



Invest Now or Pay More Later:

Early Childhood Education Promises Savings to
Pennsylvania School Districts

2006

Pennsylvania Build Initiative
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BUILD and Pennsylvania BUILD

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BUILD AND PENNSYLVANIA BUILD

The Build Initiative is a multi-state partnership that helps states construct a coordinated system of programs, policies, and services that:

- Respond to the needs of families
- Carefully use public and private resources
- Effectively prepare young children for a successful future.

It is supported by an Early Childhood Funders' Collaborative made up of 15 leading philanthropies. Pennsylvania is one of five states selected to participate in this national initiative. To learn more about Pennsylvania Build, contact Carla Thompson, Special Assistant to the Deputy Secretary, Office of Child Development, at the Pennsylvania Department of Public Welfare, Box 2675, Harrisburg PA 17105 (carthomps@state.pa.us). People interested in Pennsylvania Build can also visit http://www.pde.state.pa.us/early_childhood/cwp/view.asp?Q=104772&A=179. To learn more about the national Build initiative, visit <http://www.buildinitiative.org>.

This report was developed by James Harvey, educational writer and consultant in Seattle, Washington. In developing the report, he drew on major analyses by Dr. Clive R. Belfield, an economist specializing in the economics of education at the City University of New York. Sharon Brumbaugh, Executive Policy Specialist, and Catherine Carretti, Secretary, at the Office of Policy, Pennsylvania Department of Education provided information and analyses in support of the report.

EXECUTIVE SUMMARY

What should Pennsylvania's educational leaders do to help students meet high standards while keeping costs under control?

However this question is asked, the answer is always the same. Investment in preschool programs produces kindergarten students able to cope with school demands and better equipped to meet the demands of *No Child Left Behind*. And investments in early education start to pay for themselves immediately, with downstream savings far higher than the initial costs. Some districts recoup the initial investment immediately in special education savings, alone. Research nationally, in neighboring states and in Pennsylvania is unambiguous: Unless Keystone educators and citizens invest today in early childhood education, they'll wind up spending more tomorrow.

- **Investment in early education produces educational benefits...**
Research confirms what parents and educators know: children from high quality pre-school programs do better in school from kindergarten through grade 12. They outperform non-pre-school children on achievement tests throughout school and into adulthood.
- **...and saves money, both in schools and communities.**
Initial costs are returned to communities many times over in savings and greater productivity. One national survey concludes that every dollar invested in a preschool program 40 years ago returned more than \$17 to society.
- **What is true nationally is true in the Keystone State.**
Preliminary estimates indicate that Pennsylvania taxpayers will get back about \$1.68 for every dollar invested in preschool programs (counting educational savings, increased earnings of school graduates, and savings on public assistance and corrections). Preschool education costs, but its lack costs far more.
- **Typical school districts will recoup most of the investment in Pre-Kindergarten almost immediately.**
Analysis of eight school districts in Pennsylvania indicates that districts will recoup about 78 cents of every dollar spent on preschool education. Some small districts with high special education expenditures will receive as much as \$1.16 for every dollar invested. Non-school returns in the form of improved tax revenues and savings on public assistance and corrections can also be anticipated.
- **Districts should join the state as full partners in the movement to provide access to high-quality preschool programs.**
Drawing on federal, state, and local support for preschool programs, districts should structure programs that best serve local needs, while leveraging the districts' ability to recoup more than the costs from their investment in preschool programs.

In the end, all the economic analysis in the world does not change the wisdom of an old aphorism: Well begun is half done. That's a powerful message. Preschool programs are essential to closing the achievement gap. And they pay for themselves. Equally powerful will be the message that, when the challenge was defined, school leaders in Pennsylvania responded.

I. BENEFITS OF INVESTING IN EARLY CHILDHOOD EDUCATION

What should Pennsylvania’s educational leaders do to help students meet high standards while keeping costs under control? How can districts in the Keystone State “do more with less”? Where can district and state officials turn to address the school-readiness challenges many students face?

However these questions are asked, the answer is always the same. Investment in preschool programs produces kindergarten students better able to cope with school demands. And early investments start to pay for themselves immediately, with downstream savings far higher than the initial costs. Some districts recoup the initial investment immediately in special education savings. Research nationally, in neighboring states, and in Pennsylvania -- is unambiguous: Unless Keystone educators and citizens invest today in early childhood education, they’ll wind up spending more tomorrow.

A. Investment In Early Education Produces Educational Benefits...

The benchmark analysis of the benefits of early childhood education programs has long been the Perry Preschool Program.¹ Launched in Ypsilanti, Michigan in 1962 with a matched set of low-income, minority participants and non-participants, the effort was tracked over the following decades by researchers at the High/Scope Foundation. All of these African-American children, aged three or four, lived in poverty. They were assigned to the program at random for two years. Those in the program derived remarkable benefits. So did their communities. Perry alumni were significantly more likely to finish high school, earn more, own homes and cars, and open savings accounts. They have been less likely to require social services or run afoul of the criminal justice system. Table 1 outlines the benefits to Perry participants after 40 years.

