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# *Student Performance in the Pittsburgh Public Schools*

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## ***RAND Education***

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## **Preface**

The Pittsburgh Mayor's Commission on Public Education asked the RAND Corporation, a private, not-for-profit research and analysis organization, to provide technical assistance to the Commission to understand issues related to student performance in the Pittsburgh Public Schools. The following discussion is based on RAND's findings, previously reported to the Commission, regarding student outcomes in Pittsburgh, the operational characteristics of high-performing school districts, and the academic operations of the Pittsburgh Public Schools. The research was conducted by RAND Education, the division within RAND that seeks to bring accurate data and objective analysis to the national debate on education policy.

Although this report is part of RAND's unrestricted draft series, and as such has not been formally edited, it is intended to be available to the citizens of Pittsburgh and therefore may be cited and quoted.

**Acknowledgements**

Our first thanks go to the teachers, principals, and staff of the Pittsburgh Public Schools, who opened their schools to us, provided essential data, and spoke frankly of their experiences, needs, and concerns. We also owe thanks to the members of the Mayor's Commission on Public Education and to Eloise Hirsh, Dina Vargo, and Judith Hall of the Commission staff for inviting us to participate in the Commission's study and for working closely with us every step of the way. Finally, this project involved a variety of RAND staff in gathering and analyzing data on student performance and the operation of the Pittsburgh Public Schools. We could not have completed this report without the assistance and advice of Louay Constant, Derek Davison, Jacob Dembosky, Tom Glennan, Laura Hamilton, and Ron Zimmer.

## Summary

Substantial numbers of Pittsburgh's students are failing to achieve at levels that will prepare them for success in higher education and the job market. Despite recent improvements in test scores, over half of the students in the Pittsburgh Public Schools do not achieve proficiency in reading and math, as measured by the standards set by the state of Pennsylvania. One-fourth of ninth-graders fail to graduate from high school. And the statistics are substantially worse for low-income and African-American children in the district. In short, too many of Pittsburgh's children are not being adequately educated.

State standards and federal law now demand levels of achievement that will require dramatic improvements in current levels of achievement in Pittsburgh schools. The district's efforts to improve student achievement can take advantage of a number of strengths—including a highly experienced teacher corps, a comprehensive electronic data system, and promising initiatives in reading and mathematics—but are hampered by a variety of problems. Bickering among district leaders undermines instructional initiatives in the schools; the district's budgeting system leaves low-income children with the least-experienced teachers; and family and community engagement are inconsistent.

Research demonstrates that high levels of student achievement require not only strong performance from schools but also the support of families and the community. Reaching high levels of achievement for all students in Pittsburgh is therefore likely to require an ambitious, comprehensive, community-wide initiative.

**Introduction**

This work was undertaken on behalf of the Pittsburgh Mayor's Commission on Public Education, with the aims of providing information on student performance in the Pittsburgh Public Schools (PPS), on the academic operations of the Pittsburgh Public Schools, and on the characteristics of high-performing school districts. To support the Commission's work, RAND analyzed publicly available data on achievement and other outcomes for students in the Pittsburgh schools, interviewed a variety of individuals involved in the operations of PPS, and reviewed and summarized the literature on high-performing school districts. This report, issued in conjunction with the report of the Commission itself, documents RAND's findings.

The report first reviews findings on student outcomes in PPS. It goes on to briefly describe characteristics of high-performing districts evident in the research literature, before discussing operational challenges uncovered during interviews in PPS.

**Measures of student performance in the Pittsburgh Public Schools**

To assess student performance in PPS, RAND analyzed publicly available information from the state of Pennsylvania as well as information provided by PPS staff. For standardized test results, we relied primarily on the Pennsylvania System of Student Assessment (PSSA), because it can be compared to results in other schools across the state and because it is the primary measure of accountability in Pennsylvania under the federal No Child Left Behind (NCLB) Act. For non-test measures of student

performance, we examined data on attendance and graduation in PPS. In this section, we first discuss PPS achievement levels as compared with demographically similar schools around Pennsylvania and trends in the district's PSSA scores over the last several years. We then describe absolute levels of proficiency in the district and present evidence on achievement gaps by income, race, and school. We go on to discuss absenteeism and dropout rates, and conclude the section with a discussion of the implications of Pittsburgh's current levels of student performance under the federal No Child Left Behind (NCLB) Act.

