



## Pennsylvania's School Performance Profile: Not the Sum of its Parts

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With federal action on reauthorization of No Child Left Behind and a new administration in Harrisburg, school accountability systems are receiving renewed attention. To inform the conversation, Research for Action is taking a closer look at Pennsylvania's **School Performance Profile**, or SPP, which draws on a range of academic outcomes, and especially standardized test results, to provide a building-level score on a 100-point scale.

In this brief, RFA provides an overview of SPP system and its component parts, and examines the relationship between SPP scores and student poverty using publicly-available data. Our goals are to increase awareness among policymakers and education stakeholders about the data that undergirds SPP scores and to examine the degree to which SPPs can support valid and reliable inferences on school performance.

## Introduction

Test-based accountability has been a primary feature of public school policy since 2001, when the No Child Left Behind Act (NCLB) required states to adopt annual assessment programs, identify sanctions for schools that did not meet performance targets, and publicly report student achievement by race, poverty, special education, and limited English proficiency status. Waivers issued by the U.S. Department of Education beginning in 2011 adjusted the sanction component of the law, but the assessment and reporting requirements remained largely intact.

Pennsylvania's School Performance Profiles (SPP) represent the state's revised approach to reporting student achievement as required by the NCLB waiver, granted in August 2013. Relying on state assessment and other data, SPP provides a summary academic performance score for every traditional public and charter school in Pennsylvania, rating each school on a 0 to 100 scale;<sup>i</sup> the Pennsylvania Department of Education (PDE) considers schools scoring 70 or above to be making satisfactory gains. In addition, these scores inform key aspects of the state's new teacher evaluation system and are intended to fill a public communications role. The PDE statement accompanying the initial release of SPP scores in 2013 stated that, through SPP, "Pennsylvania citizens will be able to determine the quality of the educational programs in their schools and how students are performing."<sup>ii</sup>

Over the last few months, SPPs have received significant attention. A PDE official in former Governor Corbett's administration stated that SPP scores would be considered in the reauthorization process for cyber charter schools.<sup>ii</sup> More recently, charter school SPP scores played a major part in public dialogue concerning additional proposed charters in the School District of Philadelphia (SDP).<sup>iii</sup> Earlier this

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<sup>i</sup> There are seven additional "extra-credit" points for meeting additional indicators.

week, the state’s new acting secretary of education expressed concerns about the measure, and indicated that reforms are on the way.

Yet there has been little discussion of how the components of SPP fit together, and whether the measures can support valid and reliable judgments about school quality.<sup>2</sup> This brief serves to address that need, with particular focus on the relationship between SPP and student poverty. Our focus on poverty is grounded in research. Studies both in the United States and internationally have established a consistent, negative link between poverty and student outcomes on standardized tests,<sup>iv</sup> and found that this relationship has become stronger in recent years.<sup>v,vi</sup>

In an era of high-stakes accountability, it is vital to explore whether school rating systems provide a meaningful measure of in-school performance or rather reflect poverty rates or other external factors that are closely associated with student outcomes.<sup>vii</sup> Our brief raises important concerns in this regard; in fact, even elements of SPP that are specifically designed to control for out-of-school factors show a strong relationship between scores and student poverty rates.

## An Overview of SPP Design and Components

With some exceptions, school performance under NCLB was determined primarily by whether students and student subgroups met state-determined proficiency targets on standardized tests developed and administered by each state. Researchers have consistently noted that proficiency rates based on test scores are a particularly poor indicator of school performance in that they are strongly associated with student background and other out-of-school factors.<sup>viii,ix</sup>

In response to these concerns, a number of states across the country, with urging from the Obama Administration, have incorporated measures of student growth into accountability programs; these measures are intended to assess student progress over time and control for out-of-school factors or students’ prior testing history. The U.S. Department of Education described these indicators as keys to “next-generation” accountability systems, and made them centerpieces of the NCLB waiver application.<sup>x</sup>

In 2013, Pennsylvania received a waiver from certain provisions of NCLB, allowing the state to replace Adequate Yearly Progress (AYP) targets with the 100-point SPP scores awarded at the building level. As shown in Table 1, SPP scores are derived from both types of measures—proficiency and growth—among other indicators.<sup>xi</sup>

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<sup>2</sup> Research for Action has examined SPP several times in the past year. In February 2014, we analyzed the relationship between SPP and poverty concerning a Corbett administration initiative for which only high-SPP schools were eligible. In September, we discussed how [student opt-outs](#) could impact SPP. In November, we released a report on [cyber charter performance](#) that used SPP as a rough approximation for school quality.

Table 1. Pennsylvania’s School Performance Profile Indicators

DATA ELEMENT	DETAILS	PERCENT OF TOTAL SPP SCORE*	STANDARDIZED STUDENT TEST SCORES INCLUDED?
<b>Proficiency Indicators of Achievement</b>	Percent scoring proficient or advanced on PSSAs or Keystone Exams in tested subjects; performance on industry standards-based competency assessments; grade 3 reading; and SAT/ACT College Ready Benchmark	40%	Yes
<b>Growth Indicators of Achievement/PVAAS</b>	Meeting state-identified annual academic growth expectations on PSSAs or Keystones in tested subjects for grades 4-8 and 11	40%	Yes
<b>Indicators of Closing the Achievement Gap – based on performance of all students</b>	Percent of required achievement gap closures met in math, reading, science, and writing	5%	Yes
<b>Indicators of Closing the Achievement Gap – based on performance of historically underperforming students</b>	Percent of required gap closures met in math, reading, science, and writing	5%	Yes
<b>Other Academic Indicators</b>	Cohort graduation rate, promotion rate, attendance rate, Advanced Placement/International Baccalaureate or college credit, PSAT/Plan participation	10%	No
<b>Extra Credit for Advanced Achievement</b>	Percent scoring advanced on PSSA in math, reading, science, writing; on industry standards-based competency assessments; percent scoring 3 or higher on an AP exam	Up to 7 additional points	Yes

