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ARKANSAS ADVOCATES FOR CHILDREN & FAMILIES

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An Economic Analysis of Pre-K in Arkansas

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Dear Colleague:

By providing high-quality pre-kindergarten to large numbers of three and four year olds, Arkansas is employing a proven strategy to improve children's school readiness and chances of life success. Arkansas boasts one of the nation's highest-quality state-funded pre-k systems, and since 2004, the state legislature has committed 60 million additional dollars to the Arkansas Better Chance (ABC) pre-k program.

Today, Arkansas is at a pre-k crossroads. Currently, the state's outstanding program is targeted to children from families earning up to 200 percent of the federal poverty threshold. While the ABC system is built for success, limited funding prevents the program from reaching more than half of all eligible children. Research consistently indicates that all children make measurable gains from high-quality pre-k. So, expanding the ABC program makes sound educational sense.

This report shows that expanding the ABC program also makes sound economic sense. "An Economic Analysis of Pre-K in Arkansas," written by Dr. Clive Belfield, a renowned authority on the economics of education, calculates the potential fiscal impacts of incrementally expanding the ABC program. Dr. Belfield's analysis finds that increasing state investments in pre-k would produce significant savings to the state's education, child-welfare, and criminal justice systems and would generate substantial increases in income tax revenues. This study estimates only the returns to the state and does not take into account the significant direct financial benefits to participating children and their families. Even using this conservative economic model, pre-k for all will return an impressive $1.58 to Arkansas for every dollar spent. Voluntary pre-k for all children is clearly one of the smartest fiscal policy decisions the state could make.

Pre-K Now commends Arkansas for its strong commitment to high-quality pre-k, and we encourage leaders in the state to review these data and continue to grow the ABC program so that all three- and four-year-old children, whose families want them to attend, can go to pre-k. As always, our resources, including this series of studies on the economics of pre-k, remain available to state leaders, advocates, and families working to advance high-quality pre-k for all children.

Sincerely,

Libby Doggett

Libby Doggett, Ph.D.
Executive Director
Pre-K Now

An Economic Analysis of Pre-K in Arkansas

With this new study, Arkansas becomes the latest in a growing list of states that can quantify the positive financial returns of state investments in high-quality pre-k for all children. Arkansas pre-k is already one of the nation's highest-quality programs and so, is perfectly positioned for substantial expansion.

The economic analysis conducted for this report found that expanding the Arkansas Better Chance pre-k program to serve all three and four year olds would, conservatively, yield an impressive $1.58 for every state dollar invested. In addition, the direct financial benefits to children and families, which are not calculated here, would likely far exceed the robust returns to taxpayers.

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Introduction

A substantial body of research indicates that high-quality pre-kindergarten is beneficial for all children. It makes children more proficient learners in school and more productive citizens in adulthood.[1] As well as promoting children's social and emotional development, high-quality pre-k also generates savings for taxpayers over the short and long terms: Government expenditures are reduced, and tax revenues are increased. Consequently, many states now recognize the economic benefits of making greater investments in pre-k on both equity and efficiency grounds. This report focuses on the question of efficiency by applying an economic model to estimate the fiscal returns of expanding access to high-quality pre-k in Arkansas.

Arkansas has made important commitments to enhance the quality of and access to early education opportunities for young children, particularly those from disadvantaged families. These commitments are valuable, but they do not yet ensure that all children have access to pre-k programs. At issue is whether it makes economic sense to expand Arkansas's current high-quality pre-k program to serve more children across the state.

This study begins by describing existing programs in Arkansas. Next, three policy scenarios are considered:

- Scenario One (1) reflects the existing funding commitment of $71 million for pre-k, which serves 40 percent of at-risk children.
- Scenario Two (2) is a proposal to expand pre-k to cover all at-risk three and four year olds not served by Head Start.
- Scenario Three (3) is a proposal to cover all three- and four-year-old children regardless of family circumstances.

Each policy scenario is analyzed to determine the probable economic consequences. Both national and state-specific data are used in the models as well as evidence from peer-reviewed research studies. Finally, to determine whether expanding pre-k access would be a good investment for the state over the long term, the costs and benefits are compared for each policy scenario.

