A Review Of School Funding Adequacy Studies

Research Report No. 480

Office Of Education Accountability

Kentucky Legislative Research Commission

SENATE

Robert Stivers
President, LRC Co-Chair

David P. Givens
President Pro Tempore

Damon Thayer
Majority Floor Leader

Gerald A. Neal
Minority Floor Leader

Julie Raque Adams
Majority Caucus Chair

Reginald Thomas
Minority Caucus Chair

Mike Wilson
Majority Whip

David Yates
Minority Whip

HOUSE

David W. Osborne
Speaker, LRC Co-Chair

David Meade
Speaker Pro Tempore

Steven Rudy
Majority Floor Leader

Derrick Graham
Minority Floor Leader

Suzanne Miles
Majority Caucus Chair

Cherlynn Stevenson
Minority Caucus Chair

Jason Nemes
Majority Whip

Rachel Roberts
Minority Whip

Jay D. Hartz, Director

The Kentucky Legislative Research Commission is a 16-member committee that comprises the majority and minority leadership of the Kentucky Senate and House of Representatives. Under Chapter 7 of the Kentucky Revised Statutes, the Commission constitutes the administrative office for the Kentucky General Assembly. Its director serves as chief administrative officer of the legislature when it is not in session. The Commission and its staff, by law and by practice, perform numerous fact-finding and service functions for members of the General Assembly. The Commission provides professional, clerical, and other employees required by legislators when the General Assembly is in session and during the interim period between sessions. These employees, in turn, assist committees and individual members in preparing legislation. Other services include conducting studies and investigations, organizing and staffing committee meetings and public hearings, maintaining official legislative records and other reference materials, furnishing information about the legislature to the public, compiling and publishing administrative regulations, administering a legislative intern program, conducting a presession orientation conference for legislators, and publishing a daily index of legislative activity during sessions of the General Assembly.

The Commission also is responsible for statute revision; publication and distribution of the *Acts* and *Journals* following sessions of the General Assembly; and maintenance of furnishings, equipment, and supplies for the legislature.

The Commission functions as Kentucky's Commission on Interstate Cooperation in carrying out the program of The Council of State Governments as it relates to Kentucky.

A Review Of School Funding Adequacy Studies

Project Staff

Sabrina J. Cummins
Allison M. Stevens
Albert Alexander
Deborah Nelson, PhD
Christopher Riley
Bart Liguori, PhD

Bart Liguori, PhD
Research Division Manager

Marcia Ford Seiler
Deputy Director for the Office of Education Accountability

Research Report No. 480

Legislative Research Commission
Frankfort, Kentucky
legislature.ky.gov

Accepted March 29, 2023

Paid for with state funds. Available in alternative format by request.

Foreword

In November 2021, the Education Assessment and Accountability Review Subcommittee approved a research agenda for the Office of Education Accountability that included a review of school funding adequacy studies.

This publication reviews the most recent studies measuring the cost of an adequate public education in Kentucky and similar states. It focuses on the methods used in those studies, the outcomes of those studies, and the disadvantages of adequacy studies.

Jay D. Hartz
Director

Legislative Research Commission
Frankfort, Kentucky
March 2023

Contents

Tables

Summary

In 1989, the Kentucky Supreme Court concluded that "the total local and state effort in education in Kentucky's primary and secondary education is inadequate and is lacking in uniformity."[1] The court also stated that the General Assembly shall provide funding sufficient to provide each child in Kentucky an adequate education. The court further stated that substantial additional money would be required, but it did not decide how much funding was needed to provide an adequate education; however, the new system was to ensure that students become "sufficient" in seven capacities. On the basis of this definition, it would be hard to perform an adequacy study to determine how much money is needed for all students to reach sufficiency in these seven capacities.

This report defines *adequacy* as a methodology used to estimate the cost of providing an adequate public elementary and secondary education.

Several approaches have been developed to examine adequacy in state education funding systems.

The professional judgment approach relies on teams of teachers and other education professionals to identify resources needed to meet state standards and to educate students with special needs, such as special education students and students who are at risk of failing. The advantages of this approach include that it is easy to articulate, that expert opinions are valuable to policymakers, and that panelists account for special needs of students. Disadvantages include that costs are not linked to outcomes, that costs are often overstated, that there may be a conflict of interest among participating educators, and that this method is not based on research.

The evidence-based approach uses research as the basis for identifying resources needed to deliver an adequate education. Advantages include the foundation on educational research and knowledge, as well as the use of educational experts. Disadvantages include that findings can be outdated, that costs are not easily linked to outcomes, that prototypical schools can lead to different cost estimates, and that experimental study to test reform can be limited.

This report compares Kentucky with similar states, including West Virginia and Tennessee. Kentucky is demographically similar to these states, but education spending and student outcomes are different. Compared to Tennessee, Kentucky spends more per pupil and less on education as a percentage of state expenditures, but student outcomes are similar. Compared to West Virginia, Kentucky spends less per pupil and more of its state budget on education, but performs better on student performance measures.

The Office of Education Accountability reviewed nine adequacy studies in Kentucky and comparable states and found that each determined that additional funding would be needed in order for states to reach adequacy. The Wyoming legislature has contracted with Picus Odden & Associates to recalibrate that state's education funding model every 5 years since 2005, with three additional studies reviewing school funding elements. Wyoming's legislature incorporated or adapted some recommendations and did not implement other recommendations. Between

2006 and 2019, per-student revenue increased, but Wyoming did not reach its accountability goals, and several measures of student performance have declined.

Four adequacy studies have been performed in Kentucky. The most recent study was *Adequacy For Excellence In Kentucky*, an evidence-based model (EBM) conducted by Picus Odden & Associates for the Council for Better Education in 2014. This report estimated that an additional $2.44 billion would have been needed in school year 2013 to help all districts reach adequacy, although the model excluded federal funds. In an examination of the report, several concerns emerged regarding applying recommendations to Kentucky:

- The 2014 Kentucky EBM is a resource allocation model that provides funding based on resources needed. Kentucky uses a guaranteed base per-pupil amount adjusted by add-ons for special student groups and a transportation formula. These funds are not required to be spent on specific students or identified needs, whereas resource allocation models require that funds be spend on particular resources.
- Recommendations cannot be compared to current actual costs in Kentucky to calculate how much education funding would need to change to implement model recommendations.
- Many elements lack supporting evidence.

General concerns regarding the EBM model include:

- The model does not guarantee results or set a time frame for achieving results.
- Recommendations may not fit Kentucky policy preferences.
- Use of carried-forward costs assumes that these elements are adequate, which is not addressed or determined by the model and may not be accurate.

A professional judgment study published in 2004 estimated that an additional $1.1 billion (in 2004 dollars) was needed to adequately fund Kentucky education. A professional judgment study published in May 2003 estimated an additional $1.6 billion. A fourth study was published in February 2003 and was not reviewed because of its similarity to the May 2003 study.

Chapter 1

Measuring Educational Adequacy

Introduction And Overview

Adequacy reports measure how much funding is needed in order to meet a state's educational proficiency standards.

Researchers have prepared school funding equity and adequacy reports for various states over the last two decades. Equity reports examine inequities in spending between the richest and poorest school districts in a state. Adequacy reports measure how much funding is needed in order that each student attending school has the opportunity to meet the state's educational proficiency standards.

Beginning in the 1980s, researchers have questioned the relationship between spending and performance.

Substantial research has considered whether money matters in education. This approach compares standardized test scores of students from districts with different levels of spending. Beginning in the 1980s, Hanushek questioned the relationship between educational spending and student performance.[2] In contrast, Baker argued that money does matter and concluded that the combination of additional funding and fiscal accountability is very promising. Baker claimed:

- Many of the ways in which schools currently spend money improve student outcomes.
- When schools have more money, they have greater opportunity to spend productively. When they do not have enough money, they cannot.
- Arguments that budget cuts do not hurt student outcomes are unfounded.[3]

Description Of The Study

In 2021, the Kentucky General Assembly created the School Funding Task Force (SFTF) in House Bill 405. The SFTF recommended that the Office of Education Accountability review recent adequacy studies in its 2022 study agenda, which was approved in November 2021.

The General Assembly passed House Bill 405 during the 2021 Regular Session. HB 405 established the School Funding Task Force (SFTF). The task force was commissioned to review the Support Education Excellence in Kentucky (SEEK) program, which funds K-12 education. The SFTF was also charged with studying other state, local, and federal funds received by local school districts and how Kentucky's funding compares to that of other states. The task force was to submit recommendations to the Legislative Research Commission and suggest changes. In November 2021, the task force provided the Commission with nine recommendations, one of which was that the Education Assessment and Accountability Review Subcommittee (EAARS)

include in its 2022 Office of Education Accountability (OEA) research agenda

> a review of the most recent studies measuring the cost of an adequate public education in Kentucky and similar states with a focus on the methods used in those studies, the outcomes, and the costs associated with educating special student populations.

On November 15, 2021, EAARS adopted the annual research agenda for OEA with the text shown above.

This report addresses

- the definition of *adequate education* in Kentucky,
- the major types of adequacy studies and the limitations of these studies,
- other ways to define *adequacy in school funding*,
- the results of school funding adequacy studies done in Kentucky and comparable states, and
- a comparison of Kentucky and comparable states in education funding and student achievement.

Data Used For This Study

Data sources for this report include national literature and adequacy studies, as well as data from the National Education Association, the National Assessment of Educational Progress (NAEP), the Census Bureau, and the National Center for Education Statistics.

In conducting this study, OEA staff reviewed national literature and adequacy studies performed for Kentucky and for states with similar demographics. In addition, data from the National Education Association (NEA), the National Assessment of Educational Progress (NAEP), the Census Bureau, and the National Center for Education Statistics was used. This report also analyzes elements of an adequacy study completed for Kentucky in 2014.

Organization Of The Report

Chapter 1 reviews major conclusions, how Kentucky defines *adequacy*, major types of adequacy studies, and the ways some states updated their funding formulas without paying for an adequacy study.

Chapter 1. The remainder of Chapter 1 lists major conclusions of this study and explains how Kentucky defines *adequacy*. In addition, Chapter 1 discusses different types of adequacy studies, along with strengths and weaknesses of each type. The chapter ends by describing alternative ways of assessing the adequacy of school funding.

Chapter 2 compares Kentucky and demographically similar states and concludes with a national comparison of school funding fairness studies.

Chapter 2. Chapter 2 compares Kentucky and demographically similar states with regard to state revenues, current expenses, teacher salaries, and national testing outcomes. It concludes with a comparison of nationwide school funding fairness studies.

Chapter 3 reviews adequacy reports from Kentucky and comparable states.

Chapter 3. Chapter 3 reviews Kentucky adequacy studies, additional school improvement strategies, comparable states' adequacy studies, and student outcomes compared to education operating revenues in a state whose education funding has been recalibrated every 5 years since 2005 using an evidence-based model.

Major Conclusions

Overall Conclusions

- Kentucky's definition of *adequate education* causes difficulty in determining required costs.
- There are four types of adequacy studies; each one has various strengths and weaknesses.
- Nine adequacy studies were reviewed, and none found that all districts were adequately funded.
- Adequacy studies that base recommendations on prototypical schools and districts may overestimate or underestimate resources or require major changes in administrative staff. For example, the smallest district in Kentucky would need only 0.045 of a superintendent, but the largest would need 22.3 superintendents.
- Adequacy studies use language that implies a district can meet education goals by following their recommendations, but the studies fall short of guaranteeing results.
- Adequacy models are state specific and may not be translatable to other states because of different policy preferences, different realities, and different needs that prevent a state from achieving adequacy.
- Adequacy models may rely on insufficient research or unsupported assumptions.
- The funding model recommended by EdBuild adheres to the way Kentucky funds districts (a student-based funding formula), but Kentucky gives a set amount of funding per special needs student and does not reimburse all costs associated with educating a student with severe disabilities, nor does it use EdBuild's recommended district characteristic funding models.
- Kentucky is demographically similar to Tennessee and West Virginia in some ways:
    - Kentucky's performance on the NAEP is similar to Tennessee's, but Kentucky spends more per pupil and spends less on elementary and secondary education as a percentage of total state expenditures.

  - Kentucky performs better on the NAEP than West Virginia. Kentucky also spends less per pupil and dedicates more of its total state budget to elementary and secondary education than West Virginia does.
- Kentucky is spending less than the national average on K-12 education and has lower starting salaries for teachers. After adjusting for personal income, however, Kentucky spends more than the national average of current K-12 spending and has higher starting salaries for teachers.

Evidence-Based Model Performed In Kentucky

- In 2014, Picus Odden & Associates performed an evidence-based evaluation of Kentucky school funding. The evidence-based model (EBM) estimated that an additional $2.44 billion in state and local funding was needed in order for all districts to reach adequacy.
- The evidence-based model excluded federal funds from its estimation of district spending compared to the level recommended by Picus Odden. If federal funds were included, an additional $1.88 billion in state, local, and federal funding would be needed.
- Only one small, wealthy independent district was spending above adequacy levels; when federal funds were included, however, one other district also spent above the level recommended by the evidence-based model.

School Funding Fairness

- Kentucky received a D for funding level and funding distribution and a C for funding effort based on the methodology of the Education Law Center.

School Funding Fairness And Adequacy

- According to one report, *The Adequacy And Fairness Of State School Finance*, Kentucky compares favorably to the national average based on fiscal effort, but an extra $4,000 per pupil would be required in order to adequately fund education in districts with highest poverty.

Definition Of *Adequacy* In Kentucky

The Kentucky Supreme Court found that the local and state effort in education was inadequate and lacking in uniformity. The court established seven capacities in which students needed to become sufficient.

In 1989, the Kentucky Supreme Court concluded "the total local and state effort in education in Kentucky's primary and secondary education is inadequate and is lacking in uniformity."[4] The court stated that the General Assembly is to provide funding sufficient to provide each child in Kentucky an adequate education. The Court further stated that substantial additional money would be required. It did not decide how much funding was needed to provide an adequate education, but it stated that the new system should ensure that students become "sufficient" in seven capacities:

- Oral and written communication skills to enable students to function in a complex and rapidly changing civilization
- Knowledge of economic, social, and political systems to enable students to make informed choices
- Understanding of governmental processes to enable students to understand the issues that affect their community, state, and nation
- Self-knowledge and knowledge of their mental and physical wellness
- Grounding in arts to enable each student to appreciate his or her cultural and historical heritage
- Training or preparation for advanced training in academic or vocational fields to enable each child to choose and pursue life work intelligently
- Levels of academic or vocational skills to enable public school students to compete favorably with their counterparts in surrounding states, in academics or in the job market

It would be difficult to determine the funding needed for all students to reach proficiency in these capacities.

Using this definition, it would be hard for an adequacy study to determine how much money is needed in order for all students to reach proficiency in these seven capacities.

Types Of Adequacy Studies

There are four approaches to examining adequacy in states' K-12 funding systems. Each type of study has strengths and weaknesses.

In the remainder of this report, *adequacy* is defined as a methodology used to estimate the cost of providing an adequate public elementary and secondary education. Four approaches have been developed to examine adequacy in state education funding systems. Table 1.1 describes each of the adequacy models and the strengths and weaknesses that researchers have mentioned.

Table 1.1
Research Methodologies Used To Determine Adequacy Of School Funding

Model	Methodology	Strengths	Limitations
Professional judgment	Panel of professionals creates a prototypical school and determines costs of all elements necessary for success.	Results are easy to articulate. Expert opinions are valuable to policy makers. Panelists account for special needs of students who are economically disadvantaged, students with disabilities, and students with limited English proficiency.	Costs are not always easily linked to outcomes. Costs of resources are often overestimated. Panelists may exhibit too much subjectivity. Reform relies on professional judgment over researched practices.
Evidence-based	Scholars use current educational research to identify resources a prototypical school would need in order to meet state academic standards.	Based in real-world educational research and knowledge; uses educational experts.	Findings may become outdated or unusable. Costs are not easily linked to outcomes. Findings may not be easily generalizable. Experimental study to test claims of schoolwide reforms has been limited. Prototypical schools can lead to significantly different cost estimates.
Cost function	Researchers use statistical analyses to identify funding needed to achieve a certain level of student performance.	Researchers collect an extensive set of schools and student variables. Method uses statistical modeling.	Results may be difficult to interpret. Results are only as good as the data available. Model does not suggest types of activities likeliest to improve student performance. Model is designed to predict success of an average student in an average school, ignoring unique needs of low-income and urban students.
Successful school district	Scholars use spending levels of schools currently meeting state academic standards to estimate funding level for all schools across a state.	Results reflect actual costs as measured by expenditures associated with meeting state standards.	Sample used may be atypical of the average district. Special needs are not taken into account. Estimates may be too low. Requires removal of large city and small rural schools.

Source: Lori L. Taylor et al. "Measuring Educational Adequacy In Public Schools." Bush School of Government & Public Service, Texas A&M University. September 2005. Web.

Professional Judgment Model

The professional judgment approach was first used in Washington state after the Washington Supreme Court declared the state's school finance system unconstitutional.

The professional judgment approach was originally called the input approach and was used when the Washington state school finance system was declared unconstitutional in 1978. The Washington Supreme Court required the state legislature to identify and fund a "general and uniform" education program. In response, the state identified the average staffing (teachers, professional support staff, administration, etc.) in a typical district and used statewide average costs to determine a spending level.[5]

In the early 1980s, another type of input model, the resource cost model (RCM), was developed.[6]

The RCM method involves three steps:

- Identifying resources used in providing a set of services
- Estimating resource variations across schools and districts
- Determining the total cost of the resources

The professional judgment approach uses teams of education professionals to determine the number of staff, operating expenses, and additional resources needed to educate students with special needs.

A variant of the RCM method is the professional judgment approach. It relies on teams of teachers and other education professionals, who identify the number of staff and the operating expenses needed at the district and school levels in order to meet state standards. These experts also identify the additional resources necessary to educate students with special needs, such as special education students and students who are at risk of failing. Kentucky and several other states have used the professional judgment model in estimating the cost of an adequate education.

The professional judgment approach is easy to understand, and the cost is estimated by panels of experts, but this method may produce a wish list rather than outcome needs based on research.

Advantages to the professional judgment approach include that it is easy to understand and that the cost is estimated by panels of education professionals. Disadvantages are that it relies on educators and education stakeholders, who are likely not qualified to design programs or to predict the resources necessary to produce desired student outcomes or serve student needs. Often this method produces unrestrained, wishful recommendations without considering practical constraints, such as the amount of funding actually available or the prioritization of trade-offs. It can assume that the recommended resources and funding levels will produce desired outcomes, often without testing assumptions about which inputs will produce results. Often, districts are spending more than the professional judgment panel would recommend, but without producing the desired results predicted by the professional judgment recommendations. Lastly, there may be a conflict of interest if educators create programs, incentives, and funding recommendations that affect their own working conditions and compensation.[7]

Evidence-Based Model

The evidence-based model (EBM) is predicted to double student performance over 4 to 6 years. This model is based on empirical research with prototypical school districts containing 3,900 students.

The EBM, also called the state of the art approach, was designed by Odden, Goetz, Fermanich, and Picus. They predict that this model enables districts to double student performance over 4 to 6 years.[a] [8] The EBM identifies a set of school-level resources

[a] For example, if 35 percent of students in a district meet basic proficiency levels, that rate would increase to 70 percent over 4 to 6 years if the EBM is used.

required to deliver a comprehensive and high-quality instructional program based on empirical research. In Kentucky, these resources are based on a prototypical school district with 3,900 students.[b] These school-level resources come from multiple reform strategies rather than a single reform model. The reform strategies include implementing appropriate student-to-educator ratios, as well as staffing interventions for students who qualify for free or reduced-price lunch (FRPL), special education students, and students of English as a second language.

The EBM estimates expenditures for schools, central office, operations, and maintenance, with extra funding for students who live in poverty, have special needs, and have limited English proficiency.

The EBM estimates adquate expenditure levels for prototypical elementary, middle, and high schools. In addition to school-level resources, the EBM includes an estimate of adequate resources for central office and operations and maintenance. It also includes extra funding for students living in poverty, children with limited English proficiency (LEP), and special needs students.

The EBM is recalibrated every 5 years to include the latest research on educational needs.

Odden and Picus recommend recalibrating funding systems every 5 years when using this model. Recalibrating the EBM at this interval allows the latest research on educational needs to be applied to the prototypical schools cost. Kentucky uses average daily attendance (ADA) in its funding formula, but Odden and Picus recommend using average daily membership (ADM) as the count for funding. They also recommend using a 3-year ADM average instead of a single-year average. (ADM is the sum of all pupils on the number of days of the school year each pupil is enrolled in the district's schools, divided by the number of days the schools are in session.)

Advantages of the EBM are that the resources are based on research. Disadvantages include that prototypical districts may overestimate or underestimate needed resources and that some elements may rely on insufficient research.

One advantage of the EBM is that it includes resources and research in decision making.[9] A disadvantage is that, even if these research-based models improve student performance in one district, they might not do so in another.[10] In addition, basing recommendations on prototypical districts may overestimate or underestimate resources when districts vary from the prototypes, or it may require major reorganization of existing school systems. EBMs often do not fully consider all funding sources within a state system of education or the way funding is determined. In addition, EBMs do not guarantee that their recommendations will produce desired results, elements may rely on insufficient research or unsupported assumptions, and models created for one state may not be applicable or desirable in another state. Recommendations may not be practical or usable due to state and district variations, and they may depend on the fidelity of implementation.

[b] Other states may have different prototypical district sizes in EBMs.

Cost Function

The cost function model relies on input factors such as prices, student and parent characteristics, and school environment. Student performance is considered a result of these inputs and measures changes in test scores while controlling for nonschool inputs.

Cost function models assume that purchased and nonpurchased environmental input factors combine to produce education outcomes.[c] Costs are a function of inputs, input prices, student and parent characteristics, the school environment, and outcomes produced. Student performance is considered a result of school and nonschool inputs, and measuring changes in test scores while controlling for nonschool inputs explains how school inputs affect student performance. This model generally applies higher costs for students with LEP, exceptional children, high school students, economically disadvantaged students, and students in geographically isolated districts.[11]

Advantages of the cost function approach include the ability to use multiple measures of achievement and evaluate multiple outcomes.

Cost function models rely on historical experience and data, and they are most useful when conditions remain the same as when the data was collected.[12] Advantages of the cost function approach include the abilty to use multiple measures of achievement and evaluate multiple outcomes.[13] This model also offers straightforward cost indices with input data based on factors that affect spending.[d] Lastly, this model is well suited for analyzing education spending because it assumes minimized costs and is useful in states with variations in district spending.[14]

Disadvantages to the cost function model include that it requires reliable data from relevant outcomes, prices, and the educational environment.

There are several criticisms of the cost function approach. It requires valid and reliable data from relevant outcomes, prices, and the educational environment.[15] It cannot distinguish between the effectiveness of programs and the effectiveness of the individuals implementing the programs. Approaches such as this often do not distinguish between the impacts of one-time programs and long-term programs.[e] [16] The cost function approach does not explain the causal relationship between spending and outcomes, and generally does not predict improvements—only the opportunity for improvements. The cost function approach often assumes that the ratio of cost to student performance remains the same regardless of current levels of student performance.[17] The cost function approach is technically complex, and the researchers make many assumptions and judgments that may not be obvious to others. The cost function model assumes that districts want to minimize costs, which may not be the case. Lastly,

[c] Purchased input factors include staff, facilities, and materials. Nonpurchased input factors include student skills that are acquired through schooling.
[d] Cost function models do, however, require explicit outcomes, inputs, and assumptions.
[e] For example, classroom coaches may be hired for 1 year, but they continue to benefit student acheivement in other years after the expense is incurred.

this model does not advise districts on how to allocate funds or prioritize programs; it only provides predicted costs for desired outcomes given the districts' characteristics and resources.[18]

Successful Schools And Districts Model

The successful schools and districts (SSD) model identifies schools and districts that outperform others on state tests. It calculates their average spending per pupil. In most SSD studies, spending corresponds to median spending per pupil in the state.

