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Are Public School Teachers Adequately Compensated?

The spring 2018 teacher strikes or walkouts in West Virginia, Kentucky, Oklahoma, Colorado, Arizona, and North Carolina brought heightened attention to teacher compensation. Similar walk-outs, sick-outs, or strikes occurred early 2019 in Denver, Los Angeles, and Oakland, as well as West Virginia and Kentucky. In all of these actions, teachers were quoted in the media saying that education was being underfunded. Teachers not only pressed for salary increases, but also for more state support for K-12 education.

It is difficult to definitively answer the question of whether public school teachers are adequately compensated. In a capitalist economy, so the theory goes, individuals who are "better" at their vocations and possess higher human capital stock are rewarded by the labor market more than others (Becker, 1993). However, public sector workers' salaries are limited by available resources and other restrictions. For example, teacher salaries are often subject to salary schedules that increase pay with more years of service, and those salaries are further limited by available public funds. As a result, "better" teachers who remain in the classroom often don't receive more compensation than other teachers. Some recent efforts to base teacher pay on evaluations of effectiveness have faltered due to teachers' perceptions of unfairness (Stecher, 2018) as well as inadequate measures (Baker, 2010).

Organization of this Report

To provide context for understanding the research on the adequacy of teacher compensation, this policy brief first describes how the public K-12 education system is funded and discusses the impact of the Great Recession. The brief then highlights policy research that examines whether teachers are adequately compensated.

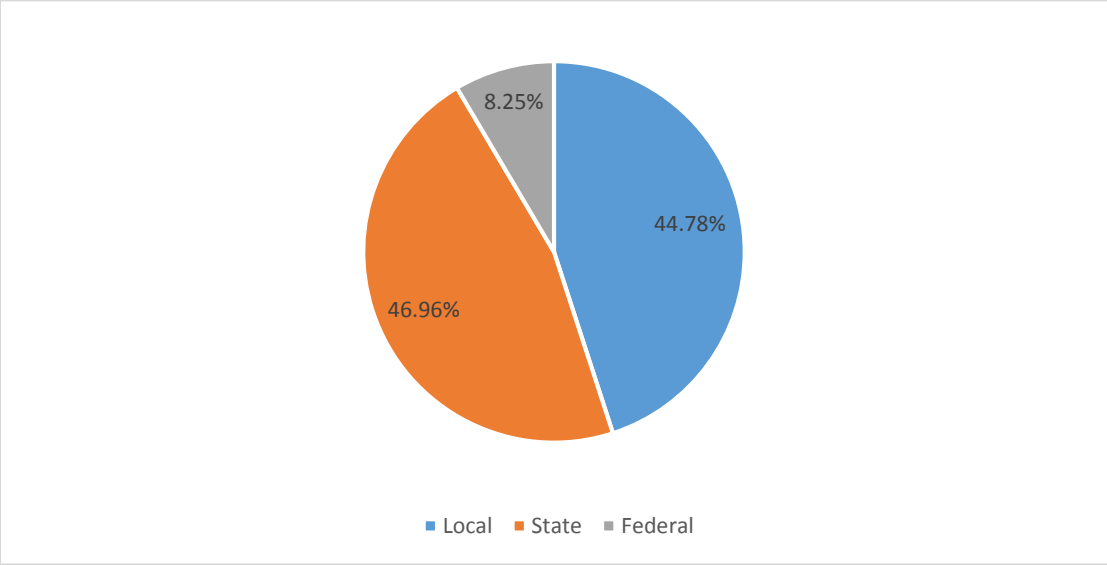
We have focused this issue brief on more recent analyses of teacher compensation since the Great Recession had a large impact on state and local tax revenues, which in turn impacted teacher compensation. Readers should keep in mind that the studies presented here discuss average teacher salaries in each of the 50 states. Within states, the amount of compensation varies greatly from district to district, school to school, and even within schools.

How is the K-12 public education system funded?

The large majority of funding for the nation's public schools comes from state (46.5%) and local (45%) sources, while relatively small share comes from the federal government (8.5%). Funding of public K-12 education is one of the largest state expenditures, comprising an average of 19% of state budgets.

The nation's public schools are funded through a combination of state, local, and federal sources. As shown in figure 1, for school year 2014-15, the U.S. Department of Education reported that, nationally, 46.5% of the revenue supporting public education came from state sources, while 45% came from local governments, mostly from property taxes. The federal government is a junior partner in supporting public education, providing 8.5% of the revenue (Cornman, 2018). The proportion of state support for public schools varies: some states provide a greater share of K-12 funding than the national average (such as Vermont at 90%), while others provide less (such as Illinois at 25%). See the table 1 in the appendix for information on all states.

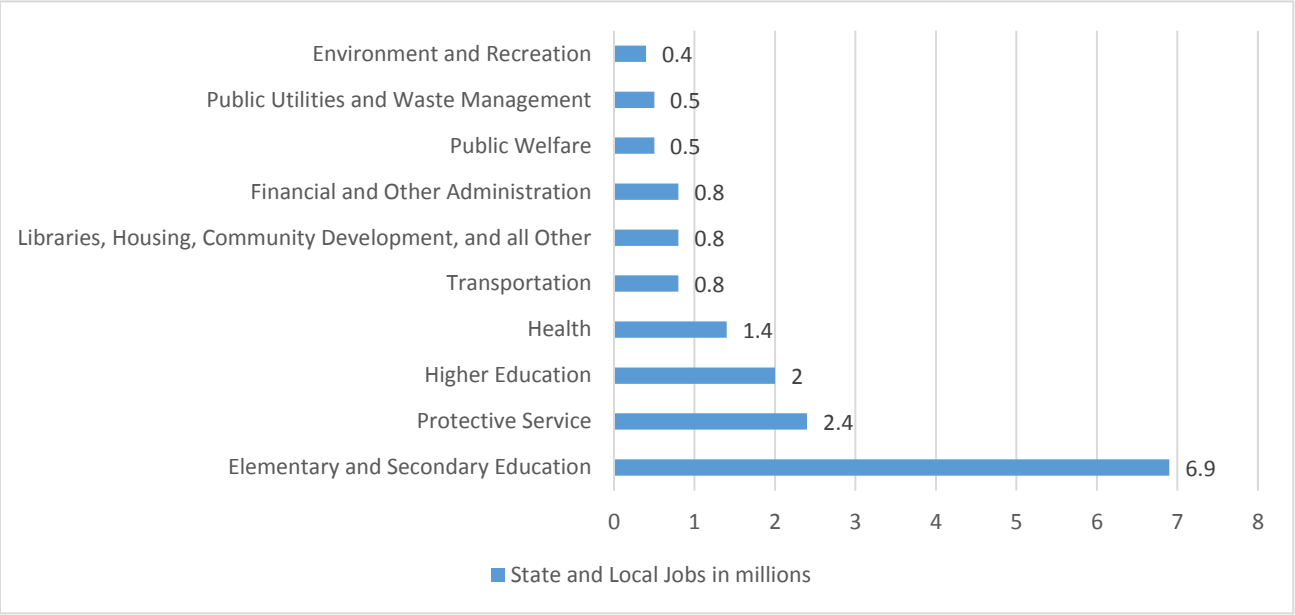
Figure 1. Source of Revenues for Public Elementary and Secondary Education, Fiscal Year 2015



