Still Wide of Any Reasonable Mark: A Re-examination of Kansas School Finance

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1.0 Introduction[1]

On July 28, 2006 The Kansas Supreme Court dismissed the case of *Montoy v. Kansas*, accepting that the Kansas Legislature, by adopting a 3-year phase-in of changes to the School District Finance Act, had substantially complied with their previous orders (including their June 3, 2005 order). The court noted that the proposed annual increases in Base State Aid per Pupil (BSAPP) provided for in the reform legislation (SB 549) would lead to substantial aggregate increases to total formula funding over the next three years:

> S.B. 549 increases the BSAPP from $4,257 to $4,316 in 2006-07; to $4,374 in 2007-08; and to $4,433 in 2008-09. That amounts to an increase of $101.25 million over the 3 years, and $183.75 million since January 3, 2005. (Monty v. State, No. 92,032, July 28, 2006)

But, the court explained that their dismissal of the case was not to be interpreted as a determination that SB 549 was constitutional. Rather, SB 549 was a substantively new state school finance formula and one which had not been thoroughly vetted by a trial court and it was not the role of an appellate court to pass judgment on the constitutionality of statutes which had not been so vetted. The court explained:

> The constitutionality of S.B. 549 is not before this court. It is new legislation and, if challenged, its constitutionality must be litigated in a new action filed in the district court. (Monty v. State, No. 92,032, July 28, 2006)

The Supreme Court's decision to dismiss the case was based largely on the assumption that the Kansas Legislature a) had made genuine efforts to consider the costs of achieving adequate student outcomes across varied populations and settings in Kansas, and b) had gone to sufficient lengths to redesign the state school finance formula in ways that linked that formula with those costs. The court explained:

> The legislature has undertaken the responsibility to consider actual costs in providing a suitable system of school finance by commissioning the LPA to conduct an extensive cost study, creating the 2010 Commission to conduct extensive monitoring and oversight of the school finance system, and creating the School District Audit Team within LPA to

[1] While this section makes specific citations to rulings in Montoy v. Kansas from July, 2006 and June, 2005, the opinions expressed in this section are informed by review of a) the trial transcript in Montoy v. Kansas from September, 2003, b) the trial court ruling issued by Judge Terrence Bullock, December, 2, 2003, c) and Supreme Court rulings of January 24, 2003, January 3, 2005, June 3, 2005 and July 28, 2006. In addition, trial exhibits (P1 to P163, D1 to D121 and J1 to J8) were reviewed.

> conduct annual performance audits and monitor school district funding as directed by the 2010 Commission.
>
> In addition, the new legislation contains numerous provisions designed to improve reporting of costs, expenditures, and needs. These new components provide the fundamental framework for a cost-based funding scheme in which the legislature will be regularly provided with the relevant, accurate information necessary to meet its constitutional obligation to provide and maintain a suitable system of financing of Kansas public schools. (Monty v. State, No. 92,032, July 28, 2006)

But the proposed remedy legislation which the court accepted as a good faith effort, leading to dismissal of the case, was never fully implemented and eventually de-funded. As a result of the de-funding of the proposed remedy legislation, many Kansas schoolchildren still attend public school districts that are as far today and in some cases further from their adequate spending targets than they were prior to dismissal of the case.[2]

Further, the proposed remedy legislation was never clearly linked to the cost analyses mentioned above, produced under the direction of the legislature. The proposed remedy legislation never took full account of differences in student needs or costs associated with meeting those needs as identified in the cost analyses. The remedy legislation included various elements that were never justified by any cost analyses, such as the Cost of Living Adjustment, which had been stayed by the Supreme Court between June of 2005 and July of 2006 for this very reason. But even these elements became features of current policy because the appellate court could not without first remanding to a fact finding court, declare specific elements of the reform legislation unconstitutional. I provide further details on this point in Section 3.0 of this report.

In this section, I provide broad guidance for understanding the evaluation of educational adequacy in the Kansas policy and legal context. Further, I provide guidance for understanding the dynamics of educational adequacy and the costs of achieving educational outcomes in an ever changing policy context.

In subsection 1.1, I explain that the Kansas Courts have declared, in no uncertain terms, that the adequacy of financing of Kansas schools shall be evaluated at least partly with respect to outcome standards expected of Kansas schoolchildren, promulgated in statutes and regulations by both the Kansas Legislature and State Board of Education. But, I also explain that consideration of outcome standards must be coupled with consideration of depth and breadth of curricular offerings and other schooling inputs because of the fallibility of current measures of student outcomes. Among other things, outcome standards themselves can be set so low as to be constitutionally inadequate, thwarting attempts to identify adequate funding levels.

[2] I provide further details on this point in Section 3.0 of this report.

In subsection 1.2, I explain that the relative adequacy of financial resources is sensitive to a number of contextual factors which may change over time, specifically the competitive labor market for school employees including teachers, changing demographics of the student population, and changing outcome standards. In short, as competitive wages for non-teachers rise in any given labor market, the wage required to maintain the quality of the teacher workforce rises. As the need for higher outcome standards increases, so too do the costs of achieving those standards, even with the same student population. Finally, as student populations change, the costs of achieving even the same outcome standards change.

1.1 Evaluating Educational Adequacy in Kansas

Educational adequacy may be evaluated conceptually and empirically from two different perspectives. On the one hand, educational adequacy may be viewed in terms of the adequacy of the various inputs, programs and services made available to students according to their needs and across educational settings. On the other hand, educational adequacy may be viewed in terms of the outcomes that are desired of students who participate in schooling regardless of their backgrounds, needs or where they reside. As noted above, this latter perspective has been adopted by the Kansas courts, but not without regard for the former.

Over time, state legislatures, state boards of education and state courts have increasingly focused on the adequacy of educational outcomes attained by children. The Kansas Courts in 1994, in *USD 229 v. State* provided an initial framework for evaluating the suitability of funding with respect to established accountability standards. In short, the court declared that the current (1992) School District Finance Act did not violate the "suitability" provision of the state constitution in part because all districts currently met state accountability standards.[3] The standards themselves had not been vetted for their own adequacy. But, the court left open the possibility that at some point in the future, the School District Finance Act could be found unconstitutional on the basis that funding was not sufficient for districts to achieve defined

[3] which, at the time, were legislated K.S.A. 72-6439(a), which included "(1) Teachers establish high expectations for learning and monitoring pupil achievement through multiple assessment techniques; (2) schools have a basic mission which prepares the learners to live, learn, and work in a global society; (3) schools provide planned learning activities within an orderly and safe environment which is conducive to learning; (4) schools provide instructional leadership which results in improved pupil performance in an effective school environment; (5) pupils have the communication skills necessary to live, learn, and work in a global society; (6) pupils think creatively and problem-solve in order to live, learn and work in a global society; (7) pupils work effectively both independently and in groups in order to live, learn and work in a global society; (8) pupils have the physical and emotional well-being necessary to live, learn and work in a global society; (9) all staff engage in ongoing professional development; (10) pupils participate in lifelong learning."

standards. Since 1994, the determination of accountability standards has been passed along by the legislature to the State Board of Education.[4]

While the court found no education article violation in 1994, they clearly established that accountability standards which include outcome standards are central to the determination of adequacy, or more precisely suitability of funding to achieve those standards under the Kansas Constitution. The Kansas Supreme Court re-affirmed the role of outcome standards in determining the adequacy of funding for Kansas schools in its June 3, 2005 and July 28, 2006 decisions in *Montoy v. Kansas*. These clarifications by the court came about as a result of an intriguing divergence of arguments during the remedy phase of the case – events in some ways unique to the State of Kansas where the State Board of Education is an independently elected branch of state government with constitutional authority over "general supervision of public schools."

On January 3, 2005, the State Supreme Court upheld a lower court ruling that the current school funding system violated the education article (Article 6, Section 6) of the state constitution.[5] During the 2005 legislative session, the Kansas Legislature adopted HB 2247 and SB 43, which, among other things, directed the Legislative Division of Post Audit (LPA) to conduct a study of the cost of providing only the bare bones minimum inputs to schooling (my paraphrase), suggesting that future funding could be based on these estimates and these alone.

On May 11, 2005 oral arguments were held regarding whether HB 2247 and SB 3 achieved substantial compliance with the January 3, order. Up to this point, it was my perception that the state's position had been co-defended with relative consistency by attorneys hired on behalf of the State Attorney General's office and by the attorney for the State Board of Education. But, it became clear at this point that the interests of the Governor and Legislature were diverging substantively from the interests of the State Board of Education which maintained authority over establishing standards and accountability.

[4] K.S.A. 72-6439: School performance accreditation system; pupil assessments; curriculum standards, establishment and review by state board; performance levels to represent academic excellence; school site councils. (a) In order to accomplish the mission for Kansas education, the state board of education shall design and adopt a school performance accreditation system based upon improvement in performance that reflects high academic standards and is measurable. (b) The state board shall establish curriculum standards which reflect high academic standards for the core academic areas of mathematics, science, reading, writing and social studies. The curriculum standards shall be reviewed at least every seven years. Nothing in this subsection shall be construed in any manner so as to impinge upon any district's authority to determine its own curriculum. (c) The state board shall provide for statewide assessments in the core academic areas of mathematics, science, reading, writing and social studies. The board shall ensure compatibility between the statewide assessments and the curriculum standards established pursuant to subsection (b). Such assessments shall be administered at three grade levels, as determined by the board. The state board shall determine performance levels on the statewide assessments, the achievement of which represents high academic standards in the academic area at the grade level to which the assessment applies. The state board should specify high academic standards both for individual performance and school performance on the assessments.

[5] But overturned the lower court ruling regarding the equal protection claim.

The proposed cost study under legislative oversight sought to disregard outright the State Board of Education's authority over setting standards when it came to evaluating the responsibility of the legislature to make suitable provision for finance of those standards. That is, the legislature sought to set a spending target for the funding formula that was not connected in any way to meeting the standards set by the state board, but rather, only connected to the minimum provision of core curriculum. In oral arguments, counsel for the State Board objected[6] and the Supreme Court concurred. Specifically, in the June 3, 2005 order which immediately followed, the Supreme Court noted:

> The post audit study must incorporate the consideration of outputs and Board statutory and regulatory standards, in addition to statutorily mandated elements of kindergarten through grade 12 education. Further, post audit's report to the legislature must demonstrate how this consideration was accomplished. (Montoy v. State, June 3, 2005)

And finally, in their July 2006 decision when the case was finally dismissed, the court revisited the importance of considering educational outcomes when determining the suitability of funding:

> This court also concluded that the Legislative Division of Post Audit (LPA) cost study provided for by H.B. 2247 was insufficient to determine the actual and necessary costs of providing a constitutionally suitable education because it would examine only the cost of "inputs"–the curriculum, programs, and related services required by law, and would not consider the costs of "outputs"–the cost of achieving measurable standards of proficiency. 279 Kan. at 842-43. Accordingly, the court required the cost study to incorporate the costs of outputs in addition to the statutorily mandated elements of a K-12 education. 279 Kan. at 843.

In short, the Kansas Court's evaluation of the Kansas Legislature's obligation to "make suitable provision of finance for the educational interests of the state" shall be tied to outcome standards, including those established by the Kansas State Board of Education.

Balancing Consideration of Outcomes and Inputs

Emphasis on the adequacy of measured outcomes should not come at the expense of consideration of the adequacy of inputs.[7] This is partly because educational outcome

[6] http://judicial.kscourts.org:7780/Archive/2005%20court%20hearings/School%20Finance%20Argument/92032-2.mp3

[7] The court acknowledged as much in declaring that the post audit study must "incorporate the consideration of outputs and Board statutory and regulatory standards, in addition to statutorily mandated elements of kindergarten through grade 12 education."

measurement to date remains limited in scope, precision and accuracy. That is, educational outcome measurement tends to narrowly focus on test scores or proficiency rates in specific curricular areas and tested grade levels, often including assessment of only reading and math. For example, the cost model estimated by William Duncombe on behalf of the Division of Post Audit included measures of reading and math performance in three grade levels each, and a measure of graduation rate.

Clearly, Kansas schools are required to accomplish more than minimal proficiency rates on these seven measures (6 tests & graduation rate). Further, where cut scores on assessments are set to low levels of rigor, proficiency rates fail to meaningfully differentiate performance across substantial portions of children. Exclusive reliance on narrowly measured and/or very low outcome standards provides little guarantee that students truly receive adequate educational opportunities by allowing for significant narrowing and dumbing down of curriculum, programs and services.

In addition to achieving minimally adequate tested outcomes in reading, math, social studies and science, Kansas children must be provided with sufficient breadth and depth of curriculum and educational opportunities, often prescribed in statutes or regulations as educational inputs for which there may not be specific outcome measurements presently available. That is, *Suitable Provision of Finance* cannot be achieved simply by providing minimally adequate funding for the required portions of children to surpass specific cut scores on reading, math, social studies and science assessments, while neglecting to provide the required balance of educational inputs, access and opportunities. Likewise, suitable provision of finance cannot be achieved by providing only bare bones curricular inputs without regard for actual student performance on assessments of reading, math social studies and science. Adequacy must be evaluated in terms of both inputs and outcomes, not either or.

In addition to curriculum and outcome standards promulgated by the State Board of Education, there also exist curricular and outcome standards articulated by the Kansas Board of Regents in order for students to gain access to Kansas public colleges and universities. College readiness and access are critical outcomes which should inform the evaluation of educational adequacy. College readiness and access may also be evaluated in terms of the availability of relevant inputs to elementary and secondary schools. For example, the Kansas State Board of Regents prescribes two levels of curriculum which must be obtained for open access to the state public higher education system and/or for access to state financial aid. These curricular offerings, tested or not on state assessments, should be accessible to all Kansas students.

First, the Qualified Admissions Curriculum:

> Qualified Admissions (QA) are a set of criteria that guarantee admission to a state university for certain Kansas residents. These criteria are set by the Kansas Board of Regents, the governing body for the six state universities. The purpose of QA is to

> enhance success at the university level by ensuring high school students are prepared for the rigors of a university education.[8]

Students who achieve an ACT score of 21 (SAT of 980) or higher and graduate in the top 3rd of their class and maintain a GPA of 2.0 or higher may be accepted to state public higher education institutions, but only if they also complete specific pre-college courses. Those include 4 units of English, 3 of Natural Sciences (including Chemistry and/or Physics), 3 of Math (from Algebra I and above) and 3 of social sciences. Students attending high schools in districts where constrained resources are narrowly focused on achieving only minimum state assessed outcomes may have limited access to these courses, thus limiting their access to public higher education.

The Board of Regents also prescribes a Scholars Curriculum:

> Students that complete the curriculum, and meet the other requirements, may be designated as State Scholars, which makes them eligible to receive State Financial Aid as provided by the Kansas Legislature.

The Scholars Curriculum is more rigorous and requires more depth in Math and Science than the QAC, including a full four years of math (requiring Algebra I, II and Geometry and at least one advanced math course such as Trigonometry or Calculus) and three years of science (including Biology, Chemistry and Physics). Standards for social studies and foreign language are also increased.

In short, in addition to ensuring that all Kansas schoolchildren have access to sufficient resources to achieve minimum outcome standards on state assessments, children must also have equal opportunity to access those resources which may gain them meaningful access to higher education in the State of Kansas.

Outcome Standards Cannot be taken at Face Value as Suitable

Outcome standards may be insufficient where the rigor of the outcomes themselves is not carefully vetted. Low outcome standards are both easy and inexpensive to achieve, but higher outcome standards are not.

Tennessee provides one illustrative example of setting very low standards, but still meeting them with minimal resources. Tennessee has among the highest pass rates in the Nation on its own state assessments. Over 93% of students passed the state high school reading assessment in 2008 (national average just over 70%).[9] Tennessee also has among the lowest

[8] http://www.kansasregents.org/resources/PDF/1048-QAPublication_Final_2010.pdf

[9] Based on data compiled by the New America Foundation.

overall education funding in the nation and among the smallest share of gross state product spent on elementary and secondary education.[10] As such, one might make the logical leap that Tennessee's education system is a model of efficiency, achieving very high outcomes – on its own terms and measures – with little spending.

But, despite having very high pass rates on state assessments, Tennessee ranks among the bottom of states on the National Assessment of Educational Progress.[11] And the National Center for Education Statistics reports that when comparing Tennessee's own proficiency standards to NAEP standards, Tennessee comes in dead last among states on most tested areas.[12] In short, Tennessee masks its failure to provide sufficient support for public schooling by setting very low standards, a problem not revealed until the first publication in 2005 of the NCES Mapping State Standards report.[13]

If we assume Tennessee's own outcome standards to be constitutionally adequate (in a Tennessee judicial context), accepting as legitimate the high pass rates on those assessments, then even Tennessee's paltry level of funding and lack of additional effort for high need schools and districts is acceptable. But, if we consider just how low Tennessee's outcome standards are compared to national standards, and consider the extent to which graduates of Tennessee schools will be disadvantaged not only on the global but on the regional labor market, then our perspective changes. Sometimes the outcome standards themselves are inadequate. As such, those outcome standards are of limited use for determining the adequacy of fiscal inputs.

Often, there exists a substantial void between what it takes for a child to achieve the minimum outcome standard on state assessments of reading and math, versus what it would take for that child to truly be prepared for higher education and beyond. In 2010, New York State hired Dan Koretz, a testing and measurement expert from Harvard to conduct an analysis of their proficiency cut scores and the relationship between those cut scores and students' performance later in high school and on to college.[14] That is, what scores would a student need to attain on 8th grade math assessments to have a reasonable likelihood of getting a good enough score on the high school math assessment to in turn have a reasonable likelihood of placing out of remedial coursework in college, or passing entry level (non-remedial) math courses? Koretz had found

[10] Baker, B.D., Farrie, D., Sciarra, D. (2010) Is School Funding Fair? Commissioned by the Education Law Center of New Jersey in collaboration with the Ford Foundation and Educational Testing Service. www.schoolfundingfairness.orgwww.schoolfundingfairness.org

[11] http://nces.ed.gov/nationsreportcard/naepdata/dataset.aspx

[12] http://nces.ed.gov/nationsreportcard/pdf/studies/2011458.pdf

[13] http://nces.ed.gov/nationsreportcard/studies/statemapping/

[14] Everson, H.T. (2010) Memo to David Steiner: Relationship of Regents ELA and Math Scores to College Readiness Indicators. July 1, 2010

that the current high school math (Regents A exam) cut score of 65 only provided about a 50/50 chance of passing college level math.[15] Koretz then identified the 8th grade cut scores that increased the likelihood of getting better than a 65 in high school (a 75 or 80 instead). That is, what 8th grade scores would be associated with having a better than 50/50 chance of passing college math? The 2006 proficiency cut score for 8th grade was 650. But, Koretz found that students would need at least a 660 to have a 50/50 chance of scoring 80 or higher on the high school exam. In high need districts, students would need a score of 668 on the 8th grade exam in order to have a 50/50 chance of scoring 80 on the high school exam.

In short, existing cut scores on New York State Assessments for 8th grade math were insufficient for measuring college readiness in 2006. New York math cut scores in 2006, when mapped to national assessments, were more rigorous than those of Kansas at that time.[16] Kansas Center for Educational Testing and Evaluation (CETE) has never, to my knowledge, produced any evidence of the predictive validity of assessment cut-scores (beyond the tests themselves predicting performance on the tests themselves in subsequent years), nor have any independent evaluations been conducted.[17] This is a huge, inexcusable and irresponsible omission for an assessment system in place for more than a decade, when it is to be assumed that the test scores attained by students on state assessments are valid indicators of adequate educational outcomes. That is, assuming successful performance on those assessments is to be the outcome gage of the constitutionality of school funding. It is only by way of the biennial National Center for Education Statistics Mapping Standards analysis that we have any gage of the relative rigor, or lack thereof, of the Kansas state assessments. I discuss that evidence at length in Section 2 of this report.

[15] In a memo regarding the Koretz report, Everson explained: *"We see that students with Regents Math A passing scores of 65 typically do not meet the CUNY cut-score for placement into college-level Mathematics courses. Indeed, these students may have only a little better than a 50-50 chance of earning a grade of "C" or higher in CUNY's remedial Mathematics courses."* Everson, H.T. (2010) Memo to David Steiner: Relationship of Regents ELA and Math Scores to College Readiness Indicators. July 1, 2010

[16] http://nces.ed.gov/nationsreportcard/pdf/studies/2010456.pdf (see page 20) It should be noted, however that from 2007 to 2009, NY state cut scores drifted and NY state standards became much lower even than Kansas. However, in response to this drift, New York state made significant corrections to their cut scores.

[17] http://www.cete.us/research/reports/. It would appear that the only attempts at any external validity testing for Kansas assessments include evaluating the relationship between a student's score in one year and that student's score in the next year, and evaluating teacher assigned categorical ratings of students with student test scores. See: http://www.cete.us/research/reports/pdfs/irwin2007_math.pdf

The Uneven Consequences of Low Standards

Low state assessment standards have different consequences depending upon which district a student attends and on that student's position with respect to standards within their particular district. Affluent school districts serving the children of highly educated parents will nearly always spend more than they need to not only achieve but far surpass low academic standards. And these school districts will in the end consistently far exceed those standards as they do in Kansas. Not only will these districts exceed the low standards but they will also likely continue to exceed much higher standards.

Districts serving poor and minority populations currently falling below the standards are most harmed by low standards. To begin with, they often fail to achieve even the low standards. But, they will be closer to achieving those low standards than they are to achieving more legitimate, more rigorous standards that should be emphasized. Setting low standards dramatically understates the additional effort needed and the additional costs of achieving more legitimate, more rigorous standards. We may estimate that a 10% or 20% increase in funding is required to achieve the low, state established standards, but in reality, a 50% to 60% increase may be required to support more legitimate, rigorous standards. Maintaining the low outcome bar allows policymakers to persistently understate resource needs in districts falling below standards and ignore districts exceeding the standards. Understating the funding gap enables policymakers to go a step further and simply ignore it as trivial, or within the margin of inefficiency. Even if students in these schools eventually receive sufficient resources to surpass the low standards, they will likely fall well short of more meaningful outcome goals.

Finally, children above the low standards in districts that are, on average, below those standards also suffer as increased emphasis is placed on moving those children marginally below the standards to marginally above the standards and already constrained resources targeted toward this narrow objective.[18] As resources are increasingly targeted toward this narrow objective, resources are often diverted from the curricular opportunities that provide for children exceeding minimum testing standards to be truly *college ready*, including access to both intermediate level (Algebra II and Trigonometry, Chemistry and Physics) and advanced (AP or IB Courses, Calculus) math and science courses at the secondary level.

[18] See for example: Baker, B.D. (2011) Cheerleading, Ceramics and the Non-Productive Use of Educational Resources in High Need Districts: Really? Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA 2011. http://schoolfinance101.files.wordpress.com/2010/01/b-baker-mo_il-resourcealloc-aera2011.pdf

1.2 Understanding the Dynamics of Education Costs vs. *Inflation*

We often hear pundits arguing that education spending has doubled over a 30 year period (nationally), when adjusted for inflation, and we've gotten little nothing for it in terms of educational outcome growth.[19] The argument is that we, as a nation, have seen only modest growth in NAEP scores but huge growth in spending. The assertion is therefore that our public education system is less cost-effective now than it was 30 years ago, or alternatively, that adding more money to the system and further decreasing pupil to teacher ratios really doesn't help. But this assumption is based on layers of flawed reasoning, on both sides of the equation.

First, what are the two sides of the equation, or two parts of the fraction? The numerator is education spending and how we measure it now compared to previously. The major flaw in the argument above is that it makes a comparison of the education dollar at present to the past by simply adjusting the value of that dollar for the average changes in the prices of goods purchased by a typical consumer (food, fuel, etc.), or the Consumer Price Index.

Unfortunately, the consumer price index is unhelpful for comparing current education spending to past education spending, unless we are considering how many loaves of bread or gallons of gas can be purchased with the education dollar. But we are not mainly purchasing actual loaves of bread or gallons of gas with that dollar. We are attempting to purchase educational outcomes, a far more complex endeavor.

Dynamics of the Labor Market for Quality Teachers

If we wish to merely maintain constant quality education over time, the main thing we must do is maintain a constant quality workforce in schools – mainly a teacher workforce, but also administrators and other education system employees. And, everything else in the system would have to remain constant.

The quality of the teacher workforce is influenced much more by the competitiveness of the wages for teachers, compared to other professions, than to changes in the price of a loaf of bread or gallon of gas. If we want to get good teachers, teaching must be perceived as a desirable profession with a competitive wage. That is, to maintain teacher quality we must maintain the competitiveness of teacher wages (which we have not over time) and to improve teacher quality, we must make teacher wages (or working conditions) more competitive. On average, non-teacher wage growth has outpaced the CPI over time, and teacher wages have lagged behind non-teacher

[19] The assertion that as a nation, we've seen no growth in assessment scores, is largely incorrect, as explained here by Richard Rothstein: http://epi.3cdn.net/c3bd19ee96cd66ee73_k9m6bx6zh.pdf

wages.[20] That is, the average non-teacher today can buy more loaves of bread. If we allow for a decline in the quality of the key input – teachers – we can expect a decline in the outcomes however we choose to measure them.

Higher Standards Cost More

Now to the denominator or the outcomes of our education system - It is important to understand that if we wish to achieve either higher outcomes, or to achieve a broader array of outcomes, or achieve higher outcomes in key areas without sacrificing the broader array of outcomes (improving math and science without cutting music or art, or even advanced math and science classes), costs will rise. In really simple terms, the cost of doing more is more. A substantial body of rigorous peer-reviewed empirical literature supports this contention.[21] If we expect our children to compete in a 21st century economy, develop technology skills and still have access to physical education and arts, it will likely cost more, not less, than achieving the skills of 1980. But, we must also make sure we are adequately measuring the full range of outcomes we expect schools to accomplish. If we are expecting schools to produce engaged civic participants, we may or may not see the measured effects in elementary reading and math test scores.

Changing Demography Affects Costs

An additional factor that affects the costs of achieving educational outcomes is the student inputs – or who is showing up at the schoolhouse door (or logging in to the virtual

[20] Sylvia Allegretto, Sean Corcoran, Lawrence Mishel (2009) The Teaching Penalty: Teacher Pay Losing Ground. Washington, DC: Economic Policy Institute. http://epi.3cdn.net/05447667bb274f359e_zam6br3st.pdf

[21] Duncombe, W., Lukemeyer, A., Yinger, J. (2008) The No Child Left Behind Act: Have Federal Funds been Left on the Table? Public Finance Review *36 (4) 381-407*

Duncombe, W. and Yinger, J.M. (2000). Financing Higher Performance Standards: The Case of New York State. *Economics of Education Review, 19* (3), 363-86.

Duncombe, W. and Yinger, J.M. (1998) "School Finance Reforms: Aid Formulas and Equity Objectives." *National Tax Journal* 51, (2): 239-63

Duncombe, W. and Yinger, J.M. (1997). Why Is It So Hard to Help Central City Schools? *Journal of Policy Analysis and Management, 16,* (1), 85-113.

Downes, T., Pogue, T. (1994). *Adjusting School Aid Formulas for the Higher Cost of Educating Disadvantaged Students. National Tax Journal XLVII* , 89-110.

Imazeki, J., Reschovsky, A. (2004) Is No Child Left Beyond an Un (or under)funded Federal Mandate? Evidence from Texas. *National Tax Journal* 57 (3) 571-588.

school). Again, a substantial body of research addresses how child poverty, limited English proficiency, unplanned family mobility and school racial composition may influence the costs of achieving any given level of student outcomes. Differences in the ways children are sorted across districts and schools create large differences in the costs of achieving comparable outcomes and so too do changes in the overall demography of the student population over time. Escalating poverty, and mobility induced by housing disruptions, increased numbers of children not speaking English proficiently all lead to increases of the cost of achieving even the same level of outcomes achieved in prior years. This is not an excuse. It's reality. It costs more to achieve the same outcomes with some students than with others. These differences exist both across school settings and over time, as student population demographics shift.

Summary of Cost Drivers

In short, the "cost" of education rises as a function of at least 3 major factors:

1. Changes in the incoming student populations over time
2. Changes in the desired outcomes for those students, including more rigorous core content area goals or increased breadth of outcome goals
3. Changes in the competitive wage of the desired quality of school personnel

Costs also change as a function of the interaction of all three of these factors. For example, changing student populations making teaching more difficult (a working condition), meaning that a higher wage might be required to simply maintain constant teacher quality (offset the increased likelihood of teacher attrition, or difficulty in recruitment). Increasing the complexity of outcome goals might require a more skilled teaching workforce, requiring higher wages.

The combination of these forces often leads to an increase in education spending that far outpaces the consumer price index, and it should. Cost rise as we ask more of our schools, as we ask them to produce a citizenry that can compete in the future rather than the past. Costs rise as the student population inputs to our public schooling system change over time. Increased poverty, language barriers and other factors make even the current outcomes more costly to achieve. And costs of maintaining the quality of the teacher workforce change as competitive wages in other occupations and industries change, which they have.

2.0 Kansas in National Context

In this section, I evaluate Kansas in the national context, beginning with a review of the position of Kansas school funding based on a recent series of National Reports produced by the Education Law Center of New Jersey. That series of reports finds that:

- The overall level of funding in Kansas is relatively average compared to other states;
- But, the distribution of funding in Kansas is, in 2007, distributed regressively with respect to student needs. By 2009, that distribution becomes flat, remaining untargeted with respect to student population needs.

Also in this section, I discuss the recently released National Center for Education Statistics report which maps state proficiency cut scores to the National Assessment of Educational Progress and ranks states by the relative rigor of their assessment standards. This report shows that:

- Kansas ranks 7th from the bottom among states in 4th grade reading standards;
- Kansas ranks 11th from the bottom among states in 8th grade reading standards;
- Kansas ranks 15th from the bottom among states in 4th grade math standards;
- Kansas ranks 17th from the bottom among states in 8th grade math standards;
- Across all 4 assessment areas, Kansas standards declined relative to NAEP standards between 2007 and 2009.

That is, Kansas assessment standards for proficiency are low and getting lower. Indeed it is less expensive to achieve low standards than to achieve high ones. What these findings suggest is that current estimates of the cost of achieving outcome standards which have guided the Supreme Court's analysis to this point are likely lower than the actual costs of achieving more rigorous and meaningful outcomes.

Next, I address Kansas relative fiscal effort toward financing public elementary and secondary education. In these difficult economic times, state legislators and governors have been quick to use the phrase "new normal" and proclaim "the money is gone!" In this section, I explain that:

- The National School Report Card ranks Kansas as above average, though not among the highest in percent of gross state product spent on schools (12th in the forthcoming 2009 edition) – That is, Kansas has not outstripped its capacity relative to the effort of other states;
- Kansas percent of personal income expended (total state and local) on elementary and secondary education has declined slightly over a 30 year period, beginning slightly above national average in 1977 and ending below average by 2007 – That is, Kansas has not outstripped its capacity relative its own past effort;

In other words, the money is not gone. It simply hasn't been collected.

Next, I explore the relative competitiveness of Kansas teacher wages to those of non-teachers in Kansas at similar age, education level and for similar hours and weeks of work. I show that:

- Based on a report by Allegretto, Corcoran and Mishel of the Economic Policy Institute, in 2010, Kansas teacher weekly wages hovered around 70% of wages for similarly educated non-teachers;
    - This placed Kansas teachers 7th from last nationally in the relative competitiveness of teacher wages;
- Based on statistical models estimated to U.S. Census data from 2000 to 2009, Kansas teachers have lost significant ground in wages compared to non-teachers over time, correcting for age, degree levels, hours worked per week and weeks worked per year;

Finally, I explore the shifting demography of Kansas school districts. That is, to what extent have student populations changed in ways that may have substantive effects on the costs of achieving even constant educational outcomes over time? I find that:

- Kansas large cities, mid-size cities and large remote towns are experiencing significant increases in low income populations, Hispanic populations, non-English speaking populations and the intersection of the three;

That is, even if we assume the outcome standards to be sufficiently rigorous (a highly suspect assumption) and even if we assume that teacher pay has remained sufficiently competitive (which it has not) the demography of large high need school districts has shifted over time such that even maintaining current outcome standards will cost more than previously estimated.

2.1 From Regressive to Flat Funding: Kansas' School Funding Report Card

In the fall of 2010, the Education Law Center of New Jersey with support from Educational Testing Service (ETS) released a national school funding fairness report card (www.schoolfundingfairness.org). Among other things, the national funding fairness report card evaluated state school finance systems in terms of the extent to which those systems provided for more or less revenue per pupil in higher versus lower poverty districts. A state school finance system where higher poverty districts could expect to receive lower total state and local revenue per pupil was considered regressive. A state school finance system where higher poverty districts could expect to receive about the same total state and local revenue per pupil was considered flat, and a state school finance system where higher poverty districts could expect to receive more total state and local revenue per pupil was considered progressive.

The approach taken in the report was unique in that it went beyond other similar state school finance comparisons by correcting more thoroughly for factors that affect the costs of providing education in one location versus another across states. Most importantly for evaluating fairness in states like Kansas, the report used a statistical model that made corrections for small

district size and population sparsity and the interaction of the two. Previously reports, like the Education Trust's funding gap reports[22] had erroneously reported that Kansas higher poverty districts had higher spending than lower poverty districts, because those reports failed to correct for the higher spending that was a function of small district size, which happened to occur in many districts with relatively high reported poverty rates.

Table 1 shows the funding fairness profiles to be released in the fall of 2011, based on the three most recent years of available federal finance data – 2006-07, 2-007-08 and 2008-09, with projections based on 2008-09. Funding fairness profiles are generated by a statistical model of state and local revenues per pupil, expressed as a function of school district size, population density, regional competitive wages and U.S. Census poverty rates. Within that model, we identified the relationship within each state between census poverty rates and state and local revenue per pupil, or the progressiveness of funding. The model is used to predict the expected state and local revenue per pupil for a district with 0%, 10%, 20% and 30% census poverty rates (near the maximum actual for Kansas).

In 2008-09, Kansas projected state and local revenues per pupil are flat with respect to poverty. That is, the state school finance system provided no substantive additional support to higher poverty districts. That said, this does represent a modest improvement since 2006-07, the data of the initial school funding fairness report, where Kansas was among the regressively funded states. Kansas made modest progress on redistributing funding from 2006-07 through 2008-09. These findings are consistent with analyses later in this report based on general and supplemental fund budget data from the state school finance system itself. But, it should also be noted that 2008-09, a year when no substantive support was provided to higher poverty districts is the best it got in Kansas. As will be discussed in Section 3.0, it's all downhill from there.

Table 1. State Funding Fairness Report Card Profiles

State	0% Poverty	10% Poverty	20% Poverty	30% Poverty	Fairness Ratio 2009	Fairness Ratio 2008	Fairness Ratio 2007
Alaska	$9,711	$14,277	$20,989	$30,856	3.18	3.03	3.27
Utah	$5,772	$6,732	$7,851	$9,157	1.59	1.52	1.51
New Jersey	$13,961	$15,687	$17,626	$19,805	1.42	1.39	1.40
Ohio	$8,993	$9,983	$11,082	$12,301	1.37	1.36	1.31
Minnesota	$10,026	$10,945	$11,948	$13,043	1.30	1.35	1.38
Massachusetts	$12,598	$13,513	$14,496	$15,550	1.23	1.23	1.19
South Dakota	$7,794	$8,274	$8,784	$9,326	1.20	1.24	1.26
Indiana	$10,137	$10,709	$11,313	$11,951	1.18	1.20	1.17
Connecticut	$14,468	$15,223	$16,019	$16,855	1.17	1.15	1.14
Montana	$8,577	$9,023	$9,492	$9,986	1.16	1.19	1.17
Delaware	$12,125	$12,685	$13,271	$13,884	1.15	1.14	0.89
Wyoming	$18,167	$19,003	$19,877	$20,792	1.14	1.12	1.08
Tennessee	$6,872	$7,141	$7,420	$7,710	1.12	1.13	1.12
California	$8,410	$8,712	$9,024	$9,348	1.11	1.08	1.03

[22] Education Trust, Funding Gaps 2006. (http://www.edtrust.org/sites/edtrust.civicactions.net/files/publications/files/FundingGap2006.pdf) Most recent report available. The 2008 report was retracted due to data errors and has not yet been re-released.

State	0% Poverty	10% Poverty	20% Poverty	30% Poverty	Fairness Ratio 2009	Fairness Ratio 2008	Fairness Ratio 2007
Kentucky	$8,561	$8,790	$9,026	$9,268	1.08	1.06	1.03
Nebraska	$9,990	$10,248	$10,511	$10,782	1.08	1.04	0.99
Georgia	$9,083	$9,316	$9,555	$9,800	1.08	1.05	1.03
New Mexico	$9,776	$9,985	$10,200	$10,419	1.07	1.07	1.14
Arkansas	$8,608	$8,732	$8,859	$8,987	1.04	1.02	1.04
Oklahoma	$7,294	$7,391	$7,489	$7,588	1.04	1.05	1.07
Oregon	$8,987	$9,076	$9,165	$9,255	1.03	1.05	1.09
West Virginia	$9,905	$9,962	$10,018	$10,076	1.02	1.03	1.00
Kansas	$10,962	$11,023	$11,085	$11,147	1.02	0.98	0.92
Vermont	$14,896	$14,974	$15,052	$15,130	1.02	0.98	0.97
Rhode Island	$12,974	$13,020	$13,066	$13,111	1.01	1.02	1.02
South Carolina	$9,679	$9,665	$9,652	$9,638	1.00	1.02	1.02
Louisiana	$10,336	$10,307	$10,277	$10,248	0.99	0.97	0.91
Iowa	$10,824	$10,786	$10,748	$10,711	0.99	1.01	1.05
Maryland	$13,584	$13,535	$13,485	$13,435	0.99	0.94	0.89
Arizona	$8,005	$7,939	$7,872	$7,807	0.98	1.00	1.04
Wisconsin	$10,984	$10,873	$10,762	$10,653	0.97	0.96	0.96
Mississippi	$8,086	$7,988	$7,891	$7,795	0.96	0.95	0.96
Washington	$9,884	$9,759	$9,636	$9,515	0.96	0.97	0.96
Colorado	$9,490	$9,306	$9,126	$8,949	0.94	0.94	0.92
Texas	$9,182	$8,980	$8,782	$8,589	0.94	0.94	0.93
Michigan	$9,979	$9,747	$9,520	$9,299	0.93	0.92	0.93
Idaho	$7,869	$7,642	$7,420	$7,206	0.92	0.91	0.88
Florida	$9,427	$9,141	$8,864	$8,595	0.91	0.88	0.91
Virginia	$11,253	$10,853	$10,467	$10,094	0.90	0.86	0.84
Pennsylvania	$13,788	$13,274	$12,778	$12,302	0.89	0.86	0.84
Maine	$12,914	$12,414	$11,934	$11,472	0.89	0.86	0.85
Alabama	$9,702	$9,302	$8,918	$8,551	0.88	0.87	0.89
New York	$18,702	$17,859	$17,055	$16,286	0.87	0.84	0.82
Missouri	$9,886	$9,426	$8,988	$8,571	0.87	0.86	0.88
North Dakota	$10,774	$9,985	$9,254	$8,577	0.80	0.79	0.82
North Carolina	$11,111	$10,240	$9,438	$8,699	0.78	0.88	0.84
New Hampshire	$13,958	$12,833	$11,799	$10,849	0.78	0.65	0.64
Illinois	$11,312	$10,367	$9,501	$8,707	0.77	0.79	0.78
Nevada	$10,561	$9,617	$8,757	$7,974	0.76	0.80	0.74

Data source: www.schoolfundingfairness.org

2.2 Low Standards on the Way Down

Beginning in 2003, with the first full report in 2005, the National Center for Education Statistics began conducting analyses to evaluate the relative rigor of state assessments. It had become clear that proficiency rates across state assessments varied widely and that in many cases those proficiency rates varied in ways that defied logic if we were to assume that proficiency rates to have similar meaning across states. Adjacent states like Kansas and Missouri had very different proficiency rates, with Kansas students passing state assessments at a very high rate (well over 60% on most tests) and Missouri students failing miserably. Massachusetts pass rates on its own tests were much lower than Tennessee's pass rates on its test, yet average scores on the National Assessment were quite the opposite, implying substantial inconsistencies in standard setting.

The National Center for Education Statistics (NCES) biennially produces a report in which they use school level data on schools that participated in the National Assessment of Educational progress to equate the percentages of children within those schools who scored proficient on state assessments with scores on NAEP, and identify the NAEP scale score that statistically aligns with "proficient" cut scores on state assessments.[23] This allows NCES to compare across states, what counts as "proficient" on each state's assessments. That is, which states have higher and lower standards of proficiency? Further, because the data are re-evaluated every 2 years, NCES can determine which states have lowered or raised standards over at two year period, relative to NAEP and relative to other states. It is important to understand that the lowering or raising of standards in this sense is not necessarily a conscious policy decision. Rather, the rigor of cut scores relative to NAEP over time may drift in one or the other direction for a variety of reasons. Arguably, NAEP scores may drift as well. It's all relative, but NAEP is used as the anchor against which the ebb and flow of state assessments can be gaged.

[23]In a four step process explained on Page 31 of:

Bandeira de Mello, V., Blankenship, C., and McLaughlin, D.H. (2009). *Mapping State Proficiency Standards Onto NAEP Scales: 2005-2007* (NCES 2010-456). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC. (http://nces.ed.gov/nationsreportcard/pdf/studies/2011458.pdf)

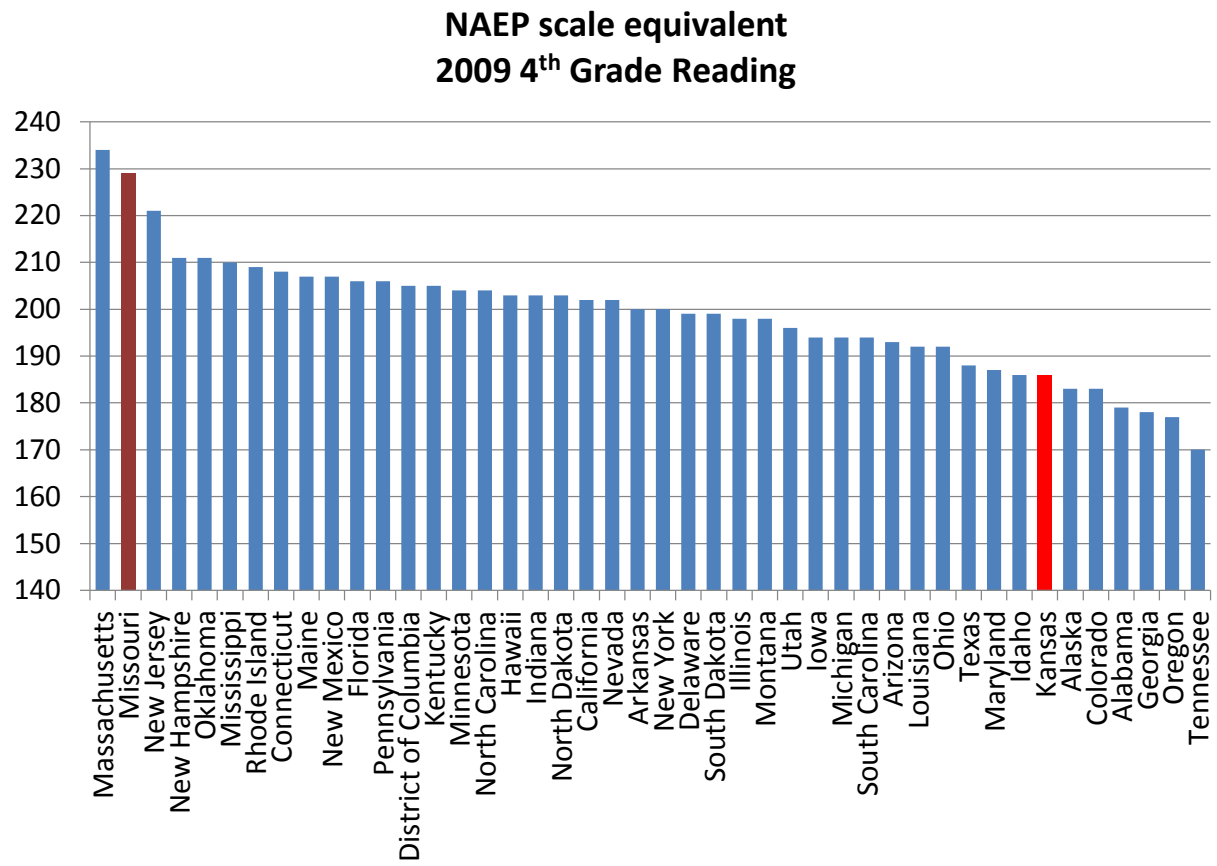
a. Obtain for each school in the NAEP sample the proportion of students in that school who meet the state performance standard on the state's test.

b. Estimate the state proportion of students who meet the standard on the state test, by weighting the proportions (from step 1) for the NAEP schools, using NAEP school weights.

c. Estimate the weighted distribution of scores on the NAEP assessment for the state as a whole, based on the NAEP sample of schools and students within schools.

d. Find the point on the NAEP scale at which the estimated proportion of students in the state who score above that point (using the distribution obtained in step 3) equals the proportion of students in the state who meet the state's own performance standard (obtained in step 2).

