

A+ Schools' Tools, Rules and Schools Initiative
Learning Policy Center Technical Report
January 11, 2010

Tools, Rules and Schools is a research project commissioned by A+ Schools to examine the distribution and mobility of teachers across Pittsburgh Public Schools (PPS) and to analyze the policies, practices and learning environments that influence where and how teachers are able to teach. The research project encompassed a 15-month study conducted by the Learning Policy Center at the University of Pittsburgh at the request of A+ Schools. Their research included a quantitative analysis of three years of staffing data from PPS, as well as interviews with PPS district administrators and human resources personnel, school board and union representatives, principals and teachers.

Our Tools, Rules and Schools study was launched in July 2008, before the PPS and Pittsburgh Federation of Teachers (PFT) released its very comprehensive and excellent **Empowering Effective Teachers Plan (EET Plan)** funded recently by the Bill & Melinda Gates Foundation. We are pleased to note that the recommendations offered in Tools, Rules, and Schools are being put in place in the EET Plan and related initiatives. We believe that the findings and recommendations made in this report substantiate the need for change and will support and focus the need for the EET Plan to pay special attention to our most vulnerable schools.

Structure of the Report

This report looks at the **tools** and training support provided to teachers, the staffing **rules** involved in recruitment and hiring, and the learning environments in the district's **schools**. The report addresses these key elements in three sections:

1. The System as It Existed: Status Report on Teacher Distribution and Mobility in PPS.
2. Reasons Why the System Existed: Barriers to Recruiting, Hiring, and Retaining Good Teachers in the Most Vulnerable Schools.
3. How the System Could Work: Our Vision and Recommendations.

Our findings from the Pittsburgh Public Schools echo findings from research conducted in urban public schools across the United States¹: **Students with the highest needs attend schools with the highest teacher turnover.** Specifically,

- The district’s most vulnerable schools – defined as those schools with the highest percentage of low-income students, higher number of disciplinary incidents, and lower student achievement – have more teachers moving in and out of them.
- When teachers move from one school to another within the district, they most often move from more to less vulnerable schools.
- The teachers in the most vulnerable schools have less experience and fewer credentials than those in less vulnerable schools.

We have also found that the district’s policies and practices prior to the Empowering Effective Teachers Plan indirectly and unintentionally worked against hiring and retaining teachers in the most vulnerable schools who might be best suited for those schools and their students. For example,

- Because teachers in more vulnerable schools more often leave their positions to fill open positions at less vulnerable schools, positions at more vulnerable schools must be filled later in the summer, often by teachers with less experience or displaced teachers who may not have expressed an interest in those positions.
- Because of their later hire date, teachers placed in the most vulnerable schools often have less time to adjust to a school and grade-level before school begins.
- Because of the late hiring of external candidates, PPS often loses interested and qualified candidates that get hired by other districts earlier in the year.
- The absence of school-specific induction for new teachers especially impacts teachers at the most vulnerable schools who often need more training and support.

Collectively, the research indicates that these factors are unintentionally working against having well-supported, committed, and effective teachers at the most vulnerable schools.

¹ For examples, see Snipes, J. and Horwitz, A. (2007). *Research Brief: Recruiting and retaining effective teachers in urban schools*. Washington DC: Council of the Great City Schools; Clotfelter, C.T., Ladd, H.F., Vigdor, J.L., and Wheeler, J. (2007). High poverty schools and the distribution of teachers and principals. *North Carolina Law Review*, v85, n5, pp. 1345-1380; and Boyd, D., Lankford, H., Loeb, S., and Wyckoff, J. (2005). Explaining the short careers of high-achieving teachers in low-performing schools. *American Economic Review*, v95, n2, pp. 166-171.

While concerned about teacher turnover at the most vulnerable schools in the Pittsburgh Public Schools, we do not advocate for new policies and practices intended to reduce teacher turnover altogether. Turnover – in itself – is sometimes necessary in order that some teachers can find positions that are a better fit with their talents and skills. However, the higher rate of teachers leaving the most vulnerable schools is a concern both because of the demonstrated positive impact of just a few years of teacher experience on student achievement² and because at least some of the teachers who are leaving those schools are likely high-performing teachers who could provide quality instruction to the district's neediest students.³ We are especially concerned that more teachers are leaving the most vulnerable schools given research indicating that teachers may move from more to less vulnerable schools in even greater numbers when their effectiveness is being measured and rewarded⁴, which is the system that PPS is proposing for their EET Plan.

While eliminating teacher turnover from vulnerable schools altogether is impossible and not something we advocate, we do recommend that PPS make vulnerable schools places where teachers can be effective and want to teach. By doing so, the district can manage the effects of mobility so that the most needy students receive the best possible instruction.

A+ Schools strongly endorses the Pittsburgh Public School District's EET Plan, which includes the goals of 1) increasing the number of highly effective teachers, 2) increasing the exposure of high-needs students to highly effective teachers, and 3) ensuring that all teachers work in learning environments that

² See Hanushek, E.A., Kain, J.F., O'Brien, D.M., Rivkin, S.G. (2005). The market for teacher quality. National Bureau of Economic Research Working Paper 1154 (February). Available at: <http://www.nber.org/papers/w11154> and Rivkin, S.G., Hanushek, E.A., and Kain, J.F. (2005). Teachers, schools, and academic achievement. *Econometrica*, v73, n2, pp. 417-458.

³ In their Empowering Effective Teachers Plan, the District notes a fairly even distribution of highly effective teachers across schools. However, the District based this finding on a sub-sample of 3rd-8th grade teachers' PSSA scores, using a system for categorizing schools (based on PSSA scores and PVAAS scores) that has very little overlap with our system (based on students with free/reduced lunch, disciplinary incidents, and PSSA scores).

⁴ Clotfelter, C.T., Ladd, H.F., Vigdor, J.L., and Diaz, R.A. (2003). Do school accountability systems make it more difficult for low-performing schools to attract and retain high-quality teachers? *Journal of Policy Analysis and Management*, 23,2, pp. 251-271.; and Vigdor, J.L. (2009). Teacher Salary Bonuses in North Carolina. In Matthew Springer (Ed.), *Performance Incentives: Their Growing Impact on American K-12 Education*. Washington DC: Brookings Institution Press.

support their ability to be highly effective. To achieve these goals, we recommend that the Pittsburgh Public School District and the Pittsburgh Federation of Teachers:

- Change the hiring process to give candidates and schools more time, information, and freedom of choice;
- Establish a core team of highly effective and committed teachers at the most vulnerable schools; and
- Address specific needs at vulnerable schools to provide teachers there with the learning environment and resources they need to deliver quality instruction.

