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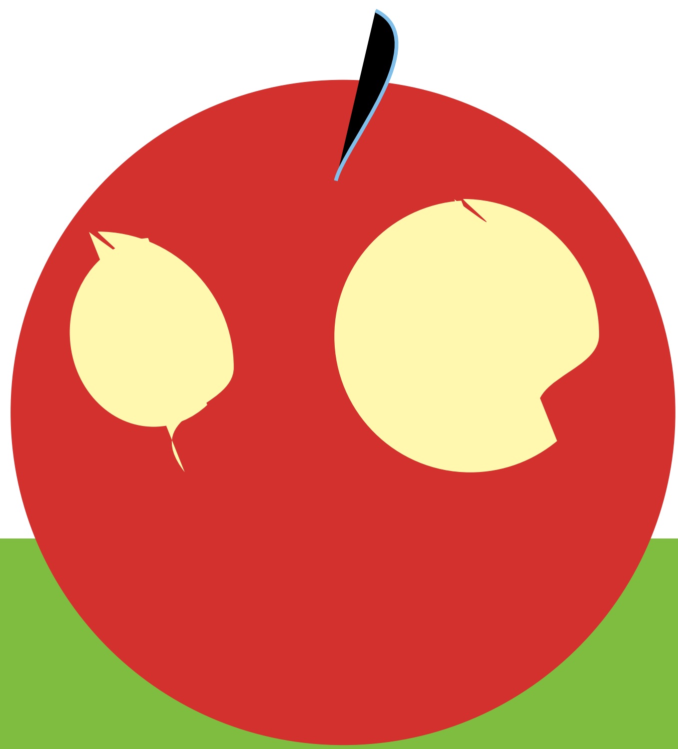

ANOTHER BITE AT THE APPLE

Comparing Teacher Retirement Plans

UTAH K-12 SPENDING SERIES: PART 4 | JUNE 2019

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INTRODUCTION

Observers often assume that government jobs pay less than the private sector but provide better benefits. With regard to pay, Utah Foundation's 2019 report, *Apples to Apples: How Teacher Pay in Utah Stacks Up to the Competition,* revealed that teachers do tend to make less than people in the private sector with similar levels of credentials, while teacher retirement benefits tend to be more generous. This compensation mix affects schools' recruitment and retention strategies. *Apples to Apples* focused mostly on pay, not retirement benefits, but called for policymakers to examine pay in the broader context of compensation. To that end, this report delves into the teacher retirement picture, making comparisons between Utah and its neighboring Mountain States.

Background

Assuming that a retiree needs about 80% of annual earnings per year to enjoy a comfortable retirement (and that retirement is supplemented by Social Security benefits) the retiree needs to have saved approximately 10% of salary at a 4% rate of return for about 40 years.[1] Career public school teachers are typically able to surpass the 10% savings goal, particularly given that robust teacher retirement plans are often included as part of overall compensation packages.

Nationally, there are three main types of teacher retirement plans: defined benefit, defined contribution and hybrid plans.

Defined benefit plans are the most common. A teacher's defined benefit retirement is just that: a set monthly benefit for teachers upon retirement. The amount of the benefit is typically determined through a combination of the number of

KEY FINDINGS OF THIS REPORT

- In Utah, teacher retirement benefits are provided as part of the Utah Retirement System, which underwent major changes in 2011 that decreased investment risk and public cost.s The changes also reduced the generosity of the plan for teachers.
- The old pension plan was much more beneficial to career teachers compared to the new teacher retirement plan, which is more suitable to teachers who may switch careers.
- The new teacher retirement plan's costs are roughly double the actual invested benefit per new teacher. The other half is going toward paying down the unfunded liabilities that the Utah Retirement System accrued in the past.
- Utah's teacher retirement offerings are different from other Mountain States in that Utah's newer plan types include an option that is similar to the standard private sector model.
- While plan benefits may be lower in Utah than in neighboring Mountain States, the plans in the other seven states require teachers to provide between 7% and 15% of their salaries to participate. Utah's teachers are not required to contribute to their retirement.
- Under the old retirement plan there was no required employee contribution. Likewise, the new plan currently has no required employee contribution – though the law allows for one as necessary to keep the Utah Retirement System adequately funded.
- Utah employers' contributions into the Utah Retirement System are 10% of employee salaries. Among the Mountain States, only Wyoming has a lower employer contribution rate.
- Of the eight Mountain States, only Idaho has a better-funded retirement system than Utah. Additionally, Utah's level of funding is based on relatively conservative investment assumptions.

