Issue Brief

The Three Rs of Teacher Pension Plans: Recruitment, Retention, and Retirement

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Executive Summary

As early as the turn of the 20th century, American legislators seemed to understand the importance of teacher quality to students' education. A 1917 report on public education noted that "a school-teacher's work is personal, direct, and positive. It works for the good or the ill of each pupil."[1]

Defined benefit (DB) pension plans were first introduced for teachers in the United States to help with the recruitment of high quality educators, and as an incentive to keep those educators in the teaching profession. By 1916, some form of retirement plan was made available to public schoolteachers in 33 states. It was thought that such a retirement system might serve two purposes: 1) bringing more diverse, and highly qualified teachers into the profession; and 2) creating a more productive workforce that actually saves public employers money, as one dollar in pension benefits was seen as worth more than a dollar in salary.[2]

Today, the vast majority of public school teachers in the United States participate in a traditional DB pension plan. This report analyzes the effectiveness of pensions on teacher retention and overall teacher productivity, and draws policy conclusions about the ideal design of teacher retirement systems. It finds that:

- Teacher effectiveness increases with experience. Education policy literature finds that teacher productivity increases sharply within the first few years of teaching. Thus, the more retention that we see among mid-career teachers, the more that the average teacher productivity within a school will increase.
- The cost of teacher turnover is quite high, both in terms of financial cost and loss of productivity to the school district. Additionally, public school teachers turn over less than private school teachers, largely due to their compensation, including pension benefits.
- Defined benefit pension plans help to recruit high quality teachers, and to retain highly productive teachers longer, as compared with defined contribution (DC) accounts.
- In 2003, DB pensions helped to retain and additional 22,000 teachers nationwide. Because longer tenured teachers are more effective teachers, the increased retention that DB pensions bring increases the overall quality of public education.
- Because the cost of teacher turnover is substantial, the retention effects of DB pension plans also save school districts money. In 2003, DB pensions saved school districts $273.2 million nationally in teacher turnover costs.

DB pensions remain a cost-effective way to increase retention of highly effective teachers in our public schools. Because DB pensions play an important role in the retention of highly productive teachers, pensions have the dual benefit of both increasing the overall quality of our public education system while also reducing the costs to taxpayers. These findings are particularly important considerations for policymakers given the economic challenges facing states and localities as they attempt to keep taxpayer costs low while improving education for American children.

Teacher Effectiveness Increases with Experience

To effectively design a retirement system that retains good quality teachers, teacher quality itself must first be assessed. That is, to know whether the policy in place is keeping the "right" employees, it must first be understood which employees are the highest quality. Only then can it be assessed whether or not those employees are being effectively retained.

On the question of teacher productivity, the education policy literature is quite clear: teachers become more effective as they gain experience. This is especially evident when looking at student test scores. A 2006 paper published by the National Bureau of Economic Research studied fifth grade mathematics and reading teachers, and found "significant returns to teacher experience."[3] A 1999 study found that, after controlling for student poverty, the two highest predictors of test scores were teacher experience and teacher preparation.[4] Furthermore, in a 2002 meta-analysis of teacher experience and productivity, Glass found that 85% of the statistically significant regression coefficients of these studies were positive, indicating to the author that "students of more experienced teachers achieve at higher levels." The study further found regularly licensed teachers to be more effective than emergency-certified teachers.[5]

Each time a mid-career teacher leaves and is replaced by an inexperienced teacher, the school as a whole sees a drop in productivity.

Education policy literature also finds that teacher productivity increases sharply within the first 3-5 years of teaching. Harris and Sass find that teachers become more and more productive within the first few years, when experience can enhance teacher effectiveness in both reading and mathematics, especially among elementary and middle school teachers. The authors find that most of the productivity increases occur within the first year of teaching. After a few years, however, subsequent experience yields "diminishing increases in teacher productivity," meaning that productivity gains begin to level off after a certain point.[6]

Milankowsi and Odden specifically quantify the gains to students of increased teacher effectiveness. They found that students achieved between 0.07 and 0.10 standard deviations higher in both reading and mathematics when taught by an experienced teacher, as opposed to an inexperienced teacher.[7]

Therefore, each time a mid-career teacher, who tends to be highly effective, leaves and is replaced by an inexperienced teacher, who tends to be less effective, the school as a whole sees a drop in average productivity. An obvious human resource goal should then be retaining mid-career teachers—who are extremely effective but not yet seeking retirement—so as to maximize the school's overall productivity as much as possible.

The Financial Cost of Teacher Turnover is High

With teacher productivity increasing sharply in the first five years of teaching and then reaching a plateau with increased experience, it makes sense to implement public policy in which teachers are especially encouraged to stay once they have achieved this level of effectiveness. In other words, once teachers have about five years' experience, they are most productive; therefore, retention policies should be built around retaining those teachers with at least five years' experience.

