



Addressing the Teacher Qualification Gap

Exploring the Use and Efficacy of Incentives to Reward Teachers for Tough Assignments

Dan Goldhaber Center on Reinventing Public Education, University of Washington

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Center for American Progress



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Executive summary

Teachers are, by most any measure, inequitably distributed among students. Poor students are far more likely than their wealthier counterparts to be matched with teachers who have little experience, graduated from less-selective colleges, and possess fewer credentials. It is not surprising that inequities exist in the distribution of teachers across the nation's classrooms. A well-developed body of literature in labor economics shows that there is generally a relationship between wages and the nonpecuniary working conditions of a job, such as risk. Jobs that have less desirable attributes usually pay a “compensating differential”—an additional increment of income or wage—to motivate individuals to accept the position over a job that offers more favorable nonpecuniary working conditions.

Yet most school systems utilize a single-salary-schedule pay structure that determines a teacher's salary by his or her degree and experience alone without considering, for instance, the desirability of the teaching position. The teacher labor market therefore adjusts based on the job attributes of a school assignment through teacher sorting across schools, rather than through salary differentials that depend on the job attributes of a school assignment. Schools serving poorer students get less-qualified teachers, and it is quite likely that these teachers are also less effective. The maldistribution of teachers, moreover, tends to create inequities in student funding.

States have employed various strategies to address the maldistribution of teachers, such as financial inducements, including salary supplements or loan forgiveness for teachers willing to work in high-poverty schools; changes to working conditions in high-poverty schools; and targeted teacher-pipeline policies. Yet we know relatively little about the efficacy of many of these strategies. Addressing teacher inequities is difficult because much of the inequity in teacher distribution overall is due to inequities within local school districts. Some of the policy options, such as financial incentives, might therefore lead to a re-allocation of teachers within a district, a prospect that may not be very politically palatable to the communities that stand to lose effective teachers.

This report builds on what we do know and combines it with labor-economic theory and an assessment of the politics associated with teacher-equity reforms to make four recommendations designed to help address teacher equity. The first two recommendations relate to data and provide the tools necessary to make the case for reform and evaluate whether reforms have had their intended effects:

1. Create and maintain state data systems that allow analyses of teacher distribution and the efficacy of policies designed to address that distribution. This will require, at minimum, the ability to match teachers with schools, students, and the characteristics of those schools and students over time.
2. Implement new teacher policies simultaneously with a plan to study their effects, with the understanding that such studies are unlikely to be completed for several years.

The next proposal is designed to bring transparency to the budgeting process, so that the public can perceive any inequities in school spending that result from teacher qualification disparities:

3. Require school districts to report spending at each school on a real-dollar basis.

The final recommendation is based on some of the research on using a direct pipeline strategy to recruit effective new teachers into the field and improve teacher equity. A direct pipeline strategy is useful in avoiding a controversial redistribution of teachers within a school district:

4. Develop and tap into new high-quality sources of teachers that are specifically targeted toward schools serving disadvantaged students.

While all these policies are promising, they are certainly not the only options for reform. The key is to try to address the problem and to learn about the efficacy of the reform efforts, for when it comes to crafting policies to change the distribution of teachers, it is clear that we don't yet know much about those policies' effectiveness.

The political will to address teacher inequities has so far failed to match the strength of the rhetoric often decrying the problem. But new federal and state policy initiatives suggest that political will and rhetoric are beginning to align. The key will be to ensure that investments are productive by pairing new teacher-equity policies with efforts to assess their success.

This paper explores the policy options that might be used to address the distribution of teachers across students. The first section discusses findings on teacher preferences, the dynamics of the teacher labor market, and whether we should care about the resulting distribution of teachers across students. The next section focuses on the magnitude of teacher inequity, followed by an exploration of how inequities develop and a discussion of what we know about the various policy options designed to address teacher inequities. Based on this information, the final section focuses on the politics of reform and makes policy recommendations for addressing the teacher qualification gap.

You can't escape the labor market: explaining the distribution of teachers across students

The teacher qualification gap is one of the most established in educational research. Students from lower-income families are much more likely than students from higher-income families to have teachers who have little experience, graduated from less-selective colleges, and possess fewer credentials. There is a considerable amount of rhetoric on the need to address this inequity. Yet the pattern has persisted for decades across all policy levels: there are inequities among districts, inequities among schools within districts, and even inequities among classrooms within schools.

Teacher preferences and the dynamics of the teacher labor market

Labor-economics studies show that there is generally a relationship between wages and the nonpecuniary working conditions of a job.¹ Jobs that have undesirable attributes—jobs that are more dangerous, dirty, mentally or physically taxing—will pay a “compensating differential.” This is an additional increment of income or wage given to workers to motivate them to accept the less-desirable position over one that offers more favorable nonpecuniary working conditions.²

Almost all school systems utilize the single-salary-schedule pay structure, which determines a teacher’s salary based on his or her degree and experience alone without consideration for variables such as the desirability of the teaching position. Yet research suggests that one of the main deciding factors for teachers considering a given position is the type of students in their prospective classroom. Studies differ about precisely which student characteristics matter, and to what extent, but most quantitative research on teacher attrition concludes that teachers make job decisions based at least partially on the students that they are likely to encounter in their schools or classrooms.

Eric Hanushek, John Kain, and Steven Rivkin use statewide data from Texas to examine teachers’ propensities to switch districts or exit Texas Public Schools in their 2004 study, “Why Do Public Schools Lose Students?” The study finds evidence that teachers are sensitive to both the poverty level and minority status of their students. This finding is confirmed by Todd Stinebrickner, Benjamin Scafidi, David L. Sjoquist, and colleagues, whose research analyzes teacher attrition using data on teachers in Georgia elemen-

tary schools.³ Donald Boyd, Hamilton Lankford, Susanna Loeb, and James Wyckoff use a slightly different methodology to assess teacher preferences in their 2003 study, “Analyzing the Determinants of the Matching of Public School Teachers to Jobs: Estimating Compensating Differentials in Imperfect Labor Markets.” Instead of focusing on attrition, they focus on what can be learned from the job matches between teachers and schools in New York. They also find that teachers are sensitive to the poverty level and race/ethnicity of their students.

These findings are troubling because they suggest that teachers weigh not just students’ poverty when choosing a job, but also the proportion of minority students in a class, which makes crafting policy solutions more difficult. It is important to note that the findings on teacher sensitivity to student demographics do not mean that *all* teachers would rather be teaching whiter, more-advantaged students. Most people can relate anecdotes of terrific teachers who find it rewarding to teach students who are most in need of their help. These teachers surely exist, but the prevailing evidence shows that they are not in the majority. The research doesn’t necessarily suggest that teachers care about student characteristics such as poverty and race, per se. They may simply be using these characteristics as proxies for other job factors, such as safety or students’ readiness to learn.

