



## **Research Report**

**Research Project 07-184**

**Prepared for  
Adequacy Study  
Oversight Subcommittee**

**BUREAU OF LEGISLATIVE RESEARCH**

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<p>The upcoming Arkansas adequacy study, required by A.C.A. §10-3-2101-2104, is designed to identify the resources needed to meet the Arkansas definition of adequacy.</p>	<h2 style="text-align: center;">Introduction</h2> <p>The Arkansas definition of "educational adequacy" is:</p> <ol style="list-style-type: none"> <li>"1. The standards included in the state's curriculum frameworks, which define what all Arkansas students are to be taught, including specific grade level curriculum and a mandatory thirty-eight (38) Carnegie units defined by the Arkansas Standards of Accreditation to be taught at the high school level;</li> <li>2. The standards included in the state's testing system. The goal is to have all, or all but the most severely disabled, students perform at or above proficiency on these tests; and</li> <li>3. Sufficient funding to provide adequate resources as identified by the General Assembly." (Adequacy Study Oversight Subcommittee, 2007)</li> </ol>
<p>The professional judgment approach involves arriving at a consensus among experts about the resources and associated costs necessary for students to meet the state's adequacy definition.</p>	<p>The upcoming Arkansas adequacy study, required by A.C.A. §10-3-2101-2104, is designed to identify the resources needed to meet the Arkansas definition of adequacy described above. Over the past 15 to 20 years, adequacy studies have been undertaken around the country primarily in response to state education lawsuits. In those studies, four approaches have been devised to determine the sufficiency of funds to provide an adequate education: 1) professional judgment, 2) exemplary school district, 3) evidence-based, and 4) cost function or econometric model. The purpose of this report is to discuss each of these approaches, including their advantages and limitations as a foundation for developing the methodology for the next adequacy study. The fact is that no one approach has clearly emerged as the most efficient and rigorous tool for ensuring adequacy (Picus &amp; Blair, 2004; Rebell, 2007; Reich, 2006; Reschovsky &amp; Imazeki, 2000). A listing and methodology of the studies undertaken in 12 states is provided in Appendix A.</p> <h3 style="text-align: center;">Approaches to Conducting Adequacy Studies</h3> <h4 style="text-align: center;">Professional Judgment Approach</h4> <p>The professional judgment approach is a popular method of determining what is sufficient funding for an adequate education. It involves arriving at a consensus among experts assembled to make judgments about the resources and associated costs necessary for the public education system to meet the state's adequacy definition. These experts not only make estimates about the costs of regular education, but they also estimate the costs of additional resources needed to provide an adequate education to special populations of students, such as English language learners and special education students (Picus &amp; Blair, 2004; Reschovsky &amp; Imazeki, 2000). This</p>

<p>The successful school district approach to determining adequacy is to identify school districts that can serve as a model for funding because they have fulfilled state expectations.</p>	<p>approach views adequacy as a relative concept that is operationally defined for a particular context (i.e., a school district).</p> <p>A particularly salient advantage of the professional judgment approach is the wealth of experience educators bring to decisions regarding resource allocation and funding. The value of this experience can be bolstered by employing local experts who reside in the area and are intimately familiar with the operations, characteristics, and students of the school district being considered. These local experts may have vested interests that hinder or impede valid estimates of resources and cost (Odden, 2003). As a result, the inherently subjective nature of the whole professional judgment approach is disconcerting to some policy-makers (Reschovsky &amp; Imazeki, 2000). Professional judgment per se is not objective or empirically-based, i.e., it is not an observation that is independent of the observer.</p> <p>Another potential problem is that in practice professional judgment approaches have generated very expensive estimates because parameters were not established on assembling resources (National Research Council, 1999; Reschovsky &amp; Imazeki, 2000). They are often very time-consuming as well.</p> <p><b>Exemplary or Successful School District Approach</b></p> <p>An alternative approach to determining adequacy is to identify school districts that can serve as a model for funding because they have fulfilled state expectations. Resource allocation and spending levels in these exemplary school districts are used to calculate a base (or foundational) cost per student for an adequate education. The base cost formula is then adjusted to account for differing student and school district characteristics.</p> <p>This approach relies heavily on the ability to: 1) operationally define or identify a successful school district, 2) distinguish successful districts from other districts, 3) identify what characteristics are significantly related to success, and 4) match districts on student and school characteristics. The reality, however, is that data are often insufficient - or inaccessible - to identify, distinguish, and compare school districts. Systematic examinations of what factors contribute to successful outcomes, and of how much impact each factor has on those outcomes, are virtually non-existent.</p> <p>Furthermore, a common observation in the literature on adequacy studies is that estimates derived from the exemplary school approach often are only useful to a small segment of school districts because of</p>
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the heterogeneity of characteristics represented in any state (Augenblick, 2002). According to Odden (2003), for example, funding estimates typically are based on average-sized, non-metropolitan districts, which are demographically homogeneous and spend less than most school districts in the state. Atypical districts are eliminated from consideration at the outset. The problem of using funding schemes found in exemplary school districts as a model is that funding estimates for districts needing improvement to attain adequacy are increasingly less accurate, more or less linearly, as the diversity of student and school characteristics increases (Picus & Blair, 2004; Reschovsky & Imazeki, 2000).

