

WORKING P A P E R

Assessing the Performance of Public Schools in Pittsburgh

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Summary

To assist the Pittsburgh Public Schools (PPS) in decisionmaking about the realignment and closure of schools, RAND addressed three key issues by analyzing student-level achievement data in the district. First, we examined achievement gains in the middle grades (6-8), finding that students in Pittsburgh's K-8 schools and magnet middle schools generally outgain students in Pittsburgh's comprehensive, feeder middle schools. K-8 schools in Pittsburgh appear to be especially beneficial for the achievement of African-American students, at least in grades 6 and 7. Second, we created an index of Average Student Achievement (ASA) in each school in the district, combining results across tests, subjects, and grades, and anchoring the index to proficiency results on the Pennsylvania System of Student Assessment (PSSA). The ASA index provides a simple but robust composite snapshot of current levels of student achievement in each school. Third, RAND developed a School Performance Index that uses statistical regression techniques and longitudinal analyses of the achievement of individual students over time to estimate each school's contribution to the achievement growth of its students. The SPI is being used by the district to ensure that decisions about school closings and realignments are made in ways that maintain and promote strong educational offerings for Pittsburgh students. This report concludes with SPI ratings for each school in Pittsburgh.

¹ This is a slightly revised version of a WR that originally was released on 9 November 2005.

Introduction

Declining enrollments and structural budget deficits are facing the Pittsburgh Public Schools (PPS). The district has a portfolio of school buildings constructed for a student population that, a decade ago, was substantially larger than it is today or will be in the foreseeable future. Half a dozen elementary schools in Pittsburgh enroll fewer than 200 students, and many buildings are similarly below capacity at middle-school and high-school levels. In short, closing schools is imperative for the long-term financial health of the district.

Recognizing that financial considerations are not the only ones that are relevant in the decisions that must be made to close schools, Superintendent Mark Roosevelt appointed a committee to consider how to realign schools in a way that would not only save resources, but also better serve the academic needs of students across Pittsburgh.

Closing schools can have substantial impacts on students, families, and neighborhoods. PPS intends to make closing decisions that will consider, first of all, the effect on student achievement. Schools must be closed while maintaining and improving the educational programs offered to all students in the district, including those who may be displaced by the closures. In particular, the realignment committee agreed on two key principles related to student achievement and school performance:

1. High-performing schools will be kept open so long as they enroll a sufficient number of students that they are able to operate with a fair and equitable amount of resources.

2. Students who are asked to move as a result of school closings will have the opportunity to move to equal- or higher-performing schools, or to schools that are given substantially enhanced educational programs.²

Superintendent Roosevelt asked RAND to assist the realignment committee in creating a plan for school realignments and closures. Over the past six weeks, RAND's work with the district and the committee has included a comprehensive, school-by-school examination of student achievement and school performance.

To meet the district's goals, PPS and the realignment committee needed good information about average student achievement and about school performance in schools across the district. In addition, the committee wanted to know whether K-8 schools or middle schools were producing larger achievement gains, as it considered possible variations in grade configurations around the district.

This paper describes how RAND addressed these issues and presents the findings of RAND's achievement analyses for the committee. Ultimately, RAND created two new indices: one measures average student achievement at each school in the district, while the other attempts to measure school performance—i.e., the contribution that each school is making toward raising the achievement of its students. These indices should be useful not only for the realignment process, but also for the district's emerging plan to improve the performance of all of Pittsburgh's public schools.

² In particular, PPS is developing models for "Accelerated Learning Academies" that will involve an infusion of resources for additional class time, enhanced professional development, and other strategies for instructional improvement.

The paper is organized as follows: It first describes the analysis of the relative achievement growth in different kinds of schools serving grades 6-8. It then describes the development of two new indices, one measuring average student achievement and the other measuring school performance. It concludes with school-by-school performance results for schools across Pittsburgh.