The successful schools and districts (SSD) model attempts to identify spending levels directly linked to a specified level of student performance. This approach identifies schools and districts that are outperforming others on state tests, and it calculates average spending per pupil in those schools and districts.[f] In most of the studies done using the SSD approach, the level of spending identified was approximately the median spending per pupil in the state.[19]

The SSD approach does not include additional funding that is needed for serving students with special educational needs.

The SSD approach does not include additional funding that is needed for serving students with special educational needs. Most SSD models have been conducted at the district level, but the more recent applications have data available at the school level.[g]

One advantage of the SSD approach is the direct link between costs and outcomes. Disadvantages include that it does not indicate how to spend funds to produce the student achievement results. Also, the model is complex.

An advantage of the SSD approach is that there is a direct link between costs and outcomes. One disadvantage is that it does not indicate how to spend funds to produce the student achievement results. Also, because the model drops certain districts from the methodology, only average-size and nonmetropolitan districts are identified. Those districts generally spend below the state average. Thus, even with adjustments for pupil needs and geographic price differences, the adequate expenditure level typically identified is insufficient for urban districts and small rural districts.[20] There is no consensus on measurement of outcomes, which can be complicated by the available data collected by schools. It uses statistical models that may be too complex for stakeholders and may have estimation errors. Results from this approach may not be generalizable to other scenarios.[21] Lastly, this approach excludes many nonschool factors that influence student performance, such as prior school experiences.[22]

Comparing Adequacy Analysis Models

A review of 27 adequacy reports found that the SSD method produced lower costs than the other three methods.

Researchers at the University of Kansas and Texas A&M University reviewed 27 adequacy analysis findings and compared

[f] This model eliminates the schools and districts that have the highest and lowest spending per pupil, those that have the highest and lowest property wealth, and large urban districts.

[g] States were not required to report school-level expenditures until the federal Every Student Succeeds Act was passed in 2015.

the per-pupil basic cost in current dollars adjusted for state-to-state differences. They determined that, in general, the SSD method produced lower costs than the professional judgment, EBM, and cost function methods. In a review of studies in which the same researchers conducted different studies in the same year in the same state, the authors also found that SSD studies produced lower cost estimates. The authors also compared states in which different researchers used similar models and found inconsistencies in the schools considered successful, the outcome standards, the inputs, and the costs. Overall, the authors found that adequacy study results varied depending on decisions about model selection, inputs, relevance, outputs, and definitions.[23]

Alternatives To Requesting An Adequacy Study

A few states recently overhauled their funding formula without paying for an adequacy study.

In addition to completing an adequacy study, states can provide other opportunities to change all or part of the way their funding formulas work. Tennessee and Vermont recently overhauled their funding formulas. In addition, Nevada redefined its approach to funding at-risk students.[h]

Tennessee Investment In Student Achievement

Tennessee recently changed from a resource-based allocation funding model to a student-based funding model. The process for changing the funding model included 18 subcommittees that provided suggestions on how to change the funding formula.

Since 1992, Tennessee had funded school districts through a resource-based allocation system called the Basic Education Program (BEP), which distributed funding based on staffing, services, and programs. The BEP was based on a ratio of students to staffing. In 2022, the Governor of Tennessee proposed a new funding formula. The process of proposing the new formula started in 2021 with the creation of 18 funding review subcommittees hosted by the Tennessee Department of Education. These subcommittees included district and school leaders, higher education partners, elected officials, business leaders, families, education stakeholders, and members of the public. Using public comments, the subcommittees developed recommendations for the new funding formula, the Tennessee Investment in Student Achievement (TISA) formula. Then, a steering committee of state officials discussed recommendations and provided feedback and guidance to the department. The TISA formula was designed to have students scoring proficient in reading by the 3rd grade; to prepare each high school graduate to succeed in postsecondary programs or career of the graduate's choice; and to provide each student with the resources needed to succeed, regardless of the

[h] In Kentucky, for school funding purposes, at-risk students are defined as students who qualify for the free school lunch program.

student's individual circumstances. Appendix A includes information on the TISA formula.

Vermont Changes To Pupil Weights

The Vermont General Assembly commissioned a study examining pupil weights in its funding formula to determine whether they were adequate and equitable. After the report was released, the legislature established a task force to determine whether and how to implement the recommendations of the report.

In 2018, the Vermont General Assembly passed Act 173, which commissioned a study to examine the pupil weights used in the state's school funding formula. This study was to examine whether current weights were adequate and equitable. The University of Vermont, Rutgers University, and the American Institute for Research issued their report in December 2019. This study did find that pupil weights were insufficient for students living in poverty, English language learners, and secondary school students. In addition, the study found that additional weights should be added for middle school students, districts in sparsely populated regions, and small schools.

In 2021, the General Assembly established the Task Force on Implementation of the Pupil Weighting Factors Report to determine whether and how to implement the recommendations. This task force was made up of four senators and four representatives, who met 12 times in 6 months.

In 2022, Vermont enacted a law that increased some funding weights, repealed elementary school and middle school funding weights, and added weights for small schools and low-population districts.

In 2022, Vermont enacted a law to implement changes to weights, as listed in Tables 1.2 and 1.3. The pre-kindergarten weight increased from 0.46 to 0.54. The kindergarten/elementary and middle school weights were eliminated, but the secondary school weight was increased from 0.39 to 1.13. Weights increased significantly for federal poverty level and English learners. Finally, Vermont added weights for small schools and those in areas of low population density.

Table 1.2
Vermont Pupil Weights
Current And FY 2025

Measure	Current Weight	Weight As Of FY 2025
Pre-kindergarten	0.46	0.54
Elementary*	1.00	None
Grades 6-8	0.36	None
Grades 9-12	0.39	1.13
Federal poverty level	0.25	1.03
English learners	0.20	2.49

* Includes kindergarten.
Source: Vermont. General Assembly. S.287 (Act 127). May 23, 2022.

Table 1.3
Vermont Weights, Small And Low Population Density Schools
FY 2025

School Measure	Criterion	Weight
Small	Number of pupils in school:*	
	• <100	0.21
	• 100–249	0.07
Low population density	Number of persons per square mile:	
	• <36	0.15
	• 36–54	0.12
	• 55–99	0.07

* Pupil counts are determined by average 2-year enrollments.
Source: Vermont. General Assembly. S.287 (Act 127). May 23, 2022.

Change In At-Risk Student Classification In Nevada

In 2019, Nevada's Commission on School Funding authorized the state Board of Education to examine classification and funding of at-risk students. The state Department of Education hired Infinite Campus to develop a new funding model. The old model was based on students who qualify for free and reduced-price lunch; the new model considers academic, attendance, behavior, and stability indicators.

Nevada changed the way it funds at-risk students starting in 2022. The new funding formula, commissioned in 2019 by the 11-member Commission on School Funding, authorized the state Board of Education to reexamine the definition and funding of at-risk students. The prior at-risk funding formula was based on FRPL students. The new definition of at-risk students was to include a broader set of the social and academic factors that hamper student progress. The state Board of Education recommended that the state Department of Education hire Infinite Campus to develop the at-risk funding model.[i] The state used academic, attendance, behavior, and stability indicators to identify students at risk of not graduating in 4 years. Table 1.4 shows some of the data elements used in determining at-risk status. In Nevada's new at-risk model, a student who belongs to more than one weighted category—for example, free lunch and limited English proficiency—would receive only the weighted funding for the category with the highest weight.[j] In an April 2022 article, Educate Nevada now criticized this new funding model because the organization estimated that only approximately 67,000 students would now qualify for at-risk funding, compared to 271,000 students under the old model.[24]

[i] Kentucky uses Infinite Campus as a vendor for its Student Information System.
[j] In Kentucky, school districts get funding for each add-on for which students qualify.

Table 1.4
Data Elements Used To Identify At-Risk Students In Nevada, By Indicator
2019

Indicator	Data Elements*
Academic	Assignments, assessments, course grades, etc.
Attendance	Daily attendance, absence codes, chronic absenteeism
Behavior	Number, type, and frequency of incidents
Stability	Zip code, special populations, homeless youth, foster youth, years in school

* Table does not list every data element identified for each indicator.
Source: Nevada. Department of Education.

Model Policies For State Education Funding

EdBuild, a company that produces studies on equitable school funding formulas, recommends that states use a student-based funding formula. It provides three tiers of model policies for add-ons to the base funding formula: Moonshot, Gold, and Silver.

EdBuild produces studies on equitable school funding and recommends that states should develop student-based school funding formulas instead of resource-based or program-based formulas. The company has cited Kentucky as an exemplar that approximates its recommendations for design of a weighted student formula.[k] EdBuild provides perspective on the best policy in each core area of states' funding formulas. EdBuild has differentiated add-ons to base funding into three tiers:

- Moonshot—Offers a path for states seeking to break new ground to push toward an ideal policy. This tier increases not only the equity and precision of the funding policy, but also the complexity. Implementing too many elements from this funding tier may diminish the formula's transparency; EdBuild recommends considering one or two of these funding formulas.
- Gold—Strong and ambitious; though uncommon, it has precedent in existing policy.
- Silver—Less ambitious, but would advance policy in most states.

Base Funding

EdBuild recommends that the base funding amount be sufficient to cover competitive teacher salaries, instructional materials, student support services, and modern classroom technology.

EdBuild recommends that the base funding must meaningfully reflect the cost of educating each student, regardless of need. This base amount should be sufficient to cover the cost of the following education expenses:

- Competitive statewide teacher salaries
- Instructional materials
- Student support services
- Modern classroom technology

[k] Edbuild recommended that states include base funding for each pupil, with special weights for separate funding for students with additional needs or district needs.

EdBuild also recommends that, if state legislators approve any new mandate, increased funding to the base amount should cover required changes.

EdBuild also recommends that, if state legislators introduce mandates for public education that will cost districts more money, the base amount should be increased appropriately. Historical factors should not cause variation in what the base amount should be. For instance, legislators should not continue to use provisions such as hold-harmless or exemptions to new legislation such as a temporary or transitional basis. Because economic conditions, available revenue, and educational costs vary from state to state, the report does not recommend an ideal per-pupil funding base; it does, however, suggest setting the base amount at a level that provides an equitable overall formula.

Appendix B summarizes the three tiers of funding elements. Silver is the least restrictive; Moonshot is the most aggressive.

School Funding Formula Elements. Appendix B lists each formula element mentioned in the EdBuild report along with how funding elements are characterized in the three tier levels: Silver, Gold, or Moonshot. Silver is the least restrictive funding element; Moonshot is the most aggressive.

Kentucky's add-on funding is more aligned to the silver level, but it falls short of some requirements. In addition, Kentucky does not provide extra funding for grade level, sparsity, and isolation.

Kentucky's system is similar to the funding model suggested by EdBuild, as it has a base with add-ons for different student populations. Kentucky falls short, however, since it does not have additional funding streams for special student populations beyond what is included in the add-ons.[l] Under EdBuild's Silver model, this system should have three to five tiers and a high-cost fund for especially high-cost students. The fund should also be distributed based on an application from the district after a students exceeds a set cost threshold. In addition, Kentucky has no add-on weights for grade level, sparsity, and isolation. The EdBuild model also recommends that all students get gifted and talented funding in order to increase the number of students identified for gifted and talented services.[m]

[l] Kentucky includes add-ons for three levels of additional special education funding. Special education students with the lowest needs have an add-on of 0.24, those with moderate needs have an add-on of 1.17, and those with the highest needs have an add-on of 2.34. There is no additional funding for the highest-need students.

[m] Kentucky funds gifted and talented programs as a grant based on identification, but EdBuild's model suggests funding it based on census data and as an add-on weight.

Chapter 2

State Comparative Findings And A National Comparison Of School Funding Fairness

Introduction

Chapter 2 shows changes in K-12 education funding and achievement data for Kentucky, similar states, and the nation.

This chapter shows changes in K-12 education funding and achievement data for Kentucky and similar states.[a] Appendix C includes information on how comparable states were identified for the report. If data were available, Kentucky is compared to the United States as a whole. The chapter concludes with a national comparison of school funding fairness.

Overall Comparison

Kentucky spends more per pupil than Tennessee but has similar NAEP test scores. West Virginia spends less per pupil than Kentucky, but Kentucky performs better on the NAEP.

Kentucky is demographically similar to Tennessee and West Virginia. Kentucky performs roughly the same as Tennessee on the National Assessment of Educational Progress; Kentucky spends more per pupil and spends less on elementary and secondary education as a percentage of total state expenditures.[b] Kentucky performs better than West Virginia on the NAEP, spends less per pupil, and dedicates more of its total state budget to elementary and secondary education.

Kentucky performs worse than North Carolina on the NAEP, and spends more per pupil; however, Kentucky spends less as a percent of total expenditures.

Kentucky's 4th- and 8th-grade NAEP scores in math and reading decreased over the last decade.

Kentucky's 4th- and 8th-grade NAEP scores in math decreased over the last decade; reading scores decreased even more. In addition, all comparable states except Tennessee also lost ground on the NAEP. While Tennessee has improved its NAEP scores, as of 2019, they were similar to Kentucky's NAEP scores.

After adjusting for personal income, Kentucky's spending rate is higher than the nation's and Kentucky has higher starting salaries.

Kentucky spends less than the nation on K-12 education and has lower starting teacher salaries; however, after adjusting for personal income, Kentucky spends more than the national average on K-12 current spending as well as spending more on starting salaries after adjusting for differences in the cost of living.

[a] Similar states include Alabama, Arkansas, Indiana, Missouri, North Carolina, North Dakota, Ohio, Oklahoma, Tennessee, and West Virginia.
[b] Expenditures are current expenditures.

Education Revenue

School districts receive most of their funding from state and local revenues, with a smaller portion coming from federal funds.

School districts rely heavily on funds from state and local revenues to fund public education. The amount of state and local funding each school district receives depends on funding mechanisms determined by each state's legislature. In some states, such as Kentucky, funding models include a student-based foundation; they base funding on the number of students and provide additional funding for special student groups.[c] Other states use either a resource-based allocation or a hybrid model to fund their education systems. A resource-based allocation model is based on the amount of staffing and the services needed. Hybrid models include a mixture of resource- and student-based needs. In addition, school districts receive funding from federal sources.[d] Appendix D includes local and federal revenue.

State Revenue

From FY 2011 to FY 2020, state revenue in Kentucky school districts increased by 1.8 percent; the national average increased 2.6 percent.

Table 2.1 shows state revenue as a percentage of total revenue for FY 2011 and FY 2020 for Kentucky and comparable states along with the national averages. In this period, Kentucky's state revenue increased by 1.8 percent; the average US increase was 2.6 percent.

Table 2.1
Public Education State Revenue As Percentage Of Total Revenue,
Kentucky And Similar States
FY 2011 And FY 2020

	State Revenue As Percentage Of Total Revenue		
State	**FY 2011**	**FY 2020**	**Percent Change, FY 2011 To FY 2020**
Alabama	53.8%	56.7%	2.9%
Arkansas	71.8	75.3	3.5
Indiana	61.9	62.5	0.6
Kentucky	**52.1**	**53.9**	**1.8**
Missouri	38.9	43.0	4.1
North Carolina	52.0	61.6	9.6
North Dakota	49.9	54.8	4.9
Ohio	43.2	38.5	-4.7
Oklahoma	47.0	47.6	0.6
Tennessee	45.8	47.1	1.3
West Virginia	55.6	55.0	-0.6
US average	44.4	47.0	2.6

Source: Staff analysis of data from United States Census Bureau 2020 Public Elementary-Secondary Education Finance Data. Web May 18, 2022

[c] Special student populations in Kentucky include special education students, low-income students, and students with limited English proficiency.
[d] The amount of federal funding is generally much smaller than the amount of state or local funding.

Public School Educational Spending

Examples of elementary and secondary education expenditures include staff, maintenance, transportation, and vocational and technical education.

Among other things, elementary and secondary education expenditures include

- staff, such as teachers, instructional aides, superintendents, and principals;
- the maintenance of buildings, as well as renovations and construction of new educational facilities;
- school breakfast and lunch programs;
- transportation; and
- vocational and technical education.

Elementary and secondary education expenditures also include spending on pre-kindergarten programs, such as preschool and Head Start, but they do not include expenditures on higher education programs.

Public Education Expenditures As A Percentage Of Total State Expenditures

Kentucky's elementary and secondary education spending as a percentage of total state spending decreased 5.3 percentage points from FY 2012 to FY 2021.

Table 2.2 displays spending on public education as a percentage of state budget in FY 2012 and FY 2021 for the selected states. Of these states, only three (North Carolina, North Dakota, and West Virginia) dedicated a larger percentage of their total budget to elementary and secondary education in FY 2021 than in FY 2012. The percentage of Kentucky's budget dedicated to elementary and secondary education expenditures decreased 5.3 percentage points in this period. Among these states, only Indiana (9 percent) and Arkansas (6.3 percent) had a greater decrease than Kentucky.

Table 2.2
Elementary And Secondary Education Expenditures
As Percentage Of Total State Expenditures, Kentucky And Similar States
FY 2012 And FY 2021

State	K-12 Expenditures As Percentage Of Total State Expenditures		Percentage Point Change,
	FY 2012	FY 2021	FY 2012 To FY 2021
Alabama	20.9%	20.4%	-0.5%
Arkansas	19.0	12.7	-6.3
Indiana	32.9	23.9	-9.0
Kentucky	**19.8**	**14.5**	**-5.3**
Missouri	22.6	21.3	-1.3
North Carolina	23.2	23.7	0.50
North Dakota	13.8	16.2	2.4
Ohio	20.6	15.9	-4.7
Oklahoma	16.5	15.9	-0.6
Tennessee	17.7	16.0	-1.7
West Virginia	10.8	13.6	2.8

Source: BallotPedia. *State Spending By Function As A Percent Of Total Expenditures*. Fiscal year 2012; National Association of State Budget Officers. *2021 State Expenditure Report*. Web.

Current Per-Pupil Spending

Kentucky's current spending increased 22.4 percent from FY 2011 to FY 2020. Only three comparable states' current spending increased more than Kentucky's did.

Current spending on education includes goods and services consumed within the current year. This includes all expenditures except those associated with adult education, community services, repayment of debts, purchases of land, school construction, depreciation of items like buses, and programs outside P-12th grade.

Table 2.3 shows that, nationally, per-pupil current spending increased by 27.2 percent. In Tennessee and Kentucky, it increased by 22.4 percent. The per-pupil current spending of North Dakota, Ohio, and Oklahoma increased more than Kentucky's did.

Table 2.3
Growth In Per-Pupil Current Spending, Kentucky And Similar States
FY 2011 And FY 2020

	Growth In Per-Pupil Current Spending		Change, FY 2011 To FY 2020	
State	**FY 2011**	**FY 2020**	**Difference**	**Percent Change**
Alabama	$8,813	$10,116	$1,303	14.8%
Arkansas	9,353	10,345	992	10.6
Indiana	9,372	10,935	1,563	16.7
Kentucky	**9,309**	**11,397**	**2,088**	**22.4**
Missouri	9,410	11,249	1,839	19.5
North Carolina	8,312	9,958	1,646	19.8
North Dakota	11,420	14,242	2,822	24.7
Ohio	11,223	13,805	2,582	23.0
Oklahoma	7,587	9,512	1,925	25.4
Tennessee	8,088	9,896	1,808	22.4
West Virginia	11,846	12,375	529	4.5
US average	10,608	13,494	2,886	27.2

Source: US. Census Bureau. *2020 Public Elementary–Secondary Education Finance Data* and *2011 Public Elementary–Secondary Education Finance Data*.

States Ranked By Personal Income

Kentucky ranks 12th in total per-pupil expenditures per $1,000 of personal income. Among comparable states, only Arkansas and West Virginia had higher ratios.

One measure for comparing states' level of financial support for elementary and secondary education is to compare total per-pupil expenditures to personal income. This measure shows states' relative investments in education compared to the income of their citizens.

Table 2.4 shows that Kentucky spent $40.18 on elementary and secondary education per $1,000 of personal income in 2020. That amount was $4.15 lower than in 2011. Kentucky had the 12th highest elementary and secondary education expenditures in the United States after taking personal income into consideration. Among comparable states for these years, Arkansas had the highest elementary and secondary education expenditures after taking personal income into consideration. Appendix E includes additional spending tables.

Table 2.4
K-12 Expenditures Per $1,000 Personal Income, Kentucky And Similar States
FY 2011 And FY 2020

	Current Education Spending (Rank)		Change, FY 2011 To FY 2020	
State	**FY 2011**	**FY 2020**	**Difference**	**Percent Change**
Alabama	$40.82 (31)	$34.84 (30)	-$5.98	-14.6%
Arkansas	70.29 (1)	53.38 (2)	-16.91	-24.1
Indiana	43.45 (21)	33.28 (38)	-10.17	-23.4
Kentucky	**44.33 (17)**	**40.18 (12)**	**-4.15**	**-9.4**
Missouri	38.66 (34)	33.22 (39)	-5.44	-14.1
North Carolina	36.39 (43)	28.68 (47)	-7.71	-21.2
North Dakota	38.37 (36)	37.23 (23)	-1.14	-3.0
Ohio	46.57 (10)	38.69 (19)	-7.88	-16.9
Oklahoma	37.59 (40)	32.67 (40)	-4.92	-13.1
Tennessee	35.75 (45)	29.5 (43)	-6.25	-17.5
West Virginia	56.67 (3)	42.77 (7)	-13.9	-24.5
US average	42.11	35.89	-6.22	-14.8

Source: US. Census Bureau. *2020 Public Elementary–Secondary Education Finance Data* and *2011 Public Elementary–Secondary Education Finance Data*.

NAEP Testing

The NAEP is also known as "the Nation's Report Card." All states are federally mandated to participate in the NAEP, but some students do not take the assessment.

The National Assessment of Educational Progress is administered by the National Center for Education Statistics. There is a federal mandate for states to participate in the NAEP. The NAEP is also known as "the Nation's Report Card." NAEP scores are used to track students' progress or declines in each state. Not all students take the NAEP; it assesses a sample of US students who are representative of different regional, racial, socioeconomic, and ethnic groups. Scores for states and for the nation as a whole are generated based on this sample.[25]

NAEP Math

The NAEP is administered to 4th- and 8th-grade students every 2 years.

Students in grades 4 and 8 take the test for the NAEP in math every 2 years. The NAEP in math measures mathematical knowledge and the ability to problem-solve. Table 2.5 shows the percentage of 4th-graders who took the test and scored at or above basic and at or above proficient. Fourth-graders performing at or above basic should show evidence of understanding mathematical concepts and procedures; students scoring at the proficient level should consistently apply integrated procedural knowledge and conceptual understanding to problem-solve.