The results of this economic analysis are summarized here. Full details on the calculations that support the results are in a Technical Appendix.[2]

Pre-K in Arkansas

Current Pre-K Programs

Arkansas offers state-funded pre-k for three and four year olds through the Arkansas Better Chance for School Success (ABC) program. Separately, federal Head Start services are also available to a limited number of children. The ABC program, which has expanded significantly over the last decade, serves 75 percent of children in centers and 25 percent in home instruction through the parent-led Home Instruction Program for Preschool Youngsters (HIPPY). Places are allocated to children in families with incomes below 200 percent of the federal poverty threshold with priority funding for programs in low-performing school districts. Importantly, the ABC program is of very high quality as measured by teacher standards, class sizes, support services, and monitoring.[3]

However, the ABC program does not currently serve all eligible children. Table 1 shows demographic information for children in Arkansas. Of the 79,100 three and four year olds in the state, 22,285 (28 percent) grow up in families with incomes below the federal poverty threshold, (e.g. $18,400 for a family of four),[4] and an additional 25,645 (32 percent) are from families with incomes close to the poverty threshold. One in three children in Arkansas grows up in a single parent home.[5] Because families regularly move in and out of poverty, children who live in families with incomes below 200 percent of the poverty threshold are either growing up in poverty or are likely to experience some poverty during their childhoods. Therefore, we include both of the above groups – a total of 47,930 (60 percent) children – in the "at risk" category. Based on a large body of research, we expect that all of these children and their families would greatly benefit from pre-k programs that promote school readiness and provide greater opportunities for success.[6]

Table 2 shows both the availability of and the need for pre-k for three and four year olds in Arkansas as of 2005-06. Currently, Head Start serves 10,070 children and the ABC program serves 18,746; In total, this is 37 percent of this age group. However, Arkansas still has 19,114 at-risk children who are not able to attend pre-k programs. There are also 31,170 children from families with higher incomes who are not served by public programs; these children too can benefit from high-quality pre-k. Overall, 63 percent of the age cohort currently is not enrolled in a publicly funded pre-k program.

Table 1: Children in Arkansas (2005-06)

	Three & Four Year Olds	
Family income in relation to the federal poverty threshold:		
Below 100% of the poverty threshold	22,285	28%
100% - 200% of the poverty threshold	25,645	32%
Above 200% of the poverty threshold	31,170	40%
Total children	**79,100**	**100%**

Sources: Division of Early Care and Education, Arkansas Department of Health and Human Services, http://www.accessarkansas.org/childcare/; "2006 Kids Count Data Book," (Baltimore: Annie E. Casey Foundation, 2006).

Table 2: Pre-K in Arkansas (2005-06)

	Three & Four Year Olds	
Pre-k program enrollment:		
Head Start and Even Start	10,070	13%
ABC program (including HIPPY)	18,746	24%
Children not served by public pre-k programs:		
At-risk (family income below 200% of the federal poverty threshold)	19,114	24%
Other	31,170	39%
Total children	**79,100**	**100%**

Sources: Division of Early Care and Education, Arkansas Department of Health and Human Services; W. Steven Barnett, Hustedt, Jason T., Robin, Kenneth B., and Schulman, Karen L., "The State of Preschool: 2005 State Preschool Yearbook," (New Brunswick: National Institute for Early Education Research, Rutgers, The State University of New Jersey, 2006). Notes: ABC provision includes HIPPY and special education. Childcare is not counted. Some children may enroll in more than one program.

Pre-K in Arkansas

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Expanding Pre-K Programs

Given the current availability of pre-k in Arkansas, there is a clear opportunity for public programs to be expanded. To that end, this study evaluates three policy scenarios:

(1) Current ABC provision: As noted above, the Arkansas legislature has provided an annual appropriation of $71 million to support pre-k for at-risk three and four year olds. (Most of this was from a recent $60 million increase in spending which ensured sufficient funding for a high-quality program). We begin by evaluating the economic effects of this large-scale investment.

(2) Pre-k for all at-risk children: The ABC program is intended for all at-risk three and four year olds (i.e. those in families with incomes less than 200 percent of the federal poverty threshold) on a voluntary basis. To cover all these children, however, an additional $40 million of funding would be needed. We model the likely economic effects of such an investment.

