5-3-2016

# The Paradox of Impoverished Missouri Schools: The School Districts in Missouri that Need More Often Get Less

William John Armon
*University of Missouri-St. Louis*

# The Paradox of Impoverished Missouri Schools
# The School Districts in Missouri that Need More Often Get Less

William J. Armon III
B.A., University of Missouri – Columbia, 2004
M.Ed., University of Missouri – Columbia, 2006

A Policy Paper Submitted to The Graduate School at the University of Missouri – St. Louis in partial fulfillment of the requirements for the degree of Doctor of Education in Educational Practice with an emphasis in Education Policy

May, 2016

Advisory Committee

Kathleen Sullivan Brown, Ph.D.
Chairperson

Carole Basile, Ed.D.
Co-Chair

James Shul, Ph.D.

## Abstract

Most states in the United States guarantee all citizens the right to an adequate education. Missouri passed SB 287 in 2004 with this exact purpose in mind. The bill was designed to ensure that students in high-poverty districts receive a greater share of funds from the state to offset shortfalls in local revenue. The new funding formula has certainly created great disparity in the amounts of state funds various districts receive. In addition, the formula recognizes the financial need of districts that have a high percentage of students living in poverty. Despite this recognition, adequacy has not been achieved for Missouri's impoverished schools. Using school districts in St. Louis County as a case study, it is clear that outcomes in high-poverty districts are not adequate. Wealthy districts continue to outspend poorer districts per pupil. Poorer districts continue to have unacceptably low outcomes. This disparity is exaggerated by a foundation formula that is not fully funded, pulling an irresponsible amount of resources away from Missouri's impoverished schools. A new funding formula is not needed; however, small and reasonable changes must be made to the current one. First, the weighting for students on free-and-reduced lunch must be doubled. Second, Missouri should use the current assessed valuation of all districts in the state when calculating local effort, rather than the frozen 2004 levels. Third, Prop C funds should not count as local effort for Missouri's impoverished school districts. And fourth, wealthy districts should lose their hold-harmless designation until the Missouri General Assembly fully funds the educational formula. These small and important changes are needed to remedy the paradox of Missouri's impoverished schools: the students that need the most, too often get the least.

*Like everything else, for Amy and Ben.*

# TABLE OF CONTENTS

# LIST OF TABLES

## Section One: Introduction

At the time of its creation, the United States was the most liberal democracy in the world. The true revolution of American independence was not in the breaking of political ties from Britain, but rather the rejection of central authority and executive power. If local control over a weak government was to succeed, the Founders believed a spirit of republicanism was necessary among the American people. This republican spirit, which Gordon Wood calls the true essence and radicalism of the American Revolution, placed high expectations on citizens (Wood, 1993). Independent citizens, who put the public good before their private interest, were needed to preserve a republic. This required, among many things, republican citizens to be literate and educated. It is no wonder, therefore, that the Revolutionary generation desired a strong system of public education in the United States (Wood, 1993; Wood, 2002).

As the Founders envisioned and hoped, public education has expanded throughout American history. In doing so, it has remained a largely local matter under local control. Public schools are controlled by elected school boards and state departments of education. And they are overwhelmingly financed by property taxes, supplemented by state aid. Decentralized control and decision-making has created concerns about equality of education for all students. The greatest concern, due to local financing of schools, is that students in poorer communities receive an education that is not equal to those in wealthier communities. There is a fear that local financing fails to fulfill state constitutional requirements of providing each citizen with an adequate education. If the Founders were correct, the failure to adequately educate all citizens will have an adverse effect on our republic.

## The History of Education Finance Reform

The struggle for equality in American education began over a century ago. While the most notable case in school equality, *Brown v. Board of Education*, dealt specifically with racial segregation, equality of financing for disadvantaged students has been far more difficult to solve. (It should be noted, of course, that race and socioeconomic status has not yet been fully separated in the United States.) Beginning with the Progressive Movement at the turn of the twentieth century, reformers have criticized an over-reliance on local property taxes to fund public schools. They claim that school quality has long been too connected to the level of wealth in a district (Odden, 2014; Guthrie et al., 2007). Wealthy districts are able to have above-average spending while having below-average tax rates. For poorer districts the opposite is true (Odden, 2014). This leaves children in poorer districts with fewer educational resources; they likely need more.

Remedies for this inequality began to appear in the 1920s. States implemented "minimum foundation" programs to create a minimum level of support that was not reliant on local funds. As decades passed, these foundation programs became increasingly inadequate to meet student needs. Wealthier districts increased local support, mostly from property taxes; poorer districts were unable to easily do so (Card, 2002). Lawsuits began to challenge the rising inequality during the 1960s. At first, these lawsuits challenged the system of financing public schools under the Equal Protection Clause of the Fourteenth Amendment to the United States Constitution and similar equal protection clauses in the various state constitutions. In 1989, litigation began to challenge public school financing for not providing adequate education to all students.

Most state foundation formulas attempt to determine a level of per-pupil spending that is adequate to meet the constitutional requirements of an effective and efficient education. Once that level is determined, the state generally provides all funds that cannot be provided by local taxes. State funds are allocated at much higher levels to poorer districts.

**Adequacy in Missouri**

In 2006, Missouri joined the many states that implemented new foundation formulas in response to legal challenges based on adequacy clauses in state constitutions. In fact, Missouri changed its system of financing public education without a specific court order to do so. The new formula, created by Senate Bill 287 in 2005, was designed to ensure that all students in Missouri public schools receive an adequate education. As occurred in most states, the new funding formula in Missouri resulted in a higher percentage of state aid going to poorer districts.

Missouri's funding formula is designed to ensure that every student in the state receives funds that are adequate for an appropriate education. In order to do this, the formula first calculates the level of per-pupil spending that is needed for an adequate education. The formula then provides additional funding for schools that have a relatively high number of students who fit specific high-need categories. There are the three of these categories. The first is free-or-reduced lunch price (FRL), a measure of student poverty. The second is Individualized Education Plans (IEPs), a measure of students qualifying for special education services. The final category is Limited English Proficiency, which measures students who are not native speakers of English. If a school district has a higher-than-average number of students in any of these categories, their

adequacy level for per-pupil spending is weighted and raised. Finally, districts with a relatively high cost of living are assumed to need a higher level of adequacy spending. After determining this adequacy level, the state subtracts the funds that are raised locally within the school district, received mostly from property taxes. The Missouri foundation formula then gives each school district the funds required to cover the difference. (Shuls, 2012; MSBA, 2014) The process of funding Missouri public schools will be explored in greater depth in Section Three.

**Adequacy in St. Louis County**

Missouri's funding formula has similar features of most of the states in the United States (Shuls, 2012). The state has fulfilled its requirements under the education adequacy clause in the state constitution. But this is not enough. Large disparities continue to exist in the educational outcomes among districts in Missouri. This paper will focus specifically on school districts in St. Louis County and make state-wide recommendations based on that discussion.

As in Missouri, there is a wide gap in St. Louis County between the highest and lowest performing school district. The best measure of performance is the Annual Performance Report (APR) score from the Missouri School Improvement Plan (MSIP5). This score measures a district's performance on the indicators of academic achievement, achievement by racial subgroup, college and career readiness, attendance, and graduation rate. There are a total of 140 possible points; a district's APR is the percentage of those total possible points they receive.

The top-performing school district in St. Louis County, Lindbergh, earned a score of 99.3 percent on their APR in 2015. The lowest-performing school district, Normandy,

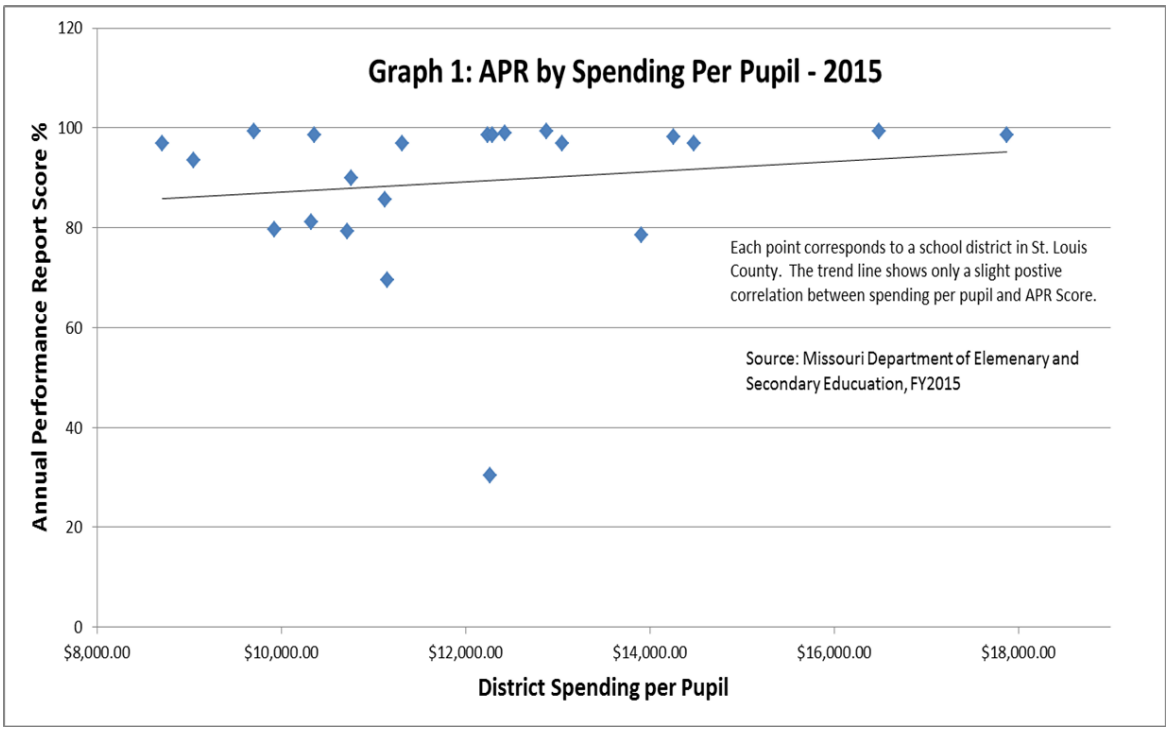
earned an APR of 30.4. Other indicators of student performance yield similar disparities. Clayton earned the highest average ACT score in 2015 with 25.6. Normandy scored lowest in this category as well, with an average ACT score of 14.0, which means that the average Normandy student is not qualified to gain admission to most state universities. Clayton had a graduation rate of 100 percent in 2015. The graduation rate of Normandy was 55.9.

To be fair, the Normandy School Collaborative has had great struggles and is particularly low in St. Louis County. Normandy on the low end and Clayton at the opposite, however, are not just isolated outliers. Twelve out of the 22 districts in St. Louis County (Special School District was not included in any data or trends discussed in this paper) have a graduation rate above 95 percent, while six districts had a rate below 80 percent. Thirteen districts in St. Louis County have an APR that is above 96 percent, while five have an APR below 80. And seven districts have an average ACT score that is above 22, while seven have an average score that is below 18. These data will be discussed further in Section Four.

These gaps in performance are not necessarily indicative of a funding formula that is unconstitutional. Funding based on adequacy, rather than equity, can certainly create disparate results in per student funding. Of course spending is not perfectly correlated with a school district's performance, which will be discussed further in Section Two. However, it is clear that the lowest-performing districts in St. Louis County are not providing an adequate education for their students. School districts with high concentrations of impoverished or minority students are far behind other districts in APR scores, ACT averages, and graduation rates.

Trends can be seen in the data from St. Louis County. First, the top-performing school districts spend only slightly more per pupil than the lowest performing districts, as seen in Graph 1. Lindbergh for example, the district with the highest APR in St. Louis County, spends less per pupil than almost every other district in the county**.**

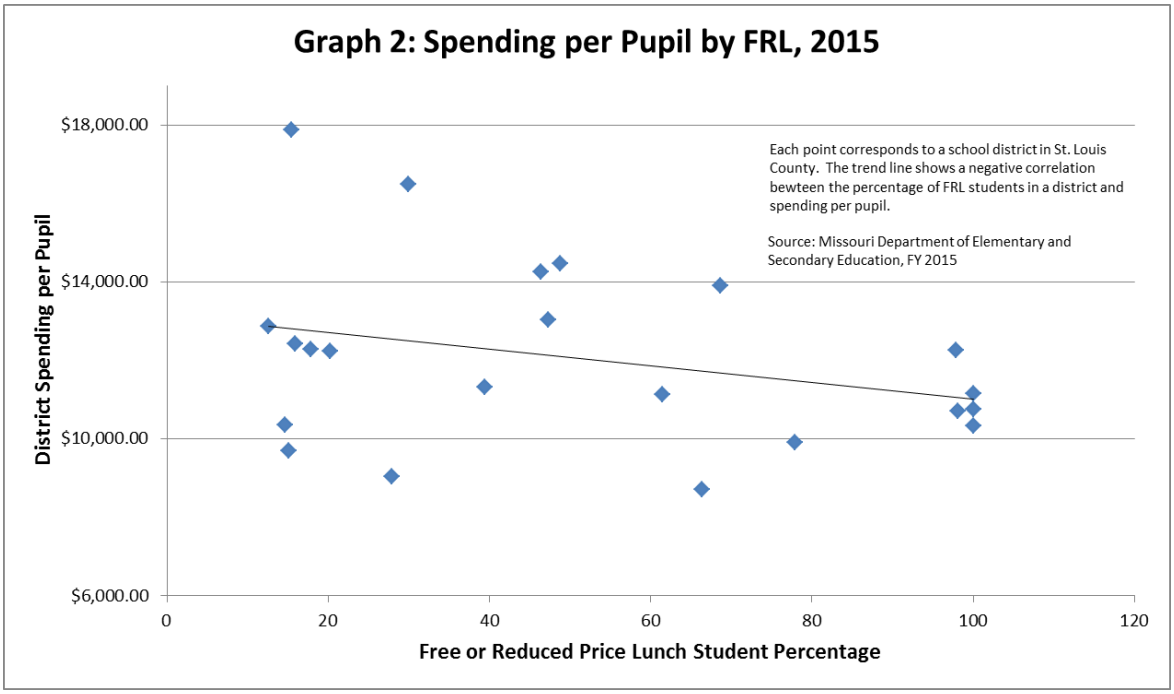
**Graph 1: Annual Performance Report by Per-Pupil Spending, 2015**




(Discussion of all data is based on trends; no statistical significance tests were performed.)

