



Strengthening Pennsylvania Businesses through Investments in Early Care and Education

How Investments in Early Learning
Increase Sales from Local Businesses,
Create Jobs and Grow the Economy

A report by: **AMERICA'S EDGE**
Strengthening Businesses Through Proven Investments in Kids

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Who We Are

The business leaders of AMERICA'S EDGE take a critical look at the knowledge, skills and abilities businesses need their employees to have in the 21st century, including the ability to be communicators, collaborators and critical thinkers. Using that analysis, we educate policy-makers and the public about high-quality, proven investments that strengthen businesses, establish a foundation for sustained economic growth, and protect America's competitive edge in a global market place, while helping our nation's children get on the right track.

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Executive Summary

How Early Learning Investments Can Help Expand Pennsylvania's Economy

Pennsylvania business leaders recognize that the key to jump-starting the state's economy and keeping struggling companies in business is to generate additional sales of local goods and services, while also creating new jobs. That is why, after taking a hard look at the research and calculating proven returns on investment, Pennsylvania business leaders are calling on state and federal policy-makers to invest in early care and education. This report documents that investments in early learning provide a significant, immediate economic boost for local businesses and help build stronger communities over the long term.

Fully investing in early care and education would generate billions of dollars in sales of goods and services for Pennsylvania businesses and create tens of thousands of jobs in the state. In fact, investments in quality early learning generate more new spending for local businesses than investments in eight other major economic sectors. For every \$1 invested in early care and education in Pennsylvania, an additional \$1.06 is generated for a total of \$2.06 in new spending in the state. This strong economic boost for local businesses is higher than investments in other major sectors such as transportation, construction, wholesale trade, retail trade and manufacturing. Inversely, cuts to state early learning programs would hurt local businesses in Pennsylvania by eliminating \$1.06 in additional new spending for every \$1 cut.

Early care and education should be a critical component of Pennsylvania's economic recovery. To provide increased access to quality early care and education for qualifying Pennsylvania children from birth through age four would require an investment of an additional \$2.2 billion. That investment would generate \$2.4 billion in total new spending in Pennsylvania businesses. And nearly all of these dollars generated in Pennsylvania would stay in Pennsylvania – helping local businesses prosper while also creating up to 75,000 new jobs, including 17,000 jobs outside the early learning sector.

Such an investment will also save Pennsylvania businesses money every day through reduced absenteeism and turnover.

The average working parent in America misses five to nine days of work per year because of child care problems. This costs U.S. businesses \$3 billion a year. Research confirms that if parents have quality early care and education available in their communities, not only will absenteeism and turnover go down, but productivity will also go up – immediately improving businesses' bottom lines.

Yet another strategic reason for this investment is that access to quality early care and education will increase the ability of Pennsylvania businesses to attract skilled employees. Quality programs for our youngest children are needed for the same reasons communities strive to have a strong K-12 education system to attract skilled workers and new businesses. Sixty percent of new jobs in the early 21st century will require skills possessed by only 20 percent of the current workforce. As our economy begins to turn around, Pennsylvania businesses need the right resources to attract and retain the best workers. One resource that can help communities attract the best employees is the availability of quality early learning for their children. Finally, such an investment will establish a foundation for sustained economic growth because quality early learning is key to ensuring that future employees have the early 21st century skills Pennsylvania businesses need. To remain competitive in a global marketplace, businesses need communicators, collaborators and critical thinkers. Research confirms that quality early learning is the crucial first step in the development of those skills. And research shows that the return on investment is impressive: Studies of high-quality early education programs for at-risk children have shown that quality programs can save as much as \$16 for every dollar invested.

The bottom line: With limited funds available to help businesses and our economy get back and stay on track, few investments make as much sense for Pennsylvania businesses' balance sheets as do investments in high-quality early care and education.

Strengthening Pennsylvania Businesses through Investments in Early Care and Education

Immediate Short-Term Economic Gains

Critical Issues for Pennsylvania Businesses

Even in today's tough economy, many businesses are experiencing a short supply of employees with 21st century skills in large part because high school and college graduates lack the knowledge and abilities businesses need.¹ Consider these facts. In Pennsylvania:

- 22 percent of high school students do not graduate on time;²
- 60 percent of eighth graders are below grade level in math;³
- 63 percent of fourth graders read below grade level.⁴

Nationally, 60 percent of three- to five-year-olds do not have the basic skills needed to enter kindergarten, such as counting to ten and recognizing letters in the alphabet.⁵

Each year, dropping out costs the United States dearly in lost productivity. In fact, high school dropouts are so much less productive than high school graduates that each class of dropouts will make \$335 billion less over their lifetime than they would have as graduates.⁶ That loss of earnings translates into less spending power, lower contribution to the tax base, and decreased productivity.

Increasing Sales of Local Goods and Services

New research by AMERICA'S EDGE found that attracting skilled employees, strengthening local and state economies now, and improving businesses' bottom lines can be achieved through cost

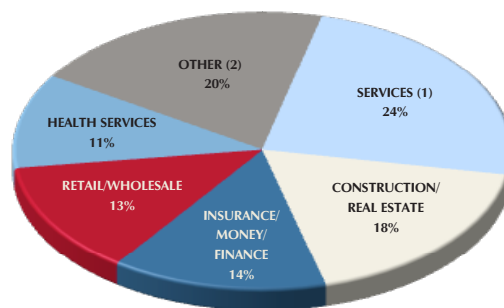
effective and proven investments in quality early childhood care and education programs.⁷

What economic modeling is the most effective way to determine early education's economic impact in Pennsylvania? This report used IMPLAN, an economic modeling system first developed 18 years ago that is widely used for conducting a variety of economic impact and related analyses, to find the impact. This study employed the most recent available (2009) data sets and IMPLAN models and adheres fully to standard input-output and IMPLAN conventions (see the Appendix for a complete explanation of IMPLAN and the report's methodology).

