GETTING DOWN TO FACTS II

Technical Report

Teacher Shortages in California: Status, Sources, and Potential Solutions

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About: The *Getting Down to Facts* project seeks to create a common evidence base for understanding the current state of California school systems and lay the foundation for substantive conversations about what education policies should be sustained and what might be improved to ensure increased opportunity and success for all students in California in the decades ahead. *Getting Down to Facts II* follows approximately a decade after the first Getting Down to Facts effort in 2007. This technical report is one of 36 in the set of *Getting Down to Facts II* studies that cover four main areas related to state education policy: student success, governance, personnel, and funding.

Stanford University

PACE Policy Analysis for California Education

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Introduction

Teacher shortages have been worsening in California since 2015. After years of budget cuts and teacher layoffs, the passage of Proposition 30, officially titled Temporary Taxes to Fund Education, and the Local Control Funding Formula (LCFF) brought more money back into California schools after 2014. Many districts began to hire again, looking to reinstate classes and programs reduced or eliminated during the Great Recession. But qualified teachers were hard to find: The supply of new teaching candidates had declined by more than 70% over the decade when jobs were not available.[1] As a result, since 2014–15, California districts have reported acute shortages of teachers, especially in mathematics, science, and special education.[2] The passage of Proposition 58 reinstating bilingual education has triggered additional shortages of bilingual teachers.

In a fall 2016 survey of 211 school districts that are part of the California School Boards Association's Delegate Assembly—a sample that generally reflects the demographics of California's districts—75% of districts reported having a shortage of qualified teachers for the 2016–17 school year, with more than 80% of these districts reporting that shortages worsened since the 2013–14 school year.[3]

In fall 2017, a survey of California's largest districts, plus a sampling of rural districts—representing one-quarter of the state's enrollment—found that teacher shortages had grown worse yet again.[4] Fully 80% of district respondents reported a shortage of qualified teachers for the 2017–18 school year. Of those districts registering shortages, 90% reported that they were as bad or worse than in the previous year.[5]

While the most acute shortages have been reported in special education, mathematics and science, emerging shortages in bilingual education and career and technical education are becoming more pronounced. Furthermore, about one third of California districts also report shortages in fields such as elementary education, English, and social studies, which are traditional areas of surplus.[6]

California's ongoing teacher shortage threatens recent education initiatives in the state—new standards, curriculum, instruction, and assessments—that aim to move the system toward more meaningful 21st century learning. When districts cannot fill a position with a qualified teacher, they have few good options. California districts report dealing with shortages by hiring long-term substitutes or teachers with substandard credentials, leaving positions vacant, increasing class sizes, or canceling courses.[7] All of these strategies can undermine the quality of instruction and student achievement.[8]

This report highlights the most recent data on California teacher shortages. We first describe overarching trends in the teacher labor market, then discuss current indicators of shortages and how they vary by subject area, location, and student population. We investigate sources of shortages in California, and finally we turn to potential state action to mitigate shortages in California.

Over the last 4 years, California has invested nearly $200 million in curbing teacher shortages. These investments have included $45 million to help classified staff become certified

to teach, $10 million to start new undergraduate programs for teacher education, and $5 million to launch a Center on Teaching Careers, a recruitment and resource center for teaching candidates and those considering a teaching career. Additional investments have included $9 million for teacher and leader recruitment and retention through the California Educator Development (CalEd) competitive grants program and about $5 million for the Bilingual Teacher Professional Development Program. In summer 2018, California enacted its largest investments: $75 million to support teacher residencies to recruit and train teachers in special education, math, science, and bilingual education; and $50 million in 2018 for "local solutions" to special education teacher recruitment and retention, which may include everything from loan repayment to mentoring, retention bonuses, and redesign of workload, among other strategies.

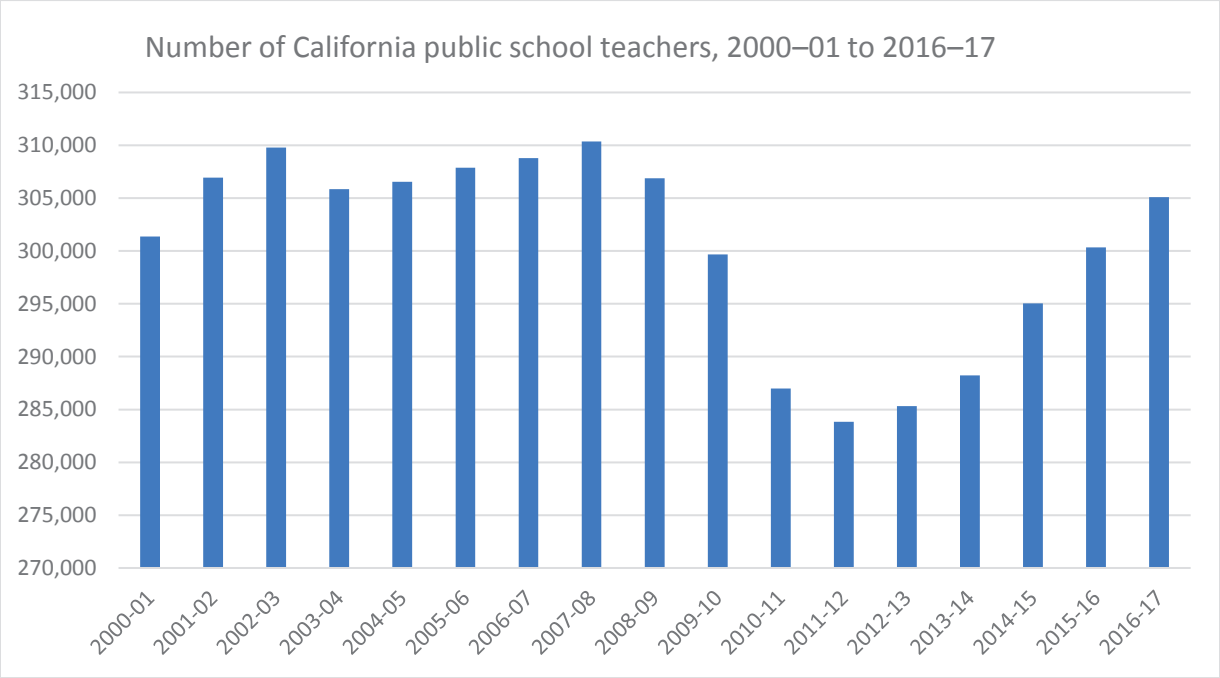
A key policy question is whether these programs will be enough to address the shortages, or whether more still needs to be done, and, if so, what? As described in this paper, shortages have continued and deepened over the last 3 years. The largest investments have just been made and it will take time to evaluate their results.

Trends in California's Teacher Workforce

Increase in Demand

After many years of budget cuts and staff layoffs, the tide turned in 2013–14, when California brought new, more equitably distributed revenues into the education system as a result of Proposition 30, which expanded revenues, and the LCFF, which redistributed funds based on pupil needs.[9] As funding improved and districts began trying to replace the positions they had lost, teacher hiring increased dramatically. The teacher workforce has expanded steadily over the past 5 years, growing by more than 8%, or 22,000 teachers (see Figure 1).

Figure 1: Teacher Workforce Growth Since 2011–12



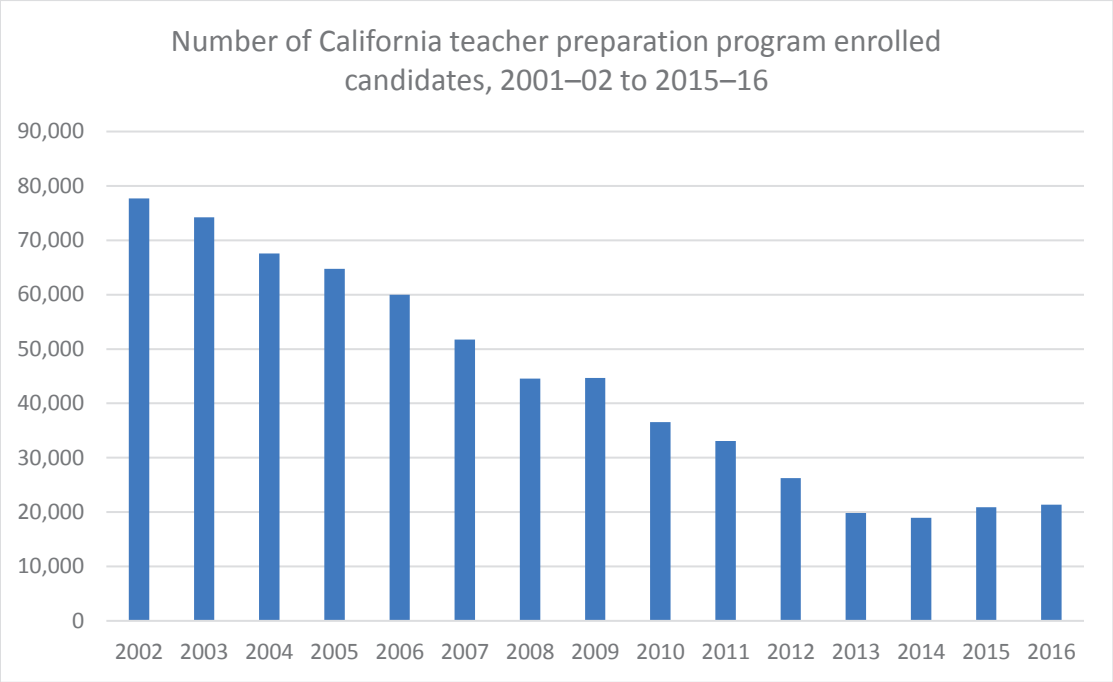
Source: California Department of Education, 2000–2016. Retrieved from http://data1.cde.ca.gov/dataquest/.

This rapid expansion in the teacher workforce over the past several years signals an overall increase in hiring. Hiring teachers would normally not be reason for concern, but California's teacher supply remains low, and all signs suggest there are not enough qualified teachers to go around.

Decline in Teacher Education Enrollments

Teacher preparation program enrollments declined by more than 70% between 2002 and 2014 when ongoing budget cuts meant that jobs for new teachers were fewer and further between (see Figure 2). Between 2008 and 2012, more than 100,000 pink slips were issued to teachers warning them they could be laid off.[10] Although most of these teachers were eventually hired back,[11] this highly publicized practice was likely a contributing factor to a diminished supply of college students wanting to go into teaching. Many teachers experiencing multiple lay-offs also decided to find another career path.

Figure 2: Enrollment in Teacher Preparation Programs Remains Low



Source: California Commission on Teacher Credentialing. Data available at http://www.ctc.ca.gov/reports/data/titleII-prog-info.html. Data from 2015-16 was provided by the CTC through a special request.

Teacher education enrollments overstate the true number of candidates entering the labor market in a given year. This is in part because not all individuals who enroll in teacher preparation programs complete them, and those who do may take more than 1 year to do so. For example, in 2014–15, while more than 20,000 individuals were enrolled in teacher education programs, only about 10,600 candidates completed programs in the same year, despite the fact that the vast majority of California programs are post-baccalaureate programs that can be completed in a year by those attending full-time. Consistent with declines in enrollments, the number of program completers declined by 25% in the last 5 years[12] (see Figure 3).

The pool of teachers available to be hired shrinks further because not all teacher education completers go on to teach in California after earning a credential. Some take time off; some go to other states; and others do not end up teaching at all. National estimates suggest that between 75% and 90% of program completers go on to teach within 4 years.[13]We were unable to estimate this number in California because of lack of access to data linking program graduates to employment.

Teacher preparation enrollments increased by 12.5% between 2013–14 and 2015–16, which represents just over 2,000 candidates (see Figure 2). About 1,200 of these candidates were enrolled in the University of California (UC) and California State University (CSU) systems. Together, these two systems prepare around 60% of teachers in the state.[14] Although small increases in 2014–15 and 2015–16 were positive signs, enrollment in the CSU system has

remained stagnant in the 2 years since then, and the UC system saw a tiny increase of just over 100 students in 2016–17 (see Table 1). Both systems remain far below enrollment levels of a decade ago. At its highest point, in 2002–03, CSU alone enrolled more than 31,000 teaching candidates, which is three times more than it currently enrolls.[15]

Table 1. Teacher Preparation Enrollments in California's State University System

University System	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17	2017–18
California State University (CSU)	9496	8052	8642	8837	9660	9642	9662
University of California (UC)	1055	788	726	883	928	1065	—
Total	10551	9840	9368	9720	10588	10707	—

Source: Data provided by the California State University (CSU) Office of the Chancellor and the University of California (UC) Office of the President through a special request. UC Data for 2016–17 and CSU data for 2017–18 are preliminary.

Increase in Substandard Credentials and Permits

One of the best indicators of teacher shortages is the prevalence of substandard credentials and permits. We use the term "substandard" because these teaching authorizations are issued to candidates who have not completed the testing, coursework, and student teaching requirements that are required for what the California Commission on Teacher Credentialing (CTC) considers standard or full credentials: the "preliminary" credential for new, fully prepared teachers and the "clear" credential for those fully prepared who have also completed an induction program. By law, substandard credentials and permits can only be granted when fully credentialed teachers are not available, and are thus a key indicator of shortages. (See Box 1.)

Box 1. California Teacher Credential and Permit Types

Fully Prepared Teachers/Teachers with Full Credentials

Preliminary credentials are awarded to individuals who successfully complete a teacher preparation program and the state assessments required for a license, including demonstration of subject-matter competence and teaching skills. These credentials are valid for 5 years.

Clear credentials are awarded to preliminary credential holders upon successful completion of an induction program. These credentials are renewable every 5 years.

Underprepared Teachers/Teachers with Substandard Credentials and Permits

Provisional Intern Permits (PIPs), **Short-Term Staff Permits (STSPs)**, **and waivers** are used to fill "immediate and acute" staffing needs. These emergency-style, one-year permits allow individuals who have not completed teacher preparation programs nor demonstrated subject-matter competence to teach a particular grade or course for a maximum of one year.

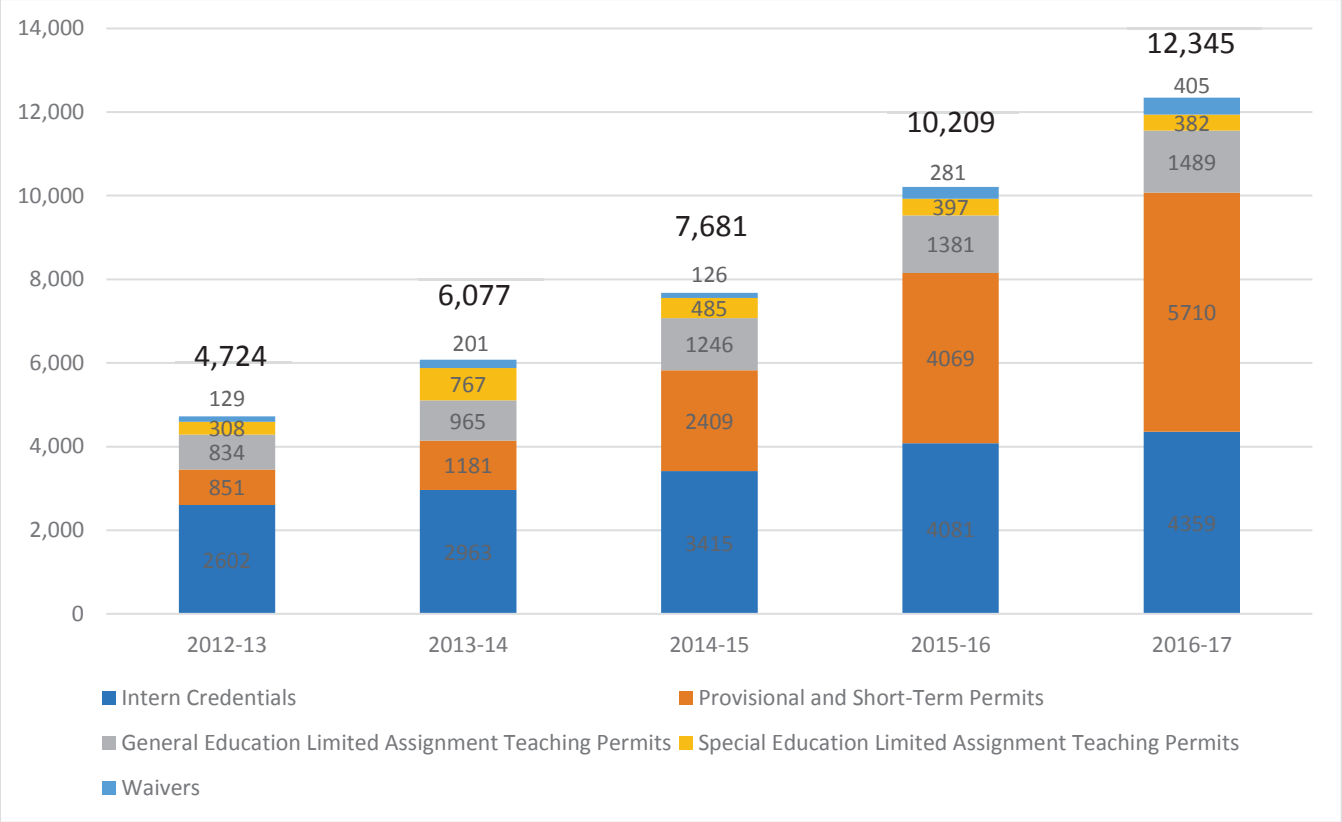
Limited Assignment Teaching Permits allow credentialed teachers to teach outside of their subject area to fill a "staffing vacancy or need."

Intern credentials are awarded to teachers in training who have demonstrated subject-matter competence but have not completed a teacher preparation program or met the performance assessment requirements for a license. Interns take courses and receive mentoring while teaching.

Source: California Commission on Teacher Credentialing, CTC Glossary: http://www.ctc.ca.gov/reports/data/files/data-terms-glossary.pdf. See also http://www.ctc.ca.gov/credentials/leaflets/cl856.pdf; http://www.ctc.ca.gov/credentials/leaflets/cl858.pdf; http://www.ctc.ca.gov/credentials/leaflets/cl402a.pdf.

In 2016–17, the most recent data available, California issued more than 12,000 intern credentials, permits and waivers, which comprised roughly half of all credentials issued that year (see Figure 3). In all, the number of substandard credentials increased by 260% from 2012–13 to 2016–17. Emergency-style permits—issued to individuals who have not demonstrated subject-matter competence for courses they are teaching and who typically have not yet entered a teacher training program—have increased by nearly seven-fold since 2012–13 and represent the fastest growing category of substandard teaching authorizations. In 2016–17, 5,700 teachers entered teaching on emergency-style permits, compared to fewer than 900 in 2012–13. These data strongly suggest supply is insufficient to meet teacher demand in the areas where these kinds of permits are being issued.

Figure 3: Substandard Permits and Credentials More Than Doubled in California Between 2012–13 and 2016–17



Note: The number of credentials issued between July 1 of each year and June 30 of the following year.
Source: Data provided by the California Commission on Teacher Credentialing through a special request.