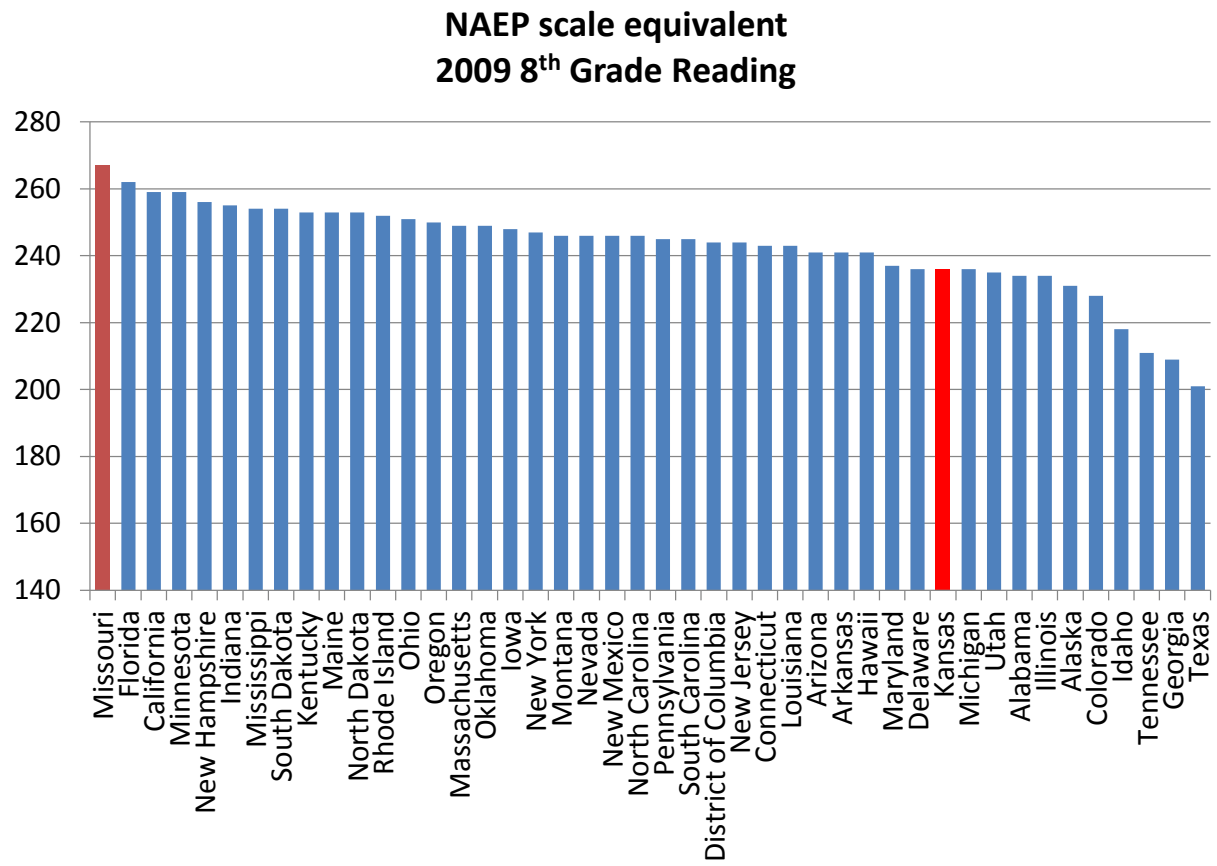
Figure 1. Kansas 4th Grade Reading Proficiency and NAEP



Data Source: http://nces.ed.gov/nationsreportcard/pdf/studies/2011458.pdf

Figure 1 shows the ranking of NAEP scale scores associated with state assessment proficiency cut scores for 4th grade reading. In short, Kansas standards are low – very low, when it comes to 4th grade reading standards. Yet, by comparison, Missouri standards are very high. Recall that the rigor of standards has significant consequences for the estimation of costs and determination of adequacy. If we acknowledge how low Kansas reading standards are at Grade 4, and assume they should be higher in order for Kansas children to be on equal footing with their peers in other states, then we must acknowledge that any estimates of cost tied to these low standards are too low.

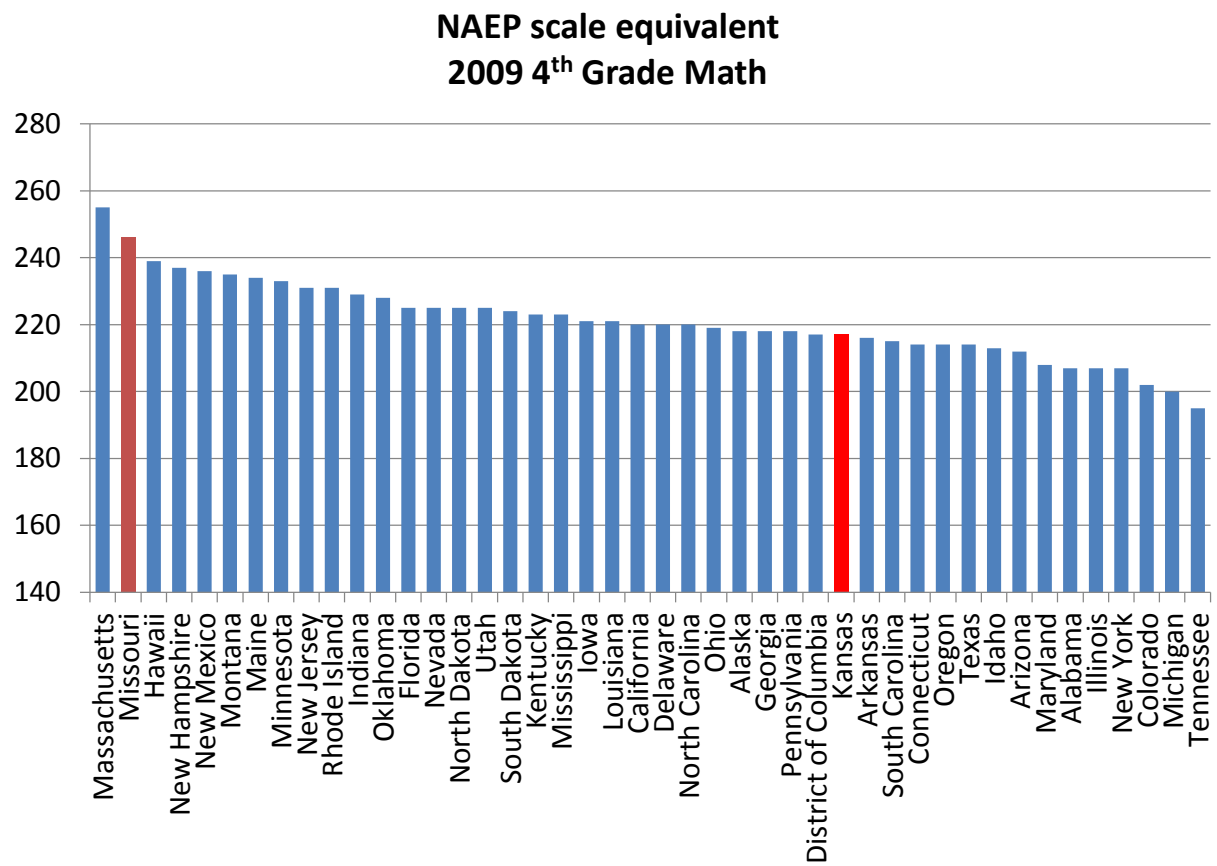
Figure2. Kansas 8th Grade Reading Proficiency and NAEP



Data Source: http://nces.ed.gov/nationsreportcard/pdf/studies/2011458.pdf

Figure 2 shows that Kansas NAEP 8th grade reading standards are also low, though not quite as low as the 4th grade reading standards.

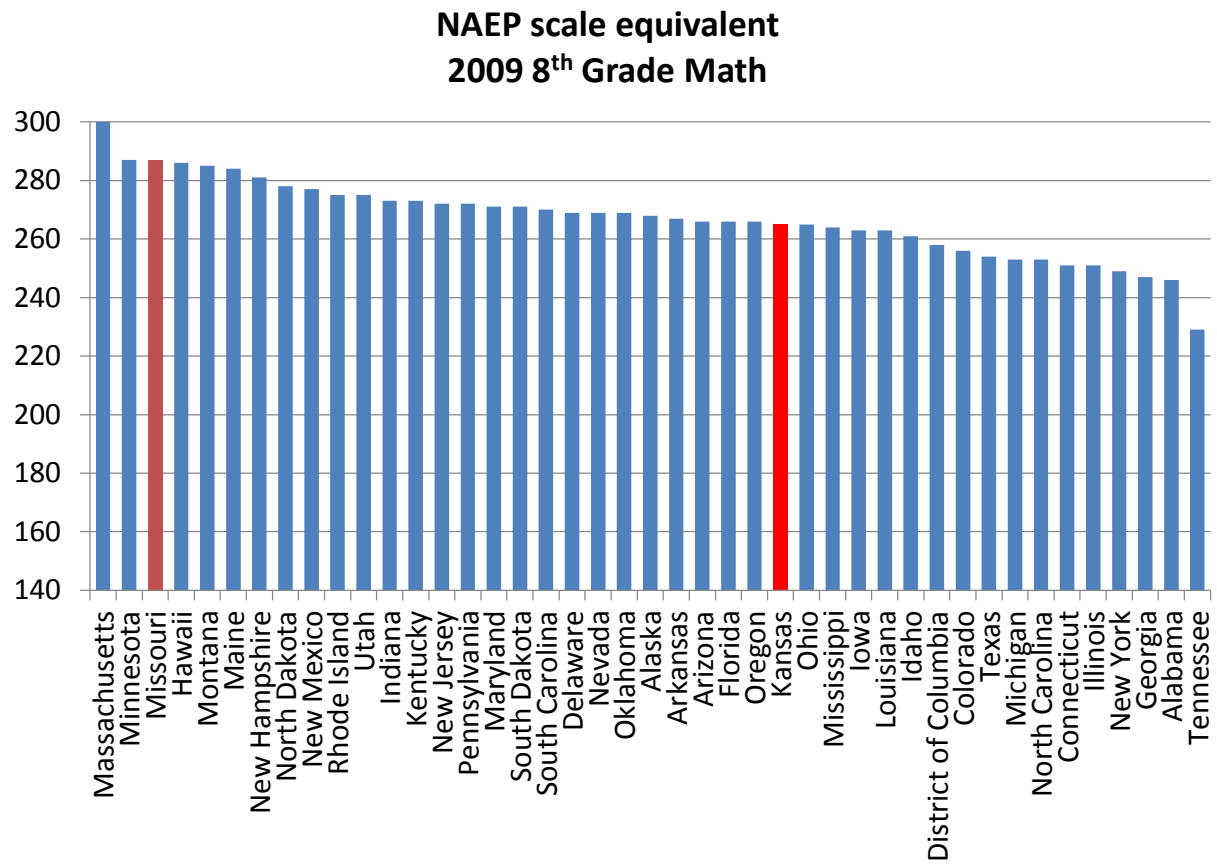
Figure 3. Kansas 4th Grade Math Proficiency and NAEP



Data Source: http://nces.ed.gov/nationsreportcard/pdf/studies/2011458.pdf

Figure 3 shows that Kansas 4th grade math standards are also in the lower half among states. Again, Missouri standards are much higher.

Figure 4. Kansas 8th Grade Math Proficiency and NAEP



Data Source: http://nces.ed.gov/nationsreportcard/pdf/studies/2011458.pdf

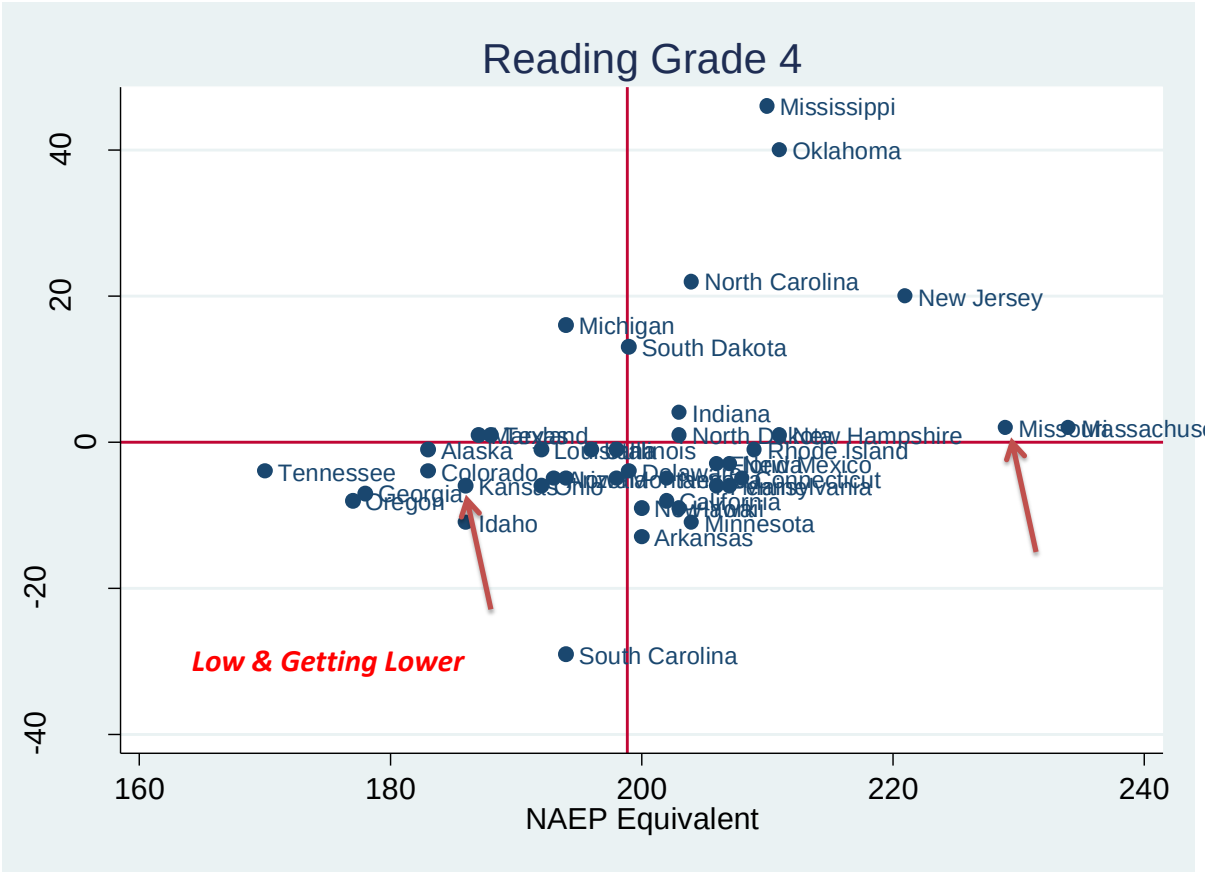
And finally, Figure 4 shows that Kansas 8th grade math standards are also in the lower half among states.

But, it is also important to evaluate how these standards have drifted over time. Kansas standards in 2009 are low, and in some areas very low. As such, estimating the costs of meeting only these very low standards may severely underestimate the needs of children in Kansas high need districts with respect to more legitimate outcomes such as college readiness.

By 2009, New York state 8th grade math standards had drifted dramatically, having been higher than Kansas standards in 2007.[24] But studies of the relationship between New York 8th grade math cut scores prior to their drifting already revealed that the cut scores fell well short of indicating college readiness. In response, New York State dramatically shifted their cut scores in 2010, resulting in much lower proficiency rates than prior years.

[24] http://nces.ed.gov/nationsreportcard/pdf/studies/2010456.pdf (page 20)

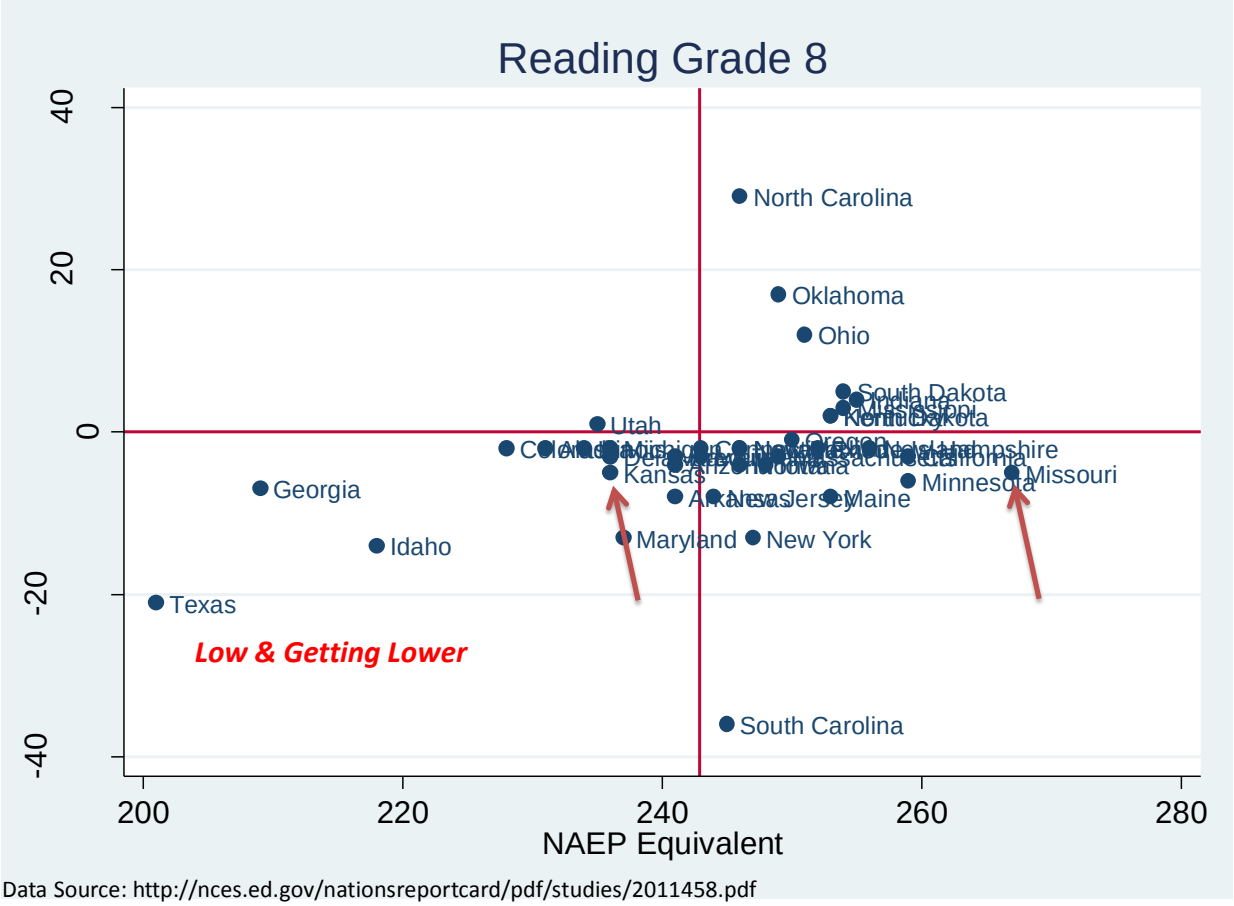
Figure 5. Grade 4 Reading, Changing Standards



Data Source: http://nces.ed.gov/nationsreportcard/pdf/studies/2011458.pdf

Figure 5 above identifies states along the horizontal axis by their 2009 NAEP equivalent score for grade 4 reading. Figure 5 arranges states along the horizontal axis by the change in the NAEP equivalent cut score between 2007 and 2009. The vertical red like is the state average NAEP equivalent cut score. Districts along that vertical line have relatively average cut scores. Districts to the right of the line have cut scores more rigorous than average (w/respect to NAEP). Districts above the horizontal line increased their standards between 2007 and 2009 and districts below the horizontal line decreased their standards. As a result, those in the upper right hand quadrant are those states with high standards that increased their standards over time, and those in the lower left hand corner are those with low standards that decreased their standards over time. Kansas is among those states that had low standards and lowered those standards between 2007 and 2009.

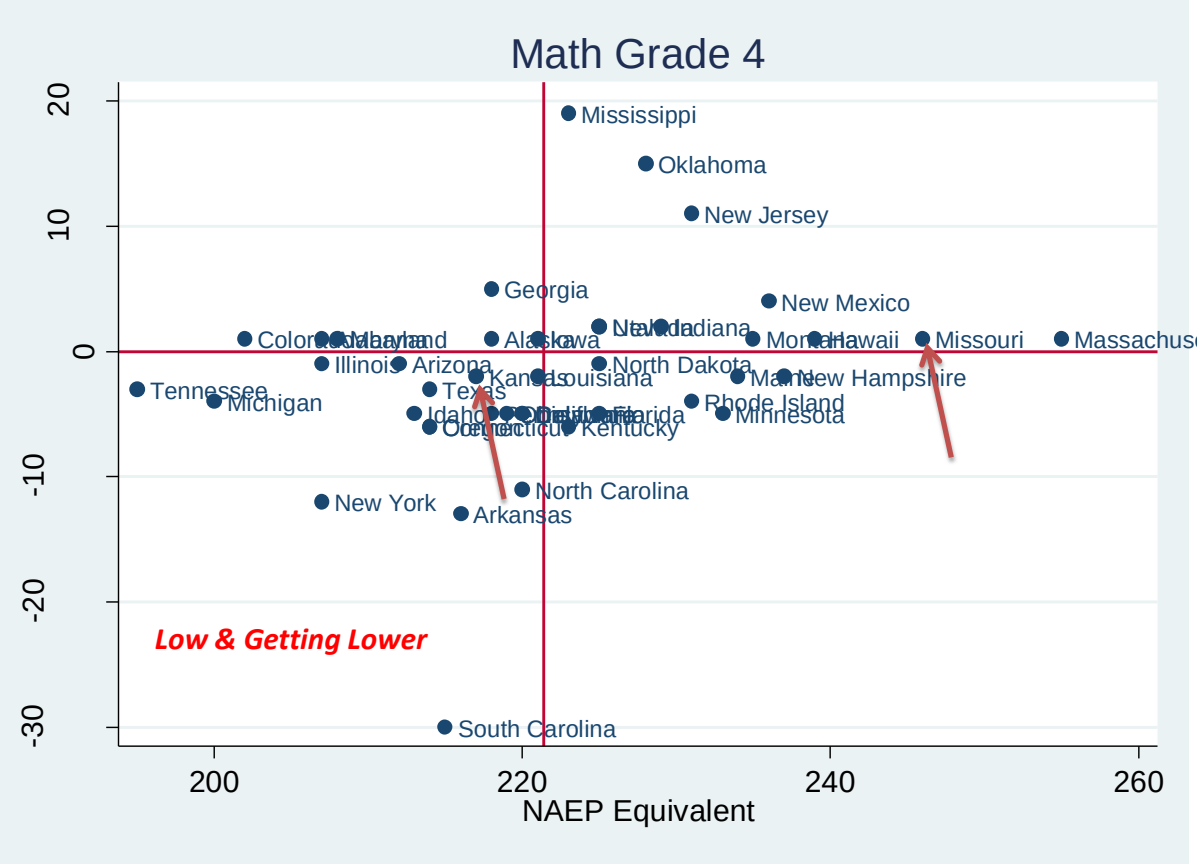
Figure 6. Grade 8 Reading, Changing Standards



Data Source: http://nces.ed.gov/nationsreportcard/pdf/studies/2011458.pdf

For 8th grade reading, Kansas is again in the lower left quadrant. Kansas standards are lower than average, and Kansas standards declined slightly between 2007 and 2009.

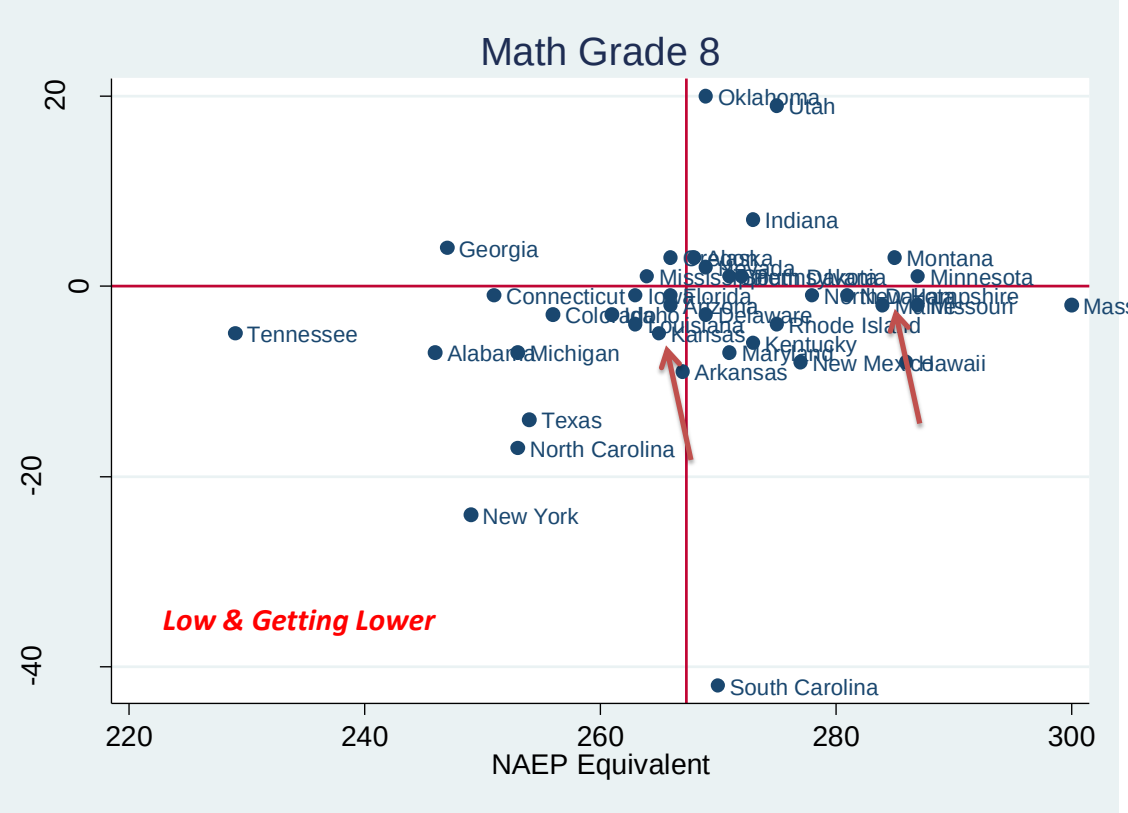
Figure 7. Grade 4 Math, Changing Standards



Data Source: http://nces.ed.gov/nationsreportcard/pdf/studies/2011458.pdf

For 4th grade math, Kansas is again in the lower left quadrant. Kansas standards are lower than average, and Kansas standards declined slightly between 2007 and 2009.

Figure 8. Grade 8 Math, Changing Standards



Data Source: http://nces.ed.gov/nationsreportcard/pdf/studies/2011458.pdf

For 8th grade math, Kansas is again in the lower left quadrant. Kansas standards are lower than average, and Kansas standards declined slightly between 2007 and 2009. Note that 8th grade math standards plummeted in New York between 2007 and 2009. But internal analyses identifying this problem in New York State have led to subsequent adjustment.

2.3 Average but Declining Effort in the Long Run

Over the past year and a half, several vocal pundits have chimed in with the argument that when it comes to spending on K-12 schools, the money is simply gone. It's not there anymore. The (supposed) massive spending bubble of the past 30 years is over and there's simply no more tax revenue available or to be derived for the financing of public schools.[25] U.S. Secretary of Education Arne Duncan has declared the new era in which the money is all gone,

[25] See, for example: http://educationnext.org/what-goes-up-must-come-down/

the "New Normal."[26] But, more legitimate analysis by credible scholars regarding the condition of state budgets and financing for public education is far more nuanced.[27]

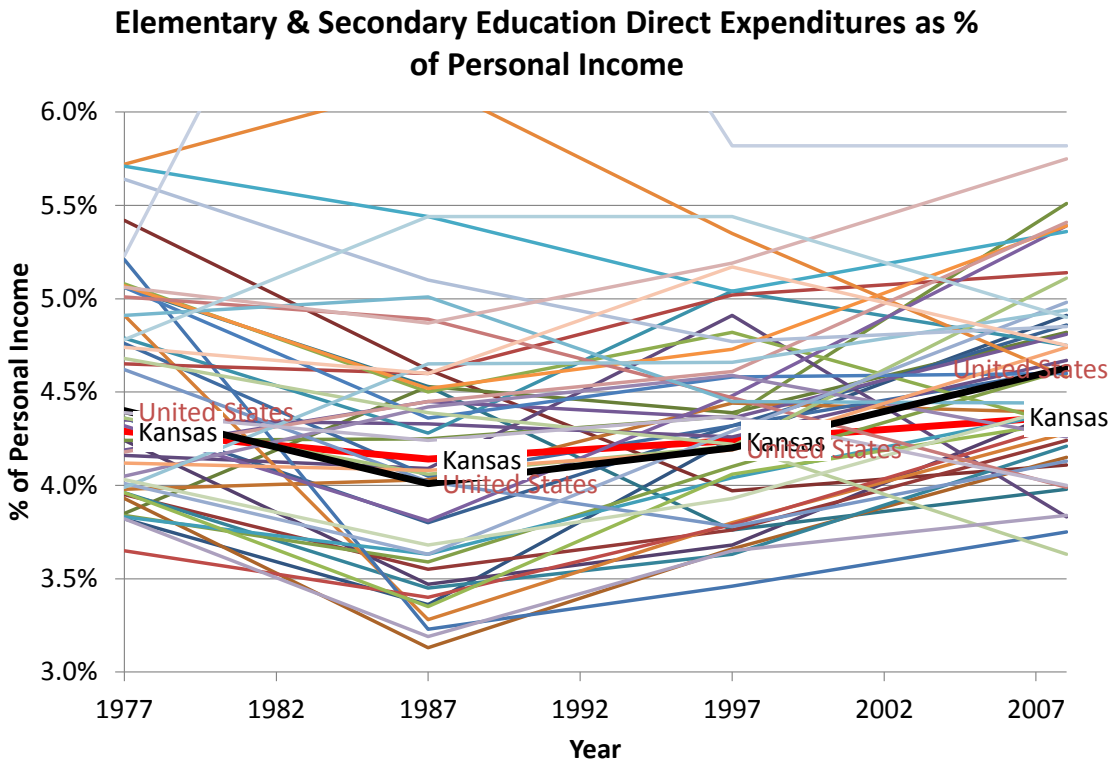
Claims that money is gone and the "new normal" is a uniform, national reality are little more than pure punditry, absent any reasonable level of data or analysis on state revenue systems, tax policy and economic capacity. Further, these claims ignore entirely the very basic understanding that education funding in the United States is the aggregate of 50 very different state funding systems, within 50 very different economic contexts and across states that have tapped their ability to pay for public schooling to very different degrees over the decades. Some states like Utah, Nevada or Tennessee have consistently failed (over the past 30 years) to put effort into public education funding, but have significant untapped capacity to do so. Others like Arizona and Colorado have dramatically reduced their effort toward financing public education over the decades, long before the most recent economic downturn, long before the money was supposedly all gone.

Educational effort, or fiscal effort applied to financing education is typically measured in either of three ways: 1) total state and local education spending as a share of gross state product, 2) total state and local education spending as a share of aggregate personal income, or 3) total state and local education spending as a share of total taxable resources. Evaluating effort by the first of these methods in our School Funding Fairness report, we found Kansas to be above average in 2007, receiving a grade of B. Kansas effort was higher than the national average by this measure, but not necessarily among the highest states in tapping its economic capacity. Indeed Kansas has applied more effort and more consistent effort than states like Colorado, Arizona or Tennessee, but that is not to suggest that Kansas by any stretch has tapped out its capacity.

[26] http://www.ed.gov/news/speeches/new-normal-doing-more-less-secretary-arne-duncans-remarks-american-enterprise-institut

[27] See, for example, quarterly reports on the status of state revenues by source and by state provided by the Rockefeller Institute at: http://rockinst.org/government_finance/. Most recent quarterly report here: http://rockinst.org/pdf/government_finance/state_revenue_report/2011-07-14-SRR_84.pdf

Figure 9. Relative Effort toward Elementary and Secondary Education over Time



Data Source: State & Local Government Finance Data Query System. http://www.taxpolicycenter.org/slf-dqs/pages.cfm. The Urban Institute-Brookings Institution Tax Policy Center. Data from U.S. Census Bureau, Annual Survey of State and Local Government Finances, Government Finances, Volume 4, and Census of Governments (Years). Date of Access: (15-Aug-11 09:14 AM)

Figure 9 shows total elementary and secondary education state and local spending as a share of personal income for all states, with Kansas and the U.S. average labeled. In 1977, Kansas was on par with the national average. By 2008, Kansas fell below the national average on this effort measure, and ranked 32nd nationally.[28] In general, Kansas has not increased its effort toward funding schools for the past 30 years. That effort has remained relatively constant. Further, that effort is not high. Different indicators provide mixed perspective. Using Gross State Product in the denominator, Kansas is above average. But using personal income in the denominator Kansas is below average by 2008.

[28] Even the Tax Foundation, whose methods have come under fire from numerous angles (in part, for using preliminary estimates in place of final data) ranks Kansas near the middle of the pack in overall state and local tax burden (21st) as of 2008. http://www.taxfoundation.org/files/f&f_booklet_20100325.pdf (page 6) For a critique of Tax Foundation methods, see: http://www.cbpp.org/cms/?fa=view&id=574

Table 2. Personal Income Over Time

Year	Personal Income	% Change in Personal Income
1977	$ 16,871,191	
1978	$ 18,709,377	10.9%
1979	$ 21,406,217	14.4%
1980	$ 23,545,941	10.0%
1981	$ 26,703,889	13.4%
1982	$ 28,948,128	8.4%
1983	$ 30,134,327	4.1%
1984	$ 33,037,362	9.6%
1985	$ 34,741,833	5.2%
1986	$ 36,385,191	4.7%
1987	$ 38,068,135	4.6%
1988	$ 39,901,040	4.8%
1989	$ 42,058,776	5.4%
1990	$ 44,749,852	6.4%
1991	$ 46,489,195	3.9%
1992	$ 49,913,697	7.4%
1993	$ 52,078,677	4.3%
1994	$ 54,796,100	5.2%
1995	$ 56,883,222	3.8%
1996	$ 60,802,316	6.9%
1997	$ 64,576,278	6.2%
1998	$ 69,260,889	7.3%
1999	$ 71,848,078	3.7%
2000	$ 76,684,081	6.7%
2001	$ 80,150,780	4.5%
2002	$ 80,704,843	0.7%
2003	$ 83,901,163	4.0%
2004	$ 87,176,582	3.9%
2005	$ 90,875,825	4.2%
2006	$ 98,577,190	8.5%
2007	$ 104,846,995	6.4%
2008	$ 111,957,460	6.8%
2009	$ 110,418,470	-1.4%
2010	$ 113,375,167	2.7%

Data Source: http://bea.gov/regional/downloadzip.cfm

Since the data on Kansas spending effort go only through 2008, and since the economic downturn occurred between 2008 and 2010, it is relevant to take a look at changes in the denominator (capacity measure) since that time. Table 2 above tracks changes in aggregate personal income from 1977 to 2010. Indeed, personal income decline for the first time during the period in 2009, but only by 1.4%. While the first decline during this period, there had been previous flat years, including during the economic shock of 2001-02.

Total headcount enrollments in Kansas have tended to grow around, or less than 1% per year during this period. Weighted (with need weights & other adjustments) student enrollments

have grown approximately 2% per year in the most recent years.[29] So, one could argue that gap in capacity to fund subsequent years might be measured by the combination of income loss and enrollment growth. While these figures are both rather small, the Kansas legislature decided to lower the base funding per pupil by a total of 14% between 2009 and 2012 (from $4,400 to $3,780).

While Kansas' state general fund budget deficits have been much larger than these few percentage point shifts in aggregate personal income,[30] those annual deficits in general fund budgets represent the balance between political willingness to raise tax rates and willingness to support spending, rather than real issues of capacity. Applying these broad brush strokes, it seems illogical to adopt the perspective that Kansas has done all it can to meet its constitutional mandate to make suitable provision for finance of the educational interests of the state. Nor is it likely that changes to state tax policy would somehow collapse the state economy or drive current residents and business elsewhere. Such rhetoric is largely unsupported by empirical analysis.[31] As is so often the case in states that have persistently short-funded their education systems, the money is not gone, it simply hasn't been collected. That choice is matter of political priority and not one of economic capacity.

2.4 Lagging Competitive Wages for Kansas Teachers

In this subsection, I address the lagging competitive wages for Kansas teachers. In short, teacher wages matter. Further, it's all relative. And, it's especially relative in two ways. First, the relative competitiveness of teacher wages to non-teacher wages for a) individuals of similar age and b) individuals with comparable education levels, is relevant to determining who chooses to enter the teaching profession and who chooses to stay within teaching. Second, the relative pay of teachers on one location versus in another location is relevant to where a teacher decides to teach or stay in teaching.

A substantial body of literature over time has validated that the overall wages and relative wages of teachers matter to the quality of those who choose to enter the teaching profession. For example, Murnane and Olson (1989) find that salaries affect the decision to enter teaching and

[29] Specifically, since 2009, after the scaling up of weightings adopted as part of the remedy legislation (SB549).

[30] See, for example: http://www.cbpp.org/cms/?fa=view&id=711 which shows a 2009 budget shortfall of 2.9%, 2010 shortfall of 33.9% and 2011 shortfall of 10.1%, and in 2012, a shortfall of 8.1% in state general fund revenue for Kansas.

[31] See, for example: http://www.cbpp.org/files/8-4-11sfp.pdf

the duration of the teaching career,[32] and Figlio (1997, 2002) and Ferguson (1991) find that higher salaries are associated with better qualified teachers.[33] In addition, more recent studies have tackled the specific issues of relative pay noted above. Ondrich, Pas and Yinger (2008) "find that teachers in districts with higher salaries relative to non-teaching salaries in the same county are less likely to leave teaching and that a teacher is less likely to change districts when he or she teaches in a district near the top of the teacher salary distribution in that county."[34]

Arguments of late regarding the "new normal" and best ways to reform public education at the same or lower per pupil cost often take the perspective that public schools simply need to recruit and retain better teachers rather than spend more, as if the two are separable policy objectives. They need to recruit the top, rather than average college graduates.[35] But these arguments are made without serious consideration for variations in state contexts, the relative competitiveness of teacher wages across state contexts or the existing literature relating wages, relative wages and interest in teaching as a career option.

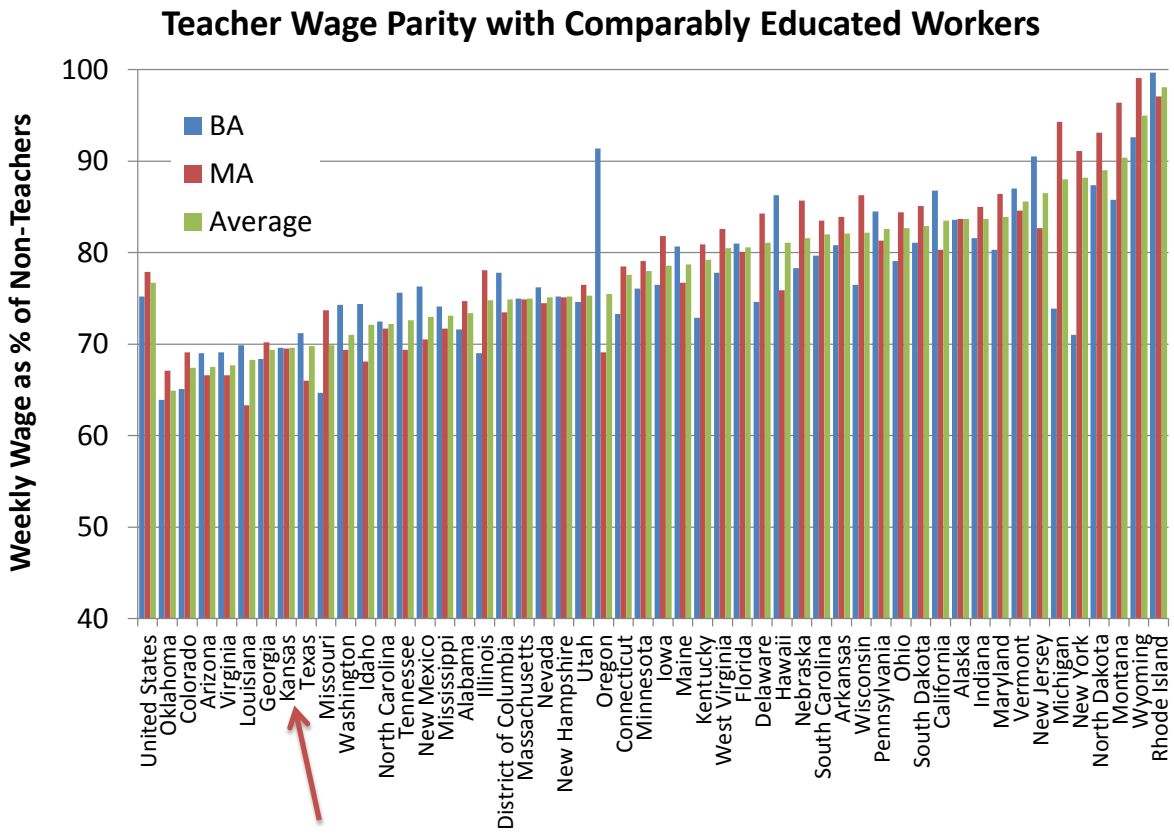
[32] Richard J. Murnane and Randall Olsen (1989) The effects of salaries and opportunity costs on length of state in teaching. Evidence from Michigan. *Review of Economics and Statistics* 71 (2) 347-352

[33] David N. Figlio (2002) Can Public Schools Buy Better-Qualified Teachers?" *Industrial and Labor Relations Review* 55, 686-699. David N. Figlio (1997) Teacher Salaries and Teacher Quality. Economics Letters 55 267-271. Ronald Ferguson (1991) Paying for Public Education: New Evidence on How and Why Money Matters. Harvard Journal on Legislation. 28 (2) 465-498.