Potentially, school districts could be classified according to student and school characteristics to derive statistics that would permit matching school districts to different funding estimates. At the present time, however, these types of analyses are not being discussed or conducted (see Ferrara, Johnson, & Chen, 2005).

**Evidence-based Approach**

A third approach to adequacy is called evidence-based, because it relies on current education research to identify the resources needed for a prototypical school to meet a state's student performance benchmarks (Picus & Blair, 2004). Typically, these evidence-based resource specifications are subjected to the professional judgment of educational practitioners in the state to ground them in local realities. After review and modifications by practitioners, the costs of prototypical school designs are estimated and applied to schools in the state, adjusting for characteristics such as low-income families, students with disabilities, and students with limited English proficiency.

A major advantage of the evidence-based approach over the other methods is its empirical bases for making decisions about the type, quality, and quantity of resources needed to make a specified impact. Evidence presented in support of funding decisions often is based on several methodologically rigorous studies conducted by different researchers in various regions of the country. When findings have been replicated by different researchers in varying settings, there is considerable evidence for the reliability and validity of funding estimates. As evidence accumulates from different methodology, researchers, and regions of the country, it is conceivable that a sophisticated classification of prototypical school districts can be developed to apply to the vast majority of districts in the country (Ferrara et al., 2005).

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	<p>Presently, however, there is insufficient evidence to construct a classification that can be generalized to the vast diversity of school districts found in different states throughout this country. This limited generalization applies to the other approaches as well (Picus &amp; Blair, 2004). The amount of heterogeneity of student and district characteristics represented in this country makes generalizations difficult but not impossible. There may be enough similarities in characteristics to allow researchers and policy-makers to apply funding schemes devised in one state to districts in another state (Picus &amp; Blair, 2004).</p>
<p>Econometric statistical procedures not only provide precise estimates of the impact of different variables on the goal, but they also control for extraneous factors (Reschovsky &amp; Imazeki, 2000).</p>	<p style="text-align: center;"><b>Econometric or Cost Function Approach</b></p> <p>The fourth method of determining financial adequacy is the econometric or cost function approach, which relies on statistical procedures to determine what inputs (resources) are needed to produce a desired level of some outcome or outcomes (Reschovsky &amp; Imazeki, 2000). More specifically, econometric statistics, such as two-stage least squares or hierarchical linear modeling (Raudenbush and Bryk, 2002), are used to estimate exactly how much money is needed to attain a certain goal. In Arkansas this gain would be linked to adequacy as defined in the Adequacy Study Oversight Subcommittee report (Adequacy Study Oversight Subcommittee, 2007). These statistical procedures not only provide precise estimates of the impact of different variables on the goal, but they also control for extraneous factors (Reschovsky &amp; Imazeki, 2000). Extraneous factors, such as family characteristics (e.g., income), are influences on student achievement that lie beyond the control of school districts. Econometric statistical procedures can separate the individual effects of each extraneous and program factor on outcomes. In other words, these statistical procedures can determine how much impact on reaching adequacy each resource has after considering the effects of extraneous factors. A more extensive discussion of the effects of programmatic and extraneous factors is found in another report by the Bureau of Legislative Research (BLR) (Bureau of Legislative Research, 2007).</p> <p>Odden, Borman, and Fermanich (2004) thoroughly document that there are several influential extraneous factors, which together have a significant impact on results. Therefore, evidence regarding the separate effect of each programmatic (e.g., problem-solving in math) and extraneous factor provides valuable empirical information for making decisions about the type, quality, and quantity of resources needed to maintain adequacy.</p> <p>A particularly cogent argument for using the econometric or cost</p>



<p>Any statistical analysis is only as valid as the data analyzed. Moreover, errors in data are compounded in complex mathematical procedures such as econometric statistics (Raudenbush and Bryk, 2002).</p>	<p>function approach to define adequacy is the mathematical precision with which cost estimates are derived. Assuming data are reliable and valid, econometric statistics provide estimates that are much more systematic and precise than any other approach discussed. In contrast, professional judgment relies on experiences and values that may bias decisions, whereas exemplary schools and evidence-based approaches provide prototypical (or generic) models which may not generalize well to other districts or states. Exemplary schools tend to be applicable to a narrow range of school districts, and evidence-based approaches frequently do not account for local differences in characteristics (Picus &amp; Blair, 2004; Reschovsky &amp; Imazeki, 2000).</p>
	<p>The Achilles' heel of the econometric approach is the quality or quantity of available data. Any statistical analysis is only as valid as the data analyzed. Moreover, errors in data are compounded in complex mathematical procedures such as econometric statistics (Raudenbush and Bryk, 2002). Hence, caution must be exercised in measuring factors and entering data to obtain reliable and valid results from econometric statistical analyses (Raudenbush and Bryk, 2002).</p>
<p>Because each approach has advantages and limitations, the integrated approach seeks to triangulate more than one approach, thereby using one approach to corroborate the other.</p>	<p><b>Integrated Approach</b></p> <p>There are convincing arguments for choosing an integrated (or blended) approach to determining adequate funding in school districts in a state. Indeed, presently there is a scarcity of studies of school funding, and the existing studies have some inconsistencies in findings regarding adequate resources and funding (Rebell, 2007; Reich, 2006; Picus &amp; Blair, 2004). As a result, funding models constructed in other states need to be assessed and possibly modified by local experts for application in their state. It must be kept in mind that estimation models constructed in other states are limited to measures and factors that may not fully capture the dynamics found in a particular state or locality. Because each approach has advantages and limitations, it may be prudent to integrate or triangulate more than one approach, thereby using one approach to corroborate the other. Professional judgment and exemplary or successful schools may be used to confirm or disconfirm and modify evidence-based models to "fit" local circumstances or settings.</p>
	<p><b>Proposed Methodology for the 2008 Adequacy Study</b></p> <p>In their 2006 study, "Recalibrating the Arkansas School Funding Structure," Odden, Picus and Goetz (August, 2006) undertook recalibration of the matrix developed during the Second Extraordinary Session of 2003 by the legislature. The legislature used</p>

