

Seniority Trumps Nearly Everything

But districts find ways to keep teachers in areas where there is a shortage. (Figure 1)

Note: Subject areas with teacher shortages are math, science, and special education.
 SOURCE: Authors' calculations

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Managing the Teacher Workforce

The consequences of “last in, first out” personnel policies

Tough economic times mean tight school district budgets, possibly for years to come.

Education is a labor-intensive industry, and because most districts devote well over half of all spending to teacher compensation, budget cuts have already led to the most substantial teacher layoffs in recent memory. Although the 2010 federal Education Jobs and Medicaid Assistance Act forestalled steeper staffing cuts, school district expenditures are expected to fall once more, and it is highly unlikely the federal government will step in again.

Calls to reform teacher layoff policies have begun to appear with regularity in newspaper editorials, policy briefs, and statehouses—and for good reason. A growing body of research confirms that teacher quality is the most influential in-school factor driving student achievement. That being the case, teacher dismissal policies and procedures can have profound implications for how much students learn.

Newly available data on “reduction-in-force” (RIF) notices received by teachers in Washington State shed light on the consequences of existing layoff policies for student achievement as well as the consequences of adopting alternatives. Our analysis of these data provides strong evidence that seniority plays an outsized role in determining which teachers are targeted for layoffs, likely in part because collective bargaining

agreements ordinarily require that the teachers last hired are the first to be fired. Those in subject areas with teacher shortages, such as mathematics and science, are less likely than other teachers to receive a layoff notice, suggesting that districts have some degree of flexibility in their dismissal procedures. However, were districts to adopt policies that allowed administrators to dismiss teachers according to their effectiveness rather than their seniority, they could lay off fewer teachers, achieve the same budgetary savings, and increase the overall efficacy of their teaching force.

Seniority-Based Layoff Policies

In the overwhelming majority of school-district collective bargaining agreements, “last in, first out” provisions make seniority the determining factor in

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which teachers are laid off. All of the 75 largest school districts in the nation use seniority as a factor in layoff decisions, and seniority is the sole factor determining the order of layoffs in more than 70 percent of these districts.

The situation in Washington State—the focus of this study—looks similar. A review of the collective bargaining agreements operating in Washington’s 10 largest school districts shows that all use seniority as a basis for determining layoffs, and 8 of these districts use seniority as the only determinant of which teachers get laid off.

There are notable examples of districts that do not rely solely on seniority. In 2004, the Chicago Public Schools changed its policies to allow principals’ evaluations of untenured teachers to influence layoff decisions (see “Do Principals Fire the Worst Teachers?” *research*, page 70). And the Los Angeles Unified School District recently agreed to limit the use of seniority in layoff determinations as part of a settlement in a lawsuit brought by the American Civil Liberties Union (ACLU). Over the past two years, more than a dozen states have sought to change laws that make seniority the determining factor in layoff decisions; so far, Florida, Idaho, Utah, and Ohio have succeeded.

Driving these changes is a belief that seniority-based layoff policies may have negative consequences for student achievement. First, to achieve a targeted budget reduction, school districts need to lay off a greater number of junior teachers than senior teachers (as junior teachers have lower salaries), meaning that a seniority-based layoff policy will cause class sizes to rise more than they would under an alternate arrangement. Second, the most-senior teachers may not be the most effective teachers. With a seniority-based layoff policy, school systems may be forced to cut some of their most promising new talent rather than dismiss more-senior teachers, who may not be terribly effective in raising student achievement. A final way in which seniority-based systems may have consequences for student achievement is that strict adherence to seniority would require at least some districts to lay off teachers in subject areas with teacher shortages, such as math and special education.

Beyond the effects of seniority-based layoffs on the teacher workforce as a whole are potential distributional consequences. In many districts, schools with high proportions of at-risk students tend to employ the most first- and second-year teachers. Under a seniority-based layoff policy, these schools stand to lose the largest share of their teachers.

Data

This study relies on a unique dataset from Washington State that links teachers to their schools and, in some cases, to their students; the dataset also includes information on those teachers who received RIF notices in the 2008–09 and

2009–10 school years. In the 2008–09 school year, 2,144 employees received a layoff notice and in 2009–10, some 450 employees received a notice.

