Arizona State Funding Project: Addressing the Teacher Labor Market Challenge

Research conducted by Education Resource Strategies
May 2018
Understanding the Context

Political Context
Since the 2008 recession, education funding has declined in Arizona, though various efforts have been made to restore some of that funding in recent years.

Arizona’s FY19 budget would spend a record $10.1B on K-12, returning state spending to above pre-recession levels. The FY19 budget invests an additional $400 million in K-12, including $100M for additional assistance, $34M for teacher salary increases, and $52M for school facilities maintenance.

Polling indicates public support for improving education in Arizona, with increasing K-12 funding and improving teacher quality identified as top concerns.

**Arizona Registered Voter Survey, Prime Group, July 2017**
- 22% of Arizonans surveyed rated the quality of K-12 education in their community with an “A” or “B” letter grade, compared to 45% nationwide.
- 45% of Arizonans surveyed identified unqualified teachers and administrators as one of the top two challenges facing public schools, compared to only 28% nationwide.

**Moore Information Polling, December 2016**
- 65% of Arizonans surveyed would be more likely to vote for a state official who voted to increase taxes to provide more funding for Arizona public schools.
- 77% of Arizonans surveyed support continuing the Prop 301 sales tax beyond 2021, and two-thirds of Arizonans would support increasing the sales tax from 5.6% to 6% to provide additional funding to public schools.

Source: Arizona registered voter survey, Prime Group 2017; Moore Information Polling 2016
With its “Education Progress Meter,” Expect More Arizona has identified increasing teacher pay as a top priority for the state. Expect More Arizona estimates that bringing median teacher pay in Arizona up to the national median would require an annual investment of $800M to $1B.
Arizona teachers are organizing in support of higher salaries and restored funding to improve recruitment, retention, and overall job satisfaction.

Arizona teachers and supporters protest outside the KTAR studios on March 12, 2018.
Understanding the Context
Teacher Effectiveness
Teacher effectiveness is the most important variable in quality of student outcomes

Recent studies show that an **effective teacher produces additional learning gains** for students in math and reading compared to an average teacher.

Students with a highly effective teacher have significantly greater growth in one year, compared to students with an ineffective teacher.

Teacher Impacts on Math Performance in Third Year,
By Ranking After First Two Years

The average student assigned to a teacher in the bottom quartile of effectiveness lost on average 5 percentile points relative to students with similar baseline scores and demographics. In contrast, the average student assigned to a top-quartile teacher gained 5 percentile points relative to students with similar baseline scores and demographics.

Assigning black students to a top-quartile teacher rather than a bottom-quartile teacher four years in a row would be enough to close the black-white test score gap (34 percentile points).

Having an effective teacher has also been shown to improve students’ long-term outcomes

- College attendance at age 20
- Earnings at age 28
- Women with teenage births
- Neighborhood quality at age 28

Source: “Measuring the Impacts of Teachers II: Teacher Value-Added and Student Outcomes in Adulthood” by Raj Chetty, John Friedman, and Jonah Rockoff (2014)
Research shows that having an effective teacher over multiple years has cumulative positive impacts on student achievement.

However, as a result of high turnover and attrition, Arizona students are unlikely to have a highly effective teacher three years in a row.

Research shows that teachers become more effective in producing student achievement gains after the first two years of teaching, with continued increases in gains as experience increases.

Additionally, research shows that teachers without certification are significantly less likely to produce gains in student achievement.

Likelihood of student assignment to a novice or uncredentialled teacher in Arizona

Understanding the Context

Student Outcomes
At 77%, high school graduation rates in Arizona fall below nearly all other states.

According to the Arizona Department of Education, the AZ 4-year graduation rate for 2015-16 was 80%, though comparative state-by-state data for that year aren’t yet available.

Source: ERS analysis using data from NCES Table 219.46 Public high school 4-year adjusted cohort graduation rate (ACGR), by selected student characteristics and state: 2010-11 through 2014-15; Cohort 2016 Four Year Grad Rate Data from the Arizona Department of Education
And those graduation rates have remained consistently low over the last 5 years

![Graph showing Public High School 4-Year Adjusted Cohort Graduation Rate, 2010-11 to 2014-15.](image)

Source: ERS analysis using data from NCES Table 219.46 Public high school 4-year adjusted cohort graduation rate (ACGR), by selected student characteristics and state: 2010-11 through 2014-15
Arizona has fewer high school students enrolling in postsecondary education compared to the U.S. average.

Percent of High School Graduates Enrolled in Postsecondary Education in the Fall Semester After High School Graduation, 2010-11 to 2014-15

Source: “Funding PreK-12 Education,” 110th Arizona Town Hall Final Report
Arizona students have made some recent gains on the NAEP assessment in reading.

Source: “Funding PreK-12 Education,” 110th Arizona Town Hall Final Report
But overall Arizona performance remains at the bottom end of all states on the recent NAEP assessment.

Source: ERS analysis based on NAEP Data Explorer
...where it has been for over a decade

2015 NAEP Average Scale Score, 4th Grade Reading, Arizona vs. U.S., 2003-2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Arizona</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>209</td>
<td>218</td>
</tr>
<tr>
<td>2005</td>
<td>207</td>
<td>219</td>
</tr>
<tr>
<td>2007</td>
<td>210</td>
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<td>2009</td>
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<td>221</td>
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<tr>
<td>2011</td>
<td>212</td>
<td>221</td>
</tr>
<tr>
<td>2013</td>
<td>213</td>
<td>222</td>
</tr>
<tr>
<td>2015</td>
<td>215</td>
<td>223</td>
</tr>
</tbody>
</table>

Arizona NAEP 4th grade reading rank: 43/50, 47/50, 47/50, 47/50, 45/50, 45/50, 44/50

Source: ERS analysis based on NAEP Data Explorer; NAEP reading rank based on average scale score
Across most subgroups, Arizona students perform worse than the national average.