Table 2.5
Percentage Of Students At Or Above Basic Or Proficient On Grade 4 NAEP Mathematics, Kentucky And Similar States
2011 And 2019

	At Or Above Basic			At Or Above Proficient		
State	**FY 2011**	**FY 2019**	**Change***	**FY 2011**	**FY 2019**	**Change***
Alabama	75%	71%	-4	27%	28%	1
Arkansas	81	75	-6	37	33	-4
Indiana	87	84	-3	44	47	3
Kentucky	**85**	**81**	**-4**	**39**	**40**	**1**
Missouri	83	80	-3	41	39	-2
North Carolina	88	82	-6	44	41	-3
North Dakota	90	84	-6	46	44	-2
Ohio	86	82	-4	45	41	-4
Oklahoma	83	80	-3	33	35	2
Tennessee	75	79	4	30	40	10
West Virginia	78	74	-4	31	30	-1
US average	82	80	-2	40	40	0

* In percentage points.
Source: National Center for Education Statistics. National Assessment of Educational Progress. "State Performance Compared To The Nation." The Nation's Report Card. N.d. Web.

Between school years 2011 and 2019, for Kentucky's 4th-grade students taking the NAEP math assessment, there was a decline of 4 percentage points in the rate of students scoring at or above basic.

NAEP 4th-Grade Math At Or Above Basic. Among Kentucky and comparable states, Tennessee was the only one that showed an increase in the percentage of students who scored at or above basic math 4th-grade knowledge from 2011 to 2019. In 2011, Tennessee and Alabama were tied for the lowest percentage of students testing at this level. Although Tennessee's basic rate increased, Alabama's fell from 75 percent to 71 percent. During the same period, the rate for Kentucky's 4th-grade math students declined 4 percentage points, from 85 percent to 81 percent.

The rate of Kentucky 4th-grade math students scoring at or above proficient increased by 1 percentage point between school years 2011 and 2019.

NAEP 4th-Grade Math At Or Above Proficient. Among states comparable to Kentucky, Tennessee had the largest growth in the percentage of students scoring at or above proficiency from 2011 to 2019. During that period, Tennessee's NAEP proficiency rate increased 10 percentage points. Tennessee now ties Kentucky with 40 percent of students scoring at or above proficient on the grade 4 math test. Kentucky's rate increased by 1 percentage point during this period.

Table 2.5 shows that compared to the nation, Kentucky 4th-graders had a higher percentage of students meeting the basic level in 2011 and 2019, but the proficiency rate was lower in 2011 and tied the national average in FY 2019.

NAEP 8th-Grade Math At Or Above Basic. Table 2.6 shows 8th-grade NAEP math scores for 2011 and 2019. Among Kentucky and comparable states, Tennessee was the only one that had an increase in the percentage of students scoring at or above basic scores in math. Tennessee increased its rate of students at or above basic by 4 percentage points, but Kentucky decreased by 5 percentage points in the same period. In 2011, 85 percent of North Dakota's 8th-grade math students scored at or above basic, but that percentage declined 10 percentage points to 75 percent in 2019. In states comparable to Kentucky, North Dakota still has the highest rate of students scoring at or above basic.

Kentucky's 8th-grade math proficiency rate fell 2 percentage points, from 31 percent in 2011 to 29 percent in 2019.

NAEP 8th-Grade Math At Or Above Proficiency. From 2011 to 2019, the percentage of Tennessee students scoring at or above proficiency improved 7 percentage points. Kentucky's 8th-grade math proficiency rate fell 2 percentage points, from 31 percent in 2011 to 29 percent in 2019. Of all comparable states, Ohio had the highest percentage of students scoring at or above proficiency in 8th-grade math—38 percent in 2019.

For 8th-grade students scoring at or above basic in math in school year 2019, Kentucky students scored 1 percentage point lower than the national average.

Compared to the national average, Kentucky had the same percentage of 8th-grade students scoring at or above basic in math in 2011. In 2019, 29 percent of Kentucky 8th-grade students scored at or above proficiency in math—4 percentage points lower than the national average.

Table 2.6
Percentage Of Students At Or Above Basic Or Proficient On Grade 8 NAEP Mathematics, Kentucky And Similar States
2011 And 2019

	At Or Above Basic			At Or Above Proficient		
State	**FY 2011**	**FY 2019**	**Change***	**FY 2011**	**FY 2019**	**Change***
Alabama	60%	57%	-3	20%	21%	1
Arkansas	70	63	-7	29	27	-2
Indiana	77	73	-4	34	37	3
Kentucky	**72**	**67**	**-5**	**31**	**29**	**-2**
Missouri	73	70	-3	32	32	0
North Carolina	75	71	-4	37	37	0
North Dakota	85	75	-10	43	37	-6
Ohio	79	73	-6	39	38	-1
Oklahoma	72	66	-6	27	26	-1
Tennessee	64	68	4	24	31	7
West Virginia	65	62	-3	21	24	3
US average	72	68	-4	34	33	-1

* In percentage points.
Source: National Center for Education Statistics. National Assessment of Educational Progress. "State Performance Compared To The Nation." The Nation's Report Card. N.d. Web.

NAEP Reading

The NAEP reading is administered every 2 years to students in grades 4 and 8. The reading assessment includes literary and informational texts to assess students' reading comprehension skills.[26]

From 2011 to 2019, there was a drop of 5 percentage points in the rate of Kentucky 4th-graders scoring at or above basic in reading.

NAEP 4th-Grade Reading At Or Above Basic. Table 2.7 shows that, among states comparable to Kentucky, Tennessee was the only one in which the percentage of 4th-grade students scoring at or above basic in reading increased. Tennessee was the state with the lowest percentage of students at or above the basic level in 2011, at 60 percent; however, 66 percent of its students scored at or above basic in 2019, which was higher than the rate in five other comparable states.

Table 2.7
Percentage Of Students At Or Above Basic Or Proficient On Grade 4 NAEP Reading, Kentucky And Similar States
2011 And 2019

	At Or Above Basic			At Or Above Proficient		
State	**FY 2011**	**FY 2019**	**Change***	**FY 2011**	**FY 2019**	**Change***
Alabama	67%	58%	-9	31%	28%	-3
Arkansas	63	62	-1	30	31	1
Indiana	68	67	-1	33	37	4
Kentucky	**72**	**67**	**-5**	**35**	**35**	**0**
Missouri	67	64	-3	34	34	0
North Carolina	68	67	-1	34	36	2
North Dakota	74	69	-5	36	34	-2
Ohio	71	68	-3	34	36	2
Oklahoma	64	63	-1	27	29	2
Tennessee	60	66	6	26	35	9
West Virginia	61	60	-1	27	30	3
US average	66	65	-1	32	34	2

* In percentage points.
Source: National Center for Education Statistics. National Assessment of Educational Progress. "State Performance Compared to the Nation." The Nation's Report Card. N.d. Web.

In 2011, 72 percent of Kentucky's 4th-grade students scored at or above basic, the second highest percentage of its peer group. By 2019, the percentage of Kentucky 4th-graders who scored at or above basic had dropped 5 percentage points, to 67 percent.

In 2011 and 2019, the rate of Kentucky 4th-graders scoring at or above basic was higher than the national average.

NAEP 4th-Grade Reading At Or Above Proficiency. As shown in Table 2.7, Kentucky had 35 percent of students scoring at or above proficient in 2011 and 2019. In that period, Tennessee had the highest increase in 4th-grade reading proficiency rates; increasing from 26 percent to 35 percent of students at or above

proficient. A higher percentage of Kentucky 4th-grade students scored at or above basic and at or above proficient in reading than the national average in both 2011 and 2019.

The rate of Kentucky 8th-graders scoring at or above basic in reading declined from 79 percent in 2011 to 73 percent in 2019.

NAEP 8th-Grade Reading At Or Above Basic. Table 2.8 shows the percentage of students scoring at or above basic and proficiency on the NAEP 8th-grade reading test in 2011 and 2019, along with the percentage point increases or decreases for each of the states comparable to Kentucky. Of those states, only Tennessee increased its percentage of 8th-grade students at or above basic in reading. Tennessee's scores increased from 70 percent to 73 percent during this period. The rate of Kentucky's students scoring at or above basic in 8th-grade reading declined from 79 percent in 2011 to 73 percent in 2019. Only one other state, North Dakota, had a larger percentage point drop in students scoring at or above basic in 8th-grade reading.

Table 2.8
Percentage Of Students At Or Above Basic Or Proficient On Grade 8 NAEP Reading, Kentucky And Similar States
2011 And 2019

	At Or Above Basic			At Or Above Proficient		
State	**FY 2011**	**FY 2019**	**Change***	**FY 2011**	**FY 2019**	**Change***
Alabama	69%	64%	-5	26%	24%	-2
Arkansas	71	68	-3	28	30	2
Indiana	78	75	-3	32	37	5
Kentucky	**79**	**73**	**-6**	**36**	**33**	**-3**
Missouri	79	74	-5	35	33	-2
North Carolina	74	72	-2	31	33	2
North Dakota	83	75	-8	34	32	-2
Ohio	79	75	-4	37	38	1
Oklahoma	73	71	-2	27	26	-1
Tennessee	70	73	3	27	32	5
West Virginia	68	67	-1	24	25	1
US average	75	72	-3	32	32	0

* In percentage points.
Source: "State Performance Compared To The Nation." The Nation's Report Card. N.d. Web.

In school years 2011 and 2019, the proportion of 8th-graders scoring at or above basic proficiency in reading was higher in Kentucky than in the nation.

NAEP 8th-Grade Reading At Or Above Proficiency. In 2011, 36 percent of Kentucky 8th-graders scored at or above proficiency; that figure declined to 33 percent by 2019. Among comparable states, Ohio had the largest percentage of students scoring at or above proficiency in 8th-grade NAEP reading (38 percent) in 2019. Kentucky had a higher proportion of 8th-grade students scoring at or above basic proficient in reading than the national average in both 2011 and 2019.

Teachers' Starting Salaries

In 2020, Kentucky's starting teacher salaries were almost $4,000 lower than the national average. However, after adjusting for regional price differences, these salaries were slightly above the national average.

Table 2.9 displays the starting salaries for teachers with a bachelor's degree and no prior experience in Kentucky and comparable states for school year 2020. The table also shows these salaries when adjusted for the cost of living in each of the states, using the regional price parities from the US Bureau of Economic Analysis.[27]

Table 2.9
Annual Starting Salary
And Annual Starting Salary Adjusted For Cost Of Living,
Kentucky And Similar States
School Year 2020

	Beginning Teacher Salary	
State	**2020**	**2020 Adjusted**
Alabama	$41,028	$45,944
Arkansas	35,201	39,463
Indiana	37,573	40,619
Kentucky	**37,238**	**41,468**
Missouri	32,970	35,643
North Carolina	37,049	40,358
North Dakota	40,106	43,593
Ohio	37,569	40,969
Oklahoma	37,992	41,612
Tennessee	38,809	42,092
West Virginia	37,978	43,157
US average	41,163	41,163

Source: EdNote. *Addressing Teacher Shortages By Adjusting Teacher Salaries*. August 2022. Web.

Kentucky's 2020 starting teacher salary is below the national average; however, when adjusting for regional price differences, it is slightly higher than the national average. Appendix F shows average salaries; Appendix G includes data on student characteristics.

National Comparison Of School Funding Adequacy And Fairness

Reports that measure school funding adequacy and fairness include reports from the Education Law Center and from the Albert Shanker Institute and Rutgers Graduate School of Education. Both reports grade states on a curve.

Two studies review fairness in education funding. The Education Law Center measures funding level, funding distribution, and funding effort in its report *Making The Grade 2021: How Fair Is School Funding In Your State?*[28] A report from the Albert Shanker Institute and Rutgers Graduate School of Education, *The Adequacy And Fairness Of State School Finance Systems*, reviews fiscal

effort, adequacy, and progressivity of state education funding.[29] Both reports grade states on a curve.

Education Law Center Report On School Funding Fairness

The Education Law Center produces an annual report on school funding fairness. It defines *funding fairness* as

> the funding needed in each state to provide qualified teachers, support staff, programs, services, and other resources essential for all students to have a meaningful opportunity to achieve a state's academic standards and graduate from high school prepared for citizenship, postsecondary education and the workforce.

Fair funding consists of sufficient funding, increased funding for high-poverty students, and the portion of school funding provided by the state.[30]

The Education Law Center report ranks and grades states on the fairness of school funding based on 2019 data regarding funding

- level,
- distribution, and
- effort.[e 31]

State School Funding Fairness Scores

Kentucky received a D for funding level and funding distribution and a C for funding effort in 2019 from the Education Law Center report. Grades were similar in comparable states.

Table 2.10 shows how Kentucky and comparable states were graded on the three measures of fairness in 2009 and 2019. Grades reflect statewide patterns and were determined by ranking states relative to other states and do not reflect whether school funding levels were adequate or appropriate. Individual districts within states may vary. Kentucky received a D for funding level and funding distribution and a C for funding effort. In general, Kentucky performed roughly the same as comparable states or better.[32]

[e] The report defines *funding level* as the state and local revenue cost-adjusted per pupil, *funding distribution* based on whether districts with high poverty receive additional funds, and *funding effort* by the level of public education funding as a percentage of the state's economic activity.

Table 2.10
State School Funding Fairness Scores
School Years 2009 And 2019

	Funding Level		Funding Distribution		Funding Effort	
State	**2009**	**2019**	**2009**	**2019**	**2009**	**2019**
Alabama	39	F	D	F	C	C
Arkansas	27	F	C	C	B	B
Indiana	29	C	C	C	A	C
Kentucky	**40**	**D**	**C**	**D**	**C**	**C**
Missouri	42	C	D	F	D	C
North Carolina	35	F	F	C	D	F
North Dakota	13	B	F	C	F	D
Ohio	37	C	A	C	A	C
Oklahoma	20	F	C	C	F	D
Tennessee	46	F	C	D	F	F
West Virginia	9	C	C	D	A	A

Note: Funding level for 2009 was measured using rank instead of grade.
Source: Danielle Farrie and David G. Sciarra. *Making The Grade 2021: How Fair Is School Funding In Your State?* Education Law Center; Bruce Baker, David Sciarra, and Danielle Farrie. *Is School Funding Fair? A National Report Card*, 2nd ed., June 2012, Education Law Center. Web.

Kentucky received a D for funding level compared to other states in 2019. Funding level is measured by the per-pupil state and local revenue.

Funding Level. Funding level is measured by state and local revenue per pupil. Kentucky was ranked 40th in 2009 and received a D for funding level compared to other states in 2019, as shown in Table 2.10. Kentucky's cost-adjusted per-pupil funding level was $13,472 in 2019, below the national average of $15,487, and Kentucky ranked 36th of all 50 states plus the District of Columbia. Five comparable states had higher funding levels than Kentucky, but only two of them were above the national average. [33]

In 2009, Kentucky received a C in funding distribution, which refers to whether districts with high poverty received more funds than districts with lower poverty. In 2009, Kentucky's score was a D for funding distribution.

Funding Distribution. Funding distribution refers to whether districts with high poverty received additional funds.[f] Table 2.10 shows that Kentucky received a C in SY 2009 and a D in SY 2019 for funding distribution; it ranked 33rd.[g] Kentucky's funding was considered regressive because the report found that per-pupil funding was 6 percent lower in high-poverty districts than in low-poverty districts, as shown in Table 2.11. Two comparable states were also considered regressive, five were considered flat (low- and high-poverty districts received about the same per-pupil funding), and three were considered progressive (high-poverty districts received more per-pupil funding than low-poverty districts).[34]

[f] *High poverty* refers to districts with a 30 percent poverty rate among school-aged children based on the US Census.
[g] This measure did not include the District of Columbia, Hawaii, Massachusetts, and Vermont.

Table 2.11
Funding Distribution In Kentucky And Comparable States
2019

State	Per-Pupil Funding		Funding Distribution Determination
	Low-Poverty Districts	High-Poverty Districts	
Alabama	$12,729	$11,180	Regressive
Arkansas	11,285	11,553	Flat
Indiana	13,897	15,003	Progressive
Kentucky	**13,800**	**13,028**	**Regressive**
Missouri	14,656	12,187	Regressive
North Carolina	10,450	11,193	Progressive
North Dakota	15,361	15,950	Flat
Ohio	14,544	15,842	Progressive
Oklahoma	10,649	10,882	Flat
Tennessee	11,508	11,119	Flat
West Virginia	14,452	13,910	Flat

Source: Danielle Farrie and David G. Sciarra. *Making The Grade 2021: How Fair Is School Funding In Your State?* Education Law Center.

Funding Distribution And Funding Levels. The Education Law Center argues that funding distribution and funding levels should be considered together. For example, a state with a progressive funding distribution may still be unable to provide sufficient funds for its high-poverty districts if overall funding levels are low. [35]

Funding effort is measured by public education funding as a percentage of the state's economic activity. Kentucky ranked above the national average for school years 2009 and 2019.

Funding Effort. Funding effort is public education funding as a percentage of the state's economic activity. Kentucky's state and local revenue was above the national average at 3.6 percent of the state's gross state product (GSP) in both 2009 and 2019; Kentucky received a grade of C in both years. In 2019, Kentucky ranked 19th among the 50 states plus the District of Columbia. Only two comparable states had a higher funding effort. The report argues that effort should be placed in the context of capacity, or relative wealth and ability to raise funds. Kentucky is considered high effort but low capacity.[36]

Report On The Adequacy And Fairness Of State School Finance Systems

A report, *The Adequacy And Fairness Of State School Finance Systems*, analyzes school funding based on fiscal effort, adequacy, and progressivity. In 2019, Kentucky ranked 27th in state finance system scores in 2019.

A report, *The Adequacy And Fairness Of State School Finance Systems*, analyzes school funding based on fiscal effort, adequacy, and progressivity using the data from SY 2019. As defined by the report,

- *fiscal effort* is how much states spend as a proportion of their economics measured in gross state product;
- *adequacy* is whether spending is enough to achieve common outcome goals, measured as the percentage difference between

actual spending and estimated spending required to achieve national average test scores; and

- *progressivity* reflects whether higher-poverty districts receive more resources than lower-poverty districts.

Of the states measured, Kentucky ranked 27th in state finance system scores in 2019.[h] Of states comparable to Kentucky, three ranked higher and seven ranked lower. Table 2.12 shows the fiscal effort, adequacy, and progressivity of Kentucky and comparable states.

Table 2.12
Fiscal Effort, Adequacy, And Progressivity Of School Funding Systems
2019

State	State Fiscal Effort	Funding Adequacy	Progressivity
Alabama	3.59%	Below	Regressive
Arkansas	4.20	Above	Progressive
Indiana	3.06	Below	Progressive
Kentucky	**3.56**	**Below**	**Flat**
Missouri	3.38	Below	Regressive
North Carolina	2.77	Below	Progressive
North Dakota	3.20	Above	Progressive
Ohio	3.76	Below	Progressive
Oklahoma	3.33	Below	Progressive
Tennessee	2.78	Below	Regressive
West Virginia	3.94	Above	Regressive

Source: Bruce D. Baker, Matthew Di Carlo, Kayla Reist, and Mark Weber. *The Adequacy And Fairness Of State School Finance Systems*. Albert Shanker Institute and Rutgers Graduate School of Education, 4th ed., Dec. 2021.

Nationally, the gap between the highest- and lowest-spending states widened from 2004 to 2007.

Fiscal Effort Trends Nationwide. Fiscal effort compares actual spending to potential spending by measuring state K-12 education funding as a percentage of gross state product or aggregate state personal income. In 37 states, fiscal effort in 2019 was the lowest since 1997. Recently, the gap between highest- and lowest-spending states has widened because some states restored funding to 2004 to 2007 prerecession levels while most states did not.

In 2019, Kentucky ranked 22nd in the nation for fiscal effort. Kentucky would need to add $701 per student to bring current funding levels up to average prerecession funding levels.

Fiscal Effort In Kentucky. In 2019, Kentucky spent 3.56 percent of its GSP on K-12 education and ranked 22nd in the nation in terms of fiscal effort. The US average was 3.45 percent with a range of 2.5 percent to 4.5 percent in 2019. Seven comparable states spent between 3 percent and 4 percent of GSP on K-12 education and were within 0.5 percentage points of the national average of 3.45 percent. The report estimates that an additional

[h] The report included 48 states. It could not determine rankings for Hawaii, Vermont, and the District of Columbia.

$701 per student would be necessary to bring Kentucky's current funding levels up to average prerecession funding.

In 2019, nationally, spending was lower than adequate levels in high-poverty districts, districts with higher percentages of Black students, and districts with higher percentages of Hispanic students.

Adequacy Trends Nationwide. The authors found variation in adequacy across states, although the average funding gap between states' highest-poverty districts and states' wealthiest districts improved from 2009 to 2019. The authors suggest that returning funding to prerecession levels would halve or eliminate the funding gap in 23 states. In addition, the authors found that spending was lower than adequate levels in high-poverty districts, districts with higher percentages of Black students, and districts with higher percentages of Hispanic students in 2019, but it was 21 percentage points above adequacy levels in primarily white districts.

Kentucky spent 27.3 percent less than necessary in its highest-poverty districts in 2019 ($4,225 less per pupil) and ranked 30th in the nation.

Adequacy In Kentucky. For Kentucky, the authors estimate an adequacy target of $15,638 per student to help students in the highest-poverty districts achieve test scores as high as the national average, finding that Kentucky spent 27.3 percent less than necessary in its highest-poverty districts in 2019 ($4,225 less per pupil) and ranked 30th in the nation; 37 other states were also found to be below adequate.[i] Among states comparable to Kentucky, funding levels were above adequate in three, were below adequate but still more adequate than Kentucky's in two, and were below adequate and less adequate than Kentucky's in five.[j]

In 2019, Kentucky's education funding was classified as flat—neither progressive nor regressive. Kentucky ranked 28th for progressivity.

Progressivity Trends Nationwide And In Kentucky. The authors defined *progressive education finance system* as

> one in which districts serving larger shares of high-needs students (e.g., students from low-income family backgrounds), all else equal, are provided greater resources than their counterparts serving smaller shares of high-needs students.[37]

In contrast, low-poverty districts receive more funding than high-poverty districts when education funding is regressive. In 2019, 20 states were regressive and 12 states were progressive. The report found that adjusted current spending per pupil in Kentucky was $11,098 in districts with 0 percent poverty and $12,227 in

[i] This measure does not include Hawaii or Vermont.
[j] Tables 2.5 through 2.8 review NAEP scores in Kentucky and comparable states. The authors note that increased spending would not immediately improve test scores and that improvement would require many years and would be a multigenerational effort.

districts with 30 percent poverty, a difference of 2.9 percent.[k] As a result, the report determined that Kentucky education funding was neither progressive nor regressive; it was flat, ranking Kentucky 28th for progressivity. Six comparable states were progressive, and four were regressive.[l] In the United States, 4 states including Kentucky were flat, 24 were progressive, and 20 were regressive.[m]

On average, states spend less of their gross state product on K-12 school funding now than they did 20 years ago, and they do not distribute it equitably.

Overall Findings. The authors conclude that most states do not provide adequate or equitable K-12 school funding. On average, states spend less of their GSP on K-12 school funding now than they did 20 years ago, and they do not distribute it equitably. Progressive funding would be necessary to achieve adequacy, if total education funding were sufficient. Adequacy funding gaps could be reduced or eliminated by raising funding efforts to prerecession levels.