Missouri's funding formula, specifically the weights for high-need students, however, assumes that schools should spend more if they have a relatively large number of these students. This does not always happen in St. Louis County. A clear second trend is that districts with large numbers of high-need students do not get more money per pupil than those with low numbers of these students. This is especially true for the indicator of poverty, as seen in Graph 2.

**Graph 2: Spending Per-Pupil by Free-and-Reduced-Lunch Students, 2015**




A final trend is that those districts with the highest number of Black students tend to be some of the lowest performing districts. Research (Baker and Green, 2009) has shown that there is "strong, consistent evidence across settings that black student concentration is associated with higher-predicted costs of achieving constant outcomes, and that those cost differences are quite large for majority black school districts." (289) This is likely the result of concentrated poverty. Despite poverty being weighted in the Missouri funding formula, this need is not met in St. Louis County, as districts with a high percentage of Black students both perform lower and spend less on average than other districts. And despite the fact that low-income school districts receive more funds from the state of Missouri; the high levels of local effort continue to mean higher per-pupil spending in wealthy districts. The chart below highlights six districts in Missouri that demonstrate school funding and outcome inequities based on race.

**Table 1: Descriptive Statistics of St. Louis Area School Districts, 2015**

| District | % of Black Students | Spending per Pupil | APR Score |
|---|---|---|---|
| Clayton | 17.7 | $17,869.77 | 98.6 |
| Kirkwood | 14.5 | $12,420.98 | 98.9 |
| Ladue | 17.1 | $12,879.05 | 99.3 |
| Ferguson-Florissant | 80.7 | $11,146.29 | 69.6 |
| Jennings | 98.5 | $10,325.07 | 81.1 |
| Riverview Gardens | 98.1 | $10,712.66 | 79.3 |

Source: Missouri Department of Elementary and Secondary Education, FY2015

The funding formula for the state of Missouri is inadequate at closing the spending gap between affluent and high-poverty school districts. If we hope to address the systemic issues faced by these high need districts, this must change. Change, however, will not come easy. It is unlikely that Missouri will adopt an entirely new funding formula. According to the Missouri Supreme Court, the current funding formula is constitutional. It also falls in line with how many other states fund public education. One major problem is that the Missouri foundation formula is underfunded. The General Assembly of Missouri would need to increase funding by $556 million in 2015 to make up the current shortfall (MSBA, 2015). The shortfall is prorated among all of the districts in the state. This proration means that the districts which are supposed to receive the most state funds, those that are poorer with more high-need students, also lose the most from Missouri's lack of funds. This underfunding is irresponsible and must be addressed. While this shortfall is not the primary purpose of this policy paper, it will be addressed further in Section Four.

**Stakeholders**

A large number of stakeholders have an interest in the allocation of state educational resources. Families with school-age children care deeply about where state education dollars go. Any changes in funding that would be seen as a redistribution of their contributions to students in other districts would meet resistance. Most individual households and businesses would resist increases in taxes unless they were convinced of the direct benefit those increases would have on local schools. As discussed in Section Two, those benefits can be questionable. Local school boards, administrators, teachers, and families would resist any decreases in state aid to their districts. State politicians and the Missouri Department of Elementary and Secondary Education (DESE) officials would also have a high interest in any changes that would occur to the funding formula.

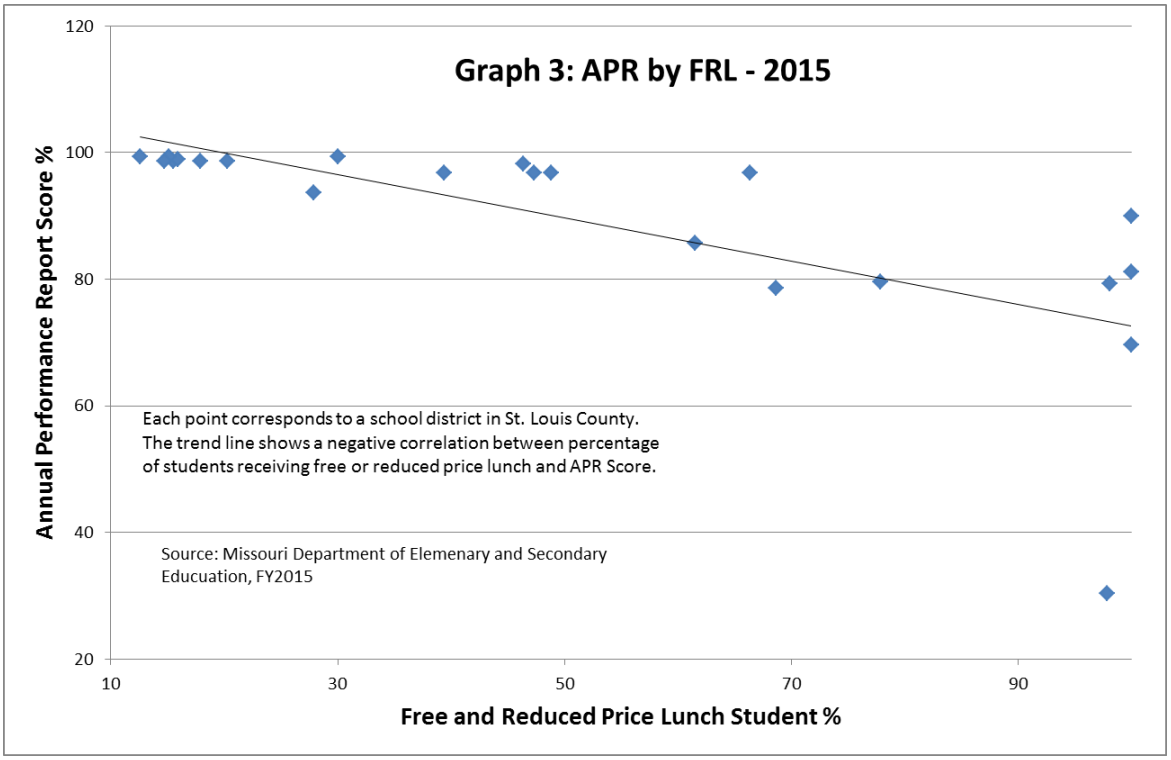
Nearly every citizen and public official in the state of Missouri is a stakeholder in education finance. Any changes that occur will increase the benefits to some while decreasing the benefits for others. Even if changes would positively affect the entire state in the long-run, there would be winners and losers initially. Just because change would be difficult politically, however, does not mean that change should not be attempted. This policy paper will outline several large and small changes that should be made to Missouri's current funding formula. Many of these changes call for the redistribution of current funds. Others call for an overall increase in funds.

## Recommendations

### Increase weights for free-and-reduced lunch students

The first change that must occur to Missouri's funding formula is the weights that are given to high-need students. Missouri weights the daily attendance of school districts for high-need students that cost more to educate (Shuls, 2012). These weights artificially increase the average daily attendance, increasing the revenue that a district receives from the state. Data suggest that there is a strong correlation between the percentage of students in a district that receive free and reduced lunch prices (FRL) and the district's APR scores, as seen in Graph 3. Similar trends can be seen for graduation rates and ACT scores. The current weight for these students is too low.

**Graph 3: Annual Performance Report by Free-and-Reduced Lunch, 2015**



**Recalculate assessed valuation for all districts**

DESE calculates local funds using the assessed valuation of a district at the end of 2004 and assumes a property tax levy of $3.43 per $100 of assessed valuation. Anchoring a district's valuation to 2004 must be changed. It is important to note that if a district's assessed valuation decreases from its 2004 levels, it is recalculated. This is appropriate and is a benefit to districts which are losing wealth. Districts that have an increasing assessed valuation, however, are not recalculated. This means school districts that experience increasing wealth will receive more state funding than they would if the assessed valuation were updated (Shuls, 2012). In an underfunded foundation formula, this money should go to poorer districts, instead of the poorer districts losing more because of the system of prorating the shortfall.

**Change Prop C funds for high-FRL districts**

Funds from Proposition C, a 1% statewide sales tax for education implemented in 1982, must also be addressed. The state currently distributes these funds based on a district's Weighted Average Daily Attendance (WADA) and counts fifty percent of the funds as local funds (Shuls, 2012). The distribution of these funds is appropriate, but the portion counted as local effort should drop to 0% for districts with at least 41% of its students, the state average, on the free or reduced lunch program.

**Drop hold-harmless distinction for wealthy districts until education is fully funded**

When the state implemented the new funding formula in 2005 it included a "hold-harmless" provision. Among other guarantees, this provision ensures that districts with greater than 350 students will not receive less state funding per-WADA than they did during the 2005-2006 school year. This means that larger districts with increasing local

support will receive more state money than they otherwise would under the new funding formula (Shuls, 2012). This single part of the "hold-harmless" provision should be removed. But it should only be removed for districts that have more than 350 students and have less than 41 percent of its students using the FRL program. This recommendation could be removed once the foundation formula is fully funded. This would reduce the burden on an underfunded foundation formula and ensure that poorer districts receive an amount closer to their fair share. Because of the system of prorating the shortfall, poorer districts receive even less of their fair share than wealthier districts.

The above changes, discussed in greater detail in Section Five, will provide greater funds to poorer districts that generally perform low on APR, graduation rates, and average ACT scores. Some of these changes will rebalance the current foundation formula, thereby decreasing state aid to wealthier districts in St. Louis County and throughout the state. Other changes call for an increase in the total amount of state aid, which would require the state to increase funding for public education, not only to cover the current shortfall, but to provide the necessary money for these increases as well.

States have been consistently increasing money to public education over the past several decades. Beginning in the early 1990s, these funding increases have been a result of adequacy lawsuits or the threat of such lawsuits. A tremendous amount of research has been conducted on the effects of the new funding formulas on student outcomes.

## Section Two: Literature Review

A wealth of research has examined the effectiveness of adequacy-based school finance reform. Using one to two decades worth of data, researchers have asked two broad questions. Did adequacy-based school finance reform create greater financial equity among school districts within a state? Further, did this financial reform increase student performance, particularly in high-poverty districts? This research has largely focused on states that have shifted significant responsibility for school finance away from local sources and toward state general funds, which is similar to the reform that began in Missouri in 2005. Findings were mixed, but much research has shown that adequacy-based school finance reform had small to moderate effects on equity and student performance.

### Equity of Education Resources – National Studies

The three waves of school finance litigation are not as disconnected as they may seem. The first two waves focused on equity, first national equity from the Fourteenth Amendment and the second on state-based equity. The final wave has emphasized adequacy, arguing that adequacy is essentially a product of vertical equity. Vertical equity is the principle by which schools are not funded based on perfect dollar-per-student equality (horizontal equity), but rather at a level that equally addresses their students' needs. In other words, vertical equity implies that school districts with hard to serve students would get more funding than schools with easier populations. This was Missouri's goal with the passage of SB 287 in 2005. States like Missouri that focused on creating vertical equity among districts should have seen horizontal equity affected as

well. Much of the research over the third wave of education finance reform has sought to discover both of these effects.

Murray, Evans, and Schwab (1998) conducted one of the first large-scale studies to determine the effects of adequacy litigation. Using expenditure data from 1972 to 1992, they reviewed 16,000 school districts to determine if court-mandated reform reduced within-state inequality. They found that this reform movement did in fact reduce inequality by a measure of 19 to 34 percent. The gains in equity were obtained by increasing spending in the poorest districts rather than decreasing spending in the wealthiest districts, a process known as leveling-up. Therefore, the reform movement not only decreased inequity, but increased the aggregate level of primary and secondary education spending in the United States. Recommendations made in this paper call for both leveling-up and redistribution through reducing state aid to wealthier districts.