### 2015 NAEP 4th Grade Reading Average Scale Scores, by Subgroup, for Arizona and National

<table>
<thead>
<tr>
<th>Subgroup</th>
<th>Arizona</th>
<th>National</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRL students</td>
<td>208</td>
<td>207</td>
</tr>
<tr>
<td>English Language Learners</td>
<td>192</td>
<td>199</td>
</tr>
<tr>
<td>Students with Disabilities</td>
<td>175</td>
<td>184</td>
</tr>
<tr>
<td>White students</td>
<td>236</td>
<td>235</td>
</tr>
<tr>
<td>Black students</td>
<td>214</td>
<td>208</td>
</tr>
<tr>
<td>Hispanic students</td>
<td>206</td>
<td>210</td>
</tr>
<tr>
<td>American Indian/Alaska Native students</td>
<td>191</td>
<td>206</td>
</tr>
</tbody>
</table>

Source: ERS analysis based on NAEP Data Explorer
Understanding the Context

Economic Impact
Arizona’s per capita income has declined relative to the U.S. average.

Per Capita Personal Income in Arizona as Percentage of U.S. Per Capita Personal Income, 2005-2016

Source: ERS analysis based on data from Bureau of Economic Analysis
And has declined faster than even the poorest states in the country.
...even after controlling for population differences in the workforce
AZ works to attract business investments, but unlike Arizona, most of the top-ranked states for business attractiveness are also highly ranked for academic performance

<table>
<thead>
<tr>
<th>State</th>
<th>2017 CNBC Best States to Do Business Ranking</th>
<th>NAEP 2015 4th grade reading rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington</td>
<td>1/50</td>
<td>13/50</td>
</tr>
<tr>
<td>North Carolina</td>
<td>5/50</td>
<td>14/50</td>
</tr>
<tr>
<td>Colorado</td>
<td>6/50</td>
<td>21/50</td>
</tr>
<tr>
<td>Virginia</td>
<td>7/50</td>
<td>4/50</td>
</tr>
<tr>
<td>Utah</td>
<td>8/50</td>
<td>15/50</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>10/50</td>
<td>1/50</td>
</tr>
<tr>
<td>Florida</td>
<td>12/50</td>
<td>9/50</td>
</tr>
<tr>
<td>Nebraska</td>
<td>13/50</td>
<td>11/50</td>
</tr>
<tr>
<td>Indiana</td>
<td>14/50</td>
<td>10/50</td>
</tr>
<tr>
<td>Iowa</td>
<td>15/50</td>
<td>20/50</td>
</tr>
<tr>
<td>Arizona</td>
<td>26/50</td>
<td>45/50</td>
</tr>
</tbody>
</table>

Source: ERS analysis based on CNBC America’s Top States for Business 2017, NAEP Data Explorer; CNBC Business Ranking Methodology: An overall ranking was calculated based on measures of workforce, infrastructure, cost of doing business, economy, quality of life, technology and innovation, education, business friendliness, access to capital, and cost of living; NAEP reading rank based on average scale score; Ten of the top fifteen states (or 66%) ranked as best states to do business in were ranked in the top half of 2015 NAEP performance. The five states excluded from the data table are: Georgia, Michigan, Minnesota, Texas, and Tennessee – these states are not ranked in the top half of 2015 NAEP performance.
Raising high school graduation rates would result in significant economic gains for the state

Source: The Graduation Effect, Alliance for Excellent Education
And increasing the number of students with a college degree would further grow Arizona’s economy.

In 2016, individuals who were awarded an undergraduate or graduate degree from Arizona’s public universities between 1990 and 2016 earned nearly $17.25 billion in wages in Arizona and paid approximately $1.23 billion in state and local taxes. Currently, 43% of Arizona residents aged 25-64 have earned a 2- or 4-year postsecondary degree. If Arizona increased the percentage of residents attaining post-secondary education to 60%, it would pump more than $3.5 billion in personal income and tax revenue into the state annually.
Understanding the Context

Current K-12 Investments
Compared to the national median, Arizona districts spend less per pupil on all uses—instruction, support services, and non-instruction.

Per Pupil Expenditure by Use, 2013-14, Adjusted for Geography

- **United States median**: $6,319 (Instruction: $6,319, Support Services: $3,932, Non-Instruction: $324)
- **Median of lowest spend states**: $4,931 (Instruction: $2,907, Support Services: $458, Non-Instruction: $394)
- **Arizona**: $4,037 (Instruction: $4,037, Support Services: $3,026, Non-Instruction: $394)

Source: ERS analysis of data from NCES Instruction Expenditures per pupil [State Finance] 2013-14, Support Services Expenditures per pupil [State Finance] 2013-14, Non-Instruction Expenditures per pupil [State Finance] 2013-14; NCES Comparable Wage Index; Lowest spend states are states in the bottom quartile of per pupil expenditure after adjusting for geography (excluding AZ): CA, CO, FL, GA, ID, MS, NC, NV, OK, TN, TX, UT
Arizona districts spend less per pupil on instruction compared to all other states

Per-Pupil Expenditure on Instruction, 2013-14, Adjusted for Geography

- **United States median**: $6,319
- **Median of lowest spend states**: $4,931
- **Arizona**: $4,037

Source: ERS analysis of data from NCES Instruction Expenditures per pupil [State Finance] 2013-14, NCES Comparable Wage Index; Lowest spend states are states in the bottom quartile of per pupil expenditure after adjusting for geography (excluding AZ): CA, CO, FL, GA, ID, MS, NV, OK, TN, TX, UT
Within instruction, Arizona districts spend less per pupil than all other states on compensation.
But compared to the rest of the country, compensation in Arizona comprises a similar percent of total per-pupil instructional spend.
Arizona districts spend less per pupil than the national median on support services, though slightly more than the other lowest-spend states.
Within support services, Arizona spends less on instruction support and school administration, but more on student support and operations and maintenance compared to other low-spend states.