In fact, teacher turnover patterns seem to fit the human resource objectives of retaining highly qualified teachers quite nicely. Harris and Adams find that the overall rate of teacher turnover is relatively low as compared to several similar professions. Further, they find that the highest rates of turnover were among the youngest teachers, and the older, retiring workers.[8] Similarly, a study by the National Commission on Teaching and America's Future (NCTAF) finds that in both urban and rural schools, the youngest and oldest teachers left at the highest rates, while middle-aged teachers were most likely to remain teachers. In large urban schools especially, teachers with less than five years' experience left at the highest rates. In fact, in a regression analysis of teacher turnover, the only statistically significant variable was teacher experience, where teachers with 0 to 1 years' experience were most likely to leave.[9]

Further, ample research has been conducted on the prevalence of teacher turnover overall, and finds that rates of teacher turnover do not seem significantly high for any teachers, at any ages. Harris and Adams find that an average of only 2.59 percent of teachers leave each year due to switching to a new profession.[10] Further, researchers at the National Center for Education Statistics found that schoolteachers were just as likely to continue working in the same occupation three years after beginning the job, as compared with other white collar jobs such as those in the sciences, business and finance, and information technology.[11]

The Alliance for Excellent Education calculates the total number of teachers who left their jobs in 2003 for reasons other than retirement—both leaving the profession and transferring to other schools. Their findings are reprinted in Table 1. The average rate of teachers leaving the profession was 5.78% nationally, while the average rate of teacher transfers was 7.36%.

It is interesting to note that the national transfer rate was higher than the leave rate. Because more teachers transfer jobs than leave the profession, it seems that teachers may be self-selecting themselves into fitting job matches. That is, should they start their career at a school for which they may not be a good match, they are more likely to transfer to a school that is a better match for them than to leave the profession entirely. This may suggest that teacher retention programs are successfully helping teachers find good job matches, so that they are more likely to stay within the teaching profession, even should the situation between them and their first employer not work out.

It should be noted that teacher transfers, though technically a form of turnover, do not necessarily present a public policy problem in terms of overall teacher retention in the United States, since students (albeit different ones) are still receiving the benefit of the transferring teachers' experience and effectiveness. Therefore, for the purposes of this paper, only teachers who are leaving the profession entirely to work in another profession (i.e., not due to transfer to another school or retirement), will be counted toward overall teacher turnover.

When a mid-career teacher leaves education for another profession, the productivity losses are great, as noted earlier. Yet for every teacher who turns over, there is an even greater loss to the school beyond that of just lost productivity; there is also a large financial cost to turnover. Whenever a teacher leaves, a new teacher must be hired, and the school must engage in activities such as recruitment, hiring, administrative processing, and training, to name a few.[12] Several studies attempt to put an actual monetary value on the cost of turnover. Though these estimates can vary depending on the data collected and methodology used, each of them seem to conclude that the cost of turnover is quite high.[13]

Table 1. U.S. Teacher Turnover Rates

Total Number of Teachers	Teachers Leaving the Profession*	Percentage of Teachers Leaving	Teachers Transferring to Other Schools	Percentage of Teachers Transferring
2,998,795	**173,439**	**5.78%**	**220,700**	**7.36%**
* Number of teachers leaving the profession does not include leaving due to retirement.				

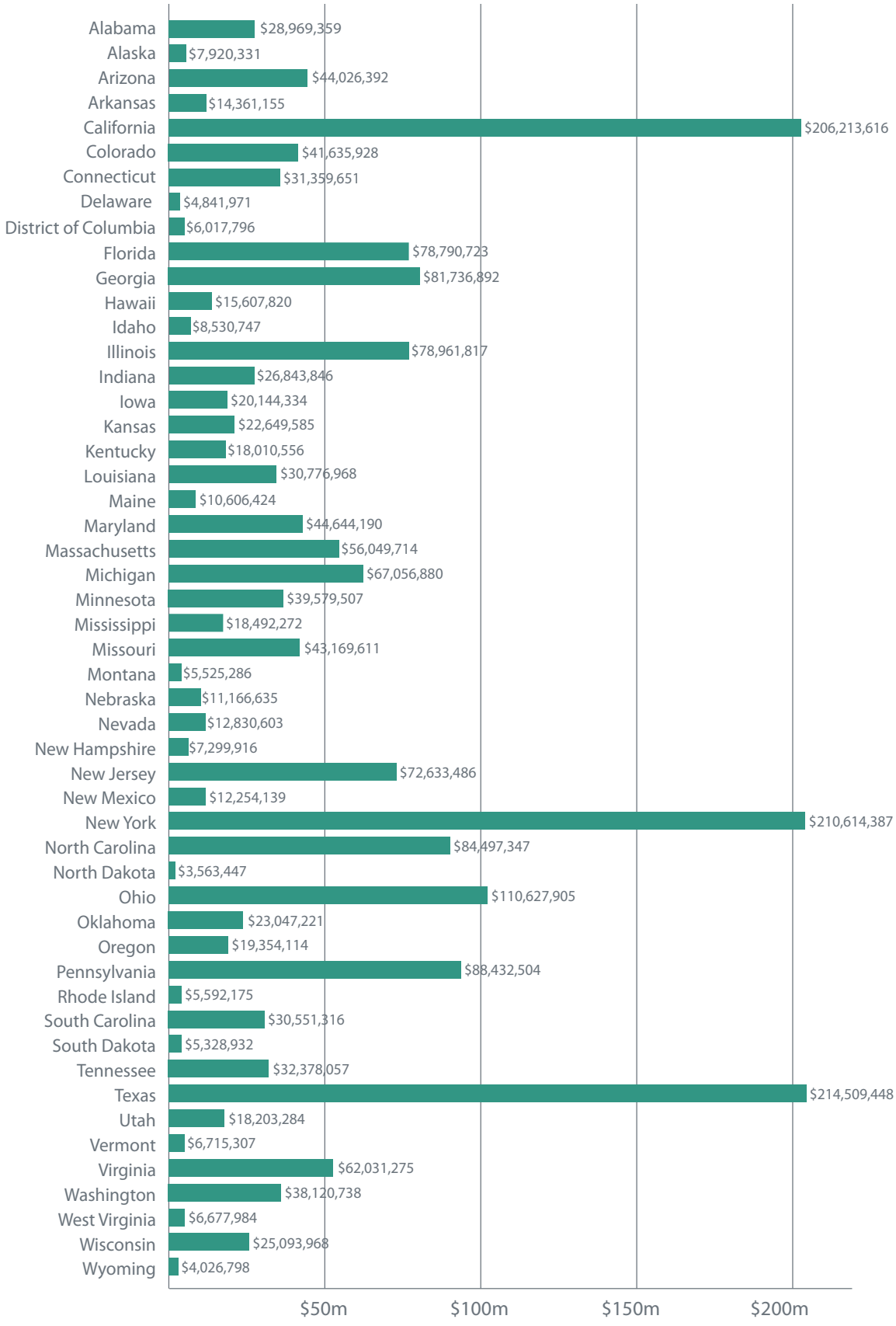
Source: Author's calculations based on Alliance for Excellent Education. 2005. *Teacher Attrition: A Costly Loss to the Nation and to the States*. Issue Brief. Washington, DC: Alliance for Excellent Education. Data from 2003.