Table 1: Selected Findings of the Perry Preschool Study After 40 Years

<i>Indicator</i>	<i>Perry Program</i>	<i>No Perry Program</i>
High school Graduates	65%	45%
Earning \$20K or more	60%	40%
Home Ownership	37%	28%
Savings Account	76%	50%
Own automobile	82%	60%
Five or More Arrests	36%	55%
Monthly Earnings at Age 27	\$1,219	\$766
Social Services at Age 27	59%	80%

In an era of greater accountability and *No Child Left Behind* mandates, one of the most significant findings from the study is the following: Perry participants, on average, outperformed the non-program group on intellectual and language tests during their early childhood years and on school achievement tests between ages 9 and 14.ⁱⁱ These benefits persisted. Participants also outperformed non-participants on literacy tests at ages 19 and 27.ⁱⁱⁱ

Research from both the National Institute for Early Education Research (NIEER) and the Early Childhood Longitudinal Study (ECLS) confirms the Perry evidence. A December 2005 report from NIEER focuses on school readiness in five states (Michigan, New Jersey, Oklahoma, South Carolina and West Virginia).^{iv} These studies provide compelling evidence of the value added to children’s learning by high-quality preschool programs.

The NIEER study compares a group of 2,728 disadvantaged five-year-olds who had attended preschool programs with 2,550 who had not. Value-added growth in key areas such as vocabulary and mathematics is powerful and positive, reaching a remarkable 85% above norm in understanding print concepts (See Table 2).

Table 2: Readiness in Kindergarten Students from Preschool Programs in Five States^v

<i>Indicator</i>	<i>Instrument</i>	<i>Raw Score Difference</i>	<i>Value-Added</i>
Vocabulary	Peabody Picture Vocabulary Test	+3.96	+31%
Early Mathematics	Woodcock-Johnston	+1.41	+35%
Print Awareness	Subtest of Pre-CTOPP	+16.64	+85%
Phonological Awareness	Subtest of Pre-CTOPP	No significant effect	No significant effect

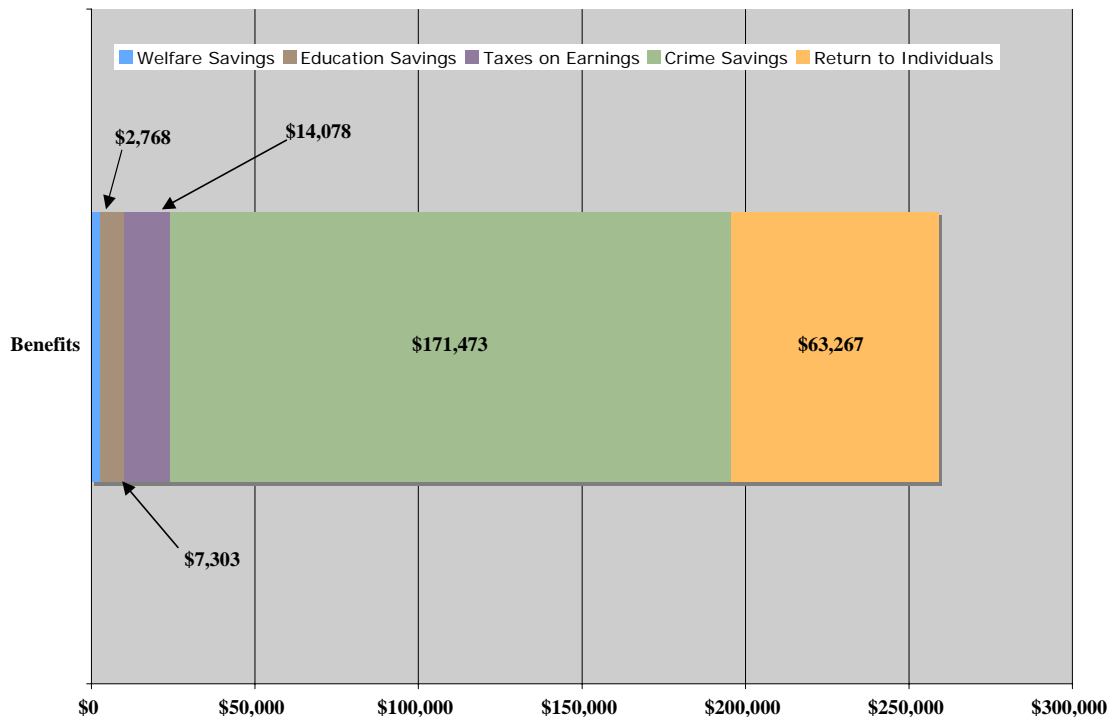
The ECLS data analyzed more than 22,000 children across the United States who entered kindergarten in 1998.^{vi} The work confirms what parents and elementary school teachers know: children from pre-kindergarten programs are better able to cope with the demands of school. Controlling for children’s characteristics, center-based pre-kindergarten care raises children’s initial scores by 43% over children who did not have access to this care.

The programs analyzed by High/Scope, NIEER and ECLS get disadvantaged children off on the right foot when they start school. In addition, it is evident from the Perry data that high-quality preschool programs provide lifetime benefits. Beyond the learning benefits, preschool programs help children become competent students who develop curiosity, independence, trust, and confidence -- and who grow into adults able to handle responsibility.

B. ...And It Saves Money

The good news does not end with learning, as important as those findings are. Groundbreaking new cost-benefit analyses indicate that school districts and the state will find investments in early learning producing results similar to investments in higher education: the initial cost is returned to communities many times over in savings and greater productivity (see Figure 1). The returns are found in savings in educational outlays and massive reductions in expenditures on public assistance and the criminal justice system. Productivity increases come from better educated adults and the higher tax receipts and money circulating in local economies.