Reformers have expressed concern that increasing state aid might simply be offset with an exaggerated drop in local taxes. In 2002, Card and Payne conducted a macro-level study to determine the aggregate financial equity effects of the adequacy reform movement. Their final working sample took data from every state except Alaska, Hawaii, and Washington D.C. between 1977 and 1992. Excluding only districts that did not exist at the beginning or end of their sampling years, they collected data from 13,036 districts. They found that a one dollar increase in state aid increased district educational spending by 50 to 65 cents. In addition, they attempted to discover the effects on equity. They found that in states where the foundation formula was ruled unconstitutional, changes were made that redistributed aid to lower-income districts. The gap in state aid between poor districts and wealthy districts widened by about $300 in real terms per-

pupil during this time period. Like Murray, Evans, and Schwab (1998), Card and Payne found that this redistribution was a result of leveling up rather than leveling down. In studying broader economic data, however, Card and Payne found that much of the state funding redistribution was offset by widening inequality in local revenues between richer and poorer districts. This would be a concern in St. Louis County as well. Many of the poorer districts are in areas of the county that are struggling economically.

Figlio, Husted, and Kenny (2004) also performed a national-level study, focusing on the political environment in states that attempted adequacy-based financial reform. The authors found that education spending reflected the legal and political situation within a state and that court rulings have not been the sole determinant of education finance reform. Interestingly, they found that strong adequacy language in education clauses in the state constitution greatly affected the strength of reform. States that had a more heterogeneous population had greater spending inequality. States that were controlled by the Democratic Party had less spending inequality. Missouri currently has a Democratic Governor, but the state legislature, the General Assembly, is strongly controlled by the Republican Party. Gerrymandering has made Republican control of the General Assembly a near certainty for many years to come.

**Equity of Education Resources – State Studies**

In March 1973, the Supreme Court of the United States issued a ruling in the landmark case of *San Antonio School District v. Rodriguez*. The Court determined that education is not a fundamental right under the United States Constitution, nor are those with low amounts of wealth a suspect class that need protection under the Equal Protection Clause of the Fourteenth Amendment (West and Peterson, 2007). This ended

the first wave of education finance litigation, which used the US Constitution's Equal Protection Clause, just two years after the *Serrano* decision. Litigation at the national level will not work to fix inequity in education finance. Congress cannot easily address the issue either, as Arocho (2014) calls for in his study of continued inequity in educational opportunity based on the wealth of a zip code. Despite the calls by some researchers (Gillespie, 2010), the *Rodriguez* decision meant that equity and adequacy disputes would have to be fought on a state-by-state basis (Odden, 2014; Baker and Green, 2014). Much of the research concerning the equity effects of adequacy litigation, therefore, has focused on individual states and provides the most useful information for making recommendations for education finance reform in Missouri.

The Lake View School District of Colorado filed a lawsuit in August of 1992 claiming that the use of property taxes as the primary means of funding public schools was not permitted under the Colorado constitution. They argued that such a system was fundamentally unfair to both students and taxpayers. Before the case was decided, Colorado passed Act 917 in 1995, which required state equalization funds to be distributed to districts based on assessed property value and average daily attendance (ADA) of students. The case expanded to include both equity and adequacy claims; in 2000, the Colorado Supreme Court ruled the state's education finance system unconstitutional, finding an inherent disparity between wealthy and poor districts. This decision pushed Colorado to reform their foundation formula in 2002 and begin subsidizing to reach adequacy levels. State categorical funding increased 761.4 percent (Jordan, Chapman, and Wrobel, 2014). Jordan, Chapman, and Wrobel (2014) have shown that the tax burden on low-income districts was reduced after the 2002 reforms,

but as of 2008, low-income districts continued to have a greater tax burden than wealthy districts. Disadvantaged districts were significantly better off after the reforms, which had no effect on property value. Earlier research by Ramirez and Siegrist (2011) continued to find that districts with substantial numbers of students enrolled in English Language Learner (ELL) programs were funded differently than districts without such students. This research confirmed continued inequity in Colorado public schools.

Missouri was a relative late-comer to adequacy-based reform; most states increased state funding to pursue redistribution of educational resources by the year 2000 (Glenn, 2009). Results have been mixed. Reforms in Kansas were effective in at least increasing the aggregate level of educational expenses in the state. Neymotin (2010) found that when adjusted for inflation, school revenue per student went from $7,500 in 1997 to $9,400 in 2006. Equity measures have not shown significant change in Kansas. Driscoll and Salmon (2008) found that when Virginia increased state funding for public schools by $755 million from 2003 to 2005, "equity actually declined, [continuing] a highly disparate system of public education that has been growing worse." (244) The increased inequality of $300 per student was a result of poorer districts lowering their local tax contributions as state aid increased, which wealthier districts chose not to do. In Massachusetts, Verstegen (2007) found that educational funding was still 35 percent below levels that were needed for adequacy.

Maryland's Bridge to Excellence in Public Schools Act was phased in between 2004 and 2008. It increased state aid to all public schools by $1.3 billion, expanding aid to districts for special education, students at risk, and students with low English proficiency levels. The money went disproportionately to districts with high numbers of

minority students or students that came from families living below the poverty line. Chung (2015) states that the reforms were not statistically significant in changing school spending for all districts, but did raise the spending levels for the schools in the bottom 40 percent. He believes that the reforms have weakened the relationship between local wealth and local spending, reducing the gap between the highest and lowest spending districts.

Michigan's Proposal A was passed by voters in 1994 and shifted a major portion of school funding away from local sources and to the state. Izraeli and Murphy (2007) found that Proposal A increased state aid to school districts from $2.63 billion in 1994 to $7.74 billion in 1995, the first year of the reform. State aid shifted from 28 percent of an average district's budget to 75 percent. In addition, aggregate school spending increased nearly 9 percent during the first year of reform implementation. Despite these massive shifts, Izraeli and Murphy found it difficult to confirm that equity measures changed significantly. In fact, they found that teacher salaries rose below the rate of inflation, which was not true prior to the reform. A separate measure of potential equity, student-teacher ratio did improve throughout the state, disproportionately helping disadvantaged districts. The authors concluded that while the reform made Michigan's system of school finance more wealth neutral, it did not achieve its goals.

Podgursky, Smith, and Springer (2008) studied the effects of education finance reform in Missouri. While indicating that vertical equity absolutely improved in the state, the researchers indicate that determining adequacy levels for the various districts and students in the state would be a "hopeless endeavor."

## Foundation Formula Modifications

While states made significant changes to their foundation formulas following the third wave of adequacy litigation, inequities have continued. Many of these inequities are the result of modifications that have been allowed to the foundation formulas designed to protect districts from losing significant amounts of revenue (Toutkoushian and Michael, 2007). Known as "overlay provisions," these modifications include economies-of-scale adjustments, floor and ceiling limits, and alternatives allowed to the foundation grant (Toutkoushian and Michael, 2008). Missouri's foundation formula has several overlay provisions, as discussed in Section Three. Toutkoushian and Michael (2008) state that "overlay provisions can be expected to introduce inequities into foundation aid programs because of how they redistribute revenues and can affect other goals in ways that may not be anticipated by policymakers." Their research in Indiana indicated that overlay provisions disproportionately benefited communities with higher wealth per pupil. In Massachusetts, Fahy (2011) also found that overlay provisions benefited wealthier communities, but districts with high proportions of low-income students as well.

## Property Wealth and School Quality

The preceding research clearly indicates that neither horizontal nor vertical equity have not been achieved as a result of the final wave of adequacy-based education finance reforms in the late-twentieth century. School districts continue to rely on local property taxes and wealthier districts continue to spend more per-pupil on average. It is interesting to review the literature on the effect that quality schools have on property value. Research (Nguyen-Hoang and Yinger, 2011; Machin, 2011; Brunner, Murdoch, &

Thayer, 2002; Dhar and Ross, 2012) clearly indicates that as school quality improves, the improvement is capitalized into higher property values. Local tax increases for school budgets have been consistently approved by voters (Silverman, 2011) as well. Increasing property values and increasing willingness to approve higher property tax rates likely means that inequity based on district wealth will continue into the future.

**Student Achievement – National Studies**

There are several classic studies of adequacy reform and educational outcomes. Nearly all of them found weak or nonexistent connections between increased spending and higher student achievement. One of the seminal researchers is Eric Hanushek, who is cited by nearly every article in this literature review. Hanushek (1996) found that there was little evidence between an increase in money for schools and student performance outcomes. Nearly a decade later, John Yinger (2004) found that there was only partial evidence that a boost in state aid, which presumably raises the overall level of education expenditures, can boost student performance. As a result of the inability to hold other factors constant, he believes it is very difficult to prove either way. Downs and Figlio (1999) did find a small positive relationship between school-finance litigation and student outcomes. Not all research has been so pessimistic.

In 2008, William Glenn found a positive relationship between adequacy litigation and scores on the NAEP exam for Black students. In 2009, Glenn concluded a longitudinal analysis of the relationship between adequacy litigation and student achievement using data from the Early Childhood Longitudinal Study, Kindergarten Cohort. His analysis revealed that adequacy litigation had a positive relationship with achievement test scores of students from very low socioeconomic backgrounds, though

the effect was small. Interestingly, Glenn's analysis found that these positive gains were only on an interstate basis, despite school finance reform affecting only a single state at a time. He argued that adequacy litigation can be an effective piece of comprehensive school reform, but is not sufficient alone.

As discussed previously, the macro study of 16,000 school districts by Murray, Evans, and Schwab (1998) found court-mandated reform reduced intrastate spending inequality. In addition, they found that raising school expenditures overall improves labor-market outcomes for students, including future earnings and high school graduation rates. Card and Payne (2002) used SAT scores to measure the effects of school finance reform. While they admit the precariousness of using SAT data, they did find evidence that spending equalization efforts had closed the SAT-performance gap between students from disadvantaged family backgrounds and those of moderate or wealthy means by 5 percent. There are a wide range of average ACT scores among districts in St. Louis County.

One interesting study (Baicker and Gordon, 2006) directly challenged the traditional notion that more money has not been found to improve student performance. Baicker and Gordon analyzed the school spending patterns in states that were ordered to alter their foundation formula by the court system. They found that those states often offset increases in education funding with marginal declines in spending on health and hospitals, highways, and public welfare. They argue that while a child's educational environment may have improved, noticeable gains were possibly offset by decreases in other necessary services. This is a powerful argument for the importance of collective

impact. While not the focus of this paper, it is hoped that the recommendations made here would be coupled with an increased emphasis on social services as well.

**Student Achievement – State Studies**

As discussed, education finance reform is essentially a state issue. Much of the research on the effects of adequacy-based education finance reform has been done on the state level. In 2003, Deke found that a 20 percent rise in annual per-pupil expenditures in Kansas increased the probability of students entering post-secondary education by 5 percent. Epple and Ferreyra (2007) found that Michigan reforms beginning in 1994 generally improved school quality and student performance in the Detroit metropolitan area. Moreover, Sherlock (2011) found that Vermont's major legislative education finance reform act, known as Act 60, may have had a positive impact on fourth grade pass rates in math, although it did not significantly affect student scores in reading or writing. She found that these effects were seen in low-spending schools, not low-achieving schools. In Kansas, Neymotin (2010) found that changes from the previous decade in per-pupil revenues caused changes in measures of student achievement. And in Maryland, Chung (2015) found little evidence that increases in spending decreased the dropout rate, but did find evidence that the socioeconomic gap in student performance was narrowed.

The decision by Kentucky's Supreme Court in *Rose v. Council for Better Education* (1989) began the third wave of school finance litigation, focusing on adequacy. Burbridge (2008) studied the results of such litigation for Kentucky itself. Her study collected data on math achievement from the fourth and eighth grade NAEP exams not only from Kentucky, but from other states that could be used for interstate

comparison as well. After analysis, she found small gains for Kentucky. When comparing Kentucky with "sister states" such as Mississippi, West Virginia, and Arkansas, Burbridge found that the states each made similar gains from education finance reforms that began during the 1990s. She found that Kentucky lagged behind other leading reform states, using Texas and North Carolina specifically.

A great deal of research has been conducted regarding the effects of Michigan's Proposal A. This referendum dramatically shifted public funding and school funding in the state of Michigan. As discussed earlier, state responsibility for school district budgets was significantly increased, from 28 percent to 75 percent. It is interesting to note that Proposal A sought to increase equity by leveling up, as wealthier districts' budgets were left largely untouched through "hold harmless" provisions.

Leslie Papke (2005 and 2008) conducted several rounds of research to assess the effects of Proposal A on student performance in Michigan. She examined data on test scores, per-student spending, school enrollment, average teacher salaries, and student-to-teacher ratios for the state. She used student eligibility for Michigan's school lunch program as a proxy measure for the economic well-being of the district. In a 2005 study, she found that the lowest-spending 10 percent of school districts also had the lowest 10 percent of pass rates. She found that this percentile saw the greatest increase in pass rates, jumping 15.7 percent in the first year of reform. It is important to note that all percentiles increased in pass rates; the pass rates of the highest-spending percentile increased 11.47 percent. This could indicate a change in the test itself. In examining fourth grade math scores on the state-wide standardized test, she found that a 10 percent increase in average spending increased the pass rate by .66 to 6.80 percent, depending on

which variable was controlled (Papke 2005). In her first round of research (2005), Papke declared that a rough rule-of-thumb would be that a 10 percent real spending increase would increase pass rates by 1 to 2 percent. Upon revisiting the research in 2008, she largely affirmed her earlier findings. Low-spending districts saw substantial increases in their per-student funding. She recalculated her estimate as a 10 percent increase in real spending to create an increase in student performance by 2.5 percent.