As a result of the generosity, risk burden, past failures to pay necessary contributions and, ultimately, the public cost of defined benefit plans, some states and districts have moved to defined contribution or hybrid plans.

years teaching (or the age of the teacher), a benefit multiplier and the teacher's salary. For example, if a teacher has 30 years in the classroom and has an average monthly salary of $5,000, 30 is multiplied by $5,000 and then multiplied by the "benefit multiplier" – say 2.5% – for a resulting monthly retirement benefit of $3,750. If the plan is supplemented by Social Security, the multiplier might be lower, say 2%.

As a result of the generosity, risk burden, past failures to pay necessary contributions and, ultimately, the public cost of these plans, some states and districts have moved to defined contribution or hybrid plans.

Defined contribution plans capture a set percentage of an employees' salary that an employer invests on behalf of the employee – such as through a 401(k). This is the standard approach across the private sector for employers that offer retirement plans. (Though some, of course, offer no retirement at all.) In the case of a defined benefit plan, the ultimate retirement amounts for each retiree depends upon the amounts invested and the performance of those investments. In these plans, the risk burden is placed on the employee.

Hybrid plans are a combination of defined benefit and defined contribution plans, providing some mix of investment in each type. Hybrid plans place less risk on the employer than defined benefit plans – but, of course, more risk than defined contribution plans, in which the employee bears all of the risk burden.

Utah's Retirement System

The Utah Legislature first authorized the formation of local, teacher retirement associations in 1907. This paved the way for the provision of retirement benefits to teachers and other governmental employees. Today, Utah teachers are part of the Utah Retirement System (URS), which serves a range of public sector employees.

In 2010, the Utah Legislature passed Senate Bill 63, modifying the plan for new hires in order to cut costs and reduce risk to the state's retirement system.[2] These changes included a lower benefit for teachers.

Public employees hired before July 1, 2011, are deemed to be Tier 1 employees. Utah's Tier 1 public sector employees are on a traditional defined benefit plan.

New hires as of July 1, 2011, are deemed Tier 2 employees. Tier 2 employees have two choices for retirement plans: a defined contribution plan or a hybrid plan.

For the defined contribution plan, an amount equal to 10% of the employee's salary is paid directly into the employee's 401(k) or other retirement account. In Utah, there is no required employee match to receive this retirement benefit.

Utah's Tier 2 hybrid plan is dominated by its defined-benefit component. When comparing the Tier 1 plan and the defined-benefit aspects of the Tier 2 hybrid plan, the lower benefits are due primarily to a change to the multiplier, a change to the final average salary computation, a longer time until eligibility for retirement and a lower cost of living adjustment (COLA) limit. (See Figure 1.)

Teacher benefits decreased under the new hybrid plan.

Figure 1: Comparison of Benefit Features of the Tier 1 Plan and the Tier 2 Hybrid Plan

Benefit Features	Tier 1	Tier 2 Hybrid
Benefit multiplier	2.0%	1.5%
Final average salary	Highest three years	Highest five years
Retirement eligibility	Age 65 & four years of service; or 30 years of service	Age 65 & four years of service; or 35 years of service
Annual cost-of-living increase limit	4.0%*	2.5%

** Currently, the Utah Retirement System is assuming a 2.5% COLA rate for both tiers.*

Source: Utah Retirement System.

For the hybrid plan, the employer contributes to the pension plan based on the yearly pension contribution rate. The difference between the yearly pension contribution rate and 10% is paid into the employee's defined contribution portion of the hybrid plan.[3] The employer contribution rates for the 2018-19 school year were 8.85% for the defined-benefit portion and 1.15% for the defined-contribution portion, and will be 8.97% and 1.03% for 2019-20.[4] The hybrid plan is becoming more dominated by its defined-benefit component each year.

Of those employed Tier 2 enrollees, roughly four out of five chose the hybrid retirement system over the defined contribution plan.[5] This is a one-time, irrevocable election. Teachers are automatically enrolled into the hybrid plan if they make no selection.

