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Understanding and Solving Teacher Shortages:  
Policy Strategies for a Strong Profession

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## Strategies for Attracting and Retaining Educators: What Does the Evidence Say?

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**Abstract:** A highly competent teacher workforce is a necessary foundation for improving children's educational outcomes, especially for those who rely most on schools for their success. Yet in the United States, shortages in the teaching force have been growing across the country, reaching crisis proportions in some teaching fields— such as mathematics, science, and special education—and in locations where wages and working conditions are least attractive. We analyzed recent research and representative survey data to identify the drivers of teacher recruitment and retention. We also reviewed the policy literature to

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identify district, state, and federal policy strategies that have been effective at addressing the factors influencing teachers' professional decisions. These policies include increasing their compensation and improving their preparation, professional support, and working conditions, as well as improving district and school management practices that otherwise create obstacles to recruitment and retention.

**Keywords:** teacher quality; recruitment; retention; teacher development

### **Estrategias para atraer y retener a los educadores: ¿Qué dice la evidencia?**

**Resumen:** La fuerza laboral docente que es muy competente es una base necesaria para mejorar los resultados educativos de los niños, especialmente para aquellos que dependen más de las escuelas para su éxito. Sin embargo, en los Estados Unidos, la escasez en la fuerza docente ha aumentado en todo el país, alcanzando proporciones de crisis en algunos campos de la enseñanza, como matemáticas, ciencias y educación especial, y en lugares donde los salarios y las condiciones de trabajo son menos atractivos. Analizamos investigaciones recientes y datos de encuestas representativas para identificar los impulsores del reclutamiento y la retención de docentes. También revisamos la literatura sobre políticas para identificar estrategias de políticas del distrito, estatales y federales que han sido efectivas para abordar los factores que influyen en las decisiones profesionales de los maestros. Estas políticas incluyen aumentar su compensación y mejorar su preparación, apoyo profesional y condiciones de trabajo, así como mejorar las prácticas de gestión escolar y del distrito que de otra manera crean obstáculos para el reclutamiento y la retención.

**Palabras clave:** calidad docente; reclutamiento; retención; desarrollo docente

### **Estratégias para atrair e reter educadores: O que a evidência diz?**

**Resumo:** A força de trabalho do professor que é muito competente é uma base necessária para melhorar os resultados educacionais das crianças, especialmente para aqueles que mais confiam nas escolas para o seu sucesso. No entanto, nos Estados Unidos, a escassez na força de ensino tem crescido em todo o país, atingindo proporções de crise em alguns campos de ensino - como matemática, ciências e educação especial - e em locais onde os salários e condições de trabalho são menos atraentes. Analisamos pesquisas recentes e dados de pesquisas representativas para identificar os impulsionadores do recrutamento e retenção de professores. Também revisamos a literatura de políticas para identificar as estratégias de políticas distritais, estaduais e federais que foram eficazes em abordar os fatores que influenciam as decisões profissionais dos professores. Essas políticas incluem o aumento de sua remuneração e a melhoria de sua preparação, apoio profissional e condições de trabalho, bem como a melhoria das práticas de gestão distrital e escolar que, de outra forma, criam obstáculos ao recrutamento e à retenção.

**Palavras-chave:** qualidade do professor; recrutamento; retenção; desenvolvimento de professores

## **Introduction**

One of the most pressing issues facing policymakers is how to staff classrooms with a stable teaching force responsive to complex student needs and the growing demands of the knowledge economy (American Association of Colleges for Teacher Education & Partnership for 21<sup>st</sup> Century Skills, 2010). Since 2014-15, teacher shortages have been growing across the country, reaching crisis proportions in some teaching fields—such as mathematics, science, and special education—and in locations where wages and working conditions are least attractive (Sutcher, Darling-Hammond, &

Carver-Thomas, 2019). Demographic trends and economic changes have led to a surge in demand for new teachers, while the supply of new teachers has diminished at the same time that a steady stream of teachers flee the profession each year. Teachers who leave the profession prematurely hurt student learning and cost taxpayers (Ronfeldt, Loeb, & Wyckoff, 2013). For example, one study found that replacing teachers who leave—which can cost in today’s dollars as much as \$20,000 per teacher in a large urban district—produces a national price tag of \$8.5 billion a year (Carroll, 2007).

The highest-poverty districts shoulder an even greater burden because they have the highest rates of teacher turnover (Allensworth, Ponisciak, & Mazzeo, 2009; Hanushek, Kain, & Rivkin, 2004). High-need schools must continually invest in recruitment efforts, professional support, and training for new teachers without reaping the benefits of many of these investments (Carroll, Reichardt, & Guarino, 2000; Shields et al., 2001).

How policymakers address this challenge will have long-term impacts on student learning. For example, will states respond to teacher shortages by lowering standards for teachers, as many have in the past? Or will they invest in a comprehensive human capital system to prepare and retain competent, committed teachers for long-term careers in the classroom?

This paper analyzes data and summarizes research regarding factors that influence teachers’ decisions to enter and exit the workforce and policies that have been found effective in recruiting and retaining teachers, especially in the highest-need schools. First, we outline our research questions and methods. We then summarize prior research and explain how this synthesis contributes to existing work. Next, we describe the reasons individuals enter and exit the profession based on our review of the existing literature and our analysis of nationally representative data on teacher turnover.

Finally, we review existing research on five major influences on teachers’ career decisions, as well as policy strategies that have been found effective at addressing these factors. These strategies address (1) teachers’ preparation and costs to entry; (2) district hiring and personnel management; (3) teacher salaries and other compensation; (4) induction and support for new teachers; and (5) working conditions, including school leadership, professional collaboration and shared decision-making, accountability systems, and resources for teaching and learning. While we treat each factor separately, we recognize the interrelatedness of each of these factors and the need for a comprehensive policy response. Because teacher recruitment and retention are especially challenging for high-need districts and schools—typically low-performing schools in low-income communities with large proportions of students of color—we also focus on how each of these five factors contributes to the recruitment and retention of teachers in these schools.

## **The Study**

In this study, we are interested in understanding the factors that contribute to teachers’ decisions to enter and leave the profession in U.S. public schools, as well as the policy strategies that are effective at finding and keeping teachers. Our specific research questions are:

- What key school- and district-level factors contribute to teachers’ decisions to enter, stay in, leave, or return to the teaching profession? In what ways do these factors influence the teaching workforce in hard-to-staff schools?
- What local, state, and federal policy strategies hold promise for improving the recruitment and retention of teachers?

### Our Methods

To answer our research questions, we examined studies that analyzed the effect of different educational practices and policies on teachers’ decisions to enter, remain in, leave, and return to the profession. In addition, we reviewed policy literature to identify district, state, and federal policy strategies that have been effective at addressing the factors influencing teachers’ professional decisions.

We also analyzed, using descriptive statistical techniques, a nationally representative survey of current and former elementary, middle, and high school teachers, the Schools and Staffing Survey (SASS) and the Teacher Follow-up Survey (TFS), conducted by the National Center for Education Statistics (U.S. Department of Education, National Center for Education Statistics, 2012 & 2013). The TFS includes responses from approximately 4,400 current and former public school teachers. When the 2012-13 TFS data were collected, public schools employed approximately 3,377,900 teachers. Of these teachers, about 3% taught in public charter schools. Approximately 28% taught in rural schools, 28% in urban schools, 32% in suburbs, and 12% in towns (Goldring, Taie, & Riddles, 2014).

### Our Approach

We begin our review with an analysis of federally-collected nationally representative survey data to identify some of the drivers of teacher recruitment and retention. The SASS and TFS provide insight into the factors influencing teachers’ career decisions. According to the National Center for Education Statistics, approximately 8% of public school teachers—roughly 259,400 individuals—left the profession between the 2012 and 2013 school years (see Figure 1). (Goldring, Taie, & Riddles, 2014). We analyze their behavior and reported reasons for leaving and for potentially returning to the profession.

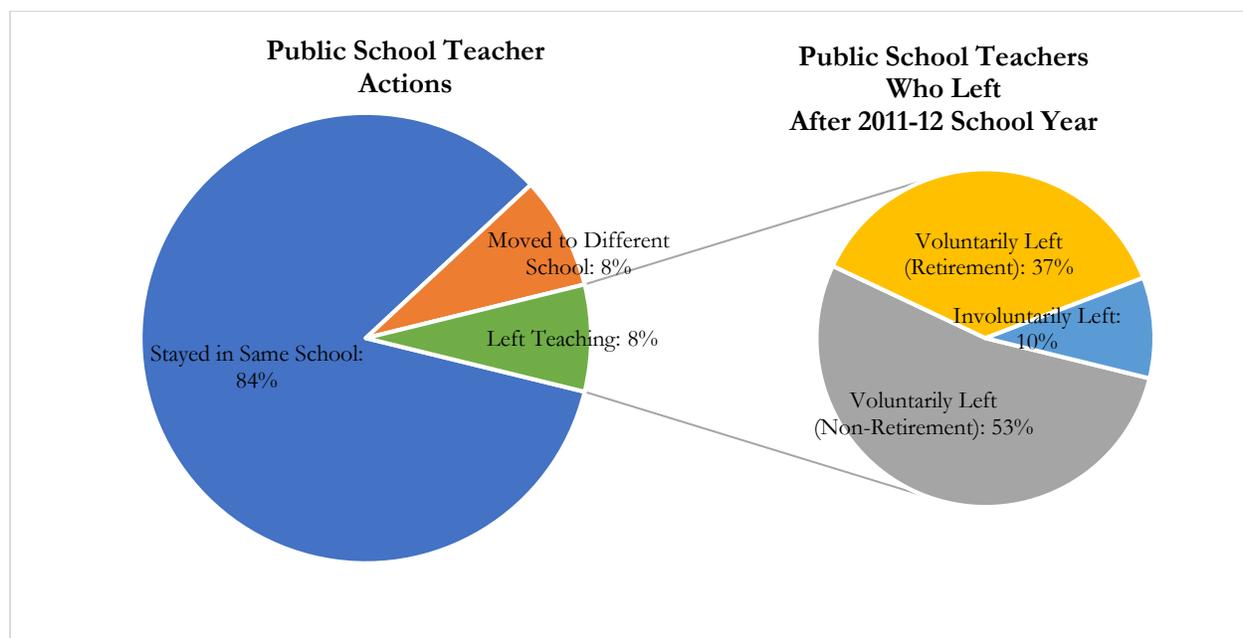


Figure 1. U.S. Public School Teachers’ Actions between the 2011-12 and 2012-13 School Years. Source: U.S. Department of Education, National Center for Education Statistics, 2012 & 2013.

We then evaluate several literatures bearing on sources of and solutions to teacher recruitment and retention problems. Prior studies examining teacher recruitment and retention have taken various approaches to synthesizing this literature. For example, several studies review and summarize the findings of qualitative and quantitative literature about attracting and keeping U.S. teachers (Darling-Hammond, 2010; Guarino, Santibanez, Daley, 2006; Johnson, Berg, Donaldson, 2005). At least one study completed a meta-analysis on empirical teacher workforce research to identify the factors that contribute to teachers entering, staying-in, and leaving the profession (Borman & Dowling, 2008). Other studies have used survey databases such as the Baccalaureate and Beyond Longitudinal Study (Bacolod, 2007) or the Schools and Staffing Survey (Ingersoll, 2014) to identify the importance of several factors on U.S. teachers' professional decisions. Another study provided examples of district and state approaches to addressing the factors that other research has shown to find and keep teachers (Darling-Hammond & Sykes, 2003). Despite the variation in methods, these studies generally find that several factors, ranging from teacher salaries to working conditions to preparation, are key predictors of teachers' career decisions.

This paper builds on the prior research in three ways. First, we review more recent research, thereby providing a timely update to prior syntheses of literature. Specifically, we review both qualitative and quantitative research about the factors influencing teachers' career decisions. Moreover, we include factors that have previously been less intensely studied, but appear to be potentially impactful on teacher retention, because they influence factors known to contribute to teachers' career decisions.