[34] Ondrich, J., Pas, E., Yinger, J. (2008) The Determinants of Teacher Attrition in Upstate New York. Public Finance Review 36 (1) 112-144

[35] http://www.mckinsey.com/clientservice/Social_Sector/our_practices/Education/Knowledge_Highlights/Closing_the_talent_gap.aspx

Figure 10. Relative Weekly Earnings of Teachers and Non-Teachers by State

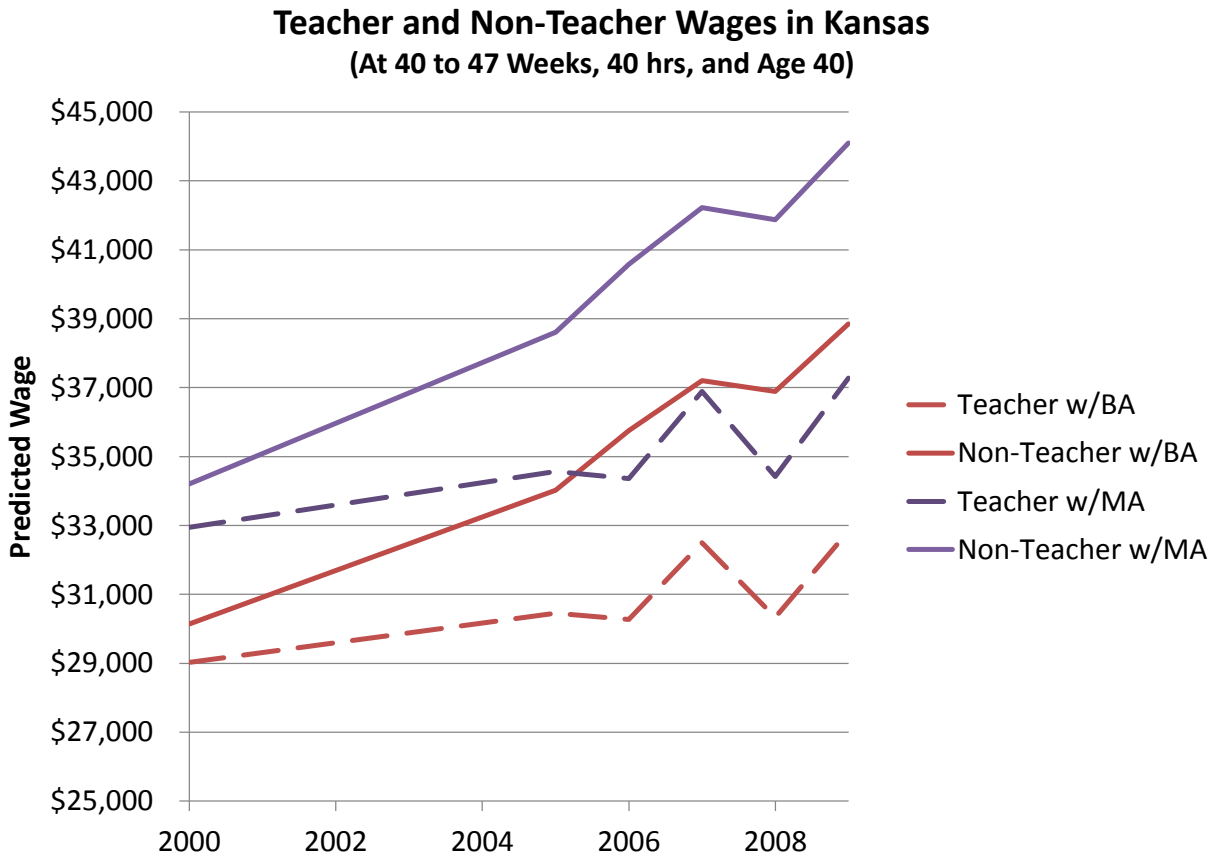


Data Source: http://www.epi.org/page/-/old/Issuebriefs/IssueBrief298.pdf?nocdn=1

Figure 10 shows the state rankings of teacher weekly wage gaps from a recent *Economic Policy Institute Issue Brief* by Allegretto, Corcoran & Mishel (2011).[36] The brief uses data from 2006 to 2010 from the Current Population Survey to generate estimates of teacher and non-teacher weekly wages for individuals holding a bachelors or master's degree. In the best of cases, teachers in Rhode Island or Wyoming can expect a weekly wage nearly comparable to non-teachers (though a lower annual wage). But, in states like Kansas at the other end of the spectrum, teachers can expect to earn a weekly wage that is less than 70% of the weekly wage of non-teachers. Kansas ranks near the bottom of states in this regard. Teacher wages in Kansas are simply not competitive with non-teaching alternatives.

[36] Allegretto, Corcoran & Mishel (2011) http://www.epi.org/page/-/old/Issuebriefs/IssueBrief298.pdf?nocdn=1

Figure 11. Predicted Wages of Teachers and Non-Teachers in Kansas



Data Source: Integrated Public Use Micro Data System.

Figure 11 uses individual (person) level data from the U.S. Census to model the comparative wages of teachers and non-teachers in Kansas over time, to determine whether the teaching penalty has increased or decreased over time. Notably, this method tends to produce smaller pay gaps than the method used by the Economic Policy Institute in Figure 10. In this method, I estimate a model of teacher and non-teacher wages using data from 2000 to 2009, from the American Community Survey (data from www.ipums.org).[37] Wages are modeled as a function of age, degree level, hours worked per week and weeks worked per year, the year of the data, and whether the individual is a teacher in elementary and secondary education (defined by occupation and industry). Further, teachers and non-teachers are compared only to other workers within the same public use microdata area. In Kansas, that means that rural teachers are

[37] Steven Ruggles, J. Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek. *Integrated Public Use Microdata Series: Version 5.0* [Machine-readable database]. Minneapolis: University of Minnesota, 2010.

compared with other rural workers, and urban teachers with other workers in the same area within the metropolitan area.

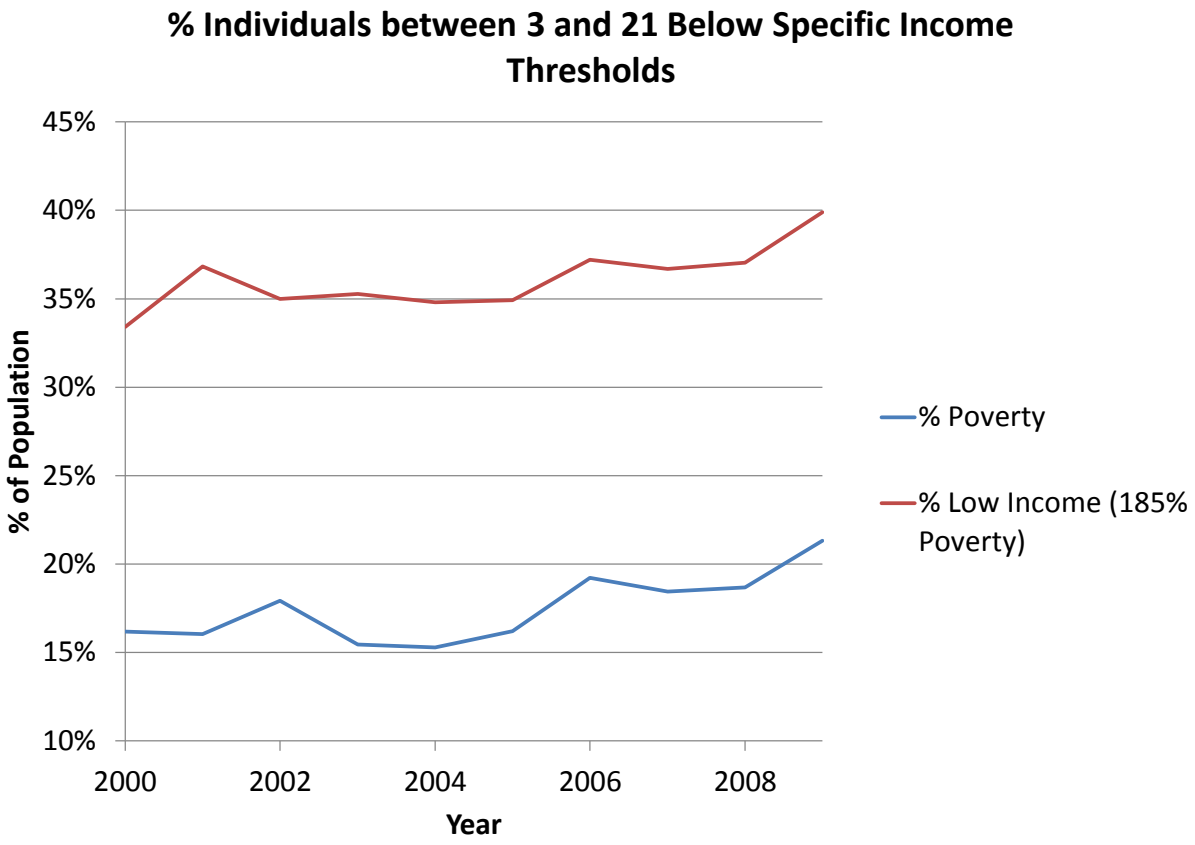
Figure 11 uses the model to project the wages of teachers and non-teachers at age 40, working 40 to 47 weeks per year, and 40 hours per week, and working in the Kansas City metropolitan area. Wages are projected separately for individuals holding a bachelor's and individuals holding a master's degree. By 2009, teachers holding either a bachelors or master's degree could expect to earn only about 85% of the wage of non-teachers for the same number of hours per week and weeks per year. Worse, the trajectory over time has been that the teacher wage gap has grown. Over time, Kansas teachers have fallen further behind non-teachers.

2.5 The Changing Demography of Kansas

In this subsection, I discuss the changing demographics of the State of Kansas in recent years. Recall that the cost of achieving desired outcomes changes over time as a function of a) changing competitive labor markets for teachers, b) changing outcome standards and c) changing characteristics of the student population which must achieve the desired outcomes. To this point in this section, I have validated that a) teacher wages in Kansas are very low relative to non-teachers and have fallen further behind over the past decade, and b) Kansas has very low outcome standards, which likely should be raised, especially for purposes of estimating the costs of achieving suitable educational outcomes.

This subsection provides validation that the third prong of cost pressures is also particularly relevant in Kansas school districts. Kansas school districts, particularly those in large central cities, midsize cities and large remote towns, have experienced significant increases in numbers and shares of low income children, Hispanic children, children who do not speak English fluently and the intersection of all three.

Figure 12. Changing Rates of Low Income Children and Children in Poverty

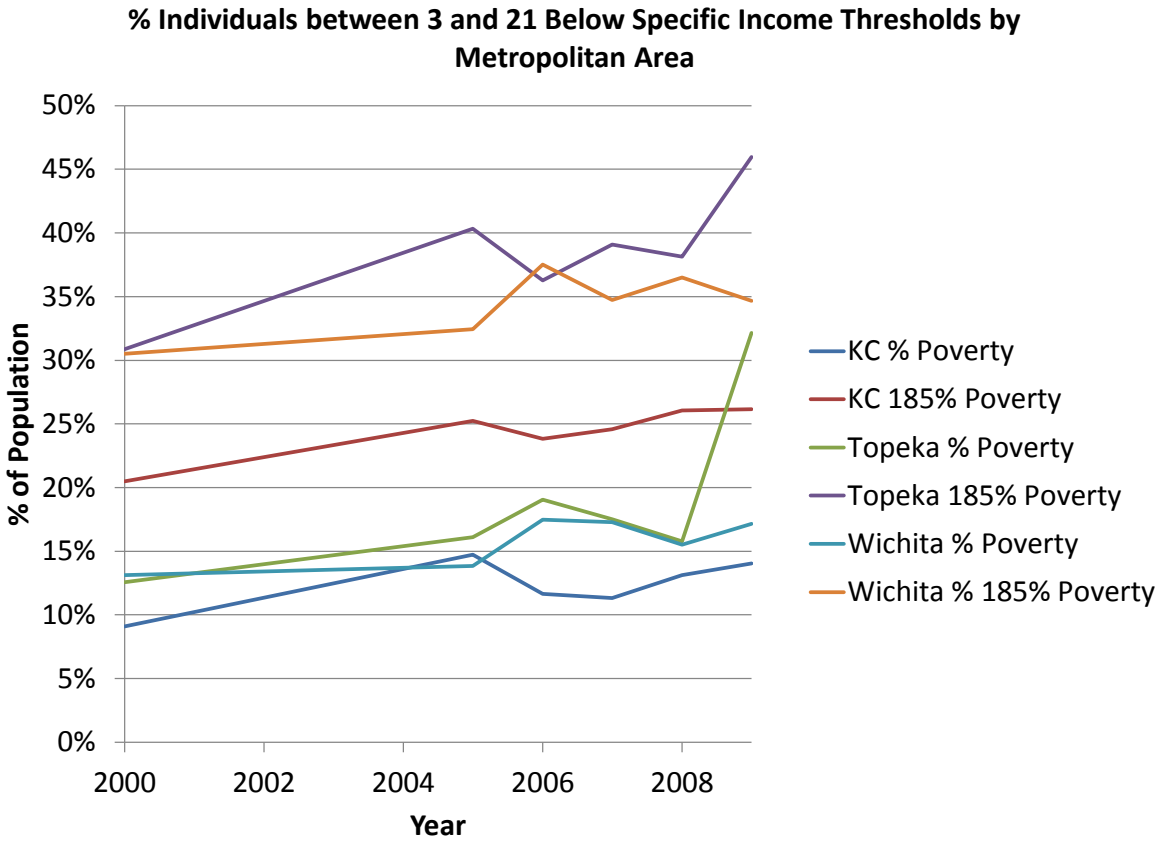


Data Source: Integrated Public Use Micro Data System.

Figure 12 uses data on individuals between the ages of 3 and 21 residing in Kanas in the U.S. Census (2000) and American Community Surveys through 2009. These data include a household level poverty index measure scaled around 100, where 100 indicates the 100% income threshold for poverty, or the U.S. Census Bureau poverty threshold. Families with a poverty index less than 100 fall below the poverty line. Here, I explore the portions of children in families falling below the 100% income threshold and below the 185% income threshold, the threshold that would be equated with a family qualifying for reduced price lunch under the National School Lunch Program guidelines.[38] Over the decade, Kansas has experienced about a 5% increase in the share of individuals between ages 3 and 21 who fall below either threshold.

[38] http://www.fns.usda.gov/cnd/governance/notices/iegs/iegs.htm

Figure 13. Changing Rates of Low Income Children and Children in Poverty by Metropolitan Area

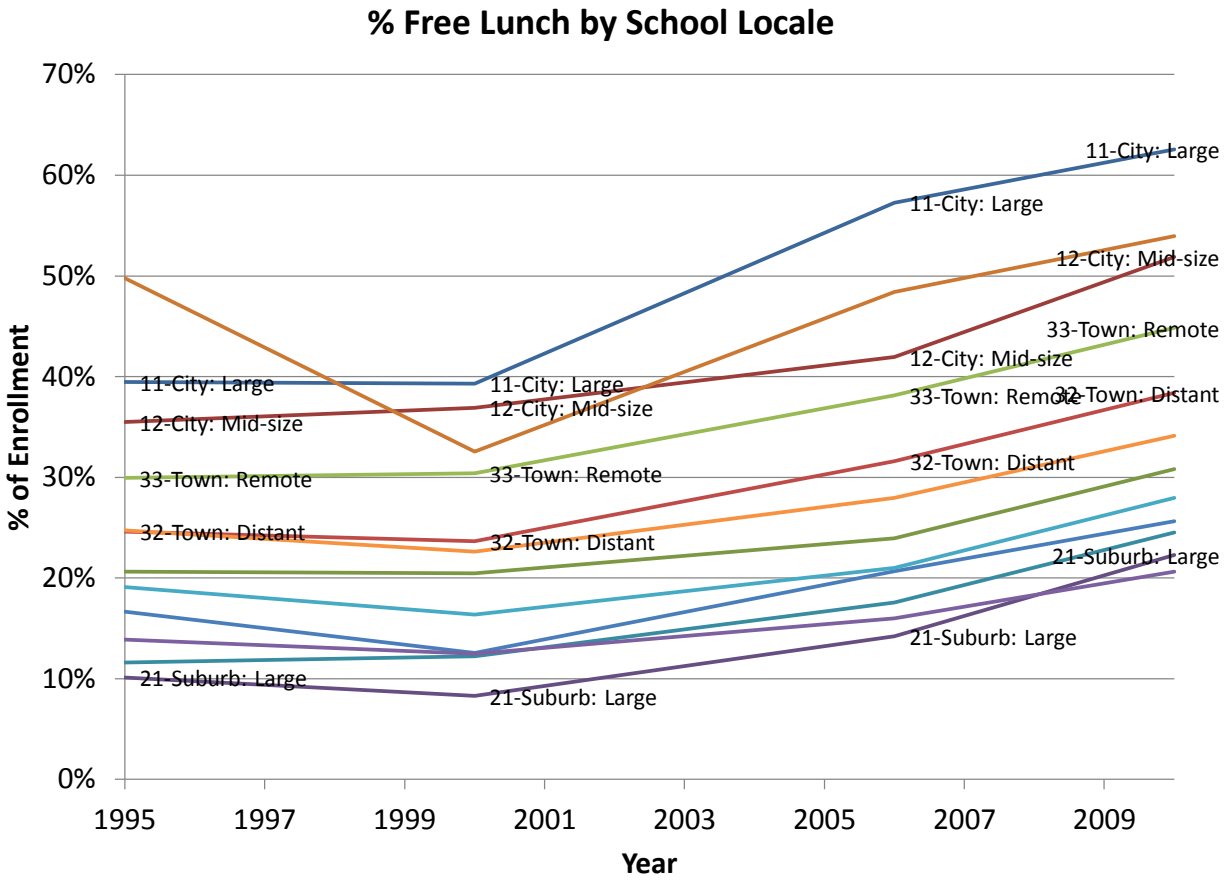


Data Source: Integrated Public Use Micro Data System.

Figure 13 shows the changes in poverty concentration for the Kansas City, Topeka and Wichita metropolitan areas. Note that in the Kansas City area, most population growth has occurred in Johnson County and to the south and west, in generally lower poverty areas. Nonetheless, poverty has grown by about 5% (similar to statewide) over the period in the Kansas City metropolitan area, but poverty in the Kansas City metropolitan area as a whole is lower than in Wichita or Topeka. However, some of these differences exist because the same income thresholds are applied to identify poverty, regardless of the quality of life that could be afforded in Wichita or Topeka compared to Kansas City at any given income level.

Figure 13 shows that poverty rates have grown by approximately 15% in Topeka, regardless of the threshold applied. Similar to Kansas City, poverty in the Wichita metropolitan area has grown by about 5%.

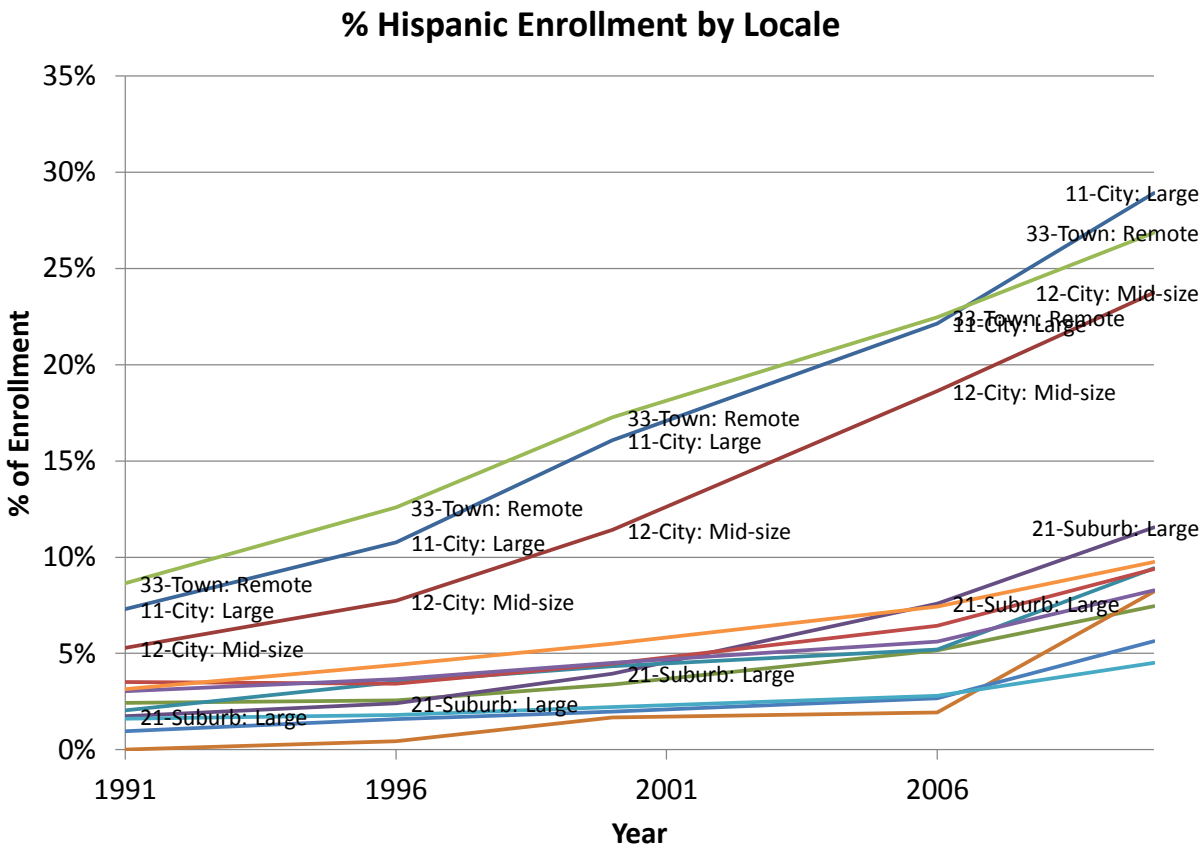
Figure 14. Changing Rates of Low Income Children Enrolled in Schools by Locale



Data Source: National Center for Education Statistics, Common Core of Data. www.nces.ed.gov/ccd

Figure 14 explores shifts in the demography of school enrollments by school locale, based on data from the National Center for Education Statistics (NCES) Common Core of Data (CCD). Specifically, Figure 14 evaluates shares of children who qualify for Free Lunch (130% income threshold) over time based on a panel of school level data on school enrollments (rather than resident populations). Regardless of locale, shares of low income children have increased. But the increase has been uneven. Shares of low income children have increased dramatically in large cities, mid-size cities and in Remote and Distant Towns. For large cities, shares of children qualified for free lunch grew by over 20% and over 10% in Mid-size cities, Remote Towns and Distant Towns. That is, poverty is growing most dramatically in the hubs of metropolitan and micropolitan areas, more so than in the surrounding, outlying areas. Indeed, large suburbs which still have relatively low poverty, have experienced some increase as well.

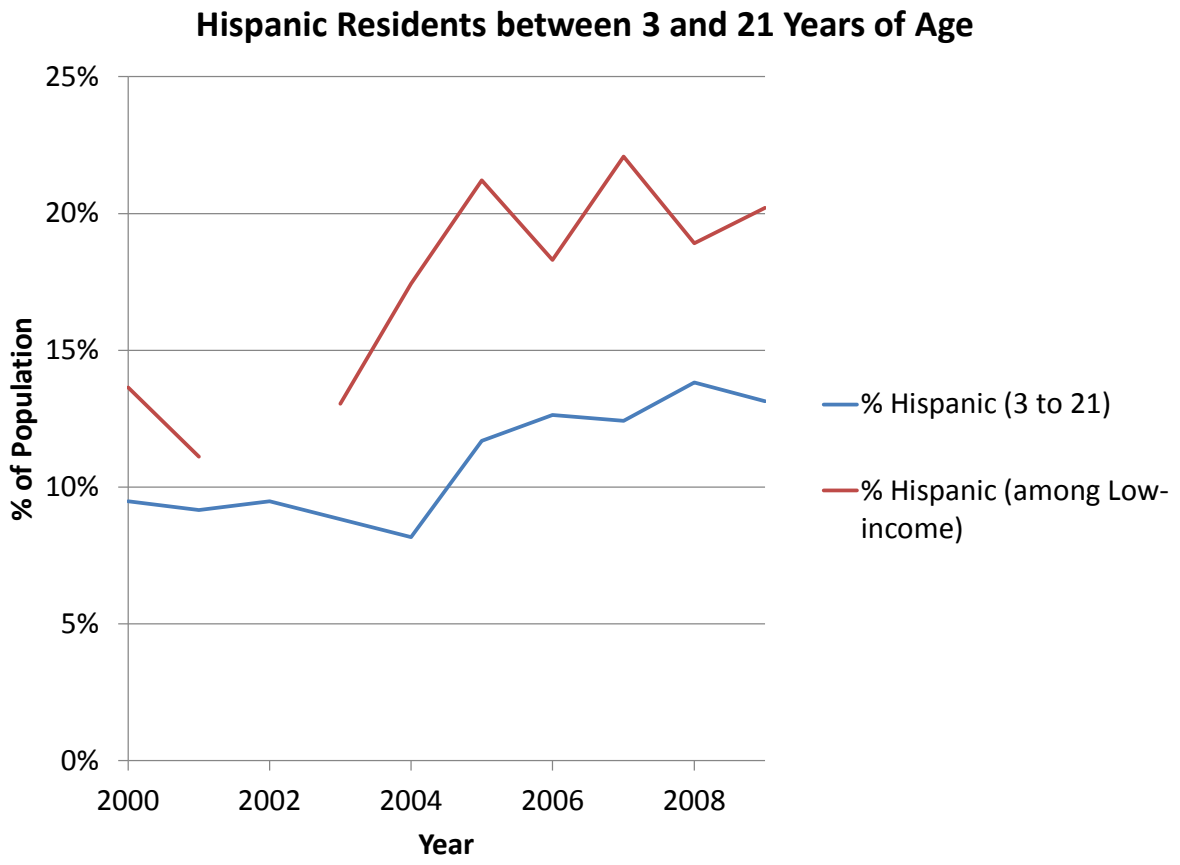
Figure 15. Changing Rates of Hispanic Children Enrolled in Schools by Locale



Data Source: National Center for Education Statistics, Common Core of Data. www.nces.ed.gov/ccd

Figure 15 explores Hispanic student enrollments over time. Hispanic enrollments have climbed dramatically in Large Cities, Remote Towns and Mid-size cities, again the hubs rather than surrounding areas. Hispanic enrollment shares have grown by 15% and more in these areas.

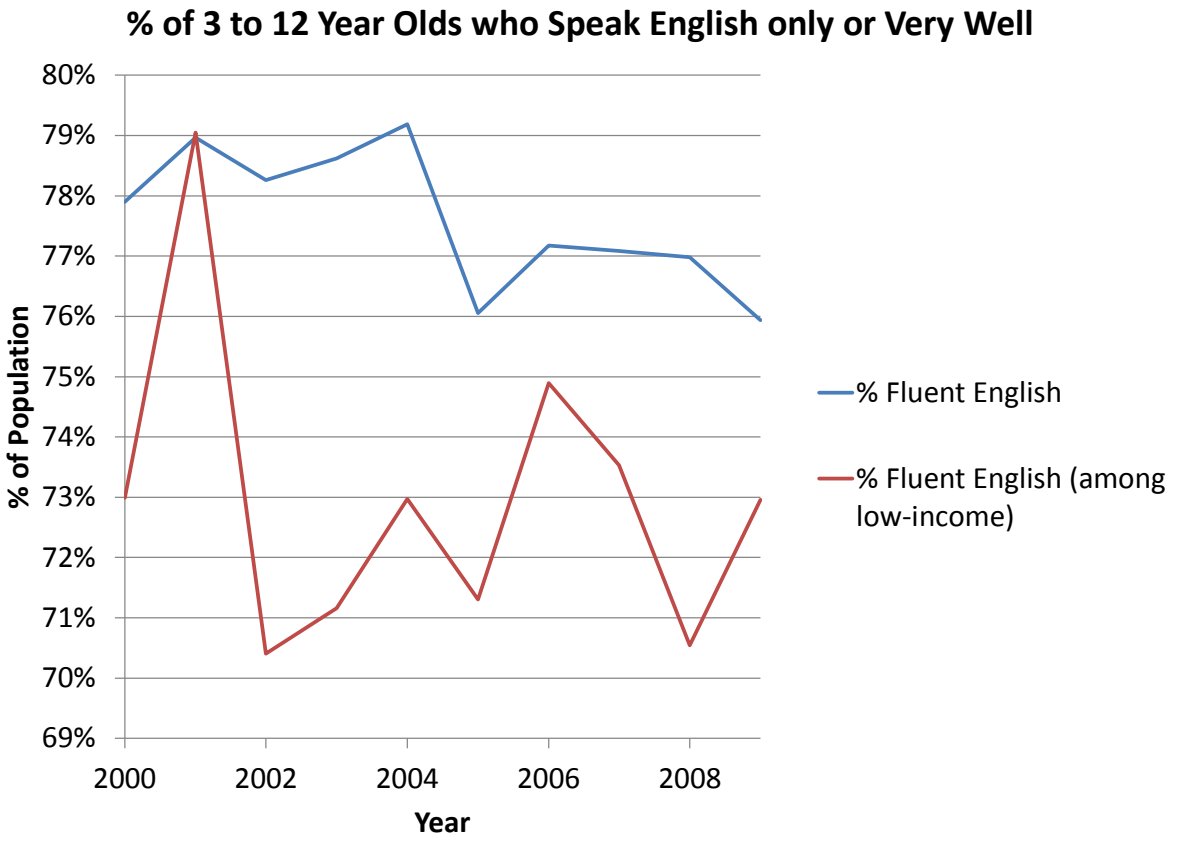
Figure 16. Changing Rates of Hispanic Children & Hispanic Low Income Children



Data Source: Integrated Public Use Micro Data System.

Returning to the U.S. Census data on individuals and families rather than school enrollments, Figure 16 shows in blue that the share of individuals between 3 and 21 in Kansas that are Hispanic has climbed somewhat less than 5%, and sits below 15%. However, among the low income population, 20% are Hispanic. That is, Hispanic residents between 3 and 21 years of age make up a larger share (1/5) of the low income population than of the population as a whole. As such, one might expect there to be some relationship in the locations of growth in low income populations and growth Hispanic populations, as shown in the previous enrollment graphs. Larger cities, midsize cities and town hubs are experience growth in both simultaneously.

Figure 17. Changing Rates of Non-English Speaking Children & Non-English Speaking Low Income Children



Data Source: Integrated Public Use Micro Data System.

Figure 17 explores the language status of younger children based on the U.S. Census American Community Survey Data. Specifically, Figure 17 explores the proportions of children ages 3 to 12 who are reported either as speaking English as their only language, or as speaking English "very well." Due to smaller numbers in the data set, these figures jump around somewhat. But overall, it appears that the share of all children between 3 and 12 who speak English fluently has declined by a few percentage points statewide (from 78% to 76%). Among low income children, it is harder to discern any trend. But, among low income children (185% income threshold), far fewer report speaking English very well or exclusively. Only 73% of children in low income families speak English very well or exclusively.

Summary of Demographic Shifts

Clearly the growth in poverty and low income status noted above, coupled with the growth in Hispanic student populations which tend to be disproportionately low income will

influence the costs of achieving outcome standards in the State of Kansas, even if those standards are held constant. Further, the diminished English language proficiency among these same populations of low income and Hispanic children poses additional challenges. And, the demographic shifts identified in this section have been unevenly distributed statewide. Some districts and districts in some locations are experiencing much greater demographic shift than others. Particularly affected are large cities, midsize cities and larger remote towns.

Cost projections used in many sections of this report, like those developed by the Legislative Division of Post Audit and relied on by the Court in its 2006 dismissal do not account for these changes, instead forecasting forward based on 2006 conditions. As a result, those cost projections must be viewed as underestimates. Costs of educational outcomes are increasing in ways yet unmeasured in Kansas. But, these pressures are being partially, inappropriately offset by declining rigor of outcome standards. The complex interactions of these forces warrants future rigorous outcome based cost modeling, accounting for demographic changes and applying more rigorous outcome standards.

3.0 The School District Finance Act, Funding Gaps & Reasonable Marks

In this section, I explore in detail the School District Finance Act and changes to the Act from inception to present, with emphasis on the period from 2006 (immediately prior to SB 549) to 2011 (most recent year of complete data).

In Section 3.1 I address the underlying Base State Aid per Pupil over time, from 1992 to present. I show that:

- Had the original BSAPP of $3,600 in 1992 grown from 1992 to 2012 at the average rate of competitive wages in Kansas, the BSAPP in 2011 would be $7,820, rather than $3,780;
- Starting from a later point, in 2002, had the BSAPP grown at the average rate of competitive wages in Kansas, by 2012, BSAPP would have been $5,521;
- Starting from even 2006, had the BSAPP grown at the average rate of competitive wages in Kansas, by 2012, the BSAPP would have been $5,131;
- Further, I show that while the BSAPP had been proposed (and acknowledged by the court) to reach $4,433 by 2008-09 and $4,597 by 2009-10, BSAPP never reached the target $4,433 and has since dropped in 2010-11 to an effective level of $3,937 and eventually down to $3,780 for 2011-12.

In Section 3.2 I compared general fund budgets per pupil from 2006 to 2011 to district level general fund budget targets established in the Legislative Post Audit Outcome Based Cost study (LPA OB). I inflate district level cost estimates based on updated information provided by

LPA to the 2010 Commission, noting that these inflated estimates dramatically understate the actual increases in education costs for districts from 2006 to 2011. Specifically, these estimates increase district costs only for changes in the prices of goods (CPI-U). They do not account for a) changes in competitive wages, b) changes in outcome standards or c) changes in student populations. Further, these cost estimates are based on Kansas' low achievement outcome standards. Nonetheless, applying these ultra-conservative cost estimates, I find:

- In 2007, funding gaps in large high need districts remained large, over $1,500 per pupil on Topeka, over $1,000 per pupil in Wichita and over $3,000 per pupil in Kansas City. By 2011, these funding gaps, relative to conservatively updated targets, had grown to over $2,300 per pupil in Topeka, over $1,700 per pupil in Wichita and over $4,000 per pupil in Kansas City;
    - Funding gaps are systematically larger in higher need, large school districts;
- Across all districts, the average funding gap in 2007 was less than $500 per pupil and, on average (but not for all districts), funding gaps were nearly erased in 2009;
    - But, by 2011, the average funding gap was approaching $1,000 per pupil;
- For high need districts, funding gaps were never erased (or even close). Funding gaps remained over $700 per pupil for districts with greater than 60% free or reduced lunch in 2009, and climbed back to over $1,500 per pupil by 2011;
    - Meanwhile, funding gaps for lower poverty districts remain smaller to non-existent.

In Section 3.3, I explain that funding gaps remain larger for high need districts because both proposed remedies and actual implemented formulas never fully accounted for additional student needs in districts with concentrated poverty.

- When fitting a model to general fund budgets to determine the extent to which the formula actually distributes aid in accordance with student needs, I find that higher poverty districts do not actually receive statistically significantly higher general fund budgets than lower poverty districts. **Statistically, the effective poverty weight in the formula remains no different from "0;"**
- When fitting a model to the legislative post audit projected general fund budgets, I find an effective poverty weight of approximately 30%, far less than the actual poverty weight derived from the statistical model estimated by William Duncombe (of approximately 70%).

In section 3.4, I evaluate the extent to which the state school finance system has closed funding gaps compared to two previous points in time, for the state's largest high need districts – Wichita, Topeka and Kansas City. Specifically, I compare against two previous time points when the school finance system was declared unconstitutional, or wide of any reasonable mark. I also address variations in access to taxable resources across districts. I show that:

- General fund budget to "cost estimate" gaps for districts such as Wichita, Topeka and Kansas City in 2011 (compared to ultra conservative CPI inflated LPA OB estimates) are as large or nearly as large as the funding gaps were between;
    - 2003 general fund budgets and the Augenblick 2001 cost estimates;
    - 2006 general fund budgets and the original Duncombe 2003-04 cost estimates;
- Districts have increasingly relied on local option budgets in recent years, and disparities in local tax effort toward raising LOB's persist as they did at the time the *Montoy* case was dismissed;
- There remain substantial disparities in tax equity and access to resources for capital outlay, exacerbated by the elimination of state aid for capital outlay (2009-10), reverting the system to its state prior to the *Montoy* ruling (January 2005).

In short, if the Augenblick cost study was a "reasonable mark" in 2003 (time of initial trial court ruling), and if the LPA outcome based study was a "reasonable mark" in 2006 (time of dismissal by the Supreme Court), and if the LPA outcome based study remains the relevant "reasonable mark," the Kansas School District Finance Act remains, to this day, wide of any of these reasonable marks.

3.1 Base State Aid per Pupil (BSAPP) over Time

Recall that the Kansas Supreme Court dismissed the *Montoy* case in 2006 on the basis that the Kansas Legislature had adopted the following remedy specifically pertaining to the projected growth in Base State Aid per Pupil, or BSAPP:

> S.B. 549 increases the BSAPP from $4,257 to $4,316 in 2006-07; to $4,374 in 2007-08; and to $4,433 in 2008-09. That amounts to an increase of $101.25 million over the 3 years, and $183.75 million since January 3, 2005. (Monty v. State, No. 92,032, July 28, 2006)

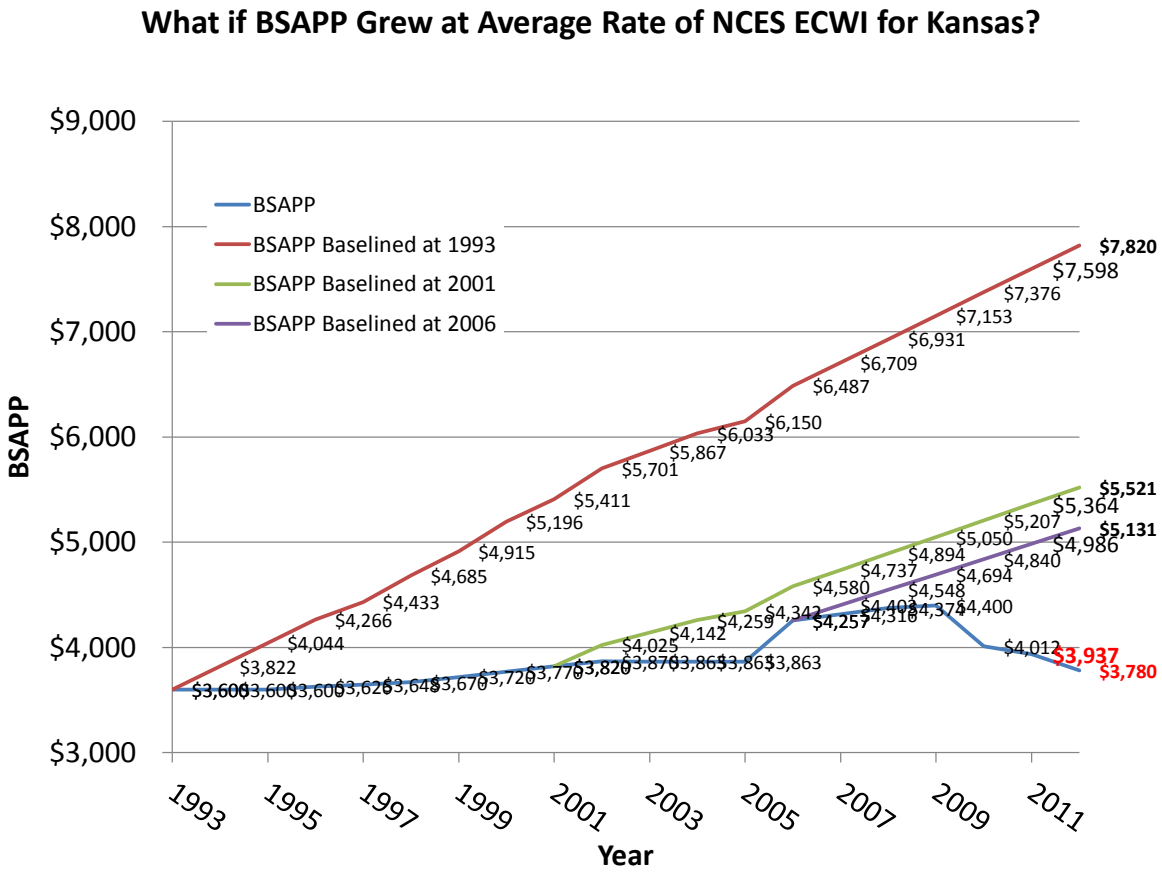
By the current budget year, 2011-12, that base state aid had been effectively reduced to not merely the pre-remedy level of $3,863 but all the way down to $3,780 per weighted pupil. Indeed, weights on various student needs and other factors have been increased over time, making the overall funding reductions somewhat less dramatic, but as will be discussed in the following subsections, those weights also were never scaled up sufficiently to provide equal opportunity for children in high need districts to achieve state outcome standards. Both the base aid per pupil and structure of the overall weighting system remain wide of any reasonable mark.

I begin here with two snapshots of BSAPP over time. In the first, Figure 18 I explore what the BSAPP would have been, had the BSAPP grown at the average rate of education cost inflation estimated for Kansas school districts within the National Center for Education Statistics, Education Comparable Wage Index.[39] This index is more appropriate than a consumer price index for measuring education cost growth because it is based on changes to the competitive wages for teachers (based on the competitive wages of non-teachers in the same labor market), varied across labor markets, rather than merely addressing changes in the price of a loaf of bread or gallon of gas. The index is available from 1997 to 2005, and for illustrative purposes, I have taken the average growth in competitive wages during that period and extended it backwards to 1992 and forwards to 2011.

[39] Taylor, Lori L. and William J. Fowler, "A Comparable Wage Approach to Geographic Cost Adjustment," (Washington DC: National Center for Education Statistics Research and Development Report # 2006-321, 2006).

Taylor, Lori L. and M. Glander, *Documentation for the NCES Comparable Wage Index Data File* (EFSC 2006-865). (U.S. Department of Education. (Washington, DC: National Center for Education Statistics, 2006). http://www.nces.ed.gov/edfin/pdf/2006865.pdf.

Figure 18. Base State Aid per Pupil Actual Compared to Projected Based at Average Competitive Wage Growth

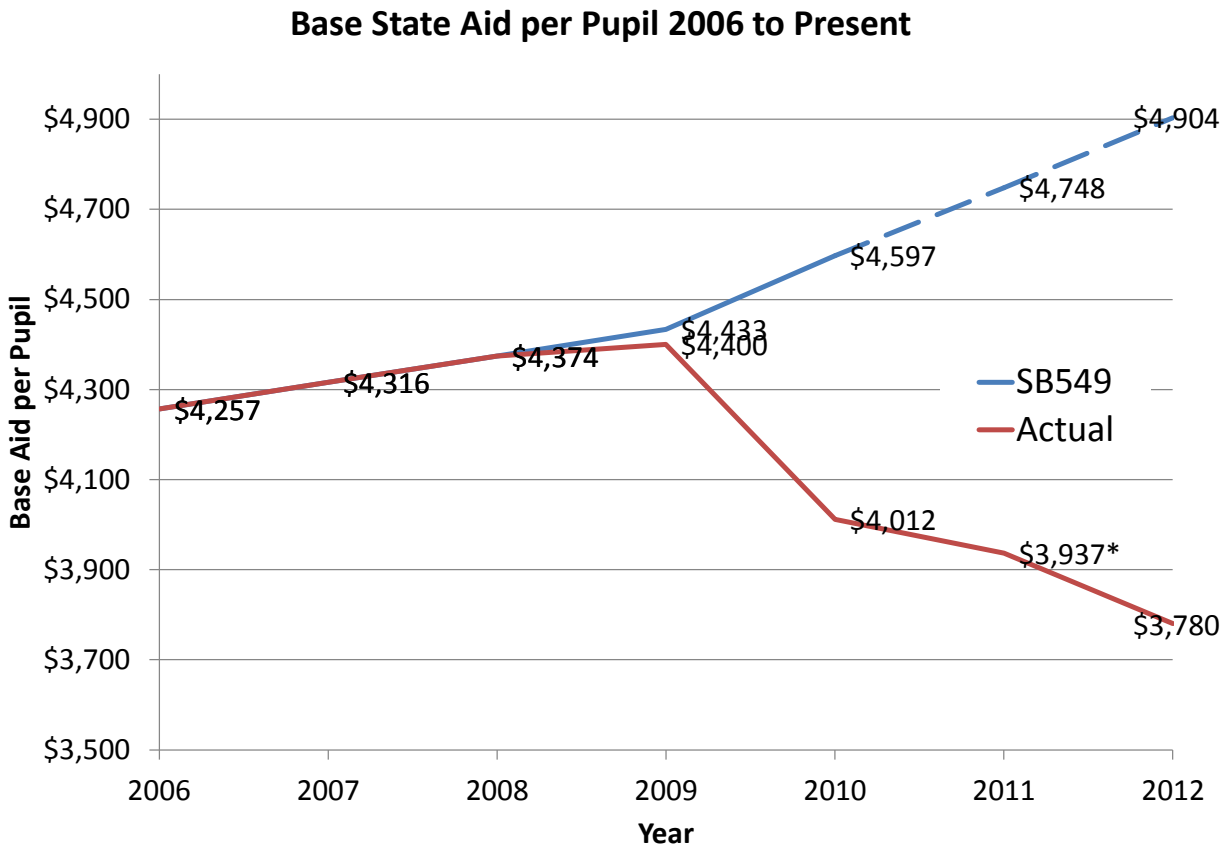


Average NCES ECWI Inflation for Kansas approximateley 4.7% annually

Figure 18 essentially presses the re-start button two times, after the initial start point of 1993. If we assume that $3,600 per pupil was a reasonable mark for BSAPP in 1993, and then inflate that figure by the NCES ECWI average growth rate for the middle of the period, BSAPP would have reached $7,820 by 2011-12. But, BSAPP was, in fact, less than half that amount, sitting at only $3,780.