The Alliance for Excellent Education calculates the financial cost of teacher turnover for the United States as a whole, and on a state by state basis. It finds that, of the nearly 3 million teachers in the United States in 2003, nearly 6% left the profession for another occupation (i.e., not due to retirement). The total cost of this turnover was close to $2.2 billion nationwide, or $12,500 per teacher leaving. It should be noted that these costs take into account the cost of turnover only—in terms of recruitment, hiring, orientation, and other associated costs—but not the salary differentials between the teacher leaving and the newly hired replacement. Nor does it take into account the productivity losses associated with teacher turnover. Figure 1 presents these state by state costs.

National Teacher Turnover Costs		
	Total Turnover Cost of Teachers who Leave the Profession	$2,158,074,356
	Total Turnover Cost per Teacher Leaving	$12,443

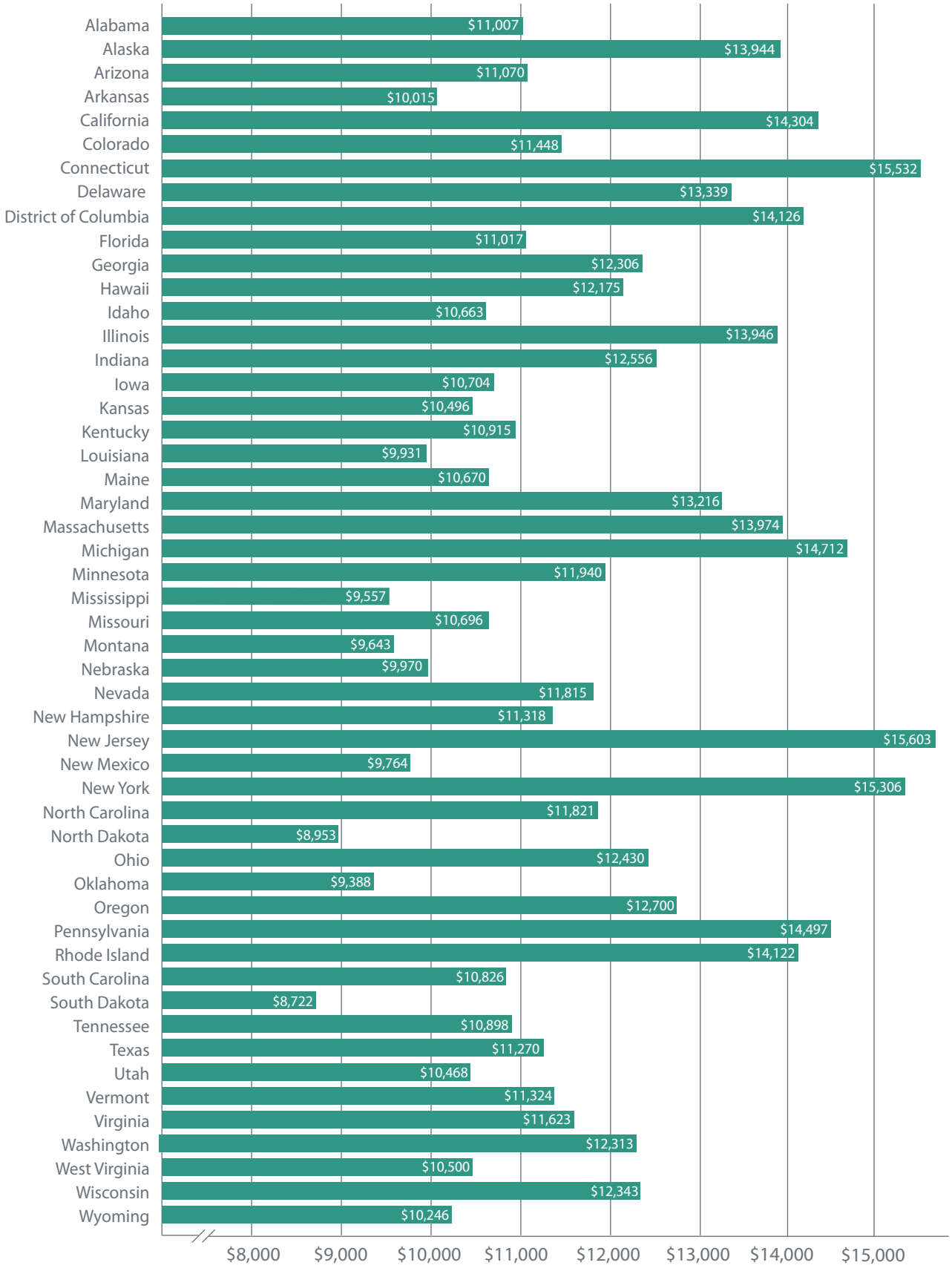
Source: Author's calculations based on Alliance for Excellent Education. 2005. *Teacher Attrition: A Costly Loss to the Nation and to the States*. Issue Brief. Washington, DC: Alliance for Excellent Education. Data from 2003.