Achievement in the middle grades

Over the past decade, PPS has converted a handful of K-5 elementary schools to K-8 schools, usually at the instigation of neighborhood advocacy groups. PPS currently serves students in the elementary and middle grades through a patchwork of schools in K-5, 6-8, and K-8 configurations. Each configuration includes some “feeder” schools for which assignment is determined primarily by residential attendance zones and some magnet schools that offer particular educational emphases (e.g. foreign language, fine arts) and enroll students by choice, districtwide.

The middle grades are viewed as a particularly challenging time for students (see Juvonen et al, 2004), and public dissatisfaction with middle schools in Pittsburgh is symptomatic of increasing challenges to the middle-school concept around the country. Some urban school districts have been closing down middle schools in favor of K-8 schools on a variety of educational grounds (see George, 2005). A few studies have found positive effects of K-8 schools (as compared with middle schools), including longer-term relationships between students and school staff, better student behavior, the

reduction of achievement dips resulting from transition to a new school, and improved test scores (see Anfara and Buehler, 2005, for a summary of research).

We use longitudinal, student-level achievement data from the district's "Real-Time Information" (RTI) database to assess differences in achievement growth from fifth grade to eighth grade for students attending middle schools and K-8s in Pittsburgh. We separately examine feeder schools and magnet schools, and separately examine the achievement of black students and white students (because the population of the Pittsburgh Public Schools consists almost entirely of those two racial groups).³ For this analysis and the remaining analyses in the paper, we convert all student test scores into standardized measures to create some comparability across different tests used in different grades.⁴ PPS uses the Pennsylvania System of Student Assessment (PSSA) in grades 3, 5, 8, and 11, and the Terra Nova and New Standards Reference Exams interspersed in other grades (see Gill and Engberg, 2005). Because our inquiries for these purposes are not subject-specific, we average each student's score across reading and math.

To assess achievement gains in the different types of schools serving middle-grade students in Pittsburgh, we examine students' test results in grades six, seven, and eight, controlling for their fifth-grade test results and for age, gender, family structure (two-

³ As of 2004-05, 57% of the enrollment of K-8 schools in Pittsburgh was African-American, approximately equivalent to the proportion of African-American students across PPS.

⁴ Specifically, we sort all student scores by rank and then convert them to rank-based z-scores, normed across the entire population of tested students in that subject and grade. This cannot create a psychometrically valid developmental scale, but it permits an examination of changes in rank with fewer assumptions than would be needed under other kinds of scaling. See the appendices of Gill et al (2005) for further discussion of rank-based z-scores.

parent household, single-parent household, or no-parent household), poverty, special education status, gifted status, and English-language learner status. The most important of these controls is the fifth-grade score, which allows us to factor out students' prior achievement, implicitly creating a measure of the gain in achievement of each student between fifth grade and sixth grade, fifth grade and seventh grade, and fifth grade and eighth grade. The additional controls help to account for the possibility that student background characteristics may affect achievement growth trajectories as well as achievement levels.

The results suggest that students in Pittsburgh's feeder middle schools experience the transitional dip in achievement that has been observed elsewhere, as indicated in Table 1, which shows the achievement advantage of K-8 schools in each of grades six through eight. Relative to their fifth-grade achievement (and controlling for the student characteristics described above), students in PPS feeder middle schools fall behind their counterparts in feeder K-8 schools in sixth grade, on average. For both white students and African-American students, the sixth-grade advantage of feeder K-8 schools over feeder middle schools is statistically significant.

Table 1: Achievement Advantage of K-8 Feeder Schools vs. Feeder Middle Schools

Grade	White students	African-American students
6	.070**	.123***
7	.037	.156***
8	.075	.028

*** p-val < .01 ** p-val < .05 * p-val < .10

For both white students and African-American students, K-8 schools retain a small

average achievement advantage through eighth grade, although the advantage is not always statistically significant. In both sixth grade and seventh grade, the K-8 advantage over feeder middle schools is larger for African-American students. This might occur because the K-8 configuration has particular benefits for African-American students, or because African-American students in Pittsburgh attend especially low-performing middle schools.

