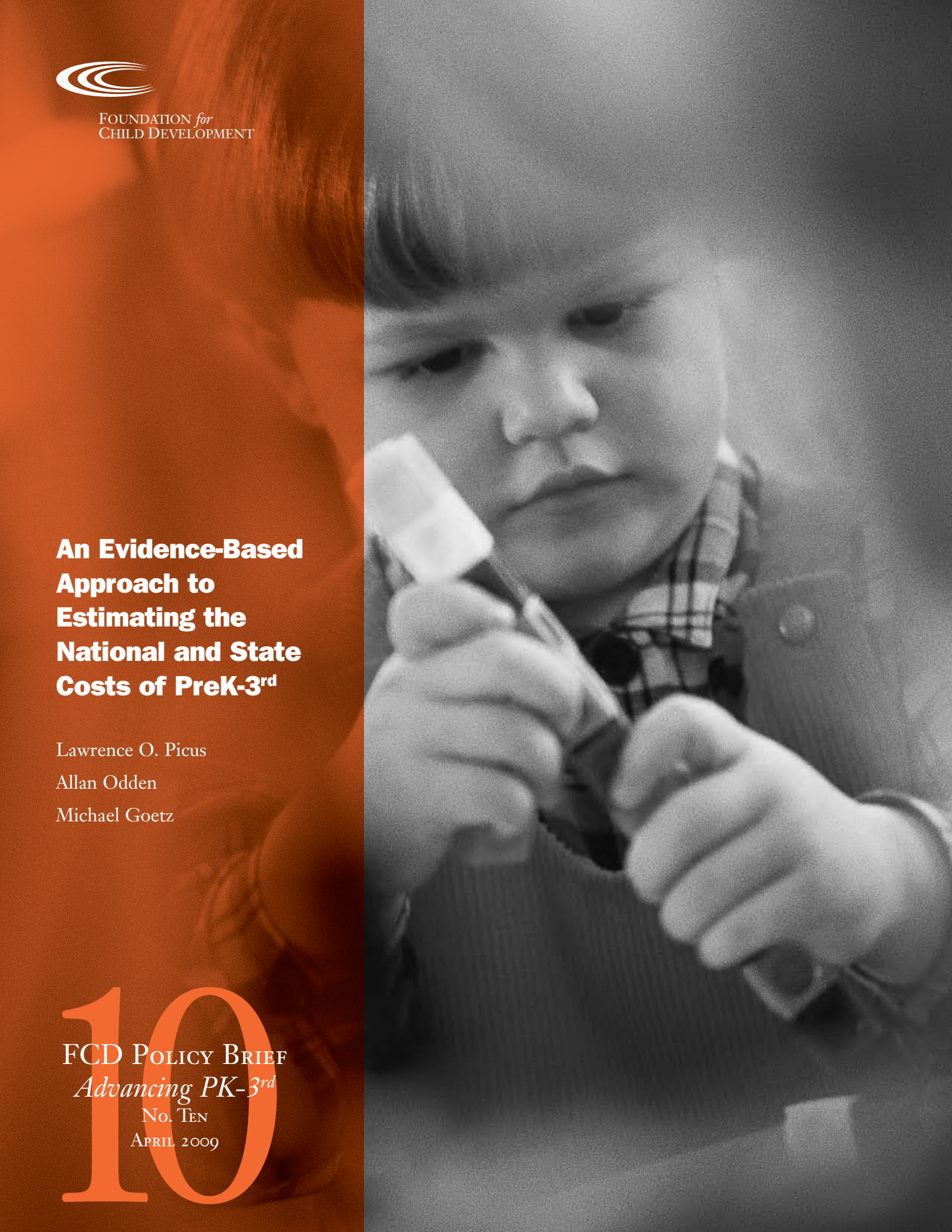

FOUNDATION *for*
CHILD DEVELOPMENT

An Evidence-Based Approach to Estimating the National and State Costs of PreK-3rd

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FCD Policy Brief
Advancing PK-3rd
No. Ten
April 2009

The American public and policymakers are realizing that if all children are to meet their states' education performance standards, they will need access to high-quality integrated PreK-3rd education programs. The PreK-3rd approach starts with three-year-olds, and focuses on providing educational experiences to three- and four-year-old children on a universal, voluntary basis, followed by required full-school-day Kindergarten, and high-quality programs in Grades One to Three.

