

POLICY BRIEF 2017-05

## Understanding and Addressing Teacher Shortages in the United States

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# Understanding and Addressing Teacher Shortages in the United States

*The labor market for teachers* has been the frequent subject of popular concern in the United States, particularly as the economy strengthens and hiring becomes more challenging. In recent years, accounts of school districts having difficulties hiring teachers have proliferated, with mentions of the phrase “teacher shortage” in U.S. news coverage increasing from about 275 in 2011 to 3,977 in 2016. However, there is little evidence to suggest the existence of a pervasive, nationwide teacher shortage.

In a new Hamilton Project policy proposal, Thomas S. Dee and Dan Goldhaber discuss evidence of the character and determinants of teacher shortages in the United States, finding that challenges in hiring teachers are specific to particular hard-to-staff schools (e.g., those serving many low-income students) and high-need subjects (e.g., STEM and special education). The distinction between these areas of acute challenge and the public discussion about teacher shortages is important for two reasons. First, policy efforts that are not targeted toward actual shortages are likely to be unnecessarily costly and relatively ineffectual. Second, the challenges of recruiting teachers for hard-to-staff schools and high-need subjects are longstanding, indicating that current policies and practices have failed to address them.

Dee and Goldhaber propose a number of reforms to practices and policies at both the state and local levels. Their proposals embody a variety of complementary strategies aimed at mitigating specific

teacher shortages. They divide these proposed reforms into those that could be implemented by K–12 school districts and those that could be implemented by state regulatory authorities.

The authors propose that K–12 school districts:

- Provide financial incentives targeted at attracting and retaining more teachers in high-need subjects and hard-to-staff schools;
- Improve district hiring practices by emphasizing adopting earlier and more-aggressive recruitment; and
- Provide labor market signals about district hiring needs by varying the number of student teaching slots based on anticipated future hiring.

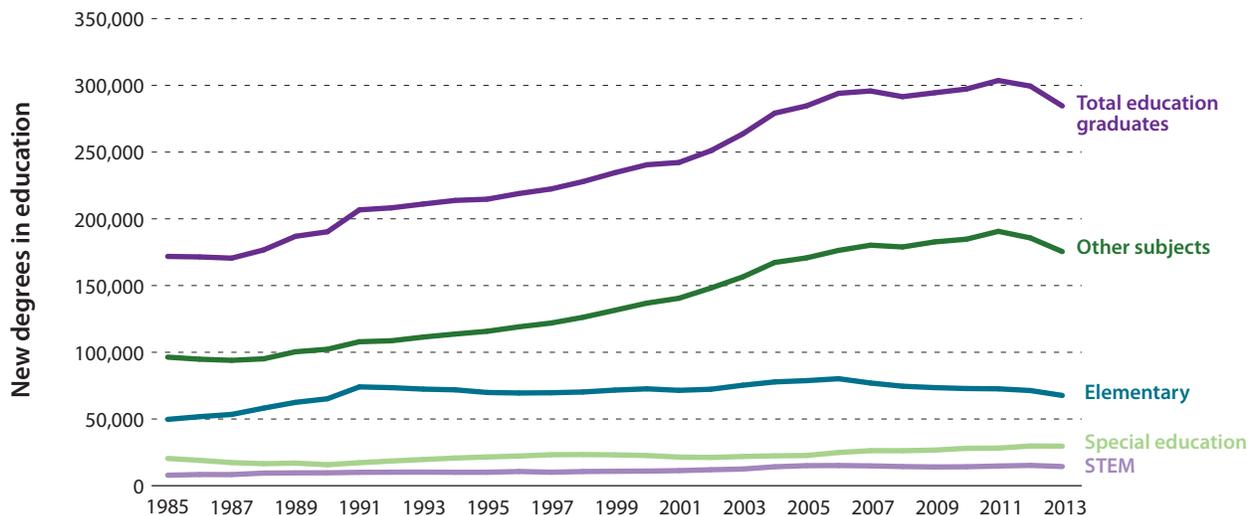
The authors propose that state regulatory authorities:

- Modify licensure requirements in high-need subjects, such as STEM and special education, to make more-extensive use of alternative certification programs;
- Create licensure reciprocity across states to increase the portability of a teaching credential; and
- Provide prospective teachers with better information on the varied job prospects in particular teaching fields.