Teacher Workforce Trends Predict Continued Shortages

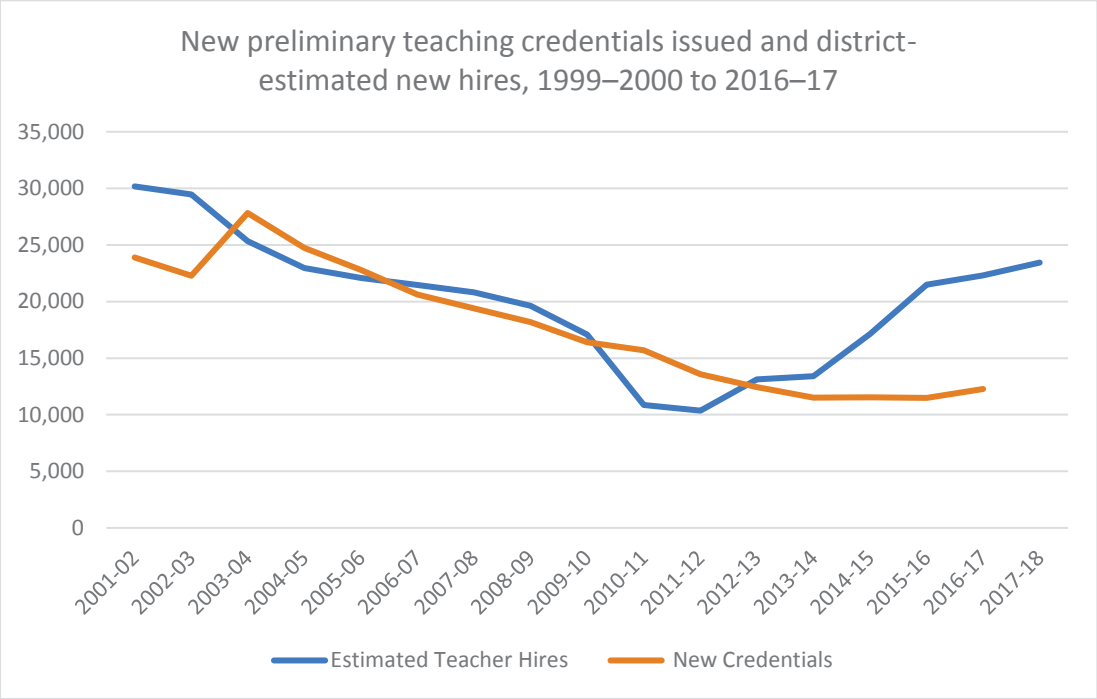
As districts have used their new resources to reinstate teaching positions, classes, and programs that were reduced or eliminated during the Recession, estimated annual hires have more than doubled in the last few years. Meanwhile the number of teaching credentials issued continues to remain at historic lows, despite a small uptick in recent years. Between 2013–14 and 2015–16, California preliminary credentials issued by the CTC stagnated at about 11,500, while district-estimated annual demand increased to more than 22,000 in 2015–16 and over 23,000 in the year after (see Figure 4).

According to the California Department of Education (CDE) data we analyzed, even more teachers were hired than districts predicted in their estimates. Actual hiring in these years reached nearly 30,000 annually, suggesting that districts either experienced more attrition than they had anticipated, which created new vacancies, or that – as LCFF was fully funded at a more rapid rate than initially planned – new funding allowed them to move more rapidly to recoup losses of teachers during the Recession.

In 2016–17, California issued more than 12,000 new preliminary teaching credentials, a small increase from the prior year (see Figure 4). Even with the additional roughly 3,900 out-of-

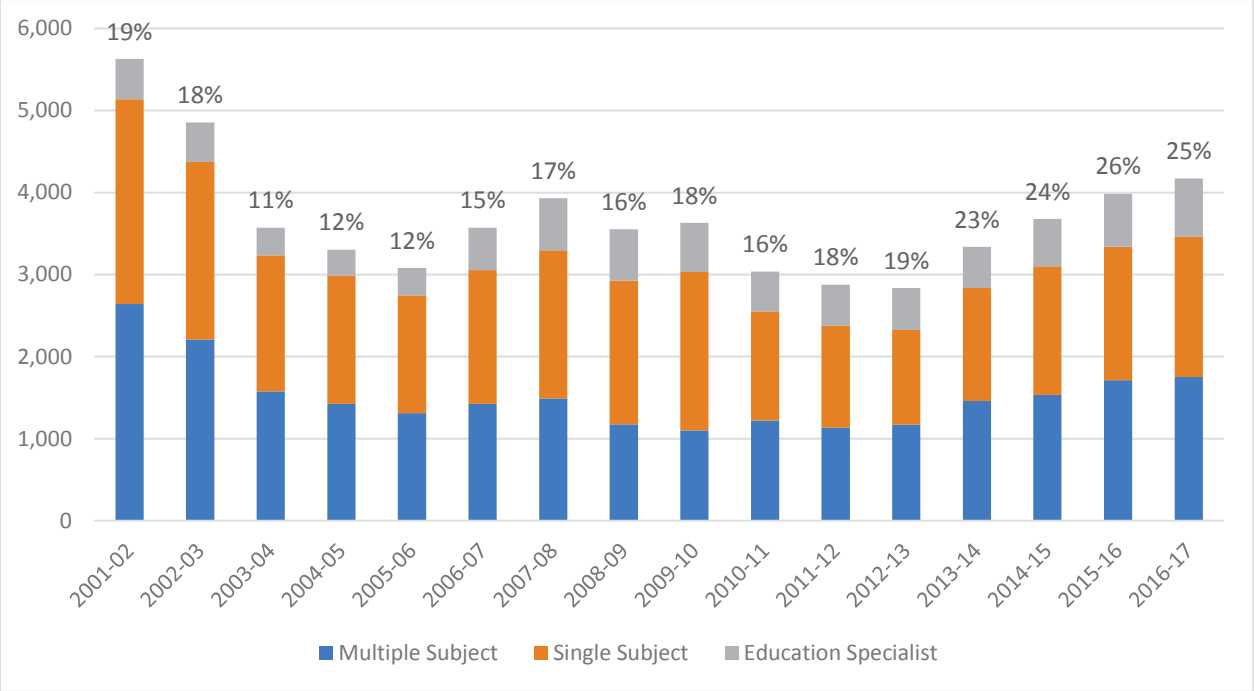
state and out-of-country credentials, plus teacher re-entrants, this increase does not close the gap between supply and demand. The number of out-of-state credentials increased by about 7% since 2013–14, comprising about one quarter of all credentials issued (see Figure 5).

Figure 4: Teacher Demand Continues to Grow



Note: New credentials are preliminary credentials issued to newly prepared teachers. 2016–17 data are preliminary. Source: California Commission on Teacher Credentialing, 2002–2015. *Teacher supply in California: A report to the l*egislature. Data available at http://www.ctc.ca.gov/reports/all-reports.html; Credential data from 2016–17 provided by the CTC by request; District estimated hires come from the CDE, 2002–2018. http://data1.cde.ca.gov/dataquest/.

Figure 5: New California Teaching Credentials Issued for Individuals Prepared Out-of-State and Out-of-Country as Percentage (%) of Total New Teaching Credentials



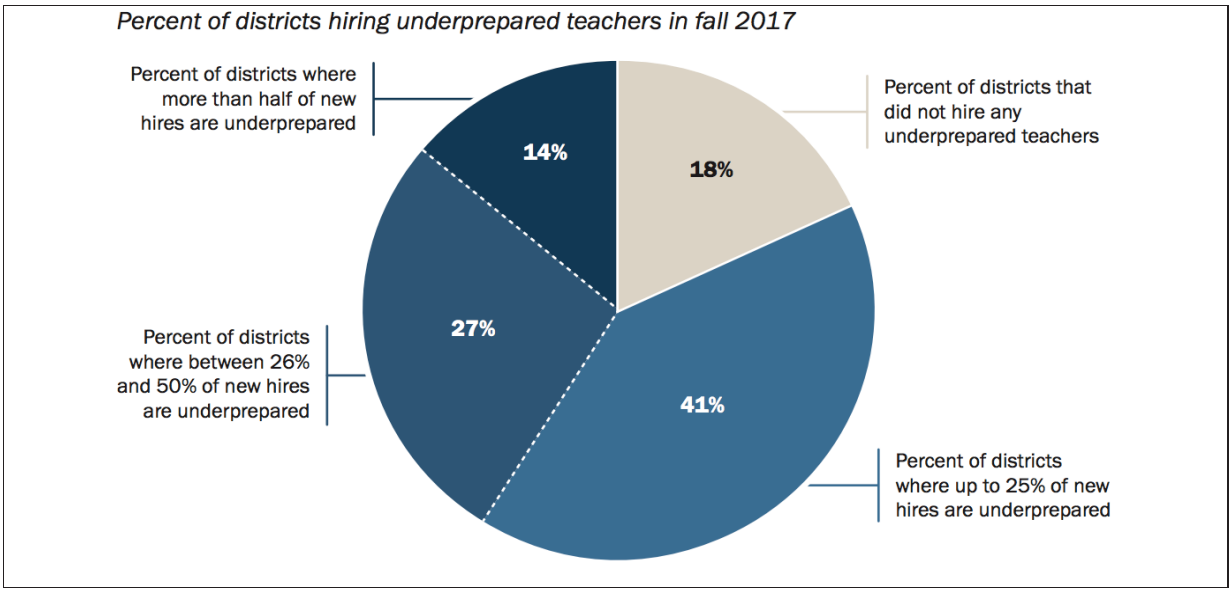
Note: Total new teaching credentials include both institutions of higher education and district pathways.
Source: California Commission on Teacher Credentialing, 2002–2016. *Teacher supply in California: A report to the legislature.* Data available at http://www.ctc.ca.gov/reports/all-reports.html; Credential data from 2016–17 provided by the CTC through a special request.

Increases in Demand are Slowing but Teacher Shortages Remain

After a spike in teacher demand as districts refilled positions cut during the layoff era, demand for new teachers could be steadying.[16] District hiring estimates reported to the CDE, in which districts project their hiring needs 1 year into the future, are increasing still, but at a slower rate than previously. Additionally, in the Fall 2017 Learning Policy Institute district survey, many districts reported small decreases in the number of vacancies and new hires between 2016–17 and 2017–18.[17]

Still, 74% of districts reported they were unable to fill all their vacancies with fully credentialed teachers in 2017–18,[18] and 82% of those resorted to hiring underprepared teachers who had not completed the requirements for full certification. Even though districts are looking for fewer teachers overall, a greater proportion of those new hires are underprepared, suggesting shortages are persisting.[19] Nearly half of these districts reported hiring a greater proportion of underprepared teachers in fall 2017 than the year before.[20] In a substantial number of districts (41%), at least one quarter of new hires were underprepared teachers in 2017–18, and in 14% of districts, underprepared teachers comprised more than half of all new hires (see Figure 6).

Figure 6. Districts Continue to Hire Underprepared Teachers



Source: Sutcher, L., Carver-Thomas, D., & Darling-Hammond, L. (2018). *Understaffed and underprepared: California districts report ongoing teacher shortages.* Palo Alto, CA: Learning Policy Institute.

Moreover, many districts are relying on the least prepared teachers—those not even enrolled in intern programs—to fill positions. Nearly two thirds of surveyed districts reported hiring teachers on Provisional Intern Permits (PIPs), Short-Term Staff Permits (STSPs), and waivers, and half of those districts hired a greater proportion of teachers on emergency-style permits in fall 2017 than they did the year prior.[21] These permits, which are for "acute" areas of shortage, do not require their holders to have demonstrated competence in the subject matter they will teach or any knowledge about how to teach the subject. In some small, rural districts, all new teachers were hired on emergency-style permits in fall 2017. In some large districts, teachers on emergency-style permits made up as much as 30% of new hires. Interns, who are completing teacher preparation while teaching and are supposed to be receiving mentoring and support, also comprised up to 30% of new hires in some large districts.[22]

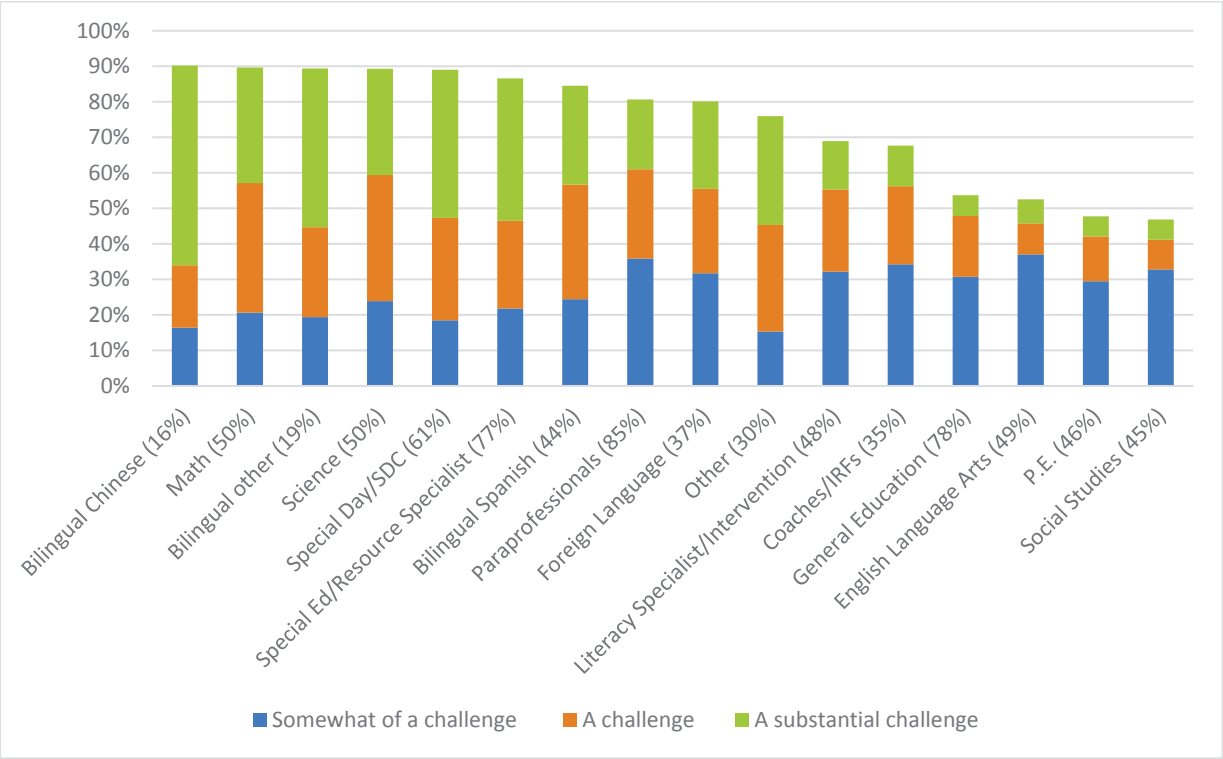
The Shape of Shortages

Shortages vary by teaching field. Looking at state-level indicators of teacher supply and demand is a first step, but it is equally important to understand imbalances in specific subject areas and locations. Although teacher shortages are more severe in some subject areas than others, districts find hiring a challenge in most subjects. For example, of more than 12,300 substandard permits and credentials issued in 2016–17, about half (6,400) were issued in the acute shortage areas of math, science, and special education. However, the remaining 6,000 or so authorizations were distributed among other subjects, including traditional surplus areas such as elementary (multiple subjects), English, and social studies, signaling widespread staffing difficulties.

Figure 7 shares the results of a fall 2017 survey of California principals conducted for the Getting Down to Facts (GDTF) project by the RAND Corporation. Of principals looking to hire in

a given subject, most had challenges filling positions. About 90% of principals looking to hire bilingual, special education, science, and mathematics teachers reported hiring challenges. And more than half of principals looking to hire world language teachers, English teachers, and elementary ("general education") teachers experienced challenges finding candidates.

Figure 7: Percentage of Principals Reporting Hiring is a Challenge (Percentage of schools that attempted to hire for a given subject area/position)

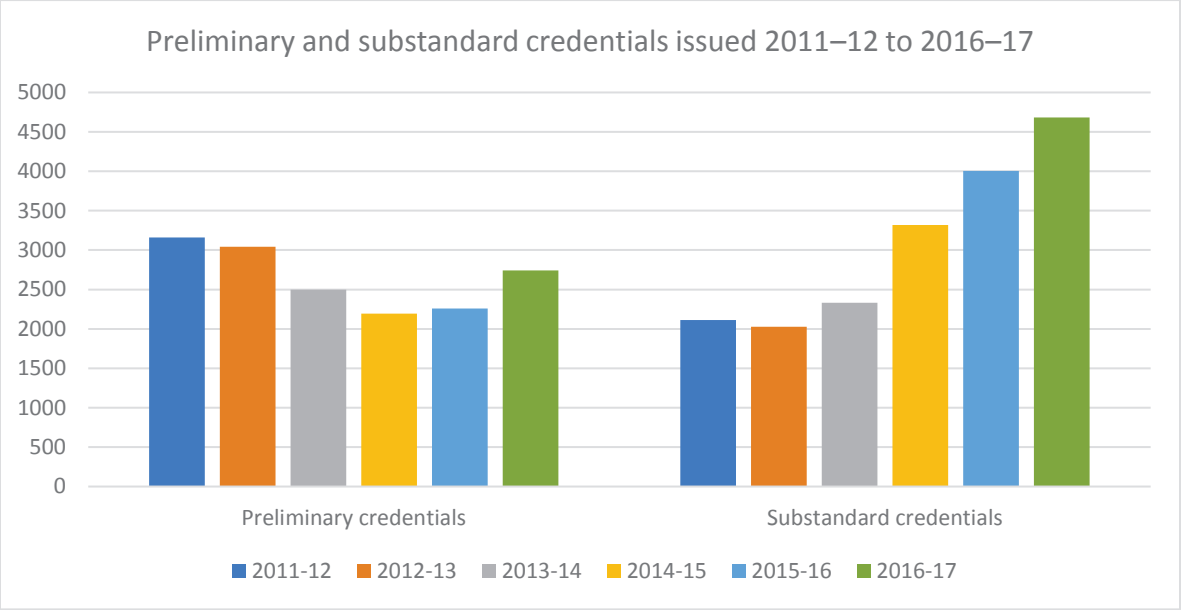


Source: Learning Policy Institute analysis of GDTFII 2018 Principal Survey conducted by RAND.

In special education, shortages are a five-alarm fire. The most vulnerable students—students with the greatest needs who require the most expert teachers—are those with the least qualified teachers. According to the GDTF survey data, depicted in Figure 7, nearly 8 in 10 California schools are looking to hire special education teachers, and 87% of principals at those schools reported hiring is a challenge. Although there was a 21% increase in new education specialist preliminary credentials in 2016–17, with more than 2,700 authorizations issued and an additional 700 out-of-state preliminary credentials issued, this increase was not nearly enough to meet demand (see Figure 8).

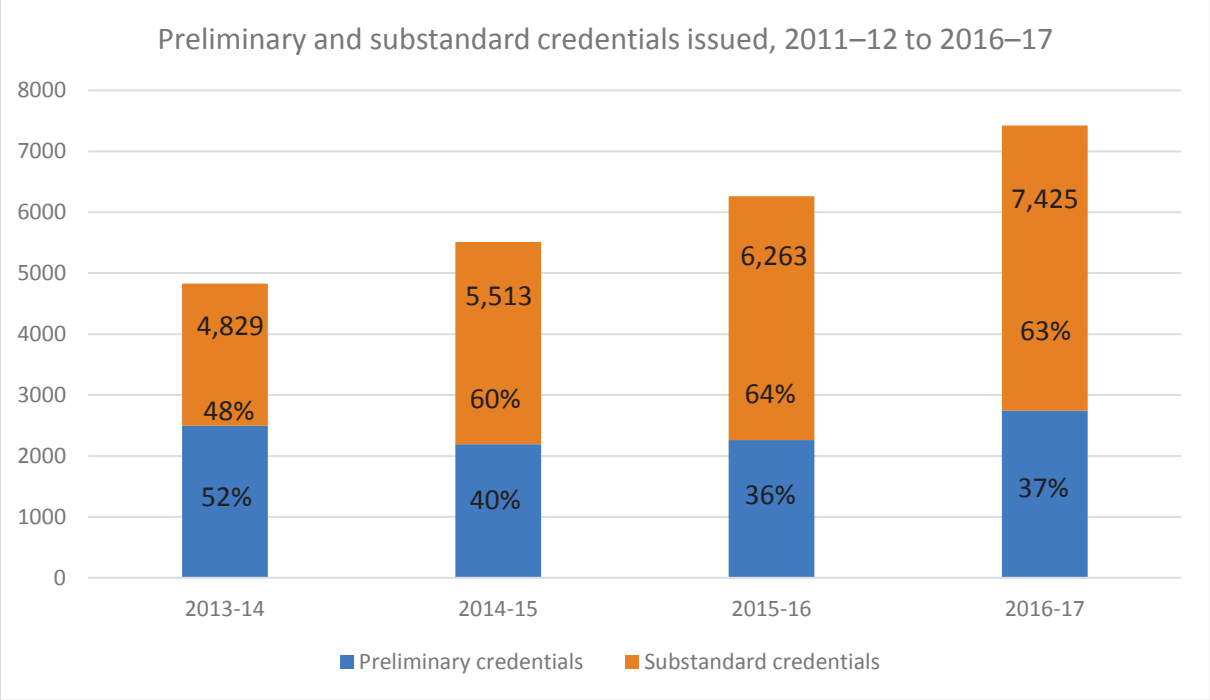
About two thirds of entering California-prepared special education teachers are on substandard credentials (see Figure 9). In total, 4,500 substandard special education/education specialist credentials were issued in 2016–17, representing the largest total in the last decade. Of these substandard credentials, most (2,500) were emergency-style permits granted to individuals without teacher preparation or subject-matter competence.