Tier 2 teachers of any age can retire with 35 years of service. For employees with under 35 years of service who retire after age 60 but before age 65, the monthly payments are reduced by between 9% and 37%.[6]

In both defined contribution and hybrid plans, contributions to 401(k)s or other retirement accounts are vested – or available to be paid out – at four years of service. Employees are free to contribute additional amounts as they would like, which vest immediately. Additional employee amounts are matched by the Utah Retirement System up to 2% plus $26 each pay period.[7]

As noted, Senate Bill 63 resulted in a lower retirement benefit for retirees. Retirement calculations for the Tier 1 plan and the defined-benefit portion of the Tier 2 hybrid plan are typical: Take the average high salary (over 3 and 5 years, respectively), multiply it by the benefit multiplier (2% and 1.5%, respectively) and by the years of service. At an average high salary of $50,000, the annual Tier 1 retirement amount for 35 years of service (though Tier 1 may retire with 30 years) would be $35,000 per year, whereas the annual Tier 2 retirement amount for 35 years of service would be $26,250 – or 75% of the Tier 1 amount. But the Tier 2 calculation does not include the 401(k) or other retirement account contribution, which has been over 1% of teacher salary per year. And neither calculation includes Social Security payments, which would allow teachers on either plan to retire with more than $40,000 per year – above the 80% of salary estimated for a "comfortable" retirement.[8]

The benefit value is highest for defined contribution at 10 years, but highest for Tier 1 at 35 years.

Figure 2: Comparison of Tier 1 Plan and Tier 2 Plan Benefit Calculations

	Tier 1	Tier 2 Hybrid	Tier 2 Defined Contribution
Starting salary	$38,499	$38,499	$38,399
Value after 10 years	$22,718	$30,164	$70,409
Value after 35 years	$852,679	$693,061	$500,482

Note: See Appendix A for calculation assumptions.

Source: Chad Aldeman, Bellwether Education Partners.

In a more detailed comparison, the Utah Tier 1 plan heavily favored teachers that stayed with the profession until retirement. The Tier 2 hybrid option includes some short-term advantages of a defined contribution plans – with a higher value than Tier 1 after 10 years of teaching – but has diminished long-term benefits. While it still benefits teachers who remain teaching for their full career, after 35 years in the profession the retirement value is only about 81% of the Tier 1 plan. The Tier 2 defined contribution plan has a much larger value after 10 years of teaching, but is more modest over the long term. However, it is fully portable, favoring those who may be more likely to switch careers. (See Figure 2).

In addition, contributions for the Tier 1 system include amounts received from the Tier 2 payroll to help finance the unfunded liability of the Tier 1 system.[9] This means that the total retirement package for Utah teachers is closer to 20% – approximately 10% for the regular contribution plus approximately 10% for the payment to the Tier 1 system. [10]

Teacher Retirement Evaluation

In 2015, the nonpartisan National Council on Teacher Quality (NCTQ) evaluated teacher retirement plans across the nation, including Utah's Tier 2 teacher retirement plans.[11] NCTQ examined the plans based on whether the pension systems are stable and well-funded, whether they are flexible and fair to all teachers, and whether the retiree benefits for teachers accrue uniformly with each additional year of work.[12]

In terms of whether Utah's pension system is adequately funded, the NCTQ set the benchmark at 90%. Utah's system was funded at 87.4% as of January 1, 2018 – an improvement of 2.2% from the previous year.[13] It is under the benchmark due in large part to unfunded liabilities under the Tier 1 plan.

NCTQ found that the Utah Retirement System is flexible in that there is a choice of a fully portable, defined contribution plan, and that teachers leaving early can take at least a partial employer contribution with them, though the plan does not vest within the three-year timeframe suggested by NCTQ. The plan is fair to employees – given that there is no required match in Utah.

Teacher benefits accrue uniformly with each additional year of work under the defined contribution plan, but not the hybrid plan. This is because retirement eligibility is not based solely on age – it is instead based on years of service, allowing benefits to accrue quickly during the final years before retirement.[14]

Mountain States Comparisons

Utah's Tier 2 system differs in a key respect from the plans in the other Mountain States of Arizona, Colorado, Idaho, Montana, Nevada, New Mexico and Wyoming: all seven offer defined benefit plans. None allow new hires to choose defined contribution plans or hybrid plans – or between the two as is the case in Utah. As a result, only Utah's teachers have a more flexible plan with the option of a fully portable primary retirement plan. All the other states allow teachers to take their personal contributions with any interest earned, but only Colorado allows teachers to also take a portion of the employer contribution.