Figure 1. Total Turnover Cost of Teachers who Leave the Profession, by State



Source: Author's calculations based on Alliance for Excellent Education. 2005. *Teacher Attrition: A Costly Loss to the Nation and to the States*. Issue Brief. Washington, DC: Alliance for Excellent Education. Data from 2003.

Figure 2. Total Turnover Cost per Teacher Leaving, by State



Source: Author's calculations based on Alliance for Excellent Education. 2005. *Teacher Attrition: A Costly Loss to the Nation and to the States*. Issue Brief. Washington, DC: Alliance for Excellent Education. Data from 2003.

DB Pension Plans Increase Recruitment and Retention of Effective Teachers

As mentioned earlier, DB plans were initially implemented in school districts to recruit and retain highly qualified teachers. In fact, for decades public and private sector employers have used DB pension plans as a recruitment and retention tool to reduce attrition of qualified workers. Especially within the public sector, DB plans may be all the more highly valued, as these employees tend to receive less total compensation than their private sector counterparts.[14] In addition, 27% of all state and local employees,[15] and 40% of all public school teachers,[16] are not covered under Social Security. For those employees, their DB pension benefit may be all the more important, as it is likely the only source of guaranteed income that they will receive in retirement. Across industries and sectors, research shows that employees still place a high value on their DB pension benefits.

Attraction and Recruitment

DB plans are an important recruitment tool, as employees seem to value these benefits quite highly. A 2008 MetLife survey found that 72% of employees cite retirement benefits as an important factor in their loyalty to their employer.[17] Among employers, a 2004 survey found that 84% of DB plan sponsors believe that their pension plan has some impact on employee retention, with 31% stating that this impact is major.[18] A 2010 study by Towers Watson found that employees of firms with DB plans place a much greater importance on both attraction and retention than workers at firms with DC plans; 33% of employees of BD firms say the plan is an important reason they decided to join the firm, as compared to just 21% of employees at DC firms.[19] Finally, Ippolito finds that workers seem to value pensions so highly that they willingly forego higher wages in order to be ensured guaranteed retirement income.[20]

Also, employers with DB pensions may be able to better attract desirable skilled employees due to a self-selection effect. This means that employees who are more likely to stick with a job also tend to be more apt to accept employment that offers a DB pension in the first place.[21] Boston College researchers find that, because DB pensions tend to favor long-term service, public employees' relatively longer tenure than private sector counterparts led to an employee preference for DB pensions over DC plans.[22] Similarly, other research has found that longer-term employees tended to prefer DB pensions to DC and cash balance plans. This could be because employees who are looking for a career instead of a short-term job seek out employers who offer DB pensions.[23] Ippolito focuses on the attraction effect of DB pensions and considers how employers use retirement plans to select employees interested in making a long-term commitment to their employers. Employees who delay gratification and are less focused on immediate rewards are more attractive employees for these employers. DB pensions, which offer larger compensation to employees with greater tenure, are more attractive to these employees than to those who are more focused on current rewards.[24] Employers with DB pensions may thus use retirement benefits to select employees who best fit their needs. In the same vein, Nyce finds that DB pensions had a much larger retention effect than DC plans and that DB pension plans raised employees' commitment to their employer, while no such effect existed for DC plans. These results were strongest among younger employees, suggesting that DB pensions can play a crucial role in retaining employees who are willing to make a long-term contribution to their employer's success.[25]