Figure 8: Trends in Special Education Teacher Supply



Source: Data provided by the California Commission on Teacher Credentialing through a special request.

Figure 9: More Total Credentials and More Underprepared Teachers in Special Education

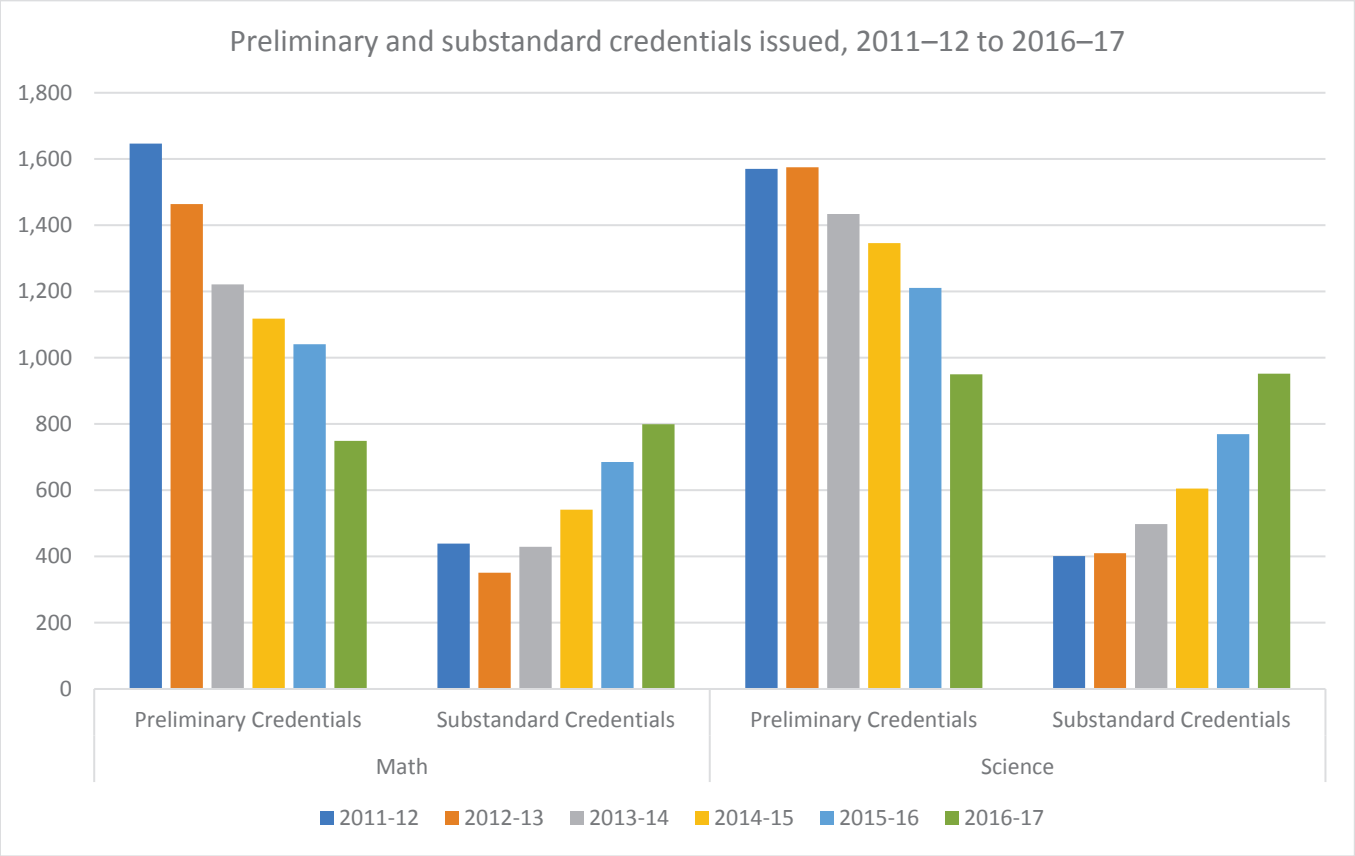


Note: Credential data exclude out-of-state credentials.
Source: Data provided by the California Commission on Teacher Credentialing through a special request.

Teacher shortages also are severe in mathematics and science. In math, the number of new fully prepared teacher candidates holding preliminary credentials has decreased by 50% in 6 years, while the number holding substandard credentials increased by more than 80% in the

same time period (see Figure 10). Similar patterns exist in science with decreasing preliminary credentials and increasing substandard credentials. Substandard science credentials also are being issued at an increasing rate. About 950 were issued in 2016–17, which is more than double the number issued in 2011–12.

Figure 10: Trends in Mathematics and Science Teacher Supply

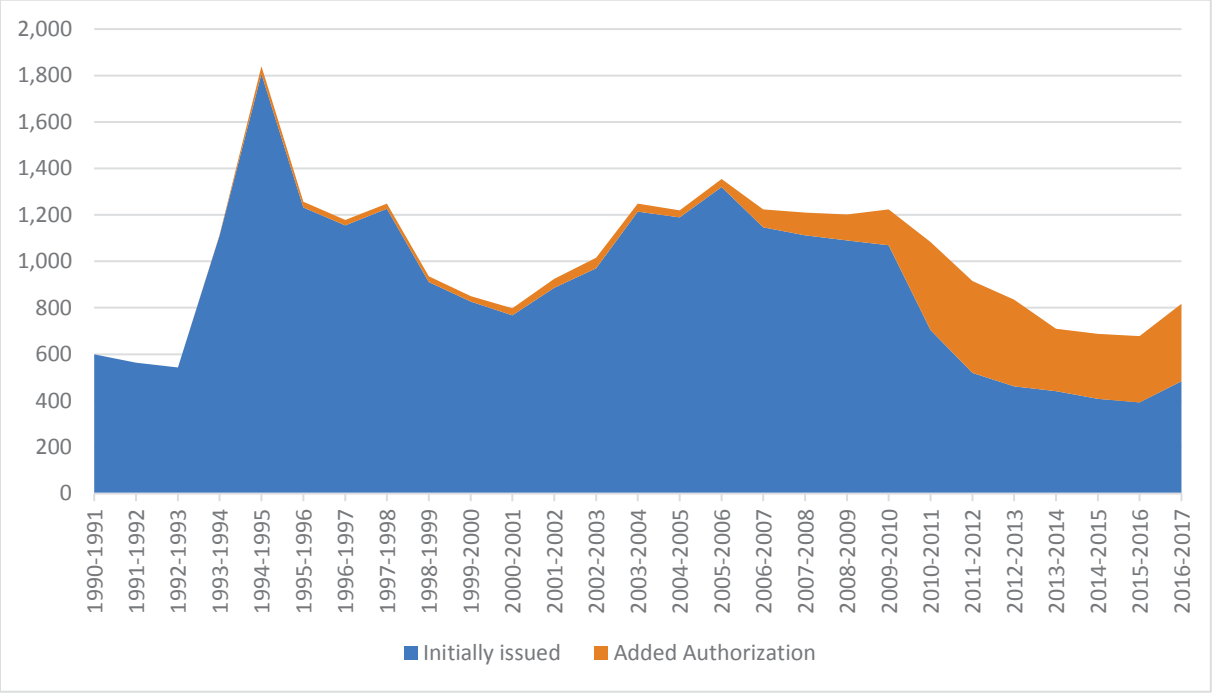


Note: Credential data exclude out-of-state credentials.
Source: Data provided by the California Commission on Teacher Credentialing through a special request.

The passage of Proposition 58 reinstating bilingual education has triggered additional shortages of bilingual teachers. Proposition 58 amends and removes key components of Proposition 227, which, when passed in 1998, severely limited the extent to which schools could offer bilingual education. With 1.4 million English learners (ELs) in California, about one out of every five students in the state is an EL.[23] Before the passage of Proposition 227, roughly 30% of ELs were served by bilingual programs. A decade later, the proportion of ELs served by bilingual programs decreased to 5%.[24] As a result, the number of bilingual teacher preparation programs was greatly reduced across the state. Currently, only 30 preparation institutions in California offer bilingual authorization training programs, compared to more than 80 that grant secondary and elementary teaching certifications.[25]

At its peak in 1994–95, California granted more than 1,800 bilingual authorizations (see Figure 11). Even after the passage of Proposition 227, California issued more than 1,200 bilingual authorizations a year between 2003–04 and 2009–10. Since 2010, new bilingual authorizations have declined steadily, with fewer than 700 teachers authorized in 2015–16. In 2016–17, there was a slight increase in the number of authorized bilingual teachers to just over 800. This is a positive sign, but still not enough to meet increasing demand. For example, in the fall 2017 survey of California principals, close to 50% of schools reported looking to hire bilingual teachers for 2017–18 school year. However, roughly 90% of these schools reported hiring challenges. In fact, more than half of all schools looking for Chinese bilingual teachers and close to one third looking for Spanish bilingual teachers reported a substantial challenge.

Figure 11: Bilingual Authorizations Issued 1990–91 to 2016–17

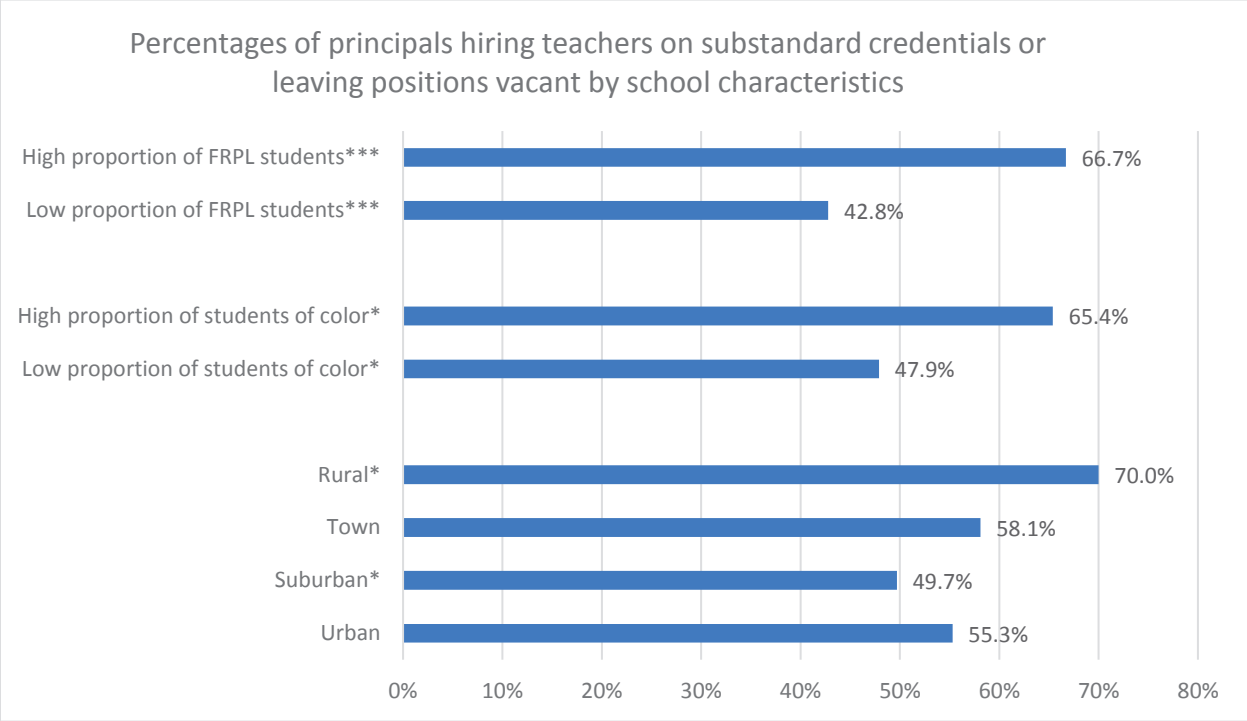


Note: Initially issued bilingual authorizations are those issued on a new teaching credential. Added authorizations are those issued on an existing credential. Source: Data provided by the California Commission on Teacher Credentialing through a special request.

Shortages vary by location and school characteristics. When there are not enough teachers to go around, it is often the schools serving the most vulnerable populations that are left with the greatest challenges. In the fall 2017 GDTF survey of California principals, 55% reported hiring teachers on substandard credentials or leaving positions vacant. In addition to hiring teachers on substandard credentials, 13% of principals reported canceling courses or expanding class sizes to deal with shortages. In schools that hired teachers on substandard credentials, on average, more than half their hires were underprepared teachers. The fact that a larger proportion of districts than schools reported these hiring patterns suggests that, within districts, only certain schools experience shortages. The fact that, among these schools, most new hires were underprepared suggests that the shortages in these places are quite severe.

Two-thirds of principals serving schools with high proportions (top quartile) of students of color and students from low-income families left positions vacant or hired teachers on substandard credentials while fewer than half of their peers in schools in the bottom quartile of low-income or minority students did so (48% and 43%, respectively) (see Figure 12).[26] Districts also reported shortages in schools serving ELs. According to survey data, of districts serving the most ELs, 83% reported having shortages, compared to 64% of districts with the fewest ELs.[27]

Figure 12: Shortages Disproportionately Impact Schools Serving Historically Disadvantaged Students



Note: Statistical differences denoted by: *** p<0.01, ** p<0.05, * p<0.1; Low proportion represents schools in the bottom quartile and high proportion represents schools in the top quartile. FRPL is the free and reduced-price lunch program. Source: Learning Policy Institute analysis of GDTFII 2018 Principal Survey conducted by RAND.

According to California's 2016 State Plan to Ensure Equitable Access to Excellent Educators, teachers in the state's high-minority schools are nearly three times as likely to be teaching on an emergency-style permit than teachers in a low-minority school. In high-poverty schools, such permits are twice as common as in low-poverty schools.[28]

Teacher shortages vary by location. For example, as the 2017–18 school year opened, Oakland Unified School District had 186, or 7%, of its teachers on emergency-style permits, while neighboring Berkeley had only five such teachers, or fewer than 1%. Principals in rural schools were most likely to report shortages, followed by those in small town and urban areas (see Figure 12). However, high-poverty urban schools have shortage levels at least as severe as rural districts.

Teacher shortages vary for a variety of reasons. Local differences in teacher salaries can contribute to the variability in teacher labor markets. Salaries can affect the attractiveness of

teaching jobs in ways that impact both recruitment and retention.[29] Working conditions, such as administrative supports and the amount of collaboration, have a strong effect on teacher retention, which, in turn, affects shortages.[30] Personnel management strategies and human resources practices also can impact shortages as they affect the speed and timing of hiring, assignments of teachers, and availability of mentoring. How all these factors play out in local labor markets in part determines the variation in teacher shortages.

When teachers are scarce, districts compete for the teachers who are available. This can result in wealthier districts with more resources and more desirable working conditions poaching teachers from poorer districts. This is one reason shortages are particularly acute in high-poverty schools,[31] and why high-poverty districts in California are twice as likely to report teacher turnover as a reason why their district is facing shortages as low-poverty districts.[32]

Teacher shortages are widespread in California, with a majority of districts reporting challenges finding qualified candidates across a wide range of teaching fields. Still, shortages are not felt uniformly across the state. They are most severe in certain subject areas, and in schools serving higher proportions of students from low-income families, students of color, and ELs. Shortages also are more pronounced in urban and rural communities. In order to appropriately target policy action to most effectively mitigate shortages, we discuss the levers that impact the teacher labor market and potential root causes of shortages in the next section.

Root Causes of Teacher Shortages in California

Our framework for supply and demand defines a teacher shortage as an inadequate quantity of qualified individuals willing to offer their services in the fields and locations where there are jobs under prevailing wages and conditions. In order to respond effectively to teacher shortages, it is important to understand the factors driving these shortages and what can be done to shift teacher supply and demand to bring the teacher labor market to equilibrium.

Each year, school districts in California must adjust their staffing levels. In the aggregate, California must replace teachers who have left the profession or state, hire additional teachers to account for student enrollment increases, and adjust the size of the workforce depending on the collective pupil-teacher ratio. (If there are increases in total student enrollment or decreases in the pupil-teacher ratio, it means fewer teachers who left must be replaced.)

In times of shortage or economic hardship, districts cannot always hire their desired demand and must make do with their current labor market conditions. For example, in the Great Recession, actual demand for teachers dropped as budgets were cut, and schools could not afford to hire new teachers or even keep all the teachers they already had. In this case, actual demand dropped, but ideal demand did not. In an ideal sense, many districts would like, at a minimum, to maintain the number of teachers and return to the class sizes and course offerings they had in place before the recession. Thus, the actual number of teachers demanded is a negotiation between *ideal* demand, economic realities, and teacher supply.

On the supply side, teachers are either new entrants or re-entrants. In California, new entrants are a combination of teacher candidates coming directly from a California teacher

preparation program (Institutions of Higher Education and district pathways), teacher candidates who graduated from a California preparation program in the past, but who did not enter directly after finishing, or new teachers transferring from out-of-state positions or preparation programs. Teacher re-entrants are former teachers returning to the classroom after stepping out of the classroom for a time. In 2016–17, for example, re-entrants constituted about 27% of new hires.[33]

In order to understand what is contributing to widespread staffing difficulties across the state, we look to the available evidence to estimate the new teacher pipeline, the factors that compose demand, and the composition of new teacher hires. Using CDE data, we look at the statewide teacher labor market and the sources of supply and demand.

Figure 13 shows (1) the number of new preliminary credentials issued to California graduates and to entrants from out-of-state pathways; (2) the number of hires by source (e.g., new entrants, re-entrants, and teachers on substandard credentials (total supply));[34] and (3) the number of teachers demanded by source (e.g., attrition, enrollment changes, and changes in pupil-teacher ratios).[35] In recent years, student enrollment decreased in California, which is shown in the graph as a negative number below the X axis.

Figure 13 highlights two main points: First, the number of fully credentialed new teachers in California is far less than the number of new teacher hires demanded. Even with re-entrants, this mismatch results in a substantial shortfall illustrated by the number of substandard credentials necessary to fill teacher hires. For example, in 2016–17, there were about 16,500 total new teaching credentials, while districts hired more than 29,000 teachers.

