Trends in the Recruitment, Employment and Retention of Teachers from Under-Represented Racial-Ethnic Groups, 1987 to 2016[1]

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Introduction

Over the past several decades, a shortage of elementary and secondary school teachers from under-represented racial-ethnic groups has been an issue of national importance. Numerous scholars and commentators have argued that there is a growing mismatch between the degree of racial/ethnic diversity in the nation's student population and the degree of diversity in the nation's elementary and secondary teaching force (for reviews, see Albert Shanker Institute, 2015; Quiocho & Rios, 2000; Torres et al., 2004; Villegas & Irvine 2010; Villegas & Lucas, 2004; Villegas, Strom & Lucas, 2012; Zumwalt & Craig, 2005). Typically, scholars and commentators have held that as the nation's population, and in turn the nation's student body, has grown more diverse, the teaching force has not kept pace. Some go further—arguing that the teaching force has changed in the opposite direction, becoming even less diverse and more homogeneously White (e.g., Rogers-Ard et al., 2013; Lewis & Toldson, 2013; Villegas, Strom & Lucas, 2012).

Commentators and researchers make three related arguments for why this mismatch is detrimental and why increasing the racial/ethnic diversity of the teaching force would be beneficial. The first focuses on "demographic parity". This argument holds that teachers from under-represented racial-ethnic groups are important as role models for students from all racial-ethnic groups. The underlying assumption is that the racial/ethnic makeup of the teaching force should reflect that of the student population, and that of the larger society. With increasing racial/ethnic diversity in the larger society, proponents hold, there is accordingly a growing need for more teachers under-represented racial-ethnic groups as role models in schools (e.g., Albert Shanker Institute, 2015; Banks, 1995; Carnegie Forum on Education and the Economy, 1986; Cochran-Smith, 2004; Dilworth, 1992; Kirby et al., 1999; Lewis & Toldson, 2013, Carver-Thomas, 2018).

A second related argument focuses on what is often called "cultural synchronicity" (Irvine, 1988, 1989). This view holds that students from under-represented racial-ethnic groups benefit from being taught by teachers of similar backgrounds, because such teachers are likely to have "insider knowledge" due to similar life experiences and cultural backgrounds. The assumption is that synchronicity is a valuable resource in teaching and learning (Achinstein & Aguirre, 2008; Foster, 1994; Gandara & Maxwell-Jolley, 2000; Haycock, 2001; Valencia, 2002; Carver-Thomas, 2018). One study, for example, found that teachers from under-represented racial-ethnic groups have higher expectations for their students and are culturally sensitive through their actions and teaching practices (Egalite & Kisida, 2016). Proponents of this view cite a growing number of empirical studies showing that having teachers from under-represented racial-ethnic groups have a positive impact on various outcomes for students (for reviews, see Villegas & Irvine, 2010; Villegas & Lucas, 2004; Albert Shanker Institute, 2015; Villegas, Strom & Lucas, 2012; Cherng & Halpin, 2016).

A third related argument concerns teacher shortages in disadvantaged schools. Teachers from under-represented racial-ethnic groups not only are likely to be well suited to teach students from under-represented racial-ethnic groups, this view holds, but they are also likely to be motivated by a "humanistic commitment" to making a difference in the lives of disadvantaged students. In turn, this argument holds, such teachers are more likely than White,

non-Hispanic/Latinx candidates to seek employment in schools serving racially diverse student populations, often in low-income, urban school districts (e.g., Foster, 1997; Haberman, 1996; Ladson-Billings, 1995; Murnane et al., 1991; Quiocho & Rios, 2000). Research has shown that these same kinds of schools—urban, poor public schools serving racially diverse students—disproportionately suffer from general teacher shortages (e.g., Liu et al., 2008). Hence, diversification of the teaching force in this view is a solution to the more general problem of teacher shortages in disadvantaged schools.

As a result of these various factors—a lack of teacher role models, insufficient cultural synchronicity between teachers and students, and a general dearth of qualified teachers in disadvantaged schools—commentators and researchers have concluded that a shortage of teachers from under-represented racial-ethnic groups has resulted in unequal access to adequately qualified teachers and, hence, to quality teaching, in poor, urban public schools serving racially diverse students. Unequal access to educational resources, such as qualified teachers, has long been considered a primary cause of unequal educational opportunities, in turn, the achievement gap and, ultimately, unequal occupational outcomes for disadvantaged populations (e.g., Dreeben & Gamoran, 1986; Oakes, 1985, 1990; Rosenbaum, 1976; Wilson, 1996).

Scholars have long held that, historically, jobs in teaching have been relatively more open to candidates from under-represented racial-ethnic groups than jobs in many other lines of work. But, researchers have argued that for a number of reasons there has been a continuing insufficient employment of teachers from under-represented racial-ethnic groups (for reviews, see Zumwalt & Craig, 2005; Villegas & Irvine, 2010; Lewis, & Toldson, 2013). Beginning in the 1950s, a consequence of the *Brown v. Board of Education* Supreme Court decision to integrate schools, educational historians have held, was that large numbers of Black and African-American educators, in particular, were uprooted and displaced, leading to a sharp decrease in the number of Black teachers (Fultz, 2004; Tillman, 2004; White, 2016). In subsequent decades, a dearth of teachers from under-represented racial-ethnic groups has persisted, scholars have held, largely because of an inadequate labor supply pipeline into the teaching occupation. One prominent factor, such scholars hold, has been that the underachievement of students from under-represented racial-ethnic groups in elementary and secondary education has resulted in fewer such students entering the postsecondary level, and lower graduation rates for those who do enter higher education (e.g., Banks, 1995). In turn, as career and employment options available to those from under-represented racial-ethnic groups have broadened in recent years, a decreasing share of this shrinking number of such college graduates have entered teaching. In addition, researchers hold, when candidates from under-represented racial-ethnic groups do seek to enter teaching, the growth of occupational entry tests, coupled with lower pass rates on these tests by under-represented teaching candidates, has meant that under-representation has continued (Irvine, 1988).

The prevailing policy response to these teacher staffing problems has been to attempt to increase the supply pipeline of teachers from under-represented racial-ethnic groups (see, e.g., Albert Shanker Institute, 2015; Feistritzer, 1997; Hirsch, Koppich, & Knapp, 2001; Liu et al., 2008; Rice, Roellke, Sparks, & Kolbe, 2008; Villegas, Strom & Lucas, 2012). Over the past several decades, organizations such as the Education Commission of the States, the American

Association of Colleges of Teacher Education, and the National Collaborative on Diversity in the Teaching Force have advocated for and implemented a wide range of initiatives designed to recruit a diversity of candidates into teaching. On the federal level, Secretary of Education Arne Duncan's 2011 TEACH Initiative sought to recruit and develop 80,000 male teachers from under-represented racial-ethnic groups by 2015 (U.S. Department of Education, 2011). Beginning in the late 1980s, the Ford Foundation, the DeWitt Wallace-Readers' Digest Fund, and other foundations committed substantial funding to recruiting and preparing teachers from under-represented racial-ethnic groups. More recently, the Kellogg Foundation has invested in Black male teacher recruitment by partnering with Historically Black Colleges and Universities (HBCUs). (Arkansas Department of Higher Education, 2016)

These efforts have included future educator programs in high schools, partnerships between community colleges with more racially diverse student enrollments and four-year colleges with teacher education programs, career ladders for paraprofessionals already in the school system, and alternative certification programs (e.g., Clewell & Villegas, 2001; Lau et al., 2007; Shen, 1998; Zeichner, 1996; Zeichner & Gore, 1990). Many of these initiatives have been designed to recruit teachers from under-represented racial-ethnic groups to teach in schools serving racially diverse student populations, often in low-income, urban school districts. Some of these initiatives have been designed to recruit male teachers, in particular—often considered the group in shortest supply (e.g., Lewis, 2006; Lewis, & Toldson, 2013; Norton, 2005; Rogers-Ard et al. 2013; Carver-Thomas, 2018). By the later 2000s, over half of the states had recruitment programs to recruit teachers from under-represented racial-ethnic groups (Villegas & Irvine, 2010).