The absence of statistically significant differences in eighth grade between K-8 feeder schools and feeder middle schools means we cannot be sure whether there is a sustained, long-term advantage for the K-8 schools. Nevertheless, these findings are sufficiently promising that the realignment committee believed it would be appropriate to convert more of Pittsburgh's K-5 schools to K-8 schools.

Students in magnet middle schools also show higher achievement in grades 6-8 from fifth-grade baselines, controlling for student background characteristics, as indicated in Table 2.

Table 2: Achievement Advantage of Magnet Middle Schools vs. Feeder Middle Schools

Grade	White students	African-American students
6	.072***	.083***
7	.100***	.121***
8	.084***	.097***

*** p-val < .01 ** p-val < .05 * p-val < .10

These results should be interpreted with caution, because magnet students are self-selected—they (or their parents) choose to attend magnets. It is possible that magnet

students would show larger achievement gains regardless of whether they were in magnets elsewhere. Nevertheless, the results provide support for the view that Pittsburgh's middle-grade students are being served better by K-8s and magnet middle schools than by feeder middle schools.⁵ Average results in grades six through eight of Pittsburgh's two K-8 magnet schools (Carmalt and Homewood Montessori) are likewise superior to those of feeder middle schools.

It is important to recognize that all of these results are averages that are summed across Pittsburgh's feeder middle schools, magnet middle schools, and feeder K-8 schools. As the next section of this report shows, there is considerable variation in the achievement growth shown in individual K-8 schools and middle schools across PPS. Some feeder middle schools are doing well, and some K-8 schools are not. Recognizing this, the realignment committee chose not to take a "one size fits all" approach, in preserving some feeder middle schools while recommending the closure of several feeder middle schools that showed weak achievement growth.

Measuring schools' average student achievement

This section describes how we analyze PPS data to produce a composite index of average student achievement in each school. Publicly available measures of achievement levels in individual schools in Pittsburgh have until now been limited to reports of the percentage of students achieving proficiency on the state's PSSA tests in grades 3, 5, 8, and 11. In small schools, these results can vary substantially from year to year,

⁵ It is possible that the existing K-8 schools were higher-performing schools even when they were K-5 schools; data are not available to examine this possibility systematically.

depending on the characteristics of the particular cohorts of students in the relevant grades in that year. We use the district's student-level data on PSSA scores as well as Terra Nova and New Standards results in other grades to create a school-level index of Average Student Achievement (ASA). The ASA index is more robust than PSSA proficiency results alone because it includes a larger number of students in each school and because it includes varied assessments that together measure a wider range of skills and knowledge than would be included on a single assessment.

As the first step in creating the ASA, results from each test in each grade are sorted by students to create rankings, which are in turn converted to normal distributions across PPS. We then aggregate standardized student-level results separately in each school. Finally, we anchor the school-level results to the PSSA by assigning the highest- and lowest-achieving schools at each level (elementary, middle, and high) a number on a 100-point scale corresponding to the proportion of their students who achieved proficiency on the PSSA, averaged across reading and math. Thus, for the highest- and lowest-achieving schools in the district at each level (identified based on average results across all grades and tests, in both reading and math), their ASA index results are identical to their PSSA proficiency results. The remaining schools are given ASA numbers based on their positions in the district's overall distribution between the highest- and lowest-achieving schools. For most schools, ASA numbers are not identical to PSSA proficiency results, but the two measures are correlated.