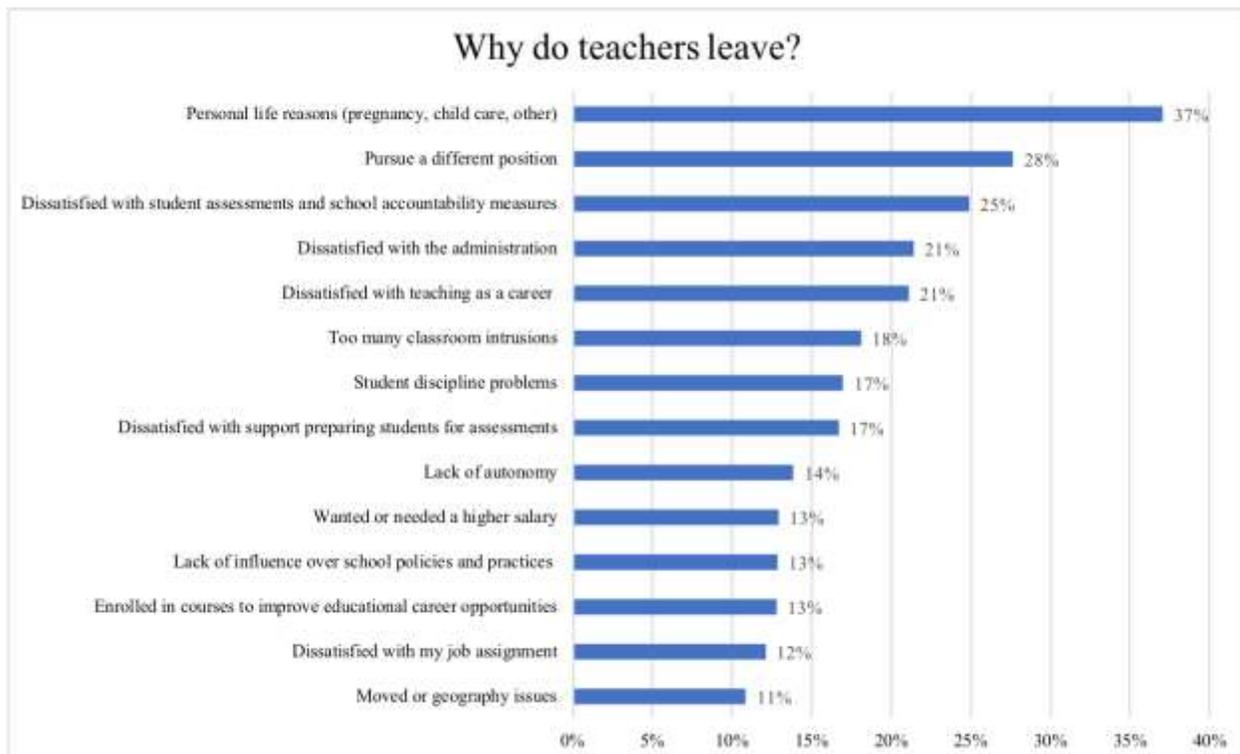
Second, we complement our summary of the teacher recruitment and retention literature by identifying policies that influence the factors known to contribute to teachers' decisions to enter and exit the workforce, including examining the evidence of the effectiveness of these policies. To do this, we provide examples of local, state, and federal policies that aim to address the factors influencing teachers' career decisions. We examine both recently implemented policies and older efforts that have been especially successful and are still relevant to the current U.S. educational context.

Third, we focus on policies that have been aimed at improving teacher recruitment and retention in schools serving high proportions of lower-income students and students of color. Recruiting and retaining teachers is especially urgent in these schools because teacher attrition disproportionately impacts these schools (Ingersoll, 2001). For example, in 2012-13, almost one in 10 teachers in high-poverty public schools left the profession. In contrast, fewer than one in 15 teachers in low-poverty schools did so. The persistently higher rates of turnover in high-poverty, high-minority schools contribute to a concentration of inexperienced and underprepared teachers in these schools (Allensworth, Ponisciak, & Mazzeo, 2009; Goldhaber, Laverly, & Theobald, 2015; U.S. Department of Education 2016). In turn, this can hurt student achievement. For example, a study of approximately 850,000 New York City fourth- and fifth-grade students over an eight-year period found that teacher turnover has a significant negative effect on student achievement, particularly in schools serving large proportions of low-performing students and students of color (Ronfeldt, Loeb, & Wyckoff, 2013).

## **What Factors Influence Teachers' Professional Decisions?**

Public school teachers who voluntarily left the profession after the 2011-12 school year noted a variety of factors for their decision (see Figure 2). Most teachers (55%) cited at least one source of dissatisfaction with teaching. In order of frequency, factors cited as extremely or very important include:

- Personal life reasons, including pregnancy and childcare (37%);
- Pursuit of a position other than that of a k-12 teacher (28%);
- Dissatisfaction with school assessment and the effects of accountability measures on their teaching or curriculum (25%)
- Dissatisfaction with the school's administration (21%);
- Dissatisfaction with teaching as a career (21%);
- Dissatisfaction with support preparing students for assessments (17%);
- The need for a higher salary (13%);
- Lack of influence over school policies and practices (13%); and
- Lack of autonomy over the classroom (13%).



*Figure 2.* The percentage of voluntary leavers who rated the factor as extremely or very important in their decision to leave.

Source: U.S. Department of Education, National Center for Education Statistics, 2012 & 2013.

Another important consideration is what might encourage those who have left the teaching profession to re-enter it. Particularly in times of teacher shortages, the pool of potential re-entrants represents a significant supply of credentialed, experienced teachers. The SASS data offer some important insights (see Figure 3). Of the public school teachers who left the profession, over half (53%) said they would consider returning to the classroom, citing a number of factors that would be extremely or very important in their decision to return. Many of these are financial, including: the ability to maintain retirement benefits (68%); salary increases (67%); student loan forgiveness (25%); and housing incentives (23%). In addition working conditions, such as smaller class sizes/student loads (61%), appear important to teachers' decisions about whether to return.

Finally, easier and less costly renewal of teacher certification (41%) and state certification reciprocity (41%) are key factors that suggest the need for a more streamlined approach to licensure. Although teaching is treated largely as local, our analysis found that at least 25% of teachers move across state lines, and they may encounter difficulties transferring their certification and retirement benefits.

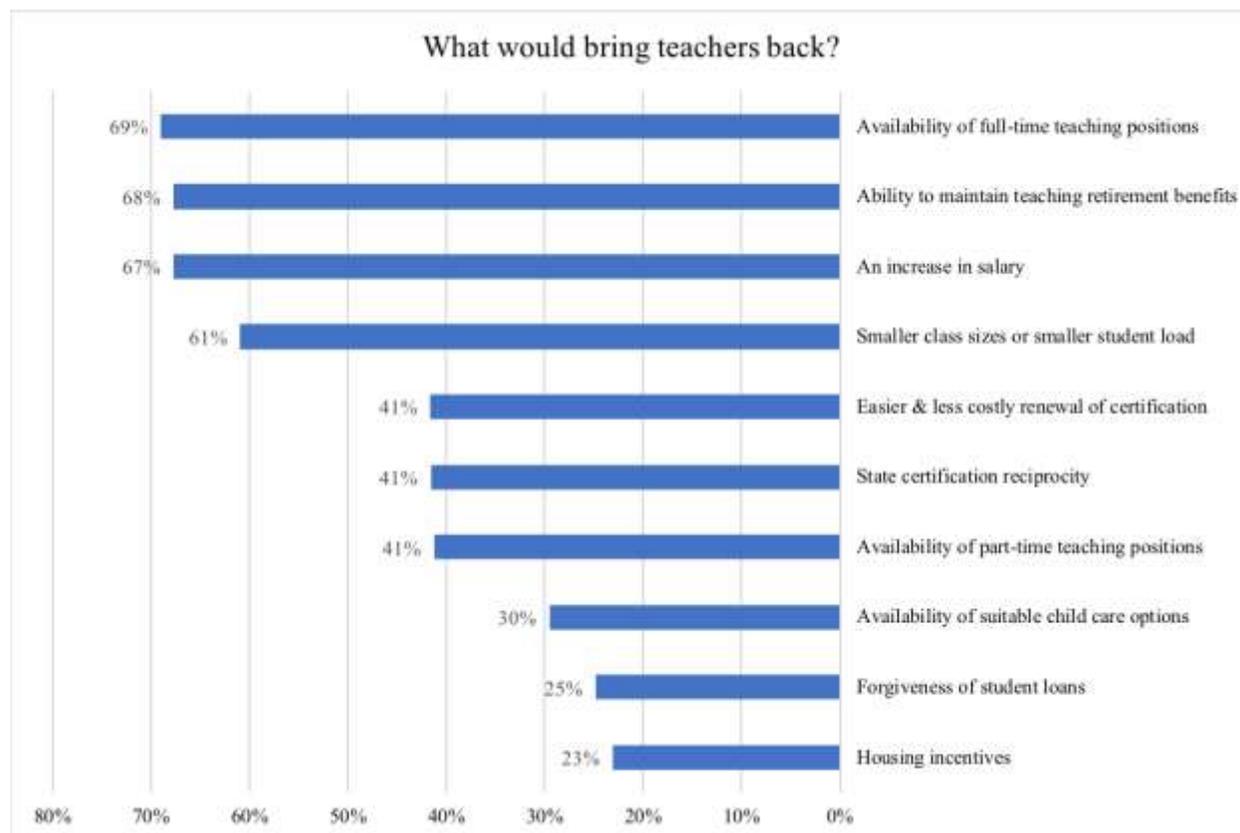


Figure 3. The percentage of leavers who rated the factor as extremely or very important in their potential decision to return.

Source: U.S. Department of Education, National Center for Education Statistics, 2012 & 2013.

The most frequently cited factor was the availability of full-time teaching positions (69%). This might have been related to the timing of the 2012 National Center for Education Statistics survey, which fell on the heels of large numbers of layoffs during the Great Recession (U.S. Department of Education, National Center for Education Statistics, 2012, 2013).

The results from this national survey suggest that, aside from family and personal reasons, teachers attend to factors associated with compensation and working conditions, including school accountability and testing systems, the quality of administrative support, and teacher input into decision-making.

We review literature associated with these factors below. In addition, we review research associated with other factors that have been found to play a major role in teacher recruitment, including hiring processes, and teacher retention, including the quality of preparation and support that new teachers receive prior to and immediately upon entering the profession (Ingersoll, Merrill, & May, 2014; Ingersoll & Smith, 2004; Johnson, Berg, Donaldson, 2005).

## Preparation and Costs to Entry

Growing evidence demonstrates that attrition is higher for those who enter the profession without adequate preparation than for those who are comprehensively prepared. First-year teachers who feel they are well prepared for teaching are much more likely to plan to stay in teaching than those who feel poorly prepared (DeAngelis, Wall, & Che, 2013). One signal of preparation is whether a teacher has completed teacher certification. According to data from the National Center for Education Statistics, 30% of uncertified entrants leave the profession within a five-year span, compared to 15% of certified entrants (Gray & Taie, 2015). Based on our analysis of the Schools and Staffing Survey, approximately 21% of first-year public school teachers in the 2012 school year were not fully certified.

The quality of preparation appears to matter as well. Having strong preparation for teaching increases teachers' sense of efficacy, a key factor related to the likelihood that teachers will remain in the profession (Darling-Hammond, Chung, & Frelow, 2002; DeAngelis, Wall, & Che, 2013). An analysis of the Schools and Staffing Survey found that new recruits who had a semester or more of practice teaching prior to employment were more than three times less likely to leave teaching after a year than those who had no practice teaching (Ingersoll, Merrill, & May, 2014).

Further analysis found that beginning teachers who had received comprehensive preparation (i.e., observing others teaching; student teaching a full semester; receiving feedback; taking courses in teaching methods, learning theory and selecting instructional materials) were two-and-a-half times less likely to leave teaching after a year in the profession than teachers with little or no pedagogical training. About 37% of first-year teachers had received comprehensive preparation, while about 15% received little or no pedagogical training before entry in 2004-05 (see Figure 4).

Moreover, this research shows that, having courses in teaching methods in addition to student teaching reduced attrition, and, regardless of the coursework package, teachers who received at least one semester of practice teaching were half as likely to leave teaching than those who had not received such training. Our analysis of Schools and Staffing Survey data in 2012 shows that one in 10 first-year teachers still entered the profession without any student teaching experience at that time.

While some studies have examined the relationship between teacher preparation and teacher attrition in terms of the content of the preparation, other research has focused on the pathway toward certification, distinguishing between traditional and alternative programs. Most scholars conclude that there is more variability within pathways than between pathways, so it is most helpful to distinguish teacher preparation pathways by the length of clinical experience and amount of coursework, as opposed to whether they are "traditional" or "alternative." Nonetheless, the research we reviewed for this article frequently uses this distinction, so these labels may be thought of as heuristics for the amount of fieldwork and coursework, even though there is variation within each pathway.

Traditional preparation programs encompass university-based undergraduate or post-graduate programs that provide both coursework and clinical training through student teaching. Alternative programs offered by universities, school districts, and other entities can vary substantially. Most of these kinds of programs, however, offer a route to teaching in which participants serve as the teacher of record while undertaking their coursework at night or on weekends, often with little or no prior student teaching. Many candidates choose alternative programs because they cannot afford to forego a salary while undergoing pre-service preparation, given the lack of financial support for intensive pre-service clinical training.