Source: National Center for Education Statistics https://nces.ed.gov/pubs2019/2019301.pdf

If state revenues drop and local real estate values decrease, as they did during the Great Recession, then there is less money to pay public employees. This especially affects teachers because they are the largest workforce of public employees by far, as shown in figure 2 (McNichol, 2012). In addition, the K-12 education system is one of the largest categories of expenditures in state budgets, comprising an average of nearly 20% of all state spending in 2017 (Sigritz, 2018). See table 2 in the appendix for information on all states regarding the portion of state spending that is allotted for public education.

Figure 2. State and Local Jobs (in millions)



Source: Center on Budget and Policy Priorities calculations of 2010 Annual Survey of Public Employment and Payroll (U.S. Census) https://www.cbpp.org/research/some-basic-facts-on-state-and-local-government-workers

Since the late 1940s, the relative shares of state, local, and federal funding have shifted. In school year 1949-50, 40% of the revenues supporting public education came from state sources, while 57% were local, and just 3% were federal (table 1). With the enactment of major federal laws providing federal aid to K-12 education, and with states assuming much greater responsibility for education, the state and federal shares have grown, while the local share has decreased. This explains why the recent teacher strikes are targeted at the state level, while most of the teacher strikes in earlier eras, particularly the 1970s, were aimed against school districts.

Table 1. Share of local, state, and federal funds supporting public K-12 education Selected years, 1949-50 to 2015-16

School Year	Local	State	Federal
1949-50	57.3%	39.8%	2.9%
1959-60	56.5%	39.1%	4.4%
1969-70	52.1%	39.9%	8.0%
1979-80	43.4%	46.8%	9.8%
1989-90	46.8%	47.1%	6.1%
1999-2000	43.2%	49.5%	7.3%
2009-10	43.9%	43.4%	12.7%*
2015-16	44.78%	46.96%	8.25%

*The increase in the proportion of federal funds for K-12 education for this school year is due to the one-time boost from the American Recovery and Reinvestment Act.
Source: https://nces.ed.gov/programs/digest/d15/tables/dt15_235.10.asp?current=yes and https://nces.ed.gov/pubs2019/2019301.pdf

What was the impact of the Great Recession on state funding of K-12 education?

> ***In response to the Great Recession and declining state revenues, 34 states cut spending on K-12 education. In many states, K-12 funding has not been restored: 29 states provided less total per pupil funding in 2015 than they provided in 2008 before the recession, after adjusting for inflation.***

At the height of the Great Recession, confronted with declining tax revenues and state constitutions requiring balanced budgets, many states were faced with the choice of cutting spending, raising revenue, and/or drawing on spending reserves (NCSL, 2010). According to the Center on Budget and Policy Priorities (CBPP), at least 34 states and the District of Columbia implemented cuts to K-12 education in response to the recession (Johnson, 2011). At the local level, the collapse of the housing market led to a decline in property values in many communities. Since the primary source of local funds for public schools are property taxes, this led to lower local revenues for education (NCES, 2018). The federal American Recovery and Reinvestment Act, designed to be an economic stimulus package, provided state and local governments with additional funds, but those funds did not cover the entirety of lost state and local revenues.

As the economy recovered, many states were slow to restore K-12 education funding to pre-recession levels. A November 2017 analysis by the CBPP found that in 2015, 29 states were spending less total funding per pupil than they did in 2008 before the recession, after adjusting for inflation (Leachman, 2017). The CBPP notes that school funding has improved for many states since 2015, but at least 12 states have cut general state education aid by 7% or more in the last decade, and 7 of these 12 states (Arizona, Idaho, Kansas, Michigan, Mississippi, North Carolina, and Oklahoma) enacted income tax cuts on top of the spending reductions. CBPP analysis indicates that local property tax revenues have improved since the recession, growing nationally an average of 1.7% above inflation between 2007 and 2016. The authors theorize that the increase in property tax revenues likely hasn't been enough to keep up with increasing enrollments and make up for state spending cuts.

Federal funding is also stagnant. According to the CBPP, federal discretionary K-12 aid is near record lows as a share of the overall economy, and appropriations for the largest federal elementary and secondary program, Title I, is down 6.2% from 2008, when adjusted for inflation. The Title I program provides funds to school districts with large numbers or proportions of students from low-income families.

Since the 2009-10 school year, the national average annual salary of public school teachers has decreased by 4.6% when adjusted for inflation, according to a CEP analysis of NCES data. As displayed in table 2, 42 states have decreased their average annual salary for public school teachers during the same time period. See table 3 in the appendix for information by state on salary increases and decreases.

Table 2. States with increases and decreases in average teacher salaries since 2009-10

States where average teacher salaries increased between 2009-10 and 2016-17 (adjusted for inflation)	States where average teacher salaries decreased between 2009-10 and 2016-17 (adjusted for inflation)
Alaska, California, Connecticut, District of Columbia, Massachusetts, Montana, Nebraska, North Dakota, Vermont	Alabama, Arizona, Arkansas, Colorado, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Michigan, Minnesota, Mississippi, Missouri, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin, Wyoming

Source: Center on Education Policy analysis of NCES data retrieved from https://nces.ed.gov/programs/digest/d17/tables/dt17_211.60.asp?current=yes

According to media reports on the teacher strikes or walkouts, the sustained education cuts were the motivating factor for the walkouts or strikes, with teachers seeking increased pay and increased state support for K-12 education (see, e.g., Will, 2018; Burnette, 2018; Goldstein, 2018; Blest, 2018).

How does compensation for teachers compare with that of other college graduates?