There was some good news to be found in RAND's examination of student performance in the Pittsburgh Public Schools. Using publicly available data from the Pennsylvania Department of Education, we conducted a statistical regression analysis of test scores from across the state on the PSSA, controlling for poverty, race, special education status, urbanicity (i.e., urban vs. suburban vs. rural), and English-language learner status. The regression analysis provides a statistical method of comparing achievement levels in PPS with those in urban schools around the state that serve similar populations. We found that, in elementary and middle grades in both reading and math, average scores in Pittsburgh schools were higher than those in urban schools serving similar populations elsewhere in Pennsylvania.<sup>1</sup>

Our trend analysis also found some promising results: Pittsburgh's PSSA scores have improved over the last several years in reading and math, gaining faster than the state

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<sup>1</sup> This analysis was done with 2001 data, which were the most recent complete data available at the time. The state has not yet released sufficient 2003 data to replicate the analysis for 2003.

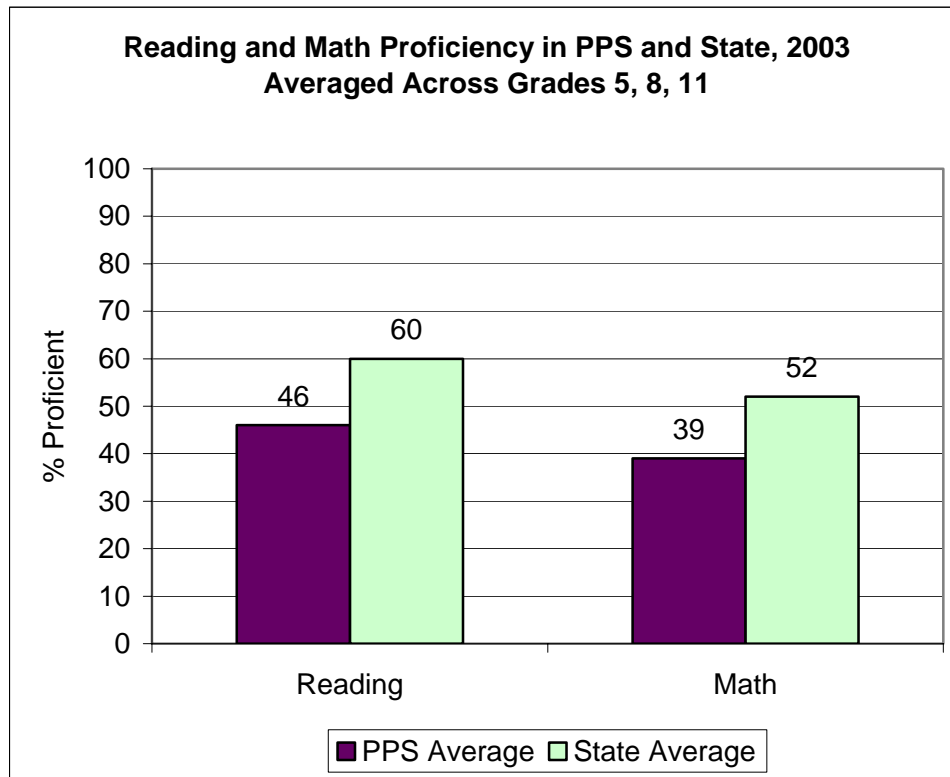
averages (see Figures A-1 and A-2 in the Appendix for details). Scores on district-mandated assessments in early elementary grades have also shown gains in the recent past.<sup>2</sup>

Despite recent gains, and despite the favorable comparison to other urban schools, achievement levels in Pittsburgh remain well below state averages and far short of the standards of proficiency set by the state. Averaging across the three grades tested (grades 5, 8, and 11), PSSA scores for 2003 indicate that only 46% of PPS students can read proficiently and only 39% can do math proficiently. Figure 1 compares proficiency rates in the Pittsburgh Public Schools with those across Pennsylvania (with calculated averages across grades 5, 8, and 11 that are weighted by the number of students tested in each grade).