## The Challenge

The authors show that teacher shortages—though not a universal national phenomenon—do exist in certain schools and subjects. Policy makers must understand key institutional details and the evidence from research on teacher labor markets to craft effective and appropriately targeted solutions to these challenges.

FIGURE 1.  
Annual Education Graduates, 1985–2013



Source: James Cowan, Dan Goldhaber, Kyle Hayes, and Roddy Theobald (2016), “Missing Elements in the Discussion of Teacher Shortages,” *Educational Researcher* 45 (8): 460–62.

## Little Evidence for a National Teacher Shortage

Because salaries and job characteristics (e.g., working conditions and class sizes) can be improved when hiring is difficult, it is not always clear why shortages persist or what constitutes evidence of a shortage. The authors examine multiple types of data about hiring challenges, including the rate of unlicensed or alternatively credentialed teachers, student-teacher ratios, the supply of teaching graduates, and reports from schools themselves. In addition, the federal government provides guidance with its official designation of “teacher shortage areas,” which can be specific to grades or subject areas within a state, or to particular districts or schools.

The authors describe evidence that teacher labor supply has generally risen over time (see figure 1). Not shown in the figure is that the supply of new education graduates exceeds the number of new hires. Furthermore, changes in the fraction of U.S. teachers with state certification have been modest and the level remains high; for example, the fraction of eighth-grade math teachers with state certification fell from 92 percent in 2012–13 to 90 percent in 2014–15.

## Teacher Shortages in Certain Schools and Subjects

The authors note that some districts face challenges in hiring conventionally certified teachers. Teacher shortages are typically concentrated in schools serving economically disadvantaged students, in urban and rural schools, and in schools serving a larger concentration of minority students. As a result, students in these schools are more likely to be taught by teachers without conventional certification. Dee and Goldhaber also observe that teachers without conventional credentials are especially common in hard-to-staff subjects such as STEM and special education.

Figure 2 shows that many schools report difficulty hiring for special education and STEM fields while having little trouble hiring for elementary school, English, and social studies. Although hiring in all fields became more difficult during times of economic growth and strong labor markets, these cyclical changes were generally smaller than were the persistent differences across fields.