This economic impact modeling system found that, for every additional \$1 invested in early care and education in Pennsylvania, \$2.06 is generated in total spending within the state. This strong economic boost for local businesses is higher than investments in other major sectors such as transportation (\$1.92), construction (\$1.91), wholesale trade (\$1.86), retail trade (\$1.73) and manufacturing (\$1.73).⁸ Research shows that among Pennsylvania's major economic sectors that will spur economic growth, early care and education offers one of the smartest ways to create additional buying power for consumers and help local companies stay in business.

To provide increased access to quality early care and education for Pennsylvania's children from birth through age four who qualify would require an investment of an additional \$2.2 billion. That investment would yield \$2.4 billion in additional sales in Pennsylvania's economy outside of early care and education, for a total of \$4.6 billion of new money infused into the state (see Appendix C).⁹ And most of these dollars generated in Pennsylvania

Every \$1 spent in Pennsylvania on early learning generates an additional \$1.06 in other sectors of the economy



Source: IMPLAN, 2009

1. Professional, business, information, entertainment, rental, and utility services.
2. Includes a variety of additional smaller economic sectors.

The early learning sector in Pennsylvania generates more additional spending in the economy than other major economic sectors:

Economic Sectors	Output Multipliers
Early Care and Education¹	\$2.06
Other Major Sectors	
Other	\$1.95
Transportation	\$1.92
Construction	\$1.91
Wholesale Trade	\$1.86
Farming, Forest, Fishing, Hunting	\$1.80
Retail Trade	\$1.73
Manufacturing	\$1.73
Mining, Oil, Gas	\$1.70
Utilities	\$1.54
1. The early care and education sector is part of the larger services sector, which on average generates a multiplier of \$2.06 for every \$1 invested.	
Source: IMPLAN, 2009 analysis of Type SAM Output Multipliers for Pennsylvania	

Every \$1 invested in the early learning sector generates an additional \$1.06 in the local economy.

would stay in Pennsylvania – helping local businesses improve sales in almost every sector. Here are some examples of the economic impact that investing in early learning would have on the major economic sectors in Pennsylvania:

- Approximately \$581 million in new sales in the state’s services sector, which employs the majority of workers in Pennsylvania. The additional dollars would benefit many small businesses including dry cleaners, mobile phone and cable companies, and numerous professional firms such as accounting, law and tax offices.¹⁰
- Approximately \$431 million in new sales in real estate and construction – providing a boost to the slumping real estate market and helping many low- and middle-income families keep up with their mortgage or rental payments.¹¹
- Approximately \$328 million in new dollars to Pennsylvania’s insurance and finance sectors, including local banks and insurance companies.¹²
- Approximately \$318 million in new sales in Pennsylvania’s retail and wholesale trade sectors, including grocery stores, department stores, and auto dealers.¹³

The \$2.4 billion in additional spending outside of early care and education will be generated in over 400 economic categories. Of those 400-plus categories, here are just a few concrete examples

of increased sales for Pennsylvania businesses:

- Over \$97 million in sales at local restaurants, the cost for over 25,000 households of four to eat out for one year;¹⁴
- Over \$41 million in sales from local electric companies, the cost of monthly electric bills for over 21,000 families of four;¹⁵
- Over \$21 million in sales from local supermarkets, the cost of a year of groceries for over 3,700 families of four;¹⁶
- Over \$28 million in sales from gasoline stations and petroleum refineries, the cost, for example, for over 9,400 families to pay for gasoline for an entire year.¹⁷
- Over \$14 million in sales from local car and automobile parts dealers, the cost, for example, for over 700 families to get a new compact car.¹⁸

The key point is that investments in the early learning sector are very competitive with investments in other major sectors, and these investments create an immediate infusion of dollars throughout Pennsylvania’s local businesses.

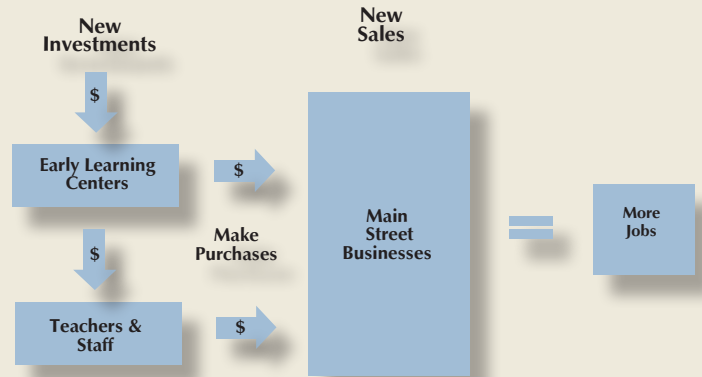
Early Learning Spending Stays in Pennsylvania

Here's how it works:

The dollars initially invested in an early learning program re-circulate through the local economy. The first dollar of spending goes directly to early care and education programs, and the additional spending is generated in two ways: (1) when early learning centers purchase local goods and services to operate their programs; and (2) when early learning teachers and staff spend their wages on local goods and services. All this additional spending is generated through what is known as the “multiplier effect.”

Although every industry generates some additional spending in these two ways (see table on page 2 for a comparison of economic output multipliers for different sectors), the early child care and education sector has one of the highest output multipliers because a high proportion of the spending by early learning programs and staff is spent locally. Much of the investment in early education goes to teacher wages, and the person-to-person nature of this service means that it must be provided and delivered locally. This is different from many industries that are based on products that could be manufactured outside of Pennsylvania or on services that can be provided remotely (e.g., customer service representatives via phone lines from other states or even internationally).