Given the importance of this issue and these questions, not surprisingly there has been a large and growing body of empirical research evaluating the significance of the racial/ethnic composition of the teaching force, especially its relationship to student growth and achievement. Much of this work focuses on the degree of match or mismatch between the race/ethnicity of students and that of their teachers, and to what extent this match is tied to various student achievement outcomes (for reviews, Achinstein et al., 2010; Albert Shanker Institute, 2015; Villegas & Irvine, 2010; Villegas & Lucas, 2004; Villegas, Strom & Lucas, 2012).

In contrast, there has been a surprisingly limited amount of empirical investigation of the basic levels, trends, and distribution of the demographic characteristics of the teaching force. In particular, there has been little original empirical examination, especially using nationally representative data, regarding to what extent the racial/ethnic character of the teaching force has changed over recent decades, and to what extent there has been change in the employment of individuals from traditionally under-represented groups in teaching.

Moreover, underlying most of the commentary and policy on this issue has been the assumption, largely untested, that such teacher staffing problems are rooted in the front end of the teacher supply pipeline. The assumption has been that an inadequate initial supply, coupled with barriers to entry, are the main reasons that insufficient numbers of teachers from under-represented racial-ethnic groups are employed. Thus, attention has tended to focus on identifying obstacles to recruiting a diversity of candidates into teaching and, in turn, developing

strategies to overcome these obstacles (Albert Shanker Institute, 2015; Villegas & Irvine, 2010; Villegas & Lucas, 2004; Rogers-Ard et al., 2013).

In contrast, little attention has been paid to where teachers tend to be employed, by their race-ethnicity and what happens to such teachers once they are employed, or to the role of the employing organizations in teacher staffing problems. There has been some recent research on the magnitude and factors behind the departures of teachers from under-represented racial-ethnic groups from schools (e.g. Bristol, 2018; Carver-Thomas & Darling-Hammond; Grissom & Keiser, 2011). However, relatively little attention has been paid to the exit end of the pipeline, and the role of teacher turnover, in these teacher shortages and staffing problems. In general, empirical research on turnover, by the race-ethnicity of teachers, has been limited, has had mixed findings, and has been inadequate to help policy address the magnitude, determinants, and consequences of such teacher turnover, or to understand the implications of retention and turnover for shortages (Achinstein et al., 2010; Albert Shanker Institute, 2015).

The Study

This chapter summarizes research we have conducted over the past decade that analyzed the best national data available to address the above described gaps and to attempt to empirically ground the debate over shortages of teachers from under-represented racial-ethnic groups (Ingersoll and May 2011; Ingersoll 2015; Ingersoll, May and Collins 2017, 2019). We examine trends in the recruitment, employment, and retention of teachers, by race-ethnicity over the past three decades. We address four specific sets of research questions:

Have There Been Changes in Racial-Ethnic Composition of the Teaching Force?

In recent decades, what changes have there been in the numbers of students and teachers from under-represented racial-ethnic groups in the school system, and how does this compare with White, non-Hispanic students and teachers? Is there more or less racial/ethnic diversity in the teaching force?

Where Are Teachers from Under-represented Racial-Ethnic Groups Employed?

What is the distribution of teachers across the school system by their race/ethnicity? In which types of schools are teachers from under-represented racial-ethnic groups employed? Are teachers from under-represented racial-ethnic groups more likely than White teachers to be employed in schools serving high-poverty, urban, and racially diverse student populations?

How High Is Teacher Turnover, What Are the Sources of Teacher Turnover, and How Does this Vary for Different Racial-Ethnic Groups?

In recent decades, what have been the rates of teacher turnover, by race-ethnicity? What are the reasons behind the turnover of teachers, and does this differ by their race/ethnicity? What role do retirement, school demographic characteristics, and school organizational conditions play in the turnover of teachers, by their race-ethnicity?

What Is the Role of the Attrition of Teachers in the Staffing Problems of Schools and in Shortages of Teachers from Under-represented Racial-Ethnic Groups?

What is the overall magnitude of attrition—teachers leaving teaching altogether—of teachers from under-represented racial-ethnic groups? How have these teachers' exit rates from teaching compared to their entry rates into teaching? If the attrition rates of teachers from under-represented racial-ethnic groups were lower in recent decades, would it have made any significant difference in the growth in the total number of such teachers employed?

Note that this chapter focuses on changes in the numbers, employment and retention of teachers from under-represented racial-ethnic groups, and does not focus on the much studied, important and contentious question of whether the match between the race-ethnicity of teachers and students impacts student learning achievement.

The data we analyzed for this study are primarily from the nationally representative Schools and Staffing Survey (SASS) and its longitudinal supplement, the Teacher Follow-up Survey (TFS), both administered by the National Center for Education Statistics in the US Department of Education. SASS is the largest and most-comprehensive data source available on teachers. NCES has administered eight cycles of this survey over a 29-year period—1987-88, 1990-91, 1993-94, 1999-2000, 2003-04, 2007-08, 2011-12, and 2015-16. The most recent cycle, administered in 2015-16, was renamed the National Teacher Principal Survey (NTPS). Twelve months after the administration of SASS, the same schools are contacted again, and those in the original teacher sample who departed from their schools are given a second questionnaire to obtain information on their departures. The TFS comprises the latter group, along with a representative sample of those who stayed in their teaching jobs (for information on SASS/TFS, see NCES, 2005). Our analyses use data from all 8 cycles of SASS/TFS/NTPS covering the 29 year period from 1987 to 2016.

Terminology

Throughout this study, we use definitions and classifications of the race/ethnicity of teachers utilized by the Census Bureau and the U.S. Department of Education. The six primary groups are White, non-Hispanic/non-Latinx; Black/African American; Asian/Native Hawaiian/Pacific/Islander; Native American/Indian/Alaska Native; Hispanic/Latinx, and those of multiple races.

The choice of an overall term to refer to all those other than White, non-Hispanic/non-Latinx is controversial.   Traditionally the term *minority* has been, and is, used to collectively refer to Black/African American; Asian/Native Hawaiian/Pacific/Islander; Native American/Indian/Alaska Native; Hispanic/Latinx, and those of multiple races. However, the use of the term *minority* has been criticized. As an alternative, in recent years, there has been increasing use of the terms *"persons of color," "teachers of color" and "students of color"* to collectively refer to these same minority groups. However, there are some definitional issues with the use of these newer terms.

Hispanic/Latinx refers to ethnicity and includes those of all races. It is important to recognize that a large majority of those identifying as Hispanic or Latinx also identify as White. Because those of Hispanic/Latinx ethnicity are included in the terms *"persons of color"* and *"teachers of color"* the latter, by definition, include large numbers of those who identify as White. To try to avoid this confusion, here we use the term "under-represented racial-ethnic groups" (or URREG) to collectively refer to all those other than White, non-Hispanic/Latinx. Moreover, at times we will use abbreviated terms for the five major racial-ethnic subgroups, as follows: White, non-Hispanic; Black; Asian; Native American; Hispanic.

The Results

Have There Been Changes in the Racial-Ethnic Composition of the Teaching Force?

The data clearly show there continues to be a persistent student-teacher racial-ethnic parity gap between the percentage of students and the percentage of teachers from under-represented racial-ethnic groups in the United States school system.

For instance, as illustrated in Table 1 (row 3), in the 2015–16 school year, about 51 percent of all public school elementary and secondary students were from under-represented racial-ethnic groups (URREG), but only about 20 percent of all public school elementary and secondary teachers were from these same groups. Moreover, this student-teacher gap also exists for each of the major racial-ethnic subgroups. For instance, in 2015–16, while 26 percent of public elementary and secondary school students in the United States were Hispanic, only 9 percent of teachers were Hispanic.

To provide context and comparison, in the top rows of Table 1, we include data on the racial/ethnic composition of the national population and of the nation's adult population (age 25 or older) with a bachelor's degree or higher (U.S. Census Bureau, 2018). These data indicate that in 2015–16, while only 20 percent of teachers were from under-represented racial-ethnic groups, 39 percent of the nation's population, and 28 percent of college-educated adults were from URREG.

But, as illustrated by the trends shown in Table 2, the data also show that the student-teacher racial-ethnic parity gap has persisted in recent years not because of a failure to recruit URREG teachers. Indeed, there has been a remarkable increase in the latter.

