



Educational Considerations

Volume 32
Number 1 *Adequacy in School Finance*

Article 6

9-1-2004

A Closer Look at the Costs of Serving Children "Living on the Edges" of State School Finance Policy: At-Risk, Limited English Proficient, and Gifted Children

Bruce D. Baker
University of Kansas

Follow this and additional works at: <https://newprairiepress.org/edconsiderations>



Part of the [Higher Education Commons](#)



This work is licensed under a [Creative Commons Attribution-Noncommercial-Share Alike 4.0 License](#).

Recommended Citation

Baker, Bruce D. (2004) "A Closer Look at the Costs of Serving Children "Living on the Edges" of State School Finance Policy: At-Risk, Limited English Proficient, and Gifted Children," *Educational Considerations*: Vol. 32: No. 1. <https://doi.org/10.4148/0146-9282.1234>

This Article is brought to you for free and open access by New Prairie Press. It has been accepted for inclusion in Educational Considerations by an authorized administrator of New Prairie Press. For more information, please contact cads@k-state.edu.

A Closer Look at the Costs of Serving Children "Living on the Edges" of State School Finance Policy: At-Risk, Limited English Proficient, and Gifted Children

Bruce D. Baker

Introduction

Considerable attention has been given over the years to understanding the costs of serving students with disabilities and the design of state funding systems for ensuring that students' special needs can be met by local districts.¹ Significantly less attention has been given to three less-well-defined student populations--at-risk, limited English proficient (LEP), and gifted and talented children--referred to herein as fringe populations because they lie on the ill-defined fringe between general and special education.²

In public school finance policy, fringe populations are often treated with nominal adjustments or add-ons to general aid formulas.³ Supplemental aid allocations for special populations, like general aid quantities, are derived primarily via political deliberation among state legislators. The balance of these provisions generally reflects the balance of political power in state legislatures more so than the balance of student and district needs.⁴ Over the past few decades, increased efforts have been made to introduce empirically determined values into deliberations over adequate general education funding and/or to use empirically determined values to scrutinize current state funding methods. Until recently, those wishing to either supplement or supplant purely political processes with rationally derived cost estimates for fringe populations found themselves with far too little information to adequately inform policy decisions.⁵ Times are changing.

In 2001, Baker performed an analysis of state revenues (1995-1996) to local districts for meeting the needs of at-risk, limited English proficient and gifted children.⁶ Baker attempted to characterize state aid allocations in terms of adequacy, equity, and rationality, which were measured as follows:

- Adequacy was measured by aid allocation per expected need pupil as a percent of core expenditures exceeds minimum reported, though not necessarily empirically cost based, adequacy weight from existing literature (LEP = 1.2, At-Risk = 1.2).

- Equity was measured by aid allocation per pupil significantly correlated in the expected direction ($p < .05$) with 2 of three context measures (median family income, core expenditures per pupil, state revenue share).
- Rationality was measured by aid allocation per pupil and total allocation significantly correlated ($p < .05$) with expected prevalence. (LEP and At-Risk only)

Like numerous previous authors,⁷ Baker relied on relatively arbitrary estimates of the "costs" of providing adequate services for at-risk and limited English proficient children for evaluating the relative adequacy of aid programs. Few state aid programs were found by Baker to be sufficient. No estimates of programming costs or funding adequacy were provided for gifted education. Analyses of aid to gifted education were limited to the equity of state aid allocations to local districts.

Not surprisingly, Baker found significant equity problems in the allocation of supplemental aid for all three populations. In many states, supplemental aid was being allocated flatly with respect to local fiscal capacity and at generally inadequate levels. State aid for gifted education in states such as South Carolina was disproportionately allocated to higher capacity, higher income districts. More surprising was Baker's finding that in many states, aid for special populations was not even highly correlated with the prevalence of students who require supplemental services, even in the case of aid for limited English proficient children, perhaps the easiest of the three populations to define. Baker and Markham concurred.⁸

Only recently has the knowledge base on the cost of adequate educational services in general and for special student populations expanded sufficiently to revisit the adequacy question posed by Baker in 2001. Baker, Taylor, and Vedlitz, in a report to the Texas Joint Committee on Public School Finance, presented an analysis of over 30 studies of the cost of providing an adequate education in over 20 states.⁹ In at least 16 separate studies performed since 1997 (most since 2001), individual estimates of marginal costs of educational services have been provided for economically disadvantaged (at-risk) and limited English proficient children. Sadly, only one study reported cost estimates for gifted education,¹⁰ but the literature on state aid and program costs in gifted education has expanded dramatically in recent years, including some cost estimates.¹¹

This article takes advantage of the emerging evidence on the costs of adequate opportunities for at-risk, limited English proficient and gifted and talented children to revisit the question of the relative adequacy of state aid allocations for these fringe populations. I begin with a review of the research literature on the costs of special programming opportunities or service delivery models for at-risk, limited English proficient and gifted and talented children. Next, I review cost analysis methodologies commonly applied in studies of educational adequacy and address the pros and cons of various methods with respect to the populations in question. Then, I compile the recent evidence regarding the costs of services in state and independently sponsored evaluations of the cost of an adequate education. Finally, focusing on programs and services for limited English proficient children, I provide a detailed analysis of the relative adequacy of state aid programs in five states - Kansas, Colorado, North Dakota, Missouri and Nebraska - using recent cost estimates as benchmarks.

Bruce D. Baker is Associate Professor, University of Kansas.

Brief Review of Literature on Program Costs & State Aid

In this section I provide a brief review of the literature on program costs and state aid programs for meeting the needs of at-risk, limited English proficient, and gifted children. Prior to the recent wave of state level adequacy analyses, little had been written in the school finance policy literature about the needs of fringe populations and associated costs of programming.

Children At-Risk

Cost estimates and/or guidelines for achieving vertical equity for at-risk and limited English proficient pupils have been presented in literature and applied in state policies for several years despite limited empirical bases. The most common estimates indicate a cost of serving both at-risk and limited English proficient pupils at 1.2, or 120% of the cost of educating the "typical" student.¹² A recent National Research Council report noted the following with respect to the 1.2 weighting for at-risk pupils:

While this indicator may be the best currently available for determining a weighting for students in poverty and is easily understood, it results from federal budget decisions about what to spend on Title I, not on a calculation of the costs of education poor children and of compensating for prior deprivation that may affect their education performance.¹³

Results from published analyses of the costs of serving at-risk pupils vary widely. Goertz,¹⁴ for example, found that in a study of schools in 17 districts, Chapter I expenditures ranged from \$175 per pupil in a district with an expenditure range of \$175 to \$1,070, to \$2,500 per pupil. Several authors address costs of serving at-risk children in terms of the costs of operating comprehensive school reform models tailored to the needs of at-risk populations. Odden and Picus cost out the ingredients of offering the Roots and Wings/Success for All, a whole school reform program focused on improving achievement of at-risk pupils, in a school of 500 pupils, arriving at approximately \$1,000 per pupil or \$500,000.¹⁵ King performed similar analyses on three whole school reform models in 1994. Table 1 summarizes the findings of these cost studies.¹⁶

At-risk children are often identified for state aid allocation purposes via economic criteria such as qualifying for free and reduced price lunch status under the National School Lunch Program. Typically, state aid for at-risk children is used to provide compensatory reading or other remedial programs. Odden and Picus noted that 28 states supported compensatory aid programs in 1993-94.¹⁷ Among those states, Odden and Picus identified five states that specifically used the word "remedial" to describe the educational programming resulting from compensatory aid, at least two of the five states used economic criteria for need identification.¹⁸ Perhaps due in part to the questionable implications of applying economic criteria to educational need, states are increasingly including measures of academic performance, and some have included language proficiency status as a risk indicator.¹⁹ Nonetheless, who is considered at-risk, and how to identify them, varies widely from state to state.