[k] Percent poverty is measured by the Small Area Income and Poverty Estimates from the US Census Bureau and does not represent the percentage of students eligible for free and reduced-price lunch.

[l] The Education Law Center report found that high-poverty Kentucky districts received $13,038 per pupil compared to $13,800 per pupil in low-poverty Kentucky districts, classifying Kentucky as regressive. This disparity is likely due to differences in funding sources. The Education Law Center used the US Census Bureau's *Annual Survey Of School System Finances*, and the Shanker Institute and Rutgers University report used the National Center for Education Statistics' Common Core of Data Public Elementary-Secondary Education Finance Survey.

[m] This measure does not include Hawaii and Vermont.

Chapter 3

Review Of Recent Adequacy Studies

Between 2003 and 2014, four adequacy studies were performed in Kentucky. This chapter reviews them, along with adequacy studies performed in comparable states. This chapter also reviews education funding and student test scores in a state with multiyear adequacy studies.

This chapter reviews adequacy studies performed in Kentucky in the past 20 years, beginning with the most recent study. Adequacy studies performed in comparable states are also reviewed. Education funding and student test scores in a state with multiyear adequacy studies are reviewed.

Kentucky Adequacy Studies

In the past two decades, four adequacy studies have been performed in Kentucky. This section reviews each study; more detailed information appears in Appendix H. The studies include:

- *Adequacy For Excellence In Kentucky*, 2014
- *Professional Judgment Study Of The Cost Of An Adequate Education*, 2004
- *A Professional Judgment Approach To School Finance Adequacy In Kentucky*, May 2003

Because *Adequacy For Excellence In Kentucky* is the most recent, it is discussed in greater depth. The fourth study, published in February 2003, is similar to the May 2003 study.

Adequacy For Excellence In Kentucky, 2014

Picus Odden & Associates conducted an evidence-based adequacy study, released in 2014. The authors met with many people connected to education, with the assistance of the Kentucky Department of Education.

Picus Odden & Associates[a] conducted an evidence-based adequacy study for Kentucky from December 2013 through August 2014 for the Council for Better Education; it was released in 2014. Picus met with education leaders, members of the educational and political community, business leaders, teachers, and educational professionals to understand school finance issues and to support their recommendations, with the assistance of the Kentucky Department of Education.

Model Estimates

The 2014 Picus report estimates an additional $2.44 billion would have been needed in SY 2013 to help all districts reach adequacy—an average of $13,130 per pupil. The report excluded federal funds.

The 2014 Picus report estimates that an additional $2.44 billion would have been needed in SY 2013 to help all districts reach adequacy, equating to an average of $13,130 per pupil. The model excluded federal funds and found that Anchorage Independent was

[a] Picus Odden & Associates is referred to as Picus from this point onward.

the only district above adequacy levels. When federal funds were included, Boyd County was also spending above the level recommended by the EBM and the additional funding needed to reach adequacy decreased to $1.88 billion. Appendix I details the district-level per-pupil spending recommended by the model; actual state and local funding in SY 2013; and actual state, local, and federal funding in SY 2013. The Picus report does not distinguish between the funding sources (local, state, or federal) supporting each element; it is not possible to determine which funding source should be altered to implement any recommendation. In addition, although the report focuses only on local and state funding, federal funding may also be used to implement any recommendations in practice.

There are three main concerns with the 2014 Kentucky EBM:
- **It provides funding based on resources needed, but Kentucky uses a guaranteed base per-pupil amount with adjustments.**
- **Recommendations cannot be compared to actual costs.**
- **Many elements lack supporting evidence.**

Concerns With The 2014 Kentucky Model. The most recent adequacy study performed in Kentucky was the 2014 EBM by Picus.[b] In examining the 2014 report, several concerns emerged:

- The 2014 Kentucky EBM is a resource allocation model; it provides funding based on resources needed, but Kentucky uses a guaranteed base per-pupil amount. In order to implement the recommendations, Kentucky would have to drastically change its school funding methodology.
- Recommendations cannot be compared to current actual costs in Kentucky.
- Although some recommendations are based on best practices, many elements lack supporting evidence.

Resource Allocation Model And Cost Comparison

The 2014 Kentucky EBM requires that funds be spent on particular resources. Kentucky uses a guaranteed base per-pupil amount, and districts have discretion on how funds are spent. It is generally not possible to compare current spending to recommended spending to calculate how much funding would be needed to implement recommendations.

The 2014 Kentucky EBM is a resource allocation model that provides funding based on resources. Kentucky uses a guaranteed base per-pupil amount, adjusted by add-ons for special student groups and a transportation formula. These funds are not required to be spent on specific children or identified needs. Districts have discretion in how funds are spent, whereas a resource allocation model requires that funds be spent on particular resources. As a result, it is not generally possible to determine how much Kentucky is currently spending on each element to evaluate the difference between current spending and recommended spending to calculate how much education funding would need to change to implement the model recommendations. This section reviews several elements of the 2014 Kentucky EBM that do not fit how Kentucky funds education.

[b] Picus has recalibrated its evidence model since this report was released in 2014. Some recommendations are outdated. The most recent recommendations from Wyoming in 2020 are noted when changes were made.

The 2014 EBM recommends prototypical districts based on student count, which does not match the practical realities of providing education in Kentucky based on existing schools and districts. Applying the model may overestimate or underestimate resources or require major reorganization.

Student Counts For Calculating Base Aid. The EBM calculated base aid on the greater of current student count or a rolling 3-year average daily membership to support districts with declining enrollment. Kentucky bases aid on prior-year adjusted average daily attendance plus growth and does not consider school size. The 2014 Kentucky EBM recommended districts of 3,900 students consisting of elementary school units with 450 students, middle school units of 450 students, and high school units of 600 students, where *school unit* can mean an individual school or schools-within-schools operating as semi-independent units. This recommendation does not match practical realities of providing education in Kentucky based on the size of existing schools and districts. Applying the model may overestimate or underestimate resources or require major reorganization.

For example, the model does not fit Wolfe County. Wolfe County has three elementary schools which also serve sixth grade, one middle school, and one high school. The Picus model would produce one elementary school, 0.6 middle schools, and 0.6 high schools.

Comparing the current number of teachers to the number recommended by the 2014 EBM would not capture the reality of teaching in Kentucky. The state's education data does not differentiate teachers by the job classifications recommended by the model.

Teachers. The 2014 EBM recommends a certain number of core content teachers, specialist or elective teachers, career and technical education (CTE) teachers, instructional coaches or facilitators, and tutors per prototypical school.[c] The Picus recommendations differ from current instructional practices in Kentucky, where some teachers tutor students before school, after school, and during summer school and receive extra duty pay. Picus recommends employing specific teachers to serve only as tutors, summer school teachers, or extended day teachers. Comparing the current number of teachers to the number recommended by the Picus model would not capture the reality of teaching in Kentucky and teachers' extra duty assignments. In addition, Kentucky education data does not differentiate teachers by the job classifications recommended by the 2014 Picus report, and high school core teachers cannot necessarily be differentiated from CTE teachers in the data. Some teachers and tutors are funded through Title I and II federal funds, which are not included in the 2014 model.

The 2014 Kentucky EBM includes per-pupil dollar amounts to directly support special student populations. Kentucky provides funding through Support Education Excellence in Kentucky and does not require these funds to be spent on specific children or identified needs.

Special Student Populations. The 2014 Kentucky EBM includes per-pupil dollar amounts for special student groups, including

[c] The 2020 model recommended 0.52 instructional coaches at the elementary level and 0.48 at the middle and high school levels, one core tutor per school, and additional tutors based on student groups.

English language learners, at-risk students, and students with mild and moderate disabilities.[d]

The 2014 Kentucky EBM recommends specific supports for students with limited English proficiency, at-risk students, and students with disabilities, but Kentucky's formula includes add-on weights to provide funding.

Kentucky does not fund special student populations with a resource allocation funding model; instead, the SEEK funding formula provides additional funding (referred to as add-ons to the guaranteed base funding formula) for costs associated with educating LEP students; students who are economically disadvantaged or who receive free lunch ("at-risk" students); and students who fall outside the normal range of development (exceptional children). These funds are not required to be spent on specific children or identified needs.

Students With Limited English Proficiency. The 2014 Kentucky EBM recommends 1 teacher per 100 LEP students, funding substitutes at 5 percent of teacher salaries, 6 days of professional development, and $10 per LEP student for instructional materials, totaling $15.4 million in SY 2013. In SY 2022, the SEEK formula included an add-on weight of 0.096 to the guaranteed base per-pupil funding amount of $4,000 for each LEP student. In SY 2022, the per-pupil LEP add-on was $384 and totaled nearly $12.3 million.

At-Risk Students. The 2014 Kentucky EBM recommends one tutor per 125 at-risk students, one extended day teacher per 120 at-risk students, one summer school teacher per 120 at-risk students, one additional support teacher per 100 at-risk students, funding substitute teachers at 5 percent of teacher salaries, 6 days of professional development, and $10 per FRPL student for instructional materials, totaling nearly $916.7 million in SY 2013. Kentucky funds at-risk students through an add-on weight of 0.15 to the guaranteed base per-pupil funding amount of $4,000. In SY 2022, the per-pupil at-risk add-on amount was $600 and totaled $223.5 million.

Students With Disabilities. For students with disabilities, the 2014 Kentucky EBM recommends one teacher per 150 students, one aide per 150 students, funding substitute teachers at 5 percent of teacher salaries, 6 days of professional development, and $10 per student for instructional materials for students with mild and moderate disabilities. The model recommended 100 percent state

[d] *School Finance: A Policy Perspective*, 6th ed., published in 2020 by Picus Odden & Associates, bases exceptional child resources on total student count and recommends 1.0 exceptional child teacher per 200 students, 1.0 teacher behaviorist per 1,000 students, 1.1 related services personnel per 1,000 students, and 1.0 psychologist per 1,000 students.

reimbursement for exceptional students with severe disabilities, minus federal Part B IDEA VI-B funds. Kentucky funds exceptional child students through an add-on weight of 0.24 for high-incidence disabilities ($960 per pupil), 1.17 for moderate-incidence disabilities ($4,680 per pupil), and 2.35 for low-incidence disabilities ($9,400 per pupil). This amounted to $457 million in SY 2022.

The 2014 Kentucky EBM recommends providing nurses, instructional aides, and supervisory aides. The current cost of these positions cannot be determined in Kentucky data to compare to the model recommendations.

Nurses. The Picus model recommends one nurse per 750 students. In Kentucky, some districts contract nurses with other entities and the cost is reported as an accounts payable expense. As such, the cost and count of nurses cannot be determined or compared to the model recommendations.

Instructional Aides And Supervisory Aides. The Picus model recommends providing instructional aides and supervisory aides.[e] Kentucky does not have a supervisory aide position. Instructional aides can be classroom teachers or can assist directors or other staff. They are not disaggregated in the data, and their numbers cannot be compared to the model recommendations.

Recommendations Lack Supporting Evidence

Several EBM recommendations are not supported by evidence or research.

Many of the EBM recommendations are based on best practices and research, but several are not supported by evidence or research. They are described in the following sections.

The 2014 Kentucky EBM recommends funding 10 days of substitute teacher coverage for every teacher. This recommendation is not based on actual teacher absences. As a result, the recommended funding does not match the need.

Substitute Teachers. The Picus model recommends funding for 10 days of substitute teacher coverage for every teacher in Kentucky to allow for 1 or 2 sick days, absences for other reasons, or long-term medical leave; however, the recommendation is not based on teacher absences. As a result, the recommended funding does not match the actual need for substitutes in this state. In Kentucky, substitutes may cover noncore classes or multiple classes taught by different teachers in the same workday. The 2014 model estimates that $152.76 million would be needed to fund substitutes for core content teachers, specialist teachers, instructional facilitators, and tutors. If applied to Kentucky in SY 2021, $147.2 million would be allocated for substitute teachers.[f] In comparison, Kentucky spent $33 million on substitute teachers from the general fund and $7.6 million from fund 2, totaling $40.7 million in SY 2021.

[e] The 2020 Picus model did not recommend instructional aides.
[f] This calculation includes the model recommendation determining the number of teachers per student count.

The 2014 Kentucky EBM calls for one librarian per school. Little research links librarians to student achievement.

Librarians. The Picus model recommends one librarian for every 450 students in elementary and middle schools and one librarian for every 600 students in high school.[g] The authors state that there is little research connecting librarians to student achievement.

The 2014 Kentucky EBM recommends principals and assistant principals for schools that would be considered A1 schools. It does not address A5 or A6 schools.

Principals And Assistant Principals. The Picus model recommends one principal for every prototypical school and one assistant principal in every prototypical high school.[h] However, the report's prototypical schools would all be A1 schools. It does not address A5 or A6 schools, which also have principals and assistant principals in Kentucky.[i]

The 2014 Kentucky EBM recommends clerical positions to help schools function rather than to directly improve student performance.

School Site Secretaries. The Picus model recommends two clerical positions in elementary and middle schools, and three in high schools. The authors do not provide research supporting this recommendation. These positions are included to help schools function rather than to directly improve student performance.[j]

The 2014 Kentucky EBM analysis showed that effective teacher development depends on professional training rather than on a set monetary amount, but the EBM's recommendation is monetary.

Professional Development. The Picus model recommends 10 days of pupil-free professional development training funded at $100 per pupil.[k] The report's analysis showed that effective teacher development depends on implementation rather than on a set monetary amount, but the model's recommendation is monetary.

The 2014 Kentucky EBM does not capture the reality of student activity funding, because some elementary school student activities are provided by outside entities, not funded through the district.

Student Activities. The Picus model recommends $250 per student to support after-school programs and teacher stipends. This amount is based on spending in other states, with no review of how much Kentucky spends.[l] If applied to Kentucky in SY 2021, the recommendation of $250 per student would total $152.9 million. In comparison, Kentucky spent $22 million on

[g] The 2020 model bases library staff on student count, with at least 0.5 librarian per school and additional librarian aides for larger schools. Kentucky does not have a librarian aide position.
[h] The updated model includes assistant principals in elementary and middle schools.
[i] A1 schools are under administrative control of a principal or head teacher, are eligible to establish a school-based decision-making council, and are not operated by or as part of another school. A5 schools are alternative programs that are district-operated facilities with no definable attendance boundaries; they are designed to remediate academic performance, improve behavior, or provide an enhanced learning experience. A6 schools are funded by the Kentucky Educational Collaborative for State Agency Children, serving children in the custody of the state. Sharing principals among schools may happen.
[j] The 2020 model increased the number of secretarial and clerical staff.
[k] The 2020 model increased the per student amount to $130.
[l] The updated model recommendations were $25 per elementary student, $322 per middle school student, and $599 per high school student.

student activities from the general fund and $30 million from school activity funds in SY 2021. In Kentucky, some elementary school student activities are provided by parks and recreation departments, the YMCA, and other entities, not funded through the district. They are not tracked in education funding.[m]

The 2014 Kentucky EBM recommended nearly $16.6 million for gifted and talented programs in 2013, but there is no evidence that such programs affect academic outcomes. The programs are offered to students already performing above state standards.

Gifted And Talented Students. The 2014 Picus model recommends $25 per regular education pupil to support gifted and talented programs. The authors note that there is no evidence that these programs affect academic outcomes and that the programs are offered to students already performing above state standards.[38] The 2014 Picus report recommends allocating nearly $16.6 million for gifted and talented students. The updated Picus model recommends allocating $40 per student, for a total of $24.5 million if applied to Kentucky in SY 2021. The actual amount that Kentucky districts spent on gifted and talented programs in SY 2021 is $10.2 million.

The 2014 Kentucky EBM recommends a certain number of teachers to support English language learners, but Kentucky addressed this need via an add-on to the Support Education Excellence in Kentucky (SEEK) formula.

English Language Learners. Picus states "it is generally agreed that to fully staff a strong English Learners (EL) program each 100 EL students should trigger one additional EL teaching position."[n] [39] The supporting research focuses on strategies to help students, such as effective teachers and good school conditions, rather than supporting the recommendation of a certain number of teachers, amount of funding, or number of professional development days. Kentucky includes an add-on to the SEEK formula to support LEP students.

The Picus model assumes 50 percent of at-risk students would attend extended day programs and summer school, but it does not support these assumptions and does not include transportation funding for these programs.

Support For At-Risk Students, Extended Day Programs, And Summer School. The Picus model assumes 50 percent of at-risk students would attend extended day programs and summer school, but it does not support these assumptions.[o] The report states that research on extended day programs and summer school effectiveness is mixed and that outcomes depend on design and implementation rather than on the number of teachers. The model also calls for quality summer schools, including full 6- to 8-week programs with small-group or individualized instruction and parent involvement and participation. The model does not include transportation funding for either program.

[m] School activity funds are required to be tracked on districts' annual financial reports, but district activity funds are not.
[n] Some scholars and the US Department of Education use the term *English learners*, but the Kentucky Revised Statutes uses *students with limited English proficiency*.
[o] The updated model recommends one teacher per 120 at-risk students to support each of these programs.

The 2014 Kentucky EBM assumes 12 percent of students have mild and moderate disabilities, providing the same level of support regardless of the number of exceptional child students, which may understate or overstate necessary supports. Kentucky includes an add-on to the SEEK formula.

Exceptional Child Students. The Picus model bases exceptional child funding on the number of regular education students and assumes 12 percent of students have mild and moderate disabilities. Basing exceptional child funding on the total number of students provides the same level of support regardless of the number of exceptional child students. For reference, Kentucky's percentage of students with exceptionalities ranged from 6 percent to 30 percent by district. As a result, this model may understate or overstate the necessary supports by district. Kentucky includes an add-on to the SEEK formula for exceptional children.

The 2014 Kentucky EBM did not review career and technical education (CTE) programs or associated costs to determine if the recommendation of $9,000 per CTE teacher was appropriate.

Career And Technical Education. The Picus model recommends $9,000 per full-time CTE teacher to fund CTE program equipment and resources.[p] CTE in Kentucky was not reviewed for the types of programs provided or the equipment and associated costs of CTE resources needed to determine whether the recommendation was appropriate.[q]

The 2014 Kentucky EBM includes central office, maintenance, and operations to support district functioning rather than student performance. The model recommends districts of 3,900 students, which may overestimate or underestimate resources when districts differ from the prototype or require major organization.

Central Office, Maintenance, And Operations. The 2014 Kentucky EBM includes resources to support central office, maintenance, and operations in each prototypical district of 3,900 students, and it estimates a total of $433.7 million.[r] The report notes that these elements are related to district functioning rather than directly related to student performance. Applying this prototype to Kentucky may overestimate or underestimate resources when schools and districts differ from the prototype or require a major reorganization of Kentucky districts. For example, Kentucky's smallest district would constitute 0.045 district and the largest district would be divided into 22.3 districts, which affects all central office and maintenance and operations staff.

In addition, Picus used prototypical school infrastructure and gross square footage assumptions to calculate the number of custodians, maintenance workers, and groundskeepers necessary to support the overall model. However, Kentucky does not have a database of square footage in education buildings, and Picus did not consider the actual square footage or buildings in Kentucky schools.[s]

[p] The updated model recommended $10,000 per full-time equivalent CTE teacher.
[q] Please see the OEA report *Career And Technical Enrollment And Subsequent Employment By Sector* (2019) for more information about CTE in Kentucky.
[r] The updated 2020 model central office staff recommendations vary based on student count and range from 4.5 positions to 63 positions.
[s] Please see the OEA report *An Overview Of Facilities Needs And Funding In Kentucky* (2020) for more information on Kentucky education buildings.

Picus reported that the benefits of tutoring stem from the quality and characteristics of the tutoring program but calls for a specific number of positions rather than program characteristics.

Tutors. Picus reports that the benefits of tutoring stem from the quality and characteristics of tutoring programs rather than from the number of tutors provided; however, its model calls for a specific number of positions rather than program characteristics. In addition, as discussed above, this recommendation does not fit the way Kentucky schools provide tutoring services.

There are three additional concerns regarding the 2014 Kentucky EBM.
- **It does not guarantee results or set a time frame for achieving results.**
- **Recommendations may not fit Kentucky policy preferences.**
- **The use of carried-forward costs assumes these elements are adequate, which is not addressed or determined by the model and which may not be accurate.**

Additional Concerns. Additional concerns regarding the 2014 Kentucky EBM include the following:

- The model does not guarantee results or set a time frame for achieving results. For example, the report states, "We are confident our approach to reviewing and evaluating school funding systems will meet Kentucky policymakers' expectations for assessing the state's need to find resource allocation strategies that will lead to improved student outcomes."[40]
- Recommendations may not fit Kentucky policy preferences.[t] For example, the 2014 Kentucky EBM included one guidance counselor per 450 elementary school students, one guidance counselor per 250 middle school students, and one guidance counselor per 250 high school students.[u] KRS 158.4416 requires districts and public charter schools to employ at least one school counselor per 250 students.[v]
- The use of carried-forward costs assumes that these elements are adequate, which is not addressed or determined by the model and which may not be accurate. The 2014 Kentucky EBM carries forward costs for transportation, food service, community services, adult education operations, facilities, debt service, fund transfers, the Kentucky Department of Operations, and the Kentucky School For the Blind and the Kentucky School for the Deaf General Fund allocation.

[t] The updated model suggests against school resource officers but recommends funding through local law enforcement at $75,000 per school resource officer if utilized. However, in 2019, Kentucky Senate Bill 1 amended KRS Chapter 158 to include the assignment of one or more certified school resource officers to each school when possible.

[u] The 2020 model recommended 1 guidance counselor per elementary school, 1.26 guidance counselors per middle school, and 2.52 guidance counselors per high school, with a minimum of 1 per district.

[v] The updated model recommends against hiring school resource officers but recommends funding through local law enforcement at $75,000 per school resource officer if utilized. KRS 158.4414 requires districts to assign one or more certified school resource officers to each school campus.

Professional Judgment Study Of The Cost Of An Adequate Education In Kentucky, 2004

Deborah A. Verstegen conducted a professional judgment study of school funding adequacy in Kentucky for the Council for Better Education, published in 2004.

Deborah A. Verstegen conducted a professional judgment study of school funding adequacy in Kentucky for the Council for Better Education, published in 2004.[41] Prototypical schools were designed at the elementary, middle, and high school levels

Model Estimates

The Verstegen report estimated an additional $1.1 billion would be required to address state standards and obligations in SY 2003.

The report estimates that implementing the professional judgment model would cost a total of $5.2 billion and require an additional $1.1 billion to address state standards and obligations. The author also recommended extending the school year, adding voluntary half-day preschool, and raising teacher salaries, which would have increased the funding gap to $1.23 billion in SY 2003.

The professional judgment model is a resource allocation model that does not fit how Kentucky funds education. Use of prototypical schools and districts may overestimate or underestimate resources or require major organization. Additional disadvantages of the professional judgment model are discussed in Chapter 1.

Disadvantages Of Professional Judgment Model. The professional judgment model is a resource allocation model that does not fit how Kentucky funds education. In addition, applying prototypical schools and districts in Kentucky may overestimate or underestimate resources or require major reorganization.

Disadvantages of the professional judgment model, discussed in greater depth in Chapter 1, are summarized here. Professional judgment models are created by consulting educators and education stakeholders who may not be qualified to design programs. The models can create unrestrained and wishful recommendations that may suffer from a conflict of interest when the model benefits the educators making the recommendations. In addition, the costs are not always easily linked to outcomes.

