RESEARCH REPORT

Evaluating Pension Reform Options with the Public Pension Simulator

A Case Study of Pennsylvania Teachers

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Evaluating Pension Reform Options with the Public Pension Simulator

Covering 14 million state and local government employees (US Census Bureau 2015), public pension plans typically provide lifetime retirement benefits that are based on years of service and the salary earned near the end of a career. Many of these plans, however, face serious financial problems and may be ill suited to a changing workplace in which long-term employment is rare.

Only a handful of plans have set aside enough funds to cover promised benefits. Conservative estimates based on the plans' own financial assumptions place the shortfall at about $1 trillion nationally (Pew Charitable Trusts 2015). Estimates that use arguably more realistic assumptions are several times higher (Novy-Marx and Rauh 2011). The public contributions necessary to close the funding gap would strain many state and local governments, requiring higher taxes or cutbacks in other services (Cembalest 2016).

The growing financial burden has sparked public debate over state and local pensions and prompted some jurisdictions to cut benefits and raise employee and government contributions to these plans. Yet, the long-term effects of recent and proposed reforms have received little attention.

In addition to affecting government costs, pension reforms help determine how fairly retirement plans treat different employees. For example, most state and local pension plans now provide meaningful retirement security to employees covered by a plan for a full career, but provide few benefits to shorter-term employees. Some proposed reforms would slash pensions for shorter-term employees, an important drawback as long-term employment becomes less common. Many public pension plans also reduce lifetime benefits for employees who work beyond a certain age, encouraging them to leave. These early retirement incentives could create staffing shortages as the nation ages.

The Urban Institute's new Public Pension Simulator (http://pensionsimulator.urban.org) fills this knowledge gap by comparing some of the nation's largest state and local pension plans under existing benefit rules and various reform alternatives. Using detailed benefit formulas and demographic and financial data from each plan, it shows how much participants with a certain amount of completed service would receive from their plan and how benefits would change as they work longer. It also shows how much governments must contribute to each plan and whether plan assets are sufficient to cover promised benefits. Users can change a plan's benefit rules or the assumptions a plan uses to project

costs, such as the rate of return on plan assets, and see the impact on benefits and costs.[1] Additional plans are being added continuously to the simulator.

Using Pennsylvania's teacher pension plan as a case study, this report illustrates how the Public Pension Simulator can shed light on the distribution of pension benefits among state and local government employees, costs for taxpayers, and the potential impact of various reform options. Pennsylvania's teacher pension plan is large, covering 260,000 employees and 242,000 retirees and their survivors in 2015 and holding assets worth $51.9 billion (Pennsylvania Public School Employees Retirement System 2015; Xerox 2016). However, the plan's finances have been deteriorating steadily for nearly a decade. In 2008, the plan held enough assets to cover 85 percent of its future pension obligations; that funding ratio fell to 70 percent in 2011 in the wake of the 2008 financial crisis and recession. It continued to fall even as the economy improved, declining to 61 percent in 2015 (Xerox 2016). To cover these shortfalls, employers must now contribute 30 percent of payroll to the pension fund, creating significant financial burdens for local school districts.

In light of these financial pressures, the Pennsylvania state legislature has been debating various ways of cutting pension costs for teachers and other state employees (Thompson 2015). After showing the distribution of benefits under existing plan rules and how much they cost taxpayers, we report the potential impact on benefits and costs of various reforms, including eliminating early retirement benefits, raising the normal retirement age, reducing benefits by changing the benefit formula, and eliminating cost-of-living adjustments (COLAs) provided to retirees. The results show that eliminating the early retirement option would significantly reduce overall costs while safeguarding pensions received by teachers with shorter careers.

Pennsylvania's Teacher Pension Plan

Like public school teachers in nearly every other state, public school teachers in Pennsylvania qualify for a lifetime retirement pension tied to their salary and years of service once they have worked long enough and have reached the plan's retirement age. Benefit rules depend on when a teacher was hired. Most Pennsylvania teachers hired on or after July 1, 2011, are Class T-E members of the pension plan.[2] These members must generally complete 10 years of service before vesting in the plan and qualifying for a pension, but members employed at age 65 vest after completing only three years of service. The plan pays benefits equal to 2 percent of final average salary (FAS) multiplied by years of completed service. FAS is based on the highest three years of salary.

Members may begin collecting benefits at age 65; those with at least 35 years of completed service may begin collecting as soon as the sum of their age and years of service equals 92. A teacher hired at age 22, then, could begin collecting a pension at age 57. The plan also offers an early retirement option to Class T-E members. Teachers who have completed at least 25 years of service may begin collecting a pension as early as age 55. However, the plan would reduce the annual benefit 3 percent for each year that members collect before reaching age 65. The plan does not automatically provide retirees with COLAs, although the state legislature sometimes provides them.

In exchange for these benefits, members must contribute 7.5 percent of their salary to the pension plan each year. If they separate from the plan before they can begin collecting a pension, they may leave their contributions in the plan and collect a deferred annuity when they qualify, or they may withdraw their contributions with interest.[3] The simulator assumes that the plan pays annual interest equal to the annual rate of return on plan assets. Pennsylvania teachers are also covered by Social Security.

Pennsylvania teachers hired before July 1, 2011, and on or after July 1, 2001, are Class T-D members of the pension plan. These members receive larger annual pensions than those hired later, and they can collect their pensions sooner. They now account for nearly 8 out of every 10 members of the entire Pennsylvania public school employees' retirement system (Xerox 2016). The benefit formula for this tier sets annual payments equal to 2.5 percent of FAS, not 2.0 percent, multiplied by years of completed service. Benefits vest after only five years of service, except that teachers employed at age 62 vest after completing only one year of service. Vested Class T-D members may begin collecting a pension at age 62; those with 30 years of completed service may begin collecting at age 60 and those with 35 years of completed service may collect at any age. Like those hired later, Class T-D members can collect reduced benefits at age 55 if they have completed 25 years of service. However, the penalty is less severe than for those hired later; for Class T-D members, annual benefits are reduced 3 percent for each year that they collect before reaching age 62, not age 65. The member contribution rate is 7.5 percent.