If we press restart at 2001 and set aside that by that time, BSAPP had already fallen well behind ($5,411 target compared to $3,820 actual), and simply accept the $3,820 figure but inflate it forward to 2011-12, that figure would have grown to $5,521 as opposed to the $40 per pupil cut to $3,780 versus the 2001 foundation of $3,820. Finally, even if we start in 2006, at the time of dismissal, the foundation level of $4,257 would have grown to $5,131. Regardless of restart point, the gap between BSAPP inflated for competitive wage growth and actual BSAPP is substantial, especially following the cuts of the past two years. But, even in the best of times, there exist few moments where BSAPP actually gained ground on appropriately inflated targets.

Figure 19. Base State Aid per Pupil Actual Compared to Base Aid Adopted in Montoy Remedy Legislation (SB 549)



*Calculated from 2010-11 Legal Max (Calculated General Fund excl. Special Ed/WFTE excl Special Ed)

Figure 19 provides a more recent snapshot of BSAPP actual versus BSAPP proposed in SB549, and subsequently inflated beyond 2010 by 3.28% per year, in accordance with figures used by LPA in their projections of costs in subsequent years.[40] Had the legislature followed through with proposed increases to BSAPP, the figure would have reached $4,597 by 2010, and if continually inflated by the CPI-U (albeit the wrong, and understated indicator), BSAPP would have grown to $4,904 by 2012. But, actual BSAPP is only about 77% of that target, or, alternatively 23% short and clearly wide of that mark. Further, it is questionable as to whether that mark is even reasonable given the incorrect choice of inflator.

[40] Scott Frank (LPA) memo to 2010 Commission, Aug. 14, 2008

3.2 Funding Gaps Compared to *Montoy* Remedies

In this subsection, I explore the funding gaps between actual general fund budgets per pupil in the most recent years and projected costs derived from the outcome based study prepared under direction of the Legislative Division of Post Audit. The outcome based cost study from LPA provides a conservative baseline for comparisons for the following reasons:

1. The "out" years (beyond 2007) for LPA OB estimates were inflated based on the Consumer Price Index, which understates significantly growth in costs of maintaining competitive wages for teachers;
2. The initial outcome based estimates are based on students achieving relatively low standards, when measured against national assessments;
3. The outcome based estimates for the out years beyond 2007 are not inflated for increased performance outcome requirements;
4. The outcome based estimates for the out years assume constant student populations based on 2006 data, and therefore don't account for any increases in poverty concentration or limited English language proficiency, which we know to have occurred unevenly across districts;
5. The outcome based formula projections provided by LPA never fully accounted for the student need related costs actually estimated in the Duncombe education cost model, which was intended to guide the outcome based cost estimates;

That said, as a baseline, the advantages of using the LPA outcome based (OB) cost study for analyses herein are two-fold. First, the study served as the basis for the proposed legislative remedies, and the supposed relationship between those remedies and the LPA OB study provided much of the basis for accepting those remedies as a good faith effort toward constitutional compliance. Second, if we assume those LPA OB targets to be a "reasonable mark" AND, if current funding falls wide of that reasonable mark, then current funding clearly falls even wider or more accurate targets.

Regarding the LPA OB study and the remedy legislation, the Supreme Court, in 2006 noted:

> The LPA Cost Study Analysis was commissioned by the legislature in order to assist in determining the actual costs of providing a suitable funding system. The legislature dictated the parameters of the study, the study was conducted by its employees, subject to the legislature's direction and oversight, the study was presented to the legislature early in the 2006 session, and there was an ongoing dialogue between the legislature and LPA concerning the study during the course of the legislative session. (Monty v. State, No. 92,032, July 28, 2006)

That is, the assumption that the Kansas Legislature has made a good faith effort toward making suitable provision for finance of the educational interests of the state hangs largely on the

assumption that the legislature oversaw this study and adopted remedy legislation substantively linked to the study.

That said, the study itself, which includes many parts, is not off limits to additional critique regarding whether the final cost estimates provided, if fully funded, would truly meet the constitutional standard. The study itself, and cost targets were never fully vetted in the context of a trial court. Rather, the fact that a study had been performed, had been appropriately guided by outcome goals, and had sufficiently informed remedy legislation, informed the Supreme Court's final judgment to dismiss the case. Regarding the LPA OB study itself, the court noted.

> The cost study has not been subjected to the fact-finding processes of litigation through which the parties were permitted to examine the validity and accuracy of the study, including the methodology and policy decisions supporting the study, the qualifications of the persons participating in the study, the assumptions underlying the study's conclusions, and the veracity of the underlying data. Although such inquiry is vital to determining the validity of the study's conclusions and the degree of weight to accord the study if offered at trial in the district court, this is an extraordinary appeal and the legislature had the opportunity to analyze the methodology and policy decisions of the LPA Cost Study Analysis, and thus to accept or reject its findings as a factor in determining what is suitable finance for the Kansas school system. (Monty v. State, No. 92,032, July 28, 2006)

While I do not provide extensive critique of this study herein, I note some important issues regarding the application of that report to the current context. Specifically, I address the five points listed above as validation that the most commonly referenced cost estimates from the study are very conservative estimates if not outright underestimates. Further, it is important to understand that there actually exist multiple possible measures and estimates for comparison within the full LPA report.

The relationship between the outcome based cost estimates and current funding is not a simple, straight line between two points. There were, in fact, several steps that occurred in the translation of cost estimates to the remedy legislation. The outcome based cost estimates start with the statistical model estimated by William Duncombe of Syracuse University (Duncombe Cost Estimates), and reported in detail in Appendix C of the original LPA report. The cost model excluded certain expenditure categories and did not propose formula aid specifically. Rather, it provided estimates of general fund expenditures (excluding special education, vocational education and transportation) required for achieving specific outcome targets. Staff at the Division of Post Audit then generated proposed funding allocations to districts adding back in the excluded categories, and including hold harmless provisions to avoid funding reductions (LPA Funding Model). Then, the legislature drafted and ultimately passed remedy legislation (SB 549) based loosely on the LPA funding model, but certainly informed by that model. Finally, there are the actual adopted general fund budgets.

Duncombe Cost Estimates → **LPA Funding Model** → Remedy Legislation → **Adopted General Fund Budgets**

In this subsection, the majority of comparisons are between the LPA funding model (Cost Study Analysis, Appendix 16) with inflated estimates based on that model[41] (Scott Frank Memo August, 2008), and actual adopted General Fund Budgets per pupil.

I focus on General Fund Budgets per pupil because those are the funds that are guaranteed by the formula to be available toward achieving adequate educational outcomes. Supplemental funds are just that, supplemental. Because these additional funds remain optional and subject to local district discretion it would be inappropriate to rely on using or maximizing these funds to merely meet the minimum constitutional obligation. Local boards of education and the populations that elect them should not possess the independent authority – the local option – to deprive their students of a constitutionally adequate education. To assume that local option funds should be counted toward meeting the minimum constitutional obligation is to assume that local boards can be granted statutory authority to violate the constitution.

In the next several figures, I compare General Fund Budgets per Pupil to LPA funding targets by district size, and then by district concentrations of low income children in 2007 and again in 2011. In short, funding gaps have grown and have grown substantially between 2007 and 2011. But, funding gaps were already large, especially for large high need districts in 2007.

[41] Inflation of district level LPA outcome based projections based on yearly inflation rates provided in Scott Frank Memo to 2010 Commission (August 14, 2008), Attachment A. Inflation adjusted only for CPI-U, at 3.71% to 2007-08 and 3.28% thereafter.

Figure 20. General Fund Budgets per Pupil 2007 Compared to Legislative Post Audit Outcome Based Target by District Size

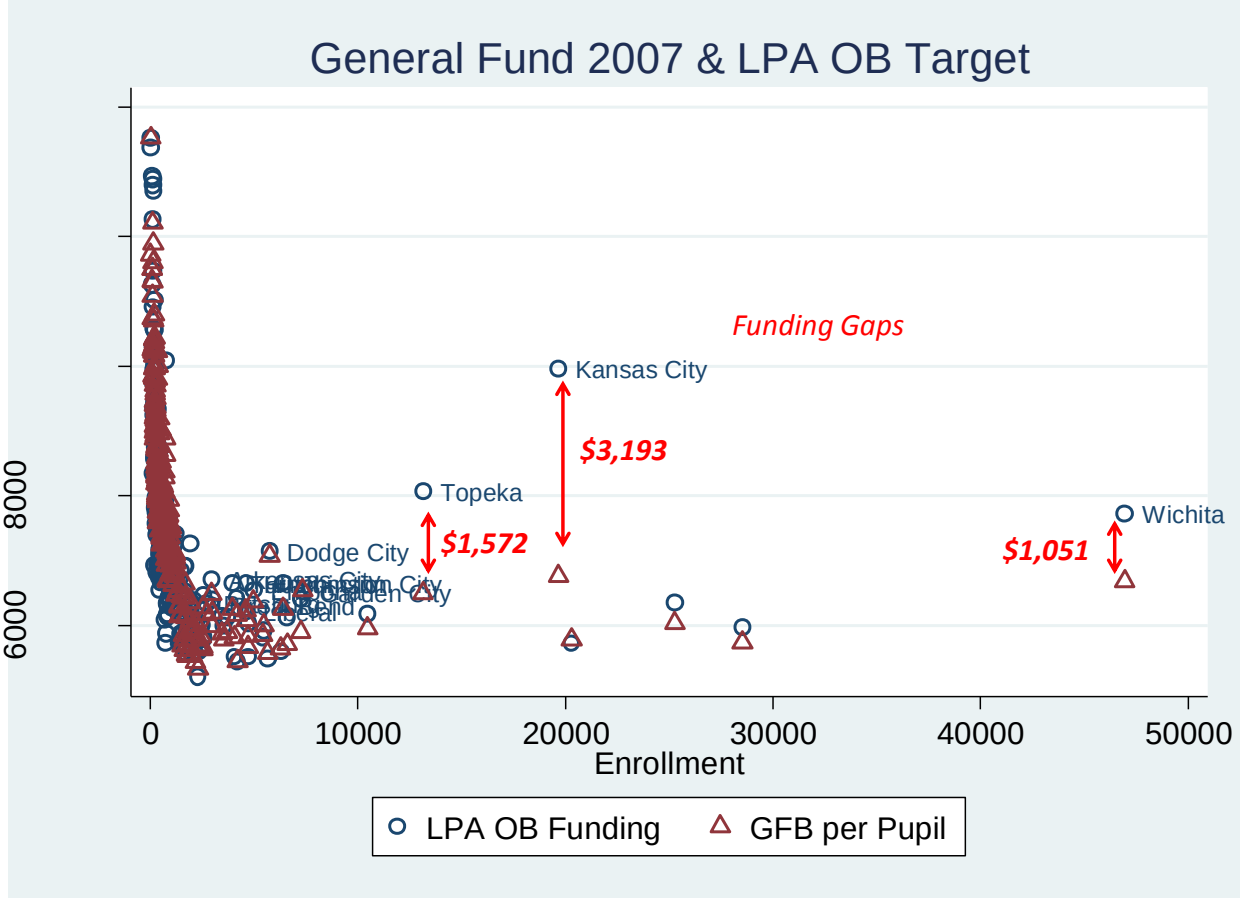


Figure 20 compares general fund budgets per pupil in 2007 to LPA outcome based target funding for 2007, with districts arranged by size. One can see in this figure that among large districts, some remain relatively close to their target funding (Shawnee Mission, Blue Valley and Olathe), while others in 2007 had gaps of greater than $1,000 per pupil between LPA OB budget targets and School District Finance Act General Fund Budgets.

Figure 21. General Fund Budgets per Pupil 2011 Compared to Legislative Post Audit Outcome Based Target by District Size

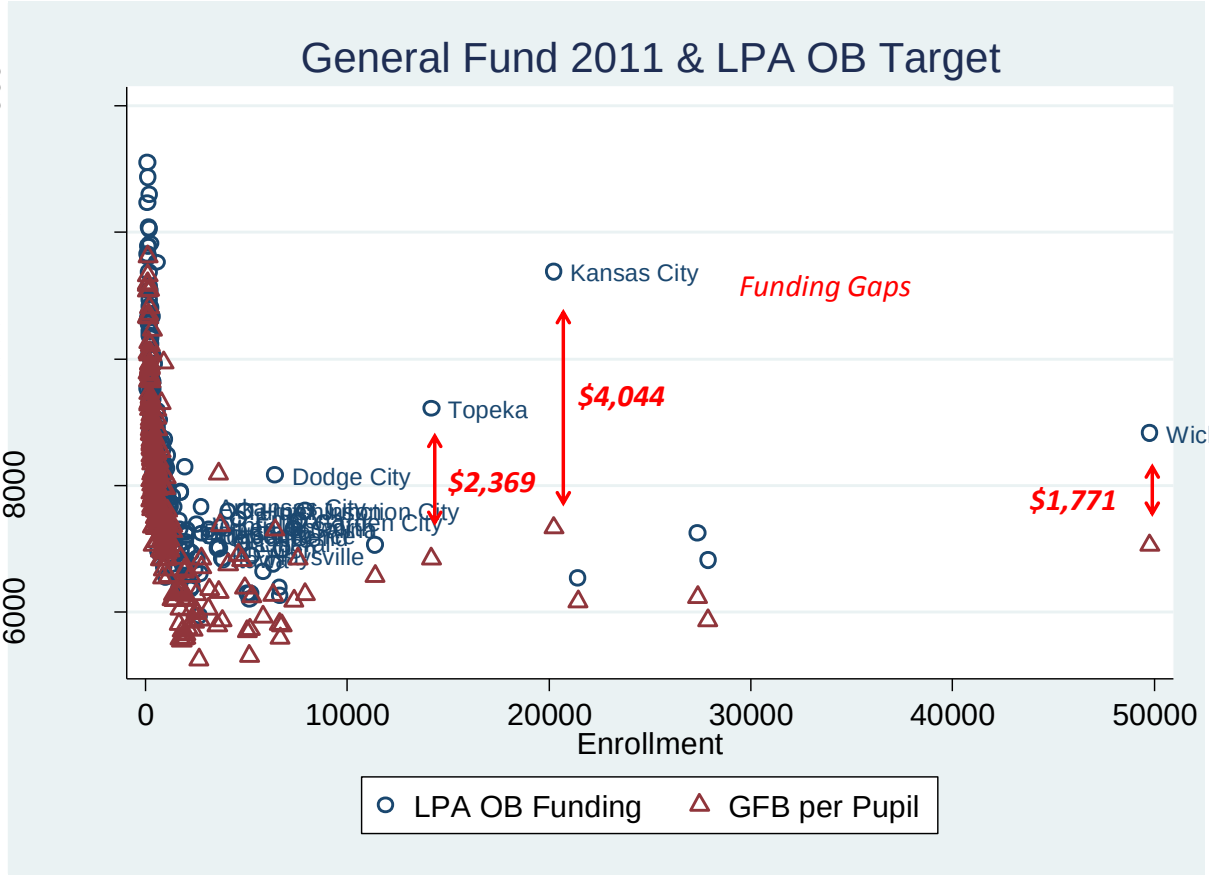


Figure 21 shows between 2007 and 2011, those general fund budget gaps grew quite substantially. Among the three urban centers, general fund budget gaps all exceed $1,500 per pupil, with Kansas City's budget gap exceeding $4,000 per pupil. Further, even for more affluent large districts like those in Johnson County, general fund budget gaps are emerging.

Figure 22. General Fund Budgets per Pupil 2007 Compared to Legislative Post Audit Outcome Based Target by Low Income Shares

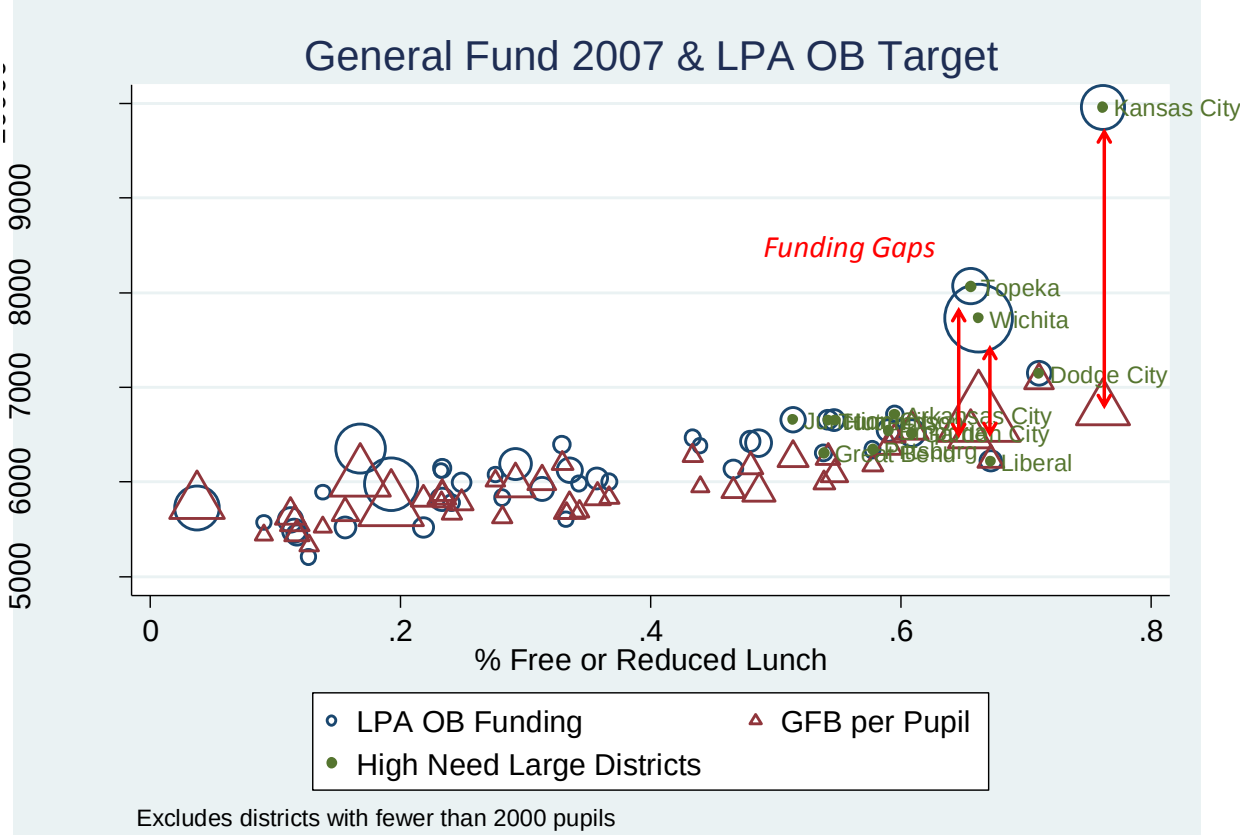


Figure 22 compares LPA OB budget targets and general fund budgets with districts arranged by percentages of children qualifying for free or reduced price lunch. The size of triangles or circles in the pictures indicate the enrollment size of districts. This figure and the next include only larger districts – those with greater than 2,000 pupil, which would not generally experience higher costs due to low enrollment. The funding gaps in Figure 22 are the same magnitude as in Figure 20. What Figure 22 displays is that the overall pattern is that funding gaps increase with district poverty rate. Several Lower poverty districts have general fund budgets near or at their funding target. But most higher poverty districts do not. However, not all are far from their general fund targets in 2007, including high need districts such as Dodge City or Liberal.

Figure 23. General Fund Budgets per Pupil 2011 Compared to Legislative Post Audit Outcome Based Target by Low Income Shares

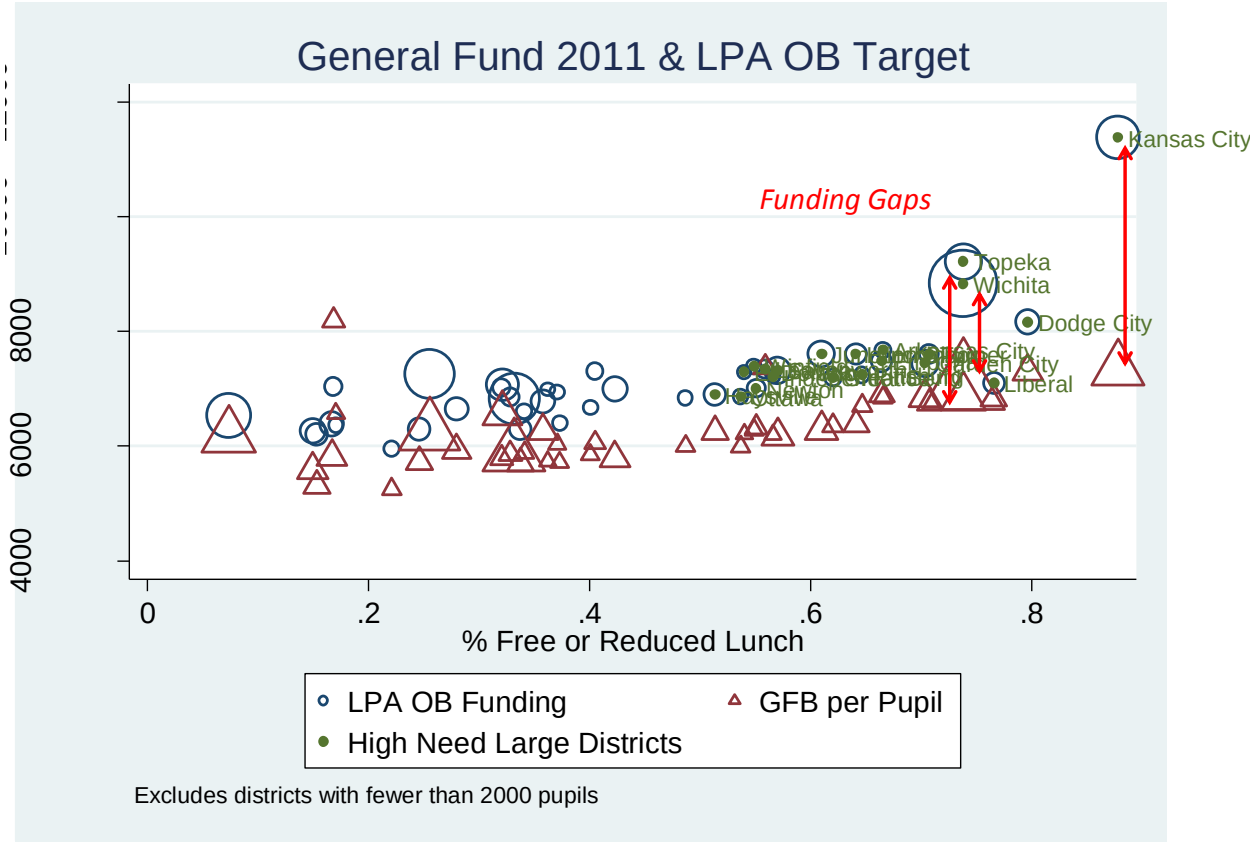


Figure 23 updates the LPA OB budget targets and general fund budgets to 2011, as in Figure 21. By 2011, nearly all districts again fell below their LPA funding targets, with larger gaps for higher poverty districts and particularly large gaps for large high poverty districts.

Figure 24. Gaps between General Fund Budgets 2007 and LPA Outcome Based Targets

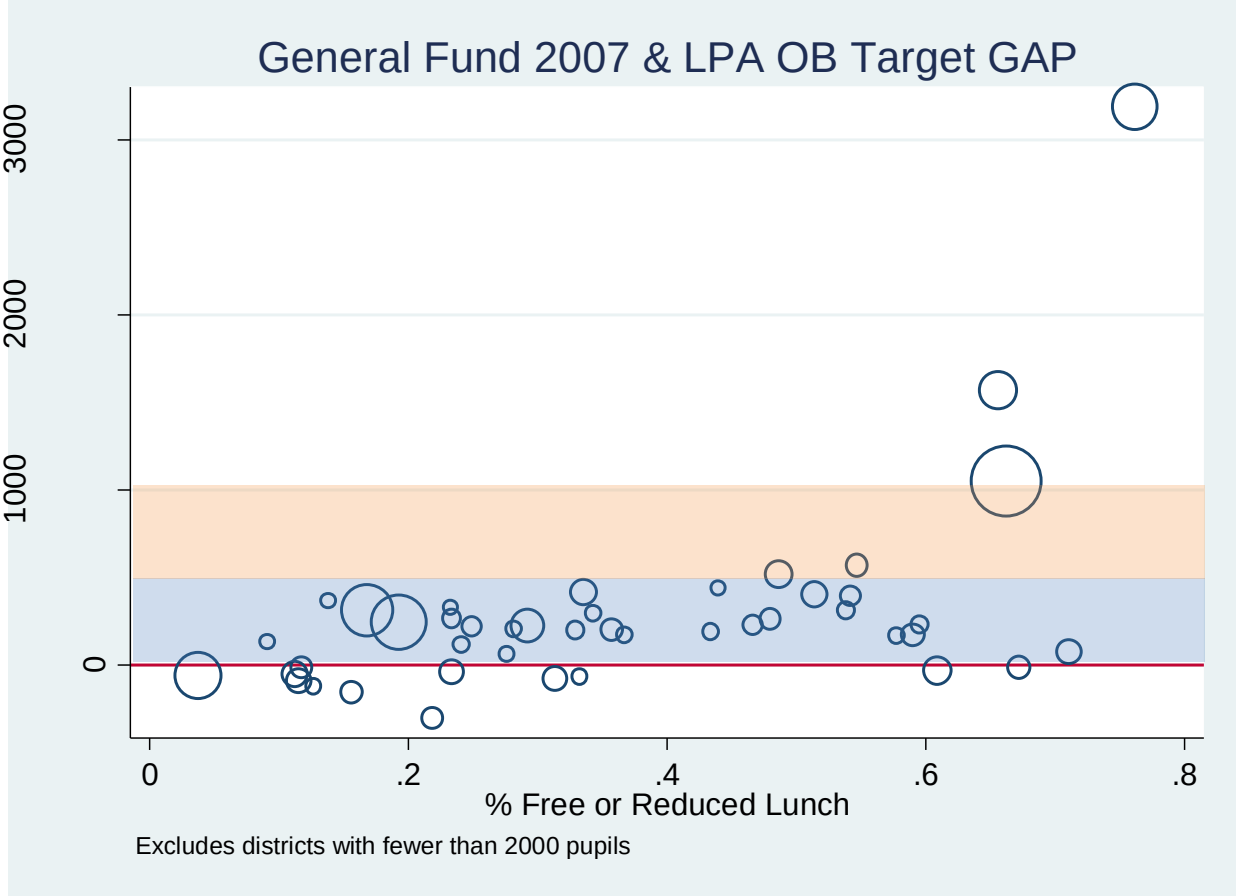


Figure 24 shows the gaps between general fund budgets and LPA outcome based targets for 2007. The largest gaps are those for Wichita, Topeka and Kansas City, all with very high rates of low income children and all with gaps greater than $1,000 per pupil. Most other gaps among districts with 2,000 or more pupils fall between $0 and $500 per pupil, in the blue shaded range.

Figure 25. Gaps between General Fund Budgets 2011 and LPA Outcome Based Targets

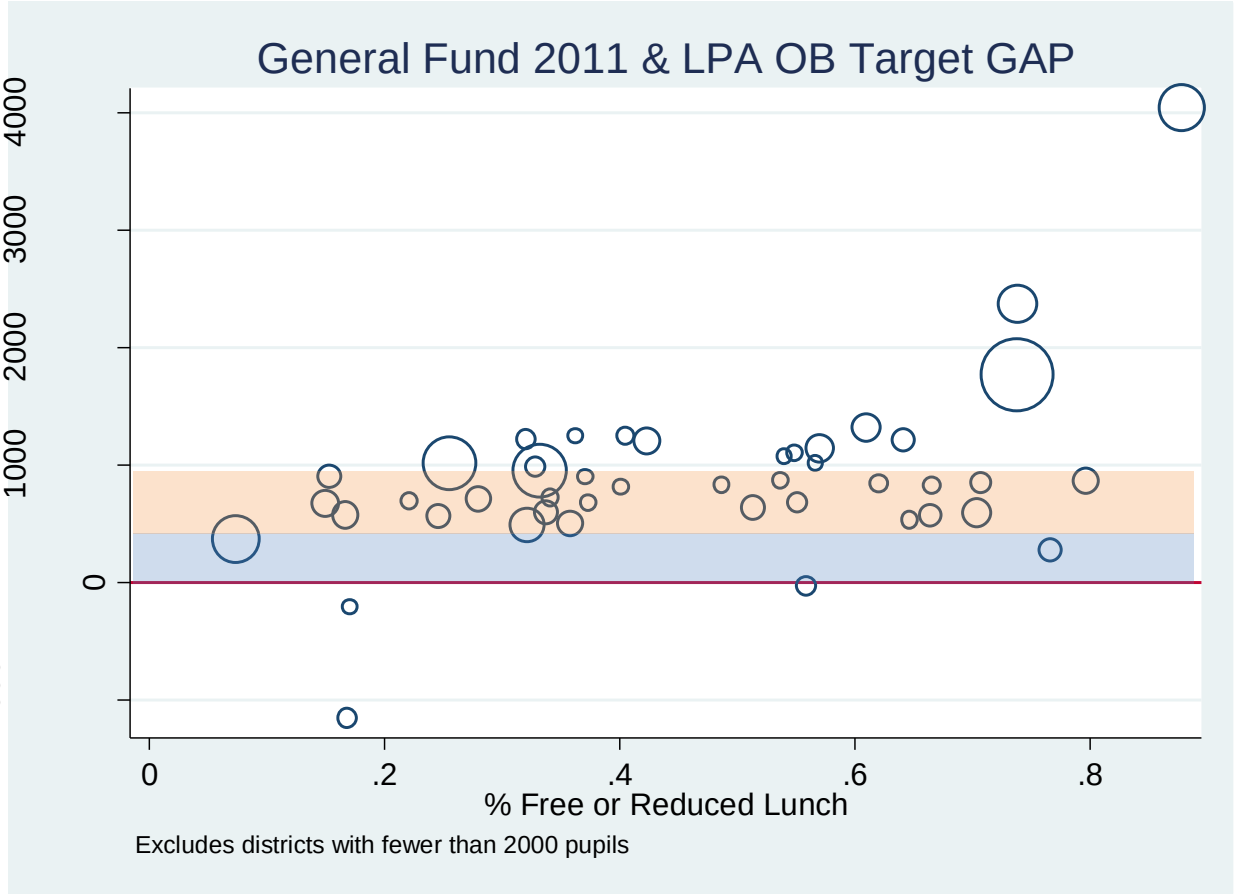
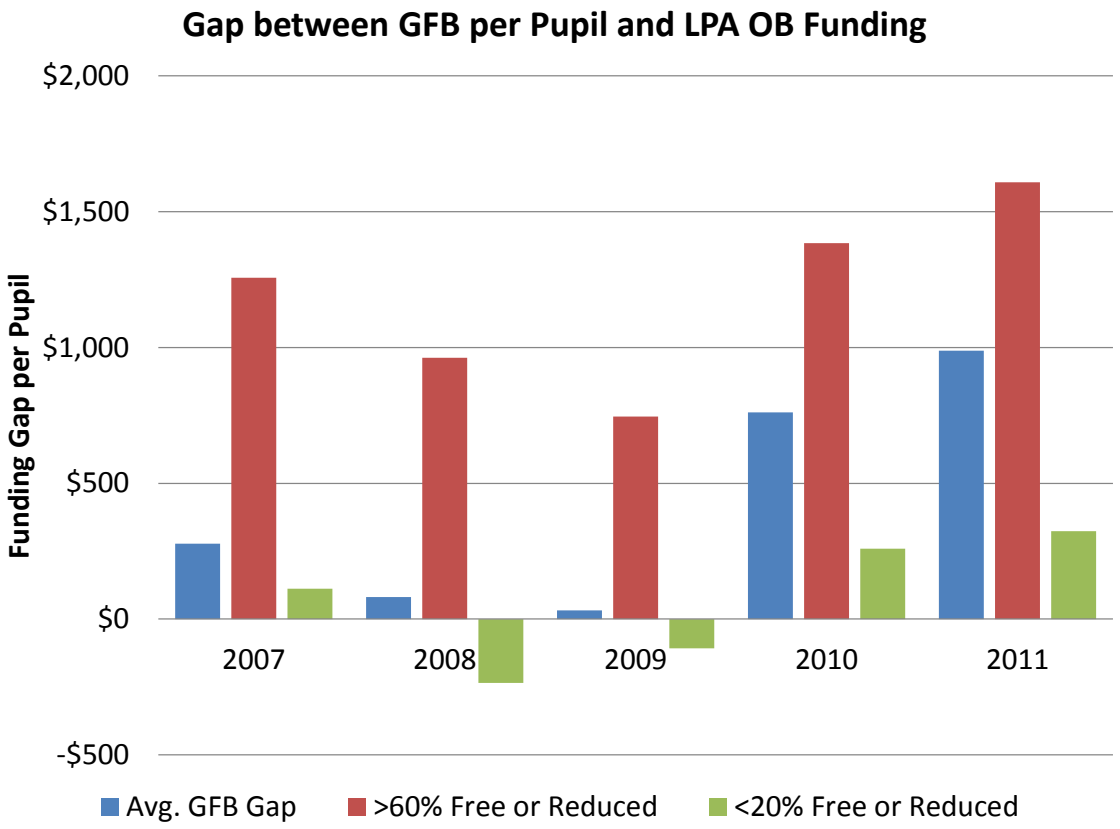


Figure 25 shows the gaps in 2011. By 2011, the typical funding gap was between $500 and $1,000 per pupil (in the orange shaded area), with funding gaps in large high need districts reaching over $4,000 per pupil.

Figure 26. Average Gaps between General Fund Budgets and LPA Outcome Based Targets



Taking the average funding gaps for all and then for low and high poverty districts in Figure 26 we see the differences in average gaps and differential effects of recent funding cuts. Across all districts the GFB to LPA OB funding gap was between $200 and $300 per pupil in 2007. That gap was essentially erased by 2009. But, by 2011, that gap had grown to about $1,000 per pupil. For low poverty districts, the gap was small to begin with, was then erased, but has risen to about $300 per pupil since, not including the very large cuts for 2011-12. For high poverty districts the gaps were never erased, staying between $500 and $1000 per pupil even in the best year. Since 2009, the gaps have increased to an average of over $1,500 per pupil.

3.3 Student Need Adjustment Compared to Cost Estimates

Here, I explore the extent to which the student need adjustments adopted in the School District Finance Act provide sufficient support to high need districts, or for that matter, provide any appreciable, predictable, systematic support to higher need districts. Recall that the national school funding fairness report card found that in Kansas' best year for school funding, the

distribution of state and local revenues per pupil with respect to poverty was flat. That is, there was no discernable funding effort being directed to higher poverty districts despite the presence of weights to accomplish as much, and despite the increases in those weights between 2007 and 2009.

Table 3 applies a method comparable to that used in the school funding fairness report for determining the extent to which funding is related to various cost and need factors. In table 3, I focus on:

1. LPA OB funding targets as a baseline for "what should be;"
2. General fund budgets per pupil assumed to reflect the full emphasis of formula need and cost weight;
3. General and supplemental fund budgets per pupil, which may reflect any erosion to need and cost adjustment created by local option budgets.

Table 3 specifically provides the statistical regression model estimates of the extent to which these funding measures are related to various cost factors, where the model includes a) a measure of variation in regional competitive wages (NCES Comparable Wage Index, averaged over all years and centered around the mean for Kansas), b) school district size categories representing economies of scale effects, c) and the percent of children who qualify for free or reduced price lunch.

Table 3. Statistical (Regression) Model of the Structure of Actual General Fund Allocations vs. Remedy Legislation

	LPA Formula Estimate for 2011-12			**GFB per Pupil 2011**			**GFB & Lob per Pupil 2011**		
Formula Factor	*Coef.*	*Std.Err.*		*Coef.*	*Std.Err.*		*Coef.*	*Std.Err.*	
Effective Free & Reduced Weight	**$2,035**	**379.96**	*	**$539**	**556.28**		**$240**	**758.25**	
Regional Wage Adjustment	-$177	654.92		-$981	958.84		-$1,319	1306.96	
Enrollment Size									
Under 100	$5,856	390.84	*	$6,350	572.22	*	$8,294	779.97	*
100 to 299	$3,204	189.36	*	$3,101	277.23	*	$3,858	377.88	*
300 to 499	$1,595	188.39	*	$2,061	275.81	*	$2,587	375.95	*
500 to 899	$985	176.02	*	$1,407	257.70	*	$1,706	351.27	*
900 to 1499	$380	209.53	**	$772	306.77	*	$1,026	418.14	*
1500 to 1999	-$29	249.93		-$225	365.92		-$294	498.77	
Intercept	$6,657	781.86	*	$7,104	1144.69	*	$9,618	1560.28	*
R-squared [Predictability]	0.71			0.53			0.50		
Effective At Risk Weight over Minimum [1]	**30.6%**			**7.6%**			**2.5%**		

*p<.05, **p<.10

[1] Calculated by dividing At Risk coefficient by Effective Base

Table 3 shows that on average, the LPA OB model would require approximately $2,000 per pupil more in general fund budgets for a district that is 100% free or reduced lunch students versus a district with 0% free or reduced lunch. This pattern of increased LPA OB funding with

increased student low income count is systematic and highly statistically significant. Under the LPA OB model, districts with higher concentrations of low income children require more general funding. The district that is in an average cost labor market (regional adjustment of 1.0), has 0% free or reduced lunch students and enrolls over 2,000 students is estimated to require $6,657 per pupil in general funding. Interestingly, even the LPA OB model shows no relationship to regional wage variation. That is, even under the outcome based target funding districts in higher wage labor markets would not receive systematically more resources per pupil. Small districts would continue to receive substantially more resources, with an additional $5,800 per pupil in the smallest districts, and an additional $3,200 per pupil in the next smallest category.

When modeling actual general fund budgets per pupil, we get a surprising result. Despite the presence of weights on low income students and on limited English proficient children, there still, in 2011 exists no predictable relationship between shares of children qualified for free and reduced lunch and general fund budgets per pupil. Districts with higher concentrations of children qualified for free or reduced price lunch receive no statistically significant additional support in general fund budgets. That support is entirely washed away by other provisions in the general fund weighting scheme. Further, in the general fund weighting scheme, the smallest districts end up with greater adjustment than warranted by the LPA OB model, as do districts in the middle ranges of small size. And, the effective base is higher because the lowest poverty districts are the ones receiving unwarranted adjustments including adjustments to their local authority for such things as declining enrollment and high housing prices.

Turning to the model including supplemental fund budgets, we see that the "poverty effect" per se is diminished even further. And the small district adjustment is magnified even further and further out of line with even the LPA OB estimates (which include hold harmless provisions at their outset).

The LPA OB Reasonable Mark Understates actual Needs

Table 3 assumes the LPA OB estimates to represent a reasonable mark, and throughout this report, I generally accept the LPA OB estimates as the currently adopted "reasonable mark," but acknowledge as the court noted in most recent ruling in the matter, that this reasonable mark has not been vetted at trial. As such it is worth pointing out that this reasonable mark actually understates additional student needs with respect to low income concentrations. Table 3 above finds that under the 2011 projections of the LPA OB model, a district with 100% children qualified for free or reduced price lunch would receive on average, about 31% more funding than a district with 0% low income children. That is, the effective low income weight in the model provides for 31% additional funding over MINIMUM funding, for the child qualified for free or reduced price lunch. This is a modest to low overall adjustment.

Published research on cost and need adjustments, and William Duncombe's original cost model of Kansas school districts point to generally higher need and cost weights. The work of William Duncombe and John Yinger, in their article *How Much More Does a Disadvantaged Student Cost?*[42] provides the most direct estimates of the additional costs of achieving common outcomes for children in poverty - using alternative poverty measures - and children with limited English language proficiency. This article has provided the basis for other published research evaluating the relative costs of serving children with varied needs and research estimating funding gaps.[43] Existing research suggests that weights to adjust for cost differences vary across states and settings. Differences in weights from different settings appear to be a function of differences in the regional distributions of families in poverty, with weight estimates for children in poverty (qualifying for subsidized lunch) at around 70 to 80% in plains states and closer to 100% in New York.[44]

Table 4 provides a summary of weights from related cost function studies by William Duncombe, and with John Yinger of Syracuse University. Duncombe and Yinger estimated alternative weights for New York State districts in their article mentioned above, finding a weight of approximately 150% additional cost (2.5 times) over the average cost in order to close outcome gaps. This weight falls around 100% when estimated using a higher income threshold for poverty – children qualifying for free or reduced price lunch. In Kansas and Nebraska, where income distributions are a) on average lower in overall level, and b) have less exaggerated extremes than in northeastern states, low income adjustments have tended to be lower than those estimate for New York State, but still higher than those generated by LPA in its simulation purportedly based on the Duncombe model.

In both Nebraska and Kansas the reported low income student cost adjustments far exceed the effective weight in the LPA OB Model. Further, these higher adjustments are expressed with respect to "average" costs not minimum costs, as in Table 3. That is, the adjustments indicate the need for an additional 70% funding over average costs, not merely a 31% adjustment over minimum costs. Notably, these adjustments in each case do vary by district type, with larger urban districts having greater population density and child poverty concentration requiring higher weighting. While LPA did build this consideration into their model, the model falls short in this respect.

[42] Duncombe, William D. and John M. Yinger, "How Much More Does a Disadvantages Student Cost?" *Economics of Education Review* 24, no. 5 (October 2005): 513-532.

[43] Bifulco, "District-Level Black-White Funding Disparities in the United States."

[44] Bruce D. Baker, Lori L. Taylor, and Arnold. Vedlitz, "Adequacy Estimates and the Implications of Common Standards for the Cost of Instruction." (Washington, DC: *National Research Council*, 2008).

Table 4. Additional Costs Associated with At Risk Populations: Findings from Cost Model Analyses

Study	Location	Poverty Basis	Additional Cost	Relative to (Base $)
How much more does a disadvantaged student cost?[45] (2005)	New York State	Census Poverty	1.5 above or 2.5 X	Average Cost (non-poor)
How much more does a disadvantaged student cost? (2005)	New York State	Free or Reduced Lunch	1.0 above or 2.0 X	Average Cost (non-poor)
Kansas Legislative Division of Post Audit (2006)[46]	Kansas	Free Lunch	Median = .70 Max = 1.15 Min = .65	Average Cost (non-poor)
Plaintiffs in Douglas County v. Heineman[47]	Nebraska	Free or Reduced Lunch	Median = .78 Max = .97 Min = .71	Average Cost (non-poor)

In an independent review of education cost studies prepared for the National Research Council, I along with Lori Taylor and Arnold Vedlitz of Texas A&M also generally found need adjustments to exceed the effective adjustment of the LPA OB model (no less greater than the non-existent effective adjustments of the actual funding formula). Across several studies applying both input and outcome oriented methods we found few as low as 30%, and the majority between 60% and 150% additional cost with respect to Census Poverty rates. Among outcome based studies, we found weights with respect to Census Poverty rates to range from .8 to 1.67, with two exceptions (among the 8 estimates), where the exceptions are explained by unique circumstances of data.[48] Specifically, cost studies evaluated for Kansas and Missouri each produced effective weights over .8 but under 1.0 (see Table 2, p. 14).

[45] Duncombe, William D. and John M. Yinger, "How Much More Does a Disadvantages Student Cost?" *Economics of Education Review* 24, no. 5 (October 2005): 513-532.

[46] Weights as reported in Duncombe's Appendix C to the original LPA report.