In terms of flexibility, the plans in five of the Mountain States vest after five years; Utah and Wyoming vest after four years; and Arizona vests immediately.

In terms of whether pension systems are stable and well-funded, all Mountain States are funded between 40% and 80% except Idaho, which is funded above 90%, and Utah, which, as noted, is just under the 90% mark.[15] However, Utah has the lowest investment return assumption of the Mountain States; under a higher investment return assumption, Utah's actuarial value would be even higher.[16] Still, this assumption is higher than most non-governmental pension plans.

In addition, all states participate in Social Security except Colorado and Nevada. All are adjusted for inflation (in several different ways) except for Arizona. And six of the eight states – including Utah – have significantly reformed or created new plans within the past decade.

But there are several additional significant differences between Utah's hybrid plan and those defined benefit plans in other Mountain States. These have to do with benefit multipliers, years to retirement and contribution rates.

Utah has a favorable value under its retirement system compared to other Mountain States

Figure 3: Comparison of Mountain States' Plans and Utah's Tier 2 Hybrid Plan, Actuarial Value with Assumptions

	Actuarial Value	Investment Return Assumption	Inflation Assumption
Utah	87.40%	6.95%	2.50%
Arizona	70.50%	7.50%	2.30%
Colorado	47.10%	7.25%	2.40%
Idaho	91.20%	7.05%	3.00%
Montana*	73.47%	7.65%	2.75%
Nevada	74.70%	7.50%	2.75%
New Mexico	63.50%	7.25%	3.00%
Wyoming	76.35%	7.75%	3.25%

** This is the value of Montana's Defined Benefit Retirement Plan, not the whole Public Employees' Retirement System.*

Source: Utah Foundation from state retirement reports.

Utah's defined benefit-dominated hybrid plan has lower benefits than other Mountain State plans.

Figure 4: Comparison of Mountain States' Plans and Utah's Tier 2 Hybrid Plan

	Type of Plan	Benefit Multiplier	Social Security	Years to Retirement
Utah	**Hybrid**	1.50%	Yes	35
Arizona	Defined benefit	2.1% - 2.30%*	Yes	30
Colorado	Defined benefit	2.50%	**No**	35
Idaho	Defined benefit	2.00%	Yes	Rule of 90***
Montana	Defined benefit	1.5% - 2.00%*	Yes	30
Nevada	Defined benefit	2.25%	**No**	33.3
New Mexico	Defined benefit	2.35%	Yes	30
Wyoming	Defined benefit	2.0% - 2.25%**	Yes	Rule of 85***

** Based upon years teaching.*

*** Based upon years teaching and other factors.*

**** The "rule of 85" and "rule of 90" means that point at which teachers can retire by adding their age and their years teaching (though all can retire by 65 years-of-age).*

Source: Utah Foundation from state retirement reports.

Utah has the lowest benefit multiplier of the Mountain States.[17] This ostensibly means that the ultimate retirement yearly benefit amount for Utah's teachers is the lowest. However, Utah's teachers receive supplemental income in the form of Social Security; the two states with the highest multipliers do not participate in Social Security. (See Figure 4.) Furthermore, Utah teachers receive the benefit of a defined contribution as part of the hybrid plan, which is currently set at over 1% of earnings. No other states provide this since they offer only defined benefit plans.[18]

Utah is tied with Colorado for the longest necessary service until retirement.[19] While teachers in all of the Mountain States can retire at 65, teachers can retire early based upon their years of service. Six of the states have straight years-to-retirement calculations. Thus, a teacher in Utah starting at the age of 25 can retire at 60, whereas a teacher in Arizona starting at 25 can retire at 55. Two states include a special calculation rule for early retirement. For instance, Idaho teachers under the Rule of 90 can retire when their age and their years teaching add to 90; a teacher that started at 25 and is now 57 and a half (teaching for 32 and one-half years) is eligible for retirement.

