



ESSAY

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ACADEMIC PROGRESS AND MISSOURI'S ANNUAL PERFORMANCE REPORT

By Abigail Hoyt

KEY FINDINGS

1. Almost 99 percent of Missouri school districts were accredited in 2017, despite wide variation in student academic performance.
2. Outside research on the academic growth of students between 3rd and 8th grade for Missouri school districts shows wide variation in school district performance across the state, ranging from 2.5 to 6.4 years of academic growth over 5 school years.
3. Data generated by outside researchers allow us to identify districts that are exceeding expectations and those that are missing them, which are more useful than the current accreditation approach.
4. APR scores, and thus accreditation status, will remain a poor gauge of student progress as long as the current APR score formula is in place.

ADVANCING LIBERTY WITH RESPONSIBILITY
BY PROMOTING MARKET SOLUTIONS
FOR MISSOURI PUBLIC POLICY

INTRODUCTION

A casual observer who learned that 98.8 percent of Missouri school districts were awarded full accreditation status in 2017 might conclude that 98.8 percent of Missouri school districts are performing at a high level and preparing students well for adult life. Parents and other community members looking for official information about how their local school districts are doing must rely primarily on the accreditation status and an Annual Performance Report (APR) score of their district, and only an APR score for their school, provided by the Missouri Department of Elementary and Secondary Education (DESE). However, accreditation status fails to account for many important details and nuances of school performance, and APR scores are difficult to interpret. More importantly, placing a broad “fully accredited” label on all but the worst-performing districts obscures significant variations in district performance across the state.

This essay uses growth data on Missouri school districts that were generated by researchers from Stanford University, not DESE, to examine the disconnect between a school district’s growth performance (that is, the level of improvement seen in students in the district over time) and its accreditation status.¹ Regardless of where a student begins a school year in terms of academic performance, they should expect to receive a year’s worth of academic growth during that year. Comparing average rates of proficiency from combined third-grade math and English language arts (ELA) assessments to eighth-grade scores five years later provides a measure of how much growth students in a given district have achieved during those years. Of course, outside factors in a student’s life will also affect academic achievement, but focusing on the amount of growth among students in a given district is a useful indicator of that district’s performance.

SCHOOL ACCOUNTABILITY IN MISSOURI

Missouri’s policy framework for imposing accountability on public school districts is the Missouri School Improvement Plan (MSIP), which is currently undergoing revisions that will result in its sixth iteration (MSIP 6) since 1985.² Under MSIP 5, each district receives an Annual Performance Report (APR) score that is the sum of scores in five primary categories in K-12 districts:

academic achievement, subgroup achievement, college and career readiness, attendance rate, and graduation rate.³ For K-8 districts, the college and career readiness category is replaced with high school readiness and the graduation rate category is dropped. The academic achievement category encompasses proficiency and growth, both of which are measured using standardized test scores on the Missouri Assessment Program (MAP) developed by DESE. The academic achievement category accounts for either 56 out of a possible 140 points (for a K-12 district) or 48 out of a possible 80 points (for a K-8 district).

The APR score determines the accreditation status of a district. If a district earns more than 70 percent of possible APR points it is fully accredited, if it earns 50 to 69 percent it is provisionally accredited, and if it earns below 50 percent it is unaccredited. In 2017, DESE categorized 98.8 percent (512 districts) of school districts in the state as fully accredited, 1 percent (5 districts) as provisionally accredited, and 0.2 percent (1 district) as unaccredited.⁴ The 2014 accreditation results reflected a very similar distribution, with 97 percent of districts earning full accreditation, 2 percent earning provisional accreditation scores, and 0.6 percent of districts unaccredited.⁵

Parents looking for information about how their child’s school is performing are only given APR scores, and these can be confusing. For example, parents might draw a number of different and possibly erroneous conclusions upon learning that their child’s school district received 90 percent of possible APR points. They might assume that the average student in the district performs at 90 percent of grade level, or that 90 percent of the students in the district perform at grade level. In fact, the 90 percent score means that when the scores from all five (or four) categories—each of which has a different scoring scale—were tallied, the district received 90 percent of all possible points. The APR score alone does not tell parents how the district performed academically, since academic performance is combined with the other categories. Anyone interested in understanding how their district is performing would have to see each of the categories that contribute to the APR score, and even those categories are combinations of scores, as with the academic performance score. Data on one of the most important measures of performance—student academic growth—is extremely difficult to understand under MSIP 5.