*\*SPP is calculated by taking points earned in the five main categories as a percentage of points available (usually 100), then adding points earned in the extra credit category, as applicable. Although the weight for each main category is constant across schools (with a partial exception for CTCs), the weight of some factors within the categories varies between elementary and secondary schools. For example, the “Indicator of Academic Achievement” category includes a measure of 3<sup>rd</sup>-grade reading proficiency, which does not apply to high schools; the “Other Academic Indicators” section includes availability of Advanced Placement courses, which does not apply to elementary schools.*

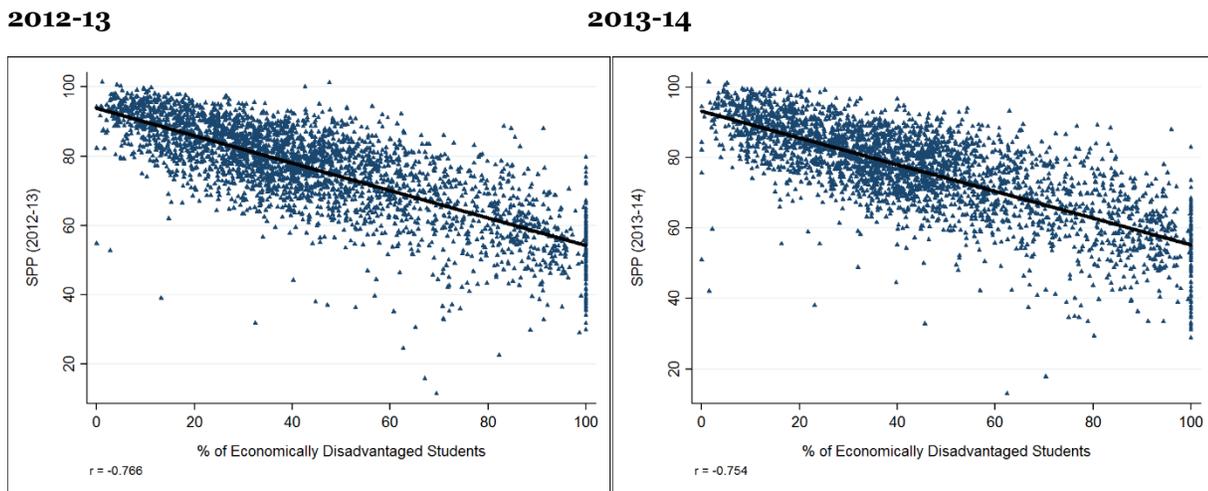
As Table 1 shows, SPP scores are primarily derived from different calculations of student performance on state standardized tests.<sup>xii</sup> Five of the six SPP indicators—accounting for 90 percent of a school’s base score as well as the extra-credit portion—rely entirely on test scores. **Our analysis finds that this reliance on test scores, despite the partial use of growth measures, results in a school rating system that favors more advantaged schools.**

## An Initial Look at SPP and Poverty

Following the release of the first round of School Performance Profiles in Fall 2013, RFA compared SPP scores for the 2012-13 school year with the percent of economically disadvantaged students enrolled in these schools. We did the same for the second round of SPP scores, one year later.

Figure 1 displays the results of this comparison: school building SPP scores are arranged against the vertical axis, and the percentages of students in each school who are economically disadvantaged appear along the horizontal axis. The points on the graph are individual schools.

Figure 1. Pennsylvania Public Schools by SPP and Poverty



**This analysis shows a very strong negative correlation between SPP and poverty in both years.** In other words, as the percent of a school’s economically disadvantaged population increases, SPP scores decrease.

Below, we examine the relationship between poverty and each of the test-based components of SPP listed in Table 1.

### I. SPP Component I: Indicators of Academic Achievement (40% of Total SPP score)

Forty percent of a school’s SPP score is based on proficiency rates in tested subjects,<sup>3</sup> grade 3 reading, and the SAT/ACT College Ready Benchmark.<sup>4,5</sup> To examine the relationship between proficiency rates and poverty, we conducted correlation analyses among: 1) all schools; 2) elementary and middle school levels, where most students took the PSSAs; and 3) at the high school level, where most students took