Employees who received these notices can be linked with administrative records of their credentials, school assignments, academic degrees, and compensation. The administrative database we used provides a record of employees working in Washington State’s school districts and includes information such as their places of employ-

A seniority-based layoff policy will cause class sizes to rise more than they would under an alternate arrangement.

ment, experience and degree, gender and race, and annual compensation levels.

We restrict our analysis to employees who were in a teaching position the year they received a layoff notice. Our final sample includes 1,717 teachers who received a layoff notice in 2008–09 and 407 teachers who received one in 2009–10, with 130 teachers who received a layoff notice in both school years. Overall, about 2 percent of teachers in the state received a layoff notice in either year. It is important to stress that not all these teachers were ultimately laid off, largely due to the influx of federal stimulus money. Of the 1,717 teachers who received a RIF notice in 2008–09, for example, 1,457 returned to the same district in 2009–10. We still focus on all RIF notices because they indicate the teachers who were targeted for layoffs, and thus tell us about the likely effects of the system that governs layoffs.

The database does not include a direct measure of a teacher’s seniority in the current district, so we estimate seniority based on how many years the teacher has been employed by the same district. The credentials data include where each teacher was trained and in what areas each teacher holds endorsements. We create a measure of the selectivity of each teacher’s college and code each endorsement a teacher holds in any of 10 subject areas.

Information about the schools in which teachers are employed comes from two sources. Washington State Report Card data provide measures of racial composition, student-teacher ratios, the percentages of students enrolled in the free or reduced-price meals program, total enrollment, and the percentage of students who passed the reading and math Washington Assessment of Student Learning exams in each teacher’s school. We use the Common Core of Data to identify teachers in urban areas, the grade level of each teacher’s

school, and the per-pupil expenditure on instruction by each teacher's district.

We can also link a subset of teachers to their students' test-score performance, which allows us to use value-added models to estimate their teaching effectiveness. Our data on student achievement come from the Washington State Assessment of Student Learning, a statewide test given annually in 3rd through 8th grade as well as in 10th grade. The student database also includes information on race and ethnicity, free or reduced-price meal eligibility, and status in the following programs: Learning Assistance Program reading/math, Title I reading/math, Title I Migrant, Gifted/Highly Capable, State Transitional Bilingual Program, and Special Education.

Methods

We first examine the simple associations between the various teacher and school characteristics listed above and the likelihood of receiving a layoff notice. In order to provide a more detailed picture of the factors that are associated with teacher layoff notices, we then examine the effects of each of these various factors on the probability that a teacher received a layoff notice, while controlling for the others. Of course, these relationships are correlations only and in theory may not represent causal relationships. However, we are confident that, despite the nonexperimental nature of this study, its findings nonetheless provide an accurate picture of the causal impact of, for instance, a teacher's credential on the likelihood of receiving a layoff notice.

The teacher characteristics that we examine include seniority in district, degree level (master's or higher vs. bachelor's),

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gender, race, college selectivity, and endorsement area. The school characteristics include whether it is in an urban area, grade level (e.g., high school), the number of students enrolled, student-teacher ratio, the percentage of students who are eligible for the free or reduced-price lunch program, the percentage of minority students, and measures of student achievement

in reading and math. In addition, we control for district-level characteristics, including total enrollment, per-pupil expenditures, and percentage of funding that comes from local, state, and federal sources.

These analyses identify the teacher, school, and district characteristics that are associated with layoff notices, but perhaps of greater interest is the relative effectiveness of teachers who receive layoff notices. For the subset of teachers who can be linked to students, we are able to estimate value-added measures of classroom performance for each teacher in each year. These indicate how well a teacher's students did relative to other teachers' students, controlling for prior student achievement and for student and family background characteristics (for example, age, race and ethnicity, disability, free or reduced-price lunch status, and parental education level).

Who Gets RIFed?

Not surprisingly, we find that most of the teachers receiving layoff notices are relatively junior. Approximately 60 percent of teachers receiving layoff notices have two or fewer years of experience, and approximately 80 percent have two or fewer years of seniority within their current district. It is interesting to note, however, that some teachers who receive layoff notices are well into their careers, implying that at least some districts in the state are making judgments about which teachers should be laid off based on criteria other than seniority.