WHY GROWTH MATTERS

Two common ways to measure academic performance are by proficiency and growth. Proficiency is used to understand a student's ability at a single moment in time, often by determining a student's level of subject mastery relative to what is expected of someone at their grade level. Growth is the difference between a student's proficiency levels at two points in time (usually the beginning and end of a school year, or the end of two different school years). In this essay, using growth helps to put student performance into context. For example, a student might finish 3rd grade with a proficiency level similar to that of a 1st-grader (meaning that he is two years below grade-level performance). The same student might finish 8th grade with a proficiency level similar to that of a 7th-grader. Looking only at proficiency, we might conclude that his school district had failed to bring him up to a proficient level. But taking growth into consideration, we can see that he made six years of academic progress over the five intervening years—which might be a useful way to measure the performance of his school district during that time.

The 2001 federal No Child Left Behind (NCLB) legislation was intended to emphasize proficiency in school accountability measures. NCLB mandated that schools track the test performance for students in grades 3 through 8, plus high school, and report the number and percentage of students whose test scores indicated grade-level proficiency. The emphasis on proficiency led educators to focus on “bubble kids”—students who could achieve proficiency with some extra attention—at the expense of other students who either were already proficient or were far enough behind that they were unlikely to achieve proficiency in the short term.⁶

In 2015, NCLB was replaced by the Every Student Succeeds Act (ESSA), which requires states to also report student academic growth. Since growth is measured over a period of time, it can show how much understanding a

student has gained while under a district's instruction even though outside factors in a student's life may influence their education.⁷ While growth is one component of the APR score, it is combined with proficiency and thus measurement and reporting are unclear.*

MISSOURI SCHOOL DISTRICT GROWTH DATA

A much more straightforward approach to assessing academic growth was developed by the Stanford Education Data Archive (SEDA). SEDA converted the national average rates of proficiency in 3rd-grade ELA and mathematics in 2009 to a grade level of 3.0.[†] Districts with average rates of proficiency that are equivalent to the national average, thus, would be considered to have their 3rd-graders performing exactly at the 3rd-grade, or 3.0, level. If, however, their 3rd-grade score was 2.5, then the schools in that district had 3rd-graders that performed, on average, below grade level. They also converted the national average rates of proficiency in 8th-grade ELA and mathematics in 2014 to a grade level of 8.0. So, if a district's 8th-grade score in 2014 was 8.5, then the students performed above grade level (represented by 8.0).

The analysis in this essay is based on the SEDA data for Missouri school districts.⁸ Missouri 3rd-graders in each district in 2009 were compared to the national average, and the same was done for Missouri 8th-graders in each district in 2014. Although there will always be some turnover in the student body of any district from year to year, there is no reason to believe that students transfer at a higher than normal rate in Missouri school districts.

Ideally, the test scores should improve by 1.0 (the equivalent of one year) for each grade year. Growth data show that students in some Missouri school districts achieve what parents might expect—a full five years of academic growth in the five years between third and eighth grade—while students in others do not.

* Schools can receive up to 12 APR points for growth in ELA and mathematics, plus up to 12 points for progress towards their proficiency targets. The growth component predicts scores for each student, after accounting for some student and school characteristics, such as mobility. The predicted scores are then compared to the actual scores and analyzed to determine the impact that the school had on whether the student performed above or below what was expected. Finally, this school impact is compared to the average for all schools in the state, and the school receives points based on whether it is statistically significantly above the state average, statistically similar, or statistically significantly below.

† The Stanford Education Data Archive (SEDA) used restricted-use state-reported rates of proficiency by grade/subject/school for 2009 and 2014 collected by the U.S. Department of Education's EdFacts initiative. These rates of proficiency were used to estimate district-level averages and standard deviations, which were then benchmarked to the National Assessment of Educational Progress (NAEP) in order to make cross-state comparisons possible. For a student to be considered “proficient” on NAEP, they must “demonstrate solid academic performance and competency over challenging subject matter.”

The SEDA data over the 5-year study period offer a window into the interplay between measurements of performance and growth. Overall, the average 3rd-grade performance score in Missouri in 2009 was 3.1, the average 8th-grade performance score in 2014 was 7.8, and the average growth score was 4.7. These numbers tell us some things about the overall performance of the students being studied. The good news is that at the end of 3rd grade, Missouri students were performing at a level slightly above the national average. However, over the next five years the students experienced, on average, only 4.7 years of academic growth, so that at the end of 8th grade they were performing at a level slightly *below* the national average.