Figure 1: Every Dollar Invested in the Perry Preschool Program 40 Years Ago Has Returned More than \$17 to Society and the Individuals Involved



The amount of money involved is surprising. For every \$15,166 invested over two years in each participant in the Perry Preschool Program in the 1960s (in constant 2000 dollars), the economic return to society is estimated to have been \$258,888. That is, for every dollar invested 40 years ago, \$17.07 has already been returned. Figure 1 displays where the returns can be identified (in schools and other community agencies), who benefits (individuals or society) and by how much.

It should come as no surprise that most of the financial benefits to participants and society accrue after participants leave school. Nearly three-quarters of the 40-year period have been post-K-12 for the Perry participants. In that post-school time, their greater self-sufficiency lowered expenditures on public assistance and raised revenue from income taxes.

The high cost of the criminal justice system is also a feature of this analysis. Non-participants have been arrested more frequently, faced more serious charges, and spent nearly twice as much time in prison as Perry Preschool participants. Had Perry alumni encountered the criminal justice system as frequently as non-participants, communities would have spent an additional \$171,473 per participant to arrest, convict, and keep them behind bars.

As Nobel-Prize-winning economist, James J. Heckman of the University of Chicago, noted about the latest Perry report: The findings “substantially bolster the case for early interventions in disadvantaged populations. More than 35 years after they received an enriched preschool program, the Perry Preschool participants achieve much greater success in social and economic life than their counterparts who are randomly denied treatment.” Good preschool programs work.

The impressive educational return of \$7,303 is likely to be even higher for children entering preschool programs today, than it was when the Perry children entered their programs in 1962. Education and school finance has changed dramatically in the intervening four decades. Disadvantaged children were expected to leave school early in the 1960s and take routine jobs as laborers and assembly line workers. Today they are expected to graduate and enter a global economy. The Perry students were in preschool before compensatory education was widely available.^{vii}

II. ANALYSIS OF COST SAVINGS TO SPECIAL EDUCATION IN PENNSYLVANIA

During the years Perry students were in school, students with learning challenges and physical disabilities (particularly severe disabilities) were frequently denied access to public schools. Special educational services for students with disabilities were virtually unknown.^{viii} The educational savings reported in the Perry analysis seem to be a function of the reduced incidence of grade repetition for program participants. The High/Scope analysis provides no information on additional potential savings in relatively new areas of school expenditure, including compensatory and special education. Are additional returns in these areas a likely consequence of expanding preschool programs?

A partial answer to this question can be found in a new economic analysis supported by Pennsylvania BUILD in 2005. Economist Clive R. Belfield of the City University of New York, a specialist in the economics of education, examined potential costs savings to special education in the Keystone State as a result of increased investment in preschool programs.^{ix} The Department of Education was particularly interested in the question of special education services since the demand for them in districts across the state increased dramatically during the 1990s, frequently at rates in excess of national experience. Could wider availability of preschool programs ameliorate this rising demand?

The answer is: Yes. It can. Of 152,000 four-year-olds in Pennsylvania (2003), fully 84% (128,900) are not currently provided for in publicly funded preschool programs (see Table 3). Belfield estimates that if preschool programs were made fully available on a voluntary basis to all four-year-olds the families of *half of all children* would take the opportunity to enroll (76,000 new places). If the offer were targeted on students in greatest need (by income, residence or screening), he estimates about *one-fifth of all children* would enroll (30,640 new places).

Table 3: Preschooling for Pennsylvania Four-Year-Olds

<i>Type</i>	<i>Enrollment (2003-04)</i>	<i>Offer Fully Available Preschool</i>	<i>Offer Targeted Preschool</i>
Head Start/Special Education/Preschools	23,100	23,100	23,100
No Preschool	128,900	52,900	98,260
New Enrollment		76,000	30,640
Total	152,000	152,000	152,000

These are ambitious but feasible goals. They would produce enrollment rates well below similar efforts in, for example, Georgia and Oklahoma, where non-compulsory pre-kindergarten programs are already available.

What would it cost the state and its districts to provide preschool placements for an additional 30,640 or 76,000 students? And what might districts and the state expect by way of returns down line? The devil lies in the details. How many students would enroll? How many would have disabilities? And what kind of disabilities would present themselves? Learning disabilities? Speech and language impairment? Mental retardation?

The biggest cost driver initially would consist of decisions about appropriate funding levels for early childhood programs. Funding the program at Head Start levels (\$7,202 per student) would require between \$221 million (targeted option) and \$547 million (fully available option) annually. Funding the program at K-12 expenditure levels (\$8,590 per pupil) would require between \$263 and \$653 million for the same options.

The economic consequences are powerful. Based on several recent studies, Belfield concludes that the availability of preschool programs frequently reduces special education assignments by as much as a quarter or a third. There appears to be growing agreement that availability of preschool programs reduces special education placements for mental retardation by 60 percent, while placements for speech and language impairment and specific learning disabilities decline by 32 and 38 percent respectively. In one highly targeted program in which initial rates of special education were very high, the introduction of a preschool program reduced special education rates by 43%. The economic consequences per child of these various studies range from a savings of \$2,122 to \$8,236.

A robust literature exists confirming a return on investment in preschool education in the form of quite dramatic reductions in special education placements and costs. Estimating conservatively, Belfield concludes that:

- Over 12 years, it costs the public \$81,814 (in present value) to provide each child with an education. If the child requires special education, the cost is \$149,297.
- The public saves \$67,483, on average, for every child who might have been in special education who is successfully placed out of it.
- Providing the fully available option in Pennsylvania would reduce special education expenditures in the state by at least 12 percent annually (\$102 million).
- The special education savings from the fully available option would offset between 16 and 19 percent of preschool program costs (depending on whether the Head Start or K-12 funding level were chosen).
- Providing targeted preschool programs would reduce special education expenditures in the state by at least 8 percent annually (\$68 million).
- The special education savings from this second option would offset between 26 and 31 percent of preschool program costs.