How Early Learning Investments Help Pennsylvania Businesses



In turn, since early education teachers and staff are low- and moderate-wage workers (child care workers have median annual incomes of \$17,440)¹⁹ they typically spend rather than save their wages, purchasing local goods and services, including housing and retail products.

Here's what this means in actual dollars and cents: Every dollar spent on early care and education in Pennsylvania yields a total of \$2.06 in the state economy.²⁰

75,000 New Jobs in Pennsylvania

Fully investing in early care and education would also create tens of thousands of new jobs. For every ten jobs created in the early care and education sector, *three* jobs are created outside that sector in Pennsylvania's economy.²¹

An analysis of the IMPLAN economic data for Pennsylvania shows that a \$2.2 billion investment providing increased access to quality early care and education for Pennsylvania's children from birth through age four who qualify would create 75,000 new jobs, including 17,000 new jobs in other economic sectors.²² These additional jobs are created when expanded early learning programs and their employees purchase additional local goods and services. As demand for goods increases, so does the need to supply those goods, which creates jobs.

Thus, investment in early learning, with the increased spending power from newly-employed individuals, would help Pennsylvania begin to reduce its unemployment rate and immediately strengthen local businesses.

Cost Savings and Increased Productivity for Businesses

Quality early learning saves businesses money through reduced absenteeism and turnover. The average working parent in America misses five to nine days of work, or one to two weeks per year, because of child care problems. In fact, according to a study published by Cornell University, this problem costs U.S. businesses \$3 billion every year.²³ Research confirms that if parents have quality early care and education available in their communities, not only will absenteeism and turnover go down, but retention and productivity will also go up.²⁴ Reduced absenteeism and turnover and increased retention and productivity translate into immediate savings and increased profits for businesses—good news to Pennsylvania businesses on both sides of their balance sheets.

Attracting Skilled Employees

Even in tough economic times, businesses often struggle to attract qualified applicants to fill skilled positions. Having access to

quality early care and education services currently helps hundreds of thousands of parents stay in the workforce in Pennsylvania.²⁵ However, over 250,000 children under five who are at-risk of school failure in Pennsylvania do not participate in regulated early care and education programs, and a significant number would likely participate if high-quality, affordable programs were available in their neighborhoods.²⁶ Like strong K-12 education systems, quality early education for our youngest children can help attract skilled workers and new businesses. Pennsylvania businesses must be poised to compete for the most skilled workers as the economy begins to recover.

Long-Term Benefits for Economic Security

In addition to jump-starting Pennsylvania's economy and creating tens of thousands of new jobs, major investments in quality early learning programs would also have important long-term benefits that would establish a foundation for sustained economic growth.

To remain competitive in the global marketplace, businesses need employees with hard skills (math, reading, writing) and soft skills (communication, collaboration and critical thinking). But employers are experiencing a significant shortage of workers with the skills they need. According to a 2006 survey, less than a quarter of employers (only 23.9 percent) report that new entrants with four-year college degrees have "excellent" basic knowledge

The Perry Preschool Program

One of the best studies of early care and education for three- and four-year-olds, the High/Scope Perry Preschool Program in Ypsilanti, Michigan, followed the children who attended the preschool until they were age 40. From 1962 through 1967, preschool teachers worked intensively with low-income children ages three and four. The children attended preschool during the week and teachers came to their homes once a week to coach their parents. When the children were age 40, researchers compared their life stories with those who did not participate in the early education program. The payoff was impressive. Almost half of the preschool children were performing at grade level by the age of 14, compared with just 15 percent of the children in the control group; 44 percent more of the children in the Perry program graduated from high school; and 60 percent of participants were earning upward of \$20,000 a year in their forties, versus 40 percent of those in the control group.³⁸

Cuts to Early Learning Hurt Businesses

In the same way that investments in early learning generate additional spending in Pennsylvania due to the multiplier effect, the reverse is also true: funding cuts to early learning programs also reduce sales from Pennsylvania businesses.

Thus, for every \$1 cut from early learning programs, an additional \$1.06 will be lost in sales of local goods and services.²⁷

Pennsylvania cannot afford cuts to early learning that will directly hurt the bottom lines of Pennsylvania businesses.

and applied skills, and significant deficiencies exist among entrants at every level.²⁸ The deficiencies are greatest with high school graduates: 42.4 percent of employers report the overall preparation of high school graduates as deficient; 80.9 percent report deficiencies in written communications; 70.3 percent report deficiencies in professionalism; and 69.6 percent report deficiencies in critical thinking.²⁹ Although preparedness increases with education level, employers note significant deficiencies remaining among graduates of the four-year colleges in written communications (27.8 percent), leadership (23.8 percent), and professionalism (18.6 percent).³⁰

High-quality early care and education is a critical step to support the development of the 21st century skills that businesses require in their workforce. Research studies demonstrate that children who participate in high-quality early learning can do better on a range of outcomes. Here are examples of what outcomes are impacted and what is possible:

- Better preparation to succeed in elementary school – for example, children exposed to one year of Oklahoma's universal pre-kindergarten program experienced a 16 percent increase in their overall test scores;³¹
- Less special education – children who attended the Chicago Child-Parent Centers (CPC) program were 40 percent less likely to need special education;³²
- Lower rates of retention in school – children participating in the Abecedarian early education program were 43 percent less likely to be held back in school;³³
- Higher rates of high school graduation – children attending the Perry program were 44 percent more likely to graduate from high school;³⁴

Early Care and Education in Pennsylvania: An economic snapshot

Early care and education programs serve young children from birth through age 5. These programs take several forms, including child care centers and family child care homes, private preschool programs, and publicly-funded and regulated early education programs including public Pre-Kindergarten, Head Start, and early childhood special education programs provided by the public schools. In Pennsylvania, over 250,000 young children under age 5 who are at-risk of school failure are not served by regulated early care and education settings.³⁹