Historically, federal aid has played a limited role in offsetting costs associated with educating children at risk. In an analysis of school district revenues, Parrish and Hikido²⁰ found that 99.2% of districts enrolling expected poverty populations in excess of 25% or their enrollments received federal Chapter I funding in 1991-1992 at an average rate of \$257 (\$207 cost and need-adjusted) per pupil or \$793 (\$781 cost and need-adjusted) per target pupil. Districts with fewer students

in poverty received less funding per enrolled pupil and similar, if not slightly higher, amounts per target pupil.

Baker and Duncombe identified 38 total states providing some form of financial support to meet the needs of at risk children.²¹ Twenty-one states included provisions in general aid programs, and 25 states allocated categorical aid separate from general aid programs. Baker and Duncombe and Carey²² estimate implicit weights of the amount of aid received by local districts from states to accommodate children in poverty. Implicit weights are measures of aid actually allocated to local districts whereas explicit weights are those specified in state school finance policies. Implicit weight analysis involves estimating the population in need, most commonly with Census data, estimating the aid allocated to that population and determining the ratio of need-targeted aid to average or "general" education revenues.²³ Using Carey's weights, eleven states (out of 39) had a poverty weight above 25%. Only two states had weights this high using Baker and Duncombe's estimates. Three of the New England states (Connecticut, New Hampshire, and Massachusetts) had particularly high poverty weights, and all of these states had statutory poverty weights of 25% or higher.

Limited English Proficient Children

Studies of the costs of providing bilingual education or transitional programming have also produced widely varying results, ranging from less than an extra 5% to an extra 100%.²⁴ Parrish estimated the costs of serving limited English proficient students under alternative instructional models in California and found the average total marginal cost of serving LEP students to be \$361 (marginal instructional cost = \$186, administrative and support cost \$175).²⁵ Across four approaches to service delivery, marginal costs were approximately 18% above classroom costs with classroom costs ranging from \$1,409 to \$1,978 per pupil and total costs, including support for LEP students, ranging from \$1,756 to \$3,505 per pupil. Parrish and Hikido noted that the \$361 marginal cost is only 8% above average expenditures per pupil in California, which at the time were \$4,598.²⁶ Findings of these cost studies are summarized in Table 1.

A handful of states reported in *Public School Finance Programs of the United States and Canada: 1998-1999* indicated that programs for LEP children were primarily a federal responsibility, through ESEA Title VII (now Title III) funding.²⁷ Baker and Markham indicated that federal aid, for the most part, has provided negligible support to local districts.²⁸ They noted that in 1995-1996 only 112 of nearly 16,000 public school districts reported receiving any Title VII aid, and that aid, on average, amounted to approximately \$260 per expected LEP pupil. Parrish and Hikido found similarly that even among districts with the highest percentages of LEP students in 1991-1992, only 19.8% received federal Title VII funding.²⁹ They further noted that "Because this [Title VII] is a discretionary rather than a formula grant program, these funds do not flow heavily to districts with high concentrations of LEP students."³⁰

Funding for bilingual education programs and other services for limited English proficient students existed in 29 states in 1998-99. Twelve states included adjustments to basic aid programs, and 19 states allocated some form of categorical aid. Baker and Markham found that many states not providing supplemental funding for limited English proficient children had significant estimated LEP populations, with some districts exceeding 25% limited English proficiency.³¹ Baker and Markham also found that among states allocating aid for LEP pupils and in states where local school districts reported that aid on

Table 1
Summary of Studies of the Costs of Serving At-Risk, LEP and Gifted Children

Cost Estimate	Source	Method	Context
At-Risk			
\$175 to \$2,500 per	Goertz, 1988 (1)	Chapter 1 expenditures	New Jersey
\$522 to \$1,293 per (ADA) to implement Slavin's <i>Success for All</i>	King, 1994	Resource Cost - Whole school reform approach	
\$96 to \$532 per pupil (ADA) to implement Levin's <i>Accelerated Schools</i>	King, 1994	Resource Cost - Whole school reform approach	
\$206 to \$556 per pupil to implement Comer School Development Project	King, 1994	Resource Cost - Whole school reform approach	
\$1,000 per pupil (ADA) (school of 500) to implement <i>Success for All</i>	Odden and Picus, 2000	Resource Cost - Whole school reform approach	
Limited English			
5% marginal cost	Carpenter-Huffman & Samulon, 1981 (2) Gonzalez, 1996 (3)		
100% marginal cost	Chambers & Parrish, 1983	Resource Cost	
18% average marginal cost above classroom cost, or 8% above state average PPE across program & placement types	Parrish, 1994	Resource Cost	California
Gifted			
\$2,061 (regular teaching assignment) or \$1,655 (special education teaching assignments)	Chambers, 1999	Resource Cost	Ohio
30 to 60%	Baker & Nimz,	Staffing Costs	Hypothetical

(1) In Picus and Odden (2000).

(2) Ibid.

(3) Ibid.

the Census Fiscal Survey of Local Governments,³² aid allocations per target pupil varied widely, from nearly zero percent to over 100% of core instructional spending per pupil.

Gifted Children

Presently, there is little existing evidence regarding the resource costs of adequate services for gifted children. Baker and Friedman-Nimz applied a cursory analysis of adding qualified gifted education

specialists to elementary schools of approximately 400 students, yielding marginal costs of .3 to .6 per gifted pupil (assuming 5% of the student population as primary beneficiaries of services).³³ Chambers provided additional insights into resource costs for gifted children in Ohio, but the analysis was limited to personnel costs and estimated with data on current practices rather than ideal conditions.³⁴ Using average caseloads and contact hours, and average expenditures per pupil hour, the average cost per participating pupil for K-12 gifted and

talented instruction was approximately \$2,061 (regular teaching assignment) or \$1,655 (special education teaching assignment).³⁵ These costs were comparable in Chambers' analyses to costs per pupil-hour of providing self contained bilingual/multicultural programs (regular teaching assignment) or costs per pupil-hour of providing programs for the developmentally handicapped (special education teaching assignment). Case loads, or class sizes, for gifted education in Ohio ranged between 15 and 20. Marginal cost estimates were not provided. Expenditures per pupil in Ohio were approximately \$5,550 in 1996, leading to a marginal cost of about 30% to 37%, similar to that found by Baker and Friedman-Nimz.³⁶

State definitions of gifted and talented children vary widely.³⁷ As a result, actual prevalence is difficult, if not impossible, to estimate. While some states specify particular percentiles on standardized achievement tests or cut-off scores on intelligence tests, most allow considerable flexibility to local districts. In 1995, thirty-one states mandated identification of gifted children, but only 24 mandated services for those children.^{38, 39}

A relatively large number of states, forty-two, allocate funding for programs for gifted and talented children, a possible testament to the strength of parent lobbying groups. While funding is allocated, however, much of the funding appears to be negligible, and several states provide only discretionary and/or competitive grants to select districts applying for a finite pot of funds. Baker and Friedman-Nimz and Baker and McIntire estimated the aid received by local districts from states for providing gifted education services, finding aid per target populations (estimated at flat 5%) ranged from only a few dollars to over \$600 per pupil (South Carolina) and nearly \$2,000 per pupil (Florida). Implicit weights of state aid ranged from less than 1% to over 30%.⁴⁰

Overview of Cost Measurement in the New Adequacy Context

This section presents an overview of methodologies commonly used in the estimation of basic and marginal costs. I choose to classify somewhat differently these methodologies, limiting the set to two basic approaches: (1) resource cost or ingredients approaches; and (2) statistical modeling approaches. Notably absent in this discussion are what some refer to as "successful schools" studies of the type that simply calculate average current expenditures of schools or districts achieving a given set of standards. I do not discuss such studies herein because they fail to address additional costs of serving the special populations discussed in this article, and when successful schools studies do address such costs, they do so by either of the two methods discussed herein. Further, analysis of the expenditures of high performing schools or districts is, in fact, a simplified form of the statistical modeling approach discussed in this section, where the model includes only one dependent variable (expenditure) and one independent variable (performance).