Adding special education savings on top of Perry's general educational savings begin to make potential returns on early childhood investments look quite significant. The Perry findings were

based on a two-year expenditure of \$15,166 in constant 2000 dollars. That investment produced an educational return of \$7,303, meaning that the public recouped 48 cents of its dollar investment. (See Figure 1, above.) Assume that just one half the investment for a single year cuts the return by one-third. In that scenario, Pennsylvania citizens could expect that only 32 cents would be recouped for each dollar invested. Table 4 displays the costs and savings statewide under the fully available and targeted options.

Table 4: A Model for Thinking about Returns on Investment in Pennsylvania

<i>Program</i>	<i>Investment</i>	<i>Return- General Education</i>	<i>Return - Special Education</i>	<i>Total Return</i>
Fully Available – Head Start per-child funding	\$547 million	32¢ on dollar	19¢ on dollar	\$279 million
Targeted – Head Start per-child funding	\$221 million	32¢ on dollar	31¢ on dollar	\$139 million
Fully Available – K-12 per-student funding	\$653 million	32¢ on dollar	16¢ on dollar	\$313 million
Targeted – K-12 per-student funding	\$263 million	32¢ on dollar	26¢ on dollar	\$153 million
Range: Investments/Returns	\$221 - \$653 million			\$139 - \$313 million

Both the Perry and the Belfield estimates are consciously conservative. The returns are unlikely to be less than the estimates above and might be substantially higher. What Table 4 reveals is that it should be possible to produce returns on investment of between 48 and 63 percent of the initial costs of providing preschool programs. Indeed the analysis in Figure 4 suggests that the targeted option provides the more powerful return on the initial investment (63 cents on the dollar when expenditures are aligned with Head Start costs and 58 cents on the dollar when aligned with K-12 costs).

III. THE OHIO ANALYSIS AND ITS COST SAVINGS

Beyond special education savings and the general benefit, is it possible that additional returns could be found elsewhere in Pennsylvania systems? In August 2004, Belfield completed a comprehensive appraisal of investments in early childhood education in a neighboring state, Ohio.^x The Ohio analysis was predicated on raising preschool enrollment of 3-year-olds to 57 percent. (A target similar to the “fully available” option analyzed in Pennsylvania for 4-year-olds.) The Ohio analysis also differed in three key respects from Belfield’s Pennsylvania study. First, the Ohio analysis explored savings throughout the school system (not simply in special education). Second, like the Perry research, the Ohio analysis was based on providing two years of preschool (to 3- and 4-year-olds). Third, Belfield’s Ohio analysis estimated returns elsewhere in government in the form of increased tax revenue and savings in expenditures for health, public assistance, and criminal justice.

Belfield’s Ohio analysis confirms what common sense suggests: taxpayers recoup more than they spend when they invest in early childhood education. Getting children off to the right start before they begin school has a multiplier effect that produces savings throughout state and local budgets. Table 5 lays out the combined picture in Ohio and compares the returns calculated in Ohio with potential returns in Pennsylvania. (See endnote 11 for a detailed description of adjustments made to accommodate the Ohio ratios to Pennsylvania’s situation.)^{xi}

Table 5: A Comparison of Estimated Returns on Investment in Ohio with Potential Returns in Pennsylvania

	<i>Ohio Investment</i>	<i>Ohio Returns</i>	<i>Pennsylvania Investment</i>	<i>Potential Pennsylvania Returns</i>
Total Investment	\$361 million		\$653 million	
Total Return		\$782 million		\$1.1 billion
<i>Education Savings from:</i>				
State system wide savings		\$11 million		\$ 7 million*
Special Education		\$133 million		\$ 104 million** \$ 208
Grade retention savings		\$6 million		million§ \$ 85
Teacher satisfaction		\$81 million		million*
Improved school safety		\$11 million		\$ 7 million*
Title I		not available		\$ 24 million§§
<i>Education Savings (Total)</i>		<i>\$242 million</i>		<i>457 million</i>
<i>Health/Welfare Savings</i>		<i>\$25 million</i>		<i>\$17 million*</i>
<i>Federal Tax Revenues</i>		<i>\$140 million</i>		<i>135 million*</i>
<i>State Tax Revenues</i>		<i>not available</i>		<i>26 million*</i>
<i>Criminal Justice Savings</i>		<i>\$375 million</i>		<i>\$508 million*</i>

* Apply Belfield Ohio analysis, discounted by one-third to reflect one-year Pennsylvania program.

** Apply Belfield’s specific analysis of Pennsylvania (Table 4)

§ Apply High/Scope discounted rate from Table 4.

§§ Apply Belfield Ohio analysis of savings in state supported programs and discount by one-third.

Belfield estimates that Ohio will receive back \$1.91 for every dollar it spends on the proposed preschool program. Selecting prudently among state programs, he estimates system wide savings in state-funded support programs (reading and writing initiatives, extended learning opportunities and the like) of \$11 million. (The Ohio calculation ignores potential savings under Title I of the *No Child Left Behind Act*, where additional returns might be found.) Early childhood investments would also produce solid returns (\$133 million) in reducing demand for special education services. Based on a detailed review of the literature on effects of improvements in grade retention, teacher satisfaction (as measured by such indicators as turnover and absenteeism) and improved school safety, Belfield estimates returns of \$6 million, \$81 million and \$11 million, respectively, in these three areas.