Early care and education is an important economic sector in Pennsylvania, making significant contributions to the local economy:

- Early care and education programs represent a sizable small business sector in the state, with certified child care places consisting of more than 4,400 child care centers, 800 group homes and 3,300 family child care homes.⁴⁰
- The early care and education sector employs more than 45,000 people in the state, including administrators, teachers, and child care workers.⁴¹
- Currently, Pennsylvania spends \$448 million on state-funded quality early learning programs, which in turn are generating an additional \$475 million in economic activity, for a total of \$923 million in economic activity for the Commonwealth.⁴²

- Less crime – children not offered the Perry program were five times more likely to become chronic offenders by age 27;³⁵ and
- Higher rates of employment – children in Perry were 22% more likely to be employed at age 40.³⁶

Studies of high-quality early education programs for at-risk children have shown that these programs can save as much as \$16 for every dollar invested.³⁷ These long-term benefits are realized when the children who receive high-quality early learning grow up and become better educated and more productive workers, with far less remedial education or criminal costs to society. That is a return on investment that cannot be matched by almost any other public investment.

Conclusion

Research is clear that investments in high-quality early care and education will help jump-start our economy through an immediate increase in sales for Pennsylvania businesses and the creation of many new jobs. At the same time, we will be building the skills of our future workforce. Policy-makers must make difficult decisions about where to invest limited funds as revenues have decreased during the recession. Funding for early care and education should be a priority since it is one of the best ways we can immediately strengthen our economy while creating lasting economic security.

Appendix A

Economic Multipliers Analysis

Economists have documented the contributions that the early care and education sector makes to the economy in the short term through economic multiplier effects.

The short-term economic development benefits of the early child care and education sector are based on estimates calculated from what are called input-output economic models. These models show the linkages between all sectors in the economy, creating a matrix detailing how spending in each sector ripples through other economic sectors via the purchases of goods and services from other sectors.

There are three types of economic linkage effects that this input-output analysis captures. Direct effects of new spending in the child care sector are seen within the sector itself, through new money spent on child care programs. Indirect effects reflect the inter-industry expenditures generated when child care businesses purchase goods and services from other sectors. These businesses, in turn, are stimulated to increase their input purchases, and so on in widening ripple effects throughout the economy. Induced effects reflect similar economy-wide impacts due to the increased spending on goods and services of early education workers as first their wages increase, and then the wages of workers in other affected industries increase. The combined linkage effect of indirect (inter-industry spending) and induced (household spending) is called a Type SAM multiplier.

Early learning investments generate new dollars and jobs throughout Pennsylvania's economy. Every new dollar spent on early learning yields a total of \$2.06 in the state economy.

AMERICA'S EDGE commissioned an analysis of the most recent available data for Pennsylvania on the economic impact of the early care and education sector on other sectors.

All input-output modeling results were generated using the Minnesota IMPLAN Group, Inc (MIG, Inc) IMPLAN® economic impact modeling system. First developed in 1993, the system now is in widespread use for conducting a wide variety of economic impact and related analyses.

This study employed the most recently available (2009) data sets and IMPLAN models. One model was created for Pennsylvania. Our modeling approach and analyses adhere fully to standard input-output and IMPLAN conventions.

Multipliers were generated for the model using two separate sets of assumptions about regional purchase coefficients (RPC), or the proportion of purchases in each sector that occur

regionally (locally). First, the multipliers were generated based on estimates from MIG, Inc.'s recently-completed National Trade Flow Model. Second, in order to facilitate comparison with earlier IMPLAN modeling work, multipliers were also generated based on the previous IMPLAN standard for RPC estimates, namely an econometric model.

The reported results are based on fully disaggregated models (i.e. 440 distinct sectors). The disaggregated sectors are defined by MIG, inc. but are based upon and cross-walked with the North American Industrial Classification System (NAICS), which several years ago replaced the Standard Industrial Classification (SIC) code system. Additional analysis was also conducted using models we aggregated into a small number of very broad sectors (e.g. Agriculture, Manufacturing, Services, etc.).

To illustrate the impact of increased spending on early learning, we used the models created to estimate the indirect and induced effects on each sector of the economy of exogenous increases (e.g. of a \$1,000,000 base investment) in the demand for child care services. Because government spending is determined as much by policy decisions as by the regional dynamics of economic forces, government spending is conventionally treated as a source of exogenous demand. We focus on this source.

For additional information and background on input-output analyses of the early care and education sector, see the following resources:

Zhilin, L., Ribeiro, R., & Warner, M. (2004). Child care multipliers: Analysis from fifty states. Linking Economic Development and Child Care Research Project. Ithaca, NY: Cornell University, Cornell Cooperative Extension. Retrieved from <http://government.cce.cornell.edu/doc/pdf/50StatesBrochure.pdf>

Zhilin, L., Ribeiro, R., & Warner, M. (2004). Comparing child care multipliers in the regional economy: Analysis from 50 states. Linking Economic Development and Child Care Research Project. Ithaca, NY: Cornell University, Cornell Cooperative Extension. Retrieved from <http://government.cce.cornell.edu/doc/pdf/50States.pdf>