And finally, there is a big difference in Mountain State employee and employer contribution rates.

As noted, under the Tier 2 hybrid plan, the difference between the yearly pension contribution rate and 10% is deposited into the employee's defined-contribution retirement account. In 2019, the pension contribution rate is 8.85%, leaving 1.15% for a defined-contribution retirement account allotment.[20] Due to the funding formula, there is currently no employee contribution necessary to participate in the

Utah is the only state that – currently – has no teacher contribution requirement.

Figure 5: Utah's Tier 2 Hybrid Plan and Other Mountain States' Plans for New Teachers

	Contribution rate (percent of salary)	
	Teacher	**Employer**
Utah	0.00%*	10.00% + 9.94%***
Arizona	11.50%	11.50%
Colorado	8.00%	10.15% + 10.00%***
Idaho	6.79%	11.38%
Montana	7.90%	8.67%
Nevada	14.50%	14.50%
New Mexico	7.90%/10.70%**	13.90%
Wyoming	8.50%	8.62%

** Teachers are required to pay any amount that exceeds the 10% employer pension contribution rate.*

*** Depending upon salary.*

**** This additional employer contribution is an amortization used to support previous plans.*

Note: Current rates. Many states will be increasing teacher and employer contribution rates for 2019-20 as necessary.

Source: Utah Foundation from state retirement reports.

Tier 2 hybrid plan. If the pension contribution rate were to surpass 10%, there would be required employee contributions under the Tier 2 defined contribution plan. This rate is set by the Utah State Retirement Board to ensure that the Utah Retirement System is adequately funded.

Utah's current formula with no required employee contribution equates to a significant, upfront benefit over retirement systems in the other Mountain States, which require employee matches ranging from 7% to 15% of pay. (See Figure 5.) The national median employee contribution for plans supplemented by Social Security is about 6%.

The employer contribution rate in Colorado is the highest of the Mountain States.[21] This is due in part to the state's election to keep teachers out of the Social Security system. Utah employers' contribution into the Utah Retirement System is 10%, but includes a 9.94% amortization rate to pay down the unfunded liabilities under the Tier 1 system. This amortization amount is expected to decrease and be eliminated once the Tier 1 system is in better fiscal standing – with the rate set to fully fund the systems over a 20-year period.

Teacher retirement benefits may have a significant impact on recruitment or retention. However, under current statues, there is no flexibility for school districts to shift retirement to compensation or vice versa. (Though there is some flexibility with charter schools; see Appendix B.) And there may be little likelihood of allowing for such flexibility given the very nature of retirement systems' necessity to fund pension obligations.

CONCLUSION

In *Apples to Apples: How Teacher Pay in Utah Stacks Up to the Competition*, Utah Foundation provided an analysis of teacher compensation in the context of teacher recruitment and retention. That report focused on teacher pay. This report builds upon that discussion with a deeper analysis of teacher benefits.

Utah's retirement offering differs the other seven Mountain States. The largest difference is that Utah's Tier 2 plans, which have been in place since 2011, include an option that is similar to the standard private sector model. Teachers have a choice between a flexible defined contribution plan and a hybrid plan – both of which tend to have lower maximum benefits than the pre-existing defined benefit plan. The trade-off is a system which keeps costs lower for employers and lowers risk to the system. Tier 2 costs are roughly double the invested benefit per new teacher because of the unfunded costs under the previous retirement plan.

The changes to the system in 2011 reduced benefits. This was indeed a cost-saving measure. In fact, Utah employers' Tier 2 contributions are only 10% of employee salaries, though employers are paying nearly 10% more to fully fund Tier 1 liabilities.

While the Tier 2 hybrid plan's benefit multiplier, a determining factor in pension payments, is the lowest among the Mountain States, the hybrid system aims to close this benefit gap with 401(k) contributions. And, teachers in Utah are beneficiaries of Social Security, unlike teachers in Colorado and Nevada. But, most importantly, the plans in neighboring Mountain States require teachers to provide between 7% and 15% of their salaries to participate – while Utah's teachers are not required to contribute.

At the end of the day, both the Tier 1 plan and Tier 2 hybrid plans allow for teachers to retire with more than 80% of their annual working salary.