The two studies discussed in this section—the first from the Economic Policy Institute (EPI) and second from The Heritage Foundation and the American Enterprise Institute (AEI)—take different approaches to determining whether public school teachers receive adequate compensation compared with other similar workers. Each study comes to different conclusions, and both have been criticized for various aspects of their methodology. These differing analyses demonstrate the complexity of this issue.

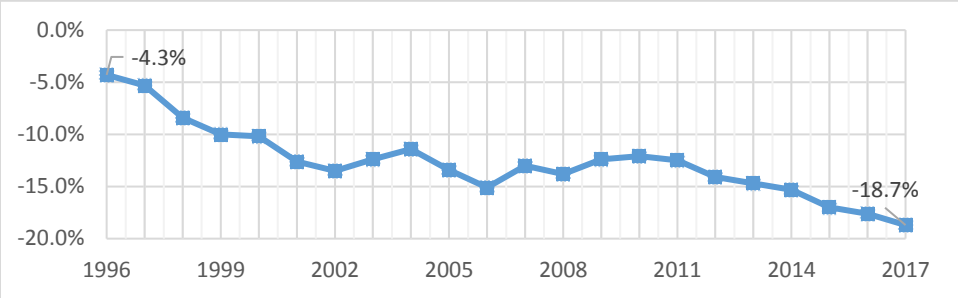
An Economic Policy Institute analysis found that when weekly salaries of public school teachers are compared with those of other college graduates, teachers on average make nearly 19% less. When benefits are considered along with salaries, the gap between teachers' compensation and that of other college graduates decreases to 11%.

Since 2004, the Economic Policy Institute (EPI) has studied the long-term trends in average public school teacher pay. Most recently, in 2018, EPI examined data through 2017 from the Bureau of Labor Statistics' Current Population Survey and from the Employer Costs for Employee Compensation Survey to determine if teacher pay was on par with that of comparable workers (Allegretto, 2018). EPI restricted the data to full time workers (defined as working at least 35 hours per week) who are age 18-64, and examined weekly salaries (as opposed to annual or hourly wages) because it makes it easier to compare teacher salaries[1] to other college graduates. EPI's analysis found that public school teachers make 18.7% less than other college graduates, which is a larger gap than in 1994, when the difference

[1] EPI acknowledges that there are different interpretations of how much teachers work. Some studies emphasize that teachers have 9 or 10-month contracts, while others point out that teachers are often involved in professional development activities over the summer and work longer hours during the school year.

was 1.8% (figure 3). This earnings gap has widened slightly since EPI's 2016 analysis of teacher pay, which placed the salary gap at 17% (Mishel, 2016).

Figure 3. Weekly wage gap between public school teachers and similar workers, 1994-2017



Source: Economic Policy Institute, https://www.epi.org/publication/teacher-pay-gap-2018/

Both the 2016 and 2018 EPI studies also analyzed differences in *total* compensation, including benefits such as health care and pensions in addition to salaries. Using this approach,[2] EPI found that the gap in compensation in 2017 between other college graduates and teachers shrinks to 11.1%. In addition, male teachers had a larger gap (–26.8%) compared with similar workers than did female teachers (–5.6%).

The EPI analysis found no state in which average public school teachers' salaries exceeded that of other college graduates. In addition, the inflation-adjusted average weekly salaries of public school teachers decreased by $27 from 1996 to 2017, while the average weekly salary of all college graduates increased by $137 during in this period. For information on wage gaps by state, see table 4 in the appendix.

An American Enterprise Institute (AEI) reviewed the 2016 EPI teacher compensation study, which used the same methodology as the 2018 report, and took issue with many of the calculations used by EPI (Biggs, 2016). First, AEI questioned EPI's calculations of the value of the pension benefits that teachers receive, which AEI says results in under-valuing pension costs. Specifically, AEI asserted that although EPI's use of employer contributions to retirement plans as an indicator of the benefits provided to employees may be sufficient for 401k-type plans, it does not capture the full state costs of the type of traditional pension plans provided to many teachers. In the case of traditional plans, retired employees are guaranteed a fixed monthly amount that states must pay regardless of how much states contributed or how well states' investment performed. In addition, AEI contended that states tend to use more optimistic return-on-investment assumptions to calculate their employee retirement contributions than do private sector employers, which are required to value their liabilities using more conservative assumptions of investment yield.

[2] EPI noted that in 2017, nonwage benefits, such as pensions and healthcare, made up a greater share of compensation for teachers (28.6%) than for other professionals (21.9%).

AEI also asserted that the 2016 EPI analysis did not fully consider health care costs, given that teachers often receive health care benefits in retirement until they qualify for Medicare, and that some teachers receive paid supplementary coverage after age 65. Moreover, AEI took issue with the controls that EPI used to compare the salaries of "comparable workers" to teachers. Finally, AEI questioned the use of weekly wages as the point of comparison and noted that it was unclear whether EPI took into account research showing that teachers work fewer hours per week than other college graduates.

A study by the Heritage Foundation and the American Enterprise Institute concluded that when public school teachers' salaries, benefits, job security, and other factors are examined, teachers receive compensation that is 52% higher than their skills would merit in the private sector.

A 2011 study by researchers from the Heritage Foundation and AEI examined whether public school teachers are being paid at a level commensurate with their skills (Biggs, 2011). This study found that when public school teachers' salaries, benefits, job security, and other factors are examined, teachers receive compensation that is 52% higher than their skills would merit in the private sector.

The researchers analyzed data on a variety of worker traits from CPS's Annual Social and Economic Supplement data from 2001 through 2010. They found that public school teachers' annual salaries are 19.3% lower than the average of other comparably educated and experienced workers. However, the researchers then explored to "what degree work conditions and unobserved ability differences may be affecting the observed teacher wage penalty." Their analysis emphasized "the fact that years of education is not a good measure of teacher quality, either within the teaching population or in comparing teachers to members of other professions." The authors contend that because there is a lack of rigor in education courses, a teaching degree is easier to obtain than an undergraduate degree in other fields.

The Heritage/AEI study concluded that teachers score lower than other college graduates on several standardized tests designed to assess intelligence. Referencing data from the SAT, ACT, GRE, and the Armed Forces Qualification Test (AFQT), and conducting an analysis that pairs data from the National Longitudinal Survey of Youth and the AFQT, the researchers concluded that "on average, teachers do not have the same cognitive skills as other college graduates." The researchers noted that "this implies that, to the extent that cognitive ability affects earnings independently of education, ordinary wage regressions may overestimate teacher earnings relative to those of other professions."