As a measure of average achievement across a school, the ASA index is not identical to a

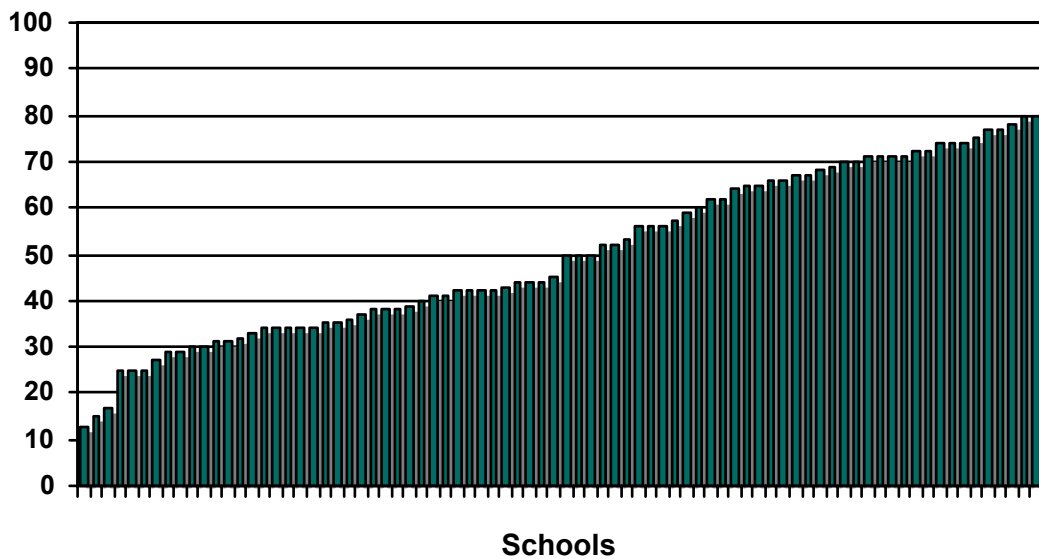
measure of the proportion of students achieving proficiency. Rather than merely examining the percentage of students who achieve a specified cut score on an exam, the ASA incorporates information about the total distribution in achievement of all students in each school. It therefore accounts for differences across schools in the achievement of very high- and very low-achieving students as well as differences in achievement of students whose scores place them near the cut point that the state has defined as proficiency.

Although ASA is a measure of average achievement rather than a count of students achieving a cut score, we nevertheless believe it is useful to anchor the ASA scale to PSSA proficiency results. Tying the ASA scale to the proportion of students who are proficient on the PSSA allows each school to be assessed relative to an external standard of achievement. In the absence of such a tie, the ASA index would be useful for comparing relative achievement levels of schools within Pittsburgh, but it would not permit comparison to an objective standard of achievement. Because PSSA proficiency has been defined by the state as the relevant standard for public-policy purposes, and because the proficiency levels are widely recognized in Pennsylvania, it is the most appropriate external anchor for the ASA.

In Pittsburgh, the school with the highest level of student achievement across all tests has an average of 80% of its students achieving proficiency on the PSSA. It therefore has an ASA of 80. The school with the lowest level of student achievement across all tests has an average of 13% of its students achieving proficiency on the PSSA. It therefore has an

ASA of 13. The remainder of the schools in Pittsburgh have ASA numbers between 13 and 80, corresponding to their positions in relative levels of average student achievement across the district.⁶ Figure 1 shows the distribution of ASA numbers in individual schools across the district. The appendix at the end of this report includes ASA results for specific schools.

Figure 1: Average Student Achievement Across Schools in Pittsburgh



The ASA provides a robust measure of student achievement levels in each school in Pittsburgh. ASA results should be useful to the district and to the public for purposes of providing a snapshot of the varying academic needs of students in schools around

⁶ The anchoring to PSSA scores is actually conducted separately at each school level (elementary, middle, and high). Readers should therefore use caution in comparing ASA results for schools serving different grade levels. ASA results are comparable across school levels only to the extent that PSSA proficiency results are comparable across school levels.

Pittsburgh. ASA results should *not*, however, be interpreted as measures of the performance of schools. Achievement levels are a product not only of school performance, but also of a wide range of other forces that are outside the control of schools, including family, peer, and neighborhood characteristics. Understanding the average level of achievement in a school is therefore not equivalent to understanding the school's contribution to student achievement. We examine school performance in the next section.

