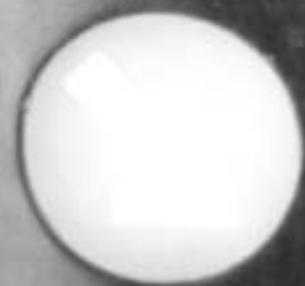


Exit



The REVOLVING DOOR

EXPERIENCED TEACHERS ARE, on average, more effective at raising student performance than those in their early years of teaching. This gives rise to the concern that too many teachers leave the profession after less than a full career and that too many leave troubled inner-city schools for suburban ones. Until now, the roots of these problems have not been well understood. In particular, it is not known whether teachers leave schools with high concentrations of disadvantaged and low-achieving populations for financial reasons or because of the working conditions associated with serving these students. Nor are there good estimates of what kinds of salary increases would need to be offered to slow the turnover among teachers.

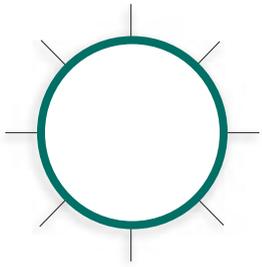
The chief obstacle to resolving these issues has been the difficulty of separating the effects of teachers' salary levels from their working conditions and preferences. The outstanding suburban school that retains most of its teachers is likely to be attractive on a number of levels: the pay is good, students are high performing, and parents are supportive. Since all three factors help in attracting and retaining teachers, it becomes difficult to calculate the degree to which each factor separately affects a teacher's decision to return to that school the following year. Conversely, the school that has disadvantaged and low-performing students may suffer high rates of teacher turnover, but sorting out the causes of turnover is difficult. Doing so requires detailed information for enough teachers and students to allow analysts to distinguish statistically among the various factors that affect teachers' decisions.

Fortunately, important parts of the necessary information are now available for elementary schools in the state of Texas for the years 1993 through 1996. Working in cooperation with the Texas Education Agency, the University of Texas at Dallas's Texas Schools Project has combined various data sets to create a database of key characteristics of both teachers and students during

PHOTOGRAPH BY MASTERFILE

A path-breaking study of teachers in Texas reveals that working conditions matter more than salary

by ERIC A. HANUSHEK, JOHN F. KAIN, AND STEVEN G. RIVKIN



Teachers transfer from one school to another more as a reaction to the characteristics of their students than in response to better salaries in other schools.

this period in all Texas public schools. This information includes the race, ethnicity, and gender of both students and teachers; students' eligibility for a subsidized lunch; and students' performance on the Texas Assessment of Academic Skills (TAAS), a criterion-reference test administered each spring to students in grades 3 through 8. The database also contains annual information about the teachers: their years of experience, their education and salary levels, the grades and subjects they teach, and the size of their classes.

Our analysis of these data reveals that teachers transfer from one school to another—or exit the Texas public school system altogether—more as a reaction to the characteristics of their students than in response to better salaries in other schools. This tends to leave disadvantaged, low-achieving students with relatively inexperienced teachers. Because teachers appear so unresponsive to salary levels, it would take enormous across-the-board increases to stem these flows. Indeed, the results suggest that policymakers ought to consider selective pay increases, preferably keyed to quality, for work in inner-city schools, together with efforts to improve the working conditions in these schools.

Reasons for Leaving

Teachers decide whether to remain at a school for a multiplicity of reasons, which can be divided into four main categories: 1) characteristics of the job, including salary and working conditions; 2) alternative job opportunities; 3) teachers' own job and family preferences; and 4) school districts' personnel policies. Although we were not able to look at the ways in which all of these factors affect teachers' decisions with respect to their employment situation, we were able to examine directly the impact of salary and certain working conditions. We were also able to draw some reasonable inferences about how family considerations and alternative job opportunities influence their decisions by examining how teachers' choices differ by gender and experience.