We provide more specific recommendations at the end of our paper.

THE SYSTEM AS IT EXISTED: Status report on teacher distribution and mobility prior to the EET Plan

Recent national studies on teacher staffing patterns indicate that more teachers tend to leave schools with high-poverty and high-minority student populations⁵ and that the teachers who stay in those neediest schools tend to be less experienced and less qualified.⁶

To determine whether similar findings are evident in the Pittsburgh Public Schools (PPS), we conducted analyses using two sources of data. First, we used demographic data from 58 Pittsburgh Public Schools to determine each school's vulnerability index.⁷ The vulnerability index takes into account four variables:

- Percent of students receiving free and reduced price lunches;
- Number of disciplinary incidents per 100 students;

⁵ Clotfelter, C.T. et al. (2003); and Ingersoll, R.M. (2004). *Why do high-poverty schools have difficulty staffing their classrooms with qualified teachers?* Report prepared for Renewing Our Schools, Securing Our Future: A National Task Force on Public Education, a joint initiative of the Center for American Progress and the Institute for America's Future.

⁶ Clotfelter, C.T., Ladd, H.F., Vigdor, J.L., and Wheeler, J. (2007). High poverty schools and the distribution of teachers and principals. *North Carolina Law Review*, 85, 5, pp. 1345-1380; Boyd, D., Grossman, P., Lankford, H., Loeb, S., Wyckoff, J. (2007). Who leaves? Teacher attrition and student achievement. *CALDER research report*, retrieved April 2009 from <http://www.teacherpolicyresearch.org/portals/1/pdfs/Do%20Effective%20Teachers%20Leave.pdf>; Boyd, D., Lankford, H., Loeb, S., Wyckoff, J. (2005). Explaining the short careers of high-achieving teachers in low performing schools. *American Economic Review*, 95, 2, pp. 166-171.

⁷ This data is publicly available in the A+ Schools 2008 Progress Report at: http://www.aplsschools.org/eq_reports_08.shtml

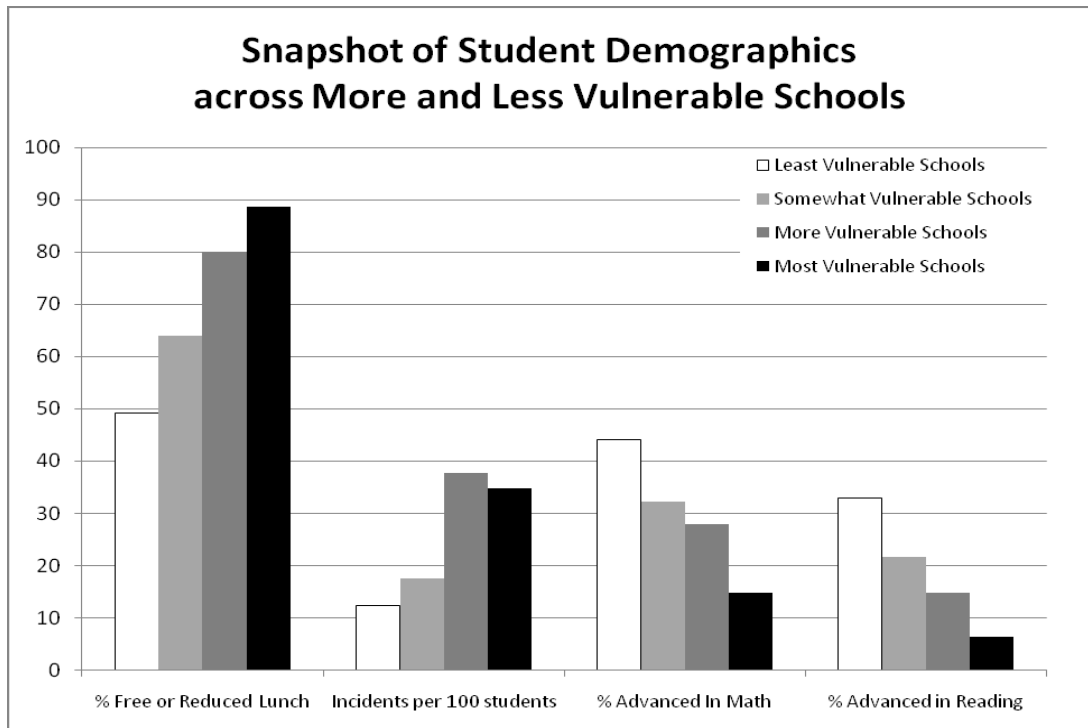
- Percent of students achieving at the advanced level in reading according to 2007-2008 PSSA scores;
- Percent of students achieving at the advanced level in mathematics according to 2007-2008 PSSA scores.

Second, we used PPS data about staffing patterns from AY 2006-2007 to AY 2008-2009. These data include 2,951 unique teachers who taught or served in the PPS at some point during those three years. The data set includes certain teacher qualifications such as their years of experience in the district, their salary, and whether they obtained Level-2 certification, National Board for Professional Teaching Standards (NBPTS) certification, or a master's degree.

Before discussing the findings, it is important to understand the district as a whole. PPS serves a highly disadvantaged population of students. Thus, while 32% of students nationwide receive free or reduced price lunches, more than double that number of students – 71% - receive free or reduced price lunches in PPS. Additionally, about 65% of PPS students are minority compared to a national average of 45% minority students,⁸ and race is highly related to vulnerability in our analysis. Therefore, while the results presented below look at variability in Pittsburgh Public Schools serving disadvantaged students, it is important to keep in mind that most schools in PPS have a relative disadvantage compared to the national average.

However, we should also note that a great deal of variability in students' socioeconomic level and achievement exists between the most and least vulnerable schools *within* PPS, as indicated in the chart below. At the least vulnerable schools, for example, where less than 50% of students receive free or reduced-priced lunches, 44% are advanced in reading and 33% are advanced in math. On the other hand, at the most vulnerable schools where almost 90% of students receive free or reduced-price lunches, only 15% of students are advanced in mathematics, and only 6% of students are advanced in reading. This data makes clear that the most vulnerable schools in PPS have a much needier student population, which requires more attention and support in order to thrive.

