



Educator Pipeline at Risk

Teacher Labor Markets After the Great Recession

By Lisette Partelow and Christina Baumgardner September 2016

Center for American Progress



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Introduction and summary

In the fall of 2015, the news was full of stories about teacher shortages in school districts and states across the country.¹ From Oklahoma to California, school leaders struggled to fill their classrooms and prepare for the coming school year; from North Carolina to Kansas, the same situation is playing out as the 2016 school year begins.² Explanations for these shortages vary; some blamed poor planning or the recovering economy, while others pointed to high rates of teacher attrition and wondered if teacher morale was suffering under new education reforms.³ With little empirical evidence to explain the scarcity of teachers in these states and districts, however, most explanations have been based primarily on previously established opinions and complaints about public education in the United States.

To put regional teacher shortages in context, it is important to recognize that the United States is not currently suffering from a national teacher shortage. According to the U.S. Department of Education, teacher preparation programs—including both traditional programs housed within an institution of higher education and alternative certification programs—currently produce enough teachers to meet total classroom demand across the country, and this is projected to continue for some time.⁴

This projection only tells part of the story, however. First, teacher labor markets are not national. Most teachers will seek employment in a school near where they were trained and hold accreditation, so a surge in demand for teachers in one state does not necessarily mean teachers from other states will move across state lines to a better job market.⁵ In addition, looking simply at aggregate numbers of teachers masks the severity of subject area shortages, which are common in science, technology, engineering, and mathematics—better known as STEM—fields, as well as in special education.⁶

Contributing to concerns about regional and subject area shortages are indications of a remarkable drop in the popularity of teacher training programs.⁷ Across the country, enrollment in teacher preparation programs, the first step to becoming

ing a teacher, has steadily declined since 2009, meaning fewer and fewer people are taking the first critical step toward entering the teaching profession.⁸ This trend suggests that, alongside important conversations about evaluating teaching effectiveness and ensuring that disadvantaged students have access to qualified educators, policymakers and other education stakeholders should also be concerned with the overall strength of the teacher pipeline.

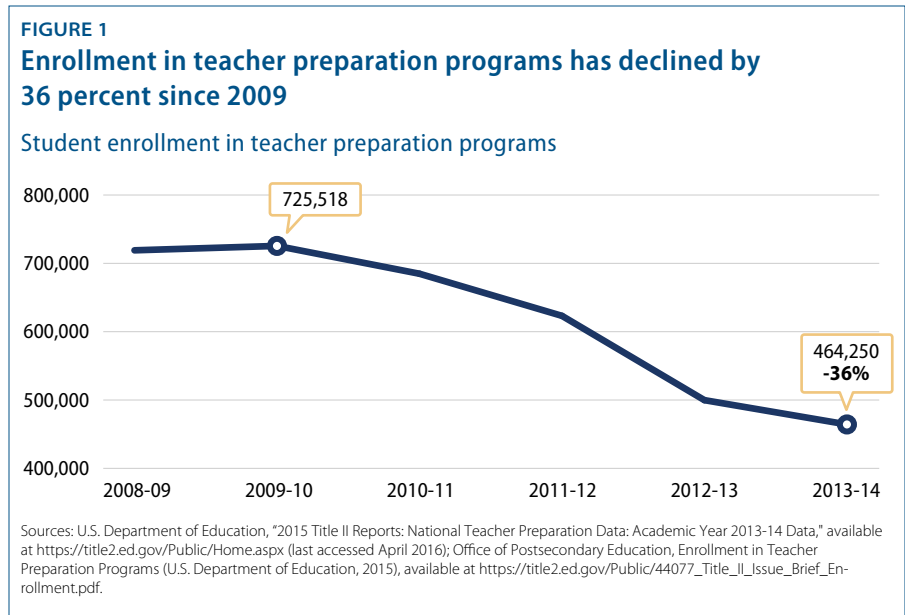
This report investigates potential reasons for the sharp decline in enrollments in teacher preparation programs in recent years and finds evidence that educator job losses resulting from the Great Recession were associated with diminished interest in teaching. Decreases in average teacher salary and the trend of what are termed “last in, first out” employment decisions were also associated with decreasing enrollment of prospective teachers in both traditional and alternative certification programs.

