

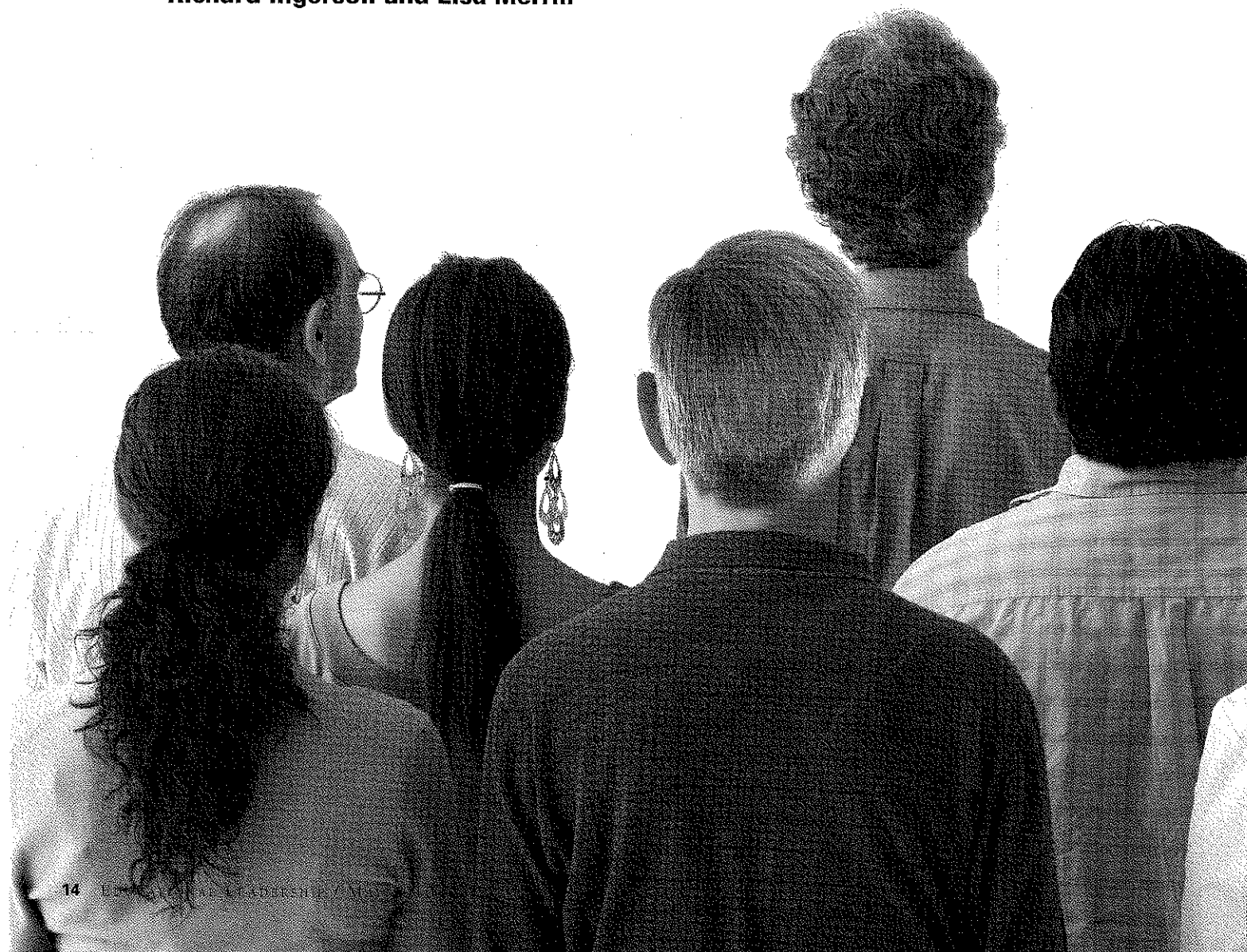
# Who's Teaching

*When researchers analyzed the last 20 years of demographic data from the Schools and Staffing Survey, they found a few surprises.*

**Richard Ingersoll and Lisa Merrill**

**H**as the elementary and secondary teaching force in the United States changed in recent years? And if so, how?

To answer these questions, we recently embarked on a research project to explore trends over the past two decades. We were surprised by what we found. The teaching force has, indeed, been changing—and some of the most dramatic trends appear



# Our Children?

to be little noticed by researchers, policymakers, and the public.