⁸ These numbers are based on a nationally representative sample in the Early Childhood Longitudinal Study (ECLS). For more information on ECLS, go to <http://nces.ed.gov/ECLS>.



Tracking Teacher Movement in the District

We tracked movement of teachers from fall 2006 to spring 2009. This data thus included two major time points where most teacher movement occurred: the summer of 2007 and the summer of 2008.⁹ Table 1 indicates that 59% of teachers have remained in the same school across all three years. Importantly, in the most vulnerable schools, only 54% of teachers stayed for three years, while schools in the least vulnerable quartile had over 66% of teachers stay¹⁰. That is a difference of 12 percentage points. This difference is similar to what has been documented in the School District of Philadelphia, where the retention rate of teachers at schools with 0-79% poverty from 1999 to 2002 (also a three-year time

⁹ We should note that since our data only tracks movement starting after the beginning of the 2006-2007 school year, it does not include any teacher movement that is a direct result of the District's "right-sizing" plan that involved the closing of many schools prior to the start of the 2006-2007 school year. However, our analysis includes teachers' subsequent movement in the years following right-sizing, which could be indirectly related to teachers' original right-sizing placement. On the other hand, our retention rates for teachers could also be conservative because they include teachers who made three-year commitments starting in 2006-2007 to teach in Accelerated Learning Academies (ALA's).

¹⁰ The lower teacher retention at the most vulnerable schools cannot be explained by a higher rate of terminations for less effective teachers, as only 6.2% of teachers were terminated throughout the District during this three-year time period, and those terminations were relatively evenly distributed across more and less vulnerable schools.

period) was 9.5 percentage points higher than the retention rate of teachers at schools with 90% or more poverty.¹¹

Because we tracked teacher movement over two major time points, the “annual” average rate of retention across PPS during the time period for which we have data is half of the cumulative rate shown in Table 1. That is, about 79% of teachers district wide stayed at the same school from one year to the next. That would mean approximately 77% of teachers stayed at the most vulnerable schools in our analysis per year compared to 83% in the least vulnerable schools. The retention rate at PPS’ most vulnerable schools is on par with what Richard Ingersoll found using data from the National Center for Education Statistics: high-poverty schools lose, on average, about 1/5 of their faculty each year.¹²

Table 1 also demonstrates that PPS has a declining teacher population, which is connected with declining student enrollment throughout the district. . As indicated in the Table, teachers are leaving the district at a faster rate than they are being replaced: While 18% of teachers left PPS during the period of our analysis, less than 5% of the teachers (136) replacing those exiting teachers were new teachers. Additionally, in our data, a sizable portion of the teaching force moves within the system (17% over two years, or about 8.5% annually), which suggests that any exiting teachers are most likely to be replaced by other teachers within the district rather than new teachers.

While the numbers just cited provide some indication of how many teachers move within the district, we also wanted to investigate what teacher and school characteristics predicted how teachers moved within the system. Using a 2-level hierarchical linear (HLM) model for our analysis, we found school-level aggregates indicating that more movement occurs into and out of highly vulnerable schools. Appendix A gives further detail about the HLM model used and Table A1 provides the results from this analysis. In this analysis, schools with a greater percentage of teachers who were stable over the past three years were less vulnerable (about 4 tenths of a SD on average), and on the flip side, schools with a greater proportion of new teachers over the past three years were more vulnerable (more than 4 tenths of a SD on average). Indeed, school level correlations indicate that schools that are harder-to-staff (as indicated by the proportion of teachers leaving the school) are more vulnerable, serve a greater percentage of black students, and have lower percentages of teachers with level 2 certification and master’s degrees.

¹¹ Neild, R.C., Useem, E., Travers, E.F. & Lesnick, J. (2003). *Once and for All: Placing a highly qualified teacher in every Philadelphia Classroom*. Philadelphia, PA: Research for Action, p. 18.

¹² Ingersoll, R. (2004).

Furthermore, additional analyses predicting whether or not a teacher left a school to move to another school in PPS confirmed that teachers are more likely to move within the district after they have received their level-2 certification but before they have 10 years experience in the district. Moreover, the primary school characteristic leading to a teacher's departure from a school was the school's level of vulnerability.

A final set of analyses confirms that school vulnerability likely plays a role in teacher movement in the district. We examined the same longitudinal data, but this time examined only teachers who moved within the district in order to understand the average vulnerability of the schools they left and the change in school vulnerability over time (see Appendix B for the model description). These results displayed in Table B1 in Appendix B reveal two significant trends occurring in the data. First, teachers who move within the PPS system, on average, begin in schools that are more vulnerable (more than 4 tenths of a SD higher in vulnerability). Thus, teachers leave their current school but remain within PPS, begin, on average, teaching highly disadvantaged populations. More importantly, the change across years is toward less disadvantaged student populations. For each year, teachers who move decrease their school-level vulnerability by almost 2 tenths of a SD (coefficient equal to .17).

Distribution of Teacher Qualifications across the Quartiles

We acknowledge that national research has established that teacher qualifications and years of experience are not necessarily proxies for teacher effectiveness.¹³ Our interest in these measures is simply to understand teacher movement within the Pittsburgh Public Schools as part of teachers' career paths.

Given our findings that new teachers tend to begin in more vulnerable schools and then move to less vulnerable schools, it is perhaps unsurprising that we found a significant difference in teacher experience and credentials when comparing more and less vulnerable schools. As noted in Table 2, significantly fewer teachers in the most vulnerable schools had: a) 5 or more years of teaching in the district; b) level-2 teaching certification; or c) National Board for Professional Teaching Standards

¹³ Research studies generally provide mixed evidence on the effects of certification on teacher quality, and additional education degrees – in particular – are often not correlated with student performance. Teacher experience is more often positively related to student achievement, but the largest gains in student achievement have been found to arise during the first few years of teaching. For more information, see Hanushek, E. and Rivkin, S.G. (2006). Teacher Quality. In Hanushek, E. and Welch, F. Handbook of the Economics of Education, Volume 2. Oxford: Elsevier and Hanushek, E.A. et al.(2005).

certification (ANOVA, Post-hoc significant mean differences of $p < .05$ in some cases). Additionally, we found significant differences in teacher qualifications in more and less vulnerable schools within each grade-level configuration [see Table 3], which is a little more surprising given the small number of schools in our analysis at each grade-level configuration (20 elementary schools; 19 K-8 schools; 10 middle schools; and 9 high schools).

