

July 25, 2011

Mr. Maxie L. Patterson
Executive Director,
Texas Association of Public Employee Retirement Systems
Two Riverway, Suite 630
Houston, TX 77056

Subject: Analysis of Defined Benefit Plan Efficiency

Dear Max:

Three Texas retirement systems, through the Texas Association of Public Employee Retirement Systems (TEXPERS), desire to compare their three defined benefit (DB) pension plans to 401(k)-type defined contribution (DC) retirement savings plans. A research paper in 2008 titled "A Better Bang for the Buck" was authored by Beth Almeida and William B. Fornia for the National Institute of Retirement Security (NIRS) in which the costs and benefits of a typical DB plan were compared to the costs and benefits of a typical DC plan, based on a hypothetical group of employees.


TEXPERS, with the support of the three systems asked William B. Fornia and Pension Trustee Advisors, Inc. (PTA) to conduct similar research for them using pension formulas and employee profiles consistent with their following three Texas pension plans:

1. Fire and Police Pension Fund, San Antonio
2. City of Austin Employees' Retirement System
3. Houston Municipal Employees Pension System

The attached report is based on the methodology and approach of "A Better Bang for the Buck", but applying data relevant to the plans named above. In the analysis that follows, we found that for the profiles of the Texas workers in the three DB plans above, the cost ranged from 39% to 44% less than the DC cost to provide the same level of retirement.

The work was conducted by Pension Trustee Advisors under my direction. I look forward to discussing this with you further.

Sincerely,



William B. Fornia, FSA

Cc: Warren Schott – F&P San Antonio
Steve Edmonds – COAERS
Rhonda Smith – HMEPS

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Introduction

Worries about retirement security abound. Governments are concerned about delivering on the promises that they have made to their citizens and to their employees as tax revenues shrink amid a weakening economy. In this environment, some have proposed replacing traditional defined benefit (DB) pensions with 401(k)-type defined contribution (DC) retirement savings plans in an effort to save money.

The value of traditional DB pensions to employees is generally recognized: they provide a secure, predictable retirement income that cannot be outlived. But less well known is the value of a DB pension to an employer. Due to their group nature, DB plans possess “built-in” savings, which make them highly efficient retirement income vehicles, capable of delivering retirement benefits at a low cost to the employer and employee. These savings derive from three principal sources.

First, DB plans better manage longevity risk, or the chance of running out of money in retirement. By pooling the longevity risks of large numbers of individuals, DB plans avoid the “over-saving” dilemma – that is, saving more than people need on average to avoid running out of cash – that is inherent in DC plans. Consequently, DB plans are able to do more with less.

Second, because DB plans, unlike the individuals in them, do not age, they are able to take advantage of the enhanced investment returns that come from a balanced portfolio throughout an individual’s lifetime.

Third, DB plans, which are professionally managed, achieve greater investment returns as compared with DC plans that are made up of individual accounts. A retirement system that achieves higher investment returns can deliver any given level of benefit at a lower cost.

Because of these three factors, we find that a DB pension plan can offer the same retirement benefit at substantially less than the cost of a DC retirement savings plan. **Specifically, our analysis indicates that for workers in the three Texas DB plans that were studied, the cost to deliver the same level of retirement income ranges from being 39% to 44% lower than the cost of a DC plan.** This is an important factor for policy makers to consider, especially with respect to public sector workforces, where tax dollars are an important source of funds for retirement benefits. DB plans are a more efficient use of taxpayer funds when offering retirement benefits to state and local government employees.

More specifically, this study finds that ...

- Longevity risk pooling in the Texas DB plans saves from 12% to 15%;
- Maintenance of portfolio diversification in the Texas DB plans saves from 3% to 5%; and
- The Texas DB plans’ superior investment returns save from 22% to 25%.

... as compared to a typical DC plan.

Two Approaches to Retirement – DB and DC Plans

Employers who offer retirement benefits can consider two basic approaches: a traditional defined benefit (DB) pension plan and a defined contribution (DC) retirement savings plan. Each type of plan has certain distinguishing characteristics that influence their cost to employers and employees.

How DB plans work

While employers have a good degree of flexibility in designing the features of a DB plan, there are some features all DB plans share.

DB plans are designed to provide employees with a predictable monthly benefit in retirement. The amount of the monthly pension is typically a function of the number of years an employee devotes to the job and the worker's pay – usually toward the end of their career. For example, the City of Austin Employees Retirement System Group B provides a benefit in the amount of 2.5% of final average salary per year of service. Thus, a City of Austin Code Enforcement Inspector whose final average salary is \$55,000, and who had devoted 30 years to the job, would earn a monthly benefit of \$3,438 (\$41,250 per year). This plan design is attractive to employees because of the security it provides. Employees know in advance of making the decision to retire that they will have a steady, predictable income that will enable them to maintain a stable portion of their pre-retirement standard of living.

Benefits in DB plans are pre-funded. That is, employers (and, in the public sector, employees) make contributions to a common pension trust fund over the course of a worker's career. These funds are invested by professional asset managers whose activities are overseen by trustees and other fiduciaries. The earnings that build up in the fund, along with the dollars initially contributed, pay for the lifetime benefits a worker receives when he retires.

How DC plans work

DC plans function very differently than DB plans

First, there is no implicit or explicit guarantee of retirement income in a DC plan. Rather, employers (and usually employees) contribute to the plan over the course of a worker's career. Whether the funds in the account will ultimately be sufficient to meet retirement income needs will depend on a number of factors, such as the level of employer and employee contributions to the plan, the investment returns earned on assets, whether loans are taken or funds are withdrawn prior to retirement, and the individual's lifespan.