Regarding public sector employees and teachers specifically, there is strong evidence that these employees have a strong preference for DB pension plans. Research finds that when given the choice between a primary DB or DC plan, public sector employees overwhelming choose the DB pension plan. Among the seven state retirement systems that offer a choice between DB and DC plans, the DB uptake rate ranges from 98 to 75 percent.[26] This suggests that public employees value their DB pension benefits highly. Additionally, research shows that women—who make up the majority of public school teachers—face a "double whammy" in retirement, in that they have

lower wages and less access to retirement benefits, while at the same time living longer than men. For this reason, it seems that women place a greater value on DB pension benefits than men. For example, in a recent public opinion poll, 62% of women said that having a DB pension plan would make them feel more confident about their chances of having a comfortable retirement, as compared with 52% of men. Additionally, 83% of women, and just 72% of men, feel that the disappearance of traditional pensions has made it harder for workers to achieve the American Dream.[27]

Perhaps most telling is the unique case of West Virginia. In 1991, the Teachers Retirement System (TRS), a DB plan, was "frozen" to new hires—all new teachers were enrolled in a DC plan. Over time, it appeared the DC plan did not enable teachers to accumulate sufficient savings for retirement. In 2005, the state closed the DC plan, and all newly hired teachers were enrolled in the TRS. Then came the question of what to do about the teachers hired between 1991 and 2005 who had been enrolled in the DC plan. The state determined that teachers would make individual elections whether to remain in the DC plan or transfer to the DB plan. In June of 2008, the teachers in the DC plan were given the choice to switch to the DB plan, and a full 78% chose to switch, including 76% of young teachers (under 40 years old). This result was a surprise, since it is often assumed (incorrectly, as it turns out) that younger workers prefer DC plans over DB plans.[28]

Retention

Perhaps as a result of their strong popularity, DB pension plans consistently reduce employee turnover. As early as 1993, Allen and colleagues found evidence that DB pensions keep workers at jobs longer.[29] Even and MacPherson similarly found that firms with pension coverage saw lower turnover rates, with the effect being greater at large firms than at smaller firms. Additionally, the authors found that firms with DB plans consistently showed smaller turnover rates than firms with DC plans, despite firm size.[30]

Researchers at Boston College have attempted to quantify the reduced attrition that pensions bring, and found significant effects. First, they find evidence that the move from DB plans into DC plans beginning in the 1990s caused employees to turn over at higher rates—as opposed to the other way around, as is sometimes assumed. They further find that DB pension coverage increases tenure with an employer by 4 years, as compared to having no retirement system in place. DB coverage increases tenure with an employer by 1.3 years as compared with DC coverage. Having a DB and DC plan showed the greatest retention effects, as the two plans together increase tenure by a full 3.1 years, as compared with a DC-only plan.[31]

Public school teachers have been found to turn over less often than private school teachers, largely due to their compensation, including pension benefits.

Within the teaching profession specifically, public school teachers have been found to turn over less often than private school teachers, largely due to their compensation, including pension benefits. In a comprehensive review of recent literature on teacher recruitment and retention, Guarino and colleagues find a large consensus in the literature that public school teachers turn over less than their private school counterparts.[32] Ingersoll finds that private school teachers turn over at a much higher rate than public school teachers, and further finds that—consistent with the data in Table 1—most public school teachers who turn over move to another school district rather than leave the profession entirely, while private school teachers are more likely to leave the profession than transfer schools.[33] The National Center for Education Statistics verifies this in a study finding that 11.9% of private school teachers turn over each year as compared with just 6.6% of public school teachers. Additionally, private school teachers were much likely to leave the profession for another career, while

public school teachers more commonly left due to child rearing or retirement.[34]

In a simulation analysis of the retention effects of changing retirement benefits, Christian Weller finds that moving public school teachers from DB pension plans to alternative retirement plans such as cash balance or DC plans would increase teacher turnover.[35] Finally, Harris and Adams again find that turnover for public school teachers is substantially lower than that of private school teachers, a point they find unsurprising, as public school teachers are more likely to have pensions, which "seem to reduce turnover."[36]

Efficient Retirement

Additionally, employees' decisions on when to actually retire offer additional productivity benefits to employers with DB pensions. DB pensions can encourage "efficient retirement," such that employees withdraw from the labor force when their productivity decreases. Lazear argues that DB pensions can function similar to severance pay in encouraging efficient retirement as employees age and their productivity starts to level off or even to decrease.[37] Nalebluff and Zeckhauser study the effect that DB pensions have on individuals' retirement decisions, and find that the features of most U.S. DB pensions can be designed to facilitate appropriate and optimal retirement decisions among employees.[38] Luchak, Pohler and Gellattly find that employees with a DB pension were more likely to retire later when they experienced higher levels of affective commitment to their employer. Employees with high affective commitment planned to retire, on average, about two years later than employees with low levels of affective commitment.[39] Hence, when setting an early retirement age, DB benefits often target an average age when employee productivity starts to soften.[40]

Thus, the literature is quite clear that public employers implement DB pension plans to attract and retain qualified workers. In turn, these employees—including teachers—value their pensions quite highly, and will work for employers with DB pension coverage substantially longer than for employers that offer only DC plans.