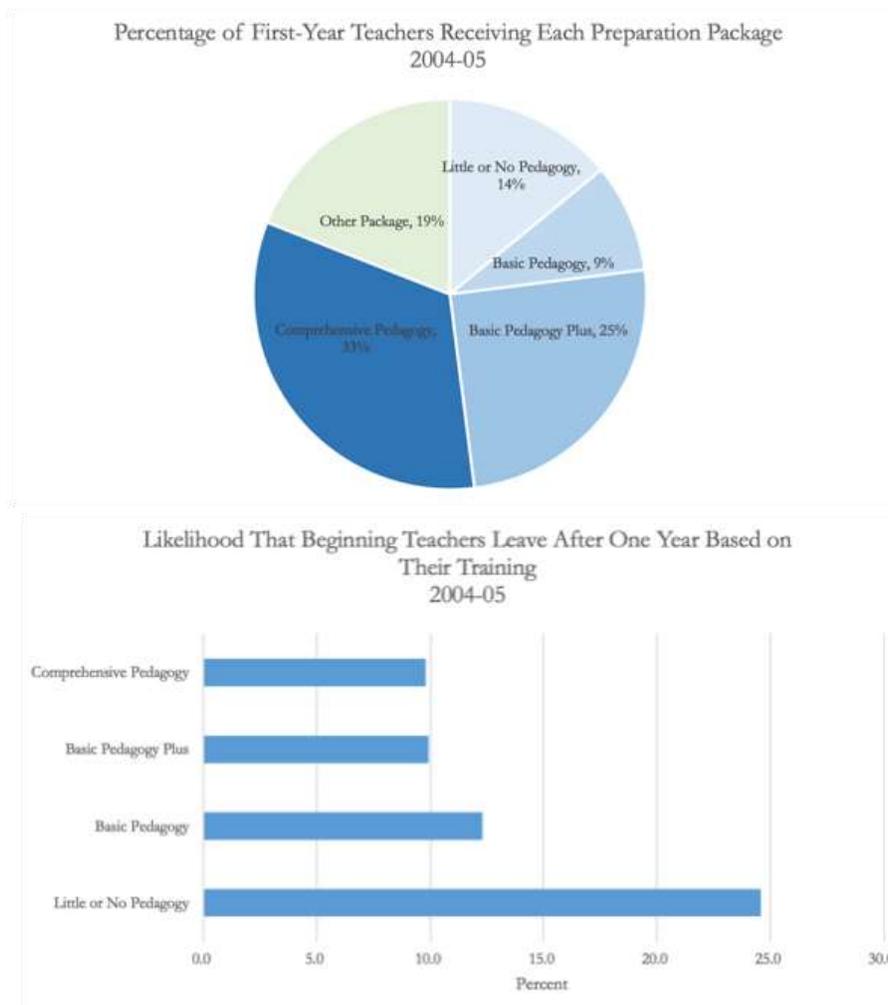


Figure 4. Beginning teacher preparation, 2004-05.

Source: Ingersoll, R., Merrill, L., & May, H., 2014.

Note: Little or No Pedagogy: little or no practice teaching; 1 course or less in teaching methods; little or no other pedagogical preparation (i.e., how to select and adapt instructional materials, coursework in learning theory and child psychology, observation of others' classroom teaching, formal feedback on their own teaching). Basic Pedagogy: full semester of practice teaching; no course in teaching methods; most other pedagogical preparation. Basic Pedagogy Plus: Same as Basic Pedagogy, plus 1-4 courses in teaching methods. Comprehensive Pedagogy: Same as Basic Pedagogy, plus 5 or more courses in teaching methods. Other Package: other mix of preparation. Percentages as reported from personal correspondence with an author.

While offering alternative certification pathways can be a popular approach to recruiting teachers, these pathways are generally associated with lower retention rates. Teachers' perceptions of their preparedness and plans to stay in teaching have been found to be significantly lower for those who undertake alternative routes than those who complete pre-service programs in which they complete pedagogical and other coursework and student-teaching programs (Darling-Hammond, Chung, & Frelow, 2002; Marinell & Coca, 2013). Actual attrition rates follow these patterns. For example, a study of North Carolina teachers found that 68% of in-state certified teachers were still teaching in North Carolina public schools after five years, compared to just over 40% of alternatively certified teachers (Henry, Bastian, & Smith, 2012). An analysis of the Schools and Staffing Survey found that while the proportion of the teaching workforce entering via alternative

programs increased from 13% in 1999-2000 to 24% in 2011-12, there was also a widening gap in the turnover rate between alternatively certified and traditionally certified teachers. The authors note that “[f]ollowing the 2007-08 school year, [alternatively certified] teachers had more than two and a half times the relative risk of leaving than [traditionally certified] teachers” (Redding & Smith, 2016, p. 21). Another recent study of the Schools and Staffing data using multivariate statistical methods to control for many of the individual teacher and school workplace factors influencing turnover, and found that alternatively certified teachers still left their positions at rates 25% higher than traditionally certified teachers (Carver-Thomas & Darling-Hammond, 2019).

Some pathways, such as Teach for America (TFA), provide a few weeks of summer training to teachers who enter teaching in the fall while they complete their preparation through alternative programs. TFA recruits commit to teach in their district for a set period of time, typically two years. Studies of Teach for America have found that approximately 80% to 90% of recruits have left the district by their third or fourth year (Darling-Hammond, Holtzman, Gatlin, & Vasquez, 2005; Kane, Rockoff, & Staiger, 2008; Raymond, Fletcher, & Luque, 2001).

As discussed above, in schools where many teachers who attrit at high rates are placed, the levels of churn can negatively impact student achievement, both among the students in the classrooms of teachers who leave as well as those in the classrooms of those teachers who stay (Ronfeldt, Loeb, & Wyckoff, 2013).

**Entry for teachers in hard-to-staff schools.** Although preparation matters for teachers’ efficacy and continuation in the profession, the cost of preparation is increasingly difficult for candidates to afford. More than two-thirds of individuals entering the field of education—many of whom are new teachers—borrow money to pay for their higher education, resulting in an average debt of about \$20,000 for those with a bachelor’s degree and \$50,000 for those with a master’s degree (U.S. Department of Education, 2015). Unlike in other professions, such as law or medicine, in which future high professional salaries better justify large upfront training costs, teaching pays a relatively low salary. In this context, prospective teachers may rationally choose a pathway in which they can earn a salary while undergoing training rather than taking on debt, which they must repay on a low salary.

Individuals entering the classroom while undergoing their training are disproportionately concentrated in hard-to-staff schools, typically under-resourced, low-performing schools serving large proportions of low-income and minority students (Orfield, Ee, Frankenberg, & Siegel-Hawley, 2016; Woodworth et al., 2009). Furthermore, the skills needed to teach in these schools are greater because teachers must be much more expert at diagnosing student learning, differentiating instruction to address gaps while accelerating progress, and supporting a range of social, emotional, health, and psychological needs, in addition to sometimes complex academic needs.

Hard-to-staff schools consequently often struggle to attract well-prepared teachers, hiring individuals who have not yet completed (and sometimes have not yet begun) their preparation. Many studies have documented the disproportionate concentration of underprepared and inexperienced teachers in low-income, high-minority schools (Boyd, Lankford, Loeb, Rockoff, & Wyckoff, 2008; Goldhaber, Lavery, & Theobald, 2015; Office for Civil Rights, 2014; Sass, Hannaway, Xu, Figlio, & Feng, 2012).

### **Hiring and Personnel Management**

Some studies also suggest that district and school practices related to hiring and supporting teachers influence teachers’ decisions to enter, stay in, or leave the profession. Schools and districts that adopt effective hiring practices are, unsurprisingly, more successful at attracting and hiring effective teachers, leading to greater rates of schoolwide achievement (Loeb, Kalogrides, & Beteille,

2012). Reviews of research reveal that issues of timing and information in particular contribute to the quality of teachers hired by schools and districts, the retention rates of teachers, and most importantly, to student achievement (Liu & Johnson, 2006; Papay & Kraft, 2016).

**Timing of hiring.** Several studies document that hiring teachers late in the year negatively affects teacher recruitment, retention, and student achievement. Multiple studies suggest that between 11% and 30% of newly hired teachers are hired after the school year begins, varying by year and geographic location (Engel, 2012; Jones, Maier, & Grogan, 2011; Liu & Johnson, 2006; Papay & Kraft, 2016). Teachers hired after the start of the school year are generally less effective and more likely to leave the teaching workforce than other newly hired teachers (Jones, Maier, & Grogan, 2011; Papay & Kraft, 2016). For example, teachers hired after the school year begins have less time to plan their curriculum, develop engaging lessons, and understand school and district operations. Moreover, teachers hired after the school year begins must balance these activities with their teaching, and could be overwhelmed by these concurrent responsibilities. Finally, districts that hire teachers later may be selecting from a pool of weaker teachers because the best-prepared teachers may have already been hired (Papay & Kraft, 2016).

Although there may be some potential benefits to hiring later in the process (e.g., more time to identify stronger applicants), one study found that the costs of later hiring far outweighed the benefits (Papay & Kraft, 2016). This study of 130,000 students and 9,000 teachers in a large urban, southern school district in the United States found that teachers who were hired after the school year started were associated with a significant and negative impact on student achievement in 4th grade through 8th grade, with a decrease of “approximately two months of instruction for a typical middle-school student” in mathematics and reading (p. 805). The authors found that in mathematics, “late-hired teachers remain persistently less effective,” suggesting that teachers hired after the school year began were generally weaker teachers. Accordingly, this study suggests that districts will likely find more effective teachers when their hiring processes allow them to search earlier. In addition, this study suggests that hiring earlier provides teachers time to better prepare for the school year.

Some studies suggest that late hiring is rooted in multiple structural barriers. Late adoption of school budgets can be one such barrier; this is often a result of slow-moving state and local budgets (Levine & Quinn, 2003; Papay & Kraft, 2016). A second barrier can occur when schools and districts are unable to accurately predict student enrollment. A third barrier can be posed by collective bargaining agreements that may delay new hires until districts complete school transfers for more senior teachers (Liu & Johnson, 2006).

**Information in the hiring process.** Hiring processes at schools and districts that lack a process which can produce quality information in a usable, timely way may negatively influence teacher recruitment and retention (Liu & Johnson, 2006). Districts, principals, and teacher-candidates all need quality information to assess the fit between the teacher candidate and the needs of the school. This process is critically important to hiring effective teachers, and therefore to increasing student learning. In the words of Kilian Betlach, an elementary school principal in Oakland, California, “Hiring is hard, and hiring is the single most important thing you can do to improve your school” (Mongeau, 2015b).

One study found numerous barriers cited by districts and schools that struggled to use information-rich sources, such as teacher observations, as part of hiring (Rutledge, Harris, Thompson, & Ingle, 2008). The authors noted that the time commitment of demonstration lessons, challenges of reviewing videos submitted by candidates, and late hiring that took place over the summer when candidates could not give demonstration lessons to students reduced the district’s and school’s collection of quality information about teacher-candidates. In addition, many principals are

not aware of the information resources available to them, or do not know how to access the data even when they are aware of the resources (Cannata, Rubin, Goldring, Grissom, Neumerski, Drake, & Schuermann, 2014).

**School and district support for mobile teachers.** Many teachers inevitably face geographic moves. Whether they decide to continue teaching in their new location or instead leave the profession is in part influenced by state and district policies related to teacher certification requirements, pensions, and salary schedules. Our analysis of the Schools and Staffing Survey reveals that more than one in 10 teachers who left their position at the end of the 2011-12 school year for non-retirement reasons cited a move or geographic issue as extremely or very important in their decision to leave.

The limited research on the cross-state mobility of the teacher workforce suggests that some state-imposed barriers, such as non-reciprocal state licensure requirements and pension systems, as well as salary caps for prior teaching experience, can discourage teachers from staying in the teaching profession when they move to a different state. These vary from state to state and over time. Although some states have worked to remove barriers in recent years, our analysis of the Schools and Staffing Survey found that certification-reciprocity issues were cited by 42% of potential teacher re-entrants as extremely or very important in their decision about whether to return to teaching. More than two-thirds (68%) also cited the ability to maintain retirement benefits, which is also a cross-state issue (see Figure 3).

One study of the teacher workforce in Oregon and Washington found that within-state mobility rates were much larger than cross-state mobility rates, suggesting that professional barriers to moving to a different state may have deterred teachers from interstate moves (Goldhaber, Grout, Holden, & Brown, 2015). The study of approximately 72,035 teachers between 2001 and 2014 focused on districts near the border and found, for example, that “among Washington school districts in the Portland-Vancouver Metropolitan Statistical Area, the rate of within-state mobility [was] seven times higher than the rate of cross-state mobility in spite of the fact that the majority of teaching jobs in that regional labor market [were] on the Oregon side of the border” (p. 21). Moreover, the authors noted that even though Oregon and Washington share a reciprocity agreement, the steps teachers must take to switch teaching positions between these two states were difficult to locate and understand.