(3) Pre-k for all children: As the benefits of pre-k do not stop at the poverty threshold, it is important to consider the potential impact of serving all three and four year olds in Arkansas regardless of family income. We estimate the supplemental economic benefits of expanding pre-k access to all children on a voluntary basis.

These three policy scenarios should not be understood as discrete options. The scenarios are set out in such a way as to describe the net effects of expanding pre-k in large but incremental steps from the current baseline. These scenarios also reflect an accepted consensus among research experts: Programs that can be accurately targeted to at-risk children yield the highest per-child returns, but every child can benefit from pre-k such that returns remain strongly positive when programs are open to all three and four year olds.[7] Further, research indicates that targeted programs regularly fail to reach all eligible children. Programs often struggle to identify, locate, and communicate with families of eligible children. Additionally, at-risk children can lose their eligibility when family incomes rise, effectively penalizing families who work to escape poverty.[8] Alternative scenarios and baselines would yield different figures but, in all probability, very similar conclusions.

Each policy scenario assumes that the pre-k program is high quality. Many states have difficulty meeting standards, but the Arkansas program is already rated highly in terms of inputs and processes, including a full curriculum, low teacher–child ratios, and comprehensive support services. This economic analysis assumes that the ABC program with this level of quality is expanded to cover children on a voluntary basis. For each scenario, we project that three-quarters of enrolled children would attend center-based programs and one-quarter would be served in home-based settings.

Costs and Total Expenditures for Voluntary Pre-K

Each of the policy scenarios requires an upfront investment in pre-k. The scale of these investments for a cohort of three and four year olds is given in Table 3.[9] The first column shows the total annual funding requirement. This total is mainly a function of the number of children served times the state reimbursement rate per child. However, this total also includes other separate costs: These are an allocation of 2 percent of funds for administration, an additional amount for children in special education, and funding reserves as a result of spaces not being filled.

Currently, the ABC program, as shown in Table 3, Row 1, is funded at $71 million annually. Per-child funding is $4,400 for the ABC program and $1,557 for HIPPY with most of the enrollments being in the ABC program (see Table Notes). Once other costs have been accounted for, the program serves 18,746 children.

To expand pre-k to serve all at-risk children, as shown in Table 3, Row 2, would require an additional $40 million annually. This amount would cover new children, increased reimbursement rates for the program, administration, and special education costs. Raising the average per-child expenditure to $4,865 for the ABC program and $1,650 for the HIPPY program would create 6,754 new places. Adding this to the baseline, the total number of at-risk children served would then be 25,500. This is 67 percent of all eligible, at-risk children who are not being served by Head Start. This proportion is within the expected take-up rate for a voluntary pre-k program: approximately 60 to 80 percent (as in Georgia and Oklahoma).

Table 3, Row 3 shows the anticipated costs if pre-k were expanded further to allow all children to participate. The amounts are in addition to current program costs and assume all at-risk children have already been offered a place. This scenario of expansion to a program for all children would require additional funding of $115 million (including administration and special education costs). This amount supports enrollments at the same reimbursement rate as scenario (2) but with slightly higher proportions of children in the ABC program than in HIPPY (see Table 3 Notes). The result would be 26,800 new places. Total enrollment would be increased to 52,300 or 76 percent of the entire cohort (excluding those served by Head Start).

The cumulative cost of investing in pre-k for all would be annual spending of $226 million, which would serve approximately 52,300 children statewide. This amount, which covers both three and four year olds, represents less than 8 percent of the Arkansas Department of Education's total annual expenditures.

Table 3: Funding Requirements for Pre-K in Arkansas

	Total annual funding requirement	Annual funding per child		Children enrolled (three & four year olds)
		ABC program	HIPPY program	
(1) Current ABC provision	$ 71 million	$ 4,400	$ 1,557	18,746
(2) Pre-k for all at-risk children	+ $ 40 million	$ 4,865	$ 1,650	+ 6,754
(3) Pre-k for all children	+ $ 115 million	$ 4,865	$ 1,650	+ 26,800
Full Implementation	**$ 226 million**	**$ 4,865**	**$ 1,650**	**52,300**

Notes: Enrollments are assumed to be divided between the ABC and HIPPY programs. The ABC program is 71 percent (row 1), 77 percent (row 2), and 78 percent (row 3) of total enrollments. Pre-k for all is voluntary. Funding is required for new places and to upgrade existing places and for administration costs, special education, and reserves for places not filled. For scenarios (2) and (3) unit costs per child per year are up-rated to account for decreasing returns to scale and inflation.