Resource Cost Studies

The Resource Cost Model (RCM) is a method that has been used extensively for measuring the costs of educational services.⁴¹ In general, RCM is a method for measuring costs of services, existing or hypothetical, adequate or not. The RCM methodology typically involves three steps: (1) identifying and/or measuring the resources (people, space, and time) used in providing a particular set of services; (2) estimating resource prices and price variations from school-to-school or district-to-district; and (3) tabulating total costs of service delivery by totaling

the resource quantities (resource intensity) and the prices. Resource cost methods have been used for calculating the cost of providing adequate educational services since the early 1980s.⁴²

Two relatively new variants of RCM have been specifically tailored to measure the costs of an "adequate" education, a professional-judgment driven RCM and an evidence-based RCM. The difference between them lies in the strategy for identifying the resources required to provide an adequate education. In professional judgment studies, focus groups of educators and policymakers are typically convened to prescribe the "basket of educational goods and services" required for providing an adequate education. In evidence-based studies, resource needs for staffing and staff development are derived from "proven effective" Comprehensive School Reform (CSR) models like Robert Slavin's *Roots and Wings/Success for All*, that focus on improving educational outcomes in high poverty schools.⁴³ More recent evidence-based analyses have striven to integrate a variety of "proven effective" input strategies such as class size reduction, specific interventions for special student populations, and comprehensive school reform models, rather than relying on a single reform model.

Statistical Modeling Studies

Less common among recent analyses of educational adequacy are statistical methods that may be used either to estimate: (1) the quantities and qualities of educational resources associated with higher or improved educational outcomes; or (2) the costs associated with achieving a specific set of outcomes, in different school districts, serving different student populations. The first of these methods is known as the education production function, and the second of these methods is known as the education cost function. The two are highly interconnected and—like successful schools analyses—require policymakers to establish explicit, measurable outcome goals.

Education production function analysis can be used to determine which quantities and qualities of educational resources are most strongly, positively associated with a designated set of student outcomes. For example, is it better for a school to have more teachers or fewer teachers with stronger academic preparation at the same total cost to maximize some desired outcome? Further, education production function analysis can be used to determine whether different resource quantities and qualities are more or less effective in districts serving different types of students (economically disadvantaged, English language learners), or in different types of districts (large urban, small remote rural).

In cost function analysis, the goal is to estimate the cost of achieving a desired set of educational outcomes and further to estimate how those costs differ in districts with certain characteristics, serving students with certain characteristics. For example, achieving state average outcomes in a high poverty urban district may have quite different costs than achieving the same outcomes in an affluent suburban one. A cost function that has been estimated with existing data on district spending levels and outcomes, and including data on district and student characteristics, can be used for predicting the average cost of achieving a desired level of outcomes in a district of average characteristics serving a student population of average characteristics. Further, the cost function can be used to generate a cost index for each school district that indicates the relative cost of producing the desired outcomes in each school district. For example, it would likely be found that per pupil costs of achieving target outcomes are higher than average in small, rural school districts, that costs are higher in

school districts with high percentages of economically disadvantaged and limited English proficient children, and that costs are higher where competitive wages for teachers are higher.

The cost function is an extension of the production function where the goal is to estimate directly, in a single model, the costs of achieving desired outcomes, while with a production function, the goal is to identify those inputs that produce desirable outcomes, and subsequently estimate the cost of those inputs. To date, outcome measures used in cost function studies have been narrowly specified, including primarily measures of student achievement in core subject areas.

Reconciling the Various Approaches

In a perfect world, with perfect information regarding the relationship between resource mix and student outcomes (for guiding bottom-up analysis), perfect data on student outcomes, and perfect measures of district inefficiency (for guiding top-down analysis), resource cost and statistical cost function analysis would produce the same results. All distortions to or differences in cost estimates would be eliminated in each type of analysis.

Resulting distortions of resource-oriented versus performance-oriented analyses may be quite similar or quite different. Ideally, investigators using resource cost approaches for calculating the cost of adequacy would have perfect information regarding the lowest cost mix of resources that would lead to the desired educational outcomes for a given set of students under a given set of conditions. As noted, resource mix is most often arrived at not by estimating the relationship between resource mix and existing student outcomes, but either by the recommendations of expert panels (professional judgment), or by identifying specific educational reform models believed by researchers to be effective. To date, evidence on the effectiveness, and more specifically the cost-effectiveness of comprehensive school reforms that commonly guide such analyses remains questionable at best.⁴⁴

Where the prescribed resource mix is not the most efficient mix that could be purchased at a given total cost, resource cost analyses will lead to distortions in cost indices, and these distortions may or may not apply uniformly across districts of varied scale or of varied student populations. For example, resource intensity required to achieve specific outcomes in a certain type of district may be overstated by expert panels or prescribed models. It is safe to assume that most cost indices produced by resource cost analyses include at least some such distortion.

Similar problems exist in the estimation of statistical models of costs. Statistical models of costs rely on existing school district expenditure data and estimated relationships between expenditure data and current levels of student outcomes. Attempts are made to subtract inefficiencies from expenditure data; that is, it is possible that a district with a specific set of characteristics currently spends more than necessary to achieve its current level of outcomes. Further, it is possible that common patterns of inefficiency exist across all or similar sets of districts in a state. Where some or all of these inefficiencies go unmeasured, actual costs (assuming either average or maximum efficiency) of outcomes may be overstated for some or all districts.

Application Issues with At-Risk, LEP and Gifted Children

The two basic cost estimation methods may have very different implications and yield very different cost estimates for each population discussed in this article. In cost function analysis, it may be difficult to estimate statistically the costs of achieving a given outcome standard for a population of at-risk and/or LEP children who have never

approached that level of outcome in the past. Extrapolation of the cost function "beyond the sample" may yield exorbitant marginal costs for these populations. More palatable cost targets may be estimated via resource cost analysis where experts prescribe particular service delivery models assumed to be associated with desired outcomes. In reality, these service delivery models may be insufficient for achieving desired outcome levels and may be backed by questionable evidence and/or assumptions.

Baker and Friedman-Nimz address extensively the conundrum of accommodating gifted children in current standards-based cost frameworks.⁴⁵ In cost function analysis in particular, one might find negative estimates for the marginal costs of bringing gifted children to a standard they have already surpassed, implying a form of intellectual recapture. As discussed by Baker and Friedman-Nimz, the problem lies in our current approaches to standards and accountability which presently provide gifted children little opportunity to extend themselves beyond the minimum bar. Resource cost analysis provides a reasonable alternative for estimating the marginal costs of ensuring that adequate support services for accelerated and/or enriched learning exist for gifted children. This latter approach rests on the assumption that policymakers believe it important to extend learning opportunities beyond the minimum bar for a state's most capable students.