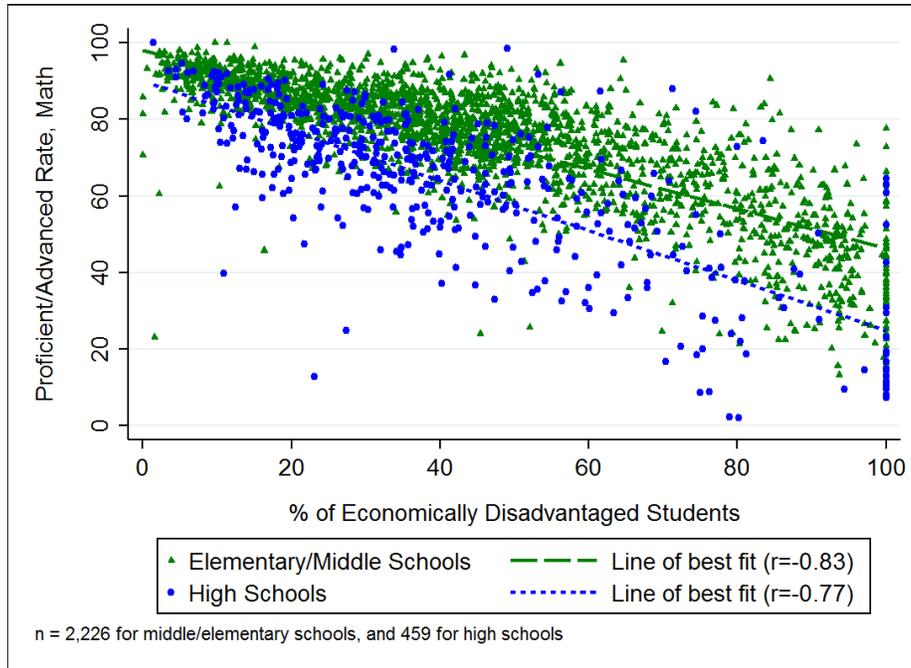
<sup>3</sup> Note this indicator accounts for 44 percent of Career and Technical schools’ SPP scores.

<sup>4</sup> The College Ready Benchmark is the percent of a school’s 12<sup>th</sup> graders who score 1550 or higher on the SAT, or 22 or higher on the ACT. This percent is multiplied by 2.5, then multiplied by the score’s “factor value,” to determine points earned.

<sup>5</sup> For 13 percent of schools, there is one additional indicator, measuring the percent of students scoring competent or above on approved Career and Technical Education tests. We omitted these results for purposes of this analysis.

Keystone Exams.<sup>6</sup> Figure 2 displays proficiency rates for math separated by grade bands. Green triangles represent Pennsylvania’s elementary and middle schools (PSSA data); the blue dots represent high schools (Keystone data).

Figure 2. Pennsylvania Public Schools by Proficiency Rates and Poverty (Math)

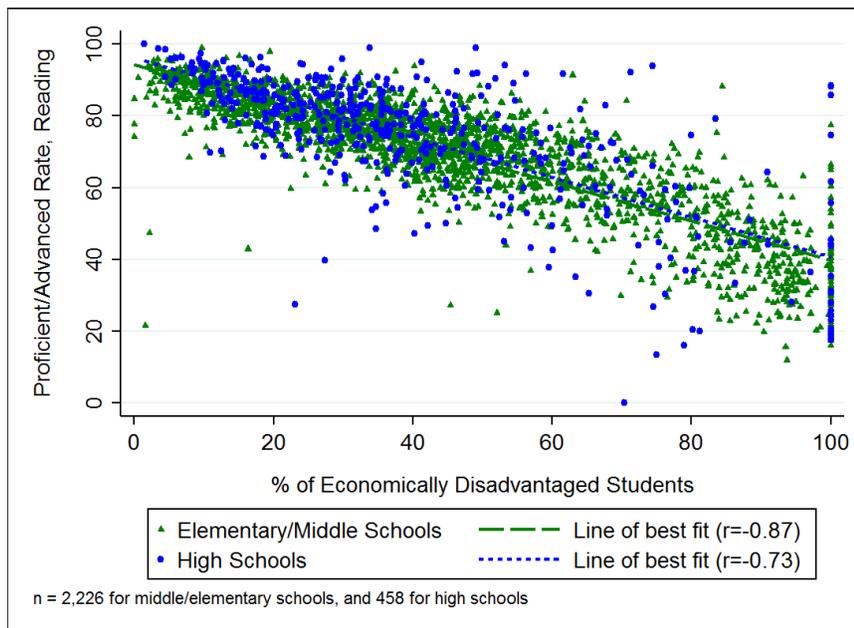


As Figure 2 indicates, performance declines sharply as poverty increases. Moreover, the clear negative linear relationship between proficiency and poverty is present at both early grades and in high school. Exceptions are rare—of 331 schools with a proficiency rate of 90 or higher on either the math PSSA or Algebra 1 Keystone exam, just nine schools (2.7%) have economically disadvantaged enrollments of 50 percent or higher.

The same pattern is evident for reading. Figure 3 displays a strong, negative link between poverty and performance on both the PSSA reading assessment in the early and middle grades (green triangle) and the Keystone literature exam at the secondary level (blue circles). Of more than 2,200 schools in this sample, 187 post proficiency rates of 90 or above. Of these, just seven schools (3.7%) have economically disadvantaged enrollments of 50 percent or higher; five of the seven are Philadelphia magnet schools.

<sup>6</sup> Unfortunately this is not a straightforward exercise. The School Performance Profiles do not disaggregate performance by grade level; therefore, schools with students tested in both PSSAs and Keystone’s (e.g. a school with grades 6-12) were left out of the grade-specific sample.

Figure 3. Pennsylvania Public Schools by Proficiency Rates and Poverty (Reading)



Results for both science and writing are largely similar, and available in the appendix.

## II. SPP Component 2: Indicators of Academic Growth (PVAAS) (40% of total SPP score)

The second element of SPP scores is based on year-to-year growth in tested subjects; like SPP Component 1 above, Academic Growth counts for 40 percent of a school's score. Growth is calculated through the Pennsylvania Value-Added Assessment System or PVAAS—a statistical model that uses students' prior assessment results to estimate a teacher or school's contributions to student learning.