The most vulnerable schools in PPS, therefore, do have teachers with less experience and fewer qualifications compared to other schools in the district. These differences reflect research studies of teacher distribution in other cities and districts. For example, in the School District of Philadelphia, 11 percent of teachers at schools with at least 90 percent low-income students had less than one full-year of experience in the district, compared to five percent at schools at which less than 80 percent of the students were poor.¹⁴

Using our HLM model discussed earlier, we also noted several teacher and school-level characteristics predicting school vulnerability. These findings were similar to the results of the ANOVAs reported earlier. For example, teachers with NBPTS certification teach in less vulnerable schools. Table A1 provides more details on these findings.

Summary of Teacher Mobility and Distribution

All PPS schools serve a higher percentage of poor and minority students compared to the national average. However, even within the PPS system there appears to be a pattern of teacher placement and mobility whereby teachers start their careers in PPS with fewer credentials and less experience at the most vulnerable schools. As teachers gain experience and credentials they are more likely to leave highly vulnerable schools, and — when they do leave these schools to stay within PPS — they move to less vulnerable schools. Thus, the proportion of teachers who stay within a school is significantly correlated with vulnerability (schools with more stable teacher populations are generally those with less vulnerable student populations), and the proportion of teachers new to a school is significantly correlated with vulnerability (more new teachers reside in the most vulnerable schools). Teachers are also most likely to move relatively early in their teaching careers — i.e., before the 10-year milestone in the district is achieved. **Thus, the most vulnerable schools appear to serve as a proving ground for new teachers entering the district, where those wishing to remain in PPS later move away from these**

¹⁴ Neild, R.C et al. (2003). p. 18.

harder-to-staff schools. Teachers may choose to move to less vulnerable schools because they want to leave the more vulnerable schools where they currently teach, as well as because budget cuts connected to declining student enrollment necessitate that they move.

REASONS WHY THE SYSTEM EXISTED:

How staffing rules and practices impacted schools prior to the EET Plan

To investigate reasons for past trends in teacher mobility and distribution, we examined staffing rules and practices regarding interviewing and hiring, and we considered how these rules and practices impacted more and less vulnerable schools.¹⁵ For this section, we drew on data from interviews with district administrators and human resources personnel; school board and union representatives; and a principal and three teachers within each of eight schools (two schools at each grade-level configuration: elementary, K-8, middle, and high). These eight schools are located across all vulnerability quartiles, with five schools in the bottom two vulnerability quartiles and three schools in the top two vulnerability quartiles. Table 4 provides a snapshot of these schools in terms of stability of their teaching force; the indicators that make up our vulnerability index (% free or reduced lunch; disciplinary incidents; and achievement); and their quartile within our vulnerability index (first quartile indicates lowest vulnerability; fourth quartile indicates highest vulnerability). While this sample is small, it contains enough variation for us to make some claims about how the policies and practices for interviewing and hiring teachers disadvantaged the most vulnerable schools.

¹⁵ For this section, “vulnerable schools” are those in our interview sample who fell into the 3rd and 4th quartile of our vulnerability index, and “less vulnerable schools” are those in the 1st and 2nd quartile.

The RULES for Interviewing Applicants

RULES according to the PA School Code and/or the policies and practices of PPS/PFT:

- For internal candidates, the principal of a school has three options for interviewing: 1) Hire the most senior teacher (in terms of experience); 2) Interview all interested teachers (required when 10 or fewer people apply); 3) Interview top 25% most senior and 25% randomly-selected displaced teachers.
- For the principal, Human Resources provides a list of internal candidates' names and telephone numbers without documentation of candidates' background or teaching performance.
- If the principal finds no internal candidate that has expressed an interest in the position and no displaced teachers are certified to be placed in the position, the principal moves to interviewing candidates on the eligibility list. The eligibility list, which is mandated by Pennsylvania State Code for the largest urban school districts, ranks any new teacher applicants based on a district point system. Major sources of points for the PPS eligibility list are: certification, credentials that include transcripts and references, urban teaching experience, and experience in PPS.
- Human Resources provides the principal with names and numbers for the top 10% of candidates on the eligibility list who have the necessary certification (e.g. Elementary, English, Chemistry, etc.) for the position (or the entire list if a small number of candidates have that certification) without documenting reasons for ranking, candidates' background, etc.
- The principal must conduct interviews with a team of people from the building, including the building's union (Pittsburgh Federation of Teachers) representative and the Instructional Teacher Leader, and the interviews must take place outside of the regular school day.
- The team ranks their first, second, and/or third choice.
- The choices are presented to the Union, which must sign off on the interview process. Then, Human Resources offers the job to the first choice who is available.

The rules for interviewing applicants allow for Human Resources to pass along to principals the names and phone numbers of candidates without providing any other information. While Human Resources collects a great deal of paper information used to rate candidates for eligibility list placement – including the candidates' application, resume, transcripts, letters of reference, etc. — that information is not provided to principals unless principals ask for it. Additionally, principals do not receive any information about internal candidates' teacher performance, including whether candidates have received unsatisfactory evaluations or are on improvement plans. Some principals reported asking internal

candidates in interviews to describe past evaluations they have received, but this is an inadequate substitute for providing crucial information about teacher performance.

In addition to principals having a lack of information about candidates, candidates choose which schools to apply to based on very little direct information about schools. Most of the time, these candidates are operating on hearsay regarding the reputation of a school, its students, and its principal. One principal at a vulnerable school wished that PPS would allow principals to hold a kind of job fair to introduce themselves to all new teacher candidates because “that way we have the opportunity as a building to represent ourselves, to talk to the candidates and to possibly actually get somebody who may have not been interested but would have ended up being a good teacher and a good fit for the building, all because of a misconception, because a lot of times when they apply they’ve never been into our building.”

The lack of information available to candidates and schools in the interview process penalizes more vulnerable schools and works to the benefit of less vulnerable schools, to which a large pool of teachers within the district will apply for any open positions. The words of a principal in a less vulnerable school illustrate this process: “We’re fortunate in that we’re a school with a good reputation... When you’re interviewing 20, 25 [veteran] teachers from within the district who are chomping at the bit to come to your school, it’s a good problem to have.”