The careful and cautious Ohio analysis indicates that the education returns, alone, cover two-thirds of the investment. The same is true in Pennsylvania when the Ohio assumptions are applied to the Pennsylvania data. The total Ohio return (including non-educational returns) is roughly \$2.16 cents for every dollar invested. In Pennsylvania, the estimates above indicate the return is about \$1.68 for every dollar invested. Preschool education costs, but lack of it costs far more.

IV. PENNSYLVANIA SCHOOL DISTRICTS

A. Potential returns for Pennsylvania School Districts accurately portray the direction of the fiscal changes likely to accompany providing fully accessible early learning opportunities. But, with the exception of the returns on special education, they do not rely on a Pennsylvania-specific investigation. What they represent is the estimated benefit in Pennsylvania if the investments in Ohio played themselves out in the same way in the Keystone State.

The Ohio analysis plays itself out in a different fashion in Pennsylvania. Several major factors drive these differences (see footnote 11 for greater detail). The first is the dramatic return on investment in terms of special education, particularly in Pennsylvania. The second is average teachers' salaries in both states (\$45,414 in Ohio and \$52,540 in Pennsylvania).

The third and fourth considerations are also significant. The Ohio analysis proposed to add an additional 42,874 new preschool children, each offered a two-year program. The Pennsylvania analysis revolved around adding 76,000 new places, for a single year. These numbers bear directly on calculations related to dropouts, special education, and lifetime experience in the work force and with the criminal justice system. In addition, the Pennsylvania data on outcomes for individuals were discounted by 33% in Table 5, on the assumption that an additional year added two-thirds to the long-term benefits, but did not double them.

Different assumptions could readily justify different conclusions. The specific numbers are less important than the direction of these changes. It is apparent that the Ohio analysis (and the comprehensive literature reviews associated with it) confirms the High/Scope Perry findings. There are substantial public returns to investment in early childhood education, in school and out. These programs create a foundation that provides strong returns in terms of improving the efficiency and effectiveness of public expenditures for education and for the health, public assistance and criminal justice systems. They also provide additional tax revenues, both because parents and caregivers are freer to accept immediate employment and because program participants earn more throughout their working lives. Both kinds of tax benefit are incorporated into Table 5.

There is little doubt that a public policy that ignores the economic benefits of supporting early childhood education programs is penny-wise and pound-foolish.

B. Implications for Pennsylvania Districts. Benefits accrue to individuals and communities, but they also accrue to the 501 school districts in the Keystone State, which provide 56% of school funding.^{xiii} What would typical school districts experience if the "fully available" option for early childhood programming were provided in Pennsylvania?

National and state averages play themselves out differently in local contexts, even within neighboring communities. Bedford and Bensalem are different places, with different populations and needs. So are Altoona and Aliquippa, Mars and Mahanoy City, Oil City and Oxford, as well as Wyalusing and Wyoming. Needs and children's early learning in the Welsh Valley area of Philadelphia's Main Line bear little relationship to children's early experiences across City Line

in Philadelphia. Families might flock to early learning opportunities in some communities and barely notice their availability in others.

Still, it should be possible to explore the broad economic implications at the district level. *If* the fully available option were to be made available throughout the state and *if* district responses typically reflected the state analysis, what would be the immediate results to districts in terms of returns in (1) special education; (2) Title I; (3) school safety; and (4) instructional costs?

Table 6 lays out the results in eight districts across the state. These districts were selected to be representative geographically and in terms of the urban, suburban and rural nature of their communities: Allentown City (Lehigh County), Altoona Area (Blair County) Bristol Township (Bucks County), Central Greene (Greene County), Franklin Area (Venango County), Sharon City (Mercer County) State College Area (Centre County), and Susquehanna Township (Dauphin County). For each of these districts, Table 6 assumes enrollment in preschool programs is proportional to the district's share of the state's K-12 enrollment (1,821,146 students). It further assumes that expenditures are set at the "fully available" level of \$653 million, described earlier. It makes no assumptions about the source of funds, which might be from local, state, or federal accounts, or a combination of all three. All figures in Table 6, with the exception of estimates on instructional costs, are based on 2003-04 data.

The results are impressive. Simply in terms of returns to education, the eight districts recoup, on average, 78% of their investment. That average conceals almost as much as it reveals. The lowest return, in Susquehanna Township, provides 67 cents for each dollar invested. The highest, Bristol Township, produces \$1.16 for every dollar invested.

What accounts for these differences? They appear largely to be a factor of district demographics and the scale and scope of expenditures on special education. Districts with large proportions of students from low-income families will derive relatively large returns on their Title I expenditures. The same is true of districts with relatively large expenditures on school safety and drug programs.

But the greatest savings (12% on average) will be found in districts that have large special education populations. Bristol Township, about half the size of Allentown, spends almost as much on special education as the larger city. Because the model expects the smaller community of Bristol Township to invest less in preschool programs, the relative return it receives on its large investment in special education practically pays for early childhood programming. That factor, almost alone, explains why Bristol Township's return on the initial investment is so high.