A Professional Judgment Approach To School Finance Adequacy In Kentucky, May 2003

Picus and Associates conducted a professional judgment panel study of school finance adequacy in Kentucky, published in May 2003, to determine whether student performance goals for 2014 could be achieved.

Picus and Associates[w] conducted a professional judgment panel study of school finance adequacy in Kentucky, published in May 2003, to determine whether student performance goals for 2014 could be achieved. Disadvantages of the professional judgment model are discussed in Chapter 1 and are reviewed in the previous section.

[w] Picus Odden & Associates was formerly the organization Picus and Associates.

Model Estimates

The costs estimated by the May 2003 Picus and Associates model totaled nearly $4 billion. Additional carried-forward costs totaled $1.6 billion.

The cost of calculated resources is nearly $4 billion. Additional elements are carried forward from actual costs, such as transportation and food services, and total $1.6 billion.

Overview Of Report

Professional judgment panels developed prototypical schools and resources that they believed would deliver an adequate education in Kentucky and meet educational goals by 2014.

Nine professional judgment panels were organized into two elementary school panels, two middle school panels, two high school panels, two district panels, and one state panel. Each was overseen and moderated by Picus and Associates staff and observed by staff from the Kentucky Department of Education. The panels developed prototypical schools and resources that they believed would deliver an adequate education in Kentucky and meet educational goals by 2014. Details of the prototypical district configuration and resources needed are discussed in Appendix H.

Picus and Associates published an EBM of Kentucky education in February 2003, identifying resources and costs needed to deliver an adequate education. This model was similar to the May 2003 model but estimated costs to be $1.259 billion lower because the May 2003 professional judgment model included additional elements.

Comparing Two 2003 Models By Picus And Associates. In February 2003, Picus and Associates published a state of the art evidence-based model of Kentucky education, which identified resources and resource costs needed to deliver an adequate education. Because of its similarity to the Picus May 2003 report, this report is not reviewed in detail. The total costs of implementing the recommendations from the February 2003 study are $1.259 billion lower than the professional judgment estimate published in May 2003 because the May estimate included additional elements.

Review Of Adequacy Studies Conducted In Other States

This section reviews adequacy studies performed in comparable states between 2003 and 2020. Every adequacy study found that education spending was not adequate.

Adequacy Studies Show More Funding Required In All States

Table 3.1 summarizes adequacy studies performed in comparable states. Each determined that additional funding would be needed for states to reach adequacy in education funding.

Table 3.1 summarizes adequacy studies performed in comparison states, including the year, additional funding required, and the type of study.[x] Of the nine adequacy reports conducted between 2003 and 2020, five were evidence-based models and four were professional judgment models. Each of the adequacy studies determined that additional funding would be needed for states

[x] Table 3.1 is not adjusted for inflation. All figures are in nominal dollars.

to reach adequacy in education funding. In 2014, the Picus report in Kentucky showed that Kentucky required $2.44 billion to fund education adequately—the highest of all the reports analyzed for this study.

Table 3.1
Adequacy Studies Performed In Comparison States
2003 To 2020

State	Year	Additional Funding ($ Millions)	Type Of Study
Arkansas	2003	$847	Evidence-based
	2006	220	Evidence-based
	2020	N/A	Hybrid*
Kentucky	2003	740	Evidence-based
	2003	1,600	Professional judgment
	2004	1,100	Professional judgment
	2014	2,440	Evidence-based
North Dakota	2008	300	Evidence-based
Tennessee	2004	1,114	Professional judgment

*The 2020 Arkansas adequacy study was conducted by the Arkansas House Interim and Senate Interim Education Committees, which consulted with education associations, nonprofits, and representatives from the Arkansas Department of Education. The report has elements of a professional judgment model and an evidence-based model, and it did not recommend a total dollar amount increase. The report recommended increasing the per-pupil dollar amount by 2.3 percent to $7,182 in SY 2022.
Source: Picus Odden & Associates. *Adequacy For Excellence In Kentucky*, report 2 of 2. 2014. Web; Anabel Aportela, Lawrence O. Picus, and Allan Odden. *A Comprehensive Review Of State Adequacy Studies Since 2003*. Augenblick, Palaich and Associates. Sept. 12, 2004; Michelle Turner Mangan, Allan Odden, and Lawrence O. Picus. *School Level Resource Use In Arkansas Following An Adequacy Oriented School Finance Reform*. www.picusodden.com. N.d.

Picus Odden & Associates Wyoming Adequacy Studies

Picus has assisted the Wyoming Legislature in recalibrating that state's education funding model every 5 years since 2005.

Picus has assisted the Wyoming Legislature in recalibrating the state's education funding model every 5 years since 2005 and has studied elements of school funding in 2004, 2008, and 2009. Wyoming's Legislature incorporated some of the recommendations into the state's school funding model, adapted some recommendations to fit the state's needs, and did not implement other recommendations.

Per-pupil revenue in Wyoming increased between 2006 and 2019, but Wyoming has not met its accountability goals, and several NAEP scores have declined.

Operating Revenues And Student Performance. Per-pupil revenue was $12,501 in SY 2006 and $18,620 in SY 2019.[y] Additional details on Wyoming K-12 operating revenues appear in Appendix H. Picus states that operating revenue has grown more than student performance. Table 3.2 show NAEP results for Wyoming in SY 2005 to SY 2019. The evidence-based model has

[y] 2006 was the first year after the first adequacy study. The authors do not note whether these estimates are adjusted for inflation.

been in place since 2005 and was recalibrated in 2010, 2015, and 2020. Picus reports that the EBM goals are higher than the state's accountability goals, which include 57 percent of students performing at or above proficient in math and 59 percent of students performing at or above proficient in reading, as of 2020. Although there have been improvements, Wyoming has not met its accountability goals; there have been declines in scores for grade 8 reading at or above basic, grade 8 reading at or above proficient, and grade 4 math at or above basic. Additional details on Wyoming NAEP scores appear in Appendix H.

Table 3.2
Wyoming NAEP Math And Reading Scores
School Years 2005 And 2019

	NAEP Reading				NAEP Math			
	Grade 4, At Or Above		Grade 8, At Or Above		Grade 4, At Or Above		Grade 8, At Or Above	
Year	Basic	Proficient	Basic	Proficient	Basic	Proficient	Basic	Proficient
2005	70.8%	34.5%	81.0%	35.7%	87.1%	42.6%	76.3%	29.0%
2019	73.3	40.6	75.2	33.9	87.1	47.8	76.4	37.1

Source: Picus Odden & Associates. *The 2020 Recalibration Of Wyoming's Education Resource Block Grant Model, Final Report*. Picus Odden & Associates, Dec. 1, 2020. Web.

Additional School Improvement Strategies

Picus identified 10 school improvement strategies for student performance and closing achievement gaps.

Picus identified 10 school improvement strategies for student performance and closing achievement gaps:

- Deeply analyze student data over time to understand performance, achievement gaps, and intervention strategies.
- Set higher student achievement goals.
- Replace current curriculum with more vigorous instructional practices based on evidence.
- Invest in teacher training including summer training, trainers, instructional coaches, and teacher collaborative work groups.
- Help struggling students by adopting low tutor-student ratios, extended days, summer school, and English language development.
- Provide smaller classes sizes in early years and possibly smaller school sizes.
- Develop more effective school days, such as multi-age elementary classrooms, block schedules in secondary schools, and double periods of secondary school math and reading.
- Support leadership of the instructional program and data-based decision making.

- Foster a professional school culture with teacher collaboration teams where student performance is considered teachers' responsibility.
- Support training, curricula, and instruction with external professional knowledge.

Conclusion

This chapter reviewed adequacy studies performed in Kentucky and comparable states. In addition, this chapter reviewed a state that has recalibrated its education funding model every 5 years based on evidence-based adequacy studies.

This chapter reviewed adequacy studies performed in Kentucky and found methodological concerns or disadvantages with each model. Adequacy studies do not guarantee improved student outcomes and are not applicable under Kentucky's current education funding system. Adequacy studies in comparable states between 2003 and 2020 were reviewed; each found that education spending was inadequate. In addition, the Wyoming Legislature has recalibrated the state's education funding model every 5 years based on evidence-based adequacy studies beginning in 2005, but Wyoming has not met its accountability goals, and some student testing results have declined.

Appendix A

TISA Funding Formula

The Tennessee Investment in Student Achievement (TISA) Act became law in May 2022. With its passage, Tennessee is transitioning to a student-based funding formula.[42] Tennessee's per-pupil base funding was established by reviewing per-pupil base amounts used in other southeastern states and in states of a similar size that use student-based formulas. Tennessee claims to have the 12th highest per-pupil base in the country and the 2nd highest in the southeast. Table A.1 lists per-pupil base amounts for states used in Tennessee's per-pupil base comparison.

Table A.1
Per-Pupil Base Funding Amounts By State
Fiscal Year 2022

State	Base Funding Amount Per Pupil
Arkansas	$7,182
Tennessee	6,860
Texas	6,160
Indiana	5,995
Mississippi*	5,829
Florida**	4,373
Louisiana	4,015
Kentucky	4,000
Oklahoma	3,391
Georgia	2,790
South Carolina*	2,489

*Amount is from 2021.
**Florida gives an additional weight of 0.126 to grades K to 3 and an additional weight of 0.01 to grades 9 to 12.
Sources: Education Commission of the States. "50-State Comparison: K-12 And Special Education Funding." 2021. Web; Tennessee. Department of Education. "Funding For Student Success: Tennessee Investment In Student Achievement." March 2022.

It is also important to determine other state funding that is provided outside the per-pupil base. In Kentucky, for example, funding for transportation, capital outlay, school safety, career and technical schools, and family resource centers is provided outside the base funding formula; Tennessee, however, included these funding streams in the base amount.

Funding Weights

According to the Tennessee Department of Education, the TISA funding model includes funding weights or additional funding based on student characteristics. Each economically disadvantaged student receives the per-pupil base funding plus a 25 percent add-on. The student count is calculated using average daily membership (ADM). TISA also includes a 5 percent

add-on for students living in areas of concentrated poverty; the add-on is funded by the total ADM for students enrolled in Title I-eligible schools. Students living in small or sparsely populated districts receive a 5 percent add-on to the per-pupil base. Ten levels of funding are used to fund students with special education needs and limited English proficiency. Depending on the nature of a student's disability, the add-ons range from 15 percent to 150 percent.

Direct Funding

According to the Tennessee Department of Education, the TISA funding model includes funding grants outside of the funding matrix. There is a literacy grant of $500 per student enrolled in grades K to 3 as measured by ADM. To help students who are behind, TISA allocates an additional $500 for each student who needs more help in 4th grade. TISA allocates an additional $5,000 per student enrolled in career and technical classes. Tennessee also pays for two ACT test administrations for each student, at a cost of $185.34 per student.

Outcome Funding

According to the Tennessee Department of Education, the TISA model provides outcome funding to districts as well, to reward districts whose students demonstrate success in literacy and in college and career readiness. The funding is distributed on a per-pupil basis as measured by ADM. Table A.2 details the outcome funding model. Districts receive extra funding for 3rd-grade students who are on track or who have mastered literacy skills. Districts also receive extra funding for students who score 21 or higher on the ACT or who acquire an industry credential. Moreover, districts receive additional funding for each student who enrolls in a postsecondary education program.

Table A.2
TISA Outcome Funding

Category	Students	Additional Outcome Funding
Literacy: 3rd grade on-track or mastered	Not economically disadvantaged	Base × 20%
	Economically disadvantaged	Base × 40%
ACT score of 21 **or** industry credential	Not economically disadvantaged	Base × 20%
	Economically disadvantaged	Base × 40%
Post high school attainment	All students	Base × 5%

Source: Tennessee. Department of Education.

Appendix B

EdBuild Model Policies And Descriptions

EdBuild provides perspective on the best policy in each core area of state funding formulas. It divides states' add-ons to base per-pupil funding into three tiers:

- Moonshot—Offers a path for states seeking to break new ground to push toward an ideal policy. This tier increases not only the equity and precision of the funding policy, but also the complexity. Implementing too many elements from this funding tier may diminish the formula's transparency; EdBuild recommends considering one or two of these funding formulas.
- Gold—Strong and ambitious; though uncommon, it has precedent in existing policy.
- Silver—Less ambitious, but would advance policy in most states.

Table B.1 summarizes the model policies for add-ons.

Table B.1
Model Policies

Formula Element	Silver	Gold	Moonshot
Economic disadvantage	Should be a generous weight. Student counts should be directly certified based on existing state and federal programs, including Medicaid, Supplemental Nutrition Assistance Program, Temporary Assistance for Needy Families, and food distribution program on Indian reservations. Should include categories for homeless, foster, and refugee students.	Should be generous weights with funding increasing based on concentration of students. Should be higher in districts with higher concentration of students and lowest in districts with lowest concentration. **OR** Provide funding using two weights: • Generous weight for each disadvantaged student • Weight for districts where percentage of disadvantaged students exceeds a set threshold; weight would apply for each disadvantaged student above threshold.	Weight should be at least double the funding that regular education students receive; use Gold recommendations to build up from this floor. States should use an identification model other than ones mentioned in Silver categories. For instance: • Student address records are linked with household income captured on tax returns. • State departments work with federal treasury departments to determine household income for home addresses falling within each school district.

Formula Element	Silver	Gold	Moonshot
English-language learners (ELLs)	Generous weight for every student counted as an ELL under Title III. This would align funding consistency between state and federal reporting and eligibility.	Generous weights in three tiers with more funding for lower levels of current ELLs using uniform, statewide assessments. Examples: • Set minimum ELL count for districts with few ELLs; provide funding on that inflated basis to ensure sufficient scale. • Increase ELL weight for districts enrolling few ELLs. • Provide per-pupil funding for districts to participate in regional ELL program rather than providing for district-level instruction.	Generous weights applied to base, with students assigned to two tiers. Provide more funds for ELLs of lower proficiency level according to prevalence of native language in a district; students whose native language is less common receive higher weights.
Special education	Use multiple-weights system with three to five tiers, assigning students to tiers based on diagnoses. Have fund for especially high-cost students; this fund should be implemented by application after student exceeds cost threshold.	Use five-tier multiple-weight system. Assign students to tiers based on hybrid system incorporating diagnoses using state matrix of abilities based on individualized education plan (IEP). Assign students with less intensive supports to the three lower-funded tiers. Assign students with more intensive supports and accommodations based on specific abilities and skills on IEP. While more complex, this targets funds more accurately. Should also have high-cost fund as in Silver model.	Five-tier system similar to Gold recommendation, but all students, not just some, are scored based on IEP. Process would require layer of state review of IEPs and could level accountability for over- or underidentification of students. Use high-cost fund level as in Silver and Gold recommendations.
Grade level	Adjust funding formula based on number of students in each grade, including pre-K and full-day kindergarten. No need to break out students by grade; grade levels unlikely to differ substantially. Thus, to keep formula simple, states can choose not to apply any grade-level weights.	Include pre-K and full-day kindergarten in funding grades in formula. Consider weight that increases funding in K-3 for early learning literacy. Add weight for 9-12 to support college and career readiness; this weight can aid in providing career and technical education and college prep coursework.	Not provided.

Formula Element	Silver	Gold	Moonshot
Gifted and talented	Provide funding on a census basis: Assume that standard percentage of every district's enrollment is gifted, and provide funding weighted for the number of students.	Increase base funding amount high enough to account for gifted instruction. Programs should be funded with general instructional dollars.	Not provided.
Sparsity and isolation	Add sliding–scale weight to base amount for each student enrolled in a sparse district. Weight should be higher in districts with fewer students per square mile and should phase out at greater student density. Since this funding is provided on a per-pupil basis, upper limit of the sliding scale should be generous to properly meet funding needs of sparse districts with very low enrollments. Sparsity weight should multiply base amount by four to five times.	Apply sliding-scale weight to base amount for sparsity, with a higher amount for districts with fewer students per square mile. Apply flat weight to base for students in isolated districts, with designation of "rural-remote" based on census designation. Districts can apply for this amount if they have geographic barriers such as mountain ranges, rivers, unpaved roadways. States should account for increased per-pupil cost of service for ELLs in districts where few students are enrolled (see Gold recommendation under "English-language learners").	Because of large geographic differences among states, funding for sparse or isolated districts should be specific to an individual state. States seeking the best funding structure should construct a policy that considers its particular geographic circumstances and needs.
Within-state cost differences	Not provided.	No adjustment for general within-state cost differences. Adjust for genuine specific local cost drivers. Example: district where cost of living is high but per-student value of tax base is relatively low. Adjustment would be for districts that have revenue challenges because much of the property tax base is tax-exempt.	Not provided.

Source: EdBuild. Common Sense and Fairness. June 2020. Web.

Appendix C

Methodology For Identifying States Similar To Kentucky For Purposes Of School Funding Comparisons

In 2014, Picus Odden & Associates prepared a report for the Council for Better Education titled *Adequacy For Excellence In Kentucky*, which identified states similar to Kentucky based on several criteria including educational outcomes, financial data, student demographics, teacher staffing, and whether the state bordered Kentucky. The states identified by Picus Odden were Alabama, Arkansas, Indiana, Missouri, Ohio, Tennessee, and West Virginia.

Methodology To Identify Additional States For This Report

Using the most recent available data, this report used the criteria below to identify comparable states based on student and teacher information, financial data, and local demographics.

- Average daily attendance per teacher, within 0.0 to 0.5 students per teacher[43]
- Revenue per ADA, within $200 per student[44]
- Number of operating districts, within 10 districts[45]
- ADA, within 50,000 students statewide[46]
- Expenditures per ADA, within $100[47]
- Percentage of students qualifying for free or reduced-price lunch, within 0.0 to 0.9 percentage points [48]
- Median household income, within $500[49]
- Public high school 4-year adjusted cohort graduation rates, same percentage[50]
- Percentage of 18- to 24-year olds enrolled in degree-granting postsecondary institutions, within 0.0 to 0.5 percentage points[51]
- Average salaries of public school teachers, within approximately $500[52]
- Number of students per district, within 500 students[53]
- Percentage of students scoring at or above proficient and at or above basic in National Assessment of Educational Progress (NAEP) reading and math in the 4th and 8th grade[54]
- Percentage of total revenue receipts from local, state, and federal revenue[55]

States received one point for each of the first 11 matching criteria and fractions of a point for the remaining two criteria based on how similar they were to Kentucky. Comparable states included Alabama, Arkansas, Indiana, Missouri, North Carolina, North Dakota, Ohio, Oklahoma, Tennessee, and West Virginia.

States' similarity scores for NAEP were determined in increments of one-eighth point based on how similar their NAEP scores were to Kentucky's.[a] For example, Tennessee's 4th-grade math, 4th-grade reading, and 8th-grade reading NAEP proficiency rates were similar to Kentucky's. Tennessee received three-eighths of a point for these criteria.

[a] The report compared states based on the percentage of students at or above a basic level and at or above a proficient level in 4th-grade NAEP reading, 4th-grade NAEP, 8th-grade NAEP reading, and 8th-grade NAEP math.

States' similarity scores for total revenue receipts from local, state, and federal revenue were determined in increments of one-third point based on how closely each state's local, state, and federal revenue receipts matched Kentucky's receipts. For example, North Carolina's state revenue was similar to Kentucky but its local revenue and federal revenue were not. North Carolina received one-third of a point.

Appendix D

State And Local Revenues By State

State And Local Revenue

In Kentucky, state and local revenues mainly come from Support Education Excellence in Kentucky (SEEK) funding. SEEK requires school districts to levy a minimum tax of 30 cents per $100 of assessed property value. The local taxes can be raised through a combination of several local taxes, such as property taxes, motor vehicle taxes, utility taxes, occupational taxes, and others. In fiscal year 2020, the SEEK guaranteed base funding was $4,000 per pupil. In addition, school districts receive additional funding for students qualifying for the federal free lunch program, those classified as exceptional children, and those with limited English proficiency.

Table D.1 shows local and state revenues for FY 2011 and FY 2020 for Kentucky and comparable states, along with the national averages. From FY 2011 to FY 2020, Kentucky's state and local revenues increased by nearly $1.9 billion, a 31.4 percent increase. For this period, only three comparable states had a higher percentage increase than Kentucky in state and local funding. While Kentucky's local and state revenue increased by 31.4 percent, the average increase in the United States was 35.7 percent.

Table D.1
Growth In Public Education Local And State Revenue In Nominal Dollars
Fiscal Years 2011 And 2020

	State And Local K-12 Revenue*		Change, FY 2011 To FY 2020	
State	**FY 2011**	**FY 2020**	**Dollars**	**Percent Change**
Alabama	$6,298,086	$7,778,841	$1,480,755	23.5%
Arkansas	4,329,791	5,034,126	704,335	16.3
Indiana	10,827,175	12,392,354	1,565,179	14.5
Kentucky	**5,938,604**	**7,802,782**	**1,864,178**	**31.4**
Missouri	8,498,185	10,899,768	2,401,583	28.3
North Carolina	12,362,561	13,922,311	1,559,750	12.6
North Dakota	1,075,832	1,737,614	661,782	61.5
Ohio	20,253,505	23,622,719	3,369,214	16.6
Oklahoma	4,864,645	6,441,332	1,576,687	32.4
Tennessee	7,372,769	9,993,697	2,620,928	35.5
West Virginia	2,954,319	3,299,883	345,564	11.7
US Average	10,491,531	14,237,450	3,745,919	35.7

* Figures in thousands of dollars.
Source: US. Census Bureau. *2020 Public Elementary–Secondary Education Finance Data* and *2011 Public Elementary–Secondary Education Finance Data*.

Table D.2 shows the percentage increase in local revenues for FY 2011 and FY 2020 for Kentucky and comparable states along with the national averages. From FY 2011 to FY 2020, Kentucky's local revenues increased by 3.3 percent. Only three comparable states had a higher percentage increase than Kentucky in local funding from FY 2011 to FY 2020; Kentucky tied with Tennessee's local revenue increase.

Table D.2
Public Education Local Revenue As Percentage Of Total Education Revenue
FY 2011 And FY 2020

	Local Revenue As Percent Of Total Revenue		
State	**FY 2011**	**FY 2020**	**Percent Change, FY 2011 To FY 2020**
Alabama	43.3%	45.5%	0.9%
Arkansas	31.6	32.5	1.9
Indiana	12.2	14.1	1.0
Kentucky	**31.5**	**34.8**	**3.3**
Missouri	29.4	30.4	0.8
North Carolina	47.4	48.2	-5.9
North Dakota	33.8	27.9	-0.1
Ohio	35.3	35.2	8.9
Oklahoma	45.7	54.6	5.4
Tennessee	36.4	41.8	3.3
West Virginia	39.5	42.8	3.8
United States	43.3	45.5	2.2

Source: US. Census Bureau. *2020 Public Elementary–Secondary Education Finance Data* and *2011 Public Elementary–Secondary Education Finance Data*.

Federal Revenue

The federal government provides funding for school districts mainly through grant programs. Examples of federal funding include Title I funding for students of low-income funding provided under the Individuals with Disabilities Education Act.

As shown in Table D.3, all states have seen a decrease in the percentage of federal funds in total revenue. Kentucky's percentage decrease from FY 2011 to FY 2020 was 5.1 percent, a little more than the national average of -4.8 percent. Oklahoma's percentage decreased by 6.0 percent, the most of any comparison state. Indiana's percentage of federal revenue compared to the percentage of total revenue decreased by 1.5 percent, the least of any comparison state.