Measuring school performance

This section describes the analyses RAND conducted with the aim of identifying the school's contribution to student achievement, thereby measuring the performance of the school.

A methodologically valid measure of school performance is one that fairly assesses the educational value that the school provides to its students, independent of family and neighborhood factors. Because students are not randomly assigned to schools, there is no way to perfectly distinguish the effects of schools from the effects of non-school factors. Nevertheless, careful analysis of student-level data can go a long way toward identifying school effects—thereby providing considerable guidance to policymakers and the public about school performance. We use three different methods of analyzing school effects, combining them to create a School Performance Index.

First, we conduct a multivariate statistical regression that examines individual test scores

across the district for all grades and subjects, controlling for student background variables including poverty, special education status, family structure, gifted status, English-language learner status, race, and mobility. Each school is entered into the regression as its own variable, and the resulting coefficient for each school is interpreted as that school's effect. Although this method does not directly examine student achievement gains over time, it uses districtwide information on the effects of the various background variables to account for differences in the preparation levels of students who enroll at different schools around Pittsburgh. The results are intended to be comparable across schools as if they were serving similar populations of students.

Second, we use the longitudinal data on individual students to conduct a quasi-experimental, "within-student" analysis that compares results for individual students who are enrolled in different schools in different years. Students move either because of structural transitions (from elementary to middle school or middle to high school) or because they transfer. In either case, the ability to observe individual students in different schools creates an opportunity to distinguish the school's effect from the effect of fixed student background characteristics, regardless of whether those characteristics are adequately measured by the demographic information available to us. If, for example, a student who had low achievement in elementary school has higher achievement after moving to middle school (and if this happens systematically for substantial numbers of students), we have evidence that the middle school is a higher-performing school.

Third, for schools serving grades 6-12 we also use the longitudinal data to assess the

gains that students make over the course of three years. For middle schools and K-8 schools, we compare average gains for students from grade 5 to grade 8. For high schools, we compare average gains for students from grade 8 to grade 11. Like the preceding analysis, this analysis helps to identify school effects by factoring out a student's previous achievement (although student background characteristics may affect gains over time, so the analysis is not definitive). Such an analysis is impossible for grades K-5 because we have no pre-kindergarten measures of student achievement to use as baseline scores. The PPS data system includes achievement results for grades 1-3 only for the last two years. In the future, when sufficient data become available, it may be useful to examine gains from first grade to fifth grade for elementary schools.

Although none of these three methods of identifying a school's effect on student achievement is definitive, they have complementary strengths and limitations, and together they can create a better estimate of school performance than average achievement or proficiency results can provide. The first approach, using cross-sectional statistical regression analysis, may not completely capture all of the relevant background differences across students, but it is more comprehensive and current than the other analyses because it includes results for every student tested in each school in 2005. The second approach provides better controls for the effects of unobserved student background characteristics, but it examines only the subset of students who have appeared in more than one school, and it requires an assumption that school effects do not carry over after a student enrolls in a new school.⁷ The third approach—examining three-

⁷ The value of this method is also limited by the fact that students are not randomly distributed when they move from elementary school to middle school and from middle school to high school,

year gains—effectively controls for prior achievement levels (but not gains) while requiring several years of data on each student, thus limiting the number of students that can be included. For purposes of assessing school performance, all three methods are superior to simply examining average student achievement (or proficiency), because all three methods seek to distinguish the school’s contribution to student achievement from the contribution of out-of-school factors.