The student-teacher parity gap has persisted largely because the number of White, non-Hispanic students has decreased, while the number of students from under-represented groups has increased (row 3 of Table 2). After a period of decline during the 1970s, elementary and secondary student enrollments began to grow steadily in the US, beginning in the mid-1980s and continuing. As Table 2 shows, over the three decades between the 1987-88 and 2015-16 school years, the elementary and secondary student population as a whole (public and private) increased by 22 percent. However, this varied by the race/ethnicity of students. While the number of White, non-Hispanic students decreased by 15 percent during those decades, the number of URREG students increased by 122 percent.

The public school teaching force, as a whole, also increased over this same three decade period—strikingly, by 65 percent (Table 2, row 4)—a rate almost three times that of the overall growth rate for students (row 3). Elsewhere, we present a closer examination of the reasons behind this relatively dramatic growth in the teaching force (Ingersoll, Merrill, Stuckey & Collins, 2018); our focus here is on the increase of teachers by their race/ethnicity.

From the late 1980s, the number of public school URREG teachers more than doubled from about 305,000 to 760,000 (row 4). Even as the size of the overall teaching force has grown, the percentage of public school teachers from the under-represented groups has increased steadily—from 13 to 20 percent. One method of illustrating the relative growth in URREG teachers, is to calculate overall URREG student-teacher ratios, from the estimates in table 2. In 1987-88 the ratio was about 40 URREG students per URREG teacher; in 2015-16 it was about 36.

To place this growth in context during this three decade period, growth in the number of URREG teachers (149%), was faster than that of the total URREG population in the U.S. (122%), was faster than that of URREG students (122%), and was over twice the growth rate of White, non-Hispanic teachers (65%).

An exception to this was growth in the number of adult Bachelor's degree holders from underrepresented groups – this was faster (209% since only 1993) than that of URREG teachers. This rapid growth in degree holders, interestingly, seems to contradict the view that the pipeline of college graduates from underrepresented groups has shrunk in recent decades. However, here we did not disaggregate these data by racial-ethnic subgroup and did not further investigate this trend.

So, while there is still not parity between the proportions of students and teachers from under-represented racial groups in schools, the U.S. teaching force has grown more racially diverse since the late 1980s.

However, between 1987 to 2016, the growth in the number of public school URREG teachers varied greatly across different racial-ethnic subgroups. This is shown in Figure 1.[2] During this period, while the number of White, non-Hispanic teachers increased by 52 percent, the number of Hispanic teachers increased by 389 percent and Asian teachers by 368 percent. Black teachers also grew in number, but at a far slower rate (34%). In all but one case, growth in URREG teachers outpaced growth in URREG students. The exception to this growth was Native American teachers, who declined by 32 percent. Native Americans comprise only 1 percent of students and less than half a percent of the teaching force.

Interestingly, this overall pattern of URREG teacher growth was not steady for Black teachers. Unlike Hispanic and Asian teachers, the number of Black teachers dipped after 2004 through to 2012. By 2016; however, the number of Black teachers climbed back up nearly

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[2] Note, that the percentages for students in Figure 1 and Table 1 differ from those in Table 2. The Figure 1 and Table 1 student data represent public schools only; the Table 2 student data includes both public and private schools.
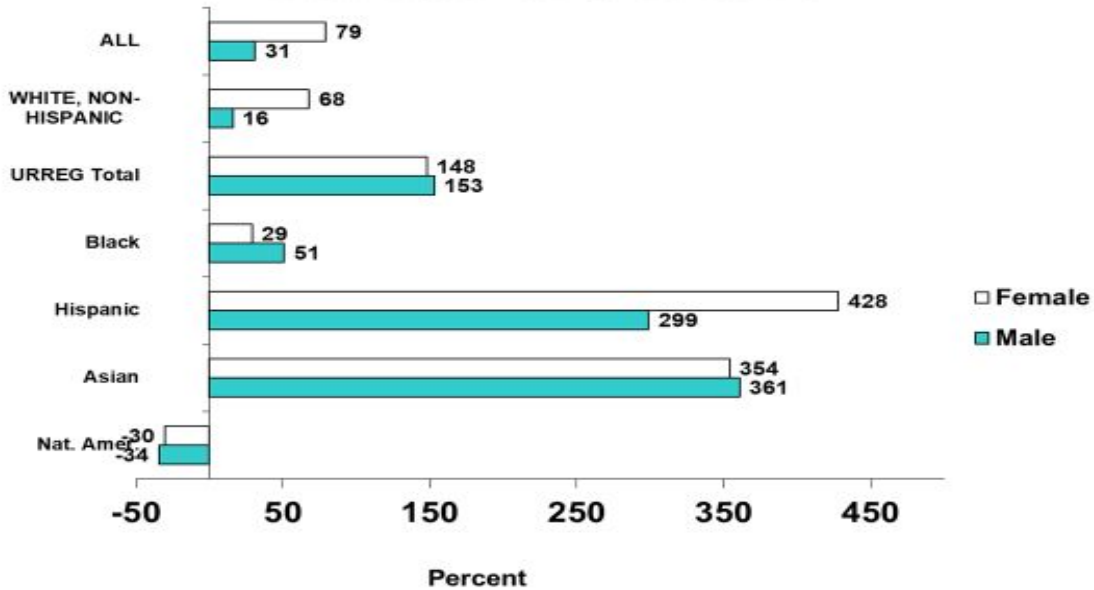
reaching its all-time high recorded in 2003-04. Further research would be helpful in understanding why this dip occurred.

Figure 1: Percent Change in the Number of Public School Students and Teachers, by Race/ethnicity, from 1987-88 to 2015-16
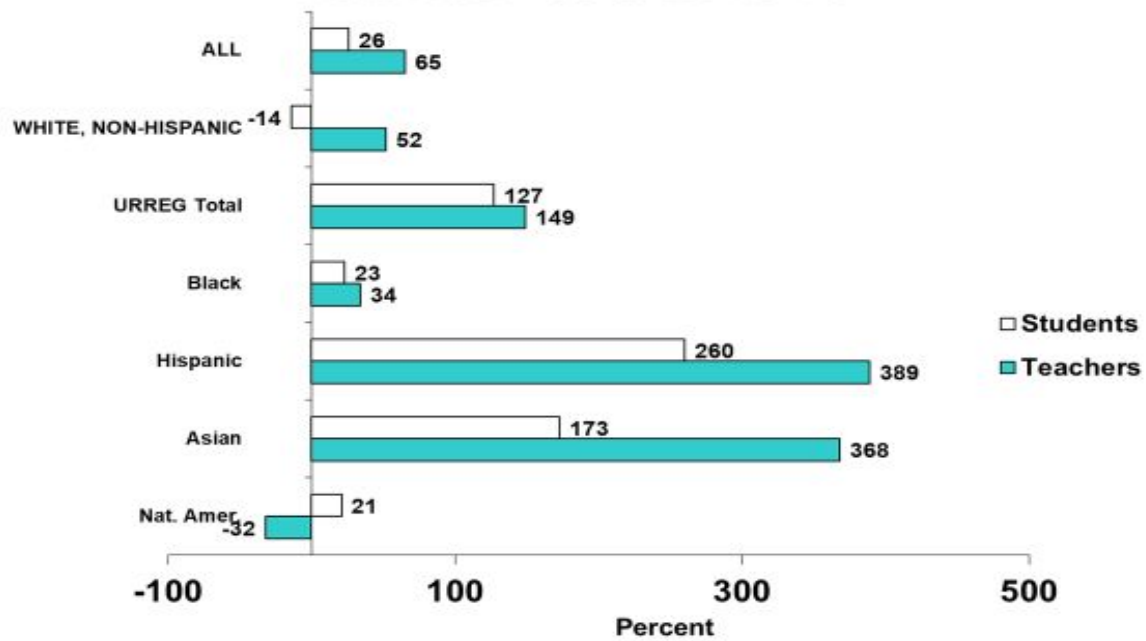
Figure 2: Percent Change in the Number of Public School Teachers, by Race/ethnicity, and by Gender from 1987-88 to 2015-16

There have also been some interesting differences in teacher race/ethnicity by teacher gender. Teaching has long been a predominantly female occupation and, in recent decades, it has become increasingly so (Ingersoll, Merrill, Stuckey and Collins 2018). Between the late 1980s and 2016 there was a 79 percent increase in the number of public school female teachers, with only a 31 percent increase in male teachers. And, by 2016, over three quarters of public teachers were female.