The most frequently cited barriers to cross-state and cross-district mobility include the expense and time associated with each state’s licensure procedures, the loss of the level of tenure and seniority when teachers leave a state or district (and related effects on their salary), and the negative effects of mobility on teacher pensions (Costrell & Podgursky, 2010; Goldhaber, Grout, Holden, & Brown, 2014; Koedel, Grissom, Ni, & Podgursky, 2012). For example, another study found that state licensure rules that aim to establish minimum teacher standards often impose barriers through testing, course and preparation requirements, fees, slow and duplicative administrative processes and requirements, and unclear licensure standards (Coggshall & Sexton, 2008). Similarly, other scholars have found that out-of-state candidates seeking California teaching positions encountered many challenges, such as “costs of courses and exams, confusion about how to complete the many and varied requirements, and redundancy with other requirements teachers had already met elsewhere” (Darling-Hammond & Sykes, 2003, p. 40; Goldhaber, Grout, Holden, & Brown, 2015). These are barriers that are amenable to policy solutions.

**Hiring and personnel management in hard-to-staff schools.** Educating historically underserved communities of students requires schools and districts to recruit talented teachers to educate and lead. Many districts in underserved communities, however, take a more passive

approach to recruiting teachers by not actively identifying top prospective teachers, instead simply posting a job announcement or attending a career fair to attract teachers (Simon, Johnson, & Reinhorn, 2015). For example, one study of five well-regarded urban districts found that principals in hard-to-staff schools found district recruitment efforts inadequate, in part because the pool of candidates the district provided did not meet principals' needs (Johnson, Marietta, Higgins, Mapp, & Grossman, 2015). In the study, the authors hypothesized that because of the district's limited effectiveness at recruiting appropriate teachers, principals relied on their personal networks and individual, informal channels instead. One principal reported that "[I] seek out and recruit my own teachers because I know what I'm looking for...I kind of grow my own" (Johnson, Marietta, Higgins, Mapp, & Grossman, 2015, p. 102).

Some traditionally hard-to-staff schools have been successful at recruiting high-quality teachers. One study of six high-performing public schools in Walker City, MA, found that these schools—where more than 70% of students, primarily students of color, were eligible for free or reduced-price lunch—were successful at recruiting teachers (Simon, Johnson, & Reinhorn, 2015). Specifically, the study found each of these six schools

actively developed a pool of candidates from which it could hire when teaching positions arose ... by cultivating relationships with nonprofits, universities, and the school district, and with the personal and professional networks of those working in the school. Often, they depended most on those who shared their mission of educating low-income, minority students (p. 1).

These studies suggest that hard-to-staff schools might pursue additional strategies to successfully recruit and hire candidates, often going beyond the resources provided by their central district offices.

### **Salaries and Other Compensation**

Although teachers may be more motivated by a desire to “do good” than some other workers, altruism alone is not enough to attract high-ability candidates to the profession and keep them in the classroom. The extent to which potential teachers choose to enter and stay in teaching is highly influenced by the availability of better and higher-paying job opportunities.

A large body of studies over many decades have shown that teachers' salaries can affect the supply of teachers in terms of the quality and quantity of individuals preparing to be teachers and their distribution across districts (see, e.g. Adamson & Darling-Hammond, 2012; Figlio, 1997; Grissom, Viano, & Selin, 2015; Loeb, Darling-Hammond, & Luczak, J., 2005; Manski, 1987; Stockard & Lehman, 2004). One study, for instance, estimated that an 11% increase in the weekly salary of teachers increased the proportion of college graduates who are willing to work as teachers by 26% (Manski, 1987). A national analysis found that a 1% increase in teacher salaries in a metropolitan area would increase the proportion of teachers who have graduated from a selective college by 1.5% (Figlio, 1997).

Salaries also appear to influence teacher attrition: Teachers are more likely to leave when they work in districts with lower wages (Loeb, Darling-Hammond, & Luczak., 2005; Grissom, Viano, & Selin, 2015; Stockard & Lehman, 2004). Data from the National Center for Education Statistics shows a 10 percentage-point gap in attrition rates between beginning teachers whose first-year salary was \$40,000 or more as compared to those earning less (Gray & Taie, 2015).

Our analysis of the 2011-12 Schools and Staffing Survey found that, of public school teachers who left the profession and said they would consider returning, 67% rated an increase in salary as extremely or very important to their decision to return (see Figure 3). Studies have also

found that teachers in high-demand fields such as mathematics and science are especially responsive to salary differences in their decisions to remain in teaching because of the opportunity costs of forgoing higher-paying jobs available to them (Beaudin, 1995). The same is true for those who have higher measured ability and presumably more options outside of teaching (Stinebrickner, 1999).

Despite the evidence that salaries influence the quality of teachers attracted to the profession and teachers' decisions to stay in the profession, teachers' salaries are not competitive in many labor markets. Even after adjusting for the shorter work year in teaching, beginning teachers nationally earn about 20% less than individuals with college degrees in other fields—a wage gap that widens to 30% by mid-career (Baker, Sciarra, & Farrie, 2015). The difference between teachers' compensation as compared to other workers with a college degree has grown larger over time. In 1994, public school teachers' earnings (including salary, health benefits, and pension) were similar to those of other workers with a college degree, after adjusting for the shorter work year in teaching; by 2015, teachers earned 11% less in total compensation (Allegretto & Mishel, 2016).

Salaries vary widely from state to state—with more competitive wages in New England and Wyoming, and less competitive wages in much of the South and parts of the West. A study published by the Center for American Progress (CAP) examining salaries nationally for mid- and late-career teachers found that experienced teachers with 10 years of teaching experience make less than unskilled workers in a number of states (Boser & Straus, 2014). Increasingly, the CAP study found, a teacher's salary in much of the United States is too low to support a middle-class existence. In 30 states, mid-career teachers who head families of four or more qualify for three or more public benefit programs, such as subsidized children's health insurance or free or reduced-price school meals. In 11 states, more than 20% of teachers work second jobs to supplement their incomes (not including those who work a summer job when schools are typically closed). Even in higher-paying states, such as California, many teachers struggle with the higher cost of living and lower purchasing power of the salaries they earn.

Many teachers, too, are saddled with college debt incurred while undergoing their teacher training (Staklis & Henke, 2013). The more college debt that students incur, the less likely they are to choose to work in a lower-wage profession such as teaching. One study of students at a highly selective undergraduate institution found that incurring debt increased the odds that students chose “substantially higher-salary jobs” and “reduce[d] the probability that students [chose] low-paid ‘public interest’ jobs” (Rothstein & Rouse, 2011, p. 149). The influence of debt on job choice was “most notable on the propensity to work in the education industry” (p. 150). As discussed below, studies of loan forgiveness programs for teachers have found that those who receive loan forgiveness—which has the effect of increasing their overall compensation—are more likely to remain in the profession (Feng & Sass, 2015).

**Salaries and other compensation in hard-to-staff schools.** Compounding the problem of low wages in the teaching profession overall are great inequities in teacher salaries among districts within the same labor market, leaving some high-need, under-resourced districts at a strong disadvantage in hiring. An analysis of the Schools and Staffing Survey found that the best-paid teachers in low-poverty schools earned 35% more than their counterparts in high-poverty schools (Adamson & Darling-Hammond, 2012). Teachers in more advantaged communities also usually experience much better working conditions, including smaller class sizes and more control over decision-making in their schools (Adamson & Darling-Hammond, 2012; Loeb, Darling-Hammond, & Luczak, 2005). Given these salary differentials among districts, high-poverty districts consistently struggle to attract and retain effective teachers, who can often take a less demanding, higher-paying job in another district down the road.

A study analyzing funding and salary disparities in California and New York documented large differences in school funding within both of these states and corresponding inequities in teacher salaries, teacher qualifications, and student achievement (Adamson & Darling-Hammond, 2012). Low-salary districts in both states had higher proportions of low-income students, students of color, and English learners and higher proportions of uncredentialed, inexperienced, and less well educated teachers. This study and another (Pogodzinski, 2000) found that wage disparities within labor markets are a significant factor in explaining the prevalence of underprepared teachers in districts paying below the market wages.

In a regression elasticity analysis, which allows researchers to examine how a percentage change in one teaching characteristic (e.g., salaries) is associated with a percentage change in another teaching characteristic (e.g., experience), the authors found that increases in salaries were associated with decreases in the proportion of uncredentialed, nonpermanent, and inexperienced teachers, as well as decreases in turnover rates.

In some cases, added stipends for teachers working in high-poverty schools have been successfully used to retain teachers. However, when implemented in isolation, this strategy appears to have a limited effect. For example, one study in North Carolina found that higher salaries (provided through bonus payments) were able, on average, to reduce teacher turnover rates by 17% in hard-to-staff subject areas in high-poverty and/or low-performing schools during the three years the incentives were in operation (Clotfelter, Glennie, Ladd, & Vigdor, 2008).

Another study found that a one-year \$5,000 bonus program (or approximately 10% salary increase) targeted to high-performing teachers working in the lowest-performing schools (i.e., Priority Schools) in Tennessee was at least marginally effective at retaining teachers (Springer, Swain, & Rodriguez, 2016). The study found that the bonus, which required teachers to remain in their Priority School for the 2014 school year, increased the rate of teacher retention for teachers in tested subjects and grades within Priority Schools by approximately 20%. However, the study did not find that the bonus affected the retention of teachers in non-tested subjects.

In California, statewide stipend payments of \$20,000 to teachers who had earned National Board Certification and worked in low-performing schools may have contributed to California having a much greater share of Board-certified teachers in schools serving concentrations of low-income and minority students than was true in other states (Humphrey, Koppich, & Hough, 2005). The state stipend was paid out over four years only to teachers who went to or stayed in the high-need schools, and many teachers from these schools applied for and were supported in achieving Board certification by support groups designed to help them reach this goal. Moreover, Los Angeles provided a 15% salary boost to teachers who became Board certified and agreed to take on additional district-determined responsibilities. In California, the targeted incentives appeared to be successful in increasing both the expertise of teachers in high-need schools as well as their commitment to remain there, rather than in recruiting expert teachers away from non-needy schools to high-need schools.

Finally, a study of the Talent Transfer Initiative offered in 10 school districts in seven states—a program that provided a \$20,000 bonus paid over two years to teachers with high value-added scores to transfer and teach in schools with low-average test scores—was associated with increased transfer and retention rates during the two-year period that teachers received the bonus (Glazerman, Protik, The, Bruch, & Max, 2013). Importantly, though, attrition rates for these teachers climbed significantly after the bonus program ended, and the study did not find any difference between the retention rates of bonus recipients and non-bonus recipients after the two-year period. This suggests that the bonus was only effective while teachers received the additional money.

## Induction and Support for New Teachers

After districts hire teachers, strong induction and support for novice teachers during their first years in the profession can increase their retention. The first few years of a teacher's career are formative ones as teachers make the leap from preparation to practice. Depending on the amount and quality of support they encounter in their first teaching job, new teachers can grow into highly competent ones—or they may develop counterproductive approaches or leave the profession entirely. Teachers with a strong start are much more likely to become and remain effective teachers over time (Atteberry, Loeb, & Wyckoff, 2013; Bastian & Marks, 2017).

Induction refers to a variety of activities for new teachers, including orientation sessions, retreats and seminars for novice teachers, coaching and feedback from experienced teachers, the opportunity for novice teachers to observe expert teachers, extra classroom assistance, reduced workloads, and mentoring (Ingersoll & Strong, 2011). Teachers who receive a comprehensive set of supports like these have been found to stay in teaching at rates more than twice those of teachers who lack these supports (Ingersoll & Smith, 2004). The goals of induction vary, but they generally focus on improving the performance and retention of novice teachers, with the ultimate goal of improving student outcomes. Induction serves as a bridge supporting new teachers as they enter the profession.

The research on these programs shows that well-designed induction programs for beginning teachers result in teachers staying in the profession at higher rates, accelerated professional growth among new teachers, and improved student learning (Bastian & Marks, 2017; Glazerman et al., 2010; Ingersoll & Smith, 2004; Ingersoll & Strong, 2011; Villar & Strong, 2007).

Based on our analysis of the 2011-12 Schools and Staffing Survey, approximately 84% of first-year teachers reported that they participated in an induction program. However, when asked about their participation in specific elements of induction, 73% reported receiving mentoring, 78% reported receiving regular supportive communication with principals and administrators, 64% reported receiving seminars or classes for beginning teachers, 58% reported receiving common planning time with teachers in their subject, and 12% reported receiving a reduced teaching schedule. These data suggest that while induction programs are prevalent across the United States, many may fail to include all of the characteristics that research has found to be associated with effective programs.

