

A Review Of School Funding Adequacy Studies

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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.

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Summary

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.”¹ The Court also stated that the General Assembly shall provide funding which is sufficient to provide each child in Kentucky an adequate education. The Court further stated that substantial additional monies would be required, but they did not decide how much funding was needed to provide an adequate education; however, the new system should ensure students become “sufficient” in seven capacities. Based on 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. 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. Advantages include being easy to articulate; expert opinions are valuable to policymakers; and panelists account for special needs of students. Disadvantages include that costs are not linked to outcomes; costs are often overstated; there may be a conflict of interest by participating educators; and this method is not research based. The evidence based approach identifies resources needed to deliver an adequate education based on research. Advantages include being based on educational research and knowledge; and utilizing educational experts. Disadvantages include outdated findings; costs are not easily linked to outcomes; prototypical schools can lead to different cost estimates; and limited experimental study to test reform.

The report also 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.

OEA reviewed nine adequacy studies in Kentucky and comparable states and found that each determined that additional funding would be needed for states to reach adequacy. The Wyoming Legislature contracted with Picus Odden & Associates to recalibrate the 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 actually 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 an additional

\$2.44 billion would have been needed in SY 2013 to help all districts reach adequacy, although the model excluded federal funds. In examining 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.
- 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 an additional \$1.1 billion (2004) was needed to adequately fund Kentucky education, while 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.

¹ *Rose v. Council for Better Educ., Inc.*, 790 S.W.2d 186, 198 (Ky. 1989).

Chapter 1

Measuring Educational Adequacy

Introduction and Overview

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

There has also been substantial research on considering whether money matters in education. This approach compares students' standardized test scores from districts that have higher spending and districts that have lower spending. Beginning in the 1980s, Hanushek questioned the relationship between educational spending and student performance.¹ In contrast, Baker argues that money does matter and concludes that the combination of additional funding and fiscal accountability is very promising.

Baker claims:

- 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 will not hurt student outcomes are unfounded.²

Description Of The Study

The General Assembly passed House Bill 405 during the 2021 Regular Session. HB 405 established the School Funding Task Force (SFTF). The SFTF was commissioned to review the Support Education Excellence in Kentucky (SEEK) program, which funds K-12 education in Kentucky. 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 other states. The SFTF was also to develop and submit recommendations and suggested changes to the Commission. In November 2021, the task force provided the Commission with nine different

recommendations in a memo. The seventh recommendation of this memo was for the Education Assessment and Accountability Review Subcommittee (EAARS) to 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 same verbiage mentioned above.

This report will address the following :

- the definition of an *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 between Kentucky and comparable states in education funding and student achievement.

Data Used For This Study

In conducting this study, OEA staff reviewed national literature and adequacy studies performed for Kentucky and other states that are similar to Kentucky.^a In addition, data from the National Education Association (NEA), National Assessment of Educational Progress (NAEP), The United States Census Bureau, and the National Center for Education Statistics (NCES) was used in the study. This report analyzes elements of an adequacy study completed for Kentucky in 2014.

Organization Of The Report

Chapter 1. The remainder of Chapter 1 includes major conclusions of this study as well as how adequacy is defined in Kentucky. In addition, Chapter 1 will discuss the different types of adequacy studies conducted along with strengths and weaknesses of each type of adequacy study. The chapter will end with alternative ways to look at adequacy of school funding.

Chapter 2. Chapter 2 includes a comparison of Kentucky and demographically similar states on state revenues, current expenses,

^a Perhaps a footnote as to how they are similar to Kentucky.

teacher salaries, and national testing outcomes. It concludes with a national comparison of school funding fairness studies.

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 five years since 2005 using an evidence based model.

Major Conclusions

Overall Conclusions

- Kentucky's current definition of an adequate education makes it difficult to determine the required costs.
- The four major types of adequacy studies have strengths and weaknesses.
- This report reviewed nine adequacy studies and none were found to be adequately funding all districts.
- 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 only need 0.045 of a superintendent, while the largest district would need 22.3 superintendents.
- Adequacy studies use language that implies districts can meet education goals by following their recommendations but fall short of guaranteeing results.
- Adequacy models are state specific and may not be translatable to another state because of different policy preferences, different realities, and different needs to reach adequacy.
- Adequacy models may rely on insufficient research or unsupported assumptions.
- The funding model recommended by EdBuild, adheres to how Kentucky funds districts, a student based funding formula; however, 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; however:
 - Kentucky' performance on the NAEP is similar to Tennessee's. Kentucky also spends more per-pupil

and spends less on elementary and secondary education as a percent of the total state expenditures when compared to Tennessee.

- Kentucky performs better on 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.
- Kentucky is spending less than the nation on K-12 education and has lower starting teacher salaries; however, after adjusting for personal income, Kentucky is spending more than the national average on K-12 current spending and has higher teacher starting salaries.

Evidence Based Model Performed In Kentucky

- In 2014 Picus Odden & Associates performed an evidence based evaluation of Kentucky school funding. The evidence based model estimated an additional \$2.44 billion in state and local funding was needed 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 & Associates. 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; however, when federal funds were included, 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 Education Law Center's methodology.

School Funding Fairness And Adequacy

- According to the report *The Adequacy and Fairness of State School Finance*, Kentucky compares favorably to the national average based on fiscal effort; however, an extra \$4,000 per pupil would be required to adequately fund education in the highest poverty districts.

Definition Of Adequacy In Kentucky

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.”³ The Court also stated that the General Assembly shall provide funding which is sufficient to provide each child in Kentucky an adequate education. The Court further stated that substantial additional monies would be required, but they did not decide how much funding was needed to provide an adequate education; however, the new system should ensure 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 the student to make informed choices
- Understanding of governmental processes to enable the student to understand the issues that affect his or her community, state, and nation
- Self-knowledge and knowledge of his or her 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 either academic or vocational fields so as to enable each child to choose and pursue life work intelligently
- Levels of academic or vocational skills to enable public school student to compete favorably with their counterparts in surrounding states, in academics or in the job market

Based on 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.

Types Of Adequacy Studies

For the remainder of this report, *adequacy* will be defined as a methodology used to estimate the cost of providing an adequate public elementary and secondary education. There have been four different approaches developed to examine adequacy in state education funding systems. Table 1.1 below is a description of each of the adequacy models and the strengths and weaknesses of those models that have been mentioned by prior researchers.

Table 1.1
Overview Of Research Methodologies Used
To Determine Adequacy Of School Funding

Model	Methodology	Strengths	Limitations
Professional Judgment	A panel of professionals creates a prototypical school and determine the costs of all the necessary elements needed for success.	The results are easy to articulate. Expert opinions are valuable to policymakers. Panelists account for the special needs of students who are economically disadvantaged, students with disabilities, and students with limited English Proficiency.	The costs are not always easily linked to outcomes. The costs of resources are often overestimated. Panelists may exhibit too much subjectivity and the reform relies upon professional judgment over researched practices.
Evidence Based	Scholars use current educational research to identify the resources a prototypical school would need in order to meet state academic standards.	This approach is based in real-world educational research and knowledge. This method utilizes educational experts.	The findings may become outdated or unusable. The costs are not easily linked to outcomes. The findings may not be easily generalizable. Another concern is the limited experimental study that has occurred to test claims of various school wide reforms. 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. This method uses statistical modeling.	The results may be difficult to interpret. The results are only as good as the range of data available. Model does not suggest the types of activities that are more likely to improve student performance. This model is designed to predict success of an average student in an average school, ignoring the unique needs of low income and urban students.
Successful School District	Scholars use spending levels of schools currently meeting state academic standards to estimate a funding level for all schools across the state.	The results reflect actual costs as measured by expenditures associated with meeting state standards.	The sample used may be atypical of the average district. Special needs are not taken into account. Estimates may be too low. In addition requires removal of large city and small rural schools.

Source: Bruce D. Baker. *Measuring Educational Adequacy in Public Schools*, Web and SEDL. *Four Approaches-Insights on Educational Policy*. Web

Professional Judgment Model

The professional judgement approach was originally called the input approach and was used when the Washington State school finance system was declared unconstitutional in 1978. The Washington State 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 using statewide average costs, determined a spending level.⁴

Jay Chambers and Thomas Parrish used another type of input model in the early 1980s, which is referred to as the Resource Cost Model (RCM).⁵

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.

A variant of the RCM method is the professional judgment approach. The professional judgment approach relies on teams of teachers and other education professionals who identify the number of staff and operating expenses needed at the district and school level to meet state standards. These experts also identify the additional resources needed 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.

Advantages to the professional judgment approach include that it is easy to understand and the cost is estimated by panels of education professionals. Disadvantages to the professional judgment approach are that it relies on educators and education stakeholders, who are likely not qualified to design programs and predict necessary resources needed to produce desired student outcomes or serve different student needs. Often this method produces unrestrained, wishful, recommendations without considering practical constraints, such as the amount of funding actually available or prioritizing trade-offs, and assumes the recommended resources and funding levels will produce desired outcomes often without testing assumptions about which inputs will produce results. Often, districts are found to be currently spending more

than the professional judgment panel would recommend but are not producing the desired results predicted by the professional judgment recommendations. Lastly, there may be a conflict of interest in educators creating programs, incentives, and funding recommendations that affect their working conditions and compensation.⁶

Evidence Based Model

The evidence based (EB) model, 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 a 4-6 year timeframe.^{b 7}

The EB model identifies a set of school-level resources 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.^c 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 and staffing interventions for students who qualify for free/reduced lunch, special education, and English as a second language students.

The EB model estimates adequate expenditure levels for prototypical elementary, middle, and high schools. In addition to school-level resources, the EB model also 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, and special needs students.

Odden and Picus recommend recalibrating funding systems every five years when using this model. Recalibrating the EB model every five years allows for the latest research on education needs to be applied to the prototypical schools cost. In addition, where Kentucky uses average daily attendance in its funding formula, Odden and Picus recommend using average daily membership as the count for funding. They also recommend using a three year average ADM instead of a single year.

^b For example, if a school district had 35 percent of students meeting basic proficiency levels, that would increase to 70 percent of students meeting basic proficiency levels over a 4-6 year period if the evidence based model were used.

^c Other states may have prototypical district sizes in evidence based models.

One advantage of the EB model is that it includes resources and research in decision making.⁸ The disadvantage to this model is that while these research-based models work in one district to improve student performance, they may not work in another district.⁹ In addition, basing recommendations on prototypical districts may overestimate or underestimate resources when districts vary from the prototypes or may require major reorganization of existing school systems. Evidence based models often do not fully consider all funding sources within a state system of education or the manner in which funding is determined. In addition, evidence based models do not guarantee 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.

Cost Function

Cost function models assume that purchased environmental input factors and nonpurchased environmental input factors combine to produce education outcomes.^d 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 non-school inputs explains how school inputs affect student performance. This model generally applies higher costs for students with limited English proficeincy (LEP), exceptional children, high school students, economically disadvantaged students, and students in geographically isolated districts.¹⁰

Cost function models rely on historical experience and data, and are most useful when conditions remain the same as when data was collected.¹¹ Advantages of the Cost Function approach include the ability to use multiple measures of achievement and evaluate multiple outcomes.¹² This model also offers straightforward cost indices with input data based on factors that affect spending.^e 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.¹³

^d Purchased input factors include staff, facilities, and materials. Nonpurchased input factors include student skills that are acquired through schooling.