But this varies by race/ethnicity. From 1987 to 2016, the number of public school White, non-Hispanic male teachers increased by only 16 percent, but the number of URREG male teachers increased by 153 percent (see Figure 2). For both Blacks and Asians, the number of male teachers has increased at a faster rate than females. According to 2015–16 data, males represented about 23 percent of all White, non-Hispanic teachers and about 25 percent of all URREG teachers.

Where Are Teachers from Under-represented Racial-Ethnic Groups Employed?

While there has been a dramatic increase in URREG teachers, this growth has not been equally distributed across different types of schools. Over 90 percent of URREG teachers are employed in public schools and moreover, URREG teachers are overwhelmingly employed in schools serving high-poverty, high-URREG, urban communities. URREG teachers were far more likely than White, non-Hispanic teachers to work in such hard-to-staff schools. As shown in Table 3, almost two-thirds of URREG teachers worked in schools serving predominantly

URREG students.[3] A similar proportion was employed in high-poverty schools. In contrast, only 1 percent of URREG teachers were employed in low-URREG schools (those in which less than a tenth of the students are URREG).
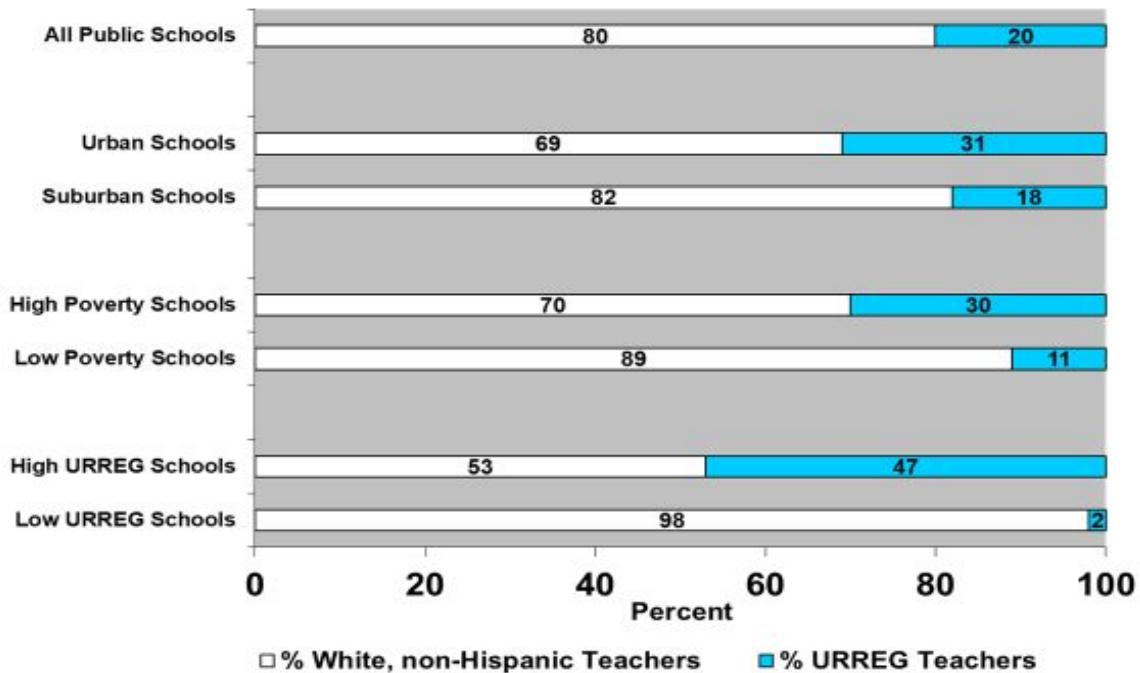
Elsewhere, we have examined trends over recent decades in the employment of URREG teachers across different types of schools and have documented the persistence of this uneven distribution of teachers, by race/ethnicity. For instance, during the two-and-half-decade period between 1987 and 2012, the number of URREG teachers in higher-poverty schools increased by 288%. In contrast, the increase in the number of URREG teachers in lower-poverty schools was only 1% for the same period (Ingersoll & Merrill, 2017).

Because URREG teachers represented only 20 percent of the public school teaching force in 2015–16, in the same types of schools where URREG teachers were disproportionately employed, the teaching staff overall was nevertheless predominantly White, non-Hispanic. Figure 3 illustrates this continuing lack of demographic parity. For instance, in high-URREG public schools (i.e., those with 75 percent or more URREG students), only 47 percent of teachers were URREG. Likewise, in high-poverty public schools, only 30 percent of teachers were URREG.

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[3] To illustrate the public sector distribution, we subdivided the public teaching force into quartiles according to the poverty and racial-ethnic student enrollments of their schools. In Table 3 and Figure 3, high-poverty schools refer to those in which 60% or more of the students are eligible for the national School Lunch program (NSLP) for students from families below poverty level. Low-poverty schools refer to those in which less than 20 % of the students are eligible for the federal free or reduced-price lunch program. High-URREG schools refer to those in which 75% or more of the students are from under-represented racial-ethnic groups. Low-URREG schools refer to those in which less than 10% of the students are from under-represented racial-ethnic groups. Note: These categories represent quartiles of the total SASS sample of public school teachers; these categories are not of equal size in number of schools or students.

Figure 3: Of Different Types of Public Schools, Race/ethnicity of their Teaching Staffs (2015-2016)

School Type	% White, non-Hispanic Teachers	% URREG Teachers
All Public Schools	80	20
Urban Schools	69	31
Suburban Schools	82	18
High Poverty Schools	70	30
Low Poverty Schools	89	11
High URREG Schools	53	47
Low URREG Schools	98	2

☐ % White, non-Hispanic Teachers   ☐ % URREG Teachers

How High Is Teacher Turnover, What Are the Sources of Teacher Turnover, and How Does this Vary for Different Racial-Ethnic Groups?

While those from under-represented racial-ethnic groups entered teaching at higher rates than White, non-Hispanic teachers over the three decades from 1987 to 2016, the TFS data show that URREG teachers also often departed from schools at higher rates.[4] Overall, the data show that URREG teachers' careers have been less stable than those of White, non-Hispanic teachers, and has included more job transitioning (see Table 4). In most years of the TFS, URREG teachers were more likely to depart their schools, either to move to another school (migration) or to leave teaching altogether (attrition). This was especially true for male URREG teachers.

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[4] Unlike the other tables and figures, Table 4 does not include data for 2015-16. This is because the 2015-16 NTPS did not include a TFS supplement and hence did not collect teacher turnover data. Moreover, unlike in earlier TFS cycles, the 2012–13 TFS did not include turnover data for teachers in private schools. In Table 4, the apparent decrease in URREG and White, non-Hispanic/Latinx turnover rates between the 2008–09 and 2012–13 TFS cycles is due to the omission of private school teachers in the latter. Turnover rates are, on average, higher in private schools. Our examination of these trends in turnover for only public schools shows that URREG teacher turnover in public schools increased during this period.

Table 4 presents turnover, attrition, and migration data for teachers, by race/ethnicity. As illustrated, for five of the seven cycles of the TFS data, total turnover rates for URREG teachers were higher than those for non-URREG teachers, at a statistically significant level. In none of the cycles were URREG turnover rates lower than those of non-URREG teachers at a statistically significant level. Moreover, this gap appears to have widened in the last decade. In the 2004–2005, 2008–09, and 2012–13 school years, URREG turnover was, respectively, 18%, 24%, and 25% higher than White, non-Hispanic teacher turnover.

This gap also appears to hold for each of the major URREG subgroups. For instance, the 2008–09 TFS data suggest that Blacks, Hispanics, Asians, and Native American teachers each had higher rates of turnover than did White, noon-Hispanic/Latinx teachers. Given smaller sample sizes, such data must be interpreted with caution.

What are the reasons for this high URREG-teacher turnover? The self-report data collected from departed teachers by the TFS indicate that, contrary to conventional wisdom, retirement is not an especially prominent factor (see Figure 4). The latter was reported by only 17 percent of those who departed. At 25 percent, school staffing cutbacks due to lay-offs, terminations, school closings, and reorganizations account for a larger proportion of turnover than does retirement. These staffing actions result in migration to other teaching jobs more often than leaving the teaching occupation altogether.