Admittedly, working conditions is a broad concept that can cover everything from class size to discipline problems to student achievement levels. Though we do not have data on every aspect of teachers' working conditions, we do know certain characteristics of their students that many believe affect the teaching conditions at a school: the percentage of low-income students at the school (as estimated by the percentage

eligible for a subsidized lunch), the shares of students who are African-American or Hispanic, average student test scores, and class sizes. Whether these characteristics directly affect teachers' decisionmaking or indicate other less tangible factors (such as the disciplinary climate or bureaucratic environment at the school) cannot be determined.

When looking at the impact of working conditions on retention rates, one needs to take into account other factors that may affect teachers' employment choices. Some teachers possess skills that are considered valuable in the marketplace. For instance, math and science teachers may find more competition for their services in the private sector than an English teacher would. However, our study focuses on elementary teachers, who tend to have similar educational backgrounds and similar opportunities outside the education system. As a result, differences in opportunities among teachers of different subjects should not be very important for this analysis.

A more important consideration is that many teachers may wish to remain at a particular location for other than job-related reasons, perhaps out of a desire to live near their hometown or near their spouse's workplace. Consequently the availability of jobs in the locality may be an important determinant of the probability of exiting a school, and the control for any systematic differences across regions within Texas.

Retention rates can also be affected by the number of years a teacher has spent in a particular location. The more years working in a particular district, the more costly it becomes to leave, simply because pay, responsibilities, and job opportunities are often tied directly to experience within the same school district. The financial attractiveness of moving elsewhere also attenuates with the passage of time. Because many districts credit a transferring teacher with only a limited number of years of experience, teachers may have to take a salary cut if they switch school districts. In general, switching careers grows costlier with age and experience. One must give up the higher salary that comes with experience within a particular field, and the time to accumulate gains from any change in job or career grows shorter as one ages. For this reason, our analysis takes into account the number of years teachers have held their jobs by comparing only teachers with similar levels of experience.

Other relevant differences among teachers may arise from their family circumstances, such as the job opportunities of a spouse or a desire to stay home with young children or to enjoy the benefits of home ownership. For example, many

female teachers who leave teaching do so in order to leave the labor market altogether, often for family reasons. We unfortunately lack information on family structure, sources of income other than salary, the location or type of housing, and whether and where a spouse works. However, we are able to look separately at teachers grouped by gender, giving us an opportunity to assess the extent to which female and male teachers are influenced by different considerations.

Ethnicity may also affect decisionmaking. Teachers may prefer to teach in schools where they share the ethnic characteristics of students, or they may find it easier to obtain a position if administrators prefer instructors who have certain ethnic characteristics. To ascertain whether ethnic background affects teachers' decisionmaking, we also look separately at white, African-American, and Hispanic teachers.

One limitation of our study is that we do not have direct information on school districts' hiring and retention practices. Districts have options when hiring, and the willingness of a teacher to leave a position will depend on the availability of an attractive position elsewhere. Although few teachers are involuntarily separated from their jobs, we do not know whether a job change is determined primarily by a teacher's decision or by that of the employer, and the circumstances undoubtedly affect both opportunities and the range of choices a teacher will consider. Our lack of information about employer-initiated moves may lead to an underestimate of the improvements in pay and working conditions achieved by teachers who move voluntarily, but the size of this underestimate is probably not very large.

Movement between and within Districts

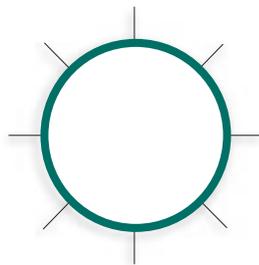
Nationwide, approximately one-fifth of all teachers decide to leave the school at which they are teaching each year. The pattern in Texas is roughly the same as in the nation as a whole. On average, in each year between 1993 and 1996, more than 18 percent of Texas teachers decided not to remain at the school at which they were teaching. More than 6 percent changed schools within their districts, another 5 percent switched from one district to another, and 7 percent left Texas public schools altogether.