Regardless of the reasons behind teachers’ preferences, the empirical evidence clearly suggests that student characteristics are a key predictor of the type of teachers in a school and their propensity to remain there. So what are the implications of teachers’ preferences for working with certain types of students? In general, those preferences mirror what we observe in the teacher labor market today. Since there is little or no differentiation in pay based on the desirability of a position, there is a queuing that takes place: among teaching jobs with equal pay, those with more favorable nonpecuniary attributes attract relatively more—and more-qualified—job applicants.⁴

Employment is a two-way street: an employee’s desire for a position has to match the employer’s preference to hire that candidate. But it is reasonable to assume that hiring officials—supposing for the moment that hiring is a school-based decision—prefer teachers with more experience and credentials. Hiring officials may themselves view such teachers to be more effective, or they may be responding to political pressure from constituents, such as active parents. Relatively little empirical research is available about school districts’ hiring preferences. National surveys administered in the late 1980s and early 1990s for the U.S. Department of Education looked at the criteria localities use when hiring. The survey shows a tendency to place a premium on hiring teachers who have full state-teaching credentials. The work by Boyd and colleagues referenced above tends to confirm the survey results. Their research finds that localities are sensitive to the academic qualifications of applicants and prefer those who attended more-selective colleges and scored higher on licensure tests.⁵

These hiring dynamics suggest that more-experienced, more-credentialed teachers have relatively more bargaining power in the teacher labor market. Thus, in the absence of compensating differentials, the two-way job matching process should therefore favor schools with more-advantaged students, who will be better able to attract more-qualified teachers. The fact that most district pay structures don't offer compensating differentials does not mean that schools serving disadvantaged student populations will necessarily be unable to fill their positions—though they may have a more difficult time—nor does it mean that labor market dynamics are held in abeyance. Rather, teachers are rewarded based on the nonpecuniary aspects of the job, rather than pay; given demonstrated school and teacher preferences, we should expect to see that disadvantaged students tend to be taught by teachers with fewer “desirable” traits.

Should we care about teacher-qualification inequities?

What if, as a good deal of research suggests, there is only a weak link between student learning and “desirable” teacher attributes such as licensure, experience, or having a master's degree? Does this suggest that policymakers should ignore inequities in the distribution of teachers?⁶ I would argue the opposite—policymakers should be concerned about distribution inequities for three primary reasons.

First, some of the characteristics that are unequally distributed have been convincingly shown to influence student achievement. In particular, all else equal, novice teachers tend to be less effective than those with more experience. The same is true of teachers who have stronger records of academic proficiency measured, for instance, by the selectivity of the colleges they graduated from or their performance on tests such as licensure exams or the SAT or ACT college-entrance tests.⁷

Second, and perhaps of greater importance, the “churn” of teaching staff associated with high rates of teacher attrition has important implications for student achievement. Kacey Guin found in her 2004 study, “Chronic Teacher Turnover in Urban Elementary Schools,” that there is a strong negative relationship—though not necessarily causal—between teacher turnover and the number of students meeting standards on statewide assessments in reading and math. It certainly isn't a stretch to imagine that churn would be harmful to the academic enterprise of a school. Teachers who leave a school are likely to be replaced by novice teachers, teachers in that school with high rates of turnover will be less likely to form cohesive bonds that enable productive collaboration, and schools will have to constantly reinvest in basic types of professional development.

Finally, regardless of how effective they are in the classroom, teachers with master's degrees and more years of performance earn higher salaries. This creates inequities in student funding as schools with more-experienced and -educated teachers subsequently receive more funding.

One solution to qualification inequities within districts would be to redistribute teachers by compelling them to take different assignments. But this naïve option ignores labor-market realities. Districts that compel teachers to take what they see as unfavorable teaching assignments may lose those teachers to other districts competing for their labor. Even in cases where this is less likely—for example, in states with geographically large school districts or if a state required all districts to adopt such a teacher equalization policy—such a policy could drive many current teachers out of the field entirely. If compulsory redistribution is taken off the table, we are left with the issue of how to change conditions at schools serving disadvantaged student populations such that teaching positions at those schools become more desirable, which is the focus of this paper.

Exploring the magnitude of teacher inequity

Research showing the effect that teacher quality can have on student achievement has caused teacher distribution to rise to the top of the education policy agenda in recent years. And documenting the extent to which teachers are inequitably distributed across students has become easier with the availability of relatively new state administrative databases that include detailed information on teachers and where they are teaching. For example, several studies have been conducted that include the complete set of schools and teachers in a state and investigate how teachers are distributed across schools.

State-level analyses of teacher distribution

Research published in 2002 by Hamilton Lankford, Susanna Loeb, and James Wyckoff, “Teacher Sorting and the Plight of Urban Schools,” examines teacher distribution in New York state. The research shows, for instance, that “By almost any measure, the qualifications of New York’s teachers are unevenly distributed across schools.” The study looked at various measures of teacher qualifications, including the percentage of teachers at a school with no prior teaching experience, only a bachelor’s degree, certification in their current assignment, failure on a licensure exam on the first try, and a degree from a highly- or less-selective college, as measured by rankings in Barron’s college guide.

The New York study combined these measures of teacher quality into a composite Teacher Quality/Qualification Index, or TQI, which was scaled to have a mean of zero and a standard deviation of one.⁸ It is more tractable to use this composite index to assess differences in teacher attributes, since researchers consider many different attributes.

The analysis of teacher distribution in New York reveals enormous differences in the qualifications of teachers teaching different types of students. Nonwhite, poor, and limited-English-proficiency students are all significantly more likely to be paired with less-qualified teachers based on the measures above. The average TQI difference for poor students—as defined by a student’s participation in the federal lunch program—versus wealthier students is more than one standard deviation, and the average difference for white and nonwhite students is more than two standard deviations. These differences are large enough to leave no doubt that it is not by chance that poor students and students of color have less-qualified teachers than other students.

Looking at a specific teacher attribute for specific students helps to make this more concrete. For example, 7 percent of white students were taught by a teacher who failed a licensure exam the first time, versus 21 percent of nonwhite students. The magnitude of inequities in the teacher distribution varied for different regions in the state—it was particularly severe in New York City—but there were no regions where students with more disadvantages were paired with teachers with more qualifications.

And New York state is not an anomaly. The Illinois Education Research Council in its 2005 publication “The Distribution of Teacher Quality in Illinois” presents an analysis on the distribution of teacher characteristics in Illinois that is very similar to the New York study.⁹ The IERC examines the distribution of five teacher characteristics across schools: the percentage of teachers at a school who have a bachelor’s degree from more-competitive colleges based on Barron’s rankings, have less than four years of teaching experience, teach at a school with emergency or provisional teaching credentials, failed a basic skills licensure test, and achieved a high or low composite ACT score. The IERC study, like the New York study, combines these five measures to get an overall TQI for each school that has a mean value of zero and a standard deviation of one.

The IERC study clearly shows that, as was the case in New York, significant inequities exist in teacher distribution in Illinois. It found, for example, that students in high-poverty schools were far less likely to be exposed to high-TQI teachers. The difference between the average low-poverty school and the average high-poverty school, in the state as a whole, was about 1.5 standard deviations, indicating a large and significant difference. As was the case in New York, the results varied somewhat by geographic region within Illinois, but there was no region where the average high-poverty schools had TQI values that exceeded those in the average low-poverty schools.

Given the strong correlation between poverty and minority status, it should be no surprise that the Illinois study also showed that the TQI in schools serving high proportions of minority schools was substantially lower than the TQI in schools serving predominantly white students.¹⁰ This means, for example, that zero percent of the teachers in the average low-poverty school failed required basic skills tests on a first attempt, while 7 percent of the teachers in the average high-poverty school failed the exam on a first attempt.

California, North Carolina, and Texas are additional examples of states where researchers have examined these types of teacher attributes and found that, in general, students with more advantages tend to be paired with more-qualified teachers.¹¹ Very detailed analyses on the distribution of teachers have not been done in every state—or even more than a handful—but it is highly likely that the teacher-distribution issues identified in states such as California, Illinois, New York, North Carolina, and Texas are the norm rather than the exception.