A third category of turnover—personal reasons—includes departures for pregnancy, child rearing, health problems and family moves. These factors account for more turnover than either retirement or staffing actions and they are probably common to all occupations and all types of organizations. The two final sets of reasons are directly related to the working conditions of teaching. Over half of all those who depart report as a reason either job dissatisfaction or the desire to pursue a better job, another career, or to improve career opportunities in or out of education. Individually, each of these categories accounts for more turnover than does retirement. Together; however, they account for the most prominent source of turnover.

Figure 4: Percent Public School Teachers From Under-represented Racial-Ethnic Groups Reporting General Types of Reasons for their Turnover, 2012-13
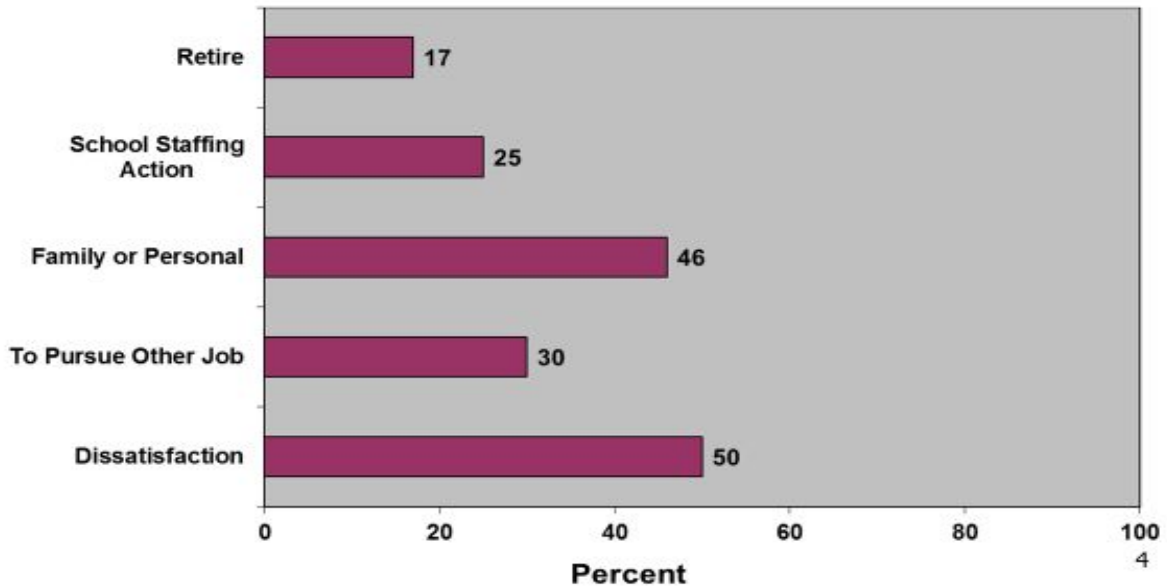
Of those who departed because of job dissatisfaction, most link their turnover to the way their school was administered, to how student assessments and school accountability affected teaching, to student discipline problems and to a lack of and lack of classroom autonomy over their teaching (see Figure 5). The data also show that White, non-Hispanic teachers report similar reasons behind their turnover and, in general, similar kinds of dissatisfactions underlie both teacher migration and teacher attrition.

Figure 5: Of Those Public School Teachers From Under-represented Racial-Ethnic Groups Reporting Dissatisfaction, Percent Reporting Particular Reasons for Their Turnover, 2012-13

Reason	Percent
Dissatisfied with Administration	81
Dissatisfied with Accountability/Testing	65
Student Discipline Problems	61
Lack of Influence & Autonomy	57
Poor Workplace Conditions	56
Classroom Intrusions	46
Poor Salary/Benefits	39
Dissatisfied with Tching Assignment	31
Class Sizes too Large	23

Percent

5
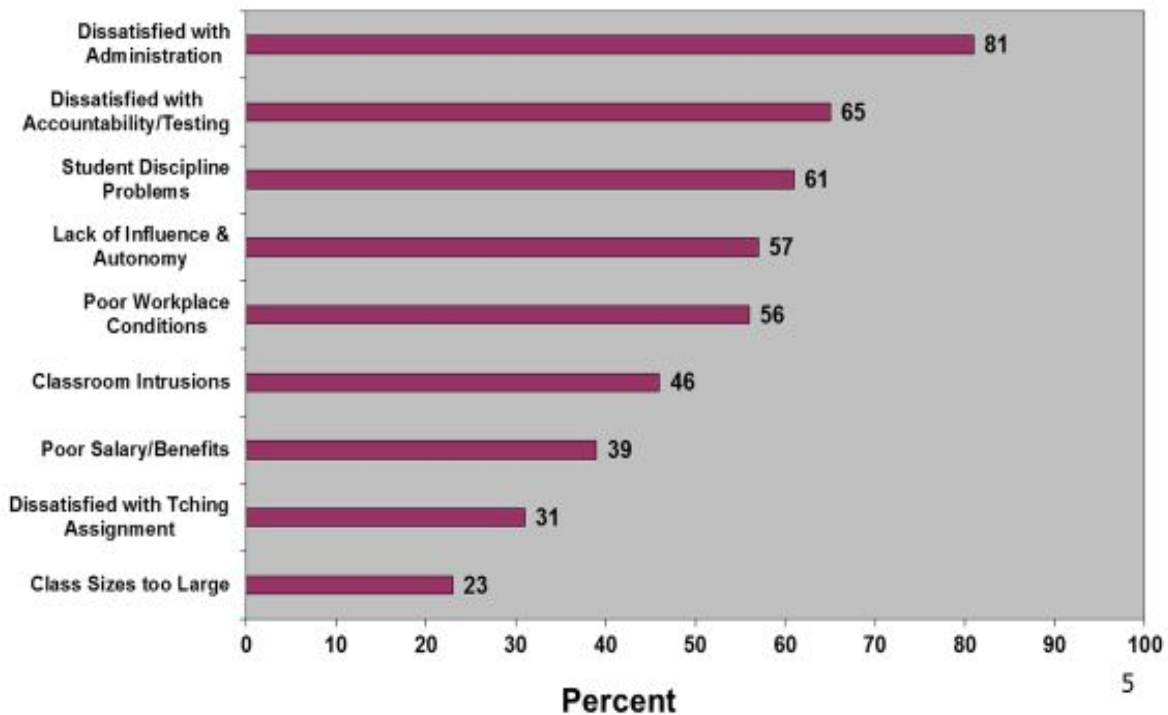
In sum, the data indicate that URREG teachers depart their jobs for a variety of reasons. Retirement accounts for a relatively small number of total departures. Some departures are due to school staffing actions; a large proportion of departures is for personal reasons; and another large proportion is for job dissatisfaction or to seek better jobs or other career opportunities. These findings are important because of their policy implications. Unlike explanations that focus on external demographic trends, these findings suggest there is a role for the internal organization and management of schools when it comes to teacher attrition and migration.

This brings us to a critical question: Why do URREG teachers depart schools at higher rates than do White, non-Hispanic teachers? Strikingly, while the demographic characteristics of schools appear to be highly important to URREG teachers' initial employment decisions, this doesn't appear to be the case for their later decisions about whether to depart. Using statistical regression analyses (Ingersoll, May, & Collins, 2019), we found that none of the following was strongly or consistently related to the likelihood of URREG teachers staying or departing: student poverty levels, proportion of URREG students or teachers, or urban or suburban location.

According to a companion study, this also appears to be especially true for Black teachers (Connor, 2011).

What *does* appear to matter is working conditions. While students' race and ethnicity, poverty levels, and school urbanicity are not factors in and of themselves, the same hard-to-staff, high-poverty urban schools that are more likely to employ URREG teachers are also more likely to have less-desirable working conditions. And these less-desirable conditions, our data suggest, account for the higher rates of URREG-teacher turnover. In other words, the data indicate that URRGE teachers are employed at higher rates in schools serving disadvantaged students, but also depart at higher rates because these same schools tend to be less-desirable as workplaces. The consequence is that the success of URREG teacher recruitment efforts have been undermined due to the conditions such teachers face once they are employed.