In 2009, Chaudhary released major research on Michigan's Proposal A. The purpose of the study was to measure the causal effects of increased inputs on fourth and seventh grade math scores. Data were collected from 1991 to 2000. Following Proposal A, Chaudhary calculated that the average real increase in school operating expenditures across the state of Michigan was 5.8 percent. This was largely used to increase teacher salaries and decrease class sizes, two factors that research has indicated should improve student performance. Chaudhary found positive effects on fourth grade math scores, but no statistically significant effects on seventh grade math scores. She is unsure if schools intentionally targeted spending toward lower grades or whether spending is more effective at increasing outcomes at lower grades. Instructional expenditures in schools across Michigan were increased by a real average of 8.3 percent. Class size decreased by 4.6 percent and teacher salaries increased by 6.6 percent. Overall, Chaudhary made several conclusions. Data suggest that a 10 percent increase in spending would increase fourth grade "scaled" math scores by 1.2 points, which is one-tenth of a standard deviation. This is a small effect, as spending would have to be increased by 100 percent to improve fourth grade "scaled" math scores by a single standard deviation. "Satisfactory" math scores would only require a 60 percent increase in spending to

increase a single standard deviation. There was no effect of increased expenditures on seventh grade math scores and it could not be determined if class size affects math scores. Increased teacher salaries, however, did appear to positively impact test performance.

A final study on Missouri (Podgursky, Smith, and Springer, 2008) made an interesting observation on student achievement and equity/adequacy based reform. The authors found that the vast majority of student achievement inequality was within a district and therefore was not affected by changing foundation formulas regarding state aid. The study recommended that adequacy-based reform be attached to students rather than schools or districts. The socioeconomic segregation and patchwork of school districts in St. Louis County likely mean that there is less concern about this recommendation than in the rest of the state. However, this would be an interesting subject for future research and policy recommendation.

**Student Achievement and Race**

The main focus of this literature review was on research pertaining to adequacy-based education finance reform and socioeconomic equity. In the United States, race continues to be a factor related to wealth and location. Chart 5 shows the percentage of Black students in each district in St. Louis County. Graph 3 shows the correlation between that percentage and APR scores. There is a great deal of research on education-finance equity, race, and student achievement. A few studies, focusing on financial equity, are presented here.

In the discussion of adequacy and state-constitutional requirements of an effective education, several studies note that the costs of an adequate education are higher in majority-Black schools. Baker and Green (2009) found “strong, consistent evidence

across settings that black student concentration is associated with higher-predicted costs of achieving constant outcomes, and that those cost differences are quite large for majority black school districts." They also found that Black-white achievement gaps far outweigh disparities along other racial, ethnic, or socioeconomic divisions. Their study of Missouri demonstrates this by finding that districts with higher poverty rates and high Hispanic populations spend less per pupil, while districts with high Black populations spend more per pupil. "It costs more to achieve desired educational outcomes in school districts where larger shares of the student population are black."

In another study, Baker (2011) attacked a leading criticism of underperforming schools, specifically those with a high percentage of Black students. Many critics claim that these schools are inefficient and waste resources. Baker attacks this argument as a "straw-man" because these districts and schools have higher costs. He found little evidence that inefficiency in Black districts is a result of greater levels of administrative inefficiency when compared with other districts. Baker argues that segregated schools create inefficiencies that increase the money needed to provide an adequate education.

Finally, two studies provide a possible reason for the Black-white achievement gap that could be traced to the need for increased financial resources (Hanushek and Rivkin, 2009; Clotfelter, Ladd, and Vigdor, 2005). These studies indicate that Black students have a far higher likelihood of having novice teachers, which is partially attributed to low salaries, or at the very least, could be addressed through salary increases. Clotfelter, Ladd, and Vigdor (2005) found that Black seventh grade students in North Carolina were far more likely to have a novice teacher in math and English than their white peers. These numbers were 54 percent more likely in math and 38 percent

more likely in English. Interestingly, two-thirds of this disparity is found within school districts, not between them.

**Literature Review Conclusion**

Neither equity nor adequacy has yet been achieved for all school districts throughout the United States. Local wealth continues to be a determinant of school quality and student performance. While some of this is beyond the reach of school finance reform, more reform is needed. Based on research, it is clear that equity does not exist among schools or school districts. As long as inequity persists, it is unlikely that all schools will provide a similarly adequate education. Research indicates that the third wave of education finance reform, based on adequacy litigation, failed to significantly change the paradigm of school funding or its effects on student performance. It is encouraging that small changes were accomplished that made real, albeit small, positive impacts for disadvantaged students. More should be done in Missouri.

## Section Three: Existing Policy

In 2005, the state legislature of Missouri passed a bill that transformed the way in which K-12 public education was financed throughout the state. This bill, SB 287, abandoned attempts at equitable funding for each student across the state to focus on ensuring that each student is provided the amount necessary for an adequate education (MSBA, 2014). This new funding formula first creates a target amount that is needed to educate a student adequately. The formula then calculates the number of students in a district, weighting students that are considered "high-need," and therefore more expensive to educate. The formula also allows an increase of funding for districts that are in areas with a high cost of living. These calculations will result in the total amount a district should spend each year. The state subtracts the amount the district raises from local sources and provides the difference to each district. (Shuls, 2012; MSBA, 2014)

### State Adequacy Target (SAT)

In order to create an adequacy-based model of school financing, the state of Missouri begins by identifying districts that are considered "Performance Districts." Performance Districts are those that receive a perfect score on their Annual Performance Report (APR). Beginning in Fiscal Year 2019, the number of Performance Districts cannot exceed 25 percent of all districts in the state (HB 1689).

The State Adequacy Target (SAT) is based on the operating expenditures of Performance Districts and is recalculated every two years. The formula uses operating expenditures from the third preceding year that a Performance District is identified. Operating expenditures are those that go towards instruction and support services. In addition, the formula only uses funds from state and local sources, not federal. Finally,

the formula calculates the SAT based on the Weighted Average Daily Attendance (WADA) of a district, not the actual Average Daily Attendance (ADA). When these numbers have been gathered for all of the Performance Districts in the state, the districts with the highest and lowest per-pupil expenditures are taken out of the equation, provided that the total enrollment of those districts does not exceed 5 percent of the total enrollment for all of the Performance Districts (Shuls, 2012). Using the method outlined above, the state arrives at the State Adequacy Target. By law, the SAT cannot decrease based on a recalculation; it can only be increased.

The SAT has seen modest increases since it began being implemented in 2005. From that year through the 2009-2010 school year, the SAT was set at $6,117. It rose slightly over the next two years; the SAT for the 2011-2012 school year was $6,131. The SAT saw greater increases over the following years; however, because of state budget shortfalls, the SAT has been locked at the 2011-2012 level. The calculated SAT for the 2015-2016 school year is $6,580, although the state continues to use the 2012 level of $6,131. (Dorson & Jordan, 2015) (Interestingly, the calculation for the two-year cycle of 2012-2014 was $6,716, which was higher than the current two-year cycle calculation. If the state funding formula was fully funded, it is unclear whether the law would require a return to the highest SAT calculated or the highest SAT previously used.) There are nearly 900,000 students in Missouri public schools. Even if this number were not weighted when calculating state aid, the state would currently be underfunding schools by nearly $400 million. The Average Daily Attendance, however, is weighted; the state is underfunding its public schools by even more.

**Weighted Average Daily Attendance (WADA)**

The state of Missouri, as well as the concept of adequacy in general, recognizes not all students require the same resources to educate. In order to adjust for this realization, Missouri's funding formula provides additional money for students that fall within certain high-need categories. While there are many possible ways to add money for these students, Missouri does so by increasing the impact that these students have on their district's attendance numbers. After calculating a district's Average Daily Attendance (ADA), the state adds weights for high-need students to establish a district's Weighted Average Daily Attendance (WADA).

A district's ADA is simply calculated by adding the total number of hours that students actually attend school during the entire year, including summer, and dividing that number by the total number of school hours that are possible to attend. (The summer hours are calculated at 1,044 for all districts, regardless of their summer school schedule.) (Shuls, 2012)

The state of Missouri identifies three categories of students that require additional resources: those who receive free or reduced price lunches (FRL), those who are on Individualized Education Plans (IEPs), and those who have a limited proficiency in the English language (LEP) (Shuls, 2012; MSBA, 2014). School districts that have high percentages of these students receive added weights to average attendance.

Whether or not a school district has a high percentage of these student populations is based on a state-identified threshold. The state again uses Performance Districts to calculate that threshold. Every two years, the state calculates the average percentage of these high-need populations in the state's Performance Districts. The threshold is

benchmarked to that average. (Shuls, 2012) The threshold benchmarks for the school years of 2014-2015 and 2015-2016 are 41.0% for free and reduced priced lunches; 12.6% for students with IEPs; and 2.1% for students with a limited proficiency in English (MSBA, 2014). Districts that have a higher percentage of students in any of these categories receive a weight that is added to their Average Daily Attendance, but only for each student that exceeds the benchmarked threshold.

Students that exceed the threshold in the three weighted categories are multiplied by a state-determined weight. That extra multiplication of the students exceeding the threshold is then added to the district's ADA, creating the Weighted Average Daily Attendance (WADA) of a district. The weights are different for each of the three high-need categories. The weight for free and reduced lunch, that is the number by which students exceeding the state threshold are multiplied, is 0.25. The weight for students with IEPs is 0.75. And the weight for students with limited English proficiency is 0.60. A district's WADA accounts for any combination of these categories in which they exceed the state threshold. (Shuls, 2012)

**Dollar Value Modifier (DVM)**

School districts that are in areas with a high cost of living are provided additional funds by the state. The state only increases aid to districts with high costs of living, it does not decrease aid to districts that experience the opposite (Shuls, 2012). In order to calculate the Dollar Value Modifier (DVM), the Department of Elementary and Secondary Education (DESE) uses the state's median wage per job (calculated by county) and the school district's average wage per job. (They calculate these figures for the school district using the county, micropolitan, or metropolitan area, whichever is

appropriate for the district in question.) Districts that have a higher average wage per job than the state median can claim the DVM. The difference between the district's average wage and the state median wage is multiplied by 15 percent. (Shuls, 2012)

A district's Dollar Value Modifier is multiplied by its Weighted Average Daily Attendance. This result is multiplied by the State Adequacy Target. The result of this formula provides the state-required level of total expenditures to provide an adequate education for a district's students. From this total expenditure requirement is subtracted the local effort provided to a district. The remainder is provided by state funds.

**Local Effort**

The amount of local effort that is subtracted from the total expenditure target is mostly derived from property taxes and is based on a formula created by the original funding bill from 2005. The amount, therefore, is not necessarily the actual amount that is raised locally for the school district. It is instead largely based on the amount that was raised in a district during the 2004-2005 school year. While each locality has the power to set its own property tax rate, the state uses a set tax levy for the calculations of local effort. The state tax levy is 3.43 percent. In addition, the district uses the assessed property valuation from 2004. (Shuls, 2012)

This method of calculation of local property tax effort benefits most districts in the state. District assessed valuation will likely increase over time. Anchoring that valuation to the 2004 level creates a smaller local effort in the state funding formula than may actually exist, requiring the state to give more aid to cover the difference. If a district's value assessment actually decreases, the state amends the local effort in the funding formula. The residents of a district also have the option of increasing their tax

levies above the 3.43 percent assumed by the state, which would again mean the state pays for a larger district funding gap than actually exists. Of course, the opposite is true as well. Districts that have a lower property tax rate will get less state aid than they need to cover the difference between local effort and the state adequacy target for total expenditures. (Shuls, 2012)

In addition to property taxes, there are a few other sources of revenue that count as local effort in the state funding formula. Unlike the state property tax levy used in the funding formula, these other sources (state assessed railroad utility tax, financial institution taxes, merchant and manufacturer taxes, fees from federal properties, and local income taxes) are allowed to fluctuate each year based on the actual amount that is raised. The largest source of local effort beyond property tax is known as Proposition C.

A 1 percent statewide sales tax, known as Prop C from 1982, counts as local effort (Shuls, 2012). The state collects this tax and distributes it to school districts on the basis of their Weighted Average Daily Attendance. Half of the money received from Prop C by a district counts towards local effort in the state funding formula (Shuls, 2012). For the fiscal year of 2014, Prop C funds amounted to slightly over $790 million, which amounted to $884 per WADA (Dorson & Jordan, 2015).