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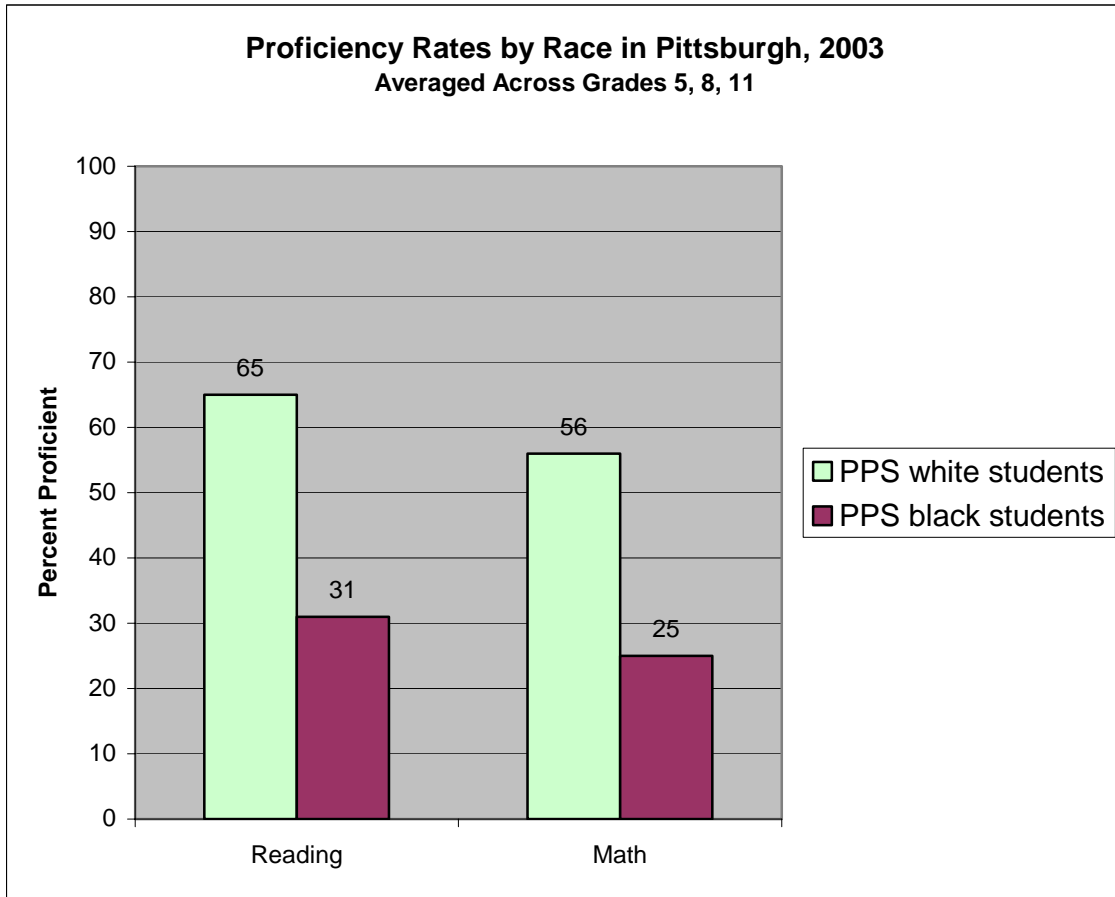
<sup>2</sup> In grades 1-4, district-wide Stanford 9 results suggest an average of 7% more students achieved proficiency in reading from 2001 to 2002. At the same time, the district's Balanced Assessment in Mathematics (BAM) suggests large improvements in proficiency in grades 1-3 between 2000 and 2002.

Figure 1



District-wide averages obscure large gaps in achievement by income, race, and school. Only 34% of low-income students in Pittsburgh can read at grade level and only 29% are proficient in math, as measured by 2003 PSSA scores. Among African-American students in Pittsburgh, only 31% can read proficiently and only 25% can do math proficiently. An examination of the test results of individual students (conducted by PPS staff and provided to RAND) confirms that a racial gap in achievement remains even after accounting for poverty and single-parent status. The racial proficiency gap in Pittsburgh is indicated in Figure 2.