Identifying the Challenges
Teacher Workforce
An analysis of conditions impacting state teacher shortages ranked Arizona in the bottom of all states for attractiveness of the teaching profession.

Teacher Attractiveness Rating (Learning Policy Institute)

Source: ERS analysis using data from "A coming crisis in teaching? Teacher supply, demand, and shortages in the U.S.", Learning Policy Institute 2016. States were evaluated on 12 metrics in the areas of compensation, working conditions, teacher qualifications, and teacher turnover. Teaching attractiveness ratings are calculated by assigning point values for each indicator according to the quintile. This rating represents the average quintile rank for each state. Analyses are based on data from 2012-2014.
Arizona teachers leave the teaching profession at the highest rate in the country, nearly 3x higher than the national median.

Rate of Teacher Attrition (Leavers) 2013

Considering all teachers who leave their schools, AZ has the highest turnover in the U.S., with close to a quarter of teachers leaving their schools annually, nearly double the national median of 14%.

Data from the Arizona Department of Education shows that since 2013, 42% of Arizona teachers left within 3 years of being hired. 22% of the teachers hired from 2013-2015 lasted only one year.
Arizona is in the bottom five of all states for percent of teachers within their first two years in the classroom.

### Percent Novice Teachers, 2013-14

High turnover and attrition means more inexperienced teachers. But research shows that teachers become more effective in producing student achievement gains after the first two years of teaching, with continued increases in gains as experience increases.

High turnover and attrition in Arizona contribute to the state’s ongoing teacher shortage.

Source: ERS analysis using data from U.S. Department of Education Teacher Shortage Areas Nationwide Listing June 2017; “Finding and Keeping Educators for Arizona’s Classrooms,” Morrison Institute for Public Policy 2017; ‘Easiest to staff” areas are defined here as the arts, early childhood, elementary education (general), English language arts, Social studies/humanities; For AK 2016-17 is most recent year of data.

Arizona reports more teacher shortages in “easy to staff areas” than all but four states. In a recent survey, 81% of administrators reported difficulty hiring new teachers.
Identifying the Challenges

Teacher Salaries
AZ’s unhealthy teacher labor market is closely tied to its low salaries; real inflation-adjusted teacher salaries have declined 16% in the last three decades, more than most other states.

Source: ERS analysis based on NCES Table 211.60 Estimated average annual salary of teachers in public elementary and secondary schools, by state: Selected years, 1969-70 through 2016-17
Just since the 2008 recession, real inflation-adjusted teacher salaries in Arizona have declined 10%, more than in all but 5 states.

Source: ERS analysis based on NCES Table 211.60 Estimated average annual salary of teachers in public elementary and secondary schools, by state: Selected years, 1969-70 through 2016-17
Reaching the point where Arizona now has the 7th lowest teacher salary in the U.S.

In a recent survey, more than 80% of AZ teachers reported increased pay as the top way to attract new teachers, with a similar percentage reporting low pay as the main reason teachers leave the profession.

Source: ERS analysis based on NCES Table 211.60 Estimated average annual salary of teachers in public elementary and secondary schools, by state: Selected years, 1969-70 through 2016-17; “Finding and Keeping Educators for Arizona’s Classrooms,” Morrison Institute for Public Policy 2017
After adjusting for differences in geography, Arizona has the 6th lowest average teacher salary in the nation.
Arizona teachers earn about 62% of what similarly educated non-teachers in the state earn (even after controlling for hours worked), the lowest wage competitiveness ratio of all states.
The average teacher salary in Arizona is 19% less than what is required for a family living wage in the state, the third largest gap in the nation.
Arizona teacher salaries and raises are low at all levels of experience

### Average Teacher Salaries Across a Career, in 2016-17 Dollars

<table>
<thead>
<tr>
<th>State</th>
<th>Average Teacher Salary Gap to Family Living Wage</th>
<th>Average Starting Salary</th>
<th>Average Salary for Bachelor's Degree + 10 years</th>
<th>Average Salary for Master's Degree + 11-20 years</th>
<th>Highest Possible Salary</th>
<th>Average Increase From Starting to Max Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado</td>
<td>-25%</td>
<td>$33,424</td>
<td>$38,219</td>
<td>$56,003</td>
<td>$59,464</td>
<td>$26,040</td>
</tr>
<tr>
<td>Virginia</td>
<td>-19%</td>
<td>$33,336</td>
<td>$38,747</td>
<td>$46,130</td>
<td>$58,347</td>
<td>$25,011</td>
</tr>
<tr>
<td>Arizona</td>
<td>-19%</td>
<td>$33,791</td>
<td>$40,094</td>
<td>$48,219</td>
<td>$57,155</td>
<td>$23,364</td>
</tr>
<tr>
<td>South Dakota</td>
<td>-17%</td>
<td>$36,800</td>
<td>$41,562</td>
<td>$52,864</td>
<td>$54,746</td>
<td>$17,946</td>
</tr>
<tr>
<td>Utah</td>
<td>-17%</td>
<td>$35,591</td>
<td>$43,113</td>
<td>$58,045</td>
<td>$60,338</td>
<td>$24,747</td>
</tr>
<tr>
<td>Michigan</td>
<td>16%</td>
<td>$38,413</td>
<td>$57,304</td>
<td>$67,625</td>
<td>$75,888</td>
<td>$37,475</td>
</tr>
<tr>
<td>Connecticut</td>
<td>16%</td>
<td>$39,320</td>
<td>$54,280</td>
<td>$64,739</td>
<td>$76,603</td>
<td>$37,282</td>
</tr>
<tr>
<td>New York</td>
<td>16%</td>
<td>$38,691</td>
<td>$48,309</td>
<td>$65,453</td>
<td>$79,091</td>
<td>$40,400</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>21%</td>
<td>$41,960</td>
<td>$51,543</td>
<td>$69,342</td>
<td>$77,722</td>
<td>$35,762</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>25%</td>
<td>$37,310</td>
<td>$54,219</td>
<td>$61,445</td>
<td>$70,909</td>
<td>$33,599</td>
</tr>
</tbody>
</table>