We analyzed data from the largest and most comprehensive source of information on teachers available—the Schools and Staffing Survey (SASS) and its supplement, the Teacher Follow-Up Survey (TFS).<sup>1</sup> Conducted by the National Center for Education Statistics (NCES), the SASS administers survey questionnaires to a random

sample of about 50,000 educators representing all types of teachers, schools, and districts and all 50 U.S. states. Unlike most major large-scale education surveys, SASS focuses on teachers rather than students.

Six cycles of SASS have been administered over a 20-year period: 1987–88, 1990–91, 1993–94, 1999–2000, 2003–04, and 2007–08. We decided to take advantage of the depth and duration of these data to explore our



questions about the demographic status of the teaching profession. Here are six of the most intriguing trends we found.

### Trend 1: Ballooning

K–12 teaching has long been one of the largest occupational groups in the United States, and it is growing even larger. Although elementary and secondary student enrollment (public, private, and charter) has risen 19 percent since the mid-1980s, the number of teachers has increased at a far faster rate, growing 48 percent (see fig. 1).

What accounts for this ballooning of the teaching force? One possible explanation is that a reduction in teachers' workloads—class sizes, hours worked, or classes taught per day—has made it necessary to employ more teachers. When we checked out this explanation, we found that elementary-level class size did go down 20 percent during this period, from an average of 26.2 to 21.1

## The ballooning of the teaching force has resulted in a surge of beginning teachers.

students per general elementary school classroom. Accordingly, the number of general elementary school teachers increased. Because elementary teachers represent almost one-third of the entire teaching force, their increase explains a portion of the ballooning—but not as much as one might expect.

In contrast to elementary classrooms, typical subject-area courses at the middle and high school levels experienced little change in class size. The average public middle or secondary school class was 24.3 students in 1987–88 and 23.4 students in 2007–08. Moreover, during this period

there were slight increases in the average number of class periods teachers taught each day and the number of hours they worked each week.

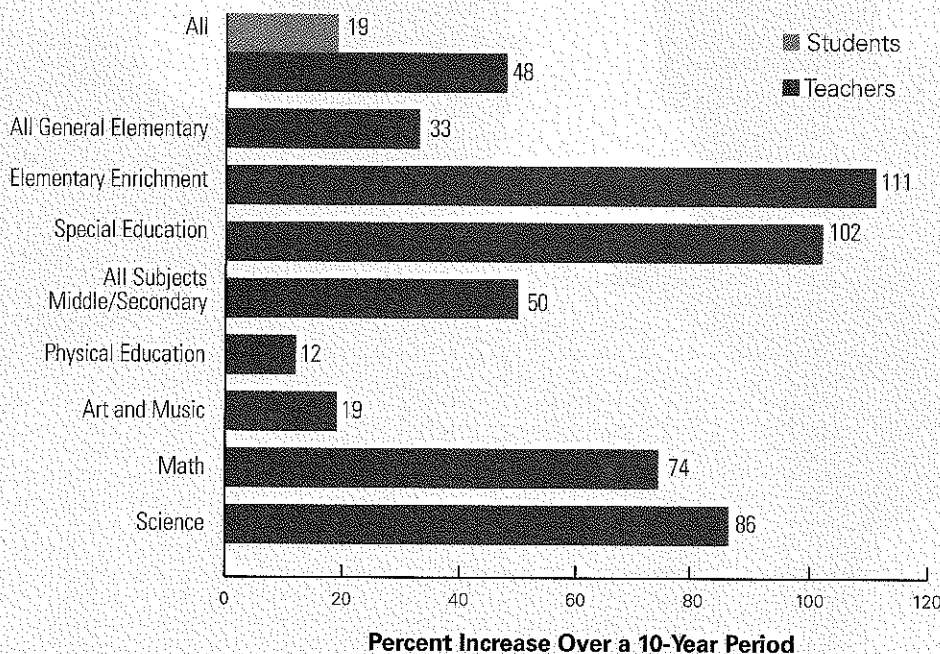
The data indicate that a more significant source of the ballooning is the growth of special education, perhaps linked to changes in the Individuals with Disabilities Education Act. As Figure 1 shows, the number of teachers with majors in special education increased by 102 percent compared with only 33 percent for general elementary school teachers. Special education classes average about one-half the size of general education classes in elementary and secondary schools. The increase in special education teachers alone accounts for almost one-fifth of the entire increase in the teaching force.