Figure 2



Among individual schools in Pittsburgh, achievement varies enormously: 2003 proficiency rates among individual schools in the district range from 3% to 91% in reading and 0% to 78% in math. Wide disparities in average school achievement are evident at all grade levels. The range of proficiency rates in individual schools is displayed graphically in Figures A-3 and A-4 in the Appendix. (Readers who are interested in the proficiency rates of individual schools can download the information from the website of the Pennsylvania Department of Education.)

Low levels of achievement are reflected not only in test scores but also in attendance and graduation rates. Attendance rates in PPS have improved in the last few years, but absenteeism remains as high as 15% in the district's high schools (alongside a 9% absence rate in middle-school grades and 6% in elementary grades), according to PPS data.

Many students who are chronically absent are on their way to dropping out. Calculating an accurate graduation rate is not a straightforward task, because school districts have difficulty knowing whether students who leave school have dropped out or merely transferred elsewhere. Reported dropout rates are often lower than true dropout rates, because districts may mistakenly believe some dropouts are transfers.<sup>3</sup> We estimated a total dropout rate as the cumulative rate of reported dropouts in each of grades nine through twelve. Using this method (which may well be conservative, i.e., produce a low estimate of dropouts), we estimate that one-fourth of ninth-graders in the Pittsburgh Public Schools fail to graduate from high school.<sup>4</sup>

In sum, recent improvements have still left over half of the students in the Pittsburgh Public Schools below proficiency according to state standards. Even more disturbingly, a substantial minority of Pittsburgh's students is at risk of dropping out. For those

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<sup>3</sup> An extreme variation on this problem has recently caused a scandal in Houston, Texas, where dropout rates have been seriously underreported (see Archer, 2003).

<sup>4</sup> The only recent information we could find on dropout rates comes from the Standard & Poor's website providing data on Pennsylvania public schools (<http://www.ses.standardandpoors.com>). In 2001, the most recent year reported, one-year dropout rates in PPS were 5.28% in grade 9, 7.66% in grade 10, 7.44% in grade 11, and 7.1% in grade 12. If those rates are constant over four years, the cumulative dropout rate for ninth-graders would be  $1 - [(1 - 0.0528) * (1 - 0.0766) * (1 - 0.0744) * (1 - 0.071)] = 24.8\%$ .

students, there is little consolation in the fact that Pittsburgh's schools are doing better than other urban schools serving similar populations.

Indeed, federal and state laws now demand that Pittsburgh's schools bring all of their students to higher levels of achievement. The federal No Child Left Behind Act (NCLB) requires all schools and districts to meet the same standards of performance (as established by the state) in terms of achievement scores, attendance, and graduation rates. In 2002-03, more than half of the schools in the district failed to meet the state's standards under NCLB. In many of those schools, the district is now required to offer parents the option of transferring their children out, with transportation provided at the district's expense. If those schools fail to meet the state's requirements in future years, more serious consequences will follow, including the threat of state takeover of individual schools or the entire district.

### **Academic operations in the Pittsburgh Public Schools**

To assist the Commission's consideration of possible recommendations for improvement, RAND examined the nascent literature on high-performing school districts. Although there is an extensive literature on high-performing schools, researchers have only recently begun to examine what distinguishes school districts that systematically achieve higher performance across their schools. This research is not yet sufficiently developed to definitely associate operational characteristics of districts with improvements in student achievement, but qualitative work on high-performing districts is beginning to identify

characteristics that are likely to lead to higher performance (see, e.g., Snipes, Doolittle, & Herlihy, 2002; Elmore, 2000; Resnick & Glennan, 2001; *School Communities that Work*, 2002). These characteristics include the following:

- A top-to-bottom organizational focus on student achievement, supported by a consistent and continuous message from superintendent and board;
- The rigorous use of achievement data to inform instructional, staffing, and programmatic decisions by teachers, principals, and central office staff;
- Systems to hire, develop, and retain effective teachers and principals in all schools;
- The full engagement of families and the larger community in promoting achievement.