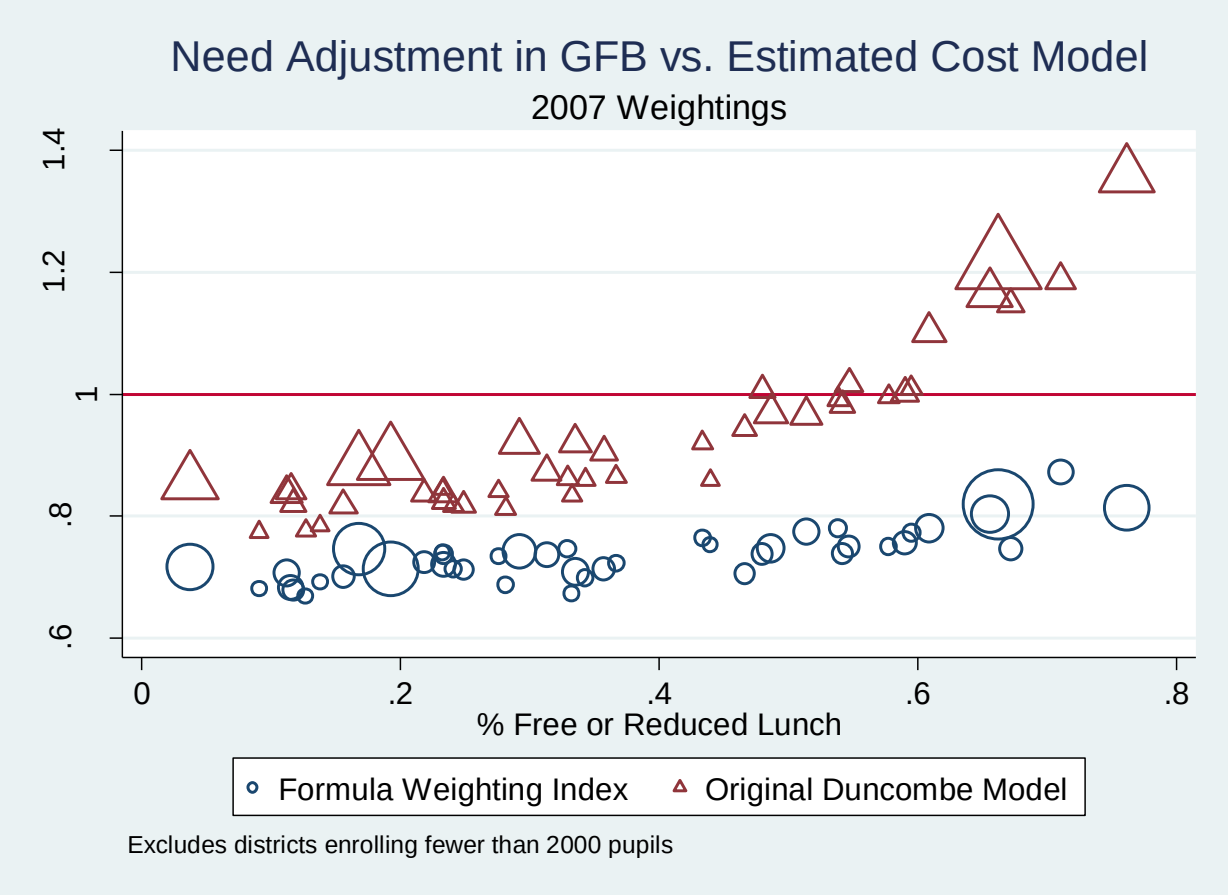
[47] Data provided by William Duncombe, and available on request.

[48] Rhode Island estimates, which were marginally lower, were based on a cost model applied to school level data, unlike other district level estimates, and applying a method called Stochastic Frontier estimation to account for variations in efficiency. One of two Texas models also applied stochastic frontier estimation and generated lower poverty weights, but we suspect that the lower poverty weights in this model may occur for a variety of reasons, including the fact that using free or reduced price lunch counts in the model as the basis for identifying student need in Texas is problematic, since the majority of students in Texas qualify. That is, the need weight in the Texas model is softened by the fact that so many students statewide qualify, which lessens measured variations in need across settings. More discussion is provided in the full NRC paper. Bruce D. Baker, Lori L. Taylor, and Arnold.

The following two figures convert the current School District Finance Formula into an index of the weight applied in that formula, and compares that weight to the original Duncombe cost index weights. I convert the current formula to an index by first dividing total Weighted FTE Pupils by the actual headcount enrollment for each district. Then, I re-center this weighted pupil index around a statewide average of 1.0. The Duncombe index is similarly centered around a statewide average of 1.0. So, in this case, I am comparing the original Duncombe need estimates with the formula weights.

Duncombe Cost Estimate Weights → LPA Funding Model Weights → Remedy Legislation Weights → **Adopted General Fund Budget Weights**

Figure 27. Student Need Adjustment in Funding Formula 2007 vs. Need Adjustment in Original Outcome Based Model



Vedlitz, "Adequacy Estimates and the Implications of Common Standards for the Cost of Instruction." (Washington, DC: *National Research Council*, 2008).

Figure 27 evaluates the need adjustment for districts enrolling greater than 2,000 pupils with respect to shares of children qualifying for free or reduced priced lunch in 2007. The horizontal red line at 1.0 indicates the average total need/cost adjustment. Under the 2007 general fund formula, no larger district had total need/cost adjustment above average. According to the funding formula, all of the above average need/cost weighting districts were small, low enrollment districts. Under the Duncombe model, a handful of the highest need large districts did have cost index values exceeding the statewide average. Overall, the Duncombe model was far more sensitive to needs and costs than the general fund weighting scheme in 2007.

Figure 28. Student Need Adjustment in Funding Formula 2011 vs. Need Adjustment in Original Outcome Based Model

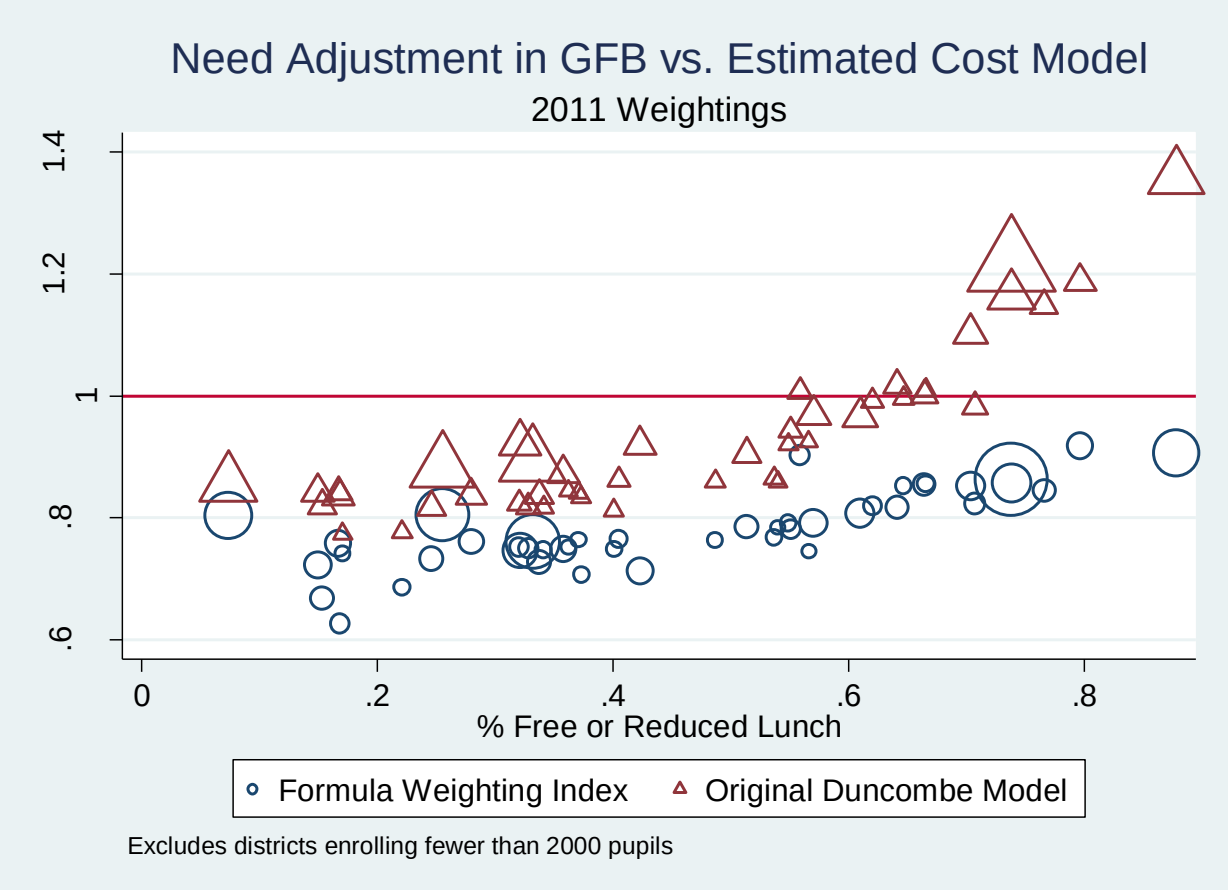


Figure 28 shows the Duncombe need/cost index values compared to the 2011 general fund formula weighting scheme. Note that by 2011, the general fund weighting scheme had been fully scaled up. From 2008 to 2011, base funding was cut from the formula but not the weightings themselves. Cutting base funding does result in larger per pupil cuts in funding from districts receiving more weighting, but in theory, doesn't disturb the implicit need index

distribution. But, in Figure 28, the implicit need distribution of the general fund weighting scheme falls well short of the actual need distribution from the original Duncombe Model. As a ballpark estimate, the Duncombe model suggest that the highest need district requires an index of about 1.4 compared to the lowest districts between .6 and .8, or an effective total weight of 1.75 (1.4/.8) to 2.33 (1.4/.6). By contrast the general fund weighting scheme actually maxes out around .9 for the highest need district, for an effective (though non-significant) total weight of 1.125 (.9/.8) to 1.5 (.9/.6). The gap in weighting between estimated need according to the original outcome based model, and the implicit need built into the formula remains very large.

Perhaps most importantly, given recent demographic shifts in Kansas, and given the need to rethink the rigor of Kansas outcome standards, updated analyses of outcome based costs are warranted.

Contributing Factors to Irrationality

How does a funding formula that emerged from litigation and was in theory built on reasonable analyses of the costs of achieving state mandated outcome goals, end up still falling wide of any reasonable mark with respect to student needs? Kansas legislators have a long and storied history of embedding and codifying past disparities into new policies, from initial adoption of SDF-QPA in the early 1990s, when funding differences between very small and larger districts were based on prior spending behavior, to the later 1990s, when fast-growing affluent suburban districts were rewarded with additional funding and then additional budget authority, to more recent times, when aging but affluent suburbs were granted additional taxing authority to account for their declining enrollments and when the state's most affluent districts successfully pleaded their case that it costs more to hire and retain teachers in districts with higher priced houses. The history of these policies is well documented in my prior published work.[49]

Five years after the Montoy case dismissal, the weighting scheme of the School District Finance Act continues to contain several elements that either do not advance suitability by providing more funding where needed, or work in direct contradiction to this goal. A simple test

[49] Baker, B.D., Imber, M. (1999) "Rational Educational Explanation" or Politics as Usual? Evaluating the Outcome of Educational Finance Litigation in Kansas. *Journal of Education Finance* 25 (1) 121-139

Baker, B.D., Green, P.C. (2005) Tricks of the Trade: Legislative Actions in School Finance that Disadvantage Minorities in the Post-Brown Era American Journal of Education 111 (May) 372-413

Baker, B.D., Green, P.C., (2009) Separate and Unequal by Design: What's the Matter with the Rising State Role in Kansas? The Rising State in Education. Bruce S. Cooper, Lance Fusarelli, Bonnie Fusarelli, Editors. State University of New York Press.

of this effect is to calculate the relationship between a) the effects of an individual weight on general fund budgets and b) district concentrations of free or reduced price lunch children. Indeed it is reasonable to assume that not every rational weight would drive more money to higher poverty districts. But, weights that drive funding in inverse relation to low income student shares are highly suspect, especially where low income weights themselves are insufficient.

Table 4 displays the correlations between the weighing effect of several weights, and shares of low income children. A weighting effect is determined by taking the WFTE for the specific factor and dividing by unweighted actual FTE enrollment. That is, by what percent does this particular weight increase overall weighting, thus, general funding, for each district?

The role of special education funding is non-trivial. It is among the bigger factors in the formula, generating an average weighting effect around 20%. That weighting effect is flat with respect to low income children concentrations. This would not be problematic if it was also the case that children with disabilities were distributed flatly with respect to low income concentrations. But they are not. Based on rates of children on individualized educational programs in the National Center for Education Statistics Common Core of data 2009-2010, there exists a positive correlation between low income students and IEP rates (+.38). That is, higher poverty districts tend to have higher concentrations of children on IEPs. As such, one would expect special education aid to be distributed positively with respect to poverty, if allocated in accordance with student needs across districts. But it is not.[50]

Similarly, the non-proficient weighting, a weighing allocated to non-low-income children who perform poorly on state assessments, is not related to poverty. One might expect this, because it is explicitly not based on poverty. Further, the weight is small, so its effect is relatively small. But, the weight is simply illogical, not because it doesn't make sense to attempt to provide additional support where students are performing poorly, but rather because it makes little sense to construct a funding scheme that would result in removal of that funding at the point where children begin performing better.

Presumably, children would begin performing better as a result of programs and services implemented with the additional funding. If those programs and services are effective, why then, would the logical policy response be to remove the funding once they have had some effect? The reality is that the additional funding is not needed as a function of prior failure (hence removed when failure is remediated), but rather as a function of the background conditions that are associated with the failure (such as poverty, mobility and language barriers). This weight, while small, and at least not regressive, is simply illogical.

[50] For additional discussion of special education funding and student populations, see:

Baker, B.D., Ramsey, M.J. (2010) What we don't know can't hurt us? Evaluating the equity consequences of the assumption of uniform distribution of needs in Census Based special education funding. Journal of Education Finance 35 (3) 245-275

The more offensive, and regressive weightings still within the formula include the substantial adjustments for new facilities and the less substantial but simply wrong (conceptually and empirically) adjustment for cost of living variations. Table 4 shows that each of these adjustments is statistically regressive, driving more money into districts with lower concentrations of low income children. The smaller declining enrollment taxing authority provision does the same to a lesser degree.

There has never been sufficient justification for providing a) substantial additional student weighting and b) substantial additional local budget authority on top of that weighting, into district general operating budgets, for districts with larger shares of children attending new school facilities. This is among the persistently most regressive features of the Kansas School finance formula, and has in many years yielded cumulative weighting for affluent suburban districts that exceeds cumulative student need weighting in neighboring poor urban districts. Operating costs of new school facilities, due to improvements to HVAC systems, insulation, mechanical systems and other upkeep and maintenance are generally much lower, not higher than those of older school facilities. Further, staffing costs in new school facilities in expanding districts may, in many cases, be more easily optimized than in schools and districts facing persistent organizational constraints (small size and sparsity), and districts with much older classrooms other spaces and infrastructure ill-configured to meet current curricular demands. In simple, blunt terms, the new facilities and ancillary new facilities adjustments are both baseless and regressive.

Table 4. Formula Factors Contributing to Irrationality of General Fund

Factor	Correlation with % Free or Reduced
Special Education Aid Distribution	0.0248 [1]
Declining Enrollment WFTE Authority	-0.1540*
COLA WFTE Authority	-0.5247*
Ancillary WFTE Authority	-0.5292*
New Facilities Weight	-0.3010*
Non-Proficient Weight	0.1024

*p<.05
[1] Correlation between special education population concentration and % free lunch (NCES Common Core 2009-10) is +.38 and statistically significant.
Note: All correlations weighted for district enrollment

Though a smaller effect on the system as a whole, but even more offensive on its face, is the local budget authority adjustment for districts with the highest priced housing, articulated originally as needed for those districts to recruit and retain teachers. The Kansas Supreme Court itself stayed this provision in 2005 but had to let it go upon dismissal in 2006. The court rightly

acknowledged the absurdity of this provision. Regarding the Cost of Living Adjustment, the Kansas High Court noted on June 3, 2005:

> H.B. 2247 authorizes a new local property tax levy for cost-of-living weighting. As originally enacted, the purpose of this weighting was to "finance teacher salary enhancements." H.B. 2247, sec. 19. In S.B. 43, sec. 12, the legislature removed this limiting provision and no purpose for the additional funding is now stated in the law. This weighting is available in those districts where the average appraised value of a single-family residence exceeds 125 percent of the state average, as long as the district has already adopted the maximum LOB. This is estimated to amount to a total funding increase of $24.6 million for the 17 districts that would currently qualify.
>
> This provision, the State asserts, is necessary to allow districts with high housing costs to recruit and retain high-quality teachers and is based on the actual costs of providing an education in those 17 districts that would qualify. Counsel for the State could not substantiate, when asked at oral arguments, its rationale that those 17 districts pay higher salaries or would pay higher salaries to teachers or that higher education costs are linked to housing prices. Further, as the plaintiffs noted, the evidence at trial demonstrated that it is the districts with high-poverty, high at-risk student populations that need additional help in attracting and retaining good teachers.
>
> Furthermore, we note that this weighting, like the increase in the LOB cap, demonstrates the State is not meeting its obligation to provide suitable financing. Also, as with the other property-tax based provisions of H.B. 2247 there is a potentially disequalizing effect. Moreover, since the original reason given for the enhancement, teacher salary increases, has been removed from the legislation, the funds generated can be used for any purpose.

And again, on July 28, 2006:

> We held that the new cost-of-living property tax provision was not based on any evidence that there was any link between high housing costs and higher education costs or that the 17 districts that would benefit from the provision pay higher teacher salaries. We noted that the evidence at trial demonstrated the opposite–that the districts with high-poverty, high at-risk student populations are the ones that need help attracting and retaining teachers. 279 Kan. at 835.

Further, a primary factor creating the disparities in housing costs which, in turn led to the inequitable Cost of Living Adjustment, is the history of well-orchestrated racial segregation of Kansas' residential housing.[51] That is, housing values in the Kansas City metropolitan area in particular have been substantially distorted by racially restrictive covenants and racially discriminatory real estate practices for decades, leading to sharp home value differentials between housing in minority versus predominantly white school districts.

[51] Kevin Fox Gotham (2000) Urban Space, Restrictive Covenants and the Origins of Racial Residential Segregation in a U.S. City, 1900 – 50. *International Journal of Urban and Regional Research* 24 (3) 616 – 633.

When adopting the Cost of Living Adjustment, Kansas legislators were sufficiently aware of these issues, because they were confronted concurrently with news media coverage and proposed legislation striking racial restrictions that remained in residential property deeds in the Kansas City metropolitan area. In fact, Kansas legislators vocally supporting the Cost of Living Adjustment, and representing neighborhoods that had been racially restricted actually spoke out against legislation striking racial restrictions in deeds, suggesting that the racial restrictions should be dealt with by local homeowners associations if they felt it worthwhile.[52]

Plain common sense, as well as a sizeable body of empirical research,[53] dictates that it is simply wrong to selectively provide the opportunity for supplemental funding for teacher recruitment and retention to predominantly white, high housing price school districts which lie adjacent to poorer, predominantly minority neighbors in the same labor market. Further, plain common sense dictates that basing such a policy on a measure knowingly tied to a history of state endorsed racial segregation is simply wrong.

3.4 Still Wide of a Reasonable Mark

Table 5 summarizes the position of the state's 3 largest high need urban districts at 3 key points in time:

Time 1: 2003 on the eve of the district court ruling in Montoy v. Kansas

Time 2: 2006 on the eve of the Supreme Court dismissal of Montoy v. Kansas

Time 3: 2011, or the most recent year for which general fund budget data were available at the time of this report.

[52] Johnson County Senator John Vratil of Leawood openly supported the COLA back in 2005, noting: "Clearly, it costs more to live in certain counties of the state… therefore, it is a logical conclusion, an *irrefutable* conclusion, that it costs more to provide an education in those areas." (Pitch Weekly, April 14, 2005). Around the same time, the Senator also declared in the Kansas City Star that the Kansas legislature should take no position on the remaining language of racially restrictive covenants in Johnson County deeds, explaining: "It's a local issue, and a homes association issue." "It's a question of, is it offensive enough that you're willing to pay $50 to $100 per homeowner to get it removed?" "And I think I know what the answer is. … It's one of those issues that politicians love to talk about because it resonates, but when you get below the surface, most people just aren't interested in going to the time and expense to deal with it." (KC Star, Sunday Feb 13, 2005).

[53] In fact, Hanushek, Kain, and Rivkin (2004) specifically note: "A school with 10% more black students would require about 10% higher salaries in order to neutralize the increased probability of leaving" (p. 350). That is, all else equal, it would cost more simply to provide comparable teaching quality in predominantly black schools. But the Kansas COLA adjustment works in the opposite direction. Hanushek, E.A., Kain, J., Rivkin, S. (2004) Why Public Schools Lose Teachers. *Journal of Human Resources* 34 (2) 326-354

In 2003, my report submitted to the court in *Montoy v. Kansas* was titled *Wide of **a** Reasonable Mark* (emphasis added). This report is titled *Still Wide of Any Reasonable Mark*. The original report evaluated the conditions of the Kansas School District Finance Act leading up to 2003. A seemingly trivial distinction in the reports is the shift from the word "a" to the word "any." In my original report, I compared the school district finance act to the cost study that had been prepared by John Augenblick and Associates for a subcommittee of the Kansas Legislature in response to a report from the Governor's Task Force. At that time, the Augenblick study was the reasonable mark and the only reasonable mark on the table. The legislature had commissioned the estimation of that reasonable mark and while they had chosen to ignore the reasonable mark they had never refuted its validity. Thus plaintiffs, the trial court and the Supreme Court largely acknowledged that document as the one available reasonable mark which had been vetted at trial. It was a single reasonable mark, "a" reasonable mark.

Table 5 presents a conservative comparison of General Fund Budgets to the Augenblick estimates, comparing 2003 (two years later) General Fund Budgets to Augenblick estimates based on data from two years prior. Table 5 shows the gaps for Wichita, Topeka and KCK at that time to be 37%, 35% and 39% respectively. These gaps were large. These gaps were wide of that reasonable mark.

In 2006, prior to dismissal of Montoy by the high court, the legislature had conducted a new study – a second reasonable mark – which produced results quite similar to the first reasonable mark – to an extent validating the reasonableness of that mark. Table 5 next compares general fund budgets in 2006 to cost targets from the original Duncombe model, based on 2003-04 data, again a two year lag, giving some catch up time for General Fund Budgets. At this point, Wichita, Topeka and Kansas City fall 29%, 30% and 37% below the second reasonable mark. But, remedy legislation had been adopted, and new reasonable marks established, providing the rationale for dismissal.

But, 5 years, later, when compared with the LPA OB model, based on the second reasonable mark, general fund budgets still fell conservatively 20%, 26% and 36% short. To reiterate, this third reasonable mark is conservative because it bases inflation only on the CPI-U, and forecasts forward the 2007 cost targets without updating student demographics. Further, the 2007 targets less aggressively address student needs than the original model on which they were based. Finally, in the past year, additional substantial cuts have been made to general fund budgets.

Table 5. Large City Funding Gaps at time of a) District Court ruling, b) Supreme Court dismissal and c) Current[54]

Time Period	Comparison to Reasonable Mark	Kansas City	Topeka	Wichita
2003 (Pre-Montoy)	GFB per Pupil 2003	$4,595	$4,440	$4,591
	Augenblick Cost[$2000-01] Reasonable Mark 1	$7,570	$6,820	$7,345
	% Under	**39%**	**35%**	**37%**
2006 (Pre-SB 549)	GFB per Pupil 2006[1]	$5,201	$4,960	$5,221
	Duncombe Estimate ($2003-04) Reasonable Mark 2	$8,254	$7,075	$7,375
	% Under	**37%**	**30%**	**29%**
2010-2011[55]	GFB per Pupil 2011	$7,334	$6,848	$7,059
	LPA Projected Cost[2] Modified Reasonable Mark 2 (Reasonable Mark 3)	$11,378	$9,217	$8,830
	% Under	**36%**	**26%**	**20%**

[1] Based on relevant components of GFB, excluding special education, vocational education and transportation weighting also excluded from Duncombe estimate.

[2] Gap understated because LPA projected costs not fully based on Duncombe cost model, and because LPA 2011 costs are projected based on CPI-U only, ignoring changes in standards and changes in demographics.

In short, even by conservative estimates, the formula that was wide of a reasonable mark in 2003, was wide of another in 2006, still comparably wide of a third reasonable mark by 2011, and even wider in 2012, leading to my conclusion and the title of this report that the Kansas School District Finance Act is *Wide of ANY Reasonable Mark.*

3.4 Inequities in Taxation for School Funding

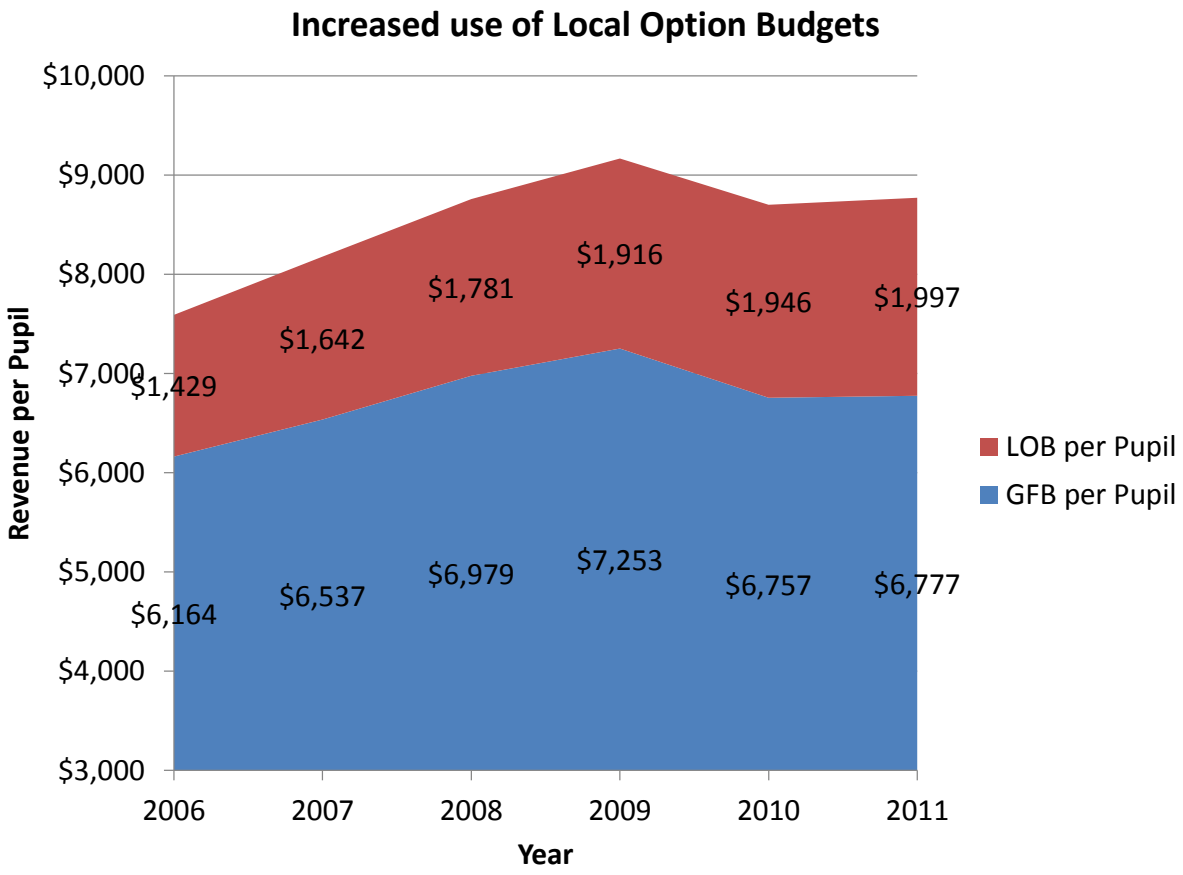
Here, I explore briefly, persistent inequities in taxation for school funding across Kansas school districts. Upon dismissing the Montoy case, the Supreme Court acknowledged that the Kansas Legislature had not only made strides, or at least planned to, in building the General Fund Budget formula around rational estimates of outcome based costs, but that the legislature had also taken meaningful steps toward reducing revenue raising disparities specifically in the local option budget and capital outlay funds. Matching aid was added for capital outlay, where

[54] In 2011, the general fund budget gap for Hutchinson was over $1,200 per pupil and in Dodge City was $866 per pupil.

[55] Note that the general fund budgets of districts were reduced again substantially in 2011-12, an increase in gap that is not shown in this table because General Fund and Legal Max reports had not yet been released at the time of this report.

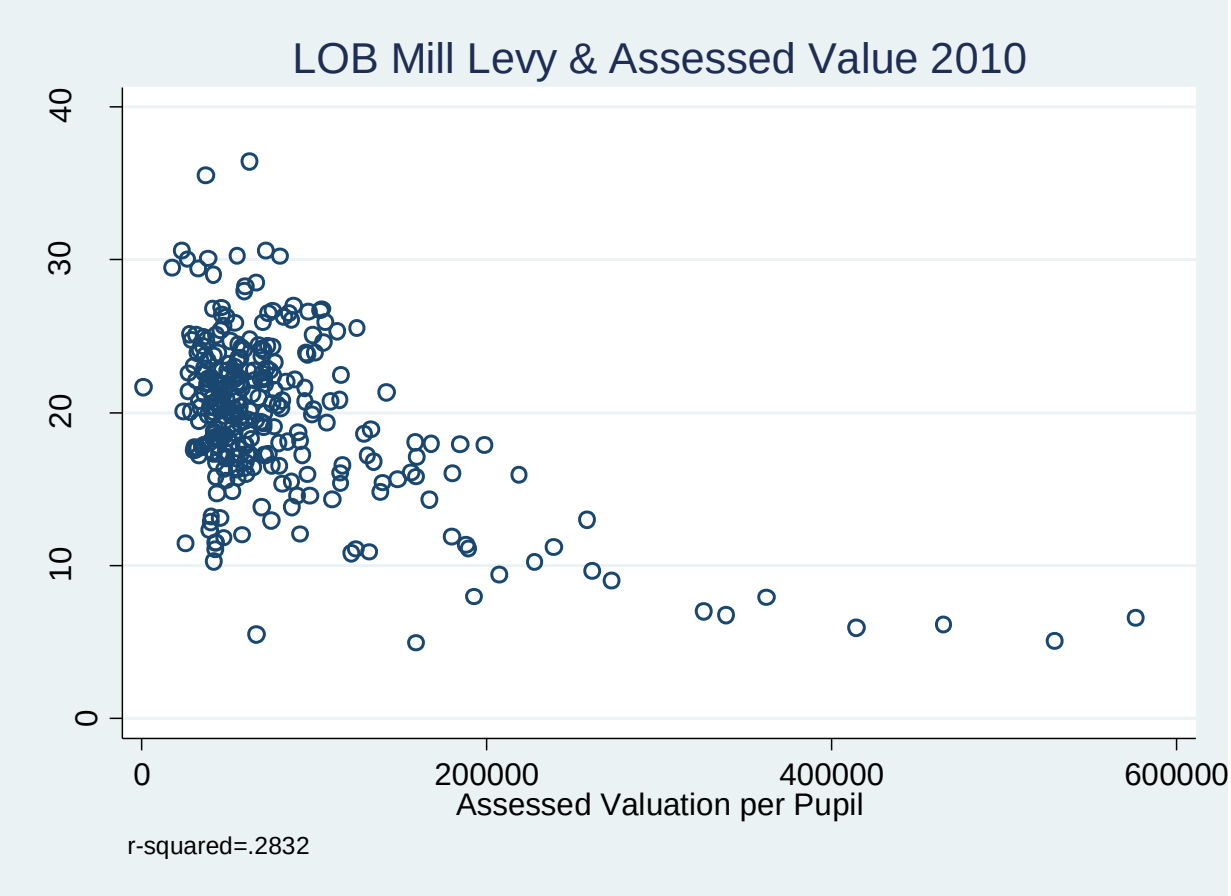
none had previously existed, and the property wealth level for equalizing local option budgets was raised. In the past few years, however, equalization aid for Capital Outlay has been eliminated and matching aid for local option budgets has come up short and has been prorated, with reduction to 92% across the board in 2010-11 and appropriated at only 83% in 2011-12.

Figure 29. Increased Use of Local Option Budgets over Time



Meanwhile, with deep cuts to general fund budgets districts have been backed into greater reliance on local option budgets. Figure 29 displays the increased reliance on local option budgets over time. Because of caps on local option budgets, districts are not able to use their local option latitude to fully offset cuts, but local option budgets per pupil have nonetheless edged upward as more and more districts have maximized their local options.

Figure 30. Variation in Local Option Mill Levies by Property Wealth 2010



A significant problem, however, with over-reliance on local option budgets is that tax equity under local option budgets differs than under general fund budgets. Under general fund budgets, districts levy a specific local tax rate and are guaranteed a specific general fund budget per pupil. Indeed there are some fluctuations as a result of additional local authority selectively embedded into general fund budgets through such factors as ancillary new facilities and COLA weighting. Local option budgets by contrast are not based on a fixed local mill levy but rather based on an equalization formula which depends on the ratio of an individual district's wealth to a specified wealth level. In general, this type of formula can be expected to yield less equity than simply assigning a local tax rate, as in the General Fund Budget.

Figure 30 shows that districts with lower taxable assessed valuation per pupil tend to have higher local option tax rates, with several very high wealth districts levying very low mill levies to max out their local option. However, many of these districts turn out to be very small districts with high property wealth per pupil not so much as a result of great wealth (numerator), but rather as a result of few pupils (denominator). The correlation between LOB mill levies and LOB Assessed Valuation per pupil, weighted for district enrollment is approximately -.50.

Figure 31. Variation in Local Option Mill Levies by Property Wealth 2010 (Large Districts)

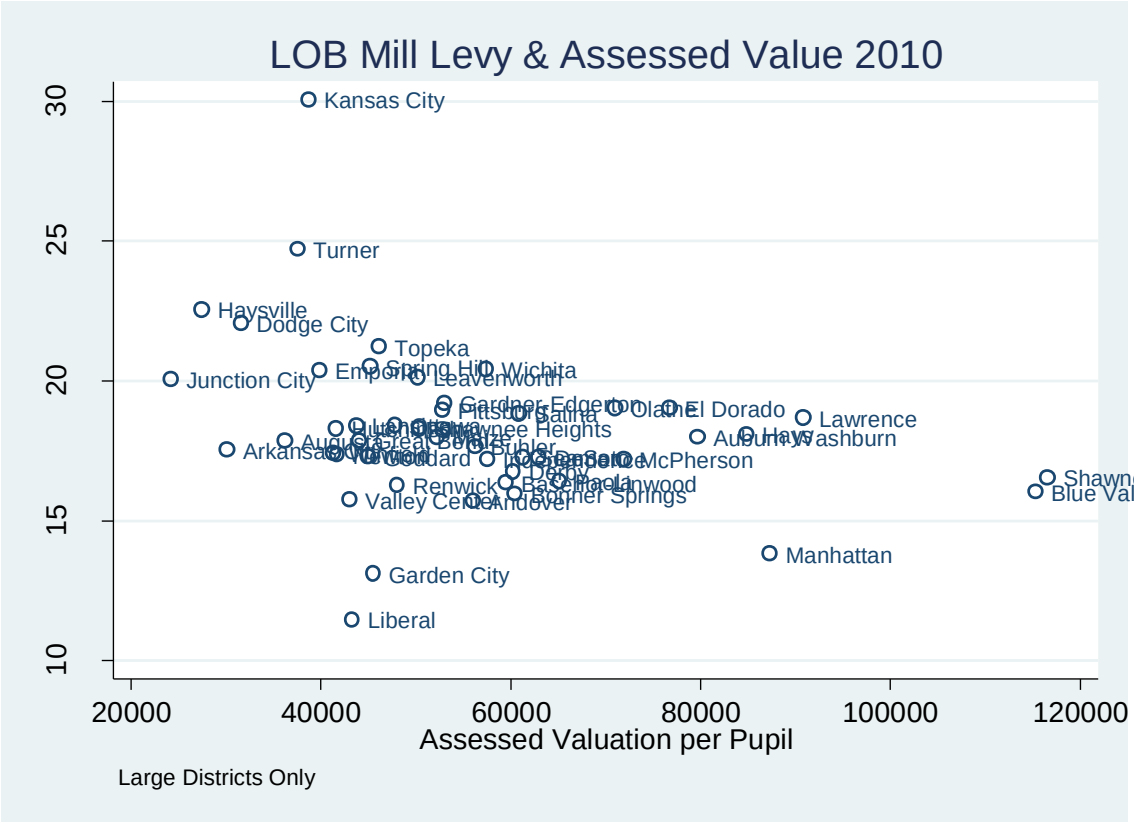


Figure 31 focuses on districts enrolling over 2,000 pupils. One can see that on average, districts such as Kansas City and Turner levy much higher mill rates than Blue Valley and Shawnee Mission, nearly double for Kansas City. The correlation between LOB mill levies and LOB Assessed Valuation per pupil, weighted for district enrollment and excluding smaller districts, is approximately -.45 (still sizeable and regressive). In 2006, that correlation was approximately the same, at -.47. LOB taxation remains inequitable.

Figure 32. Variation in Local Yield from Capital Outlay Mill Levies 2010

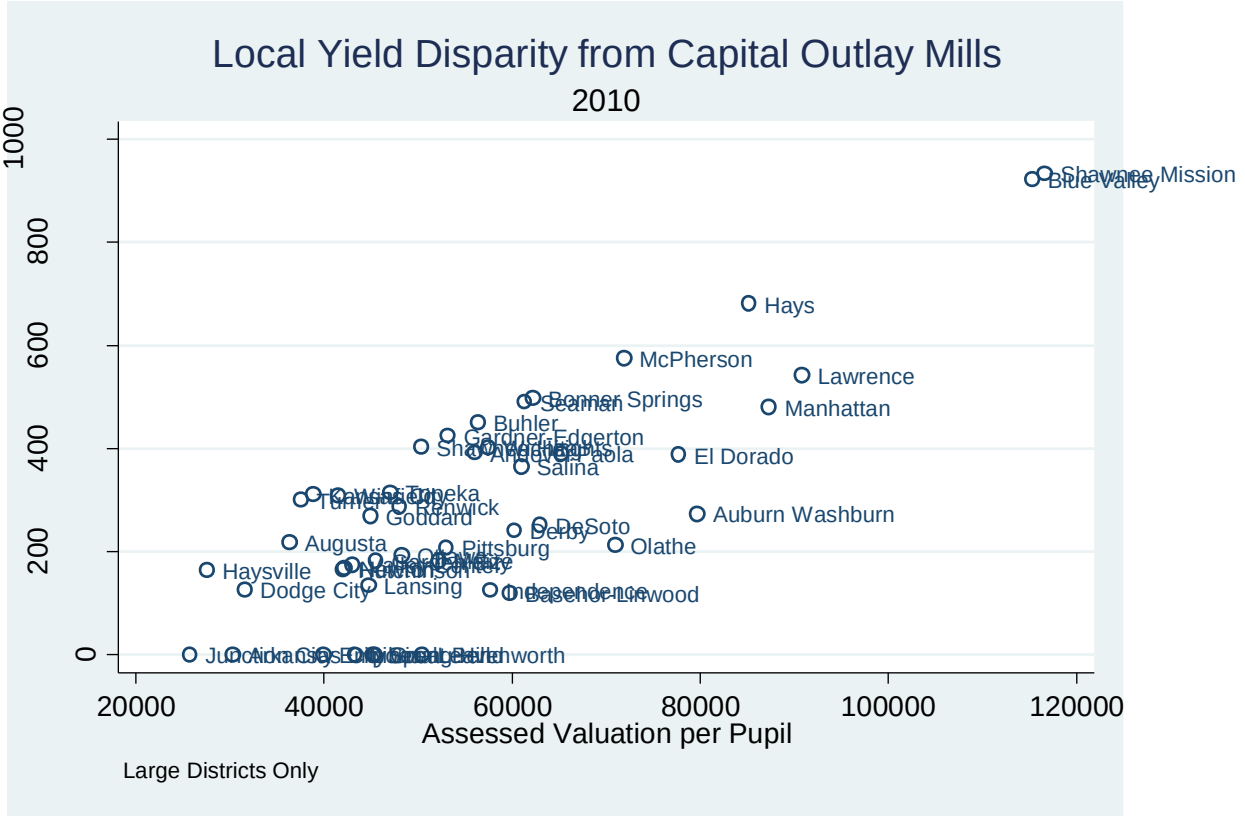


Figure 32 shows the estimated local yield from capital outlay mill levies for 2010, using actual capital outlay mill levies (most districts levying 4 mills) and actual assessed valuation per pupil. While districts such as Dodge City and Haysville raise less than $200 per pupil, Kansas City, Topeka and Turner raise less than $400 per pupil, districts like Shawnee Mission and Blue Valley can add nearly $1,000 per pupil in Capital Outlay funds for key resources including technology infrastructure as well as seemingly more mundane upkeep of facilities. Spent well, capital outlay funds can actually aid these districts in lower other costs, such as operating costs of facilities (HVAC, mechanical, electrical systems) or even optimizing classroom configurations, including technology infrastructure improvements.

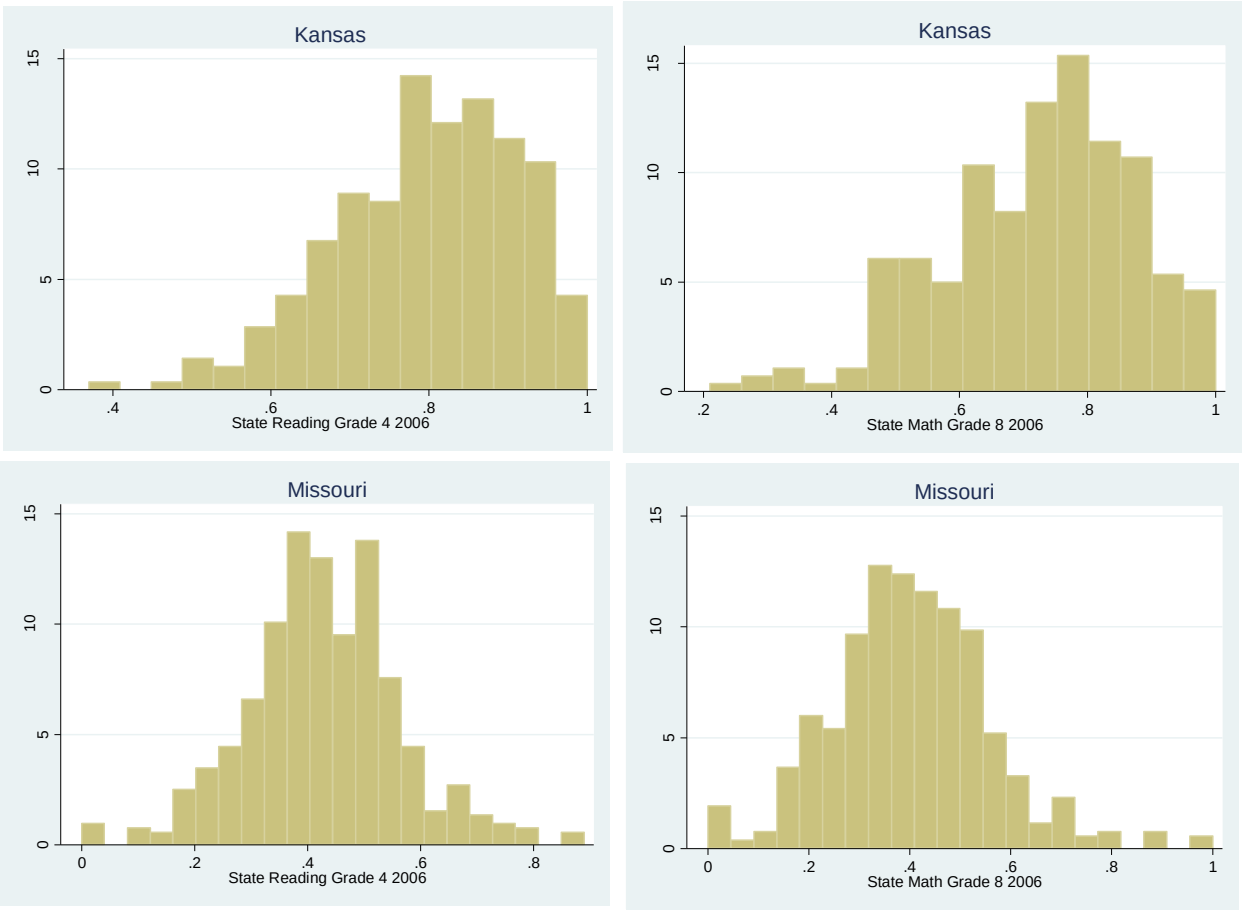
3.5 Kansas' Low Standards Understate True Costs of Adequacy

Here, I briefly return to the point that if Kansas had higher outcome standards, the costs of achieving those standards would be significantly higher than those estimated in the LPA OB budget targets. Direct estimates of these higher costs are not currently available for Kansas. But,

William Duncombe and John Yinger, along with Anna Lukemeyer have conducted research specifically on this point, using as their examples, Kansas as the state with low outcome standards and Missouri as the state with high outcome standards (Recall the relative position of the two states in Section 2 herein).