Another source of the ballooning is a dramatic increase—111 percent—in the number of teachers of elementary enrichment classes. These are instructors who teach one subject (predominantly art, music, or physical education) to most of the students in an elementary school.

As the teaching force has grown, it has also experienced large shifts at the middle and secondary levels. The overall number of subject-area teachers in these grades has increased by 50 percent, but there have been winners (math and science, as well as special education) and losers (art, music, and physical education). The number of teachers with math degrees has gone up by 74 percent, and the number of teachers with science degrees has gone up by 86 percent.

Interestingly, the data also show that the fastest rate of

**FIGURE 1. The Ballooning Teaching Force, 1987–88 to 2007–08**



Source: Authors' analysis of data from the Schools and Staffing Survey.



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increase in math and science teachers occurred during the 1990s, before the advent of No Child Left Behind. As states implemented increased course requirements for high school graduation, especially in math and science, the number of students taking classes in these subjects went up by 69 percent and 60 percent, respectively, between 1987–88 and 2007–08. These changes undoubtedly have driven the large increase in the employment of teachers with math and science degrees.

What are the implications of this rapid growth in the teaching force? One sobering implication is the financial cost, given that teacher salaries are the largest item in school district budgets. The questions arise, How have school systems been able to cope with such an increase in their largest budget item, and who pays for it? How much of the increase in special education staff has been covered by federal, state, or local funding to schools?

Another issue related to these data is an ongoing concern among policymakers about the math and science teacher shortage. We have explored this issue in depth elsewhere (Ingersoll & Perda, in press). The data show that, contrary to conventional wisdom, the new supply of qualified math and science teachers has more than kept

## The teaching force has been changing—and some of the most dramatic trends appear to be little noticed by researchers, policymakers, and the public.

pace with increases in both teacher retirements and student enrollments.

### Trend 2: Graying

The teaching force has gotten older. We often hear about this trend, and the SASS data confirm it. As shown in Figure 2 (p. 17), in 1987–88 the age distribution of public school teachers was shaped like a tall peak: The modal, or most common, age was 41. By 2007–08, the modal age had increased to 55. Moreover, the number of teachers 50 years or older increased from about 530,000 in 1988 to 1.3 million in 2008. As a result, teacher retirements have increased from 35,000 in 1988 to 87,000 in 2004 (the most recent data available).

The aging of the teaching force has cost implications for school budgets and state pension systems. Veteran teachers earn higher salaries, and the increased number of retirees requires greater spending on pensions. But if schools

replace retirees with new teachers, who earn lower salaries and who pay into state pension plans, these additional costs could be absorbed. As we will discuss in Trend 3, not only have retirees been replaced with newcomers, but the flow of newcomers has become a flood.

Another implication of the aging of the teaching force, long noted, is its effect on teacher supply. Our analyses of the data indicate that the average age of retirement for teachers is 59 and that the number of teachers retiring will probably reach an all-time high in 2011–12 and then begin to decline. However, often overlooked is the fact that teacher retirements have always represented a small portion of those leaving teaching—less than one-third in recent years. In our research on the teacher shortage, we found that school staffing problems are more related to preretirement turnover than to retirements (Ingersoll & Perda, in press).

### Trend 3: Greening

Graying is not the only age trend for teachers; an opposite trend has been going on simultaneously. As Figure 2 shows, by 2008 the teacher age distribution had become two-peaked, with large proportions of teachers at both ends of the age spectrum.

The ballooning of the teaching force has resulted in a surge of beginning teachers (which includes not only young teachers but also a growing number of older career switchers). In 1987–88, the modal teacher had 15 years of teaching experience under his or her belt. By 2007–08, the modal teacher was not a gray-haired veteran but a beginner in his or her first year of teaching.