Finally, teachers hired before July 1, 2001, are Class T-C members of the pension plan. This class combines the relatively small annual pension provided to Class T-E members with the relatively early retirement ages available to Class T-D members. The plan multiplier, then, is 2.0 percent, and members may generally begin collecting full benefits at age 62. However, Class T-C members contribute only 6.25 percent of their salary to the plan. Table 1 summarizes benefit rules for each membership class.

TABLE 1

Benefit Formula Rules by Membership Class

Pennsylvania Public School Employees' Retirement System

	Class T-C	Class T-E	Class T-F
Hire dates	Before July 1, 2001	On or after July 1, 2001, and before July 1, 2011	On or after July 1, 2011
Vesting requirement (years)	5; 1 if employed at age 62	5; 1 if employed at age 62	10; 3 if employed at age 65
Years included in FAS calculation	3	3	3
Benefit multiplier	2.0%	2.5%	2.0%
Normal retirement eligibility	35 YOS; age 60 and 30 YOS; age 62 and 5 YOS (or 1 YOS if employed at age 62);	35 YOS; age 60 and 30 YOS; age 62 and 5 YOS (or 1 YOS if employed at age 62);	35 YOS and sum of age and YOS =92; age 65 and 10 YOS (or 3 YOS if employed at age 65)
Early retirement eligibility	Age 55 and 25 YOS	Age 55 and 25 YOS	Age 55 and 25 YOS
Early retirement penalty	3% for each year that member collects before reaching age 62	3% for each year that member collects before reaching age 62	3% for each year that member collects before reaching age 65
COLA	Not automatic	Not automatic	Not automatic
Employee contribution as percent of salary	6.25%	7.5%	7.5%

Source: Plan documents (Pennsylvania Public School Employees Retirement System 2012; Xerox 2016).
Notes: FAS = final average salary; YOS = years of service; COLA=cost-of-living adjustment. The benefit multiplier is the share of FAS that, when multiplied by years of service, determines the annual pension benefit.

Public Pension Simulator

The Public Pension Simulator shows how replacement rates and the value of lifetime pension benefits vary with years of completed service. It computes replacement rates by dividing annual pension benefits received at age 75 by annual salary received in a member's last year of service, both expressed in inflation-adjusted 2015 dollars. The computations use benefits collected at age 75 to capture the impact of any COLA that the plan may provide. Lifetime benefits are computed as the expected present value of the future stream of pension benefits. The simulator sums annual benefits that will be collected from the benefit take-up age until age 120, the assumed maximum lifespan, but reduces future benefits by the probability that retirees will die before receiving each payment and by a user-specified discount rate. A dollar of benefits paid sooner is worth more than a dollar paid later because earlier payments can earn interest during the waiting period. The simulator reports total lifetime benefits and lifetime

benefits net of employee contributions. Replacement rates and lifetime benefits are shown for employees hired at a particular user-specified age.

The calculations assume that retirees collect single-life annuities, not joint-and-survivor annuities, and that separated employees choose the date to begin collecting their pension so as to maximize the value of lifetime benefits. However, the simulator also computes the amount of retirement benefits separating members could receive if they withdrew their contributions from the plan, invested the funds on their own, and used the balance to purchase a lifetime annuity at the plan's normal retirement age. The model assumes that members choose that outcome if it generates higher retirement incomes than a teacher pension would. For more information about how the simulator computes pension benefits, see McGee and Welch (2016a).

The simulator also estimates employer costs of providing these pension benefits. It reports the employer normal cost rate, defined as the fixed percentage of salary that must be aside each year to fully cover, with member contributions, future pension payments. The simulator computes the employer normal cost rate by dividing the expected present value of lifetime pension benefits for a newly hired member by the expected present value of her lifetime salary. This calculation requires assumptions about a pension fund's investment returns, future inflation rates, how long employees will remain on the payroll, how much they will earn, when they will retire, and how long they will live. The Public Pension Simulator uses the accession and separation assumptions adopted by a plan's actuaries to estimate the age distribution of the workforce and expected completed years of service. Mortality assumptions come from the Social Security actuaries. The simulator defaults to the plan's assumptions on investment returns, interest rates, and salary growth, but users can change these settings. For more information about how the simulator computes pension costs, see McGee and Welch (2016b).

We used the Public Pension Simulator to project benefits and costs for newly hired public school teachers in Pennsylvania. Our analysis focused on Class T-E members of the pension plan, but we also compared costs for the three different membership classes. Except where otherwise noted, we set the inflation rate equal to 2.7 percent and the nominal rate of return on plan assets equal to 6.0 percent, implying a real rate of return of 3.3 percent. These rates are similar to the long-run intermediate assumptions adopted by the Social Security trustees.[4] By comparison, Pennsylvania's Public School Employees' Retirement System assumes an inflation rate of 2.75 percent and a nominal rate of return of 7.5 percent. We simulated benefits and costs for teachers hired at ages 22, 30, 40, 50, and 60 and varied the years of completed service. The computations assumed that the state legislature will award retirees COLAs each year equal to one-half the change in the consumer price index.