^e Although cost funciton models require explicit outcomes, inputs, and assumptions.

There are several criticisms of the cost function approach. The cost function approach requires valid and reliable data from relevant outcomes, prices, and the educational environment.¹⁴ Similarly, this model cannot distinguish between the effectiveness of programs and the effectiveness of the individuals implementing the programs. Similarly, such approaches often do not distinguish between the impacts of one-time programs and long-term programs.^{f 15} 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 the ratio of cost to student performance remains the same regardless of current levels of student performance.¹⁶ The cost function approach is technically complex and many assumptions and judgments are made by the researchers that may not be obvious to others. Lastly, the cost function model assumes that districts want to minimize costs, which may not be the case, and this model does not advise districts on how to allocate funds or prioritize programs, only provides predicted costs for desired outcomes given the districts' characteristics and resources.¹⁷

Successful Schools And Districts Model

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 other schools and districts on state tests and then calculates average spending per pupil in those schools and districts.^g 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.¹⁸

This SSD approach does not include additional funding that is needed for serving students with special educational needs. Most of the SSD models in the past have been conducted at the district level; however, more recent applications of the SSD model have data available at the school level.^h

^f For example, classroom coaches may be hired for one year, but they continue to benefit student achievement for years moving forward.

^g This model also eliminates the schools and districts that have the highest and lowest spending per pupil, the schools and districts that have the highest and lowest property wealth, and large urban districts.

^h In the past, states were not required to report school level expenditures; however, the federal Every Student Succeeds Act (2015) requires states to provide school-level expenditures.

An advantage of the SSD approach is that there is a direct link between costs and outcomes. One disadvantage is that this model does not indicate how funds should be spent 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.¹⁹ There is also no consensus on measurement of outcomes, which can be complicated by the available data collected by schools. The statistical models used by the CCD model may be too complex for stakeholders and may have estimation errors. In addition, results from this approach may not be generalizable to other scenarios.²⁰ Lastly, this approach excludes many non-school factors that influence student performance, such as prior school experiences.²¹

Comparing Adequacy Analysis Models

Researchers at the University of Kansas and Texas A&M reviewed 27 adequacy analysis findings and compared the per pupil basic cost in current dollars adjusted for state-to-state differences and determined that, in general, the Successful Schools method produced lower costs while the Professional Judgment, Evidence-Based, and Cost Function methods produced higher costs. The authors also reviewed studies in which the same researchers conducted different studies in the same year in the same state and found that the Successful Schools 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, outcome standards, inputs, and costs. Overall, the authors found that adequacy study results varied depending on decisions about model selection, inputs, relevance, outputs, and definitions.²²

Alternative To Requesting Adequacy Study

In addition to the adequacy studies completed, 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 their approach to funding at-risk students.ⁱ

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

Tennessee Investment in Student Achievement (TISA)

Since 1992 Tennessee used a resource-based allocation, system called the Basic Education Program (BEP) to fund school districts. The BEP 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 for school districts. The process to propose the new funding 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. The subcommittees developed recommendations for the new funding formula referred to as the Tennessee Investment in Student Achievement (TISA) formula using public comments. 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; 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 student's individual circumstance. Appendix A includes information on the new formula Tennessee is using.

Vermont Changes To Pupil Weights

In 2018, The Vermont General Assembly passed Act and Resolves No 173, which commissioned a study to examine the pupil weights utilized in their school funding formula. This study was to examine if the current weights were adequate and equitable. The University of Vermont, Rutgers University, and the American Institute for Research issued their report in December of 2019. This study did find that the pupil weights for students living in poverty, English Language learners, and secondary school students were insufficient. In addition, the study found that additional weights should be added for middle school students, school 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 if and how to implement the recommendations. This task force was made up of four senators and representatives. They met 12 times in a little over 5 months' time.

In 2022, the Vermont General Assembly passed a law, which was signed by the Governor, to implement the following changes to the current weights established in Table 1.2 and 1.3 below. PreKindergarten’s weight was increased from 0.46 to 0.54. The Kindergarten/Elementary and middle school weight was eliminated, however the secondary school weight was increased from 0.39 to 1.13. In addition, the federal poverty level and English learners weights were also increased significantly. Finally, Vermont added weights for low population density and small schools described in Table 1.3 below.

Table 1.2
Vermont’s Current And Fiscal Year 2025 New Weights

Measure	Existing Weight	New Weight
Pre-Kindergarten	.46	.54
Elementary	1	none
Grades 6-8	.36	none
Grades 9-12	.39	1.13
Federal Poverty Level	.25	1.03
English Learners	.2	2.49

Note: Elementary grades include kindergarten.

Table 1.3
Vermont’s Fiscal Year 2025 New Weights

Measure	Description	New Weight
Low Population Density	No of persons per square mile is fewer than 36	0.15
	No of persons per square mile is 36 or more but fewer than 55	0.12
	No of persons per square mile is 55 or more but fewer than 100	0.07
Small Schools	School has fewer than 100 pupils	0.21
	100 or more but fewer than 250	0.07

Note: Pupil counts are determined by average two-year enrollments.

Nevada Change In At-Risk Student Classification

Nevada changed the way they fund at-risk students starting this year. The new funding formula commissioned in 2019 by the 11-member Commission on School Funding Committee, allowed the State Board of Education the authority to re-examine the definition and funding of at-risk students. The prior at-risk funding formula was based on students qualifying for free and reduced price lunch. The new definition of at-risk students was to include a broader set of social and academic factors that hamper student progress. The Nevada State Board of Education recommended that the Nevada Department of Education hire Infinite Campus to develop the at-

risk funding model.^j The state used academic, attendance, behavior, and stability indicators to identify students at risk of not graduating in four years. Table 1.4 includes some of the data used in determining at-risk status. In the new Nevada at-risk model, a student who belongs to more than one weighted category—e.g., free lunch and limited English proficiency—would only receive the weighted funding for the category with the highest weight.^k A recent article published in Educate Nevada (ENN) criticizes this new funding model because they estimate that only about 67,000 students would now qualify for at-risk funding compared to 271,000 students qualifying in the old model.²³

Table 1.4
Data Elements Used By Nevada To Identify
At-Risk Students 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

Note: Not all data elements were included within each indicator.

Source: Nevada Department of Education

Model Policies for State Education Funding

Edbuild produced studies on equitable school funding and recommended that states should develop student-based school funding formulas instead of resource-based or program-based formulas. In addition, they referenced Kentucky, as an exemplar that approximated their recommendations as to how the weighted student formula should be designed.^l EdBuild also provided their perspective on the best policy in each of the core areas of states funding formulas. In addition, EdBuild differentiated add-ons to base funding into three tiers:

- Silver – somewhat less ambitious, but would still advance policy in most states.

^j Kentucky uses Infinite Campus as a vendor for its Student Information System.

^k In Kentucky, a school districts get funding for each add-on students qualify.

^l Edbuild recommended that states should include base funding for each pupil with special weights for separate funding for students with additional needs or district needs.

- Gold – A policy that is strong and ambitious and that, while it may be uncommon, is still precedent in existing policy.
- Moonshot – A policy that offers a path for states seeking to do the work of breaking new ground in order to push further towards an ideal policy. This tier not only increases the equity and precision of the funding policy, but also the level of complexity. Implementing too many of this tier of funding may diminish the transparency of the formula, so EdBuild recommends considering one or two of these funding formulas.

Base Funding

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

EdBuild also recommended that if state legislators introduce new mandates for public education that will cost districts more money, that the base amount be increased appropriately. In addition, 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 are not the same in each state, the report does not recommend an ideal per-pupil funding base; however, the report does suggest that the base amount should be set at a level that provides an equitable overall formula.

School Funding Formula Elements. Appendix B includes each formula element mentioned in the EdBuild report along with how funding elements are characterized in the three different tier levels: silver, gold, or moonshot. Silver would be the least restrictive funding element with Moonshot being the most aggressive funding model.

Kentucky is similar to the EdBuild suggested funding model as it has a base with add-ons for different student populations; however, Kentucky falls short since it does not have additional funding

streams for special student populations beyond what is included in the add-ons.^m The EdBuild silver model says this system should have three to five tiers and a high-cost fund set up for especially high-cost students. The fund should also be distributed based on an application from the district after a student exceeds the set cost threshold. In addition, Kentucky has no add-on weights for grade level, sparsity, and isolation. The ed build model also recommends that all students should get gifted and talented funding in order to increase the number of students identified for gifted and talented services.ⁿ

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^m 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 students with the highest needs have an add-on of 2.34. There is no additional funding for the highest needs students.

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

¹ Hanushek citations He continues to argue that just dumping large amounts of extra resources into states funding formulas with no expectations for how well the funds will be spent produce very small gains. (An Interview with Eric Hanushek, April 26, 2006).

² Does Money Matter in education Second edition, April 2019

³ *Rose v. Council for Better Educ., Inc.*, 790 S.W.2d 186, 198 (Ky. 1989).

⁴ Odden, Allan R. And Lawrence O. Picus. *School Finance, A Policy Perspective*. McGraw Hill Education, Sixth Ed., 2020. Print.

⁵ Chambers, J.G. 1999. "Measuring Resources in Education: From Accounting to the Resource Cost Model Approach." Working Paper Series, National Center for Education Statistics, Office of Educational Research and Improvement (Washington, DC: U.S. Department of Education) Working Paper #1999-16. Hartman, William T., Denny Bolton and David H. Monk, "A Synthesis of Two Approaches to School-Level Financial Data: The Accounting and Resource Cost Model Approaches." In *Selected Papers in School Finance, 2000 – 01*, edited by W. Fowler. National Center for Education Statistics, Office of Educational Research and Improvement. Washington, DC: U.S. Department of Education, 2001.

⁶ Hanushek, Eric A. "The Alchemy of 'Costing Out' an Adequate Education." In Martin R. West and Paul E. Peterson (eds.) *School Money Trials: The Legal Pursuit of Educational Adequacy*. 2007. Web. Accessed February 15, 2022.

⁷ Odden, Allan R., Lawrence O. Picus, Michael E. Goetz. *A 50 State Strategy to Achieve School Finance Adequacy*. Prepared for the Annual Meeting of The American Education Finance Association, Denver, Colorado. April 2008. Web.

⁸ Education Funding Advisory Board. "Appendix III: Review of Augenblick & Myers Adequacy Model." *Illinois Education Funding Recommendations*. January 2011. Web. Accessed Feb. 15, 2021.

⁹ "Four Approaches: Professional Judgment Approach." *Insights on Education Policy, Practice, and Research Archive*. March 2004. Web.

¹⁰ Gronberg, Timothy J., Dennis W. Jansen, Lori L. Taylor, Kevin Booker. "School Outcomes and School Costs: The Cost Function Approach." Texas A&M University. January 2004. Web. Accessed February 15, 2021.