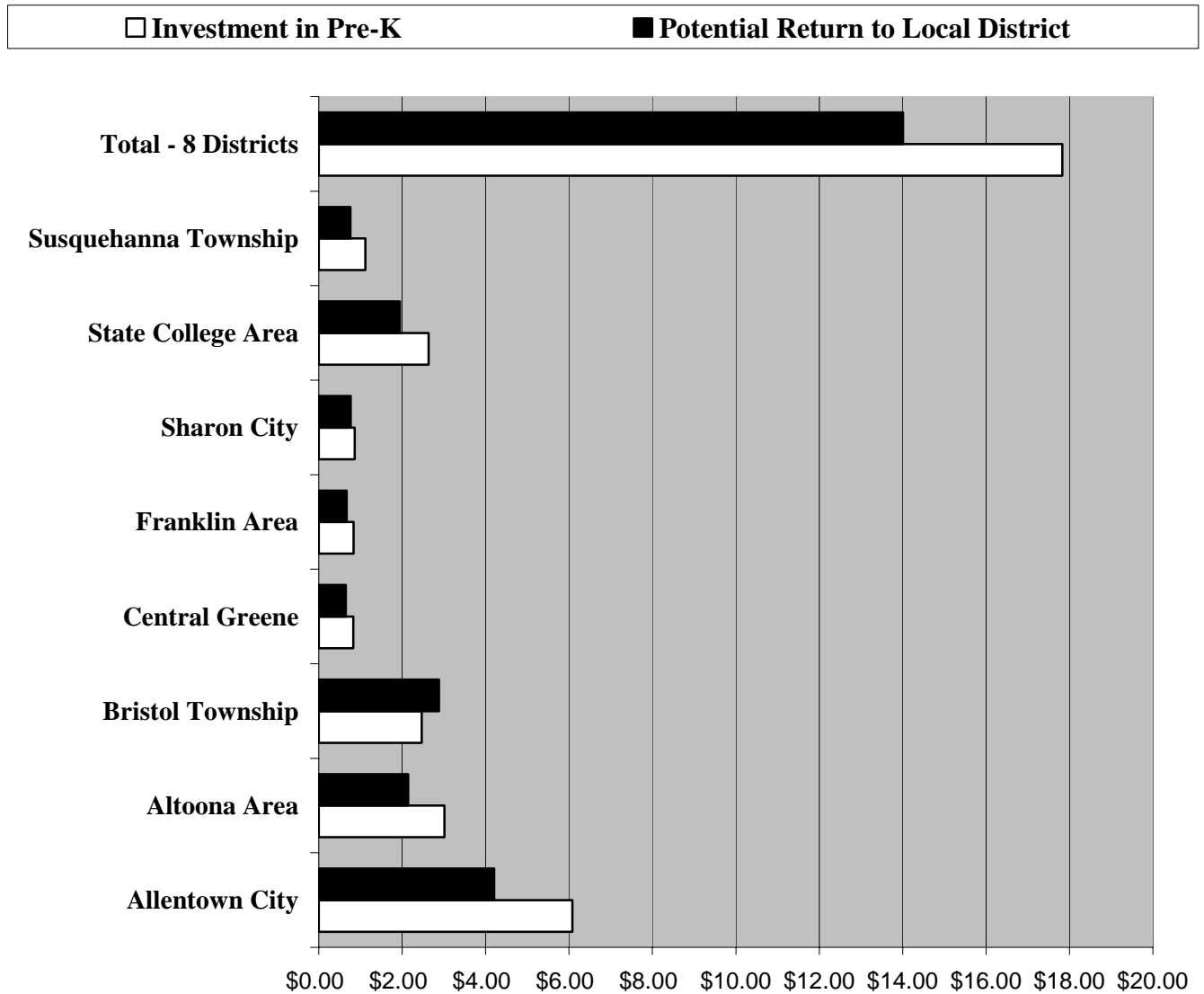
Are these returns overstated or understated? What can be said with confidence is that they are not unreasonable estimates. They are based on the best evidence available from similar analyses in Pennsylvania and Ohio. They are not inconsistent with national estimates of returns on investment in preschool programs. And, in fact, the returns on "instructional costs" are estimated very conservatively. Belfield set a lower boundary of 5% on his estimates of returns on system-wide programs in Ohio and an upper boundary of 10%. The Figure 6 returns are based on the 5% factor; estimated returns would be substantially higher if Belfield's upper boundary (which he employed in Ohio) had been selected.

Table 6: Representative School District Returns in Pennsylvania^{xiii}
(Dollars in Millions)*

District (03-04 Enrollment)	Investment in Pre-K	2003-04 Expenditures	Amount	Potential Returns To Local Districts
Allentown City (16,694)	\$6.079	Special Education	\$ 18.8	\$2.256
		Title I	\$ 7.0	\$0.469
		School Safety	\$ 0.13	\$0.016
		Instructional Costs	\$43.67	\$1.463
Total	\$6.079			\$4.204
Altoona Area (8,390)	\$3.010	Special Education	\$ 9.4	\$1.128
		Title I	\$ 2.7	\$0.181
		School Safety	\$ 0.07	\$0.009
		Instructional Costs	\$24.73	\$0.828
Total	\$3.010			\$2.146
Bristol Twp. (6,890)	\$2.468	Special Education	\$ 16.8	\$2.016
		Title I	\$ 1.4	\$0.094
		School Safety	\$ 0.04	\$0.005
		Instructional Costs	\$22.86	\$0.766
Total	\$2.468			\$2.881
Central Greene (2,310)	\$0.829	Special Education	\$ 2.9	\$0.348
		Title I	\$ 0.6	\$0.040
		School Safety	\$ 0.02	\$0.001
		Instructional Costs	\$ 7.78	\$0.261
Total	\$0.829			\$0.650
Franklin Area (2,332)	\$0.835	Special Education	\$ 3.2	\$0.384
		Title I	\$ 0.6	\$0.041
		School Safety	\$ 0.02	\$0.002
		Instructional Costs	\$ 7.18	\$0.240
Total	\$0.835			\$0.667
Sharon City (2,407)	\$0.862	Special Education	\$ 3.7	\$0.444
		Title I	\$ 0.9	\$0.060
		School Safety	\$ 0.02	\$0.002
		Instructional Costs	\$ 7.68	\$0.257
Total	\$0.862			\$0.763
State College Area (7,343)	\$2.632	Special Education	\$ 8.0	\$0.960
		Title I	\$ 0.7	\$0.047
		School Safety	\$ 0.03	\$0.004
		Instructional Costs	\$27.87	\$0.934
Total	\$2.632			\$1.945
Susquehanna Twp (3,121)	\$1.16	Special Education	\$ 3.8	\$0.456
		Title I	\$ 0.3	\$0.020
		School Safety	\$ 0.01	\$0.001
		Instructional Costs	\$ 8.29	\$0.278
Total	\$1.116			\$0.755
Total – 8 districts	\$17.831			\$14.011