Let's look first at the changes in salary typically experienced by teachers moving to a new district. Instead of relying on salary data reported for each individual teacher, we calculate district average salaries for teachers in each of their first ten years of experience during the period from 1993 to 1996. These averages are based on regular pay for teachers without advanced degrees and exclude extra pay for coaching or other activities. (The latter is not an important part of compensation: more than 85 percent of teachers receive no extra pay, and the median extra

pay for those who do receive it is about \$1,000 per year.) We use these averages to characterize the salary schedule of each district and then estimate the potential salary change resulting from a move, given the experience level of each teacher. For example, the salary change for a teacher who switches districts after four years of teaching is assumed to equal the average salary of fifth-year teachers in the new district minus the salary for that level of experience in the old district.

On average, teachers who move between districts after no more than two years at a school improve their salaries, though just barely. Male teachers gain 1.2 percent in salary, while women gain 0.7 percent. Even these small gains begin to disappear for teachers with more experience. Overall, the average annual salary gain among all teachers with less than ten years' experience is 0.4 percent of annual salary, or roughly \$100. Women with three to nine years of experience who decide to change districts actually take, on average, a small pay cut. In short, most teachers moving between districts do not receive substantially better pay in their new jobs.

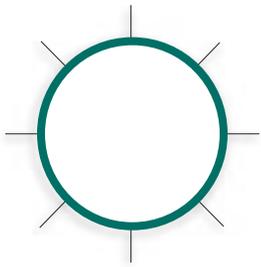
The picture for working conditions is quite different. There is strong evidence that teachers moving between districts have the opportunity to teach higher-achieving, higher-income, nonminority students. The findings for achievement are the clearest and most consistent. The average job switcher moving from one district to another moved to a district whose average achievement was 0.07 standard deviations higher on the TAAS than the district the teacher left. (The difference is three percentile points on a 100-point scale.) The shares of the dis-



Teaching lower-achieving students is a strong factor in decisions to leave Texas public schools.

trict's students who were African-American, Hispanic, or low income also declined significantly for movers. On average, the districts to which teachers moved had 2 percentage points fewer African-American students and 4.4 percentage points fewer Hispanic students than the districts they had left. The percentage of low-income students in movers' districts fell by more than 6 percent.

These patterns were even more pronounced for teachers who moved from urban to suburban districts. The salaries of such teachers actually declined by 0.7 percent, on average, as a result of their moves. Meanwhile, the average achievement in the new districts increased by 0.35 standard deviations (14 percentile points), and the shares of African-American and Hispanic students decreased by 14 and 20 percentage points, respectively.



Since teachers' exiting rates are smaller at schools with more advantaged students, these schools also enjoy more experienced teachers.

Teachers who moved between different suburban districts experienced similar, albeit smaller, changes in student characteristics. Student achievement in their new districts was one-tenth of a standard deviation higher, while the percentages of African-American, Hispanic, and economically disadvantaged students all declined.

We can gain further insight into the factors associated with teacher mobility by examining the pre- and post-move school characteristics for teachers moving to a new school within the same district. These results confirm that teachers who move between schools within urban districts typically arrive at a school with higher average student achievement (0.11 standard deviations) and a smaller percentage of minority and low-income students. In other words, those who choose to change schools within districts appear to follow the same attributes,

seeking out schools with fewer academically and economically disadvantaged students. These patterns are also consistent with the notion that new teachers are often placed in the most difficult teaching situations and that senior teachers can often choose comfier positions within the system.