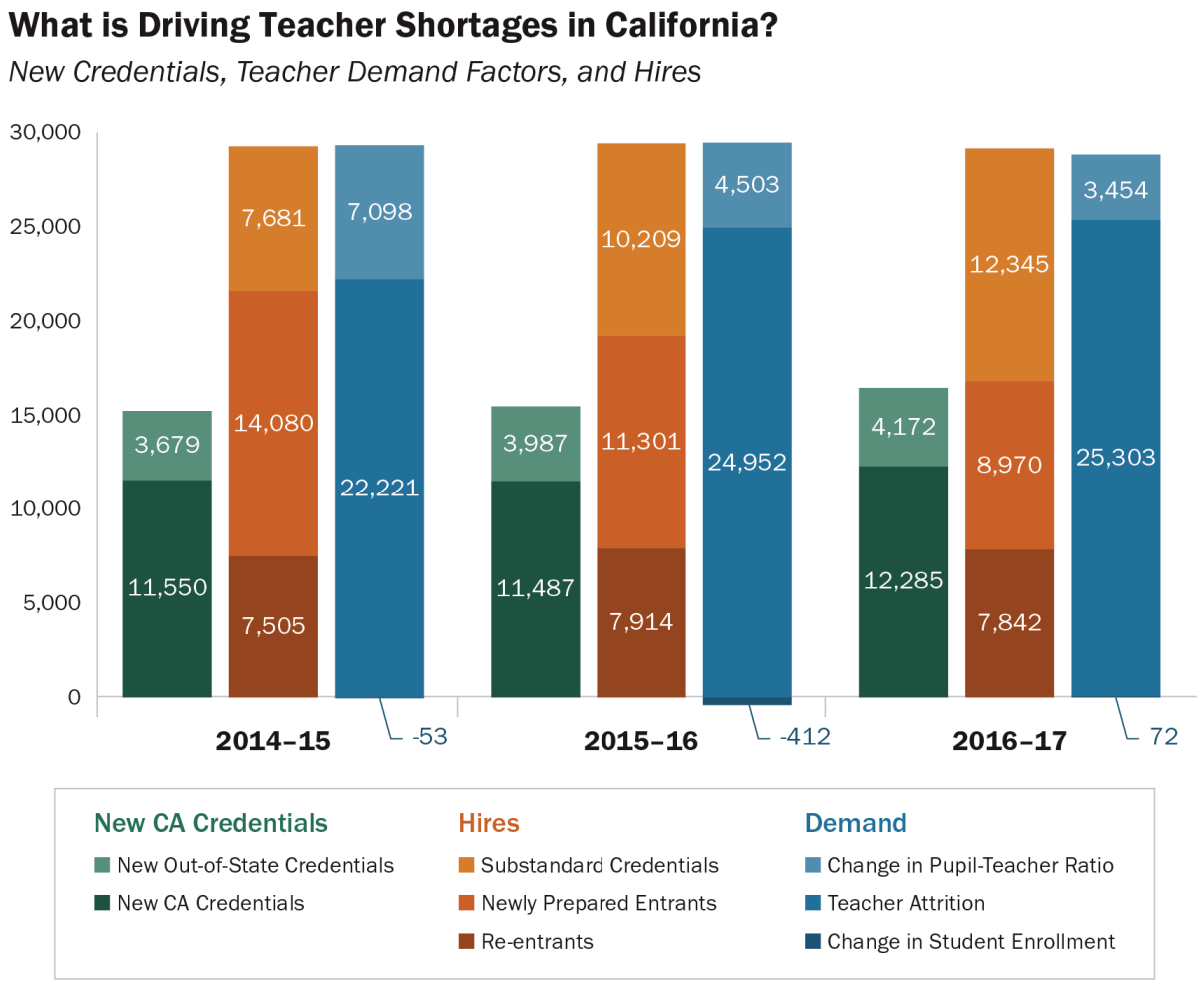
However, new credentials can overestimate the available new entrant supply because (1) some individuals earn more than one credential; (2) not all potential teachers choose to enter the classroom directly after earning a credential; and (3) some new credentials are granted to teachers who leave the state. In recent years, there has been intense recruiting from neighboring states, such as Nevada, and some new teachers leave the state. We estimate there were actually only 9,000 new entrants in 2016–17.

New entrants also include delayed entrants, or teachers who earned a credential but took time off before entering the classroom. This was particularly true when new teachers who could not get a job during the period of layoffs entered a year or two later. This is likely why in 2014–15, there were more new entrants than total new credentials issued in the same year.

Second, teacher demand is largely driven by attrition. In 2015–16 and 2016–17, attrition was responsible for roughly 86% and 88% of demand, respectively. In 2014–15, 24% of the demand was due to attrition. This pattern fits with general economic trends and the idea that schools and districts worked to reinstate classes and programs that were cut during the Recession.

Demand due to pupil-teacher ratio reduction has slowed slightly, but still represents a notable share. In 2015–16 and 2016–17, 15% and 12% of demand was due to pupil-teacher ratio reduction, respectively. Although student enrollment increases are not the driving factor in demand for the state as a whole, enrollment growth impacts some counties far more than others.

Figure 13:



Note: A negative number of teachers represents a decrease in the total number of teachers.
Source: California Staffing Data File provided to the Learning Policy Institute by the CDE through a special request; California Department of Education. Data available on DataQuest Web Page at http://data1.cde.ca.gov/dataquest/; California Commission on Teacher Credentialing through a special request.

Based on available evidence, California teacher shortages have been driven by three main factors:

1. A rapid decline in teacher preparation enrollments and thus new entrants,
2. New demand as districts seek to return to pre-Recession course offerings and class sizes, and
3. Teacher attrition.

We investigate each in turn below.

The Decline in Teacher Preparation Enrollments

As noted, over the past decade or so, teacher preparation enrollments in California have declined by more than 70%. Program completers have decreased in step with enrollments and the number of new preliminary credentials issued remains at recent lows. According to the fall

2016 California School Boards Association (CSBA) survey, nearly 80% of districts that reported having a teacher shortage cited the shrinking supply of new teachers as the reason for shortages.[36] The 3,500–4,000 new credentials issued to out-of-state teachers and former teachers re-entering the workforce are not enough to close the gap. The rapid and sustained increase in substandard credentials indicates supply is inadequate to meet demand. Understanding the factors that have contributed to this sharp decline in supply is critical if policymakers are to craft an effective response.

Diminished interest in teaching. Many researchers and practitioners point to the large number of Recession-era layoffs as a major cause of the much-diminished interest in the teaching profession, noting that young people were discouraged from entering a field in which there were few jobs and little job security. As the San Diego school system's director of human resources noted:

For several years, there was no incentive to go into teaching and as a result, the pipeline for new teachers is smaller. Now, we have to do more than just recruit teachers. We have to let people know teaching is a viable career.[37]

During the years of layoffs, California law required that notifications be delivered to teachers in danger of being laid off by March 15th of each year. Between March 2008 and March 2012, the California Teachers Association reported that roughly 100,000 California teachers received such "pink slips."[38] Although a significant percentage of these teachers ultimately kept their jobs in many of these years, the layoffs caused others to leave the profession, and the annual flurry of news articles announcing these events left a mark on the public psyche, including the perceptions of individuals who might consider teaching as a profession. As an Orange County Register headline noted in March 2015, "March used to be the month we dreaded."[39]

Teacher salaries were frozen and working conditions suffered during the era of cutbacks, as resource limitations led to increased class sizes, less availability of materials, and fewer instructional supports. In addition, some observers suggest that the teaching profession has also become less attractive because it has been at the center of intense policy debates and legal battles over such issues as teacher evaluation and tenure.[40]

The impact of these various factors can be seen in the results of an annual survey of high school students taking the ACT college entrance exam, which found that the number of high school students interested in becoming educators dropped by more than 16% between 2010 and 2014.[41] Only 5% of high school students taking the college admissions test say they are interested in teaching as a career. This number could expand if teaching becomes a more attractive career, but it also could dwindle further as candidates encounter the standards for entry that have been put in place in most states and explore other career options available to them.

Another significant obstacle to entry into the teaching profession is cost of teacher preparation. More than two thirds of individuals entering the field of education 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 more than twice that for those with a master's degree.[42] While research

demonstrates that a teacher's level of preparation is associated with their effectiveness as well as with their likelihood of remaining in the profession,[43] the cost of preparation is increasingly difficult for candidates to afford. Research also suggests that college students' choice of career is affected by the debt they incur and salaries they can expect to earn.[44]

Teacher education program capacity. Much of the decline in teacher education enrollments in California has occurred within the state university system, which typically prepares nearly 60% of teacher education graduates each year and is the most productive sector for California teaching candidates. UC and CSU completion rates are much higher than those of some very large private institutions, which enroll many part-time students who graduate more slowly and at lower rates. In 2015–16, for example, the UC and CSU systems served 43% of enrollees in teacher education, but graduated 57% of all completers who received credentials.[45] In the fall 2017 survey of California principals, 78% said the CSU system and 57% said the UC system was an important source of teachers to their school. No other source of teachers was reported as important by more than 40% of principals surveyed.[46]

***Teacher education program types*.** The large majority of teacher education programs in California are post-baccalaureate credentialing programs that typically take 9 to 12 months to complete for full-time enrollees. Internships that prepare teachers while they are employed often take 24 months to complete. These are offered by both IHEs, which offer the largest share, and local education agencies (LEAs) (districts or counties).

A relatively small number of undergraduate programs were created under an earlier CTC-developed exception to the Ryan Act, which required post-baccalaureate teacher education in 1970. These so-called "blended" programs of undergraduate teacher education are joined by 41 new programs launched in response to a $10 million legislative allocation in 2016 to expand undergraduate programs, especially in shortage fields. These new undergraduate programs are expected to enroll students beginning in fall 2018. Nearly one third of the new programs will prepare candidates in mathematics or science; nearly one quarter will prepare candidates in special education; and one fifth will prepare candidates for a bilingual authorization.[47]

***Teacher education program capacity*.** While there has been some small increase in teacher preparation program enrollments, that increase appears to have stagnated in the last 2 years in the CSU and UC systems. In addition, a question has emerged as to whether low enrollments are, in all cases, due to a dearth of candidates, or if there is, in part, insufficient program capacity.

To understand more about the teacher pipeline, LPI partnered with the CTC to administer a survey to all institutions approved by the CTC to sponsor teacher education. As shown in Table 2, of the 88 institutions preparing teachers, 75 (85%) responded to the survey.

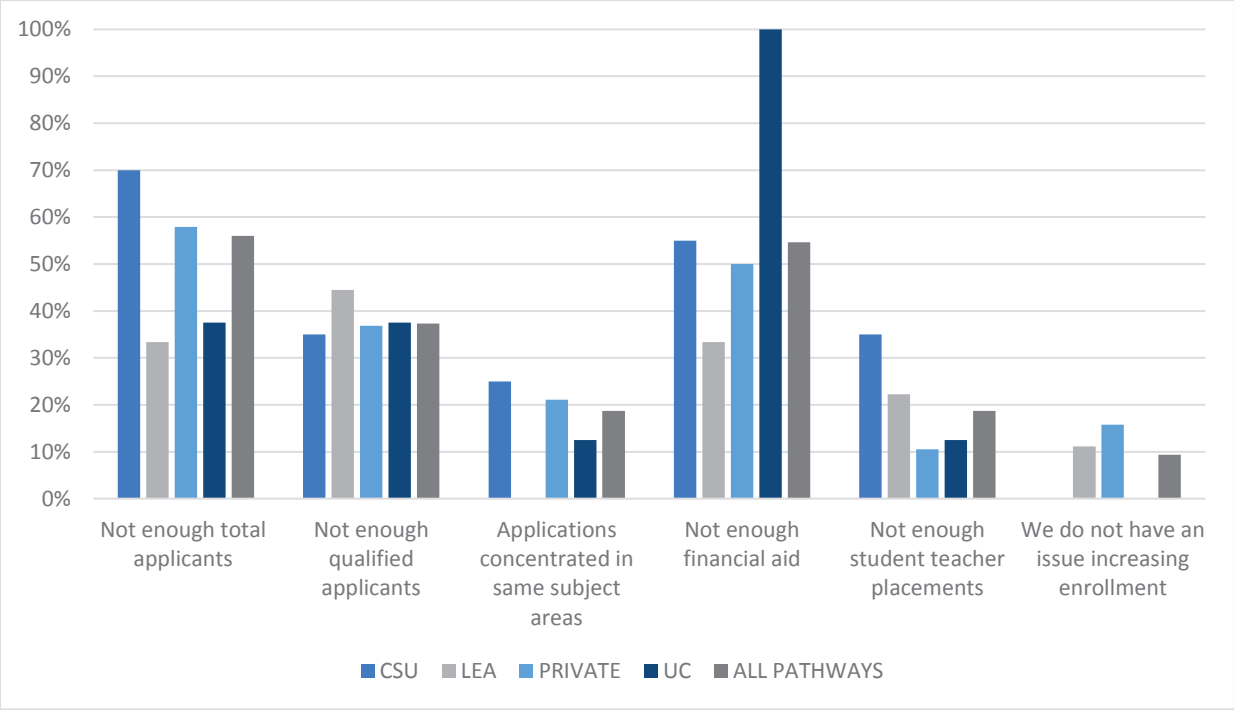
Table 2. Respondents to the Teacher Education Program Capacity Survey

	Sponsoring Teacher Preparation	Institutions Responding to the Survey	Percent of Institutions Responding
California State University (CSU)	23	20	87%
Private or Independent Colleges and Universities	47	38	81%
University of California (UC)	8	8	100%
Local Education Agencies (LEAs)	10	9	90%

Source: Data provided by the California Commission on Teacher Credentialing through a special request.

One common explanation for low enrollment in teacher education programs is that applications are concentrated in popular subjects, such as English and social studies, while shortage areas such as mathematics and science go unfilled. Although some institutions experience this phenomenon, the majority of programs do not identify this as a major obstacle. The top problem cited by institutions was inadequate numbers of applicants (56%), and inadequate financial aid was close behind (55%) (see Figure 14). Lack of financial aid was cited by more than half of all programs and by 100% of reporting UC campuses. In addition, more than one third of teacher preparation programs emphasized that a lack of *qualified* applicants is a major obstacle to boosting enrollments. Very few institutions responded they did not have an issue increasing enrollments.

Figure 14: Obstacles to Increasing Teacher Preparation Enrollments by Preparation Type



Source: Data provided by the California Commission on Teacher Credentialing and analyzed by Learning Policy Institute.

The survey also asked for estimates of the number of available slots, applications, and acceptances in each subject area. The way institutions interpreted and reported these estimates varied significantly, leading to imperfect data with missing values. For that reason, the following results should be interpreted with caution.

Table 3. Estimated Teacher Education Slots, Applications, and Acceptances, 2017–18

	California State University (CSU)			Private			University of California (UC)			Total		
Subject Area	Slots	Apps	Accept	Slots	Apps	Accept	Slots	Apps	Accept	Slots	Apps	Accept
Mathematics	488	432	281	1717	842	440	64	185	107	2269	1459	828
Science	608	417	285	1655	579	324	87	211	126	2350	1207	735
Special Education	1747	904	703	884	590	341	50	80	46	2681	1574	1090

Note: Slots = estimated number of available slots for 2017–18; Apps = number of applications received for 2017–18, Accept = number of individuals accepted for 2017–18. Source: Data provided by the California Commission on Teacher Credentialing through a special request.

In the CSU system, individual programs generally reported more slots available than applications received. This was particularly true in special education, where even if every applicant was accepted and attended, the system still would be at just over half of its possible capacity. As Table 3 shows, only a portion of applications was accepted, and we can assume that, even after being accepted, not all students end up attending. In the UC system, programs tended to receive more applications than slots available. Although the story varies across preparation segment, on the whole, there appears to be additional capacity to accommodate more students. However, as noted below, these data mask some challenges that are not readily apparent in the numbers by themselves.

Program terminations and cutbacks. Even if there were enough capacity to accommodate the current number of applicants, program capacity has declined since a decade ago when California was enrolling many more prospective teachers. In special education—an extreme shortage area—four programs were eliminated outright (two in "Moderate to Severe Disabilities" and two in Early Childhood Special Education), and nearly thirty were put on a moratorium status or reduced in size since 2007 (see Table 4). This is a natural response to both state budget cuts in higher education and the reduced number of applicants to teacher education, but it signals the need to rebuild capacity.

Table 4. Special Education Programs Cut Back Since 2007

	California State University (CSU)	Private	University of California (UC)	Total
Mild to Moderate Disabilities (MM)	5	10	1	16
Moderate to Severe Disabilities (MS)	5	2	1	8
Early Childhood Special Education (ECSE)	2	3	—	5
Visual Impairments (VI)	—	—	—	—
Deaf and Hard of Hearing (DHH)	—	—	—	—
Physical and Other Health Impairments (PHI)	—	—	—	—
Language and Academic Development (LAD)	—	—	—	—

Source: Data provided by the California Commission on Teacher Credentialing through a special request.

Limited enrollment resources. In our research, we also learned that the numbers of slots enumerated by CSU campuses are in part theoretical. Although the programs might be able to grow to those levels, on an annual basis, the amount of funding allocated to teacher education slots within each university is often constrained by CSU practices that typically determine annual slots based on the size of enrollments in the previous year or two. Because campuses experienced low enrollment in response to the tight Recession-era labor market, they no longer have sufficient enrollment funding to admit more candidates despite the current demand. In

this sense, CSU teacher education programs are caught in challenging position. Even as applications increase, a number of programs have had to turn away interested applicants because they did not have enrollment allocations sufficient to cover all of the students they would like to admit. This enrollment funding deficit may in turn dampen demand, because word gets out that campuses are not accepting candidates, even though k–12 schools are struggling to find teachers.

A disincentive to universities increasing teacher education slots is that the cost of providing quality teacher preparation—which involves management of clinical placements and supervision —is larger than that of many liberal arts majors, so the system can admit more students at lower cost in other programs. We learned that the increases in enrollments at some campuses were due to individual deans making strong arguments to provosts. To change this, the legislature would need to allocate funds more directly to teacher education within the UC and CSU systems, and/or the university's practices for allocating funds to programs would need to change within those systems.

***Qualifications requirements*.** Another interesting pattern emerges from these data. In mathematics and science, only about 55–60% of applicants were accepted, and in special education, only 69% of applicants were accepted. Since programs seem to have more slots than applicants, and they complain of shortages of qualified applicants, there appears to be an issue of teacher qualifications. To increase enrollment, it is important not only to have more applicants applying to teacher education program, as well as more who are qualified.

The CTC has extensive requirements for teacher education entry that may account, in substantial part, for these trends. To be eligible for student teaching or an internship, candidates must pass at least two hurdles often required by programs for admission:

1. The California Basic Educational Skills Test (CBEST) or a high enough score on certain other tests;[48]
2. Subject-matter qualifications that may be met by completing a specified subject-matter program of study but are typically met by passing the California Subject Examination for Teachers (CSET)

Because the rules for "highly-qualified teachers" under No Child Left Behind until recently required elementary (i.e., multiple subjects) teachers to pass a content-matter test rather than complete a program of study, as was true before 2002, and because the CTC-approved programs of study for secondary teachers do not map well onto majors in most universities, most elementary and secondary candidates completed subject-matter qualifications by taking the CSET. This pattern is likely to change, since the CTC recently re-authorized subject-matter programs of study for elementary (multiple subjects) candidates. As shown in Tables 5 and 6, both sets of examinations have relatively high fail rates. The fail rates are extremely high in fields such as math and science, in which even individuals with majors in these fields have difficulty passing the tests.

Table 5. CBEST First-Time and Cumulative Passing Rates, 2012–2017

Testing Year			First-Time Passing Rate		Cumulative Passing Rate	
	N Completed	N Passed	% Passed	N Completed	N Passed	% Passed
2012–17	163,669	112,377	68.7	163,669	137,670	84.1
2016–17	37,673	25,175	66.8	37,673	28,691	76.2
2015–16	36,942	25,056	67.8	36,942	31,045	84.0
2014–15	34,229	23,476	68.6	34,229	29,524	86.3
2013–14	29,130	20,555	70.6	29,130	25,703	88.2
2012–13	25,695	18,115	70.5	25,695	22,707	88.4

Source: California Commission on Teacher Credentialing (2018). Annual report on passing rates of Commission-approved examinations from 2012–13 to 2016–17. Sacramento, CA: Author.

Table 6. CSET Annual and Cumulative Passing Rates, 2003–2017

CSET Examination	Annual Passing Rate (2016–17)			Cumulative Passing Rate (2003–2017)		
	# Attempted	# Passed	% Passed	# Attempted	# Passed	% Passed
All Exams	17,573	12,021	68.4	374,375	302,384	80.8
Multiple Subjects (2003)				157,532	143,992	91.4
Multiple Subjects Updated (2014)	8,838	6,379	72.2	28,702	23,210	80.9
Writing	436	351	80.5	10,231	8,667	84.7
Single-Subject Exams						
Agriculture	20	3	15.0	239	126	52.7
Art	260	186	71.5	2,829	2,393	84.6
Business	31	8	25.8	737	410	55.6
English (2003)				26,164	20,894	79.9
English Updated (2014)	1,574	1,146	72.8	4,669	3,739	80.1
English Language Development	22	1	4.5	63	5	7.9
Health Science	150	77	51.3	3,566	2,682	75.2
Home Economics	29	15	51.7	542	388	71.6
Industrial Technology Education	102	82	80.4	813	690	84.9
Preliminary Educational Technology	158	155	98.1	2,973	2,877	96.8
Mathematics (2003)				10,103	6,505	64.4
Mathematics Updated (2015)	374	234	62.6	1,122	728	64.9
Music	128	109	85.2	1,567	1,441	92.0
Physical Education	636	295	46.4	7,698	5,499	71.4
Biological Sciences	739	500	67.7	13,595	10,750	79.1
Chemistry	239	179	74.9	5,604	4,471	79.8
Geosciences	107	69	64.5	4,388	3,384	77.1
Physics	128	66	51.6	3,339	2,134	63.9
Social Science	1,279	872	68.2	26,243	21,082	80.3

Source: California Commission on Teacher Credentialing (2018). Annual report on passing rates of Commission-approved examinations from 2012–13 to 2016–17. Sacramento, CA: Author.