**Hold Harmless**

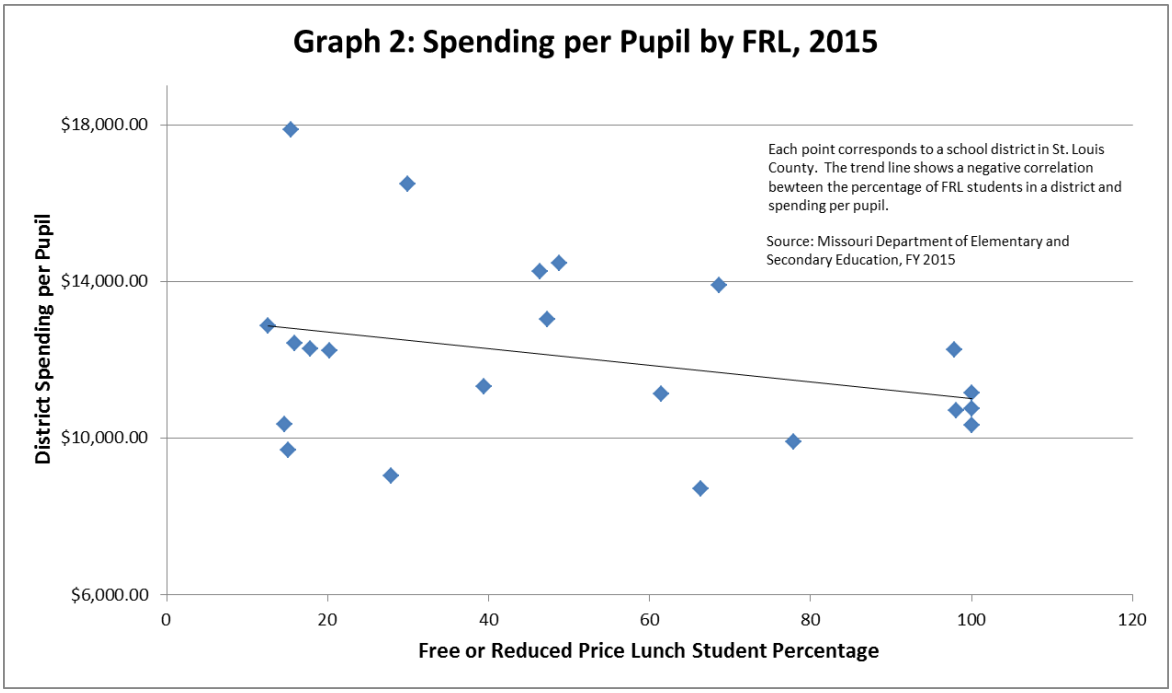
It is important to note that there is a provision from the 2005 funding bill that designates certain districts as “hold harmless” districts. The hold harmless provision guarantees that no district in the state will receive less state aid than it did in the final year under the old formula. There were 195 hold harmless districts in 2015. These districts fall into two main categories. The first, school districts with fewer than 350 students, is

guaranteed no less than the total funds they received in 2005. The second category, districts with over 350 students, is guaranteed no drop in funding per-WADA compared 2005.

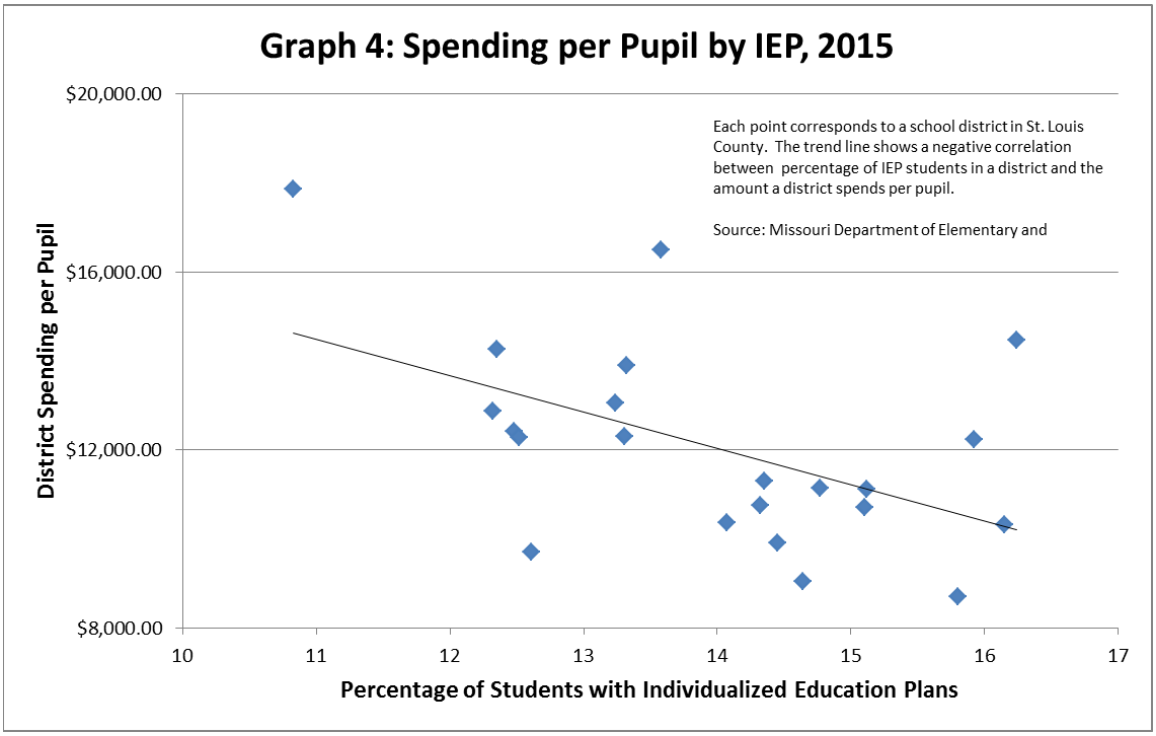
## Section Four: Key Issues

The Missouri State Constitution guarantees the right of every student in Missouri to receive an adequate education. The 2005 funding formula, based on this guarantee of adequacy, acknowledges that certain students are more expensive to educate. As a result, the formula provides extra funds to districts with high numbers of students living in poverty (FRL), students who do not speak English as their first language (ELL), and students who have disabilities that affect their learning needs (IEP). It is therefore reasonable to assume that the districts that fall into these categories will spend more per student than districts that do not. That assumption, however, would not be correct in the state of Missouri.

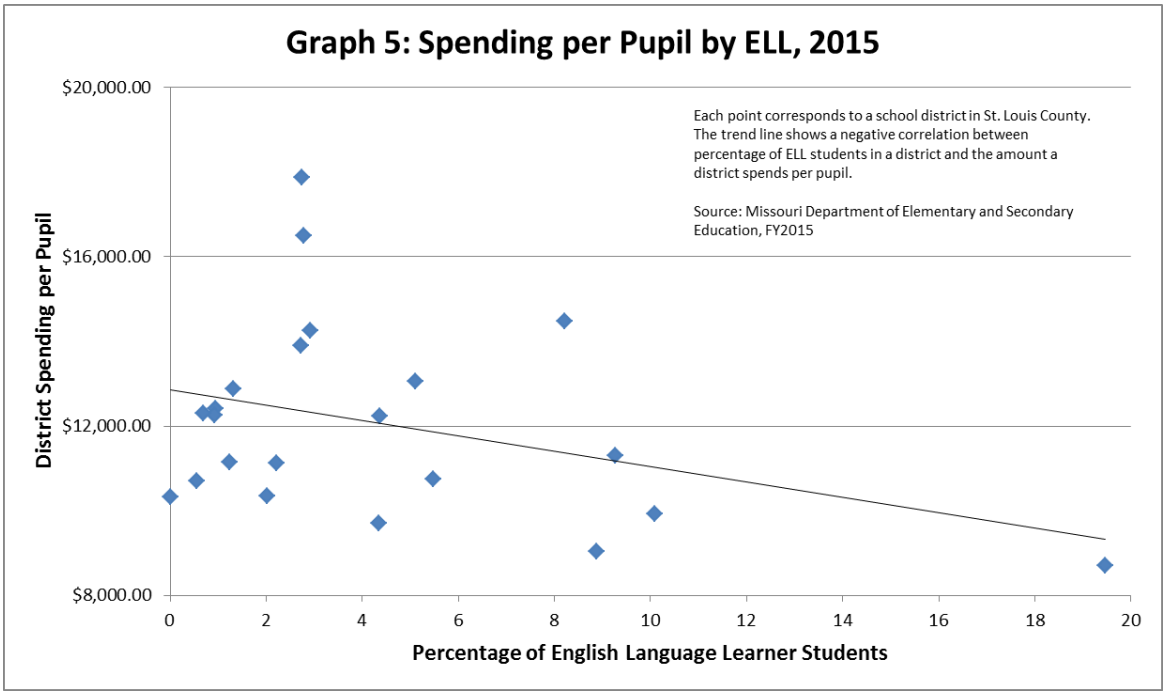
**Graph 2: Spending Per-Pupil by Free-and-Reduced-Lunch Students, 2015**



## Graph 4: Spending Per-Pupil by Individualized Education Plan Students, 2015



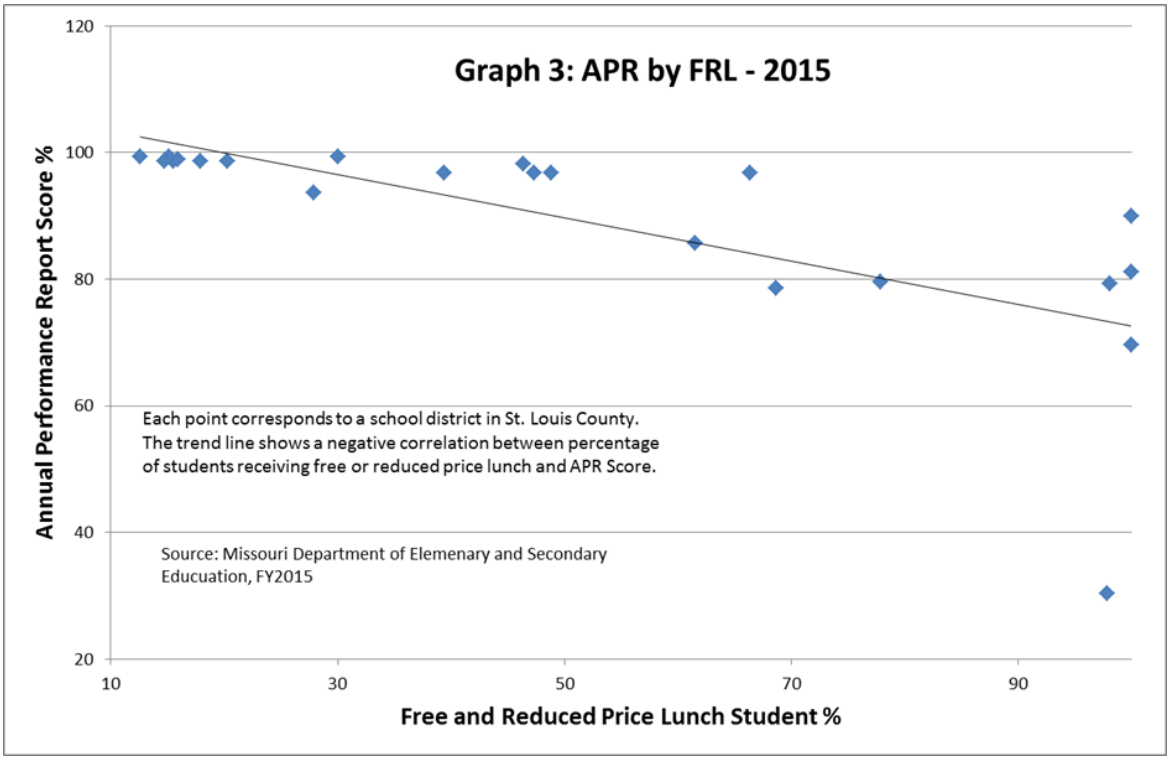

## Graph 5: Spending Per-Pupil by English Language Learners, 2015



Using St. Louis County as a case study, it is clear that the districts that have the highest percentages of at-risk students generally spend less per student than districts with lower percentages of students in the three categories which the state designates as high-risk. This can be seen in the graphs above. The trend lines in all three indicate that, on average, as the percentage of these students in a district goes up, the spending per student in a district goes down. This is alarming given the state's acknowledgement that these students are more expensive to educate.

Out of the three at-risk indicators recognized by the state, however, there is one that is more alarming than the others. The major recommendations in this policy paper focus on redistribution of state education dollars based mostly on the indicator of poverty, measured by the percentage of students in a district that receive free or reduced lunch prices (FRL). Similar to ELL and IEP students, districts with a higher percentage of students living in poverty spend less on average per student. Percentage of ELL and IEP students, at least in St. Louis County, is not a good predictor of district scores on the Annual Performance Report (APR). Percentage of students receiving free or reduced lunch prices, however, is correlated to APR performance. As seen in the graph below, districts with higher percentages of FRL students have lower average scores on the APR.