In order to understand how PPS operates to promote student achievement—and to examine the extent to which it exhibits characteristics consistent with those identified as important to high performance—RAND conducted an extensive set of interviews with staff in the central office and with principals and teachers in 11 schools around the city. Central office staff interviewed included the superintendent, the chief academic officer, the chief of staff, the executive directors for elementary, middle, and high schools, the directors of reading and mathematics, and officials responsible for human relations, professional development, and public relations. The 11 schools selected were chosen to be representative of the district as a whole. They included five elementaries (including one K-8 school), three middle schools, and three high schools. They included both

neighborhood schools and magnet schools, and represented a wide range of geographic areas, student demographics, and achievement. In addition, RAND staff interviewed two members of the school board and two officials of the Pittsburgh Federation of Teachers. Below we describe our findings about academic operations in PPS.

PPS has a number of strengths in its academic operations, beginning with a highly experienced, fully credentialed, and stable corps of teachers—an asset that many urban districts lack. In addition, PPS has a variety of promising programs and practices that are consistent with the characteristics of high-performing school districts. It has established district-wide curricula in reading and math that are intended to ensure coherent instruction across the district's schools; it offers an extensive array of professional development opportunities to teachers; it is establishing supplemental, after-school programs in schools with large numbers of students who are currently below proficiency; and it has built an electronic data warehouse that establishes the infrastructure for an information system capable of providing student-level achievement data for instructional and evaluative purposes to teachers and administrators.

Nevertheless, RAND's examination of PPS operations suggests that the district's performance is hampered by a number of weaknesses. First, the district's efforts to provide a coherent, sustained, district-wide focus on its core academic programs have been undermined by disagreements at the top. The widely publicized battles among members of the school board and between the board and the superintendent have sown doubts in the schools about the district's commitment to the superintendent's initiatives.

This has been particularly problematic in mathematics, where the district's chosen curriculum is not fully supported by all teachers. In our interviews, for example, we were told that staff who are less than fully committed to the district's programs are less likely to rigorously implement those programs, under the impression that the lack of a united front at the highest levels of the system means that the consequences of ignoring curricular mandates will not be serious. Interviewees reported that momentum for change is stalled by a "this, too, shall pass" attitude among resistant teachers and administrators. In short, the district's governance problems have real consequences in the schools.

Second, while PPS's electronic data system is impressive, and more advanced than those of most school districts, the district is not yet prepared to make full use of the system. The system is set up well for instructional purposes (including not only annual standardized-test results, but also the standards-based assessments conducted several times annually)—if teachers and principals are adequately trained in using the data to inform decisions. Interviews revealed that the extent to which teaching staff have been trained in these areas and actually use data to inform instruction, however, varies from school to school, and in many cases depends on the extent to which individual principals are committed to such an approach. The district as a whole has not yet developed the mechanisms to ensure that instructional use of data is universal and effective. Similarly, the district data system also has the potential to be a powerful tool for evaluation, but the district does yet not appear to have the analytic capacity to use it evaluatively (for

example, the position of director of accountability for the district has been open for the past year).

Third, the district has a budgeting system that permits substantial inequities in the distribution of experienced teachers to schools. Like many school districts around the country, PPS in recent years has adopted a school-based budgeting system that aims to give principals some discretion in allocating funds and to ensure equity across schools. But teacher salaries are exempt from the school-based budgeting system (as they are in many districts; see Roza and Hill, 2003). Instead of allocating *funding* for teacher salaries to each school based on enrollment, PPS allocates teacher *slots* independent of salary to each school. As a result, highly-experienced teachers can congregate in “better” schools.<sup>5</sup> As the Pennsylvania Economy League found in its examination of PPS finances, the lowest-paid, least experienced teachers are concentrated in schools with the highest proportion of children in poverty (see the findings of the Finance Committee in the Report of the Mayor’s Commission on Public Education; see also NCSC, 2003). Implicitly, the district’s basic policy for budgeting staff to schools provides less funding to low-income children.