DB Pension Plans Can Increase Teacher Productivity

Even as they retain employees longer, there is evidence that DB pension plans actually increase worker productivity. Dorsey finds "various indirect evidence" that certain productivity gains are attributable to DB pensions.[41] More recently, in his analysis of productivity changes when a company moves from a DB to a DC retirement plan, Hall finds that those firms that moved from a DB to a DC plan between 1995 and 2000 experienced productivity losses, especially as compared with those firms who retained their DB plans. He hypothesizes that this loss of productivity may be due to the fact that—as noted above—workers turn over more quickly with the DC switch, and thus leave the firm before they had acquired all of the job-specific skills necessary to achieve higher productivity.[42] Although the author concludes that more work needs to be done in order to prove such a correlation between increased tenure and increased productivity, the relationship does seem intuitively likely, especially in relation to the teacher productivity literature reviewed above.

DB pensions serve to retain effective teachers, which increases overall teacher quality at each school.

Additionally, within the teaching profession specifically, the teacher effectiveness literature clearly shows that as teachers gain experience they become more effective. Since DB pensions are serving to retain teachers longer, it would follow that such increased retention would naturally lead to further productivity gains. That is, the DB pension plan is serving to retain the most qualified teachers; this, in turn, increases overall teacher quality at each school. Indeed, in a simulation analysis of teacher effectiveness and retirement benefits, Weller finds the counterfactual to be true—that average teacher effectiveness could fall by at least 4.3% and 1.2%, respectively, should DB pensions be replaced by DC plans or cash balance plans for teachers.[43]

The bottom line is that better recruitment of targeted employees, increased retention of skilled employees, and greater commitment to the employer translate into higher productivity with DB pensions. Further, these findings seem to hold especially true for schoolteachers and their employers.

In Reducing Turnover, the DB System Saves Schools Money

As effective as DB pensions are at reducing turnover and thus increasing overall teacher quality, they have the added benefit of reducing the financial costs associated with teacher turnover. Since DB pensions reduce turnover, as compared with DC plans, such reduced turnover saves the school district money in terms of those same turnover costs discussed previously: recruitment, hiring, administrative processing, training, etc.

Figure 3 and Appendix Table 2 shows the increase in tenure attributable to the fact that schools in each state offer a primary DB plan rather than a DC plan. We calculate the additional teachers retained under the DB plan, as well as the additional turnover costs that would be associated with a switch to a DC plan. The table shows that the DB plan is associated with substantially less teacher turnover, and thus large cost savings. Nationally, nearly 22,000 teachers are more likely to stay in the profession as a result of a DB plan, and such reduced attrition yields $273.2 million in cost savings nationwide.

It should be noted that these costs take into account the cost of turnover only—in terms of recruitment, hiring, orientation, and other associated costs—but not the salary differentials between the teacher leaving and the newly hired replacement. For example, if a mid-career teacher is replaced by a young teacher, the school will generally pay the younger, inexperienced teacher a lower salary than the older teacher being replaced.

Such salary differentials are not included, as the analysis was meant to isolate the cost of turnover itself. Some studies, such as that of Milankowski and Odden, attempt to include salary differentials as well as the loss of productivity in turnover cost calculations. Interestingly, these authors find that, when losing a mid-career teacher, the productivity loss is so substantial that it outweighs any cost savings in terms of a reduced salary for the new teacher.[44] In a cost-benefit analysis of a California teacher mentoring program, Villar and Strong found that the highest cost savings were achieved with increases in teacher effectiveness. After five years, every dollar invested in a teacher "produces a positive return…and the state almost recovers its expenses," as increases in teacher productivity positively affect the teachers, their students, the school district, and the broader society.[45]

Such results may not be surprising, considering the near consensus in the literature on the massive gains in productivity that more experienced teachers bring, as discussed previously.