Only about 65–70% of candidates pass the CBEST on the first attempt, and the cumulative pass rate over the period of 2012–16 was 85%. A declining quality of candidates as shortages grow more severe may be signaled by the fact that the cumulative pass rate in the most recent year, 2016–17, was only 76%.

The CSET is taken by the smaller number of candidates who have already passed the CBEST. About 80% of all candidates pass the CSET, but cumulative pass rates for 2003–17 were only 65% for mathematics candidates and only 64% for physics candidates. The new English language development test—aimed at teachers of new ELs—currently has a pass rate of only 8%. The pass rates on these and other tests were lower in 2016–17 than in previous years.

Although the CTC recently voted to re-establish subject-matter programs as an alternative to the CSET for multiple-subjects teachers, now that the NCLB requirements are ended, and is exploring the use of majors and perhaps a form of transcript review as an alternative to CSET passage for single-subject candidates, for now, the CSET stands as a significant barrier to enrollment in many teacher education programs, especially in high-need fields such as mathematics and science. (In some cases, candidates take the CSET multiple times throughout the program and still may still be struggling to pass it when they have graduated, and thus must teach on an emergency-style permit rather than a preliminary credential.)

In addition to the CBEST and the CSET tests, there are two other assessments most candidates must pass to earn a credential:

1. Reading Instruction Competence Assessment (RICA) is required for all multiple subjects and education specialist candidates.
2. Teacher Performance Assessment (TPA)—an assessment of applied teaching skills—is required for candidates in most teaching fields.[49]

About two thirds of candidates pass the RICA on the first try; between 2012–17 the cumulative pass rate was 91%.[50] Since the capstone TPA is typically taken only by candidates who have already passed the other two or three sets of assessments required of them and have completed most of their teacher education training, the pass rates are higher: about 85% of candidates pass the TPA on the first attempt and about 90% eventually pass.

The pathway to becoming a teacher in California loses a significant share of candidates at each testing juncture: Overall, at least 40% of those who initially intend to teach are unable to move forward at some testing juncture, and in some fields, including mathematics and science, this includes well over half of those who initially intended to teach. Of these assessments, only the TPA has been shown to be related to teachers' effectiveness in the classroom.[51] Given that candidates also reported that the tests are a financial hurdle and a logistical challenge, there is no doubt that they have a noticeable impact on the pipeline for becoming a teacher in the state.

Teacher re-entrants. Using CDE teacher assignment data, we find roughly 27% of new hires in 2016–17 were re-entrants who had previously taught but did not teach in the preceding year[52] (see Table 7). Nationally, re-entrants constitute roughly one third to one half of the

teacher supply in a given year.[53] These trends are very much subject to labor market conditions and also can be affected by re-entry policies. California has fairly stringent re-entrance polices, often requiring teachers who left the classroom for an extended period of time to re-certify, pay fees, and sometimes take additional coursework before returning to the classroom.

Table 7. Estimated Re-entrants as a Percentage of New Hires in California

	2014–15	2015–16	2016–17
Of New Hires (n):	29,266	29,424	29,157
% Re-Entrants	26%	27%	27%
% New-Teachers	74%	73%	73%

Source: California Staffing Data File provided to the Learning Policy Institute by the California Department of Education through a special request.

The factors that influence re-entrants are similar to those that influence new entrants and those from out of state: the ease of entry and the attractiveness of salaries and teaching conditions. In theory, there is a reserve pool of teachers made up of a large group of former teachers who left teaching for a variety of reasons, but still hold a credential and are a potential source of supply. In California, some teachers who left the classroom re-enter, but few, at least recently, return to California classrooms more than 2 or 3 years after leaving (see Table 8).

Table 8. Length of Time to Re-entry

Length to return …	2009–10	2010–11	2011–12	2012–13	2013–14	2014–15
Total Leavers:	41,046	22,003	23,023	22,627	22,221	24,952
No Re-entry	53%	67%	69%	73%	76%	83%
After 1 year	31%	17%	18%	17%	18%	17%
After 2 years	8%	7%	7%	6%	5%	
After 3 years	4%	4%	4%	3%		
After 4 years	3%	3%	3%			
After 5 years	2%	2%				
After 6 years	1%					

Source: California Staffing Data File analyzed by the Learning Policy Institute, provided by the California Department of Education through a special request.

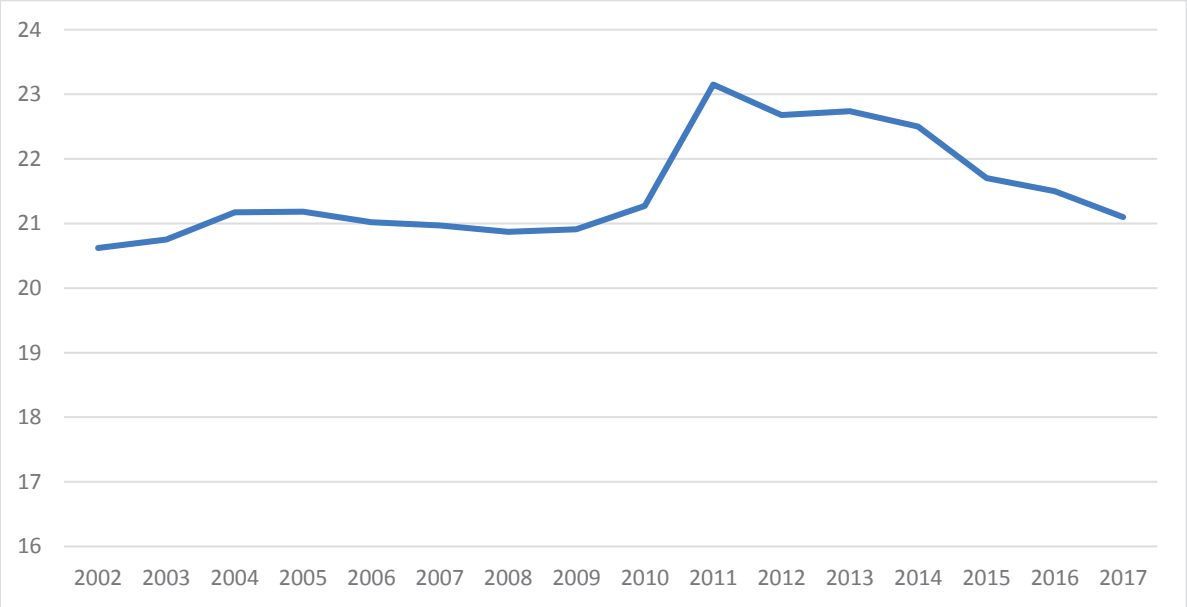
Increased and Sustained Demand

As districts develop their annual hiring projections, key considerations include student population growth, class size, program expansion or contraction (such as adding or eliminating courses or areas of study), and the number of expected retirements, along with other kinds of teacher attrition, ranging from medical leave and family moves to departures for other districts, states, or out of the profession entirely.

Pupil- teacher ratios. One of the strongest drivers of growing teacher demand, especially in the years of recovery following the Recession, is the effort to return class sizes and teacher loads to more manageable levels. California's pupil-teacher ratios have been the largest in the country for many years. [54] During the Recession, when school districts stopped hiring and laid off thousands of teachers, California's pupil-teacher ratios, already ranked the highest in the country, jumped even further. Whereas the national average is about 16:1, the California ratio reached a peak of 24:1 in 2011, according to nationally comparable measures (see Figure 15).[55] (Note that class sizes are always larger than pupil-teacher ratios.) During the Recession, many districts increased class sizes to 30 or more in elementary schools and 40 in some high schools. This pupil-teacher ratio increase was not a policy preference but a response to the economic reality. With new resources, districts are now seeking to increase the number of teachers.[56]

Since then, as funding returned to California schools the pupil-teacher ratios moved slowly toward pre-Recession levels. In the process, California expanded its workforce by more than 20,000 teachers, or 7%. In 2016–17, the state pupil-teacher ratio was roughly 21:1, which almost fully returns the state to 2007–08 levels (see Figure 15). This may mean that the rapid increase in hiring post-Recession could be slowing. However, California's pre-Recession pupil-teacher ratios were already the worst in the nation, so it is possible that California districts will continue to hire to become more comparable with national benchmarks.

Figure 15: California Pupil-Teacher Ratios 2001-02 to 2016–17



Source: California Department of Education, 2000–2016. Data available on DataQuest Web Page at http://data1.cde.ca.gov/dataquest/

Student enrollment. Another key factor that determines hiring needs and shortages is student enrollment. In California, student enrollment growth is not currently a major driving factor for shortages, but this varies by location. According to the California Department of Finance, k–12 student enrollment is projected to decrease slightly—by less than 1% by 2021–22

and by nearly 3% in the next decade—if birthrates, immigration, and migration do not shift unexpectedly. However, these projections vary by region. For example, in 12 counties, enrollment is expected to increase by more than 3% and in five counties more than 5% by 2021–22. Conversely, enrollment in nine counties is projected to decrease by more than 3% and in 2 counties more than 5% by 2021–22.[57]

The Role of Teacher Attrition

While teacher demand is driven by several factors, including growing student enrollment and pupil-teacher ratios, the lion's share of demand is driven by teacher attrition. In fact, in California, we estimate that attrition accounts for about 88% of annual demand, and drives many of the shortages we see today, particularly in high-need schools.[58]

Most of attrition is pre-retirement attrition caused by teachers leaving the profession early or in mid-career, usually due to dissatisfactions with their positions or with the profession. Nationally, less than one third of attrition is caused by retirements.[59] This suggests that if the level of pre-retirement attrition were reduced, the demand for teachers would decrease substantially, and that would help solve the teacher shortage. In fact, if California were able to cut its attrition rate in half, from around 8.5% to 4%, to be comparable to high-achieving countries and low turnover states (generally these are in the Northeast), demand would drop about 13,500 teachers and largely eliminate overall teacher shortages, potentially leaving only small regional and subject-specific shortages. Recruitment alone is not enough to solve shortages, since high rates of turnover quickly undo schools' efforts to bring in new hires.

Which teachers leave and why? Recently, about 8.5% of teachers in California appear to be leaving the profession (or the state) each year, and another 8% leave their current school to move to another (see Table 9). Between 2007–08 and 2011–12 California's teacher workforce contracted by 9%, leading to higher attrition than normal, which was especially pronounced in 2009–10 where the bulk of the layoffs occurred.

Whereas movers mostly changed schools within their current district during the Recession, in recent years, movers have been changing schools across districts to a greater extent than previously. In this section, we summarize what we know about teacher turnover in California, including which teachers turn over at higher rates, why teachers leave their schools or the profession, and the satisfaction level of California teachers, among other things. (For more on teacher turnover over time, see Appendix A.)

Table 9. Teacher Turnover over Time

	2009–10	2010–11	2011–12	2012–13	2013–14	2014–15	2015–16
Leavers	13.85%	8.00%	8.12%	7.99%	7.78%	8.53%	8.52%
Movers	8.88%	9.19%	7.80%	7.85%	8.39%	8.26%	7.86%
Within district movers	7.61%	7.44	6.16	5.23%	5.19%	4.81%	4.39%
Between district movers	1.27%	1.75	1.64	2.62%	3.20%	3.45%	3.47%
Total Turnover	22.73%	17.19%	15.92%	15.84%	16.17%	16.79%	16.38%

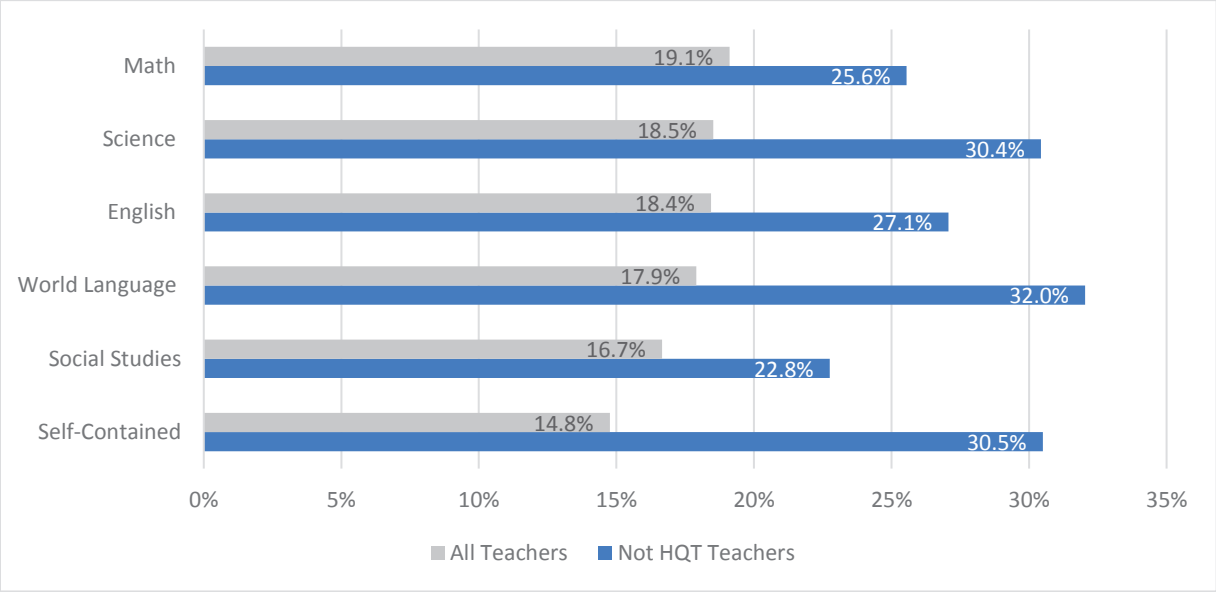
Source: California Staffing Data File, analyzed by the Learning Policy Institute, provided by the California Department of Education through a special request.

Which teachers turn over at higher rates? In California, teachers of mathematics, science, and English are more likely to leave their school or the profession than those in other fields (see Figure 16). Because some teaching specialties are not identified in the data file available to us, we were not able to calculate turnover rates for special education or teachers of English language development in traditional schools. Nationally, these teachers tend to turn over at higher rates than other fields as well.[60] However, we were able to calculate turnover for teachers working in special education schools: Between the 2015–16 and 2016–17 school years, 13.4% of teachers teaching in special education schools left the profession or state and another 7.3% moved between schools within California. Combined, more than one out of five teachers teaching in special education schools left their position, which was more than any other subject.

Similarly, according to the 2017 principals' survey conducted for GDTF, principals reported that teachers in the shortage areas of special education, mathematics, science, bilingual education, and world languages are the most difficult to retain (see Figure 17).

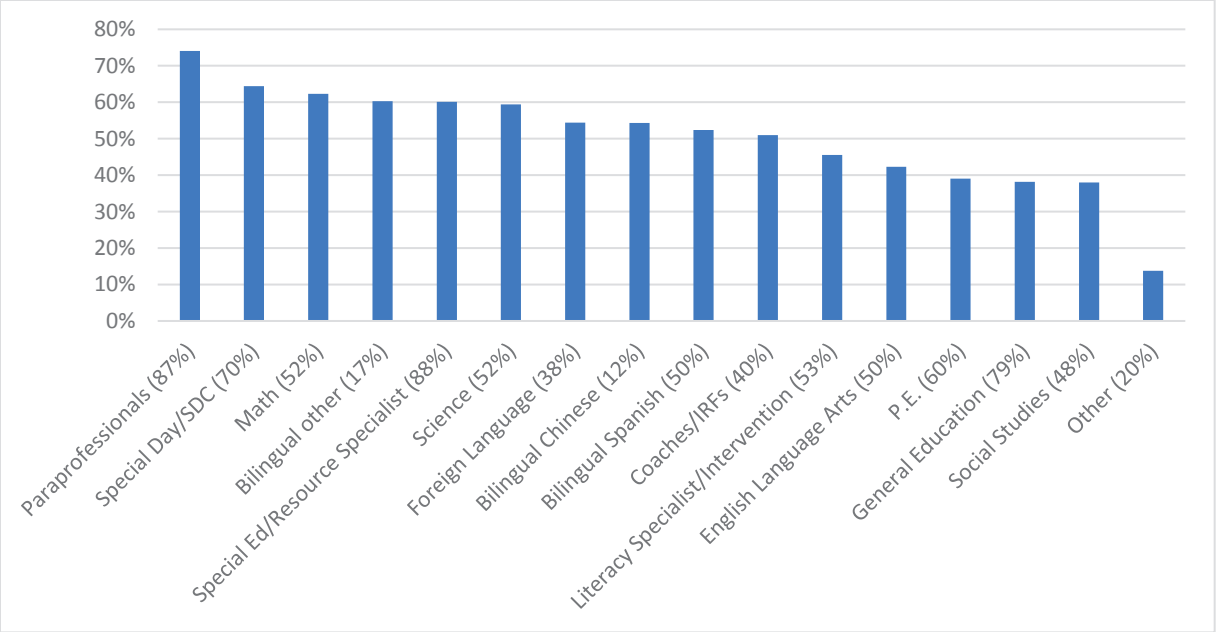
In addition, underprepared teachers are much more likely to leave: Teachers not designated as "highly qualified" under the federal law (in California, these are teachers on emergency-style credentials or those assigned out of field), depending on the subject area, are nearly twice as likely to turn over. This finding is similar to national findings that teachers who are the least well prepared are two to three times more likely to leave the profession than those who are fully prepared.[61]

Figure 16: Teacher Turnover by Subject and Highly Qualified Teacher (HQT) Status Between 2015–16 to 2016–17 School Years



Note: Self-contained classes include both elementary school classrooms and special education classrooms. Not HQTs, or not highly qualified teachers, are teachers who did not meet the designation of "highly qualified" under the former federal education law, No Child Left Behind. A highly qualified teacher in California is defined as a teacher who holds a bachelor's degree, a teaching or intern credential, and has demonstrated core academic subject-matter competence. In this analysis, "not highly qualified teachers" are teachers who lack an appropriate subject-matter credential for the courses they teach.
Source: California Staffing Data File analyzed by the Learning Policy Institute, provided by the California Department of Education through a special request.

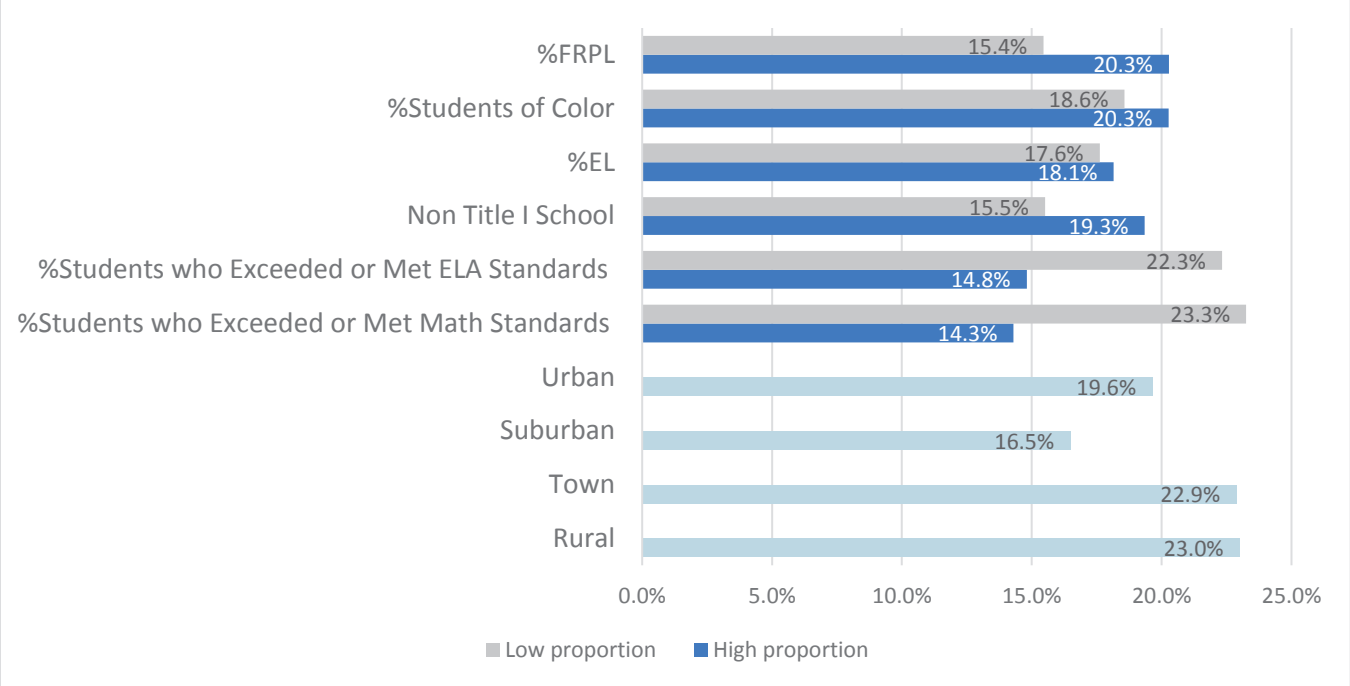
Figure 17: Percentage of schools reporting that teacher retention is a challenge (Percentage (%) of districts that have that teacher in a given subject area/position)



Source: Learning Policy Institute analysis of GDTFII 2018 Principal Survey conducted by RAND.