While DC plan assets are also held in a pension trust, that trust is comprised of a large number of individual accounts. DC plans are typically "participant directed," meaning that each individual employee can decide how much to save, how to invest the funds in the account, how to modify these investments over time, and at retirement, how to withdraw the funds. Retirement experts typically advise individuals in DC plans to change their investment patterns over their lifecycle. In other words, at younger ages, because retirement is a long way off, workers should allocate more funds to stocks, which have higher expected returns, but also higher risks. As one gets closer to retirement, experts suggest moving money away from stocks and into safer, but lower returning assets like bonds. This is to guard against a large drop in retirement savings on the eve of retirement, or in one's retirement years.

This high degree of participant direction makes DC plans very flexible in accommodating individuals' desires, decisions, and control. Employees, however, do not always follow the best expert advice when it comes to saving and investing for retirement. Too many workers fail to contribute sufficient amounts to the plans, and individuals' lack of expertise in making investment decisions can subject individual

accounts to extremely unbalanced portfolios with too little or too much invested in one particular asset, such as stocks, bonds, or cash. For example, one study found that more than half of all DC plan participants had either no funds invested in stocks—which exposes them to very low investment returns—or had almost all their assets allocated to stocks, making for a much more volatile portfolio.

Another important difference between DC and DB plans becomes apparent at retirement. Unlike in DB plans, where workers are entitled to receive regular, monthly pension payments, in DC plans it is typically left to the retiree to decide how to spend one's retirement savings. Research suggests that many individuals struggle with this task, either drawing down funds too quickly and running out of money, or holding on to funds too tightly and having a lower standard of living as a result. In theory, employers that offer DC plans could provide annuity payout options, but in practice they rarely do.

Both DB and DC plans are important to retirement security

Because individuals do not have perfect knowledge as to whether they will remain in a given job (and therefore in a given DB plan) until retirement, taking advantage of the opportunity to save in a supplemental DC plan can provide employees with useful diversification of retirement income sources. DC plans also are flexible vehicles that can accommodate individual retirement income needs that can vary. For example, two otherwise identical workers might have different family situations, health needs, or simply different preferences and expectations about their retirement income needs. DC plans give workers the opportunity to save for retirement in a manner that reflects their individual situations.

This is why most retirement experts liken the ideal design of retirement income sources to a “three-legged stool,” consisting of Social Security, a DB plan, and a supplemental DC savings plan. Indeed, researchers have found that workers who have access to all three sources of retirement income are in the best position to achieve a secure retirement.

However, to the extent that retirement benefits for private sector employees constitute a cost to employers, and since benefits for public employees are supported by taxpayer contributions, designing retirement benefits in a fiscally responsible fashion is an important public policy goal. To that end, it is important for policymakers to recognize that the features that make DB plans highly attractive to employees – a predictable monthly retirement benefit, low fees and professional management of retirement assets – also provide significant savings for employers and taxpayers.

DB Plans are more cost effective

The cost of either a DB or DC plan depends primarily, but not only, on the generosity of the benefits that it provides. Economists have found that DB plans are typically more generous than DC plans, and obviously, more generous benefits are more expensive. However, for any given level of benefit, a DB plan will cost less than a DC plan. This makes DB plans, in the language of economists, *more efficient* since they stretch taxpayer, employer or employee dollars further in achieving any given level of retirement income.

There are three primary reasons behind DB plans' cost advantage.

1. First, because DB plans pool the longevity risks of large numbers of individuals, they avoid the “over-saving” dilemma inherent in DC plans. DB plans need only accumulate enough funds to provide benefits for the average life expectancy of the group. In contrast, individuals will need to set aside enough funds to last for the “maximum” life expectancy if they want to avoid the risk of running out of money in retirement. Since the maximum life expectancy can be substantially greater than the

average life expectancy, a DC plan will have to set aside a lot more money than a DB plan to achieve the same level of monthly retirement income.

2. Second, because DB plans do not age, unlike the individuals in them, they are able to take advantage of the enhanced investment returns that come from a balanced portfolio over long periods of time. For instance, ongoing DB plans generally include individuals with a range of ages. As older workers retire, younger workers enter the plan. As a result, the average age of the group in a mature DB plan does not change much. This means DB plans can ride out bear markets and take advantage of the buying opportunities that they present without having to worry about converting all of their money into cash for benefits in the near future. By contrast, individuals in DC plans must gradually shift to a more conservative asset allocation as they age, in order to protect against financial market shocks later in life. This process can sacrifice investment returns because people may have to sell assets when they are worth too little due to market fluctuations coinciding with retirement timing. Moreover, they are not able to take advantage of higher expected returns associated with a balanced portfolio.
3. Third, DB plans achieve greater investment returns as compared to the individual account DC plans. Superior returns can be attributed partly to lower fees that stem from economies of scale. Also, because of professional management of assets, DB plans achieve superior investment performance as compared to the average individual investor.

Methodology

We compare the relative costs of DB and DC plans by constructing a model that first calculates the cost of achieving a target retirement benefit in a typical DB plan. We express this cost as a level percent of payroll over a career. We then calculate the cost of providing the same retirement benefit under a DC plan. Additional details on our methodology can be found in the Technical Appendix to the *“Better Bang for the Buck”* report.

Our model is based on a group of 1,000 newly-hired employees as shown below in each of three Texas plans:

1. The Fire and Police Pension Fund, San Antonio
2. The City of Austin Employees Retirement System Group B
3. The Houston Municipal Employees Pension System Group D.

For the purposes of simplicity, we give the individuals in each group a common set of features, according to the average data associated with each different plan.