¹¹ Gronberg, Timothy J., Dennis W. Jansen, Lori L. Taylor, Kevin Booker. "School Outcomes and School Costs: The Cost Function Approach." Texas A&M University. January 2004. Web. Accessed February 15, 2021.

¹² Education Funding Advisory Board. "Appendix III: Review of Augenblick & Myers Adequacy Model." *Illinois Education Funding Recommendations*. January 2011. Web. Accessed Feb. 15, 2021.

¹³ Gronberg, Timothy J., Dennis W. Jansen, Lori L. Taylor, Kevin Booker. "School Outcomes and School Costs: The Cost Function Approach." Texas A&M University. January 2004. Web. Accessed February 15, 2021.

¹⁴ Gronberg, Timothy J., Dennis W. Jansen, Lori L. Taylor, Kevin Booker. "School Outcomes and School Costs: The Cost Function Approach." Texas A&M University. January 2004. Web. Accessed February 15, 2021.

¹⁵ Hanushek, Eric. A. "Is the 'Evidenced-Based Approach a Good Guide to School Finance Policy?'" Prepared for Washington Learns Steering Committee, August 2006. Web. Accessed March 4, 2022.

¹⁶ Hanushek, Eric A. "The Alchemy of 'Costing Out' an Adequate Education." In Martin R. West and Paul E. Peterson (eds.) *School Money Trials: The Legal Pursuit of Educational Adequacy*. 2007. Web. Accessed February 15, 2022.

¹⁷ Gronberg, Timothy J., Dennis W. Jansen, Lori L. Taylor, Kevin Booker. "School Outcomes and School Costs: The Cost Function Approach." Texas A&M University. January 2004. Web. Accessed February 15, 2021.

¹⁸ Odden, Allan R. And Lawrence O. Picus. *School Finance, A Policy Perspective*. McGraw Hill Education, Sixth Ed., 2020. Print.

¹⁹ Ibid.

²⁰ Gronberg, Timothy J., Dennis W. Jansen, Lori L. Taylor, Kevin Booker. "School Outcomes and School Costs: The Cost Function Approach." Texas A&M University. January 2004. Web. Accessed February 15, 2021.

²¹ Hanushek, Eric A. "The Alchemy of 'Costing Out' an Adequate Education." In Martin R. West and Paul E. Peterson (eds.) *School Money Trials: The Legal Pursuit of Educational Adequacy*. 2007. Web. Accessed February 15, 2022.

²² Taylor, Lori L., Bruce D. Baker, Arnold Vedlitz. "Measuring Educational Adequacy in Public Schools." The Bush School of Government & Public Service, Texas A&M. September 2005. Web. Accessed March 7, 2022.

²³ ENN staff. A Quiet Regulatory Change Could hurt Nevada's Most Vulnerable Students. April 2022. Web

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Chapter 2

State Comparative Findings And A National Comparison Of School Funding Fairness.

Introduction

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

Overall Comparison

Kentucky is demographically similar to Tennessee and West Virginia, however compared to Tennessee, Kentucky performs about the same on the National Assessment of Educational Progress (NAEP). Kentucky also spends more per-pupil and spends less on elementary and secondary education as a percent of total state expenditures.^b

Compared to West Virginia, Kentucky performs better on NAEP, spends less per-pupil and dedicates more of its total state budget to elementary and secondary education.

Compared to North Carolina, Kentucky performs worse 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 have decreased over the last decade and reading scores have decreased even more. In addition, all comparable states except Tennessee also have lost ground on the NAEP. While Tennessee has improved their NAEP scores, as of 2019, their NAEP scores were similar to Kentucky's NAEP scores.

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

^a Similar states include Alabama, Arkansas, Indiana, Missouri, North Carolina, North Dakota, Ohio, Oklahoma, Tennessee, and West Virginia.

^b Expenditures are current expenditures.

on K-12 current spending and spending more on starting salaries after adjusting for cost of living differences.

Education Revenue

School districts rely heavily on funds they receive from state and local revenues to fund public education. The amount of state and local funding each school district receives depends on the funding mechanisms that are determined by each state's legislature. Some funding models include a student-based foundation, like Kentucky, which base funding on the number of students and additional funding for special student groups.^c Other states either use 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

Table 2.1 shows state revenue as a percent of total revenue for FY 2011 and FY 2020 for Kentucky and its comparable states along with the national averages. From FY 2011 to FY 2020, Kentucky's state revenue increased by 1.8 percent. While Kentucky's percent of state revenue increased the United States average increase was 2.6 percent.

^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 state or local funding.

**Table 2.1
Public Education State Revenue As A
Percentage Of Total Revenue
Kentucky And Similar States
Fiscal Years 2011 And 2020**

State	State Revenue as a Percentage of Total Revenue		Change from FY 2011 to FY 2020
	FY 2011	FY 2020	Percent Change
Kentucky	52.1%	53.9%	1.8%
Alabama	53.8	56.7	2.9
Arkansas	71.8	75.3	3.5
Indiana	61.9	62.5	0.6
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
United States	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

Public School Educational Spending

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; however, they do not include expenditures on higher education programs.

Public Education Expenditures As A Percent Of Total State Expenditures

Table 2.2 displays how much each state spends on public education compared to the total percent of their state budget in FY 2012 and FY 2021. All but two states, North Carolina and North Dakota, have a smaller percentage of their total state budget going to elementary and secondary education in FY 2021 compared to

FY 2012. Kentucky's percentage of its state budget going to elementary and secondary education expenditures has decreased 5.3 percent from FY 2012 to FY 2021. Compared to Kentucky, only two states, Indiana (9 percent) and Arkansas (6.3 percent) are the only two comparison states that had a greater percentage decrease in the amount of total state expenditures going to elementary and secondary education from FY 2012 to FY 2021

Table 2.2
Elementary And Secondary Education Expenditures As A
Percent Of Total State Expenditures
Kentucky And Similar States
Fiscal Year 2012 And 2021

State	K-12 expenditures as a percent of total state expenditures		Change from FY 2012 to FY 2021
	FY 2012	FY 2021	Percent Change
Kentucky	19.8%	14.5%	-5.3%
Alabama	20.9	20.4	-0.5
Arkansas	19.0	12.7	-6.3
Indiana	32.9	23.9	-9.0
Missouri	22.6	21.3	-1.3
North Carolina	23.2	23.7	.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 and NASBO. *2021 State Expenditure Report.* web

Current Per-Pupil Spending

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, repaying debts, purchases of land, school construction, and depreciated items like buses and programs outside P-12th grade.

As shown in Table 2.3, nationally, per-pupil current spending increased by 27.2 percent. Tennessee and Kentucky's per-pupil current spending increased by 22.4 percent. North Dakota, Ohio and Oklahoma's per-pupil current spending increased more than Kentucky's did.

Table 2.3
Growth In Per-Pupil Current Spending;

**Kentucky And Similar States
Fiscal Years 2011 And 2020**

State	Growth in Per-Pupil Current Spending		Change from FY 2011 to FY 2020	
	FY 2011	FY 2020	Difference	Percent Change
Kentucky	\$9,309	\$11,397	\$2,088	22.4%
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
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
United States	10,608	13,494	2,886	27.2

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

States Ranked By Personal Income

One measure for comparing states' level of financial support for elementary and secondary education is to compare total per-pupil expenditures to personal income within the state. 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 \$1000 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. When compared to similar states, Arkansas had the highest elementary and secondary education expenditures in 2011 and 2020 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
Fiscal Year 2011 And Fiscal Year 2020

State	Current Education Spending		Change From FY 2011 To FY 2020	
	FY 2011	FY 2020	Difference	Percent Change
Kentucky	\$44.33(17)	\$40.18(12)	\$-4.15	-9.4%
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
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
United States	42.11	35.89	-6.22	-14.8

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

NAEP Testing

The National Assessment of Educational Progress (NAEP) is administered by the National Center for Education Statistics (NCES). There is a federal mandate for states to participate in NAEP. 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, the NAEP assesses a sample of students in the United States who are representative of different regional, racial, socioeconomic, and ethnic groups. A score for the state and the nation as a whole are generated based on this sample.¹

NAEP Math

Students in grades 4 and 8 will take the NAEP in math test every 2 years. The NAEP in math measures mathematical knowledge and the ability to problem solve. Table 2.5 shows the percent of students in 4th grade that took the NAEP test and scored either at or above basic and at or above proficient on the test. Fourth graders performing at or above the basic level should show some of evidence of understanding mathematical concepts and procedures, while students scoring at the proficient level should consistently apply integrated procedural knowledge and conceptual understanding to problem solve.

NAEP 4th-Grade Math At Or Above Basic. Tennessee was the only state that showed an increase in the percent of students that scored at or above basic math 4th grade knowledge from 2011 to 2019. It should be noted that Tennessee and Alabama were tied for the lowest percentage of students testing at this level in 2011. While Tennessee's basic rate increased, it should be noted that Alabama fell from 75 percent to 71 percent or 4 percentage points from 2011 to 2019. During the same time period, Kentucky's 4th-grade math students declined four percentage points from 85 to 81.

NAEP 4th-Grade Math At Or Above Proficient. Among Kentucky's comparison states, 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 grade 4 math test. Kentucky 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 had a lower proficiency rate in 2011 and tied the national average in FY 2019.

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

State	At or Above Basic			At or Above Proficient		
	FY 2011	FY 2019	Change	FY 2011	FY 2019	Change
Kentucky	85%	81%	-4%	39%	40%	1%
Alabama	75	71	-4	27	28	1
Arkansas	81	75	-6	37	33	-4
Indiana	87	84	-3	44	47	3
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
U.S. Average	82	80	-2	40	40	0

Source: "State Performance Compared to the Nation." The Nation's Report Card. N.d. Web.

NAEP 8th-Grade Math At Or Above Basic. Table 2.6, shows 8th-grade NAEP math scores for 2011 and 2019. Tennessee was the only state that had an increase in the percentage of students scoring

at or above basic scores in math. While Tennessee increased its rate of students at or above basic by 4 percentage points, Kentucky decreased by 5 percentage points in the same time period. In 2011, 85 percent of North Dakota's 8th-grade math students scored at or above basic; however, that percentage declined 10 percentage points to 75 percent in 2019. Of Kentucky's comparison states, North Dakota still has the highest rate of students scoring at or above basic.

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

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, Kentucky's 29 percent of Kentucky's 8th grade students scored at or above proficiency in Math—1 percentage point lower than the national average.

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

State	At or Above Basic			At or Above Proficient		
	FY 2011	FY 2019	Change	FY 2011	FY 2019	Change
Kentucky	72%	67%	-5%	31%	29%	-2%
Alabama	60	57	-3	20	21	1
Arkansas	70	63	-7	29	27	-2
Indiana	77	73	-4	34	37	3
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
U.S. Average	72	68	-4	34	33	-1

Source: "State Performance Compared to the Nation." The Nation's Report Card. N.d. Web.

NAEP Reading

The NAEP reading is administered every two years to students in grades 4 and 8. The reading assessment includes literary and

informational texts to assess students' reading comprehension skills.²

NAEP 4th-Grade Reading At Or Above Basic. Table 2.7 shows that of Kentucky's comparison states, Tennessee was the only state where 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 five other comparison states.