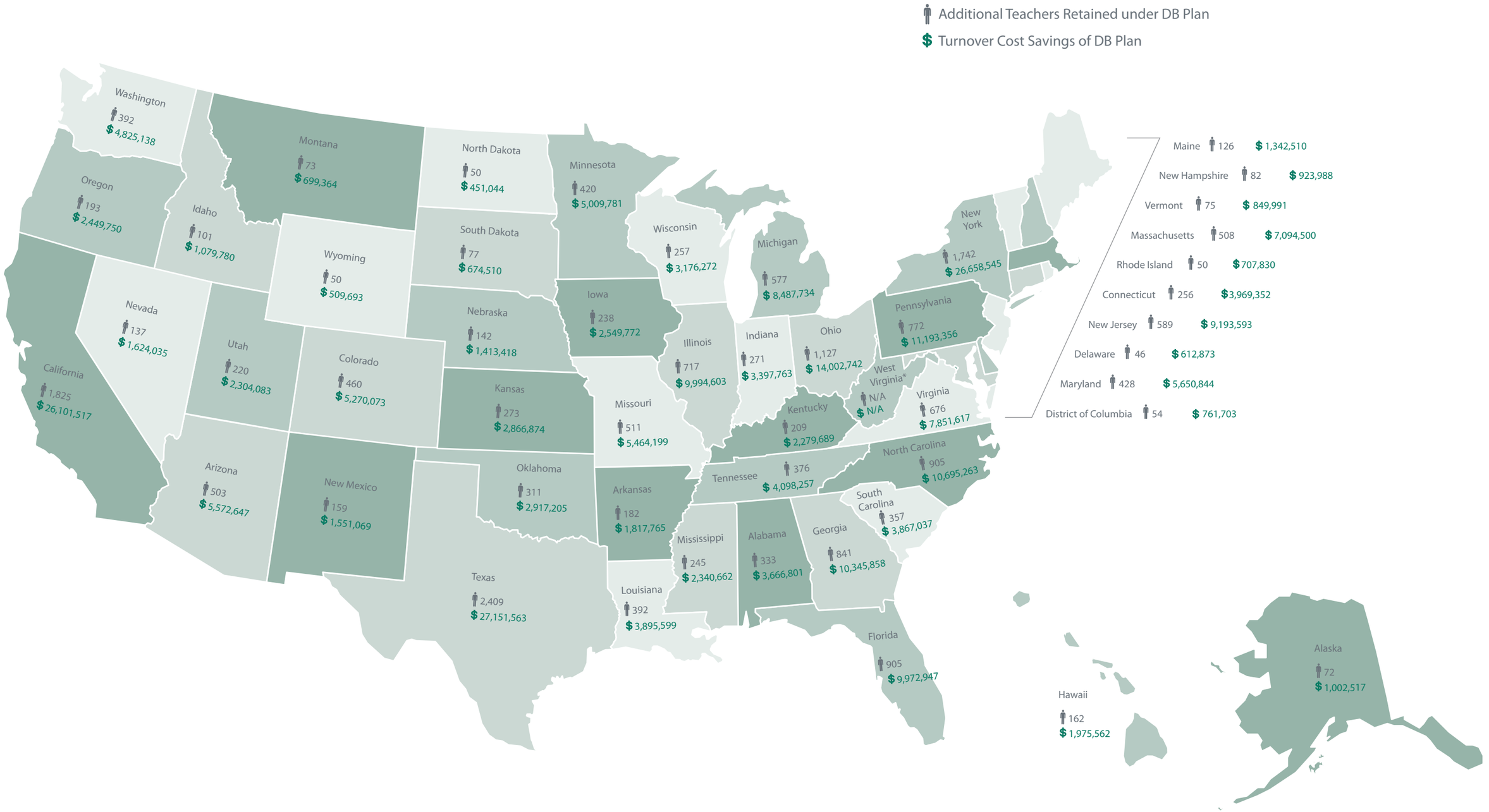
Finally, these costs also do not take into account the transition costs of switching out of the DB pension system. Weller finds that the transition costs associated with moving from a DB pension to an alternative retirement plan can be substantial. The transition costs of a switch to a cash balance design would cost on average 0.7% of payroll, and a DC transition would cost 0.3% of payroll, over 40 years.[46]

National Teacher Turnover Cost Savings Associated with DB Plans

Projected Leave Rate Under DC Plan	6.52%
Additional Teachers Retained Under DB Plan	21,953
Turnover Cost Savings of DB Plan	$273,158,556

Estimated from Munnell, A.H., Haverstick, K., and Sanzenbacher, G. 2006. "Job Tenure and Pension Coverage." CRR Working Paper 2006-18. Chestnut Hill, MA: Center for Retirement Research at Boston College. Alliance for Excellent Education. 2005. *Teacher Attrition: A Costly Loss to the Nation and to the States*. Issue Brief. Washington, DC: Alliance for Excellent Education. Detailed information available in the Technical Appendix.

Figure 3. Teacher Turnover Cost Savings Associated with DB Plans, by State



*Data for West Virginia not applicable, as teachers were offered only a DC plan in 2003.
Estimated from Munnell, A.H., Haverstick, K., and Sanzenbacher, G. 2006. "Job Tenure and Pension Coverage." CRR Working Paper 2006-18. Chestnut Hill, MA: Center for Retirement Research at Boston College. And Alliance for Excellent Education. 2005. *Teacher Attrition: A Costly Loss to the Nation and to the States*. Issue Brief. Washington, DC: Alliance for Excellent Education. Detailed information available in the Technical Appendix.

Conclusion

Education policy literature shows that teachers become more effective with more experience. The DB pension system was originally designed to recruit and retain high quality educators, while also offering economic security in retirement to those public employees who teach America's children. This report analyzes the effectiveness of pensions on teacher retention and overall teacher productivity. It finds that:

- DB pensions help to retain highly productive teachers longer.
- 5.78% of public school teachers left the profession for another occupation in 2003; the cost of turnover nationally is $12,443 per teacher.
- DB pensions helped to retain an additional 22,000 teachers nationwide in 2003, which in turn saved $273.2 million in teacher turnover costs across the nation's school districts.