Appendix B

New spending generated by early care and education investments Selected major regions of Pennsylvania								
Location	Percent of children under five relative to state	Total new early care and education investments to serve unmet need from birth to five	Total new spending generated in the economy	Total new spending generated outside the early care and education sector	Spending by Major Sector			
					Services (24%)	Real estate and construction (18%)	Insurance and finance (14%)	Retail and wholesale (13%)
Pennsylvania	100%	\$2.2 billion	\$4.6 billion	\$2.4 billion	\$581 million	\$431 million	\$328 million	\$318 million
South East Region ¹	35%	\$770 million	\$1.6 billion	\$840 million	\$203 million	\$150 million	\$114 million	\$111 million
South West Region ²	13%	\$286 million	\$598 million	\$312 million	\$75 million	\$56 million	\$42 million	\$41 million

¹ South East Region includes the counties of Bucks, Chester, Delaware, Montgomery and Philadelphia.
² South West Region includes the counties of Allegheny, Fayette, Washington and Westmoreland. Data for Green county not available.
 Sources: IMPLAN, 2011, using 2009 Pennsylvania data and statewide IMPLAN models; American Community Survey 2009 data on total children under 5 by county.
 Notes: For Pennsylvania, input-output modeling analyses were conducted to identify economic impacts. Pennsylvania's Type SAM output multiplier was \$2.06. For the South East and South West Regions, the figures above represent a proportional estimate of the statewide economic impact, estimated based on the proportion of children under 5 in those locations.

Appendix C

AMERICA'S EDGE estimates that \$2.2 billion in new high-quality early care and education investments are needed in Pennsylvania to serve an additional estimated 285,000 young children from birth through age four currently unserved by early care and education programs who would qualify for them.

Goals for providing high-quality early learning to Pennsylvania children

AMERICA'S EDGE supports the goal laid out by Pennsylvania's plan for providing high-quality early care and education programs to serve young children at risk of school failure. While some states have proposed and implemented higher participation rates in early learning programs – Oklahoma, the national leader on access to early learning programs, serves 71% of its 4-year-olds with pre-k, and serves 87% of its 4-year-olds with pre-k, Head Start, or early childhood special education programs – Pennsylvania's plan provides a realistic short-term goal for increased access to high-quality early learning in Pennsylvania.

Pennsylvania's goal to serve children under age 5 at risk of school failure with high-quality early care and education programs has been defined by Pennsylvania's Office of Child Development and Early Learning (OCDEL) as those with family incomes at or below 300 percent of the Federal Poverty Level (FPL). Research cited in OCDEL's Program Reach and Risk Assessment Report shows that families earning up to 300 percent of FPL are at risk of school failure and also are not able to afford privately purchased high-quality early care and education services. A total of approximately 425,000 children (425,114) under age 5 in Pennsylvania need to be served by high-quality early care and education programs to reach this goal (this figure includes those currently served and those not yet served by these programs).

Barnett, W.S., Epstein, D.J., Friedman, A.H., Sansanelli, R.A., & Hustedt, J.T. (2009). *The state of preschool 2009 – State preschool yearbook*. Rutgers, NJ: Rutgers University, National Institute for Early Education Research; Pennsylvania Office of Child Development and Early Learning. (2010, October). Program Reach and Risk Assessment Report, State Fiscal Year 2009-2010. Harrisburg, PA: Author. Retrieved on February 1, 2011 from http://www.pakeys.org/uploadedContent/Docs/ELinPA/2009-2010_Reach_and_Risk.pdf

Economic multipliers calculations for new investments needed

The \$4.6 billion estimate of the total new spending generated in Pennsylvania's economy from \$2.2 billion in new early care and education spending was calculated by taking the Type SAM Output multiplier for Pennsylvania, \$2.06, and multiplying it by the \$2.2 billion, which yields \$4.6 billion in new spending. This new spending includes the \$2.2 billion new direct spending in the early childhood education sector, plus the new indirect and induced spending (with a subtotal of \$2.4 billion) which ripple out to other

sectors of Pennsylvania's economy, yielding \$4.6 billion in new total spending.

Estimates of current capacity in early care and education programs

In Pennsylvania, there are an estimated 733,000 children (732,956) under age five living in families. Based on 2008 population estimates from the Pennsylvania State Data Center, Pennsylvania State University, cited in spreadsheet attachments to OCDEL's Program Reach and Risk Assessment Report. Pennsylvania Office of Child Development and Early Learning. (2010, April). Program Reach and Risk Assessment Report, State Fiscal Year 2008-2009. Harrisburg, PA: Author. Retrieved on February 1, 2011 from <http://www.pakeys.org/uploadedContent/Docs/ELinPA/2009ReachRiskApr2010.pdf>

To estimate the number of children under age five at risk of school failure and served by regulated early care and education programs, AMERICA'S EDGE obtained the most recently available figures from state data sources documenting enrollment in the various early care and education programs.

AMERICA'S EDGE was able to obtain estimates of program capacity or enrollment for each major type of early care and education program available to children and families in Pennsylvania.

Pre-K Counts: 11,841 children were enrolled in Pennsylvania Pre-K Counts in the 2008-2009 fiscal year. Pennsylvania Office of Child Development and Early Learning. (2010, April). Program Reach and Risk Assessment Report, State Fiscal Year 2008-2009. Harrisburg, PA: Author. Retrieved on February 1, 2011 from <http://www.pakeys.org/uploadedContent/Docs/ELinPA/2009ReachRiskApr2010.pdf>

Head Start: 33,558 children were enrolled in Head Start programs in Pennsylvania, using state or federal funds, during the 2008 – 2009 fiscal year. Pennsylvania Office of Child Development and Early Learning. (2010, April). Program Reach and Risk Assessment Report, State Fiscal Year 2008-2009. Harrisburg, PA: Author. Retrieved on February 1, 2011 from <http://www.pakeys.org/uploadedContent/Docs/ELinPA/2009ReachRiskApr2010.pdf>