Pensions Received by Newly Hired Teachers

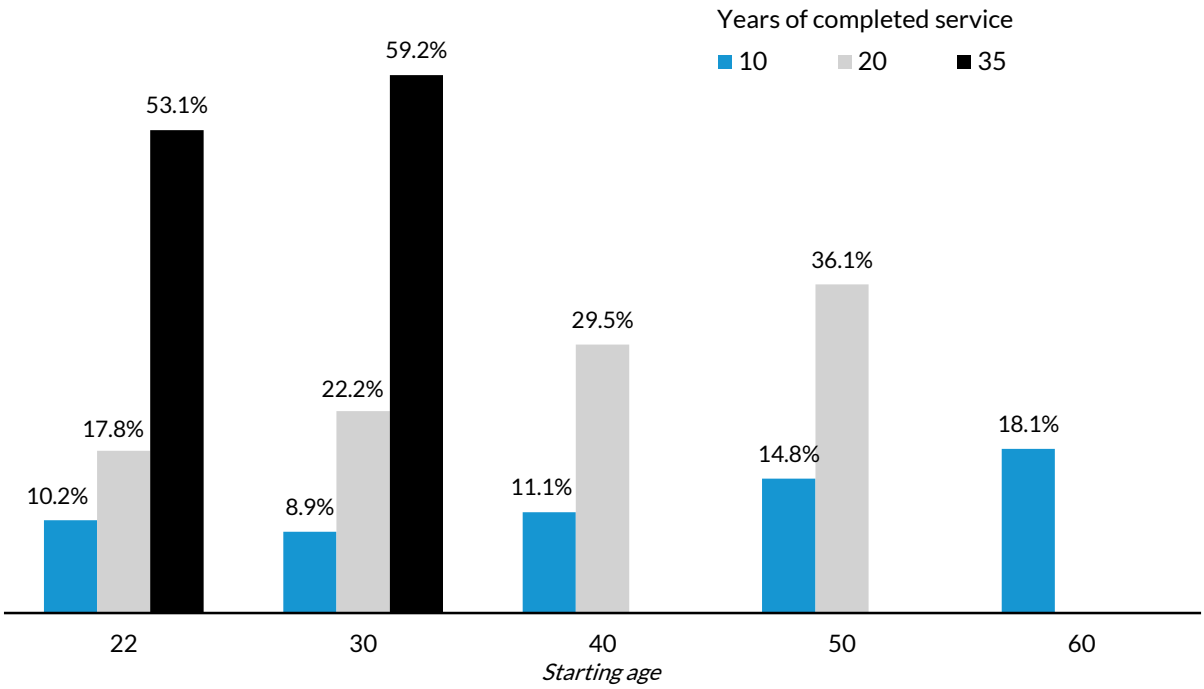
The existing pension plan enables long-term teachers in Pennsylvania to replace a substantial share of their earnings in old age. For example, teachers who complete 35 years of service can achieve a replacement rate of 53.1 percent if hired at age 22 and 59.2 percent if hired at age 30 (figure 1). These replacement rates report age-75 pension benefits as a share of share of inflation-adjusted earnings received in a teacher's final year of employment. Although the plan's benefit multiplier is 2 percent, a teacher who completes 35 years of service is not able to replace 70 percent of his or her real earnings because the multiplier is applied to earnings averaged over the highest three earnings years, less than the final-year salary as long as salary rises steadily over a career. More important, the real value of a pension received by Pennsylvania teachers erodes over time with inflation, because the plan does not automatically provide COLAs tied to changes in the consumer price index. Nonetheless, when combined with Social Security benefits, which typically replace about 35 to 40 percent of earnings, the Pennsylvania teachers retirement plan enables long-term teachers to receive nearly as much income when retired as when they were working.

Shorter-term teachers receive much smaller pensions. For example, a teacher hired at age 30 can replace 22.2 percent of his or her inflation-adjusted final-year salary at age 75 if he or she completes 20 years of service and 8.9 percent if he or she completes 10 years of service. Teachers hired at older ages can generally replace a large share of their inflation-adjusted earnings in retirement than teachers with the same number of completed service years who were hired at younger ages because inflation reduces pension benefits more for younger hires.[5] Consider a teacher hired at age 22 who is employed for 10 years. His or her pension will not begin until he or she turns 65—33 years after he or she separated—but it will be based on earnings he or she received no later than age 32 that are not adjusted for inflation. When inflation is 2.7 percent per year, the real value of his or her initial pension benefit falls 58 percent during the 33-year wait. By contrast, inflation will erode the initial pension benefit for only five years for a teacher hired at age 50 who remains employed for 10 years; a 2.7 percent annual inflation rate reduces his or her pension by only 12 percent.

FIGURE 1

Annual Pension Income at Age 75 as a Share of Final Earnings, by Starting Age and Years of Completed Service

Pennsylvania teachers hired on or after July 1, 2011 (class T-E)



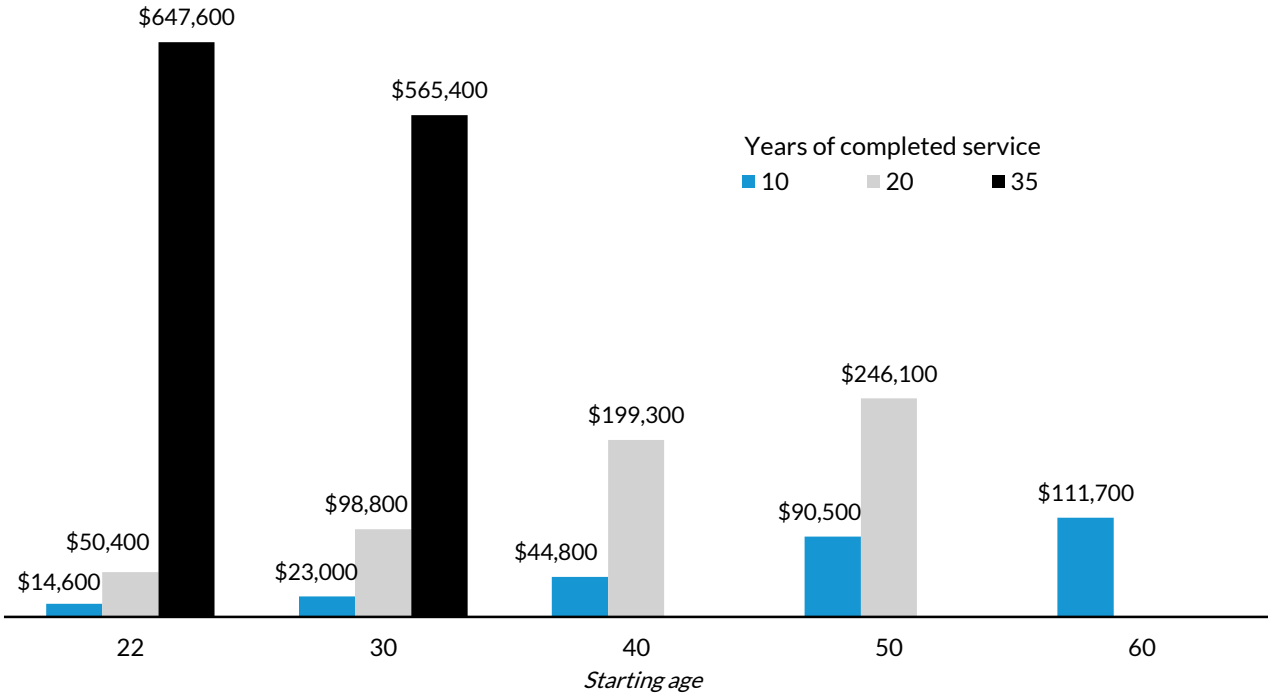
Source: Authors' estimates from the Urban Institute's Public Pension Simulator.
Notes: The figure shows annual pension income received at age 75 divided by annual salary received in a teacher's last year of service, both expressed in inflation-adjusted 2015 dollars. Estimates assume that the state legislature will award retirees annual cost-of-living adjustments equal to one-half the change in the consumer price index.