Worker	Age when Hired	Age at Retirement	Years of Service	Male or Female?
San Antonio Police Officer	27	57	30	Male
Austin Code Enforcement Inspector	32	62	30	Male
Houston Nurse	36	62	26	Female

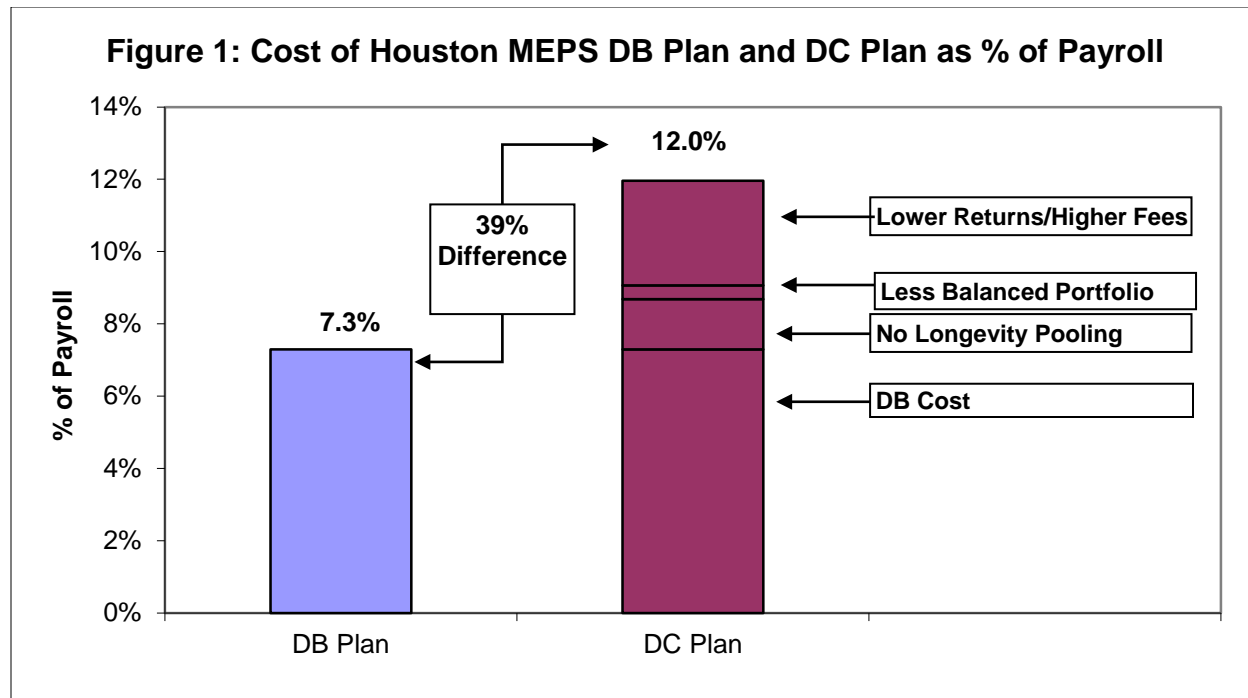
Next, we calculate the benefits provided under each plan. This is based on information provided by the various plans.

Worker	Final Average Pay	Pension Multiplier	Years of Service	Monthly Pension
San Antonio Police Officer	\$80,000	2.25%/5%/2%	30	\$5,733
Austin Code Enforcement Inspector	\$55,000	2.50%	30	\$3,438
Houston Nurse	\$50,000	1.8%/1%	26	\$1,917

We define certain parameters for life expectancy and investment returns. Then, on the basis of all these inputs, we calculate the contribution that will be required to fund our target retirement benefit through the DB plan over the course of a career. We perform the same exercise for the DC plan. The following pages will review various findings for these three hypothetical workers as well as summaries of their results.

DB Plans are more cost-effective because of longevity risk pooling, portfolio diversification, and superior returns

We find that the cost to fund the target retirement benefit for the Nurse under the Houston Municipal Employees' Pension System Group D DB plan, for example, comes to 7.3% of payroll each year. By comparison, we find that the cost to provide the same target retirement benefit under the DC plan is 12.0% of payroll each year. In other words, the DB plan can provide the same benefit at a cost that is 39% lower than the DC plan, as shown in **Figure 1**. These costs are calculated independently of who pays the costs. In most public pension plans, the cost is shared between the employers and the employees.



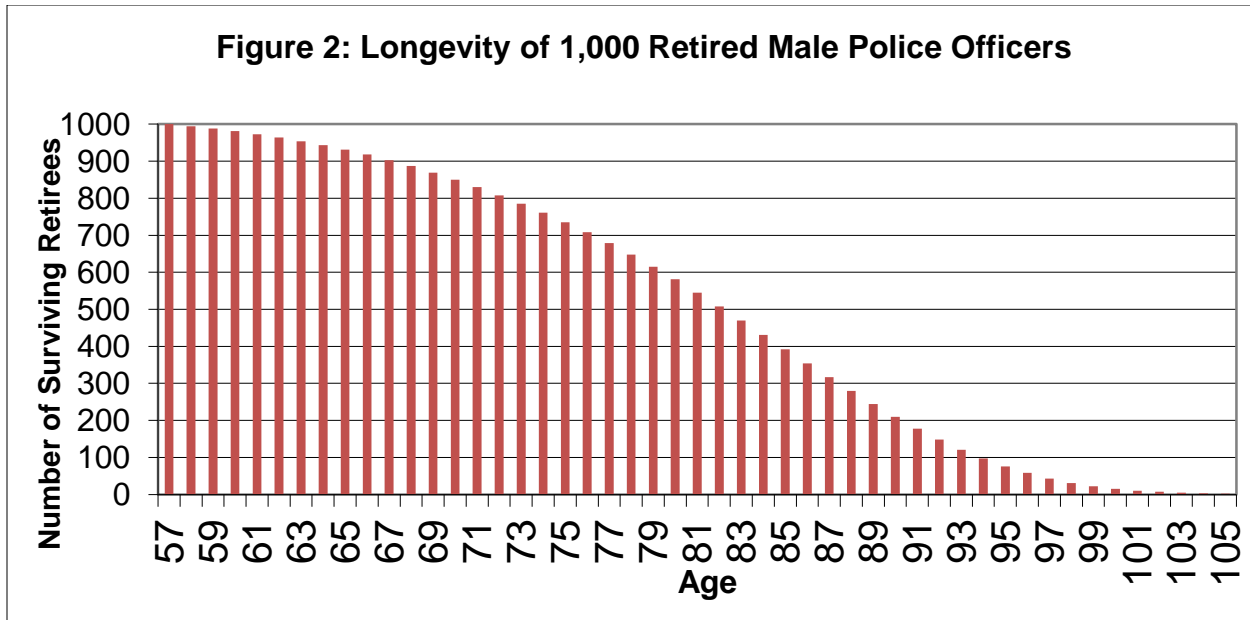
The cost comparisons for the employee groups analyzed in our study are as follows. Costs are shown as percentage of annual payroll.