Economic Benefits of Pre-K for Arkansas

Itemizing the Social Benefits of Pre-K

Expanding pre-k programs is likely to yield sizeable fiscal benefits to a state.[10] Such benefits arise because pre-k helps create more proficient learners who then become more productive citizens. The benefits span the lives of the children served and are reaped by many government agencies. These benefits include:

Efficiency gains to the school system
When children enter school as more proficient learners, rates of special education placement and grade retention are reduced. Schools are also able to provide more efficient education with lower rates of teacher turnover and absenteeism and better use of instructional time. Education spending is lower.

Increases in tax revenues
Children who have been to pre-k become more productive as they enter the labor force. Pre-k also helps families to meet their childcare needs, freeing up parents to participate in the labor market. Tax revenues are higher.

Savings to criminal justice system budgets
Pre-k programs help reduce crime both while children are juveniles and as they become productive citizens in adulthood. Public expenditures on the criminal justice system are lower.

Savings to health and welfare budgets
Pre-k programs provide important health and welfare services (such as health screenings and nutrition guidance). Public spending on these welfare programs is therefore offset.

In Table 4, national research and state-specific data are used to estimate the extent of these benefits for Arkansas.[11] For each of the four cost-benefit domains listed above, the per-child impacts of pre-k are multiplied by the program costs to calculate the overall effects. These analyses only consider returns to taxpayers in terms of public-service costs. They do not address either the direct financial benefits incurred by participating children and their families or those produced by growth in the pre-k sector (i.e. new, well-paid jobs, revenues to educational suppliers, increased income to participating providers).

The fiscal benefits for the three scenarios will not be as large as has been found for "model programs" such as the High/Scope Perry Preschool or the Abecedarian program. These were relatively expensive programs targeted only to the most high-risk children.[12] Each of the three proposed policy scenarios for Arkansas would produce a much larger-scale program with spending per child that is necessarily constrained by government budgets.

However, all children should benefit from pre-k, particularly when it is available for two years, as is the case in Arkansas. National research on statewide and city programs finds positive academic and social impacts on all children with the added benefit that large-scale programs will change how schools are organized and how education can be delivered.[13] Nevertheless, to be conservative, this analysis assumes that the per-child benefits become smaller as the program expands. Benefits are also calibrated according to family background, with at-risk children gaining more than those from more-advantaged families. In addition, this study assumes that children enrolled when fewer places were available ("early enrollees") will benefit more than those enrolling as the program expands ("late enrollees").[14] Finally, it is assumed that unit costs will increase significantly as the program expands. These assumptions mean that any bias in the calculations is toward understating the net benefits rather than overstating them.

Table 4: Fiscal Impacts per Cohort from Expanded Pre-K in Arkansas ($ millions)

	(1) Current ABC Program	(2) Pre-k for all at-risk children	(3) Pre-k for all children	Total (1)+(2)+(3)
Children per scenario	18,746	6,754	26,800	52,300
"Graduating class" of four year olds	9,373	3,377	13,400	26,150
School-system savings:				
Reduction in special education	$ 28.8	$ 9.9	$ 5.9	$ 44.6
Learning productivity gains [a]	$ 17.2	$ 5.9	$ 24.6	$ 47.7
Tax revenue increases:				
Based on participants' earnings	$ 86.8	$ 29.8	$ 78.1	$ 194.7
Based on parental earnings [b]	$ 4.8	$ 1.6	$ 6.9	$ 13.3
Criminal justice savings	$ 13.7	$ 4.7	$ 10.3	$ 28.7
Health and welfare savings	$ 13.3	$ 4.6	$ 9.5	$ 27.4
Total present value benefits [c]	**$ 164.6**	**$ 56.5**	**$ 135.3**	**$ 356.4**

Notes: [a] Learning productivity gains include: savings in grade retention, teacher turnover/absenteeism, and school expenditures on facilities.
[b] Some families will participate more in the labor market during the two years when their children are in pre-k.
[c] Present value figures are discounted at a rate of 3.5 percent over the lifetime of the cohort up to age 65. Numbers are rounded to the nearest 0.1 million. Numbers are averages from three separate models: See the Technical Appendix for full details of the calculations.