Effective PreK-3rd programs provide the following components: high-quality and unified learning in well-staffed classrooms; well-prepared teachers (and aides for three- and four-year-olds) to educate children ages three to eight; supportive school district policies; strong principal leadership that includes supporting professional development time for teachers to plan for effective coordination across and between grades; and engaged families and communities that share accountability with PreK-3rd schools for children's educational success.

What Will a Quality PreK-3rd Approach Cost?

With support from the Foundation for Child Development, Lawrence O. Picus and Associates developed a comprehensive and flexible cost model that uses their Evidence-Based approach to school finance adequacy (Odden and Picus, 2008). They also conducted site visits in six locations to ascertain whether or not the resources identified in their model were adequate to provide integrated, high-quality PreK-3rd programs that would enhance the likelihood that all children would be able to meet their states' educational performance standards.

Assuming the components of the Evidence-Based adequacy model were implemented for all PreK-3rd programs, the estimated *additional* national cost of providing adequate PreK-3rd programs ranges from $27.4 billion to $78.7 billion annually using educational cost estimates from 2005–2006, and depending on the number of three- and four-year-old children eligible for, and electing to participate in, PreK programs. On a per-child served (PreK-3rd) basis, additional costs range from $2,095 to $3,975.

If universal eligibility for three- and four-year-old children is assumed, with a participation rate of 65 percent (a number that approximates PreK program participation in Oklahoma, a state with universal access for four-year-olds), and a PreK class size of 20 students with a teacher and an instructional aide, the *total* estimated PreK-3rd costs are $215 billion annually or $10,867 per PreK-3rd student. This represents an increase of $71.5 billion or $3,626 per PreK-3rd pupil.

For this analysis, the costs of an integrated PreK-3rd education system are determined by estimating:

- The number of three- and four-year-old children in each state
- The costs of providing PreK programs for those children (as well as for subsets of three- and four-year-olds stratified by poverty level and participation rates)
- The costs of public school programs for Grades K-3 for all children
- Any additional costs associated with integration of PreK programs with existing public K-3 schools
- The net public costs of an approach that connects PreK programs with Grades K-3

[1]These figures assume that any state that funds PreK-3rd programs above the adequate level estimated using the Evidence-Based approach will continue to expend those resources for education. That is, these figures "hold harmless" those states where education expenditures exceed our estimates, and therefore, represent the national cost to bring every state to at least an adequate level. In addition, these numbers assume a maximum of 65 percent participation in PreK programs.

The Evidence-Based Method of School Finance Adequacy

To estimate the resources necessary for a high-quality education program, this study used the Evidence-Based method as developed by Allan Odden and Lawrence O. Picus. Although not the only method available for estimating what is known as school finance adequacy, the Evidence-Based method has been used in numerous states, including Arkansas and Wyoming, and forms the basis for the school funding systems. Moreover, it has been used previously to estimate resources needed for both high-quality PreK and K-12 programs, facilitating development of an integrated model. The resources recommended by this approach are adequate for schools to double student performance on state tests in the medium term.