School-based Pre-K: an estimated 9,942 young children at risk of school failure were served by school-based Pre-K programs during the 2008-2009 fiscal year. This figure was calculated by taking the number of children under 5 in school-based Pre-K programs (17,141 children) and applying the proportion of children at risk of school failure (those with family incomes at or below 300 percent of FPL), yielding an estimated 9,942 children at risk of school failure participating in school-based Pre-K. This estimate assumes a proportionate distribution of at-risk children among those enrolled in school-based Pre-K, the most appropriate estimate absent program data indicating program enrollment by family income level. Pennsylvania Office of Child Development and Early

Learning. (2010, April). Program Reach and Risk Assessment Report, State Fiscal Year 2008-2009. Harrisburg, PA: Author. Retrieved on February 1, 2011 from <http://www.pakeys.org/uploadedContent/Docs/ELinPA/2009ReachRiskApr2010.pdf>

Early Intervention: an estimated 35,765 young children at risk of school failure were served by early intervention programs during the 2008-2009 fiscal year. This figure was calculated by taking the number of children under 5 in early intervention programs (61,663 children) and applying the proportion of children at risk of school failure (those with family incomes at or below 300 percent of FPL), yielding an estimated 35,765 children at risk of school failure participating in early intervention programs. This estimate assumes a proportionate distribution of at-risk children among those enrolled in early intervention, an appropriate estimate absent program data indicating program enrollment by family income level. Pennsylvania Office of Child Development and Early Learning. (2010, April). Program Reach and Risk Assessment Report, State Fiscal Year 2008-2009. Harrisburg, PA: Author. Retrieved on February 1, 2011 from <http://www.pakeys.org/uploadedContent/Docs/ELinPA/2009ReachRiskApr2010.pdf>

Child care – Keystone STARS and other regulated child care: the total number of young children at risk of school failure in regulated child care programs (which included child care centers or family child care homes, both those participating in the Keystone STARS quality rating and improvement system and those not participating) was an estimated 99,000 children (98,537), based on 2009-2010 state data from OCDEL. This figure was calculated by taking the number of children under 5 in Keystone STARS programs (107,542 children) and applying the proportion of children at risk of school failure (those with family incomes at or below 300 percent of FPL), yielding an estimated 62,374 children at risk of school failure participating in Keystone STARS programs. This estimate assumes a proportionate distribution of at-risk children among those enrolled in Keystone STARS, an appropriate estimate absent program data indicating program enrollment by family income level. Since OCDEL noted in the October 2010 Program Reach and Risk Assessment Report that 63.3 percent of children under age 5 in regulated child care are served by programs participating in Keystone STARS, AMERICA'S EDGE applied this percentage to the number of at risk children served by Keystone STARS programs, yielding an estimated total of 98,537 at risk children under age 5 in regulated child care programs (including STARS and non-STARS programs). Children enrolled in regulated child care programs not participating in Keystone STARS are in programs of unknown quality, and therefore are not included in estimates of the number of Pennsylvania young children enrolled in high-quality early care and education programs. AMERICA'S EDGE includes them in this estimate of at risk young children served by regulated early care and education programs because they represent a portion of the early care and education market on which economic impacts can appropriately be based. Pennsylvania Office of Child Development and Early Learning. (2010, April). Program Reach and Risk Assessment Report, State

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Total Children Served and Unserved

AMERICA'S EDGE estimates that the total number of young children at risk of school failure (those with family incomes below 300 percent of the Federal Poverty Level) currently served by early care and education programs in Pennsylvania is 140,000 children (140,375). This estimate totals the number of economically at risk children served by the early care and education programs detailed above, and adjusts for the potential for duplicated counts for individual children enrolled in more than one early care and education setting (Pre-K Counts and child care, for example) by adjusting the child care programs estimates downward by 50%, which assumes that 50% of these children were also enrolled in another early care and education program. Subtracting this estimate of the number of children being served (140,375 children) from the proposed number of children to be served to reach the goal of serving all children under age 5 at risk of school failure (425,114 children) yields 284,740 children, or approximately 285,000 children not being served who would need to be served to reach this goal.

Program data documenting the number of children enrolled in multiple early learning programs were not available; improved early learning data systems that track individual children's participation in multiple programs, currently under development in Pennsylvania, will provide useful data in the future to develop more precise estimates across the whole early learning sector.

Calculations for per-child and total costs for early care and education investments

Pennsylvania's Office of Child Development and Early Learning estimates that the Pennsylvania Pre-K Counts program has an average per child annual cost of \$7,900. AMERICA'S EDGE uses this figure as a good estimate of per-child annual cost of high-quality early care and education in Pennsylvania. Multiplying this per-child cost of high-quality early care and education (\$7,900) by the total number of new children to be served to reach all children under age 5 at risk of school failure, which is an additional 285,000 children (284,740 children, rounded to 285,000), yields an estimated \$2.2 billion in new early care and education spending needed.