For the purposes of SPP, PVAAS attempts to measure whether students in an individual school gain or lose ground over time in relation to students in other schools. For each subject, student scores are averaged at the school level and given a ranking based on their position relative to the statewide average test score. An identical operation is performed for the scores those students had in previous years. The difference between their ranking in the current year and their ranking in previous years is translated into a growth index.<sup>7</sup> This next point is technical, but important: For writing and science, which are not tested every year, building performance is compared against a predicted score based on prior student and school test scores in these subjects plus prior test scores in math and reading.<sup>xiii</sup> In calculating SPP scores, the PVAAS growth index is converted to a scale score, with possible scores of 50 to 100. A score of 50 represents a severe drop in the rankings and 100 indicates a sizable gain.

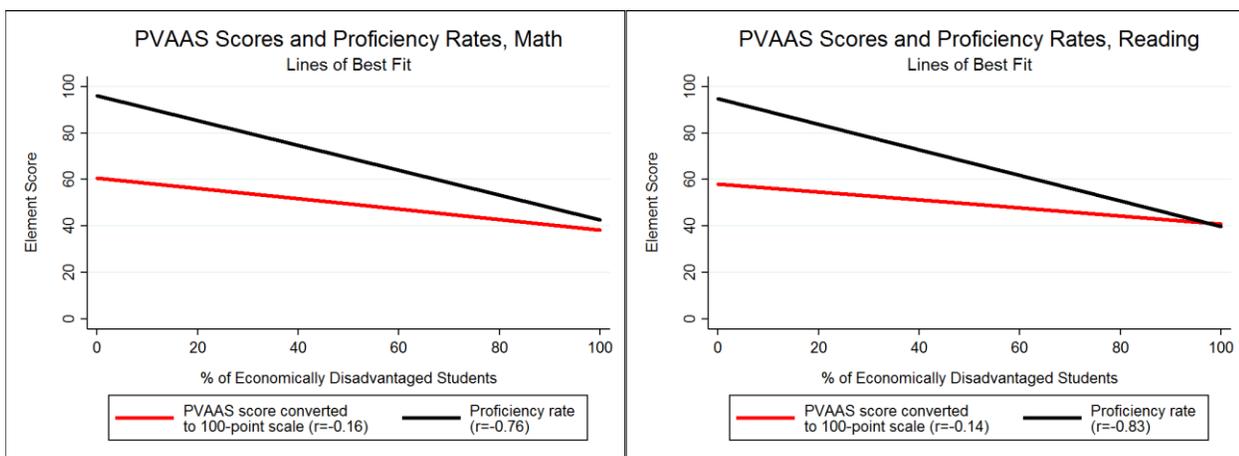
<sup>7</sup> For more information, readers may wish to consult the PVAAS website, <https://pvaas.sas.com>.

## Comparing the Relationship between Poverty, PVAAS and Proficiency Scores

### A. Math and Reading

SPP's PVAAS/Growth indicator is specifically designed to isolate the effects of within-school factors.<sup>xiv</sup> Our analysis finds that the relationship between grades 4-8 math and reading growth in PVAAS and poverty is not as strong as that found between PSSA proficiency scores and poverty. Figure 4 compares these relationships for Math and Reading by subject area.<sup>8</sup> The black line in each graph shows the correlation between poverty and the percent of students scoring proficient or above in math and reading; the red line displays the relationship between poverty and growth in PVAAS. As displayed in Figure 4, the relationship between poverty measures and performance is much stronger for the proficiency indicator.

Figure 4. Growth in PVAAS, Percent Proficient, and Poverty for Math and Reading, 2013-14 SPP

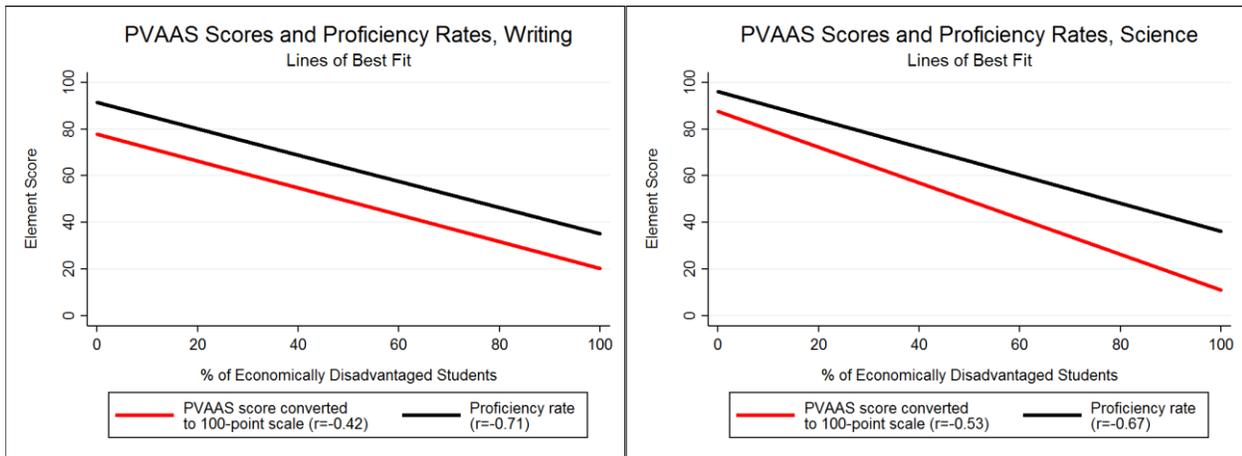


### B. Writing, Science and Keystones

In contrast, growth scores do not appear to be working as intended for writing and science, the subjects that are not tested year-to-year. Figure 5 displays the correlation between poverty, PVAAS and proficiency scores in these subjects. The lines for both percent proficient and growth follow similar patterns. The correlation between poverty and proficiency rates is stronger, but PVAAS scores are also significantly and negatively correlated with poverty.