**Graph 3: Annual Performance Report by Free-and-Reduced-Lunch Students, 2015**




Despite the state's acknowledgement that students living in poverty are more expensive to educate, and despite the evidence that suggests schools with high percentages of these students perform worse, spending per pupil is still less. Not a single one of the top eight performing districts in St. Louis County (four schools tied for fifth rank in 2015), those with an APR of 98.6 or above, have an FRL population above 30 percent. The lowest five performing schools in St. Louis County, of which the highest APR is 81 percent, all have an FRL population above 68 percent. Three of these five schools have an FRL population that is above 95 percent. And yet, there is not a similar disparity in spending between these top-performing and low-performing districts.

Spending in the top-performing districts, with low FRL populations, ranges from $17,869 per student to $9,699 per student in 2015. Spending in the worst performing districts, each with high levels of FRL populations, ranges between $13,903 and $9,916

per student. The average for the top eight performing districts is just over $13,000. The average for the bottom five performing districts is about $11,400.

Two things are clear from these data. First, the number of students living in poverty has an effect on the performance of a school district. Second, the districts with the highest percentage of students living in poverty do not spend more than the districts that have a far lower percentage of these students.

This reality is concerning for St. Louis County and for the state of Missouri. That said, all of the districts in St. Louis spend more per student than what the state has deemed necessary for an adequate education. If the state funding formula was fully funded, it would be fulfilling its constitutional requirements to provide an adequate education. The disparity in spending is a result of a choice. The citizens in wealthier districts have largely chosen to pay, in some cases significantly, extra amounts of property tax in order to provide more funding to their schools. They do so because they believe that these extra funds will provide a better education for the students in their district. It would be inappropriate to believe that this is an ill-informed or naïve choice on their part. The additional funds must be part of the reason that their school districts are performing better. The recommendations made in this policy paper are not meant to create complete equality, but their purpose is to shift some state funds to those districts with high levels of impoverished students.

Missouri's public education funding formula is based on a combination of local funds and state funds. Districts that choose to increase local funds can provide far higher amounts of money than is expected from the state. Districts that cannot provide as much local money, especially those with high-need students, receive a greater amount from the

state. This system, when fully funded, still creates disparities among districts and students. This system, however, is currently underfunded. This underfunding, shamefully, magnifies the disparities between the wealthier and poorer districts in the state of Missouri.

Missouri's funding formula is currently underfunded at a rate of about $700 per student (*A Shaky Foundation*). This underfunding is not spread equally among students in Missouri. It is prorated based on a percentage of the state funds that a district receives. In other words, if the funding formula is underfunded by 20 percent, each district loses 20 percent of its base funds from the state. This results in the districts that receive the most in state aid being underfunded by the highest dollar amount. This distinction is greatest in St. Louis County.

The wealthiest districts in St. Louis County, such as Clayton, appropriately receive the lowest amount of state aid. In fact, districts like Clayton, Brentwood, and Ladue receive a very small amount of state aid, well below $100 per student. And given this, the prorating system makes some sense. If the underfunding was distributed on a basis of equality, five districts in St. Louis County would lose every dollar of state aid they receive. The prorating system, however, creates other problems. The wealthiest districts lose insignificant amounts of state aid. There are six districts in the county that lose less than $50 per student. The poorer districts, however, lose significant amounts of aid. There are nine districts in the county, generally the lowest performing districts, which lose over $700 per student. There are districts outside of St. Louis County that lose more than $900 per student.

**Table 2: State Aid Lost by St. Louis Area School Districts, 2015**

| District | FRL % | APR Score | State Aid Lost |
|---|---|---|---|
| Clayton | 15.5 | 98.6 | $34 |
| Kirkwood | 15.9 | 98.9 | $38 |
| Ladue | 12.6 | 99.3 | $39 |
| Bayless | 66.4 | 96.8 | $876 |
| Ferguson-Florissant | 100 | 69.6 | $800 |
| Jennings | 100 | 81.1 | $443 |
| Riverview Gardens | 98.1 | 79.3 | $455 |

Source: Missouri Department of Elementary and Secondary Education, FY2015

*A Shaky Foundation* (2014), The Missouri Budget Project

It is unacceptable that the Missouri legislature has failed to fully fund its commitment to public education. It is unacceptable that the Clayton School District loses $34 per student, just as it is unacceptable that the Bayless School District loses $876 per student. The underfunding for Missouri's foundation formula is not the topic of this paper. Missouri must, however, find a way to fund schools to the full amount that is required. Until this is done, the underfunded portion should be distributed in a way that does less harm to the schools that need the money the most.

## Section Five: Recommendations and Conclusions

It is unlikely that there will be a major overhaul of the way Missouri finances public education. There are, however, small common sense changes that can be made to address the need for increased resources in districts with a great number of high-need students, specifically those living in poverty. Some of these changes call for increases in the aggregate level of state aid to schools. Others call for a redistribution of certain funds, giving a greater share of those funds to high-need districts. These are recommendations that would apply throughout the state. Analysis of these recommendations is focused on St. Louis County.

### The Factor of Poverty

Poverty impacts education. The state of Missouri appropriately recognizes poverty as a high-risk factor in its public schools. Along with students with IEPs and students who are English Language Learners, poverty is weighted in Missouri's funding formula.

Each student receiving free or reduced lunch prices, above the state average of 41 percent, receives a weight that increases the amount of money that a district receives for that student. The weighting for impoverished students is .25. This weighting is too low. The weighting for students with IEPs and ELL students is significantly higher, at .75 and .60 respectively. This paper does not recommend reducing those weightings. But because poverty is the strongest correlation to school performance, as discussed in Section Four, the state must weight that factor more significantly.

The recommendation of this paper is to double the weight for students on free or reduced lunch prices to .50. This would provide significantly higher funds to schools that

have a larger number of students living in poverty. These funds should be used for a myriad of resources for these students. They should be used to reduce class sizes and hire more experienced teachers. They should be used for collective-impact services that would reduce the burden of poverty both inside and outside of the school.

Several schools in St. Louis County would experience a tremendous impact from this recommendation. One hundred percent of Jennings' students, for example, qualify for free or reduced lunch prices. Jennings had an Average Daily Attendance (ADA) of about 2,400 students in the 2014-2015 school year. The average percentage of students in a district that qualify for reduced lunch prices is 41 percent; only students beyond that threshold receive the weighting. Therefore Jennings receives the weighting for about 1,400 of its students. At the current weight of .25, Jennings' WADA increased by about 350 because of poverty in the district. This recommendation would increase the school's WADA by an additional 350.

At current expenditure rates, Jennings receives about $5,400 for the state for each student that attends the school on a daily basis. This recommendation would increase that figure by $740, giving Jennings School District nearly an additional $1.8 million each school year. This is money that could be used to provide services that counterbalance the devastation poverty has on education.

Other school districts in St. Louis County would see similar increases. The Hazelwood School District has an APR of 85 percent and over 60 percent of its students receive free or reduced lunch prices. This recommendation would increase the total expenditures for Hazelwood by nearly $3 million, providing each student that attends daily an additional $175 in resources for the school year. For Ritenour, a school district

with an APR score below 80 percent and a FRL population above 75 percent, this recommendation would provide an additional $1.8 million each year, an additional $312 for each student that attends daily.

This is the most significant recommendation that is presented here. This recommendation would have the greatest impact on the overall education budget for the state of Missouri because it calls for an increase of funds for every district that has above 41 percent of its students receiving free or reduced lunch prices. This recommendation does not call for any decrease to counterbalance these additions.

The Missouri foundation formula is underfunded, which makes any increase unlikely and difficult. Because of this underfunding, an increase for some districts would mean a decrease for others. If the funding formula were fully financed, however, this would not be the case. But the money has to come from somewhere. State taxes and expenditures would either increase overall or the budget for other social services or expense would have to decrease. It is time for the citizens of Missouri, a state with relatively low government revenue, to value education for all students throughout the state.

**Accurate Assessment of Property Value**

It is important to remember that the local effort that is used to calculate the state foundation formula is not the actual amount that is raised locally each year. In general, it is the amount that was raised during the 2004-2005 school year. The bulk of local effort comes from property taxes. Property taxes are raised by assessing a tax on a percentage of local property value. The funding formula assumes that the local property tax levy is 3.43 percent and the assessed valuation of all property is held constant at the level from

December 31, 2004. There is no recommended change to the assumed level of 3.43 percent. This benefits school districts that have chosen to raise their tax levies, contributing more local funds. Some poor and wealthy districts have chosen to do this in St. Louis County and throughout the state. A change in this assumption by the funding formula would disproportionately harm poor districts.

The funding formula, however, should no longer assume property assessed value at the 2004 level. This assumption disproportionately benefits districts that have the biggest increases in local wealth. While the formula does allow the assessed valuation to drop, poor districts are still harmed. Wealthy districts in the state have seen their property values rise drastically since 2004. This increase does not count for anything in the funding formula. This means that the state provides an artificially high amount of funds to wealthy districts. Because the state underfunds education, this robs poorer districts of much-needed funds. This cannot be allowed to continue.

Because the state does not update assessed valuation, wealthy districts can essentially choose one of two advantages. They can significantly lower property taxes and retain the same level of funding. Or they can hold their tax levies stable and significantly increase overall funding for their schools. Poor districts do not have this option.

St. Louis County provides an excellent case study for the detriment of the current policy in regards to assessed valuation. There are districts in St. Louis County, such as Brentwood, Kirkwood, Rockwood, University City, and Webster Groves that have seen their property values rise by over 25 percent. And yet this rise in property value is not counted towards their local effort. Other districts, such as Ferguson-Florissant,

Hazelwood, Jennings, and Riverview have seen an increase of fewer than two percent or an actual drop in valuation. The state does adjust the formula if valuation drops, but that does not solve the real problem. In an underfunded system, wealthy districts are getting an artificially high amount of state aid at a time when all districts are receiving less aid than they deserve, especially poorer districts.

The chart below clearly demonstrates that the poorer districts, as measured by percentage of students who qualify for free or reduced lunch prices, have had the smallest growth in assessed valuation. At the same time, wealthy districts have seen massive increases in local wealth, none of which is accounted for by the funding formula.

**Table 3: Assessed Valuation of St. Louis Area School Districts, 2004 & 2015**

| District | FRL % | 2004 Assessed Valuation | 2015 Assessed Valuation | % Change |
|---|---|---|---|---|
| Clayton | 15.5 | $837,032,780 | $1,002,431,060 | +19.8 |
| Kirkwood | 15.9 | $907,281,960 | $1,260,364,990 | +38.9 |
| Ladue | 12.6 | $1,163,195,840 | $1,423,709,590 | +22.4 |
| Ferguson-Florissant | 100 | $890,041,320 | $884,795,980 | -0.6 |
| Jennings | 100 | $94,176,970 | $95,577,080 | +1.5 |
| Riverview Gardens | 98.1 | $222,320,810 | $193,946,730 | -14.6 |
| Source: Missouri Department of Elementary and Secondary Education | | | | |

Missouri must recalculate the local effort in the funding formula based on the actual assessed valuation of each district. There is no doubt that this shift would create anger among citizens of wealthier districts. This anger is understandable as their schools

would lose funding. Nonetheless, this shift must occur to retain the spirit of the 2005 funding bill as well as compensate poorer districts for the massive losses they see from state underfunding.

**Weighted Prop C Funds**

Proposition C was passed in Missouri in 1982. This proposition instituted a statewide sales tax of 1 percent that is earmarked for education. Today, this money goes to districts on a WADA basis and districts count half as local revenue. As Baker and Corcoran (2012) noted, these funds do not increase inequity in education in Missouri, but because of the way they are distributed, they sustain that inequity. The authors argue that a "more progressive distribution [of these funds] according to need and for equalization according to wealth, could go a long way toward eliminating the regressive nature of Missouri's school funding."

Proposition C is clearly a valuable source of revenue for school districts. But the value should be distributed in a way that provides greater benefit to districts with higher percentages of impoverished students. For districts that have a higher-than-average percentage of students qualifying for free or reduced lunch prices, which is currently 41 percent, Prop C funds should not count as any local effort. This change would increase state funding for poorer school districts by over $400 per "weighted" student (Shuls, 2012), which would mean an even greater increase per actual student in attendance each day.

There are several concerns with this recommendation. First, the foundation formula is already underfunded. Increasing the amount of money that the state should provide poorer districts will only increase the amount that the state underfunds education.

As stated earlier, these recommendations are based on a fully funded foundation formula; however, this is a worthy change even with the underfunding. By increasing the amount that poorer districts should receive, they will also receive more under the current system of prorating state funds.

There is also a concern that this recommendation will not actually increase the funds that the state provides poor school districts. Because the money is no longer counted as local funds, it would count as state funds. Policy makers could simply use the funds from Prop C to replace the amount that should be added to the funding formula by the drop in local revenue. This is a common tactic in legislative bodies when citizens choose to earmark certain funds, such as those from lotteries or gambling, to increase educational dollars. Legislators simply decrease the amount of general funds provided and replace them with the earmarked funds. This cannot be allowed to happen with Prop C funds.

**Held Harmless No Longer**

The largest impediment to the recommendations provided in this paper is the current underfunding of Missouri's public schools. This underfunding makes any recommendation that would increase total education expenditures precarious at best. This final recommendation is designed to encourage the state to fully fund education or at least to ease the burden on poor districts until they do.