As a result of these findings, the authors of this report conclude that teacher labor markets are more responsive to market conditions than once thought. Based on these findings, the authors recommend increasing teacher compensation, ending seniority-based layoff policies, and providing prospective teachers with relevant local labor market information in order to reduce shortages and prevent further declines in enrollment in teacher preparation programs.

The teacher pipeline is at risk

Title II of the Higher Education Act requires that states provide the U.S. Department of Education with annual reports on all teacher preparation programs within the state.⁹ This data collection and reporting provides the first comprehensive look at the earliest stages of the teacher pipeline, including both traditional and alternative certification programs.

As illustrated in Figure 1, these data show that there has been a sharp decline in the number of individuals enrolling in teacher preparation programs. In the 2009-10 academic year, enrollment peaked at 725,518 students, but by 2013-14, the most recent year for which data are available, that number had plummeted to 464,250 students.¹⁰ Over this time period, total enrollment in teacher preparation programs nationwide declined 36 percent.



With demand for teachers projected to increase in future years, the drop in enrollment may be a harbinger of teacher shortages in the future.¹¹ Furthermore, teacher quality is the most significant school-based determinant of student learning, so if shortages lead to an increase in emergency certification or a lowering of standards for entry into the profession—as has already happened in some states—they could be problematic for school systems and teachers alike.¹² The immediate effects of this drop are seen in fewer education majors in schools of education as well as fewer participants in alternative certification programs such as Teach for America, which has had difficulty recruiting new members in recent years.¹³ Program completion numbers have followed a similar pattern, declining from 220,640 graduates in the 2009-10 school year to 180,744 graduates in 2013-14.¹⁴

In almost every state in the country, the supply of new entrants into the teaching profession is waning. Forty-six states and the District of Columbia have experienced declines in teacher preparation program enrollment, but some have been harder hit than others. In eight states—California, Illinois, Indiana, Louisiana, Michigan, Oklahoma, Oregon, and Pennsylvania—total 2013-14 enrollment was less than half of what it was in 2008-09.¹⁵ While a few states have bucked the trend and increased their enrollment numbers during this period—New Hampshire, Utah, and Washington—these states are the exceptions, not the rule.¹⁶ Surveys also indicate that interest in the teaching profession is waning, with only 5 percent of 2014 high school graduates who took the ACT exam reporting that they planned to major in education, down from 7 percent in 2010.¹⁷

A diminished teacher supply is troubling because shortages could negatively affect students and educational outcomes. When school districts struggle to recruit qualified teachers, the results can include larger class sizes, the hiring of underprepared teachers on emergency credentials, and a less competitive hiring process.¹⁸ Teachers in schools facing shortages are also more likely to teach outside their subject area of expertise, and older teachers may be discouraged from retiring.¹⁹ Higher-poverty school districts and those with large populations of students of color can find it especially difficult to recruit experienced teachers when there are shortages.²⁰

A diminishing supply of newly trained teachers could exacerbate already severe regional teacher shortages in many parts of the country, such as California and Oklahoma.²¹ Furthermore, the persistent shortage of teachers in certain subject areas, such as STEM subjects and special education, suggests a mismatch between teacher supply and demand.²²

FIGURE 2

Change in teacher preparation enrollment by state, 2008-09 to 2013-14



Note: To most accurately capture Arizona's state-level enrollment changes during this time period, the data for Arizona has been adjusted and does not include enrollees at Grand Canyon University or the University of Phoenix, both of which are based in Arizona but enroll students from around the country.

Source: Authors' analysis is based on U.S. Department of Education, "2015 Title II Reports: National Teacher Preparation Data: Academic Year 2013-14 Data," available at <https://title2.ed.gov/Public/Home.aspx> (last accessed April 2016).

Along with projected student enrollment and class size targets, the number of new teachers hired each year is a function of the number of teachers who retired the previous year or left to pursue another profession. Recent graduates of teacher preparation programs are therefore just one part of overall teacher supply, which includes current teachers, former teachers who have left the profession but are still credentialed, and teachers working on temporary, emergency credentials. In all, approximately half of the 250,000 newly hired teachers each year are newly prepared, while the rest consist of current teachers changing jobs or people recruited from the reserve pool of former teachers.²³

The roots of the teacher shortage

Previous research on teacher labor markets

Economists generally believe that in a properly functioning labor market, individuals will tend to choose the profession that provides the best returns for their skillset at a given time.²⁴ Like many labor markets, the supply of available teachers at any given time is influenced by a variety of factors, including earnings potential and employment prospects, both current and expected. And like other professionals, would-be teachers are also likely to consider less tangible factors such as job conditions, whether they find the work fulfilling, and prestige.