The data show five-year growth rates among Missouri districts ranging from 2.5 to 6.4 years. Of the 384 districts for which SEDA data are available, 278 (72 percent) showed five-year student growth of less than five years. Only 106 districts (28 percent) showed average student growth of five years or more.[‡]

Regardless of where their 3rd-graders started, 159 districts (41 percent) achieved the growth necessary for their 8th-grade students to be at the 8th-grade level in 2014. Districts had to accomplish anywhere from 4.2 to 6.4 years of growth to achieve an average performance of 8.0, depending on where 3rd-graders started. This means that at least 53 of the districts where students ended at or above 8th-grade level did so despite achieving student growth of less than one grade level per year.[§] Their students were above grade-level proficiency when they left 3rd grade, and lost ground—just not enough to sink below grade level after five years.

There was wide variation between the starting 3rd-grade scores, the ending 8th-grade scores, and the amount of growth. But nearly all districts in the state have one thing in common—they enjoy full accreditation from the state.

GROWTH AND THE ANNUAL PERFORMANCE REPORT

It is important to emphasize that, contrary to the MSIP results, performance across school districts in Missouri isn't

uniform. The academic progress achieved by individual districts over the five years studied ranged from 2.5 years of growth all the way up to 6.4 years of growth. However, the APR scores awarded across the state would give the casual observer the impression that nearly all of Missouri's public school districts are performing adequately. In fact, 97 percent of school districts were awarded full accreditation in 2014, and 98 percent received full accreditation in 2017. The maps of accreditation and APR scores (Maps 1 and 2) would suggest that all districts perform at the same high level. In both maps, the predominance of blue shows how districts are consistently given favorable ratings. For the APR scores map, the blue districts received APR scores that place them in the “fully accredited” tier. Growth is a factor in the APR scores, but the uniformly high APR scores in spite of variation in growth suggest that other factors that contribute to APR scores can mask a lack of academic progress among students.

Of the districts in the SEDA dataset, 245 (64 percent) had APR scores between a 90 and 100 percent. However, the growth scores for those 245 districts ranged from 2.9 years to 6.4. It is difficult to know how much significance should be attached to the APR scores when districts that earned 90 percent of APR points had such a wide range of growth scores. However, it is significant that the Portageville school district, in which students averaged only 2.9 years of academic progress in 5 school years, still earned an APR score of 94 percent, far higher than the 70 percent score needed for accreditation.

APR scores not only mask poor performance, but they also make it difficult to make meaningful comparisons between districts. Judging by APR scores alone, the quality of school districts in Missouri appears consistent throughout the state. Of all the districts included in the SEDA data, 98 percent had APR scores over 70 percent.

The degree to which academic growth is masked by other factors in the APR score can be illustrated by comparing the two districts of Hancock Place and Lamar R-I. Both received APR scores of 95 percent. Both started with similar 3rd-grade performances in 2009, as measured