Finally, our interviews of teachers around the district found too many schools with inadequate family and community support for learning. This problem, of course, is not unique to Pittsburgh. High-poverty schools across the country have special challenges in

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<sup>5</sup> Such concentration was also encouraged by past union contracts that gave teachers seniority rights to transfer to open positions among schools in PPS. Recently, however, the union has agreed to move to a more open, competitive system of transfer hiring, so current seniority rules no longer appear to be a contributing factor to this problem (although staffing in the schools today is undoubtedly still affected by the past seniority preferences).

raising student achievement, because education is a result not only of school performance but of many factors in homes and neighborhoods that are outside the control of the schools. Research repeatedly demonstrates the importance of out-of-school factors in student achievement (see, e.g., Jencks and Phillips, 1999). The wide gaps in out-of-school educational opportunities available to low-income students are often apparent the day they arrive in kindergarten (Hart and Risley, 1995).

In sum, our examination of PPS operations makes clear that the district can improve its performance. But dramatic improvements in student achievement will be possible only if improvements in the performance of the schools themselves are coupled with greater support from families and the community in preparing children for school and in reinforcing education outside of school.

### **The need for substantial improvements in student performance**

The standards set by federal and state law under NCLB require levels of student performance that have never been achieved in most urban districts around the country. Doing better than Philadelphia will not be enough. Gradual improvements at the margin will not be enough. NCLB ultimately expects all students to achieve proficiency. For urban, high-poverty districts like Pittsburgh, the task will be challenging.

The proposals offered by the Mayor's Commission recognize the need for substantial improvements in student performance in Pittsburgh. Although there are no guarantees in

education policy, the strategies proposed by the Commission are consistent with those that are being adopted in other districts around the country that are seeking high achievement for all students.

The findings of this report indicate that Pittsburgh has a long way to go to approach proficiency for all students. They further indicate that there is substantial room for improvement in PPS operations. Achieving proficiency for all children in Pittsburgh—rich and poor, black and white—will require a city-wide effort that includes schools, families, and the larger community.