Table D.3
Public Education Federal Revenue As Percentage Of Total Revenue
FY 2011 And FY 2020

State	Federal Revenue As Percent Of Total Revenue		Percent Change, FY 2011 To FY 2020
	FY 2011	FY 2020	
Alabama	14.6%	10.7%	-3.9%
Arkansas	16.0	10.7	-5.3
Indiana	8.6	7.1	-1.5
Kentucky	**16.4**	**11.3**	**-5.1**
Missouri	13.7	8.9	-4.8
North Carolina	14.2	10.5	-3.7
North Dakota	14.8	10.0	-4.8
Ohio	11.1	6.9	-4.2
Oklahoma	16.6	10.6	-6.0
Tennessee	14.7	10.1	-4.6
West Virginia	14.7	11.6	-3.1
United States	12.3	7.5	-4.8

Source: US. Census Bureau. *2020 Public Elementary–Secondary Education Finance Data* and *2011 Public Elementary–Secondary Education Finance Data*.

Appendix E

Current Spending On Instruction And District And School Administration

Current P-12 spending on education includes goods and services consumed within the current year. This includes all expenditures except those associated with adult education, community services, repayment of debts, purchases of land, school construction, depreciation of items such as buses, and programs outside P-12th grade.

Table E.1 shows that, nationally, per-pupil current spending on instruction increased by 26.6 percent from FY 2011 to FY 2020; in Kentucky, it increased by 22.4 percent. Among comparable states, West Virginia increased spending on instruction the least: 0.17 percent.

Table E.1
Per-Pupil Spending On Instruction By Comparable States
FY 2011 And FY 2020

	Spending on Instruction		Change, FY 2011 To FY 2020	
State	**FY 2011**	**FY 2020**	**Amount**	**Percent Change**
Alabama	$5,143	$5,883	$740	14.4%
Arkansas	5,374	5,810	436	8.1
Indiana	5,476	6,213	737	13.5
Kentucky	**5,445**	**6,665**	**1,220**	**22.4**
Missouri	5,688	6,364	676	11.9
North Carolina	5,225	6,270	1,045	20.0
North Dakota	6,867	8,616	1,749	25.5
Ohio	6,251	8,213	1,962	31.4
Oklahoma	4,311	5,424	1,113	25.8
Tennessee	5,015	5,977	962	19.2
West Virginia	7,126	7,138	12	0.17
US average	6,458	8,176	1,718	26.6

Source: US. Census Bureau. *2020 Public Elementary–Secondary Education Finance Data* and *2011 Public Elementary–Secondary Education Finance Data.*

As shown in Table E.2, per-pupil current spending on district administration increased by 31.8 percent at the national level from FY 2011 to FY 2020; in Kentucky, it increased 18 percent. West Virginia was the only comparable state that decreased the amount spent on district administration, with a 14.8 percent drop over this period.

Table E.2
Per-Pupil Expenditures On District Administration
FY 2011 And FY 2020

	District Administration		Change, FY 2011 To FY 2020	
State	**FY 2011**	**FY 2020**	**Amount**	**Percent Change**
Alabama	$212	$256	$44	20.8%
Arkansas	89	154	65	73.0
Indiana	184	208	24	13.0
Kentucky	**211**	**249**	**38**	**18.0**
Missouri	284	632	348	122.5
North Carolina	88	106	18	20.5
North Dakota	508	604	96	18.9
Ohio	302	397	95	31.5
Oklahoma	252	280	28	11.1
Tennessee	171	209	38	22.2
West Virginia	229	195	-34	-14.8
US average	201	265	64	31.8

Source: US. Census Bureau. *2020 Public Elementary–Secondary Education Finance Data* and *2011 Public Elementary–Secondary Education Finance Data.*

For school administration expenditures in this period, Table E.3 shows that Kentucky increased at the same rate as the nation as a whole (32 percent). Only three comparable states—North Dakota, Oklahoma, and Tennessee—increased this spending at a higher rate.

Table E.3
Per-Pupil Amounts For Current Spending On School Administration
FY 2011 and FY 2020

	School Administration		Change, FY 2011 To FY 2020	
State	**FY 2011**	**FY 2020**	**Amount**	**Percent Change**
Alabama	$546	$641	$95	17.4%
Arkansas	475	539	64	13.5
Indiana	525	692	167	31.8
Kentucky	**516**	**682**	**166**	**32.2**
Missouri	536	661	125	23.3
North Carolina	515	607	92	17.9
North Dakota	537	759	222	41.3
Ohio	608	719	111	18.3
Oklahoma	405	541	136	33.6
Tennessee	463	633	170	36.7
West Virginia	634	690	56	8.8
US average	574	758	184	32.1

Source: US. Census Bureau. *2020 Public Elementary–Secondary Education Finance Data* and *2011 Public Elementary–Secondary Education Finance Data.*

Appendix F

Staffing Data For Kentucky And Comparable States

This section reviews how average teacher salaries changed between FY 2010 and FY 2020.

Table F.1 displays average teacher salaries for Kentucky and comparable states. Only two states raised teacher salaries at a lower rate than Kentucky over this period: Arkansas, whose average teacher salary increased 8 percent, and Indiana, whose average increased 3.5 percent. Kentucky's average teacher salary was $49,543 in FY 2010; by FY 2020, it had increased 9 percent to $53,907. North Dakota's average teacher salary had the highest percentage increase: 25 percent. Of comparable states, Ohio had the highest average 2020 teacher salary at $61,406.

Table F.1
State Average Teacher Salaries
FY 2010 And FY 2020

	State Average Teacher Salary		Change, FY 2010 To FY 2020	
State	**FY 2010**	**FY 2020**	**Dollars**	**Percent Change**
Alabama	$47,571	$54,095	$6,524	13.7%
Arkansas	46,700	50,456	3,756	8.0
Indiana	49,986	51,745	1,759	3.5
Kentucky	**49,543**	**53,907**	**4,364**	**8.8**
Missouri	45,317	50,817	5,500	12.1
North Carolina	46,850	54,150	7,300	15.6
North Dakota	42,964	53,525	10,561	24.6
Ohio	55,958	61,406	5,448	9.7
Oklahoma	47,691	54,096	6,405	13.4
Tennessee	46,290	51,862	5,572	12.0
West Virginia	45,959	50,238	4,279	9.3
US average	55,370	63,645	8,275	14.9

Source: National Center for Education Statistics. Digest of Education Statistics, 2010 and 2020.

:

Appendix G

Student Characteristics Of Kentucky And Comparable States

Student Characteristics

This appendix reports on specific student characteristics, such as the number of students enrolled in public education and the average number of students per teacher in each classroom. In addition, this section reviews change in the number of special education students, the percentage of students eligible for free or reduced-price lunch (FRPL), and the number of students who have limited English proficiency (LEP).

Student Enrollment

Enrollment is the count of all students enrolled in a district on a specific date. As shown in Table G.1, student enrollment decreased in six states comparable to Kentucky between FY 2011 and FY 2020. In four comparable states, enrollment grew. Only two comparable states, Missouri and Ohio, had a larger decline in students as a percentage of enrollment than Kentucky did. Kentucky had approximately 23,000 students (3.4 percent) fewer students enrolled in FY 2020 than in FY 2011. Compared to the national-level decline in this period, Kentucky's enrollment decline was 0.4 percentage points greater.

Table G.1
Fall K-12 Public School Enrollment, Kentucky And Comparable States
FY 2011 And FY 2020

	Fall Enrollment		Change, FY 2011 To FY 2020	
State	**FY 2011**	**FY 2020**	**Students**	**Percent Change**
Alabama	744,621	734,559	-10,062	-1.4%
Arkansas	483,114	486,305	3,191	0.7
Indiana	1,040,765	1,033,964	-6,801	-0.7
Kentucky	**681,987**	**658,668**	**-23,319**	**-3.4**
Missouri	916,584	882,388	-34,196	-3.7
North Carolina	1,507,864	1,513,677	5,813	0.4
North Dakota	97,646	114,955	17,309	17.7
Ohio	1,740,030	1,645,412	-94,618	-5.4
Oklahoma	666,120	694,113	27,993	4.2
Tennessee	999,693	985,207	-14,486	-1.4
West Virginia	282,870	253,447	-29,423	-10.4
US	49,521,669	49,375,467	-146,202	-3.0

Source: National Center for Education Statistics. Digest of Education Statistics. 2011 and 2022.

Special Education Student Enrollment

Students who require special education services receive unique instruction conducted in classrooms, homes, hospitals, and other settings. These services can include speech therapy, physical therapy, and occupational therapy. Students classified as requiring special education services must have individualized education programs that define their career goals and the supports they need to reach proficiency for graduation.

Table G.2 shows the enrollment of 3- to 21-year-olds in special education as a percentage of their states' total enrollment in FY 2011 and FY 2020. In that period, the percentage of students requiring special education services grew in Kentucky and comparable states. Among comparable states, Alabama had the highest growth in its population of special education students (2.2 percent), followed by Oklahoma (2.0 percent). In Kentucky, North Carolina, and North Dakota, special education populations grew 0.8 percent in this period. Only four comparable states have a higher proportion of special education students: Indiana, Ohio, Oklahoma, and West Virginia.

Table G.2
Percentage Of 3- To 21-Year-Old Students Receiving Special Education
FY 2011 And FY 2020

	Percent Special Education Students		Percentage
State	**FY 2011**	**FY 2020**	**Points Of Change**
Alabama	10.9%	13.1%	2.2%
Arkansas	13.5	15.4	1.9
Indiana	15.9	17.3	1.4
Kentucky	**15.2**	**16.0**	**0.8**
Missouri	13.8	14.5	0.7
North Carolina	12.4	13.2	0.8
North Dakota	13.7	14.5	0.8
Ohio	14.8	16.4	1.6
Oklahoma	14.7	16.7	2.0
Tennessee	12.2	13.2	1.0
West Virginia	15.9	17.6	1.7
US average	13.0	14.4	1.4

Source: National Center for Education Statistics. Digest of Education Statistics. 1990-1991 through 2019-2020.

Students With Limited English Proficiency

Students with limited English proficiency are unable to communicate fluently in English, or they come from homes where English is not spoken. LEP students require specialized or modified instruction in their academic courses.

As shown in Table G.3, Kentucky and comparable states all saw increases in the percentage of LEP students from FY 2010 to FY 2019. Oklahoma's percentage increased the most, from 6.6 percent to 9.1 percent, an increase of 2.5 percentage points. In FY 2010, 2.4 percent of Kentucky students were LEP students; by 2019, that figure almost doubled to 4.3 percent, an

increase of 1.9 percentage points. In FY 2011, 9.2 percent of all US students were LEP students; by FY 2019, that national average increased 1.2 percent to 10.4 percent.

Table G.3
Percent Of K-12 Students With Limited English Proficiency
Kentucky and Comparable States
FY 2010 And FY 2019

State	Percent Limited English Proficiency Students		Percentage Points Of Change
	FY 2010	FY 2019	
Alabama	2.4%	4.4%	2.0
Arkansas	6.8	8.2	1.4
Indiana	4.9	6.6	1.7
Kentucky	**2.4**	**4.3**	**1.9**
Missouri	2.4	3.9	1.5
North Carolina	7.5	8.0	0.5
North Dakota	2.8	3.7	0.9
Ohio	2.0	3.6	1.6
Oklahoma	6.6	9.1	2.5
Tennessee	3.2	5.1	1.9
West Virginia	0.6	0.8	0.2
United States	9.2	10.4	1.2

Source: National Center for Education Statistics. Digest of Education Statistics. Fall 2000 through fall 2019.

Students Eligible For Free Or Reduced-Price Lunch

Students whose family income is at or below 130 percent of the federal poverty level can receive free meals in public schools. Students whose family income is between 130 percent and 185 percent of the federal poverty level can receive meals at a reduced rate. In addition, students whose families participate in federal assistance programs such as the Supplemental Nutrition Assistance Program or the Kentucky Transitional Assistance Program can be directly certified for meal benefits in Kentucky.

The percentage of students receiving free or reduced-price lunch is often used as a proxy measure for the percentage of students living in poverty. Kentucky's percentage of students eligible for FRPL is higher than the national rate. As shown in Table G.4, Kentucky and three comparable states had lower FRPL rates in FY 2020 than in FY 2011. During the same period, the US FRPL rate increased from 48.1 percent to 52.1 percent. In comparable states during this period, North Carolina had the highest rate of increase in FRPL students—an increase of 7.5 percentage points. Kentucky's FRPL rate went from 56.6 percent to 55.7 percent, a decrease of 0.9 percentage points.

Table G.4
Percentage Of Public School Students Eligible For Free Or Reduced-Priced Lunch
FY 2011 And FY 2020

State	Percent Of Students Eligible For Free Or Reduced-Price Lunch		Percentage Points Of Change
	FY 2011	FY 2020	
Alabama	55.1%	55.0%	-0.1
Arkansas	60.5	65.5	5.0
Indiana	46.8	48.4	1.6
Kentucky	**56.6**	**55.7**	**-0.9**
Missouri	45.0	50.0	5.0
North Carolina	50.3	57.8	7.5
North Dakota	31.7	30.2	-1.5
Ohio	42.6	45.5	2.9
Oklahoma	60.5	59.1	-1.4
Tennessee	55.0	58.8	3.8
West Virginia	51.5	51.2	-0.3
US average	48.1	52.1	4.0

Source: National Center for Education Statistics. Digest of Education Statistics. Fall, selected years, 2000 through 2020.

Pupil-Teacher Ratio

The pupil-teacher ratio is the number of pupils enrolled in a school compared to the full-time equivalent of teachers employed there. A low student-teacher ratio is widely considered an indicator of high quality, as students have more opportunities for personal attention.

Table G.5 shows pupil-teacher ratios in Kentucky and comparable states in FY 2011 and FY 2020. Alabama had the lowest pupil-teacher ratio in FY 2020 at 17.7 students per teacher, but Arkansas saw the largest reduction in pupil-teacher ratio, going from 14.1 to 12.9, for a decrease of 1.2 students per teacher on average.

In FY 2011, Kentucky's pupil-teacher ratio was 16.0; by FY 2020, it had increased to 16.4—higher than the national average of 15.9.

Table G.5
Pupil-Teacher Ratios For Kentucky And Comparable States
FY 2011 And FY 2020

State	Pupil-Teacher Ratio		Difference
	FY 2011	FY 2020	
Alabama	15.3	17.7	2.4
Arkansas	14.1	12.9	-1.2
Indiana	18.0	17.0	-1.0
Kentucky	**16.0**	**16.4**	**0.4**
Missouri	13.8	13.2	-0.6
North Carolina	15.2	15.5	0.3
North Dakota	11.4	12.5	1.1
Ohio	16.1	15.9	-0.2
Oklahoma	16.0	16.2	0.2
Tennessee	14.8	15.7	0.9
West Virginia	13.9	14.0	0.1
United States	16.0	15.9	-0.1

Note: Ratio weighs enrollment against count of full-time equivalent teachers.
Source: National Center for Education Statistics. Digest of Education Statistics. Selected years, fall 2000 through 2019.

Appendix H

Review Of Recent Adequacy Studies

This appendix reviews adequacy studies performed in Kentucky in the past 20 years, beginning with the most recent study.

Adequacy For Excellence In Kentucky, 2014

Picus Odden & Associates conducted an evidence-based adequacy study for Kentucky from December 2013 through August 2014 for the Council for Better Education. Picus Odden met with education leaders, members of the educational and political communities, business leaders, teachers, and education professionals to understand school finance issues and to support their recommendations, with the assistance of the Kentucky Department of Education.

Because the 2014 Kentucky evidence-based model (EBM) is the most recent adequacy study performed in Kentucky, OEA staff closely examined its methodology and findings. Several disadvantages are discussed in Chapter 3.

Picus Odden have recalibrated the evidence model since this report was released in 2014, and some recommendations are outdated. Picus Odden's most recent recommendations are from Wyoming in 2020.

Elements Of The Model. Table H.1 summarizes the costs estimated by the EBM and costs that were carried forward from actual costs.

Total Costs. The model estimated that an additional $2.44 billion would be needed in school year (SY) 2013 to help all districts reach adequacy, equating to an average of $13,130 per pupil. The model excluded federal funds and found that Anchorage Independent was the only Kentucky district above adequacy levels. When federal funds were included, Boyd County was also spending above the level recommended by the EBM, and the additional funding needed to reach adequacy decreased to $1.88 billion. This appendix details the district-level per-pupil spending recommended by the model; actual state and local funding in SY 2013; and actual state, local, and federal funding in SY 2013.

Table H.1
Evidence-Based Model Total Costs
School Year 2013

Category	Resource	Cost
Evidence-based model	Core instruction	$2,329,493,799
	Specialist teachers	539,823,270
	Teacher and pupil supports	693,823,467
	School administration	244,557,099
	Per-pupil resources	530,417,300
	Special education	438,158,594
	Low income	916,697,861
	English learners	15,474,423
	Small school adjustment	40,434,548
	Pre-K	572,235,127
	Small district adjustment	10,703,977
	Central office	433,695,198
	Maintenance and operations	480,412,752
	Total	$7,245,927,414
Carry-forward costs	Food service	347,932,132
	Community services	60,861,322
	Adult education operations	287,215
	Facilities	6,976,259
	Debt service	715,849,097
	Fund transfers	566,478,697
	Transportation	418,656,457
	Kentucky Department of Education operations	20,951,500
	Kentucky School for the Blind/Deaf general fund allocation	16,135,700
	Total	$2,154,128,378
Combined	Total	$9,400,055,792

Note: Figures may not sum due to rounding.
Source: Picus Odden & Associates. *Adequacy For Excellence In Kentucky*, report 2 of 2. 2014. Web.

Kentucky Prototypical School Resources

This section reviews the resources developed for prototypical schools by Picus Odden at the elementary, middle, and high school levels, shown in Table H.2. Applying this model in Kentucky could overestimate or underestimate resources if districts or schools do not fit the prototype, or districts and schools would need to be reorganized to fit the prototype. *School units* can mean an individual school or schools-within-schools operating as semi-independent units.

Table H.2
Kentucky Prototypical School Configuration, Picus Odden & Associates Model
2014

School Element	Elementary Schools	Middle Schools	High Schools
Grade	Kindergarten to 5	6 to 8	9 to 12
School size	450 students	450 students	600 students
Class size	Grades K-3: 15 students Grades 4-5: 25 students	25 students	25 students
Full-day kindergarten	Yes	N/A	N/A
Length of teacher contract	192 work days: 174 instruction days, 4 holiday days, 4 open/close school days or parent conference days, 10 professional development days		

Source: Picus Odden & Associates. *Adequacy For Excellence In Kentucky*, report 1 of 2. 2014. Web.

Table H.3 shows personnel resources. They are estimated using average salaries and benefits, except for substitutes, which are funded at 5 percent of teacher salaries.

Table H.3
Personnel Resources To Support Prototypical Schools
Picus Odden & Associates, Kentucky Adequacy Study
2014

	School Level			
Element	Elementary	Middle	High	Total Cost
Core content teachers	26.0	18.0	24.0	$2,218,565,522
Substitutes, core content	5% of salaries	5% of salaries	5% of salaries	110,928,276
Specialist teachers	5.2	3.6	8.0	514,117,400
Substitutes, specialists	5% of salaries	5% of salaries	5% of salaries	25,705,870
Instructional facilitators	1 per 200 students	1 per 200 students	1 per 200 students	228,327,998
Tutors	1.0	1.0	1.0	94,143,496
Guidance counselors	1.0	1.24	1.8	164,660,267
Supervisory aides	2.0	2.0	3.0	75,947,595
Librarians	1.0	1.0	1.0	114,620,537
Substitutes, pupil supports	5% of salaries	5% of salaries	5% of salaries	16,123,575
Principals	1.0	1.0	1.0	106,605,077
Assistant principals	0.0	0.0	1.0	24,442,054
Secretarial/clerical	2.0	2.0	3.0	113,509,968
Total				$3,807,697,635

Note: Unless otherwise specified, figures represent number of staff members per prototypical school.
Source: Picus Odden & Associates. *Adequacy For Excellence In Kentucky*, report 1 of 2. 2014. Web.

Table H.4 shows per-pupil resources. Per-pupil resources provide a specified amount of funding per student, covering instructional materials, technology equipment, gifted and talented funding, professional development, and student activities funding.

Table H.4
Resources Required To Support Prototypical Schools
Picus Odden & Associates, Kentucky Adequacy Study
2014

Element	Resources Per Student	Total
Instructional materials	Elementary schools: $140 Middle schools: $140 High schools: $175	$99,555,686
Equipment/technology	$250	165,716,005
Gifted and talented	$25	16,571,601
Professional development	$100	66,286,402
Assessments	$25	16,571,601
Student activities	$250	165,716,005
Total		$530,417,300

Note: The equipment/technology recommendation provides one computer for every two to four students; this ratio is outdated based on the current goal of providing a 1:1 student-to-computer ratio set within the 2018–2024 Master Plan for the Kentucky Education Technology System.[56] The updated model recommends $250 per student for a 3:1 ratio or $340 for a 1:1 ratio. The 2020 model recommended $210 per student for instructional materials.
Source: Picus Odden & Associates. *Adequacy For Excellence In Kentucky*, report 1 of 2. 2014. Web.

Resource Allocation Model. The 2014 Kentucky EBM is a resource allocation model that provides funding based on resources. Kentucky uses a guaranteed base per-pupil amount adjusted by add-ons for special student groups and a transportation formula.

Student Counts For Calculating Base Aid. The EBM calculated base aid on the greater of current student count or a rolling 3-year average daily membership to support districts with declining enrollment. Kentucky bases aid on prior-year adjusted average daily attendance (AADA) plus growth.

Regional Cost Adjustment Factors. The EBM recommended using a comparable wage index to adjust salary levels. The authors note that this recommendation shifts aid away from rural districts and into urban districts, where prices for education inputs are higher. The authors also state that costs vary across regions and districts based on community characteristics, work requirements, and work environments.

School Size. Kentucky bases funding on district AADA plus growth and does not consider school size. The 2014 Kentucky EBM recommended districts of 3,900 students consisting of elementary school units with 450 students, middle school units of 450 students, and high school units of 600 students, where *school unit* can mean an individual school or schools-within-schools operating as semi-independent units.

Special Student Populations

This section reviews prototypical school resources for special student groups including students with limited English proficiency, at-risk students, and students with mild and moderate disabilities, as shown in Table H.5.[a]

Table H.5
Evidence-Based Model Recommendations For Special Student Populations

Category	School Element	Resources	Resource Cost
English language learners	Teachers	1 teacher per 100 ELLs	$14,545,451
	Substitutes	5% of salaries	727,273
	Professional development	6 days	—
	Instructional materials	$10 per ELL	201,700
	Total		$15,474,423
Low income	Tutors	1 teacher per 125 at-risk students	214,681,560
	Extended days	1 teacher per 120 at-risk students	214,681,560
	Summer school	1 teacher per 120 at-risk students	214,681,560
	Additional pupil support	1 teacher per 100 at-risk students	214,681,560
	Substitutes	5% of salaries	42,936,782
	Professional development	6 days	—
	Instructional materials	$10 per FRPL pupil*	15,034,840
	Total		$916,697,861
Students with disabilities	Teachers	1.0 per 150 students	305,792,088
	Aides	1.0 per 150 students	110,448,262
	Substitutes	5% of salaries	15,289,604
	Professional development	6 days	—
	Instructional materials	$10 per student	6,628,640
	Students with severe and profound disabilities	100% state-funded aid program	—
	Total		$438,158,594
Career and technical education	Equipment resources	$9,000 per FTE CTE teacher	Not estimated by model

Note: ELL = English language learner; FRPL = free and reduced-price lunch; FTE = full-time equivalent; CTE = career and technical education. Figures may not sum to totals shown, due to rounding.
*The 2020 model recommended 4.46 teacher positions for every 100 English language learners.
Source: Picus Odden & Associates. *Adequacy For Excellence In Kentucky*, report 1 of 2. 2014. Web.