Induction supports, of course, are not the only determinants of teachers' job decisions. Both district hiring and layoff decisions and external labor market options have an effect. During the period when the Great Recession caused widespread layoffs of new teachers across the country and a sharp drop in the number of alternative jobs available, at least one study found little influence of a statewide induction program on retention rates for new teachers (Wechsler, Caspary, Humphrey, & Matsko, 2010). The authors noted that the state of the economy in 2009 was likely to be a more prominent factor in teachers' employment decisions than the presence or absence of an induction program.

Retention rates are not the only outcome of interest. Also important is the development of teacher competence and effectiveness. One research review documented a consensus that beginning teachers who participated in induction were more able to keep students on task, develop workable lesson plans, use effective questioning practices, adjust classroom activities to meet students' interests, maintain a positive classroom atmosphere, and demonstrate successful classroom management (Ingersoll & Strong, 2011). Finally, multiple studies show that students of beginning teachers who participate in induction generally have higher scores, or gains, on academic achievement tests (Bastian & Marks, 2017; Glazerman et al., 2010; Ingersoll & Strong, 2011).

**Induction and support for new teachers in hard-to-staff schools.** The extent of challenges for early career teachers is generally greater in high-poverty schools where, evidence suggests, the quality of induction programs tends to be weaker. For example, one study of 374 randomly selected first- and second-year teachers in Florida, Massachusetts, and Michigan found that new teachers in low-income schools were less likely to have formal mentors during their first year as compared to new teachers in high-income schools (65% versus 91%; Kardos & Johnson, 2010). The study also found that teachers in low-income schools were less likely to have mentors in the same school (53% versus 82%), same grade level (28% versus 61%), and same subject area (40% versus 60%). Moreover, novice teachers in low-income schools were less likely to have even three conversations with their mentors about classroom management, lesson planning, and classroom instruction during their first year of teaching (approximately 45% versus 65%). These weaker programs may be a function of fewer resources spent on induction in high-poverty districts, limited resources spent over a greater number of beginning teachers, and/or too few effective, experienced teachers in low-income schools to serve the disproportionate concentrations of inexperienced teachers in these schools (Kini & Podolsky, 2016).

### **Working Conditions**

The success of recruiting and retaining teachers by raising salaries, along with providing effective preparation, hiring, and induction can be enhanced when teachers work in collaborative and supportive environments. Along with salaries, teachers' working conditions are a strong predictor of teacher retention in educators' decisions about where to teach and whether to stay. For example, efforts to institute one-time bonuses to attract teachers to hard-to-staff schools, often called "combat pay," have proven largely unsuccessful when they do not also address underlying poor working conditions (Berry, 2009).

Research has long shown that teachers' working conditions affect their ability to teach well. At least four interdependent factors consistently rise to the top as among the most important teaching and learning conditions for teachers and most highly related to their decisions to remain teaching in a given school: (1) school leadership and administrative support; (2) opportunities for professional collaboration and shared decision-making; (3) high-stakes accountability systems; and (4) resources for teaching and learning (Futernick, 2007; Maryland Working Conditions Survey, 2015; North Carolina Working Conditions, 2014; U.S. Department of Education, National Center for Education Statistics, 2012 & 2013; Vermont Working Conditions Survey, 2013).

Working conditions are often much worse in high-poverty than in low-poverty schools. Teachers in more economically advantaged communities often experience smaller class sizes and pupil loads, and greater influence over school decisions (Boyd et al., 2011; Ladd, 2011). Teacher turnover is 50% higher in high-poverty schools compared to low-poverty schools. Multiple studies suggest, however, that teachers are not leaving high-poverty schools because they do not want to teach high-need students, but rather because of lower salaries and more stressful teaching conditions (Ingersoll, 2001; Loeb, Darling-Hammond, & Luczak, 2005). Higher attrition rates in these schools have been linked to poorer facilities, fewer textbooks and supplies, fewer administrative supports, and larger class sizes (Simon & Johnson, 2015). These findings suggest that addressing working conditions should be an important target for policies aimed at retaining qualified teachers in high-need schools.

**School leadership.** The quality of administrative support is often the top reason teachers identify for leaving or staying in the profession, often more important than salaries (Carroll, 2007; U.S. Department of Education, National Center for Education Statistics, 2012 & 2013; Vermont Working Conditions Survey, 2013). Several studies have found that support from principals and

other school leaders is one of the best predictors of teacher attrition (Boyd et al., 2011; Kraft, Marinell, & Lee, 2016; U.S. Department of Education, National Center for Education Statistics, 2012 & 2013).

Research identifies at least two major components of school leadership that contribute to teachers' decisions about whether and where to stay in the profession. These include administrator support and leadership style.

Teachers are more likely to remain teaching when they feel supported by administrators (Johnson, Kardos, Kauffman, Liu, & Donaldson, 2004). Support from administrators can take many forms, including providing emotional, environmental, and instructional support (Hughes, Matt, & O'Reilly, 2015). As a principal from one school in a small urban district in a southeastern state noted:

My role is primary. It's setting the climate and culture, making sure that these things are supportive of new teachers. It's being supportive myself of new teachers, making sure I'm visible, making sure I'm having conversations with them, making sure they're getting the resources they need, making sure they feel connected (Brown & Wynn, 2009, p. 51).

One correlational study of principal support and teacher retention in 17 schools in a western state in the United States found that teachers who expected to remain teaching in their school rated emotional and environmental support as the attributes they valued most highly from their principals (Hughes, Matt, & O'Reilly, 2015). Examples of this type of support included when a principal supported "a teacher's decision in front of parents and colleagues" or when a principal "recognized them for a job well done" (p. 132).

Interestingly, a study of survey data from a charter management organization with more than 25 schools found that teachers' perceptions of their workload did not predict turnover after their perceptions of their principal's support and the effectiveness of their school's professional development were taken into account (Torres, 2014). In addition, a study of 45 urban schools in a southeastern state found that schools with the lowest teacher attrition rates tended to have school leaders that provided support through instructional resources, teaching materials, and professional learning opportunities (Brown & Wynn, 2009). As one principal observed, ensuring adequate "resources and supplies and providing the structures and procedures [is] necessary to keep the focus on helping all children achieve at higher levels" (p. 53).

A 20-year public school teacher in Minneapolis confirmed the importance of these kinds of supports for her continuation in the profession:

For the past decade, I've worked at a school where 97% of the children qualify for free and reduced-price lunch. I stay because the school climate is good for children and teachers alike. I stay because my principal is wonderful, supports us, does what's best for children, and because I trust her. I stay because my colleagues are gifted teachers and good company and because I continually learn from them (Ragatz, 2014).

Importantly, as noted by the Minneapolis teacher, teachers' working conditions are also students' learning conditions. When teachers are supported in collaborating and doing what works for children, they feel more efficacious in their work.

Teachers are also more likely to remain in their school and in the profession when school leaders effectively communicate with them. The correlational study of 17 schools mentioned above found that teachers valued principals' "communication and being notified of events in their building" (Hughes, Matt, & O'Reilly, 2015, p. 132). At the same time, negative communications

appear to have the opposite effect. Teachers who recently left teaching positions in New York City charter schools between 2010 and 2011 consistently noted that principals' "high and often implicit expectations" contributed to their feeling a lack of trust with their principals that, in turn, influenced their decisions to leave the school (Torres, 2016, p. 61). The study's findings and the teachers' comments highlight the importance of principals setting explicit, high (and reasonable) expectations for teachers, and then providing positive reinforcement when teachers achieve the expectations.

In addition, a principal's leadership style is associated with teachers' decisions to leave the school or profession (Thibodeaux, Labat, Lee, & Labat, 2015). The study mentioned above of 45 urban schools noted that most of the leaders in the schools with low attrition rates did not "view themselves as traditional, omnipotent, 'top-down' administrations" (Brown & Wynn, 2009, p. 55). Instead, these principals described their responsibilities as facilitators, collaborators, team leaders, or leader of leaders. To execute this type of leadership style, these principals often used leadership teams, interview teams, or site-based management teams to make school-based decisions, "with the new teacher's opinion just as important as the person that's been here 25 years" (p. 55). One principal of a school with a low attrition rate described her leadership style as follows:

I have a style that encourages people to share their opinions, to talk through issues, to try to reach consensus. When necessary, I will make a clear decision and say, "This is the way it has to be." But when I can, I really try to view my role as the facilitator of an entire team more than I do the person that comes in and says, "This is the way it has to go and we're going to do it this way" (p. 55).

An analysis of the 1999-2000 Schools and Staffing Survey found that teachers who perceived that they had more influence over their school's policies were more likely to remain in the profession, and in their school specifically (Jackson, 2012). In contrast, principals' ratings of their own influence on their school policies were associated with an increased likelihood that the teachers in the school would leave. The authors suggest that school leaders should "cultivate opportunities for teachers in general to exercise influence over decision-making in the school. Teachers need to feel that their concerns are being heard and that their professional judgment is valued within the school community" (p. 895).

**School leadership in hard-to-staff schools.** Teachers working in schools with large proportions of low-income students and students of color tend to rate their principals as less effective (Grissom, 2011), with one study of Miami-Dade County Public Schools finding that principals in high-poverty schools, on average, tended to be more inexperienced and academically weaker (as measured by the selectivity of principals' undergraduate institution; Loeb, Kalogrides, & Horng, 2010).

Principal quality impacts teacher attrition even more in these schools than in others. Multiple studies of teacher attrition in high-poverty schools have found that teachers' perceptions of their school's leader is a dominant factor in their decision to remain in the school (Boyd et al., 2011; Goodpaster, Adedokun, & Weaver, 2012; Marinell & Coca, 2013).

One large national study found that a principal's effectiveness, as reported by teachers, was strongly related to teacher attrition, and that this impact was much larger in high-need schools (Grissom, 2011). Effectiveness was measured by six questions about administrator performance on the survey, including "setting clear expectations, providing support and encouragement, and recognizing staff for a job well done" (p. 2561). A 1.5 standard deviation increase in principal effectiveness on this measure reduced teacher attrition "enough to offset the turnover differential between disadvantaged schools and other schools, as defined by student demographics" (p. 2575).

A synthesis of six studies analyzing teacher turnover in high-poverty schools found that effective school leaders embodied three key roles (Simon & Johnson, 2015). First, they are effective school managers, including ensuring that teachers have necessary resources, communication channels, and sensible budgets. Second, they are effective instructional leaders who strategically hire teachers and staff, provide regular and fair teacher evaluations, and help their teachers to continually improve. Third, they are inclusive decision-makers who listen to teachers' ideas and engage them in change, and provide teacher autonomy within their classroom as appropriate.

**Professional collaboration and shared decision-making.** A combination of teaching conditions related to the quality of school leadership, the caliber of collegial relationships, and specific aspects of school culture most greatly influence teachers' job satisfaction and their anticipated or actual career decisions (Futernick, 2007; Maryland Working Conditions Survey, 2015; North Carolina Working Conditions Survey, 2014; U.S. Department of Education, National Center for Education Statistics, 2012 & 2013; Vermont Working Conditions Survey, 2013). As with other professions, teachers' job satisfaction—and therefore career decisions—are shaped by their connectedness to a team working toward a common shared purpose (Johnson, Kraft, & Papay, 2012; Skaalvik & Skaalvik, 2011). The amount of voice that teachers have in decision-making on issues directly affecting their ability to do their job well also contributes to teachers' satisfaction. The most important factors identified in a survey of more than 2,000 current and former California teachers about why they chose to stay were the opportunity to participate in school decision-making and the quality of relationships among the staff (Futernick, 2007). Also important were adequate time for planning and adequate teaching and learning resources. Our analysis of the Schools and Staffing Survey shows that 13% of teachers who voluntarily left the profession after the 2011-12 school year cited a lack of influence over school policies and practices as extremely or very important in their decision to leave.

Schools that foster these types of professional working environments typically empower teachers to direct and collaborate in their professional learning. A survey of teachers in their first three years of experience in Michigan and Indiana found that novice teachers who intended to remain in their schools were generally working in schools characterized by a good professional fit in terms of interests and goals, relational trust, and collective responsibility among colleagues for setting expectations, maintaining discipline, and helping one another (Pogodzinski, Youngs, & Frank, 2013).

Smaller qualitative studies of rural STEM teachers (Goodpaster, Adedokun, & Weaver, 2012) and teachers in Teach for America (Heineke, Mazza, Tichnor-Wagner, 2014) have similarly found that close relationships with supportive school colleagues and administrators strongly contributed to teachers' decisions to remain in the profession.

More collaborative work environments where professional learning is emphasized can have a positive effect on teacher retention. For example, a study surveying urban teachers in a Midwest city with four, five or six years of teaching experience found that relationships with coworkers, support, and collaboration with fellow teachers positively influenced job satisfaction and teachers' decisions to remain teaching at their school (Waddel, 2010). As a teacher in the study explained,

[We are] a shared learning community. We are very involved with each other in planning, learning...lots of team preparation. We all hold the same vision. We believe in our mission and work together to achieve that (p. 76).