The Evidence-Based approach relies on the best available educational research to identify strategies that when implemented at the school level will lead to dramatic gains in student achievement over a four- to six-year time frame.[2] Figure 1 identifies the components of the Evidence-Based model. These include:

- Class sizes of 15 in grades K-3 (our model allows cost estimations of both 15 and 20 student classes at the PreK level, each with a teacher and instructional aide)
- Specialist teachers to provide a rich liberal arts program, including music, art and PE, and to provide for planning and collaboration time for core teachers. These are resourced at a rate of 20 percent of core teachers
- Classroom aides in all PreK classrooms (PreK only)
- Strategies for struggling students (K-3 only) including:
    - Certificated tutors for short-term intensive help so that students return to the regular program at grade level as quickly as possible, also providing additional resources for children who are at risk of falling behind
    - Extended day programs
    - Summer school

[2]The research supporting the Evidence-Based model is described in detail in chapter 4 of Odden, A.R., and Picus, L.O. (2008). *School Finance: A Policy Perspective, 4th edition*. New York, NY: McGraw Hill. There are multiple approaches available for estimating an adequate level of resources for public schools, and considerable debate over the efficacy of all of those methods. The goal of all adequacy methods is to provide sufficient resources for schools and school districts to offer high-quality education programs for all children. This study relies on the Evidence-Based approach because of its grounding in the best available research on educational effectiveness, and because previous experience in developing cost estimates provides a set of resources adequate for schools to double student performance as measured by state tests and are generally affordable by most states facing school finance adequacy demands.

- Resources for children with special needs and/or disabilities
- Funding for professional development including:
    - Additional teacher time for comprehensive summer workshops focused on teaching and learning
    - Instructional coaches in each school at a ratio of one coach for every 200 students
    - Funds for trainers and consultants
- Staff for pupil support (guidance counselors, nurses, social workers, family liaisons, etc.)
- Staff resources for school site leadership
- Staff resources for district administration
- Funds for:
    - Instructional materials
    - Technology
    - Operations, maintenance and utilities
    - Central office operations

The costs of these resources are approximated for a set of prototypical schools and then summed to the district and state level to provide an estimate of adequate school funding. The resource needs of existing K-3 students in each state was estimated, along with the additional resources that would be needed for PreK programs under a variety of assumptions regarding both PreK eligibility and participation rates. Estimates of program costs were developed for PreK class sizes of both 15 and 20 students.

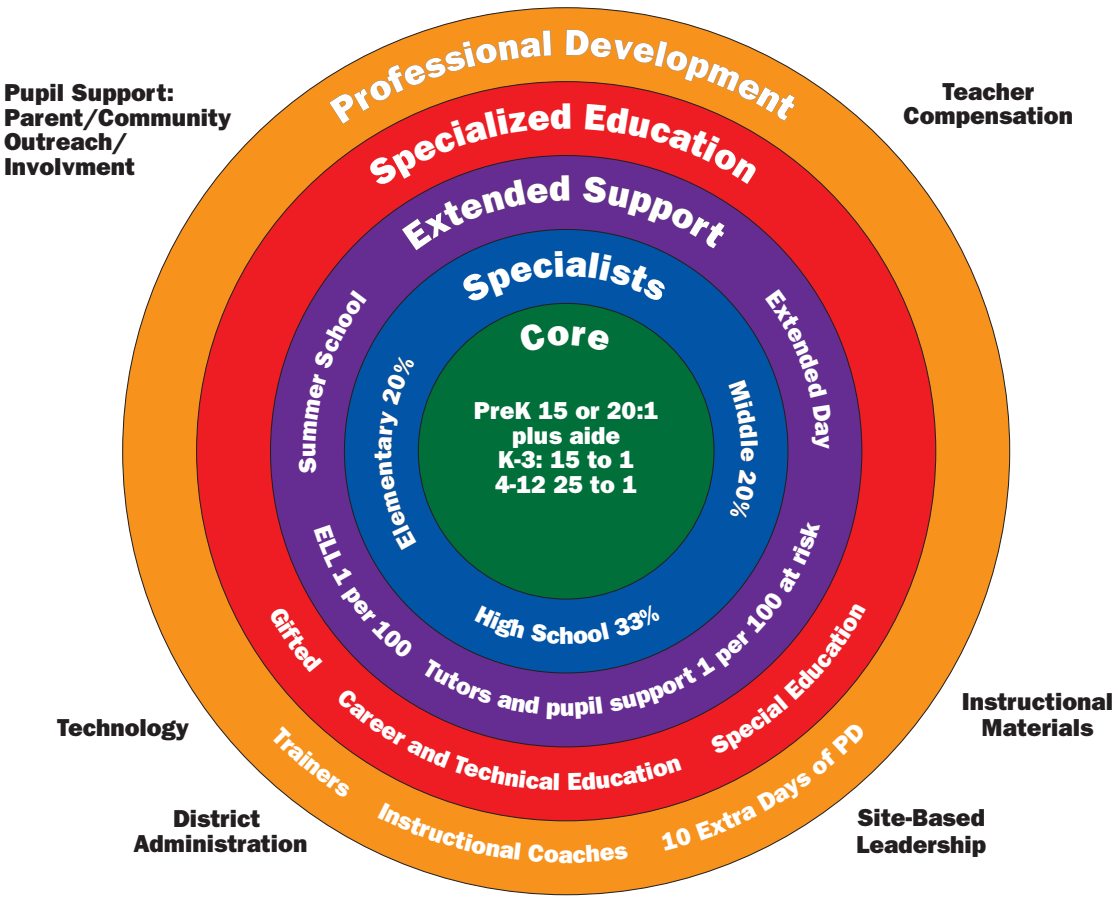
Development of the Cost-Estimation Model