At-Risk Student Support, Extended Day Programs And Summer School. The Picus Odden model assumes 50 percent of at-risk students would attend extended day programs and summer school.[b] The model also calls for quality summer schools, including full 6- to 8-week programs with small-group or individualized instruction and parent involvement and participation. The model does not include transportation funding for either program.

[a] *School Finance: A Policy Perspective,* 6th ed., published in 2020 by Picus Odden & Associates, bases exceptional child resources on total student count and recommends 1.0 exceptional child teachers per 200 students, 1.0 teacher behaviorists per 1,000 students, 1.1 related services personnel per 1,000 students, and 1.0 psychologist per 1,000 students.
[b] The updated model recommended one teacher per 120 at-risk students to support each of these programs.

Exceptional Child Students. The Picus Odden model bases exceptional child funding on the number of regular education students and assumes 12 percent of students have mild and moderate disabilities. The model recommended 100 percent state reimbursement for exceptional students with severe disabilities, minus federal Title VI b funds.

Career And Technical Education. The Picus Odden model recommends $9,000 per full-time career and technical education (CTE) teacher.[c]

Preschool. Table H.6 shows the staffing and resources that Picus Odden identified as needed to support preschool. The model provides preschool to all 3- and 4-year olds, prioritizing children in poverty, totaling $572.2 million in SY 2013.[d] In Kentucky, preschool is available to all 4-year-olds whose family income is less than 160 percent of the federal poverty level; all 3- and 4-year-olds with developmental delays and disabilities; and 4-year-olds placed at districts' discretion. Preschools receive state funds and federal Individuals with Disabilities Education Act B (IDEA B) funding to support students with special needs. In SY 2021, Kentucky school districts received nearly $7.8 million from IDEA B, which was not included in the 2014 Picus Odden analysis of adequate funding.[57] Districts received nearly $84.5 million from state funding based on amounts per student.

Table H.6
Picus Odden & Associates Prototypical Preschool Recommended Resources
2014

School Element	Resources Per School
Program size	150 students
Class size	15 students
Core content teachers	10 teachers
Specialist teachers	2 teachers
Instructional coaches	1 per 200 students
Total	12.75 positions
Pupil support	1 teacher per 100 FRPL students
Special education, mild and moderate disabilities	1.0 teacher and 1.0 aide per 150 students
Substitute teachers	5 percent of salaries
Instruction aides	1 per classroom (10)
Supervisory aides	0.75 aides
Assistant principals	1
Program site secretary	1
Professional development	$100 per student
Technology and equipment	$250 per student
Instructional materials	$140 per student
Assessments	$25 per student
Total costs	$572,235,127

* FRPL = free and reduced-price lunch.
Source: Picus Odden & Associates. *Adequacy For Excellence In Kentucky*, report 1 of 2. 2014. Web.

[c] The updated model recommended $10,000 per full-time equivalent CTE teacher.
[d] The updated model included additional staffing and increased funding. The 2020 Wyoming model included additional staff including assistant principals, secretaries, nurses, computer technicians, and counselors, and additional per-pupil resources including $130 for professional development, $210 for instructional materials, $25 for formative assessments, and either $250 to support 3:1 technology or $350 to support 1:1 technology.

Central Office, Maintenance, And Operations

Table H.7 shows the staffing and resources that Picus Odden identified as needed to support central office, maintenance, and operations in each prototypical district of 3,900 students, at an estimated total cost of $433.7 million.[e] The report notes that these elements are related to district functioning rather than directly related to student performance.

In addition, based on prototypical school infrastructure and gross square footage assumptions, Picus Odden calculated the number of custodians, maintenance workers, and groundskeepers considered necessary to support the overall model.

Table H.7
Central Office, Maintenance, And Operations Resources
Per Prototypical School District Of 3,900 Students
2020

Category	Position	Resources
Superintendent's office	Superintendent	1.0
	Assistant superintendent	1.0
	Secretary	1.0
Business office	Business manager	1.0
	Director of human resources	1.0
	Accounting clerk	1.0
	Accounts payable	1.0
	Secretary	1.0
	Custodian	0.5
	Groundskeeper	1.0
	Maintenance	0.8
Curriculum and support	Director of pupil services	1.0
	Director of special education	1.0
	Director of assessment and evaluation	1.0
	Secretary	3.0
Technology	Director of technology	1.0
	Computer technician	1.0
	Secretary	1.0
Operations and maintenance	Director	1.0
	Secretary	1.0
	Custodian	22.48
	Maintenance workers	9.04
	Grounds maintenance	6.92
Other expenses	Miscellaneous*	$350 per student
Costs	Central office	$433,695,198
	Maintenance and operations	$480,412,752

Note: The report does not provide total costs by category. Figures represent staff per school unless otherwise noted.
*Includes communication, purchase services, insurance, supplies, legal audit, association fees, elections, technology, etc.
Source: Picus Odden & Associates. *Adequacy For Excellence In Kentucky*, report 1 of 2. 2014. Web.

[e] The updated 2020 model central office staff recommendations vary based on student count and range from 4.5 positions to 63 positions.

Small Districts And Small Schools. Table H.8 shows the staffing and resources that Picus Odden identified as needed to support small districts (those with 390 students or fewer). The model estimates $10.7 million to support small districts in SY 2013.

Small schools are defined as having 50 or fewer students. The EBM allocates one assistant principal and one teacher per seven students; other resources, such as professional development and technology, remain the same. The model for Kentucky includes 132 principals, 428 teachers, and substitutes, totaling $40.4 million in SY 2013.

Table H.8
Resources To Support Small Districts

		Number Of Students In District		
Category	**School Element**	**390**	**195**	**97.5**
Personnel resources	Teachers and supporting staff	24.0	13.0	14.0
	Instructional facilitators	2.0	1.0	0.0
	Substitute teachers	1.3	0.7	0.0
	Counselors/nurses	2.0	1.0	0.0
	Supervisory aides	2.0	1.0	0.0
	Librarians	1.0	0.5	0.0
	Principals	1.0	1.0	0.0
	Assistant principals	1.0	0.0	1.0
	School secretaries	2.0	1.0	0.0
Dollar per pupil resources	Professional development	$100 per student	$100 per student	$100 per student
	Technology/equipment	$250 per student	$250 per student	$250 per student
	Instructional materials	$152 per student	$152 per student	$152 per student
	Formative assessments	$25 per student	$25 per student	$25 per student
	Student activities	$250 per student	$250 per student	$250 per student
	Gifted funds	$25 per student	$25 per student	$25 per student
Central office	Professional staff	2.0	1.0	1.0
	Support staff	2.0	1.0	1.0
	Miscellaneous/communications	$350 per student	$350 per student	$350 per student
Maintenance and operations	Custodians	2.0	1.0	0.5
	Maintenance	1.0	0.5	0.25
	Groundskeepers	1.0	0.5	0.25
	Utilities	$197 per student	$197 per student	$197 per student
	Supplies	$0.07 per sq. ft.	$0.07 per sq. ft.	$0.07 per sq. ft.

Note: Figures represent staff per school unless otherwise noted.
Source: Picus Odden & Associates. *Adequacy For Excellence In Kentucky*, report 1 of 2. 2014. Web.

Calculation Of The Cost Of An Adequate Education In Kentucky: A Professional Judgment Approach, 2004

Deborah A. Verstegen conducted a professional judgment study of school funding adequacy in Kentucky for the Council for Better Education, published in 2004. Prototypical schools were designed at the elementary, middle, and high school levels.

Prototypical Districts. Districts were grouped into small to medium districts, medium to large districts, and large to very large districts. Additional groups with equal numbers of students

ranging from 185,000 to 191,000 AADA were created and grouped into 125 small to medium districts, 41 medium to large districts, and 10 large to very large districts. The report did not name the districts and schools included within each group, and it is impossible to update the data without that information.

Resource Allocations. Five principles guided resource allocations and are listed in Table H.9. Three focus groups determined the resource inputs needed at the school level for an adequate education in prototypical schools in districts of different sizes. Three district-level focus groups reviewed these recommendations and applied district-level costs based on actual district budgets, excluding transportation. A seventh state-level focus group reviewed the resources, incorporated state-level issues, and considered costs. Table H.10 details the prototypical school design developed by the professional judgment panel, and Table H.11 shows the per-pupil resources. The model also includes 5 days of professional development training for certified staff and 4 days for classified staff.

Disadvantages. This model is a resource allocation model that does not fit how Kentucky funds education. In addition, applying prototypical schools and districts in Kentucky may overestimate or underestimate resources or require major reorganization.

Disadvantages of the professional judgment model are discussed in Chapter 1. Professional judgment models are created by educators and education stakeholders who may not be qualified to design programs. The models can create unrestrained and wishful recommendations that may suffer from a conflict of interest when the model benefits the educators making the recommendations.

Table H.9
Principles Guiding Resource Allocation In Prototypical Schools,
Professional Judgment Model Of Education Funding Adequacy
2004

Principle	Recommendation
Early learning opportunities are cost effective and improve student outcomes.	Half-day preschool and full-day kindergarten.
Small classes and small schools support student success.	Class sizes should be 15 to 18 students in kindergarten through grade 5; elementary, middle, and high schools average 340 students, 462 students, and 640 students, respectively.
Time and learning are related.	Summer school, Saturday school, extended school day, and extended school year models should be made available to students.
Needs drive costs.	Excess funding for students with disabilities, students with limited English proficiency, economically disadvantaged students, and gifted and talented students.
Those closest to students should have flexibility in making most instructional decisions.	Prototype budgets were provided only for pricing resource components, not for controlling resource allocation in schools or classrooms.

Source: Deborah A. Verstegen. *Calculation Of The Cost Of An Adequate Education In Kentucky: A Professional Judgment Approach*. Education Policy Analysis Archive, vol. 12, no. 8, Feb. 29, 2004. Web.

Table H.10
Personnel Resources For Prototypical Schools, Professional Judgment Model Of Education Funding Adequacy 2004

School Level	Resource	District Size		
		Small	Moderate	Large
Elementary school	Teachers	77.6	77.6	78.1
	Aides	11.5	10.4	10.4
	Guidance counselors	2.9	5.2	3.5
	Nurses	2.9	2.6	1.7
	Librarians	2.9	5.2	3.5
	Technology specialist	2.9	2.6	3.5
	Principal	2.9	2.6	3.5
	Assistant principal	0.0	2.6	0.0
	Clerical	5.7	7.8	10.4
	Instructional facilitator	1.4	1.3	1.7
	Safety officer	0.0	2.6	0.0
	Social worker	0.0	2.6	0.0
Middle school	Teachers	83.2	58.9	59.1
	Aides	0.0	0.0	0.0
	Guidance counselors	6.4	5.3	3.0
	Nurses	3.2	1.8	2.0
	Librarians	3.2	1.8	2.0
	Technology specialist	3.2	1.8	2.0
	Principal	3.2	1.8	2.0
	Assistant principal	3.2	1.8	4.0
	Clerical	9.5	7.1	6.0
	Instructional facilitator	1.6	0.9	0.9
	Safety officer	0.0	1.8	2.0
	Social worker	0.0	1.8	0.0
High school	Teachers	66.3	76.5	76.5
	Aides	0.0	0.0	0.0
	Guidance counselors	4.2	6.5	6.0
	Nurses	2.1	1.3	1.5
	Librarians	2.1	1.3	3.0
	Technology specialist	2.1	1.3	1.5
	Principal	2.1	1.3	1.5
	Assistant principal	2.1	2.6	3.0
	Clerical	8.3	9.8	6.0
	Instructional facilitator	2.1	1.3	1.5
	Safety officer	0.0	2.6	0.0
	Social worker	0.0	1.3	0.0

Note: Figures represent staff required per school.
Source: Deborah A. Verstegen. *Calculation Of The Cost Of An Adequate Education In Kentucky: A Professional Judgment Approach*. Education Policy Analysis Archive, vol. 12, no. 8, Feb. 29, 2004. Web.

Table H.11
Prototypical School Per-Pupil Resources,
Professional Judgment Model Of Education Funding Adequacy
2004

		School Level		
District size	**Resource**	**Elementary**	**Middle**	**High**
Small to medium	Instructional materials	$200	$225	$250
	Equipment	100	200	125
	Technology	300	300	300
	Assessment	20	20	20
	Student activities	N/A	N/A	N/A
	Athletics	25	100	200
	Textbooks	100	140	140
Medium to large	Instructional materials	200	200	200
	Equipment	25	25	25
	Technology	267	267	267
	Assessment	15	15	15
	Student activities	8	25	35
	Athletics	5	33	83
	Textbooks	75	75	100
Large to very large	Instructional materials	128	133	142
	Equipment	25	25	25
	Technology	308	308	308
	Assessment	10	10	10
	Student activities	5	5	20
	Athletics	5	33	83
	Textbooks	N/A	N/A	N/A

Note: Figures represent per-pupil funding.
Source: Deborah A. Verstegen. *Calculation Of The Cost Of An Adequate Education In Kentucky: A Professional Judgment Approach*. Education Policy Analysis Archive, vol. 12, no. 8, Feb. 29, 2004. Web.

Conclusion. The report estimates that implementing the professional judgment model would cost a total of $5.2 billion and require an additional $1.1 billion to address state standards and obligations. The authors also recommended extending the school year, adding voluntary half-day preschool, and raising teacher salaries, which would increase the funding gap to $1.23 billion in SY 2003.

A Professional Judgment Approach To School Finance Adequacy In Kentucky, May 2003

Picus and Associates conducted a professional judgment panel study of school finance adequacy in Kentucky to determine whether student performance goals for 2014 could be achieved; it was published in May 2003. This section reviews the professional judgment panels, the methodology of the study, and its findings. Disadvantages of the professional judgment model are discussed in Chapter 1 and are reviewed in the previous section.

Professional Judgment Panels. Nine professional judgment panels were organized into two elementary school panels, two middle school panels, two high school panels, two district panels,

and one state panel. Each was overseen and moderated by Picus and Associates staff and observed by staff from the Kentucky Department of Education. The panels developed prototypical schools and resources they believed would deliver an adequate education in Kentucky and to meet educational goals by 2014.

Prototypical Districts. The school-level panels created prototypical schools, which were modified by the district-level panels and then by the state-level panel. The outcome, shown in Table H.12, totals nearly $4 billion. Additional elements are carried forward from actual costs, such as transportation and food services, and total $1.6 billion.

Table H.12
Prototypical School Design And Personnel Resources By School
2003

	School level			
Resource	**Elementary**	**Middle**	**High**	**Estimated cost**
School size (number of pupils)	400	500	800	—
Principal	1	1	1	$98,199,500
Assistant principal	0	1	1	31,000,600
Teachers	24	25	40	1,640,563,200
Specialist teachers	20%	20%	20%	319,781,100
Instructional coaches	1	1	2	70,048,400
Pupil support	3	4.5	8	344,950,400
Special education support	7	7	8	356,527,800
English language learners	1 per 15 ELL students	1 per 15 ELL students	1 per 20 ELL students	56,767,300
Technology	1	1	2	70,007,000
Library	0	1	2	33,807,400
Extra day assignments	N/A	$60 per student	$120 per student	248,214,900
Substitutes	Typical use plus 1	Typical use plus 1	Typical use plus 2	88,993,300
Classroom aides	1 per 50 students	N/A	N/A	86,089,700
Clerical	4.5	6	8	145,448,200
Professional development	$50	$50	$50	32,606,600
Technology	$264	$264	$264	139,556,000
Instructional materials	$250	$250	$250	163,032,700
Extra duty pay	—	—	—	30,309,000
Total costs				$3,955,903,100

Note: Nonmonetary figures represent staff required per school. Monetary figures represent per-pupil cost.
Source: Lawrence O. Picus, Allan Odden, and Mark Fermanich. *A Professional Judgment Approach To School Finance Adequacy In Kentucky*. May 2003. Web.

Increasing Instructional Days And Teacher Contract Days. The 2003 Picus and Associates model recommended increasing the number of instructional days from 175 days to 180 days and increasing the number of teacher contract days from 185 days to 200 days. That would cost an additional $250.8 million in SY 2003. An additional 5 days for classified staff to support this increase would also be required, an additional $5.9 million.

Comparing Two 2003 Models By Picus And Associates. Picus and Associates published a state of the art study of Kentucky education in February 2003, which is not reviewed in detail

because of its similarity to the Picus Odden May 2003 report. The total cost to implement the recommendations from the February 2003 study is $1.259 billion lower than the professional judgment estimate because the professional judgment estimate included extended teacher contracts totaling $257 million; additional instructional aides totaling $86 million; smaller class sizes of 20 students in grades 4 through 12 totaling $414 million; and additional special education teachers, tutors, and family support personnel totaling $488 million.

Picus Odden & Associates Wyoming Adequacy Studies

Picus Odden has assisted the Wyoming Legislature in recalibrating the state's education funding model every 5 years since 2005 and studied elements of school funding in 2004, 2008, and 2009. Wyoming incorporated some of the recommendations into its legislative model, adapted some recommendations to fit state needs, and did not implement other recommendations.

Table H.13 shows Wyoming K-12 operating revenues from SY 2005 to SY 2019. Revenue in 2006, the first year after the first adequacy study, was $12,501 per student and revenue in SY 2019 was $18,620, although the authors do not note whether these estimates are adjusted for inflation.

Table H.13
Wyoming K-12 Operating Revenues
SY 2005 To SY 2019

Year	General Fund	Special Revenue	Enterprise Funds	Total Operating Revenue	Enrollment	Operating Revenue Per Student
2005	$840,452,300	$164,845,079	$25,579,977	$1,030,877,356	$83,772	$12,306
2006	898,107,584	121,829,031	26,464,065	1,046,400,681	83,705	12,501
2007	1,115,203,990	161,682,086	29,363,846	1,306,249,921	84,629	15,435
2008	1,180,793,267	158,145,034	31,249,982	1,370,188,282	85,578	16,011
2009	1,193,970,430	174,995,822	37,904,245	1,406,870,497	86,519	16,261
2010	1,248,998,873	174,398,888	38,475,856	1,461,873,616	87,420	16,722
2011	1,274,738,890	212,112,990	36,257,835	1,523,109,715	88,165	17,276
2012	1,331,844,178	195,130,458	37,928,803	1,564,903,439	89,476	17,490
2013	1,370,360,482	182,762,763	37,539,177	1,590,662,422	90,993	17,481
2014	1,377,782,164	177,626,925	37,376,035	1,592,785,123	92,218	17,272
2015	1,421,470,400	192,850,164	37,593,786	1,651,914,350	93,303	17,705
2016	1,486,181,081	187,278,558	38,268,594	1,711,728,233	94,002	18,209
2017	1,488,488,910	184,757,295	39,110,805	1,712,357,010	93,261	18,361
2018	1,519,060,779	155,912,416	37,980,778	1,712,953,973	92,976	18,424
2019	1,519,893,402	173,102,060	38,282,464	1,731,277,927	93,029	18,610

Source: Picus Odden & Associates. *The 2020 Recalibration Of Wyoming's Education Resource Block Grant Model, Final Report*. Picus Odden & Associates, Dec. 1, 2020. Web.

The authors state that operating revenue has grown more than student performance. Tables H.14 and H.15 show National Assessment of Educational Progress (NAEP) results for Wyoming in SY 2005 to SY 2019. The evidence-based model has been in place since 2005 and was recalibrated in 2010, 2015, and 2020. The authors say that, as of 2020, the EBM goals are

higher than the state's accountability goals, which include 57 percent of students performing at or above proficient in math and 59 percent of students performing at or above proficient in reading. Although there has been improvement in grade 4 math NAEP scores, grade 8 at or above proficient scores, and grade 4 reading NAEP scores from SY 2005 to SY 2019, Wyoming has not met its accountability goals. Grade 8 NAEP math scores at or above basic and grade 8 reading scores have actually declined.

Table H.14
Wyoming NAEP Math Scores
SY 2005 To SY 2019

	Grade 4		Grade 8	
	At Or Above		At Or Above	
Year	Basic	Proficient	Basic	Proficient
2005	87.13%	42.61%	76.34%	29.03%
2007	88.46	44.26	79.80	35.98
2009	87.41	40.46	78.08	34.65
2011	87.88	43.92	80.33	37.43
2013	90.19	47.81	80.65	37.82
2015	88.42	48.30	78.46	35.27
2017	88.62	50.78	79.17	38.45
2019	87.10	47.80	75.19	33.93

Source: Picus Odden & Associates. *The 2020 Recalibration Of Wyoming's Education Resource Block Grant Model, Final Report*. Picus Odden & Associates, Dec. 1, 2020. Web.

Table H.15
Wyoming NAEP Reading Scores
SY 2005 To SY 2019

	Grade 4		Grade 8	
	At Or Above		At Or Above	
Year	Basic	Proficient	Basic	Proficient
2005	70.82%	34.45%	81.00%	35.69%
2007	73.50	36.38	79.72	33.19
2009	71.75	32.61	81.75	34.44
2011	71.34	34.38	81.60	37.71
2013	74.73	37.13	84.41	37.61
2015	75.23	41.23	80.96	35.98
2017	74.15	41.36	80.39	37.63
2019	73.34	40.55	75.19	33.93

Source: Picus Odden & Associates. *The 2020 Recalibration of Wyoming's Education Resource Block Grant Model, Final Report*. Picus Odden & Associates, Dec. 1, 2020. Web.

Appendix I

District Comparisons Between Evidence-Based Model Recommendations And State, Local, And Federal Funding

Table I.1 shows the level of funding recommended by the evidence-based model, the state and local funding, and the state, local, and federal funding by district in school year 2013.