* See footnote 13 for description of weights applied to derive “potential returns.”

Table 7: Investments/Returns



V. BEYOND IMPLICATIONS: MAKING IT HAPPEN

In the debate about preschool opportunities for children in the Keystone State here are several important bottom lines to keep in mind:

- National, state and local research clearly documents the educational value of early learning opportunities for preschool children. Children who have benefited from these programs are more ready to enter school and, once in school, they do better.
- National, state and regional analysis also convincingly demonstrate the economic value of preschool programs in terms of returns to both school systems and local communities.
- Pennsylvania districts account for just 56% of per-pupil expenditures on education, yet they stand to receive, on balance, an average return of 78% on any funds invested in preschool programs. Prudent investors would take that return.
- Beyond district returns, communities across the state, stretching from Bucks and Lehigh counties in the East, through Centre County to Mercer will find expanded tax revenues and reduced expenditures on public assistance and corrections.
- Drawing on federal, state, and local support for preschool programs (through the Head Start Supplemental Assistance Program, Education Accountability Block Grants and the like) districts can readily structure programs that best serve local educational needs, while guaranteeing the districts' ability to leverage their preschool investment so that it returns more than it costs.

In the final analysis, all the economic analysis in the world does not change the wisdom of an old aphorism: Well begun is half done. Children who start out in life with a solid foundation stand a much better chance of developing into competent adults. They stand a much better chance of succeeding in school, whatever accountability demands the system imposes on them or their systems. And they stand a much better chance of contributing to their communities, helping pay back the early investment in their development many times over. All of these are powerful messages.

School and state educational leaders should restate those messages at every opportunity. Leaders cannot blow an uncertain trumpet. In doing so, state and local leaders will be sending out an equally important signal ... when the challenge was defined, school leaders in the Keystone State responded. In doing so, they will have the satisfaction of knowing that their efforts promised to produce the most exciting result of all — no children were left behind because none of them were asked to begin kindergarten without the tools needed to succeed in school.

ENDNOTES

ⁱ Unless otherwise noted in this document, all references to the Perry Preschool Program come from a report entitled *The High/Scope Perry Preschool Study Through Age 40: Summary, Conclusions, and Frequently Asked Questions*, November 2004.

ⁱⁱ “Long Term Study of Adults Who Received High-Quality Early Childhood Care and Education Shows Economic and Social Gains, Less Crime.” (Press Release from the High/Scope Educational Research Foundation accompanying release of 40-year findings from the Perry Preschool study, nd.) Available at <http://www.highscope.org/>

ⁱⁱⁱ “Long Term Study of Adults Who Received High-Quality Early Childhood Care and Education Shows Economic and Social Gains, Less Crime.”

^{iv} Barnett, W. Steven and Cynthia Lamy and Kwanghee Jung, *The Effects of State Prekindergarten Programs on Young Children’s School Readiness in Five States*. New Brunswick: National Institute for Early Education Research, December 2005.

^v Assessments administered by NIEER researchers included: In vocabulary, the Peabody Picture Vocabulary Test, 3rd Edition, 1997; in mathematics, the Woodcock-Johnson Tests of Achievement, 3rd Edition, 2001 (Subtest 10 – Applied Problems); in print and phonological awareness the Print Awareness and Blending subtests of the Preschool Comprehensive Test of Phonological & Print Processing (Pre-COTPP, 2002).

^{vi} West J. and K. Denton and E. Germino-Hausken, *America’s Kindergartners: Findings from the ECLS Kindergarten Class of 1998-99*. Washington: National Center on Education Statistics, 2000. (Reported in Belfield, *Investing in Early Childhood Education* in Ohio.)

^{vii} The federal *Elementary and Secondary Education Act of 1965*, widely credited with launching compensatory education efforts through its Title I, was enacted as Perry alumni began to enroll in public schools. A decade later, according to studies at the National Institute of Education, it still had not been fully or effectively implemented. (See a variety of reports from the “NIE Compensatory Education Study,” 1975-1980.) Perry graduates enrolled at a time when they would have obtained very little benefit from compensatory education or Title I.