Source: ERS analysis based on data from NCES Table 211.40 Average base salary for full-time public elementary and secondary school teachers with a master's degree as their highest degree, by years of full-time teaching experience and state: Selected years, 1993-94 through 2011-12; NCES Table 211.30 Average base salary for full-time public elementary and secondary school teachers with a bachelor's degree as their highest degree, by years of full-time teaching experience and state: Selected years, 1993-94 through 2011-12; NCES Table 2. Percentage of public school districts that had salary schedules for teachers and among those that had salary schedules, the average yearly teacher base salary, by various levels of degrees and experience and state: 2011–12; MIT Living Wage Calculator; Bureau of Labor Statistics. All data inflation-adjusted to 2016-17; gap to living wage analysis compares average salary for each state in 2016-17 to a family living wage; excluding living wage gap, all other analyses have adjusted for cost of living across states.
Teachers in Arizona with 10 years of experience who head families of four qualify for the most public assistance programs of all states.
Arizona teachers cite pay as the main reason for leaving the profession in far greater rates than the national average.

In a recent survey, more than 80% of Arizona teachers reported low pay as the main reason they leave the profession, with a similar percentage reporting increased pay as the top way to attract new teachers. In contrast, in a national survey, less than 10% of teachers who voluntarily left the profession cited salary or other benefits as their reason for leaving.

"The pay is extremely minimal, so much so that I can hardly afford living in a small apartment and paying my bills, including student loans."

– Survey response from Tucson elementary school teacher

Source: ERS analysis based on data from “Finding and Keeping Educators for Arizona’s Classrooms,” Morrison Institute for Public Policy 2017; NCES Table 5.

Percentage distribution of public school teacher leavers who left teaching involuntarily or who rated various reasons as the most important in their decision to leave the position of a K–12 teacher: 2012–13, (based on data from U.S. Department of Education, National Center for Education Statistics, Teacher Follow-up Survey (TFS), "Former Teacher Data File," 2012-13)
Average teacher salaries vary across the state, though the majority of districts are close to the median average teacher salary for Arizona.

**Average Teacher Salary by Arizona District, 2016-17**

- **Median:** $43.4K
- **Outside 10% of Median**
- **Within 10% of Median**

59% of districts are within 10% of the median average teacher salary.

Average teacher salary spread between highest and lowest district: 2.2x

Source: ERS analysis using data from 2016-17 Arizona Dept of Education School District Employee Report, Teachers by Gender & Grade.
Most Arizona districts have average teacher salaries below the local family living wage, and some districts are facing particularly large gaps.

97% of districts have an average teacher salary below the family living wage.

153 districts (or 63%) have an average teacher salary more than 20% below the family living wage.

Source: ERS analysis using data from 2016-17 Arizona Dept of Education School District Employee Report, Teachers by Gender & Grade; MIT 2016-17 Living Wage Calculator
Identifying the Challenges

Teacher Working Conditions
Other reasons Arizona teachers cite for leaving the profession include poor working conditions and lack of support.

Source: "Finding and Keeping Educators for Arizona’s Classrooms," Morrison Institute for Public Policy 2017
Arizona also has a higher pupil-to-teacher ratio than nearly every other state.

As well as larger class sizes than most states

Source: ERS analysis using data from NCES School and Staffing Survey Table 7. Average class size in public primary schools, middle schools, high schools, and schools with combined grades, by classroom type and state: 2011–12; No data for FL, HI, MD, RI
Arizona has larger pupil-to-instructional aide ratios than many other states
Arizona teachers have less planning and collaboration time than teachers in other states.

Source: ERS analysis based on data from National Council on Teacher Quality Teacher Contract Database. Only 10 states have policies for teacher planning time; for all other states, planning time for the state’s largest district was used; 12 states had neither state nor local policies available (AL, GA, ID, IN, IA, ME, MO, NY, PA, SC, UT, WI); for the 18 states/districts that specified only ‘1 planning period’ an estimate of 50-minute periods was used; Assumes that structured time for teacher collaboration happens in planning time during the regular school day.
Even compared to the lowest-funded conservative states, Arizona spends less on teacher support through staff training and school administration.
Identifying the Challenges
Per-Pupil Funding
While Arizona per-pupil funding was once close to the national median, the gap has grown significantly in recent years.

Arizona Per-Pupil Revenue Compared to National Median, Selected Years 1989-90 to 2014-15

<table>
<thead>
<tr>
<th>Year</th>
<th>Per pupil revenue in 2014-15 dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990-91</td>
<td>$9,000</td>
</tr>
<tr>
<td>1994-95</td>
<td>$8,000</td>
</tr>
<tr>
<td>1998-99</td>
<td>$10,000</td>
</tr>
<tr>
<td>2002-03</td>
<td>$12,000</td>
</tr>
<tr>
<td>2006-07</td>
<td>$14,000</td>
</tr>
<tr>
<td>2010-11</td>
<td>$14,000</td>
</tr>
<tr>
<td>2014-15</td>
<td>$12,000</td>
</tr>
</tbody>
</table>

AZ funding rank

<table>
<thead>
<tr>
<th>Year</th>
<th>AZ funding rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990-91</td>
<td>33/50</td>
</tr>
<tr>
<td>1994-95</td>
<td>24/50</td>
</tr>
<tr>
<td>1998-99</td>
<td>44/50</td>
</tr>
<tr>
<td>2002-03</td>
<td>36/50</td>
</tr>
<tr>
<td>2006-07</td>
<td>43/50</td>
</tr>
<tr>
<td>2010-11</td>
<td>44/50</td>
</tr>
<tr>
<td>2014-15</td>
<td>47/50</td>
</tr>
</tbody>
</table>

Arizona is now one of the lowest-funded states in the country

This includes funds raised from Prop 301, passed in 2000 to increase education revenue, which contributed $492M ($453 per pupil) in FY15 and $547M (or $495 per pupil) in FY17.