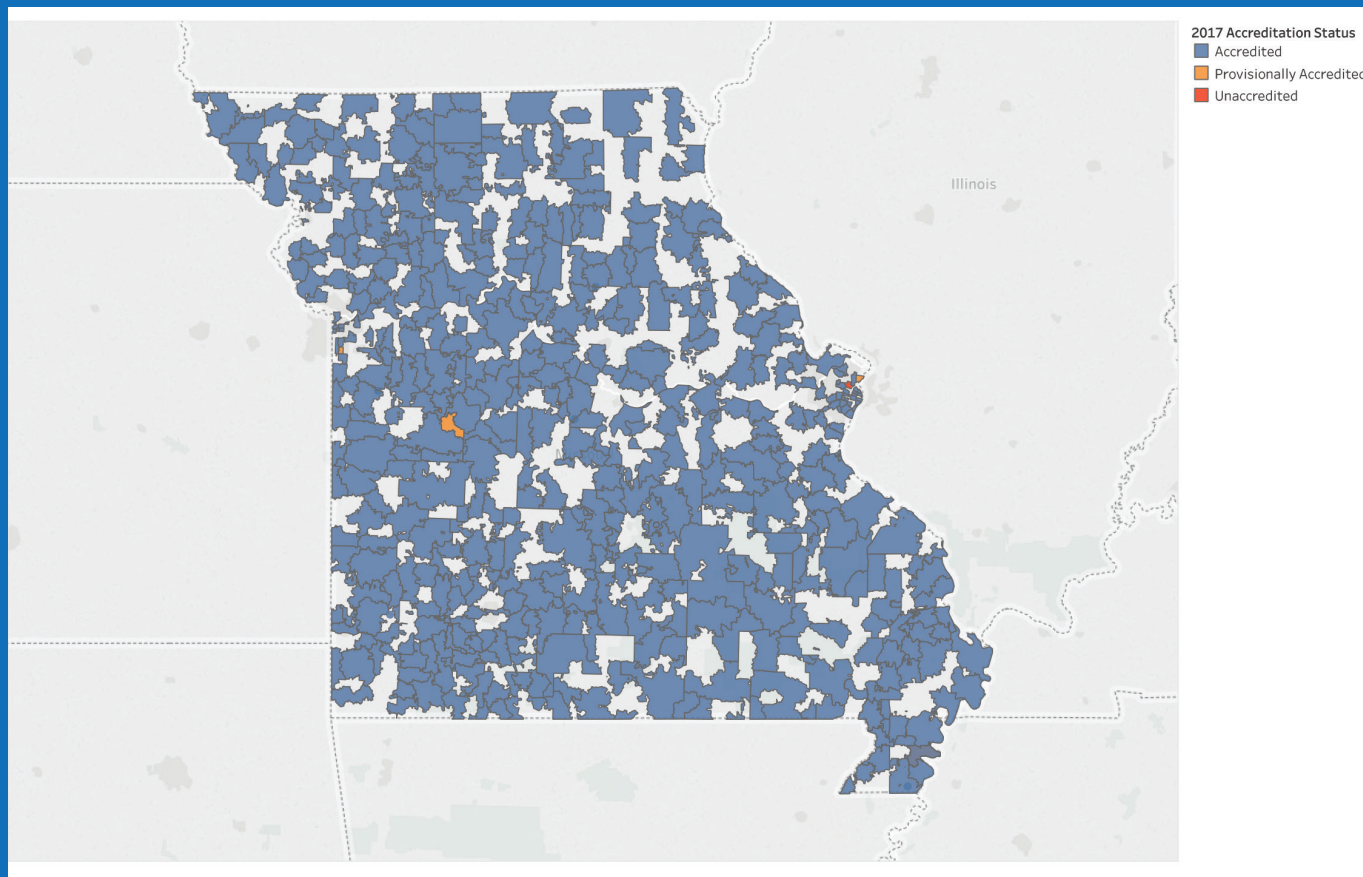
[‡] SEDA data were available for only 384 of Missouri's 518 school districts. This may be due to privacy laws that restricts using data for fewer than 20 grade/subject test takers in a school.

[§] Only 106 of the 159 districts that had students performing, on average, at the 8th grade level in 2014 had achieved five years of growth since 2009.

Map 1:

Accreditation Status of Missouri School Districts, 2017

Nearly all school districts in Missouri are fully accredited.



Note: Gray areas on map represent districts that cross ZIP codes.

by the SEDA data. Hancock 3rd-graders scored 2.8, and Lamar R-I's scored 2.9. However, their performance was not the same in 8th grade in 2014, when Hancock students had an average score of 6.5, (3.7 years of growth) and Lamar R-I students scored 8.5 (5.6 years of growth). Between the two, Lamar R-I was able to achieve more than five years of growth in five years to bring underperforming 3rd-graders past 8th-grade performance level. The two districts display the contrasting district performances that can be present among districts who achieve the same APR scores.