^{viii} Pennsylvania was one of the jurisdictions featured prominently in the legal affirmation of the right of students with disabilities to an education in public schools. In *PARC v. Commonwealth of Pennsylvania* (1972), a U.S. federal court ratified a consent agreement assuring that schools would not exclude students classified with mental retardation. The court also required all students to be provided with a free public education. In *Mills v. Board of Education of District of Columbia* (1972), another federal court rejected the school board’s claim that it could not afford to educate students with disabilities without taking funding from other students. The court ordered the district to educate students with disabilities in public schools. These cases played a major role in the enactment of *The Education of All Handicapped Children Act of 1975* (now

IDEA, *Individuals with Disabilities Education Improvement Act*), which advanced the rights of students with disabilities to a free public education, provided parental appeal and due process protections, and promised to pay 40% of the “excess costs” of special education (a promise that was not kept).

^{ix} Pennsylvania Build Initiative, *The Cost Savings to Special Education from Preschooling in Pennsylvania*. Harrisburg: Pennsylvania Department of Education, 2005.

^x Clive R. Belfield, *Investing in Early Childhood Education in Ohio: An Economic Appraisal*. (Washington: Renewing Our Schools, Securing our Future, August 2004.)

^{xi} A word about the comparison figures is required. The two data sets from Belfield differ substantially. The Ohio data does not contemplate a “targeted” option (for the most disadvantaged 20% of the population of the preschool population). Ohio’s figures also refer to 3-year-olds, provide for two years of preschool, and are calculated around 70% of per-pupil expenditures in K-12. Pennsylvania data, by contrast, refer to 4-year-olds, provide for just one year of preschool, and are calculated around 100% of Head Start or K-12 per-pupil funding. The Pennsylvania analysis also accounts for both “targeted” and “fully available” options.

For purposes of comparison, Table 5 compares the data for one cohort of 3-year-olds in Ohio with the data for 4-year-olds in Pennsylvania. It compares the “fully available” Pennsylvania option with the 57% option in Ohio. It also adjusts the 70% K-12 per-pupil expenditure in Ohio to 100% of average per-pupil expenditures in the state, to make possible a comparison with comparable Pennsylvania K-12 per-pupil expenditures. Finally, in calculating comparable returns in Pennsylvania, it discounts the Ohio analysis by one-third to reflect the belief that a one-year program in Pennsylvania cannot be expected to deliver 100% of the benefits of a two-year program in Ohio.

Belfield developed the weights for his major analysis in Ohio. Except in cases where Belfield provided specific data for Pennsylvania (in his separate paper), this report applies Belfield weights to Pennsylvania data as follows:

1. State system-wide savings are simply the Ohio figure of \$11 million, discounted by one-third. Belfield’s Ohio analysis assumed a 10% saving in state system expenditures after pre-k programs were implemented.
2. Special education returns in Pennsylvania are taken from Belfield’s separate paper on Pennsylvania. They represent a savings of 12% in special education.
3. Grade retention savings are derived from the High/Scope Perry analysis reflected in Table 4.
4. Teacher satisfaction is a three-part measure that is added together and discounted 33%. It includes:
 - a. Job Satisfaction: (# of PA teachers) X (40% average PA salary) X 3% (compensating wage differential) = \$ savings
 - b. Turnover reduction: (9% of # of Pennsylvania teachers) X (33% of cost of new teachers) - (24% to account for size of reduction) = \$ savings.

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- c. Reducing teacher absenteeism: [(average PA salary + 27.3% for benefits) X (6.66% for average # of absences)] – 5% of total = \$ savings.
 4. Pennsylvania expenditures for Safe and Drug Free Schools amounted to \$12.8 million in 2003-04. Belfield's Ohio analysis assumed a 19% saving in the area of school safety and drugs following implementation of ECE programs. That result is discounted by one-third in Figure 5.
 5. Title I returns are based on the Ohio analysis of 10% savings on statewide programs, discounted by one-third.
 6. Health/welfare savings are simply the Ohio figure of \$25 million, discounted by one-third. A comparable Pennsylvania figure was not available in time for publication.
 7. Tax revenues (federal and state) are a two-part calculation:
 - a. Parents: Additional income generated by parents averaging \$963 per parent for all 76,000 new ECE participants, at an average tax rate of 31% (federal) and 3.07 (Pennsylvania) and discounted 33%.
 - b. Participants: Net additional income for 1,952 new high school graduates generated by ECE program, averaging \$127,000 over lifetime (Census calculation), taxed at an average rate of 31% (federal) and 3.07 (Pennsylvania) and discounted 33%.
 8. Criminal justice savings: Belfield's Ohio weighted the upper end of three studies of the effects of early childhood education on savings in criminal justice. Table 5 applies Belfield's ratio to the 76,000 participants in Pennsylvania.

^{xii} National Center on Education Statistics, data for 1998-99, available at: www.ed.gov/rschstat/eval/disadv/2002indicators/pennsylvania

^{xiii} Figures assume "fully available" program in Pennsylvania; K-12 expenditure rate; and preschool enrollment proportional to district's share of statewide school-age population. The return estimates are based on the following calculations:

1. Special Education – a 12% savings in expenditures (from Belfield's Pennsylvania analysis).
2. Title I – a 10% savings in expenditures (based on Belfield's Ohio analysis of benefits to statewide programs) discounted by one-third.
3. School Safety – a 19% savings in expenditures (based on Belfield's Ohio analysis of benefits to school safety programs) discounted by one-third.
4. Instructional costs obtained from <http://nces.ed.gov/surveys/sdds/singlechoicepage.asp?state1=42> Figure used represents costs for instruction for 1999-2000, less expenditures for 1-3. Return estimate -- a 5% savings in expenditures (based on Belfield's lowest boundary from the Ohio analysis of benefits to statewide programs) discounted by one-third. In Belfield's Ohio analysis, he used a 10% savings figure on statewide programs.