Even more striking was what we found when we looked at which conditions were most correlated with URREG teachers' departures. Salary levels, the provision of useful professional development, and the availability of classroom resources all had some impact on whether these teachers were likely to leave. However, the strongest factors by far for URREG teachers were the level of collective faculty decision-making influence in the school and the degree of individual instructional autonomy held by teachers in their classrooms. Influence and autonomy, of course, are hallmarks of respected professions. Schools that provided teachers with more classroom discretion and autonomy, as well as schools with higher levels of faculty input into school decision making, had significantly lower levels of URREG teacher turnover.

What Is the Role of the Attrition of Teachers in the Staffing Problems of Schools and in Shortages of Teachers from Under-represented Racial-Ethnic Groups?

It is important to recognize that teacher turnover is not necessarily detrimental. In general, theory and research from the fields of organizational theory, economics, and sociology have long held that some degree of employee turnover is normal and inevitable, and can be efficacious for individuals, for organizations, and for the economic system as a whole (e.g., Abelson & Baysinger, 1984; Hom & Griffeth, 1995 ; Jovanovic, 1979a, 1979b; Mobley, 1982; Price, 1977, 1989; Siebert & Zubanov, 2009). Across a range of occupations and industries, job and career changing are normal and common, perhaps increasingly so, and some hold that high levels of employee turnover are a sign of economic opportunity and a dynamic, well-functioning economy (e.g., Kimmitt, 2007). Moreover, researchers have concluded that effective organizations usually promote some degree of employee turnover and benefit from it by the departure of low-caliber performers and the recruitment of "new blood" to facilitate innovation.

However, though there can be benefits to employee turnover, theory and research in these fields have also long held that employee turnover is not cost-free. There is a general consensus that a variety of costs and consequences are associated with employee turnover, including the loss of human capital and of investments in employee development, the cost of replacement hiring and training, and disruption of production processes, and that such costs vary by industry and occupation.

In the education sector, from the viewpoint of those managing schools and those seeking to employ more URREG teachers in school classrooms, all of these types of departures have the same effect: They reduce the number of URREG teachers in a particular school. One consequence of attrition, in particular, our analysis reveals, is that it undermines efforts to increase the number of those from URREG in the teaching force as a whole.

As shown in Figure 1, between the 1987-88 and 2015-16 school years, the public school URREG teaching force grew about 149 percent. In 1987–88, URREG teachers represented 13 percent of the teaching force; in 2015–16 URREG teachers represented 20 percent. Notably, this increase in the URREG teaching force occurred in spite of the high attrition rate among URREG teachers, as shown in Table 4.

For instance, the SASS/TFS data indicate that at the beginning of the 2003–04 school year, about 47,600 URREG teachers entered teaching; however, by the following school year, 20 percent more—about 56,000—had left teaching altogether. Of these, about 18,500 retired, 20,000 indicated that they left to pursue another job or career, and 20,000 indicated that they left because of job dissatisfaction. This raises the question: If URREG teacher attrition rates could have been lower in recent decades, what would have been the gain in the total number of URREG teachers employed?

To answer this question, we undertook simulation analyses designed to predict the growth in the overall URREG teaching force over the past two and a half decades under two alternative hypothetical scenarios, wherein rates of URREG teacher attrition were lower.[5] We drew from the results of our regression analyses (Ingersoll, May, & Collins, 2019), to choose two examples of lower attrition rates. Figure 6 displays the actual growth of the public school

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[5] We simulated racial/ethnic representation in the teaching force by modeling entry to, and exit from, teaching by URREG and White, non-Hispanic/Latinx teachers for each year from 1987–88 through 2015–16. We projected the number of URREG teachers in each year by subtracting from the previous year's total the number of URREG teachers who left teaching and adding the number of URREG teachers hired under each of our two alternative attrition rate scenarios.

To determine the number of URREG attriters, we applied our hypothetical attrition rates to the simulated total number of URREG teachers from the previous year. In our first simulation scenario, we applied White, non-Hispanic/Latinx attrition rates for each year to URREG teachers. We estimated these rates from SASS/TFS for the seven on-cycle years and linearly interpolated for years for which no survey was administered. Under the second simulation scenario, we applied to URREG teachers the attrition rate for teachers employed in schools scoring in the top decile of teachers' classroom autonomy in the 2011–12 SASS/TFS.

In order to project the number of URREG teachers hired in each year, we multiplied the actual contemporaneous proportion of new teachers who were from URREG by the simulated total number of teachers hired in that year. We estimated the proportions of new teachers who were from URREG from SASS/TFS for on-cycle years and linearly interpolated for years for which no survey was administered. To project the number of teachers hired in any year, we assumed that the total size of the labor force would not change between attrition scenarios. That is, the total numbers of teachers in each year of each of our simulations match the historical estimates from SASS. From these annual totals, we calculated the growth (or decline) in the teacher labor force each year. We added to this growth the total number of teachers who would have left the occupation under each attrition scenario each year, as teachers would need to be hired to replace those exiting teaching. To this total number of teachers hired, we applied the proportion of new teachers who were from URREG to arrive at the number of URREG teachers hired each year.

URREG teaching force as estimated in SASS/NTPS, and also the hypothetical growth under our two alternative scenarios.

In the first scenario, we estimated the growth in the number of public school URREG teachers if the attrition rates for URREG teachers had been the same as those for non-URREG teachers from 1987-88 to 2015-16. Recall in Table 4 for most years of the survey, URREG attrition rates were lower than those of non-URREG teachers. In this scenario, our simulation indicates that, by 2016, the URREG teaching force would have grown to 780,400—a gain of about 20,000 teachers over the actual levels (760,100). Under this scenario, by 2016, URREG teachers would have represented 20.4 percent of the public school teaching force, rather than 19.9 percent.

In our second scenario, we estimated the growth in the number of URREG teachers if their attrition rates had been equal to those in schools with high levels of teacher classroom autonomy. We chose this factor because, as we found in our regression analyses, the association between teachers' classroom autonomy and turnover was a relatively strong relationship. In this second scenario, our simulation indicates that, by 2016, the URREG teaching force would have grown to 950,407—a gain of 190,000 teachers over the actual levels. Under this scenario, by 2016, URREG teachers would have represented 24.8 percent of the overall public school teaching force—still far fess than the percentage of students that were URREG (49 percent in Table 2), but close to the percentage of the college-educated population that were URREG (25 percent in Table 2).

Figure 6: Trends in the Number of Teachers From Under-represented Racial-Ethnic Groups, by Actual and Alternative Attrition Conditions (1987-2012)
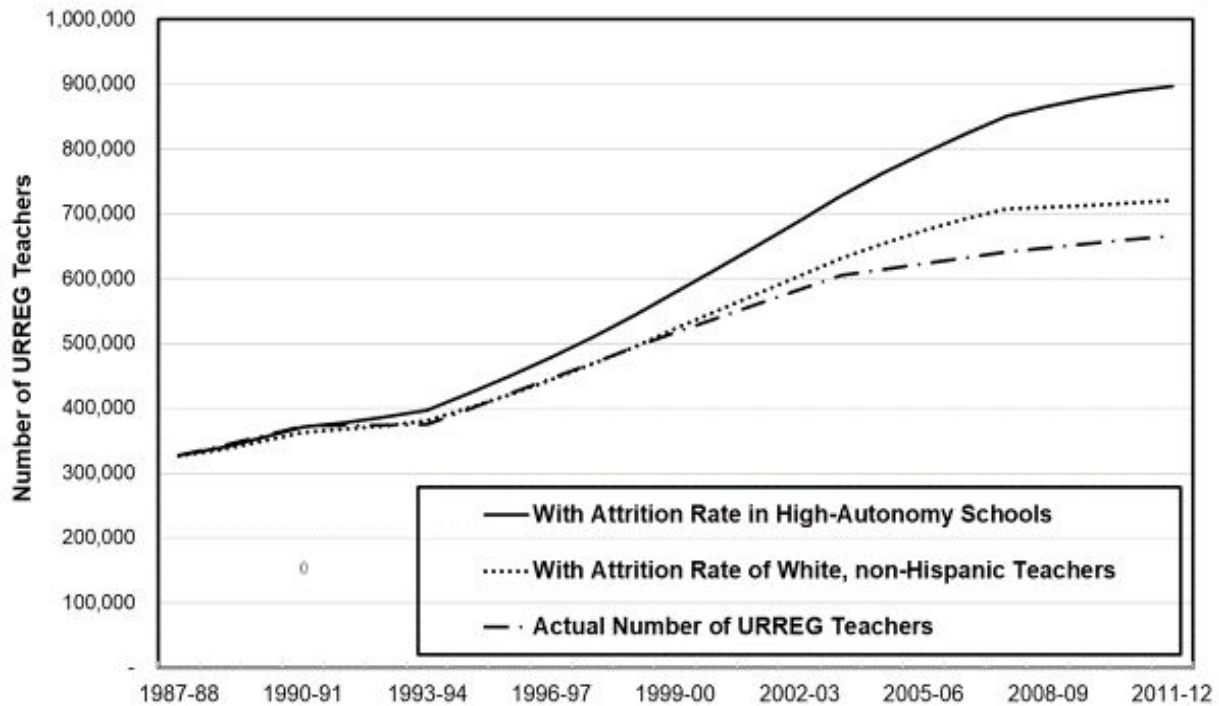
Our second simulation analysis suggests that had the schools in which URREG teachers have been working afforded them the classroom autonomy held by teachers employed in schools that were in the top 10th percentile of teacher classroom autonomy, it is conceivable that the United States would have had almost 200,000 more URREG teachers by 2016.