There is some debate about the extent to which potential wages influence the choice to become a teacher,²⁵ but several academic studies have demonstrated that teacher pay matters.²⁶ For example, Susanna Loeb and Marianne Page, researchers at Stanford University and the University of California, Davis, respectively, determined that earlier studies that failed to show the positive effects of wages on teacher quality were flawed because they failed to adequately control for alternative wage opportunities in other professions.²⁷ After making this and other corrections in their own model, they found that raising teachers' wages 10 percent reduced high school dropout rates 3 percent to 4 percent, due to the wage hike's positive effects on the teacher supply.²⁸ Meanwhile, research in the United Kingdom has found a significant effect of increasing teachers' pay relative to other professions: A 10 percent raise in earnings relative to other graduate-level professions increases the probability of the average graduate choosing to teach by 5.4 percent.²⁹

When the wages of teachers in the United States relative to other comparable professions are taken into consideration, a teacher recruitment crisis should not come as a surprise.³⁰ Linda Darling-Hammond, another Stanford researcher, estimates that teachers earn 15 percent to 30 percent less than individuals with college degrees who enter other fields, depending on the field and the region.³¹ And a recent Economic Policy Institute analysis found that teachers earn 17 percent less than comparable workers.³²

In addition to earnings potential, anticipated job opportunities are also a critical factor in students' decision-making about whether to enter the teaching field, and the health of the broader economy plays a key role in this choice. More so than the private sector, education employment has historically been relatively insulated from fluctuations in the business cycle, with schools continuing to staff classrooms regardless of economic conditions.³³ This inelasticity was evident throughout the half-century preceding the recent economic downturn, a period when the total number of teachers in America generally increased at a steady pace without being significantly affected by fluctuations in the gross domestic product.³⁴

Other scholars believe that production of the nation's teacher supply is in fact cyclical, although the effects of economic downturns are somewhat unclear. Research shows that students in college during periods of high unemployment are more likely to choose majors associated with higher earnings, which implies that students would be less likely to enroll in teacher preparation programs during a recession.³⁵ On the other hand, teaching often provides better job prospects and more perceived job security than other employment options during economic downturns, and so it can attract professionals who would not otherwise be interested in teaching. A 2015 analysis of trends in teacher labor markets found that higher-skilled individuals are more likely to enter the teaching profession during recessions because employment opportunities in professions that typically pay better are scarce.³⁶

The Great Recession's impact on teaching was significant

While existing literature on teacher labor markets is informative, complicating efforts to identify a clear source behind the declining interest in teaching is the confluence of seismic economic shifts during the Great Recession. The severity of that dramatic economic downturn—which officially began in late 2007 and ended in mid-2009—was unprecedented on several levels, especially in terms of its impact on local and state governments and, in turn, on the teaching profession.

Following the Great Recession, the nation lost more than 220,000 education-related jobs, many of which were teaching positions.³⁷ Never before had there been teacher job losses of this scale and magnitude. Declines in teaching positions have only been recorded twice since 1970, and neither decline was anywhere near the level of layoffs and job losses that occurred post-recession.³⁸ New teachers were more likely to be laid off during these years than their more experienced colleagues because many school districts relied on seniority-based systems to determine the order by which teachers were selected for layoffs.³⁹

Most teacher layoffs happened as other sectors of the economy were beginning to recover, between 2009 and 2012.⁴⁰ The lag in teacher layoffs was due to a tapering-off of federal support when state budgets had not yet recovered.⁴¹ Congress appropriated \$100 billion to support education-related jobs as part of the American Recovery and Reinvestment Act of 2009, followed by an additional \$10 billion in state stimulus money through the Education Jobs and Medicaid Assistance Act of 2010.⁴² The Obama administration credited federal stimulus efforts with saving as many as 367,000 educator jobs, suggesting that the crisis could have been much worse.⁴³ Perhaps because of these layoffs and other changes related to budget cuts—for example, larger class sizes and fewer classroom resources—only 39 percent of teachers surveyed in 2012 reported that they were satisfied with their jobs, a result that was an all-time low.⁴⁴

Declining teacher preparation program enrollments are closely related to education layoffs

Center for American Progress' analysis of the data collected and reported under Title II of the Higher Education Act and other state-level data reveals that the recent declines in enrollment in teacher preparation programs are closely associated with education layoffs following the Great Recession.