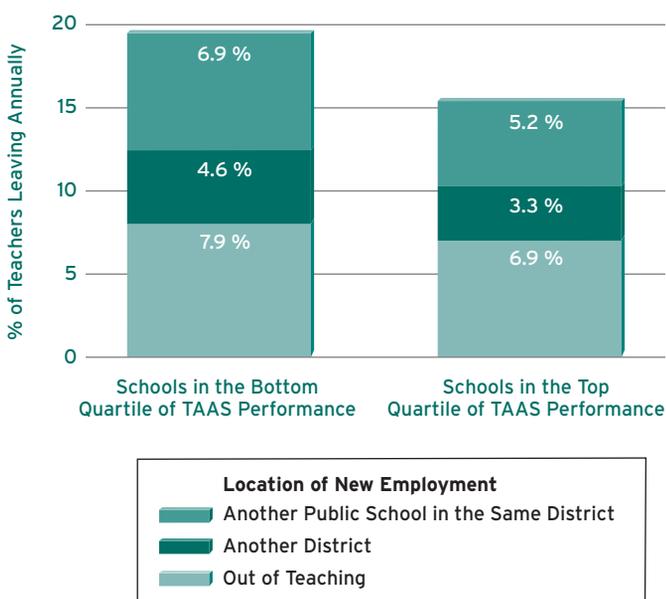
Important differences emerge, however, when we separate teachers by their own ethnic background. African-American teachers tend to move to schools with *higher* percentages of African-American enrollment than their previous schools, regardless of whether they change districts or simply move to a new school in the same district. However, the average change in the percentage of Hispanic students for teachers of Hispanic descent is not much different from the changes experienced by teachers as a whole. The typical gap in average test scores between their current and former school is also much smaller for African-American and Hispanic teachers who have switched schools.

It is not clear whether these ethnic differences are the result of teachers' preferences or of the job opportunities available to them. It could be that African-American teachers prefer to work at a school near where they live. If so, then residential segregation by race may lead to the selection of schools with more African-American students. Or teachers may simply prefer to teach students of a similar ethnic background. Alternatively, job opportunities for African-American teachers may be more extensive in schools with higher proportions of African-American students.

All this movement of teachers among schools obviously affects the composition of the teaching force at particular schools. Since exiting rates are smaller at schools with more advantaged students, these schools also enjoy more experienced teachers. The pattern is particularly striking when schools are grouped according to their average level of student achievement. As Figure 1 shows, almost 20 percent of teachers in schools in the bottom quartile of student achievement leave their schools each year, while in the top-quartile schools only 15 percent leave. The driving force of this relationship is not teachers' leaving urban districts for suburban ones; on the contrary, most of the difference in leaving rates between these types of schools is caused by teachers moving to new schools within their original district. Since teachers with fewer than two years of experience tend to be less effective than more experienced teachers, existing mobility patterns in Texas are likely to adversely affect the achievement of disadvantaged students.

Escaping Low Achievement (Figure 1)

Schools where students score, on average, in the bottom quartile on the Texas Assessment of Academic Skills (TAAS) lose almost 20 percent of their teachers each year, compared with an exit rate of just 15 percent in schools where students score in the top quartile. The result is that low-achieving students are more likely to be stuck with rookie teachers.



SOURCE: Authors

Salaries and Student Demographics

The analysis to this point has not disentangled the effects of salaries from the effects of the working conditions associated with students of varying achievement and family backgrounds. To identify more precisely the independent effects of the multiple factors affecting teachers' choices, we use regression analysis to estimate the separate effects of salary differences and school characteristics on the probability that a teacher will leave a school district in a given year, holding constant a variety of other factors, including class size and the type of community (urban, suburban, or rural) in which the district is located. We also compare the impact of salaries and school characteristics on the probability of switching to another district with their impact on the probability of leaving teaching altogether.

The results of this analysis confirm that teachers are more likely to leave districts with low average achievement scores. Ethnic composition of the student body is also an important determinant both of the probability of leaving the public schools entirely and of switching from one school district to another. White teachers, regardless of their teaching experience, will tend to move to schools with fewer African-American and Hispanic students. Less experienced white teachers are also more likely to leave the public schools altogether if they come from schools with higher concentrations of African-American and Hispanic students. For African-American and Hispanic teachers, the reactions to varying concentrations of African-American students are almost exactly the opposite.