Summary and Implications

It is widely believed that the nation's schools suffer from dire shortages of teachers from under-represented racial-ethnic groups. Numerous scholars and commentators have held that there is a growing mismatch between the degree of racial/ethnic diversity in the nation's student population and the degree of diversity in the nation's elementary and secondary teaching force, and this is detrimental to the growth and learning of students. In response, in recent decades, numerous government and non-government organizations have implemented a variety of URREG teacher recruitment programs and initiatives. Has the number of URREG teachers grown?

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The national data show a gap persists between the percentage of URREG students and the percentage of URREG teachers in the United States school system. For instance, in 2016, 39 percent of the nation's population was URREG, and 49 percent of all elementary and secondary students were URREG, but only 20 percent of all public school elementary and secondary teachers were URREG. But the data also show this gap is not due to a failure of teacher recruitment. Indeed, since the late 1980s, the number of public school URREG elementary and secondary teachers has increased by almost 150 percent, outpacing growth in the number of White, non-Hispanic teachers and outpacing growth in URREG students. The result is that the teaching force has rapidly grown more diverse.

Moreover, URREG teachers are overwhelmingly employed in public schools serving high-poverty, high-URREG, and urban communities. URREG teachers are two to three times more likely than White, non-Hispanic/Latinx teachers to work in such hard-to-staff schools. Hence, the data suggest that, in spite of any possible barriers to entry, and competition from other occupations for URREG college graduates, there has been a large increase in the number of URREG teachers, especially in schools serving disadvantaged and URREG student populations. While our data analysis does not test this, nor allow us to attribute these gains to particular reforms, this success is likely connected to the ongoing URREG recruitment initiatives.

However, overall, the data also show that, over the past two and a half decades, URREG teachers were more likely to depart from their schools than White, non-Hispanic teachers. This was especially true for URREG male teachers. The result has been that, numerically, there has been a large degree of job transition among URREG teachers each year.

Some turnover of teachers is, of course, normal, inevitable, and beneficial. For individuals, departures leading to better jobs, either in teaching or not, can be a source of upward mobility. For schools, departures of low-performing employees can enhance organizational outcomes. For the educational system, some teacher outflows, such as cross-school migration, temporary attrition, or those leaving classroom teaching for other education-related jobs, do not represent a net or permanent loss of human capital to the education system as a whole.

However, from an organizational level of analysis, and from the viewpoint of those managing schools, none of these types of departures are cost-free, whether permanent, to other schools, or to other education jobs. All have the same effect; they typically result in a decrease in URREG classroom instructional staff in that organization. One consequence of attrition, in particular, our analysis reveals, is that it undermines efforts to address the URREG teacher shortage.

Why do URREG teachers depart schools at higher rates? Strikingly, while the demographic characteristics of schools appear to be highly important to URREG teachers' initial employment decisions, this does not appear to be the case for their later decisions about whether to depart. A school's enrollment of poverty-level students, a school's URREG student enrollment, the school's proportion of URREG teachers, or whether the school lies in an urban or suburban community were not strongly or consistently related to the likelihood that URREG teachers would decide to stay or depart.

Among the most prominent reasons URREG teachers gave for leaving or moving were a desire to obtain a better job or career or dissatisfaction with some aspect of their teaching job. The data further specify that particular school working and organizational conditions were strongly related to URREG teacher departures. Hard-to-staff schools that are more likely to employ URREG teachers often also have less desirable organizational conditions. And less desirable conditions, our data suggest, account for the higher rates of URREG teacher turnover. In other words, the data indicate that URREG teachers departed at higher rates because the schools in which they were employed tended to have less positive organizational conditions. The strongest organizational factors for URREG teachers were the levels of collective faculty decision-making influence in their school and the degree of individual instructional autonomy held by teachers in their classrooms. Schools that provided more teacher classroom discretion and autonomy, as well as schools with higher levels of faculty input into school decision-making influence, had lower levels of URREG teacher turnover.

This finding is consistent with a long line of our research showing the importance of professional autonomy and teacher "voice" in schools (see, Ingersoll, 1996, 2003; Ingersoll & Collins, 2017, 2019). However, teachers' classroom autonomy appears to have shrunk in recent years with the implementation of accountability reforms, especially in urban school districts. Some studies have found a growing tension with teachers increasingly held accountable for issues, decisions and outcomes over which they may have little, or even diminishing, control – leading to higher teacher turnover (Guggino & Brint, 2010; Ingersoll & Collins, 2017; Ryan et al., 2017).

Organizational accountability and employee authority are not necessarily contradictory imperatives. Leading thinkers in the applied field of organizational leadership have long advocated a balanced approach wherein organizational accountability and employee authority go hand in hand (e.g., Drucker, 1973, 1992). In this view, employees should not be held accountable for things over which they have no control; likewise, employees should not be granted control or autonomy without commensurate accountability. The importance of balancing teachers' responsibilities and authority is borne out in our own research showing that schools in which teachers are both held to high academic standards and allowed substantial input into decision-making have higher teacher retention (Ingersoll & Collins, 2017, 2019; Ingersoll, Merrill & May, 2016) and higher student achievement (Ingersoll, Sirinides & Dougherty, 2017).

Our present study presents an overall portrait across all public schools and across all URREG subgroups. Underlying our study is the assumption that common patterns across schools and across URREG subgroups can be informative. However, local and state contexts vary and URREG subgroups are, of course, not homogeneous, between or within. Thus, drawing conclusions about the nation as a whole and URREG teachers as a whole runs the risk of overgeneralizing. Throughout our study, where sample sizes permit, we disaggregate URREG by subgroup. In an earlier related study, Connor (2010) focused specifically on Black teachers, comparing them to White, non-Hispanic teachers. His findings on turnover were similar to those reported here in our study. Further research is necessary to examine whether the overall patterns we discovered apply across contexts and groups.

What are the implications of these results for the widespread policy and reform efforts to diversify the teaching force? In supply and demand theory, any imbalance between labor demand and supply can be referred to as a shortage, in the sense that there is an inadequate quantity of individuals able and willing to offer their services under given wages and conditions. From this perspective, the problems many schools encounter retaining URREG teachers can technically be referred to as a shortage. However, in the context of URREG teachers and schools, the term shortage is typically given a narrower connotation—an insufficient production and recruitment of new URREG teaching candidates in the face of increasing URREG student enrollments. These terminological and diagnostic differences have crucial implications for prescription and policy.

As noted in the beginning of this report, increased production and recruitment of URREG candidates has long been the dominant strategy to diversify the teaching force and address the URREG teacher shortage. Numerous high-profile groups have called for dramatic increases in the recruitment of new URREG teachers across the nation (e.g., Education Commission of the States, American Association of Colleges of Teacher Education, National Educational Association). Beginning in the late 1980s, such efforts received substantial support and funding—the Ford Foundation and the DeWitt Wallace Readers' Digest Fund alone committed over $60 million. More recently the Kellogg Foundation has invested in recruitment efforts to increase the number of URREG male teachers by partnering with Historically Black Colleges and Universities (HBCUs).