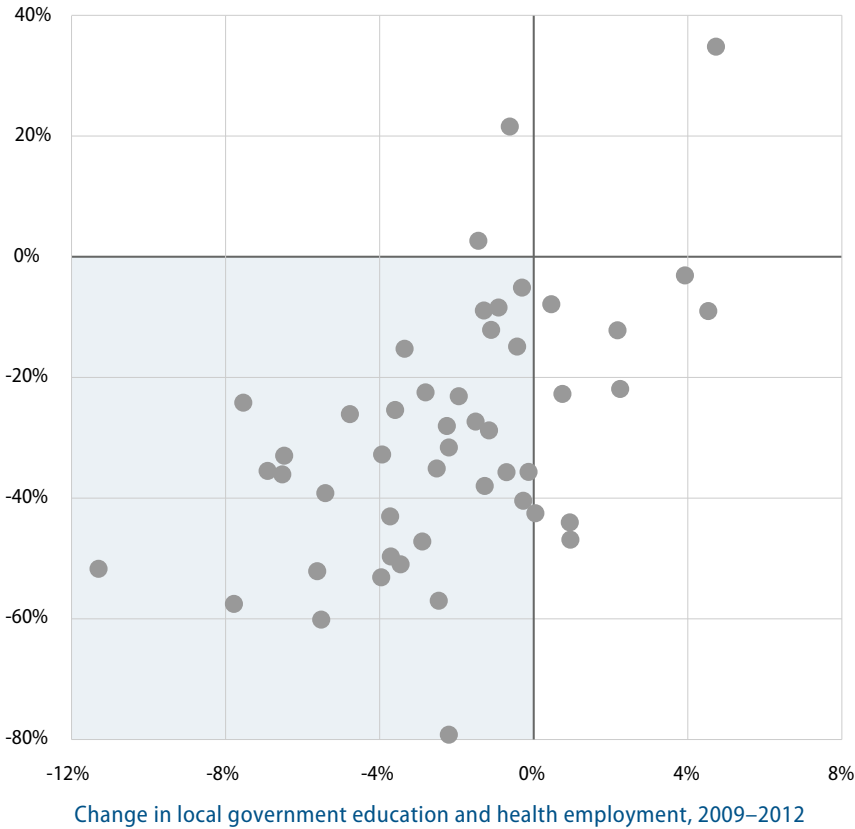
For this analysis, data on local government employment in education and health were used as a proxy for education layoffs. While this category includes local government employees other than teachers and school-related positions, about two-thirds of the jobs in this category are in public schools, providing a reasonable proxy for education-sector job trends.⁴⁵ This proxy is the same one that was used by the White House to determine education layoffs in their post-2008 recession estimates.⁴⁶

Using regression analysis and controlling for macroeconomic factors and differences in certain state policies, the authors found a strong association between the magnitude of a state's 2009–2012 education layoffs—as measured by U.S. Bureau of Labor Statistics data on local government employment—and subsequent declines in teacher preparation program enrollments. The best estimates suggest that reducing education positions 10 percent was associated with subsequent teacher preparation program enrollment declines of 45 percent. (see Appendix A for methodology and Appendix B for the regression table)

In addition, a state policy prohibiting districts from using last in, first out employment decisions—meaning teachers with the least seniority are the first to be laid off—is associated with a smaller decline in enrollment, suggesting that prospective teachers in states where this dismissal policy is commonly used by school districts may be influenced by perceived risks of layoff during an economic downturn.

FIGURE 3
Education and health employment losses during the recession are associated with teacher preparation enrollment declines

Change in teacher preparation enrollment, 2008-09 to 2013-14, by state



Note: Delaware, the District of Columbia, and Hawaii do not have values for "Change in local government employment, 2009–2012" so are not included in this figure.