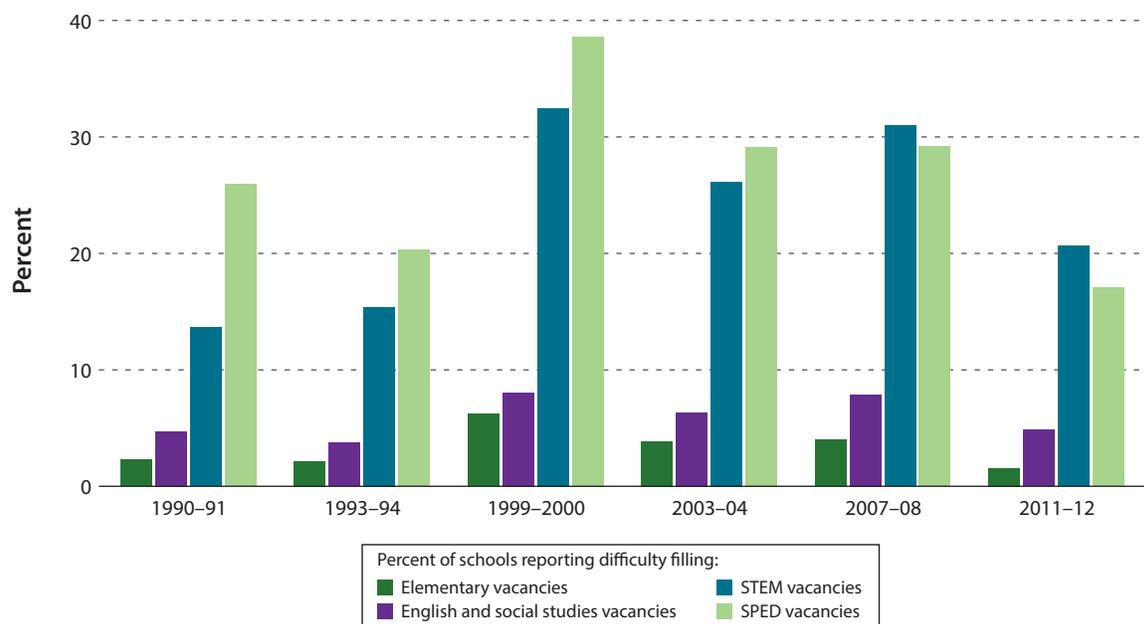
## Teacher Labor Markets

Addressing school- and subject-specific teacher shortages will likely require adjustments to teacher compensation. The authors note evidence suggesting a moderate level of teacher responsiveness to compensation, however, suggesting it would be necessary to offer substantial monetary incentives to induce teachers to take positions in hard-to-staff schools or in high-need subjects. In particular, motivating teachers to move from one school to another can be costly.

The authors maintain that it is important to understand the local, segmented nature of teacher labor markets in order to understand teacher responsiveness to pay and the geography of teacher labor supply. For example, the location of student teaching assignments, especially with regard to the proximity to where a student teacher grew up, plays a major role in determining where teaching graduates find employment, thereby affecting schools’ recruitment.

However, the authors also cite evidence that state-specific licensing requirements, seniority rules, and the lack of portability for teachers’ defined-benefit pensions render local teacher labor markets more disconnected from each other than they would otherwise be. The interstate mobility of teachers, even those residing near state borders, is very low, making it more difficult to address teacher shortages that are specific to particular geographic areas.

**FIGURE 2.**  
Percentage of Difficult-to-Fill Teacher Vacancies, Select School Years



Source: James Cowan, Dan Goldhaber, Kyle Hayes, and Roddy Theobald (2016), “Missing Elements in the Discussion of Teacher Shortages,” *Educational Researcher* 45 (8): 460–62.  
Note: SPED = special education.

# A New Approach

In light of these challenges, Dee and Goldhaber propose multiple policy reforms that will help increase the supply of teachers in schools and subjects where shortages are a problem. Drawing on the relevant empirical evidence, they group the proposals into actions that can be taken by K–12 school districts and by state regulatory authorities. Noting that there are two distinct problems with regard to teacher shortage—difficulty staffing teachers with particular skills and difficulty staffing certain schools—the authors propose reforms that address both problems.

## K–12 School Districts

### *Increase the Use of Targeted Financial Incentives.*

The most direct way that school systems can address staffing issues is through compensation. The authors argue that differentiated compensation of teachers—higher in places and subjects where teachers are scarce, and lower elsewhere—is a feasible strategy for addressing staffing issues. Compensation-based incentives can be used to address both skill shortages and school shortages. The evidence that monetary incentives affect recruitment and especially retention is strong, suggesting that targeted financial incentives are a sensible first step. However, the authors caution that such incentives should be targeted to the schools and subjects where shortages are both severe and chronic, given the expense of such incentives.

### *Adopt Earlier and More-Aggressive Recruitment Practices.*

The authors present evidence suggesting that school districts can make strong gains by being more strategic in their hiring practices. Late hiring (i.e., hiring after the beginning of the school year) is common, particularly in schools that serve economically disadvantaged students. This late hiring is problematic for both student achievement and teacher retention.

The authors note that the abundant supply of graduates with a teaching degree suggests that more-aggressive recruitment could pay dividends. Indeed, there are between 100,000 and 200,000 more individuals who graduate with a teaching degree each year than there are available teaching positions.

Because teacher shortages are concentrated in hard-to-staff schools and high-need subjects, the authors argue that school districts should do more to recruit broadly, aggressively, and in a targeted manner that reflects a district’s particular needs. They suggest strategies for identifying promising candidates such as increased school district advertising and recruitment outside the state, the formation of interstate partnerships between school districts and teacher education programs (TEPs), and the use of new technology, including data mining and analytics.

### *Recruit Student Teachers Who Meet Anticipated Needs.*

The authors discuss the ways in which K–12 school districts, in conjunction with TEPs, have considerable control over the supply of teachers. Licensure systems generally require that prospective teachers complete a period of supervised student teaching. This

## Roadmap

K–12 school districts will:

- Implement financial incentives targeted at high-need subjects, such as special education and STEM subjects, as well as in hard-to-staff schools;
- Improve hiring practices through earlier and more-aggressive teacher recruitment; and
- Use student teacher slots to address the mismatch in supply and demand for teachers.