Teachers who received layoff notices are also far less likely to hold an advanced degree. Consequently, there is an average difference of about \$15,000 in salary between teachers who did and did not receive notices. Had all 1,717 teachers who received layoff notices in 2008–09 actually been laid off, the salary savings in the state would have been \$5,521,238. As noted earlier, one of the prevailing critiques of seniority-based layoffs is that it is necessary to lay off more teachers in order to attain a specified budget objective than it would be if districts used alternative criteria. If teachers were laid off at random (so that the laid-off teachers made the average salary in their district), we estimate that it would only be necessary to lay off 1,349 teachers in order to attain the same budgetary savings. This is roughly 20 percent less than the actual number of teachers who received layoff notices.

According to the 2006 report "Educator Supply and Demand in Washington State," there are 14 endorsement areas for which there are "high degrees of shortage," all of which fall into math, science, or special education. We classify any teacher with an endorsement in one of these areas accordingly. There is some evidence to suggest that school districts are choosing to retain

teachers in subject areas with teacher shortages, with 13.3 percent of teachers that received layoff notices falling into such a category compared to 15.1 percent of teachers who did not receive a notice.

Teachers receiving a notice tended to be in smaller schools, but were not, in general, more likely to be teaching in schools

Districts would only have to lay off 132 teachers under an effectiveness-based system in order to achieve the same budgetary savings they would achieve with 145 layoff notices under today's seniority-driven system, a difference of about 10 percent.

with high proportions of minority students or lower test-score levels. However, school-level measures can mask a significant degree of teacher sorting across classrooms within schools. For the subset of teachers who can be linked to their students, we find that teachers who received a layoff notice are more likely to be teaching poor, non-white, and lower-scoring students than other teachers.

We next examine our value-added measures of teacher effectiveness and find that teachers who received layoff notices were about 5 percent of a standard deviation less effective on average than the average teacher who did not receive a notice. This result is not surprising given that teachers who received layoff notices included many first- and second-year teachers, and numerous studies show that, on average, effectiveness improves substantially over a teacher's first few years of teaching.

Explaining RIFs

Our analysis of multiple factors indicates that, as expected, seniority plays an important role in determining whether teachers receive a layoff notice. We find additional evidence that districts are choosing to retain teachers thought to have advanced or atypical skills. On average, teachers with a master's degree or an endorsement in a subject area with teacher shortages are about 0.6 percentage points less likely to receive a RIF notice. Conversely, teachers with endorsements in health, physical education, or the arts are far more likely to receive a layoff notice. Finally, we find evidence that school districts behave strategically by

retaining teachers who have endorsements in multiple areas and therefore provide flexibility in terms of the classes they can teach. Perhaps surprisingly, controlling for district and school characteristics does not noticeably change the results reported above, and few of the school-level variables identifying student demographics are predictors of which teachers receive layoff notices.

Finally, we ran our analysis including value-added measures of teacher effectiveness for the subset of teachers we are able to link to individual students. It is first worth noting that the inclusion of the teacher effectiveness measures does little to change the estimated effects of the teacher, school, and district characteristics discussed above. More importantly, the effects of the value-added measures (based on both math and reading scores) are close to zero, suggesting that effectiveness plays little or no role in determining which teachers are targeted for layoffs. And, these results were robust to a variety of different ways of measuring teacher value added. In other words, the fact that teachers who received layoff notices were, on average, somewhat less effective than their peers is an artifact of the relationship between effectiveness and seniority.

Policy Implications

Our findings largely comport with what one would expect given seniority provisions in collective bargaining agreements. The surprise is that factors other than seniority do appear to influence which teachers are targeted for layoffs.

To get a more concrete sense of the extent to which various factors play into the targeting of teachers for layoffs, we ran simulations based on the effects calculated by our statistical model. First, we calculate the expected probability of a teacher with each combination of endorsement area and seniority level receiving a layoff notice. Although a teacher's endorsement area does affect the likelihood of being laid off, the effect is far smaller than the influence of seniority. For instance, we estimate the probability that a first-year special education teacher receives a layoff notice is 6.2 percent, compared to 17 percent for a first-year health/physical education teacher. This difference is statistically significant, but it pales in comparison to the difference in probability for a first-year teacher compared to a teacher with 12 or more years of seniority: The estimated probability of a teacher with 12 or more years of seniority receiving a layoff notice is less than one-quarter of 1 percent for every endorsement area (see Figure 1).