In a qualitative study of novice teachers, one teacher described the formal and informal school structures that contributed to the collegial and supportive school environment that encouraged her to remain in the school, including schoolwide and grade-level meetings about topics ranging from

how to handle bullying to how to assess learning (Johnson, 2007). She also described how she met with her grade-level team weekly to review the prior week and plan for the next, emphasizing the importance of teamwork in establishing the supportive, professional school culture:

We have a good team. The third-grade team, we try to plan together. We teach pretty much the same curriculum, but we, within our own room, we do our own style of teaching it. So, we stay with the same units, and we plan the same field trips. So that part is good. You feel like you're supported. So that was good, especially last year. ... And then this year, I feel like I can stand on my own two feet ... And the team is good; it's strong ... I do my own thing, but I'm also a team player and that's what you need here. And you can't come here and say, "Well, I'm going to do everything my way" and survive here. It's a lot of teamwork and you have to be a team player (Johnson, 2007, p. 164).

A culture of collaboration and shared decision-making does not spontaneously occur within schools. Instead, schools that foster these types of professional working environments typically empower teachers to direct and collaborate in their professional learning through thoughtfully designed school structures. Schools with lower retention rates have been found to cultivate a "strong sense of collective responsibility—where there is a shared commitment among the faculty and staff to improve the school so that all students can learn" (Allensworth, Ponisciak, & Mazzeo, 2009, p. 25). These schools also promote a school culture "characterized by mutual trust, respect, openness and commitment to student achievement" (Johnson, Kraft, & Papay, 2012, p. 14). In addition, they establish time for teachers to collaborate, plan, examine student work, and self-reflect (Ladd, 2011) and provide expanded roles for teachers (Ladd, 2011). Schools with lower retention rates also tend to support shared decision-making so that "teachers feel they have control over various aspects of their work" (Marinell & Coca, 2013, p. 25).

Importantly, schools that create the necessary conditions for productive working relationships within and across academic departments or grade levels often provide numerous benefits, in addition to increased teacher retention. These benefits include greater consistency in instruction (Friedlander, & Darling-Hammond, 2007), more willingness to share practices and try new ways of teaching (McLaughlin & Talbert, 2001; Snow-Gerono, 2005), more success in solving problems of practice (Hord, 1997), increased job satisfaction (Hord, 1997; Stockard & Lehman, 2014) and increased student achievement (Darling-Hammond, Chung-Wei, Andree, Richardson, & Orphanos, 2009). In addition, teachers who work in schools with these strong professional environments improve at much faster rates than their peers working in schools with weaker professional environments (Kraft & Papay, 2014). Moreover, strong professional environments also can have a positive effect on teacher attitudes, and fuel a desire to remain in the profession (Ware & Kitsantas, 2007). This is mirrored in an international study finding that "in all countries, when teachers reported more positive relationships with students and collaborative relationships with other teachers, they also reported significantly higher levels of self-efficacy" (Schleicher, 2015, p. 47).

***Collegial relationships in hard-to-staff schools.*** Relationships among teachers and administrators significantly contribute to teacher retention decisions in hard-to-staff schools. As one study described, "In schools where students' needs are greater—as they often are in high-poverty schools—it is plausible that teachers depend on one another even more than they do in other schools" (Simon & Johnson, 2015, p. 20). For example, one longitudinal study in the Chicago Public School district between 2003 and 2007 found that over 75% of the variation among schools' teacher retention rates was explained by teachers' reports of the "climate and organization of work at their school" (Allensworth, Ponisciak, & Mazzeo, 2009, p. 25). Teachers were more likely to remain in

their schools when they reported that they felt a collective responsibility in their school to ensuring that all children learn, and when they perceived their colleagues “have a ‘can do’ attitude and work together on improving the school” (p. 25).

These factors are echoed in a review of studies finding that, for teachers in high-poverty, collegial schools, the following are important: an inclusive environment characterized by respect and trust among colleagues; formal structures that promote collaboration; and the presence of a shared mission among teachers (Simon & Johnson, 2015).

**Accountability systems.** A recent development in the literature on teacher retention is the impact of federal and state accountability systems on teachers’ career decisions. As noted earlier, based on our analysis of the Schools and Staffing Survey, of the teachers who left the profession after the 2011-12 school year for reasons other than retirement, approximately 25% reported that dissatisfaction with the influence of school assessment and accountability measures on their teaching or curriculum was extremely or very important in their decision to leave teaching. In addition approximately 17% reported that dissatisfaction with support preparing students for assessments was extremely or very important in their decision to leave teaching.

With the passage of the No Child Left Behind Act (NCLB) in 2001, the federal government required a testing and accountability system that outlined a series of annual targets for increases in test scores, followed by sanctions for schools not meeting “Adequate Yearly Progress” overall or for any single student group. Under the Race to the Top and NCLB waiver programs, many states adopted policies to use test scores as a basis for evaluating teachers. Consequently, in some cases the stakes attached to students’ standardized test scores grew even higher and the number of tests expanded. A study from the Council of the Great City Schools that reviewed testing for more than 7 million students in about three dozen states found that students in the 66 surveyed districts were required to take an average of 112 districtwide tests between pre-k and the 12th grade (Hart, Casserly, Uzzell, Palacios, Corcoran, & Spurgeon, 2015).

Some scholars have hypothesized that hallmarks of the high-stakes accountability systems—mandated curricula and test preparation activities—“de-skill” teachers and serve students poorly, pushing many enterprising and effective teachers to seek out other schools better organized for student learning where they can do their best work (Johnson, Berg, & Donaldson, 2005). One 25-year veteran kindergarten teacher explained how the effects of high-stakes accountability policies contributed to her resignation:

I have watched as my job requirements swung away from a focus on the children, their individual learning styles, emotional needs, and their individual families, interests and strengths to a focus on testing, assessing, and scoring young children, thereby ramping up the academic demands and pressures on them...I have changed my practice over the years to allow the necessary time and focus for all the demands coming down from above. Each year there are more. Each year I have had less and less time to teach the children I love in the way I know best—and in the way child development experts recommend. I reached the place last year where I began to feel I was part of a broken system that was causing damage to those very children I was there to serve (Strauss, 2014).

Even though many teachers report dissatisfaction with increased accountability, the research about the effect of accountability on teacher retention is limited, with mixed results. One study of the impact of accountability policies on teachers in Florida found that teacher attrition increased in schools that experienced a negative accountability “shock” due to a change in the grading system, even when controlling for student demographics, socioeconomic status, test scores and disciplinary

incidents (Feng, Figlio, & Sass, 2010). The study found some evidence that teacher attrition decreased in schools that experienced a positive change in their rating.

Another study that looked across states during the 1990s, when accountability systems were generally less focused on sanctions than after the introduction of NCLB, found that teachers in states with what the authors identified as stronger accountability systems were just as likely to indicate that accountability reforms were important in their attrition decision as teachers in states with weaker accountability systems (Loeb & Cunha, 2007). The study did not find an increase in attrition rates after state accountability systems were introduced between 1993-94 and 1999-00. In a review of the studies exploring attrition and accountability, the authors note that the research to date “suggests that accountability has not dramatically changed the career choices of teachers overall, but that it has likely increased attrition in schools classified as failing relative to other schools,” and that the teachers leaving are not the least effective teachers (Figlio & Loeb, 2011, p. 411).

**Accountability systems in hard-to-staff schools.** Attrition can be higher in schools designated as low performing under accountability systems, which are very likely among those already struggling most to retain teachers (Sass, Flores, Claeys, & Perez, 2012). A study in North Carolina found that the state’s accountability system made it more difficult for all schools to retain staff, and the negative effects on teacher retention were greater in low-performing schools (Clotfelter, Ladd, Vigdor, & Diaz, 2004). These studies suggest that, ironically, a policy intended to improve education for low-achieving students may have had the opposite effect by making it harder for their schools to retain teachers. Moreover, other studies suggest that teachers may worry about the security of their jobs, particularly if they teach in schools with low-performing students, which are more likely to encounter repercussions from the state (Barksdale-Ladd & Thomas, 2000; Hoffman, Assaf, & Paris, 2001).

**Resources for teaching and learning.** Schools with sufficient instructional materials and supplies, safe and clean facilities, reasonable student-to-teacher ratios, and adequate support personnel can positively affect teacher retention rates (Borman & Dowling, 2008). The availability of adequate instructional resources (e.g., books, paper and student supplies, technology access) can influence morale and teachers’ self-perceived effectiveness (Ware & Kitsantas, 2007). Our analysis of the 2011-12 Schools and Staffing Survey found that of the public-school teachers who left the profession and said they would consider returning, 61% reported that smaller class sizes would be extremely or very important in their decision to return (see Figure 3). Such factors as extremely large pupil-staff ratios and smaller levels of expenditures for teaching materials have been found to be associated with higher staff turnover (Theobald, 1990). Similarly, inadequate and unsafe facilities contribute to teachers’ job dissatisfaction and attrition (Buckley, Schneider, & Shang, 2004; Stockard & Lehman, 2004).

Inevitably, a lack of resources such as books, a library, computers and Internet access, or reliable photocopy machines limits the kind of teaching and learning that can occur (Johnson, Berg, & Donaldson, 2005). Although many teachers do their best to cope with resource deficits—often spending hundreds of dollars of their own money to backfill shortages—many also become demoralized when required to teach in such conditions (Johnson, Berg, & Donaldson, 2005). Although these factors are not typically the primary reason for teachers’ decisions to change schools or leave the profession, they do influence school morale and teachers’ self-perceived effectiveness and career decisions (Buckley, Schneider, & Shang, 2004). As Rebecca Fulop, a science teacher in California, described her frustration:

I signed up for reduced pay in my life to make a difference in students’ lives. And the worst thing that I deal with is this daily frustration that I can’t be there for all of my

students the way I want to, because I don't have enough time, resources, and capacity to do it (Rizga, 2015, pp. 246-247).

Brenda, a mid-career entrant into the profession who taught Spanish in an urban middle school, agreed:

You know, it's not like I'm in awful conditions, like rats running around the room or anything. But [in the nonprofit I came from], if I needed to photocopy something, there was a photocopier there. There were computers. There were phones. And to think that we expect to educate kids not having any—we have one copier at the school. And of course, no phone in the rooms—that goes without saying. So put that together with just feeling kind of beaten down and so exhausted at the end of the day, every day. I think it's a wonder that anyone stays (Johnson, 2007, p. 93).

**Resources in hard-to-staff schools.** Hard-to-staff schools also tend to suffer from inadequate school resources that contribute to teacher retention, albeit not as significantly as school leadership and climate. Nonetheless, one study using survey data from k-12 public school teachers in Washington, DC found that teachers' plans to leave their school were associated with the teachers' rating of their school's facilities (Buckley, Schneider, & Shang, 2004). Another study noted that high-poverty schools tend to lose teachers when they are assigned large classes (Simon & Johnson, 2015).

## What Does Research Suggest About Policies That May Improve Teacher Recruitment and Retention?

### Policy Strategies to Improve Preparation

As noted earlier, strong preparation for teachers can increase the likelihood that they remain in the profession. Moreover, strong preparation enhances teachers' sense of efficacy and effectiveness, improving student outcomes. In contrast, preparation pathways that recruit teachers who leave the profession after a few years contribute to teacher turnover, which hurts student achievement. Based on our review of the existing policy research, we identified three key strategies that improve teachers' preparation and entry into the profession, so that teachers both enter and remain in the profession at higher rates.

**Provide service scholarships and loan forgiveness programs.** Individuals who have left the teaching profession identify loan forgiveness as a factor that would bring them back to the classroom. In the Schools and Staffing Survey, one in four public school teachers who left teaching and said they would consider returning to the profession identified loan forgiveness as extremely or very important in their decision to return (see Figure 3).

Since 1958, when the National Defense Student Loans were enacted, the federal government and more than 40 states have at various points offered loan forgiveness and/or service scholarship programs to individuals interested in teaching (Feng & Sass, 2015). These approaches underwrite preparation—often in particular high-need fields—in exchange for a number of years of service in the profession—often in particular high-need locations. A review of research on these policies, used both in medicine and teaching, found that they can be effective in attracting and preparing high-ability candidates and recruiting them to the places or fields where they are needed (Podolsky & Kini, 2016). Successful program models tend to: Offer a substantial enough award to be an effective inducement, such as covering all or a large percentage of tuition; target high-need fields and/or schools; recruit and select candidates who are academically strong, committed to teaching, and well-

prepared; commit recipients to teach with reasonable financial consequences if recipients do not fulfill the commitment (but not so punitive that they avoid the scholarship entirely); and be bureaucratically manageable for participating teachers, districts, and higher education institutions.