A comprehensive and flexible model was developed to estimate the costs of an integrated PreK-3rd program. The model provides state-by-state estimates of the costs of these Evidence-Based programs. Using data from 2005–2006 (the most recent year for which data for all model components were available) the model includes K-3 enrollment by state as well as Census Bureau estimates of the number of three- and four-year-old children in each state. The estimated counts of three- and four-year-old children are further disaggregated on the basis of family income, so that PreK pupil counts could include estimates of the total number of three- and four-year-olds in each state as well as the number of three- and four-year-olds living in families with incomes at the Federal poverty level and the number in families with incomes at 200 percent of the Federal poverty level. The final model enables users to continuously vary the estimated percentage of eligible three- and four-year-olds who actually participate in PreK programs.

The Cost Model

In addition to allowing for the variation in the number of three- and four-year-olds, the model allows users to vary all of the components of the Evidence-Based model. The largest component of the model is for personnel. In the cost estimates provided here, the National Education Association (NEA) estimates of teacher salaries by state were used along with national average salaries adjusted by region for geographical cost differences for all other personnel categories.

Figure 1: The Evidence-Based Model:
A Research-Driven Approach to Linking Resources to Student Performance



ELL = English Language Learners
PD = Professional Development

Estimated Costs of an Integrated PreK-3rd Approach

The estimated costs of an integrated PreK-3rd program vary depending on the assumptions made regarding eligibility of three- and four-year-old children for PreK programs and on the assumptions made regarding their participation rate. It also varies with the size of PreK classes. Tables 1 and 2 incorporate these assumptions and display the variation in the estimated total costs and total costs per-pupil of an integrated PreK-3rd program. For example, if universal eligibility for three- and four-year-old children is assumed, with a participation rate of 65 percent and PreK class size of 20 students with a teacher and aide, the estimated total PreK-3rd costs are $215 billion or $10,867 per PreK-3rd student. *It is important to note that these are total costs for PreK-3rd programs and reflect not only quality PreK program costs, but the costs of a quality K-3 program as estimated using the Evidence-Based model, which in many states exceeds current K-3 spending.*

Tables 3 and 4 show how much *additional* revenue would be needed to fund these programs. Assuming the components of the Evidence-Based adequacy model were implemented for PreK-3rd programs in every state, and that parents of 65 percent of the eligible children elect to place their children in PreK programs, the estimated additional national costs of providing adequate PreK-3rd programs range from $29.8 billion to $78.7 billion depending on the number of three- and four-year-old children who are eligible for the program and the average size of PreK classes.[3] On a per-child-served basis these additional costs range from $2,237 to $3,975.