Worker	DB Cost	DC Cost	Difference
San Antonio Police Officer	20.1%	35.7%	44%
Austin Code Enforcement Inspector	15.4%	25.5%	40%
Houston Nurse	7.3%	12.0%	39%

The DB cost advantage stems from differences in how benefits are paid out in each type of plan, how investment allocations shift in DC plans as individuals age, and how actual investment returns in DC plans compare with those in DB plans.

Longevity Risk Pooling

Longevity risk describes the uncertainty an individual faces with respect to their exact lifespan. While actuaries can tell us that, on average, for example, our pool of male police officers who retire at age 57 will live to be 82, they can also predict that some will live only a short time, and some will live to be over 100. **Figure 2** illustrates the longevity patterns among our 1,000 police officers. With each passing year, fewer retirees are still living. Age 82 corresponds to the year when roughly half of retirees are still alive.

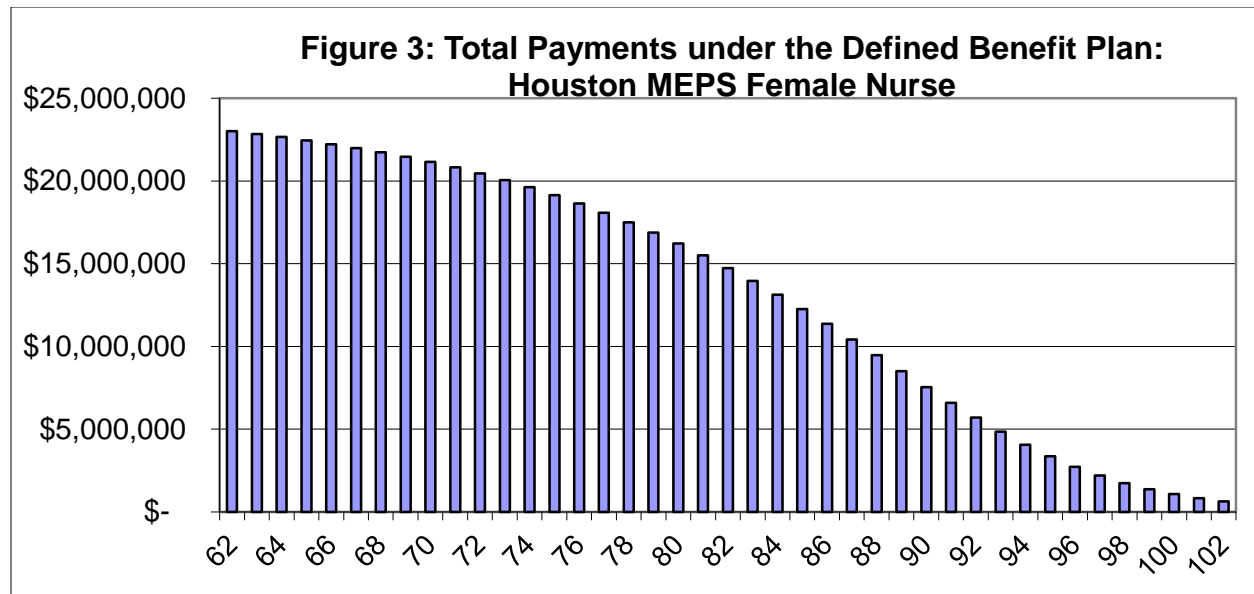


In a DB plan, the normal form of benefit is a lifetime annuity, that is, a series of monthly payments that lasts until death. A DB plan with a large number of participants can plan for the fact that some individuals will live longer lives and others will live shorter lives. Thus, a DB plan needs only to ensure that it has enough assets set aside to pay for the *average* life expectancy of all individuals in the plan, or in the police officer’s case, to age 82. Based on our target benefit level, the DB plan needs to have accumulated \$921,807 for each police officer in the plan by the time they turn 57. This amount will ensure that every individual in the plan will receive a regular monthly pension payment that lasts as long as they do. The contribution required to fund this benefit, smoothed over a career, comes to 20.1% of payroll.

The corresponding information for all three employee groups analyzed in our study is as follows:

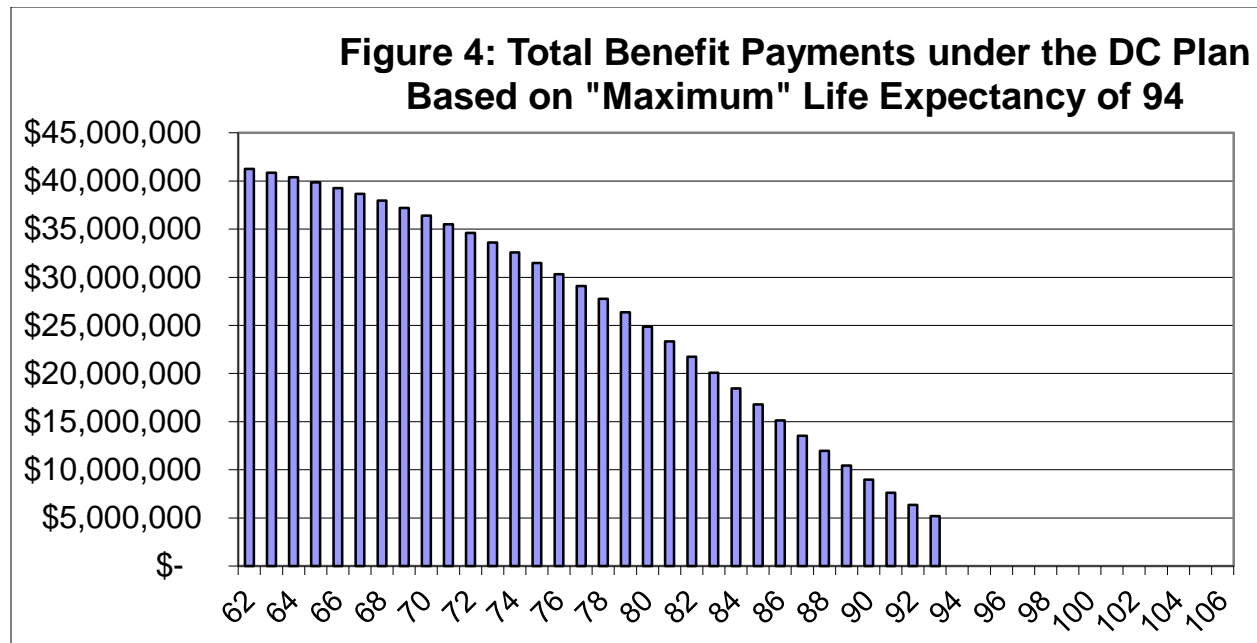
Worker	Amount needed at age of retirement	Average life expectancy at retirement
San Antonio Police Officer – Male	\$921,807	82 at age 57
Austin Code Enforcement Inspector – Male	\$411,190	83 at age 62
Houston Nurse – Female	\$243,053	86 at age 62

Total annual payments out of the Houston MEPS DB plan will have a similar pattern as seen in **Figure 3**. The amount of benefits paid out will decrease steadily with the effect of 1000 retiring individuals gradually dying off. In the DB plan, every retiree receives a steady monthly income that lasts until his or her death.



Next, we contrast this situation with that in a DC plan. Because DC plans rarely offer annuity options, individuals must self-insure longevity risks. This can be an expensive proposition. Because an individual in a DC plan does not know exactly how long he will live, he will probably not be satisfied with saving an amount sufficient to last for the *average* life span, because if he lives past age 83, he will have depleted his retirement savings. For this reason, an individual will probably want to be sure that he has enough money saved to last for the *maximum* life span (or something close to it).

We define the “maximum life expectancy” for purposes of the Austin Code Enforcement Inspector analysis as 94 years old. It corresponds to the age beyond which only 10% of individuals survive, and therefore it is not a “true” measure of maximum life expectancy. In fact, our mortality table indicates that one lucky individual out of the 1,000 retired Austin males will celebrate his 106th birthday. This simplifying assumption is intended to be more realistic (that most individuals will be satisfied with a 90% chance of not outliving their money, rather than a 100% chance), but it will also tend to understate the cost of the DC plan. **Figure 4** illustrates the payout pattern under the DC plan, where individuals withdraw funds on an equivalent basis to the DB plan until age 94 – that is, in a series of regular payments. After age 94, there are no more withdrawals, even though 100 (10% of our initial pool of 1,000) workers are still living. The money has simply run out.

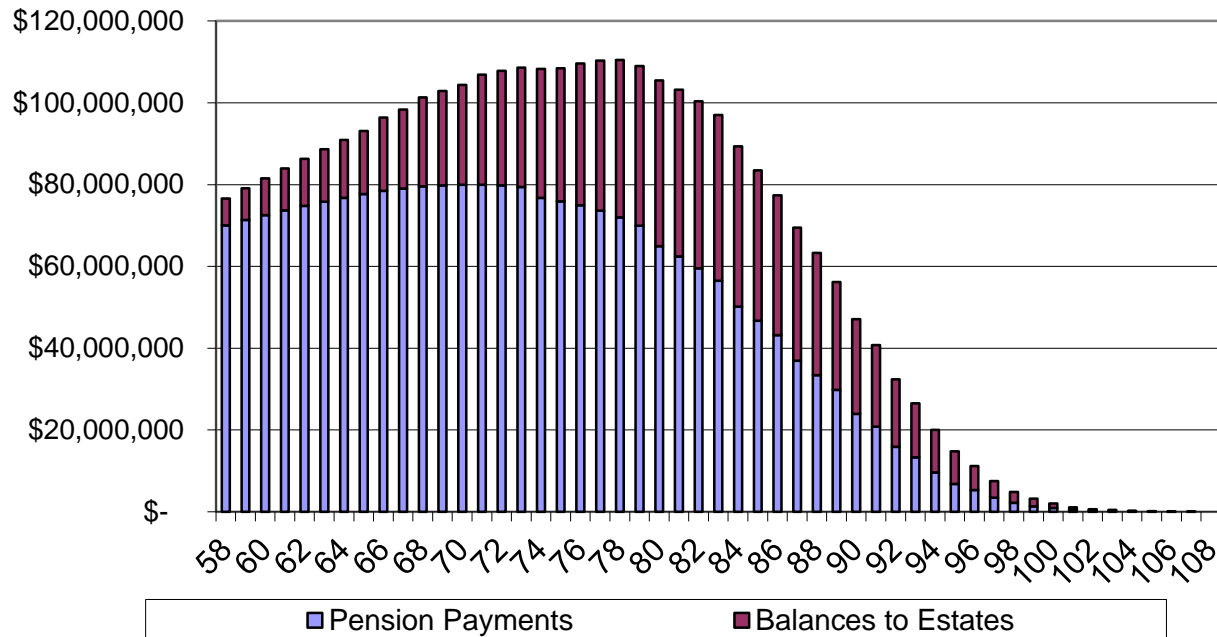


Thus, our simplifying assumption of using a 90th percentile life expectancy of 94, rather than the true maximum life expectancy, will reduce the cost of providing the target benefit under the DC plan, but will also mean that individuals with exceptionally long lives will experience a reduced standard of living, compared to what they would experience under a DB plan. Thus, in our example, the DC plan ends up delivering less in total retirement benefits than the DB plan.