Benefit differences between short- and long-term teachers are even starker when we compare the expected value of lifetime pension benefits. Teachers who complete 35 years of service can expect to receive pensions worth $647,600 (in 2015 dollars) over their lifetimes if hired at age 22 and $565,400 if hired at age 30 (figure 2). For teachers hired at age 22, those with 35 years of completed service can expect pensions worth more than 12 times as much as pensions received by their counterparts with 20 years of completed service and 44 times as much as pensions received by their counterparts with 10 years of completed service. Teachers with 35 years of service collect so much because their final salaries are high and they qualify for early retirement. Collecting early generates more lifetime payments and prevents inflation from eroding the real value of initial pension benefits because teachers do not have to wait to collect benefits after they separate.

FIGURE 2

Expected Value of Lifetime Pension Benefits, by Starting Age and Years of Completed Service

Pennsylvania teachers hired on or after July 1, 2011 (class T-E), 2015 constant dollars



Source: Authors' estimates from the Urban Institute's Public Pension Simulator.

Notes: The analysis assumes that the state legislature will award retirees annual cost-of-living adjustments equal to one-half the change in the consumer price index. Estimates are rounded to the nearest $100 and assume an annual discount rate of 6 percent and inflation rate of 2.7 percent.

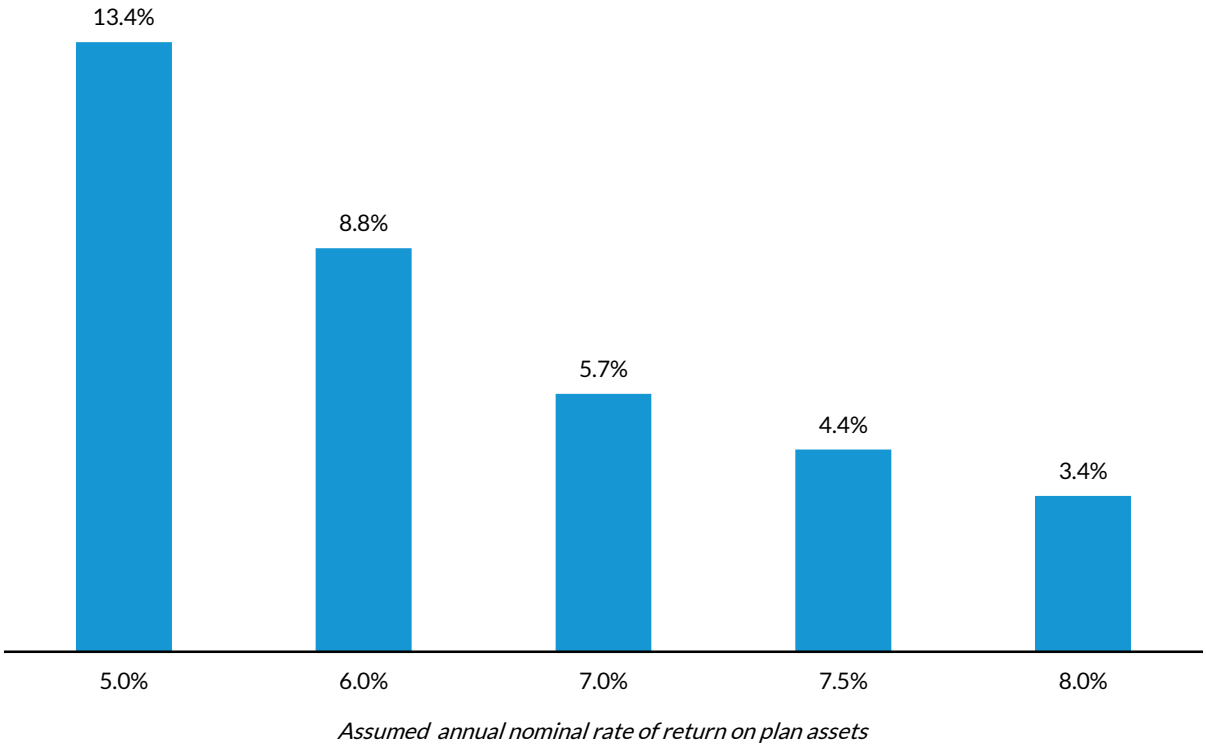
Employer Costs of Teacher Pensions

The costs of providing a pension to newly hired public school teachers in Pennsylvania varies widely depending on assumptions about the rate of return on plan assets. A 6.0 percent nominal rate of return, corresponding to a 3.3 percent real rate, generates an employer normal cost of 8.8 percent of payroll (figure 3). However, a 7.5 percent nominal rate of return—the assumption used by the plan's board of trustees—cuts the employer normal cost rate in half, to 4.4 percent. By contrast, a 13.4 percent nominal rate of return raises the employer normal cost rate to 13.4 percent. The remainder of our analysis assumes a 6.0 percent nominal rate of return on plan assets.

FIGURE 3

Employer Normal Cost Rate for Pension Benefits, by Assumed Rate of Return on Plan Assets

Pennsylvania teachers hired on or after July 1, 2011 (class T-E)