Calculating the Economic Value of Pre-K

Increased pre-k enrollments will have important effects in raising government revenues and reducing expenditures. These economic benefits can then be aggregated to reach an overall economic value from investing in pre-k. Savings are expressed as "present values" in relation to the date of the investment in pre-k over participating children's lifetimes up to age 65.[15] Amounts are expressed as annual costs and benefits from each "graduating class" after two successive years of pre-k. For each scenario only half of the group (the four year olds) will progress on to kindergarten while the other half (the three year olds) remain in pre-k. Thus, only half the benefits are realized each year, and so, the benefits are reported per graduating class of four year olds.

Table 4 itemizes the anticipated cost benefits from each proposed policy scenario. There are substantial savings to the school system, including reduced special education expenditures and increased productivity (e.g., lower teacher absenteeism and reduced spending on safety, remediation, and grade retention). The biggest benefit is increased income tax revenues as a result of higher earnings. The link between education and earnings is very strong: High school graduates earn over $260,000 more over their lifetimes than do high school dropouts, and all graduates, regardless of ability or family background, obtain similar income advantages.[16] Parents will also earn more and pay more in taxes during the pre-k period than they would have without pre-k. There are also strong positive fiscal effects on crime, health, and welfare.

Each scenario yields significant total fiscal benefits over the lifetime of the cohort (through age 65) with their magnitude depending upon the numbers of children served and the effectiveness of pre-k for children of different family backgrounds. The current ABC program will yield gross benefits of $165 million. Expanding pre-k to cover all at-risk children is anticipated to produce $57 million in additional savings. Offering pre-k to all children is predicted to yield further savings of $135 million. Because the scenarios are separate, when added together they generate total estimated present value benefits from statewide pre-k in Arkansas of $356 million. These gross benefits can now be compared to the costs of providing pre-k.

Cost–Benefit Analysis of Voluntary Pre-K

Pre-k yields fiscal savings over the long run. More importantly from the perspective of the taxpayer, these savings exceed the costs of providing pre-k.

Table 5 compares the costs and savings for a single age cohort under each of the policy scenarios. In each case, the benefits substantially exceed the costs (noting that the costs are for two years of pre-k). For the current ABC program, the cost is $71 million and the return is $165 million; so, the net benefit is $94 million. Alternatively expressed, this investment in pre-k should yield economic benefits that are 2.3 times the costs. This is the investment with the highest return because it is targeted to children most at risk and thus most likely to enjoy the largest advantage from participating. However, the other two scenarios are also cost effective.

The second scenario is to expand pre-k to all at-risk three and four year olds, i.e. those living in households with incomes below 200 percent of the federal poverty threshold. This would cost an additional $40 million but would yield added benefits of $57 million. The net economic gain is $17 million for each cohort and the benefits exceed the costs by a factor of 1.4.

If Arkansas were to offer pre-k to all three and four year olds on a voluntary basis, the additional cost would be $115 million. This investment would also yield a positive return: the additional gross economic benefits are $135 million, producing net benefits of $20 million. For this scenario, for each dollar invested the state would recoup $1.18 in savings.

It is possible to take an overall view of the net benefits of pre-k for all by adding up the figures from each of the scenarios. (See the final column of Table 5.) If pre-k were available to all children, the annual cost would be $226 million. The gross benefits would be $356 million. The net present value of this investment would therefore be $130 million, resulting in a benefit-cost ratio of 1.6.

Per individual child, the benefits of pre-k are substantial. Across all children, the average present value benefit is $13,630. This figure compares favorably to the cost of two years of pre-k at $8,400. The net return per child is therefore $5,230. The returns are higher for at-risk children, but they are still strongly positive for children from all family backgrounds. Recall also that these are only the public benefits; the personal benefits to the children and families are not calculated here.

These estimates are based on published research and projections of the likely lifetime consequences of participating in pre-k. Three models were created, based on different research findings, and the tables are based on the average of those models. However, even under the most conservative of the three models, the benefits of pre-k still outweigh the costs by 30 percent. Thus, it is unlikely that an analysis using alternate assumptions would produce significantly different results.