Sources: Authors' analysis based on U.S. Department of Education, "2015 Title II Reports: National Teacher Preparation Data: Academic Year 2013-14 Data," available at <https://title2.ed.gov/Public/Home.aspx> (last accessed April 2016); Bureau of Labor Statistics, "Quarterly Census of Employment and Wages: Employment, Local Government, Education and Health Care Category," available at http://data.bls.gov/cew/apps/data_views/data_views.htm#tab=Tables (last accessed May 2016).

Reduced average teacher pay or pay that has not kept up with inflation also appears to be moderately related to declining interest in teaching in a state. According to the authors' analysis, reducing pay from \$50,000 to \$45,000 annually—after accounting for inflation—during the post-recession years was associated with a 16.6 percent decline in enrollment in teacher preparation programs. After controlling for other factors, these three variables together—cutting teaching positions, allowing last in, first out layoff policies, and reduced teacher pay—account for roughly a third of the decline in teacher preparation program enrollment.

Teacher recruitment efforts should address perceptions of job insecurity and low pay

As compared with other factors, changes in employment and salaries between 2009 and 2012 were the greatest predictors of a state's decline in prospective teachers, suggesting that policymakers should more closely examine the extent to which would-be teachers are aware of and influenced by their potential salaries and job prospects upon graduation.

These results support the hypothesis that recent declines in teacher preparation programs are in large part a rational response to the contraction of the education sector during the economic downturn. In other words, employment prospects and job security matter to prospective teachers quite a lot. As state and local governments saw substantial revenue declines, forcing school districts to eliminate large numbers of school-related positions, policymakers may have inadvertently made the teaching profession appear unstable relative to other professional options.

While this report's analysis reveals little about the exact channels through which the layoffs of 2009–2012 influenced prospective teachers, previous research supports the notion that the choice of college major is more swayed by employment stability and earnings prospects during economic downturns.⁴⁷ One-third of teachers surveyed in 2012 reported that they did not feel their job was secure, compared with 8 percent in 2006.⁴⁸ Another survey found that, particularly for millennials, job stability and current job openings in their chosen field are important factors in choosing a profession.⁴⁹ Under these circumstances, it is understandable that prospective teachers would choose to avoid the instability and shrinking earnings characteristic of teaching in favor of another profession.

Teacher salaries also appear to matter to potential teachers, as stagnant or declining earnings are also associated with enrollment declines. While the literature may not be consistent on the effects of relative teacher wages on student performance, the analysis in this report adds to recent research demonstrating that compensation is more important to the teacher pipeline than was previously believed.

Also of interest to policymakers is the finding that last in, first out policies are related to the declining interest in teaching. This analysis makes it evident that states prohibiting a last in, first out policy are less likely to face severe enrollment declines than states that allow school districts to make seniority the only factor influencing individual layoff decisions. Widespread dismissals caused by education funding decreases brought new attention to how reduction-in-force decisions were made, with new teachers most likely to be let go first; by 2015, 22 states had taken the step of prohibiting the use of seniority as the only factor in layoff decisions.⁵⁰

Additional research is needed to better understand how reduction-in-force policies could better address the needs of novice teachers while protecting the rights of more senior teachers. With increasing numbers of states considering performance in addition to seniority in layoff decisions, states will continue to grapple with this issue.

Recommendations

Increasing compensation and ending seniority-based layoffs are important levers for policymakers seeking to reduce or prevent teacher shortages

Compensation relative to other professions can influence the decision to go into teaching, as do policies that stipulate that teachers have a greater likelihood of getting laid off in their first years of teaching regardless of talent or skill. When a teaching salary is significantly less than one could earn in a career requiring a similar level of education, this increases the opportunity cost of becoming a teacher. Moreover, an increased risk of being laid off when new teachers are first starting their careers presents another disincentive to becoming a teacher. Unlike other states, where the number of incoming teachers declined as much as 50 percent between 2008 and 2013, states that prohibited the use of seniority as the only factor in teacher layoff decisions tended to have smaller declines in teacher preparation program enrollments during this period.