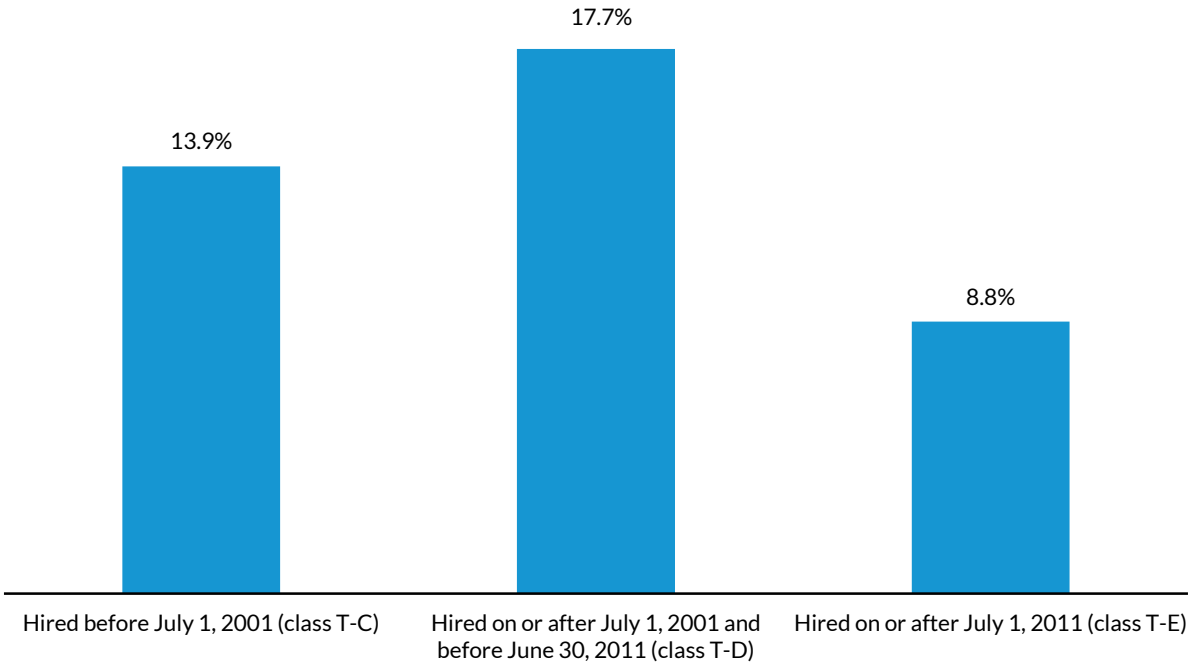
Source: Authors' estimates from the Urban Institute's Public Pension Simulator.
Notes: The figure shows the expected present discounted value of lifetime pension costs divided by the expected present discounted value of lifetime salary payments. Estimates assume an annual inflation rate of 2.7 percent. The analysis also assumes that the state legislature will award retirees annual cost-of-living adjustments equal to one-half the change in the consumer price index.

Employer normal costs are much lower for teachers hired today than for teachers hired before 2011, reflecting the sharp benefit cuts passed by the state legislature that year. Using a 6.0 percent nominal rate of return on plan assets, the Public Pension Simulator computes an employer normal cost rate of 17.7 percent for Class T-D, twice as high as for teachers in Class T-E, which covers teachers hired today (figure 4). Class T-D covers teachers hired between mid-2001 and mid-2011 and includes nearly 80 percent of all plan members. The employer normal cost for Class T-C is 13.9 percent, lower than for Class T-D but still substantially higher than for teachers hired after mid-2011.

FIGURE 4

Employer Normal Cost Rate for Pension Benefits, by Membership Class

Using a 6 percent annual rate of return on plan assets



Source: Authors' estimates from the Urban Institute's Public Pension Simulator.
Notes: The figure shows the expected present discounted value of lifetime pension costs divided by the expected present discounted value of lifetime salary payments. Estimates assume an annual inflation rate of 2.7 percent. The analysis also assumes that the state legislature will award retirees annual cost-of-living adjustments equal to one-half the change in the consumer price index.

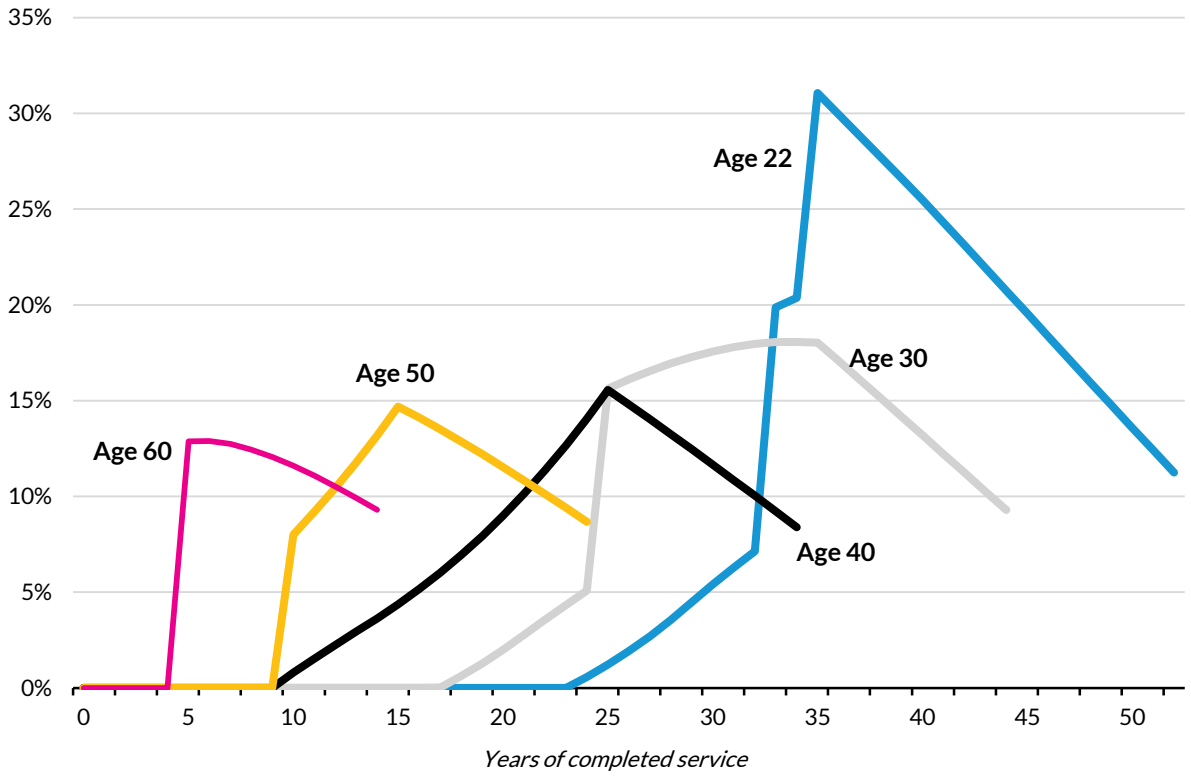
How much employers end up paying for a teacher's pension varies widely depending on when he or she joins the plan and how long he or she works. Employers do not incur any pension costs for a teacher hired at age 22 until he or she completes 24 years of service; teachers who separate with less service either do not collect a pension (because they have not satisfied the 10-year vesting requirement or because they could do better financially by withdrawing their contributions from the plan, investing the funds elsewhere until retirement, and forgoing a pension) or collect a pension that can be fully financed by their own contributions. Costs escalate quickly, however, with additional years of teaching. Employer costs for teachers hired at age 22 with 32 years of completed service increase dramatically if they teach for one more year, rising from 7 to 20 percent of salary. The spike occurs because those age-22 hires turn 55 as they complete 33 years of service and quality for early retirement. Another spike in pension costs occurs at 35 years of service when age-22 hires qualify for an immediate unreduced pension, raising the employer cost rate to 31 percent of salary. If they teach for more than 35 years, however,