Most notably absent from the information that principals receive is anything that bears on whether candidates will be committed enough to persevere at the most vulnerable schools. Yet some district personnel and many teachers spoke to us about the importance of teachers’ dedication and commitment to urban students in the most vulnerable schools. For example, when asked whether they would recommend teaching at their school to a friend, teachers at less vulnerable schools replied with a simple “yes.” But, teachers at more vulnerable schools almost always said yes with some explanations. Examples of their responses:

- “I would recommend it to a friend who would want to be an urban educator... and I would totally recommend it for someone who feels called to teach in this city. I mean, it’s not an easy job.”
- “Yes, I would. Yes, I would only if they are dedicated to teaching children.”
- “If somebody’s willing to commit 150 percent, then this is a great place to be. But if you’re not, this wouldn’t be the job for you.”

These responses indicate that teachers need to have something beyond certifications to be successful at vulnerable schools; they need a commitment and passion beyond what is required at less vulnerable schools. When we conducted our study, the hiring and interview process provided no way to screen candidates for this commitment and passion or fast-track those who may be particularly promising, either within or outside of the district. That said, the district is currently working to integrate measures of candidates' passion and commitment into the interview process.

During the interview itself, a school's interview team has limited time to gather additional information about candidates. Because teachers on the interview team must complete interviews outside of the regular workday, principals spoke about scheduling very brief interviews, usually between 15-25 minutes. In that time, the interview team must ask all the questions related to the interview rubric and review any additional information that the candidate provides, like a résumé or portfolio.

The principal in School H noted, "It's very hard to tell a good teacher from an interview... 'cause there's a lot more to teaching and managing a classroom and being able to relate to the students that you can speak to. Personally my issue with the process is the fact that it's really hard to weed out I think through a 15, 20 minute interview with somebody who is really, truly going to fit in your building."

An ITL from School A who has participated on the interview team at a less vulnerable school also commented, "The interview itself is not enough. I mean people first of all can have connections, they can know answers, people can throw buzzwords, but it doesn't indicate what kind of a teacher you are. I know of excellent teachers who can't interview well."

For the interview process to work well, it is also important to have experienced, expert teachers on the interview team who can gauge candidates' knowledge of subject matter and the grade level that they will teach. At School C, a less vulnerable school, the principal commented that he tries to have teachers on the interview team who teach the same subject matter at the grade level directly above and directly below the grade level of the position for which they are hiring because those teachers are "going to have to work closely with that person...[and] need to sort of be on the same page." At the most vulnerable schools, putting together such an interview team is a challenging prospect because of the high teacher turnover at those schools; no principal at a vulnerable school spoke of creating an interview team so strategically.

The RULES for Filling Open Positions

According to the PA School Code and/or the policies and practices of PPS/PFT:

- Any open positions must first be offered to teachers within the building, and then posted for internal applicants up to three times; the third posting is on July 1st.
- If a teacher who was displaced from another school has the appropriate certification for a posted position, and no other internal candidate has been placed in the position, that displaced teacher will be placed in the posted position.
- For any opening filled after July 1st, which often includes positions filled by new teachers on the eligibility list, the principal must post the job opening again the next year and interview any interested internal candidates.

The rules for filling open positions benefit the least vulnerable schools, in that positions at least vulnerable schools are filled much more quickly by teachers within the district, creating new openings at more vulnerable schools later in the summer. In our interviews, administrators at less vulnerable schools spoke about interviewing up to 30 internal candidates for an open position. Those in more vulnerable schools commented on often interviewing only two or three candidates. As noted previously, our statistical data on the system “as it existed” confirms that teachers who move within the system go from more to less vulnerable schools. When the positions at less vulnerable schools are filled by PPS candidates from more vulnerable schools the newly vacated positions at the more vulnerable schools

are then advertised first internally, in the second posting period in June, one month after the first posting in May. If a position isn't filled after the second posting, the position is posted once again in a third posting period in July.

In this process, some positions at the most vulnerable schools may remain or become open even after the third posting period, which can be as late as August. At the point when three posting periods have ended and no internal candidates have expressed an interest in the position, which is most often the case with positions at more vulnerable schools, then any displaced teacher with the appropriate certification must be placed in that position, even if that displaced teacher has not expressed an explicit interest in the position and/or if the principal would rather not hire that particular teacher.

Consequently, at this last-minute stage just before or as school begins, positions in the most vulnerable schools are generally filled by candidates with less experience, or by teachers who may be less satisfied with their placement. To make matters worse, those teachers have less time before the school year begins to prepare themselves and acclimate to their school and grade level. Taken together, these factors are likely leading teachers to leave more vulnerable schools sooner than they otherwise might.

Managing the Process to Retain a Core Team of Teachers in Vulnerable Schools

Hiring teachers who can be effective in our most vulnerable schools is one hurdle. Another is retaining those effective teachers in vulnerable schools. Teachers at the most vulnerable schools in PPS likely need much more support and resources than those at the least vulnerable schools to serve a particularly challenging and needy school population. This need for teacher support in the most vulnerable schools is even more necessary given what we have just demonstrated about the lack of experience and stability in the teaching population in those most vulnerable schools.

From our interviews, we found that the less vulnerable schools provide different learning environments for teachers, and those learning environments likely encourage teachers to remain at schools.

Specifically, staff at less vulnerable schools described their schools as places where students are working and learning and where parents, teachers, and staff support one another. The principal at School B (a less vulnerable school), for example, commented that “when people who have never been here come, they say that, you know, it’s such a positive, welcoming, nurturing kind of environment, not only for teachers, but more importantly for kids.” Similarly, a teacher at another less vulnerable school said, “This school is a wonderful, small, quaint, family-oriented community school. It’s very open, warm. It’s

just a nice little school...I love coming to work every day here...The kids, the family support, the staff support, the administrative support.” A teacher at School A — another less vulnerable school — also noted to us that “first thing in the morning, I mean, everybody is teaching, everybody is working... the kids know they’re here to learn.”