A national picture of inequities in teacher distribution

One way to get a national picture of teacher distribution across schools is to analyze the National Center for Education Statistics' *Schools and Staffing Survey*. SASS provides a nationally representative snapshot of U.S. schools at various points in time—currently school years 1987–88, 1990–91, 1993–94, 1999–2000, 2003–04, and 2007–08, though those last data are not yet available—and sampled over 13,000 schools in 2003–04.¹²

Unlike the state data in the studies described above, the SASS is a national sample of schools and a sample of teachers within those schools, not the complete set of all schools and teachers in a region. SASS data can therefore be used to see how the educational backgrounds, certification and training, and experience of teachers in schools serving high-poverty students compares to those serving more-affluent students. It also shows the extent to which distributional patterns have changed over time. But it is imperfect because the sample of teachers who respond to the SASS questionnaire in a particular school may not be representative of all the teachers in that school. This is a concern, but the SASS is the only viable national dataset that can be used for this purpose, and there is no reason to believe that the teacher samples are not representative of schools.¹³

Table 1 shows the characteristics of schools serving high- and low-poverty and high- and low-minority student populations. For each school, the sample of teachers was aggregated up to the school level and then averaged across schools for two school years—1993–94

Table 1: Characteristics of schools serving high- and low-poverty and high- and low- minority populations

Percentage of students eligible for free/reduced-price lunch program				
	1993–94		2003–04	
	Bottom Quintile (<9.71%)	Top Quintile (>66.83%)	Bottom Quintile (<13.15%)	Top Quintile (>69.70%)
Beginning teacher (three or fewer years)	11%	16%	16%	21%
Master's or higher	53%	40%	51%	40%
Regular teaching certification	94%	88%	91%	88%
Teacher base salary	\$36,412	\$31,147	\$46,233	\$41,470

Percentage of minority students				
	1993–94		2003–04	
	Bottom Quintile (<2.38%)	Top Quintile (>55.90%)	Bottom Quintile (<4.86%)	Top Quintile (>71.52%)
Beginning teacher (three or fewer years)	11%	16%	13%	22%
Master's or higher	41%	43%	46%	41%
Regular teaching certification	94%	86%	93%	87%
Teacher base salary	\$29,295	\$33,599	\$39,754	\$43,876

and 2003–04—and in various student-characteristic quintiles. The top quintile is the set of schools with the highest percentages of students receiving free or reduced-price lunch and the highest percentage of minority/nonwhite students.¹⁴

One of the most consistent educational findings is that teachers tend to become more effective during the early part of their careers. It is therefore a concern for educational equity that the 1993–94 data show that 16 percent of teachers in high-poverty schools have three or fewer years of experience, which is nearly 50 percent more than in the low-poverty quintile, where it is only 11 percent. This exact finding also holds true for schools serving high and low proportions of minority students. And, not surprisingly, schools serving poorer, nonwhite students are also much more likely to be staffed by teachers without advanced degrees and who lack full state-teaching credentials. What’s more, these findings are true not only for the 1993–94 school year, but also for the later sample in 2003–04. In fact, the numbers in the table suggest that the nation did little to redress teacher inequities over that 10-year period.

The national findings reflect the state data reported for Illinois and New York. Schools serving more economically disadvantaged students and a higher proportion of nonwhite students are much more likely to be staffed by less-experienced and less-credentialed teachers.

It is clear that teacher-distribution inequities have implications for financial equity, whether or not one views these teacher-distribution inequities as having important consequences on educational achievement. Teachers who work with disadvantaged students tend to earn far less than those who teach in more-affluent schools under the single salary schedule. Because the SASS asks teachers to report their salaries, we can see how this plays out for different types of students. Table 1 reports the average base salary that teachers at schools in the various quintiles received. As it turns out, high-poverty schools actually tend to be staffed by teachers who, on average, are paid *less* than teachers in low-poverty schools in both sample years. This was not the case for schools with high minority populations; teachers in those schools tended to earn more.

Schools serving more low-income students are not necessarily receiving fewer school resources, since their schools may have smaller classes, after-school tutoring, or other supplemental services. That said, it is likely that teacher salary allocations do imply differences in the educational resources devoted to students of different economic backgrounds, or at the very least, that the real resources devoted to economically disadvantaged students are understated.

The reason, as pointed out in a 2005 paper by Marguerite Roza, “Many a Slip ’tween Cup and Lip: District Fiscal Practices and Their Effect on School Spending,” is the common practice whereby school districts account for teachers at the average price (a teacher’s salary), regardless of whether they are high-cost teachers with advanced degrees or more experience who tend to teach more-affluent students, or lower-cost teachers, who tend to be teaching disadvantaged students. Roza illustrates that the inequitable distribution of teachers within districts can lead to quite significant disparities—\$2,900 in one example—in the per-pupil allocation of resources within the same school district.

Understanding how teacher inequities develop

In order to be employed in a particular school, a teacher at some point in her or his career must have applied to the district in which that school exists.¹⁵ Thus, the type of teachers who apply to a district plays an important role in the attributes of those who are ultimately employed in that district's schools. The size and character of a district's applicant pool may be related to many factors. Some factors will be outside the control of districts: the local labor-market dynamics, for example, and what competing opportunities exist in a region, or whether there are teacher-training institutions nearby. But districts themselves may influence their applicant pools through policies that affect teacher compensation or school working conditions or by advertising or recruiting teachers outside of district boundaries, such as at regional job fairs.

The "localness" of teacher labor markets

Relatively little quantitative information is available about the ways that districts try to influence their applicant pools, but on the whole teacher labor markets appear quite localized. The New York state study described above is consistent with a study of Pennsylvania principals published in 2000 by Robert Strauss and colleagues, "Improving Teacher Preparation and Selection: Lessons from the Pennsylvania Experience," which shows that one of the best predictors of whether a teacher ends up employed in a particular district or school is whether a teacher had attended the school in the past, lived in the community, or worked in the school as a substitute. This is not necessarily an indication of district efforts to create a large, high-quality teacher applicant pool, since the efforts themselves may or may not be successful, and districts may opt for local hires because they have more information about them.

The "localness" of teacher labor markets could also reflect teacher preferences for employment near where they grew up or went to school as much as it reflects district efforts to recruit from a wide region. Regardless of the given teacher applicant pool, the district itself more significantly shapes the ultimate character of its workforce through the hiring process and the candidates to whom it offers jobs. Again, there is little empirical work on whether school systems make good selections among teacher applicants.¹⁶

Teacher preferences and school district policies and practices

Once a district has made its hiring decisions, the character of the workforce in its individual schools will be influenced by teacher preferences along with the policies and practices that govern transfers within the district. For example, a series of reports by the New Teacher Project describes how rules such as senior transfer preferences that typically govern within-district transfers and “excessed” teachers—teachers who are cut from a school and moved to another school within their district—may cause schools serving disadvantaged students to be disproportionately staffed by less-effective or less-qualified teachers.¹⁷

Changes to transfer and excessed-teacher policies and practices would likely affect the distribution of teachers, but this is not automatically the case. Take, for example, seniority transfer provisions: if these rules were not in place, senior teachers would have less power over their job assignments within a district, but they could still leave a district rather than take or stay in an undesirable teaching position.

The separation between teachers and schools is another potential cause of unequal teacher distribution. I use the term “separation” rather than “quit” because, in theory, a separation may occur either because a teacher opts to leave a school system or because a school system no longer wants to employ that teacher. In practice, most separations likely take place because of teacher preferences, particularly those separations that occur after a teacher has received tenure.