Next, the authors substituted education level and education experience with AFQT scores to provide a more accurate measure or proxy for observable skills. The analysis considered the differences in public and private school teacher salaries, the salaries teachers make when they move to another profession, and the benefits that teachers receive, including their time off in the summer, health care, paid leave, and pensions. Based on this analysis, the researchers found that "overall, public-school teacher compensation exceeds private levels by approximately 52 percent, for a total of more than $120 billion annually in excessive labor costs." They argue for state and local governments to pay market rates for teachers who are measurably effective.

The National Education Policy Center at the University of Colorado offered a strong critique of the Heritage/AEI report, saying it was "built on a series of faulty analyses…and misrepresents total teacher

compensation in fundamental ways." That Center challenged the Heritage/AEI analysis on many points, including the following:

- Framing the 12% lower pay for teachers as being appropriate for their lesser intelligence even though there is no foundation for such a claim
- Calculating total teacher benefits as having a monetary value of 100.8% of pay, even though the Department of Labor disagrees and gives a figure of 32.8%—a figure almost identical to that of people employed in the private sector
- Valuing pension costs at 32%, even though the real number is closer to 8.4%
- Representing the shorter work year as 28.8% additional compensation when the work year is only 12% shorter

In summary, the Center's analysis of teacher salary and benefits for teachers concluded that teachers are undercompensated by 19% (Keefe, 2012).

Are teachers making a living wage?

> ***An Education Resource Strategies analysis found that in 30 states, the average teacher salary would not provide a minimum living wage.***

Education Resource Strategies (ERS) used the Massachusetts Institute of Technology's living wage measurement to determine the states in which average teacher salaries would provide teachers with a minimum living wage[3](Katz, 2018). Using the minimum living wage for all family compositions with a single earner and one or more children, ERS found that in more than half of the states, the average teacher salary would not provide a minimum living wage. The state with the largest wage gap is Colorado, with an average teacher salary that is 25% below the living wage. The state with the largest average teacher salary advantage is Massachusetts, with average pay 25% above the living wage. See table 5 in the appendix for information by state on the living wage gap.

It is important to keep in mind that the data used in this analysis is reported in in terms of average state salaries. As noted earlier, teacher salaries vary within states, districts, and schools, with some teachers making more than the state average and some making less.

What proportion of teachers have a second job?

> ***An NCES survey found that 18% of teachers reported having a second job, while a Brookings Institution analysis indicates that teachers are 30% more likely to have a second job than non-teachers.***

The According to the National Teacher and Principal survey of the National Center for Education Statistics (NCES), in the 2015-16 school year, 18% of teachers reported having a second job, and the average amount of extra income earned from that second job was $5,100 (Spiegelman, 2018).

[3] The minimum living wage is the income needed to cover basic expenses, such as food, housing, child care, transportation, medical costs, and other expenses

A Brookings Institution analysis of the Bureau of Labor Statistics' American Time Use Survey found that teachers are 30% more likely than non-teachers to work a second job, and that secondary teachers are more likely to have a second job than elementary school teachers. The peak months for these teachers to take on second jobs is January and February (Startz, 2018).

Also, a recent survey conducted by Airbnb found that about 10% of its hosts are teachers. The survey noted that these teachers collectively brought in about $160 million through their Airbnb hosting, which is about $6,500 per teacher (Rosenberg, 2018).

Does the public think that teachers are paid enough?

> ***More than three-quarters of Americans believe that public school teachers are underpaid, according to a 2018 national poll.***

In April of 2018, the Associated Press and the NORC Center for Public Affairs Research conducted a survey in which 78% of Americans said they believe teachers are in the U.S. are underpaid. Just over half (52%) of the public supported teachers striking in order to improve their pay, while 25% disapproved of such actions and 22% neither approved nor disapproved. However, only half of the poll respondents said they would support an increase in their taxes so that teacher pay could be improved, while 26% would oppose a tax increase for this purpose, and 23% neither supported or opposed it (Associate Press-NORC).

Results were similar A recent poll conducted by Phi Delta Kappa showed similarly found that 66% of respondents believe that teacher pay in their community is too low. Further, nearly three-quarters of those polled (73%) indicated that they would support the teachers in their community if they were to go on strike for higher pay. Also, when asked about the national average starting salaries for teachers ($39,000), 65% of those polled responded that it was too low (Phi Delta Kappa, 2018).

A poll conducted by Education Next also found public support for increasing pay. The authors divided the survey respondents into two groups. One group was informed of the average teacher salary in their state before being asked whether they supported increasing teacher pay; 49% of this group said that public school teacher salaries should be increased. The other group was not told in advance about the average teacher salary in their state, and 67% of these respondents supported pay increases for teachers. The authors were also able to isolate the responses of those polled who lived in the six states where there were teacher walkouts or strikes in the spring of 2018: 63% of these respondents favored increasing teacher pay (Cheng, 2018).

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References

Allegretto, S., and Mishel, L. (2018). *The teacher pay penalty has hit a new high*. Economic Policy Institute. Retrieved from https://www.epi.org/publication/teacher-pay-gap-2018/

Associated Press-NORC Center for Public Affairs Research. (2018). American attitudes toward teacher pay and protests. Retrieved from http://apnorc.org/projects/Pages/American-Attitudes-toward-Teacher-Pay-and-Protests.aspx

Baker, E., Barton, P., Darling-Hammond, Haertel, E., Ladd, H., Linn, R., Ravitch, D., Rothstein, R., Shavelson, R., & Shepard, L. (2010). *Problems with the use of student test scores to evaluate teachers.* Economic Policy Institute. Briefing paper #278. Retrieved from https://www.epi.org/files/page/-/pdf/bp278.pdf

Becker, G. (1993). *Human capital: A theoretical and empirical analysis, with special reference to education.* 3rd Edition, University of Chicago Press, Chicago.