Results from each of the three analyses are initially calculated in terms of the same rank-based standardized measures that are used for the ASA index. But the cross-sectional results are not directly comparable to the gain results, so we convert results from all three analyses into normal curve equivalent (NCE) scores, which are scaled in a way that permits averaging. We weight the results of the three analyses as follows:

- For schools serving grades 6-12, adjusted cross-sectional results are weighted 50%, quasi-experimental within-student results are weighted 25%, and three-year gain results are weighted 25%
- For elementary schools serving grades K-5, adjusted cross-sectional results are weighted 75% and quasi-experimental within-student results are weighted 25%

Although we believe that these weights produce results that appropriately consider the strengths and weaknesses of each analysis, these are not the only possible ways to weight the results of the different analyses. In order to reduce the significance of weighting

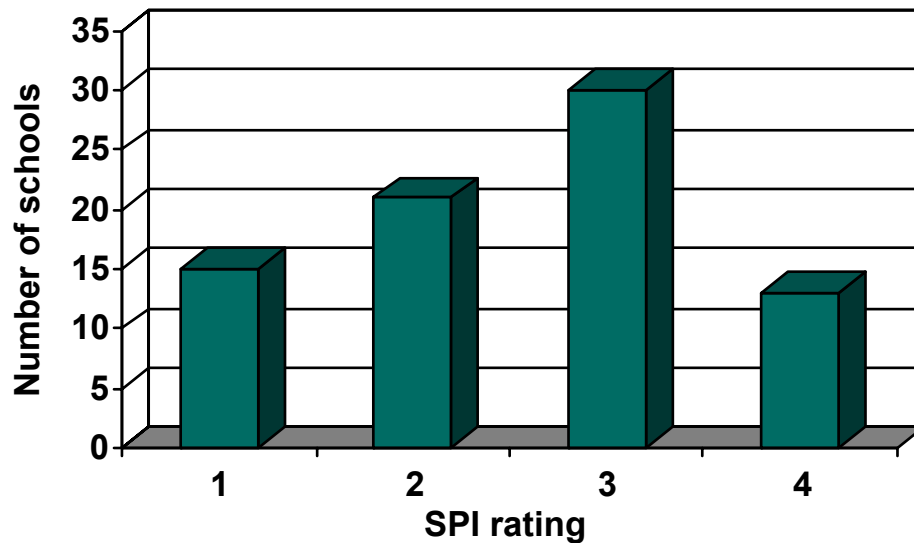
as follows. If school performance is correlated across school levels within feeder patterns, the “within-student” method may underestimate school effects. High-performing elementary schools, for example, won’t look quite as high-performing if they feed to high-performing middle schools.

decisions and to avoid overstating the precision of our results, we convert the results to a four-point scale. For most schools, the results of the different analyses are well correlated, so that alternative weighting decisions would produce few differences in results on the four-point scale. Such a scale is reasonably robust to different weighting decisions and to variations in results across the three methods of analysis.

Superintendent Roosevelt and the realignment committee believe that the top score on the scale should be reserved for schools that not only produce substantial gains for the students they serve, but that also bring their students to high absolute levels of achievement. Initial discussions with the Board of Education of the Pittsburgh Public Schools suggest that they, too, support the idea that the top rating should designate schools that excel both in terms of student gains and in terms of external standards of student achievement. In consequence, we have proposed a School Performance Index (SPI) on a five-point scale. The first four points will be based on the results of the analyses described above. Schools that earn four points on the statistically adjusted and gain measures will be eligible to earn a fifth point—the top rating—if they also achieve a minimum threshold of absolute achievement on the ASA scale, for black students and white students, low-income students and non-low-income students. Setting the standard for that threshold is a policy decision rather than a research question. We expect that the PPS board and staff will engage in a discussion about appropriate standards for “five-star” schools in the near future. In the meantime, we report here the results for each school on the four-point scale, pending the determination of standards that may result in the promotion of some schools from “4” ratings to “5” ratings.