Turnover also varies by school characteristics, with higher rates in schools serving higher proportions of students from low-income families, in Title I schools, and those serving a large concentration of students of color (see Figure 18). High-achieving schools, as measured by the percentage of students who met or exceeded the California Assessment of Student Performance and Progress (CAASPP) standard, have turnover rates about 30% lower than low-achieving schools. Schools in rural and town areas have slightly higher turnover rates (23% and 22.9%, respectively) compared to schools in urban areas (19.6%) and much higher than schools in suburban areas (16.5%).

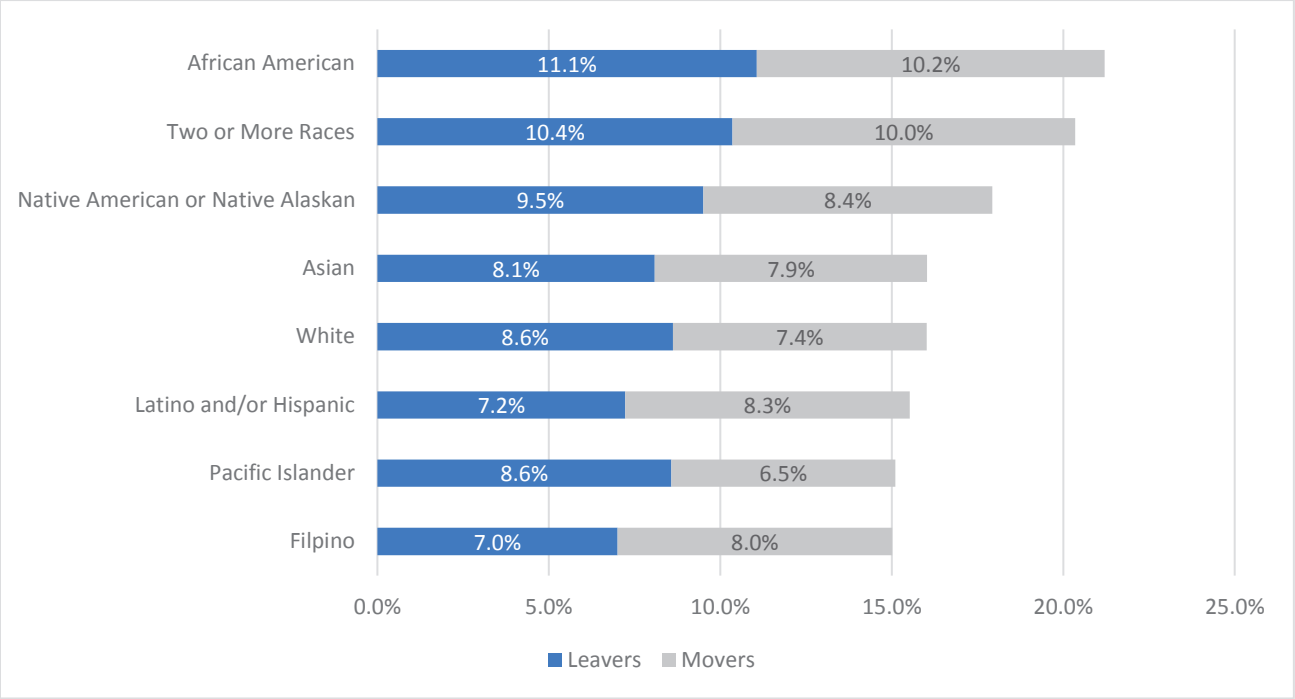
Figure 18: Teacher Turnover by School Characteristics Between the 2015–16 to 2016–17 School Years



Note: Student achievement data are from the 2016–17 CAASSP obtained from Ed-Data.org. Source: California Staffing Data File analyzed by the Learning Policy Institute, provided by the California Department of Education through a special request.

Teacher race/ethnicity also is associated with varying levels of turnover. For example, 21.2% of African American teachers and 20% of teachers who identify with two or more races left or moved schools in 2015–16, compared to only 16% of White teachers and about 15% of Latino and Filipino teachers (see Figure 19 and Appendix A).

Figure 19: Turnover by Teacher Race/Ethnicity Between the 2015–16 and 2016–17 School Years



Note: Race and ethnicity categories are those used in the CDE database.
Source: California Staffing Data File analyzed by the Learning Policy Institute, provided by the California Department of Education through a special request.

Why do teachers leave? Although there are no recent data on why California teachers leave their jobs, the federal Schools and Staffing Survey sheds light on reasons teachers leave their school and/or the profession nationally. The most frequently cited reasons in 2012–13 were a range of dissatisfactions noted by 55% of those who left the profession and 66% of those who left one school for another. The top-ranked concerns were testing and accountability pressures (listed by 25% of those who left the profession); lack of administrative support; dissatisfaction with the teaching career, including lack of opportunities for advancement; and dissatisfaction with working conditions, from input into decision making to opportunities for collaboration and professional learning. Personal and financial reasons also were cited, along with the desire to take another kind of job or to retire.

According to the teacher survey conducted for GDTF II, about 80 to 90% of California teachers in different settings are reasonably satisfied with their jobs (averaging 85%), with the highest satisfaction rates from teachers in low-poverty, low-minority schools, and those in rural areas (see Table 10). However, only about half are satisfied with the recognition they get from society, with the lowest rates from teachers in high-poverty, high-minority schools, and those in rural areas. White teachers and those with more than 10 years of experience are less satisfied with teachers' recognition from society than teachers of color and those with less experience.

Table 10. California Teacher Satisfaction by School and Teacher Characteristics

	How satisfied are you with your job?	How satisfied are you with recognition from society
	Percentage satisfied or very satisfied	
Overall	85%	51%
High-Poverty Schools	82%	44%
Low-Poverty Schools	90%	57%
High-Minority Schools	83%	47%
Low-Minority Schools	86%	61%
Urban Schools	85%	51%
Suburban Schools	84%	51%
Town Schools	81%	59%
Rural Schools	91%	41%
Non-White Teachers	84%	67%***
White Teachers	85%	46%***
> 10 Years of Experience	85%	43%***
10 Years of Experience or Less	85%	64%***

Note: Statistical differences within category denoted by matching symbols: *** p<0.01, ** p<0.05, * p<0.1
Source: Learning Policy Institute analysis of GDTFII 2018 Teacher Survey conducted by the RAND Corporation.

Similarly, while California teachers generally feel good about their performance (97%) and like working in their current schools (88%) and districts (85%), those working in high-poverty and high-minority schools feel less positively and are less likely to say they would become a teacher if they could do it all over again (see Tables 11 and 12).

In contrast, 69% of teachers say they are discouraged by the state of the teaching profession, with those in the most advantaged schools (low-minority, low-poverty, suburban, and white teachers) feeling most discouraged. Finally, a substantial minority of teachers in high-poverty (40%) and high-minority (38%) schools – and 47% of teachers of color – believe that "biases and stereotypes make it difficult for staff of particular backgrounds or identities to advance in my district." Teachers of color are disproportionately represented in high-poverty and high-minority schools, and they may see evidence of bias in advancement in their districts.

Table 11. California Teacher Reports by School Characteristics

Question	Percentage of Teachers Who Agree or Strongly Agree								
	Overall	High-Poverty	Low-Poverty	High-Minority	Low-Minority	Urban	Suburban	Town	Rural
If I could do it all over, I would definitely become a teacher.	81%	77%	84%	76%	83%	79%**	80%	84%	92%**
I am discouraged by the state of the teaching profession.	69%	65%	75%	57%***	80%***	61%**	76%**	72%	73%
I like being a teacher in my current district.	85%	83%	92%	80%	89%	84%	85%	96%	84%
I like working at my current school.	88%	83%**	97%**	77%***	97%***	89%	88%*	83%	96%*
I feel good about my performance as a teacher overall.	97%	99%	99%	98%	99%	97%*	97%**	98%	100%***
Biases and stereotypes make it difficult for staff of particular backgrounds or identities to advance in my district.	24%	40%**	20%**	38%**	17%**	29%***	22%***	6%***	14%

Note: Statistical differences from the mean within category are denoted by asterisks: *** p<0.01, ** p<0.05, *p<0.1 Source: Learning Policy Institute analysis of GDTFII 2018 Teacher Survey conducted by RAND.

Table 12. California Teacher Reports by Teacher Characteristics

Question	Percentage of Teachers Who Agree or Strongly Agree				
	Overall	Non-White Teachers	White Teachers	> 10 Years of Experience	10 years or less Experience
If I could do it all over, I would definitely become a teacher.	81%	78%	82%	80%	82%
I am discouraged by the state of the teaching profession.	69%	57%**	74%**	66%	74%
I like being a teacher in my current district.	85%	89%	83%	85%	85%
I like working at my current school.	88%	85%	89%	85%***	94%***
I feel good about my performance as a teacher overall.	97%	98%	97%	96%*	99%*
Biases and stereotypes make it difficult for staff of particular backgrounds or identities to advance in my district.	24%	46%***	15%***	22%	26%

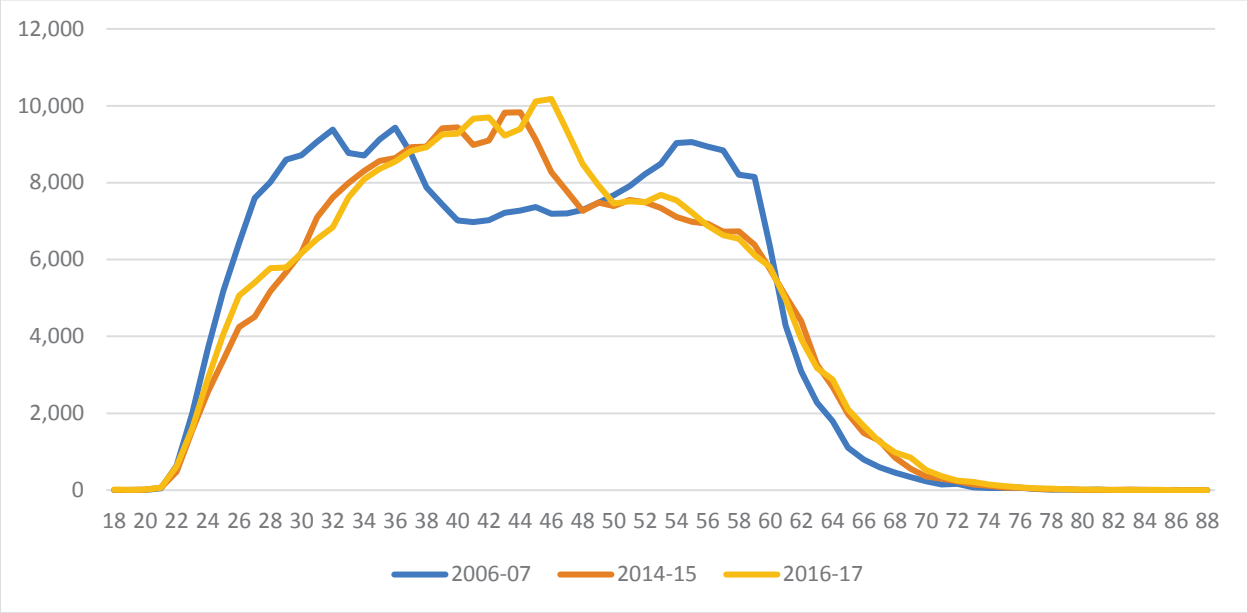
Note: Statistical differences within category denoted by matching symbols: *** p<0.01, ** p<0.05, * p<0.10
Source: Learning Policy Institute analysis of GDTFII 2018 Teacher Survey conducted by RAND.

These findings suggest that while California teachers are not generally dissatisfied with their immediate work in their schools and districts, those who work in more challenging contexts are less satisfied, and there are concerns across the profession about the status of the profession and the respect with which the teaching is held. This signals the long-term work needed to support teacher recruitment and retention.

Other factors associated with turnover. Nationally, teachers' reports of a lack of administrative support have a very strong relationship with teacher turnover. In a model controlling for other school and teacher factors, teachers who strongly disagreed that their administration is supportive were more than twice as likely to leave their school or teaching than teachers who strongly agreed their administration is supportive. Teachers who enter the classroom through alternative certification pathways—who have had less coursework and student teaching, on average, than teachers who are prepared through traditional programs—are more likely to leave their schools and the profession, even after controlling for their students, schools, and teaching conditions. Controlling for other factors, teachers in districts with higher salary schedules are significantly less likely to leave their schools than those in districts with lower salary schedules.[62]

***Retirement*.** Nationally, about one third of annual attrition is due to retirements, but there are very different patterns of retirement across and within states. As Figure 20 shows, California's teacher workforce age distribution has changed shape over the last decade to one with a more substantial mid- and late-career segment. Nearly 10% of teachers (9.8%) are over the age of 60 and can be expected to retire within the decade, most within the next 5 years. An additional 24% of teachers are over the age of 50 (see Table 13). Of these, one could expect at least half (12% of the total) to retire within the decade. Together, this amounts to more than 65,000 teachers who will likely need to be replaced over the course of the decade.

Figure 20. Age Distribution of California's Teaching Force



Source: Learning Policy Institute analysis of California Department of Education data from the California Staffing Data File, provided by request.

Table 13. Age Distribution of California's Teacher Workforce

Age	2006–07	2008–09	2010–11	2012–13	2014–15	2016–17
Under 30	42214	40823	28082	24372	27679	31342
	13.7	13.3	9.8	8.5	9.4	10.3%
30–39	87269	89535	84605	82071	81679	79153
	28.3	29.2	29.5	28.8	27.6	26.0%
40–49	72018	73020	76185	80790	87082	93302
	23.3	23.8	26.5	28.3	29.4	30.7%
50–59	84501	78368	73205	70778	70652	71088
	27.4	25.5	25.5	24.8	23.9	23.7%
60 and older	22009	24357	24854	27294	28706	29476
	7.1	7.9	8.7	9.6	9.7	9.8%
Total	308,011	306,103	286,931	285,305	295,798	304,361

Source: Learning Policy Institute analysis of California Department of Education data, provided through a special request.

***Costs of teacher turnover*.** Not all teacher turnover is bad. There is a healthy level of turnover that represents retirements and incorporates teachers who are not a fit at their school or in the profession all together. But a high level of turnover can impact student achievement. Research shows that high teacher turnover rates in schools negatively impact student achievement for all students in a school, not just those in a new teacher's classroom.[63] These rates are highest in schools serving students from low-income families and students of color. Constant churn exacerbates staffing difficulties that lead to shortages. Thus, students in these hard-to-staff schools disproportionately suffer the consequences of both turnover and shortages: substitute teachers, canceled classes, and inexperienced, underprepared teachers.

Turnover also extracts a significant financial cost. Research shows that teacher replacement costs, including expenses related to separation, recruitment, hiring, and training, can range from an average of $9,000 per teacher in rural districts to more than $20,000 in urban districts.[64] If the supply of highly qualified teachers were plentiful, there might be no need to worry about turnover, even if it is high and costly. However, that is not currently the case in California, given widespread teacher shortages.

Teacher turnover can become a vicious cycle: Teachers without preparation negatively impact student outcomes and leave teaching at two to three times the rates of fully prepared teachers.[65] In fact, in California, teachers who are designated as not highly qualified (those on emergency-style permits)[66] turn over at nearly twice the rates of teachers more generally (27% vs. 15%). This undermines achievement both through direct effects of churn and through

children's overexposure to a string of beginning teachers who are typically less effective than experienced teachers.[67]

At a time when it is particularly important to retain teachers, the prevalence of underprepared teachers, unfortunately, impedes schools' ability to do so. In this way, high turnover becomes a vicious cycle: high turnover leads to vacancies being filled by underprepared teachers, more underprepared teachers means higher turnover, and the cycle repeats. Short-term fixes, such as hiring teachers without full preparation, may curb fears of empty classrooms but do little to solve underlying issues that produce shortages, especially teacher turnover.

Strategies for Addressing Shortages

California has not been standing still in the face of teacher shortages. Over the last 3 years, the state legislature has enacted several initiatives to address teacher shortages, including designating $45 million to help classified staff become certified to teach, $10 million to start new undergraduate programs for teacher education, and $5 million to launch a Center on Teaching Careers, a recruitment and resource center for teaching candidates and those considering a teaching career. In addition, federal funding under Title II of the Every Student Succeeds Act (ESSA) was allocated in 2017 that can be used to address shortages through the CalEd competitive grant program. The program offers about $9 million in grants, ranging from $100,000 to $1.25 million, for LEAs to focus on the development of school leaders or teacher recruitment and development, especially in shortage subjects.[68] The state also invested an additional $5 million in the Bilingual Teacher Professional Development Program to fund initiatives that increase the number of teachers with bilingual authorizations, a critical shortage area.[69]

In summer of 2018, California enacted its two largest investments: $75 million to support teacher residencies to recruit and train teachers in special education, mathematics, science, and bilingual education; and $50 million in 2018 for "local solutions" to special education teacher recruitment and retention, which could include everything from loan repayment to mentoring, retention bonuses, and redesign of workload, among other strategies.