**Develop teacher residencies.** Another increasingly popular strategy to recruit and retain well-prepared and diverse candidates in high-need schools is the teacher residency model. In contrast to alternatives that require teachers to train while teaching in order to maintain a source of income, teacher residencies offer an alternative model that underwrites the cost of preparation for candidates while still allowing for full preparation prior to employment.

Over the past decade, leveraged by federal funding, teacher residencies have grown in number in response to hiring needs in hard-to-staff regional areas (urban and rural) and subject areas (e.g., special education, mathematics, science, bilingual/English language development). School districts partner with local teacher preparation programs to recruit the teachers that districts know they will need and to prepare the teacher candidates to excel and remain in these hard-to-staff areas. When used in this deliberate manner, teacher residencies address a crucial recruitment need while also building the capacity of the districts to offer high-quality instruction to the students they serve.

Patterned on a medical residency, this model provides residents with a year-long apprenticeship teaching alongside an expert mentor teacher. Residents simultaneously complete credential coursework that is tightly integrated with their clinical placement. Residents are paid a stipend and/or receive tuition remission to enable them to devote the full year to their preparation, and in exchange commit to teach for three to five years in the districts' schools .

Initial studies on residencies suggest that they have attracted greater diversity into the teaching workforce and supplied more teachers in hard-to-staff subjects while retaining them in the sponsoring districts at much higher rates than other new teachers (Guha, Hyler, Darling-Hammond, & Kini, 2016). Moreover, studies of the longest-standing teacher residency programs have found higher retention rates of residency graduates (Guha, Hyler, Darling-Hammond, & Kini, 2016; Papay, West, Fullerton, & Kane, 2012; Silva, McKie, Knechtel, Gleason, & Makowsky, 2014). The research, when taken as a whole, suggests that the residency model holds promise for both recruiting diverse individuals and retaining effective teachers.

**Create local pathways into the profession.** Some enterprising states and districts are investing in innovative, localized pipeline programs into teaching, such as high school career pathways and “Grow Your Own” teacher preparation models. These programs motivate and expose individuals to a career in education, and may help them along the pathway into the profession. These strategies are a response to the research demonstrating that teachers often prefer to teach near where they grew up and attended high school (Reininger, 2012; Boyd, Lankford, Loeb, & Wyckoff, 2005). Thus one solution for hard-to-staff schools, especially those in rural areas, is to recruit graduates of those schools and members of the school's community into teaching.

One model for developing interest in the teaching profession is with high school-level coursework that introduces students to the profession. Another model is high school career-pathway programs, such as teaching academies that can embed career-focused courses on education topics alongside work-based experiences, as part of their overall program of college-preparatory high school courses aligned to state standards. Such academies often partner with colleges to provide as much as a year or two of college courses during high school to give students a running start. These academies can offer a clear and articulated sequence of academic and professional courses needed throughout secondary and postsecondary schooling, along with personalized supports and real-world experiences to ensure that graduates will ultimately be ready to pursue teaching as a career (Warford, 2006).

Another kind of solution, Grow Your Own programs, offers incentives and partnerships to individuals who want to teach and to two- and four-year colleges to recruit community members into teaching. These programs also support participants as they complete their bachelor's degree and earn their teaching credential. Specifically, the programs provide financial aid to candidates and help colleges provide counseling and programmatic supports. These programs are sometimes focused on paraprofessionals who are already in schools, often as special education or bilingual teachers' aides—individuals who are knowledgeable about and committed to these subject areas and who are often from the communities in which they plan to teach (Clewell & Villegas, 2001).

At least one career pathway program has been found to be associated with the recruitment and retention of diverse teachers (Clewell & Villegas, 2001). The study examined the Wallace Foundation-funded national program, “The Pathways to Teaching Careers Program,” which offered scholarships and other support to paraprofessionals, Peace Corps members, and noncertified teachers working in public schools to become fully certified teachers. In return, participants committed to teach in public schools for a set period of time. The study found that: 74% of the paraprofessionals recruited in the program were from a minority background; 75% of the participants completed the program (as compared to a 60% national completion rate at the time for traditional teacher education students); and 91% of paraprofessionals taught in high-need schools in targeted districts.

### **Policy Strategies to Improve Hiring and Personnel Management**

As noted earlier, district and school practices related to hiring and supporting teachers influence the quality of teachers hired, as well as teachers' decisions to enter, stay in, or leave the profession. Some of these practices can also affect student achievement. Based on our review of the existing policy research, we identified four key strategies to improve teachers' hiring and management.

**Strengthen hiring practices.** Research on hiring practices in high-performing urban schools finds that these schools invest substantial time in a multi-step hiring process that allows the school staff and candidate to assess their mutual fit based on extensive information: initial screening of resumes and cover letters, a pre-interview screening, an interview with the principal, a teaching demonstration and debrief, and a school visit in which the candidate meets other teachers and members of the school community (Mongeau, 2015b; Simon, Johnson, & Reinhorn, 2015).

Schools and districts can create such processes and increase the involvement of current staff in recruitment and vetting of candidates by compensating staff for time spent attending recruitment fairs and interviewing candidates, as well as offering bonuses to staff who refer a new hire (Simon, Johnson, & Reinhorn, 2015). Such strategies offer multiple benefits in terms of lightening principals' hiring loads, promoting shared leadership and decision-making, and ensuring a good fit between the candidate and existing staff (Berry, Daughtrey, & Wieder, 2010; Ingersoll & Perda, 2009). These strategies can also be successful in recruiting candidates of color, especially where current teachers of color are actively involved in recruitment efforts (Simon, Johnson, & Reinhorn, 2015).

**Revise timelines for voluntary transfers or resignations.** If districts organize a proactive and efficient hiring system then they also will have more time for effective processes, such as watching candidates teach demonstration lessons and structuring interviews with teachers and principals. Both research and common sense suggest these practices lead to better matching of candidates to schools and more effective new hires.

To that end, some states have taken steps to allow schools to hire teachers earlier so that hiring processes occur before the school year ends. One approach is to lessen the impact of in-

district transfers on hiring. For example, California law requires that seniority-based voluntary-transfer processes be completed by April 15, thereby freeing principals to consider all teacher candidates equally after this date (California Education Code, § 35036). Some districts have also implemented creative incentive programs to minimize the impact of late retirements or resignations. For example, in response to data showing that 82% of resignations and 39% of retirements occurred after May 1, including 85 resignations after the first day of school, San Francisco Unified School District instituted an incentive program whereby teachers who submit their intent to resign or retire by March 1 receive a small stipend (The New Teacher Project, 2009; United Educators of San Francisco, 2014).

**Build training and hiring pipelines for new and veteran teachers.** Among schools that are most successful, principals shoulder much of the responsibility for hiring, but districts also play a key role. In addition to providing guidance and support to principals, districts can develop strong partnerships with local teacher preparation programs, because where a candidate does her student teaching is strongly associated with where she later teaches (Krieg, Theobald, & Goldhaber, 2016; Simon, Johnson, & Reinhorn, 2015). Investing in Grow Your Own models and residency models can help districts build their teacher pipeline from within (Simon, Johnson, & Reinhorn, 2015). These models can address the challenges of recruiting and retaining teachers in rural and urban settings. States can support these approaches by providing grants and expertise to districts interested in implementing Grow Your Own or residency models.

Districts—particularly high-need districts—could consider revisions to salary schedules that place a cap on the number of years of experience a teacher can transfer in on the salary scale, so that expert, experienced teachers who want to transfer into the district do not lose salary credit. This would expand the pool of available hires during times of shortages. Districts should also develop systems for tracking teacher turnover—including exit interviews—to better target programs aimed at reducing turnover and to hold themselves accountable (Carroll, 2007).

States can support mobile teachers by developing reciprocity agreements with other states that recognize the prior preparation and experience of out-of-state teachers. States also can invest in the design and implementation of online hiring platforms where teachers can easily identify the steps necessary to be hired in the state, as well as an online interface where mobile teachers can easily add their prior experiences and credentials to become certified in a given state.

**Create cross-state pension portability for teachers.** Current defined-benefit pension plans—which are not portable across states, and even within states in some cases—create disincentives for teachers to remain in the profession when they choose to relocate, as most states do not allow teachers to bring their retirement benefits with them. A national discussion around pension portability is particularly timely given that the teaching workforce has changed in recent years—with fewer teachers spending their entire careers in the classroom in a single district, and many teachers moving across states, as well as working in charter schools that are not always part of state pension systems (Aldeman & Rotherham, 2014; Ingersoll, Merrill, & Stuckey, 2014; Olberg & Podgursky, 2011). TIAA-CREF, the well-known provider of defined-contribution pensions, offers one helpful model worth exploring with its retirement benefits in higher education that allow for cross-state mobility in the profession (Kimball, Henemann III, & Kellor, 2003). Implementing such a model would likely require a federal or national foundation initiative. Initial research on Washington State’s switch from offering only a traditional defined-benefit plan to offering teachers a choice between that and a more portable retirement benefit option suggests that the more portable option did not cause unhealthy teacher attrition and that it appeared associated with an increase in the quality of the teacher workforce (Goldhaber, Grout, Holden, & Brown, 2014).

## Policy Strategies to Increase Salaries and Other Compensation

As described earlier, increasing teachers' salaries and compensation can increase the quality and quantity of individuals preparing to be teachers, as well as reduce the likelihood that they will leave the classroom after they enter the profession. Based on our review of the existing policy research, we identified three key strategies to improve teachers' compensation.

**Increase and equalize teacher salaries.** Teacher salaries can be increased in schools and communities where salaries are not competitive or able to support a middle-class lifestyle either through statewide school finance reforms that create greater equity in revenues or through salary incentives in particular districts or schools. Evidence suggests that several approaches to equity-oriented finance reforms can improve teacher quality and distribution, especially when paired with strong supports for improved preparation and mentoring (Darling-Hammond, 2019).

Federal law also includes both opportunities and requirements to provide low-income schools and districts with additional resources to attract and retain high-quality teachers. While states and local school districts control the purse strings of education budgets and, therefore, must take the lead in reforming teacher compensation, the federal government also has an important role to play, contributing about 8% of spending for k-12 public schools nationwide (U.S. Department of Education, 2016). The Elementary and Secondary Education Act (ESEA), now reauthorized as the Every Student Succeeds Act (ESSA), maintains provisions for ensuring that: federal dollars for disadvantaged students are spent to "supplement, not supplant" state and local dollars; states maintain their current spending level to continue to receive federal funds (i.e., "maintenance of effort"); and districts spend relatively equal amounts of state and local funding on Title I and non-Title I schools prior to the addition of federal funds (i.e., "comparability of services"; Every Student Succeeds Act, 2015). The federal government should implement and then enforce these funding-equity provisions of ESSA so that there are strong levers on the equitable distribution of state and local resources, including teachers, both within and across school districts. ESSA includes additional important provisions to address teacher salary and other resource inequities that impede schools' abilities to attract and retain high-quality teachers.

**Offer housing incentives.** Lack of affordable housing is one reason teachers leave the profession or leave districts with high costs of living (Mongeau, 2015a). In the SASS Teacher Follow-up Survey, nearly one in four public school teachers who had left the classroom and said they would consider returning cited housing incentives as a factor that would be extremely or very important in their decision to return (see Figure 3). To address the lack of affordable housing, some districts across the United States have offered housing subsidies or related incentives to recruit and retain teachers (National Education Association, 2004). Districts, sometimes with support from the U.S. Department of Housing and Urban Development, have offered money for housing-related expenses (e.g., rent, relocation expenses, down payments) targeted to teachers in high-need fields (Teach NYC, 2005), as well as down-payment assistance (Capital Homes, 2016; Department of Housing and Community, n.d.), discounted homes (U.S. Department of Housing and Urban Development, n.d.), and subsidized teacher housing (Mongeau, 2015a).

Housing incentive programs have not yet been studied to determine whether they are effective at recruiting and retaining teachers. Consequently, it is important that existing programs that provide housing incentives document and analyze the extent to which they have been successful in meeting these goals. .

**Offer career advancement opportunities.** Opportunities to assume leadership roles and share expertise appear associated with teachers' interests in remaining in the profession. For

example, one national survey of 1,210 pre-k through 12th grade teachers found that holding multiple leadership roles was associated with increased intentions to remain in teaching for the upcoming three years (Berry, Daughtrey, & Wieder, 2010).

A study of Missouri's 25-year-old career ladder program found that, after controlling for district characteristics (e.g., wealth, size, level of urbanization), teachers, especially those at mid-career, in districts with career ladder programs were less likely to leave their district than those in non career ladder districts (Booker & Glazerman, 2009). Teachers in career ladder districts were also less likely to leave the profession overall, and reported increased job satisfaction due to their participation in the program (Silman & Glazerman, 2009).