[3]These figures assume that any state that funds PreK-3rd programs above the adequate level estimated using the Evidence-Based approach continue to expend those resources for education. That is, these figures "hold harmless" these states where education expenditures exceed our estimates and therefore represent the national cost to bring every state to at least an adequate level. In addition, these numbers assume a maximum of 65 percent participation in PreK programs.

Integrating PreK and K-3 Programs

An important component of PreK-3rd is integration between the PreK and K-3 programs. It is important that teachers at both levels have time to understand the curriculum across all levels, and have adequate time for planning and coordination to ensure a well-articulated curriculum. To understand the staffing and fiscal resource requirements of this integration, we visited six PreK-3rd programs identified by the Foundation for Child Development. Based on our observations and on interviews with school teachers and administrators, we concluded that the range of personnel funded through the Evidence-Based model is adequate to provide sufficient resources for strong integration across Grades PreK-3rd.

The data in Tables 1–4 were derived using the Evidence-Based model for 2005–2006 in states with spending currently below Evidence-Based adequacy estimates.

Table 1:
Estimated **Total** Costs of Providing PreK-3rd Programs (Billions of Dollars)

	Number of 3- and 4-Year-Olds					
	100% of federal poverty level		200% of federal poverty level		All Children	
	Average PreK class size (teacher and instructional aide)					
Participation Rates	**15**	**20**	**15**	**20**	**15**	**20**
50% participation	$169.3	$168.2	$180.6	$178.2	$207.6	$202.1
65% participation	$172.4	$171.0	$187.1	$184.0	$222.2	$215.0
100% participation	$179.8	$177.5	$202.2	$197.5	$256.2	$245.2

Table 2:
Estimated **Per-Child Total** Costs of Providing PreK-3rd Programs (Dollars)

	Number of 3- and 4-Year-Olds					
	100% of federal poverty level		200% of federal poverty level		All Children	
	Average PreK class size (teacher and instructional aide)					
Participation Rates	**15**	**20**	**15**	**20**	**15**	**20**
50% participation	$11,029	$10,954	$11,097	$10,951	$11,181	$10,884
65% participation	$10,794	$10,953	$11,132	$10,948	$11,230	$10,867
100% participation	$11,091	$10,950	$11,207	$10,944	$11,323	$10,836

Table 3:
Estimated **Additional** Costs of Providing PreK-3rd Programs (Billions of Dollars)

	Number of 3- and 4-Year-Olds					
	100% of federal poverty level		200% of federal poverty level		All Children	
	Average PreK class size (teacher and instructional aide)					
Participation Rates	**15**	**20**	**15**	**20**	**15**	**20**
50% participation	$28.4	$27.4	$38.2	$36.1	$64.1	$58.6
65% participation	$31.0	$29.8	$44.0	$41.2	$78.7	$71.5
100% participation	$37.3	$35.3	$58.8	$54.1	$112.7	$101.7

Table 4:
Estimated **Per-Child Additional** Costs of Providing PreK-3rd Programs (Dollars)

	Number of 3- and 4-Year-Olds					
	100% of federal poverty level		200% of federal poverty level		All Children	
	Average PreK class size (teacher and instructional aide)					
Participation Rates	**15**	**20**	**15**	**20**	**15**	**20**
50% participation	$2,169	$2,095	$2,692	$2,545	$3,471	$3,179
65% participation	$2,332	$2,237	$2,763	$2,790	$3,975	$3,626
100% participation	$2,623	$2,500	$3,281	$3,099	$4,981	$4,494

Developing State-by-State Cost Estimates

The power of this model is that it allows individuals in each state to estimate the costs of PreK-3rd approaches using a variety of assumptions about program components, eligibility and participation rates for PreK children, as well as salaries for school personnel. Table 5 displays our estimate of the costs of a high-quality integrated PreK-3rd program in all 50 states assuming an average PreK class size of 20 (with both a teacher and an instructional aide) and an average class size of 15 for K-3 programs, along with universal access for all three- and four-year-olds, and a participation rate of 65 percent.