HOW STUDENT ACHIEVEMENT GROWTH VARIES ACROSS MISSOURI

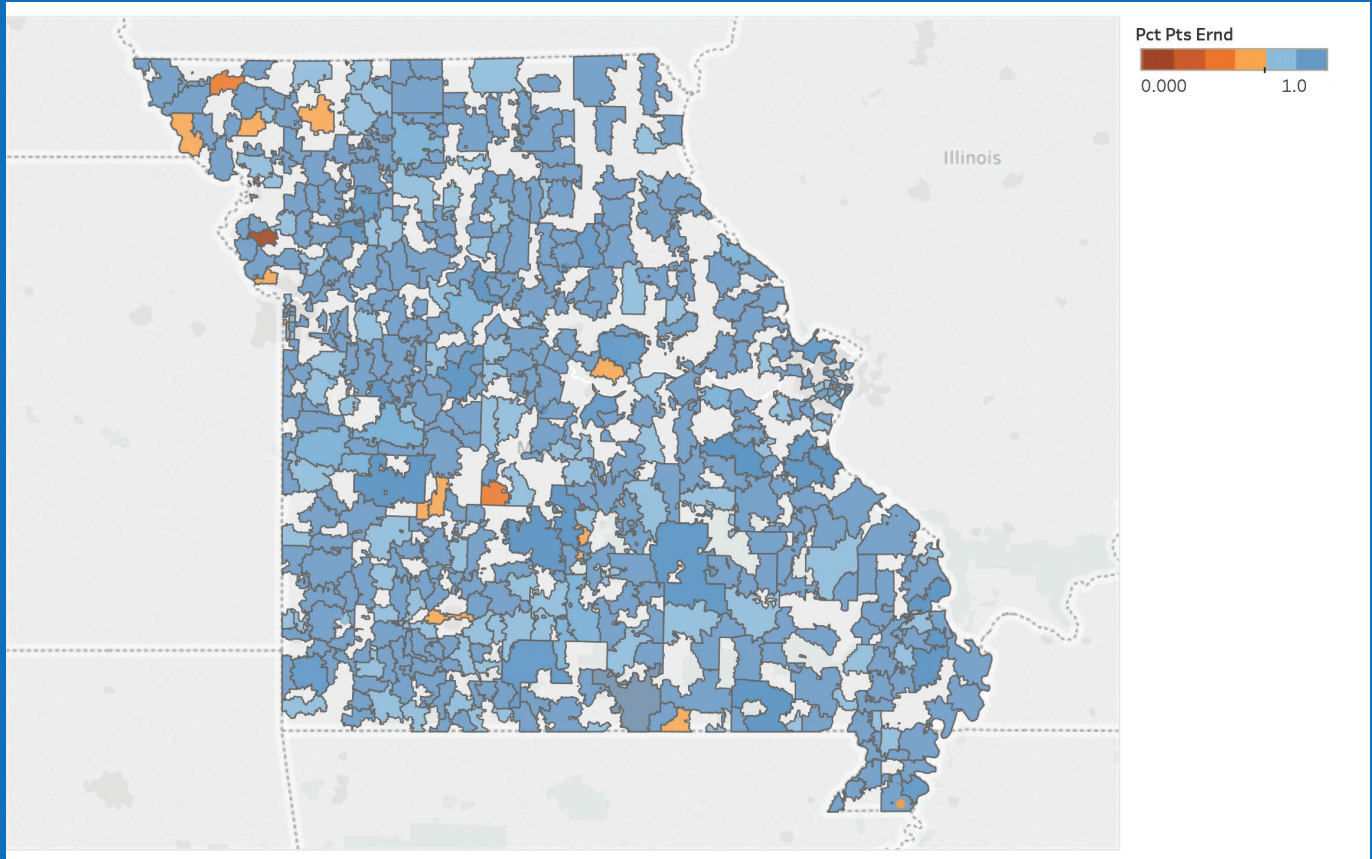
While APR scores and (especially) accreditation status are of little use to anyone interested in academic growth in a given district, the SEDA data are helpful, even if the news they bring isn't always welcome. Map 3 shows average growth between 2009 and 2014, and the contrast between this map and Maps 1 and 2 is striking. Map 3 contains a mix of blue and orange, unlike the near-uniform colors in the other maps.

Table 1 shows the ten districts that achieved the most student academic growth over the five years from 2009

Map 2:

APR Score Percentage of Missouri School Districts, 2017

There is little variation in APR scores across school districts in Missouri. Nearly all have scores of 70 percent or higher.



Note: Gray areas on map represent districts that cross ZIP codes.

to 2014. As can be seen in Map 3, these districts are distributed throughout the state. Knowing which districts enjoyed high rates of growth could allow for those districts to mentor and share knowledge with low-growth districts.

The districts with the lowest growth scores (Table 2) experienced growth ranging from 2.5 to 3.5 academic years over the five-year period. Eight of these districts were still awarded full accreditation. Only Normandy was unaccredited, and Hayti R-II was provisionally accredited at the time the data were collected. Kennett 39 had less growth than both Hayti R-II and Normandy, yet it received full accreditation.