States and school districts should work to close the compensation gap between teachers and other professionals

Policymakers have several possible levers at their disposal to make the teaching profession more attractive by increasing compensation to match that of other professionals. In addition to raising state or local taxes to increase teacher salaries, states and districts can also adopt school models such as Opportunity Culture that restructure existing budgets in order to pay teachers more and give them more opportunities for advancement.⁵¹ At the federal and state levels, providing additional relief from student loan debt would provide an important financial benefit and a de facto increase in compensation for many teachers. Lastly, funds available through Title II of the Elementary and Secondary Education Act and the Teacher and School Leader Incentive Program could be accessed to support states and districts in their efforts to transition to improved compensation systems for teachers.

States and school districts should end last in, first out layoff policies

In the past few years, many states have moved to end last in, first out layoff policies, and more should do the same. The Teacher and School Leader Incentive Fund, a competitive grant that aims to improve districts' human capital management systems, could be used to fund projects that revamp district reduction-in-force policies and better reward and support talented teachers.

Districts and preparation programs should provide prospective teachers with information about local teacher labor market conditions and should take those conditions into account in recruitment, enrollment, and compensation decisions

This paper's findings indicate that prospective teachers are responding to labor market conditions more than may have previously been assumed. This is relevant both when teacher job prospects are not very good—as in a recession in a state with a high number of teacher layoffs and a last in, first out policy—and also when teacher job prospects are especially good, such as for teachers of English language learners, special education, and STEM. Teacher preparation programs and districts could take advantage of prospective teachers' decision-making acumen to encourage more of them to go into high-need fields by providing information on job prospects for various types of teaching careers.

Likewise, teacher preparation programs can improve their students' placement outcomes if they take the same labor market information into account as they recruit and enroll students. Districts, in turn, can also develop recruitment and compensation policies that are responsive to shortages and other labor market needs.

Conclusion

Teacher labor markets are more responsive to market conditions than once thought. When there are changes in pay, decreasing job opportunities, or a great likelihood of layoffs in teachers' first years, prospective teachers respond to these incentives. Particularly in a recovering economy, these policies make the teaching profession a less desirable choice for students and are associated with declines in enrollment in teacher preparation programs. Given the teacher shortages that many states and districts are already facing, policymakers should take into account the decision-making processes of prospective teachers and make changes that will increase the attractiveness of the teaching profession accordingly.

Appendix A: Methodology

This report uses state-level teacher preparation program enrollment figures reported under Title II of the Higher Education Act, as amended in 2008. Administered by the U.S. Department of Education, the data collection mandated under Title II now captures all institutions receiving federal aid under the Higher Education Act, including both traditional and alternative certification programs. States were first required to collect these data in 2010, reporting enrollment data for the 2008-09 academic year, which for the first time allowed researchers to comprehensively capture enrollment patterns among all teacher preparation programs. Subsequent reports have been released to the public in April of each year; as of summer 2016, the most recent available report includes data for the 2013-14 academic year.

Using variation in enrollment patterns across states, the authors used regression analysis to estimate the relationships between changes in total statewide enrollment in teacher preparation programs and various factors. To do so, the authors created a dependent variable to capture a state's percent change in enrollment between 2008-09 and 2013-14. The authors then created a variable to capture changes in school employment—both layoffs and deferred hiring—following the recession, using states' percent change in the U.S. Bureau of Labor Statistics' "Local Government: Education and Health" category between 2009 and 2012, the period of biggest contraction.⁵²

The authors created a variable for change in average teacher salary during this same period, controlled for inflation, as reported to the National Center for Education Statistics by the National Education Association. A dummy variable to represent the existence of a state policy banning school districts from making firing decisions based only on seniority—known as last in, first out—as of 2013, was also created for this analysis. Finally, a series of controls was added, including 2012 state unemployment level, private-sector job change, a dummy variable that was turned on if a state required the use of student test scores in teacher evaluations, and the average wait in a state until a teacher can earn tenure.