Schools that experience high teacher attrition—which are disproportionately schools serving disadvantaged student populations—must fill their vacancies either with a teacher who transfers from another school within the district or by revisiting the pool of applicants from outside the district. Given the workplace characteristics teachers prefer, it should come as no surprise that schools with these high attrition rates tend to be perpetually staffed by teachers with less experience and fewer credentials.

The geographic level of teacher inequities

The scarce research on school districts’ recruitment, selection, and hiring makes it difficult to sort out the precise reasons for existing teacher distributions. One way to narrow down the possible causes is to see at which level—school, district, or region—inequities appear. For instance, if inequities appeared to be a regional phenomenon, one might postulate that either the number of teacher-training institutions or the regional variation in salary for jobs besides teaching could be affecting the teacher supply. If, however, little inequity is seen between regions but instead appears to be primarily due to the systematic sorting of more-qualified teachers across school districts within regions, one might be able to address the issue by equalizing school funding. Finally, if the issue appears to be primarily

an intradistrict issue, one might propose changes in a district’s salary structure or in the working conditions at particular schools to address the problem.

One way to assess the geographic level of teacher inequity is by looking at the extent to which the unequal distribution of teachers can be ascribed to different levels—differences in teacher attributes that exist among regions of a state, among school districts operating within a region, and among schools within districts. Both the 2002 report by Lankford and colleagues on New York and the 2005 IERC report on Illinois parcel out observed teacher inequalities by geographic level.¹⁸

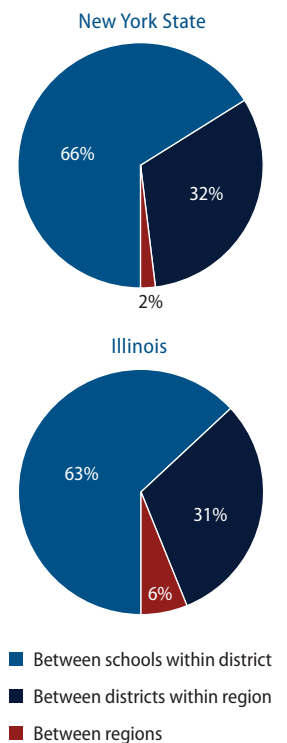
Interestingly, the results from the two studies are strikingly similar, as Figure 1 illustrates. In New York, 35 percent of the variation in overall measures of teacher quality/qualifications, or TQI, is among schools within districts, 40 percent is among districts within regions, and 25 percent is among regions in the state. It is notable that this breakdown is dominated by the New York City school system, which is the largest in the country. When New York City is eliminated from the sample, only 2 percent of the variation in the TQI is attributed to regional differences, and nearly 70 percent is among schools within districts.

In Illinois, just over 50 percent of the variation in TQI occurs among schools within school districts, about 40 percent is among districts within a region, and less than 10 percent occurs among regions in the state. Here, too, Chicago, which is the nation’s third-largest school district, affects the results. When Chicago is eliminated from the sample, the share of the within-district variation rises to over 60 percent.¹⁹

Additional analyses of the teacher workforce in New York state help to narrow further the possible explanations for the unequal distribution of teachers. In a 2002 report, “Initial Matches, Transfers, and Quits: Career Decisions and the Disparities in Average Teacher Qualifications Across Schools,” Donald Boyd joins the researchers from the New York study described above to assess, among other things, the degree to which the distribution of teacher qualifications can be attributed to teachers’ career choices. The study follows a cohort of new teachers over time to see how much of the average teacher qualification gaps—for instance, between schools serving wealthier and poorer students—can be attributed to initial matches between teachers and schools as compared to teacher transfers to a different school and teacher exits. (Again, most of these exits probably represent teachers who quit.)

The analyses reveal that the initial match of teachers to schools, where teachers are hired when they first enter the profession, creates inequality in the distribution. For example, the authors compared the attributes of school teachers in New York City to teachers in suburban New York schools and found large initial differences in qualifications. These differences grow as a consequence of teachers transferring among districts and exiting the profession, but 65 percent to 90 percent of the differences that existed after five years could be attributed to the initial match itself.

Figure 1: Variance in the Teacher Quality Index for New York State and Illinois*



* Percentages exclude New York City and Chicago from New York state and Illinois, respectively. Source: Lankford, Loeb, and Wyckoff (2007); DeAngelis, Presley, and White (2005)

Together, these studies suggest that addressing teacher inequities is a complex endeavor. A minor difference in teacher qualifications within districts might suggest that some districts required additional funding to raise salaries or increase in other ways their capacities to hire teachers. But much of the variation in teacher qualifications is instead due to sorting of teachers within a district, and since there typically are not within-district differences in salaries beyond those associated with degree and experience, this variation therefore suggests that differences in working conditions among schools are a significant reason for TQI inequities.

Policy options for addressing inequities and what we know about them

The level of, and reason for, teacher inequities provide clues to the types of policies that would be most effective in addressing them. The state-level research clearly suggests that little of the inequity occurs at the regional level, which implies that inequities don't arise from school systems having access to fundamentally different labor markets. Instead it appears that inequities arise from a combination of the between- and within-district distribution of teachers.

Providing districts that seem to have undesirable working conditions with greater resources might help address inequities, as these districts could raise salaries or effect other reforms that make the district, on the whole, a more-favorable place to work. But additional resources that target school districts are unlikely to solve completely—or even mostly—the problem. Resources that flow to districts will not change the distribution of teachers across schools within those districts unless the policies that influence teacher distribution are also changed.

Moreover, policy options for dealing with teacher inequity get into touchy politics. To the extent that inequities result from teacher preferences, as the research suggests, an important consideration is how to change the incentives so that disadvantaged schools are *relatively* more-desirable places to work. I emphasize the word *relatively* here because general improvements in the attractiveness of all schools in a district would only be expected to attract more applicants to a district, not change the distribution of teachers within it.

Surveys on teacher preferences

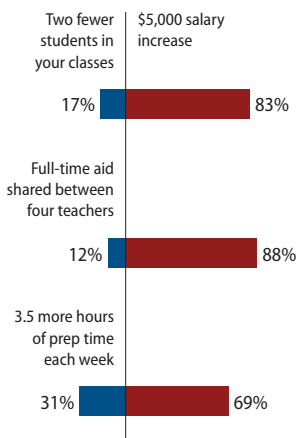
Many argue that teachers care as much as or more about working conditions than financial compensation, so it makes sense to focus on conditions that attract teachers. There is little doubt, for instance, that teachers care about the environment in which they are teaching and that this environment is affected by the school's leadership and collegiality.

A 1997 report released by the National Center for Education Statistics, “Job Satisfaction Among America’s Teachers: Effects of Workplace Conditions, Background Characteristics, and Teacher Compensation,” underscores the importance of workplace factors in explaining teacher satisfaction. The study finds that teachers’ perceptions

about the quality of leadership and administrative support, parental participation, student behavior, and their autonomy over their classrooms are all more important than compensation in explaining satisfaction.

Unfortunately, many of the workplace variables that teachers may identify as important are not easily manipulated through policy. One cannot, for instance, turn a switch to increase the levels of school leadership or collegiality. Thus, while the importance of these more amorphous aspects of a school's environment should not be ignored, they clearly are not under a policymaker's direct control as much as other working conditions, such as class size or common planning periods for teachers. There is relatively little quantitative research on these manipulable policy levers, and the research that does exist tends to show only small effects associated with changing working conditions such as class size.²⁰

Figure 2: Teacher Preferences for Workplace Changes vs. Salary Increase



Source: Goldhaber, DeArmond, and DeBurgomaster (2007).