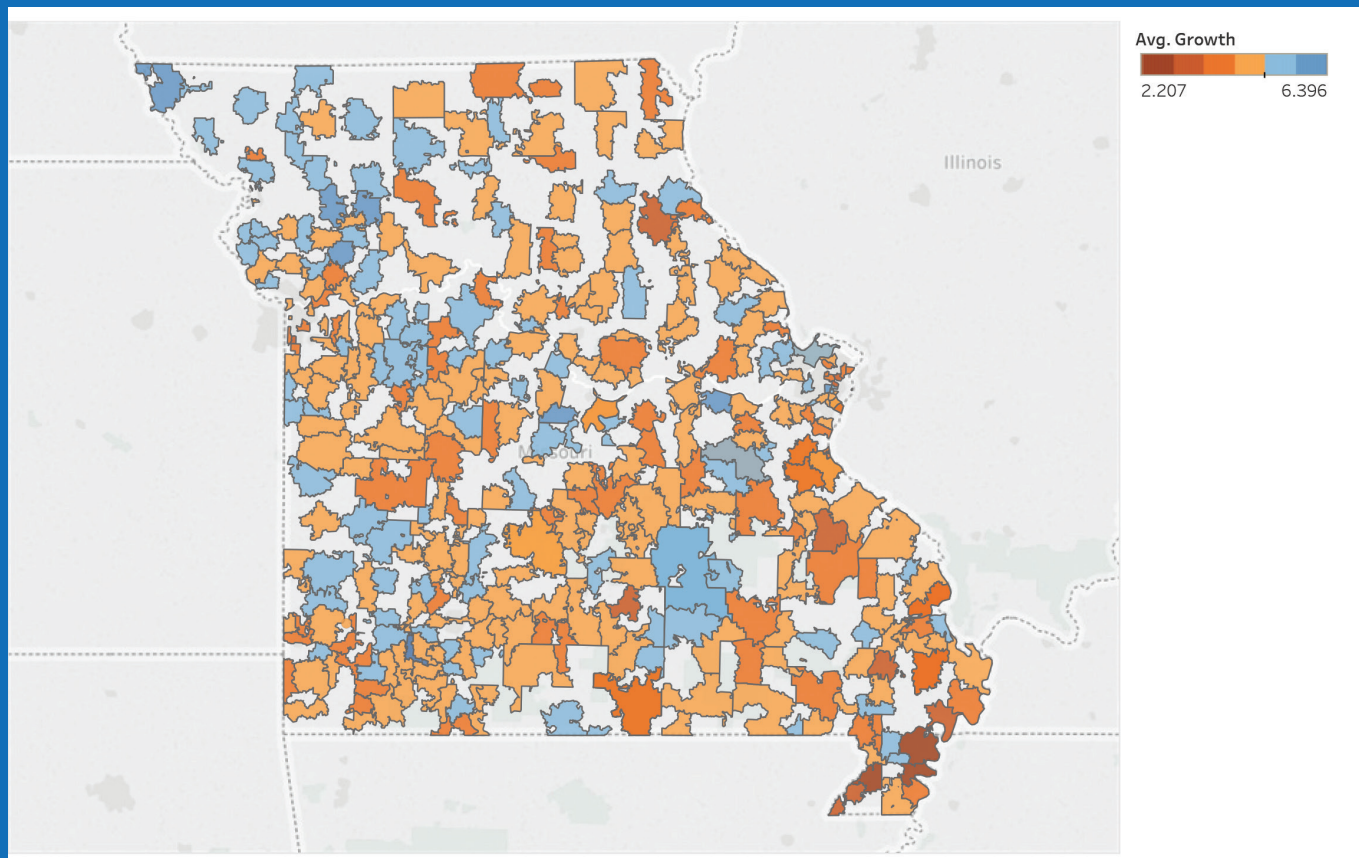
One interesting way to look at these data is to graph where districts' 3rd-graders started in 2009 and where their 8th-graders ended up in 2014. Figure 1 gives us an idea of the distribution of district performance over the 5-year period under study. Each district is represented by a blue dot. The x -axis reflects the average performance level of their 3rd-graders and the y -axis reflects the average performance of their 8th-graders.

In general, high performance in 3rd grade is associated with high performance in 8th grade (see the blue dots in the upper-right quadrant of the graph), but there are exceptions. A handful of districts, the "strivers" in

Map 3:

Average Academic Growth, 2009-2014, Missouri School Districts

Variation in growth performance varies much more widely across school districts than do accreditation status and APR scores.



Note: Gray areas on map represent districts too small to include in SEDA data or districts that cross ZIP codes.

the upper-left quadrant, had below-average 3rd-grade performance and above-average 8th-grade performance, meaning that progress in the intervening years was particularly strong. The striver districts were able to bring underperforming 3rd-graders to above grade level by 8th grade.