For illustrative purposes, Figure 33 shows the distribution of Kansas proficiency rates on Grade 4 reading and Grade 8 math. In Kansas, nearly all districts exceed 60% proficiency on grade 4 reading, and most on grade 8 math. The mode in each case is around 80% proficiency. By contrast, the modal district in Missouri hovers around 40% proficient in 2006. Note also that the Missouri distribution is more "normal," meaning that districts spread out in both directions. Because the Kansas standards are so low, districts are compressed against the high end, with many achieving approximately 100% proficiency, making even the absurd NCLB 2014 benchmark seemingly obtainable. But achieving 100% proficiency on a low standard is hardly meaningful. Missouri standards for proficiency on their own assessments are particularly high, making this contrast interesting but relatively extreme.

Figure 33. Distributions of District Proficiency Rates in Kansas and Missouri 2006 (Selected Assessments)



Duncombe and colleagues estimate direct comparisons of the costs of moving toward NCLB target outcomes in both Kansas and Missouri to illustrate specifically the point that higher standards cost more (and to illustrate secondarily, that federal funding under NCLB provides little support toward achieving even lower standards as in Kansas). Duncombe and colleagues specifically note:

> Our results differ for Kansas and Missouri largely because Kansas has a much lower standard for student performance.[56]

In the article, Duncombe and colleagues project the additional costs of achieving NCLB targets for all districts and then specifically for high need urban districts (large central city districts). They find that the increased costs of achieving higher standards in high need districts in Missouri are much greater than the increased costs of achieving the lower Kansas standards in high need Kansas districts, even where the starting point of spending is already higher in high need urban Missouri districts. They note:

> In both states, the estimated required spending increases for the large central cities are particularly large. In Kansas these increases range from 9 percent in 2007 to 22 percent in 2011 and in Missouri from 52 percent in 2007 to 90 percent in 2011.

Baseline current spending levels for Kansas large central city districts were $6,112 compared to $9,813 in Missouri (Table 4). That is, even though baseline spending levels were higher in Missouri, the state's much higher academic outcome standards still require much greater per pupil spending increases to achieve NCLB targets for 2011.

These findings reinforce the point that current estimates of costs for high need Kansas districts relied on by the court in 2006 and relied on herein are conservative – conservative because the outcome standards themselves may be unreasonably low. These simulation findings further emphasize the need for additional evaluation of the rigor of Kansas standards, along the lines of the re-evaluation in New York State released in the spring of 2010, and subsequent cost analysis of achieving more rigorous outcome standards.

4.0 District Funding Gaps, Accountability and Student Outcomes

In this section, I address the relationship between funding gaps and variations in actual student outcomes across Kansas school districts. Specifically, I look at funding gaps between

[56] W. Duncombe, A. Lukemeyer, J. Yinger (2008) The No Child Left Behind Act: Have Federal Funds Been Left Behind? Public Finance Review *36 (4) 381-407*

general fund budgets and LPA outcomes based funding targets in relation to accountability system status of school districts and I look at funding gaps by district in relation to proficiency rates on several state assessments.

In section 4.1 I address funding gaps over time by the accountability status of Kansas school districts I find:

- Districts on "corrective action" have been on corrective action for an average of over 7 years. These districts have never reached even the modest funding targets provided in the LPA OB model;
    - In 2007, the average funding gap for districts on corrective action in 2011 was $1,260;
    - By 2011, the average funding gap for districts on corrective action in 2011 was nearly $2,000 per pupil.
- Districts "on improvement" have been on improvement for an average of 1.4 years (1 to 2 years) and funding gaps, on average (though not uniformly) had been eliminated in 2009, but have re-emerged to over $1,000 per pupil by 2011;
- Districts "on improvement" status, which have experienced increased funding gaps in the last two years, have also experienced declining performance for the past few years;
    - That declining performance is not explained by changes in demographics. Districts "on improvement" are experiencing demographic shifts at a rate comparable to other districts.

In Section 4.2 I evaluate the relationship between funding gaps between general fund budgets and LPA OB targets, and district level proficiency rates on various student assessments. I also evaluate the relationship over time between district concentrations of children qualified for free or reduced price lunch, and state assessment outcomes. I find:

- Across all assessments, proficiency rates are systematically lower in districts facing larger funding gaps;
- Among districts enrolling greater than 2,000 students, and weighted by the enrollment of those districts, general fund budget gaps explain anywhere from 27% to 51% of the variations in proficiency rates;
- General fund budget gaps also explain over 38% of the variation in 4 year high school graduation rates.
- Between 2007 and 2009, the relationship between low income student concentrations and proficiency rates improved marginally in 4^{th} grade math and 5^{th} grade reading.

In short, there exist substantial disparities in the extent of funding gaps by district accountability status, with districts on corrective action facing the largest and most persistent over time funding gaps, districts on improvement facing recent re-emergence of large funding

gaps, and other districts now facing funding gaps. Further, the size of general fund budget gap with respect to estimated need (LPA OB estimate) is systematically associated with proficiency rates, where districts with larger funding gaps also have lower average proficiency rates.

4.1 General Fund Gaps, Outcomes and Accountability Status

Here, I discuss differences in funding gaps between General Fund Budgets and LPA OB estimates by district accountability status of districts in 2011. Table 6 shows the average funding gaps over time for districts a) on corrective action, b) on improvement status and c) that made AYP. Districts on Corrective Action, on average, have very large gaps between their general fund budgets and the LPA OB cost estimates. Those gaps have persisted over time but have become especially large in recent years. Districts on Corrective Action have been on Corrective Action or improvement status for an average of over 7 years.

Meanwhile, districts on improvement status also have sizeable gaps between their general fund budgets and LPA OB targets. Their gaps had been reduced by 2009 within initial incomplete phase-in of SB 549. But, in the past two years those gaps have increased dramatically and by 2011 exceeded $900 per pupil. On average, districts on improvement have been on improvement between 1 and 2 years.

Funding gaps for districts still making AYP remain much smaller, but are also re-emerging in recent years.

Table 6. General Fund Funding Gaps (compared to LPA Outcome Based Projections) by NCLB AYP Status

	Corrective Action	On Improvement	Made AYP or N/A	Average
GFB per Pupil (2011)	$6,990	$6,499	$6,763	$6,777
% Free or Reduced	73.4%	52.9%	36.2%	47.4%
GFB Gap 2007	**$1,260**	$261	-$90	$278
GFB Gap 2008	**$1,049**	$17	-$272	$82
GFB Gap 2009	**$940**	-$119	-$280	$32
GFB Gap 2010	**$1,678**	$609	$445	$762
GFB Gap 2011	**$1,953**	$908	$633	$988
Years on Improvement	**7.16**	**1.40**		

[1] Outcome Based Estimates from LPA Appendix 16, including Hold Harmless

[2] Inflation of district level LPA outcome based projections based on yearly inflation rates provided in Scott Frank Memo to 2010 Commission (August 14, 2008), Attachment A. Inflation adjusted only for CPI-U, at 3.71% to 2007-08 and 3.28% thereafter.

Table 7. Changes in Proficiency Rates in Reading by AYP Status under NCLB

Assessment	2011 Status	2005	2006	2007	2008	2009	2010
Read 3	Corrective Action				70.39	72.58	70.95
	Made AYP				88.54	90.09	88.68
	On Improvement				***85.08***	***85.32***	***83.42***
Read 4	Corrective Action				74.50	75.31	75.52
	Made AYP				90.87	92.07	91.43
	On Improvement				***87.30***	***86.42***	***85.89***
Read 5	Corrective Action	67.44	63.65	68.57	71.40	71.78	73.54
	Made AYP	81.92	82.09	85.87	88.43	89.36	89.56
	On Improvement	78.04	76.10	80.37	***84.16***	***83.93***	***83.71***
Read 6	Corrective Action				67.69	69.46	69.19
	Made AYP				90.99	92.08	92.83
	On Improvement				85.66	88.05	86.48
Read 7	Corrective Action				70.71	73.65	76.41
	Made AYP				90.99	92.49	94.03
	On Improvement				85.72	87.13	88.69
Read 8	Corrective Action	65.58	63.49	64.11	66.54	67.46	71.79
	Made AYP	81.87	83.26	84.90	88.46	90.44	91.30
	On Improvement	74.39	73.44	76.03	79.95	84.53	84.72
Read 11	Corrective Action	52.92	63.40	58.98	68.36	71.30	76.60
	Made AYP	68.49	81.89	82.68	86.02	88.68	90.82
	On Improvement	61.47	73.22	76.29	79.13	81.65	83.88

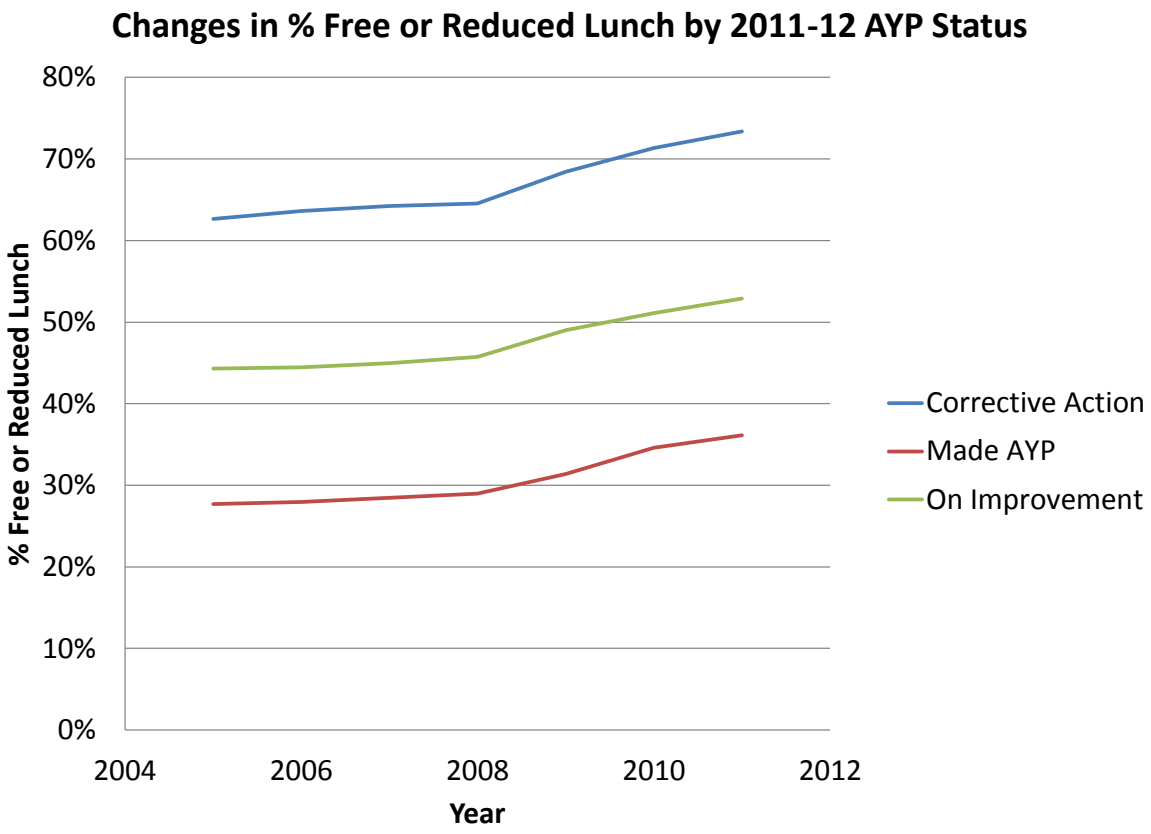
Table 7 summarizes changes in proficiency rates by accountability status for Reading assessments from 2005 to 2010. Table 7 shows that in the past few years in particular, districts on improvement status have seen declining proficiency rates at the lower grade levels. Proficiency rates have been more stable or increasing in higher grade levels, but those changes may merely reflect the declining standards identified in Section 2 of this report. What is out of line is declining performance seen in lower grades, where standards against NAEP have declined.

Table 8. Changes in Proficiency Rates in Math by AYP Status under NCLB

Assessment	2011 Status	2005	2006	2007	2008	2009	2010
Math 3	Corrective Action				74.79	77.71	78.24
	Made AYP				90.29	91.95	91.49
	On Improvement				***88.00***	***87.44***	***86.41***
Math 4	Corrective Action	73.21	67.49	71.46	74.82	75.96	77.07
	Made AYP	89.25	85.19	89.25	90.24	90.95	90.79
	On Improvement	87.25	82.67	87.76	***87.19***	***85.63***	***84.70***
Math 5	Corrective Action				76.37	76.71	76.37
	Made AYP				90.34	90.67	90.33
	On Improvement				***86.27***	***85.37***	***84.66***
Math 6	Corrective Action				63.77	62.61	64.02
	Made AYP				88.02	89.94	90.84
	On Improvement				81.54	83.14	83.53
Math 7	Corrective Action	52.63	56.13	59.24	61.42	61.50	61.23
	Made AYP	75.12	75.95	81.60	84.04	86.17	86.71
	On Improvement	67.04	66.67	70.66	75.89	78.50	78.82
Math 8	Corrective Action				57.15	60.81	60.26
	Made AYP				80.95	83.54	82.83
	On Improvement				69.16	74.13	74.15
Math 10	Corrective Action	33.67	39.47	53.63	58.67	60.70	62.81
	Made AYP	58.74	65.43	76.80	80.21	84.20	86.06
	On Improvement	48.26	56.16	70.60	73.83	75.16	77.55

Table 8 shows a similar pattern of declining outcomes in districts on improvement status at lower grade levels, but this time on math assessments. Again, outcomes are increasing at higher grade levels, and as shown back in Section 2, outcome standards have gotten lower. So, again, one would expect outcomes to be getting higher not lower. But, for those districts on improvement experiencing increased budget gaps from year to year in recent years, lower grade level outcomes continue to slip.

Figure 34. Changes in Low Income Shares by AYP Status under NCLB



While one explanation for those slipping outcomes in districts on improvement status might be changing demography relative to other districts, Figure 34 suggests that the rate of increase in low income children in these districts is similar to that of districts on corrective action and of districts that continue to make AYP.

Figure 35. Graduation Rates 2010 and 2011-12 AYP Status

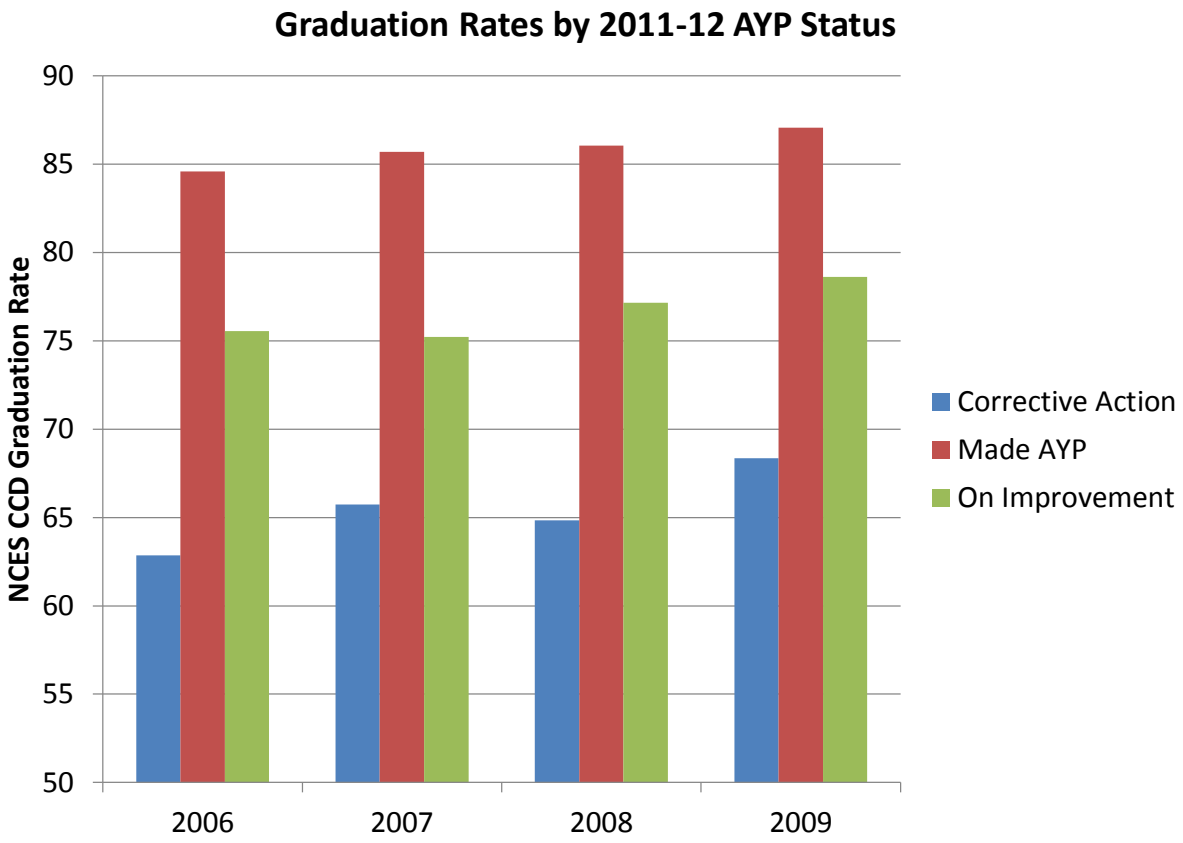
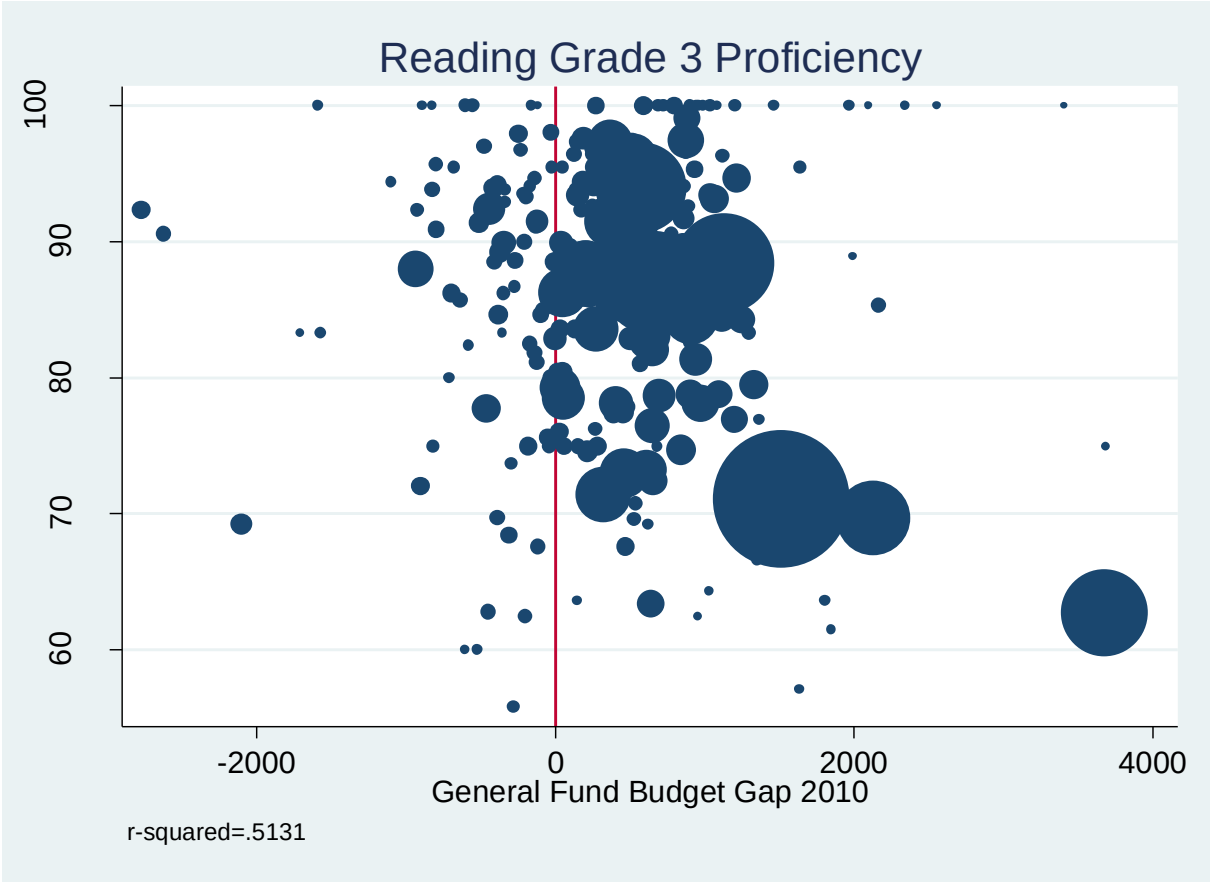


Figure 35 compares the graduation rates (4yr graduation rates as reported by the National Center for Education Statistics) over time for districts by accountability status. Graduation rates are low but do continue to improve for districts on corrective action and for districts on improvement status.

4.2 General Fund Gaps and Lagging Assessment Scores

The next several figures validate the relationship between general fund budget gaps and disparities in educational outcomes. In short, districts with larger budget gaps have lower average proficiency rates across assessments. Figure 36 provides one example, comparing general fund budget gaps with reading proficiency rates in grade 3. Districts to the right of the vertical red line have General Fund Budget Gaps – lower GFB per pupil than their LPA OB target for 2010. The size of each bubble represents district enrollment size. For this figure, the r-squared (percent of variation explained) for districts enrolling over 2,000 pupils is .5131. That is, the size of the general fund budget gap alone explains 50% of the variations in proficiency rates on 3rd grade reading.

Figure 36. Grade 3 Reading Proficiency and General Fund Budget Gaps



Two features of the measures used in Figure 36 and the next several lead to understating this relationship. First, the initial 2007 LPA OB targets include hold harmless and other provisions not actually related to the cost or improving outcomes, creating a lining up of districts along the vertical red line and only a random distribution of districts (for a variety of reasons) to

the left of the red line. That is, some very low poverty districts may in fact have more in general funding than they would need at a minimum to achieve the very low outcome standard assessed. But, the LPA targets embed additional funding for those districts, altering the overall pattern. Second, because the standard is relatively low, many districts actually achieve 100% proficiency, further compromising the fit of a trendline (and reducing the r-squared). But, even including these factors, the funding gaps explain over half of the variance in proficiency rates.

Figure 37. Grade 8 Reading Proficiency and General Fund Budget Gaps

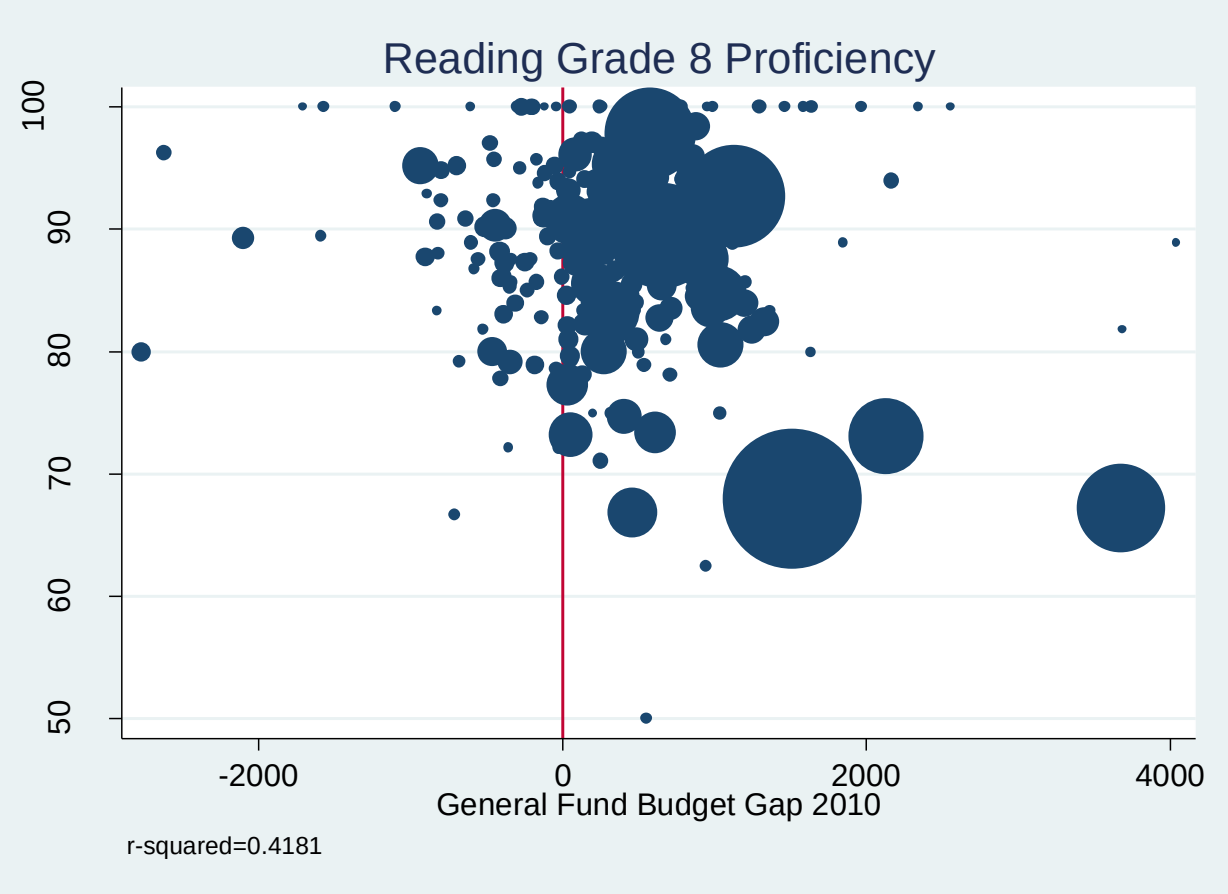
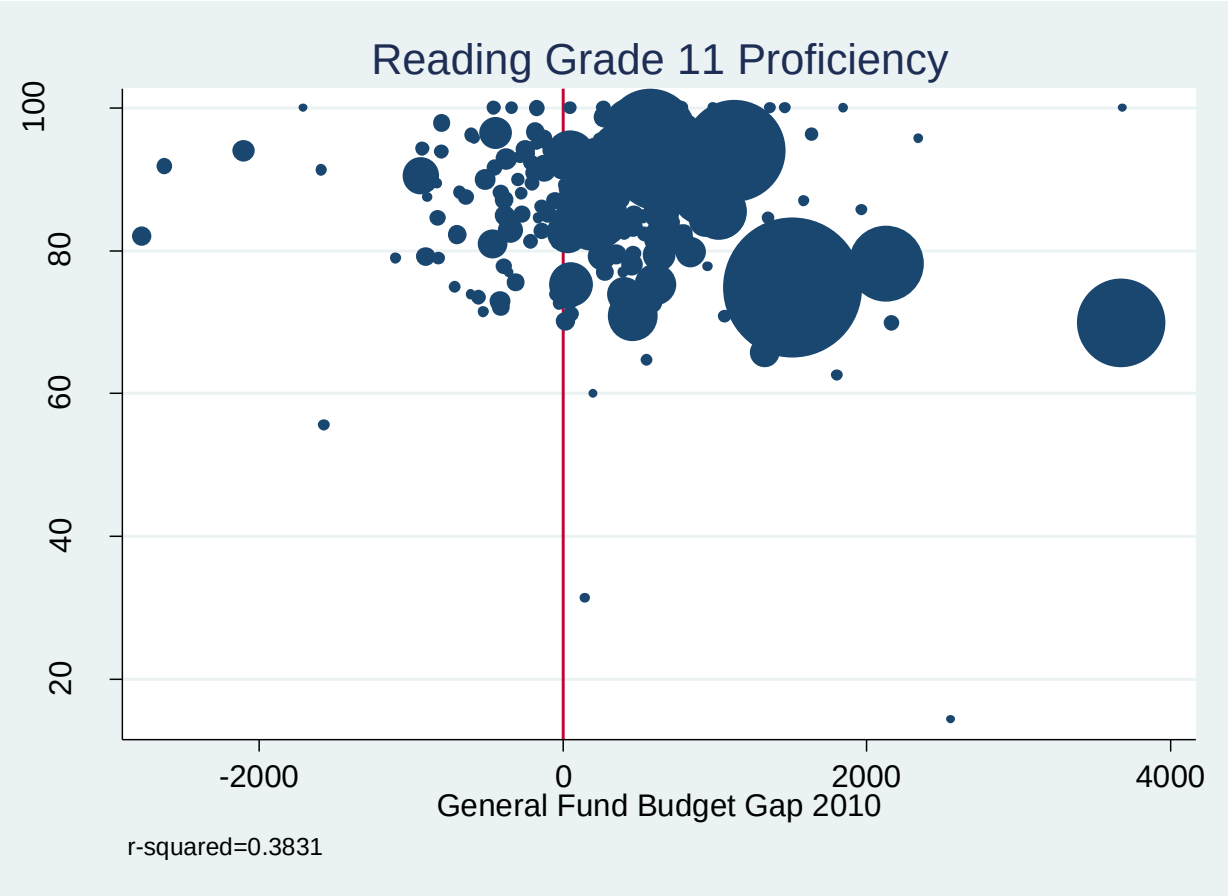


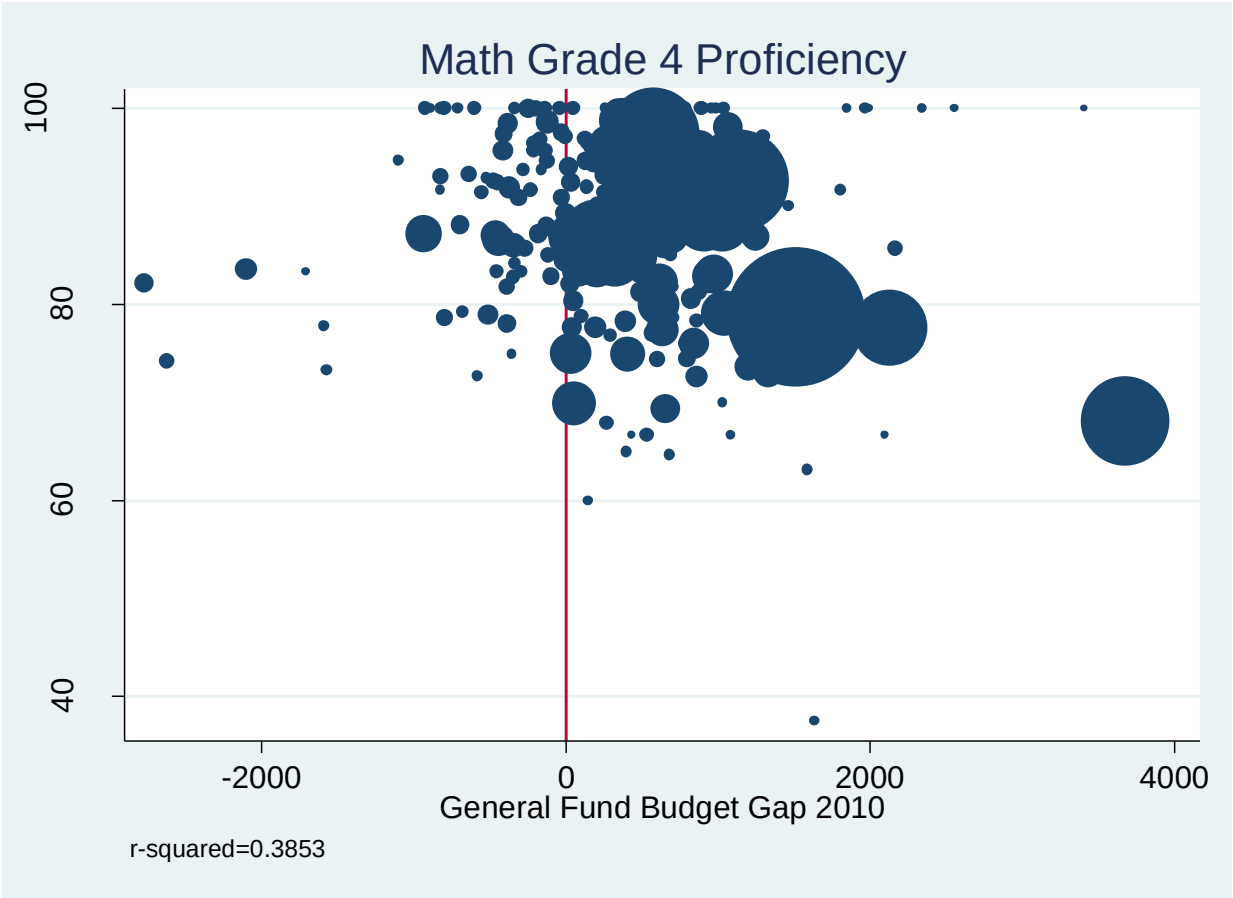
Figure 37 addresses the relationship between funding gaps and proficiency rates on 8th grade reading assessments. Here, funding gaps remain systematically associated with proficiency rates, with districts facing larger funding gaps having systematically lower proficiency rates. Here, funding gaps explain over 40% of the variance in proficiency rates.

Figure 38. Grade 11 Reading Proficiency and General Fund Budget Gaps



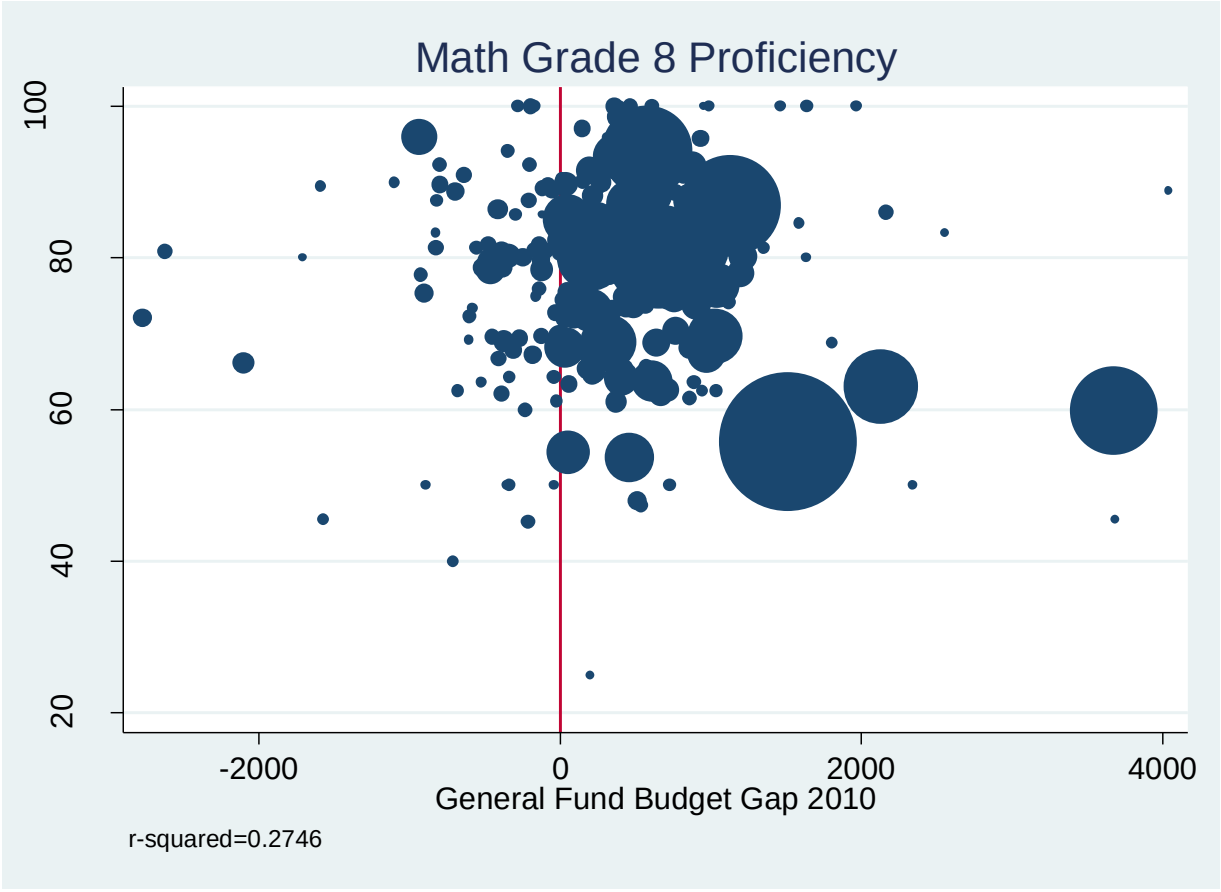
At the 11th grade level, the patterns of disparity persist, with funding gaps explaining 38% of the variance in proficiency rates on reading assessments.

Figure 39. Grade 4 Math Proficiency and General Fund Budget Gaps



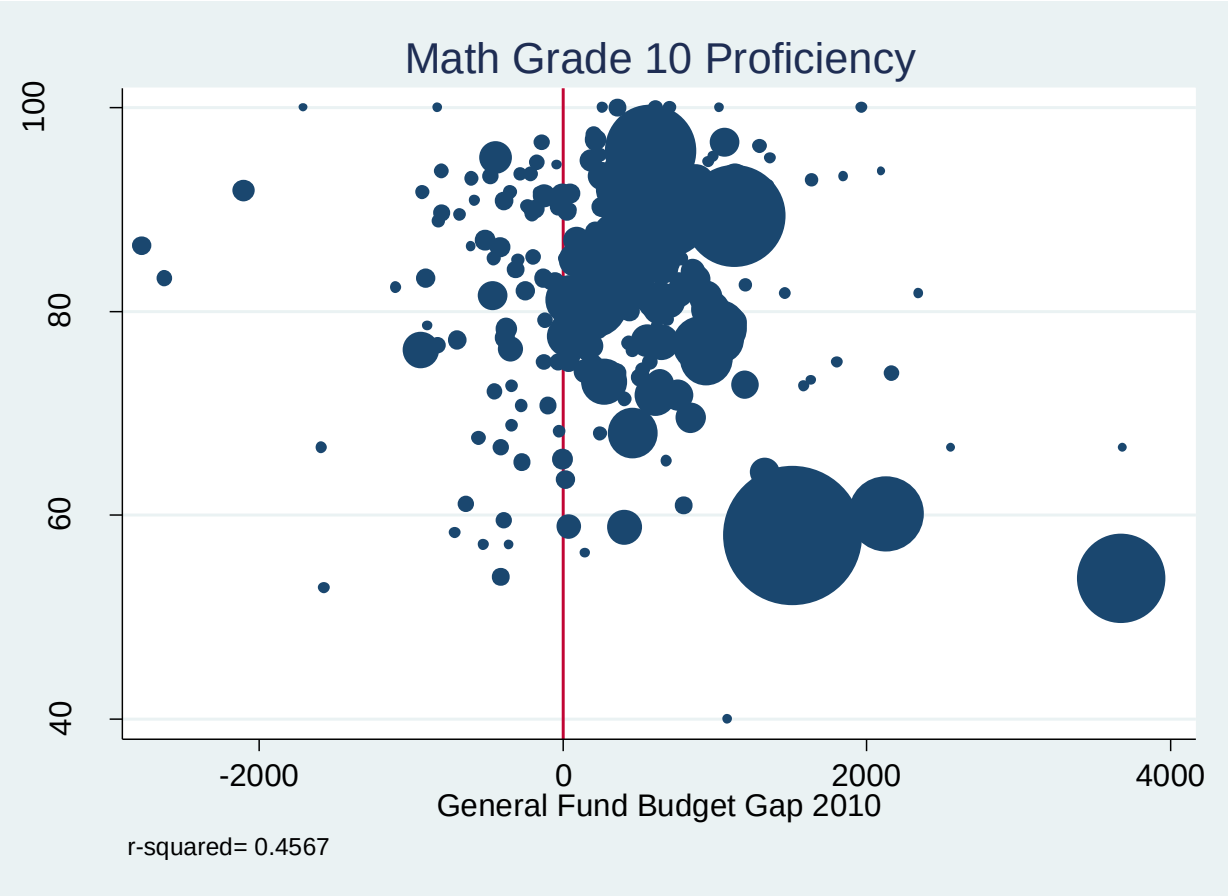
Patterns on mathematics assessments are similar. Districts with larger funding gaps have systematically lower proficiency rates on 4th grade math assessments. Funding gaps alone explain 39% of the variations in 4th grade math proficiency rates.

Figure 40. Grade 8 Math Proficiency and General Fund Budget Gaps



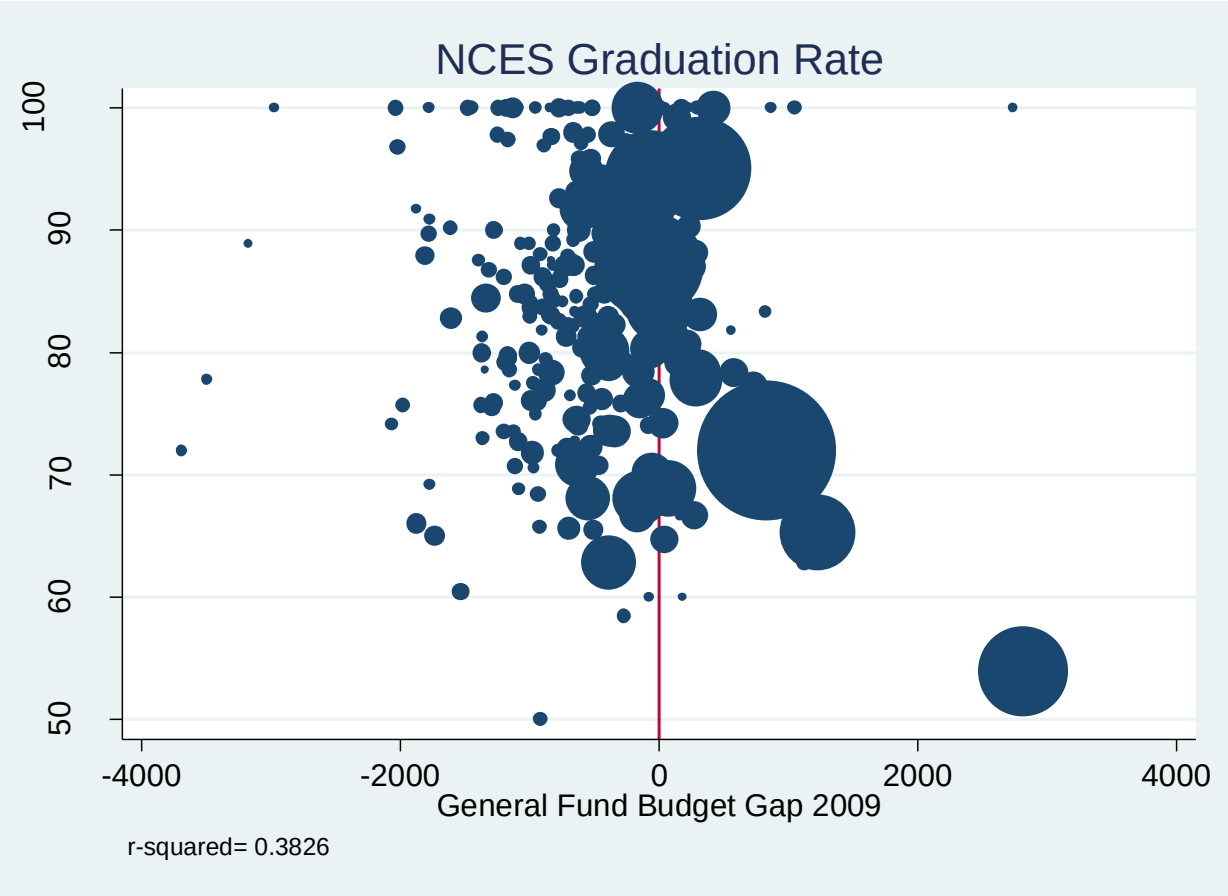
On 8th grade math assessments, funding gaps alone explain 27% of the variance in proficiency rates.

Figure 41. Grade 10 Math Proficiency and General Fund Budget Gaps



On 10th grade math assessments, funding gaps alone explain 46% of the variance in proficiency rates. Shifts in the extent to which funding gaps explain variation in proficiency rates from year to year, or across assessments may represent little more than variations in the standards on the tests, with tests having lower standards showing flatter distributions of outcomes across children by need. Where variation is less on tested outcomes, the percent of variation explained by funding gaps tends to be smaller, likely because a larger share of the variation is un-explainable or less explainable (noise).