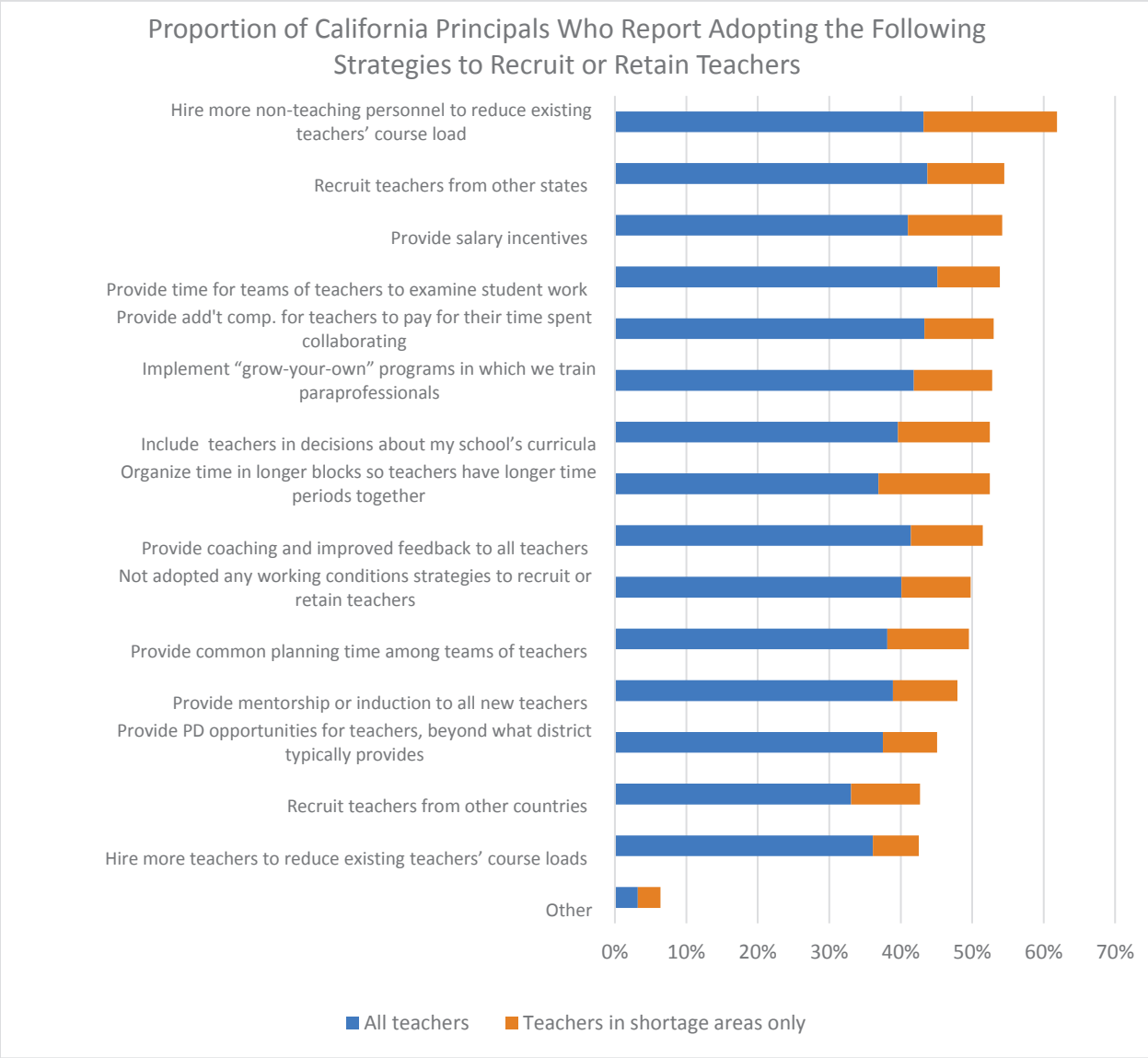
When considering whether these efforts have made progress in addressing shortages, our findings suggest that, while these programs should make a positive difference, California will need to undertake additional policy steps to solve the shortages soon.

Principals' Strategies for Attracting and Retaining Teachers

Given that most of the state's strategies have not yet had time to take full effect, local leaders have been seeking local solutions while tapping state programs as they can. In the 2017 GDTF principals' survey, more than 40% of principals reported seeking to hire both more non-teaching personnel and more teaching personnel in order to reduce existing teaching loads. To fill these slots, more than 50% of principals reported efforts to engage in "grow-your-own" programs for recruitment, to recruit teachers from other states and countries, and to recruit and retain teachers by providing salary incentives (see Figure 21).

Similarly, more than 40% reported attending to issues of teacher support and collaboration, including time for teaching teams to plan and examine student work, compensation for collaboration time, longer blocks of time for teachers to work together, involvement in decision making, mentoring, coaching, and professional development. In some cases, these efforts are specific to teachers in shortage fields, but in most cases, they pertain to all teachers. The goal is to improve the teaching environment for all teachers and thus to strengthen the profession overall.

Figure 21. California Principals' Strategies for Recruiting and Retaining Teachers



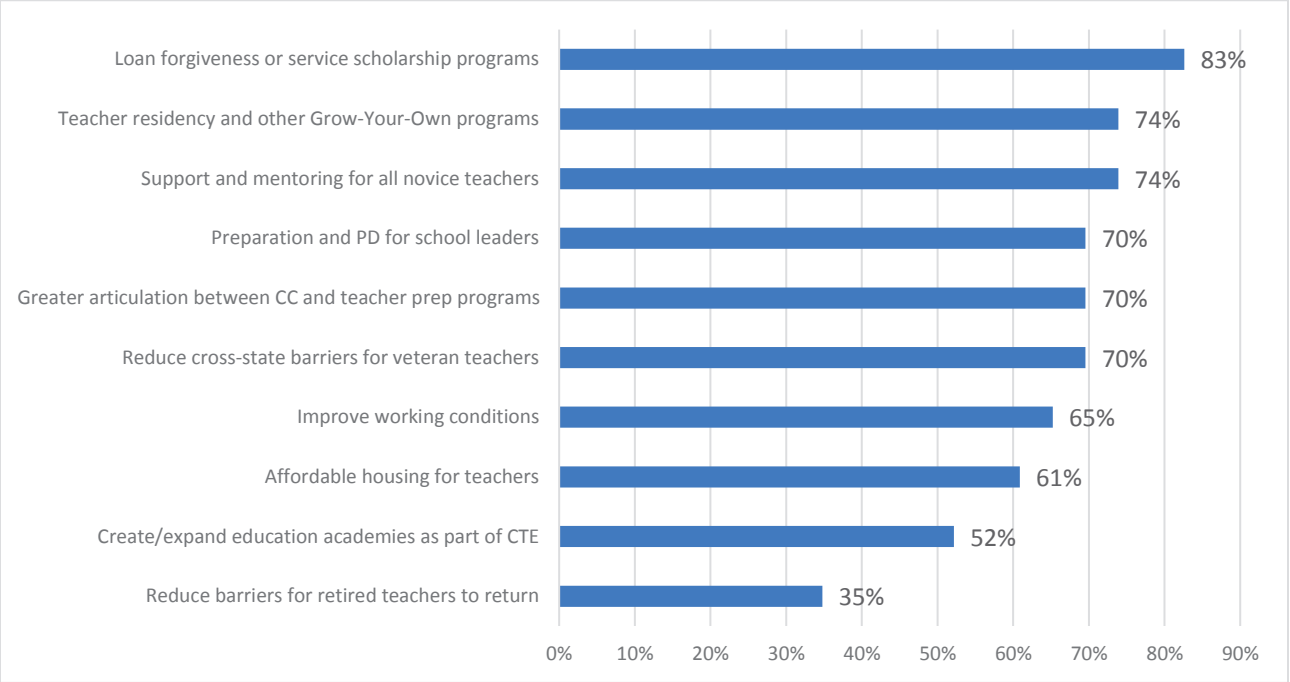
Source: Learning Policy Institute analysis of GDTFII 2018 Principal Survey conducted by RAND.

District Leaders' Views of How to Address Shortages

When asked in a recent survey what state policies would address the teacher shortage, district leaders most frequently cited strategies that could increase entrance to teaching

through loan forgiveness or service scholarship programs, teacher residencies and other Grow Your Own programs, and mentoring support for novice teachers (see Figure 22). All of these are means to increase both recruitment and retention.

Figure 22. What Districts Feel California Can Do to Reduce Teacher Shortages



Source: Sutcher, L., Carver-Thomas, D., & Darling-Hammond, L. (2018). *Understaffed and underprepared: California districts report ongoing teacher shortages.* Palo Alto, CA: Learning Policy Institute.

District leaders also identified several other state policies most believe can reduce teacher shortages, including:

- Invest in **preparation and professional development for school leaders**, including training in how to productively manage hiring and support for new teachers.
- Provide incentives for **greater articulation between community colleges and teacher preparation programs**, so that teacher candidates can begin their teacher training coursework and clinical training while enrolled in community college.
- **Reduce barriers to entry for veteran teachers moving from other states** through stronger licensure reciprocity and/or cross-state pensions or portable retirement benefit plans.
- Offer incentives to schools **to improve working conditions** associated with job satisfaction and retention, such as providing time for teacher collaboration.
- Provide support to create affordable housing for teachers.
- Provide funding for districts to **create or expand high school education academies** as part of their career and technical education programs.

Of these proposed approaches, the state has not yet reinstated the most popular proposal from district leaders and teacher education leaders: creation of forgivable loans and service scholarships that offset the costs of preparation to teach with a service requirement.

The state also has not yet invested in preparation and training for school leaders or improved working conditions, such as time for collaboration.

Findings and Policy Considerations

With the data currently available in California, our analysis suggests the following findings:

Trends in Teacher Supply

- Stagnant teacher supply is insufficient to meet teacher demand. New California credentials to fully prepared candidates remain near recent lows of around 12,000 (of whom not all enter the profession), while district hires approach 30,000 teachers annually. Even with an additional nearly 4,000 out-of-state and out-of-country credentials and close to 8,000 teacher re-entrants, supply is not keeping pace with demand.
- This mismatch has led to significant increases in substandard credentials and permits being issued. In 2016–17, California issued more than 12,000 intern credentials, permits, and waivers, more than double the number issued in 2012–13 and roughly half of all credentials issued this past academic year. The greatest growth has been in emergency-style permits, which numbered close to 6,000 in 2016–17.
- Teacher shortages are most severe in special education, with two out of three new teachers entering on substandard credentials, as well as in mathematics, science, and bilingual education. In high-need schools, shortages extend to other subject areas, including English and elementary education.
- In recent years, 27% of new teacher hires in California have been re-entrants, or former teachers returning to the classroom. Teachers who left the classroom are coming back, but in the last 8 years, few have returned to California classrooms more than 2 years after leaving.

Declines in Teacher Education Enrollments

- The steep decline in teacher education enrollments and graduates (70% over the last decade) is reversing slightly, but a small increase in completers has stalled in the UC and CSU systems, which typically provide about 60% of California's newly credentialed teachers each year. Although the system theoretically has capacity to grow, restrictions on program enrollments caused by university funding rules may be slowing the system's ability to respond to the growth in demand.
- Both school districts and teacher education programs identify the need for financial aid for candidates as an additional major driver for impacting supply.
- Relatively low admittance and acceptance rates for university programs from among the pool of candidates who apply also contribute to a shortage of qualified candidates. Qualification rules, including requirements to pass CTC-required tests of basic skills and subject-matter knowledge (usually prior to admission), plus tests of reading and teaching performance prior to licensure, are reducing the supply of teachers.

Increases in Demand

- Increases in demand have occurred as districts have sought to reduce their high pupil-teacher ratios to pre-Recession levels. The number of annual teacher hires has hovered around 30,000 since 2014–15, a 30% increase, or nearly 8,000, additional hires each year compared to demand in 2012–13, the year before Proposition 30 and LCFF began to turn around the funding situation. In 2014–15, 25% of demand was driven by reductions in the pupil-teacher ratio, a share which dropped to about 12% in the subsequent years. Overall, the pupil-teacher ratio has fallen from 23:1 to 21:1 on average, nearly back to pre-Recession levels. This is still one of the highest ratios in the country (the national average is 16:1). The likelihood that this source of demand will continue depends in part on resources available to schools in the coming years.
- Student enrollments are projected to remain stable and then decrease slightly over the next decade if current birthrates and immigration trends continue. Some parts of the state will have increases while other parts have decreases. For most districts, enrollment growth will not be a major driver of demand.

The Role of Teacher Attrition

- In recent years, teacher attrition has accounted for about 88% of demand in California. Roughly 8.5% of teachers leave the profession or state each year, and another 8% leave their current school to move to another. Most attrition tends to be pre-retirement attrition. However, with 34% of teachers statewide age 50 and older, retirements will continue to be an important factor in some locations over the next decade.
- In California, mathematics, science, and English teachers turn over at higher rates than teachers in other fields. Although we could not acquire identifying data for California special education or bilingual teachers, nationally, these teachers also turn over at higher rates. Teachers teaching in schools serving a high proportion of students from low-income families and students of color have higher rates of teacher turnover. Moreover, schools in rural, town, and urban communities have higher turnover rates than schools in suburban areas. African American teachers have higher turnover rates than Latino, White, and Filipino teachers.
- California teachers are not generally dissatisfied with their immediate work in their schools and districts; however, those who work in more challenging contexts are less satisfied, and there are concerns across the profession about the status of the profession and the respect with which the teaching is held.
- Research shows that compensation matters to teachers' career decisions (including salaries, college debt levels, and housing costs), as do working conditions, especially having a supportive administrator and a collegial work environment. Turnover for beginners is influenced by how well novices are prepared prior to entry—teachers without preparation leave teaching at two to three times the rate of fully prepared teachers—and how well they are mentored in the first years on the job.

Policy Considerations

Given that much of the teacher shortfall appears to be the result of steep declines in the production of new teachers as demand has increased, a key policy strategy may be the expansion of high-retention pathways to teaching that will both recruit and retain teachers. Previous research suggests consideration of the following evidence-based approaches:

1. **Loan forgiveness programs and service scholarships** can recruit and retain high-quality teachers into the fields and schools where they are most needed. These approaches underwrite preparation in exchange for a number of years of service in the profession, often in particular high-need locations and subject areas. College students choose their professions in part based on whether the salaries they earn can offset the higher-education debt they accumulate. With teachers earning about 30% less than other college graduates,[70] some who would like to teach eschew the profession because they cannot afford the costs required or debt incurred to be trained. Service scholarships and forgivable loan programs have proven to be highly effective in recruiting individuals into teaching and directing them to the neediest fields and locations.[71]

The now-defunct Assumption Program of Loans for Education (APLE) loan forgiveness program and Governor's Teaching Fellowship provided teacher candidates between $11,000 and $20,000 in exchange for a commitment to teach for at least 4 years in high-need schools and subjects. Beneficiaries of those programs were more likely to teach in low-performing schools and had higher retention rates than the state average.[72] As noted earlier, a fall 2017 survey of California teacher preparation programs administered by the CTC, found that university faculty were most likely to identify a lack of financial aid for teaching candidates as the largest obstacle to increasing enrollment in their programs. Reinstating support for training, repaid with service, could be a critically important tool for turning shortages around.

2. **Teacher residencies**, which are one-year intensive apprenticeships modeled on medical residencies, consistently show higher retention rates, attract more diverse candidates, and target high-need subjects and locations.[73] Residents apprentice alongside an expert teacher in a high-need classroom for a full academic year while completing coursework for a master's degree at a partnering university. They typically receive a stipend and tuition assistance in exchange for a commitment to teach in the district for an additional 3 to 4 years after their residency. Such programs supply a diverse pool of effective teachers for high-need fields and dramatically reduce teacher attrition rates.[74] California has about 12 such programs across the state.[75] As noted above, the legislature appropriated $75 million for teacher residencies focused on special education, math, science, and bilingual education teachers. Designing and implementing these well will be the state's next major challenge.
3. Other **Grow Your Own teacher education programs** recruit, train, and support paraprofessionals, after-school program staff, and other local community members to teach in their own communities. The California Classified School Employee Teacher Credentialing Program, funded in 2016 and 2017, supports classified staff, such as paraprofessionals, to earn a bachelor's degree and teaching credential. The program provides classified staff with $4,000 per year for up to 5 years (or $20,000 in total) to subsidize their teacher training costs. With a state investment of $45 million, the program funded 2,250 slots. Nearly half of

all program participants are Hispanic or Latino/a, and 5% are African American. Districts submitted grant applications requesting funding for more than 8,000 slots, suggesting that there is a significant unmet need that could be addressed with program continuation in the years to come.[76]

4. **Support and mentoring for novice teachers** can include seminars, coaching and mentoring, reduced workloads, collaborative planning time, extra classroom assistance, and a variety of other activities. High-quality induction is associated with higher teacher retention rates and improved student learning.[77] All beginning California teachers are required to complete an induction program during their first 5 years of teaching in order to earn the California clear credential. However, targeted state funding for induction was folded into the LCFF, resulting in many districts reducing their support for new teachers, supporting them only in their second year (not their first), requiring new teachers to pay a fee for induction, or requiring new teachers to enroll at an IHE to complete induction. A renewal of the quality and availability of the Beginning Teacher Support and Assessment Program is needed and timely.
5. California has sought to **remove unnecessary barriers to teacher entry** with some easing of rules for reciprocity from other states and enabling teacher candidates to substitute adequate scores from other academic tests for the basic skills (CBEST) exam for licensing. Still, there is room for the CTC to examine whether other steps could be taken. Fully prepared, often experienced teacher candidates seeking to transfer in from other states still often struggle to get approved in California and sometimes must jump through hoops that are not always clearly necessary. Barriers to credentialing posed by CTC testing policies also are significant, with four tests for most multiple-subjects candidates and three for most single-subject candidates. In addition to the fact that candidates report the tests are a financial hurdle and a logistical challenge, fail rates not significant. Overall, at least 40% of those who initially intend to teach are unable to move forward at some testing juncture; in some fields, including mathematics and science, this comprises well over half of those who initially intended to teach. Other professions require one test after completion of training (e.g. the bar exam, medical licensing exam, architectural registration exam). The CTC is already examining coursework-based pathways for some of the requirements (e.g., demonstrating subject-matter competence through programs of study) and should be encouraged to look further at these issues.
6. Like many other states, California could **utilize retirees** to avoid teacher shortages, especially with 10% of the workforce over the age of 60 and soon to retire. Some states have sought to immediately expand the pool of qualified educators by recruiting recently retired educators to serve in shortage areas or as mentors to beginning teachers. States using this approach have typically eliminated barriers to re-entry, such as mandatory separation from service periods and caps on earnings that may apply while a teacher is receiving a pension – two barriers California currently has in effect. If teachers contribute to the retirement fund while they are working, even if they draw down retirement income, the approach can be cost-neutral.
7. **Investments in teacher preparation and training** may be needed to expand program availability in high-need fields, such as special education, where a number of programs were earlier discontinued and where the annual demand is extremely high. As California is

changing the licensing expectations for Education Specialists, it may be helpful to support new program designs with strategic competitive grants. There also may be a need to evaluate the university funding rules, which determine how quickly teacher education program enrollments can be expanded within the CSU system, either targeting some of the state's funding that goes to CSU campuses specifically for teacher education or transforming rules within the university that seem to constrain annual growth in teacher education slots.

8. **Investments in principal preparation and training** can also help curb teacher attrition. Holistic strategies to address teacher shortages consider the central role principals play in attracting and retaining talented teachers. Teachers cite principal support as one of the most important factors in their decisions to stay in a school or in the profession,[78] especially in high-poverty schools. [79] Research demonstrates that a principal's ability to create both positive working conditions and collaborative, supportive learning environments plays a critical role in attracting and retaining qualified teachers.[80] With the transition to ESSA—including new opportunities in the law to set aside up to 3% of Title II funds to support leadership development—a growing number of states are committing resources to strengthen school leadership in ways that can support efforts to recruit and retain high-quality educators.[81] California's State Board has suggested it will likely seek to do this – a move that should be designed to focus training on this set of issues.
9. **Improvements in teaching conditions** can be incentivized through awareness – for example, by using school-by-school working conditions surveys, as many states do, to provide ongoing data on teachers' experiences and perceptions. They also can be improved through investments in collaboration time, professional learning communities, pupil load reductions (which currently are especially important for special education teachers in California), and career ladders that compensate teachers as they gain expertise and use it to mentor and coach other teachers. California's now defunct Teachers as a Priority program, which provided funding to high-need schools so that they could improve local teaching conditions ranging from mentoring to class sizes to collaboration time, is one example of a previously successful strategy.
10. To manage supply and demand more effectively, there is a need for **greater data availability** and analysis of data that can reveal entry and exit patterns for teachers of different subjects and training backgrounds, and the productivity of different pathways and investments in teaching in terms of recruitment and retention. This requires using merged data sets in the possession of the CTC and CDE, which should be supported as soon as possible.

Conclusion

A common objection to teacher shortage interventions is the belief that the teacher labor market will adjust on its own to meet demand. It is true that teacher supply is dynamic and adjusts as economic and social conditions change. As the demand for teachers increases, districts mostly likely will seek to improve salaries and working conditions and more individuals will take an interest in teaching, a change that will likely occur incrementally over the next few years.

Nonetheless, teacher shortages are still a major problem. The possibility of more teachers tomorrow does nothing to help students today. Even if teacher supply eventually adjusts to meet growing demand, that change could be years into the future with a cost borne by students. And while teacher preparation enrollments may once again grow, there is no guarantee that new candidates will enter the fields where they are most needed. Indeed, evidence suggests that special incentives will continue to be needed for certain high-need teaching fields and locations. Even high-paying, low turnover states such as Connecticut, Massachusetts and New Jersey, offer incentives to address shortages in special education, bilingual education, math, and science, despite having a statewide surplus of teachers in other fields.[82] Similarly, schools in urban and rural areas or with low-income, high-minority, and/or high-EL student populations may continue to struggle to find qualified teachers.