The authors then used the following regression models to estimate the relationships between these factors and the change in enrollment in each state:

$$(1) \Delta Enroll_{st} = \beta_0 + \beta_1 \Delta Employ_{st} + \epsilon$$

$$(2) \Delta Enroll_{st} = \beta_0 + \beta_1 \Delta Employ_{st} + \beta_2 NoLIFO + \epsilon$$

$$(3) \Delta Enroll_{st} = \beta_0 + \beta_1 \Delta Employ_{st} + \beta_2 NoLIFO + \beta_3 \Delta AvgSal_{st} + \epsilon$$

$$(4) \Delta Enroll_{st} = \beta_0 + \beta_1 \Delta Employ_{st} + \beta_2 NoLIFO + \beta_3 \Delta AvgSal_{st} + \beta_4 U + \beta_5 P + \beta_6 S + \beta_7 T + \epsilon$$

Appendix B: Regression table

TABLE B1
Association between teacher preparation enrollment changes and explanatory variables with controls

	Change in teacher preparation enrollment, 2008-09–2013-14			
	(1)	(2)	(3)	(4)
Employment change, 2009–2012	3.481*** (0.817)	3.807*** (0.828)	3.738*** (0.815)	4.544*** (1.146)
State policy prohibits LIFO		0.086 (0.053)	0.091* (0.053)	0.135** (0.054)
Average salary change, 2009–2012			1.047 (0.663)	1.659** (0.688)
Unemployment level, 2012				0.024 (0.019)
Private-sector job change, 2009–2016				-0.914* (0.524)
Teacher evaluation linked to student achievement				-0.036 (0.057)
Average years until tenure				-0.040* (0.023)
Constant	-0.220*** (0.032)	-0.253*** (0.037)	-0.225*** (0.040)	-0.179 (0.146)
Observations	48	48	48	48
R2	0.283	0.323	0.359	0.453
Adjusted R2	0.268	0.292	0.315	0.358
Residual standard error	0.182 (df = 46)	0.178 (df = 45)	0.176 (df = 44)	0.170 (df = 40)
F statistic	18.172*** (df = 1; 46)	10.714*** (df = 2; 45)	8.211*** (df = 3; 44)	4.738*** (df = 7; 40)

Notes: Robust standard errors appear in parentheses. The number of observations for each regression is 48 states—including the District of Columbia—due to missing Bureau of Labor Statistics employment data for three states. The number in each column heading denotes the regression model as specified in Appendix A, which can be found in the Methodology section.

* Signifies $p < 0.1$.
 ** Signifies $p < 0.05$.
 *** Signifies $p < 0.01$.

Sources: Authors' analysis is based on U.S. Department of Education, "2015 Title II Reports: National Teacher Preparation Data: Academic Year 2013-14 Data," available at <https://title2.ed.gov/Public/Home.aspx> (last accessed April 2016); Bureau of Labor Statistics, "Quarterly Census of Employment and Wages: Employment, Local Government, Education and Health Care Category," available at http://data.bls.gov/cew/apps/data_views/data_views.htm#tab=Tables (last accessed May 2016); National Council on Teacher Quality, "2013 State Teacher Policy Yearbook: National Summary" (2014), available at http://www.nctq.org/dmsStage/2013_State_Teacher_Policy_Yearbook_National_Summary_NCTQ_Report; National Center for Education Statistics, "Estimated average annual salary of teachers in public elementary and secondary schools, by state: Selected years, 1969-70 through 2012-13," available at https://nces.ed.gov/programs/digest/d13/tables/dt13_211.60.asp (last accessed April 2016); Bureau of Labor Statistics, "Local Area Unemployment Statistics," available at <http://www.bls.gov/lau/> (last accessed March 2016); Joint Economic Committee, "State Economic Snapshots" (2016), available at http://www.jec.senate.gov/public/_cache/files/d34ae724-6397-42bb-96a9-980e306b2b92/jec-state-economic-snapshots-march-2016.pdf. See Appendix A for more information.

About the authors

Lisette Partelow is the Director of Teacher Policy at the Center for American Progress. Her previous experience includes teaching first grade in Washington, D.C., working as a senior legislative assistant for Rep. Dave Loebsack (D-IA), and working as a legislative associate at the Alliance for Excellent Education. She has also worked at the U.S. House of Representatives Committee on Education and Labor and the American Institutes for Research. Partelow has a master's degree in public affairs from Princeton University and a master's degree in elementary education from George Mason University. She received a bachelor's degree from Connecticut College.

Christina Baumgardner performed the data analysis and research in drafting this paper as part of her master's degree in public policy from the Goldman School of Public Policy at the University of California, Berkeley. She previously worked as a senior policy advisor for education, criminal justice, and immigration policy for Sen. Bob Casey (D-PA); as a policy analyst at the Joint Economic Committee; and as an Education Pioneers Fellow with the Oakland Unified School District.

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Endnotes

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