<sup>8</sup> SPP measures proficiency on a 0-100 scale, and growth on a 50-100 scale. In order to plot lines of best fit for these indicators together, growth scores were converted to a 100-point scale.

Figure 5. Growth in PVAAS, Percent Proficient and Poverty for Writing and Science, 2013-14 SPP



### C. PVAAS and Poverty by Grade Bands

Figures 6 and 7 examine grade band results on this indicator. Figure 6 displays the correlation between PVAAS and poverty for all tested elementary and middle school subjects grouped together. The slopes for writing (green) and science (blue) are steeper compared to those for math (red) and reading (black). If there were no relationship between poverty and PVAAS, we would expect to see flat lines on a graph that includes poverty. Instead, science and writing have a moderate-to-strong correlation with economically disadvantaged and might be better measures of the effects of poverty than measures of achievement growth. In contrast, math and reading PVAAS scores show little relationship to poverty in the elementary and middle grades.

Figure 6. PA Public Schools by PVAAS and Poverty (Elementary and Middle School Subjects)

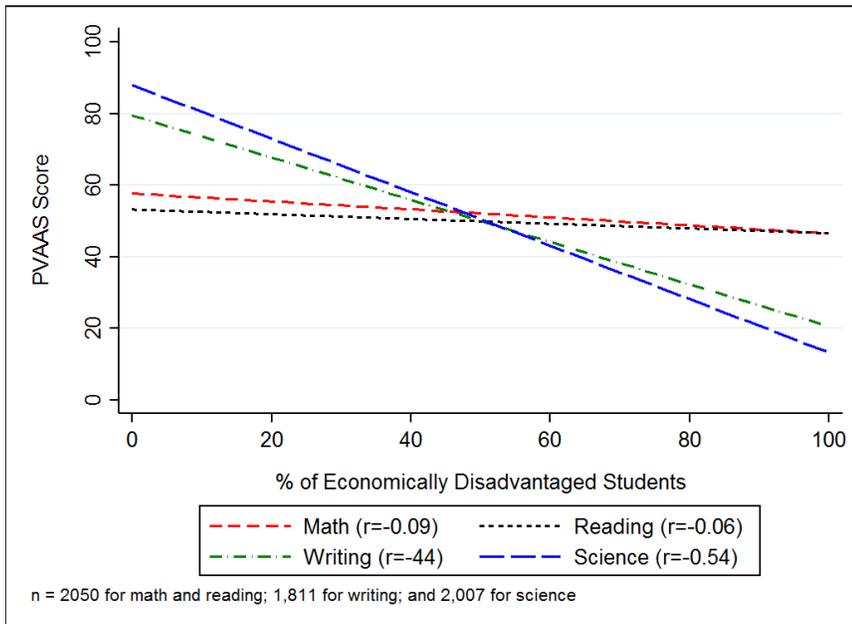
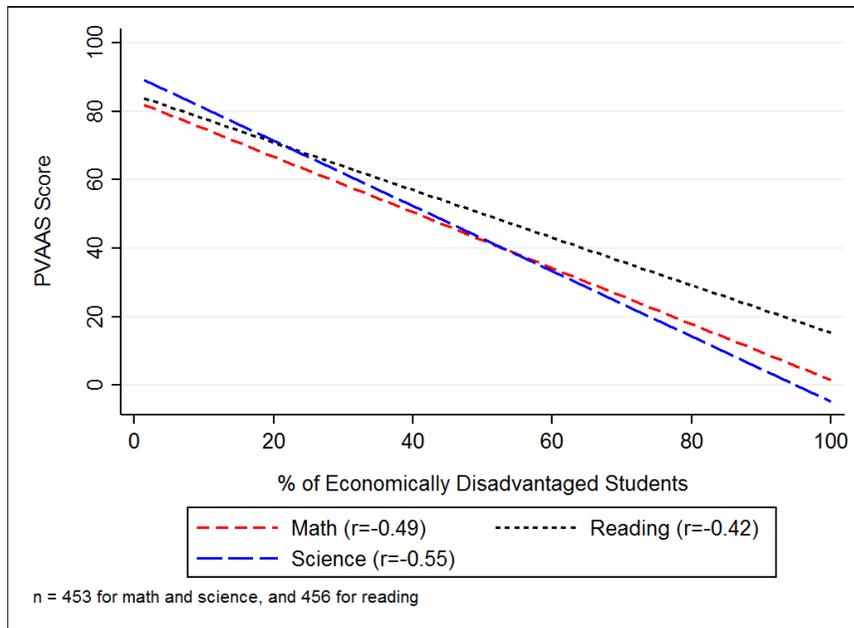


Figure 7 provides the correlation between PVAAS and poverty for high school subjects. Here, the moderate-to-strong negative correlation figure appears across all tested subject areas.

