/Vol25No2/Vol25No2.pdf

[34] Ladd, H. F., Muschkin, C. G, & Dodge, K. (2012). *From birth to school: Early childhood intiatives and third grade outcomes in North Carolina*. Durham, NC: Sanford School of Public Policy, Duke University. Retrieved from http://www.sanford.duke.edu/research/papers/SAN12-01.pdf

Glossary

Compiled by Olivia Little
Interim Associate Director, Wisconsin Family Impact Seminars

Hard Skills

Technical or academically-oriented skills, such as math, literacy,or science skills, often confirmed by standardized tests, assessments, or certifications.[1]

Multiplier Effects

Spending on businesses or programs often leads to an increase in economic activity, referred to as a multiplier effect. For example, if investments are made in early childhood programs, programs in the area will buy local supplies, teachers and other employees of the programs will buy local goods and services, and so forth, generating revenue in the local economy.[2,3]

Paraprofessional

A person who is trained to assist professionals in a certain occupational field, but who does not hold professional licensure themselves.

Present Value

Present values represent past or future dollars in terms of present-day dollars, adjusting for both price changes over time and for the "discount" that people impose on future dollars versus dollars today. Future dollars are discounted because of most people's preference to consume resources now rather than in the future. This discounting is separate from adjustments for inflation, which must also be taken into account.[4]

Random-Assignment Experiment

A research study that is conducted by splitting participants into two groups: a treatment group and a nontreatment group. The participants are split in such a way that each one has an equal chance of being assigned to the treatment (or the nontreatment) group. The study then measures the differences between the two groups after the treatment or program has been administered. This design gives the best assurance that differences between the two groups are due to the treatment or program, and not due to other factors.[5]

Return on Investment (ROI)

A measure to evaluate the efficiency of an investment, typically stated as the ratio between the overall benefits of the investment versus the overall costs of the investment.

Soft Skills

"Nontechnical skills, abilities, and traits required to function in a specific employment environment: delivering information or services to customers and co-workers; working effectively as a member of a team; learning or acquiring the skills necessary to perform a task; inspiring the confidence of supervisors and management; and understanding and adapting to the cultural norms of the workplace."[6]

Spillover Effects

Spillover effects occur when the costs or benefits of an action affect third parties who are not directly involved. For example, if an education program increases the skills of some workers in a local area, workers that are not involved in the program may still be affected, for instance by benefiting from increased wages in the area. Even if workers from the program are highly skilled, the productivity and competitiveness of their employer will be reduced if the other workers are not skilled, or if workers at the employer's suppliers are not skilled.[7]

Glossary Endnotes

[1] Manpower Inc. (2010). *Teachable fit: A new approach for easing the talent mismatch*. Retrieved from http://us.manpower.com/us/en/multimedia/fresh-perspective-hardest-jobs-to-fill.pdf

[2,7] Bartik, T. J. (2011). *Investing in kids: Early childhood programs and local economic development.* Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

[3,4] Boardman, A. E., Greenberg, D. H., Vining, A. R., & Weimer, D. L. (2006). *Cost-benefit analysis: Concepts and practice* (3rd ed.). Upper Saddle River, NJ: Pearson Education, Inc.

[5] Kemple, J. J., & Willner, C. J. (2008). *Career Academies: Long-term impacts on labor market outcomes, educational attainment, and transitions to adulthood.* New York: MDRC.

[6] Eberts, R., O'Leary, C., & Wandner, S. (Eds.). (2002). *Targeting employment services.* Kalamazoo, MI: Upjohn Institute for Employment Research.