Source: ERS analysis based on NCES Revenues and Expenditures for Public Elementary and Secondary Education: School Year 2014–15 (Fiscal Year 2015); “Funding PreK-12 Education,” 110th Arizona Town Hall Final Report; Arizona Joint Legislative Budget Committee Non-Capital Funding Report August 2017
...Even after controlling for differences in geography, Arizona students are funded at 71% of the national median and only 42% of the highest funded state.

Total K12 Per-Pupil Revenue, 2014-15, Adjusted for Geography

This includes funds raised from Prop 301, passed in 2000 to increase education revenue, which contributed $492M ($453 per pupil) in FY15 and $547M (or $495 per pupil) in FY17.

National median = $12,651

Source: ERS analysis based on NCES Revenues and Expenditures for Public Elementary and Secondary Education: School Year 2014–15 (Fiscal Year 2015); NCES Comparable Wage Index; "Funding PreK-12 Education," 110th Arizona Town Hall Final Report; Arizona Joint Legislative Budget Committee Non-Capital Funding Report August 2017
And real inflation-adjusted per-pupil funding in Arizona has actually declined 12% in recent years, more so than all but one state.
Prop 123 and Results-Based Funding together result in an additional $330M annually, or $298 per pupil, which still leaves Arizona investing less per pupil than most states.

While some of this additional revenue has been targeted for teacher compensation, this amount isn’t enough to address the labor market challenge.

Source: ERS analysis based on NCES Revenues and Expenditures for Public Elementary and Secondary Education: School Year 2014–15 (Fiscal Year 2015); NCES Comparable Wage Index; “Funding PreK-12 Education,” 110th Arizona Town Hall Final Report; Arizona Joint Legislative Budget Committee Non-Capital Funding Report August 2017.; Arizona Department of Education FY 2018 Results-Based Funding Allocation File; Uses estimated FY17 student enrollment from JLBC report of 1,104,753.
Identifying the Challenges

State Commitment to K-12 Funding
State effort for K-12 in Arizona is in line with other southwestern states, despite having lower K-12 revenue per pupil.
State effort for K-12 in Arizona is low, even when compared with a group of conservative states with similar wealth.

State and Local K-12 Revenue as Percent of State GDP, 2014-15

<table>
<thead>
<tr>
<th>State</th>
<th>K-12 Revenue as % of State GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Florida</td>
<td>2.7%</td>
</tr>
<tr>
<td>Arizona</td>
<td>2.9%</td>
</tr>
<tr>
<td>Alabama</td>
<td>3.3%</td>
</tr>
<tr>
<td>Kentucky</td>
<td>3.4%</td>
</tr>
<tr>
<td>Montana</td>
<td>3.5%</td>
</tr>
<tr>
<td>South Carolina</td>
<td>4.0%</td>
</tr>
</tbody>
</table>

National median = 3.3%

Per-pupil revenue 2014-15 (adjusted for geography)
- Florida: $9,857
- Arizona: $8,995
- Alabama: $10,293
- Kentucky: $11,373
- Montana: $14,497
- South Carolina: $12,207

K-12 revenue per taxpayer 2014-15
- Florida: $2,451
- Arizona: $2,975
- Alabama: $3,214
- Kentucky: $3,454
- Montana: $3,181
- South Carolina: $3,704

Per capita GDP 2016
- Florida: $39,543
- Arizona: $38,590
- Alabama: $37,261
- Kentucky: $37,261
- Montana: $38,985
- South Carolina: $37,063

Change in per capita GDP 2009-2016
- Florida: 2.1%
- Arizona: 2.0%
- Alabama: 5.7%
- Kentucky: 7.5%
- Montana: 8.4%
- South Carolina: 6.1%

Source: ERS analysis based on data from NCES Revenues and Expenditures for Public Elementary and Secondary Education: School Year 2014–15 (Fiscal Year 2015); NCES Comparable Wage Index; Internal Revenue Service; Bureau of Economic Analysis, Gallup Ideology by State 2016
Every state that is poorer than Arizona spends more of their GDP on K-12 education.
And state effort in Arizona falls significantly behind most of the highest-performing states.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Florida</td>
<td>$9,857</td>
<td>$2,451</td>
<td>9/50</td>
</tr>
<tr>
<td>Arizona</td>
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<td>45/50</td>
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<tr>
<td>Virginia</td>
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<td>4/50</td>
</tr>
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<td>Indiana</td>
<td>$12,446</td>
<td>$4,829</td>
<td>10/50</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>$15,659</td>
<td>$3,454</td>
<td>1/50</td>
</tr>
<tr>
<td>Kentucky</td>
<td>$11,373</td>
<td>$4,078</td>
<td>2/50</td>
</tr>
<tr>
<td>New Hampshire</td>
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</tr>
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<td>Connecticut</td>
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<td>6/50</td>
</tr>
<tr>
<td>Wyoming</td>
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</tr>
<tr>
<td>New Jersey</td>
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</tr>
<tr>
<td>Vermont</td>
<td>$21,589</td>
<td></td>
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</tbody>
</table>

Source: ERS analysis based on NAEP Data Explorer; NCES Revenues and Expenditures for Public Elementary and Secondary Education: School Year 2014–15 (Fiscal Year 2015); NCES Comparable Wage Index; Internal Revenue Service; Bureau of Economic Analysis; NAEP reading rank based on average scale score.
State commitment to education funding in Arizona has lagged the nation since 1990 and is at one of the lowest points of the last three decades.
Finding the Solutions

Teacher Salary Reform
Currently, it takes the average Arizona teacher more than 25 years just to earn a family living wage.