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

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

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

State	At or Above Basic			At or Above Proficient		
	FY 2011	FY 2019	Change	FY 2011	FY 2019	Change
Kentucky	72%	67%	-5%	35%	35%	0%
Alabama	67	58	-9	31	28	-3
Arkansas	63	62	-1	30	31	1
Indiana	68	67	-1	33	37	4
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
U.S. Average	66	65	-1	32	34	2

Source: "State Performance Compared to the Nation." The Nation's Report Card. N.d. Web.

NAEP 8th-Grade Reading At Or Above Basic. Table 2.8 shows the percent of students scoring at or above basic and proficiency on the NAEP 8th-grade reading in 2011 and 2019 along with the percentage point increases or decreases for each of Kentucky's comparison states. Of the states similar to Kentucky, only Tennessee increased their percentage of 8th-grade students at or above basic in reading. Tennessee's scores increased from 70 to 73 percent during the time period. The rate of Kentucky's 8th grade 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 than Kentucky.

NAEP 8th-Grade Reading At Or Above Proficiency. In 2011, Kentucky had 36 percent of its 8th graders scoring at or above proficiency, that figure declined to 33 percent in 2019. Among Kentucky's comparison 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.

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

State	At or Above Basic			At or Above Proficient		
	FY 2011	FY 2019	Change	FY 2011	FY 2019	Change
Kentucky	79%	73%	-6%	36%	33%	-3%
Alabama	69	64	-5	26	24	-2
Arkansas	71	68	-3	28	30	2
Indiana	78	75	-3	32	37	5
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
U.S. Average	75	72	-3	32	32	0

Source: "State Performance Compared to the Nation." The Nation's Report Card. N.d. Web.

Teachers Starting Salaries

Table 2.9 displays the starting salaries for teachers with a bachelor's degree and no prior experience in Kentucky and its comparison states for the 2019-2020 school year. Table 2.9 also adjusted the beginning salary for the cost of living in each of the states using the regional price parities from the U.S. Bureau of Economic Analysis.³

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

Table 2.9
Annual Starting Salary And
Annual Starting Salary Adjusted For Cost Of Living
Kentucky And Similar States, 2019-2020 School Year

State	2020 Beginning Teacher Salary	2020 Adjusted Beginning Teacher Salary
Kentucky	\$37,238	\$41,468
Alabama	41,028	45,944
Arkansas	35,201	39,463
Indiana	37,573	40,619
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
United States	41,163	41,163

Source: EdNote. *Addressing Teacher Shortages by Adjusting Teacher Salaries*. August 2022, web.

A National Comparison Of School Funding Adequacy, And Fairness.

Two studies review fairness in education funding. The Education Law Center measures funding level, funding distribution, and funding effort in their report *Making the Grade 2021: How Fair is School Funding in Your State?*⁴ The Albert Shanker Institute and Rutgers Graduate School of Education report, *The Adequacy and Fairness of State School Finance Systems*, reviews fiscal effort, adequacy, and progressivity of state education funding.⁵

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.⁶

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.^{e7}

State School Funding Fairness Scores

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 about the same or better as its comparison states.⁸

Table 2.10
State School Funding Fairness Scores
SY 2009 and SY 2019

State	Funding level		Funding distribution		Funding effort	
	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: Farrie, Danielle and David G. Sciarra. “2021 Making the Grade, How Fair Is School Funding In Your State?” Education Law Center; Baker, Bruce, David Sciarra, and Danielle Farrie. “Is School Funding Fair? A National Report Card.” Second edition: June 2012. Education Law Center. Web.

Funding Level. Funding level is measured by the state and local revenue per pupil. Kentucky was ranked 40 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 and below the national average of \$15,487 in 2019. Five

^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.

comparison states had a higher level of funding than Kentucky, but only two comparison states were above the national average.⁹

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. Kentucky’s funding was considered regressive because the report found that high poverty districts received six percent less funding per pupil (\$13,038) compared to low poverty districts (\$13,800), as show in Table 2.11 below. Two comparison states were also considered regressive, while five comparison states were considered flat where low and high poverty districts received about the same per pupil funding, and three comparison states were considered progressive because high poverty districts received more per pupil funding than low poverty districts.¹⁰

Table 2.11
Funding Distribution In Kentucky And Comparison States

State	Per-Pupil Funding In Low Poverty Districts	Per-Pupil Funding In High Poverty Districts	Funding Distribution Determination
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: Farrie, Danielle and David G. Sciarra. “2021 Making the Grade, 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.¹¹

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 and

^f High poverty refers to districts with a 30 percent poverty rate among school-aged children based on the US Census.

received a grade of C in both years. Only two comparisons state 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.¹²

Report On The Adequacy And Fairness Of State School Finance

The report *The Adequacy and Fairness of State School Finance* analyzes school funding based on fiscal effort, adequacy, and progressivity using the data from 2018-2019 school year. The report defines *fiscal effort*, *adequacy*, and *progressivity*. Below are the definitions used 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 percent difference between actual spending and estimated spending required to achieve national average test scores; and
- *Progressivity* is 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.[§] Of Kentucky's comparison states, three states ranked higher than Kentucky and seven states ranked lower than Kentucky. Table 2.12 shows the fiscal effort, adequacy, and progressivity of Kentucky and its comparison states.

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

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

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

Source: Shanker Institute and Rutgers

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.

Fiscal Effort In Kentucky. In 2019, Kentucky spent 3.56 percent of its GSP on K-12 education and ranked 22 in the nation in terms of fiscal effort. The U.S. average was 3.45 percent and ranged from 2.5 percent to 4.5 percent in 2019. Seven comparison 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 \$701 per student would be necessary to bring Kentucky's current funding levels up to average prerecession funding.

Adequacy Trends Nationwide. The authors found variation in adequacy across states, although the funding gap between states' highest poverty districts and states' wealthiest districts improved from 2009 to 2019 on average. The authors suggest that returning funding to pre-recession 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 Black students, and districts with Hispanic students in 2019, while spending was actually 21 percent above adequacy levels in primarily-white districts.

Adequacy In Kentucky. In Kentucky, the authors estimate an adequacy target of \$15,638 per student to help students in the

highest poverty districts achieve test scores that are as high as the national average, finding that Kentucky spent 27.3 percent less than necessary in its highest-poverty districts in 2019 or \$4,225 per-pupil less. Of Kentucky's comparison states, three states had above adequate funding levels, two states had below adequate funding levels but funded more adequately than Kentucky, and five states had below adequate funding levels and funded less adequately than Kentucky.^h

Progressivity Trends Nationwide And In Kentucky. The authors defined a 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.¹³

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. This report found that adjusted current spending per pupil in Kentucky was \$11,098 in districts with 0 percent poverty and \$12,227 in districts with 30 percent poverty, a difference of 2.9 percent.ⁱ As a result, the report determined that Kentucky education funding was neither progressive nor regressive and was considered flat. Six comparison states were considered progressive and four comparison states were considered regressive.^j

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 and do not distribute it equitably. Progressive funding would be necessary to achieve adequacy, if total education funding was sufficient. Adequacy funding gaps could be reduced or eliminated by raising funding efforts to pre-recession levels

^h Tables 2.5 through 2.8 review NAEP scores in Kentucky and comparison states. The authors note that increased spending would not immediately improve test scores and that improvement would require many years and be a multigenerational effort.

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

^j The Education Law Center report found that high poverty districts received \$13,038 per pupil compared to \$13,800 per pupil in low poverty districts and determined that Kentucky was regressive. This is likely due to differences in funding sources. The Education Law Center used the U.S. Census Bureau's Annual Survey of School System Finances and the Shanker Institute and Rutgers University report used the NCES CCD Public Elementary-Secondary Education Finance Survey.

¹ US. Department of Education. National Center For Education Statistics. "An Overview of NAEP" 2019. Web.

² US. Department of Education. National Center For Education Statistics. "Explore Results for the 2019 NAEP Reading Assessment" 2019. Web

³ U.S. Bureau of Economic Analysis, Regional Price Parity Indices 2020. Web

⁴ Farrie, Danielle and David G. Sciarra. "2021 Making the Grade: How Fair is School Funding in Your State?" Education Law Center. 2021. Accessed February 15, 2022.

⁵ Baker, Bruce D., 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, Fourth Edition, December 2021, p. 35

⁶ Ibid,

⁷ Ibid.

⁸ Ibid.

⁹ Ibid.

¹⁰ Ibid.

¹¹ Ibid.

¹² Ibid.

¹³ Ibid.

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Chapter 3

Review Of Recent Adequacy Studies

Introduction

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. The education funding and student test scores in a state with multi-year 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 and more detailed information can be found 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 the Adequacy For Excellence in Kentucky report is more recent, it will be discussed in greater depth in this report.

Adequacy For Excellence In Kentucky 2014 Report

Picus Odden & Associates conducted an evidence-based adequacy study for Kentucky from December 2013 through August 2014 for the Council for Better Education, released in 2014. Picus Odden & Associates^a 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 Odden & Associates report estimates that an additional \$2.44 billion would have been needed in SY 2013 to

^a Picus Odden & Associates will be referred to as Picus from this point onward.

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 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 funding sources (local, state, or federal) supporting each element and 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.

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 that provides funding based on resources needed. Kentucky uses a guaranteed base per pupil amount adjusted by special student add-ons and a formula for transportation. 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.
- While some recommendations are based on best practices, many elements lack supporting evidence.

Resource Allocation Model And Cost Comparison Concerns

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 and districts have discretion in how funds are spent, whereas a resource allocation model requires that funds be spend on particular resources. As a result, it is not generally possible to determine how much Kentucky is currently spending on each element to evaluate

^b Picus Odden & Associates have recalibrated their evidence model since this report was released in 2014 and some recommendations are outdated. The most recent recommendations from Wyoming in 2020 will be noted when changes were made.

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.

Student Counts For Calculating Base Aid. The evidence-based model (EBM) calculated base aid on the greater of current student count or a rolling-three year average daily membership (ADM) to support districts with declining enrollment. Kentucky bases aid on prior year 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 a 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 and applying the model may either 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.

Teachers. The 2014 EBM recommends a certain number of core content teachers, specialist or elective teachers, career and technical education teachers, instructional coaches or facilitators, and tutors per prototypical school.^c There are differences in what Picus recommends and current instructional practices in Kentucky. In Kentucky, some teachers tutor students before, after school, and during summer school and receive extra duty pay. Picus recommends employing specific teachers as only tutors, summer school teachers, or extended day teachers. Comparing the number of current teachers to the number recommended by 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 career and technical education (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.

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

Special Student Populations. The 2014 Kentucky EBM includes per pupil dollar amounts for special student groups including English Language Learners, at-risk students, and students with mild and moderate disabilities.^d 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 receive free lunch, referred to as “at-risk” students; and students who fall outside the normal range of development, referred to as 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 five 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 limited English proficiency 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. 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

^d*School Finance: A Policy Perspective, Sixth Edition*, 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.

disabilities. The model recommended 100 percent state 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.