Appendix

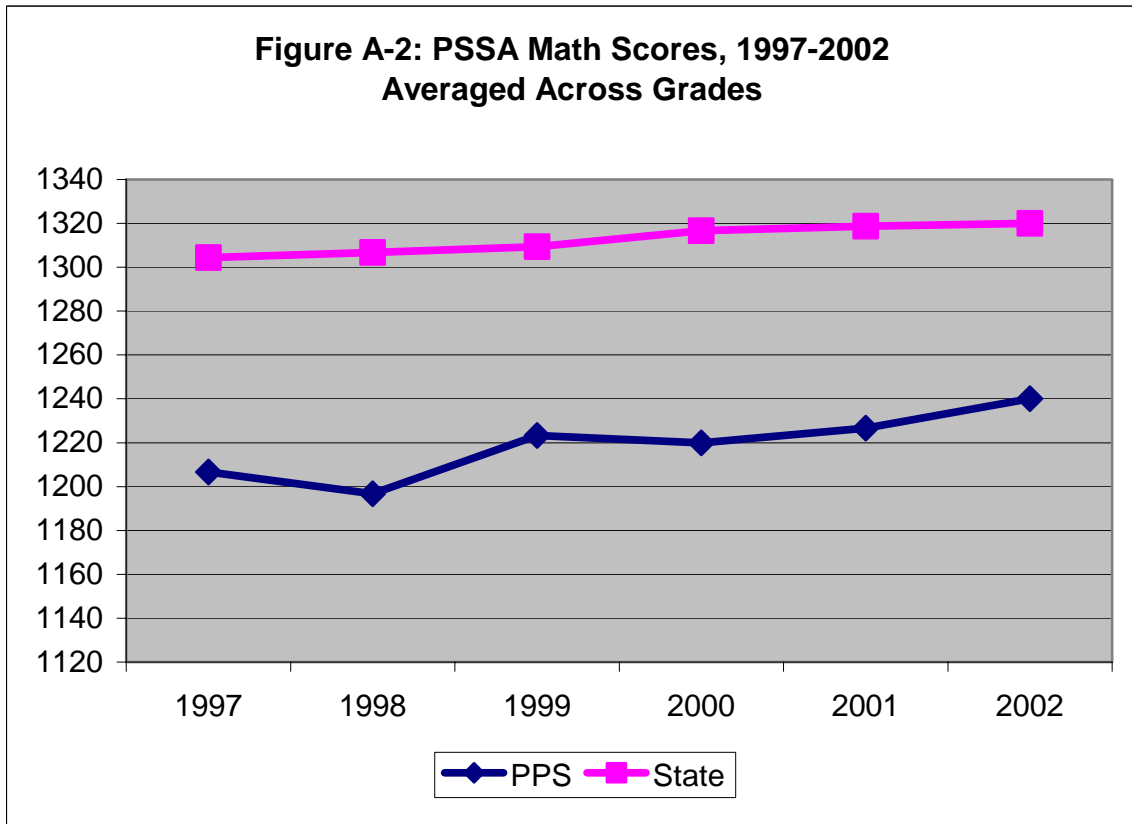
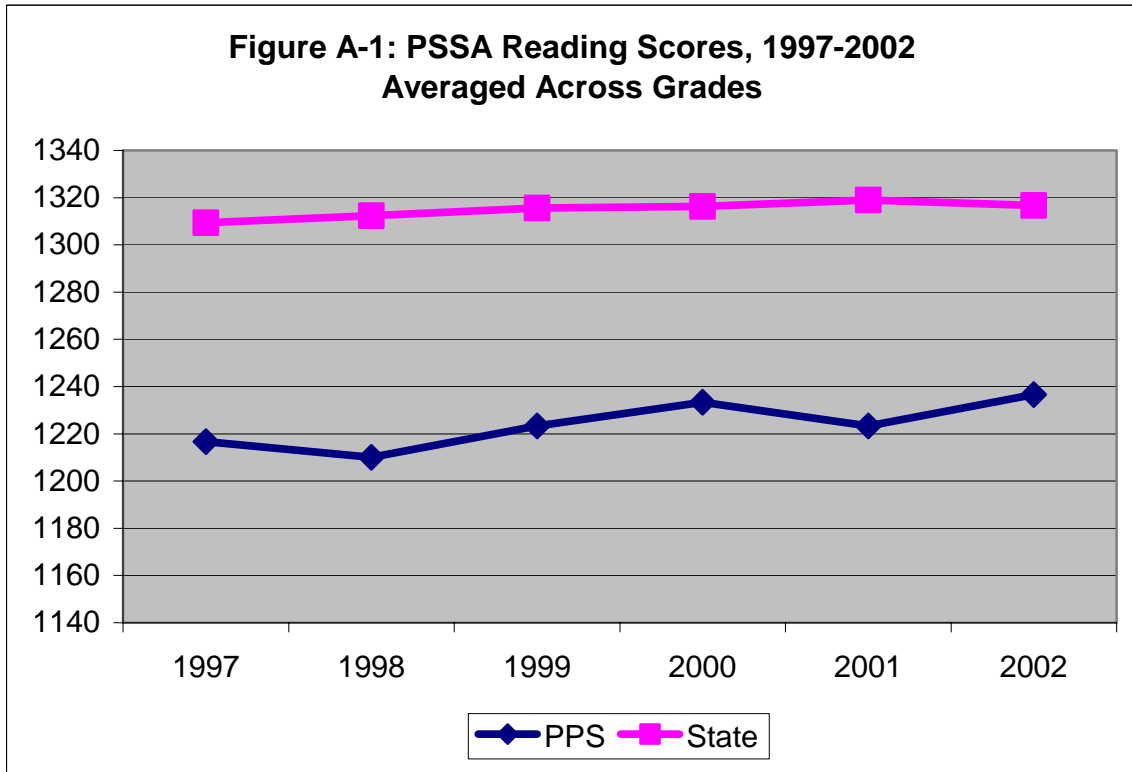