Of course, those 10% of individuals who do survive beyond age 94 would want to avoid the possibility of having their retirement income reduced to zero. It is likely that individuals will respond to a long life by gradually reducing their withdrawals from the plan to avoid running out of money.

It is important to acknowledge that if a retiree dies before exhausting all of his or her DC retirement savings, the money in the account does not simply evaporate. Rather, it will pass to the estate. Benefits that were intended to be pension benefits become death benefits paid to heirs instead. This is the "over-saving" dilemma that is inherent in DC plans. **Figure 5** illustrates this phenomenon for the San Antonio police officer. Since his average life expectancy is 82, but DC retirees must prudently save for the 10% possibility of reaching age 94, the aggregate amount of money transferred to estates is substantial – totaling 20% of all assets accumulated in the plan (although only 9% on a present-value basis). Note also that the Police Officer illustration has a hump shape. This is because the underlying San Antonio DB plan provides an inflation-based cost of living increase. So our hypothetical DC participant will similarly increase his withdrawal due to inflation.

**Figure 5: Total Benefit + Estate Payments under the DC Plan:
San Antonio Police Officer**



While some individual heirs will benefit from these intergenerational transfers of wealth, they are not economically efficient from a taxpayer or employer perspective. Because heirs did not provide services that the employer/taxpayer benefited from, providing additional benefits to heirs is economically inefficient. Moreover, these additional “death benefits” are not tied in any direct way to an individual employee’s productivity during his working years, rather their value is a function of living a shorter life.

DB plans avoid this problem entirely. By pooling longevity risks, DB plans not only ensure that all participants in the plan will have enough money to last a lifetime, they can accomplish this goal with less money than would be required in a DC plan. Because DB plans need to fund only the average life expectancy of the group, rather than the maximum life expectancy for all individuals in the plan, less money needs to be accumulated in the pension fund. Remember that the San Antonio Fire and Police Pension Fund DB plan needed to accumulate \$921,807 for each police officer in the plan by the time he turns 57 in order to fund the target level of benefit. Due to the “over-saving” dilemma, DC plans must accumulate at least \$1,146,979 per participant, or \$225,172 more, in order to minimize the likelihood of running out of funds. In order to accumulate those additional amounts, contributions to the plan would climb to 25.0% of pay, from 20.1% under the DB plan.

Maintenance of Portfolio Diversification

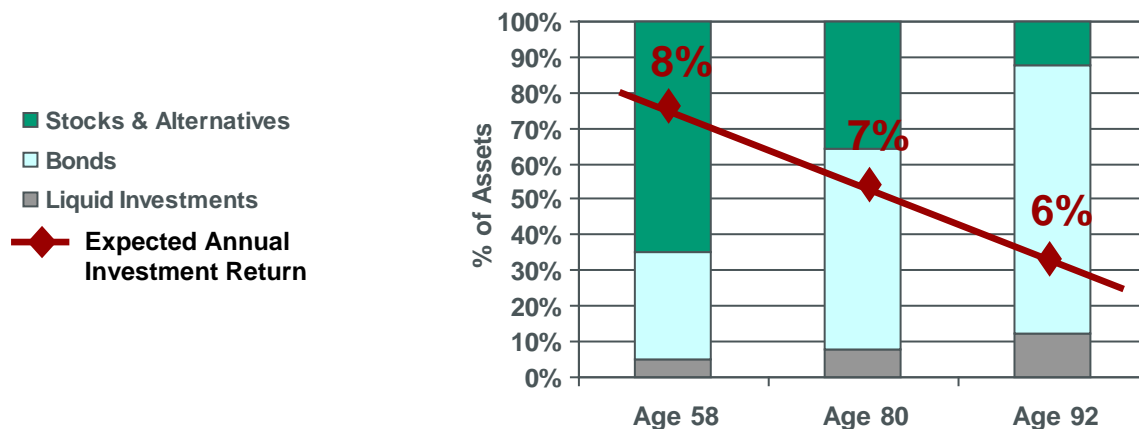
A retirement system that achieves higher investment returns can deliver a given level of benefit at a lower cost. All else equal, the greater the level of investment earnings, the lower contributions to the plan will need to be. Prior research substantiates DB plans’ significant advantage in investment returns, as compared to DC plans.

Part of the reason why DB plans tend to achieve higher investment returns as compared to DC plans is that they are long-lived. That is, unlike individuals, who have a finite career and a finite lifespan, a DB pension fund endures across generations; thus a DB plan, unlike the individuals in it, can maintain a

well-diversified portfolio over time. In DC plans, individuals’ sensitivity to the risk of financial market shocks increases as they age. The consequences of a sharp stock market downturn on retirement assets when one is in their 20s are minor, compared to when one is on the eve of retirement. For this reason, individuals are advised to gradually shift away from higher risk/higher return assets as they approach retirement. While this shift offers insurance against the downside risk of a bear market, it also sacrifices expected return since more money will be held in cash or similar assets that offer low rates of return in exchange for more security. A reduction in expected investment returns will require greater contributions to be made to the plan in order to achieve the same target benefit.

In the development of our analysis, Texas’s well-diversified DB plans are expected to achieve investment returns of 8% per year, net of fees. (Similarly, the three plans’ actuaries assume 7.75% to 8.50%). In the DC plan, individuals gradually shift out of higher risk/higher return assets in favor of lower risk/lower return assets. This results in a sacrifice of expected annual return of 2% by age 92, as shown in **Figure 6**.