Source: ERS analysis based on NCES Schools and Staffing Survey Public Teachers and District Data Files 2011-12; Arizona Department of Education Teacher Experience Report FY17; Superintendent Annual Financial Report FY17; Expect More Arizona Progress Meter; Bureau of Labor Statistics Inflation Index; MIT Living Wage Calculator; US Census Bureau; Pew Research Center. This analysis uses average salaries based on teacher experience from 2011-12, adjusted for inflation to 2016-17 dollars. Due to data availability, salary data beyond year 14 is estimated based on the reported 15+ year average and reported maximum salary.
Enabling teachers to reach the family living wage by mid-career would cost about $900M-$1.1B annually.
But Arizona cannot afford to funnel so many resources into an outdated system that does not attract and retain the best teachers or incentivize teachers to improve and contribute

## Goals and Principles of a Strategic Teacher Compensation System

<table>
<thead>
<tr>
<th>THE WHY</th>
<th>THE WHAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A teacher compensation system should support the district’s efforts to...</td>
<td>To accomplish this goal, the compensation system must ensure that...</td>
</tr>
</tbody>
</table>

### COMPENSATION GOAL

| Attract a high-potential teaching force. | The value proposition for new employees is clear, competitive, and differentiated based on needed knowledge and skills, and is carefully reviewed and improved on an ongoing basis. |
| Retain a high-performing teaching force and encourage low performers to leave the system. | Effective performers have predictable and greater career and compensation opportunities, while ineffective performers are not given automatic pay increases over time. |
| Leverage the highest performers for continuous improvement in district-wide student learning. | Strong performers based on clear criteria are given opportunities for expanded responsibilities and reach to contribute to student and teacher learning, while efforts are made to minimize the reach of the lowest performers. |
| Strategically align the teaching force in support of district priorities and performance goals. | The value proposition should reward behaviors that are aligned with district priorities. This includes incentives to attract educators to more challenging assignments or harder-to-staff subject areas as well as toward greater professional collaboration and innovation. |
| Compensate a high-performing teaching force in a fiscally sustainable way. | The value proposition is flexibly structured to reflect changing short- and long-term economic realities and emphasizes important nonmonetary factors. |

Arizona districts could use that $900M-$1.1B investment to frontload pay raises to help teachers reach the family living wage sooner and minimize the high rates of attrition for new teachers.

Calculated Average Teacher Salary by Years of Experience, 2016-17

Source: ERS analysis based on NCES Schools and Staffing Survey, Public Teachers and District Data Files 2011-12; Arizona Department of Education Teacher Experience Report FY17; Superintendent Annual Financial Report FY17; Expect More Arizona Progress Meter; Bureau of Labor Statistics Inflation Index; MIT Living Wage Calculator; US Census Bureau; Pew Research Center. This analysis uses average salaries based on teacher experience from 2011-12, adjusted for inflation to 2016-17 dollars. Due to data availability, salary data beyond year 14 is estimated based on the reported 15+ year average and reported maximum salary. Total investment based on 2016-17 teacher FTE for both district and charter; includes estimated teacher salary investment of ~$745M-$893M and benefits investment of ~$149M-$179M (assumes 20% benefits rate excluding fixed costs of health, dental, and life insurance, based on data from Arizona School Boards Association).

- Family living wage 2017: $58.2K
- National median teacher salary 2017: $54.7K
- Calculated AZ teacher salary trajectory 2017
- Proposed increase to reach family living wage in 11-12 years
- Proposed increase to reach family living wage in 5-6 years
Alternately, districts could use that $900M-$1.1B investment to differentiate salary based on contribution to improve recruitment and retention of the most effective teachers.

Calculated Average Teacher Salary by Years of Experience, 2016-17

- Family living wage 2017: $58.2K
- National median teacher salary 2017: $54.7K
- Calculated AZ teacher salary trajectory 2017
- Proposed increase for highly effective teachers
- Proposed increase for effective teachers
- Proposed increase for minimally effective teachers
- Proposed increase for ineffective teachers

Source: ERS analysis based on NCES Schools and Staffing Survey, Public Teachers and District Data Files 2011-12; Arizona Department of Education Teacher Experience Report FY17; Superintendent Annual Financial Report FY17; Expect More Arizona Progress Meter; Education Sector Inside IMPACT: D.C.’s Model Teacher Evaluation System; Bureau of Labor Statistics Inflation Index; MIT Living Wage Calculator; US Census Bureau; Pew Research Center. This analysis uses average salaries based on teacher experience from 2011-12, adjusted for inflation to 2016-17 dollars. Due to data availability, salary data beyond year 14 is estimated based on the reported 15+ year average and reported maximum salary. Due to lack of AZ effectiveness data, analysis uses effectiveness breakdown from DCPS (selected because of history of strong teacher evaluation system and aligned compensation model) of 2% ineffective, 16% minimally effective, 67% effective, and 15% highly effective. Total investment based on 2016-17 teacher FTE for both district and charter; includes estimated teacher salary investment of ~$745M-$893M and benefits investment of ~$149M-$179M (assumes 20% benefits rate excluding fixed costs of health, dental, and life insurance, based on data from Arizona School Boards Association).
Finding the Solutions

Maximizing Teacher Salary Investments
Arizona could leverage this increased teacher salary investment as a key opportunity to bring in other reforms to improve teaching and learning across the state

- Increase the length of the school day
- Improve teacher development and support
- Foster innovative school designs
- Modernize teacher retirement plans
Arizona students spend less time in school than students in other states

Minimum Annual Instructional Hours for 9th grade 2014-15

National median = 1038

Source: ERS analysis based on data from NCES Table 5.14. Number of instructional days and hours in the school year, by state: 2014–15; Maine is excluded as does not have a requirement for minimum instructional hours; for 13 states (AL, AR, IL, IN, MS, NV, NJ, NY, SC, TN, VT, WV) minimum instructional time was calculated using the minimum amount of instructional time in days and the minimum time required for any day to count as an instructional day for 9th grade.
Arizona could increase total instructional time by 1.5 hours a day, to bring AZ in line with the highest-performing states in the country.