<p>The BLR proposes to use an integrated approach primarily relying on evidence-based research, in the manner of Odden et al. in the completion of the 2008 Adequacy Study.</p>	<p>that recalibration study and its own research to complete the adequacy study of 2006. The BLR proposes to use an integrated approach primarily relying on evidence-based research, in the manner of Odden et al. in the completion of the 2008 Adequacy Study. The study will have similar components to the Odden et al. study but will adapt those components to current information needs. The proposed components include: 1) an expenditure analysis, 2) a web-based district survey of all districts, 3) site-visits of a sampling of schools throughout the state, 4) a report analyzing and synthesizing the collected data, and 5) an evaluation of the need, if any, of recalibration of the matrix. This proposed study with any modifications recommended by the Joint Adequacy Study Oversight Subcommittee of the House Education Committee and the Senate Education Committee will serve as the state's adequacy report for 2008.</p>
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## Appendix A

State	Year Completed	What Drove the Study	Study Undertaken By	Study Undertaken For	Method Used	Recommended Increase In Education Funding
Arkansas	2003	Court Case: Lake View v. Huckabee, 2001	Lawrence O. Picus & Associates	Arkansas Legislature's "Joint Committee on Educational Adequacy"	Evidence Based Study	\$847.3 million for the 2002-03 school year
Connecticut	2005	The CCJEF wanted to understand the cost of an adequate education	Augenblick, Palaich & Associates	The Connecticut Coalition for Justice in Education Funding (CCJEF)	Both Successful School Districts (SSD) & Professional Judgment (PJ)	Between \$250 million (SSD) and \$2 billion (PJ) for the 2003-04 school year
Illinois	2001	The legislature wanted to determine the cost of their new educational standards	Augenblick & Myers	The Illinois Education Funding Advisory Board	Successful School Districts	[Incomplete information]
Kentucky	2003	The CBE wanted to understand the cost of an adequate education	Verstegen & Associates	The Council for Better Education (CBE)	Professional Judgment	Between \$1.097 and \$1.23 billion for the 2001-02 school year (See state write-up)
Louisiana	2001	The state wanted to determine the cost of their new educational standards	Augenblick & Myers	State Board of Education	Successful School Districts - School Level	[Incomplete information]
Mississippi	1993	The state wanted to review its rationale for education spending.	Augenblick, Van de Water & Myers	State Department of Education	Successful School Districts	\$89.2 million for the 1991-92 school year
New York	2004	Court Case: CFE v. State, 2004	American Institute for Research and Management Analysis & Planning	The Campaign for Fiscal Equity	A variation of the Professional Judgment	Between \$6.21 and \$8.4 billion for the 2001-02 school year (See state write-up)
Ohio	1997	Court Case: DeRolph v. State, 1997	Augenblick & Myers	The DOE's School Funding Task Force	Successful School Districts	(See state write-up)
Oregon	1997 (Revised in 2000)	The state wanted to review its rationale for education spending (See state write-up)	Internally by a state-appointed commission.	The Legislative Council on the Oregon Quality Education Model	Professional Judgment	\$972 million for the 2001-03 biennium budget
South Carolina	2000	The SC-SBA wanted to determine the cost of the state's new educational standards	Augenblick & Myers	South Carolina School Boards Association (SC-SBA)	Professional Judgment	\$2.9 billion increase in spending between the 1998-99 and 2005-06 school years
South Dakota	2006	The SDAFE wanted to understand the cost of an adequate education	Augenblick, Palaich & Associates	South Dakota Alliance for Education (SDAFE)	Both Successful School Districts & Professional Judgment	Between \$125.6 million (SSD) and \$404.3 (PJ) for the 2003-04 school year
Wyoming	1997	Court Case: Campbell County v. State, 1995	Management Analysis & Planning Associates	Joint Appropriations Committee of the state Legislature	A variation of the Professional Judgment	\$76.4 million for the 1996-97 school year

NOTE: Education Commission of States (2007; Appendix A)