Figure 6: Returns Based on Age



We find that the shift in portfolio allocation has a modest, but nonetheless, significant effect on cost. Specifically, we find that the per- retiree amount that must be accumulated in the Austin Code Enforcement Inspector’s DC plan by retirement age now climbs to \$529,421. By comparison, the DB plan requires \$411,190. The contributions required to fund the target benefit level now climb to 19.8% of payroll (compared to 15.4% of payroll under the DB plan).

Superior Returns

Another important reason why DB plans achieve higher investment returns than DC plans is that assets are pooled and professionally managed. Expenses paid out of plan assets to cover the costs of administration and asset management reduce the amount of money available to provide benefits. As a result, a plan that can reduce these costs will require fewer contributions. By pooling assets, large DB plans are able to drive down asset management and other fees. For example, researchers at Boston College (Munnell and Soto) find that asset management fees average just 25 basis points for public sector DB plans. By comparison, asset management fees for private sector 401(k) plans range from 60 to 170 basis points. Thus, private DC plans suffer from a 35 to 145 basis point cost disadvantage, as compared with public DB plans. On their face, these differentials may appear small, but over a long period of time, they compound to have a significant impact. To illustrate, over 40 years, a 100 basis

point difference in fees compounds to a 24% reduction in the value of assets available to pay for retirement benefits.

Administrative costs are largely driven by scale. Thus, a similarly-sized DB plan and DC plan can have opportunities to negotiate minimized administrative expenses. But a DC plan involves costs that do not exist in a DB plan, such as the costs of individual recordkeeping, individual transactions, and investment education to help employees make good decisions. DB plans, unlike DC plans, bear the administrative costs of making regular monthly payments after retirement.

But fees are only part of the story – differences in the way retirement assets are managed in DB and DC plans play a substantial role. As previously discussed, investment decisions in DB plans are made by professional investment managers, whose activities are overseen by trustees and other fiduciaries. Research has found that DB plans have broadly diversified portfolios and managers who follow a long-term investment strategy. We also know that individuals in DC plans, despite their best efforts, often fall short when it comes to making good investment decisions. Thus, it should not be surprising that researchers find a large and persistent gap when comparing investment returns in DB and DC plans. Munnell and Sunden put the difference in annual return at 80 basis points. A 2007 report from the global benchmarking firm, CEM Benchmarking, Inc., concluded that between 1998 and 2005, DB plans showed annual returns 180 basis points higher than DC plans, largely due to differences in asset mix. And Towers Watson found that, between 1995 and 2008, DB plans outperformed DC plans by 103 basis points, on average. Among large plans, the DB advantage was even greater – at 127 basis points.

In our model, we use conservative estimates of the differences in DB and DC plan costs and expected returns. We model a 100 basis point (1%) net disadvantage for the DC plan annual investment returns as compared with DB plan returns. While this is slightly higher than the estimate of Munnell and Soto, it is lower than the more recent estimates of Flynn and Lum from CEM Benchmarking, and Towers Watson. This 100 basis point differential persists into the retirement years and magnifies the effects of the shift in asset allocation discussed previously. However, our model separates these effects to avoid double-counting. We do not isolate the impact of expenses and fees from the impact of superior investment management skill.

We find that a 1% per year disadvantage in DC plan investment returns compounds over time to create a significant cost disadvantage. In particular, we find that the amount which must be set aside for each Houston Nurse at retirement age now climbs to \$334,448 (compared to the \$243,053 required in the Houston MEPS DB plan). The level of required contributions to the DC plan climbs again, this time to 12.0% of payroll (compared to 7.3% under the DB plan).

Summary of Results – DB Plans Reduce Costs by about 40%

Taken together, the economies that stem from investment pooling and longevity risk pooling can result in significant cost savings to employees and employers (or in the case of the public sector, taxpayers). In our model, required contributions range from being 39% to 44% lower in the three DB plans as compared to the DC plans.

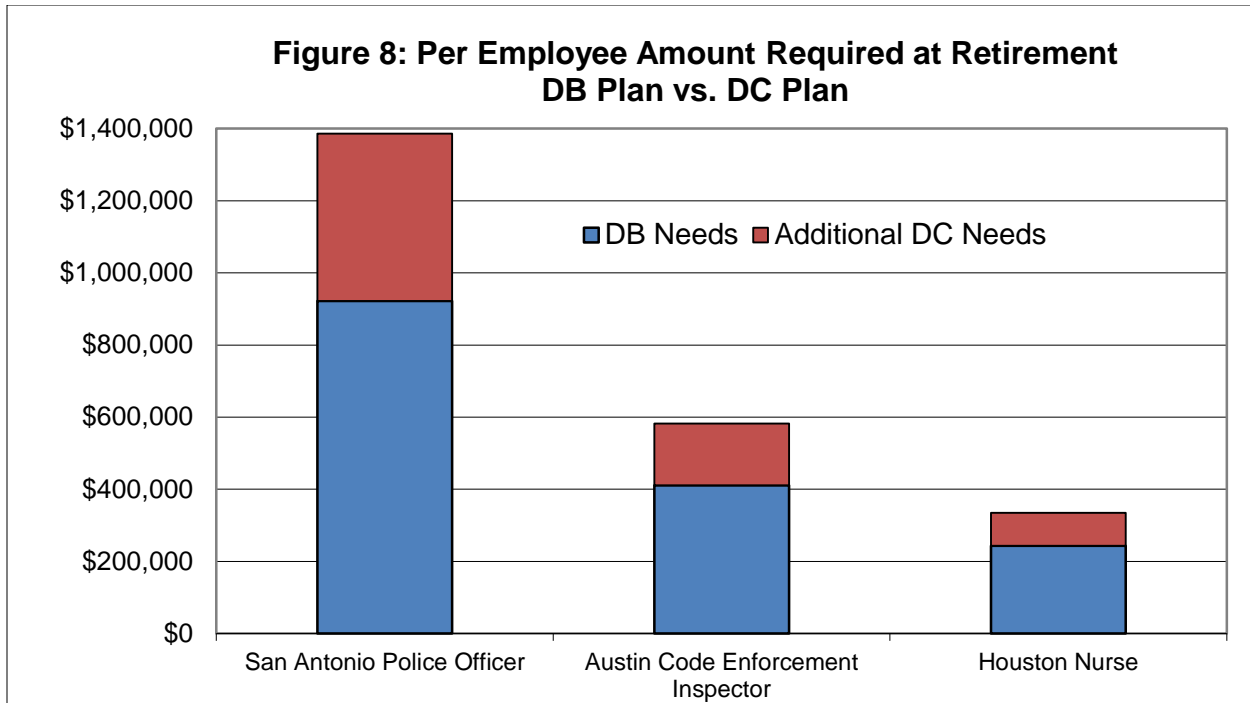
Our analysis clearly demonstrates that DB plans are far more cost-effective than DC plans. We find that to achieve target retirement benefit that will replace 46% to 86% of average salary, the three DB plans will require contributions ranging from 7.3% to 20.1% of payroll, whereas the DC plan will require contributions to be almost twice as high, ranging from 12.0% to 35.7% of payroll. We find that due to the effects of longevity risk pooling, maintenance of portfolio diversification and greater investment returns over the lifecycle, a DB plan can provide the same level of retirement benefits at 56% to 61% of the cost of a DC plan, as shown in **Figure 7**.