The differential effect of the ethnic composition of the student body for white and African-American teachers could reflect personnel policies that prefer minority teachers in schools with higher concentrations of minority students. But teachers' own preferences may be even more important, as suggested by the fact that the decision to leave the Texas public schools altogether—a decision much more closely related to the individual teacher's preferences than to the district—is influenced in the same way by the schools' ethnic composition.

If the ethnic composition of the school is the most important factor affecting teachers' decisions to change jobs, financial considerations are also relevant, especially when it comes to a decision by a somewhat less experienced male teacher to move from one district to another. For male teachers with fewer than three years of experience, the estimated change in the probability of switching districts for a 10 percent increase in salary is 2.6 percentage points; for men with three to five years of experience, the estimated change for a salary increase of the same magnitude is 3.4 percentage points; for still more experienced male teachers, financial effects trail off, down to essentially zero for those with more than 20 years of experience.

The results indicate that higher salaries significantly reduce the probability that male teachers will leave a district. The magnitude of the effect is largest for those early in their career. By contrast, the effects of salary difference for more experienced

women teachers are significantly smaller. While females in their first five years of teaching are somewhat responsive to salary differences, such differentials have no observable effects on those with six or more years of experience.

In short, the financial impact on the decisions of female teachers is less than half that for men. Because they represent the vast majority of elementary teachers, women's unresponsiveness to financial differentials is important to the subsequent policy discussion.

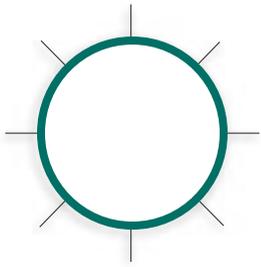
Policy Implications

The results presented above confirm the difficulty that schools serving academically disadvantaged students have in retaining teachers, particularly those early in their careers. Teaching lower-achieving students—whether because teachers find it more difficult or less rewarding—is a strong factor in decisions to leave Texas public schools, and the magnitude of the effect holds across the full range of teachers' experience levels. There is also strong evidence that a higher rate of minority enrollment increases the probability that white teachers will leave a school. By contrast, increases in the shares of African-American and Hispanic students reduce the probability that African-American and Hispanic teachers will leave.

Given these findings, a key question is how to reduce the flows out of low-achieving, high-minority schools and out of the teaching profession altogether. One oft-proposed solution is to provide teachers with "combat pay"—salary increments designed to encourage them to remain at a tough school. But how large would the increase need to be in order to neutralize the effects of difficult working conditions? Let's consider this closely.

The situation is complicated by the fact that most elementary-school teachers in Texas are white females (only 20 percent are African-American or Hispanic, while only 14 percent are male). As noted earlier, female teachers are less responsive to increases in salary, meaning that the bonus required to keep them at a school will be larger than for males. In addition, white teachers are the most likely to exit low-achieving, high-minority schools, meaning that it will take even larger increases to retain them. If the teaching corps looked much different—say, if the teachers in urban elementary schools were mostly African-American and Hispanic males—the costs of the "combat pay" solution would be lower.

Based on our findings of what causes teachers to leave their schools, we calculated the salary increases that would be necessary to offset the effects of difficult working conditions in large urban versus suburban schools. These calculations, performed separately for white male and female teachers in their early careers, are shown in Figure 2. The findings suggest that truly large boosts in salary would be needed, particularly for women. Female teachers in large urban school districts would require a 25 percent initial increase in compensation, rising to more than



To retain teachers in urban areas, truly large boosts in salary would be needed, particularly for women.

40 percent when they reach three to five years of experience. Moreover, this is only in the “typical” urban school. For the neediest or most troubled schools in urban areas, even the differentials calculated in Figure 2 would probably not be sufficient to stem the high levels of turnover in such schools.