Conclusion

This economic analysis shows the costs and benefits of three policy scenarios for expanding pre-k in Arkansas. It is important to recognize that these analyses only consider the impact to government budgets and so, ultimately, to taxpayers. They do not take into account the benefits to children and families from having a greater opportunity to succeed and being ready for school. In most cases, these private benefits exceed the benefits to the taxpayer.

Arkansas has already established a high-quality pre-k program for at-risk children. At issue is whether it makes economic sense to expand this program statewide on a voluntary basis to provide access for all at-risk three and four year olds or all children. Under a range of simulations, this study finds that pre-k investments yield considerable savings to government agencies. The evidence here suggests that it is efficient to invest in pre-k for all three and four year olds in Arkansas: Conservatively, a pre-k-for-all program would yield fiscal benefits approximately one and a half times the costs. In absolute terms, these results make a strong case for public funding of pre-k, and the case is strengthened when compared to other public investments, which have more modest returns. Moreover, because at-risk children gain the most, pre-k is an equitable as well as an efficient policy.

Table 5: Costs and Benefits per Cohort from Expanded Pre-K ($ millions)

	(1) Current ABC Program	(2) Pre-k for all at-risk children	(3) Pre-k for all children	Total (1)+(2)+(3)
Children per scenario	18,746	6,754	26,800	52,300
Graduating class of four year olds	9,373	3,377	13,400	26,150
Costs (C)	$ 71.0	$ 40.0	$ 115.0	$ 226.0
Benefits (B)	$ 164.7	$ 56.5	$ 135.2	$ 356.4
Net benefit (B-C)	$ 93.7	$ 16.5	$ 20.2	$ 130.4
Benefit-cost ratio (B/C)	**2.32**	**1.41**	**1.18**	**1.58**

Notes: Figures are in present values, discounted at a rate of 3.5 percent.

Endnotes

[1] W. Steven Barnett and Clive R. Belfield, "Early Childhood Development and Social Mobility," *The Future of Children* 16, no. 2 (2006), Walter S. Gilliam and Edward F. Zigler, "State Efforts to Evaluate the Effects of Prekindergarten: 1977 to 2003," (New Haven: Yale University Child Study Center, 2004).

[2] The Technical Appendix is available from the author at clive.belfield@qc.cuny.edu.

[3] W. Steven Barnett, Hustedt, Jason T., Robin, Kenneth B., and Schulman, Karen L., "The State of Preschool: 2005 State Preschool Yearbook," (New Brunswick: National Institute for Early Education Research, Rutgers, The State University of New Jersey, 2006), 14 & 47.

[4] U.S. Department of Health and Human Services, "The 2006 HHS Poverty Guidelines," (2006).

[5] See "2006 Kids Count Data Book," (Baltimore: Annie E. Casey Foundation, 2006).

[6] See note 1 above and the special issue of *Economics of Education Review*, (forthcoming in 2007).

[7] W. Steven Barnett and D. Ackerman, "Costs, Benefits, and the Long-Term Effects of Early Care and Education Programs: Recommendations and Cautions for Community Developers," *Journal of the Community Development Society* 37 (2006), Flavio Cunha et al., "Interpreting the Evidence on Life Cycle Skill Formation," NBER Working Paper No. 11331 (Cambridge, MA: National Bureau of Economic Research 2005), Katherine A. Magnuson and Jane Waldfogel, "Early Childhood Care and Education: Effects on Ethnic and Racial Gaps in School Readiness," *The Future of Children: School Readiness: Closing Racial and Ethnic Gaps* 15, no. 1 (2005), A. Rolnick and R. Grunewald, "Early Childhood Development = Economic Investment," *fedgazette*, Mar. 2003.

[8] W. Steven Barnett, Kirsty Brown, and Rima Shore, "The Universal Vs. Targeted Debate: Should the United States Have Preschool for All?" *Preschool Policy Matters*, Apr. 2004.