Moreover, we found again and again that principals make a huge difference in whether teachers want to stay at a school or move to a new school, which is a point underscored in national research.¹⁶ In many interviews, teachers spoke about either moving to a school because they knew and respected the principal at that school or leaving a school because they did not care for the principal. Teachers at the most vulnerable schools spoke about specifically appreciating principals who made them accountable for their instruction and who also were consistent with discipline. While teachers at less vulnerable schools talked about liking administrators who did not “breathe down their necks” and allowed them some flexibility in their instruction, no teachers at more vulnerable schools said the same thing of administrators who they appreciated.

These findings suggest that teachers need different learning environments to be effective at more versus less vulnerable schools and administrators play a role in establishing those conditions. Therefore, we believe that the solution for retaining effective teachers at our most vulnerable schools is not to focus on replicating the learning environments present in the least vulnerable schools. Nor is the solution to establish financial incentives that would entice a teacher to work extra hard in a more challenging school. Neither of these solutions actually focuses on supporting teachers to be effective at serving a student population that is more needy and challenging than those students at less vulnerable schools. **To solve the problem of retaining effective teachers at vulnerable schools, we must find out what particular supports teachers need at more vulnerable schools and provide those supports to teachers so that they are better enabled to be effective. Additionally, because of the role that administrators play, principals may need more direction and knowledge about how to be responsive to varying needs of teachers and have the freedom to take different approaches in providing support at more versus less vulnerable schools.**

¹⁶ Some examples: Ingersoll, R. (2001). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal*, *v38*, *n3*, 499-534; and Boyd, D., Grossman, P., Ing, M., Lankford, H., Loeb, S., and Wykoff, J. (2009). The influence of school administrators on teacher retention decisions. Available: <http://www.teacherpolicyresearch.org/portals/1/pdfs/TeacherRetentionAdministrators22May2009.pdf>

One way to support teachers is through strong school-level teacher induction practices that can provide clear norms regarding the expectations and culture within a school. PPS does require that teachers attend a district induction provided by the Pittsburgh Federation of Teachers, and some teachers described that induction as useful. However, in all the schools where we did our interviews, no formal school-level induction exists. Through the EET Plan, the district will be putting a much more substantial induction process in place. But that induction process currently does not include any school-level induction process for teachers.

As with staffing rules, the absence of formal school-level induction likely impacts vulnerable schools more adversely than less vulnerable ones. At two less vulnerable schools, principals talked about not really needing a school-specific induction process because they generally hire seasoned teachers who have come from other buildings within the district. One of those principals, for example, commented that building induction wasn't necessary because "we're getting veteran teachers, and... our teachers really have been super about, you know, just welcoming and assisting those new folks, you know, into the building and the culture of the building." At the more vulnerable schools that receive many more new teachers and have high teacher turnover, even an informal process of welcoming in new teachers does not seem to exist. In fact, no teachers or principals at more vulnerable schools in our dataset talked about any informal process, although the new principal at School F said that he was working to put such a process in place.

HOW THE SYSTEM COULD WORK:

Enhancements to the District's Empowering Effective Teachers Plan

To address the points we raised about the adverse ways that the most vulnerable schools are affected by the current process, we propose a vision for how the system could work that focuses on developing three main elements, in addition to what PPS has already proposed: 1) A hiring process that gives candidates and schools more time, information, and freedom of choice; 2) A core team of highly effective teachers in each school; and 3) School-specific learning environments that are intentionally created to support teachers in being able to teach.

All three of these elements already exist to some extent in PPS' least vulnerable schools. Those schools are able to fill their positions earlier, have a much larger pool of candidates to choose from, and can be more selective in hiring. Teachers at those schools are more likely to stay, and thus have more time to build relationships with students, parents and staff and other teachers. Those teachers also receive

more support from students' families and colleagues. **Our recommendations are intended to make teacher stability and support more equitable across all schools in the PPS system.**

Below, we outline each element of our proposed enhancements and list some specific recommendations.

Element 1:

A hiring process that gives candidates and schools more time, information and freedom of choice

What to do:

- Shift the posting and hiring timeline to occur earlier in the year so that schools have more time for screening and interviewing candidates and so that positions that were vacated by internal candidates can be filled well in advance of August.
- Create a data system that teacher candidates from inside or outside PPS can use to apply for jobs and post information about themselves; make that data system accessible to principals.
- Create opportunities for schools to advertise themselves to potential internal and external teacher candidates.

How it can be done:

- Move the school budget submission and approval date earlier in the year so that "known" vacancies can be posted earlier than the current first posting date of May 19.
- Discontinue the late-summer placement of teachers in open positions in schools based solely on their seniority or displacement status.
- ✓ EET Plan calls for earlier posting schedule for open positions
- Create a data system for internal and external applicants.
- Put district practices in place so that principals automatically receive more information about teacher candidates prior to scheduling interviews.
- ✓ EET Plan calls for an extensive teacher information data system to enable internal teacher placement as well as external teacher screening
- Organize job fairs throughout the school year for internal and external teaching candidates.
- ✓ Recently initiated by PPS for external candidates and plans call for including internal candidates going forward.
- On the PPS website, list additional characteristics of schools that could be attractive to teacher candidates, such as the school's strategic plan, bios of the school leadership team, supports for teachers available at the school, etc. Post an online video at each school geared to prospective teaching candidates.
- ✓ Plans are in place to make additional information available to candidates via web and other avenues.

- Screen internal and external teacher candidates for the following qualities: 1. Candidates' passion to teach high-needs students and 2. Candidates' ability to teach high-needs students effectively.
- Use new rubric for evaluating teachers (in development by PPS) to guide interviews for new teachers.
- Develop surveys or other instruments that measure teachers' commitment and passion for teaching in urban environments that can be used as part of the application or interview process.
- ✓ EET Plan proposes a new screening tool for new candidates that includes elements of RISE rubric.
- Revise the Collective Bargaining Agreement (CBA) to incorporate the gauges for teachers' passion and performance in the application, hiring and interview process.
- ✓ Implied in the EET Plan
- Award points to teachers on the eligibility list for their passion and ability to teach high-needs students.
- ✓ EET Plan calls for changing the eligibility list criteria.
- Support principals to efficiently and fairly exit teachers whose performance is not high quality.
- ✓ Included in the EET Plan

Element 2:

A core team of highly effective teachers in each school, particularly in the most vulnerable schools

What to do:

- Develop a career ladder role for highly effective teachers who remain part of a school's core team for an extended period of time.
- Empower the core team to contribute to developing a professional learning community in schools

How it can be done:

- Add a career ladder role for a core team of teachers at every school.
- ✓ EET Plan includes career ladder roles for individual teacher leaders and teams of teachers within schools; these core teams are currently working to implement EET initiatives in schools.
- Conduct research to determine what supports and incentives will be most beneficial to highly effective teachers in terms of their continuing commitment to vulnerable schools and their performance, and build those incentives into the job description and salary structure.
- ✓ EET Plan calls for development of a learning environment rubric that could support this recommendation
- Provide leadership development support for the core team to socialize new teachers, implement school-specific induction and participate on the school interview team.
- School administrators provide structures for their core team to meet frequently to discuss

- instruction and their role in supporting other teachers who may be more mobile.
- ✓ Core teams of teachers at each school are being developed to implement EET Plan and support teachers.