Compiling the Recent Evidence from the Adequacy Literature

In this section, I provide an abbreviated summary of the findings of Baker, Taylor and Vedlitz,⁴⁶ focusing specifically on the marginal costs associated with educating fringe populations. I begin with a brief primer on the expression of marginal costs in aid formulas and in different types of cost analyses. I include this primer both to promote the use of apples-to-apples comparisons of marginal costs, and to make clear when I am actually comparing apples with oranges.

Primer on the Expression of Marginal Costs

Marginal costs, as discussed herein are ratios of the additional cost of providing appropriate services or achieving desired outcomes with a specific population, with respect to the average student population. Marginal costs in state aid formulas are typically expressed as pupil weights, supplemental block grants per pupil in need, or additional resource reimbursement plans. In the case of pupil weights, those weights are most often expressed relative to a base state aid per pupil, or foundation aid level in the state school finance formula. Foundation aid levels are rarely representative of actual spending levels. For example, in 2003-2004, the Kansas base aid per pupil was \$3,863 but the average state and local annual general operating revenue per pupil was \$6,368 per pupil. These differences are important in gauging the true value of explicit weights in the aid formula and comparing those weights to adequacy estimates. A 10% weight for at-risk children in the Kansas aid formula yields \$386.30 per pupil, or about 6% of average general revenue (excluding special education).

Marginal costs can also be expressed in different ways in cost analyses. In most recent professional judgment studies, one can readily identify the basic costs of operating districts, though in most recent cases three to five alternate basic costs are applied for different size districts to capture economies of scale effects. Ultimately, the basic cost is the base cost estimate for the scale-efficient (usually the largest) district. Basic costs, in this case, refer to the costs of providing general education programs, or the cost of operating a district of a given size, assuming no children with special needs. Marginal

costs in professional judgment analyses are most often expressed with respect to these basic costs. As such, a marginal cost of 30% for at-risk children would mean that the cost of educating an at-risk child is 30% above the cost of providing a basic education program. This assumption is less true of evidence-based analyses which tend to structure general education programs around models intended for serving at-risk populations.

Assumptions are somewhat different in cost function analyses. Generally, marginal costs are expressed with respect to a district serving a student population of average characteristics. For example, it may be found that a district of average characteristics (average percent LEP,

average percent at-risk, average size, average competitive wage etc.) should be able to achieve state average outcomes with approximately \$6,000 per pupil. It may then be estimated that the average cost of achieving state average outcomes with an at-risk pupil is \$8,000, or 33% above the cost of average outcomes in the average district. The average district under these circumstances likely has at least some children with special needs making the comparison basis different from and arguably higher than the basic cost estimate in professional judgment studies. That said, I mix these apples and oranges in the remainder of this section.

Table 2
Marginal Costs of Student Needs from Recent Adequacy Studies

	<i>Method</i>	<i>Average</i>	<i>High</i>	<i>Low</i>
Economic Disadvantage				
Kansas	RCM	0.44	0.58	0.33
Montana	RCM	0.38	0.42	0.36
Colorado	RCM	0.48	0.61	0.37
Missouri	RCM	0.37	0.43	0.32
North Dakota	RCM	0.37	0.45	0.23
Nebraska	RCM	0.35	0.45	0.26
Kentucky	RCM	0.21 (1)	0.24	0.20
New York (2002)	ECF	1.14 (2)	1.34	0.98
Texas (2004)	ECF	0.32 (3)	0.36	0.27
Wisconsin	ECF	1.59		
Average				0.57
Average RCM				0.37
Average ECF				1.02
Limited English Proficient				
Kansas	RCM	0.61	1.03	0.21
Colorado	RCM	1.24	3.00	0.57
Missouri	RCM	0.47	1.17	-
North Dakota	RCM	0.56	1.01	-
Nebraska	RCM	1.48	1.91	0.97
Kentucky	RCM	0.21	0.24	0.20
New York (2002)	ECF	1.22 (2)	1.29	1.18
Texas (2004)	ECF	0.20 (3)	0.30	0.11
Average				0.75
Average RCM				0.76
Average ECF				0.71
Gifted and Talented				
Kentucky	RCM	0.02 (1)	0.02	0.01

(1) (\$817 marginal cost per all pupils/.528 average poverty share) / \$6,551 total base cost large.

(2) Based on estimates by district type (New York City, Other Large Cities, Downstate, Upstate).

(3) Gronberg et al., 51.

Marginal Cost Findings

Table 2 summarizes the marginal cost findings of ten separate state level analyses of the cost of providing an adequate education.⁴⁷ To the extent possible, estimates have been manipulated to be comparable. In all cases, marginal costs were estimated with respect to total district cost estimates. Recall, however, that total district basic costs differ conceptually between resource cost and cost function models. Average, high, and low estimates are provided in Table 2 to paint a realistic view of the range of estimates. Most variation between estimates from a given study results from differences in marginal costs over basic costs across districts of different size or geographic location; that is, the additional costs of serving the at-risk child in the small rural district are in most cases different from the additional costs of accommodating an at-risk child in the large poor urban district.

For economically disadvantaged or at-risk children, most marginal cost estimates land between 30% and 50% above basic or average costs. Thirteen of the 28 estimates in Table 2 lie between 35% and 45% above basic or average costs. Two education cost function studies, in New York and in Wisconsin, produce significantly higher marginal costs of achieving state average outcomes for at-risk children. In each case, the additional costs exceed 100% of the cost of achieving average outcomes with an average mix of students.

Marginal costs for limited English proficient children are generally less consistent across all studies, but the differences in estimates by methodology are smaller. On average, the marginal cost of achieving desired outcomes exceeds 70% for LEP children. Three of eight average marginal cost estimates exceed 100% additional costs, and six of eight exceed 40%.

Marginal costs for gifted children were estimated in only one study and appear relatively low as compared with current spending practices in Ohio as analyzed by Chambers⁴⁸ or compared to Baker and Friedman-Nimz estimates of marginal costs.⁴⁹ Baker and Friedman-Nimz estimated the costs of providing one qualified specialist per 300 total enrolled pupils and compared that cost to average current expenditures per pupil. Versteegen assigned a somewhat higher case load for gifted education specialists.⁵⁰ Interestingly, Versteegen's dollar figure of \$15 per all enrolled pupils is still higher than other studies that have recommended allocations for gifted education. The 1997 Wyoming adequacy study performed by Management, Analysis and Planning, Inc. (MAP), concluded that proposed small class sizes in the general formula, coupled with a supplemental flat grant of \$9 per Average Daily Attendance (ADA) would be sufficient to promote schoolwide talent development.⁵¹ No cost justification was provided for the \$9 figure although it was accepted by the Wyoming Supreme Court as rational in the absence of contradictory evidence.⁵²

Dissecting the Relative Adequacy of Current Policies: The Example of LEP Children

In this section, I present a detailed analysis of the relative adequacy of current funding compared with cost estimates for limited English proficient children in five states – Kansas, Colorado, Missouri, North Dakota and Nebraska. I focus on opportunities for limited English proficient children, rather than at-risk or gifted children for a variety of reasons. Most notably, while there is ambiguity in the identification of each student population and their educational needs, gaining consensus on LEP children, who they are and what they need, is perhaps least problematic of the three. Second, unlike gifted children, census data can be used to estimate prevalence of limited English

proficiency.⁵³ Third, as discussed by Baker⁵⁴ and more thoroughly by Baker, Green, and Markham,⁵⁵ LEP children may have more diverse and potentially more viable legal options in both federal and state courts for challenging the relative adequacy of state funding. Finally, despite the greater clarity of educational need and rapidly increasing prevalence of children facing language barriers to learning, fewer states provide supplemental resources for LEP children than for either at-risk or gifted children.