Faced with a similar challenge during a period of severe shortages more than 20 years ago, California responded by issuing emergency-style permits and waivers By the year 2000, more than 40,000 individuals were teaching with substandard authorizations, disproportionately assigned to high-minority, high-poverty schools.[83] However, the number of underprepared teachers decreased quickly as incentives introduced in the late 1990s took hold; the APLE loan forgiveness program, the governor's fellowships, and Cal T grants all helped to underwrite preparation with service requirements that recruited and distributed teachers to places they were most needed. Salary increases, investments in teacher mentoring, and the Teachers as a Priority program all contributed to sharp reductions in the number of underprepared teachers who were hired. However, these programs were eliminated over the subsequent decade, leaving the state unprepared for the emergence of a new round of shortages.

The most recent evidence shows that the pattern of many years ago may be repeating itself now; substandard credentials and permits are rapidly increasing, and students in special education, as well as those in high-minority, high-poverty, and high-EL schools are being hit the hardest. There are thousands of students today in classrooms with teachers who are wholly unprepared. While California has made initial investments in increasing the supply of well-prepared teachers, these investments will take time to yield qualified teachers. More action is needed to ensure a robust, well-prepared teacher workforce now and into the future. Rather than filling more classrooms with underprepared teachers, California could invest in rapidly building the supply of qualified teachers in the fields and locations where they are most needed, while creating incentives for experienced, effective teachers to re-enter and remain in the classroom.

Appendix A

Table A1. Teacher Leavers and Movers by Race/Ethnicity

Teachers' Race/Ethnicity		2009–10	2010–11	2011–12	2012–13	2013–14	2014–15	2015–16
African American	Leavers	18.1%	10.4%	10.9%	11.0%	11.0%	11.3%	11.1%
	(Movers)	10.5%	11.3%	9.8%	10.4%	10.0%	9.9%	10.2%
Native American/Alaskan	Leavers	14.7%	8.1%	7.5%	8.3%	8.1%	8.6%	9.5%
	(Movers)	9.7%	10.0%	7.6%	7.8%	9.4%	8.7%	8.4%
Asian	Leavers	13.0%	7.7%	7.5%	7.1%	7.2%	7.2%	8.1%
	(Movers)	8.9%	8.6%	7.3%	7.7%	8.1%	8.2%	7.9%
Filipino	Leavers	13.0%	7.0%	7.1%	6.8%	7.1%	6.7%	7.0%
	(Movers)	8.5%	9.8%	8.7%	8.4%	9.0%	8.7%	8.0%
Latino and/or Hispanic	Leavers	11.7%	6.3%	6.8%	6.4%	6.3%	6.6%	7.2%
	(Movers)	9.9%	10.0%	9.1%	8.8%	8.9%	8.8%	8.3%
Not Reported	Leavers	18.1%	11.2%	10.9%	11.8%	10.8%	11.3%	10.5%
	(Movers)	11.8%	12.6%	10.5%	12.8%	14.2%	14.5%	11.6%
Pacific Islander	Leavers	14.8%	5.3%	9.5%	7.7%	9.1%	7.3%	8.6%
	(Movers)	11.4%	9.7%	9.0%	9.8%	10.1%	8.4%	6.5%
White	Leavers	14.1%	8.2%	8.2%	8.1%	7.9%	8.9%	8.6%
	(Movers)	8.5%	8.7%	7.2%	7.2%	7.8%	7.6%	7.4%
Two or More Races	Leavers	—	—	—	9.2%	8.4%	8.9%	10.4%
	(Movers)	—	—	—	8.0%	10.1%	8.9%	10.0%

Note: Two or more races was not a category until 2012–13.
Source: Learning Policy Institute analysis of California Staffing Data File provided by the California Department of Education through a special request.

Table A2. Teacher Movers and Leavers by Subject and Highly Qualified Teacher (HQT) Designation

				2014–15	2015–16
Mathematics	All teachers		Leavers	8.5%	8.2%
			Movers	10.6%	9.6%
	Teachers designated as not HQT for at least one mathematics class		Leavers	10.8%	10.3%
			Movers	13.1%	11.7%
	Teachers designated as not HQT for all mathematics classes		Leavers	16.3%	14.2%
			Movers	12.9%	11.4%
Science	All teachers		Leavers	8.6%	8.3%
			Movers	10.0%	9.4%
	Teachers designated as not HQT for at least one science class		Leavers	11.1%	10.9%
			Movers	13.6%	12.7%
	Teachers designated as not HQT for all their science classes		Leavers	18.8%	16.6%
			Movers	14.1%	13.9%
English	All teachers		Leavers	8.6%	8.5%
			Movers	9.8%	9.3%
	Teachers designated as not HQT for at least one English class		Leavers	10.1%	10.0%
			Movers	11.6%	11.1%
	Teachers designated as not HQT for all their English classes		Leavers	16.3%	14.6%
			Movers	12.7%	12.4%
Social Studies	All teachers		Leavers	8.1%	7.7%
			Movers	8.6%	8.3%
	Teachers designated as not HQT for at least one social studies class		Leavers	9.3%	9.1%
			Movers	10.7%	10.3%
	Teachers designated as not HQT for all their social studies classes		Leavers	13.7%	12.7%
			Movers	10.4%	10.0%
World Languages	All Teachers		Leavers	8.8%	7.7%
			Movers	9.2%	8.6%
	Teachers designated as not HQT for at least one world language class		Leavers	13.5%	11.1%
			Movers	15.8%	14.6%
	Teachers designated as not HQT for all their world language classes		Leavers	25.4%	17.8%
			Movers	14.0%	14.2%

Table A2. Teacher Movers and Leavers by Subject and Highly Qualified Teacher (HQT) Designation (continued)

Self-Contained Classes	All Teachers		Leavers	7.1%	7.5%
			Movers	7.6%	7.2%
	Teachers designated as not HQT for at least one self-contained class		Leavers	12.5%	14.2%
			Movers	14.3%	12.2%
	Teachers designated as not HQT for all their self-contained classes		Leavers	17.7%	18.5%

Note: Self-contained classes include both elementary school classrooms and special education classrooms. Not HQTs, or not highly qualified teachers, are teachers who did not meet the designation of "highly qualified" under the former federal education law, No Child Left Behind. A highly qualified teacher in California is defined as a teacher who holds a bachelor's degree, a teaching or intern credential, and has demonstrated core academic subject-matter competence. Not HQT teachers in this analysis are teachers who lack an appropriate subject-matter credential for all the classes they teach. Source: California Staffing Data File provided to the Learning Policy Institute by the California Department of Education through a special request.

Table A3. Teacher Turnover by School Demographics

School Level Turnover (movers + leavers)	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Average Turnover	27.9%	21.8%	19.1%	18.9%	19.6%	20.0%	19.6%
10th Percentile	6.3%	0.0%	1.7%	0.0%	2.5%	3.4%	3.4%
25th Percentile	12.8%	7.3%	7.9%	7.6%	8.0%	9.1%	8.7%
Median Turnover	20.9%	13.6%	14.3%	13.6%	14.3%	15.4%	14.8%
75th Percentile	33.3%	24.0%	23.1%	22.2%	24.0%	25.0%	24.0%
90th Percentile	61.5%	50.0%	38.1%	37.9%	40.0%	40.0%	39.1%
Non-Title I Schools	26.1%	16.2%	17.9%	16.0%	15.4%	16.0%	15.5%
Title I Schools	25.5%	18.4%	17.9%	18.7%	19.4%	19.8%	19.3%
%FRPL Q1 (low poverty)	20.0%	12.9%	13.8%	14.0%	15.0%	15.4%	15.4%
Q2	23.9%	17.4%	17.4%	16.9%	18.9%	19.0%	18.5%
Q3	25.7%	18.7%	18.5%	18.8%	19.4%	20.4%	19.2%
%FRPL Q4 (high poverty)	28.0%	19.6%	19.7%	20.3%	20.5%	20.8%	20.3%
%Students of Color Q1 (low minority)	26.3%	16.7%	17.9%	17.9%	18.8%	19.2%	18.6%
Q2	24.4%	16.2%	16.1%	16.3%	17.7%	18.8%	18.0%
Q3	25.7%	17.3%	17.9%	17.8%	18.6%	18.8%	18.5%
%Students of Color Q4 (high minority)	26.7%	21.2%	20.6%	20.9%	20.9%	20.9%	20.3%
%EL Q1 (low EL)	27.8%	17.1%	19.2%	15.7%	18.1%	18.8%	17.6%
Q2	23.8%	15.8%	17.0%	15.9%	18.4%	18.7%	18.0%
Q3	26.2%	17.0%	18.7%	16.9%	19.2%	19.7%	19.5%
%EL Q4 (high EL)	25.4%	17.9%	17.5%	16.8%	17.9%	18.3%	18.1%
%Exceed or Met CAASPP Math Q1 (low achievement)						23.8%	23.3%
Q2						18.8%	17.7%
Q3						16.9%	16.3%
%Exceed or Met CAASPP Math Q4 (high achievement)						14.5%	14.3%

%Exceed or Met CAASPP ELA Q1 (low achievement)						22.4%	22.3%
Q2						19.2%	18.6%
Q3						17.2%	16.0%
%Exceed or Met CAASPP ELA Q4 (high achievement)						15.1%	14.8%
Urban	24.9%	18.0%	18.4%	18.5%	19.3%	19.9%	19.6%
Suburban	24.5%	15.8%	16.1%	16.2%	16.8%	17.3%	16.5%
Town	28.7%	20.7%	20.7%	22.5%	22.0%	22.8%	22.9%
Rural	30.6%	21.2%	20.6%	21.3%	24.0%	23.5%	23.0%

Note: The turnover rate is calculated for each school then averaged.

Source: California Staffing Data File provided to LPI by the California Department of Education through a special request.

Endnotes

[1] Darling-Hammond, L., Furger, R., Shields, P. M., & Sutcher, L. (2016). *Addressing California's emerging teacher shortage: An analysis of sources and solutions*. Palo Alto, CA: Learning Policy Institute.

[2] Darling-Hammond, L., Furger, R., Shields, P. M., & Sutcher, L. (2016). *Addressing California's emerging teacher shortage: An analysis of sources and solutions*. Palo Alto, CA: Learning Policy Institute; Podolsky, A., & Sutcher, L. (2016). *California teacher shortages: A persistent problem*. (Brief). Palo Alto, CA: Learning Policy Institute & California School Boards Association; Carver-Thomas, D., & Darling-Hammond, L. (2017). *Addressing California's growing teacher shortage: 2017 update*. Palo Alto, CA: Learning Policy Institute.

[3] Podolsky, A., & Sutcher, L. (2016). *California teacher shortages: A persistent problem*. (Brief). Palo Alto, CA: Learning Policy Institute & California School Boards Association.

[4] LPI's survey drew an initial sample of 31 districts, choosing districts based on size and geographic representation. The sample included the 15 largest districts in California. To ensure geographic diversity, we used the regional system of the California County Superintendents Educational Services Association, which divides California's 58 counties into 11 "service regions" (see http://ccsesa.org/members/region-map/). We included an additional large district in each of the five CCSESA service regions not represented by the 15 largest districts. To ensure representation from rural school districts, we also included the district that received the most federal Rural Education Achievement Program funding in 2016–17 in each CCSESA service region, for a total of 11 rural districts. We had an overall response rate of 81% (25 responses). All 11 CCSESA regions are represented by the 25 districts that responded to the survey. For five of the CCSESA regions, we received at least one response from a large district and a rural district; for four regions, we received responses from large districts only; and for two regions, we received responses from rural districts only.

[5] Sutcher, L., Carver-Thomas, D., & Darling-Hammond, L. (2018). *Understaffed and underprepared: California districts report ongoing teacher shortages*. Palo Alto, CA: Learning Policy Institute.

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17 Sutcher, L., Carver-Thomas, D., & Darling-Hammond, L. (2018). *Understaffed and underprepared: California districts report ongoing teacher shortages*. Palo Alto, CA: Learning Policy Institute.

18 Twenty-three of the 25 districts surveyed reported on their ability to fill all vacant positions with qualified teachers in 2017–18.

19 Sutcher, L., Carver-Thomas, D., & Darling-Hammond, L. (2018). *Understaffed and underprepared: California districts report ongoing teacher shortages*. Palo Alto, CA: Learning Policy Institute.

20 Twenty-two of the 25 districts surveyed reported on the hiring of underprepared teachers in 2017–18, and 21 of the 25 districts surveyed reported sufficient data to determine the proportion of underprepared teachers in 2017–18 compared to 2016–17.

21 Twenty-two of the 25 districts surveyed reported on the hiring of emergency-style teachers in 2017–18, and 21 of the 25 districts surveyed reported sufficient data to determine emergency credentials as a proportion of new hires in 2016–17 and 2017–18.

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33 Percentages of re-entrants and new hires were calculated using teacher assignment data from 2009–10 to 2016–17. A teacher re-entrant is defined as a teacher who is teaching in year t, not teaching year t-1, but was a California teacher in at least one prior year before t-1 in which data were available. Therefore, a new teacher is one teaching in year t, not teaching year t-1, and has not taught in any years in which data were available, 2009–10 to year t. As a result, analysis for 2016–17 is the most reliable and the analysis from 2014–15 is the least reliable because there are less data to determine teachers' prior experiences. California Staffing Data File was provided to LPI by the CDE through a special request.

34 The number of re-entrants was calculated using teacher assignment data from 2009–10 to 2016–17. A teacher re-entrant is defined as a teacher who is teaching in year t, not teaching year t-1, but was a California teacher in at least one prior year before t-1 for which data were available. As a result, the analysis for 2016–17 is the most reliable for identifying re-entrants and the analysis from 2014–15 is the least reliable because there are less data to determine teachers' prior experiences. Substandard credential data are from the CTC. The number of credentials does not always equal the number of teachers because it is possible for a teacher to hold multiple substandard permits or credentials. The number of new entrants was calculated by subtracting the number of re-entrants and teachers on substandard credentials from the total number of hires. This method roughly captures the proportion of re-entrants, new entrants, and teachers on

substandard credentials. This does not measure exact counts because a teacher can hold multiple substandard credentials and a re-entrant also could hold a substandard credential. These problems would result in a slight underestimation of the new entrant category.

35 Estimated demand was calculated using teacher assignment data from 2009–10 to 2016–17 obtained from the CDE. Publicly available student enrollment data also were used for this analysis. Estimated demand represents the total number of new hires in a given year. A new hire is defined as a teacher who is teaching in California in the current year but was not teaching in California the previous year. As described earlier, teacher demand in a given year is driven by two factors: additional teachers to replace those who left teaching and additional teachers due to marginal increases (or decreases) in the size of the teacher workforce. Demand due to attrition is the number of teachers who left the profession or the state in the prior year. To disaggregate the rest of demand into smaller components, additional workforce growth was separated into student enrollment–driven workforce growth and pupil-teacher ratio–driven workforce growth. Teacher demand due to student enrollment growth was estimated by dividing the change in student enrollment by the previous pupil-teacher ratio. The difference between the number of teachers necessary under the current pupil-teacher ratio and the number of teachers necessary under the following year's pupil-teacher ratio represents the increase in teachers needed due to changes in the pupil-teacher ratio. After replacing teachers who left and accounting for changes in student enrollment, the remaining teacher hires can be attributed to changes in the pupil-teacher ratio.

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37 Comments by Acacia Thede, Executive Director of Human Resources of the San Diego Unified School District. (n.d.).

38 Figures represent the total pink slips reported by the California Teachers Association in press releases from April 7, 2008, through March 15, 2012. Retrieved October 6, 2015, from http://www.cta.org/About-CTA/News-Room/Press-Releases/2008/04/20080407-1.aspx; http://www.cta.org/About-CTA/News-Room/Press-Releases/2009/03/20090313-1.aspx; http://www.cta.org/About-CTA/News-Room/Press-Releases/2010/03/20100311_1.aspx; http://www.cta.org/About-CTA/News-Room/Press-Releases/2011/03/20110315_1.aspx; http://www.cta.org/About-CTA/News-Room/Press-Releases/2012/03/20120315_1.aspx.

39 Leal, F., Tully, S., & Kheel, R. (2015, March). March used to be the month we all dreaded: From 2,219 to a trickle, pink-slip season slows for Orange County's teachers. *The Orange County Register*. Retrieved October 6, 2015 from http://www.ocregister.com/articles/teachers-654470-school-jobs.html.

40 Sawchuk, S. (2014, October 21). Steep drops seen in teacher-prep enrollment numbers. *Education Week*. Retrieved November 11, 2015 from

http://www.edweek.org/ew/articles/2014/10/22/09enroll.h34.html; Kraft, M. A., Brunner, E. J., Dougherty, S. M., & Schwegman, D. (2018). *Teacher accountability and reforms and the supply of new teachers*. (Working paper). Retrieved from https://scholar.harvard.edu/files/mkraft/files/kraft_et_al._2018_teacher_accountability_reforms.pdf.

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42 U.S. Department of Education. (NCES 2015-026). *Web tables: Trends in graduate student financing: Selected years, 1995–96 to 2011–12*. Washington, DC: Author. Retrieved from http://nces.ed.gov/pubs2015/2015026.pdf.

43 Podolsky, A., Kini, T., Bishop, J., & Darling-Hammond, L. (2016). *Solving the teacher shortage: How to attract and retain excellent educators*. Palo Alto, CA: Learning Policy Institute; Clotfelter, C. T., Ladd, H. F., Vigdor, J. L. (2007). *Teacher credentials and student achievement in high school: A cross-subject analysis with student fixed effects*. (NBER working paper #13617). Cambridge, MA: National Bureau of Economic Research. Retrieved from http://www.nber.org/papers/w13617.pdf.

44 Podolsky, A. & Kini, T. (2016). How effective are loan forgiveness and service scholarships for recruiting Teachers? (Brief). Palo Alto, CA: Learning Policy Institute.

45 California Commission on Teacher Credentialing. (2017). *Teacher Supply in California, 2015–16*. Sacramento, CA: Author.

46 Learning Policy Institute analysis of GDTFII 2018 Principal Survey conducted by RAND.

47 California Commission on Teacher Credentialing. (2017). *Update on State-Funded Grant Program*. Retrieved from https://www.ctc.ca.gov/docs/default-source/commission/agendas/2017-12/2017-12-3b.pdf?sfvrsn=894e57b1_2.

48 These tests and requirements include (1) passing the CSET Multiple Subjects test, plus the writing skills examination; (2) passing the CSU Early Assessment Program or the CSU placement examinations; and (3) achieving a qualifying score on the SAT, ACT, College Board Advanced Placement exams (in mathematics and English), or a basic skills examination from another state.

49 Education specialists have been an exception in the past, but recent action by the CTC will create a TPA for these candidates as well.

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51 Darling-Hammond, L., Newton, S. P., & Wei, R. C. (2013). Developing and assessing beginning teacher effectiveness: The potential of performance assessments. *Educational Assessment Evaluation and Accountability 25*(3); Goldhaber, D., Cowan, J., & Theobald, R. (2016). *Evaluating prospective teachers: Testing the predictive validity of the edTPA*. (CALDER working paper #157). Washington, DC: American Institutes for Research.

[52] Re-entrants and new hires were calculated using teacher assignment data from 2009–10 to 2016–17. A teacher re-entrant is defined as a teacher who is teaching in year t, not teaching year t-1, but was a California teacher in at least one prior year before t-1 for which data were available. Therefore, a new teacher is a teacher who is teaching in year t, not teaching year t-1, and has not taught in years for which data were available, 2009–10 to year t. As a result, this makes the analysis for 2016–17 the most reliable and the analysis from 2014–15 the least reliable because there are less data in this earlier year to determine teachers' prior experiences.

[53] Recent estimates from the 2011–12 Schools and Staff Surveys (SASS) survey show that approximately 49% of teachers entering the teaching workforce were re-entrants. Estimates from the 2008–09 SASS survey show that approximately 37% of teachers entering the teaching workforce were re-entrants. A re-entrant is defined as a new hire (someone who was not teaching in public schools the previous year) who has prior experience teaching in public schools. LPI analysis of the Public School Teacher File, 2004, 2008, and 2012, from SASS, National Center for Education Statistics. Labor market conditions in 2011–12 were unusual that year because many districts were laying off teachers, especially beginners, and hiring very few new teachers.

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