Because DB pension plans are so highly regarded by the employees who have them—especially teachers—they play a critical role in recruiting and retaining highly productive teachers. This increases each school's average level of effectiveness, and thereby benefits students as well. Additionally, the DB plan brings the added benefit of saving school districts—and taxpayers—money in terms of expensive turnover costs. In other words, DB pensions provide the dual benefit of increasing the quality of the U.S. public education system while at the same time reducing the cost of teacher turnover to taxpayers.

Technical Appendix

To estimate the percentage increase in job tenure when switching from a DC to a DB plan (Table 2 below), we first utilized data from Munnell and colleagues' 2006 paper "Job Tenure and Pension Coverage." The mean tenure reported in the paper for workers with no employer-sponsored retirement plan was 7.26 years in 2003. The paper also reports that, from this baseline of no retirement plan, switching to a DC and DB retirement plan at work respectively increases tenure by 2.7 and 4.0 years. The average tenure under a DC plan was 10.0 years, and a switch from a DC plan to a DB plan increases tenure by 1.3 years, for a total average tenure of 11.3 years.

Assuming a 35-year career, we then calculate the total number of jobs that employees under each type of plan will hold throughout their careers: 3.5 jobs under a DC plan, and 3.1 jobs under a DB plan. Thus, the probability of each employee turning over in any given year is the total number of jobs worked divided by the number of years worked, or 0.1 and 0.09, respectively. Thus, the probability of turning over in a single year is 12.7% higher in a DC plan versus a DB plan.

We then multiply this probability by Alliance for Excellent Education's reported turnover rates to determine what the turnover rates would have been under the alternative retirement systems. The difference in turnover rates is multiplied by the total number of teachers in order to calculate the number of teachers who would have turned over under the alternate retirement system. This number is multiplied by the per teacher cost of turnover in order to calculate the cost savings resulting from the corresponding retirement plan.

Table 2. Teacher Turnover Cost Savings Associated with DB Plans, by State

	Projected Leave Rate Under DC Plan	Additional Teachers Retained Under DB Plan	Turnover Cost Savings of DB Plan
Alabama	5.86%	333	$3,666,801
Alaska	7.69%	72	$1,002,517
Arizona	9.32%	503	$5,572,647
Arkansas	5.35%	182	$1,817,765
California	5.80%	1,825	$26,101,517
Colorado	9.68%	460	$5,270,073
Connecticut	5.40%	256	$3,969,352
Delaware	5.43%	46	$612,873
District of Columbia	8.41%	54	$761,703
Florida	6.27%	905	$9,972,947
Georgia	8.52%	841	$10,345,858
Hawaii	11.98%	162	$1,975,562
Idaho	6.24%	101	$1,079,780
Illinois	4.65%	717	$9,994,603
Indiana	3.94%	271	$3,397,763
Iowa	5.56%	238	$2,549,772
Kansas	7.12%	273	$2,866,874
Kentucky	4.34%	209	$2,279,689
Louisiana	6.87%	392	$3,895,599
Maine	6.40%	126	$1,342,510

	Projected Leave Rate Under DC Plan	Additional Teachers Retained Under DB Plan	Turnover Cost Saving of DB Plan
Maryland	6.98%	428	$5,650,844
Massachusetts	5.78%	508	$7,094,500
Michigan	5.12%	577	$8,487,734
Minnesota	6.46%	420	$5,009,781
Mississippi	6.60%	245	$2,340,662
Missouri	7.09%	511	$5,464,199
Montana	5.42%	73	$699,364
Nebraska	5.47%	142	$1,413,418
Nevada	7.09%	137	$1,624,035
New Hampshire	4.86%	82	$923,988
New Jersey	5.33%	589	$9,193,593
New Mexico	6.71%	159	$1,551,069
New York	7.44%	1,742	$26,658,545
North Carolina	9.41%	905	$10,695,263
North Dakota	4.85%	50	$451,044
Ohio	8.13%	1,127	$14,002,742
Oklahoma	6.05%	311	$2,917,205
Oregon	6.05%	193	$2,449,750
Pennsylvania	5.41%	772	$11,193,356
Rhode Island	3.85%	50	$707,830
South Carolina	7.27%	357	$3,867,037
South Dakota	5.97%	77	$674,510
Tennessee	5.74%	376	$4,098,257
Texas	8.04%	2,409	$27,151,563
Utah	8.38%	220	$2,304,083
Vermont	7.27%	75	$849,991
Virginia	7.42%	676	$7,851,617
Washington	6.39%	392	$4,825,138
West Virginia	N/A	N/A	N/A
Wisconsin	3.41%	257	$3,176,272
Wyoming	5.65%	50	$509,693
US Total	**6.52%**	**21,953**	**$273,158,556**

Estimated from Munnell, A.H., Haverstick, K., and Sanzenbacher, G. 2006. "Job Tenure and Pension Coverage." CRR Working Paper 2006-18. Chestnut Hill, MA: Center for Retirement Research at Boston College. And Alliance for Excellent Education. 2005. *Teacher Attrition: A Costly Loss to the Nation and to the States.* Issue Brief. Washington, DC: Alliance for Excellent Education.
*Data for West Virginia not applicable, as teachers were offered only a DC plan in 2003.

Endnotes

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