The estimates provided in Table 5 were generated using a national Evidence-Based model that provided the same staffing resources for K-3 programs for each state. Individual states may wish to develop their own estimates of the costs of a high-quality PreK-3rd program using their own state education databases, and varying aspects of the Evidence-Based staffing model. The flexibility of the cost model makes these computations relatively straightforward; the complexity and expense of developing the cost estimates lies in the effort expended to obtain high-quality data.

Seven steps are required to estimate the potential costs of quality PreK-3rd education for an individual state:

1. **Determine the parameters of an adequate K-3 education program.** The Evidence-Based model provides a starting point for developing these resource estimates, but as we have found in our work, individual states often made adjustments to the resources identified in the model to meet state-identified needs.

2. **Apply the K-3 resource model to PreK programs.** Make any further adjustments to the identified resources believed to be important in the individual state. For example, in the model described in this Policy Brief, K-3 classes are staffed at 15 students per certified teacher with no classroom aides, while—depending on the cost estimate—PreK programs are staffed at either 15 or 20 students per certified teacher and teaching assistant.

3. **Develop accurate estimates of personnel salaries.** The estimates reported here are, of necessity, based on national estimates (and in the case of teachers, national state-by-state estimates). The model assumes that newly hired certified teachers in PreK programs would be paid at the state average teacher salary, but a more detailed labor market analysis might show that newly credentialed PreK teachers have different experience and education demographics making the average salary estimate somewhat different depending on how these PreK teachers compare to the existing teaching staff.

4. **Estimate the number of three- and/or four-year-olds who would participate in the PreK programs.** This is based on the eligibility and expected participation rates chosen by the state.
5. **Use the resources and pupil counts developed in Steps 1–4.** Estimate the total costs of a high-quality PreK-3rd program.
6. **Estimate existing public expenditures for PreK and K-3 education.** This is not a simple task for K-3 expenditures, because most state and school district accounting systems do not necessarily distinguish costs on a grade-by-grade basis. School districts also make many decisions that affect the relative level of per pupil expenditure by grade level.
7. **Compare the estimated costs with current spending.** This step allows you to understand the additional costs of a high-quality PreK-3rd program.

Conclusions

This study estimates the costs of providing a high-quality PreK-3rd education approach in all 50 states plus the District of Columbia. Relying on an Evidence-Based approach to school finance adequacy, it identifies the staffing resources needed to offer high-quality integrated PreK-3rd programs and then estimates the costs of those resources.

By developing a highly flexible model, it is possible to simulate alternative staffing resource configurations for PreK-3rd programs providing a state-by-state estimate of the cost to implement the program. If it is assumed that 65 percent of three- and four-year-old children will participate in PreK programs, the estimated additional cost of providing the resources for PreK-3rd ranges from $28.4 billion, if eligibility is limited to three- and four-year-olds at 100 percent of the federal poverty level, to $78.7 billion if PreK is universally available to three- and four-year-olds. These costs range from $2,237 to $3,975 per student served, and vary considerably by state.

These state-by-state estimates can be further refined by using more detailed individual state data systems, if they are available.

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Table 5: Estimated Costs of an Integrated PreK-3rd Programs By State: 2005-2006