Endnotes

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- 5 Nord, C.W., Lennon, J., Baiming, L., & Chandler, K. (1999). *Home literacy activities and signs of children's emerging literacy, 1993 and 1999*. Washington, DC: U.S. Department of Education. Retrieved on April 6, 2010 from <http://nces.ed.gov/pubs2000/2000026.pdf>
- 6 Alliance for Excellent Education. (August 2009). *The high cost of high school dropouts: What the nation pays for inadequate high schools*. Washington, DC: Author. Retrieved on October 12, 2010 from: <http://www.all4ed.org/files/HighCost.pdf>
- 7 High-quality early care and education programs include the following essential features: Highly-qualified teachers with appropriate compensation, comprehensive and age-appropriate curricula, strong family involvement, small staff-to-child ratios to ensure that each child gets sufficient attention, small, age-appropriate class sizes, and screening and referral services for developmental, health, or behavior problems. Whitebook, M. (2003). *Early education quality: Higher teacher qualifications for better learning environments—A review of the literature*. Berkeley, CA: Institute of Industrial Relations. Retrieved on February 25, 2010 from <http://iir.berkeley.edu/cscee/pdf/teacher.pdf>; Katz, L. (1999). *Curriculum disputes in early childhood education*. Champaign, IL: Clearinghouse on Early Education and Parenting. Retrieved on February 25, 2010 from http://ceep.crc.uiuc.edu/early_care_and_educationarchive/digests/1999/katz99b.html; Goffin, S. G., & Wilson, C. (2001). *Curriculum models and early childhood education: Appraising the relationship* (2nd ed.). Upper Saddle River, NJ: Merrill/Prentice Hall; Some examples of a strong parent-involvement component include the home visits in the High/Scope Perry Pre-kindergarten and Syracuse University Family Development programs, the intensive parent coaching in Chicago Child-Parent Centers, and the parent volunteers in Head Start. For Perry Pre-kindergarten see: Schweinhart, L. J., Barnes, H. V., & Weikart, D. P. (1993). *Significant benefits: The High/Scope Perry Pre-kindergarten study through age 27*. Ypsilanti, MI: High/Scope Press. See also D. R. Powell (Ed.). (1988). Parent education as early childhood intervention: Emerging directions in theory, research, and practice (pp. 79-104). Norwood, NJ: Ablex Publishing. For preschool classrooms, the staff-to-child ratio should be not more than 10 children per teacher. In early learning settings for infants, the child-staff ratio should be not more than three children per teacher, and for toddlers, not more than four children per teacher. American Academy of Pediatrics, American Public Health Association, and National Resource Center for Health and Safety in Child Care and Early Education (2002). *Caring for Our Children: National Health and Safety Performance Standards: Guidelines for Out-of-Home Child Care Programs, 2nd edition*. Elk Grove Village, IL: American Academy of Pediatrics and Washington, DC: American Public Health Association; Barnett, W.S., Epstein, D.J., Friedman, D.J., Boyd, J.S., & Hustedt, J.T. (2008). *The state of preschool 2008: State preschool yearbook*. New Brunswick, NJ: National Institute of Early Education Research; Dunkle, M., & Vismara, L. (2004). *Developmental checkups: They're good, they're cheap and they're almost never done. What's wrong with this picture?* Retrieved on February 25, 2010 from <http://www.child-autism-parent-cafe.com/child-development.html>
- 8 AMERICA'S EDGE's commissioned an analysis of the linkage effects of early care and education. Analyses were conducted using fully disaggregated models and using models aggregated into nine very broad sectors. This analysis calculated the Type SAM (Social Accounting Matrix) Output multipliers for all nine major aggregated economic sectors in the state using IMPLAN models. The analysis was conducted on 2009 data, the most recently available data set for Pennsylvania. The early care and education sector's Type SAM output multiplier for Pennsylvania was \$2.06. See table in report for Type SAM output multipliers of each sector analyzed. See Appendix A, Economic Multipliers Analysis, for more details on analysis and methods.
- 9 AMERICA'S EDGE estimates that \$2.2 billion in new early care and education investments are needed in Pennsylvania to serve an additional 285,000 young children from birth through age four currently unserved by these programs. See appendix C for calculations of new early care and education investments in Pennsylvania.
- 10 The services sector includes professional, business, information, entertainment, rental, and utility services. It represented 24 percent of the new spending generated outside the early care and education sector. The \$581 million figure was calculated by taking 24 percent of \$2.4 billion, which is the amount of the total \$4.6 billion in new spending that is generated outside the early care and education sector (the first \$2.2 billion dollars invested is spent directly, in the early care and education sector).
- 11 The real estate and construction sectors represented 18 percent of the new spending generated outside the early care and education sector. The \$431 million figure was calculated by taking 18 percent of \$2.4 billion, which is the amount of the total \$4.6 billion in new spending that is generated outside the early care and education sector. These numbers illustrate how far the \$431 million figure would go in terms of average mortgage payments. Housing sector economic demand included real estate and construction industry spending due to early care and education sector spending.
- 12 The insurance and finance sectors represented 14 percent of the new spending generated outside the early care and education sector. The \$328 million figure was calculated by taking 14 percent of \$2.4 billion, which is the amount of the total \$4.6 billion in new spending that is generated outside the early care and education sector.
- 13 The retail and wholesale trade sectors represented 13 percent of the new spending generated outside the early care and education sector. The \$318 million figure was calculated by taking 13 percent of \$2.4 billion, which is the amount of the total \$4.6 billion in new spending that is generated outside the early care and education sector.
- 14 Based on input-output analysis using fully disaggregated IMPLAN models with 440 distinct economic sectors in the 2009 Pennsylvania model. See Appendix A, Economic Multipliers Analysis, for more details on analysis and methods. Bureau of Labor Statistics. (2011). *Consumer Expenditure Survey*. Washington, DC: U.S. Department of Labor. Retrieved on January 27, 2011 from <http://www.bls.gov/ce/>. The national figure for yearly out-of-home food spending is adjusted to reflect higher expenses in the Northeast, using other data from the same Census database.
- 15 Based on input-output analysis using fully disaggregated IMPLAN models with 440 distinct economic sectors in the 2009 Pennsylvania model. See Appendix A, Economic Multipliers Analysis, for more details on analysis and methods. Bureau of Labor Statistics. (2011). *Consumer Expenditure Survey*. Washington, DC: U.S. Department of Labor. Retrieved on January 27, 2011 from <http://www.bls.gov/ce/>. The national figure for yearly out-of-home food spending is adjusted to reflect higher expenses in the Northeast, using other data from the same Census database.
- 16 Based on input-output analysis using fully disaggregated IMPLAN models with 440 distinct economic sectors in the 2009 Pennsylvania model. See Appendix A, Economic Multipliers Analysis, for more details on analysis and methods. Bureau of Labor Statistics. (2011). *Consumer Expenditure Survey*. Washington, DC: U.S. Department of Labor. Retrieved on January 27, 2011 from <http://www.bls.gov/ce/>. The national figure for yearly out-of-home food spending is adjusted to reflect higher expenses in the Northeast, using other data from the same Census database.
- 17 Based on input-output analysis using fully disaggregated IMPLAN models with 440 distinct economic sectors in the 2009 Pennsylvania model. See Appendix A, Economic Multipliers Analysis, for more details on analysis and methods. The estimated cost <http://www.bls.gov/ce/> of a 2011 Ford Focus, including taxes and fees, financing, and insurance is \$19,096. Automotive.com. (2011). *2011 Ford Focus ownership costs*. Bonita Springs, FL: Source Interlink Media. Retrieved on January 27, 2011 from <http://www.automotive.com/2011/12/ford/focus/ownership-costs/index.html>
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- 19 Bureau of Labor Statistics. (2008). *Child day care services. Career Guide To Industries*. Washington, DC: U.S. Department of Labor. Retrieved on January 27, 2011 from <http://www.bls.gov/oco/cg/cgs032.htm#earnings>
- 20 AMERICA'S EDGE commissioned an analysis of the linkage effects of early care and education using IMPLAN models. Analyses were conducted using fully disaggregated models and using models aggregated into nine very broad sectors. The analysis was conducted on 2009 data, the most recently available data set for Pennsylvania. The early care and education sector's Type SAM output multiplier for Pennsylvania was \$2.06. See Appendix A, Economic Multipliers Analysis, for more details on analysis and methods. An economist who studies business incentives at the Upjohn Institute for Employment Research, Timothy Bartik, has come up with lower short-term multiplier estimates for early childhood investments than presented in this report, which is based on the original work of Mildred Warner from Cornell University. Bartik's estimates leave out, or value differently, some benefits counted by other economists, and his primary argument is that while federal investments add new money to the state that can stimulate the economy, shifting state tax money from individuals to investments in pre-kindergarten within the state does not provide new money as an input into the state economy. However, Bartik concludes that even if the state were the only source of funding for early education: "There is a net stimulus even once we adjust for the taxes needed to finance early childhood education. ...The spending associated with preschool (with some effects from the child care provided) will immediately boost earnings by about 22 percent of the preschool spending." Bartik also focuses on ways to increase short-term returns from these investments or to defer costs until longer-term benefits far outweigh those costs. So, while there is debate in the economics field over how exactly to count the magnitude of short-term multiplier