Not only would across-the-board salary increases of 25 to 40 percent for teachers in urban areas be an enormously expensive reform, but it would be difficult to target such a solution, since teachers typically negotiate salary schedules that apply to all the teachers in the district, not just to those in the most disadvantaged schools. Similarly, even if targeted to the most disadvantaged schools, any increases in salaries would almost certainly go to new and middle-career teachers alike, even though our results indicate that salary differentials are nearly irrelevant for women teachers with ten or

more years of experience. But, to the extent that other characteristics of schools where disadvantaged students are found—such as safety and disciplinary problems, more bureaucratic rules, poor leadership, greater student turnover, or a greater distance to work—are important elements, improving these working conditions could mitigate the turnover problem we have identified. And these improvements might have their own effect on student performance.

Finally, it is important to note that this study focuses solely on how many teachers move among schools and out of teaching. We have not examined the quality of the teachers who move from one district to another or leave teaching altogether. The actual cost of improving the quality of instruction depends crucially on whether good teachers, not just experienced teachers, are being retained. Salary policies that are guided just

by the characteristics of the students in a school will retain both the good and the bad teachers.

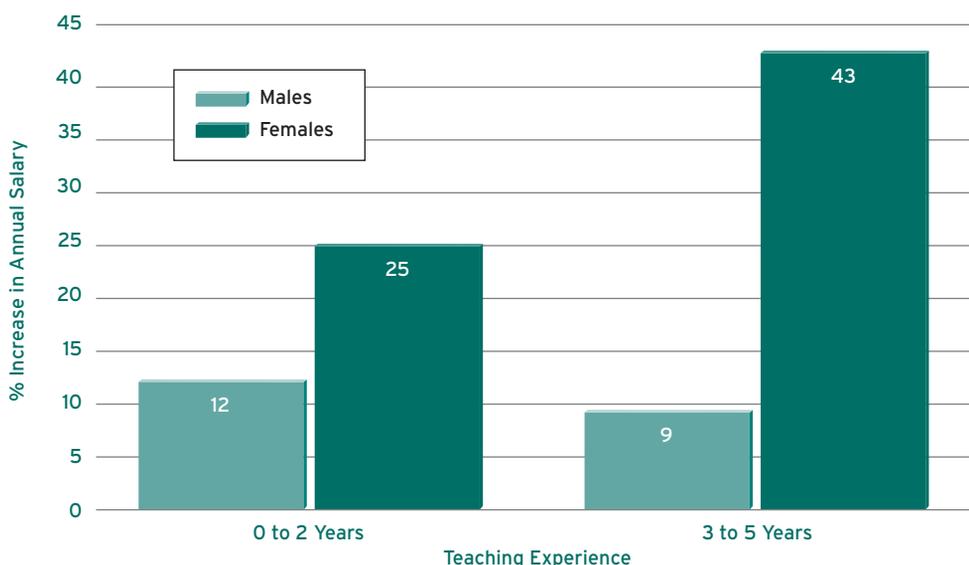
We do know from our other work that differences in teacher quality are more significant than the differences arising from having inexperienced teachers. Therefore, an approach with more appeal might be simply to accept the fact that there may be greater turnover in schools serving a larger disadvantaged population, but then to concentrate much more attention and resources on the quality dimension. While we do not have much experience with such policies, they seem like the most feasible way to deal with the problems of schools serving low-income and minority students.

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How Much "Combat Pay" Is Necessary? (Figure 2)

Substantial boosts in salary would be needed to retain teachers in low-achieving, high-minority schools at rates similar to the retention rates experienced in suburban schools. The large bonuses required for women—from 25 to 43 percent depending on experience—reflect their unresponsiveness to salary differentials.

Increase in Salary of Urban Teachers Necessary to Equalize Turnover between Urban and Suburban Schools



Note: Estimates based on the differences in average achievement and in the shares of African-American and Hispanic students between large urban and suburban districts.

SOURCE: Authors