employer costs drop sharply. Each additional year of teaching means one less year collecting a pension, because teachers cannot collect a pension until they separate. Annual pension benefits increase with each additional service year, but not enough to offset the loss of a year of pension payments.

FIGURE 5

Employer Normal Cost Rate for Pension Benefits, by Starting Age and Years of Completed Service

Pennsylvania teachers hired on or after July 1, 2011 (class T-E)



Source: Authors' estimates from the Urban Institute's Public Pension Simulator.

Notes: The figure shows, for teachers hired at a given age who remain employed for a given number of years, the expected present discounted value of lifetime pension costs divided by the expected present discounted value of lifetime salary. Estimates assume an annual nominal rate of return on plan assets of 6.0 percent and an annual inflation rate of 2.7 percent. The analysis also assumes that the state legislature will award retirees annual cost-of-living adjustments equal to one-half the change in the consumer price index.

This pattern in the employer normal cost rate—spikes followed by sharp declines—is also evident for teachers hired at other ages. For example, the cost rate surges 11 percentage points at 25 service years for age-30 hires, when they qualify for immediate early retirement, and 13 percentage points at 5 service years for age-60 hires, when they qualify for an immediate unreduced pension. For teachers hired at ages 30 and older, employer costs as a percentage of salary decline sharply once they pass age 65, after 35 years of service for age-30 hires and after 15 years of service for age-50 hires.

These spikes and sharp declines in the service years profile of normal costs, which are common in FAS defined benefit pension plans (Costrell and Podgursky 2008; Johnson, Steuerle, and Quakenbush 2012), raise questions about the fairness of teacher pensions in Pennsylvania and how well they meet employer needs. How much members benefit from their pension reflects how much that pension costs their employer. The future pension earned by an age-22 hire who teaches for 35 years is worth 31 percent of the salary she received each year, on average, throughout his or her career, net of his or her own plan contributions. However, if he or she taught for three fewer years, his or her future pension would be worth only 7 percent of his or her salary each year, net of her own contributions, and if he or she taught for 12 fewer years he or she would not receive a pension worth more than his or her own contributions. Teachers hired at older ages can also benefit much more from the pension plan than teachers who served just as long but were hired at younger ages. For example, a teacher with 25 years of completed service would earn a pension equal to 16 percent of his or her salary each year he or she taught (net of his or her contributions) if hired at age 40, but only 1 percent if hired at age 22. These compensation differences are difficult to justify, because it is hard to imagine that teacher productivity could vary so much by tenure and age of hire.

These patterns may impede school districts' recruitment and retention goals. Plan rules require relatively young hires to remain employed for many years before they can benefit from the plan, providing them with little incentive to join the state teacher workforce unless they are confident that they will remain employed for an extended period. The plan also creates strong incentives for teachers to retire once they can begin collecting an unreduced pension, because the value of their lifetime benefits drops sharply if they continue working. These early retirement incentives may make it more difficult for school districts to meet their staffing needs, particularly as the population ages. Finally, the spikes in pension values at particular service years create strong incentives for some teachers to remain employed until reaching that seniority level, even if they are not well-suited to the job and could be more productive elsewhere.

Impact of Potential Pension Reforms

We used the Public Pension Simulator to estimate how potential pension reforms to Pennsylvania's teacher pension plan might affect employer costs and teacher benefits. We considered the following reforms:

- Eliminate all early retirement benefits so that teachers would qualify for a pension only at age 65 with 10 years of completed service.

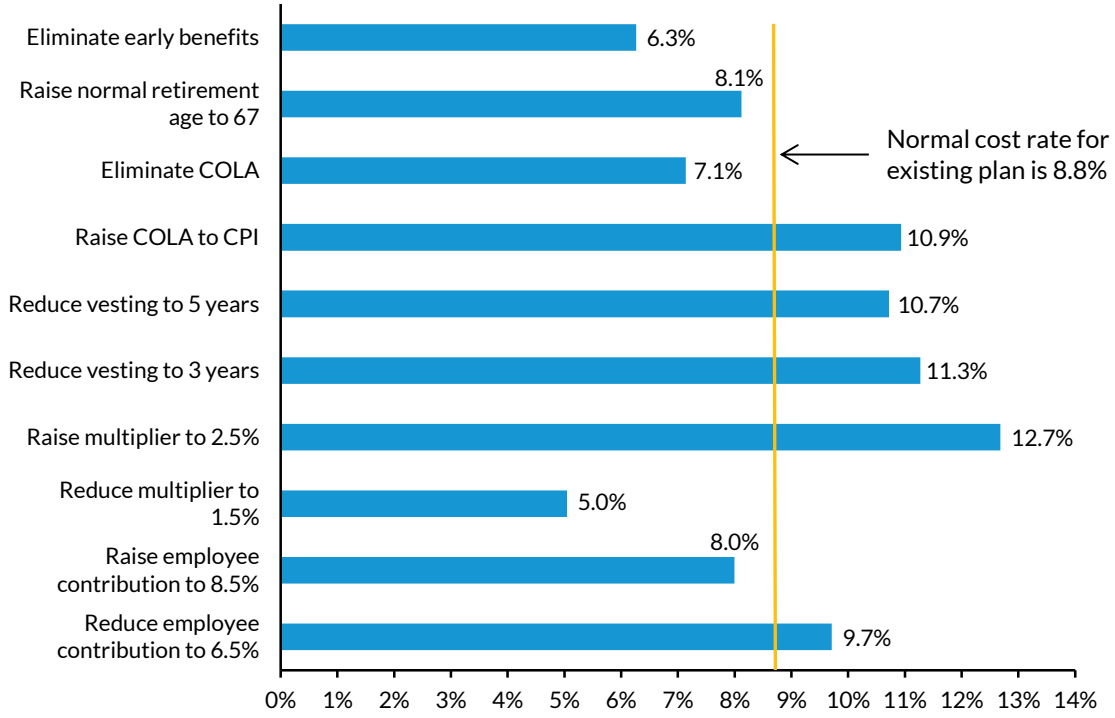
- Raise the normal retirement age to 67, and tie the age-55 early retirement penalty to age 67.
- Eliminate all COLAs.
- Create an automatic COLA that raises pension payments each year by the change in the consumer price index.
- Reduce the vesting period to five years.
- Reduce the vesting period to three years.
- Raise the benefit multiplier to 2.5 percent.
- Reduce the benefit multiplier to 1.5 percent.
- Raise the employee contribution rate to 8.5 percent.
- Reduce the employee contribution rate to 6.5 percent.