As in the *Apples to Apples* report, this report does not indicate whether Utah's teacher retirement benefits are sufficient for attracting teachers and keeping them in Utah's classrooms. However, the retirement benefits appear to be relatively generous given the current lack of an employee contribution requirement.

APPENDIX A: UTAH PLAN COMPARISONS, VALUE AND ASSUMPTIONS

	Utah Tier 1 (Noncontributory)	Utah Tier 2 Hybrid Plan	Utah Tier 2 Defined Contribution Plan
Starting salary	$38,499	$38,499	$38,399
Salary growth rate	3.25-9.75% (including inflation)	3.25-9.75% (including inflation)	3.25-9.75% (including inflation)
Employee contributions	--	--	--
Employer contributions	22.19%*	8.93% for DB, 1.07% for DC	10%
Investment return assumption	6.95%	6.95% for DB, 6.45% for DC	6.45%
Inflation assumption	2.5%	2.5%	2.5%
Vesting period	4 years	4 years	4 years
Formula multiplier for DB	2%	1.5%	N/A
Final Average Salary for DB	3 years	5 years	N/A
Normal retirement age for DB	65/4, Any/30	65/4, 62/10, 60/20, Any/35	N/A
COLA for DB	2.5%**	2.5%	N/A
Value after 10 years for someone who starts teaching at age 25 (2019 dollars)	$22,718	$30,164	$70,409
Value after 35 years for someone who starts teaching at age 25 (2019 dollars)	$852,679	$693,061	$500,482

* Plus Tier 2 amortizations amounts.

** The COLA for Utah's Tier 1 plan has an allowable maximum of 4.0%, but for the analysis by Chad Aldeman in this report, it is set at the current COLA rate of 2.5%.

Source: Chad Aldeman, Bellwether Education Partners.

APPENDIX B: CHARTER SCHOOL RETIREMENT PLAN INFORMATION

The Utah Legislature created a special provision for charter schools whereupon their creation they can elect to participate in the Utah Retirement Systems (URS) for all of their employees. This is a one-time election and is irreversible.[22] The list below includes those charter schools which participate in URS.[23]

- Academy for Math, Engineering and Science Charter School (AMES)
- American Leadership Academy
- East Hollywood High School
- Fast Forward Charter High School
- Intech Collegiate Charter High School
- Itineris High School
- Monticello Academy
- Noah Webster Academy
- Northern Utah Academy of Math, Engineering, and Science Charter School (NUAMES)
- Salt Lake Arts Academy, Inc
- Soldier Hollow Charter School
- Success Academy **(**Cedar City and St. George campuses)
- Summit Academy Charter School (Draper, Independence and Bluffdale campuses)
- Thomas Edison (Listed as participating but inactive)
- Timpanogos Academy (Listed in participating but inactive)
- Utah County Academy of Sciences

ENDNOTES

1 These are rules of thumb, but with caveats; for example, if you earn a low annual income, you would need more than 80% replacement, etc. Drawn from: Alicia H. Munnell, Francesca Golub-Sass, and Anthony Webb, "How Much to Save for a Secure Retirement," research brief, Center for Retirement Research at Boston College, November 2011 and "How Much Do I Need to Retire?," Fidelity Viewpoints, August 21, 2018, www.fidelity.com/viewpoints/retirement/how-much-money-do-i-need-to-retire.

2 Utah Retirement System, The URS Newsroom, Tier 2 Savings, http://newsroom.urs.org/tier-2-savings. Estimates suggest that the move to Tier 2 will potentially save Utah $180 million by 2018.

3 Utah Retirement System, Comparing Tier 2 Plans, Hybrid Retirement System and Defined Contribution Plan, July 1, 2018 – June 30, 2019, www.urs.org/documents/byfilename/%7CPublic%20Web%20Documents%7CURS%7CDB%7CTier2%7CTier%202Compare%7C%7Capplication%7Cpdf/.

4 Utah Retirement Systems, Final Tier 2 Retirement Contribution Rates as a Percentage of Salary and Wages, Fiscal Year July 1, 2018 - June 30, 2019, www.urs.org/mango/pdf/pehp/pdc/1920%20t2%20final%20cont.%20rate_FF74D8A1.pdf, and July 1, 2018 - June 30, 2019, www.pehp.org/mango/pdf/pehp/pdc/1819t2_FF99F495.pdf.