Figure 7. PA Public Schools by PVAAS and Poverty (high school subjects)



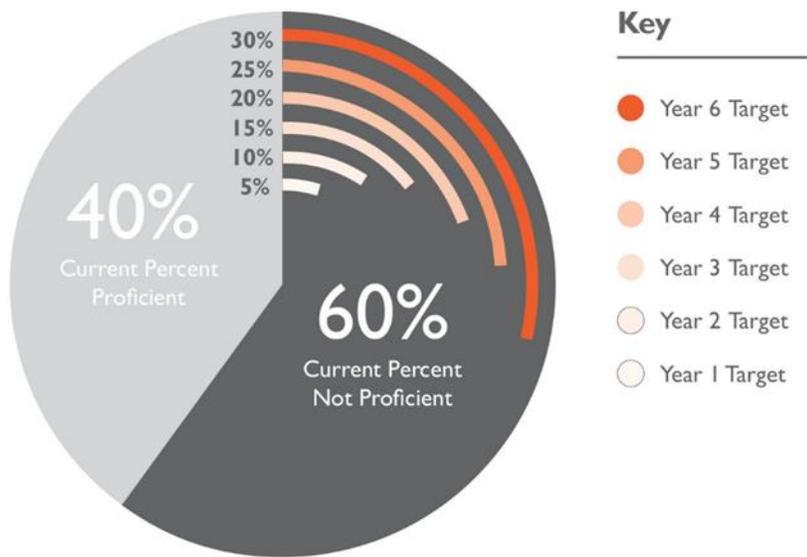
### III. SPP Component 3: Closing the Achievement Gap (10% of total SPP score)

The final indicator included in SPPs incorporates a new use of proficiency rates. In the Closing the Achievement Gap measure, schools are expected to increase the number of students scoring proficient or advanced over time.

We will first explain the measure itself: Schools are tasked with meeting specific proficiency rate targets, which are based on the difference between a school’s current proficiency rate and 100% proficiency. Success is defined as closing half of this achievement gap over a six-year period—a metric that imposes a greater burden on low-achieving schools. For example, a school in which 40 percent of students met proficiency in a given subject for the baseline year is 60 percentage points shy of the 100 percent goal. Under Pennsylvania’s NCLB waiver, the school is responsible for closing one-half of the gap over a six-year period. In this example, half the gap amounts to 30 percentage points, or five points each year.<sup>9</sup> Figure 7 provides a graphic display of how this metric works.

<sup>9</sup> At the end of six years, the benchmark will be reset (regardless of whether or not targets were met) and targets recalculated.

Figure 7. Closing the Achievement Gap Indicator

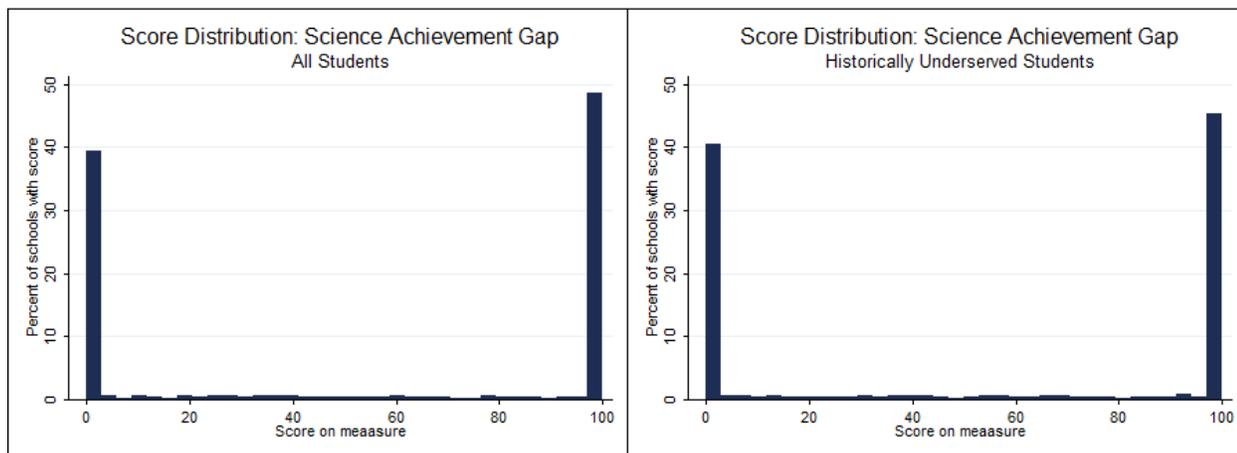


A school’s score on the Gap Closing indicator is determined by the percentage of the target it fills, with a maximum of 100 and a minimum of zero. For example, a school with a proficiency rate that falls 80 percent of the way between the yearly benchmark and the target would receive 80 percent of the available points. If a school’s final proficiency rate falls to the right of the target, it receives full SPP points; if it scores to the left of the target, it receives no points.

The Closing the Achievement Gap indicator is calculated twice—once each for two different groups of students. The first is all students in the school building, and the second is comprised of the school’s “historically disadvantaged subgroup,” defined as students who have Individual Education Plans, are English Language Learners, and/or are economically disadvantaged (these students are also included in the “all students” calculation).

Figure 8 displays the distribution of Closing the Achievement Gap scores in science for all students, and for those categorized as historically disadvantaged.

Figure 8. Closing the Achievement Gap Indicators



In the first-year results for science,<sup>10</sup> we see that the calculation is, essentially, an all-or-nothing proposition: the vast majority of schools either reached the target (as shown by the right-hand columns), or received none of the points (left-hand columns).

These measures plainly impose a higher burden on schools serving historically-disadvantaged populations. As we outlined earlier in the brief, SPP scores—and especially proficiency indicators—are closely associated with student poverty rates. A higher-poverty school is likely to start out with fewer numbers of students scoring proficient on state tests, and will thus face a greater distance and higher hurdles in closing the achievement gap indicators. For instance, a school with 40 percent of its students at proficient at the baseline year needs to increase its rate by five percentage points each year to meet its target. A school with 88 percent of its students at proficient needs to increase its rate by just one percent each year.