Table 3 summarizes the school level staffing proposals for serving LEP children from professional judgment driven resource cost analyses. Table 3 is provided to add some insight into the underlying resource configurations that led to the marginal costs presented in Table 2. Table 3 includes only estimates for scale-efficient – large – districts. Table 3 indicates that regardless of state context, panels of education experts working with consultants on behalf of both legislatures (Kansas, North Dakota) or special interests (Colorado, Missouri, Nebraska) consistently indicated that elementary and secondary level LEP children required additional personnel at rates of approximately 20 LEP children per full time teacher with one or more instructional aides per teacher. These staffing requirements led to per LEP pupil additional (above regular program) costs of \$2,403 to \$3,822 per pupil at the elementary level and \$2,851 to \$4,937 per pupil at the secondary level.

Table 4 includes consultants' estimates of adequate basic aid per pupil and consultants' estimates of the adequate adjustment per LEP child (including non-personnel costs). Note that adequacy for LEP children is achieved by the combination of general and supplemental funding. Like Table 3, Table 4 includes cost estimates for scale-efficient districts. In Kansas, a district serving 11,200 pupils was estimated to have basic costs per pupil in 2001 of \$5,811. The adequate LEP adjustment for a district of that size was estimated at \$5,993 for a total allocation per LEP child of \$11,804 (assuming that child is not also from an economically disadvantaged background). In contrast, in 2001 the basic allotment in large Kansas districts was \$3,955, and the LEP/Bilingual Education Adjustment was \$744 for a cumulative basic allocation of \$4,699, less than half that deemed adequate by the legislature's own consultants. The case is similar for the other states in Table 4, with only Nebraska exceeding 50% of adequacy for LEP children in its basic formula allotment, due both to Nebraska's higher general aid and larger LEP supplement.

The basic formula allotment comparisons to adequacy estimates in the upper portion of Table 4 likely underestimate the actual resources available in local school districts for LEP children. However, basic formula allotments do represent that amount of funding guaranteed by the state to be available. Arguably, the basic aid formula alone should ensure adequate funding.

The lower sections of Table 4 compare actual current expenditures per pupil to adequacy targets rather than comparing the minimum amount guaranteed by aid formulas. Note that current expenditure data include expenditure of federal funds as well as expenditures on children with disabilities. A debatable point is whether state legislatures alone are responsible for ensuring adequate funding regardless of federal effort, or whether federal funds may be combined with state and local funds to achieve state defined adequacy targets. Because adequacy estimates for large, scale-efficient districts are used in Table 4, average current expenditures per pupil are calculated for only large districts (enrolling > 2,000 pupils).⁵⁶ Current expenditures are reported for the average large district and for the average of large districts in the top 10% of districts by LEP student concentration. In Kansas, Nebraska,

Table 3
School Level Cost Estimates for LEP Children

	<i>Kansas</i>	<i>Colorado</i>	<i>Missouri</i>	<i>North Dakota</i>	<i>Nebraska</i>
Elementary					
Students	430	400	450	322	350
ELCB Students	17	44	4	3	18
Teachers	1	2	0.20	0.30	1
Salary	\$37,183	\$39,183	\$40,046	\$43,572	\$35,695
Cost	\$44,620	\$94,039	\$9,611	\$15,686	\$42,834
Aides	1	4	-		1
Salary	\$16,960	\$13,086	\$13,433		\$17,848
Cost	\$20,352	\$62,813	-	-	\$21,418
Cost Per Pupil	\$3,822	\$3,565	\$2,403	\$5,229	\$3,570
Middle					
Students	430	400	506		680
ELCB Students	17	44	5		34
Teachers	1	2	0.20		2
Salary	\$37,183	\$39,183	\$40,046		\$35,695
Cost	\$44,620	\$94,039	\$9,611		\$85,668
Aides	3	2	-		2
Salary	\$16,960	\$13,086	\$13,433		\$17,848
Cost	\$61,056	\$31,406	-		\$42,835
Cost per Pupil	\$6,216	\$2,851	\$1,922		\$3,780
Secondary					
Students	1,150	800	1,348	276	1,900
ELCB Students	46	88	13	3	95
Teachers	2	4	1	0.30	5
Salary	\$37,183	\$39,183	\$40,046	\$43,572	\$35,695
Cost	\$89,239	\$188,078	\$48,055	\$15,686	\$214,170
Aides	4	4	1		5
Salary	\$16,960	\$13,086	\$13,433		\$17,848
Cost	\$81,408	\$62,813	\$16,120	-	\$107,088
Cost per Pupil	\$3,710	\$2,851	\$4,937	\$5,229	\$3,382

and North Dakota (1 district), large districts with high LEP populations spent less per pupil than large districts on average. Large districts with high LEP concentrations also tended to have higher poverty rates than low LEP concentration districts.

Adequacy estimates at the bottom of the table are based on calculated adequate base aid, estimated adequate poverty weights, LEP weights, and poverty and LEP shares. For example, the figure of \$7,010 per pupil for a high concentration LEP Kansas district includes a base aid of \$5,811, poverty supplement of 15.7% times the estimated poverty weight of .44 times the base (\$5,811) and LEP supplement of 13.3% times the LEP weight of 1.03 times the base. Note that U.S. Census Bureau data are used for poverty estimates, resulting in significant underestimation of poverty, hence conservative estimates of the cost

of adequacy in high LEP districts. Even with conservative estimates, high LEP concentration districts fall consistently short of adequate funds across the states under investigation, and minimum spending high concentration LEP district in each state falls substantially below adequate levels.

Conclusions and Policy Implications

Findings of numerous recent studies produce a compelling argument that the costs of providing appropriate services for at-risk children are likely between 35% and 45% above average or basic costs and that the costs of achieving desired outcomes with at-risk children may approach or even exceed 100%. These findings are significantly different from standard recommendations and frequently used analytical weights

Table 4
Relative Adequacy Comparisons for LEP Children

	Kansas (a)	Colorado	Missouri (b)	North Dakota	Nebraska
Basic Adequacy Estimates					
"Adequate" Basic Aid	\$5,811	\$6,815	\$7,832	\$6,005	\$5,845
"Adequate" LEP Adjustment	\$5,993	\$4,837	\$4,746	\$6,046	\$5,682
Adequacy for LEP Child	\$11,804	\$11,652	\$12,578	\$12,051	\$11,527
Revenue Guaranteed by Aid Formula					
Minimum Guaranteed Foundation	\$4,107	\$4,202	\$4,043	\$2,287	\$4,814
LEP Adjustment in Aid Formula	\$744	\$400	–	\$300	\$1,204
Base Revenue per LEP Child	\$4,851	\$4,602	\$4,043	\$2,587	\$6,018
Percent Adequate	41%	39%	32%	21%	52%
Current Expenditures (Average District) (c)					
Mean Current Expenditures per Pupil	\$6,501	\$6,435	\$6,570	\$5,839	\$6,371
Mean % LEP	4.9%	10.1%	1.2%	0.0%	5.9%
Mean % Poverty	11.1%	10.2%	13.8%	10.3%	11.4%
Current Expenditures (High % ELCB District) (c)					
Mean Current Expenditures in Top 10% LEP	\$6,390	\$6,733	\$8,286	\$4,929	\$5,614
Minimum Current Expenditures in Top 10% LEP	\$5,112	\$5,912	\$4,571	\$4,929	\$5,314
Mean % LEP in Top 10% LEP Districts	13.3%	25.8%	4.7%	1.6% (d)	25.3%
Mean % Poverty in Top 10% LEP Districts (e)	15.7%	18.4%	30.3%	11.2%	16.7%
Adequacy Comparisons					
Computed "Adequate" Revenue per Pupil	\$7,010	\$8,507	\$8,783	\$6,365	\$7,688
Mean as % of Adequate	91%	79%	94%	77%	73%
Minimum as % of Adequate	73%	69%	52%	77%	69%

(a) Kansas Minimum Foundation = $1.0632 \times \$3,720 = 3,955$ (2001).