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 used to assist directors or other staff and are not disaggregated in the data and cannot be compared to the model recommendations.

Recommendations Lack Supporting Evidence

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

Substitute Teachers. The Picus model recommends funding for 10 days of substitute teacher coverage for every teacher in Kentucky to allow for one or two sick days, absences for other reasons, or long term medical leave; however, the recommendation is not based on teacher absences and as a result the recommended funding does not match the actual need for substitutes in Kentucky. In Kentucky, substitutes may cover non-core classes or multiple classes taught by different teachers in the same workday. The 2014 model estimates \$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

^e The 2020 Picus Odden & Associates model did not recommend instructional aides.

^f This calculation includes the model recommendation determining the number of teachers per student count.

from the General Fund and \$7.6 million from Fund 2, totaling \$40.7 million in the 2021 school year.

Librarians. The Picus model recommended 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.

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 only included schools that would be considered A1 schools as prototypical schools and does not address A5 or A6 schools, which also have principals and assistant principals in Kentucky.ⁱ

School Site Secretaries. The Picus model recommends two clerical positions in elementary and middle schools and three clerical positions 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

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 a set monetary amount, but the recommendation of the model is monetary.

Student Activities. The Picus model recommends \$250 per student to support after school programs and teacher stipends. This is based on spending in other states with no review of how

^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 aid position.

^h The updated model included 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 and are designed to remediate academic performance, improve behavior, or provide an enhanced learning experience. A6 schools are KECSAC funded programs serving children in the custody of the state. Sharing principals amongst 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.

much Kentucky spends.¹ 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 student activities from the General Fund and \$30 million from school activity funds in SY 2021. In Kentucky, some elementary school student activities are not funded through the district but instead are provided by parks and recreation, the YMCA, and other entities and are not tracked in education funding.^m

Gifted And Talented Students. The 2014 Picus model recommends \$25 per regular education pupil to support gifted and talented programs. The authors note there is no evidence that gifted and talented programs affect academic outcomes and such programs are offered to students already performing above state standards.¹ The 2014 Picus report recommends allocating nearly \$16.6 million for gifted and talented students. The updated Picus model recommends allocating \$40 per student and would total \$24.5 million if applied to Kentucky in SY 2021. In comparison, Kentucky districts spent \$10.2 million on gifted and talented programs in SY 2021.

English Language Learners. Picus state “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
² The supporting research focuses on strategies to help students, such as effective teachers and good school conditions, rather than supporting the recommendation for a certain number of teachers, funding, or professional development days. Kentucky includes an add-on to the SEEK formula for students with limited English proficiency.

At Risk Student Support, 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 did not support these assumptions.^o The report states that research on extended day programs and summer school effectiveness is mixed and outcomes depend on design and implementation rather than number of teachers. The model also

¹ The updated model recommendations were \$25 per elementary student, \$322 per middle school student, and \$599 per high school student.

^m While school activity funds are required to be tracked on district AFRs, district activity funds are not.

ⁿ While some scholars and the US Dept. Of Education use the term English Learners, the Kentucky Revised Statutes uses the term students with limited English Proficiency.

^o The updated model recommended one teacher per 120 at-risk students to support each of these programs.

calls for quality summer schools, including a 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.

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.

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 if the recommendation was appropriate.^q

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 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, the smallest district currently in Kentucky would constitute 0.045 district while the largest district would be divided into 22.3 districts, which affects all central office and maintenance and operations staff.

In addition, Picus calculated the number of custodians, maintenance workers, and groundskeepers based on prototypical school infrastructure and gross square footage assumptions considered necessary to support the overall model. However, Kentucky does not have a database of square footage in education

^p The updated model recommended \$10,000 per FTE 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.

buildings and Picus did not consider the actual square footage or buildings in Kentucky schools.^s

Tutors. Picus report that the benefits of tutoring stem from the quality and characteristics of tutoring programs rather than on the number of tutors provided; however, their 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.

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.”³
- Recommendations may not fit Kentucky policy preferences.⁴ 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.⁴ KRS 158.4416 requires that districts and public charter schools to employ at least one school counselor per 250 students.^v
- Carried forward costs assumes that these elements are adequate, which is not addressed or determined by the model and may not be accurate. The 2014 Kentucky EBM carries forward 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.

^s Please see the OEA report *An Overview Of Facilities Needs And Funding In Kentucky (2020)* for more information on Kentucky education buildings.

⁴ The updated model suggests against school resource officers (SROs), but recommends funding through local law enforcement at \$75,000 per SRO if utilized. However, in 2019, Kentucky Senate Bill 1 amended KR Chapter 158 to include the assignment of one or more certified school resource officers to each school when possible.

⁴ The 2020 model recommended one guidance counselors per elementary school, 1.26 guidance counselors per middle school, and 2.52 guidance counselors per high school, with a minimum of one per district.

^v The updated model recommends against hiring school resource officers (SROs), but recommends funding through local law enforcement at \$75,000 per SRO 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. Prototypical schools were designed at the elementary, middle, and high school levels

Model Estimates

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 have increased the funding gap to \$1.23 billion in SY 2003.

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 were discussed in Chapter 1 and are summarized briefly here. Professional judgment models are created by consulting educators and education stakeholders who may not be qualified to design programs, and 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^w conducted a professional judgment panel study of school finance adequacy in Kentucky to determine if student performance goals for 2014 could be achieved, published in May 2003. Disadvantages of the professional judgment model were discussed in Chapter 1 and were reviewed in the previous section.

^w Picus Odden & Associates was formerly the organization Picus and Associates.

Model Estimates

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

Overview Of Report

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. Details of the prototypical district configuration and resources needed are discussed in Appendix H.

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

Review Of Adequacy Studies Conducted In Other States

This section reviews adequacy studies performed in comparison 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 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 to

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

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.

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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	Professional judgment
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

Source: Picus Odden & Associates. Adequacy for Excellent in Kentucky: Report 2 (of 2). Picus Odden & Associates, 2014. Web.

Source: Aportela, Anabel, Lawrence O. Picus, Allan Odden. *A Comprehensive Review of State Adequacy Studies Since 2003*. Augenblick, Palaich and Associates. Sept. 12, 2004.

Source: Mangan, Michelle Turner, Allan Odden, 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 the state’s education funding model every 5 years since 2005 and have studied elements of school funding in 2004, 2008, and 2009.

Wyoming's legislature incorporated some of the recommendations into their school funding model, adapted some recommendations to fit their state’s needs, and did not implement other recommendations.

Operating Revenues And Student Performance. Per-pupil revenue was \$12,501 in SY 2006 and \$18,620 in SY 2019.^{y z} Additional details on Wyoming K-12 operating revenues are shown in Appendix H. Picus state 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 been in place since 2005 and recalibrated in 2010, 2015, and 2020. Picus say 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 and Grade 8 Reading at or above basic, Grade

^y 2006 was the first year after the first adequacy study.

^z The authors do not note if these estimates are adjusted for inflation.

8 Reading at or above proficient, and Grade 4 Math at or above basic scores actually declined. Additional details on Wyoming NAEP scores are shown in Appendix H.

Table 3.2
Wyoming NAEP Math And Reading Scores
SY 2005 And SY 2019

Year	Grade 4 NAEP Reading		Grade 8 NAEP Reading		Grade 4 NAEP Math		Grade 8 NAEP Math	
	At Or Above Basic	At Or Above Proficient	At Or Above Basic	At Or Above Proficient	At Or Above Basic	At Or Above Proficient	At Or Above Basic	At Or Above 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, shown below:

- 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.
- 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.
- Leadership support of the instructional program and data-based decision making.
- Foster a professional school culture with teacher collaborate teams where student performance is considered teachers' responsibility.
- Supporting training, curricula, and instruction with external professional knowledge.

Conclusion

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

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¹ Picus Odden and Associates. *Adequacy for Excellence in Kentucky, Report 1 (of 2)*. Picus Odden and Associates, August 2014, p. 78.

² Picus Odden and Associates. *Adequacy for Excellence in Kentucky, Report 1 (of 2)*. Picus Odden and Associates, August 2014, p. 77.

³ Picus Odden and Associates. *Adequacy for Excellence in Kentucky, Report 1 (of 2)*. Picus Odden and Associates, August 2014, p. 11.

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Appendix A

TISA Funding Formula

The Tennessee Investment in Student Achievement (TISA) Act became law in May 2022. With the passage of TISA, Tennessee will transition to a student-based funding formula.¹ The Tennessee per-pupil base funding was established by reviewing the per-pupil base amount used in other states with student-based formulas that were similarly sized and states that were located in the southeast region of the United States. Tennessee claims to have the 12th highest per-pupil base in the country and the second highest in the southeast. Table A.1 below includes the per-pupil base amount for similar states used in Tennessee’s per-pupil base comparison. In addition to the per-pupil base funding, it is important to determine what other state funding may be provided outside the per-pupil base. For example, in Kentucky, transportation, capital outlay, school safety, career and technical schools, and family resource centers are funded outside the base funding formula, however Tennessee included these funding streams in the base amount.

Table 2.1
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

Note: Florida also gives grades K to 3 an additional weight of 0.126 and grades 9 to 12: additional weights of 0.01. The Mississippi and South Carolina per-pupil base funding amounts are from 2021.

Source: “50-State Comparison: K-12 And Special Education Funding.” Education Commission of the States, 2021. Web; Tennessee Department of Education: Funding for Student Success Tennessee Investment in Student Success, March 2022.

Funding Weights

According to the Tennessee Department of Education, the TISA funding model includes funding weights or additional funding based on student characteristics. Students classified as economically disadvantaged receive the per-pupil base funding plus a 25 percent add-on for each student. 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, which is funded by the total ADM for students enrolled in Title I-eligible schools. Finally, students living in sparsely populated or small districts receive a 5 percent add-on to the per-pupil base. There are 10 levels of funding that are used to fund students with special education needs and limited

English proficiency. Depending on the nature of a student's disability the add-on ranges 15 to 150 percent.

Direct Funding

According to the Tennessee Department of Education, the TISA funding model has funding grants that are outside of the funding matrix. There is a literacy grant of \$500 per student enrolled in grades K to 3 as measured by ADM. For students that are behind, TISA allocates an additional \$500 per 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 the cost of 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 funding provides outcome funding to districts as well. This is to reward districts for students demonstrating success in literacy and being college and career ready. The funding is on a per-pupil basis as measured by ADM. Table 2.2 details the outcomes funding model. Districts receive extra funding for 3rd-grade students who are on track or mastered literacy skills. Districts also receive extra funding for students scoring 21 or higher on the ACT or acquiring an industry credential. Moreover, districts receive additional funding for each student who enrolls in a postsecondary education program.

Table 2.2
TISA Outcome Funding

Category	Students	Additional Outcome Funding
Literacy – 3 rd grade On-Track or Mastered	Not Economically Disadvantaged	Base X 20%
	Economically Disadvantaged	Base X 40%
ACT score of 21 OR industry Credentials	Not Economically Disadvantaged	Base X 20%
	Economically Disadvantaged	Base X 40%
	Disadvantaged	Base X 40%
Post High School Attainment	All Students	Base X 5%

¹ Tennessee. *TISA Act Overview-Rulemaking*. July, 2022. Web.