This is not altogether surprising. In 2007, my colleagues Michael DeArmond and Scott DeBurgomaster and I released a report entitled “Teacher Attitudes About Compensation Reform: Implications for Reform Implementation,” which suggests that teachers actually prefer additional compensation over cost-equivalent changes in working conditions. The report surveyed teachers in Washington state and asked whether they would prefer a salary increase of \$5,000 or three specific changes in working conditions that would cost school districts roughly the same amount: two fewer students in a class, a full-time teacher's aide split among four teachers, or an additional 3.5 hours of preparation time per week. Figure 2 shows teacher responses to these trade-offs: an overwhelming majority of teachers said they would prefer a salary increase to each of these other working conditions improvements.

These findings suggest that pay incentives would more effectively change teacher behavior than would different working conditions, but one must be very careful about jumping to conclusions. It is important to note that sometimes individuals' behaviors do not closely match their survey responses. Also, to my knowledge, there is no quantitative research focusing on targeted interventions in working conditions—that is, interventions such as smaller class sizes or supplemental preparation time in schools that are difficult to staff because they are viewed by teachers as being less desirable.

One could easily imagine other working-condition interventions that might be more effective than, for instance, changing class sizes. Some evidence suggests that high-quality induction and mentoring programs reduce teacher attrition. A 2004 report by Richard Ingersoll and Jeffrey Kralik for the Education Commission of the States, “The Impact of Mentoring on Teacher Retention: What the Research Says,” concludes, based on a review of the literature, that “assistance for new teachers—and in particular, teacher mentoring programs—have a positive impact on teachers and their retention,” and that “there is promise in the use of induction and mentoring as a means of reducing high rates of teacher turnover.”²¹ Yet most induction and mentoring programs target all new teachers in a district, rather than just those in hard-to-staff schools, so it is unclear whether the programs would particularly enhance the relative attractiveness of hard-to-staff schools.

Financial incentives for hard-to-staff schools

We know only slightly more about how financial incentives can act as inducements to teach in hard-to-staff schools, despite the fact that there appears to be increasing policy interest in using financial inducements. A recent report by Emily Cohen, Kate Walsh, and RiShawn Biddle, “Invisible Ink in Collective Bargaining,” found that 20 states offer financial incentives to teach in hard-to-staff schools. These states predominately offer multi-year pay incentives. A teacher in California, for example, can receive up to \$5,000 more a year for four years.²² States have also tested a variety of other financial incentives to attract teachers to low-achieving schools, including loan forgiveness, tuition-free advanced degrees, and housing subsidies.²³

Some school districts also encourage teachers to take positions in hard-to-staff schools with financial incentives. The Los Angeles Unified School District offers a \$1,020 bonus per semester for teachers in its Urban Classroom Teacher Program. Denver has provided a 3 percent bonus to teachers for hard-to-staff assignments, which is approximately \$1,000 for new teachers and will rise in coming years to nearly \$3,000. In Charlotte, North Carolina, new hires or re-hires who accept assignments in one of the district’s high-need schools receive \$2,000 extra; the bonus in New York City Public Schools for taking a position in a high-need school can be around \$3,000 if the school also shows evidence of achievement gains.

The federal government has also recently taken a role in encouraging individuals to take positions at schools serving disadvantaged students. The federal government has established the Teacher Incentive Fund, a grant program for districts implementing compensation alternatives to the single salary schedule to encourage highly qualified teachers to take positions in hard-to-staff schools. These grants are provided to localities on a competitive basis based on what are deemed to be innovative plans.

The federal government has also created the Teacher Education Assistance for College and Higher Education grant program. The TEACH program provides students with grants of up to \$4,000 per year if they intend to teach in a high-need field at a school that serves students from low-income families. TEACH grants are converted to unsubsidized Stafford loans if teachers fail to teach for at least four academic years within eight calendar years of completing their program of study.²⁴

There is, surprisingly, no published study to my knowledge on how targeted grant, loan, loan forgiveness, or housing assistance programs affect the likelihood that teachers will opt for employment in hard-to-staff schools. And I am aware of only one study regarding the effect of direct financial inducements on finding teachers for hard-to-staff schools. Charles Clotfelter, Elizabeth Glennie, Helen Ladd, and Jacob Vigdor analyze the North Carolina Public Schools Bonus Program, which awarded \$1,800 annually to teachers in hard-to-staff subjects and schools while in operation from 2001–04. The study, “Would Higher Salaries Keep Teachers in High Poverty Schools? Evidence from a Policy Intervention in

North Carolina,” found that the bonus reduced turnover rates by just over 10 percent. The study also showed that there was significant confusion about the program and suggested that it could have had been twice as effective if teachers better understood it.

Most of the quantitative estimates of the effect of money—usually salary—on teacher behavior are derived from examining the behavior of teachers who receive different pay and are in schools with different characteristics, as opposed to estimates that are based on policy interventions. The 2004 study of Texas schools by Hanushek and colleagues estimates, for example, that a female teacher with three to five years of experience would have to receive a 50 percent salary increase in order to offset teaching in a classroom with a 25 percentage point increase in the proportion of black students.²⁵ On the other hand, the study also finds that teachers do not appear to require a premium to teach greater proportions of poor students.

The findings from the 2003 research on New York teachers by Donald Boyd and colleagues paints a similar picture. They estimate that it is necessary to pay teachers an additional \$2,900 to induce them to teach in a classroom with a 25 percentage point increase in the proportion of minority students but only an additional \$350 to induce them to teach in a classroom with a 25 percentage point increase in the proportion of students receiving free or reduced-priced lunch.

All of these findings raise a troubling and touchy issue, as they seem to suggest that teachers are more sensitive to the race and ethnicity of their students than the students’ socioeconomic status. It’s difficult to imagine a political or legal environment that would allow some type of inducement that differentially rewarded teachers based on the minority status of their students. Yet we cannot know whether this reflects genuine feelings about teaching minority students or simply that minority status serves as a proxy for other classroom or school factors that researchers don’t observe.

In practice, this distinction may not be important since there is a relatively high correlation between students’ race/ethnicity and free-/reduced-price-lunch status. For instance, recent studies estimate that the correlation between the percentage of African American students in a school and of those who receive free or reduced-price lunch ranges between 0.40 and 0.55.²⁶ This means that policies that target economically disadvantaged schools also tend to target schools with large minority populations, thus effectively sidestepping the issue.

Teacher-supply-pipeline approach

One problem with financial incentives that go only to existing teachers is that they would serve to reallocate teachers amongst schools. And, if this is a zero-sum game, some students will be losing out.

A way to circumvent the issue is to develop a teacher supply pipeline that specifically targets hard-to-staff schools. In fact, several programs exist—Teach For America being the most well-known—that are designed explicitly to provide new sources of teachers to disadvantaged schools. In the case of TFA, recruits make a two-year commitment to teach in low-income public schools in both urban and rural regions. In return, members participate in a five-week training session prior to placement and are offered ongoing professional development. Participants usually receive an alternative teaching certification by the end of their two years through continued coursework as part their state’s approved alternative certification program.

Donald Boyd, Hamilton Lankford, Susanna Loeb, and James Wyckoff offer new research on changes in the qualifications of teachers in New York City in their report, “The Narrowing Gap in New York City Teacher Qualifications and its Implications for Student Achievement in High-Poverty Schools.” The study shows the role that a “direct pipeline” can play, while not discounting the effect of other policy changes such as increased teacher salaries. The authors conclude that, during the period from 2000 to 2005, New York City used two alternative pathways into teaching—Teach for America and the New York City Teaching Fellows Program—to narrow significantly the gap in teacher qualifications between low- and high-poverty schools.