Biggs, A. & Richwine, J. (2016). *Debunking the myth of the 'teacher pay gap,' again*. American Enterprise Institute. Retrieved from http://www.aei.org/publication/debunking-the-myth-of-the-teacher-pay-gap-again/

Biggs, A. & Richwine, J. (2011). *Assessing the compensation of public-school teachers*. The Heritage Foundation. Retrieved from https://www.heritage.org/education/report/assessing-the-compensation-public-school-teachers

Blest, P. & Martin, N. (2018). North Carolina's teacher revolt was decades in the making. *Splinter*. Retrieved from https://splinternews.com/north-carolina-s-teacher-revolt-was-decades-in-the-maki-1826103129

Burnette, D. (2018). At electrifying rally, Arizona teachers demand better pay, threaten strike. *Education Week.* Retrieved from: http://blogs.edweek.org/edweek/state_edwatch/2018/03/during_electrifying_rally_arizona_teachers_demand_better_pay.html?qs=teacher+strikes

Cheng, A., Henderson, M., Peterson, P. & West, M. (2018) *Public Support Climbs for Teacher Pay, School Expenditures, Charter Schools, and Universal Vouchers: Results from the 2018 EdNext Poll.* Education Next. Retrieved from https://www.educationnext.org/public-support-climbs-teacher-pay-school-expenditures-charter-schools-universal-vouchers-2018-ednext-poll/#teachersalaries

Cornman, S., Zhou, L., Howell, M., & Young, J. (2018). *Revenues and expenditures for public elementary and secondary education: school year 2015–16 (fiscal year 2016)*. National Center for Education Statistics. Retrieved from https://nces.ed.gov/pubs2018/2018301.pdf

Goldstein, D. & Dias, E. (2018). Oklahoma teachers end walkout after winning raises and additional funding. *New York Times.* Retried from https://www.nytimes.com/2018/04/12/us/oklahoma-teachers-strike.html

Johnson, N., Oliff, P., & Williams, E. (2011). *An update on state budget cuts.* Center on Budget and Policy Priorities. Retrieved from https://www.cbpp.org/sites/default/files/atoms/files/3-13-08sfp.pdf

Katz, N., Apfelbaum, K., Frank, S. & Miles, K. (2018). *Low teacher salaries 101*. Education Resource Strategies. Retrieved from https://www.erstrategies.org/cms/files/3984-low-teacher-salaries-101-updated-619.pdf

Keefe, J. (2012). *NEPC review: assessing the compensation of public-school teachers*. National Education Policy Center. Retried from https://nepc.colorado.edu/thinktank/review-assessing-compensation

Leachman, M., Masterson, K., & Figueroa, E., (2017). *A punishing decade for school funding.* Center for Budget and Policy Priorities. Retrieved from https://www.cbpp.org/research/state-budget-and-tax/a-punishing-decade-for-school-funding

McNichol, E., (2012). *Some basic facts on state and local government workers.* Center on Budget and Policy Priorities. Retrieved from https://www.cbpp.org/research/some-basic-facts-on-state-and-local-government-workers

Mishel, L., Allegretto, S. and Essrow, D. (2016). *The teacher pay gap is wider than ever*. Economic Policy Institute. Retrieved from https://www.epi.org/publication/the-teacher-pay-gap-is-wider-than-ever-teachers-pay-continues-to-fall-further-behind-pay-of-comparable-workers/

National Center for Education Statistics. (2016). *Digest of education statistics 2015*. Table 235.10. Retrieved from https://nces.ed.gov/programs/digest/d15/tables/dt15_235.10.asp

National Center for Education Statistics. (2018) *The condition of education at a glance*. Public school revenue sources. Retrieved from https://nces.ed.gov/programs/coe/indicator_cma.asp

National Conference of State Legislators. (2010). *NCSL fiscal brief: state balanced budget provisions.* Retrieved from http://www.ncsl.org/research/fiscal-policy/state-balanced-budget-requirements-provisions-and.aspx

Phi Delta Kappa. (2018) Teaching: respect but dwindling appeal. Supplement to the *Kappan* magazine. Retrieved from http://pdkpoll.org/results

Rosenberg, E. (2018) Another sign of hard times for teachers? They make up nearly 10 percent of Airbnb hosts. *The Washington Post*. Retrieved from https://www.washingtonpost.com/business/2018/08/18/another-sign-hard-times-teachers-they-make-up-nearly-percent-airbnb-hosts/?noredirect=on&utm_term=.7cd863d312ad

Sigritz, B., Cummings, L., Gashaw, B., Mazer, S., Wavrunek, L., & White, K. (2018). *State expenditure report*. National Association of State Budget Officials. Retrieved from https://www.nasbo.org/mainsite/reports-data/state-expenditure-report

Spiegelman, M. (2018). Outside jobs for regular, full-time public school teachers. *Data Point*. National Center for Education Statistics. Retrieved from https://nces.ed.gov/pubs2018/2018137.pdf

Startz, D. (2018). *Why are teachers more likely than others to work second jobs?* Brookings. Retrieved from https://www.brookings.edu/blog/brown-center-chalkboard/2018/03/23/why-are-teachers-more-likely-than-others-to-work-second-jobs/

Stecher, B., Holtzman, D., Garet, M., Hamilton, L., Engberg, J., Steiner, E., Robyn, A., Baird, M., Gutierrez, I., Peet, E., de los Reyes, I., Fronberg, K., Weinberger, G., & Chambers, J. (2018). *Improving teaching effectiveness: final report.* RAND Corporation. Retrieved from https://www.rand.org/pubs/research_reports/RR2242.html

The Associated Press-NORC Center for Public Affairs Research. (2018) *American Attitudes Toward Teacher Pay and Protests.* Retrieved from http://apnorc.org/projects/Pages/American-Attitudes-toward-Teacher-Pay-and-Protests.aspx

Will, M., (2018). Arizona Teachers Set to Strike Over School Funding and Pay. *Education Week.* Retrieved from https://www.edweek.org/ew/articles/2018/04/25/arizona-teachers-set-to-strike-over-school.html?qs=teacher+strikes

Will, M. (2018). West Virginia legislature reaches deal to end strike, deliver pay raise to teachers. *Education Week*. Retrieved from http://blogs.edweek.org/edweek/teacherbeat/2018/03/west_virginia_legislature_reaches_deal.html?qs=teacher+strikes

Will, M. (2018). Oklahoma teacher union calls for a $10,000 pay raise over three years. Is it enough? *Education Week*. Retrieved from http://blogs.edweek.org/edweek/teacherbeat/2018/03/oklahoma_teachers_union_calls_.html?qs=teacher+strikes+oklahoma

Will, M. (2018). Oklahoma legislature passes 'historic' teacher pay raise. But what about the walkout? *Education Week*. Retrieved from http://blogs.edweek.org/edweek/teacherbeat/2018/03/oklahoma_senate_passes_teacher_pay.html?qs=teacher+strikes+oklahoma

Will, M. (2019). How Teacher Strikes Are Changing. *Education Week*. Retrieved from https://www.edweek.org/ew/articles/2019/03/06/how-teacher-strikes-are-changing.html