**Minimum Annual Instructional Hours for 9th grade 2014-15**

Increasing AZ to the median of 990 hours/year equates to 1.5 hours a day for a 180-day school year.

<table>
<thead>
<tr>
<th>State</th>
<th>Minimum Annual Instructional Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona</td>
<td>720</td>
</tr>
<tr>
<td>New Jersey</td>
<td>720</td>
</tr>
<tr>
<td>Connecticut</td>
<td>900</td>
</tr>
<tr>
<td>Florida</td>
<td>900</td>
</tr>
<tr>
<td>Vermont</td>
<td>962.5</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>990</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>990</td>
</tr>
<tr>
<td>Virginia</td>
<td>990</td>
</tr>
<tr>
<td>Kentucky</td>
<td>1062</td>
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<tr>
<td>Indiana</td>
<td>1080</td>
</tr>
<tr>
<td>Wyoming</td>
<td>1100</td>
</tr>
</tbody>
</table>

**Source:** ERS analysis based on NAEP Data Explorer, NCES Table 5.14. Number of instructional days and hours in the school year, by state: 2014–15; For 3 of the top-performing states (IN, NJ, VT) minimum instructional time was calculated using the minimum amount of instructional time in days and the minimum time required for any day to count as an instructional day for 9th grade; NAEP reading rank based on average scale score.
AZ could improve teacher development and support by doubling current teacher planning time to enable longer blocks for teacher collaboration weekly, without impacting student instructional time.

Extending the student instructional day by 1.5 hours generates an additional 450 minutes weekly of teacher and student time. Districts could use this time to extend teachers’ planning periods from the current average of 45 minutes, to 90 minutes, to enable more effective planning and collaboration time.

Additionally, if AZ were to move to teacher career and compensation pathways, its most effective teachers would receive increased pay tied to specific roles and responsibilities, including serving as teacher leaders to facilitate effective planning and collaboration for teacher teams, without an additional increased investment.

AZ could foster innovative educational practices such as multi-classroom leaders, building on career and compensation pathways that extend the reach of the most effective teachers.

As part of the additional compensation received through a revised compensation structure tied to effectiveness, highly effective teachers can take on additional responsibilities, including:

- Leading a team of teachers
- Setting high standards for instruction and assessments and providing direction and modeling for team members
- Clarifying team members’ roles
- Determining how students spend time
- Providing on-the-job feedback and development for team teachers
- Organizing and scheduling time for members of the team to monitor progress, plan instruction, and collaborate to improve instruction
- Evaluating team teachers for potential role changes and increased responsibility

A recent study found that the multi-classroom leader model led to significant growth in student achievement and teacher performance, as well as improved collaboration culture within a school.
Arizona could also evolve the instructional delivery model to increase the cost effectiveness of teacher compensation investments.

In the blended learning approach shown here, digital content is integrated into one teacher’s classroom. This option enables:

- Smaller group sizes (despite large class sizes) for teacher-student work
- A dynamic and personalized learning environment
- Individualized pathways through digital instruction
- Improved real-time data on student need

Source: ERS Strategic School Design
Currently, only 16% of the Arizona teacher workforce will receive pension benefits that meet or exceed the value of their own contributions, plus interest.

Source: ERS analysis based on data from “Retirement Reality Check: Grading State Teacher Pension Plans” June 2017; “Negative Returns: How State Pensions Shortchange Teachers” September 2015; Arizona State Retirement System (ASRS); ASRS was 77.6% funded as of June 2014.
AZ could replace antiquated pension plans with defined contribution plans that are more visible, more portable, and more cost effective.

Alaska: Defined Contribution (401a) Plan
A new teacher in the Anchorage School District realizes a return on her contributions immediately, and her net benefit grows over time.

Arizona: Defined Benefit (Pension) Plan
A new teacher in Mesa Public Schools must remain in the pension system for 30 years before she realizes a return on her contributions.

One study of Illinois teachers found that teachers would prefer a $2 increase in current wages to a $10 increase in their retirement package.

By making this shift from pension plans to defined contribution plans, Arizona has an opportunity to increase teacher salaries by 9.5% over time.

**Projected Change to Average Teacher Salary**

- **Current avg teacher salary 2015-16 (adjusted for inflation to 2016-17 dollars):** $46,274
- **Potential per teacher increase in salary if pension debt costs were eliminated:** $4,407
- **Projected avg teacher salary if pension debt costs were eliminated:** $50,681

Making this type of shift requires a long-term transition plan that over time has the potential to increase teacher salaries and save ~$220-260M in pension debt costs.

Source: ERS analysis based on data from NCES Table 211.60 Estimated average annual salary of teachers in public elementary and secondary schools, by state: Selected years, 1969-70 through 2015-16; “The Pension Pac-Man: How Pension Debt Eats Away at Teacher Salaries,” Bellwether Education Partners, May 2016; “Negative Returns: How State Pensions Shortchange Teachers,” Bellwether Education Partners, September 2015; Annual Report of the Arizona Superintendent of Public Instruction 2017; Arizona Joint Legislative Budget Committee Non-Capital Funding Report 2017; Bureau of Labor Statistics; Range of total pension debt cost savings based on district teacher FTE only at the low end and all teacher FTE (district and charter) at the high end.
Finding the Solutions
Impact of Investments on K-12 Revenue Needs
To effectively improve the teacher workforce, Arizona would need to invest about $900M-$1.1B annually, or ~$970 per pupil.

Source: ERS analysis of data from Arizona Joint Legislative Budget Committee Non-Capital Funding Report 2017; ERS analysis of teacher salary investments. Uses estimated FY17 student enrollment from JLBC report of 1,104,753; Analysis assumes high end of teacher compensation investment, $1.1B.

This equals a total increase of 11.6% per pupil on average, and an 13.6% increase in state/local funds only.
Compared to the lowest-spend conservative states, Arizona districts spend slightly more on support services.