Reducing the benefit multiplier to 1.5 percent, eliminating early retirement benefits, and eliminating COLAs would lower plan costs most (figure 6). Assuming a 6.0 percent rate of return on plan assets, we find that reducing the multiplier to 1.5 percent would lower the overall employer normal cost rate from 8.8 percent to 5.0 percent, a relative reduction of 43 percent. The employer normal cost rate would fall 28 percent, in relative terms, if early retirement were eliminated and 19 percent if COLAs were eliminated. Among benefit enhancements, raising the benefit multiplier to 2.5 percent would raise costs most, followed by reducing the vesting period to three years and creating an automatic COLA equal to the change in the consumer price index. Raising the normal retirement age to 67 and increasing or decreasing the employee contribution rate by 1 percentage point would not change employer costs much.

FIGURE 6

Employer Normal Cost Rate for Pension Benefits under Various Pension Reforms

Pennsylvania teachers hired on or after July 1, 2011 (class T-E)



Source: Author's estimates from the Urban Institute's Public Pension Simulator.

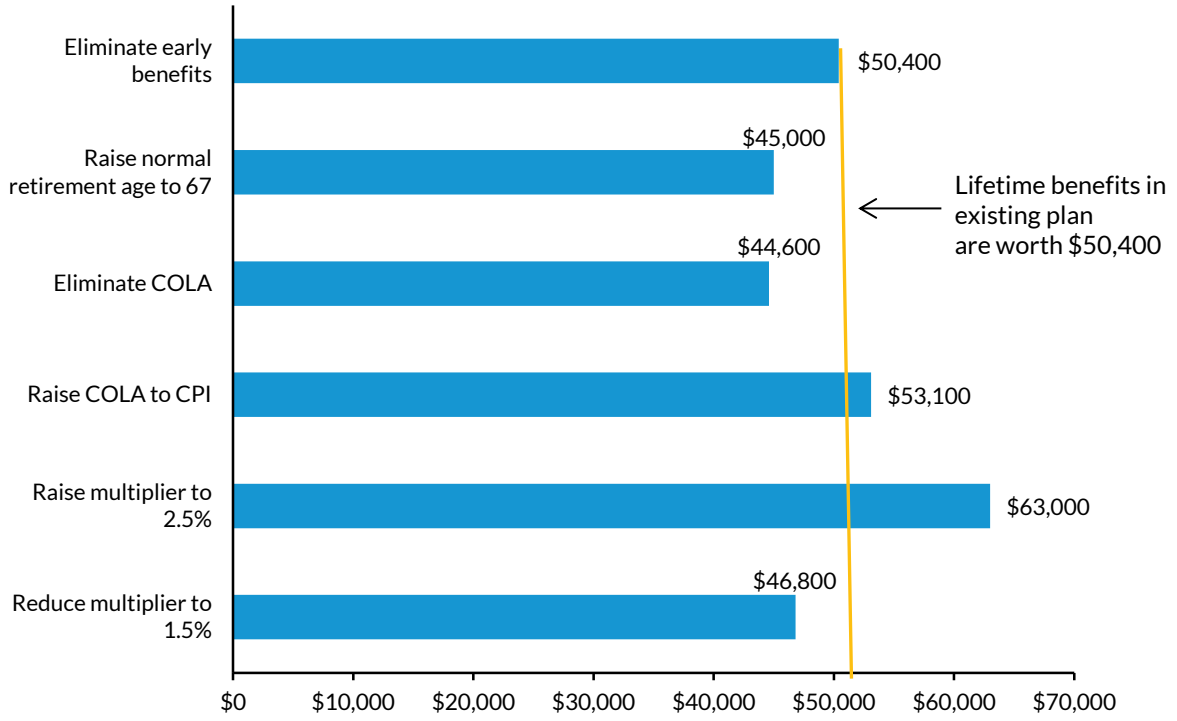
Notes: The figure shows the expected present discounted value of lifetime pension costs divided by the expected present discounted value of lifetime salary payments under each reform option. Estimates assume an annual inflation rate of 2.7 percent and an annual rate of return on plan assets of 6.0 percent.

The impact of potential plan reforms on individual teachers would depend on when they were hired and how long they were employed. None of the reforms we considered would affect teachers hired at age 22 who completed only 10 years of service, because under each of the reforms, as under the current benefit rules, they would be better off financially by withdrawing their contributions from the plan when they separate and investing their funds elsewhere until retirement. Many of the reforms would affect age-22 hires who complete 20 years of service. For example, raising the normal retirement age to 67, eliminating COLAs, and reducing the benefit multiplier to 1.5 percent would each reduce the expected value of their lifetime pension benefits by about $15,000, or about 30 percent (figure 7). Raising the benefit multiplier to 2.5 percent would boost their lifetime pension benefits by about $13,000, or 25 percent. Eliminating early retirement benefits would not affect age-22 hires who complete 20 years of service, however, because they are not currently eligible to retire early.