Table I.1
District-Level Spending
School Year 2013

	EBM		State And Local		State, Local, And Federal	
District	**Total**	**Per Pupil**	**Total**	**Per Pupil**	**Total**	**Per Pupil**
Adair County	$43,183,111	$15,669	$33,602,840	$12,193	$36,019,822	$13,070
Allen County	37,117,923	11,768	28,195,206	8,939	30,298,159	9,605
Anchorage Ind.	5,792,340	13,655	7,370,671	17,376	7,513,497	17,713
Anderson County	60,252,931	14,587	44,148,314	10,688	46,595,574	11,281
Ashland Ind.	43,136,305	12,636	27,621,082	8,091	32,388,339	9,488
Augusta Ind.	5,638,837	18,117	2,748,867	8,832	3,002,611	9,647
Ballard County	18,180,352	12,770	13,491,322	9,477	14,465,466	10,161
Barbourville Ind.	7,693,324	11,264	5,399,471	7,905	5,883,292	8,614
Bardstown Ind.	37,243,209	13,687	26,380,643	9,695	27,885,764	10,248
Barren County	64,516,214	12,608	48,615,661	9,500	53,390,710	10,433
Bath County	25,784,644	12,096	17,482,237	8,201	19,660,769	9,223
Beechwood Ind.	14,967,234	12,366	11,677,463	9,648	12,025,227	9,935
Bell County	37,866,276	11,974	27,127,507	8,578	30,815,673	9,744
Bellevue Ind.	11,019,960	13,355	6,899,705	8,362	7,471,313	9,054
Berea Ind.	13,756,659	11,658	11,452,921	9,706	12,848,769	10,889
Boone County	308,542,237	14,238	213,014,785	9,830	220,847,220	10,191
Bourbon County	37,841,731	13,197	26,780,089	9,339	30,463,543	10,624
Bowling Green Ind.	54,814,641	12,849	39,703,624	9,307	42,911,794	10,059
Boyd County	46,484,040	13,308	34,037,721	9,745	37,724,548	10,800
Boyle County	37,992,401	13,418	29,133,635	10,290	30,670,829	10,832
Bracken County	18,283,859	13,994	10,633,866	8,139	11,315,261	8,661
Breathitt County	28,257,696	12,375	20,699,030	9,065	23,819,300	10,431
Breckinridge County	39,490,977	13,334	26,991,233	9,114	30,016,314	10,135
Bullitt County	200,750,201	15,329	143,588,994	10,964	148,878,551	11,368
Burgin Ind.	5,961,340	12,145	4,402,213	8,968	4,599,819	9,371
Butler County	29,374,398	12,788	19,248,603	8,380	21,035,977	9,158
Caldwell County	25,390,008	11,725	16,835,512	7,774	18,015,272	8,319
Calloway County	39,778,055	11,688	28,888,740	8,488	31,477,923	9,249
Campbell County	92,149,103	17,639	68,045,886	13,025	70,493,140	13,493
Campbellsville Ind.	14,495,043	11,912	10,988,318	9,030	12,533,260	10,300
Carlisle County	10,937,238	12,874	8,164,164	9,610	8,933,585	10,515
Carroll County	27,467,862	13,533	20,710,309	10,204	24,504,064	12,073
Carter County	67,972,288	13,536	42,436,080	8,451	47,242,805	9,408
Casey County	29,613,731	12,029	20,731,879	8,421	23,104,555	9,385
Caverna Ind.	10,609,642	11,556	7,034,272	7,662	8,577,834	9,343

	EBM		State And Local		State, Local, And Federal	
District	**Total**	**Per Pupil**	**Total**	**Per Pupil**	**Total**	**Per Pupil**
Christian County	137,424,370	14,215	86,152,840	8,912	96,569,199	9,989
Clark County	80,237,399	13,521	51,639,405	8,702	56,176,882	9,466
Clay County	50,088,973	13,590	37,023,756	10,045	41,970,125	11,387
Clinton County	23,867,580	12,741	17,569,291	9,379	19,933,856	10,641
Cloverport Ind.	6,434,750	15,806	3,536,483	8,687	4,071,152	10,000
Corbin Ind.	36,403,767	11,777	24,898,692	8,055	27,070,568	8,758
Covington Ind.	60,901,907	14,575	45,259,578	10,832	51,742,520	12,383
Crittenden County	16,787,091	12,012	10,897,784	7,798	12,089,763	8,651
Cumberland County	13,518,346	12,436	9,918,697	9,125	11,337,533	10,430
Danville Ind.	24,553,613	12,451	20,654,729	10,474	22,081,963	11,198
Daviess County	138,321,916	11,676	113,703,513	9,598	119,623,902	10,098
Dawson Springs Ind.	8,610,104	12,321	5,709,015	8,170	6,138,652	8,785
Dayton Ind.	12,973,139	13,943	8,127,601	8,735	9,090,385	9,770
East Bernstadt Ind.	7,666,025	13,841	4,859,811	8,774	5,119,336	9,243
Edmonson County	23,452,122	11,147	17,414,301	8,277	18,988,894	9,026
Elizabethtown Ind.	36,295,203	13,372	22,596,823	8,325	23,775,838	8,760
Elliott County	16,213,908	13,886	9,447,384	8,091	10,528,986	9,017
Eminence Ind.	9,210,780	12,568	5,740,561	7,833	6,230,849	8,502
Erlanger-Elsmere Ind.	33,216,744	13,648	21,301,995	8,752	22,754,376	9,349
Estill County	32,491,997	12,192	21,531,760	8,079	25,085,562	9,413
Fairview Ind.	11,891,099	13,113	7,227,273	7,970	7,590,626	8,371
Fayette County	510,601,771	12,233	438,390,471	10,503	464,736,340	11,134
Fleming County	30,873,849	12,454	22,757,824	9,180	25,452,613	10,267
Floyd County	81,439,304	12,199	53,866,608	8,069	62,708,639	9,393
Fort Thomas Ind.	39,360,338	12,894	29,429,254	9,640	30,391,634	9,956
Frankfort Ind.	10,817,807	12,731	8,445,883	9,939	9,139,990	10,756
Franklin County	85,514,188	12,775	57,944,433	8,656	60,947,456	9,105
Fulton County	7,383,270	13,017	5,476,819	9,656	6,923,496	12,207
Fulton Ind.	5,773,319	14,400	4,097,724	10,221	4,789,828	11,947
Gallatin County	25,463,762	14,374	17,549,305	9,906	18,489,424	10,437
Garrard County	34,049,021	12,633	25,140,300	9,327	27,005,491	10,019
Glasgow Ind.	36,778,986	17,615	20,049,099	9,603	22,420,345	10,738
Grant County	58,949,271	14,230	40,051,026	9,668	42,684,751	10,304
Graves County	58,372,265	11,975	40,426,613	8,294	43,154,179	8,853
Grayson County	56,634,679	12,412	37,150,364	8,142	40,470,394	8,869
Green County	23,164,511	13,015	16,310,354	9,164	17,833,708	10,020
Greenup County	40,682,464	12,871	25,881,780	8,188	29,271,906	9,261
Hancock County	21,937,237	12,515	17,254,609	9,843	18,239,188	10,405
Hardin County	216,379,589	14,064	151,513,996	9,848	162,495,189	10,561
Harlan County	59,621,242	13,394	40,376,908	9,071	45,454,028	10,211
Harlan Ind.	10,542,576	12,250	6,556,319	7,618	7,082,528	8,230
Harrison County	39,434,669	11,972	25,278,924	7,674	27,313,884	8,292
Hart County	37,966,912	15,185	31,189,271	12,474	33,386,067	13,353
Hazard Ind.	12,463,931	12,243	8,511,418	8,361	9,344,055	9,179
Henderson County	100,292,905	13,020	72,463,476	9,407	77,572,018	10,070
Henry County	31,971,607	13,900	23,859,778	10,373	25,098,341	10,912
Hickman County	10,691,786	13,328	8,501,063	10,597	9,274,202	11,561
Hopkins County	90,945,735	12,122	63,981,941	8,528	68,602,047	9,144
Jackson County	36,332,091	15,303	26,350,681	11,099	29,759,698	12,534
Jackson Ind.	6,359,114	14,496	4,402,876	10,037	4,880,859	11,126
Jefferson County	1,340,045,750	12,900	1,148,590,014	11,057	1,270,444,941	12,230
Jenkins Ind.	6,768,070	11,526	5,090,877	8,669	5,676,849	9,667

	EBM		State And Local		State, Local, And Federal	
District	**Total**	**Per Pupil**	**Total**	**Per Pupil**	**Total**	**Per Pupil**
Jessamine County	111,872,223	13,340	79,552,215	9,486	84,159,585	10,036
Johnson County	48,212,892	11,886	35,178,540	8,673	38,335,077	9,451
Kenton County	215,232,058	13,852	141,406,147	9,101	146,762,674	9,445
Knott County	32,297,476	12,123	22,589,908	8,479	25,947,156	9,739
Knox County	56,787,391	11,706	40,388,575	8,326	47,254,701	9,741
LaRue County	37,350,358	14,428	27,155,663	10,490	28,842,236	11,141
Laurel County	123,230,638	12,312	83,051,334	8,298	90,503,609	9,042
Lawrence County	40,098,237	15,175	26,220,367	9,923	29,141,101	11,028
Lee County	15,054,635	12,690	10,488,611	8,841	12,406,637	10,458
Leslie County	24,760,510	12,269	17,391,470	8,618	20,198,707	10,009
Letcher County	41,373,066	11,693	29,990,739	8,476	33,261,191	9,400
Lewis County	31,112,343	12,219	20,237,477	7,948	22,649,837	8,895
Lincoln County	56,616,426	13,194	42,586,290	9,925	47,882,362	11,159
Livingston County	16,484,021	12,587	12,916,053	9,863	14,373,771	10,976
Logan County	47,026,279	12,583	33,714,601	9,021	36,014,116	9,636
Ludlow Ind.	11,872,768	13,134	7,793,183	8,621	8,267,470	9,146
Lyon County	11,452,452	11,893	8,540,841	8,870	9,011,955	9,359
Madison County	142,091,888	11,658	105,768,326	8,678	113,902,590	9,345
Magoffin County	30,048,104	12,554	19,845,951	8,291	23,273,371	9,723
Marion County	47,368,476	13,778	33,801,763	9,832	36,082,515	10,496
Marshall County	57,617,163	11,396	44,133,498	8,729	46,665,711	9,230
Martin County	27,762,752	12,221	18,968,969	8,350	22,838,435	10,053
Mason County	35,793,673	11,741	24,919,457	8,174	26,987,197	8,853
Mayfield Ind.	21,904,876	12,843	16,269,423	9,539	18,000,847	10,554
McCracken County	86,284,112	11,591	68,846,466	9,249	72,606,031	9,754
McCreary County	37,833,810	11,757	26,649,018	8,282	30,115,352	9,359
McLean County	20,217,014	11,708	14,286,873	8,274	15,546,136	9,003
Meade County	75,237,124	14,053	46,982,537	8,776	49,227,613	9,195
Menifee County	14,542,911	12,491	10,295,080	8,842	11,439,340	9,825
Mercer County	43,584,244	13,595	32,956,737	10,280	34,841,853	10,868
Metcalfe County	21,159,085	12,648	15,827,514	9,461	18,180,788	10,868
Middlesboro Ind.	17,026,741	11,543	12,328,217	8,358	14,173,547	9,609
Monroe County	23,893,069	11,999	18,398,112	9,240	21,045,092	10,569
Montgomery County	65,020,025	11,942	44,259,615	8,129	47,954,547	8,808
Monticello Ind.	11,964,264	13,649	8,801,559	10,041	9,847,849	11,234
Morgan County	28,184,383	14,736	18,238,940	9,536	20,302,113	10,615
Muhlenberg County	70,904,917	12,868	54,179,267	9,833	57,836,759	10,496
Murray Ind.	18,954,309	11,842	14,401,615	8,997	17,576,385	10,981
Nelson County	71,821,788	13,517	46,071,542	8,671	48,238,847	9,079
Newport Ind.	27,631,730	14,449	20,160,539	10,542	23,111,448	12,086
Nicholas County	15,440,450	13,298	10,214,230	8,797	11,099,491	9,559
Ohio County	56,156,822	12,664	37,986,131	8,566	40,691,749	9,177
Oldham County	207,584,159	16,248	167,769,595	13,131	171,750,251	13,443
Owen County	27,951,115	13,827	18,001,932	8,906	19,160,972	9,479
Owensboro Ind.	57,662,753	12,335	48,254,833	10,322	52,194,105	11,165
Owsley County	9,892,731	12,686	7,744,584	9,931	10,698,143	13,719
Paducah Ind.	37,751,149	12,458	31,573,020	10,419	37,282,164	12,303
Paintsville Ind.	16,534,045	19,038	14,999,450	17,271	16,003,898	18,427
Paris Ind.	10,492,189	13,179	6,935,183	8,711	7,616,828	9,567
Pendleton County	41,359,634	15,451	26,667,493	9,962	28,534,387	10,660
Perry County	54,202,345	12,042	39,325,572	8,737	44,607,749	9,911
Pike County	127,818,441	12,501	90,504,213	8,852	99,900,322	9,771

	EBM		State And Local		State, Local, And Federal	
District	**Total**	**Per Pupil**	**Total**	**Per Pupil**	**Total**	**Per Pupil**
Pikeville Ind.	13,819,461	10,699	12,263,787	9,494	13,021,024	10,080
Pineville Ind.	7,031,039	12,279	5,326,471	9,302	5,881,384	10,271
Powell County	29,978,446	11,438	20,540,417	7,837	22,980,805	8,768
Pulaski County	102,289,436	11,911	71,867,161	8,369	78,736,899	9,169
Raceland Ind.	13,397,227	12,165	8,718,357	7,916	9,245,800	8,395
Robertson County	6,940,615	18,721	4,218,268	11,378	5,502,974	14,843
Rockcastle County	37,548,637	12,098	26,161,273	8,429	28,937,903	9,324
Rowan County	42,329,539	12,394	30,202,803	8,844	32,500,035	9,516
Russell County	44,203,431	13,925	33,530,865	10,563	37,477,784	11,806
Russell Ind.	28,379,129	11,940	19,500,601	8,204	20,486,916	8,619
Russellville Ind.	14,900,762	12,620	11,048,525	9,358	12,217,227	10,348
Science Hill Ind.	6,627,727	11,760	4,462,328	7,918	4,714,832	8,366
Scott County	147,927,989	16,076	110,493,458	12,008	114,790,431	12,475
Shelby County	96,314,117	13,163	71,595,890	9,785	75,281,725	10,288
Silver Grove Ind.	4,138,882	17,953	2,622,251	11,374	2,887,176	12,524
Simpson County	46,251,248	14,701	34,406,177	10,936	36,585,201	11,629
Somerset Ind.	18,631,922	10,959	14,333,461	8,431	15,689,700	9,228
Southgate Ind.	3,609,403	15,789	2,223,810	9,728	2,445,250	10,697
Spencer County	40,333,972	13,326	26,559,787	8,775	27,899,430	9,218
Taylor County	30,767,022	10,895	21,857,717	7,740	24,334,088	8,617
Todd County	30,870,390	13,873	23,351,556	10,494	25,550,611	11,482
Trigg County	30,923,397	13,745	23,067,853	10,254	24,508,608	10,894
Trimble County	21,164,013	13,804	13,311,782	8,683	15,122,740	9,864
Union County	32,143,279	12,880	25,255,726	10,120	27,011,915	10,823
Walton Verona Ind.	22,745,595	13,589	16,612,076	9,924	17,161,584	10,253
Warren County	195,376,245	12,631	133,151,433	8,608	140,958,644	9,113
Washington County	23,541,333	13,317	17,677,600	10,000	19,463,138	11,010
Wayne County	33,385,723	12,406	22,307,991	8,289	24,799,273	9,215
Webster County	32,979,868	13,988	21,107,985	8,953	23,343,875	9,901
West Point Ind.	2,302,937	16,844	1,330,026	9,728	1,484,923	10,861
Whitley County	60,670,702	12,810	41,561,885	8,776	47,713,069	10,074
Williamsburg Ind.	10,358,683	11,926	7,151,410	8,233	7,886,116	9,079
Williamstown Ind.	14,356,640	13,930	9,305,936	9,029	10,424,570	10,114
Wolfe County	17,379,933	12,220	11,945,175	8,399	13,806,392	9,707
Woodford County	58,295,131	13,790	43,214,326	10,222	45,850,367	10,846

Note: EBM = evidence-based model; Ind. = Independent.
Source: Picus Odden & Associates. *Adequacy For Excellence In Kentucky*, report 2 of 2. 2014. Web; staff analysis of data from the Kentucky Department of Education.

Endnotes

[1] *Rose v. Council for Better Educ., Inc.,* 790 S.W.2d 186, 198 (Ky. 1989).
[2] Education Sector. "Money Matters: An Interview With Eric Hanushek." Hoover Institution, Stanford University, April 26, 2006. Web.
[3] Bruce D. Baker. *Does Money Matter In Education?*, second ed. Albert Shanker Institute, April 2019.
[4] *Rose v. Council for Better Educ., Inc.,* 790 S.W.2d 186, 198 (Ky. 1989).
[5] Allan R. Odden and Lawrence O. Picus. *School Finance: A Policy Perspective*. McGraw Hill Education, sixth ed., 2020.
[6] Jay G. Chambers. "Measuring Resources In Education: From Accounting To The Resource Cost Model Approach." National Center for Education Statistics, Office of Educational Research and Improvement, Working Paper 1999-16, 1999; William T. Hartman, Denny Bolton, and David H. Monk. "A Synthesis Of Two Approaches To School-Level Financial Data: The Accounting And Resource Cost Model Approaches." *Selected Papers In School Finance, 2000–01*, WJ Fowler Jr., ed., National Center for Education Statistics, Office of Educational Research and Improvement, 2001.
[7] Eric A. Hanushek. "The Alchemy Of 'Costing Out' An Adequate Education." Martin R. West and Paul E. Peterson, eds. *School Money Trials: The Legal Pursuit Of Educational Adequacy*, Brookings Institution Press, 2007. Web.
[8] Allan R. Odden, Lawrence O. Picus, and Michael E. Goetz. "A 50-State Strategy To Achieve School Finance Adequacy." Educational Policy, vol. 24, no. 4, 2010, pp. 628–654. Web.
[9] Education Funding Advisory Board. "Appendix III: Review Of Augenblick & Myers Adequacy Model." *Illinois Education Funding Recommendations*, Jan. 2011. Web.
[10] Southwest Educational Development Laboratory "Four Approaches: Professional Judgment Approach." *Insights On Educational Policy, Practice, And Research*, no. 16, March 2004. Web.
[11] Timothy J. Gronberg et al. "School Outcomes And School Costs: The Cost Function Approach." Texas A&M University. Jan. 2004. Web.
[12] Ibid.
[13] Education Funding Advisory Board. "Appendix III: Review Of Augenblick & Myers Adequacy Model." *Illinois Education Funding Recommendations*, Jan. 2011. Web.
[14] Timothy J. Gronberg et al. "School Outcomes And School Costs: The Cost Function Approach." Texas A&M University. Jan. 2004. Web.
[15] Ibid.
[16] Eric A. Hanushek. "Is the 'Evidence-Based Approach A Good Guide To School Finance Policy?" Stanford University, Aug. 2006. Web.
[17] Eric A. Hanushek. "The Alchemy Of 'Costing Out' An Adequate Education." Martin R. West and Paul E. Peterson, eds. *School Money Trials: The Legal Pursuit Of Educational Adequacy*, Brookings Institution Press, 2007. Web.
[18] Timothy J. Gronberg et al. "School Outcomes And School Costs: The Cost Function Approach." Texas A&M University. Jan. 2004. Web.
[19] Allan R. Odden and Lawrence O. Picus. *School Finance: A Policy Perspective*. McGraw Hill Education, sixth ed., 2020.
[20] Ibid.
[21] Timothy J. Gronberg et al. "School Outcomes And School Costs: The Cost Function Approach." Texas A&M University. Jan. 2004. Web.
[22] Eric A. Hanushek. "The Alchemy Of 'Costing Out' An Adequate Education." Martin R. West and Paul E. Peterson, eds. *School Money Trials: The Legal Pursuit Of Educational Adequacy*, Brookings Institution Press, 2007. Web.
[23] Lori L. Taylor et al. "Measuring Educational Adequacy In Public Schools." Bush School of Government & Public Service, Texas A&M University. September 2005. Web.
[24] Educate Nevada Now. "A Quiet Regulatory Change Could Hurt Nevada's Most Vulnerable Students." April 21, 2022. Web.
[25] US. Department of Education. National Center For Education Statistics. "An Overview Of NAEP." 2019. Web.

[26] US. Department of Education. National Center For Education Statistics. "Explore Results For The 2019 NAEP Reading Assessment." 2019. Web.
[27] US. Bureau of Economic Analysis. Regional Price Parity Indices 2020. Web.
[28] Danielle Farrie and David G. Sciarra. *Making The Grade 2021: How Fair Is School Funding In Your State?* Education Law Center. 2021. Web.
[29] Bruce D. Baker, Matthew Di Carlo, Kayla Reist, and Mark Weber. *The Adequacy And Fairness Of State School Finance Systems.* Albert Shanker Institute and Rutgers Graduate School of Education, 4th ed., Dec. 2021, p. 35.
[30] Danielle Farrie and David G. Sciarra. *Making The Grade 2021: How Fair Is School Funding In Your State?* Education Law Center. 2021. Web.
[31] Ibid.
[32] Ibid.
[33] Ibid.
[34] Ibid.
[35] Ibid.
[36] Ibid.
[37] Bruce D. Baker, Matthew Di Carlo, Kayla Reist, and Mark Weber. *The Adequacy And Fairness Of State School Finance Systems.* Albert Shanker Institute and Rutgers Graduate School of Education, 4th ed., Dec. 2021, p. 35.
[38] Picus Odden & Associates. *Adequacy For Excellence In Kentucky*, report 1 of 2. 2014, p. 78.
[39] Ibid., p. 77.
[40] Ibid., p. 11.
[41] Deborah A. Verstegen. *Calculation Of The Cost Of An Adequate Education In Kentucky: A Professional Judgment Approach*. Education Policy Analysis Archive, vol. 12, no. 8, Feb. 29, 2004. Web.
[42] Tennessee. *TISA Act Overview-Rulemaking.* July 2022. Web.
[43] National Education Association. *Rankings Of The States 2020 And Estimates Of School Statistics 2021*. April 2021. Web.
[44] Ibid.
[45] Ibid.
[46] Ibid.
[47] Ibid.
[48] National Center for Education Statistics. "Table 204.10. Number And Percentage Of Public School Students Eligible For Free Or Reduced-Price Lunch, By State: Selected Years, 2000-01 Through 2018-19." Digest of Education Statistics, n.d. Web.
[49] US. Census Bureau. "Median Household Income In The Past 12 Months (In 2020 Inflation-Adjusted Dollars)." 2020 American Community Survey 1-Year Experimental Estimates. N.d. Web.
[50] National Center for Education Statistics. "Table 219.46. Public High School 4-Year Adjusted Cohort Graduation Rate (ACGR), By Selected Student Characteristics And State: 2010-11 Through 2018-19." Digest of Education Statistics. N.d. Web.
[51] National Center for Education Statistics. "Table 302.65 Percentage Of 18- To 24-Year-Olds Enrolled In Degree-Granting Postsecondary Institutions, By Race/Ethnicity And State: 2019." Digest of Education Statistics. N.d. Web.
[52] National Education Association. *Rankings Of The States 2020 And Estimates Of School Statistics 2021*. April 2021. Web.
[53] National Center for Education Statistics. "Table 2. Number Of Operating Public Schools And Districts, Student Membership, Teachers, And Pupil/Teacher Ratio, By State Or Jurisdiction: School Year 2019-20." Common Core of Data. N.d. Web.
[54] National Center for Education Statistics. National Assessment of Educational Progress. "State Performance Compared To The Nation." The Nation's Report Card. N.d. Web.
[55] National Education Association. *Rankings Of The States 2020 And Estimates Of School Statistics 2021*. April 2021. Web.
[56] Kentucky. Department of Education. "Areas Of Emphasis, KETS 2018–2024 Master Plan." Aug. 2, 2022. Web.
[57] Kentucky. Department of Education. "Federal Grants." Oct. 7, 2022. Web.