Until the state fully funds education, districts with a less-than-average percentage of students qualifying for free or reduced lunch prices would no longer be able to keep the "hold harmless" distinction. Districts that are hold harmless should actually receive less money per weighted student from the state than they did in 2005. The hold harmless

provision of the 2005 funding bill guaranteed that districts could not drop below that per-WADA amount. As such, many districts in St. Louis County and throughout the state have received a hold harmless distinction. There are both wealthier districts and poorer districts that have been held harmless. There are doubts about whether the hold harmless distinction should exist at all; however, it currently helps a variety of districts. Therefore, this paper is not recommending ending the distinction permanently. The recommendation is simply to end it temporarily for districts that have less than 41 percent of its students who qualify for free or reduced lunch prices. Based on those held harmless in 2015, the districts recommended to lose that distinction are Brentwood, Clayton, Kirkwood, Ladue, Lindbergh, and Parkway.

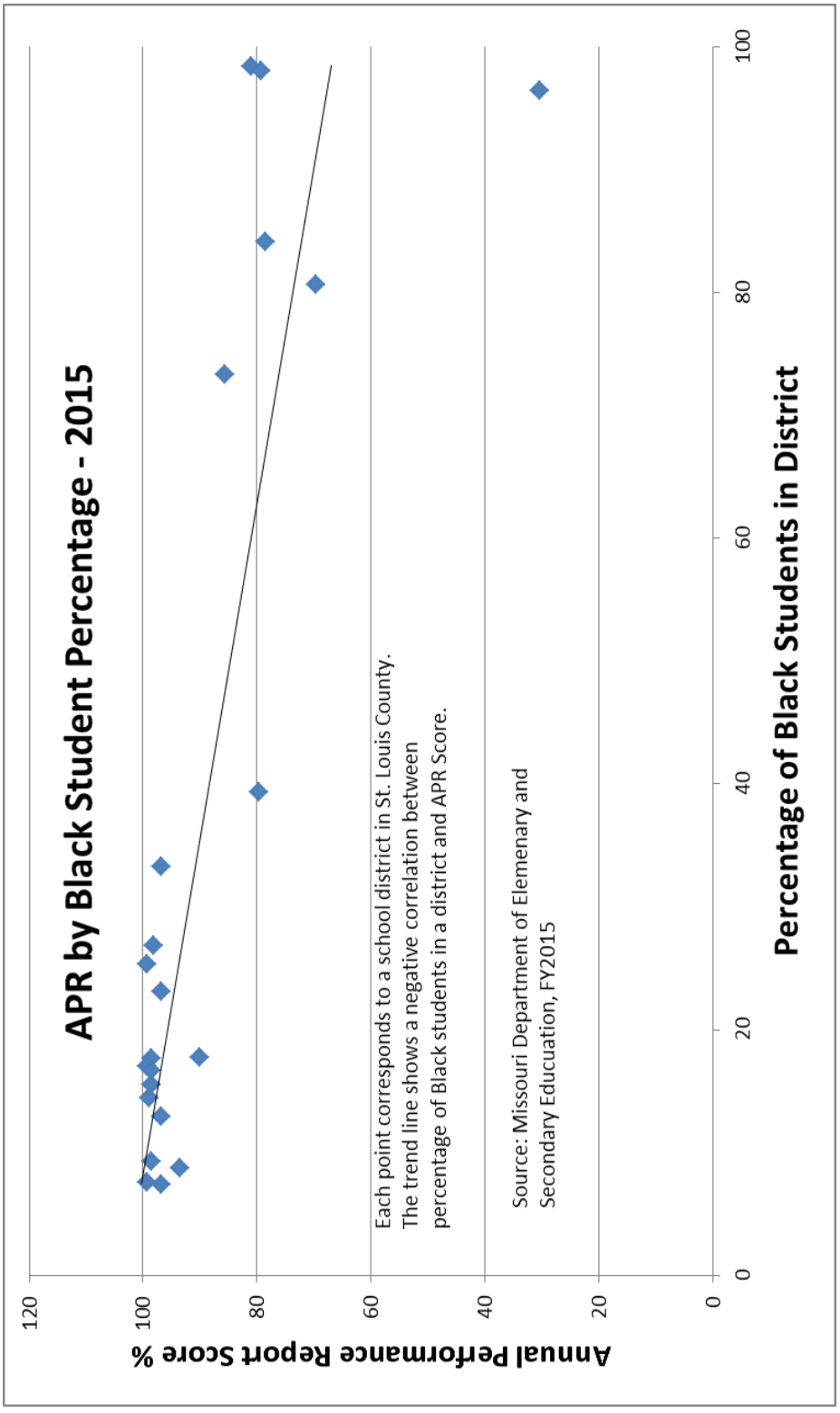
It is hoped that this decrease of funding for wealthier districts will encourage state law makers, specifically those that are elected from wealthier constituencies, to fully fund the educational foundation formula. It is further hoped that this decrease in funding for wealthier districts will call attention to the problem of underfunding, as it would likely cause a more significant decrease in state funds than the system of prorating currently does. Missouri's foundation formula must be fully funded. No districts should be harmed by the failure of state law makers. But until those legislators choose to act, only poorer districts should be held harmless.

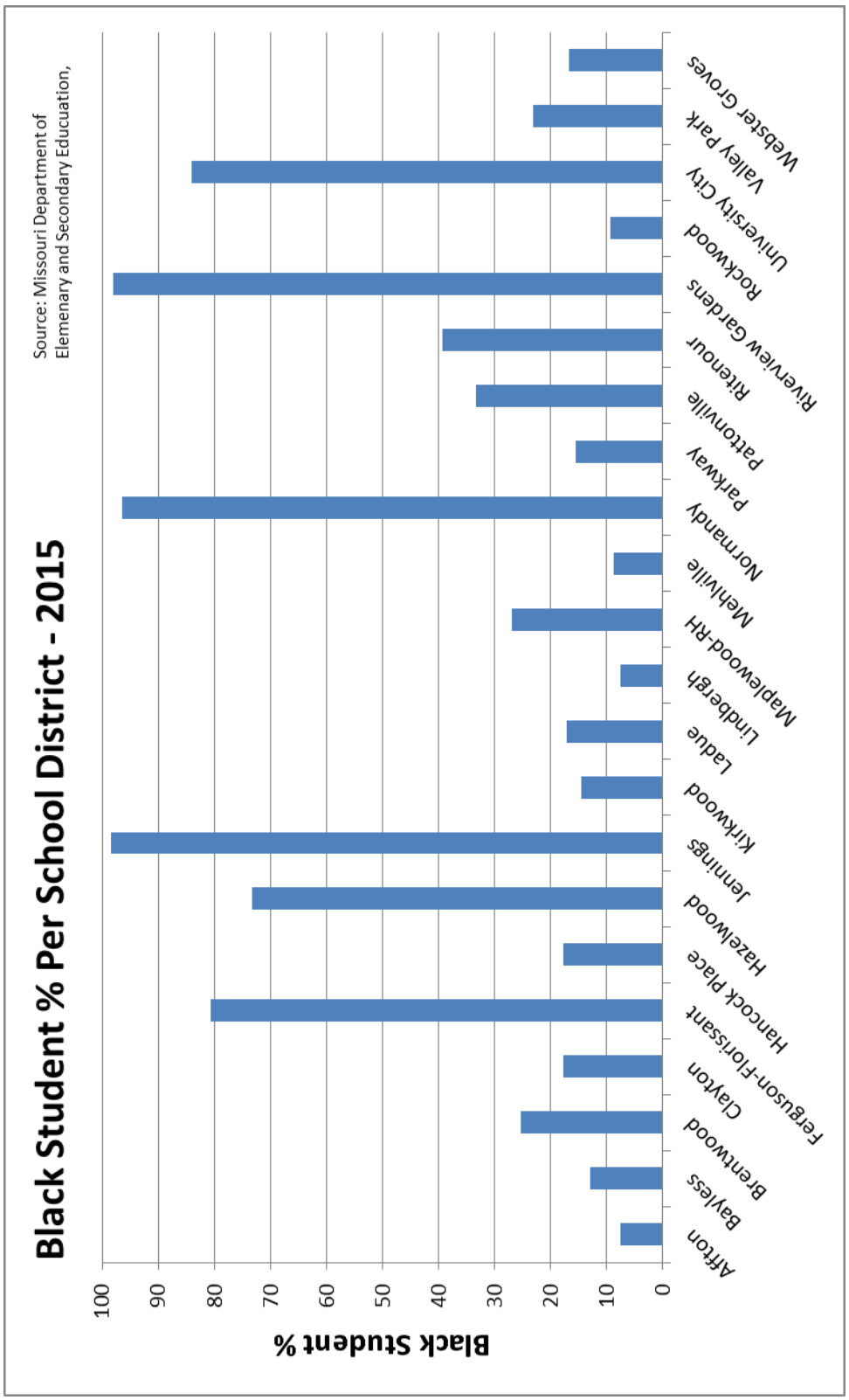
## Conclusion

Missouri's educational system is unhealthy. Educational outcomes are far too closely tied to geography, race, and especially socioeconomic status. Money alone cannot provide renewed health. But without the necessary funds, Missouri's underperforming schools will never improve. The recommendations here are designed to work within the current system. These small, but necessary, changes will channel increased funds to schools with high student poverty. Once the Missouri General Assembly chooses to fully fund education, these recommendations will have minimal financial impact on wealthy districts.

As democracy expanded throughout the history of the United States, the Founders' demands of an educated and engaged citizenry became increasingly important. Education is no longer reserved for the elite or wealthy. Each state in the US has made the commitment to provide an adequate education to all of its citizens. Providing an adequate education is not just necessary for the future of students, families, and communities. It is necessary for the health of our republic.

# Appendix


APR by Black Student Percentage - 2015
Annual Performance Report Score %
120
100
80
60
40
20
0
0
20
40
60
80
100
Percentage of Black Students in District
Each point corresponds to a school district in St. Louis County.
The trend line shows a negative correlation between
percentage of Black students in a district and APR Score.
Source: Missouri Department of Elemenary and
Secondary Educuation, FY2015


Black Student % Per School District - 2015
Source: Missouri Department of Elemenary and Secondary Educuation,
Black Student %
0
10
20
30
40
50
60
70
80
90
100
Affton
Bayless
Brentwood
Clayton
Ferguson-Florissant
Hancock Place
Hazelwood
Jennings
Kirkwood
Ladue
Lindbergh
Maplewood-RH
Mehlville
Normandy
Parkway
Pattonville
Riteneur
Riverview Gardens
Rockwood
University City
Valley Park
Webster Groves

| School | Total Expenditures | ADA | Spending per ADA | Attendance - Hours Absent | Free/ Reduced % | ELL/LEP % | IEP % | Black % | Discipline % | Grad Rate % | APR % | ACT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Affton | $25,632,189.56 | 2,266.83 | $11,307.49 | 94.6 | 39.4 | 9.26 | 14.35 | 7.5 | 0.6 | 90.9 | 96.8 | 20.1 |
| Bayless | $13,690,856.09 | 1,526.86 | $8,699.70 | 95.2 | 66.4 | 19.47 | 15.8 | 13 | 1.5 | 90.6 | 96.8 | 17.7 |
| Brentwood | $11,952,950.94 | 725.04 | $16,485.81 | 95.6 | 30 | 2.79 | 13.58 | 25.4 | 1.1 | 98.3 | 99.3 | 23.7 |
| Clayton | $42,074,262.63 | 2,354.49 | $17,869.77 | 96 | 15.5 | 2.75 | 10.83 | 17.7 | 0.2 | 100 | 98.6 | 25.6 |
| Ferguson-Florissant | $110,462,320.98 | 9,910.23 | $11,146.29 | 94.1 | 100 | 1.24 | 14.77 | 80.7 | 5.5 | 75.1 | 69.6 | 16.4 |
| Hancock Place | $15,116,766.57 | 1,405.49 | $10,755.49 | 95.1 | 100 | 5.48 | 14.32 | 17.8 | 1.8 | 100 | 90 | 18 |
| Hazelwood | $186,376,317.53 | 16,755.89 | $11,123.03 | 94.3 | 61.5 | 2.22 | 15.12 | 73.4 | 2.8 | 89.5 | 85.7 | 17.1 |
| Jennings | $24,755,379.78 | 2,397.60 | $10,325.07 | 93.9 | 100 | 0 | 16.15 | 98.5 | 4.1 | 93 | 81.1 | 16.1 |
| Kirkwood | $63,541,697.25 | 5,115.67 | $12,420.98 | 95.5 | 15.9 | 0.95 | 12.48 | 14.5 | 1.2 | 97.7 | 98.9 | 22.7 |
| Ladue | $49,188,553.49 | 3,819.27 | $12,879.05 | 95.7 | 12.6 | 1.32 | 12.32 | 17.1 | 0.7 | 97.8 | 99.3 | 24.8 |
| Lindbergh | $56,159,137.89 | 5,789.70 | $9,699.83 | 96.4 | 15.1 | 4.35 | 12.61 | 7.6 | 0.5 | 97.4 | 99.3 | 22.2 |
| Maplewood-RH | $15,624,587.86 | 1,095.79 | $14,258.78 | 95.1 | 46.4 | 2.92 | 12.35 | 26.9 | 1.2 | 98.9 | 98.2 | 19.8 |
| Mehlville | $87,945,700.66 | 9,723.98 | $9,044.21 | 95.5 | 27.9 | 8.88 | 14.64 | 8.8 | 1 | 96.6 | 93.6 | 20.3 |
| Normandy | $41,712,990.04 | 3,400.74 | $12,265.85 | 92.3 | 97.9 | 0.92 | 12.52 | 96.5 | 3.8 | 55.9 | 30.4 | 14 |
| Parkway | $202,017,561.76 | 16,514.68 | $12,232.60 | 95.3 | 20.3 | 4.36 | 15.92 | 15.6 | 1.2 | 95.9 | 98.6 | 22.6 |
| Pattonville | $74,556,116.17 | 5,150.35 | $14,475.94 | 95.1 | 48.8 | 8.22 | 16.24 | 33.3 | 2.5 | 90.2 | 96.8 | 20.2 |
| Ritenour | $57,383,505.09 | 5,786.67 | $9,916.50 | 93.7 | 77.9 | 10.08 | 14.45 | 39.4 | 2.2 | 86.1 | 79.6 | 17.1 |
| Riverview Gardens | $57,662,214.49 | 5,382.62 | $10,712.66 | 91 | 98.1 | 0.56 | 15.1 | 98.1 | 1.4 | 74.7 | 79.3 | 13.8 |
| Rockwood | $209,128,999.29 | 20,190.06 | $10,358.02 | 95.7 | 14.7 | 2.02 | 14.07 | 9.3 | 0.6 | 97.4 | 98.6 | 23.3 |
| University City | $37,081,243.64 | 2,667.13 | $13,903.04 | 94.1 | 68.7 | 2.72 | 13.32 | 84.2 | 4 | 73 | 78.6 | 16.5 |
| Valley Park | $11,730,790.35 | 899.27 | $13,044.83 | 96 | 47.3 | 5.1 | 13.24 | 23.2 | 0.6 | 98.5 | 96.8 | 21.5 |
| Webster Groves | $49,572,723.00 | 4,033.50 | $12,290.24 | 95.6 | 17.9 | 0.7 | 13.31 | 16.7 | 1.2 | 96 | 98.6 | 23 |