FIGURE 7

Expected Value of Lifetime Pension Benefits under Various Pension Reforms, Age-22 Hires with 20 Years of Completed Service

Pennsylvania teachers hired on or after July 1, 2011 (class T-E), 2015 constant dollars



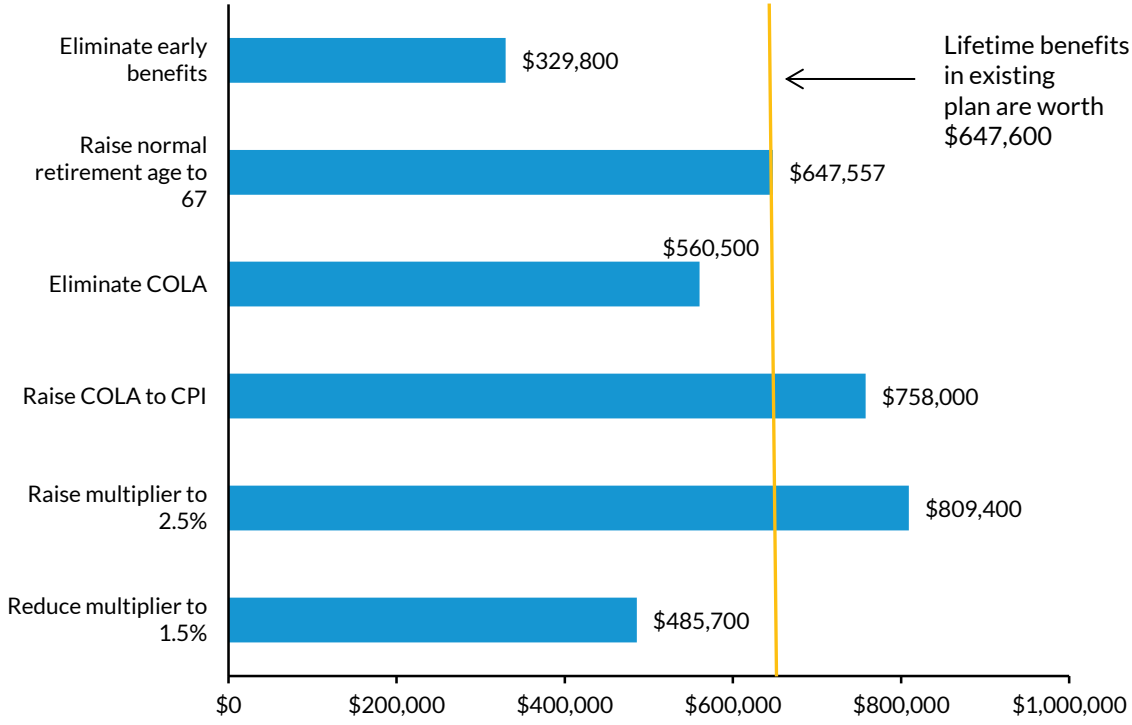
Source: Author's estimates from the Urban Institute's Public Pension Simulator.
Notes: Estimates are rounded to the nearest $100 and assume an annual discount rate of 6 percent and inflation rate of 2.7 percent.

Eliminating early retirement benefits would cut the expected value of lifetime pensions nearly in half for age-22 hires with 35 years of completed service, to $329,800 (figure 8). This change would reduce their benefits more than any other reform we considered. Nonetheless, these long-tenured teachers would continue to receive substantial benefits, and their pension at age 75 would replace nearly half of their inflation-adjusted final earnings (results not shown). Raising the normal retirement age to 67 would not affect them, because their 35 years of completed service would continue to enable them to collect an immediate unreduced pension. Raising the benefit multiplier to 2.5 percent would increase their lifetime benefits by about $162,000, and creating an automatic COLA would increase their lifetime benefits by about $110,000.

FIGURE 8

Expected Value of Lifetime Pension Benefits under Various Pension Reforms, Age-22 Hires with 35 Years of Completed Service

Pennsylvania teachers hired on or after July 1, 2011 (class T-E), 2015 constant dollars



Source: Author's estimates from the Urban Institute's Public Pension Simulator.
Notes: Estimates are rounded to the nearest $100 and assume an annual discount rate of 6 percent and inflation rate of 2.7 percent.

Conclusions

The Public Pension Simulator provides researchers and policy analysts with an important tool to evaluate existing pension plans and various reform options. By showing how benefits and costs vary as employees work longer, the simulator identifies those members who get the most out of the plan and those who get the least, revealing important inequities in how different employees are compensated. It also shows how much the pension plan may encourage workers to retire early. In addition, the simulator can show how potential pension reforms would change overall plan costs, affect retirement security for plan members, and alter the distribution of pension benefits.

Results for Pennsylvania teachers highlight the dramatic disparities in pensions between short-term and long-term teachers and between those hired at relatively young ages and relatively old ages. Teachers can sometimes more than double the value of their lifetime benefits by remaining employed for a single additional year, while their benefits can plummet if they continuing working past the normal retirement age. Moreover, teachers hired a decade ago will qualify for much more generous pensions than those hired today, illustrating how new hires have often had to bear the brunt of recent pension reforms. Policymakers should consider how these recent changes have already affected new hires as they evaluate additional cuts.

Reforms that aim to reduce disparities in pensions within the state and local government workforce might consider eliminating the early retirement option, which could significantly reduce the large pensions now received by many long-term employees hired at relatively young ages while safeguarding the more meager pensions received by employees with shorter careers. The resulting savings could be devoting to raising pension benefits for shorter-term employees.

Notes

1. The current version of the Public Pension Simulator does not model the impact of structural pension reforms, such as replacing a traditional defined benefit plan with a cash balance plan or a hybrid plan that reduces the plan's defined benefit and adds a 401(k)-type component. This feature will be added to the simulator soon.
2. Newly hired teachers can instead choose Class T-F membership, which provides more generous pensions and requires higher teacher contributions, but only 15 percent choose that option (Xerox 2016).
3. Members who separate before they vest must withdraw from the plan and accept a refund of their contributions.
4. In 2015, Social Security's intermediate-cost projections assumed a long-run inflation rate of 2.7 percent and a real interest rate of 2.9 percent (Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds 2015).
5. However, for teachers with 10 years of completed service the replacement rate is higher for those hired at age 22 than at age 30. This result occurs because both groups earn higher replacement rates by withdrawing their contributions from the plan, investing them elsewhere, and then purchasing an annuity. Age-30 hires earned higher salaries and contributed more to the plan than age-22 hires, so they accumulated larger balances. However, the difference was small because age-22 hires invested their funds longer. As a result, the higher final salaries earned by age-30 hires generated a lower replacement rate.

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