Figure 2 shows the number of Pittsburgh’s 80 schools achieving each score on the SPI, pending the district’s policy decision about standards for the “5” rating.⁸

Figure 2: Number of PPS Schools Achieving Each SPI Rating

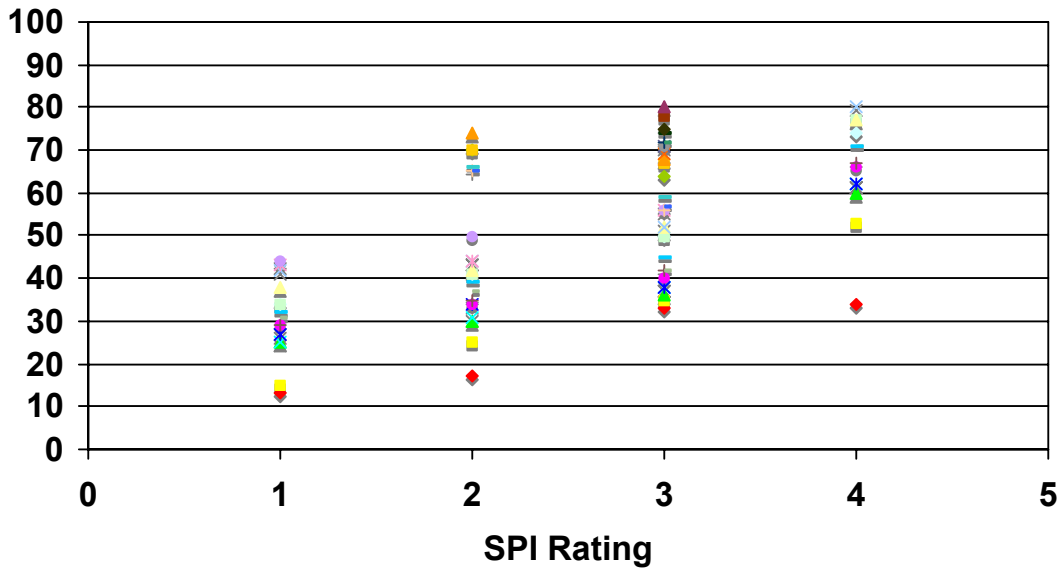


SPI ratings are correlated with average student achievement, but there is wide variation in ASA within each SPI rating. Most of the schools with the highest ASA levels are high-performing schools, but some schools that serve relatively advantaged populations of students are seeing above-average ASA scores despite below-average performance. Conversely, PPS has some high-performing schools that would not be immediately recognized as such by looking at ASA scores: They are producing substantial gains in the achievement of highly disadvantaged students, but their average achievement levels are not at the top of the scale. The relationship between school performance and average achievement is illustrated in Figure 3, which charts the SPI and ASA scores for each

⁸ PPS operated 86 schools in 2004-05, but six of these are specialized schools serving students with special needs (e.g. disabilities or behavioral problems), and they are not included in our analyses.

school in Pittsburgh. Each point plotted in the chart represents one school.

Figure 3: School Performance and Average Student Achievement



Schools that earn an SPI rating of four are among the best in Pittsburgh at raising the achievement of the students they enroll. Schools that earn an SPI rating of one are not demonstrating that they are effectively raising the achievement of their students. Table 3 shows the SPI rating of each school in Pittsburgh. Within each rating, schools are listed alphabetically.

Table 3: School Performance Index Ratings

1	2	3	4
Burgwin	Allegheny Trad Elem	Allderdice	Arsenal
Chatham	Arlington	Allegheny Trad Middle	CAPA High
Colfax	Carrick	Banksville	Dilworth
Columbus	Concord	Beechwood	Greenfield
East Hills	Fort Pitt	Bon Air	Lincoln
Friendship	Frick	Brashear	Linden
King	Fulton	Brookline	Phillips
Knoxville Middle	Knoxville Elem	Carmalt	Schaeffer
Mann	Liberty	Clayton	Schiller
Northview	Madison	Crescent	Sterrett
Peabody	Mifflin	Grandview	Stevens
Prospect Elem	Milliones	Greenway	Westwood
Reizenstein	Morningside	HW Montessori	Woolslair
Rooney	Murray	Langley	
Westinghouse	Oliver	Lemington	
	Perry Traditional	Manchester	
	Sheraden	McCleary	
	South Brook	Miller	
	Spring Hill	Minadeo	
	Weil Tech	Morrow	
	West Liberty	Pgh Classical	
		Prospect Middle	
		Rogers CAPA	
		Roosevelt	
		Schenley	
		South Hills	
		Sunnyside	
		Vann	
		Washington Poly	
		Whittier	