Appendix B

EdBuild Model Policies And Descriptions

EdBuild provides their perspective on the best policy in each of the core areas of state funding formulas. In addition, they divide states' add-ons to base per-pupil funding into the following three tiers:

- Silver – somewhat less ambitious, but would still advance policy in most states.
- Gold – A policy that is strong and ambitious and that, while it may be uncommon, is still precedent in existing policy.
- Moonshot – A policy that offers a path for states seeking to do the work of breaking new ground in order to push further towards an ideal policy. This tier not only increases the equity and precision of the funding policy, but also the level of complexity. Implementing too many of this tier of funding may diminish the transparency of the formula, so Edbuild recommends considering one or two of these within funding formulas.

Table B.1 summarizes each of the different 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. These should include Medicaid, Supplemental Nutrition Assistance program, Temporary Assistance for Needy Families, and the food distribution program on Indian reservations. It should also include categories of homeless, foster, and refugee students.	Should be generous weights with funding increasing base on the concentration of students in each district. It should be higher in districts with hire concentration of students and lowest in districts with the lowest concentration. OR Provide funding using two weights: a generous weight for each disadvantaged student and in districts where the percent of disadvantaged students exceeds a specific threshold. This weight would apply for each disadvantaged student above the threshold set.	The weight should be set at least double the amount of funding regular education students receive and then use the gold recommendations to build up from this floor. In addition, states should use a different identification model, other than the ones mentioned in the Silver categories, such as: Linking student address records with household income captured on tax returns or state departments work with federal treasury departments to determine household income for home addresses falling within each school district.
English-Language Learners	A generous weight for every student counted as an English-language learner	Generous weights broken out in three tiers weight more funding for lower	Generous weights applied to the base with students assigned to two different

	under Title III. This would align funding consistency between state and federal reporting and eligibility.	levels of current ELL using uniform, statewide assessments. There are three examples. 1. Set a minimum ELL count for districts with few ELL students and provide funding on that inflated basis to ensure sufficient scale. 2. Increase the ELL weight for districts enrolling few ELL students or 3. Provide per-pupil funding for districts to participate in a regional ELL program rather than providing for district-level instruction.	tiers. Provide more funds for lower proficiency level ELL students and the prevalence of their native language in the district, with students whose native language is less common receiving higher weights.
Special Education	Use a multiple-weights system with 3 to 5 tiers assigning students to different tiers based on diagnoses. In addition, have a high-cost fund for especially high-cost students. This fund should be by application after student exceeds cost threshold.	Use a 5 tier multiple-weights and students assigned to tiers based on hybrid system incorporating diagnoses using a state matrix of abilities based on IEP. Students with less intensive supports are assigned to one of the three lower funded tiers. Students with more intensive supports and accommodations are assigned based on specific abilities and skills on IEP. While more complexed, this has a more accurate targeting of funds. Should also have a high-cost fund like in Silver model.	A five tier funding system similar to the Gold recommendation, except all students are scored based on IEP rather than some. This process would require a layer of state review of IEPs and could level accountability for the over- or under-identification of students. In addition, there should still be the high-cost fund level in silver and gold policy recommendations.
Grade Level	Adjustments to funding formula based on number of students in each grade level, which includes Pr-kindergarten and full-day. No need to break out students by grades, due to the unlikely to differ substantially by grade level in most districts. As a result, states can choose not to apply any grade-level weights to keep formula simple.	Include prekindergarten and full-day kindergarten in funding grades in formula. Consider giving a weight that increases funding in K-3 for early learning literacy. In additional weight for 9-12 to support college-and career-readiness. This weight can aid in providing bother career and technical education and college prep coursework.	Not provided
Gifted and Talented	Provide funding based on a census basis; assume that a standard percentage of	Increase the base funding amount high enough to account for gifted	Not provided

<p>Sparsity and Isolation</p>	<p>every district's enrollment is gifted. Provide weighted funding for the number of students.</p> <p>Add a sliding –scale weight to the base amount for each student enrolled in a sparse district. The weight should be higher in districts with fewer students per square mile and phase out at greater student density. Since this funding is provided, on a per-pupil basis the upper limit of the sliding scale should be generous to properly provide funding needs of sparse districts with very low enrollments. The sparsity weight should multiply the base amount by four to five times.</p>	<p>instruction and programs should be funding out of the general instructional dollars.</p> <p>Apply a sliding scale weight to the base amount for sparsity; with a higher amount in districts weight fewer students per square mile. In addition, apply a flat weight to the base for students in districts that are isolated with the designation of "rural-remote based on the US Census designation. Moreover, districts can apply for this amount if they have geographic barriers such as mountain ranges, rivers, unpaved roadways, and other feature that make travel challenging. In addition, states should also account for the increased per-pupil cost of service ELL in districts where few student are enrolled. (See Gold recommendation under "English-language learners.</p>	<p>Due to states having very different geographic differences, funding for sparse or isolated districts should be specific to the individual state. As such, states seeking the best funding structure, should construct a policy that considers its particular geographic and circumstances needs.</p>
<p>Within-State Cost Differences</p>	<p>Not provided</p>	<p>Adjustments can be made for specific and genuine local cost drivers, but no adjustment to funding should be giving for general within-state cost differences. One specific instance could be where districts cost of living is high but the per-student value of tax base is relatively low. This would be for districts that have revenue challenges because much of the property tax base is tax-exempt.</p>	<p>Not provided</p>

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

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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 entitled *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 & Associates were Alabama, Arkansas, Indiana, Missouri, Ohio, Tennessee, and West Virginia.

Methodology To Identify Additional States In OEA Report

This report identified comparable states based on student and teacher information, financial data, and local demographics using the most recent available data. Below are the criteria that were used.

- Average daily attendance (ADA) per teacher within 0.0 to 0.5 students per teacher¹
- Revenue per ADA within \$200 per student²
- Number of operating districts within 10 districts³
- ADA within 50,000 students statewide⁴
- Expenditures per ADA within \$100⁵
- Percentage of students qualifying for free or reduced price lunch within 0.0 to 0.9 percentage points⁶
- Median household income within \$500⁷
- Public high school 4-year adjusted cohort graduation rates, same percentage⁸
- Percentage of 18- to 24-year olds enrolled in degree-granting postsecondary institutions within 0.0 to 0.5 percentage points⁹
- Average salaries of public school teachers within approximately \$500¹⁰
- Number of students per district within 500 students¹¹
- Percent of student scoring at or above proficient and at or above basic in NAEP reading and math in the 4th and 8th grade.¹²
- Percentage of total revenue receipts from local, state, and federal revenue¹³

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 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 this criteria.

^a The report compared states based on the percent 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 based on how each state's local, state, and federal revenue receipt matched Kentucky's receipts. For example, North Carolina's state revenue was similar to Kentucky but their local revenue and federal revenue were not. North Carolina received one-third of a point.

¹ *Rankings of the States 2020 and Estimates of School Statistics 2021*. National Education Association, April 2021. Web.

² Ibid.

³ Ibid.

⁴ Ibid.

⁵ Ibid.

⁶ "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." National Center for Education Statistics, Digest of Education Statistics, n.d. Web

⁷ "Median Household Income in the Past 12 Months (in 2020 Inflation-Adjusted Dollars)." U.S. Census Bureau, 2020 American Community Survey 1-Year Experimental Estimates. N.d. Web.

⁸ "Table 219.46. Public high school 4-year adjusted cohort graduation rate (ACGR), by selected student characteristics and state: 2010-11 through 2018-19." National Center for Education Statistics, Digest of Education Statistics. N.d. Web.

⁹ "Table 302.65 Percentage of 18- to 24-year-olds enrolled in degree-granting postsecondary institutions, by race/ethnicity and state: 2019." National Center for Education Statistics, Digest of Education Statistics. N.d. Web.

¹⁰ *Rankings of the States 2020 and Estimates of School Statistics 2021*. National Education Association, April 2021. Web.

¹¹ "Table 2. Number of operating public schools and districts, student membership, teachers, and pupil/teacher ratio, by state or jurisdiction: School year 2019-20." National Center for Education Statistics, Common Core of Data. N.d. Web.

¹² "State Performance Compared to the Nation." The Nation's Report Card. N.d. Web.

¹³ *Rankings of the States 2020 and Estimates of School Statistics 2021*. National Education Association, April 2021. Web.

Appendix D

State And Local Revenues By State

State And Local Revenue

In Kentucky, state and local revenue 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, classified as exceptional children, and with limited English proficiency.

Table D.1 shows local and state revenues for FY 2011 and FY 2020 for Kentucky and its 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. Only three comparable states had a higher percentage increase in state and local funding from FY 2011 to FY 2020 than Kentucky. 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	State And Local K-12 Revenue*		Change from FY 2011 to FY 2020	
	FY 2011	FY 2020	Dollars	Percent Change
Kentucky	\$5,938,604	\$7,802,782	\$1,864,178	31.4
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
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: United States Census Bureau. *2020 Public Elementary – Secondary Education Finance Data* and *2011 Public Elementary – Secondary Education Finance Data*

Table D.2 shows the percent increase in local revenues for FY 2011 and FY 2020 for Kentucky and its 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 in local funding from FY2011 to FY 2020 than Kentucky and tied with Tennessee's local revenue increase. This is also an increase of 3.2 percent more than the national average.

Table D.2
Public Education Local Revenue As A Percentage Of
Total Education Revenue;
Fiscal Years 2011 and 2020

State	Local Revenue as a Percentage of Total Revenue		Change from FY 2011 to FY 2020
	FY 2011	FY 2020	Percent Change
Kentucky	31.5%	34.8%	3.3%
Alabama	43.3	45.5	0.9
Arkansas	31.6	32.5	1.9
Indiana	12.2	14.1	1.0
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: United States 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 (IDEA).

As shown in Table D.3 below, all states have seen a decrease in the percent of federal funds in total revenue. Kentucky's percentage decreased by 5.1 percent from FY 2011 to FY2020, which was a little more than the national average of -4.8 percent. Oklahoma's decreased by 6.0 percent, the most of any comparison state. Indiana's percent of federal revenue compared to the percentage of total revenue has decreased by 1.5 percent, the least of any of Kentucky's comparison states.

Table D.3
Public Education Federal Revenue As A Percentage Of
Total Revenue;
Fiscal Years 2011 And 2020

State	Federal Revenue as a Percentage of Total Revenue		Change from FY 2011 to FY 2020
	FY 2011	FY 2020	Percent Change
Kentucky	16.4%	11.3%	-5.1%
Alabama	14.6	10.7	-3.9
Arkansas	16.0	10.7	-5.3
Indiana	8.6	7.1	-1.5
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: United States Census Bureau. *2020 Public Elementary – Secondary Education Finance Data* and *2011 Public Elementary – Secondary Education Finance Data*

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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, repaying debts, purchases of land, school construction, and depreciated items like buses and programs outside P-12th grade.