(b) Missouri Minimum Foundation = $.0275 \times 147,022 = 4,043$ (2003). Actual amount was reduced due to the budget shortfall.

(c) Districts enrolling greater than 2,000 pupils.

(d) North Dakota districts did not report LEP/ELCB counts in the NCES/LEAU. U.S. Census data used as proxy.

(e) Source: U.S. Census Bureau data. 5%–17%.

of 20% above average costs. In fact, only one resource cost study produced a weight nearly this small. Similarly, findings of numerous recent studies suggest that the relative costs of service delivery for limited English proficient children probably lie somewhere between 40% and 100% above basic or average costs. In the case of LEP children, resource cost estimates and cost function estimates fall closer to the same range. Again, these estimates differ markedly from both commonly referenced weights of 20% or prior research.⁵⁷

The case for supplemental funding for gifted children remains more complicated. Resource cost analysis suggest marginal costs on the order of 30% to 50%; yet cost functions based on standard levels of outcomes would still imply negative marginal costs for many gifted children. Clearly the adequate provision of differentiated curricular opportunities to gifted children is contingent on access to appropriately trained teachers, whether those teachers are purchased with sufficient general funding or supplemental aid for gifted education.

These new findings and evolving methods may inform education finance policy analysis and design in a number of ways. First, more

consistent empirical evidence regarding the costs of serving specific student populations may directly or indirectly inform the design of state school finance systems. Findings from recent analyses may be incorporated directly into state aid formulas as pupil need adjustments or may serve as benchmarks for evaluating current school finance systems and guiding reforms. States, including Texas, are currently leading the way to new frontiers of empirically-guided policy, considering the use of econometric models as a basis for benchmarking the balance of future school finance policy.⁵⁸ Second, new evidence regarding costs associated with specific student needs may aid education policy researchers in making more appropriate cost-adjusted comparisons of district, school, and child level resources. Much has been made over the past several years regarding the need for such cost-adjusted comparisons.⁵⁹

It remains difficult for policymakers to accept the consistencies in recent empirical evidence when policy analysts and researchers continue to vary so much in their interpretations and use of the evidence. Most researchers and the education media continue to rely

on arbitrary cost adjustments for measuring the relative adequacy of financial resources across districts and across states,⁶⁰ the most problematic case being the widely read and cited *Education Week, Quality Counts* report which annually compares the relative adequacy of funding from state to state using a mix of inaccurate and arbitrary cost adjustments resulting in erroneous rankings.⁶¹ Recent research by Duncombe and Johnston uses education cost function analysis to generate cost indices for adjusting resource levels of Kansas school districts and then applies conventional equity statistics.⁶² In doing so, they find that little changed in cost-adjusted resource distribution following what were reported to be major structural changes to the state's aid formula in the early 1990s. In contrast, in testimony in defense of the state of Kansas, Picus used pupil weights directly from the Kansas state aid formula to adjust for cost, finding the system to be highly equitable.⁶³ A district court judge rejected Picus' analyses on the basis that the weights underlying the analysis had little or nothing to do with costs.⁶⁴ Until policy researchers are willing to accept new, more rigorous standards for evaluating and adjusting the costs of serving specific student populations, we can expect to have limited positive influence on policymakers.

There remains much scrutiny over the reliability of current methods for estimating either the absolute or relative costs of education. Doubt over the reliability of emerging methods and resulting estimates is often used by state legislatures to defend the status quo either in the context of political deliberation or the context of school finance litigation. The relevant policy question herein is not whether the current state of the art for measuring educational adequacy has been perfected such that identical results can be produced in every case regardless of methodology, but whether findings of recent studies applying various methods are more consistent and more empirically sound than existing state policies and/or "standards of practice" frequently cited by consultants and policymakers in the absence of empirical evidence.

Endnotes

¹ Jay. G. Chambers, "Patterns of Expenditures on Students with Disabilities: A Methodological and Empirical Analysis," in *Funding Special Education*, Nineteenth Annual Yearbook of the American Education Finance Association, ed. Thomas. B. Parrish, Jay G. Chambers, and Cassandra M. Guarino (Thousand Oaks, California: Corwin Press, 1999), 89-123; Thomas. B. Parrish and Jane Wolman, "Trends and New Developments in Special Education Funding: What the States Report," in Parrish et al., 203-229.

² Bruce D. Baker, "Living on the Edges of School Funding Policy: The Plight of At-Risk, Limited English Proficient and Gifted Children," *Educational Policy* 15 (November 2001): 699-723.

³ In some states, funding for gifted and talented children is governed under special education program funding rather than as an add-on to general funds.

⁴ Bruce D. Baker and William Duncombe, "Balancing District Needs and Student Needs: The Role of Economies of Scale Adjustments and Pupil Need Weights in School Finance Formulas," *Journal of Education Finance* 29 (Winter 2004): 195-222; Christopher Adolph, *How Parties Distribute School Finance by Income and Race* (Cambridge, Massachusetts: Kennedy School of Government, Harvard University, 2002); Thomas. B. Timar, "Politics, Policy, and Categorical Aid: New Inequities in California School Finance," *Educational Evaluation and Policy Analysis* 16 (Summer 1994): 143-160; David L. Colton, "The Weighting Game: Two Decades of Fiscal Neutrality in New Mexico," *Journal of Education Finance* 22 (Winter 1996): 28-59; Stanley Pogrow and Swift Douglas, "New Mexico School Finance Revisited: The Politics of Revising a Weighted-Pupil Formula," *Journal of Education Finance* 5 (Summer 1977): 114-123.

⁵ Note that while Guthrie and Smith (1998) provided a supplement to the original MAP report focused specifically on "disadvantaged, limited English proficient, gifted" students, the supplement falls well short of providing a well defined, empirically based framework for serving fringe populations. On Feb. 23, 2001, the Wyoming State Supreme Court (*Wyoming v. Campbell*, No. 00-120 (Wyo. 2001), at 79) concurred that the proposed program for limited English proficient was insufficient and that the proposed program for gifted education, while sufficient, was not empirically based (*Wyoming v. Campbell*, at. 84).

⁶ Baker, "Living on the Edges of School Funding Policy."

⁷ Thomas B. Parrish, Christine S. Matsumoto, and William J. Fowler, Jr., *Disparities in Public School District Spending 1989-90: A Multivariate, Student-weighted Analysis, Adjusted for Differences in Geographic Cost of Living and Student Need* (Washington, D.C.: National Center for Education Statistics, 1995) NCES 95-300R.

⁸ Bruce D. Baker and Paul Markham, "State School Funding Policies and Limited English Proficient Children," *Bilingual Research Journal* 26 (Fall 2002): 659-680.