Even more important is the application of this specific SPP indicator for federal accountability classifications. Many of Pennsylvania’s Title I schools, which serve higher concentrations of economically disadvantaged students, will face sanctions if they fall short on the achievement gap indicators over a three-year span. These sanctions include replacing (or needing state approval for) a building principal, undergoing a curriculum audit, or school schedule redesign.

## Conclusion

Over the past several months, RFA has examined SPPs as they relate to state policy proposals, the relationship between SPP scores and student poverty, and now the relationship between component parts of the measures and poverty. Key findings from this latest examination are as follows:

- Despite an emphasis on multiple inputs, Pennsylvania’s School Performance Profile rating system is overwhelmingly dependent on standardized test scores. This is concerning on two levels. First, standardized tests measure just part of the expectations we hold for students and schools. Second, these measures are closely associated with student poverty rates and other out-of-school factors—raising questions about whether the measures are a valid and reliable measure for purposes of school accountability.
- In fact, even with PVAAS—an indicator expressly designed to control for out-of-school factors—we see a strong correlation with poverty in both science and writing, and across all Keystone-tested subjects in high school.
- Both in the design of the measures and attendant sanctions, high-poverty schools face particular challenges. The “Closing the Achievement Gap” elements require schools with low test scores (which are more likely to enroll high numbers of traditionally-disadvantaged students) to make more progress; these same schools are more likely to face strict accountability provisions if they fall short.

McEachin and Polikoff (2012) argue that a “desirable accountability system” would “consistently hold low-performing schools accountable for only that portion of student performance under the school’s

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<sup>10</sup> State officials intended to begin evaluating schools on the achievement gap measures using 2012-13 scores as the benchmark, but eventually delayed the use of the measure in all subjects except science, citing evolving standards in math and reading.<sup>10</sup> About 2,700 schools received “closing the achievement gap” scores in science for 2013-14.

control.” Instead of performing this function, our analyses suggest that Pennsylvania’s School Performance Profiles could be interpreted as a complex profile of student poverty.

It is important to note that while our findings point to substantial flaws with the measure, our analysis is not comprehensive. First, we look at the relationship of SPP components and only one out-of-school characteristic, poverty. Research indicates schools face greater challenges when multiple student risk factors are concentrated;<sup>xv</sup> further examinations could look at a broader range of data, or assess the relationship between SPP measures and students who live in areas of concentrated poverty. Unfortunately, publicly available data does not allow us to account for the depth of poverty within these schools.

On the specific issue of growth, we can only speculate as to why measures in science and writing are so closely associated with poverty. One potential explanation is that, until 2008, school performance was measured by only two subjects: math and reading. In a high-stakes accountability system, schools face greater pressure to focus on what will be tested. A second possible explanation is that writing and science are tested only in 4th, 8th and high school grades, and it may be more challenging for PVAAS to project student performance without annual testing. This assumption is supported by the strong relationship between growth on all Keystone Exams and poverty measures.

Pennsylvania’s School Performance Profiles have real consequences for students, schools, and school professionals. New leadership within the Pennsylvania Department of Education has signaled a desire to look more closely at SPP and has expressed concern about the validity of these scores as an indicator of school performance. Given the analyses presented in this brief, the Department’s cautions are welcome from both research and policy perspectives.

## Appendix

Figure 1A. PA public schools by proficiency rates and poverty (Grade 3 Reading)

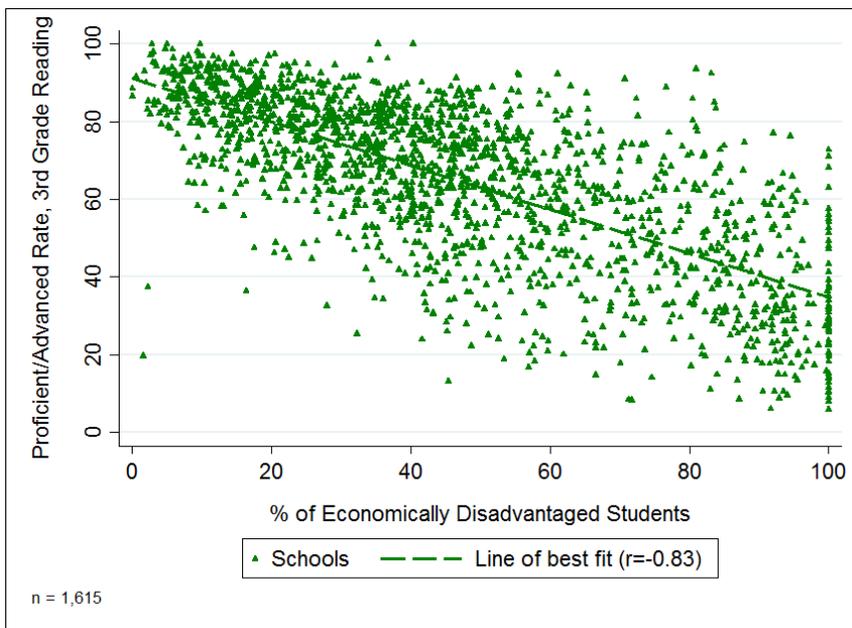


Figure 2A. PA public schools by proficiency rates and poverty (science)