As shown in Table E.1, nationally per-pupil current spending on instruction increased by 26.6 percent from FY 2011 to FY 2020, while Kentucky increased by 22.4 percent. Of Kentucky's comparable states, West Virginia spending on instruction increased the least—0.17 percent.

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

State	Instruction Function		Change from FY 2011 to FY 2020	
	FY 2011	FY 2020	Amount	Percent Change
Kentucky	\$5,445	\$6,665	\$1,220	22.4%
Alabama	5,143	5,883	740	14.4
Arkansas	5,374	5,810	436	8.1
Indiana	5,476	6,213	737	13.5
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
United States	6,458	8,176	1,718	26.6

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

As shown in Table E.2, nationally per-pupil current spending on district administration increased by 31.8 percent from FY 2011 to FY 2020, while Kentucky increased 18 percent. West Virginia was the only state that actually decreased the amount spent on district administration at 14.8 percent less than 10 years ago.

Table E.2
Per Pupil Expenditures On District Administration
Fiscal Year 2011 and FY 2020

State	District Administration		Change from FY 2011 to FY 2020	
	FY 2011	FY 2020	Amount	Percent Change
Kentucky	\$211	249	\$38	18.0%
Alabama	212	256	44	20.8
Arkansas	89	154	65	73.0
Indiana	184	208	24	13.0
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
United States	201	265	64	31.8

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

As shown in Table E.3, FY 2011 to FY 2020 Kentucky increased the amount spent on school administration at the same rate as the nation as a whole (32 percent). Only three other comparable states, North Dakota, Oklahoma and Tennessee, increased at a higher percentage.

Table E.3
Per pupil amounts for current spending on School Administration
Fiscal Year 2011 and FY 2020

State	School Administration		Change from FY 2011 to FY 2020	
	FY 2011	FY 2020	Amount	Percent Change
Kentucky	\$516	\$682	\$166	32.2%
Alabama	546	641	95	17.4
Arkansas	475	539	64	13.5
Indiana	525	692	167	31.8
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
United States	574	758	184	32.1

Source: United States 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 of the report will review how the average teacher salary has changed from FY 2010 to FY 2020.

Table F.1 displays average teacher salaries for Kentucky and comparable states. The table shows that only two states have raised teacher salaries than Kentucky has over the 10 year time period; Arkansas, whose average teacher salary in FY 2020 increased 8 percent to \$50,456 from FY 2010 to FY 2010; and Indiana whose teacher salaries increased 3.5 percent during the same period. Kentucky’s average teacher salary was \$49,543 in FY 2010 and increased 9 percent by FY 2020 to \$53,907. North Dakota's average teacher salary had the highest percent increase—25 percent. Of Kentucky's comparable states, Ohio actually has the highest average teacher salary at \$61,406.

Table F.1
State Average Teacher Salaries;
Fiscal Year 2010 and Fiscal Year 2020

State	State Average Teacher Salary		Change From FY 2010 To FY 2020	
	FY 2010	FY 2020	Dollars	Percent Change
Kentucky	\$49,543	\$53,907	\$4,364	8.8%
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
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
United States	55,370	63,645	8,275	14.9

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

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Appendix G

Student Characteristics Of Kentucky And Comparable States

Student Characteristics

This Appendix will report 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 percent of students eligible for free or reduced-price lunch and the number of students who have limited English proficiency.

Student Enrollment

Enrollment is the count of all students that are enrolled in a district on a specific date. As shown in Table G.1, six of Kentucky's comparable states decreased in student enrollment between FY 2011 and FY 2020. There were four states that were comparable to Kentucky where 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 as compared to FY 2011. When compared to the nation, between FY 2011 and FY 2020, Kentucky's enrollment decline was 1.3 percentage points greater.

Table G.1
Fall K-12 Public School Enrollment By State,
FY 2011 And FY 2020

State	Fall Enrollment		Change from FY 2011 to FY 2020	
	FY 2011	FY 2020	Students	Percent Change
Kentucky	681,987	658,668	-23,319	-3.4%
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
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
United States	49,521,669	49,375,467	-146,202	-2.1

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 the classroom, home, hospital, and other settings. These services can also include speech, physical, and occupational therapy. Students classified requiring special education services must have an individualized education program (IEP) that defines their career goals and the supports they need to reach proficiency for graduation.

Table G.2 includes 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. Over the last 10 years, the percent of students requiring special education services has grown in Kentucky and its comparable states. Among Kentucky's comparable states, Alabama had the highest growth in its population of special education students—2.2 percent, followed by Arkansas—1.9 percent. Kentucky, North Carolina and North Dakota all had their special education populations grow 0.8 percent between FY 2011 and FY 2020. Among Kentucky's comparable states, only four states have a higher proportion of special education students, Indiana, Ohio, Oklahoma and West Virginia.

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

State	Percent Special Education Students		Percent Change
	FY 2011	FY 2020	
Kentucky	15.2%	16.0%	0.8%
Alabama	10.9	13.1	2.2
Arkansas	13.5	15.4	1.9
Indiana	15.9	17.3	1.4
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	1.68
United States	13.0	14.4	1.4

Source: National Center for Education Statistics, Digest of Education Statistics 1990-91 through 2019-20

Students With Limited English Proficiency

Limited English Proficiency (LEP) are unable to communicate fluently in English or come from non-English-speaking homes. LEP students require specialized or modified instruction in their academic courses.

As shown in Table G.3, Kentucky and its comparable states all had increases in the percentage of LEP students from FY 2010 to FY 2019. Oklahoma increased the most from 6.6 percent to 9.1 percent, an increase of 2.5 percent. In FY 2010, 2.4 percent of Kentucky students were LEP students and that figure almost doubled by FY 2019 to 4.3 percent, an increase of 1.9 percent. In

FY 2011, on average, 9.2 percent of all students were LEP students; by FY 2019, that figure 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		
	FY 2010	FY 2019	Percent Change
Kentucky	2.4%	4.3%	1.9%
Alabama	2.4	4.4	2.0
Arkansas	6.8	8.2	1.4
Indiana	4.9	6.6	1.7
Missouri	2.4	3.9	1.5
North Carolina	7.5	8.0	0.5
North Dakota	2.8	3.7	.90
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 And 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 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 (SNAP) or the Kentucky Transitional Assistance Program (KTAP) 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. When compared to the nation, Kentucky has a higher percentage of students eligible for FRPL. As shown in Table 2.14, Kentucky and three other comparable states had lower FRPL rates in FY 2020 than in FY 2011. During the same time period the FRPL rate increased in the United States from 48.1 percent to 52.1 percent. From FY 2011 to FY 2020, of Kentucky's comparison states, North Carolina had the highest percentage point increase in FRPL students—an increase of 7.5 percent. Kentucky's FRPL rate went from 56.6 percent to 55.7 percent, a decrease of 0.9 percentage points during the same time period.

Table G.4
Percent Of Public School Students Eligible For
Free or Reduced-Priced Lunch
FY 2011 and FY2020

State	Percent Of Students Eligible For Free Or Reduced Priced Lunch		Percent Change
	FY 2011	FY 2020	
Kentucky	56.6%	55.7%	-0.9%
Alabama	55.1	55.0	-0.1
Arkansas	60.5	65.5	5.0
Indiana	46.8	48.4	1.6
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
United States	48.1	52.1	4.0

Source: National Center for Education Statistics, Digest of Education Statistics fall, selected years, 2000-01 through 2019-20

Pupil Teacher Ratio

Pupil-teacher ratio shows 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 quality as students have more opportunities for personal attention.

Table G.5 shows pupil teacher ratios in Kentucky and its comparison states in FY 2011 and FY 2020. While Alabama has the lowest pupil-teacher ratio in FY 2020 at 17.7 students per teacher, Arkansas has seen the largest reduction in pupil-teacher ratio as it has reduced theirs from 14.1 to 12.9 or a decrease 1.2 students per teacher on average.

In FY 2011 Kentucky had a pupil teacher ratio of 16.0, however in FY 2020 the pupil-teacher ratio increased to 16.4. This is still higher than the national average at 15.9 pupils per teacher in FY 2020.

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

State	Percent Of Students Eligible For Free Or Reduced Priced Lunch		Percent Change
	FY 2011	FY 2020	
Kentucky	16.0	16.4	0.4
Alabama	15.3	17.7	2.4
Arkansas	14.1	12.9	-1.2
Indiana	18.0	17.0	-0.1
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: Using enrollment to full time equivalent teacher count

Source: National Center for Education Statistics, Digest of Education Statistics, selected years, fall 2000-01 through 2019

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Appendix H

Review Of Recent Adequacy Studies

Introduction

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 Report

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 & Associates 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.

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

Picus Odden & Associates have recalibrated their evidence model since this report was released in 2014 and some recommendations are outdated. The most recent recommendations from Wyoming in 2020 will be noted when changes were made.

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

Total Costs. The model estimates that an additional \$2.44 billion would be 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 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 H 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 Dept. of Education operations	20,951,500
	Kentucky School for the Blind/Deaf General	16,135,700
	Fund allocation	
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 Excellent in Kentucky: Report 2 (of 2). Picus Odden & Associates, 2014. Web.

Kentucky Prototypical School Resources.

This section reviews the resources developed for prototypical schools by Picus Odden & Associates 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
Grades	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 consisting of 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 Excellent in Kentucky: Report 1 (of 2). Picus Odden & Associates, 2014. Web.

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

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

Element	Elementary	Middle	High	Total Cost
Core content teachers	26	18	24	\$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	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 Excellent in Kentucky: Report 1 (of 2). Picus Odden & Associates, 2014. Web.

Table H.4 shows per-pupil resources. Per-pupil resources provide a specified amount of funding per student. They include 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, 2014 Kentucky Adequacy Study

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

Note: The equipment/technology recommendation provides one computer for every two to four students, which is outdated based on the current goal of providing a 1:1 student to compute ratio set within the KETS 2018 – 2024 Master Plan.¹ 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 Excellent in Kentucky: Report 1 (of 2). Picus Odden & Associates, 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 evidence-based model calculated base aid on the greater of current student count or a rolling-three year average daily membership (ADM) to support districts with declining enrollment. Kentucky bases aid on prior year AADA plus growth.

Regional Cost Adjustment Factors. The EBM recommended using a Comparable Wage Index to adjust salary levels. The authors note this will shift aid away from rural districts 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 adjusted average daily attendance (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 a 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
Special Student Populations

Category	School Element	Resources	Resource Cost
English Language Learners	Teachers	1 teacher per 100 EL students	\$14,545,451
	Substitutes	5% of salaries	727,273
	Professional Development	6 days	
	Instructional Materials	\$10 per EL student	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: The 2020 model recommended 4.46 teacher positions for every 100 ELL students.

Source: Picus Odden & Associates. Adequacy for Excellent in Kentucky: Report 1 (of 2). Picus Odden & Associates, 2014. Web.

At Risk Student Support, Extended Day Programs And Summer School. The Picus Odden & Associates 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 a full six to eight week programs with small group or individualized instruction and parent involvement and participation. The model does not include transportation funding for either program.

Exceptional Child Students. The Picus Odden & Associates model bases exceptional child funding on the number of regular education students and assumes 12 percent of students have

^a*School Finance: A Policy Perspective, Sixth Edition*, 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.