State regulatory authorities will facilitate:

- More-extensive use of alternative certification programs in high-need subjects and in hard-to-staff schools;
- Meaningful licensure reciprocity across states; and
- Better information about labor market demand for prospective teachers in various specialties and geographic areas.

requires close collaboration between TEPs and school districts, because both must agree to the assignment of student teachers.

Student teaching field placements are directly relevant to teaching shortages. In particular, the location of student teaching is predictive of where prospective teachers accept their first job. To some extent, this reflects the choices of individuals who might prefer to student teach in a given location for the same reasons they prefer to obtain their first job in that location. However, the association between student teaching and a first teaching job might also be attributable to teacher candidates and schools finding good matches during the course of student teaching. Districts that find it difficult to recruit staff could therefore benefit from hosting more student teachers.

In addition, making more student teaching placements available in high-need subjects sends a strong signal about the likelihood of future employment in that subject. These placements are not just about educating teacher candidates, but also give school systems a first look at prospective hires and ease recruiting challenges.

## State Regulatory Authorities

### *Modify Licensure Requirements in High-Need Subjects.*

In every state, access to the teacher labor market is determined by the rules of a state’s teacher licensure (or certification) system. These systems differ from state to state but usually require prospective teachers to pass one or more licensure tests. Many states also require that prospective teachers graduate from an approved teacher training institution and obtain student teaching experience. This likely dissuades many individuals from entering

## Learn More about This Proposal

This policy brief is based on The Hamilton Project policy paper, “Understanding and Addressing Teacher Shortages in the United States,” which was authored by

THOMAS S. DEE

Professor of Education, Stanford University  
Associate Dean of Faculty Affairs, Stanford Graduate School of Education

DAN GOLDHABER

Director, Center for Education Data & Research  
University of Washington

the profession: mid-career professionals, for instance, might be unwilling to bear the cost of tuition or forgone earnings associated with completing formal preservice training in approved TEPs.

The authors propose that states make more-extensive use of alternative certification programs to prepare teacher candidates in high-need areas, such as STEM and special education. For school systems in which the choice is between an alternatively certified teacher and a long-term substitute, experimentation with alternative pathways into the classroom makes particular sense.

### *Create Meaningful Licensure Reciprocity with Other States.*

Because licensure systems are state specific and details of licensure requirements differ from state to state, the differences across states create barriers to teacher mobility: licensure does not necessarily transfer from state to state. In some cases, a teacher licensed to teach in one state can obtain licensure in another state simply by passing a test and paying a fee, but in other cases teachers might have to reenroll in a TEP, even if they have taught in public schools for years. While some states have nominal reciprocity agreements, these agreements typically do not imply that a certificate in one state is recognized by another; the agreements often make it difficult for teachers to understand requirements for reciprocity.

The labor market barriers created by state-specific licensure systems exacerbate the problem of equating teacher supply and demand. First, the lack of portability of a teaching certificate might dissuade some individuals who would otherwise be interested in teaching from pursuing this career. Second, state-specific licensure systems sometimes prevent the movement of qualified teachers from areas of a labor surplus to areas of a labor shortage.

The authors believe that implementing true licensure reciprocity is a low-cost means of helping deal with teacher shortage problems. Regulatory reforms that help to create regional teacher labor markets are likely to catalyze meaningful teacher mobility and to leverage the reserve pool of college graduates who have been trained for careers in teaching.

### *Provide Teacher Candidates with Better Information about Job Prospects.*

Given the difficulties in recruiting and retaining teachers with skills in areas like special education and STEM, it is unsurprising that teacher candidates with in-demand skills appear to have far brighter job prospects. The authors note research assessing the likelihood that teacher candidates from a sample of TEPs in Washington State end up in the teaching labor market. That research finds large differences according to the training specialty area of candidates: relative to teacher candidates licensed to teach elementary education, candidates who satisfy Washington’s licensure requirements to teach in STEM or special education are 10 to 12 percentage points more likely, all else equal, to be employed in public schools one year (and five years) after they are credentialed.

The authors therefore propose that states generate information about labor market prospects in various specialties and geographic areas, and that they provide it to prospective teachers through TEPs. To the extent that teacher candidates are not fully aware of this information, it might shape their training decisions with respect to both geographic location and area of specialty. As prospective teachers are better matched to teaching vacancies, local shortages will be alleviated.