Source: 2015 Missouri Department of Elementary and Secondary Education Data

| School | 2004 Assessed Valuation | 2015 Assessed Valuation | % Change |
|---|---|---|---|
| **Affton** | $338,521,760.00 | $372,136,990.00 | +9.9 |
| **Bayless** | $126,851,090.00 | $143,921,040.00 | +13.5 |
| **Brentwood** | $223,427,010.00 | $281,055,970.00 | +25.8 |
| **Clayton** | $837,032,780.00 | $1,002,431,060.00 | +19.8 |
| **Ferguson-Florissant** | $890,041,320.00 | $884,795,980.00 | -0.6 |
| **Hancock Place** | $52,710,620.00 | $159,332,040.00 | +202.3 |
| **Hazelwood** | $1,595,163,090.00 | $1,598,735,070.00 | +0.2 |
| **Jennings** | $94,176,970.00 | $95,577,080.00 | +1.5 |
| **Kirkwood** | $907,281,960.00 | $1,260,364,990.00 | +38.9 |
| **Ladue** | $1,163,195,840.00 | $1,423,709,590.00 | +22.4 |
| **Lindbergh** | $1,013,709,110.00 | $1,199,688,760.00 | +18.3 |
| **Maplewood-RH** | $184,545,260.00 | $263,038,660.00 | +42.5 |
| **Mehlville** | $1,381,635,050.00 | $1,658,413,330.00 | +20.0 |
| **Normandy** | $215,677,310.00 | $232,335,940.00 | +7.7 |
| **Parkway** | $3,515,415,440.00 | $4,158,544,670.00 | +18.3 |
| **Pattonville** | $1,202,133,790.00 | $1,304,337,970.00 | +8.5 |
| **Ritenour** | $495,415,210.00 | $539,635,270.00 | +8.9 |
| **Riverview Gardens** | $222,320,810.00 | $193,946,730.00 | -14.6 |
| **Rockwood** | $2,520,008,910.00 | $3,207,184,640.00 | +27.3 |
| **University City** | $458,756,240.00 | $574,360,760.00 | +25.2 |
| **Valley Park** | $122,713,040.00 | $157,498,130.00 | +28.3 |
| **Webster Groves** | $544,983,760.00 | $700,894,180.00 | +28.6 |
| | | | |

Source: Missouri Department of Elementary and Secondary Education

# References


Arocho, J. (2014). Inhibiting intrastate inequalities: A Congressional approach to ensuring equal opportunity to finance public education. *Michigan Law Review*, *112*, 1479-1504.

Baicker, K. & Gordon, N. (2006). The effect of state education finance reform on total local resources. *Journal of Public Economics*, *90*, 1519-1535.

Baker, B. D. (2011). Exploring the Sensitivity of Education Costs to Racial Composition of Schools and Race-Neutral Alternative Measures: A Cost Function Application to Missouri. *Peabody Journal of Education*, *86*(1), 58-83.

Baker, B. D. & Corcoran, S. P. (2012) The Stealth Inequities of School Funding: How State and Local School Finance Systems Perpetuate Inequitable Student Spending. *Center for American Progress, September 2012*, 24.

Baker, B. D. & Green III, P. C. (2009). Equal educational opportunity and the distribution of state aid to schools: Can or should school racial composition be a factor? *Journal of Education Finance*, *34*(9), 289-323.

Baker, B. D. & Green III, P. C. (2014). *Conceptions of Equity and Adequacy in School Finance*. In "Handbook of Research in Education Finance and Policy," ed. by Ladd, H. F. & Goertz, M. E. Routledge: New York.

Brunner, E. J., Murdoch, J., & Thayer, M. (2002). School Finance Reform and Housing Values. *Public Finance and Management*, *2*(4), 535-565.

Burbridge, L. C. (2008). Can the impact of adequacy-based education reform be measured? *Journal of Education Finance*, *34*(1), 31-55.

Card, D. & Payne, A. A. (2002). School finance reform, the distribution of school spending, and the distribution of student test scores. *Journal of Public Economics, 83*, 49-82.

Chaudhary, L. (2009). Education inputs, student performance and school finance reform in Michigan. *Economics of Education Review*, *28*, 90-98.

Chung, I. H. (2015). Education finance reform, education spending, and student performance: Evidence from Maryland's Bridge to Excellence in Public Schools Act. *Education and Urban Society*, *47*(4), 412-432.

Clotfelter, C. T., Ladd, H. F. & Vigdor, J. (2005). Who teaches whom? Race and the distribution of novice teachers. *Economics of Education Review, 24*, 377-392.

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*, 275-284.

Dhar, P. & Ross, S. L. (2012). School district quality and property values: Examining differences along school district boundaries. *Journal of Urban Economics, 71*, 18-25.

Dorson, R. & Jordan, J., presenters. (2015). *School Finance Topics*. Missouri Department of Elementary and Secondary Education. PowerPoint retrieved from dese.mo.gov.

Downes, T. A. & Figlio, D. N. (1999). Economic inequality and the provision of schooling. *Economic Policy Review, 3*, 99-110.

Driscoll, L. G. & Salmon, R. G. (2008). How increased state equalization aid resulted in greater disparities: An unexpected consequence for the Commonwealth of Virginia. *Journal of Economic Finance, 33*(3), 238-261.

Epple, D. & Ferreyra, M. M. (2007). School finance reform: Assessing general equilibrium effects. *Journal of Public Economics, 92*, 1326-1351.

Fahy, C. (2011). Education funding in Massachusetts: The effects of aid modifications on vertical and horizontal equity. *Journal of Education Finance, 36*(3), 217-243.

Figlio, D. N., Husted, T. A., & Kenny, L. W. (2004). Political economy of the inequality in school spending. *Journal of Urban Economics, 55*, 338-349.

Gillespie, L. N. (2010). The fourth wave of educational finance litigation: Pursuing a federal right to an adequate education. *Cornell Law Review, 95*(5), 989-1020.

Glenn, W. J. (2009). School finance adequacy litigation and student achievement: A longitudinal analysis. *Journal of Education Finance, 34*(3), 247-266.

Guthrie, J. W., Springer, M. G., Rolle, R. A. & Houck, E. A. (2007). *Modern Education Finance and Policy*. Pearson Eduation Inc: Boston.

Hanushek, E. A. (1996). *School resources and student performance*. In "Does Money Matter? The Effect of School Resources on Student Achievement and Adult Success," ed. Burtless, G. 43-73. Washington, D.C: Brookings Institute.

Hanushek, E. A. & Rivkin, S. G. (2009). Harming the best: How schools affect the Black-white achievement gap. *Journal of Policy Analysis and Management, 28*(3), 366-393.

Hirth, M. A. & Eiler, E. (2005). Horizontal and vertical equity analysis of Indiana's 2001 Reward-for-Effort formula. *Journal of Education Finance, 30*(4), 382-398.

Izraeli, O. & Murphy, K. J. (2007). The impact of Proposal A on school financing, equity, and quality of public schools in the state of Michigan. *Journal of Education Finance, 33*(2), 111-129.

Jordan, M. M., Chapman, D. & Wrobel, S. L. (2014). Rich districts, poor districts: The property tax equity impact of Arkansas school finance equalization. *Public Finance and Management, 14*(4), 399-415.

Machin, S. (2011). Houses and schools: Valuation of school quality through the housing market. *Labour Economics, 18*, 723-729.

Missouri School Boards' Association (MSBA). (2015). *The Foundation Formula: A Funding Model for K-12 Education*. Retrieved on November 3, 2015. http://www.msbafuturebuilders.org/documents/research/Missouri%20K-12%20Foundation%20Formula.pdf

Murray, S. E., Evans, W. N., & Schwab, R. M. (1998). Education-finance reform and the distribution of education resources. *American Economic Association, 88*(4), 789-812.

Neymotin, F. (2010). The relationship between school funding and student achievement in Kansas public schools. *Journal of Education Finance, 36*(1), 88-108.

Nguyen-Hoang, P. & Yinger, J. (2011). The capitalization of school quality into house values: A review. *Journal of Housing Economics, 20*, 30-48.

Odden, A. R. & Picus, L. O. (2014). *School Finance: A Policy Perspective, 5th Ed.* McGraw-Hill: New York.

Papke, L. E. (2005). The effects of spending on test pass rates: evidence from Michigan. *Journal of Public Economics, 89*, 821-839.

Papke, L. E. (2008). The effects of changes in Michigan's school finance system. *Public Finance Review, 36*(4), 456-474.

Podgursky, M., Smith, J., & Springer, M. G. (2008). A new defendant at the table: An overview of Missouri school finance and recent litigation. *Peabody Journal of Education, 83*, 174-197.

Ramirez, A., Siegrist, M., Krumholz, P., & Rainey, T. (2011). Equity, adequacy, and categorical funding in Colorado school finance: A focus on English Language Learners. *Education and Urban Society, 45*(6), 700-713.

*A Shaky Foundation*. (2015) The Missouri Budget Project. Retrieved from: http://www.mobudget.org/wp-content/uploads/2014/06/A_Shaky_Foundation.pdf

Sherlock, M. (2011). The effects of financial resources on test pass rates: Evidence from Vermont's Equal Education Opportunity Act. *Public Finance Review, 39*(3), 331-364.

Shuls, J. V. (2012). A Primer on Missouri's Foundation Formula for K-12 Public Education. *Show-Me Institute Policy Study, 35*, December 2012.

Silverman, R. M. (2011). How unwavering is support for the local property tax?: Voting on school district budgets in New York, 2003-2010. *Journal of Education Finance, 36*(3), 294-311.

Toutkoushian, R. K. & Michael, R. S. (2007). An alternative approach to measuring horizontal and vertical equity in school funding. *Journal of Education Finance, 32*(4), 395-421.

Toutkoushian, R. K. & Michael, R. S. (2008). The impacts of school funding formula modifications on equity, fiscal neutrality, and adequacy. *Journal of Education Finance, 33*(4), 352-380.

Verstegen, D. A. (2007). Has adequacy been achieved? A study of finances and costs a decade after court-ordered reform. *Journal of Education Finance, 32*(3), 304-327.

West, M. R. & Peterson, P. E. (2007). *The Adequacy Lawsuit: A Critical Appraisal*. In "School Money Trials: The Legal Pursuit of Educational Adequacy," ed. by West, M. R. & Peterson, P. E. The Brookings Institution Press: Washington D.C.

Wood, G. S. (1991). *The Radicalism of the American Revolution*. Vintage Books: New York.

Wood, G. S. (2002). *The American Revolution: A History*. The Modern Library: New York.

Yinger, J. (2004). *State aid and the pursuit of educational equity: an overview*. In "Helping Children Left Behind: State Aid and the Pursuit of Educational Equity," ed. by Yinger, J. MIT Press: Cambirdge.