⁹ Bruce D. Baker, Lori Taylor and Arnold Vedlitz, *Measuring Educational Adequacy in Public School* (Austin, Texas: Texas Joint Select Committee on Public School Finance, 2004), <http://www.capitol.state.tx.us/psf/Reports/Measuring%20Educational%20Adequacy.pdf>.

- ¹⁰ Deborah A. Verstegen, "Calculation of the Cost of an Adequate Education in Kentucky: A Professional Judgment Approach," *Education Policy Analysis Archives*, 12 no. 8 (2004), <http://epaa.asu.edu/epaa/v12n8/>; Deborah A. Verstegen, *Calculating the Cost of an Adequate Education in Kentucky*, a paper prepared for the Council for Better Education (2003).
- ¹¹ Bruce D. Baker and Reva C. Friedman-Nimz, "State Policy Influences Governing Equal Opportunity: The Example of Gifted Education," *Educational Evaluation and Policy Analysis*, (in press); Bruce D. Baker and Reva C. Friedman-Nimz, "Gifted Children, Vertical Equity and State School Finance Policies and Practices," *Journal of Education Finance* 28 (Spring 2003): 523-556; Bruce D. Baker and Reva C. Friedman-Nimz, "Determinants of the Availability of Opportunities for Gifted Children: Evidence from NELS '88", *Leadership and Policy in Schools* 1 no. 1(2002): 52-71; Bruce D. Baker and Jay McIntire, "Evaluating State School Funding for Gifted Education Programs," *Roeper Review* 26 (Summer 2003): 173-179; Bruce D. Baker, "Gifted Children in the Current Policy and Fiscal Context of Public Education: A National Snapshot and Case Analysis of the State of Texas," *Educational Evaluation and Policy Analysis* 23 (Fall 2001): 229-250; Bruce D. Baker, "Measuring the Outcomes of State Policies for Gifted Education: An Equity Analysis of Texas School Districts," *Gifted Child Quarterly* 45 (Winter 2001): 4-15.
- ¹² Parrish et al., *Disparities in Public School District Spending 1989-90*; Thomas B. Parrish and Christine S. Hikido, *Inequalities in Public School District Revenues* (Washington, D.C.: National Center for Education Statistics, 1998), NCEs 98-210.
- ¹³ Helen F. Ladd and Janet Hansen, ed. *Making Money Matter: Financing America's Schools* (Washington, D.C.: National Academy Press, 1999), 127.
- ¹⁴ Goertz in Allan R. Odden and Lawrence O. Picus, *School Finance: A Policy Perspective*, 2d ed. (New York: McGraw-Hill, 2000), 212.
- ¹⁵ Odden and Picus, 213.
- ¹⁶ Jennifer King, "Meeting the Educational Needs of At Risk Students: A Cost Analysis of Three Models," *Educational Evaluation and Policy Analysis* 16 (Spring 1994): 1-19.
- ¹⁷ Odden and Picus, 200.
- ¹⁸ Excluding those states identifying the funding as serving "reading programs" (California), "learning assistance" (Washington), "reading improvement" (Illinois) or others generally classified as "compensatory."
- ¹⁹ Odden and Picus, 215-217.
- ²⁰ Parrish and Hikido, *Inequalities in Public School District Revenues*.
- ²¹ Baker and Duncombe, "Balancing District Needs and Student Needs."
- ²² Kevin Carey, *State Poverty-Based Education Funding: A Survey of Current Programs and Options for Improvement* (Washington, D.C.: Center on Budget and Policy Priorities, 2002).
- ²³ Baker and Duncombe, "Balancing District Needs and Student Needs."
- ²⁴ Carpenter-Huffman and Samulon (1981) and Gonzalez (1996) in Odden and Picus, 214.
- ²⁵ Thomas B. Parrish, "A Cost Analysis of Alternative Instructional Models for Limited English Proficient Students in California," *Journal of Education Finance* 19 (Winter 1994): 256-278.
- ²⁶ Parrish and Hikido, *Inequalities in Public School District Revenues*.
- ²⁷ Catherine C. Sielke, John Dayton, C. Thomas Holmes, and Anne L. Jefferson, ed., *Public School Finance Programs of the United States and Canada: 1998-99* (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 2001), NCEs 2001-309.
- ²⁸ Baker and Markham, "State School Funding Policies and Limited English Proficient Children."
- ²⁹ Parrish and Hikido, *Inequalities in Public School District Revenues*.
- ³⁰ *Ibid.*, 75.
- ³¹ Baker and Markham, "State School Funding Policies and Limited English Proficient Children."
- ³² U.S. Bureau of the Census, *Public Elementary-Secondary Education Finance Data*, <http://www.census.gov/govs/www/school.html>
- ³³ Baker and Friedman-Nimz, "Gifted Children, Vertical Equity, and State School Finance Policies and Practices."
- ³⁴ Chambers, "Patterns of Expenditures on Students with Disabilities."
- ³⁵ *Ibid.*, 108.
- ³⁶ Based on pupil-weighted average of current expenditures less state aid allocation for special education using U.S. Census fiscal survey of local governments (1996).
- ³⁷ Kristen R Stephens and Francis A Karnes, "State Definitions for the Gifted and Talented revisited," *Exceptional Children* 66 (Winter 2000): 219-238.
- ³⁸ Includes only those states with legislative mandates and not administrative rules or department of education guidelines.
- ³⁹ Council of State Directors of Programs for the Gifted and Talented, *State of the States Gifted and Talented Report* (1996).
- ⁴⁰ Baker and Friedman-Nimz, "Gifted Children, Vertical Equity and State School Finance Policies and Practices,"; Baker and McIntire, "Evaluating State School Funding for Gifted Education Programs."
- ⁴¹ Chambers, "Patterns of Expenditures on Students with Disabilities"; William Hartman, Denny Bolton, and David Monk, "A Synthesis of Two Approaches to School-Level Financial Data: The Accounting and Resource Cost Model Approaches," in *Selected Papers in School Finance, 2000-01*, ed. William J. Fowler (Washington, D.C.: U.S. Dept. of Education, 2001).
- ⁴² Jay G. Chambers and Thomas B. Parrish, *The Development of a Resource Cost Model Funding Base for Education Finance in Illinois*, Report prepared for the Illinois State Board of Education (Palo Alto, California: Associates for Education Finance and Planning, Inc., 1982); Jay G. Chambers, *The Development of a Program Cost Model and Cost-of-Education Model for the State of Alaska. Volume II - Technical Report* (Palo Alto, California: Associates for Education Finance and Planning, Inc., 1984).

⁴³ Allan R. Odden, "Costs of Sustaining Educational Change Via Comprehensive School Reform," *Phi Delta Kappan* 81 (February 2000): 433-438.

⁴⁴ Henry M. Levin, *The Cost-Effectiveness of Whole School Reforms*. Urban Diversity Series No. 114 (New York: Institute for Urban and Minority Education, Eric Clearinghouse on Urban Education, 2002), ED465851.

⁴⁵ Baker and Friedman-Nimz, "Gifted Children, Vertical Equity and State School Finance Policies and Practices."

⁴⁶ Baker et al., *Measuring Educational Adequacy in Public School*.