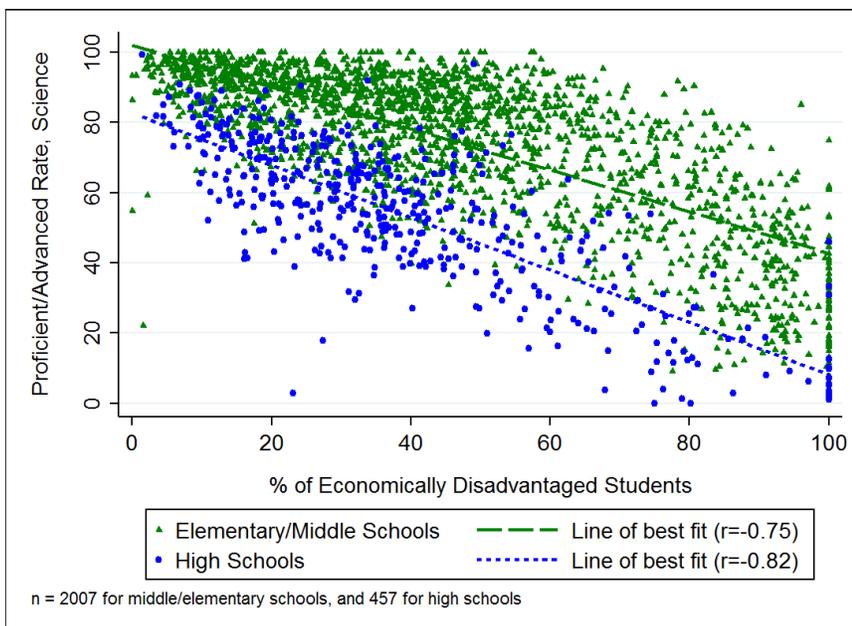


Figure 3A. PA public schools by proficiency rates and poverty (writing)

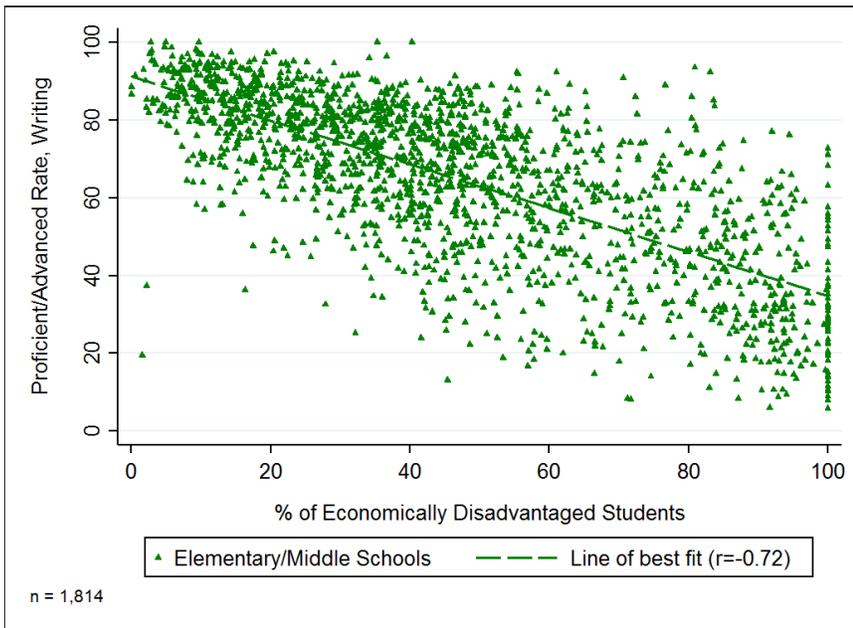
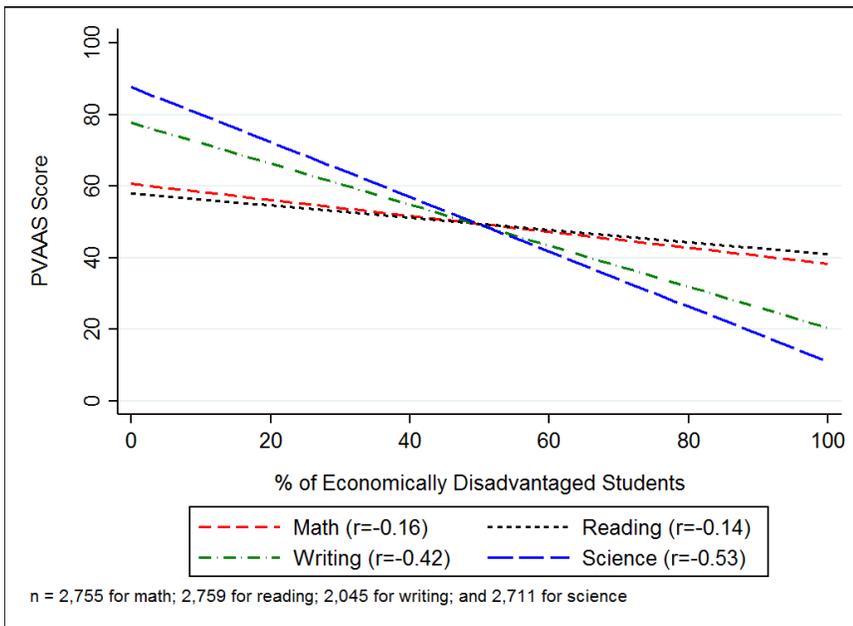


Figure 4A. All Subjects Grouped, 2013-14



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