[9] The cost function assumes increasing unit costs as the program expands (hiring additional high-quality teachers requires higher salaries, for example) and because of inflation. See W. Steven Barnett and Pamela Kelley, J., eds., *Measuring Preschool Costs and Revenues: Issues and Answers* (Summary Report on the Early Education Cost Symposium, New Brunswick, 2002), Helene Stebbins and Barbara Hanson Langford, "A Guide to Calculating the Cost of Quality Early Care and Education," in *Financing Strategies Series* (Washington, DC: The Finance Project, 2006).

[10] See citations in endnotes 1, 6, and 7.

[11] The same method has been used in studies for a number of other states. Clive R. Belfield, "The Fiscal Impacts of Universal Pre-K: Case Study Analysis for Three States," Working Paper No. 6 Invest in Kids Working Group (Washington, DC: Committee for Economic Development, 2005), Lynn A. Karoly and James H. Bigelow, "The Economics of Investing in Universal Preschool Education in California," (Santa Monica: RAND Corporation, 2005).

[12] Information on these programs is given in: Clive R. Belfield et al., "The High/Scope Perry Preschool Program: Cost-Benefit Analysis Using Data from the Age-40 Followup," *Journal of Human Resources* 41, no. 1 (2006), L.N. Masse and W. Steven Barnett, "A Benefit-Cost Analysis of the Abecedarian Early Childhood Intervention," in *Cost-Effectiveness and Educational Policy*, ed. H.M. Levin and P.J. McEwan (Larchmont, NJ: Eye on Education, 2002).

[13] For Oklahoma, see William Gormley, Jr. et al., "The Effects of Oklahoma's Universal Pre-K Program on School Readiness: An Executive Summary," (Washington, DC: Center for Research on Children in the United States, Georgetown University, 2004). For national evidence, see Katherine A. Magnuson, C. Ruhm, and Jane Waldfogel, "Does Prekindergarten Improve School Preparation and Performance?" *Economics of Education Review* (forthcoming in 2007). For evidence from Chicago, see A.J. Reynolds et al., "Age 21 Cost-Benefit Analysis of the Title I Chicago Child-Parent Centers," *Educational Evaluation and Policy Analysis* 24 (2002). Evidence from across five states is reported in W. Steven Barnett, 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, Rutgers, The State University of New Jersey, 2005).

[14] The goal of the models is to produce a realistic and conservative estimate of the economic consequences based on research evidence. We apply the best evidence on the effects of pre-k. By 'best', we mean that the research methods are high quality and that the results are relevant to Arkansas. Based on a review of the literature, we can create three 'best estimate' models, which differ according to the dataset used, and the extent of the adjustment for family background. Here, we report the average results from these three models. Full estimates are in the Technical Appendix.

[15] 'Present values' are values that are adjusted to account for the time period in which the benefits are incurred. For example, children who have attended pre-k earn more as adults, but this is not until at least 15 years after pre-k. Therefore, these higher earnings should be discounted, i.e. valued less because they occur so far in the future. We apply the conventional discount rate of 3.5 percent.

[16] See Cecilia E. Rouse, "The Labor Market Consequences of an Inadequate Education" (paper presented at *The Social Costs of Inadequate Education*, Equity Symposium, Sept. 2005).

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Pre-K Now at a Glance

Mission
Pre-K Now collaborates with advocates and policymakers to lead a movement for high-quality, voluntary pre-kindergarten for all three and four year olds.

Vision
Pre-K Now's vision is a nation in which every child enters kindergarten prepared to succeed.

Location
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Funders
The Pew Charitable Trusts
The David and Lucile Packard Foundation
RGK Foundation
CityBridge Foundation
The Schumann Fund for New Jersey

Pre-K Now Key Differentiators
- Focuses exclusively on pre-k
- Provides the most up-to-date gauge of the pre-k pulse in any state
- Offers nationwide access to pre-k advocates
- Monitors and distributes daily pre-k newsclips
- Provides a national perspective on local pre-k issues
- Provides outreach, policy, and Spanish-language information targeted to the Latino community
- Leads a national movement which has gained significant momentum in the last five years

The Case for Pre-K
- Pre-k benefits all children academically, socially, and emotionally.
- High-quality pre-k for all nets a high return on investment in children and the community.
- The most important brain development occurs by age five.
- Pre-k is the first step to improving K-12 education.

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An Economic Analysis of Pre-K in Arkansas