Teachers from these two programs tend to have significantly stronger academic qualifications such as licensure test scores than other certified teachers and, in particular, other temporarily licensed teachers.²⁷ These teacher-supply sources allowed the city to substitute alternatively licensed teachers for many of the temporarily licensed teachers who otherwise would have likely staffed high-poverty schools. Specifically, the authors note:

“Between 2000 and 2005, 44 percent of newly hired Teaching Fellows and TFA teachers were placed in schools in the highest-poverty quartile; and, by 2005, 40 percent of all new hires in the highest poverty quartile were Teaching Fellows or TFA corps members. In 2000, before Fellows and TFA teachers were significant in numbers, 63 percent of newly hired teachers in the highest poverty quartile were temporarily licensed teachers. The hiring of Fellows and TFA teachers into high-poverty schools, instead of temporarily licensed teachers, has been responsible for much of the narrowing of the gap in teacher qualifications between high-poverty and low-poverty schools.”

The extent to which alternative pipelines can be used to address teacher equity in hard-to-staff schools is still unknown. This strategy seemingly made a difference in New York City, but programs like TFA currently supply only a very small proportion of the nation’s teachers, and there is simply no solid research on whether a talented pool of individuals exists who would teach in hard-to-staff schools if provided with TFA-like pathways into the profession.

These alternative pathways are themselves not without controversy. There is significant variation in the requirements to enter the profession through alternative routes and the type of individuals who come through these routes, so it should come as no surprise that there is considerable disagreement over the efficacy of alternative-route strategies.²⁸ One of the oft-cited downsides to alternative-route teachers is that they are more likely to leave the profession after only a few years in the classroom.

TFA and the New York City Teaching Fellows Program in New York City are lauded for bringing talented college graduates into schools but knocked for their recruits' high attrition rate. The high attrition occurs in part because these alternative-route teachers tend to be placed in very tough schools. But according to another study of New York City schools by Donald Boyd, Pamela Grossman, Susanna Loeb, Hamilton Lankford, and James Wyckoff, "How Changes in Entry Requirements Alter the Teacher Workforce and Affect Student Achievement," TFA and Teaching Fellow attrition after two years is considerably higher than the attrition rate for traditionally licensed teachers even when compared to other teachers in similar schools. This means that the benefits of having academically skilled alternative-route teachers must be weighed against the costs of having to replace them with less-experienced teachers when they leave.

The New York study attempts to take these various factors into consideration by simulating how differences in pathways into the profession affect student achievement. The authors consider that teachers from different pathways have different estimated, experience-dependent effects on student achievement and different attrition rates out of New York City schools. Accounting for these factors, the study shows that New York City students clearly benefit from having these alternative pathways over time in both English language arts and mathematics at the middle level. The picture is a bit more mixed at the elementary level: TFA and Teaching Fellows teachers look beneficial relative to many of the other types of teachers who staff these typically poorer schools, but they are not always as effective as teachers who have the full set of credentials from the state.

We probably know more about the effects of TFA than any other alternative-route program. There are both high-quality nonexperimental studies that include TFA teachers and an experiment focused on the efficacy of the TFA program, but TFA would certainly have to be considered unique in the academic caliber of its recruits. It would be premature to jump to a broad conclusion about the net benefits of a general alternative-route, direct-pipeline strategy. But it's worth noting that the direct-pipeline strategy to staff tough schools helps to avoid some of the contentious political issues that can arise from policies designed to re-allocate existing teachers via incentives for teaching in hard-to-staff schools.

Politics and policy recommendations

The No Child Left Behind Act requires a “highly qualified teacher” to staff all classrooms, and in particular, ensures that minority and disadvantaged students are not taught by inexperienced or unqualified teachers.²⁹ A primary argument for this requirement in NCLB is that school districts and states, left to their own devices, were not typically instituting policies that led to an equitable distribution of teachers across schools. As the research in Illinois and New York shows, much of the inequity results from an inequitable distribution of teachers within school districts and could therefore be addressed by district-level policies. Yet as Brian Jacob and Mathew Springer note in their 2008 report, “Teacher Attitudes on Pay for Performance: A Pilot Study,” less than 5 percent of districts in the country are estimated to use financial incentives to encourage teachers to take positions in less-desirable schools—far fewer than the number that provide financial incentives to attract teachers in shortage fields (over 10 percent) or that reward teachers for having an advanced teaching certificate, such as certification from the National Board for Professional Teaching Standards (nearly 20 percent).

The politics of reform

One might imagine that districts don’t financially induce teachers to take jobs in less-desirable schools because unions oppose any deviations from the single salary schedule. But this turns out not exactly to be the case. The National Education Association, the larger of the two major teachers unions, does oppose financial incentives for hard-to-recruit positions, which could be interpreted as positions at less-desirable *schools*, but this has not prevented local NEA affiliates from negotiating contracts that include such incentives. ProComp, the much-heralded pay reform in Denver, has a component that provides financial incentives to teach in hard-to-staff schools.

The American Federation of Teachers, by contrast, is more explicit in supporting such incentives. Its national policy position mentions exploring, among other things, alternatives that could include “financial incentives to teachers who agree to teach in low-performing and hard-to-staff schools.” And as I note in my 2006 paper “Teacher Pay Reforms: The Political Implications of Recent Research,” surveys of teachers themselves suggest that, of various types of pay reforms, they are most inclined toward pay incentives for hard-to-staff schools.³⁰

Of course, this doesn't mean that no teachers or teachers unions oppose bonuses for hard-to-staff schools. The recent dust-up over ProComp in Denver—which included the threat of a teacher's strike—was in no small part related to disagreement about whether ProComp ought to be modified to increase targeted incentives, including those for hard-to-staff schools, or whether additional resources should be put into building base salaries.

Surely the politics of pay-for-performance are thornier, in terms of teacher and union opposition, than incentives for hard-to-staff positions. Yet the research by Jacob and Springer shows that twice as many districts report using pay-for-performance as compared to incentives for hard-to-staff positions. This leads one to a different explanation for the uncommon use of the latter incentives. District leaders and administrators may be reluctant to use incentives that, if successful, could lead some of the district's favorite teachers to move from an affluent school, which likely has an active parent community, to a school serving more disadvantaged students, which may have parents who are less politically mobilized.

The above situation would hold true if teacher distribution is a zero-sum game, which it is likely to be when strategies are focused only on re-allocating existing teachers. But importantly, the findings on alternative pathways show that these pathways can enable improvements in teacher qualifications in schools serving disproportionately poor and minority students without redistribution of a fixed teacher-quality pie. Recall that the 2008 New York study by Donald Boyd and colleagues, while not definitive, also suggests that improvements in the qualifications of the teachers in New York City led to academic gains for the city's students.

A broader recruitment strategy designed to draw more talented people into teaching and get them into disadvantaged schools solves the political problems of trying to divide the current teacher pie. TEACH grants or other similar policy interventions have potential but are untested. There are, however, some reasons to be wary about up-front investments of public money. Large initial investments in individuals before they enter the teaching profession are risky for at least two reasons. First, there is no guarantee that these investments go to effective teachers. In fact, a significant body of empirical literature suggests that there is a wide range of effectiveness among teachers, very little of which is associated with the credentials that determine eligibility for employment. Second, much of the investment may be lost because many teachers leave the profession, or a disadvantaged school, in their first couple of years.