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Appendix: Supplementary Tables

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Table 1. Proportion of local, state, and federal funding supporting public elementary and secondary education, by state or jurisdiction: Fiscal year 2016 (in thousands of dollars)

State	Total	% Local	% State	% Federal
US	**$678,378,476**	**44.78%**	**46.96%**	**8.25%**
AL	7,586,636	34.16%	54.69%	11.15%
AK	2,497,340	22.97%	64.63%	12.40%
AZ	10,225,235	41.45%	45.91%	12.64%
AR	5,383,382	37.31%	51.09%	11.60%
CA	85,779,627	32.11%	59.42%	8.47%
CO	10,237,008	49.22%	43.72%	7.06%
CT	11,697,383	55.34%	40.34%	4.31%
DC	2,274,302	90.05%		9.95%
DE	2,190,905	34.25%	57.42%	8.33%
FL	27,929,250	49.18%	39.26%	11.57%
GA	19,617,068	44.64%	45.85%	9.52%
HI	3,031,312	1.95%	89.44%	8.61%
ID	2,413,672	24.08%	65.31%	10.62%
IL	27,704,831	67.44%	24.14%	8.42%
IN	12,437,534	36.42%	55.55%	8.03%
IA	6,657,857	38.91%	53.82%	7.27%
KS	6,297,498	28.42%	63.15%	8.43%
KY	7,634,758	33.64%	54.74%	11.63%
LA	8,930,136	43.79%	43.49%	12.72%
ME	2,809,790	53.60%	39.38%	7.03%
MD	14,420,623	50.23%	43.93%	5.84%
MA	17,962,854	57.20%	37.79%	5.01%
MI	19,835,653	30.94%	60.18%	8.88%
MN	12,725,423	27.54%	66.85%	5.61%
MS	4,712,456	34.12%	51.20%	14.68%
MO	11,147,752	58.40%	32.98%	8.63%
MT	1,781,468	39.64%	47.75%	12.61%
NE	4,351,337	58.64%	33.05%	8.31%
NV	4,683,088	55.48%	35.62%	8.90%
NH	3,055,956	61.42%	32.89%	5.69%
NJ	29,671,607	53.11%	42.69%	4.20%
NM	3,987,279	16.23%	70.04%	13.73%
NY	65,776,757	53.22%	41.75%	5.04%
NC	14,072,129	26.30%	62.08%	11.62%
ND	1,705,036	33.09%	57.79%	9.12%
OH	24,956,848	47.40%	44.89%	7.72%
OK	6,270,084	40.17%	48.33%	11.50%
OR	7,377,456	40.02%	52.34%	7.64%
PA	29,892,129	55.59%	37.60%	6.82%
RI	2,485,803	50.90%	41.40%	7.70%
SC	9,442,258	42.81%	47.72%	9.48%
SD	1,461,886	55.83%	30.40%	13.77%
TN	9,596,867	42.32%	46.21%	11.46%
TX	58,954,734	48.56%	40.89%	10.56%
UT	5,447,070	37.03%	54.62%	8.34%
VT	1,724,527	4.02%	89.34%	6.64%
VA	15,927,348	53.82%	39.54%	6.64%
WA	14,830,244	30.43%	62.16%	7.41%
WV	3,433,438	34.09%	55.52%	10.39%
WI	11,309,921	47.32%	45.54%	7.15%
WY	2,042,925	36.40%	57.55%	6.05%

Source; NCES https://nces.ed.gov/pubs2018/2018301.pdf

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Table 2. Elementary and secondary education expenditures as a percentage of total state expenditures Fiscal years 2015, 2016, and 2017

State	Fiscal 2015	Fiscal 2016	Fiscal 2017	Fiscal 2018
US	**19.6%**	**19.6%**	**19.4%**	**19.6%**
AL	20.9%	20.7%	22.9%	22.8%
AK	12.3%	16.4%	16.4%	15.3%
AZ	14.3%	15.0%	14.8%	17.3%
AR	14.6%	14.7%	14.5%	14.1%
CA	21.4%	20.7%	20.0%	19.7%
CO	25.0%	23.7%	26.7%	25.7%
CT	14.2%	14.9%	13.2%	12.7%
DE	23.9%	23.5%	23.8%	23.4%
FL	18.8%	18.7%	17.1%	17.3%
GA	24.6%	24.5%	24.5%	24.5%
HI	14.7%	14.2%	13.8%	13.8%
ID	25.1%	25.3%	22.5%	26.4%
IL	13.7%	17.2%	14.5%	14.7%
IN	30.0%	28.9%	28.8%	28.1%
IA	15.9%	15.7%	16.4%	16.9%
KS	30.2%	29.4%	28.2%	30.4%
KY	17.0%	16.3%	17.5%	17.1%
LA	18.8%	19.2%	16.9%	16.8%
ME	17.6%	17.2%	17.4%	17.6%
MD	18.3%	18.1%	18.6%	17.7%
MA	11.6%	11.3%	11.2%	13.2%
MI	25.2%	25.2%	26.1%	26.6%
MN	25.1%	25.3%	24.9%	24.6%
MS	16.1%	16.7%	15.3%	15.9%
MO	22.9%	23.0%	22.8%	22.5%
MT	15.8%	15.8%	15.0%	14.6%
NE	14.5%	14.2%	13.9%	13.9%
NV	16.1%	18.8%	16.7%	16.4%
NH	20.7%	19.6%	19.5%	20.3%
NJ	22.9%	24.3%	23.7%	23.2%
NM	18.2%	17.4%	16.8%	17.4%
NY	19.0%	19.6%	19.4%	19.1%
NC	23.4%	23.6%	23.3%	22.3%
ND	13.8%	15.4%	16.1%	19.1%
OH	16.8%	16.7%	17.1%	17.1%
OK	16.1%	15.4%	14.8%	15.4%
OR	11.9%	12.4%	12.0%	13.1%
PA	18.6%	18.1%	18.1%	18.4%
RI	14.5%	14.9%	13.2%	14.7%
SC	18.7%	19.1%	19.8%	19.8%
SD	14.5%	14.4%	16.5%	16.4%
TN	18.1%	17.7%	17.8%	17.4%
TX	25.6%	24.5%	24.5%	27.6%
UT	25.3%	25.6%	25.9%	25.7%
VT	31.8%	31.9%	32.7%	32.9%
VA	15.5%	14.8%	15.1%	15.1%
WA	22.7%	23.4%	23.7%	25.1%
WV	15.8%	15.2%	14.8%	13.9%
WI	16.0%	15.7%	16.7%	16.3%
WY	15.8%	15.8%	21.0%	20.1%