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 & Associates model recommends \$9,000 per full time CTE teacher.^c

Preschool. Table H.6 shows the staffing and resources identified by Picus Odden & Associates needed to support preschool, which the model would provide to all three- and four-year olds prioritizing children in poverty, totaling \$572.2 million in SY 2013.^{d e} In Kentucky, preschool is available to all four-year-old children whose family income is less than 160 percent of the federal poverty level; all three- and four-year-old children with development delays and disabilities; and four-year-olds placed at districts' discretion. Preschools receive state funds and federal 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 the 2014 Picus Odden & Associates analysis of adequate funding.² 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	Per School Resource
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

Source: Picus Odden & Associates. Adequacy for Excellent in Kentucky: Report 1 (of 2). Picus Odden & Associates, 2014. Web.

^c The updated model recommended \$10,000 per FTE CTE teacher.

^d The updated model included additional staffing and increased funding.

^e 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 identified by Picus Odden & Associates needed to support central office, maintenance, and operations in each prototypical district of 3,900 students and estimates a total of \$433.7 million.^f The report notes that these elements are related to district functioning rather than directly related to student performance.

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

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

Category	Position	Resources
Superintendents Office	Superintendent	1
	Assistant Superintendent	1
	Secretary	1
Business Office	Business Manager	1
	Director of Human Resources	1
	Accounting Clerk	1
	Accounts Payable	1
	Secretary	1
	Custodian	0.5
	Groundskeeper	1
	Maintenance	0.8
	Curriculum and Support	Director of Pupil Services
Director of SPED		1
Director of Assessment and Evaluation		1
Secretary		3
Technology	Director of Technology	1
	Computer Technician	1
	Secretary	1
Operations and Maintenance	Director	1
	Secretary	1
	Custodian	22.48
	Maintenance Workers	9.04
Grounds Maintenance	Grounds Maintenance	6.92
Other Expenses	Misc.	\$350 per student
Costs	Central office	\$433,695,198
	Maintenance and operations	\$480,412,752

Note: Miscellaneous includes communication, purchase services, insurance, supplies, legal audit, association fees, elections, technology, etc. The report does not provide total costs by category. Figures represent staff per school unless otherwise noted.

Source: Picus Odden & Associates. Adequacy for Excellent in Kentucky: Report 1 (of 2). Picus Odden & Associates, 2014. Web.

^f 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 identified by Picus Odden & Associates needed to support small districts 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 evidence-based model allocates one assistant principal and one teacher per seven students, while 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

Category	School Element	Districts With 390 Students	Districts With 195 Students	Districts With 97.5 Students
Personnel Resources	Teachers and supporting staff	24	13	14
	Instructional Facilitators	2	1	0
	Substitute Teachers	1.3	0.7	0
	Counselors/Nurse	2	1	0
	Supervisory Aides	2	1	0
	Librarians	1	0.5	0
	Principals	1	1	0
	Assistant Principals	1	0	1
	School Secretary	2	1	
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	1	1
	Support Staff	2	1	1
	Misc. and Communications	\$350 per student	\$350 per student	\$350 per student
Maintenance and Operations	Custodians	2	1	0.5
	Maintenance	1	0.5	0.25
	Groundskeepers	1	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 Excellent in Kentucky: Report 1 (of 2). Picus Odden & Associates, 2014. Web.

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. Prototypical schools were designed at the elementary, middle, and high school levels.

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

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.

Prototypical Districts. Districts were divided by size and 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 districts and schools included within each group were not included in the report and it is not possible to update the data without that information.

Resource Allocations. Five principals 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 different sized districts. 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 five days of professional development training for certified staff and four days of professional development training for classified staff.

Disadvantages. As with the Picus Odden & Associates model, 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 were discussed in Chapter 1. Recall that professional judgment models are created by educators and education stakeholders who may not be qualified to design programs, and 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 and 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, extended school year models should be made available to students.
Needs drive costs	Excess funding for students with disabilities, LEP students, 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

Note: LEP= limited English proficiency.

Source: Verstegen, Deborah A. Calculation of the Cost of an Adequate Education in Kentucky: A Professional Judgment Approach. Education Policy Analysis Archive, 12(8), February 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	
	Asst. principal	0	2.6	0	
	Clerical	5.7	7.8	10.4	
	Instructional facilitator	1.4	1.3	1.7	
	Safety officer	0	2.6	0	
	Social worker	0	2.6	0	
	Middle School	Teachers	83.2	58.9	59.1
		Aides	0	0	0
Guidance counselors		6.4	5.3	3	
Nurses		3.2	1.8	2	
Librarians		3.2	1.8	2	
Technology specialist		3.2	1.8	2	
Principal		3.2	1.8	2	
Asst. principal		3.2	1.8	4	
Clerical		9.5	7.1	6	
Instructional facilitator		1.6	0.9	0.9	
Safety officer		0	1.8	2	
Social worker		0	1.8	0	
High School		Teachers	66.3	76.5	76.5
		Aides	0	0	0
	Guidance counselors	4.2	6.5	6	
	Nurses	2.1	1.3	1.5	
	Librarians	2.1	1.3	3	
	Technology specialist	2.1	1.3	1.5	
	Principal	2.1	1.3	1.5	
	Asst. principal	2.1	2.6	3	
	Clerical	8.3	9.8	6	
	Instructional facilitator	2.1	1.3	1.5	
	Safety officer	0	2.6	0	
	Social worker	0	1.3	0	

Note: Figures represent staff required per school.

Source: Verstegen, Deborah A. Calculation of the Cost of an Adequate Education in Kentucky: A Professional Judgment Approach. Education Policy Analysis Archive, 12(8), February 29, 2004. Web.

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

District size	Resource	School Level		
		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
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: Versteegen, Deborah A. Calculation of the Cost of an Adequate Education in Kentucky: A Professional Judgment Approach. Education Policy Analysis Archive, 12(8), February 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.

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 if student performance goals for 2014 could be achieved, 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 were discussed in Chapter 1 and were 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 modified by the state level panel. The final outcome is shown in Table H.12 and 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

Resource	School level			Estimated cost
	Elementary	Middle	High	
School Size (number of pupils)	400	500	800	
Principal	1	1	1	\$98,199,500
Asst. 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: Picus, Lawrence O., Allan Adden, 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 five 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 will not be reviewed in detail because of its similarity to the Picus Odden & Associates May 2003 report. The total cost to implement the recommendations from the February 2003 study are \$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 & Associates have assisted the Wyoming Legislature in recalibrating the state's education funding model every five years since 2005 and have studied elements of school funding in 2004, 2008, and 2009. Wyoming incorporated some of the recommendations into their legislative model, adapted some recommendations to fit their state's 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 if 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. Table H.14 and Table H.15 show NAEP results for Wyoming in SY 2005 to SY 2019. The evidence based model has been in place since 2005 and recalibrated in 2010, 2015, and 2020. The authors say 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 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 and 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

Year	Grade 4		Grade 8	
	At Or Above Basic	At Or Above Proficient	At Or Above Basic	At Or Above Proficient
2005	87.13%	42.61%	76.34%	29.03%
2007	88.46	44.26	79.8	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	48.3	78.46	35.27
2017	88.62	50.78	79.17	38.45
2019	87.1	47.8	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

Year	Grade 4		Grade 8	
	At Or Above Basic	At Or Above Proficient	At Or Above Basic	At Or Above Proficient
2005	70.82%	34.45%	81.00%	35.69%
2007	73.5	36.38	79.72	33.19
2009	71.75	32.61	81.75	34.44
2011	71.34	34.38	81.6	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.

¹ "Areas of Emphasis, KETS 2018 – 2024 Master Plan." The Kentucky Department of Education. Aug. 2, 2022. Web. Accessed Aug. 17, 2022.

² "Federal Grants." The Kentucky Department of Education. Oct. 7, 2022. 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 SY 2013.

Table I.1
District Level Spending
SY 2013

District	EBM		State And Local		State, Local, and Federal	
	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 Independent	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 Independent	43,136,305	12,636	27,621,082	8,091	32,388,339	9,488
Augusta Independent	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 Independent	7,693,324	11,264	5,399,471	7,905	5,883,292	8,614
Bardstown Independent	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 Independent	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 Independent	11,019,960	13,355	6,899,705	8,362	7,471,313	9,054
Berea Independent	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 Independent	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

District	EBM		State And Local		State, Local, and Federal	
	Total	Per Pupil	Total	Per Pupil	Total	Per Pupil
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 Independent	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 Independent	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 Independent	10,609,642	11,556	7,034,272	7,662	8,577,834	9,343
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 Independent	6,434,750	15,806	3,536,483	8,687	4,071,152	10,000
Corbin Independent	36,403,767	11,777	24,898,692	8,055	27,070,568	8,758
Covington Independent	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 Independent	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 Independent	8,610,104	12,321	5,709,015	8,170	6,138,652	8,785
Dayton Independent	12,973,139	13,943	8,127,601	8,735	9,090,385	9,770
East Bernstadt Independent	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 Independent	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 Independent	9,210,780	12,568	5,740,561	7,833	6,230,849	8,502

District	EBM		State And Local		State, Local, and Federal	
	Total	Per Pupil	Total	Per Pupil	Total	Per Pupil
Erlanger-Elsmere Independent	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 Independent	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 Independent	39,360,338	12,894	29,429,254	9,640	30,391,634	9,956
Frankfort Independent	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 Independent	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 Independent	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 Independent	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 Independent	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 Independent	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 Independent	6,768,070	11,526	5,090,877	8,669	5,676,849	9,667
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

District	EBM		State And Local		State, Local, and Federal	
	Total	Per Pupil	Total	Per Pupil	Total	Per Pupil
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 Independent	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 Independent	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 Independent	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 Independent	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 Independent	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 Independent	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

District	EBM		State And Local		State, Local, and Federal	
	Total	Per Pupil	Total	Per Pupil	Total	Per Pupil
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 Independent	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 Independent	37,751,149	12,458	31,573,020	10,419	37,282,164	12,303
Paintsville Independent	16,534,045	19,038	14,999,450	17,271	16,003,898	18,427
Paris Independent	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
Pikeville Independent	13,819,461	10,699	12,263,787	9,494	13,021,024	10,080
Pineville Independent	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 Independent	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 Independent	28,379,129	11,940	19,500,601	8,204	20,486,916	8,619
Russellville Independent	14,900,762	12,620	11,048,525	9,358	12,217,227	10,348
Science Hill Independent	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 Independent	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 Independent	18,631,922	10,959	14,333,461	8,431	15,689,700	9,228
Southgate Independent	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

District	EBM		State And Local		State, Local, and Federal	
	Total	Per Pupil	Total	Per Pupil	Total	Per Pupil
Walton Verona Independent	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 Independent	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 Independent	10,358,683	11,926	7,151,410	8,233	7,886,116	9,079
Williamstown Independent	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

Source: Picus Odden & Associates. *Adequacy for Excellent in Kentucky: Report 2 (of 2)*. Picus Odden & Associates, 2014. Web. Staff analysis of data from the Kentucky Department of Education.