One seemingly easy solution to this second issue is to tie the receipt of an incentive to a specified period of service in a hard-to-staff school, as is the case with the TEACH grant. But this, too, is problematic, because a significant, albeit unknown, number of ineffective teachers are weeded out before they receive tenure. Because of the political sensitivity of teacher dismissal, much of this weeding out happens under the radar and therefore does not show up in any reported statistics. What happens, for instance, to a grant that is contingent on a teacher's employment if that school does not want the teacher? That up-front

investment now gives states or districts, depending on the funding source, an incentive to retain ineffective teachers in order to get a return. And what if, despite the investment, districts still wish to dismiss a teacher? In this case, teachers have an added incentive to say the separation was not at their behest, lest they find themselves having to pay back a scholarship or grant. Far better documentation about the reasons for the dismissal would be needed than is currently available, which may add to the financial or political costs associated with such separations.

The allocation of teachers, or educational resources of any type, ultimately depends on the way that often-contentious schooling issues are mediated through our political structures. But shining the light on teacher equity may help to create the political conditions that lead to change. It is interesting to note, for instance, that New York City is not alone in seeing improvements in the qualifications of teachers in its disadvantaged schools. The Illinois Education Research Council in a new 2008 report, “Leveling Up: Narrowing the Teacher Academic Capital Gap in Illinois,” shows that the distribution of teachers in Illinois has become more equal in recent years.

Much of the improvement in Illinois can be traced to changes in the qualifications of teachers in Chicago’s schools. Chicago, unlike New York City, appears to have improved without having tapped into any specific new sources of teachers; TFA, for instance, supplies less than 5 percent of new teachers to the city. IERC makes the case that change in the city occurred because the district experienced a surge in new applicants and was focused on hiring applicants with strong academic credentials.

It is certainly speculation as to whether or why recruitment and hiring practices in Chicago changed, but I would argue that it is due both to NCLB’s highly-qualified-teacher requirement and the scrutiny that may have been received precisely because the original 2005 IERC reports so effectively highlighted the extent to which teacher qualifications in Illinois were inequitably distributed. Such reporting is only possible when the state maintains data that match teachers and their qualifications to schools.

The bottom line is that simply documenting that a problem exists is an important step toward solving the problem. Various groups—The Education Trust is likely the most prominent—have raised the issue of teacher inequities and pushed policymakers to address the situation.³¹ These groups are aided by better information on the existing distribution of teachers, information that is all too often unavailable due to data limitations. Addressing data shortcomings is therefore a sensible starting place in making recommendations.

Recommendations

Quality data is necessary to make the case that we ought to be concerned about teacher equity. And it is a lack of data that helps explain why we know so little about the efficacy of various strategies to address teacher inequities.³² Even when quality data does exist, it sometimes takes several years to know whether an intervention actually made a difference. This ignorance, too, is related to data, but in this case it's a question of timing and availability. A policy enacted in year 1 is not likely to go into effect until year 2, and it may be year 3 or 4 before data on teacher behavior comes online, which means that research about the efficacy of such a policy is unlikely to become available until five or six years after the initial adoption of the policy.

The irony of the \$1,800 bonus that was awarded to teachers in hard-to-staff schools and subjects in North Carolina is that it actually did have an effect on teacher attrition, but policymakers abandoned the policy prior to knowing its effects. One can only imagine that knowing the effect of a policy intervention would have some influence over the likelihood that a policy is adopted and maintained.

Thus, I begin with two related recommendations that would enable not only the identification of teacher-distribution issues but also the evaluation of various solutions:

1. Create and maintain state data systems that allow analyses of the distribution of teachers and the efficacy of policies designed to address that distribution. At a minimum, these data systems must match teachers to schools, the characteristics of those schools and students, and track them over time.
2. Implement new teacher policies simultaneously with a plan to study their effects, realizing that such studies are not likely to be completed for several years.

These two recommendations would provide advocates the tools necessary to make the political case for addressing teacher equity, and it would allow policymakers and researchers to see whether policies and programs designed to address the issue are working.

One powerful argument for addressing teacher inequities is that they can result in an unfair distribution of educational spending. Such inequities often translate into real differences in the resources spent on different types of students because many school

districts distribute resources to schools based on staffing models. A staffing model might, for example, say that a school gets one principal for every 250 students, one assistant principal for every 400 students, and one teacher for every 20 students, all without regard to the cost of the staff the school gets. The inequity arises because less-experienced personnel generally staff schools that serve disproportionate numbers of disadvantaged students.

What's more, this form of inequity is often masked in school budget documents, which report the average cost of staff in a school, teachers in particular, rather than actual dollar costs. This very issue is addressed in a recent report from the Center for American Progress, "Ensuring Equal Opportunity in Public Education: How Local School District Funding Practices Hurt Disadvantaged Students and What Federal Policy Can Do About It," and a conference built around the report. Conference participants may not all have agreed with specific alternatives to staffing-based models, but there was general agreement that transparency is lacking when school budget reports fail to identify salaries accurately.³³

Policymakers and advocates need the tools to make the political case for addressing teacher maldistribution; consistent with that notion is the recommendation that

3. School districts should be required to report spending at each school on a real-dollar basis.

It's hard to argue that the public shouldn't at least know how teachers and resources are allocated, and the adoption of recommendations 1 and 3 would ensure this knowledge. Of course, requiring reporting is not the same as requiring equal spending. The drive toward equity could go a step further and suggest that schools adopt a "weighted student-funding" formula, whereby each school receives a budget based on the number and type of students it serves. For example, students who are eligible for free or reduced-price lunch or learning disabled might receive more funding.

The idea of using weighted student funding is itself controversial since it would, in most districts, entail a redistribution of district resources out of more advantaged schools.³⁴ An option for avoiding the controversy around redistribution is for school districts to grow the teacher supply pipeline, a strategy that has been successfully used by New York City. Consistent with this approach is the recommendation that

4. School districts should develop and tap into new high-quality sources of teachers that are specifically targeted toward schools serving disadvantaged students.

Targeting new sources of teachers to disadvantaged schools is important if the goal is to address teacher inequities. One important finding from a recent survey of college graduates conducted for the Woodrow Wilson National Fellowship Foundation, "Teaching as a Second Career," is that fewer than half of those surveyed who expressed a willingness to consider a career in teaching were interested in teaching in urban schools, and only about

10 percent were interested in teaching in a city school district. General programs designed to increase the supply of potential new teachers might therefore have little effect on the equity of their distribution.

Furthermore, these new sources of supply must really be high quality in order to improve the outcomes of disadvantaged students. There are now a number of studies of Teach For America and the Teaching Fellows Program that show that teachers from these programs are, on average, at least as effective as teachers who enter the profession through traditional routes. But there is tremendous variation in the quality and character of alternative routes into the teaching profession, and many of these programs are not empirically tested like the programs in New York City.

The bottom line in teacher equity is teacher quality and not necessarily teacher qualifications. Thus, one more consideration when providing incentives to teach in disadvantaged schools should be recruiting teachers with proven track records of raising student achievement, since achievement is the ultimate metric when it comes to concerns about teacher equity.³⁵

Concluding thoughts

When it comes to crafting policies designed to change the distribution of teachers, we clearly don't know much about how effectively they make schools that serve disadvantaged students more desirable places to work. Targeted working-condition changes may have been tried over the years, but there exist, to my knowledge, no credible studies of their effects.

We know a bit more about the effect of financial incentives, but only a bit. Most of what we know is inferred from observations in the labor market of teacher behavior in the absence of any specific hard-to-staff school incentive—for example, which districts teachers are employed in, which ones they leave, and where they go. For a variety of reasons, these estimates are not always empirically convincing.³⁶ There is only one credible estimate that is based on an actual policy intervention designed to encourage teachers to take positions in high-poverty schools: Clotfelter and colleagues' work on the effects of the \$1,800 bonus in North Carolina.