Figure A-3: Reading Proficiency in PPS by School, 2003

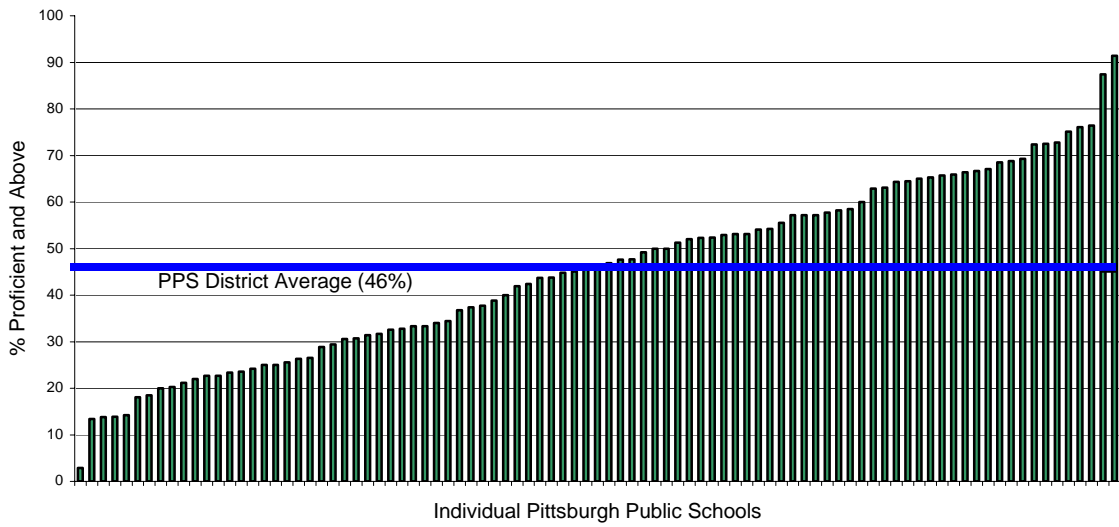
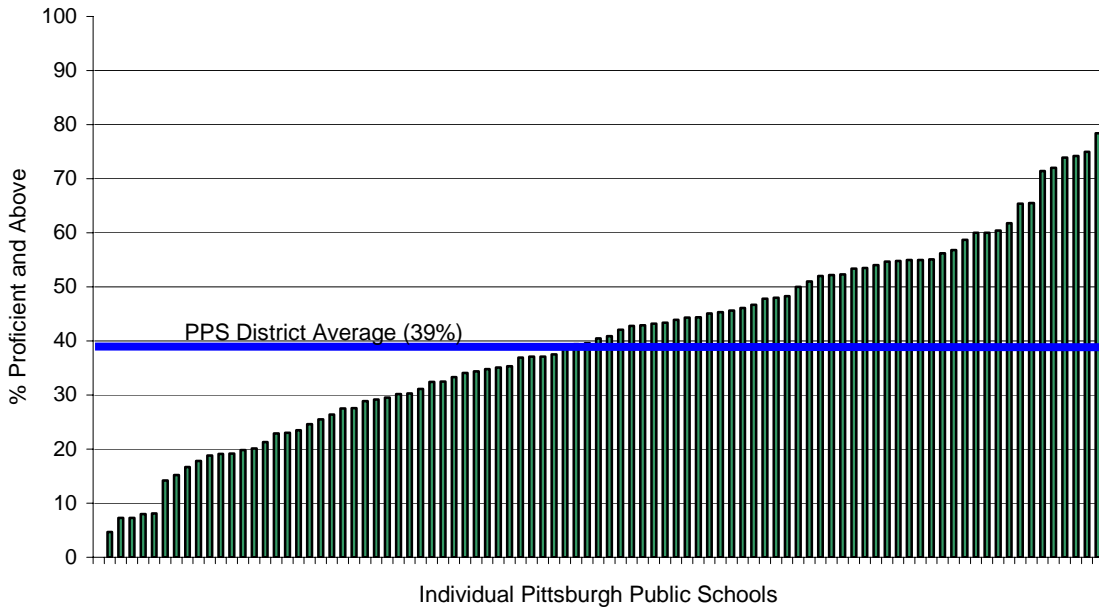


Figure A-4: Math Proficiency in PPS by School, 2003



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