Figure 42. NCES Graduation Rates and General Fund Budget Gaps



Variations in graduation rates across districts are also relatively strongly associated with funding gaps, with funding gaps alone explaining 38% of the variations in 4 year graduation rates as measured by NCES. The accountability standard for graduation rates is 75% or "improvement", were the standard for meeting "improvement" goals indicates that "any increase is acceptable".

4.3 Has the Relationship between Low Income Concentration and Outcomes Changed?

As state school finance systems are provided an infusion of resources making them generally more adequate, or experience a substantive shift in the distribution of resources, improving targeting to high need populations, one would expect to see either or both an improvement in the overall level of educational outcomes or a weakening of the relationship between child poverty and outcomes. That is, a closing of poverty related achievement gaps. Arguably, the goal of targeted financing to high poverty settings is to disrupt the relationship

between poverty and outcomes. In the final section of this report, I discuss studies that have conducted rigorous evaluations of the relationship between state school finance reforms of both types (level and distributional) and student outcomes.

Here, I explore briefly the recent changes in the relationship between student population low income status and proficiency rates on state assessments. This analysis is complicated by the fact that Kansas proficiency cut scores are low to begin with and have drifted downward throughout the most recent years. When proficiency cut scores drift downward, and larger shares of children are labeled proficient, whether their true proficiency has changed or not, often, some of the predictable variance in proficiency is lost. That is, as the scores become generally less disparate, the disparities are often less related to key factors like poverty. As such, Figure 43 must be considered in this context of drifting standards.

Figure 43. Selected Outcome Measures and Shares of Low Income Students over Time

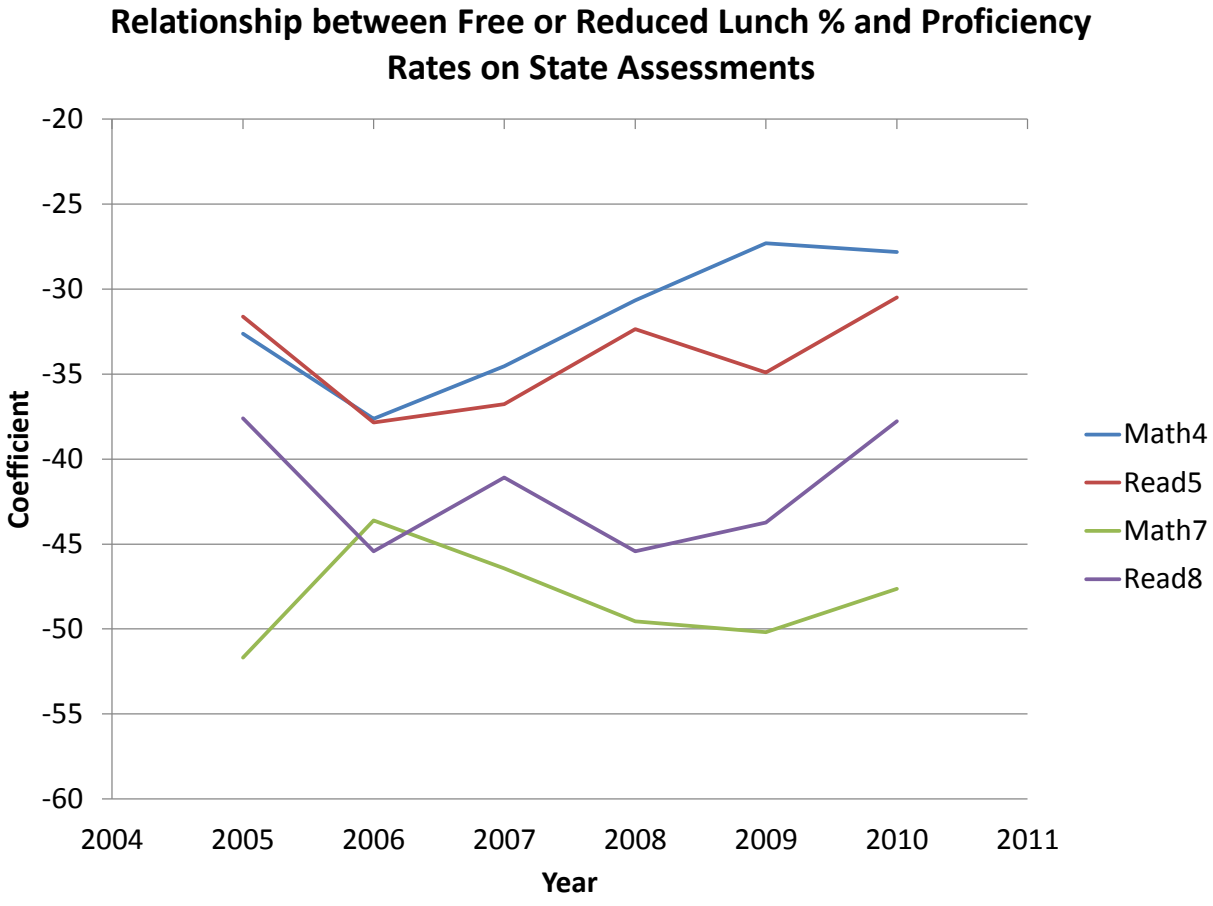


Figure 43 shows the coefficient for the statistical relationship between free or reduced lunch shares and proficiency rates on state assessments. A negative coefficient indicates that districts with higher shares of children qualified for free or reduced lunch have lower proficiency

rates. Here, a -20 would indicate that, if a district with 0% low income had an expected proficiency rate of 100%, a district with 100% low income children would have an expected proficiency rate of 80% (or 20% lower).

Overall, the relationship between low income concentrations and proficiency rates remains strong and negative. At lower grades, there appears to be some improvement from 2006 to 2010, and in higher grades, where disparities are greater, there is some improvement between 2009 and 2010, but from 2006 to 2010, a pattern is difficult to discern.

5.0 High Need Districts Lack Important Resources

In this section, I explore the extent to which Kansas students across districts have meaningful access to intermediate and advanced level courses in order to have equal opportunity to access public higher education in Kansas. As indicated previously, the Kansas Board of Regents specifies high school curriculum that would qualify a student for admission to public higher education institutions in Kansas. But these requirements are of little value if students in high need, under-resourced districts have limited access to these courses. I fact, the requirements become a barrier limiting access to children fortunate enough to attend districts which can and do provide access to the right courses. In this section, I also explore the distribution of other key resources including the distribution of novice teachers across school districts.

This section makes extensive use of a recently released data set compiled by the Office of Civil Rights of the U.S. Department of Education. While the survey did not cover all Kansas school districts, it did cover a sufficient portion of higher and lower poverty districts for which to conduct analyses of the relevant disparities in secondary curricular opportunities.[57]

In Section 5.1 I show that:

- Students attending districts with higher concentrations of low income students have systematically lower participation rates in advanced placement courses;
- Students attending districts with higher concentrations of low income students have systematically lower participation rates in high school calculus courses;
- Students attending districts with higher concentrations of low income students have systematically lower participation rates in chemistry and physics.
- Students attending districts with higher concentrations of low income students are less likely to gain early access to Algebra, a key milestone toward accessing advanced high school math courses.

[57] http://ocrdata.ed.gov/Whats_New.aspx

In Section 5.2 I show that:

- Students attending districts with higher concentrations of low income students are much more likely to have teachers in their first or second year of teaching.

In short, the likelihood is small that students attending the highest need, most under-resourced districts in the state have real access to the curriculum they would need in order to gain guaranteed admission to public higher education institutions, no less to gain access to much needed state financial aid. Indeed most if not all high schools in Kansas provide an approved list of courses to meet the Regents requirements, many courses offered by arrangement with local community colleges. But this is no guarantee that students have real access to these courses or participate in them at any reasonable rate. In fact, the OCR data suggest they do not, with very few students in high need districts participating in course that would qualify them for either QA admissions or for Scholars financial aid.

Further, students attending the highest need, most under-resourced districts in the state are far more likely to be subjected to novice teachers.

5.1 Curricular Depth & Breadth

When districts serving high need and underperforming populations are faced with resource constraints, they may be forced to divert resources from enrichment programs and advanced curriculum toward programs targeted at raising progress towards minimum standards in core content areas. Although reasonable and appropriate under the circumstances, such choices can serve to deprive students in these districts of important opportunities. If high need districts were afforded sufficient resources, they could both target necessary resources toward remedial and basic programming and continue to offer challenging as well as broad and enriched curricula. Such curricular opportunities are not merely frills. Access to advanced and enriched curricula is a significant equal opportunity concern, affecting access to and potential success in college and beyond.

The opportunity to participate in important milestone courses such as algebra or geometry as well as more advanced and enriched academic coursework is associated with college acceptance, matriculation and ultimately personal financial success after college. For example, Rose and Betts note:

> "Our results suggest that a curriculum that includes algebra and geometry is systematically related to higher earnings for graduates a decade after graduation."[58]

Betts and Rose further explain that:

> "…the math curriculum can explain nearly one-quarter of the gap between students with parental income in the lowest and middle groups. This latter finding is important because it suggests a tool—namely the math curriculum—for increasing the degree of equity in students' earnings opportunities later in life."[59]

Others point to the importance of early access to algebra specifically in order to put students on a trajectory to succeed in non-remedial, credit bearing math courses during their freshman and sophomore years in college.[60]

Killgore explains the importance of high school students' academic and non-academic qualifications for acceptance to selective colleges. With regard to non-academic merit, Killgore explains:

> Nonacademic merit becomes important to admissions officers at elite colleges because it offers them additional criteria to distinguish the best from among their large pool of applicants who are highly qualified in academic terms. Nonacademic merit consists of extracurricular involvement, such as sports, artistic activities, student organizations, and volunteerism. By emphasizing the importance of developing both types of merit prior to entering college, elite colleges further prepare their students to engage in the adult world as effective professionals, citizens, and as members of the power elite.[61]

Long, Iatarola and Conger find:

> Using data on students in Florida public postsecondary institutions, we find that differences among college-going students in the highest math course taken explain 28–35

[58] Heather Rose and Julian R. Betts, "The Effect of High School Courses on Earnings," *Review of Economics and Statistics* 86, no. 2 (Month, 2004): 497–513, p. 510.

[59] Heather Rose and Julian R. Betts, "The Effect of High School Courses on Earnings," *Review of Economics and Statistics* 86, no. 2 (Month, 2004): 497–513, p. 510.

[60] Adam Gamoran and Eileen C Hannigan, "Algebra for Everyone? Benefits of College-Preparatory Mathematics for Students With Diverse Abilities in Early Secondary School," *Educational Evaluation and Policy Analysis* 22, no. 3 (Fall, 2000): 241-254.

[61] Leslie Killgore, "Merit and Competition in Selective College Admissions," *The Review of Higher Education* 32, no. 4 (Summer 2009): 469–488, p. 471.

percent of black, Hispanic, and poverty gaps in readiness and over three-quarters of the Asian advantage.[62]

Expecting public school districts serving higher need student populations to limit or eliminate entirely activities not associated with improving minimum outcomes in reading and math alone significantly disadvantages high school graduates wishing to compete for admissions to selective colleges or to progress through credit-bearing courses in college.

The following several graphs explore disparities in access to or participation in select advanced courses using data from the recent Office of Civil Rights collection. Notably, most or all Kansas high schools do offer the on-paper opportunity for their students to take a qualified admissions curriculum. But the on-paper opportunity is just that. For example, in districts like Kansas City, KS, many of the courses that fulfill QAC requirements are not offered on site at high schools but rather at Kansas City, KS Community College.[63] Off-site offerings, while better than nothing, may pose logistical constraints on scheduling, which may further reduced participation rates.

One might argue that these districts do not offer onsite offerings simply because there is no demand. There simply aren't enough students qualified to access those offerings. Therein lies part of the problem. In a more equitable and adequate system of schooling, there should be sufficient demand especially in large urban high schools, where economies of scale is not an issue. Again, the basic premise of equal opportunity in this case is that school districts serving high need population should have both the available resources to provide sufficiently supportive and rigorous curriculum at lower grade levels such that students may access a meaningful high school education, and those districts must also have resources to provide meaningful, rigorous high school courses.

[62] Mark C. Long, Patrice Iatarola, and Dylan Conger, "Explaining Gaps in Readiness for College-Level Math: The Role of High School Courses" *Education Finance and Policy* 4, no. 1 (Winter 2009): 1-33.

[63] http://registration.kan-ed.org/regents/index.asp?Search=&SearchBy=City&Submit=Go

Figure 44. Shares of Students Enrolled in Advanced Placement Courses by Low Income Shares

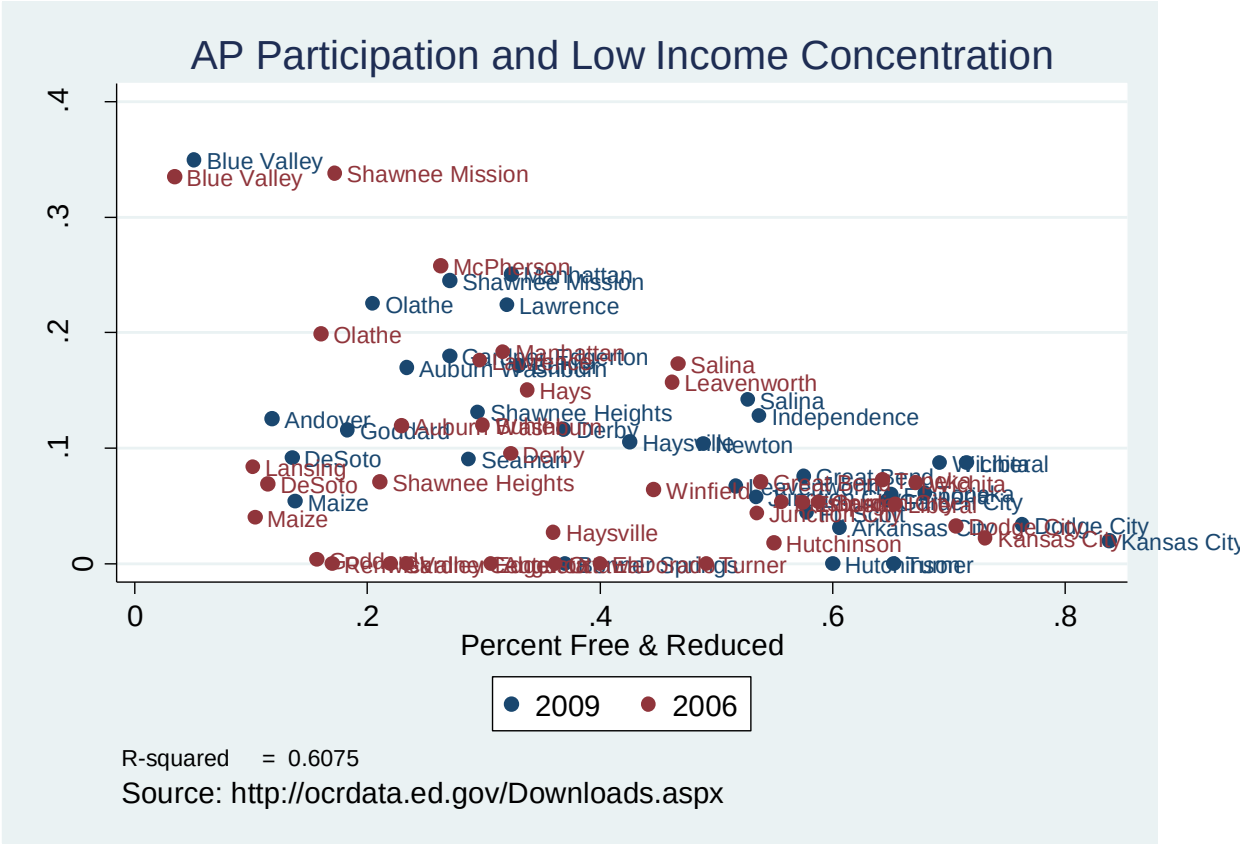


Figure 44 displays the relationship between Advanced Placement course participation rates in 2006 (red) and again in 2009 (blue) across Kansas districts arranged by percent free and reduced lunch. Districts with higher rates of children qualifying for free or reduced price lunch have systematically lower percentages of high school students taking one or more advanced placement courses. Affluent suburban Johnson County districts including Blue Valley, Shawnee Mission and Olathe all have comparatively very high participation rates, though rates in Shawnee Mission appear to be on the decline. By contrast, very few high school students in Kansas City, Dodge City, Hutchinson, Turner or Arkansas City participate in AP courses. Overall, district low-income concentrations explain about 61% of the variations in participation rates in AP courses.

Figure 45. Shares of Students Enrolled in Advanced Placement Math Courses by Low Income Shares

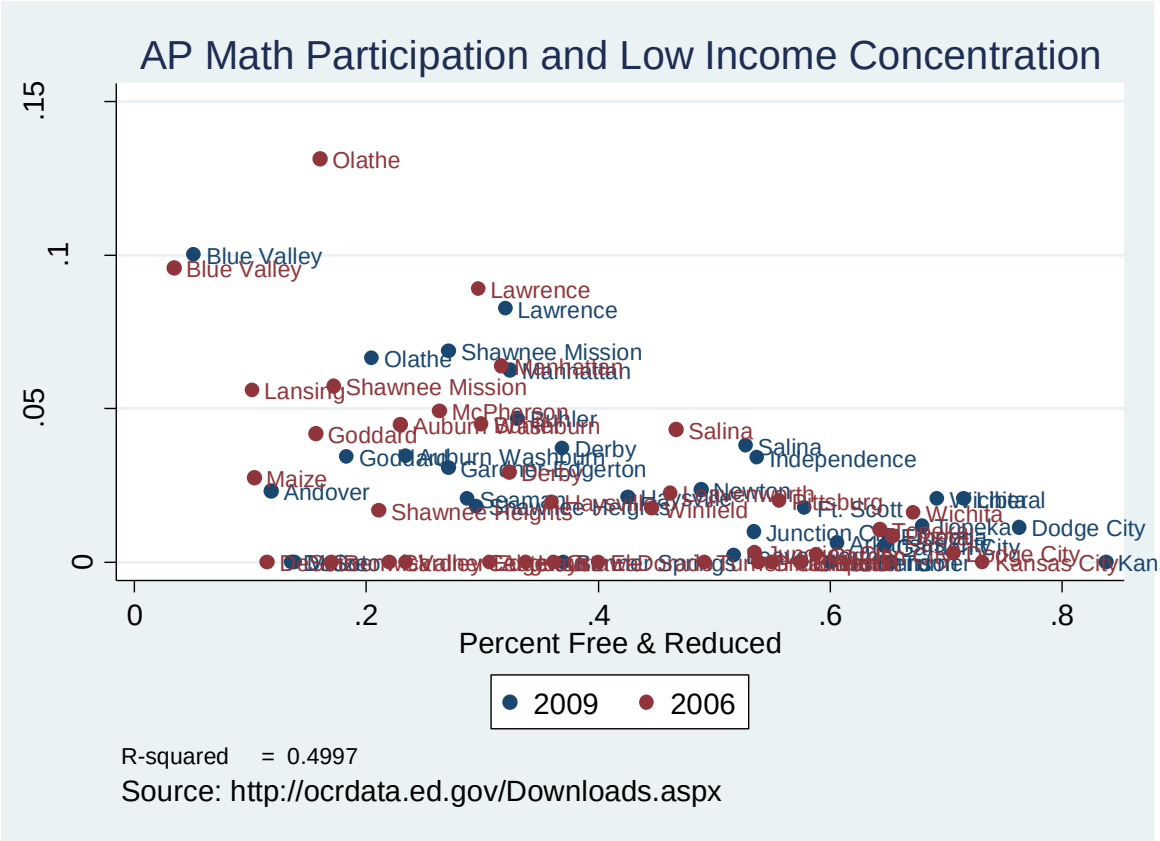


Figure 45 focuses specifically on AP math course participation on the basis that several past studies have validated the importance of taking higher level math courses in high school as a predictor of getting beyond entry level math courses in college, a frequent barrier to college persistence among students from low income families. Again, affluent suburban districts have much higher rates of participation specifically in AP math courses. Indeed, this is likely partly a function of preparedness of those students to take such courses when they reach high school. As such, this measure is a combined input and outcome measure. It is representative of the cumulative outcomes of curriculum in the lower grade levels, but it represents a key input at the secondary level.

Figure 46. Shares of Students Enrolled in Advanced Math Courses by Low Income Shares

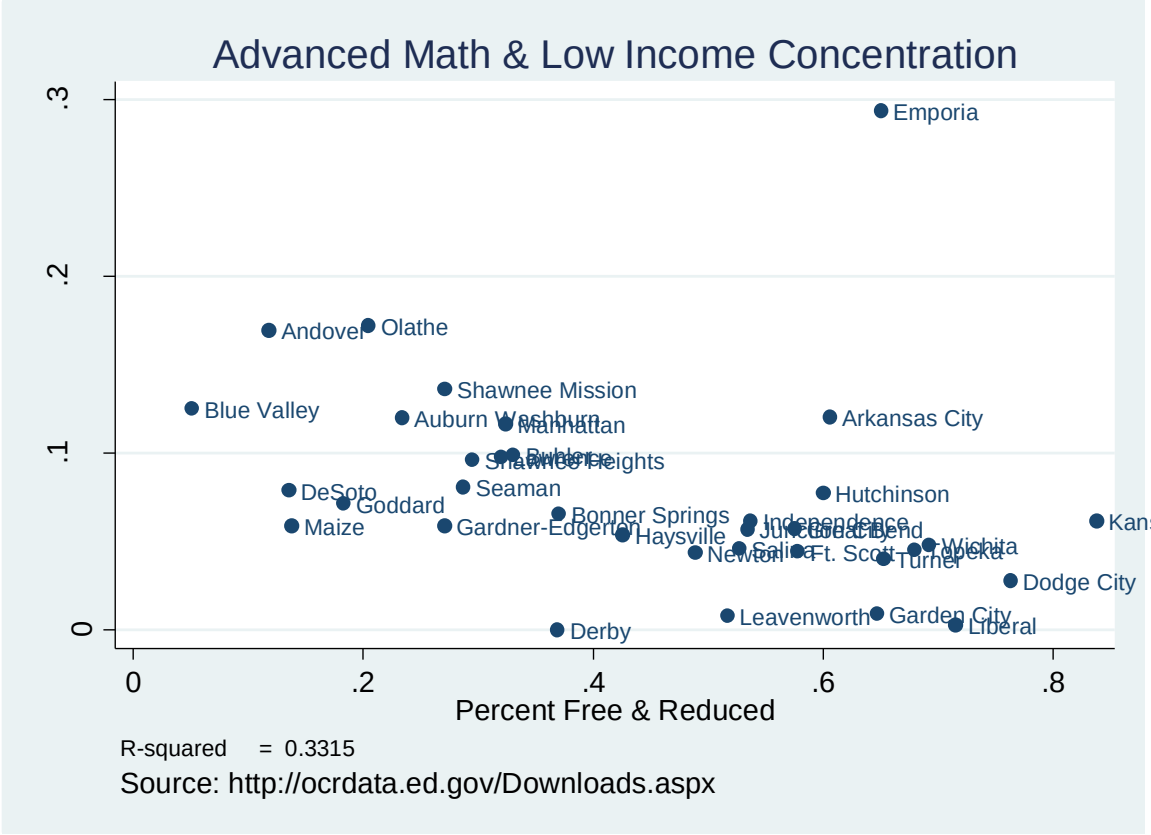


Figure 46 shows the relationship between all advanced math course participation and low income concentrations. With the exception of Emporia, there exists a strong relationship whereby districts with higher concentrations of low income children have much lower rates of children participating in advanced high school math courses, such as those which would be required for either the QAC or Scholars curriculum (trigonometry, elementary analysis, analytic geometry, statistics, precalculus, etc.).

Figure 47. Shares of Students Enrolled in Calculus Courses by Low Income Shares

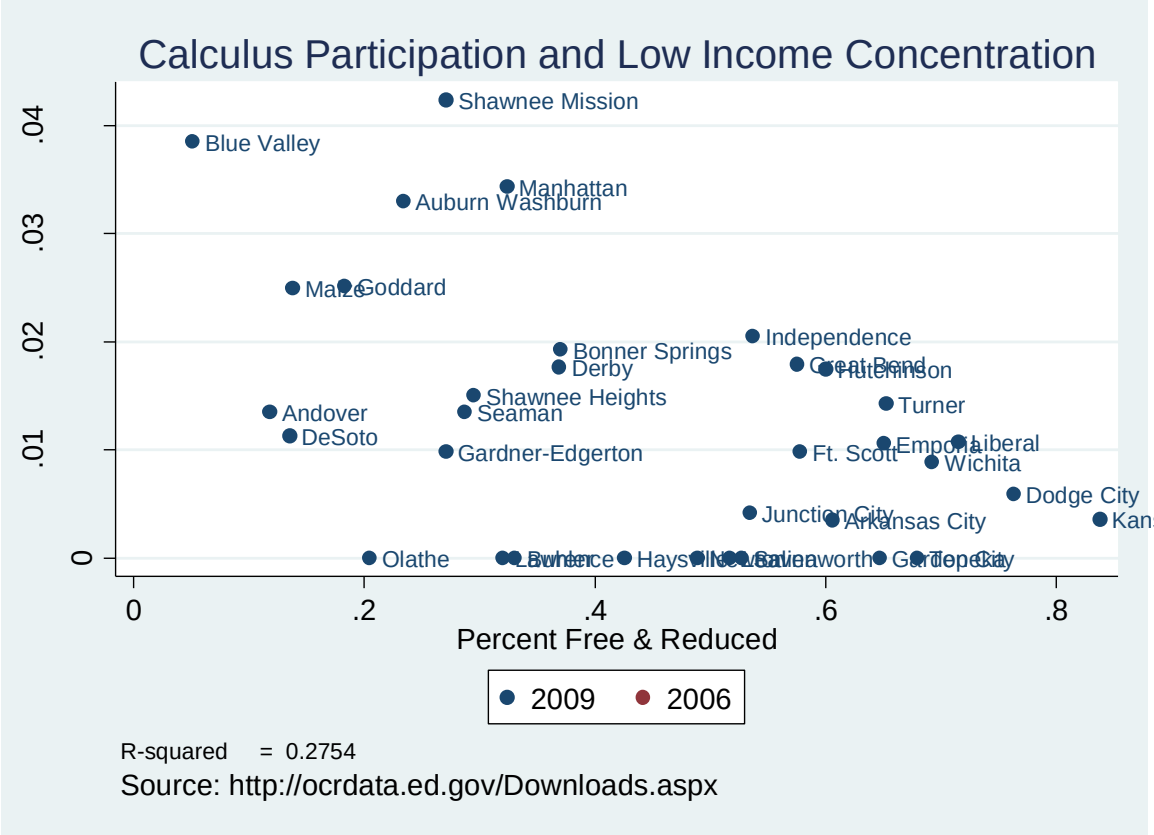


Figure 47 shows calculus participation rates by low income concentration. As one might expect, given the previous figures, calculus participation rates in high poverty districts are relatively low and in lower poverty districts are much higher.[64]

[64] Some 0 values appear to be a function of missing data, perhaps not reported at all or reported under a separate category such as within AP courses. It is unlikely, for example, that no students in Olathe or Lawrence are enrolled in Calculus courses when such high percentages are enrolled in AP math courses.

Figure 48. Shares of Students Enrolled in Algebra I Grade 7 or 8 versus Algebra I Grades 9 to 12 by Low Income Shares

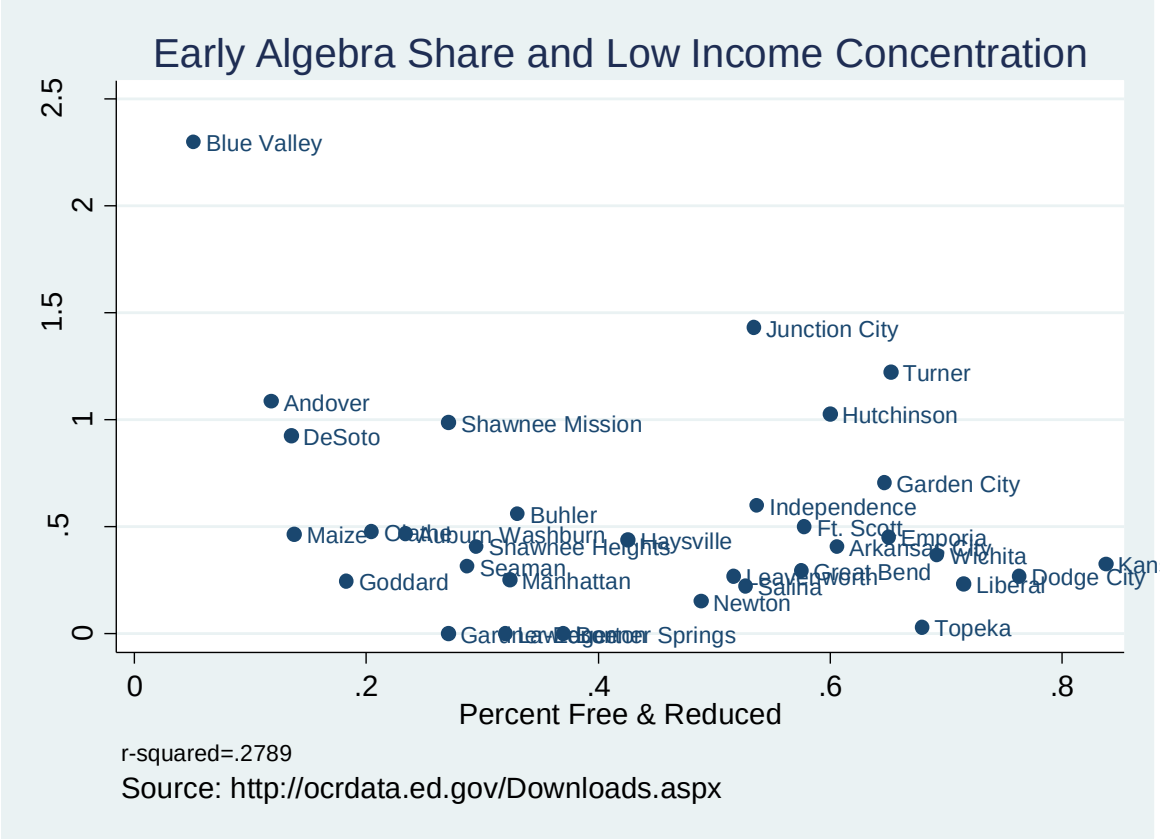


Figure 48 shows the number of students enrolled in Algebra I in grade 7 or 8 over the number of students who took algebra I in grades 9 to 12. Students not taking Algebra I until grade 9 or later are unlikely to be able to take Calculus. Students taking Algebra I in grade 11 or 12 may never take any middle or advanced level math courses and likely be ill prepared for college, if they attend at all. These students would be unlikely to qualify for either the Regents QAC or Scholars curriculum. Students in Kansas City, Dodge City, Liberal and Topeka participate in 7th or 8th grade algebra at very low rates. Further, the relationship is systematic across districts by poverty, and relatively strong, with low income shares alone explaining 28% of the variance in early algebra versus late algebra participation.

Figure 49. Shares of Students Enrolled in Chemistry Courses by Low Income Shares

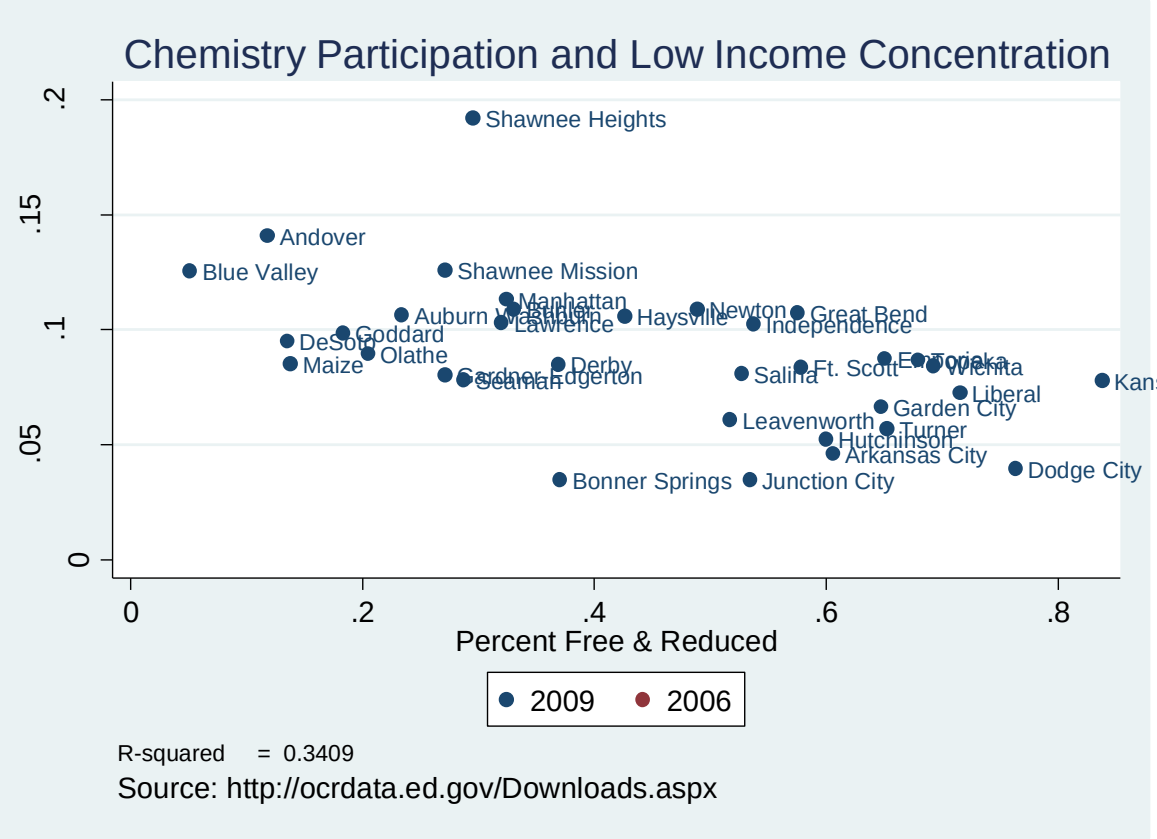


Figure 49 shows the relationship between chemistry course participation and low income concentration. Low income concentration alone explains over 1/3 of the variance in chemistry course taking in Kansas high schools. Yet, Chemistry is among those relevant courses for completing the QAC or scholars curriculum.

Figure 50. Shares of Students Enrolled in Physics Courses by Low Income Shares

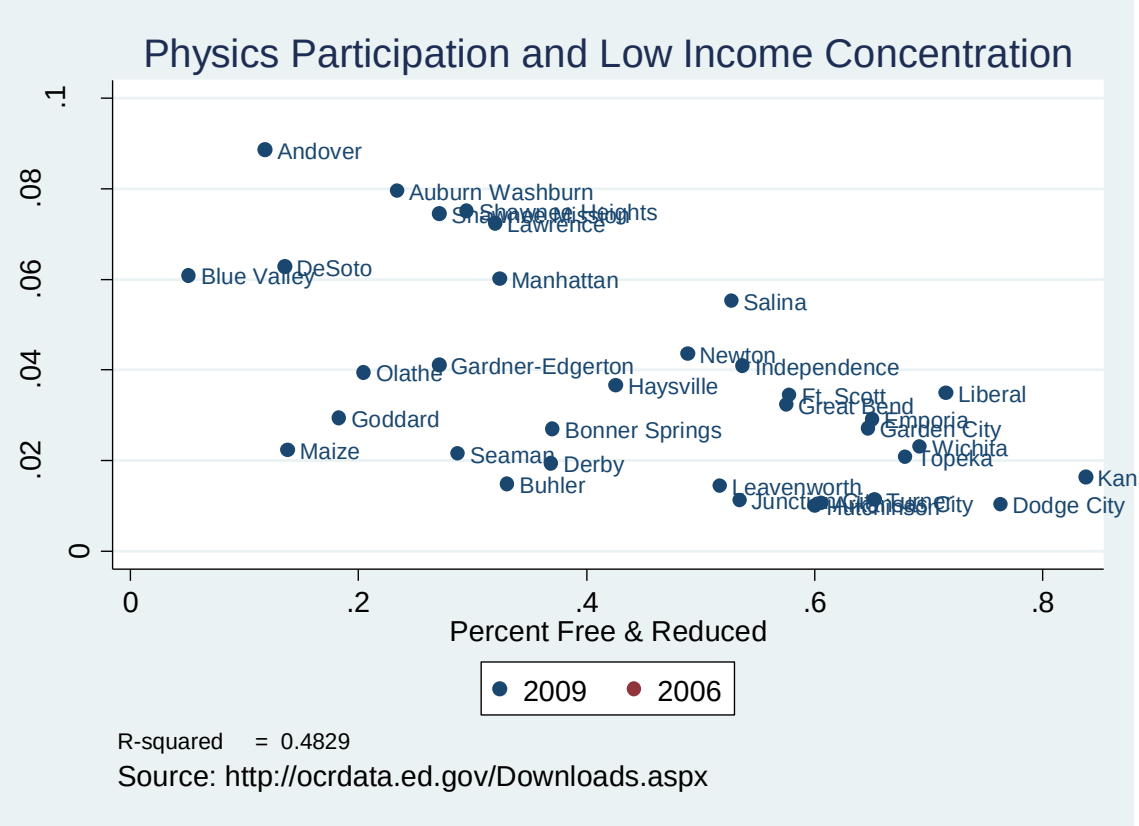
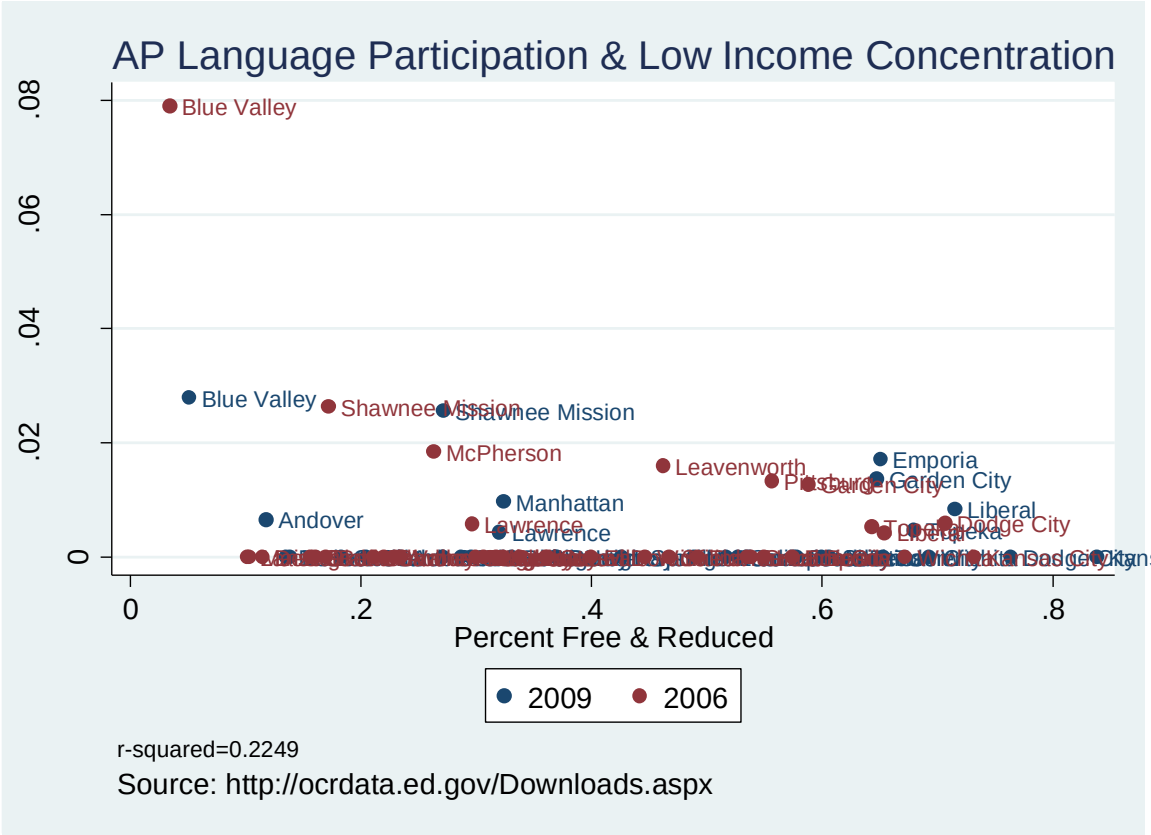


Figure 50 displays the relationship between physics course taking and low income concentrations. This relationship is particularly strong, with low income concentrations explaining nearly half of the variance in physic course taking across Kansas high schools. This course, like Chemistry is among those relevant courses for accomplishing either the QAC or Scholars curriculum.

Figure 51. Shares of Students Enrolled in Advanced Placement Language Courses by Low Income Shares



Finally, Figure 51 displays the relationship between low income concentrations and participation in advanced placement foreign language courses. In this case, many more districts report no participation. But, the higher participation rates continue to be in lower poverty schools, with low income concentrations still explaining over 20% of the variation in participation.

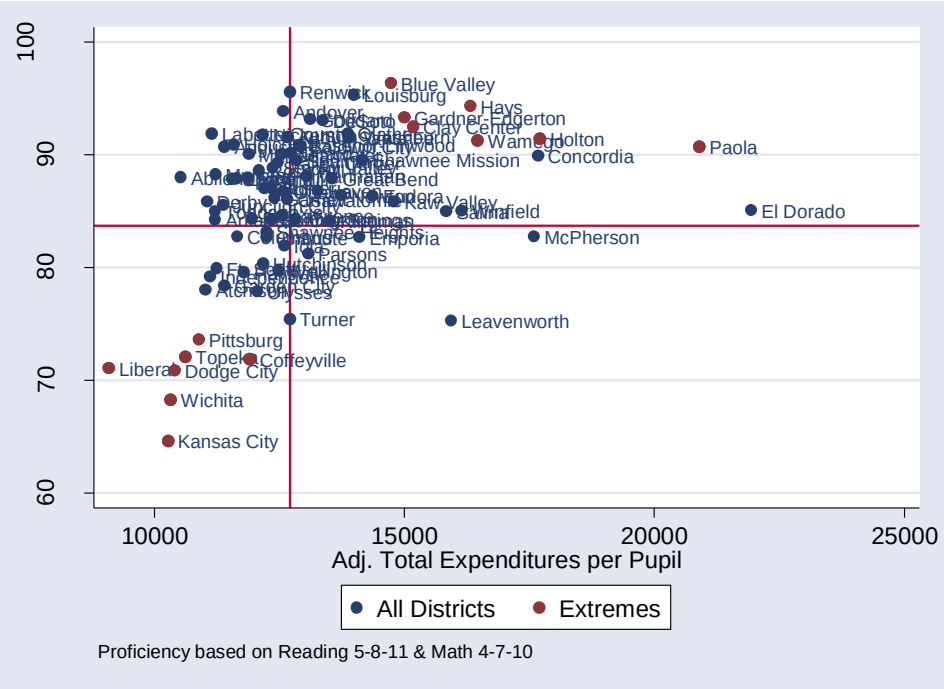
5.2 Staffing Depth and Breadth

In this subsection, I explore disparities in actual staffing distributions and assignments to courses across Kansas public school districts using data on individual teachers, focusing on the most recent two years of data (2010 & 2011). For illustrative purposes, I organize Kansas school districts into quadrants, based on where each district falls in terms of a) total expenditures per pupil adjusted for the costs of achieving comparable (average) student outcomes (using the

Duncombe cost index)[65], and b) actual district average proficiency rates on state reading (grades 5, 8 and 11) and math (grades 4, 7 and 10) assessments.

Figure 52 shows the distribution of districts by their quadrants. As an important starting point, Figure 52 shows that there exists a reasonably strong positive relationship between adjusted spending per pupil and outcomes (r-squared = .45, weighted for district enrollment). That is, districts with more resources have higher outcomes and districts with fewer resources have lower outcomes. Placing a horizontal line at the average actual outcomes and a vertical line at the average adjusted spending carves districts into four groups or quadrants. It is important to understand, however, that districts nearer the intersection of the horizontal and vertical lines are more similar to one another and less representative of their quadrants. That is, "average" Kansas districts are characterized by the cluster around the intersection as opposed to the few districts right at the intersection. To explore the extent of disparities between the most and least advantaged districts statewide, some analyses herein focus specifically on those districts which are deeper into their quadrants, labeled as "extreme" and colored in red in the figure.[66]

Figure 52. Distribution of Districts by Resources & Outcomes (2010)



[65] The Duncombe Cost Index is used to adjust expenditures for the value of those expenditures toward achieving common outcome goals (the statewide average). This is done by taking the expenditure figure (either general fund budgets or total expenditures per pupil) and dividing that figure by the cost index.