Conversely, districts in the lower-right quadrant were “laggards,” in which students were above grade level in 3rd grade but had slipped below grade level by the end of 8th grade, having lost ground relative to other districts. Poor performance is often attributed to demographics, but the demographic patterns would apply to both the 3rd-graders

and the 8th-graders. Again, this is useful information for DESE and for districts so that they can identify strong and weak performers.

POLICY IMPLICATIONS

According to DESE, one of the policy goals for MSIP 5 was to “distinguish performance of schools and districts in valid, accurate and meaningful ways so that districts in need of improvement can receive appropriate support and interventions . . . and high performing districts can be recognized as models of excellence.”⁹ The current APR system does little if anything to help accomplish this

Table 1: Top Ten Growth Districts, Missouri, 2009–2014

District Name	Growth Rate	APR Score
Marionville R-Ix	6.4	95%
North Wood R-IV	6.0	99%
Cameron R-I	6.0	99%
Lawson R-XIV	5.9	98%
Cole Co. R-I	5.9	99%
Ladue	5.9	99%
Hamilton R-II	5.8	99%
New Haven	5.8	97%
Rock Port R-II	5.7	100%
Silex R-I	5.7	100%

Source: Stanford Education Data Archive.

goal. If APR scores are to be used as a gauge of district quality, then “districts in need of improvement” can barely be identified, let alone be targeted for support and interventions. An effective accreditation system doesn’t need to focus solely on year-to-year academic growth. However, when student progress is lost among other metrics of school district quality, parents and policymakers are deprived of information they need to evaluate their schools and hold them accountable—as is happening in Missouri now.

As DESE creates MSIP 6, it needs to make sure that school reports are easy to understand and present useful information to parents. A better system would rely more heavily (though not exclusively) on student academic growth. Just as important, it would feature accreditation levels that reflect the success of districts in keeping as many students as possible at or above grade level in all subjects. A school district in which students are not progressing academically would be assigned an accreditation status that reflected its struggles—not as a punishment, but rather as a signal to stakeholders that intervention might be needed.

Table 2: Bottom Ten Growth Districts, Missouri, 2009–2014

District Name	Growth Rate	APR Score
Kennett 39	2.5	89%
Hayti R-II	2.7	75%
Portageville	2.9	94%
Farmington R-VII	3.0	93%
New Madrid Co. R-I	3.2	75%
University City	3.3	70%
Normandy	3.3	63%
Monroe City R-I	3.4	92%
Bloomfield R-XIV	3.4	93%
Southland C-9	3.5	75%

Source: Stanford Education Data Archive.

One model for such a system would be based on a 100-point scale, easily translated into letter grades that would be familiar to parents and policymakers. The letter grading would be easy to understand and would also allow for more distinctions among districts than the current binary, accredited/unaccredited model.