Source: National Association of State Budget Officers, 2016 State Expenditure Report
https://www.nasbo.org/mainsite/reports-data/state-expenditure-report

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Table 3. Estimated average annual salary of teachers in public elementary and secondary schools, by state (in U.S. dollars)

State	2009-10 School Year	2016-17 School Year	Difference from 2009-10 to 2016-17 *Adjusted for Inflation*	Percent Change from 2009-10 to 2016-17 *Adjusted for Inflation*
US	**$61,804**	**$58,950**	**-$2,854**	**-4.60%**
AL	53,260	48,868	-4,392	-8.20%
AK	66,809	68,138	1,329	2.00%
AZ	52,567	47,403	-5,164	-9.80%
AR	52,285	48,616	-3,669	-7.00%
CA	76,360	78,711	2,351	3.10%
CO	55,086	46,506	-8,580	-15.60%
CT	72,046	72,561	515	0.70%
DC	63,907	60,214	-3,693	-5.80%
DE	72,268	76,131	3,863	5.30%
FL	52,294	49,407	-2,887	-5.50%
GA	59,464	54,602	-4,862	-8.20%
HI	61,648	57,674	-3,974	-6.40%
ID	51,818	47,504	-4,314	-8.30%
IL	69,501	61,602	-7,899	-11.40%
IN	55,964	50,554	-5,410	-9.70%
IA	55,561	55,443	-118	-0.20%
KS	52,237	47,984	-4,253	-8.10%
KY	55,468	52,339	-3,129	-5.60%
LA	54,752	50,000	-4,752	-8.70%
ME	51,620	51,077	-543	-1.10%
MD	71,622	66,961	-4,661	-6.50%
MA	77,558	77,804	246	0.30%
MI	64,890	62,200	-2,690	-4.10%
MN	58,702	57,346	-1,356	-2.30%
MS	51,103	42,925	-8,178	-16.00%
MO	50,737	48,293	-2,444	-4.80%
MT	51,232	51,422	190	0.40%
NE	51,756	52,338	582	1.10%
NV	57,686	57,376	-310	-0.50%
NH	57,595	57,253	-342	-0.60%
NJ	72,919	69,623	-3,296	-4.50%
NM	51,790	47,500	-4,290	-8.30%
NY	80,200	79,637	-563	-0.70%
NC	52,453	49,837	-2,616	-5.00%
ND	48,102	51,618	3,516	7.30%
OH	62,650	57,000	-5,650	-9.00%
OK	53,395	45,245	-8,150	-15.30%
OR	61,829	61,631	-198	-0.30%
PA	66,231	65,863	-368	-0.60%
RI	66,824	66,477	-347	-0.50%
SC	53,190	48,598	-4,592	-8.60%
SD	43,482	42,668	-814	-1.90%
TN	51,826	48,456	-3,370	-6.50%
TX	54,033	52,575	-1,458	-2.70%
UT	51,373	47,244	-4,129	-8.00%
VT	54,954	60,187	5,233	9.50%
VA	55,997	51,049	-4,948	-8.80%
WA	59,342	54,147	-5,195	-8.80%
WV	51,456	45,701	-5,755	-11.20%
WI	57,395	54,998	-2,397	-4.20%
WY	62,542	58,650	-3,892	-6.20%

Source: special analysis of https://nces.ed.gov/programs/digest/d17/tables/dt17_211.60.asp?current=yes

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Table 4. Public school teacher and non-teacher college graduate weekly wages, by state