State	PreK-3rd Cost Cost Estimate	PreK-3rd Cost Estimate Per Pupil	Estimate of PreK-3rd Current Expenditures	PreK-3rd Expenditures Per Pupil	Difference	Difference Per-Pupil
Alabama	2,979,894,704.38	9,611.21	1,923,963,355.50	6,205.46	1,055,931,348.88	3,405.75
Alaska	594,381,239.78	11,729.21	415,453,133.00	8,198.34	178,928,106.78	3,530.87
Arizona	4,468,226,073.98	10,042.16	1,984,386,839.58	4,459.83	2,483,839,234.40	5,582.33
Arkansas	1,891,004,148.77	9,762.75	1,388,076,923.00	7,166.27	502,927,225.77	2,596.48
California	31,850,591,951.57	12,354.68	17,336,706,375.48	6,724.82	14,513,885,576.09	5,629.86
Colorado	3,179,243,403.38	9,805.85	2,236,083,813.63	6,896.83	943,159,589.75	2,909.02
Connecticut	2,800,222,696.99	12,355.98	2,283,009,822.25	10,073.78	517,212,874.74	2,282.20
Delaware	617,484,651.05	11,997.03	474,002,927.78	9,209.34	143,481,723.27	2,787.69
District of Columbia	440,899,831.19	14,422.68	390,419,340.00	12,771.36	50,480,491.19	1,651.31
Florida	11,080,664,406.82	10,005.64	7,045,975,632.87	6,362.39	4,034,688,773.95	3,643.25
Georgia	7,180,071,951.53	10,677.99	4,699,172,493.00	6,988.47	2,480,899,458.53	3,689.52
Hawaii	860,362,224.85	10,450.78	584,416,554.13	7,098.88	275,945,670.72	3,351.90
Idaho	1,010,349,393.40	9,133.96	600,439,457.06	5,428.21	409,909,936.34	3,705.75
Illinois	10,145,651,409.85	12,110.20	6,280,879,594.00	7,497.07	3,864,771,815.85	4,613.12
Indiana	4,545,325,529.01	10,638.49	2,924,860,475.60	6,845.73	1,620,465,053.41	3,792.75
Iowa	1,740,368,210.99	9,218.32	1,188,524,774.04	6,295.33	551,843,436.95	2,922.98
Kansas	1,790,617,087.90	9,613.73	1,252,259,937.92	6,723.32	538,357,149.98	2,890.41
Kentucky	2,698,769,519.55	9,891.15	1,845,776,125.00	6,764.88	852,993,394.55	3,126.27
Louisiana	2,846,067,176.47	9,847.80	2,012,595,112.52	6,963.87	833,472,063.95	2,883.93
Maine	674,354,152.84	9,681.50	682,037,694.62	9,791.81	(7,683,541.78)	(110.31)
Maryland	3,840,617,658.75	11,495.55	2,591,716,106.96	7,757.40	1,248,901,551.79	3,738.15
Massachusetts	4,633,155,336.88	11,956.71	3,816,456,989.52	9,849.07	816,698,347.36	2,107.64
Michigan	7,759,965,768.50	11,572.45	5,369,134,655.16	8,007.00	2,390,831,113.34	3,565.45
Minnesota	3,382,479,850.45	10,513.37	2,476,249,701.37	7,696.64	906,230,149.08	2,816.73
Mississippi	2,103,146,324.56	9,716.42	1,295,295,380.40	5,984.19	807,850,944.16	3,732.23
Missouri	3,542,005,804.80	9,574.20	2,281,809,613.84	6,167.83	1,260,196,190.96	3,406.37
Montana	506,508,570.79	9,156.80	371,477,465.24	6,715.67	135,031,105.55	2,441.13
Nebraska	1,054,612,654.02	9,266.09	720,038,192.52	6,326.44	334,574,461.50	2,939.65
Nevada	1,689,504,930.65	9,925.35	913,591,211.00	5,367.08	775,913,719.65	4,558.27
New Hampshire	711,586,239.10	9,770.81	577,258,766.00	7,926.36	134,327,473.10	1,844.45
New Jersey	7,067,947,347.49	12,966.30	6,095,448,779.52	11,182.23	972,498,567.97	1,784.07
New Mexico	1,331,102,897.17	10,065.26	941,646,902.72	7,120.35	389,455,994.45	2,944.91
New York	14,131,711,946.66	12,806.99	11,917,953,305.52	10,800.75	2,213,758,641.14	2,006.24
North Carolina	5,979,309,408.03	9,820.56	3,649,499,666.00	5,994.03	2,329,809,742.03	3,826.54
North Dakota	313,968,776.76	8,796.86	236,147,543.64	6,616.45	77,821,233.12	2,180.42
Ohio	7,976,148,069.52	10,824.73	5,649,112,737.00	7,666.62	2,327,035,332.52	3,158.11
Oklahoma	2,401,624,650.61	9,406.55	1,641,937,568.79	6,431.05	759,687,081.82	2,975.50
Oregon	2,366,855,890.99	10,643.79	1,570,678,853.80	7,063.37	796,177,037.19	3,580.42
Pennsylvania	8,019,397,369.02	11,503.75	6,000,052,342.00	8,607.02	2,019,345,027.02	2,896.73
Rhode Island	672,086,431.76	11,584.62	503,647,875.88	8,681.28	168,438,555.88	2,903.34
South Carolina	2,796,562,748.94	9,889.04	1,902,521,954.00	6,727.58	894,040,794.94	3,161.45
South Dakota	415,532,116.90	8,404.53	312,228,389.55	6,315.11	103,303,727.35	2,089.42
Tennessee	3,867,030,947.88	9,711.66	2,207,878,476.00	5,544.86	1,659,152,471.88	4,166.79
Texas	18,800,277,587.98	10,024.93	11,611,114,193.68	6,191.43	7,189,163,394.30	3,833.50
Utah	2,016,344,084.69	8,885.52	940,924,224.75	4,146.42	1,075,419,859.94	4,739.11
Vermont	353,027,451.73	10,059.55	352,334,955.74	10,039.82	692,495.99	19.73
Virginia	5,048,902,620.18	10,281.70	3,553,507,371.64	7,236.45	1,495,395,248.54	3,045.26
Washington	4,105,746,271.62	10,251.26	2,566,186,639.81	6,407.27	1,539,559,631.81	3,843.98
West Virginia	1,049,189,454.30	9,976.19	932,663,076.00	8,868.20	116,526,378.30	1,107.99
Wisconsin	3,363,076,186.68	10,318.71	2,671,830,954.98	8,197.81	691,245,231.70	2,120.90
Wyoming	328,445,223.73	9,869.65	314,823,162.20	9,460.31	13,622,061.53	409.34
Totals*	**215,022,420,385.44**	**10,867.50**	**143,534,207,436.21**	**7,254.39**	**71,495,896,491.01**	**3,613.10**