Conclusions, limitations, and next steps

The SPI ratings should be interpreted cautiously. No statistical method can definitively and unequivocally distinguish school effects from the effects of families, peers, and communities. Measuring effects is particularly challenging for magnet schools, which are enrolled by student and family choice; they may therefore serve student populations that would do better even if they were in non-magnet schools. Moreover, these analyses

are not fully comprehensive measures because they measure only reading and math results; they do not assess the extent to which students are learning science, the arts, and civic skills. And the SPI ratings provide no information about *why* some schools are performing better than others; they only identify schools that appear to be doing better and worse at promoting gains in student achievement in reading and math.

Finally, it should be noted that the SPI was created for the purpose of informing decisions about school closings and student reassignments rather than as an ongoing accountability measure for schools. As other RAND research has indicated, even the most sophisticated methods of “value-added” analysis require assumptions that merit caution in using them for accountability purposes (McCaffrey et al, 2003). With additional evaluation and development, the analytic methods used for the SPI may serve a variety of purposes in the future. RAND is now working with the Pittsburgh Public Schools to develop a new school accountability system, compatible with federal requirements, that will examine the annual achievement growth of students in each school as one factor for determining “adequate yearly progress” under NCLB. Although no such system is perfect, a growth-based system that uses some of the methods incorporated in the SPI has the potential to more-fairly hold educators accountable for their contribution to the achievement of their students than existing federal accountability measures do.

Despite its limitations, the SPI ratings represent an important input to the district’s realignment process and a key first step in larger efforts to improve instructional performance and student achievement across Pittsburgh. This is the first time the district

has used rigorous analyses of student achievement data in an effort to have school performance inform decisions about the closing of schools. The ratings should help PPS make its closing and realignment decisions in ways that will best promote student achievement for the long term. And they demonstrate how the district's data can be used to inform critical policy decisions, pointing toward more ambitious analyses that will help the Pittsburgh Public Schools understand the critical factors that distinguish its high-performing schools from its low-performing schools, ultimately laying the groundwork for systemwide improvement of the delivery of instruction and the achievement of students.

Appendix: Average Student Achievement (ASA) in Pittsburgh Public Schools, Spring 2005

School	ASA	School	ASA
Alderdice	72	Manchester	46
Allegheny Trad Elem	47	Mann	43
Allegheny Trad Middle	53	McCleary	49
Arlington	64	Mifflin	68
Arsenal	35	Miller	45
Banksville	76	Milliones	25
Beechwood	62	Minadeo	80
Bon Air	72	Morningside	42
Brashear	52	Morrow	51
Brookline	72	Murray	33
Burgwin	36	Northview	29
CAPA	74	Oliver	16
Carmalt	55	Peabody	14
Carrick	42	Perry Traditional	39
Chatham	32	Pgh Classical	67
Clayton	38	Phillips	78
Colfax	48	Prospect Elem	44
Columbus	27	Prospect Middle	57
Concord	71	Reizenstein	29
Crescent	39	Rogers CAPA	78
Dilworth	65	Rooney	33
East Hills	43	Roosevelt	76
Faison	30	Schaeffer	64
Fort Pitt	34	Schenley	54
Frick	74	Schiller	66
Friendship	30	Sheraden	48
Fulton	35	South Brook	64
Grandview	59	South Hills	70
Greenfield	73	Spring Hill	43
Greenway	36	Sterrett	76
HW Montessori	65	Stevens	52
King	30	Sunnyside	49
Knoxville Elem	32	Vann	40
Knoxville Middle	25	Washington Poly	43
Langley	31	Weil Tech	34
Lemington	45	West Liberty	65
Liberty	67	Westinghouse	13
Lincoln	69	Westwood	72
Linden	80	Whittier	71
Madison	45	Woolslair	53

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