	Public elementary and secondary teachers			Other college graduates			Ratio			Teacher Wage Gap (total) (1)/(2)-1
State	B.A. only	M.A. only	Total	B.A. only	M.A. only	Total*	B.A. only	M.A. only	Total	----------
US	$980	$1,261	$1,137	$1,326	$1,624	$1,493	73.9%	77.7%	76.2%	-23.8%
AK	$1,368	$1,487	$1,437	$1,385	$1,618	$1,519	98.8%	91.9%	94.6%	-5.4%
AL	$804	$991	$905	$1,186	$1,363	$1,282	67.8%	72.7%	70.6%	-29.4%
AR	$800	$992	$875	$1,081	$1,274	$1,156	74.0%	77.8%	75.7%	-24.3%
AZ	$831	$955	$915	$1,281	$1,513	$1,438	64.9%	63.1%	63.6%	-36.4%
CA	$1,345	$1,564	$1,464	$1,503	$1,900	$1,719	89.5%	82.3%	85.2%	-14.8%
CO	$870	$1,041	$971	$1,312	$1,625	$1,496	66.4%	64.0%	64.9%	-35.1%
CT	$1,150	$1,529	$1,473	$1,456	$1,822	$1,769	79.0%	83.9%	83.3%	-16.7%
DC	$1,002	$1,441	$1,320	$1,476	$1,784	$1,699	67.9%	80.8%	77.7%	-22.3%
DE	$1,075	$1,137	$1,117	$1,267	$1,406	$1,362	84.8%	80.9%	82.0%	-18.0%
FL	$900	$1,042	$959	$1,177	$1,452	$1,290	76.5%	71.8%	74.3%	-25.7%
GA	$882	$1,077	$995	$1,256	$1,508	$1,402	70.2%	71.4%	71.0%	-29.0%
HI	$1,063	$1,126	$1,095	$1,229	$1,469	$1,353	86.4%	76.6%	80.9%	-19.1%
IA	$854	$1,129	$959	$1,169	$1,372	$1,247	73.1%	82.3%	77.0%	-23.0%
ID	$897	$1,014	$936	$1,168	$1,406	$1,247	76.8%	72.1%	75.1%	-24.9%
IL	$968	$1,387	$1,241	$1,325	$1,665	$1,547	73.1%	83.3%	80.2%	-19.8%
IN	$837	$1,187	$1,013	$1,171	$1,392	$1,282	71.5%	85.3%	79.0%	-21.0%
KS	$915	$1,129	$1,041	$1,232	$1,443	$1,356	74.3%	78.3%	76.8%	-23.2%
KY	$773	$1,035	$968	$1,179	$1,321	$1,285	65.5%	78.4%	75.4%	-24.6%
LA	$917	$943	$927	$1,155	$1,300	$1,212	79.4%	72.5%	76.5%	-23.5%
MA	$1,055	$1,416	$1,319	$1,474	$1,749	$1,675	71.5%	81.0%	78.7%	-21.3%
MD	$1,236	$1,547	$1,441	$1,486	$1,785	$1,683	83.2%	86.7%	85.6%	-14.4%
ME	$960	$1,099	$1,037	$1,142	$1,465	$1,321	84.0%	75.0%	78.5%	-21.5%
MI	$890	$1,313	$1,158	$1,320	$1,600	$1,498	67.4%	82.1%	77.3%	-22.7%
MN	$951	$1,380	$1,238	$1,387	$1,573	$1,512	68.5%	87.7%	81.9%	-18.1%
MO	$754	$1,034	$920	$1,219	$1,486	$1,377	61.8%	69.6%	66.8%	-33.2%
MS	$799	$939	$849	$994	$1,140	$1,047	80.4%	82.4%	81.1%	-18.9%
MT	$857	$1,133	$1,003	$1,091	$1,211	$1,155	78.5%	93.5%	86.9%	-13.1%
NC	$784	$994	$877	$1,253	$1,491	$1,358	62.5%	66.7%	64.5%	-35.5%
ND	$927	$1,226	$1,050	$1,096	$1,300	$1,180	84.6%	94.4%	89.0%	-11.0%
NE	$885	$1,081	$995	$1,140	$1,451	$1,316	77.7%	74.5%	75.7%	-24.3%
NH	$1,024	$1,219	$1,151	$1,340	$1,617	$1,520	76.4%	75.4%	75.7%	-24.3%
NJ	$1,369	$1,603	$1,477	$1,488	$1,917	$1,685	92.1%	83.6%	87.7%	-12.3%
NM	$857	$969	$924	$1,177	$1,506	$1,375	72.9%	64.3%	67.2%	-32.8%
NV	$863	$1,099	$1,021	$1,211	$1,477	$1,389	71.3%	74.4%	73.5%	-26.5%
NY	$1,071	$1,514	$1,472	$1,393	$1,672	$1,645	76.9%	90.6%	89.5%	-10.5%
OH	$922	$1,191	$1,103	$1,216	$1,445	$1,370	75.8%	82.4%	80.5%	-19.5%
OK	$784	$812	$792	$1,144	$1,422	$1,227	68.5%	57.1%	64.6%	-35.4%
OR	$997	$1,198	$1,161	$1,309	$1,634	$1,575	76.1%	73.3%	73.8%	-26.2%
PA	$1,051	$1,344	$1,250	$1,295	$1,522	$1,449	81.1%	88.3%	86.2%	-13.8%
RI	$1,277	$1,459	$1,391	$1,236	$1,605	$1,467	103.3%	90.9%	94.8%	-5.2%
SC	$837	$1,036	$962	$1,132	$1,255	$1,210	73.9%	82.5%	79.5%	-20.5%
SD	$799	$930	$843	$1,041	$1,161	$1,081	76.70%	80.10%	77.90%	22.10%
TN	$814	$1,011	$920	$1,130	$1,382	$1,266	72.0%	73.2%	72.7%	-27.3%
TX	$974	$1,083	$1,005	$1,334	$1,617	$1,414	73.0%	67.0%	71.1%	-28.9%
UT	$872	$1,063	$940	$1,290	$1,557	$1,384	67.6%	68.3%	67.9%	-32.1%
VA	$995	$1,223	$1,124	$1,507	$1,835	$1,692	66.0%	66.7%	66.4%	-33.6%
VT	$991	$1,217	$1,115	$1,131	$1,390	$1,274	87.6%	87.5%	87.6%	-12.4%
WA	$1,030	$1,286	$1,207	$1,499	$1,788	$1,698	68.7%	71.9%	71.1%	-28.9%
WI	$951	$1,175	$1,064	$1,281	$1,452	$1,367	74.3%	80.9%	77.8%	-22.2%
WV	$778	$1,043	$931	$1,081	$1,256	$1,182	71.9%	83.1%	78.8%	-21.2%
WY	$1,079	$1,272	$1,172	$1,162	$1,262	$1,210	92.9%	100.8%	96.9%	-3.1%

*Totals are weighted averages of the B.A. and M.A. level weekly wages where the weights are the shares of teachers with a B.A. or M.A. This ensures that the distribution of education among teachers and other college graduates does not affect the comparison. Data are for workers age 18–64 with bachelor's or master's degrees and positive wages (excluding self-employed workers).
Source: https://www.epi.org/publication/teacher-pay-gap-2018/

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Table 5. Living wage gap for teachers, by state

State	Gap of average teacher Salary 2016-17 to family living wage 2017	Gap of average teacher salary 2016-17 to family living wage 2017 *Adjusted for Geography*
AL	-8.2%	-$4,429
AK	9.8%	$6,915
AZ	-18.5%	-$9,476
AR	-5.5%	-$3,217
CA	13.6%	$9,683
CO	-24.9%	-$12,185
CT	15.7%	$10,658
DE	1.6%	$981
FL	-14.1%	-$7,651
GA	-1.3%	-$735
HI	-16.7%	-$10,151
ID	-15.4%	-$8,910
IL	4.4%	$2,645
IN	-4.4%	-$2,597
IA	4.8%	$3,183
KS	-10.1%	-$5,642
KY	-2.2%	-$1,283
LA	-7.2%	-$3,964
ME	-8.8%	-$5,390
MD	1.6%	$991
MA	24.8%	$17,974
MI	15.5%	$10,821
MN	-2.0%	-$1,234
MS	-16.4%	-$8,212
MO	-12.6%	-$6,934
MT	-10.2%	-$6,587
NE	-3.8%	-$2,375
NV	1.0%	$599
NH	0.2%	$106
NJ	7.7%	$4,792
NM	-16.3%	-$8,517
NY	15.7%	$11,032
NC	-8.4%	-$4,430
ND	-4.0%	-$2,240
OH	9.7%	$5,945
OK	-16.3%	-$8,410
OR	0.6%	$441
PA	20.9%	$14,196
RI	14.7%	$9,670
SC	-9.0%	-$4,877
SD	-17.2%	-$9,341
TN	-4.3%	-$2,275
TX	-2.9%	-$1,474
UT	-16.7%	-$8,526
VT	2.1%	$1,479
VA	-18.6%	-$8,706
WA	-11.3%	-$5,921
WV	-11.7%	-$6,197
WI	0.2%	$125
WY	6.1%	$3,946

Source: ERS https://www.erstrategies.org/cms/files/3984-low-teacher-salaries-101-updated-619.pdf

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