*(PreK Class Size of 20, K-3 Class Size of 15, all Three- and Four-Year-Olds Eligible, 65 Percent Participation in PreK)

Online Resources

An Evidence-Based Approach to Estimating the National and State-by-State Costs of an Integrated PreK-3rd Education Program (Full Report).
http://www.lopassociates.com/PDFs/St.%20by%20St.%20costs%20of%20integrated%20Prek-3rd.pdf

PreK-3rd Cost Calculator: Calculate program costs to determine how much each state would pay for PreK-3rd Approaches based on different services and assumptions.
http://www.lopassociates.com/

Visit the FCD web site, www.fcd-us.org, for other briefs in the Advancing PreK-3rd Series.

Other policy briefs in the Advancing PreK-3rd Series include:

No. 4: PK-3: What Is It and How Do We Know It Works?

No. 5: Core Knowledge for PK-3 Teaching: Ten Components of Effective Instruction

No. 6: Carrots and Sticks: New Jersey's Effort to Create a Qualified PK-3 Workforce

No. 8: Challenging Common Myths About Young English Language Learners

FCD Policy to Action Brief Series:

No. 1: The Case for Investing in PreK-3rd Education: Challenging Myths about School Reform

No. 2: PreK-3rd: What is the Price Tag?

FCD Web Site:

PreK-3rd Resources by Audience

PreK-3rd Resources by Topic