[66] having either <75% proficient & <$12,000 per pupil in total expenditures, adjusted for need and costs, or having >90% proficient & >$14,000 in need and cost adjusted spending

The quadrants of the figure may be characterized as follows:

- Upper Left: Lower than average adjusted spending with higher than average outcomes
- **Upper Right: Higher than average adjusted spending with higher than average outcomes**
- Lower Right: Higher than average adjusted spending with lower than average outcomes
- **Lower Left: Lower than average adjusted spending with lower than average outcomes**

Again, some caution is warranted in interpreting these quadrants. One can be fairly confident that those districts deeper into the upper right and lower left quadrants legitimately represent high resource, high outcome, and low resource low outcome districts. But, one should avoid drawing bold "efficiency" conclusions about districts in the upper left or lower right. For example, the relationship appears somewhat curved, not straight, shifting larger numbers of districts that lie at the middle of the distribution into the upper left quadrant (rather than evenly distributed around the intercept).

The largest numbers of children in the state attend school districts that fall in the expected quadrants - those in the upper right which have high resource levels and high outcomes - and those in the lower left which have low resource levels and low outcomes. While a significant number of districts fall in the upper left - appearing to have high outcomes and low resources - most are relatively near the center of the distribution, and in total, they serve fewer students than either those in the upper right or lower left quadrants.

It is also important to understand that comparisons of staffing configurations made across these quadrants are all normative – based on evaluating what some children have access to relative to others. Most of the following comparisons are between school districts in the upper right and lower left hand quadrants. That is, what do children in low resource, low outcome schools have access to compared to children in high resource, high outcome schools? We know from the previous figures, based on the Office of Civil Rights data that participation rates in advanced courses decline precipitously as poverty increases across Kansas schools and districts. We also know that access to such opportunities is important for success in college. And, we know that such opportunities can only be provided by making available sufficient numbers of qualified teaching staff. Further, we know that districts serving higher need student populations face resource allocation pressures to allocate more staffing to basic, general and remedial courses. Research on staffing configurations in other states generally supports these assertions.

Table 9 summarizes the characteristics of districts falling into each quadrant. Of the approximately 474,000 students matched to districts for which full information was available in 2010, 172,671 attend districts with high spending and high outcomes, at least compared to

averages. 154,000 attend districts with low spending and low outcomes. Smaller groups attend districts in the other two quadrants.

For adjusted total expenditures per pupil, districts in the higher spending, higher outcome quadrant have about $4,000 per pupil more than those in the lower spending, low outcomes quadrant. The difference for general fund budgets is about $800. Also related to resources, districts with high spending levels and high outcomes have fewer pupils per teacher assignment when compared to low spending, low outcome districts. That is, from the outset, low spending low outcome districts have fewer teacher assignments to spread across children. Yet, these low spending low outcome districts, which are invariably higher need districts, must find ways to both provide basic and remedial programming to bring their students up to minimum standards, and must find some way to offer the types of advanced courses required for their graduates to have meaningful access to higher education.

Table 9. Characteristics of Districts by Group (2010)

Measure	High Outcome, Low Spending	High Outcome, High Spending	Low Outcome, High Spending	Low Outcome, Low Spending
Districts	107	**92**	16	**58**
Enrollment	128,433	**172,671**	16,156	**154,000**
Total Expenditure per Pupil (ADJ)	$11,817	**$14,844**	$15,098	**$10,838**
GFB per Pupil (ADJ)	$7,251	**$7,134**	$7,461	**$6,316**
Students per Teacher Assignment	7.24	**7.45**	6.58	**7.93**
Mean Outcome	88.24	**90.61**	79.77	**72.51**
% Free or Reduced Lunch	38.0%	**31.4%**	54.2%	**68.0%**

Table 10 summarizes the counts of teacher assignments, assignments per 1,000 pupils and disparities in teacher assignment in Mathematics between districts identified as having high resource levels and high outcomes and districts identified as having low resource levels and low outcomes. Total teacher counts are for a two year period and Table 10 presents only those specific course assignments for which at least 100 teacher course assignments were counted over two years. Total teacher assignment counts are then expressed per 1,000 pupils based on the total quadrant enrollments from Table 9 (for two years). For example, in a high resource, high outcome district, there are approximately .21 teacher assignments to Trigonometry/Algebra per 1,000 pupils. By contrast, there are only .04 teacher assignments to Trig/Algebra per 1,000 pupils in low outcome, low resource districts - or a 5X difference.

Table 10. Disparities in Math Teacher Assignments

	Total (2010 + 2011)		Per 1,000 Pupils (2010 + 2011)		
Subject	**High Outcome, High Resource**	**Low Outcome, Low Resource**	**High Outcome, High Resource**	**Low Outcome, Low Resource**	**Disparity Ratio**
Trigonometry/Algebra	74	13	0.21	0.04	5.02
Algebra I—Part 2	82	32	0.23	0.10	2.26
Algebra III	69	28	0.20	0.09	2.17
Algebra I—Part 1	86	40	0.25	0.13	1.90
Trigonometry	106	50	0.30	0.16	1.87
Accounting	51	25	0.15	0.08	1.80
AP Calculus AB	66	38	0.19	0.12	1.53
Geometry	482	278	1.38	0.90	1.53
Calculus	99	58	0.28	0.19	1.51
Mathematics Proficiency	39	25	0.11	0.08	1.38
Pre-Calculus	154	99	0.44	0.32	1.37
Algebra II	453	317	1.30	1.03	1.26
Algebra I	429	312	1.23	1.01	1.21
Consumer Math	59	43	0.17	0.14	1.21
Mathematics (Middle)	784	889	2.24	2.89	0.78
General Math	64	77	0.18	0.25	0.73
Transition Algebra	55	73	0.16	0.24	0.66
Developmental Mathematics	30	40	0.09	0.13	0.66
General Applied Math	29	61	0.08	0.20	0.42
Pre-Algebra	67	144	0.19	0.47	0.41
Mathematics—Other	38	83	0.11	0.27	0.40
Algebra—Other	89	195	0.25	0.63	0.40
Mathematics (Elementary)	229	521	0.66	1.69	0.39
Informal Geometry	20	92	0.06	0.30	0.19

In Figure 10, one can see that in nearly every advanced math course assignment, high resource high outcome districts are able to provide much more concentrated staffing per pupil. Indeed, low resource, low outcome districts do have greater concentration of general math, transition algebra, general applied math and elementary math. But, they are severely lacking in teacher assignments to courses in advanced algebra, trigonometry and Calculus, courses critical for college persistence.

Table 11. Disparities in English Language Arts Teacher Assignments

	Total (2010 + 2011)		Per 1,000 Pupils (2010 + 2011)		
Subject	**High Outcome, High Resource**	**Low Outcome, Low Resource**	**High Outcome, High Resource**	**Low Outcome, Low Resource**	**Disparity Ratio**
AP English Language and Composition	98	19	0.28	0.06	4.55
Public Speaking	95	43	0.27	0.14	1.95
Forensic Speech—Debate	95	45	0.27	0.15	1.86
Journalism	57	28	0.16	0.09	1.80
AP English Literature	82	44	0.23	0.14	1.64
Reading Specialist	145	80	0.42	0.26	1.60
Assisted Reading	61	37	0.17	0.12	1.45
Forensic Speech—Inclusive	41	25	0.12	0.08	1.45
Creative Writing	64	40	0.18	0.13	1.41
English/Language Arts	363	243	1.04	0.79	1.32
Developmental Reading	175	130	0.50	0.42	1.19
English/Composition (juniors & seniors)	36	27	0.10	0.09	1.18
English/Language Arts II (10th Grade)	477	430	1.37	1.40	0.98
English/Language Arts I (9th Grade)	491	451	1.41	1.46	0.96
English Language Arts (Middle)	1000	939	2.86	3.05	0.94
English/Language Arts III (11th Grade)	404	397	1.16	1.29	0.90
Reading (Elementary)	540	703	1.55	2.28	0.68
Composition	34	52	0.10	0.17	0.58
Corrective Reading	28	48	0.08	0.16	0.51
English Language and Literature	30	94	0.09	0.31	0.28
English Language Arts (elementary)	126	441	0.36	1.43	0.25

Table 11 summarizes the distributions of English language arts teacher course assignments. Again, AP courses stand out as disparate, consistent with prior findings of participation rates based on the OCR data. Low resource, low outcome districts are leveraging substantial additional staffing resources at the elementary level and keeping up with general course offerings at the high school level. But in doing so, these low resource, low outcome districts appear to be sacrificing advanced course offerings as well as breadth of electives available to students in high resource, high outcome school districts.

Table 12. Disparities in Science Teacher Assignments

	Total (2010 + 2011)		Per 1,000 Pupils (2010 + 2011)		
Subject	**High Outcome, High Resource**	**Low Outcome, Low Resource**	**High Outcome, High Resource**	**Low Outcome, Low Resource**	**Disparity Ratio**
Physics	229	128	0.66	0.42	1.58
Chemistry	352	217	1.01	0.70	1.43
Engineering and Technology	62	43	0.18	0.14	1.27
Integrated Science	45	32	0.13	0.10	1.24
Environmental Science	87	69	0.25	0.22	1.11
Biology	482	397	1.38	1.29	1.07
Science (Middle)	702	580	2.01	1.88	1.07
Physical Science	190	165	0.54	0.54	1.02
Anatomy and Physiology	131	114	0.38	0.37	1.01
Earth Science	41	38	0.12	0.12	0.95
Earth and Space Science	100	94	0.29	0.31	0.94
Biology—Advanced Studies	97	109	0.28	0.35	0.78
Life and Physical Science	51	63	0.15	0.20	0.71
Zoology	32	53	0.09	0.17	0.53
Science (Elementary)	125	415	0.36	1.35	0.27

Table 12 characterizes the distribution of teacher assignments to science courses. While there are fewer extremes (more than 2X differences) in this case, as one might expect from the OCR data analyses in the previous subsection, chemistry and physics teacher assignments are far more concentrated in high resource, high outcome school districts than in low resource low outcome school districts. Again, higher concentrations of elementary science appear in lower resource low outcome districts. But despite this effort in lower grades (to provide introductory science content to students) and perhaps partly because of it (due to resulting resource constraints), students have less access to advanced courses at the secondary level.

Table 13. Disparities in Social Studies Teacher Assignments

	Total (2010 + 2011)		Per 1,000 Pupils (2010 + 2011)		
Subject	**High Outcome, High Resource**	**Low Outcome, Low Resource**	**High Outcome, High Resource**	**Low Outcome, Low Resource**	**Disparity Ratio**
World Geography	151	58	0.43	0.19	2.30
Modern World History	95	38	0.27	0.12	2.20
Economics	89	36	0.25	0.12	2.18
Sociology	112	54	0.32	0.18	1.83
Psychology	128	77	0.37	0.25	1.47
AP U.S. History	72	52	0.21	0.17	1.22
U.S. History—Comprehensive	266	195	0.76	0.63	1.20
U.S. Government—Comprehensive	328	270	0.94	0.88	1.07
History Comprehensive	737	730	2.11	2.37	0.89
Modern U.S. History	169	192	0.48	0.62	0.78
World History—Overview	210	278	0.60	0.90	0.67
World History and Geography	27	53	0.08	0.17	0.45
History Comprehensive	109	390	0.31	1.27	0.25
Early U.S. History	20	176	0.06	0.57	0.10

Table 13 displays the disparities in social studies teacher assignments. Disparities are substantial for social science electives such as sociology, economics, modern world history and world geography. General courses such as comprehensive history and overview courses remain more concentrated in lower resource, low outcome districts.

Table 14. Disparities in Fine Arts Teacher Assignments

	Total (2010 + 2011)		Per 1,000 Pupils (2010 + 2011)		
Subject	**High Outcome, High Resource**	**Low Outcome, Low Resource**	**High Outcome, High Resource**	**Low Outcome, Low Resource**	**Disparity Ratio**
Creative Art—Drawing	84	34	0.24	0.11	2.18
Concert Band	54	24	0.15	0.08	1.98
Music Theory	43	20	0.12	0.06	1.90
General Band	220	117	0.63	0.38	1.66
Chorus	211	121	0.60	0.39	1.54
Vocal Music (Middle)	247	144	0.71	0.47	1.51
Art (Middle)	241	151	0.69	0.49	1.41
Drama—Comprehensive	47	30	0.13	0.10	1.38
Creative Art—Sculpture	54	36	0.15	0.12	1.32
Drama—Acting/Performa	59	42	0.17	0.14	1.24
Art (Elementary)	423	303	1.21	0.98	1.23
Ceramics/Pottery	78	56	0.22	0.18	1.23
Music (Elementary)	434	315	1.24	1.02	1.21
Orchestra	59	45	0.17	0.15	1.16
Creative Art—Comprehensive	137	114	0.39	0.37	1.06
Vocal Ensembles	74	63	0.21	0.20	1.04
Instrumental Music (Middle)	367	322	1.05	1.05	1.01
Creative Art—Drawing/	73	66	0.21	0.21	0.98
Instrumental Music (Elementary)	338	334	0.97	1.08	0.89
Creative Art—Painting	35	35	0.10	0.11	0.88
Music (Middle)	51	52	0.15	0.17	0.86
Marching Band	40	45	0.11	0.15	0.78
Vocal Music (Elementary)	284	321	0.81	1.04	0.78
Contemporary Band	36	42	0.10	0.14	0.76

Finally, some pundits have gone so far as to argue that high need districts all have sufficient resources to accomplish minimum proficiency goals, but that high need districts are simply squandering those resources on frivolous and expensive activities such as cheerleading and ceramics.[67] These arguments are typically accompanied by little more than anecdotes and not generally born out through large scale analysis of resource allocation across districts. For the most part, where resource allocation differences across higher and lower spending and higher and lower need districts have been explored with comprehensive data sources, it has generally been found that high need districts already target substantial resources to basic and remedial courses and do so at the expense of allocating resources to advanced curricular offerings, to fine arts, or to libraries. Kansas school districts are no different. Table 14 shows that disparities

[67] See, for example: http://schoolfinance101.files.wordpress.com/2010/01/b-baker-mo_il-resourcealloc-aera2011.pdf

across the arts are significant. There exist a handful of areas where low outcome, low resource districts have greater concentration of teacher assignments, mainly at the elementary level.[68]

5.3 Novice Teachers

A substantial body of literature has found that concentrations of novice teachers (i.e. teachers with less than 3 or 4 years of experience) can have significant negative effects on student outcomes.[69] Rivkin, Hanushek, and Kain (2005) find that teacher experience is important in the first two years of a teaching career (but not thereafter).[70] Hanushek and Rivkin note that: "we find that identifiable school factors – the rate of student turnover, the proportion of teachers with little or no experience, and student racial composition – explain much of the growth in the achievement gap between grades 3 and 8 in Texas schools."[71] Notably, evidence from a variety of state and local contexts, provides a consistent picture that higher concentrations of novice teachers are associated with negative effects on student outcomes.

[68] This occurs partly because poorer urban districts tend to have larger shares of their total enrollments concentrated in lower grades. This distribution may also explain some of the high school level disparities, where high need urban districts have fewer teachers assigned to upper level academic courses and to advanced level fine arts courses. But, it is important to understand in these tables that the degrees of disparity in teacher assignments generally far surpass the degrees in differences in share of total enrollment. For example, the percent of total students enrolled in grades 9 to 12 in high resource, high outcome districts is 30.2, and the percent in low resource, low outcome districts is 27.8.

[69] See Charles T. Clotfelter, Helen F. Ladd and Jacob L. Vigdor, "Who Teaches Whom? Race and the distribution of novice teachers*," Economics of Education Review* 24, no. 4 (August, 2005): 377-392;

See Charles T. Clotfelter, Helen F. Ladd and Jacob L. Vigdor, "Teacher sorting, teacher shopping, and the assessment of teacher effectiveness," Sanford Institute of Public Policy, Duke University, 2004; and

Hanushek, Kain, and Rivkin, "Teachers, schools, and academic achievement."

[70] Hanushek, Kain, and Rivkin, "Teachers, schools, and academic achievement."

[71] http://edpro.stanford.edu/hanushek/admin/pages/files/uploads/w12651.pdf

Figure 52. Shares of First and Second Year Teachers by Low Income Student Shares

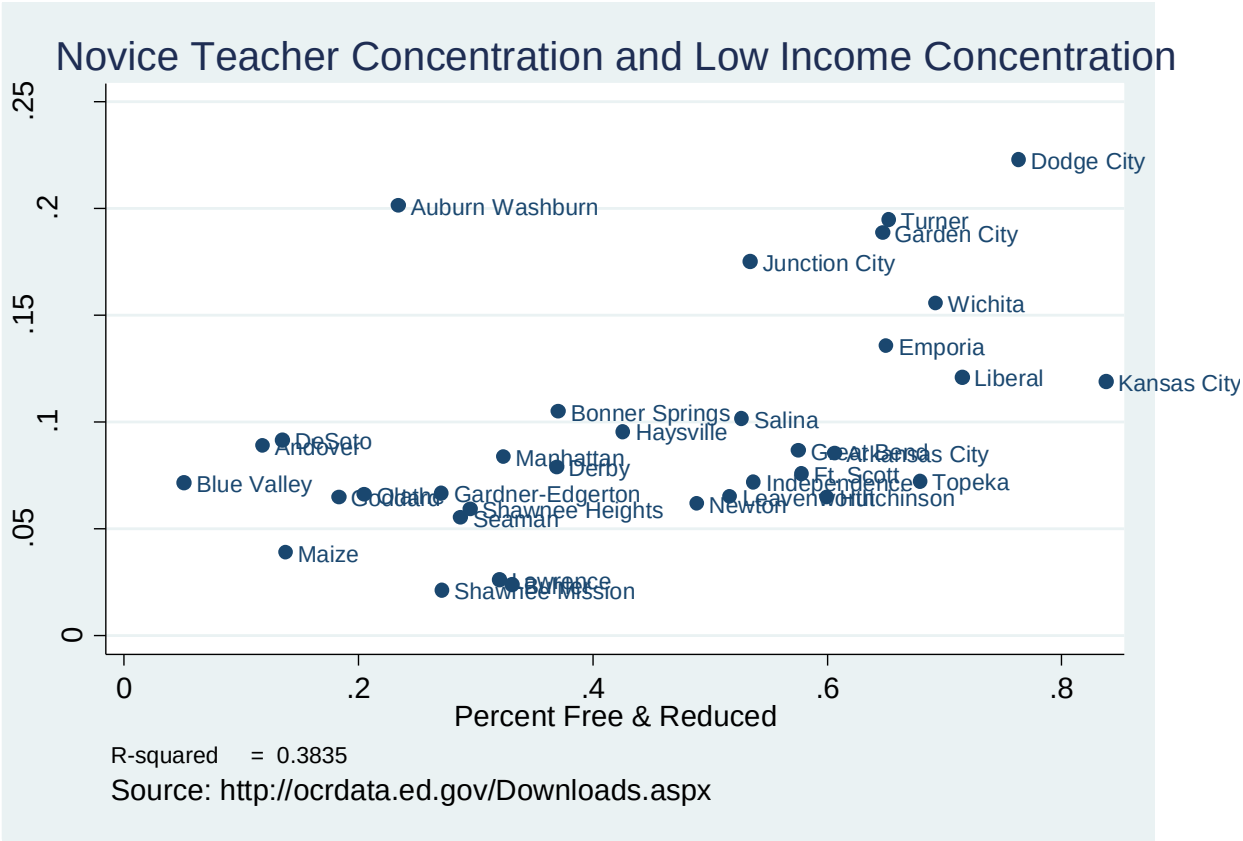


Figure 52 shows that districts with higher concentrations of low income populations have systematically higher concentrations of novice teachers (in their first or second year). In fact, low income concentration alone explains nearly 40% of the variation in novice teacher concentration. Districts like Kansas City have much higher rates of novice teachers than neighboring suburban districts, including those which are growing rapidly and have increased demand for new teachers. This finding suggests that districts like Kansas City and Turner have much higher turnover rates than districts like DeSoto, Blue Valley or Shawnee Mission. Yet, current Kansas school finance policies provide financial support for teacher retention in the districts already advantaged with systematically lower concentrations of novice teachers.

Table 15 uses data from the statewide staffing files for 2010 and 2011 and compares teachers by quartile and then for the extreme groups. Based on the indicator of teacher prior year status differences appear relatively small, with marginally higher shares of teachers indicating that they are returning teachers in high resource, high outcome districts or very high resource very high outcome districts.

Table 15. Shares of Returning and Novice Teachers by District Group

	% Returning	% Novice (<=3 years)
High Outcome, High Resource	94.02	15.36
Low Outcome, Low Resource	91.96	23.4
Very High Group	93.61	17.21
Very Low Group	92.59	26.56

Data Source: Statewide Staffing Assignment Database, 2010-2011

But, shares of novice teachers reveal more substantive differences. Table 15 shows that in low resource, low outcome districts over 23% of teachers have 3 or fewer years of experience, compared to 15.36% in high resource high outcome districts. The share of novice teachers increases to 26.56% in very low resource very low outcome districts.

Table 16. Odds that a Teacher is Novice by District Group (Logistic Regression)

DV = Novice Teacher	Odds Ratio	Std. Err.	P>z
Need/Resource Group			
High Outcome, Low Resource	1.06	0.03	*
High Outcome, High Resource			
Low Outcome, High Resource	1.54	0.08	*
Low Outcome, Low Resource	**1.69**	**0.05**	*****
Labor Market*			
Year = 2011	0.90	0.02	*

Table 16 provides more precise estimates of the odds that a teacher is novice, given the group that the district is in, and compared against districts in the same labor market. The baseline comparison group is the high resource high outcome group. Compared to teachers in the high resource high outcome districts, teachers in the low resource low outcome districts are nearly 70% more likely to be novice.

5.4 Teacher Salaries

Finally, table 17 explores whether there exist related teacher salary disparities between otherwise similar teachers across the four groups. In this section, I have already shown that:

- Low resource low outcome districts have fewer total teacher assignments per child than high resource high outcome districts;
- Low resource low outcome districts tend to have far fewer teacher assignments in advanced course offerings in math and science;
- Low resource low outcome districts tend to have far fewer upper level elective assignments in social studies and English;
- Low resource low outcome districts tend to have fewer teacher assignments to upper level electives in the arts;
- Low resource low outcome districts are concentrating staffing resources at the elementary level and in basic and/or general level courses;

- Teachers in low resource low outcome districts are 70% more likely to be novice than teachers in high resource high outcome districts;

A remaining question in addition to a) facing more difficult working conditions including much higher need student populations and b) facing the limited likelihood of having the opportunity to teach advanced courses or electives, is whether teachers concentrated in high need Kansas districts are also receiving lower salaries? Specifically, Table 17 asks whether teachers in low resource low outcome districts are receiving lower base salaries than teachers of the same experience level in high resource high outcome districts in the same labor market.

Table 17. Salary Disparities by District Group (linear regression)

DV = Base Salary	Coef.	Std. Err.	P>t
Need/Resource Group			
High Outcome, Low Resource	-$2,275	$87	*
High Outcome, High Resource	$0	$0	
Low Outcome, High Resource	-$1,988	$180	*
Low Outcome, Low Resource	-$453	$90	*
Experience Level			
0 to 5 Years			
6 to 10 Years	$3,637	$100	*
11 to 15 Years	$6,859	$103	*
16 to 20 Years	$10,463	$110	*
21 to 25 Years	$13,498	$117	*
Over 25 Years	$15,288	$99	*
Staffing Type Classification			
Elementary Teacher			
Middle School Teacher	$385	$94	*
Secondary Teacher	$416	$87	*
Special Ed/ESOL Teacher	$571	$105	*
School Specialist	$2,996	$140	*
School Support	$1,034	$175	*
Administration	$31,558	$145	*
Migrant Teacher	-$370	$6,562	
Labor Market*			
Year = 2011	$33	$63	
Constant	$28,003	$1,004	*
R-squared	**0.5716**		

*P<.05

Table 17 shows that teachers in low resource low outcome districts at the same experience level are paid, on average, in base salary, about $450 less than teachers in high resource high outcome districts in the same labor market. Teachers in other districts are actually paid even less in base salary. That is, there exists no compensating differential to attract teachers to low resource low outcome districts. In fact, arguably, current policies which provide for additional local budget authority to affluent suburban districts work to reinforce the salary disparities shown in Table 17 and the novice teacher concentration disparities shown in Tables 15 and 16, and in Figure 52.

6.0 School Finance Reforms Do Matter

This final section addresses the question of what we know about the effects of state school finance reforms, and whether there exists definitive evidence one way or the other, that reforming state school finance systems improves student outcomes. In recent years, there have been a handful of studies and entire books dedicated to making the case that court ordered school finance reforms simply have no positive effect on children. In fact, some go so far as to claim that court ordered school finance reforms "harm our children."[72] The premise that additional funding for schools, often leveraged toward class size reduction, additional course offerings or increased teacher salaries, causes harm to children is, on its face, absurd. Further, no rigorous empirical study of which I am aware actually validates that increased funding for schools in general or targeted to specific populations has led to any substantive, measured reduction in student outcomes or other "harm." Arguably, if this were the case, it would open new doors to school finance litigation against states which choose to increase funding to schools.

But questions regarding measurement and validation of positive effects versus non-effects are complex. Having reviewed and written about the many of these claims, I have found that the arguments regarding the failures of court orders and school finance reforms are often built on analyses that suffer from one or all of the following shortcomings, which I refer to as the 3Ws of weak research design: Whether, When & Who:

> **Whether**: Many analyses argue to show that school funding reforms had no positive effects on outcomes, but fail to measure whether substantive school funding reforms were ever implemented or whether they were sustained. Studies of this type often simply look at student outcome data in the years following a court ruling regarding school funding, creating crude classifications of who won or lost the ruling. Yet, the question at hand is not whether a ruling in and of itself leads to changes in outcomes, but whether reforms implemented in response to a ruling do. One must, at the very least, measure whether reform actually happened!
>
> **When**: Many analyses simply pick two end points, or a handful of points of student achievement to cast as a window, or envelop around a supposed occurrence of school finance reform or court order, often combining this strategy with the first (not ever measuring the reform itself). For example, one might take NAEP scores from 1992 and 2007 on a handful of states, and indicate that sometime in that window, each state implemented a reform or had a court order.

[72] See, for example: E.A. Hanushek (2006) Courting Failure: How School Finance Lawsuits Exploit Judges' Good Intentions and Harm Our Children. Hoover Institution Press. Reviewed here: http://www.tcrecord.org/Content.asp?ContentId=13382

Then one might compare the changes in outcomes from 1992 to 2007 for those states to other states that supposedly did not implement reforms or have court orders. This, of course provides no guarantee that the non-reform group didn't actually do something more substantive than the reform group. But, that aside, the casting of a large time window and the same time window across states ignores the fact that reforms may come and go within that window, or may be sufficiently scaled up only during the latter portion of the window. It makes little sense, for example to evaluate the effects of New Jersey's school finance reforms which experienced their most significant scaling up between 1998 and 2003, by also including 6 years prior to any scaling up of reform. Similarly, some states which may have aggressively implemented reforms at the beginning of the window may have seen those reforms fade within the first few years. When matters!

Who: Many analyses also address imprecisely the questions of "who" is expected to benefit from the reforms. Back to the "whether" question, if there was no reform, then the answer to this question is no-one. No-one is expected to benefit from a reform that didn't ever happen. Further, no-one is expected to benefit today from a reform that may happen tomorrow, nor is it likely that individuals will benefit twenty years from now from a reform that is implemented this year, and gone within the next three years. Beyond these concerns, it is also relevant to consider whether the school finance reform in question, if and when it did happen, benefited specific school districts or specific children. Reforms that benefit poorly funded school districts may not also uniformly benefit low income children who may be distributed, albeit unevenly, across well-funded and poorly-funded districts. Not all achievement data are organized for appropriate alignment with funding reform data. And if they are not, we cannot know if we are measuring the outcomes of *who* we would actually expect to benefit.

In subsection 5.1, I provide examples of when whether and who problems in research on school finance reforms. In subsection 5.2 I provide a summary of more rigorous, mainly peer reviewed empirical studies of the effects of state school finance reforms. On balance, these studies show that substantive and sustained state school finance reforms can and do positively affect student outcomes, to the extent that the research design is sufficiently careful at measuring specifically who is expected to benefit and measuring whether and to what extent substantive reforms were actually implemented.

5.1 Examples of Whether, When and Who Problems

In 2011, Kevin G. Welner of the University of Colorado and I published an extensive review of the good, the bad and the ugly of research on the effectiveness of state school finance reforms.[73] In our article we identify several specific examples of empirical studies claiming to find that school funding reforms and judicial orders simply don't matter. That is, they don't have any positive effects on measured student outcomes. But, as noted above, many of those studies suffer from basic flaws of logic in their research design, which center around questions of whether, when and who.

As one example of a *whether* problem, consider an article published by Greene and Trivitt (2008). Greene and Trivitt claim to have found "no evidence that court ordered school spending improves student achievement" (p. 224). The problem is that the authors never actually measured "spending" and instead only measured whether there had been a court order. Kevin Welner and I explain in greater detail:

> To illustrate these dangers, consider a recent study by Greene and Trivitt (2008). Using a version of Springer, Liu and Guthrie's classification scheme, they take the very problematic leap of evaluating the direct relationship between student outcomes and rulings by category (equity and adequacy).11 Greene and Trivitt do, at one point, raise the key questions: whether a judicial order necessarily leads to reform legislation, as well as whether equity orders lead to equity solutions and whether adequacy orders lead to adequacy solutions. But, while they raise such questions, the authors do not follow by including statistical tests concerning these issues. Rather, using dummy variables for whether a judge issued an "equity" or "adequacy" ruling, plus a handful of state contextual measures, Green and Trivitt test for direct statistical relationships between their dummy variables (type of ruling) and their student outcome measures. Their models never incorporate any measures of the actual reform legislation. Accordingly, the resulting empirical analysis addresses only whether there exists a direct link between the occurrence and type of a judicial order and changes in outcomes relative to "other" states, regardless of what has gone on in those states.
>
> The Greene and Trivitt article, published in a special issue12 of the *Peabody Journal of Education*, proclaimed that the authors had empirically estimated "the effect of judicial intervention on student achievement using standardized test scores and graduation rates in 48 states from 1992 to 2005" and had found "no evidence that court ordered school spending improves student achievement" (p. 224, emphasis added). The authors claim to have tested for a direct link between judicial orders regarding state school funding systems and any changes in the level or distribution of student outcomes that are

[73] Baker, B.D., Welner, K. (2011) School Finance and Courts: Does Reform Matter, and How Can We Tell? Teachers College Record 113 (11) p. –

> statistically associated with those orders. That is, the authors asked whether a declaration of unconstitutionality (nominally on either equity or adequacy grounds) alone is sufficient to induce change in student outcomes. The study simply offers a rough indication of whether the court order itself, not "court-ordered school spending," affects outcomes. It certainly includes no direct test of the effects of any spending reforms that might have been implemented in response to one or more of the court orders.

Kevin Welner and I also raise questions regarding "who" would have benefited from specific reforms and "when" specific reforms were implemented and/or faded out. In our article, much of our attention regarding *who* and *when* questions focused on Chapter 6, *The Effectiveness of Judicial Remedies* of Eric Hanushek and Alfred Lindseth's book *Courting Failure.*[74] Specifically, Hanushek and Lindseth identify four states, Kentucky, Massachusetts, New Jersey and Wyoming as states which have by order of their court systems, (supposedly) infused large sums of money into school finance reforms over the past 20+ years. Given this simple classification, Hanushek and Lindseth take the National Assessment (NAEP) Scores for these states, including scores for low income children, and racial subgroups,[75] and plot those scores against national averages from 1992 to 2007. No statistical tests are performed, but graphs are presented to illustrate that there would appear to be no difference in growth of scores in these states relative to national averages. Of course, there is also no measure of whether and how funding changed in these states compared to others. Additionally, there is no consideration of the fact that in Wyoming, for example, per pupil spending increased largely as a function of enrollment decline and less as a function of infused resources.

Setting these other major concerns aside, which alone undermine entirely the conclusions of Hanushek and Lindseth's chapter, Kevin Welner and I explain the problem of using a wide time window to evaluate school finance reforms which may ebb and flow throughout that window:

> As noted earlier, the appropriate outcome measure also depends on identifying the appropriate time frame for linking reforms to outcomes. For example, a researcher would be careless if he or she merely analyzed average gains for a group of states that implemented reforms over an arbitrary set of years. If a state included in a study looking at years 1992 and 2007 had implemented its most substantial reforms from 1998 to 2003, the overall average gains would be watered down by the six pre-reform years – even assuming that the reforms had immediate effects (showing up in 1998, in this example).

[74] Hanushek, E. A., and Lindseth, A. (2009). *Schoolhouses, Courthouses and Statehouses*. Princeton, N.J.: Princeton University Press.

[75] Additional examples here: http://edpro.stanford.edu/Hanushek/admin/pages/files/uploads/06_EduO_Hanushek_g.pdf

> And, as noted earlier, such an "open window" approach may be particularly problematic for evaluating litigation-induced reforms, given the inequitable and inadequate pre-reform conditions that likely led to the litigation and judicial decree.
>
> There also exist logical, identifiable, time-lagged effects for specific reforms. For example, the post-1998 reforms in New Jersey included implementation of universal pre-school in plaintiff districts. Assuming the first relatively large cohorts of preschoolers passed through in the first few years of those reforms, a researcher could not expect to see resulting differences in 3rd or 4th grade assessment scores until four to five years later.

Further, as noted previously, simply disaggregating NAEP scores by race or low income status does not guarantee by any stretch that one has identified the population expected to benefit from specific reforms. That is, race and poverty subgroups in the NAEP sample are woefully imprecise proxies for students attending districts most likely to have received additional resources. Kevin Welner and I explain:

> This need to disaggregate outcomes according to distributional effects of school funding reforms deserves particular emphasis since it severely limits the use of the National Assessment of Educational Progress – the approach used in the recent book by Hanushek and Lindseth. The limitation arises as a result of the matrix sampling design used for NAEP. While accurate when aggregated for all students across states or even large districts, NAEP scores can only be disaggregated by a constrained set of student characteristics, and those characteristics may not be well-aligned to the district-level distribution of the students of interest in a given study.
>
> Consider, for example, New Jersey – one of the four states analyzed in the recent book. It might initially seem logical to use NAEP scores to evaluate the effectiveness of New Jersey's *Abbott* litigation, to examine the average performance trends of economically disadvantaged children. However, only about half (54%) of New Jersey children who receive free or reduced-price lunch – a cutoff set at 185% of the poverty threshold – attend the *Abbott* districts. The other half do not, meaning that they were not direct beneficiaries of the *Abbott* remedies. While effects of the *Abbott* reforms might, and likely should, be seen for economically disadvantaged children given that sizeable shares are served in *Abbott* districts, the limited overlap between economic disadvantage and *Abbott* districts makes NAEP an exceptionally crude measurement instrument for the effects of the court-ordered reform.[16]

Hanushek and Lindseth are not alone in making bold assertions based on insufficient analyses, though Chapter 6 of their recent book goes to new lengths in this regard. Kevin Welner and I address numerous comparably problematic studies with more subtle whether, who and when problems, including the Greene and Trivitt study noted above. Another example is a study by Florence Neymotin of Kansas State University, which purports to find that the substantial infusion of funding into Kansas school districts which supposedly occurred between 1997 and

2006 as a function of the Montoy rulings never led to substantive changes in student outcomes. Now, the reader who has made it this far in this report without skipping the first several sections should realize that the most relevant court orders in Montoy did not come until January of 2005, June of 2005 and eventually July of 2006. Remedy legislation may be argued to have begun as early as 2005-06, but primarily from 2006-07 on, before its dismantling from 2008 on. Regarding the Neymotin study, Kevin Welner and I explain:

> A comparable weakness undermines a 2009 report written by a Kansas State University economics professor, which contends that judicially mandated school finance reform in Kansas failed to improve student outcomes from 1997 to 2006 (Neymotin, 2009).[13] This report was particularly egregious in that it did not acknowledge that the key judicial mandate was issued in 2005 and thus had little or no effect on the level or distribution of resources across Kansas schools until 2007-08. In fact, funding for Kansas schools had fallen behind and become less equitable from 1997 through 2005.[14] Consequently, an article purporting to measure the effects of a mandate for increased and more equitable spending was actually, in a very real way, measuring the opposite.[76]

5.2 More Rigorous Studies

Kevin Welner and I also review several studies applying more rigorous and appropriate methods for evaluating the influence of state school finance reforms. Among those studies is one national, cross-state study by Card and Payne (2002) which evaluates whether changes in the spending inequality generally lead to changes in outcome inequality, resolving some but not all of the whether, when and who concerns raised above by more specifically measuring the extent to which funding inequality changed and relying on comparable bases for evaluating income and outcome inequality (income inequality in both cases).[77] Card and Payne's analyses, while imperfect, rise to a level far above and beyond those conducted by Hanushek and Lindseth in their Chapter 6, or by Greene and Trivitt who failed entirely to measure "whether" reforms happened. Card and Payne found:

> We find evidence that equalization of spending leads to a narrowing of test score outcomes across family background groups." (p. 49)[78]

[76] B. Baker, K.G. Welner (2011) Do School Finance Reforms Matter and How Can We Tell. Teachers College Record. http://www.tcrecord.org/content.asp?contentid=16106

[77] For additional discussion of the strengths and weakness of this particular study see Baker & Welner (2011).

[78] Card, D., and Payne, A. A. (2002). School Finance Reform, the Distribution of School Spending, and the Distribution of Student Test Scores. Journal of Public Economics, 83(1), 49-82.

In the Spring 2011 issue of the Journal of Education Finance and Policy, Joydeep Roy published an analysis of the effects of Michigan's 1990s school finance reforms which led to a significant leveling up of previously low spending districts. Roy, whose analyses measures both *whether* the policy resulted in changes in funding and *who* was affected, found:

> "Proposal A was quite successful in reducing interdistrict spending disparities. There was also a significant positive effect on student performance in the lowest-spending districts as measured in state tests." (from abstract)[79]

Similarly, Papke (2001), also evaluating Michigan school finance reforms from the 1990s, found:

> "Focusing on pass rates for fourth-grade and seventh grade math tests (the most complete and consistent data available for Michigan), I find that increases in spending have nontrivial, statistically significant effects on math test pass rates, and the effects are largest for schools with initially poor performance." (Papke, 2001, p. 821.)[80]

Two studies of Massachusetts school finance reforms from the 1990s find similar results. The First, by Downes, Zabel and Ansel (2009) found:

> "The achievement gap notwithstanding, this research provides new evidence that the state's investment has had a clear and significant impact. Specifically, some of the research findings show how education reform has been successful in raising the achievement of students in the previously low-spending districts. Quite simply, this comprehensive analysis documents that without Ed Reform the achievement gap would be larger than it is today." (p. 5)[81]

The second, by Guryan (2003) found:

> "Using state aid formulas as instruments, I find that increases in per-pupil spending led to significant increases in math, reading, science, and social studies test scores for 4th- and 8th-grade students. The magnitudes imply a $1,000 increase in per pupil spending leads to about a third to a half of a standard-deviation increase in average test scores. It is noted

[79] Roy, J. (2003). Impact of School Finance Reform on Resource Equalization and Academic Performance: Evidence from Michigan. Princeton University, Education Research Section Working Paper No. 8. Retrieved October 23, 2009 from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=630121(Forthcoming in Education Finance and Policy.)

[80] Papke, L. (2005). The effects of spending on test pass rates: evidence from Michigan. Journal of Public Economics, 89(5-6). 821-839.

[81] Downes, T. A., Zabel, J., and Ansel, D. (2009). Incomplete Grade: Massachusetts Education Reform at 15. Boston, MA. MassINC.

> that the state aid driving the estimates is targeted to under-funded school districts, which may have atypical returns to additional expenditures." (p. 1)[82]

Downes had conducted earlier studies of Vermont school finance reforms of the late 1990s (Act 60). In a 2004 book chapter, Downes noted:

> "All of the evidence cited in this paper supports the conclusion that Act 60 has dramatically reduced dispersion in education spending and has done this by weakening the link between spending and property wealth. Further, the regressions presented in this paper offer some evidence that student performance has become more equal in the post–Act 60 period. And no results support the conclusion that Act 60 has contributed to increased dispersion in performance." (p. 312)[83]

Two studies of school finance reforms in New Jersey also merit some attention. The first, by Alex Resch of the University of Michigan, explored in detail the resource allocation changes during the scaling up period of school finance reform in New Jersey. Resch found evidence suggesting that New Jersey *Abbott* districts "directed the added resources largely to instructional personnel" (p. 1) such as additional teachers and support staff. She also concluded that this increase in funding and spending improved the achievement of students in the affected school districts. Looking at the statewide 11th grade assessment ("the only test that spans the policy change"), she found:

> "that the policy improves test scores for minority students in the affected districts by one-fifth to one-quarter of a standard deviation" (p. 1).[84]

Goertz and Weiss (2009) also evaluated the effects of New Jersey school finance reforms, but did not attempt a specific empirical test of the relationship between funding level and distributional changes and outcome changes. Thus, their findings are primarily descriptive. Goertz and Weiss explain:

> "State Assessments: In 1999 the gap between the Abbott districts and all other districts in the state was over 30 points. By 2007 the gap was down to 19 points, a reduction of 11 points or 0.39 standard deviation units. The gap between the Abbott districts and the high-wealth districts fell from 35 to 22 points. Meanwhile performance in the low-,

[82] Guryan, J. (2003). Does Money Matter? Estimates from Education Finance Reform in Massachusetts. Working Paper No. 8269. Cambridge, MA: National Bureau of Economic Research.

[83] Downes, T. A. (2004). School Finance Reform and School Quality: Lessons from Vermont. In Yinger, J. (ed), Helping Children Left Behind: State Aid and the Pursuit of Educational Equity. Cambridge, MA: MIT Press.

[84] Resch, A. M. (2008). *Three Essays on Resources in Education* (dissertation). Ann Arbor: University of Michigan, Department of Economics. Retrieved October 28, 2009, from http://deepblue.lib.umich.edu/bitstream/2027.42/61592/1/aresch_1.pdf

> middle-, and high-wealth districts essentially remained parallel during this eight-year period" (Figure 3, p. 23).[85]

On the one hand, these studies of New Jersey school finance warrant careful consideration because of their findings of substantive positive outcomes, in sharp contrast with claims by Hanushek and Lindseth. They also warrant careful consideration because they both acknowledge *WHEN* New Jersey school finance reforms actually happened, and *WHO* was likely to have benefited from those reforms, in sharp contrast to the crude and imprecise comparisons made by Hanushek and Lindseth.

Finally, there exists one peer reviewed study of the effects of school finance reforms in Kansas, based on the shifts in funding distribution that occurred in the early 1990s. Notably, those funding shifts were relatively subtle, mainly involving the leveling up of funding in districts with very low funding as a result of very low taxable property wealth in the late 1980s. John Deke's study published in the Economics of Education Review accounts for the magnitude of these changes, finding that the changes in funding were positively associated with subsequent changes in graduation rates:

> "Using panel models that, if biased, are likely biased downward, I have a conservative estimate of the impact of a 20% increase in spending on the probability of going on to postsecondary education. The regression results show that such a spending increase raises that probability by approximately 5%" (p. 275).[86]

On balance, it is safe to say that a sizeable body of rigorous empirical literature, conscious of whether, who and when concerns, validates that state school finance reforms can have substantive positive effects on student outcomes including reduction of outcome disparities or increased overall outcome level. Further, it is safe to say that analyses provided in sources like the book chapter by Hanushek and Lindseth (2009), or research articles by Neymotin (2009), Greene and Trivitt, provide little credible evidence to the contrary, due to significant methodological omissions. Finally, even the boldest, most negative publications regarding state school finance reforms provide no support for the contention that school finance reforms actually "harm our children," as indicated in the title of a 2006 volume by Eric Hanushek.

[85] Goertz, M., and Weiss, M. (2009). Assessing Success in School Finance Litigation: The Case of New Jersey. New York City: The Campaign for Educational Equity, Teachers College, Columbia University.

[86] Deke, J. (2003). A study of the impact of public school spending on postsecondary educational attainment using statewide school district refinancing in Kansas, Economics of Education Review, 22(3), 275-284.