Next we examine the implications of employing an effectiveness-based layoff policy rather than the seniority-driven

system currently in place. First, we calculate a value-added measure of effectiveness that combines data from all available years and both subjects (averaging math and reading). Teachers in each school district are then ranked according to this value-added score. Finally, starting with the least effective teachers in each district and moving up the effectiveness ladder, enough teachers are assigned to a hypothetical layoff pool to achieve a budgetary savings for each district that is at least as great as the budgetary savings each district would have seen had all the teachers who received a layoff notice in 2008–09 actually been laid off.

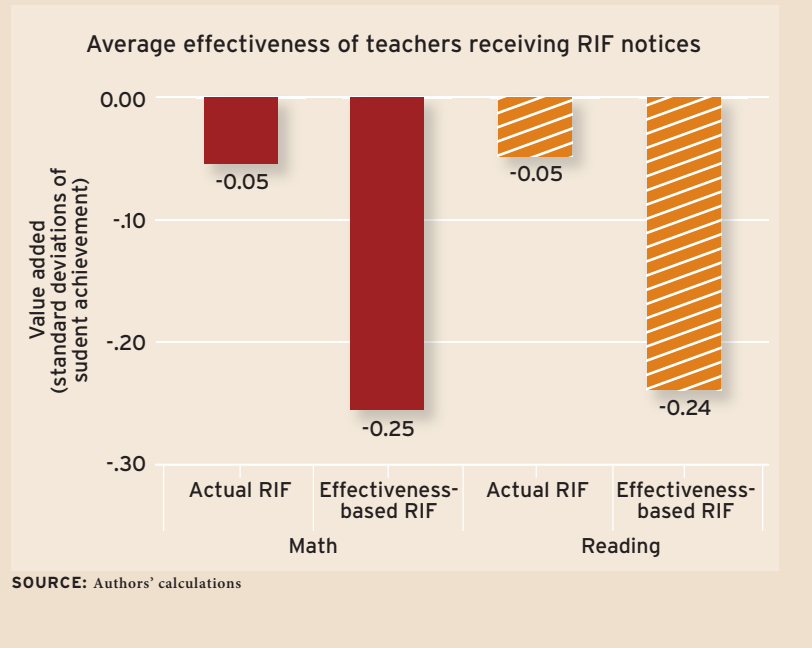
The overlap between the subgroup of teachers who received a layoff notice and the subgroup of teachers who received one in our simulation is relatively small—only 23 teachers (or 16 percent of the teachers for whom we could estimate value-added who received a layoff notice). Moreover, because the teachers who received layoff notices in our simulation were more senior (and had higher salaries) than the teachers who actually received layoff notices, the simulation results in far fewer layoffs. We calculate that districts would only have to lay off 132 teachers under an effectiveness-based system in order to achieve the same budgetary savings they would achieve with 145 layoff notices under today’s seniority-driven system, a difference of about 10 percent.

As expected, there are large differences in classroom effectiveness between teachers who actually received layoff notices and those who would have received them in our effectiveness-based simulation. The two groups differ by about 20 percent of a standard deviation in students’ math and reading achievement (see Figure 2). The magnitude of the difference is striking, roughly equivalent to having a teacher who is at the 16th percentile of effectiveness rather than at the 50th percentile. This difference corresponds to roughly 2.5 to 3.5 months of student learning.

Since there is little overlap between the samples under these different scenarios, we investigate the likelihood that different types of students might be disproportionately affected by one type of layoff system. For the subset of teachers who can be linked to student-level data, we consider the characteristics of the students whose teachers received a layoff notice under the actual system and in our simulation. We find that the probability that students in a particular subgroup have a teacher who received a layoff notice varies considerably from one subgroup to the next. In particular, black students are far more likely than other students to have been in a classroom of a teacher who

Who Gets Fired? (Figure 2)

Under current procedures, teachers targeted for job cuts are, on average, only slightly less effective than the average teacher. This gap would widen considerably if districts used effectiveness as their decision rule.



received a layoff notice. The effectiveness-based layoffs result in fewer layoff notices and are much more equitably distributed across student subgroups; black students in particular are only marginally more likely to have been in a classroom with a teacher who received a layoff notice under this system.

Districts across the country are rethinking layoff strategies. This is sensible, because although the simplicity and transparency of a seniority-based system certainly has advantages, it is hard to argue that it is in the best interest of students. The effectiveness-based system in our simulation would result in a very different group of teachers targeted for layoffs than does the current system and in layoffs that affect different segments of the student population. Most importantly, the differences in the effectiveness of teachers laid off under each type of system have implications for student achievement.

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