Element 3:

School learning environments that are intentionally created to support teachers' instruction in vulnerable schools

What to do:

- Provide school-specific induction for all incoming teachers, including an introduction to a school's students, community, and culture, and also provide ongoing school-level structures for meetings and mentoring over the course of a year.
- Determine what additional support teachers in the most vulnerable schools need to meet the goals of the RISE rubric.

How it can be done:

- The principal and core team at each school create and implement a plan for inducting new teachers.
- ✓ EET Plan includes extensive district level induction as well as plans for school level core teams to work with new teacher induction.
- Locate the schools with a high percentage of free/reduced lunch where teachers are effective and investigate the supports that enable those teachers to be effective.
- Ask teachers about the supports they need in order to be effective in the most vulnerable schools and organize their recommendations into a plan of action.
- ✓ Planned as part of the EET initiative.

NEXT STEPS

We are confident that these recommendations, as part of the district's Empowering Effective Teaching Plan could lead to empowering effective teachers in our most vulnerable schools and making those schools places where effective teachers want to stay. A core team of effective teachers in every school is necessary to achieve excellence for all Pittsburgh Public School students, especially our most vulnerable students. Much collaborative work with teachers and the Pittsburgh Federation of Teachers, and with families, the community, and other stakeholders is necessary in order to reshape the system. The recommendations above require changes to the collective bargaining agreement, to the district's human resource practices and to the way teachers are supported at the school level. The broad changes we

envision won't happen without public support. If you embrace our vision and recommendations we urge you to take action and help build the momentum for change. You can sign onto the "community agenda for empowering effective teachers" attached or online at www.aplusschools.org.

Table 1: Frequencies of Teacher Movement Within Pittsburgh Public Schools from AY 2006-2007 to beginning of AY 2008-2009

	Number	Percent	Cum. Percent
Never Moved or left system in 3 years	1,725	58.5	58.5
Left the system	531	18.0	76.5
Moved once within the system	382	12.9	89.4
Moved twice within the system	56	1.9	91.3
Entered System less than 3 years ago – no move	125	4.2	95.9
[entered system less than 3 years ago – made one move]*	[11]	[4.6]	

Moved once then left	35	1.2	97.1
Uncategorized	86	2.9	100
Total	2,951	100	100

Table 2: Teacher Characteristics Based on School Vulnerability Quartile by School Level

<i>Elementary Schools(K-5) N=20</i>				
Vulnerability	Pct. With Less than 5 Yrs. Exp.	Avg. Salary	Pct, with Level-2 Certification*	Pct. With NBPTS*
Least	9.6	67,001	68.2 ^δ	0.0
2 nd Quartile	6.4	70,885	58.9	5.7 ^δ
3 rd Quartile	10.8	67,021	52.1	3.6
Most	11.3	67,835	54.9	1.4
<i>Intermediate Schools (K-8) N=19</i>				
Vulnerability	Pct. With Less than 5 Yrs. Exp.~	Avg. Salary~	Pct, with Level-2 Certification*	Pct. With NBPTS
Least	11.9 ^δ	66,156 ^π	52.4 ^δ	2.2
2 nd Quartile	12.7	65,960	55.1 ^δ	.9
3 rd Quartile	17.9	63,138	42.4	1.5
Most	19.7	62,893	42.1	.5

<i>Middle Schools N=10</i>				
Vulnerability	Pct. With Less than 5 Yrs. Exp.~	Avg. Salary	Pct, with Level-2 Certification*	Pct. With NBPTS
Least	8.5 ^δ	64,968	47.5	5.1
2 nd Quartile	18.3	64,059	58.7 ^δ	3.2
3 rd Quartile	16.3	66,472 ^δ	57.1 ^δ	3.1
Most	25.4	60,341	35.8	3.0

<i>High Schools N=9</i>				
Vulnerability	Pct. With Less than 5 Yrs. Exp.~	Avg. Salary*	Pct, with Level-2 Certification	Pct. With NBPTS*
Least	16.6	65,799 ^δ	50.8 ^δ	6.2 ^δ
2 nd Quartile	12.0 ^δ	68,060 ^δ	54.1 ^δ	3.8
3 rd Quartile	11.8 ^δ	69,165 ^δ	47.3	.9
Most	22.2	60,828	39.8	0.0

* Indicates ANOVA significant at p<.05 ~ Indicates ANOVA significant at p<.10

^δ Indicates Least Significant Difference (LSD) post-hoc test detected a significant mean difference (p<.05) between the group and the fourth quartile (most vulnerable schools)

^π Indicates Least Significant Difference (LSD) post-hoc test detected a marginally significant mean difference (p<.10) between the group and the fourth quartile (most vulnerable schools)

Table 3: Teacher Characteristics Based on School Vulnerability Quartile – All Schools N=58

Vulnerability	Pct. With Less than 5 Yrs. Exp.*	Avg. Salary*	Pct, with Level-2 Certification*	Pct. With NBPTS*
Least	13.2 ^δ	66,066 ^δ	54.3 ^δ	3.7 ^δ
2 nd Quartile	12.1 ^δ	67,410 ^δ	56.6 ^δ	3.5 ^π
3 rd Quartile	14.4	66,007 ^π	48.7	2.3
Most	18.6	63,508	44.4	1.0

* Indicates ANOVA significant at $p < .05$ ~ Indicates ANOVA significant at $p < .10$

^δ Indicates Least Significant Difference (LSD) post-hoc test detected a significant mean difference ($p < .05$) between the group and the fourth quartile (most vulnerable schools)