5 Utah Retirement System, The URS Newsroom, Tier 2 Elections, http://newsroom.urs.org/tier-2-elections.

6 Utah Retirement System, *Make Your Choice: An Introduction to Your Retirement Benefit Options*, www.urs.org/documents/byfilename/%7CPublic%20Web%20Documents%7CURS%7CDB%7CTier2%7CChoose_PE%7C%7Capplication%7Cpdf/.

7 Utah Retirement Systems, A Component Unit of the State of Utah, 2017 Comprehensive Annual Financial Report for the Year Ended December 31, 2017, p. 87, www.urs.org/documents/byfilename/%7CPublic%20Web%20Documents%7CURS%7CReports%7CCAFR%7C2017_CAFR%7C%7Capplication%7Cpdf/.

8 Social Security Administration, Social Security Quick Calculator, www.ssa.gov/oact/quickcalc/. Note: Calculations assume that the teacher was born in 1954 and is earning $50,000 per year, resulting in an estimated $17,016 Social Security benefit per year.

9 Utah Retirement Systems, p. 85.

10 Utah Retirement System, The URS Newsroom, Tier 2 Savings, http://newsroom.urs.org/tier-2-savings.

11 National Council on Teacher Quality's mission: "The National Council on Teacher Quality (NCTQ) is a nonpartisan, not-for-profit research and policy organization that is committed to modernizing the teaching profession. We conduct research to assist states, districts, and teacher prep programs with teacher quality issues. We don't just call attention to what's wrong, but offer concrete solutions to help solve teacher quality challenges."

12 National Council on Teacher Quality, *How to Protect Teachers and Taxpayers: Doing the Math on Teacher Pensions*, January 2015, www.nctq.org/dmsView/Doing_the_Math.

13 Utah Retirement Systems, A Component Unit of the State of Utah, 2018 Comprehensive Annual Financial Report for the Year Ended December 31, 2018, p. 46.

14 National Council on Teacher Quality, p. iv.

15 Ibid., p. 98. Arizona Retirement System, A component unit of the State of Arizona, Comprehensive Annual Financial Report for Fiscal Year Ended June 30, 2018, p. 105, www.azasrs.gov/sites/default/files/pdf/CAFR_FY_2018.pdf. Colorado Public Employees' Retirement Association, Comprehensive Annual Financial Report for the year ended December 31, 2017, p. 46, https://www.copera.org/sites/default/files/documents/5-20-17.pdf. Public Employee Retirement System of Idaho, Comprehensive Annual Financial Report as of and for Fiscal Year 2018, Ended June 30, 2018, p. 112, www.persi.idaho.gov/Documents/Investments/FY18/AnnualReport_2018.pdf. Public Employees' Retirement Board, A Component Unit of the State of Montana, CAFR for the Fiscal Year Ended June 30, 2018, p. 98, https://mpera.mt.gov/Portals/175/documents/2018CAFR.pdf. Public Employees' Retirement System of Nevada, A Component Unit of the State of Nevada, CAFR

for the Fiscal Year Ended June 30, 2018, p. 123, www.nvpers.org/public/publications/FY18CAFR.pdf. New Mexico Educational Retirement Board, A Pension Trust Fund of the State of New Mexico, 2018 CAFR for the Fiscal Year Ended June 30, 2018, p. 92, www.nmerb.org/pdfs/2018%20CAFR%20Report_FINAL.pdf. Wyoming Retirement System, A Fiduciary Fund of the State of Wyoming, CAFR for the Fiscal Year Ended December 31, 2017, p. 55, https://retirement.state.wy.us/-/media/Documents/Financial/WRS-CAFR-2017.ashx. For states in which teachers are part of a larger public employee system, the liabilities were adjusted to reflect an estimate of the percentage of teachers in the system (Wyoming, Nevada, Idaho, Arizona, Utah).

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19 Utah Retirement Systems. Arizona Retirement System, p. 25. Your PERA Benefits, p. 7. Public Employee Retirement System of Idaho, p. 23. Public Employees' Retirement Board, p. 60. Public Employees' Retirement System of Nevada, p. 2. New Mexico Educational Retirement Board, p. 36. Wyoming Retirement System, p. 10..

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