effects, there is widespread agreement that early education is a very wise investment in our economic future. Bartik, T. J. (2011). Investing in Kids: Early Childhood Programs and Local Economic Development. Kalamazoo, MI: W. E. Upjohn Institute for Employment Research. Bartik, T. (2011, January 21). Early childhood education and the U.S. labor market crisis. Preschool Matters. Retrieved on February 2, 2011 from <http://preschoolmatters.org/2011/01/21/early-childhood-education-and-the-u-s-labor-market-crisis/>

21 The linkage effects of the early care and education sector were analyzed using IMPLAN models for Pennsylvania using 2009 data, the most recently available for the state. The Type SAM employment multiplier for early care and education for Pennsylvania was 1.30. This means that for every one new job in the ECE sector, an additional 0.30 jobs are created outside that sector in other parts of the state economy. Multiplying both numbers by ten yields this reformulation of the same finding: for every 10 jobs created in the ECE sector, 3 jobs are created outside the sector.

22 The \$2.2 billion investment in early care and education programs was applied to the 2009 Pennsylvania employment multiplier findings for the ECE sector (with a Type SAM multiplier of 1.30 using IMPLAN), and yielded 75,350 total jobs, or approximately 75,000 jobs, with 17,457 of these jobs (or approximately 17,000 jobs) being in other economic sectors outside early care and education. See Appendix A, Economic Multipliers Analysis, for more details on analysis and methods.

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26 Although estimates of the number of children participating in regulated early care and education programs vary, a conservative estimate suggests that more than 250,000 young children under age 5 who are at risk of school failure in Pennsylvania were not in regulated early learning programs. See Appendix C for an explanation of the number of children served in each type of early care and education program in Pennsylvania. In Appendix C, AMERICA'S EDGE estimates that approximately 285,000 children (or more than 250,000 children) under age 5 and at risk of school failure are not served by regulated early care and education programs.

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39 Although estimates of the number of children participating in regulated early care and education programs vary, a conservative estimate suggests that more than 250,000 young children under age 5 who are at risk of school failure in Pennsylvania were not in regulated early learning programs. See Appendix C for an explanation of the number of children served in each type of early care and education program in Pennsylvania. In Appendix C, AMERICA'S EDGE estimates that approximately 285,000 children (or more than 250,000 children) under age 5 and at risk of school failure are not served by regulated early care and education programs.

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42 The current state investment in high-quality early learning programs based on Fiscal Year 2010-2011 funding allocations, \$448 million, was applied to the Type SAM output multiplier for Pennsylvania of 2.06, yielding \$475 million in additional economic activity, and \$923 million in total economic activity generated by these early learning investments. The current early learning investments, \$83.6 million in Pre-K Counts funding, \$37.6 million in state Head Start Supplemental funding, \$297.8 million in Early Intervention funding and \$28.7 million in Keystone STARS funding, were summed, yielding \$448 million in current state investments in these quality early learning programs. FY 2010-2011 funding allocations obtained from Pennsylvania's Office of Child Development and Early Learning.



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