Per-Pupil Expenditure by Use, 2013-14, Adjusted for Geography

- **United States median**: $6,319 (Instruction) + $3,932 (Support) = $10,251
- **Median of lowest spend conservative states**: $5,031 (Instruction) + $2,907 (Support) = $7,938
- **Arizona**: $4,037 (Instruction) + $3,026 (Support) = $7,063

Source: ERS analysis of data from NCES Instruction Expenditures per pupil [State Finance] 2013-14, Support Services Expenditures per pupil [State Finance] 2013-14, Non-Instruction Expenditures per pupil [State Finance] 2013-14; NCES Comparable Wage Index; Gallup Ideology by State 2016; Lowest spend conservative states are (excluding AZ): CO, FL, GA, ID, MS, NV, OK, TN, TX, UT, VA
There may be an opportunity to reallocate some resources from student support and O&M to help fund this teacher salary investment.

Compared to the median of peer states, AZ spent $131 per pupil more on student support services and $120 per pupil more on operations and maintenance.

### Support Services Expenditure Per Pupil by Function, 2013-14, Adjusted for Geography

<table>
<thead>
<tr>
<th>Arizona</th>
<th>$319</th>
<th>$336</th>
</tr>
</thead>
<tbody>
<tr>
<td>$926</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$538</td>
<td></td>
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</tr>
</tbody>
</table>

Within student support services, Arizona districts spend more on compensation and purchased services.

Compared to the median of peer states, AZ spent $57 per pupil more (or 0.8% of total expenditure) on purchased services and $59 per pupil more (or 0.8%) for compensation ($45 for salaries plus $14 for benefits).

Source: ERS analysis based on NAEP Data Explorer; NCES Comparable Wage Index; NCES Student Support Services - Salaries [State Finance] 2013-14; Student Support Services - Benefits [State Finance] 2013-14; Student Support Services - Purchased Services [State Finance] 2013-14; Student Support Services - Supplies [State Finance] 2013-14; Student Support Services – Other [State Finance] 2013-14; Fall Membership [State Finance] 2013-14; Gallup Ideology by State 2016; Student support services include attendance and social work, guidance, health, psychological services, speech pathology, audiology, and other student support service; NAEP reading rank based on average scale score; comparison states are the lowest spend conservative states.
While AZ’s average compensation for student support staff is less than half that of the peer median, AZ’s higher per-pupil spend is a result of a lower student-staff ratio in this area, lower than all but 4 states.

AZ’s average total compensation (salaries plus benefits) for student support staff is only $41K compared to $83K for comparison states. Keeping salaries the same, AZ could reduce its per-pupil spend to the peer median just by raising ratios to 110 pupils per student support staff member.

Source: ERS analysis based on NAEP Data Explorer; NCES Student Support Services [State] 2013-14; NCES Comparable Wage Index; NCES Student Support Services - Salaries [State Finance] 2013-14; Student Support Services - Benefits [State Finance] 2013-14; Fall Membership [State Finance] 2013-14; Gallup Ideology by State 2016; NAEP reading rank based on average scale score; comparison states are the lowest spend conservative states.
A second opportunity for increased efficiency is within O&M, where Arizona districts spend more on purchased services and supplies compared to other low-funded conservative states.

### Operations and Maintenance Expenditure Per Pupil by Function, 2013-14, Adjusted for Geography

Compared to peer states, AZ spent $152 per pupil more (or 2% of total expenditure) on O&M purchased services and $29 per pupil (or 0.4%) on supplies.

<table>
<thead>
<tr>
<th>States</th>
<th>Remaining Expenses Per Pupil</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States median</td>
<td>$313</td>
</tr>
<tr>
<td>Comparison state median</td>
<td>$192</td>
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<tr>
<td>Utah</td>
<td>$104</td>
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<tr>
<td>Georgia</td>
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<tr>
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<td>Florida</td>
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<td>Arizona</td>
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<tr>
<td>Oklahoma</td>
<td>$253</td>
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<tr>
<td>Mississippi</td>
<td>$202</td>
</tr>
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</table>

Source: ERS analysis based on NAEP Data Explorer; NCES Comparable Wage Index; NCES Operations & Maintenance- Salaries [State Finance] 2013-14; Operations & Maintenance- Benefits [State Finance] 2013-14; Operations & Maintenance- Purchased Services [State Finance] 2013-14; Operations & Maintenance- Supplies [State Finance] 2013-14; Operations & Maintenance- Other [State Finance] 2013-14; Fall Membership [State Finance] 2013-14; Gallup Ideology by State 2016; Operations and maintenance includes the operation of buildings, the care and upkeep of grounds and equipment, vehicle operations (other than student transportation) and maintenance, and security; NAEP reading rank based on average scale score; comparison states are the lowest spend conservative states.
Together, these savings opportunities are not enough to meet the teacher investment revenue gap.

### Estimated Average Per-Pupil Revenue Required for Teacher Salary Investment

- **Average per-pupil revenue 2016-17 (non-capital):** $8,361
- **Additional average per-pupil investment for teacher salary increase:** $970
- **Average per-pupil revenue accounting for potential savings and reinvestments:** $8,026

**Remaining gap to fund teacher salary investment:**

**Potential savings opportunities from existing resource reallocation:**

After reallocating half of these resources, Arizona could fund the remaining teacher salary investment by increasing state effort for education to 3.2%

Source: ERS analysis based on Arizona Joint Legislative Budget Committee Non-Capital Funding Report 2017; Bureau of Economic Analysis; ERS analysis of teacher salary investments; Savings estimates based on previous per pupil calculations totaling 4% of total expenditure in 2013-14, and applying that 4% savings to a per pupil revenue of $8,361 in 2016-17; total estimated saving shown here based on applying those per pupil savings to estimated FY17 student enrollment from JLBC report of 1,104,753; additional revenue required based on estimate of $1.1B investment for increasing teacher salaries