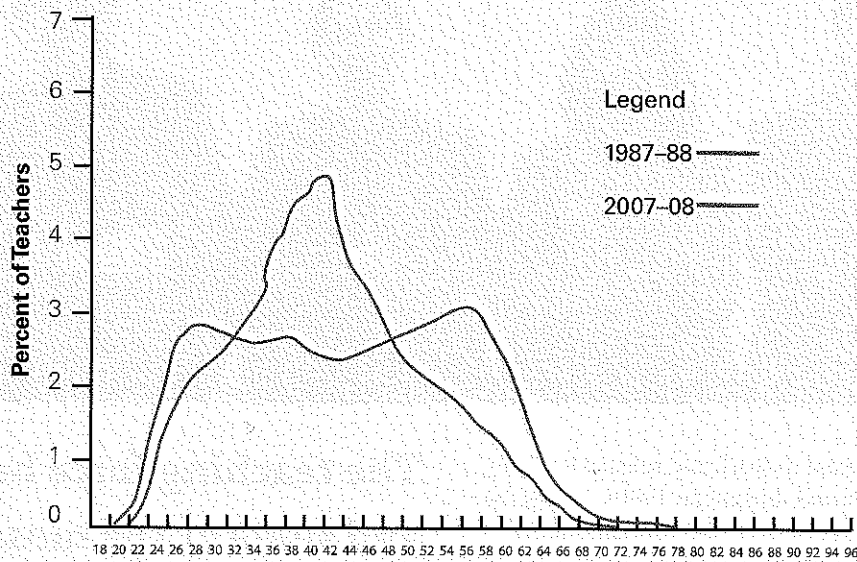
This redistribution in age and experience has both positive and negative implications. New teachers can be a source of fresh ideas and energy. On the other hand, for many schools and school systems, veterans will become scarce, with increasingly fewer teachers able to provide mentoring and leadership.

### Trend 4: Becoming More Female-Dominated

In the past several decades, many occupations and professions that were traditionally male-dominated have opened up to women. With alternatives increasingly available, one might conclude that fewer women would enter traditionally female-dominated occupations.

This has not happened for teaching, however. SASS data as well as the NCES Common Core of Data show that the proportion of teachers who are female has steadily increased, from 66 percent in 1980 to 76 percent in 2007–08. This change in the female-to-male ratio has not been caused by a decline in the number of males entering teaching—that number has grown by 26 percent since 1987–88. But the number of female teachers grew almost twice as much during the same period.

FIGURE 2. The Teaching Force Becomes Older—And Younger



Source: Authors' analysis of data from the Schools and Staffing Survey.

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The increase in female teachers has been concentrated at the secondary level, where male teachers were in the majority until the late 1970s. There have been only slight increases at the elementary level, where females have long been in the majority.

The reasons for this trend are unclear. A contributing factor might be that the proportion of adult women entering the paid workforce, as a whole, has dramatically increased. Hence, although women have more varied career opportunities than in the past, more women overall are seeking employment and a portion of those are still entering teaching. Moreover, a shortened day, winter and spring breaks, and long summer vacations that have traditionally made teaching a more manageable

career for mothers of young children may still be factors attracting women to teaching. In addition, women now have more varied career opportunities in education, as evidenced by the increases in female teachers at the secondary level and dramatic increases in the number of female administrators.

If this trend continues, by 2012 more than 80 percent of teachers in the United States will be female. An increasing number of students may encounter few, if any, male teachers during their elementary and secondary school careers. Given the importance of teachers as role models, and sometimes as surrogate parents, this trend could certainly be a policy concern.

### Trend 5: Becoming Less Stable

The data show an increase in teacher turnover, which includes both teachers who move between schools and teachers who leave the profession altogether. Average turnover rates fluctuate from year to year, but overall they have increased since the early 1990s by 28

percent (from 13.2 percent in 1991–92 to 16.9 percent in 2004–05).

One question that naturally arises is how teacher turnover rates compare with turnover rates in other occupations. In other analyses of national data (Ingersoll & Perda, 2010), we have found that, as one might expect, teaching has more annual turnover than some higher-status professions (such as lawyers, engineers, architects, professors, and pharmacists); about the same turnover as some occupations (such as police officers and corrections officers); and less turnover than some lower-status lines of work (such as child care workers, secretaries, and paralegals).

But these figures mask large differences in turnover rates between different types of teachers and between different types of schools, revealing the need to disaggregate the data. For example, increases in turnover were higher for beginning teachers. Rates of turnover for first-year public school teachers rose from 21.4 percent to 28.5 percent from 1988 to 2004—a 31 percent increase.

For most of the past decade and a half, annual rates of teacher turnover differed little by race or ethnicity. That changed in 2004–05, however, when turnover rates among minority teachers became significantly greater than those for white teachers.