^π Indicates Least Significant Difference (LSD) post-hoc test detected a marginally significant mean difference ($p < .10$) between the group and the fourth quartile (most vulnerable schools)

Table 4: Our Case Study Schools

School Pseudonym	% Teachers Have Not Moved	Vulnerability Index Indicators				Vulnerability Quartile
		% Free Lunch	% Math Advanced	% Reading Advanced	Disciplinary Incidents per 100 students	
School A (K-8)	62	65	47	31	23	1
School B (6-8)	82	53	34	32	95	2
School C (K-5)	89	64	52	22	10	2
School D (High)	68	68	8	6	41	3
School E (K-8)	52	89	29	8	55	3
School F (High)	51	77	8	5	60	4
School G (K-5)	44	86	15	3	8	4
School H (6-8)	52	90	9	9	69	4

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Appendix A

We examined models to help us understand the relationships we uncovered earlier by examining differences between teacher qualifications for schools in the different quartiles based on vulnerability. In these models we can begin to predict the level of school vulnerability (which can change over time in our longitudinal data) based on a number of school and teacher characteristics. This relationship can be seen to go both ways, since we assume school vulnerability is likely to cause teacher movement which in turn changes the school aggregate make-up at a given point in time. While these models are correlational, they nevertheless are worthwhile at describing the relationships occurring within the system and help to explain teacher movement through the system.

These models predict the level of school vulnerability at a given point in time based on teacher and school characteristics. The general form for this model is as follows (see, e.g., Raudenbush and Bryk, 2002):

$$\text{Level 1 (Timepoints): } (Vulnerability)_{ij} = \pi_{0j} + \sum_{q=1}^Q \pi_{qtj} W_{tj} + e_{0tj}$$

$$\text{Level 2 (Teachers): } \pi_{0j} = \beta_{00} + \sum_{q=1}^Q \beta_{0q} X_j + r_{0j}$$

$$\text{Level 2 (Teachers): } \pi_{1j} \dots \pi_{qj} = \beta_{10} \dots \beta_{q0}$$

where e_{0tj} , r_{0j} are independent normal residual errors, and where

$(Vulnerability)_{ij}$	=	Vulnerability of school at time t for teacher j
π_{0j}	=	Average school vulnerability for teacher j
W_{tj}	=	A set of time-varying school covariates at time t for teacher j
π_{qtj}	=	Effect of school characteristic at time t for teacher j
β_{00}	=	Average school vulnerability
X_j	=	A set of teacher covariates
β_{0q}	=	Effect of teacher characteristics on school vulnerability
$\beta_{10} \dots \beta_{q0}$	=	Effects of school characteristics on school vulnerability

One difficulty in constructing these models is that many of the teacher and school covariates are highly correlated, leading to multi-collinearity in the models. For the sake of model parsimony we have run a number of models and chosen select covariates. We describe just one set of these prediction models for the sake of brevity. Results for this prediction model are seen in Table A1 below.

 Table A1: Model Predicting School Vulnerability Across All Timepoints (N=8,667) for All Teachers (N=2,889)

	Coeff.	Standard Error	p-value
<i>Teacher Level</i>			
Avg. Sch. Vulnerability	.03	.02	.068
Years in District	.03	.02	.217
Salary	-.01	.02	.531
NBPTS	.28	.10	.008
<i>Time Varying Covariates-</i>			
<i>School Characteristics</i>			
Avg. Years in School	.07	.02	.003
Avg. Salary	-.27	.02	.000
Pct. Level-2 Certification	.19	.02	.000
Pct. Stable Past 3 Years	.39	.02	.000
Pct. New Past 3 Years	-.42	.02	.000

This model reveals the relationships that exist between various teacher and school characteristics and the working conditions at a school. Since school vulnerability is standardized, as are the independent covariates, the coefficients are in an effect size metric. Please note that we included controls for demographic descriptors in the teacher-level model that are not included in the chart above. Thus, the results show that teachers with National Board certification teach in less vulnerable environments and that on average these schools are almost three tenths of a standard deviation above the mean. Several school level conditions predict better working conditions. Schools with a greater proportion of teachers with Level-2 certification and with more years in the school tend to be less vulnerable. Additionally, schools with a greater percentage of teachers who were stable over the past three years were less vulnerable (about 4 tenths of a SD, on average), and on the flip side, schools with a greater proportion of new teachers over the past three years were more vulnerable (more than 4 tenths of a SD on average).

Appendix B

In order to understand movement of teachers in PPS we examined an unconditional growth model in HLM (Raudenbush and Bryk, 2002) that allowed us to understand change over time. Therefore, we used the longitudinal data to examine how teachers moved through the system. The general form for this model where time points were nested within teachers was as follows:

$$\text{Level 1 (Timepoints): } (Vulnerability)_{ij} = \pi_{0j} + \pi_{1j}(\text{time}) + e_{0j}$$

$$\text{Level 2 (Teachers): } \pi_{0j} = \beta_{00} + r_{0j}$$

$$\text{Level 2 (Teachers): } \pi_{1j} = \beta_{10} + r_{1j}$$

where e_{0j} , r_{0j} , r_{1j} , are independent normal residual errors, and where

$(Vulnerability)_{ij}$	=	Vulnerability of school at time t for teacher j
π_{0j}	=	Average school vulnerability for teacher j
π_{1j}	=	Average change in school vulnerability for teacher j
(time)	=	Time in years
β_{00}	=	Average school vulnerability
β_{10}	=	Average change in school vulnerability

In this model, we examined how teachers moved between schools when they moved within the system. We began by taking only those teachers who did move within the system during the three years under study. Isolating those teachers we examined their data over the three years in a fully unconditional model and examined what the average level of school vulnerability was for these teachers who do move (β_{00}) and how it changed over time (β_{10}). The results of this model are displayed in Table B1 below. Given that the school vulnerability factor was originally standardized the coefficients β_{00} and β_{10} are reported in an effect size metric.

Table B1: Fully Unconditional Model Predicting School Vulnerability for All Timepoints (N=1560) for Mobile Teachers (N=520)

	Coeff.	s.e	p-value
Avg. Sch. Vulnerability	-.417	.069	.000
Avg. Change in Sch. Vulnerability	.170	.033	.000