Nothing in our research suggests that bringing new qualified URREG candidates into teaching is not a worthwhile step. However, the data indicate that new teacher recruitment strategies alone do not directly address a major source of URREG teacher staffing problems: attrition. This is especially true for URREG teacher recruitment efforts aimed at male teachers, because male URREG teachers have especially high departure rates. Indeed, the increase in the number of URREG teachers is all the more remarkable because it has occurred in spite of the high attrition rate among URREG teachers. Improving the retention of URREG teachers brought into teaching by recruitment initiatives could prevent the loss of the investment and help to lessen the ongoing need for more recruitment initiatives. However, nothing in our research suggests that improving URREG teacher retention alone will close the parity gap. Our perspective suggests the efficacy of developing teacher recruitment and retention initiatives together is required in order to solve the URREG teacher shortage. A recent report by Albert Shanker Institute (2015) highlighted a number of promising examples of schools that have emphasized both recruitment and retention of URREG teachers.

Our analyses support the view that school organization, management, and leadership matter, and they shift attention to discovering which policy-amenable aspects of schools as organizations—their practices, policies, characteristics, and conditions—are related to their ability to retain URREG teachers. The data suggest that poor, high-URREG, urban schools with improved organizational conditions will be far more able to do so. To be sure, the data do not suggest that altering any of the organizational conditions we examined would be easy. However, unlike reforms such as teacher salary increases, professional development, and class-size reduction, changing some working conditions would appear to be less costly financially—an important consideration, especially in low-income settings and in periods of budgetary

constraint. Our analysis especially draws attention to the importance of teachers' classroom discretion and autonomy and faculty schoolwide influence on teacher retention.

Promising examples of schools that balance accountability with high levels of teacher autonomy and decision-making influence have sprung up in recent years in the United States. For example, there is a growing network of schools that are operated and run by teachers (Kolderie, 2008, 2014). These schools are often referred to as "partnership schools" because they are modeled after law partnerships, where lawyers both manage, and ultimately are accountable for, the organization and its success (Hawkins, 2009). In this approach, the focus of reform would shift from solely attracting or developing "better people for the job" to also securing "a better job for the people" (Kolderie, 2008, 2014). Rather than simply forcing the existing arrangement to work better, this alternative perspective suggests the importance of also viewing the roots of shortages as an organizational and occupational design issue, implying the need for a different arrangement, better built for those who do the work of teaching.

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Table 1: Percentage National Population, College-Educated Adults, and K-12 Public School Students and Teachers,
by Race-Ethnicity (2015-2016)

	White, Non-Hispanic	Under-Represented Racial-Ethnic Groups				
		Total	*Black/ African American*	*Hispanic / Latinx*	*Asian/ Pacific Islander*	*N... An...*
1.) Population of U.S.	60.9	39.3	*12.5*	*18*	*5.8*	
2.) Population with Bachelor's Degree or Higher (age 25 or older)	74.6	25.4	*7.9*	*7.5*	*9.8*	
3.) K-12 Public Schools						
Students	49.9	51.1	*15.5*	*25.9*	*5.4*	
Teachers	80.1	19.9	*6.7*	*8.8*	*2.5*	

Sources:
Row 1: U.S. Department of Commerce, Census Bureau, Current Population Reports
Row 2: U.S. Department of Commerce, Census Bureau, American Community Survey.
Row 3: U.S. Dept of Education, Schools and Staffing (SASS) and the National Teacher Principal
Survey (NTPS).

Table 2: Trends in the National Population, College Educated Adult Population, and K-12 Public School S
by Race/Ethnicity (1987-2016)

	1987-88 School Year	1990-91 School Year	1993-94 School Year	1999-00 School Year	2003-04 School Year	2007-08 School Year	2011-12 School Year
1.) Population of U.S.	244,499,000	252,153,000	260,327,000	281,422,000	292,805,000	304,060,000	313,914,00
Number from URREG	56,479,000	61,273,000	66,644,000	79,080,000	93,991,000	104,597,000	116,148,00
% population from URREG	23.1	24.3	25.6	28.1	32.1	34.4	37.
2.) Population with Bachelor's Degree or Higher (age 25 or older)	Not Avail.	Not Avail.	36,544,000	44,845,000	51,748,000	57,787,000	60,046,00
Number URREG Degree Holders			5,590,000	8,139,000	10,754,000	13,107,000	15,037,00
% Degree Holders from URREG			15.3	18.1	20.8	22.7	24.
3.) Public and Private School K-12 Student Enrollment	45,220,953	44,777,577	46,592,207	50,629,075	52,375,110	53,644,872	53,988,33
Number White, non-Hispanic Students	32,885,581	31,213,142	31,895,394	32,700,441	32,419,640	31,864,127	30,164,71
Number URREG Students	12,335,372	13,564,435	14,696,813	17,928,634	19,955,470	21,780,745	23,823,61
% URREG Students	27.3	30.3	31.5	35.4	38.1	40.6	44.
4.) Public School K-12 Teaching Force	2,323,204	2,559,488	2,561,294	3,002,258	3,250,600	3,404,520	3,385,17
Number White, non-Hispanic Teachers	2,017,993	2,213,957	2,215,519	2,531,578	2,720,752	2,829,156	2,773,19
Number URREG Teachers	305,212	345,530	345,775	470,680	529,848	579,364	611,97
% Teachers from URREG	13.1	13.5	13.5	15.7	16.3	16.9	18.

Table 2 Data Sources:

Row 1: U.S. Department of Commerce, Census Bureau, Current Population Reports
Row 2: U.S. Department of Commerce, Census Bureau, American Community Survey.
Row 3. The rows of student data from 1987-88 to 2011-12 are from our analyses of the Schools and Staffing (SASS). The 2015-16 student data are drawn from the Common Core of Data (CCD) and the Private School Survey (PSS). We used these sources because the 2015-16 data from the National Teacher Principal Survey (NTPS), the successor to SASS, did not collect data for private schools, and did not collect data on students' race-ethnicity. (The NTPS did append data from on race-ethnicity from the CCD, however, there were large numbers of schools missing such data, making the estimates less accurate, and hence we did not use them here.)
Row 4. The rows of teacher data from 1987-88 to 2011-12 are from our analyses of the Schools and Staffing (SASS). The 2015-16 teacher data are drawn from the 2015-16 NTPS, the

successor to SASS. Unlike SASS, the NTPS did not collect data for private schools. Moreover, the alternative source of 2016-16 private school data – the Private School Survey (PSS) – did not collect data on teachers' race-ethnicity. So, unlike the rows of student data, the rows of teacher data represent public schools only.

Notes:

1. % change is from 1993-94 to 2015-16

Table 3: Of Public School Teachers, by Race-ethnicity, Percentage Employed in Different Types of Schools, (2015-2016)

School Type	All Teachers	White, non-Hispanic Teachers	Teachers from Under-Represented Racial-Eth			
			Total	*Black/ African American*	*Hispanic / Latinx*	*Asian/Pac. Islander*
Urban	31	27	47	51	46	51
Suburban	40	40	36	33	38	39
High Poverty	42	36	63	70	64	53
Low Poverty	19	21	10	8	10	18
High URREG	27	18	64	68	69	59
Low URREG	13	16	1	.2	1	2

Note: High-poverty schools are those in which 60% or more of the students are eligible for the national school lunch program (NSLP) for students from families below the federal poverty level. Low-poverty schools are those in which less than 20% of the students are eligible for the NSLP. High-URREG schools are those in which 75% or more of the students are from under-represented racial-ethnic groups. Low-URREG schools are those in which less than 10% of the students are from under-represented racial-ethnic groups.

Table 4: Percentage Annual Public and Private Teacher Migration and Attrition, by Race/ethnicity of Teachers, and by Year

	URREG Teachers			White, non-Hispanic Teache		
Year	Moves	Leaves	Total	Moves	Leaves	To
1988-89	9.2	5.9	15.1	7.9	6.5	14
1991-92	7.0	6.1	13.1	7.2	6.0	13
1994-95	9.2	7.6	16.8	6.7	7.2	13
2000-01	8.4	7.5	15.9	7.7	8.2	15
2004-05	9.0	10.4	19.4	7.6	8.8	16
2008-09	10.1	9.2	19.3	6.7	8.9	15
2012-13 (public only)	10.6	8.3	18.9	7.5	7.6	15

Endnotes