CONCLUSION

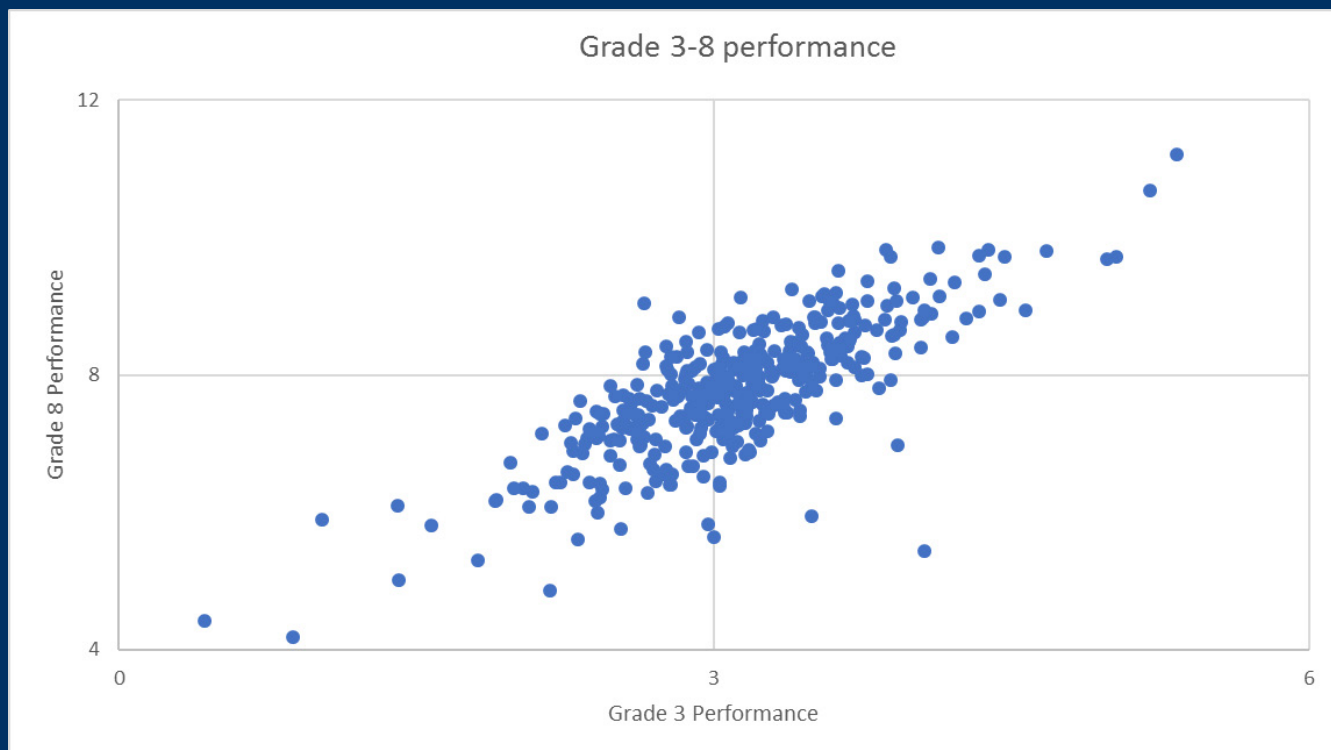
Missouri’s system of APR-based school district accreditation tells us very little about the quality of our school districts. The APR score is an opaque metric in which the importance of academic progress is diluted by more peripheral factors such as attendance and graduation rates. In addition, the scoring criteria are so forgiving that over 98 percent of districts in the state enjoyed accreditation in 2017 even though many of those districts had consistently failed to keep students achieving at or above grade level. The first step in improving Missouri’s public schools is to measure their performance accurately, and reform of our system of evaluating and accrediting districts is needed before such measurement can take place.

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Figure 1

2009 3rd-grade Performance vs. 2014 8th-grade Performance, Missouri School Districts

For most districts, relative performance is similar in 3rd grade 8th-grade. However, some districts gain ground during these years (top-left quadrant) and others lose ground (bottom-right quadrant) relative to other districts.



Source: SEDA data.

ENDNOTES

1. The Stanford Education Data Archive (SEDA) is an initiative aimed at harnessing data to help scholars, policymakers, educators, and parents learn how to improve educational opportunity for all children. SEDA includes a range of detailed data on educational conditions, contexts and outcomes in school districts and counties across the United states. <https://cepa.stanford.edu/seda/overview>
2. History of the Missouri School Improvement Program. Missouri Department of Elementary and Secondary Education. Accessed October 1, 2018 from <https://dese.mo.gov/sites/default/files/qs-esea-flexibility-waiver-msip-history.pdf>.
3. Stahly E. Accountability in Missouri's Public-School System. Show-Me Institute. March 1, 2018. Accessed September 17, 2018 from <https://showmeinstitute.org/publication/accountability/accountability-missouris-public-school-system>
4. District Accreditation. Department of Elementary and Secondary Education. Accessed September 17, 2018 from <https://mcds.dese.mo.gov/guidedinquiry/>.
5. Districts Increase Annual Performance Report Scores. Department of Elementary and Secondary Education. August 29, 2014 from <https://dese.mo.gov/communications/news-releases/districts-increase-annual-performance-report-scores>.

6. Neal D, and Whitmore Schanzenbach D. Left Behind by Design: Proficiency Counts and Test-Based Accountability. National Bureau of Economic Research, NBER Working Paper. August 2007 from <http://www.nber.org/papers/w13293.pdf>.
7. Lachlan-Haché L, and Castro M. Proficiency or Growth? An Exploration of Two Approaches for Writing Student Learning Targets. American Institutes for Research. April 2015 from <https://www.air.org/sites/default/files/Exploration-of-Two-Approaches-Student-Learning-Targets-April-2015.pdf>, pp. 1–2
8. Missouri-specific data from the Stanford Education Data Archive provided by Richard DiSalvo of the Stanford Center for Education Policy Analysis.
9. History of the Missouri School Improvement Program. Missouri Department of Elementary and Secondary Education. Accessed October 1, 2018 from <https://dese.mo.gov/sites/default/files/qs-esea-flexibility-waiver-msip-history.pdf>.

NOTES



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