## Conclusion

Contrary to conventional wisdom, Dee and Goldhaber do not find evidence of a nationwide teacher shortage in U.S. public schools, but they do find striking evidence of teacher recruitment and retention challenges in high-need fields and hard-to-staff schools. These targeted teacher shortages are related to longstanding problems with the ways in which schools recruit, train, and compensate teachers. As such, the authors argue that solutions should also be targeted.

As part of such a strategy, Dee and Goldhaber propose differentiated teacher compensation to better match areas of particular need. They further propose that districts attenuate teacher shortages through early recruiting efforts as well as through the forward-looking use of student teaching placements in anticipation of hiring needs.

Finally, state regulatory authorities would act to improve access to the teaching profession and remove barriers to teacher mobility. Making the maximum appropriate use of alternative certificates, particularly in areas where staffing is difficult, is one part of the solution to local shortages. Creating a national labor market for teachers through lowering interstate licensing barriers will also make the teaching labor market more flexible, mitigating local shortages. Finally, providing information to prospective teachers about prospects for employment across different geographic locations and subjects can better match teachers to vacancies.

# Questions and Concerns

## 1. Why do you propose narrowly targeted compensation increases, rather than a broad-based teacher salary increase?

The authors argue that a targeted policy would be far more cost effective. In school year 2011–12, roughly 20 percent of schools reported difficulties in recruiting special education and STEM teachers, whereas virtually no schools reported difficulties recruiting in other specializations. If we view 20 percent of schools as hard to staff, a policy that provided salary increases to teachers in all schools would cost five times as much as a targeted policy. Indeed, the cost-effectiveness of broad salary increases might be even worse if that policy reduced the relative willingness of teachers in high-need subjects to teach in hard-to-staff schools.

## 2. Why haven't you emphasized improvements in teacher working conditions as a way to address targeted teacher shortages?

Dee and Goldhaber note that different aspects of teachers' working conditions, particularly the quality of a principal's leadership, are indeed highly predictive of teacher satisfaction and retention and are likely to influence the success of teacher recruitment as well. However, the authors believe that evidence on how to design the relevant working

conditions (e.g., validated strategies for the professional development of effective school leaders) is weak. They do suggest experimenting with working-conditions interventions, which might entail school leadership rotation (e.g., an experiment for principals along the lines of the Talent Transfer Initiative) or principal professional development targeted to hard-to-staff schools and designed explicitly to address identified deficiencies.

## 3. Does your proposal for meaningful teacher licensure reciprocity across states present insurmountable challenges for regulatory coordination?

The authors recognize that the political challenges involved in adopting and implementing licensure reciprocity are substantial. In particular, any efforts to harmonize pension wealth for teachers who move across states is likely to be particularly difficult. They also see several reasons for cautious optimism, however, particularly for more-modest efforts that focus only on licensure reciprocity, such as the federal Interstate Teaching Mobility Act. State-level policy makers, coordinated by organizations like the Council of Chief State School Officers and the National Governors Association, also have the ability to coordinate such an innovation. Such an effort might benefit from both the current concern about teacher shortages and the bipartisan appeal of licensure reciprocity.

## Highlights

In this paper, Thomas S. Dee of Stanford University and Dan Goldhaber of the University of Washington present evidence on the prevalence and nature of teacher shortages. They find that such shortages are not a general phenomenon but rather highly concentrated in certain subjects (e.g., STEM and special education) and types of schools (e.g., schools serving disadvantaged students) where hiring and retaining teachers is a chronic problem. They discuss several complementary approaches for addressing teacher shortages.

## The Proposal

**Strategies for K–12 school districts.** The authors propose that schools implement targeted financial incentives, emphasize early and aggressive recruitment, and use student teaching positions to provide labor market signals about hiring needs.

**Strategies for state regulatory authorities.** The authors propose that regulators allow extensive use of alternative pathways into the teaching profession in high-need areas, while also providing teacher candidates with more information about the varied job prospects in different fields. In addition, regulatory authorities should implement meaningful licensure reciprocity across states, creating a more flexible teaching labor market.

## Benefits

Teacher shortages are most common in schools serving economically disadvantaged students, in urban and rural schools, and in schools serving a larger concentration of minority students; subjects such as STEM fields and special education are also difficult to staff.



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