Given the lack of research on financial incentives for hard-to-staff schools, it should come as no surprise that there isn't a good answer to the policymaker's question: "What is the *right amount* to encourage teachers to take tough positions?" In fact, there may be no real answer to that question. Larger incentives are likely to lead to bigger effects, but we just don't know enough right now to pinpoint the effect of such interventions. The only way we will learn more is by experimenting with incentives—financial and otherwise—and then carefully evaluating the results.

The lack of knowledge about how to tackle teacher equity is emblematic of the seriousness with which policymakers have taken this issue in the past. Digging below the headlines that decry the need to address teacher-distribution inequities, it becomes clear that a limited range of policy measures have been employed to date, and their efficacy has gone largely untested. This is despite the fact that inequity in the distribution of teachers is one of the most well-documented and agreed-upon findings in education research and that this inequity has potentially important student-achievement consequences and clear financial ones.

New federal and state policy initiatives designed to address the teacher qualification gap suggest that policymakers are getting serious about finding solutions. Hopefully, this is true, and hopefully, policymakers will also address the efficacy side of the equation to make sure that investments are being productively spent.

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Endnotes

- 1 See, for instance, Rosen (1986).
- 2 This theory also holds true in the case of job characteristics that make jobs attractive. All else equal, we would expect the most appealing positions to offer lower wages.
- 3 A review of the literature on teacher recruitment and retention by Guarino et al. (2006) confirms the findings cited above: high-minority, low-income, and low-performing schools typically have higher teacher attrition rates.
- 4 For example, see a discussion in a recent paper by DeArmond et al. (2008) on teacher hiring.
- 5 It is interesting to note that economist Dale Ballou's findings reported in his 1996 paper, "Do Public Schools Hire the Best Applicants?" suggest that the teacher labor market as a whole—as opposed to individual schools or districts—does not as strongly reward measures of academic qualifications such as grade point average or the selectivity of the college from which individuals graduate.
- 6 See the following recent review articles: Goldhaber (2002), Wayne and Youngs (2003), and Allen (2003) for a summary of the relationship between teacher attributes and student achievement.
- 7 See, for example, Clotfelter et al. (2007), Goldhaber (2007), Hanushek et al. (2005), Rockoff (2004), and Goldhaber (2002).
- 8 They obtain an overall composite school measure using principal-components techniques.
- 9 See DeAngelis, Presley, and White (2005).
- 10 This is consistent with literature that focuses on the distribution of teachers across student of varying races and ethnicities; see, for instance, Clotfelter, Ladd, and Vigdor (2005).
- 11 For research in North Carolina, see Clotfelter, Ladd, Vigdor, and Wheeler (2007). For California, see Betts, Rueben, and Danenberg (2000). For Texas, see Education Trust (2008).
- 12 See <http://nces.ed.gov/pubs2006/2006313.pdf>.
- 13 The SASS first samples schools from the *Common Core of Data*, which are stratified by a variety of factors such as state, district urbanicity, school grade, percent minority, and so forth. Once schools are selected, districts associated with these schools are then selected for the sample as well. As for the selection of teachers, the sampled schools are asked to provide teacher lists for their schools. Teachers are then selected using a stratified random sample based on experience, race, and bilingual/ESL instruction, with adjustments made to school size.
- 14 The 1993–94 and 2003–04 samples include a total of 8,462 and 7,797 schools, respectively, each of which has varying samples of teachers. Both full- and part-time teachers were retained in the sample, but schools with two or fewer sampled teachers were removed from the samples due to concerns over statistical reliability (though the results do not appreciably differ when left in the sample). The means for school salary schedule in each of the quintiles are based on roughly 150 fewer observations (numbers are available upon request) due to mismatches between schools and school districts. All means are weighted (by the "final school weight") to be nationally representative.
- 15 Teachers in public schools employed by school districts even if the ultimate hiring decision is made at the school level. Charter schools, depending on the charter law in a state, may act as independent hiring authorities.
- 16 Recent case study reports published by Harris et al. (2007) and by DeArmond et al. (2008) suggest that when principals are given discretion over hiring teachers, they are often more concerned with the attitudes of prospective teachers and how they would fit within a school culture than measures of cognitive ability.
- 17 See, for example, Levin et al. (2005).
- 18 Both studies employ a statistical procedure known as variance decomposition for this purpose.
- 19 Both New York City and Chicago school districts exercise considerable influence in the relative size of variation within and between the district because both districts are extremely large relative to the respective student population in each state, and attributes of teachers in those districts are quite different, on the whole, from other teachers in each respective state.
- 20 See, for example, studies by Hanushek et al. (2005) and Stinebrickner et al. (2007).
- 21 In their analysis of the *Schools and Staffing Survey*, Smith and Ingersoll (2004) find that beginning teachers who participated in induction activities and received mentoring were significantly less likely to move to another school or leave the teaching profession after the first year of teaching.
- 22 National Council on Teacher Quality TR³ database, available online at: <http://www.nctq.org/tr3/>.
- 23 For specific examples of these types of programs, see Center for Teaching Quality (2004).
- 24 For more details about the TEACH program, such as designation of high-needs fields and schools serving low-income students, see its website: <http://studentaid.ed.gov/PORTALSWebApp/students/english/TEACH.jsp>.
- 25 Interestingly, the corresponding estimate for male teachers is only a 10 percent increase in salary.
- 26 See, for example, Blau (2003) and Saporito and Lareau (1999).
- 27 As the report notes, only 5 percent of newly hired Teaching Fellows and TFA teachers failed the state's licensure exam (in 2003) on a first attempt, as opposed to 16 percent of newly hired, traditionally licensed teachers and over 30 percent of temporarily licensed teachers.
- 28 These issues are described in greater depth in my 2004 book chapter, "Why Do We License Teachers?"
- 29 HQTs are defined as those who have a bachelor's degree, appropriate subject-matter knowledge, and are fully certified by the state. See Department of Education (2006).
- 30 For example, in the Washington state survey of teacher attitudes, less than 20 percent of teachers reported being in favor of merit pay, whereas over 70 percent reported favoring incentives for teachers taking positions in hard-to-staff schools.
- 31 For example, see The Education Trust's website (<http://www2.edtrust.org/edtrust/>) for a variety of publications documenting inequities in the distribution of teachers across students.
- 32 For example, the frustration of data limitations is described by Linda Jacobson in her 2006 article in *Education Week*, "Teacher-Pay Incentives Popular But Unproven." She notes, for instance, that California adopted a \$20,000 incentive to encourage NBPTS-certified teachers to teach in high-poverty schools, but when researcher Julia Koppich tried to assess whether the incentive had had the desired effect, she discovered that the state simply didn't maintain the data that would allow her to answer the question.
- 33 The report and conference focused on how "average cost pricing" of staff can lead to inequities and allow localities to skirt the intent of federal Title I funds, which is to supplement local education spending on poor children. For more on this issue, see <http://www.americanprogress.org/issues/2008/06/comparability.html>.
- 34 As the recent CAP conference on funding practices describes, this can be both successful and also quite disruptive for school districts. Oakland, California, for instance, is a system that has successfully implemented reforms consistent with weighted student funding, whereas Houston, Texas, had far more difficulty with this type of reform.
- 35 I do not go into the ways that one would judge whether a teacher has a "proven track record," as this is a both a contentious issue in and of itself and very much in the statistical weeds.
- 36 For a discussion of these, see Boyd et al. (2003) and Goldhaber et al. (2007).

About the author

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