Teacher turnover is also not equally distributed across states, regions, and school districts. The largest variations by location, however, are those between different schools, even within the same district. The data show that in 2004–05, 45 percent of all public school teacher turnover took place in just one-fourth of public schools. High-poverty, high-minority, urban, and rural schools have the highest rates of turnover. Not only were the rates higher in these kinds of schools, but in the case of cross-school moves, teachers' destinations differed. The data show a significant annual shuf-



## The proportion of teachers who are female has steadily increased.

fling of teachers from poor to wealthier schools, from high-minority to low-minority schools, and from urban to suburban schools.

These changes have large implications. Employee turnover in any occupation, including teaching, has pros and cons, costs and benefits. As mentioned before, our research has found that teacher turnover plays a large role in school staffing problems and teacher shortages (Ingersoll & Perda, in press). Increases in turnover may further exacerbate these problems. In addition, education policymakers need to look closely at what can be done about the increasing turnover rates among beginning teachers and minority teachers, as well as in dis-

advantaged schools, which are traditionally among the hardest to staff.

### Trend 6: Holding Steady in Academic Abilities

The belief that the “best and brightest” college graduates find teaching less attractive than other career options is widespread. This belief is supported by a number of studies showing teachers' standardized test scores to be well below the average for all college graduates (see Corcoran, Evans, & Schwab, 2004). For instance, in analyzing national data from NCES's Baccalaureate and Beyond Survey, we found that in the college class of 1999–2000, those majoring in education tended to have among the lowest average SAT scores. Moreover, those majoring in subjects other than education who went on to become teachers also had lower SAT scores than those with the same major who did not go into teaching.

Another measure of an individual's academic ability is the selectivity or competitiveness of his or her undergraduate institution. To assess how the

academic ability of teachers may have changed over the past two decades, we looked at trends in this measure using *Profiles of American Colleges* (Barron's Educational Series, 2009), which ranks colleges and universities in six categories: most competitive, highly competitive, very competitive, competitive, less competitive, or not competitive.

What did we find? In 2007–08, fewer than 10 percent of first-year teachers had graduated from the top two categories of higher education institutions,

## High-poverty, high-minority, urban, and rural schools have the highest rates of teacher turnover.

compared with about 25 percent of first-year teachers who had graduated from the bottom two categories of higher education institutions. Over the past 20 years, the portions have tended to fluctuate up and down; therefore it is not possible to conclude that there is a trend in either direction.

We do, however, see important differences by gender. The proportion of female first-year teachers from institutions in the top two categories changed little between 1987–88 and 2007–08—from 8.3 percent to 7.7 percent. For males, the picture is different. Males are more likely than females to come from the top two ranks, but the percentage of male first-year teachers in these ranks decreased significantly between 1987–88 and 2007–08—from 15.5 percent to 10.2 percent. For both males and females, the proportion coming from the bottom two ranks has changed little (from 23 to 24 percent for females, and from 24 to 25 percent for males).

To sum up, these data suggest that although the academic ability of the male portion of newly entering teachers has decreased in the past 20 years, this

has not been true of female teachers. Perhaps we should call the latter a nontrend.

We should note that although the *percentage* of teachers from top colleges and universities has not changed much, the *number* of teachers from these institutions has increased (by 59 percent for females and by 29 percent for males) as the teaching force has ballooned. In sheer numbers, the teaching profession is getting more of the “best and brightest” than before.

When considering the implications of measures of teacher academic ability, we must also acknowledge that we cannot assume that the “best and brightest” are the most effective teachers. The relationship between teachers' academic ability and teaching quality is unclear. However, academic ability is generally assumed to be an important indicator of the caliber of employees in any line of work, as well as an indicator of the attractiveness of an occupation or profession.

### More Questions Than Answers

Has the elementary and secondary teaching force changed in recent years? The answer is yes, in a number of ways. It is larger. It is older—and younger. It is more female. It is less stable. However, its academic ability remains about the same.

For each of these trends or nontrends, large questions immediately arise. What are the reasons for, and sources of, the trend? Will the trend continue? And, if so, will it have positive or negative effects? For instance, will the teaching force continue to outgrow the student population it

serves, or will this ratio level off? As the large number of older teachers retires, will teaching become an occupation predominantly practiced by the young?

We have seen little awareness and discussion of most of these issues by researchers, policymakers, or the public. Nor are we able to get closure on these questions here—that would require far more extensive analyses than we have yet done. We are hopeful that in time, further research will provide some answers. **EL**

<sup>4</sup>Information about the Schools and Staffing Survey and the Teacher Follow-up Survey, including methodology and results, is available at <http://nces.ed.gov/surveys/SASS>.

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