⁴⁷ Tables 2, 3, and 4 draw upon the following studies: John Augenblick and John Myers, "Calculating the Cost of an Adequate Education in Colorado Using the Professional Judgment and Successful School Districts Approaches," a report submitted to Colorado School Finance Project (Denver, Colorado: 2003); John Augenblick, John Myers, John Silverstein, and Anne Barkis, "Calculation of the Cost of an Adequate Education in Kansas in 2000-2001 Using Two Different Analytic Approaches," a report submitted to the Legislative Coordinating Council, State of Kansas (Denver, Colorado: 2001); John Augenblick and John Myers, "Calculation of the Cost of an Adequate Education in Missouri Using the Professional Judgment and the Successful School Districts Approaches," a report submitted to the Missouri Education Coalition for Adequacy (Denver, Colorado: 2003); John Augenblick and John Myers, "Calculation of the Cost of an Adequate Education in Nebraska in 2002-2003 Using the Professional Judgment Approach," a report submitted to Nebraska State Education Association, Greater Nebraska Schools Association, Lincoln Public Schools, Nebraska Association of School Boards, Nebraska Coalition for Educational Equity and Adequacy, Nebraska Council of School Administrators, Nebraska Rural Communities Association, Omaha Public Schools, and Westside Community Schools (Denver, Colorado: 2003); Augenblick, Palaich and Associates, "Calculation of the Cost of an Adequate Education in North Dakota in 2002-2003 Using the Professional Judgment Approach," a report submitted to the North Dakota Department of Public Instruction (Denver, Colorado: 2003); John Myers and Justin Silverstein, "Calculation of the Cost of an Adequate Education in Montana in 2001-2002 Using the Professional Judgment Approach," submitted to Montana School Boards Association, Montana Quality Education Coalition, Montana Rural Education Association, Montana Association of School Business Officials, Montana Association of County School Superintendents (Denver, Colorado: 2003); Andrew Reschovsky and Jennifer Imazeki, "The Development of School Finance Formulas to Guarantee the Provision of Adequate Education to Low-Income Students," in *Developments in School Finance*, 1997, ed. William J. Fowler, Jr. (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 1998), NCES 98-212; William D. Duncombe, Anna Lukemeyer, and John Yinger, "Financing an Adequate Education: A Case Study of New York," in *Developments in School Finance: 2001-2002*, Fiscal Proceedings from the Annual State Data Conferences of July 2001 and July 2002, ed. William F. Fowler, Jr. (Washington, D.C.: U.S. Department of Education, U.S. Department of Education, National Center for Education Statistics, 2003) 127-54; Timothy Gronberg, Dennis Jansen, Lori Taylor, and Kevin Booker, "School Outcomes and School Costs: The Cost Function Approach," (Austin, Texas: Texas Joint Select Committee on Public

School Finance, 2004) <http://www.capitol.state.tx.us/psf/Reports/school%20outcomes%20and%20school%20costs.doc2.pdf>.

⁴⁸ Chambers, "Patterns of Expenditures on Students with Disabilities "; or Jay. G. Chambers, "Measuring Resources in Education: From Accounting to the Resource Cost Model Approach," Working Paper Series #1999-16 (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, Office of Educational Research and Improvement, 1999).

⁴⁹ Baker and Friedman-Nimz, "Gifted Children, Vertical Equity, and State School Finance Policies and Practices."

⁵⁰ Deborah A. Versteegen, "Calculation of the Cost of an Adequate Education in Kentucky."

⁵¹ James Guthrie and James R. Smith, *Wyoming Education Finance Issues: Programs for Students with Special Needs (Disadvantaged, Limited English Proficient, Gifted)* (Davis, California: Management Analysis and Planning, Inc., 1998).

⁵² *Wyoming v. Campbell*, No. 00-120 (Wyo. 2001), at 84.

⁵³ Baker (2001) and Parrish and Hikido (1998) all use school district special tabulations of the U.S. Census Bureau variable indicating the percent of children between 5 and 17 who speak English "not well" or "not at all." Further, since 1998, the National Center for Education Statistics Common Core of Data - Local Education Agency Universe Survey has included district-reported counts of identified LEP pupils.

⁵⁴ Baker, "Living on the Edges of School Funding Policy"; or Baker, "Gifted Children in the Current Policy and Fiscal Context of Public Education"; or Baker, "Measuring the Outcomes of State Policies for Gifted Education."

⁵⁵ Bruce D. Baker, Preston C. Green and Paul Markham, "Legal and Empirical Analysis of State Financing of Programs for Children with English Language Communication Barriers," a paper presented at the Annual Meeting of the National Association for Bilingual Education, Albuquerque, New Mexico, 2004.

⁵⁶ See Matthew Andrews, William Duncombe, and John Yinger, "Revisiting Economies of Size in American Education: Are We Any Closer to Consensus?" *Economics of Education Review* 21 (June 2002): 245. The lower threshold was identified by Andrews et al. as the point at which district level costs begin to level off.

⁵⁷ Thomas B. Parrish, "A Cost Analysis of Alternative Instructional Models for Limited English Proficient Students in California," *Journal of Education Finance* 19 (Winter 1994): 256-278.

⁵⁸ In April 2004, the Texas House of Representatives introduced a school finance plan consisting of a series of need based block grants that would be guided by Education Cost Function analysis presented to the Texas Joint Select Committee on Public School Finance. A presentation on the "Cost Guided" aid formula can be seen at: <http://www.house.state.tx.us/fx/av/committee78/40424a49.ram> (3:10 time mark). Details of the plan are described in HB 1 of the special session on school finance of the 78th Texas Legislature.

⁵⁹ William Fowler and David H. Monk, *A Primer for Making Cost Adjustments in Education* (Washington, D.C.: U.S. Department of Education, 2001), <http://nces.ed.gov/pubs2001/2001323.pdf>; Parrish et al., *Disparities in Public School District Spending 1989-90*.

⁶⁰ Ross Rubenstein, "National Evidence on Racial Disparities in School Finance Adequacy," in *Developments in School Finance, 2001-02*, ed., William J. Fowler (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 2003), 91-110.

⁶¹ See, for example: <http://www.edweek.org/sreports/qc04/reports/resources-t1b.cfm>. *Education Week* in making their resource adequacy comparisons from state to state adjust for the cost of serving at-risk children using the arbitrary weight of 1.2 and for children with disabilities using a moderately supportable weight of 1.9. The authors do not adjust at all for prevalence of LEP children. A dated (1993 - 94) and problematic index is used to adjust for regional price differences, and no index is used to adjust for differences in costs associated with scale and/or sparsity, perhaps the largest factor influencing costs in many states. See Baker and Duncombe (2004). The result of using arbitrary adjustments in some cases, dated adjustments in others, and no adjustments in others is that the state-by-state rankings and comparisons presented in *Quality Counts*, reported by local news organizations and cited by state departments of education, are erroneous and misleading.

⁶² William Duncombe and Jocelyn Johnston, "Is Something Better than Nothing? An Assessment of School Finance Reform in Kansas," a paper presented to the Conference on State Aid to Education. Maxwell School of Citizenship and Public Affairs, Syracuse University, 2002. <http://www-cpr.maxwell.syr.edu/efap/upcoming%20events/Duncombe%20draft%20paper.pdf>.

⁶³ *Montoy v. State*, No. 99-C-1738 (Shawnee County, Nov. 21, 2001)

⁶⁴ In *Montoy v. Kansas*, Judge Terry Bullock, regarding the weighted equity analysis of Dr. Lawrence O. Picus, noted that "Dr. Picus testified he believes Kansas has a 'substantial amount' of school equity, but in so opining he also testified that he assumed the Kansas system of weighting was based on actual costs to educate, which it is not." §80