Many expert teachers can and want to provide professional support to their colleagues while remaining in the classroom teaching, and teachers with formal leadership positions are more likely to provide advice or information to colleagues (Spillane, Kim, & Frank, 2012). Bolstering such leadership opportunities could offer a way for districts and schools to recognize in-house talent and retain high-quality teachers who can provide additional support to colleagues while also increasing professional growth and job satisfaction.

One well-established approach for recognizing teacher expertise is the National Board Certification (NBC) process described above, which has allowed tens of thousands of teachers to remain in the classroom while pursuing greater recognition, career and leadership opportunities, and increased compensation. Teachers who pass the rigorous NBC process—112,000 in total (National Board for Professional Teaching Standards, 2016a)—are widely recognized as experienced, accomplished teachers. Importantly, one study noted that the introduction of numerous state and district incentives for NBC teachers in 2008 in Washington (i.e., bonuses, conditional loans, awards of professional development credit) increased the number of NBC teachers from 2,703 in 2008 to 6,739 in 2012 (Cowan & Goldhaber, 2016).

Several studies have found that teachers who become nationally certified are on average, more effective teachers (as measured by their students' standardized-test score gains) than non-NBC teachers with similar experience, when controlling for student and classroom characteristics (Chingos & Peterson, 2011; Clotfelter, Ladd, & Vigdor, 2010; Cowan & Goldhaber, 2016), especially for low-income students (Goldhaber & Anthony, 2007). Although not yet widely practiced, many districts use NBC teachers as mentors to new and struggling teachers, as experts in curriculum design and support, and as instructional leaders in their schools. In some states and districts, NBC teachers also are eligible for salary increases as well as bonuses or other incentives, and teachers are reimbursed for the costs they incur in undergoing the NBC process (California Department of Education, n.d.; National Board for Professional Teaching Standards, 2016b). A disproportionate number of NBC teachers work in locations offering these financial incentives and supports (Humphrey, Koppich, & Hough, 2005; Koppich, Humphrey, & Hough, 2006).

Another variation of a career ladder policy is a peer assistance and review model that provides “a program of structured mentorship, observation, and rigorous, standards-base[d] evaluation of teachers by teachers” (Natale, Bassett, Gaddis, & McKnight, 2013, p. 24). For example, Rochester, NY, and Cincinnati have developed career ladders using this model in which “the accomplished teachers identified through more advanced evaluations of practice serve as mentors for beginning teachers, among other leadership roles. These evaluations depend both on standards-based assessments of teaching—through local evaluations and/or National Board Certification—and in the case of Rochester's career ladder, evidence of student learning assembled by the teacher in a portfolio” (Darling-Hammond, 2010, p. 224).

## Policy Strategies to Increase Induction and Support for New Teachers

As highlighted earlier, strong induction and support for novice teachers can increase their retention, accelerate their professional growth, and improve student learning. Although programs for mentoring and induction have become more widely available in the United States over the past two decades, variability in the quality of these programs exists, with not all beginning teachers receiving the kind of comprehensive program found to be most effective for increasing beginning teacher retention and effectiveness. For example, based on our analysis of the Schools and Staffing Survey, only 58% have common planning time, and only 12% have a reduced teaching load (see Figure 5). In many places, novice teachers in the United States are more likely to face more non-teaching duties than their more experienced colleagues, as well as the most challenging teaching assignments—with more diverse and higher-need students and multiple courses to prepare for (Goldhaber, Lavery, & Theobald, 2015).

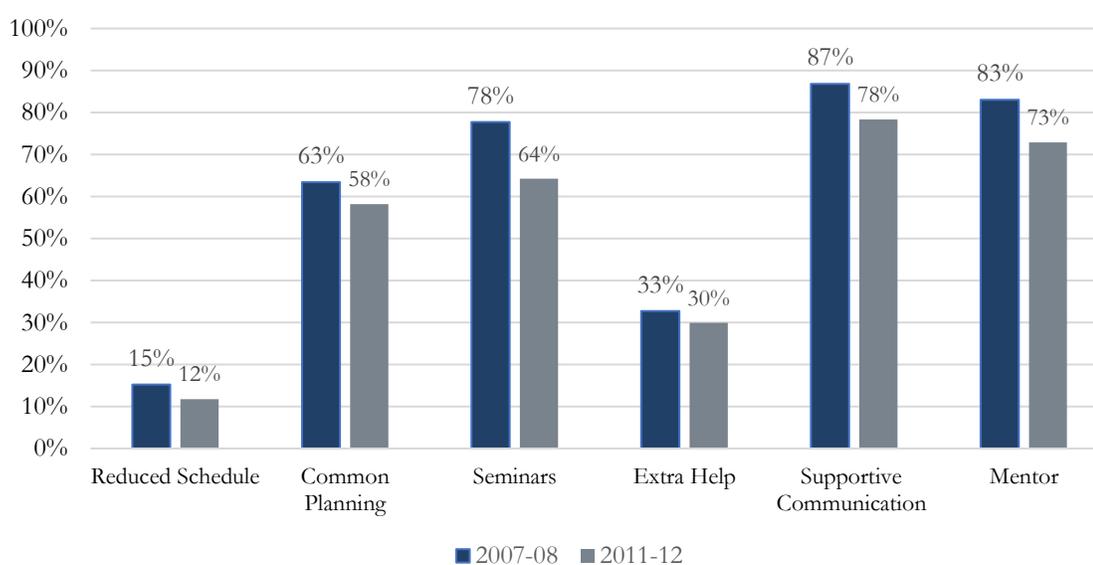


Figure 5. Percentage of 1<sup>st</sup> year teachers who received various induction supports, 2008 vs 2012. Source: U.S. Department of Education, National Center for Education Statistics, 2012 & 2013.

Furthermore, evidence suggests that during times of budget cuts, induction programs are often cut, affecting both the quality of such programs and equitable access to them (Koppich, Humphrey, Bland, Heenan, McCaffery, Ramage, & Stokes, 2013). As figure 5 shows, between 2008 and 2012, during the Great Recession, every element of induction programs – from mentoring to seminars to common planning time – became less prevalent across the country.

Importantly, induction programs may provide a significant return on investment. For example, A 2007 analysis of a medium-sized California school district found that after five years, the \$13,000 cost of the comprehensive, two-year induction program brought \$21,500 in benefits, or an \$8,600 return on investment (Villar & Strong, 2007). The benefits came from the increased effectiveness of beginning teachers who had gone through induction, and whom the study found were as effective as more highly-paid fourth year teachers who had not experienced induction. Another benefit of the two-year induction program included lower attrition and therefore lower recruiting costs. According to the study, after five years, society sees a \$1.66 return for every \$1 invested into induction programs.

States can develop statewide programs that require a range of induction supports as well as provide training and technical assistance for districts to implement these programs. Districts can design induction programs with the features that research suggests are most important for program effectiveness, providing the time and resources to support induction structures such as mentoring, classroom observations, and collaborative planning time. Given the benefits of induction for retention and effectiveness, these programs should be made available to all new teachers.

### **Policy Strategies to Improve Working Conditions**

As explained earlier, teaching conditions are a strong predictor of teachers' decisions about where to teach and whether to stay. Based on our review of the existing policy research, we identified three key strategies to improve teachers' working conditions.

**Invest in principal development.** Improving principal preparation may contribute to more effective school leaders who are able to attract and retain teachers. Because of the importance of school leadership in teachers' recruitment and retention decisions, local and state policies can invest in the development of high-quality principals who work to include teachers in decision-making, foster positive school cultures and create learning communities that can have a significant positive impact on teacher retention (Brown & Wynn, 2007; Wallace Foundation, 2011).

A rigorous study of a principal preparation program aimed at developing such leaders found that it reduced both teacher and principal turnover (Jacob, Goddard, Kim, Miller, & Goddard, 2015). The randomized control trial of 126 public schools serving third through fifth grade in Michigan's rural schools analyzed schools that either received McREL's Balanced Leadership Professional Development program (BLPD) or whatever the district typically provided to principals. The BLPD program for school leaders, including principals, focuses on: shaping a vision of academic success for all students; creating a climate hospitable to education; cultivating leadership in others; improving instruction; and managing people, data, and processes to foster school improvement. The program was staffed by a full-time team of training consultants with school-level experience. The independent study found a "16 percentage-point reduction in principal turnover and a five percentage-point reduction in teacher turnover in treatment schools," meaning that teachers and principals who did not participate in BLPD but worked with others who did were less likely to leave their school (p. 327-328). The study found even larger effects for teachers and principals who participated in BLPD, with a "seven percentage-point reduction for teachers and a 23 percentage-point reduction for principals" (p. 328).

State and federal policies can also support the development and analysis of principal preparation programs. Research has established the core features of effective principal preparation programs include research-based content, curricular coherence, problem-based learning methods, field-based internships, the existence of cohort groups, and close collaboration between programs and districts (Cosner & Tozer, 2015; Davis, Darling-Hammond, LaPointe, & Meyerson, 2005). Effective programs provide principals an opportunity to learn by practicing aspects of the daily tasks of the principalship, such as learning to listen to and include teachers in school-site decision-making. States could encourage the widespread development of these high-quality principal preparation programs by incorporating these elements into policy through program accreditation or state licensing standards, a practice that several states have already undertaken (Darling-Hammond, 2007; Manna, 2015).

**Use teacher surveys to guide improvements in working conditions.** More than 18 states and many school districts have implemented teacher surveys to determine the quality of a school's environment and to guide improvements (New Teacher Center, 2016). The Teaching,

Empowering, Leading and Learning (TELL) survey is one of the most commonly used assessment tools. While there is limited research on the impact of these types of surveys on improving teaching and learning conditions, an analysis of the TELL surveys' impact on policy and practice in North Carolina shows promising results (Maddock, 2009). For example, the results of North Carolina's TELL survey spurred statewide education initiatives ranging from providing five hours of weekly planning for teachers to increasing funding for professional development. Another study of a representative sample of 25,135 K-12 teachers in 2008 used a subset of questions from the TELL survey in Massachusetts to identify the elements of working conditions that predicted teacher satisfaction, teacher career intentions, and student achievement growth (Johnson, Kraft, & Papay, 2012). The study found that teachers' responses to TELL questions about the school's culture, the principal's leadership, and relationships among colleagues most strongly predicted teachers' job satisfaction and career plans. The study also found that positive responses on this subset of TELL questions were associated with student achievement growth, even when controlling for student demographics. This finding suggests that responses from survey questions, such as those from the TELL survey, could help districts identify and work with schools whose working conditions do not support teacher retention and student achievement.

**Incentivize professional development strategies and school redesign.** Systematic and sustained collaboration among teachers requires changes in school design, scheduling, and resource allocation so that teachers have the time necessary for productive collaboration (Easton, 2008). Schedules must allow for regular blocks of time (e.g., common preparation periods) for teachers of the same subject or who share groups of students to collaborate and plan curricula together (Louis, Marks, & Kruse, 1996). For example, redesigned high schools that have improved teacher effectiveness and retention have secured 7-10 hours of shared time per week by hiring more teachers and fewer non-teaching personnel; offering a more streamlined curriculum with fewer low-enrollment courses; organizing time in longer blocks, thus producing reduced teaching loads; and using time when students are in clubs or internships for teacher collaboration (Darling-Hammond, 2010).

Extra resources may be required to hire additional staff and/or compensate teachers for professional-learning time scheduled for after their contract day or school year has ended (Davis, 2015; National Center on Time & Learning, n.d.). The federal government could consider reinstating the former federal Smaller Learning Communities grant, which provided funds to public high schools with more than 1,000 students to, among other things, redesign their schedules to offer common planning time for teachers who share the same students or teach the same subject (Federal Register, 2010). The grant also funded projects that provided collaborative professional development for teachers, including coaching and classroom observations amongst teachers.

## Conclusion

Recruiting and retaining excellent teachers is critically important for the success of future generations, especially for those living in underserved communities. Fortunately, decades of research on the factors that contribute to attracting and keeping teachers in the classroom can guide strategies to meet this challenge. Some states have proved that transforming human-capital systems to support a quality, stable educator workforce is possible. Comprehensive investments in the preparation, induction, and professional learning of teachers and principals as well as in the conditions necessary to support high-quality teaching and learning should be considered simultaneously.

There is no silver bullet solution to recruiting and retaining a 3-million person teaching workforce serving more than 50 million students across 50 states. Local contexts will determine

what set of research-based policies are most appropriate for a given state, district, or school to ensure their teachers lead rather than leave the profession. School officials and policymakers also must recognize that there are many factors influencing teachers' decisions to enter and remain in teaching—and these factors are interdependent. A comprehensive set of policies is needed to address America's emerging teacher shortage and to ensure every child is taught by a competent, committed teacher.

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