Figure 7: Tallying DB Plan Cost Savings

	San Antonio Police Officer	Austin Code Enforcement Inspector	Houston Nurse
1. Longevity risk pooling saves.....	14%	15%	12%
2. Maintenance of portfolio diversification saves	5%	3%	3%
3. Superior investment returns save	25%	22%	24%
All-in costs savings in DB plans	44%	40%	39%

The longevity risk pooling that occurs in the three DB plans accounts for 12% to 15% of the incremental cost savings. The DB plans’ ability to maintain a more diversified portfolio drives another 3% to 5% cost savings, and their superior investment returns across the lifecycle generate an additional 22% to 25% reduction in cost.

Our results also indicate that DB plans can do more with less. That is, they can ensure that all individuals in the plan (even those with very long lives) are able to enjoy an adequate retirement benefit that lasts a lifetime, at the same time that they require fewer assets to be contributed to a retirement plan and fewer assets to accumulate in the plan. For example, we calculated the amount of money that would be required to be set aside for each retired Austin Code Enforcement Inspector in each type of plan to provide a retirement benefit of \$3,438 per month. As shown in **Figure 8**, at retirement age, the City of Austin DB plan requires about \$410,000 to be set aside for each individual, whereas the DC plan requires more than \$580,000. The difference – more than \$170,000 for each and every worker – illustrates that the efficiencies embedded in DB plans can yield large dollar savings for employers, employees and taxpayers. The DB and DC costs are also compared as follows for each of the three employees which we studied.



Finally, below is a table summarizing the cost differential between DB and DC plans for the three groups.

	DB Cost	Longevity Pooling Impact	Diversification Impact	Superior Return Impact	Full DC Cost
San Antonio Police Officer	20.1%	4.9%	1.7%	9.0%	35.7%
Austin Code Enforcement Inspector	15.4%	3.7%	0.7%	5.7%	25.5%
Houston Nurse	7.3%	1.4%	0.4%	2.9%	12.0%

Conclusion

Our findings indicate that DB plans provide a better bang for the buck when it comes to providing retirement income. We find that a DB plan can provide the same level of retirement income at about 40% less cost than the cost of a DC plan. Hence, DB plans should remain a centerpiece of retirement income policy and practice, especially in light of current fiscal and economic constraints.

We find that the biggest drivers of the cost advantages in DB plans are longevity pooling and enhanced investment returns that derive from reduced expenses and professional management of assets. The sacrifice of investment returns that results from life-cycle driven shifts in portfolio allocation in DC plans had a smaller, but still significant, effect. The sources of cost savings in DB plans reflect, at a very basic level, the differences in how DB and DC plans operate. Group-based DB plans provide lifetime benefits and feature pooled, cost-efficient, professionally managed assets: these features drive significant cost savings that benefit employers, employees, and taxpayers.

When considering our results, it is important to keep in mind that in our effort to construct an “apples to apples” comparison, we made a number of simplifying assumptions that actually reflected more favorably on DC plans. For instance, we did not model any asset leakage from the DC plan before retirement, through loans or early withdrawals, nor any terminations of employment under either plan. We also assumed that individuals followed a sensible “goldilocks-like” withdrawal pattern in retirement – not too fast, not too slow, but just right. We used conservative estimates of the difference in actual investment returns between DB and DC plans. And, we used a 90th percentile life expectancy to project required accumulations in the DC plan, rather than “full” life expectancies. Thus, if anything, our analysis likely underestimates the cost of providing benefits in a DC plan and thereby understates the cost advantages of DB plans.

Due to the built-in economic efficiencies of DB plans, employers and policy makers should continue to carefully evaluate claims that “DC plans will save money.” As mentioned, benefit generosity is a separate question from the economic efficiency of a retirement plan. While either type of plan can offer more or less generous benefits, DB plans have a clear cost advantage for any given level of retirement benefit. Considering the magnitude of the DB cost advantage, the consequences of a decision to switch to a DC plan could be dramatic for employees, employers, and taxpayers.

Finally, policymakers should consider proposals that can strengthen existing DB plans and promote the adoption of new ones. When viewed against the backdrop of workers’ increasing insecurities about their retirement prospects and the economic and fiscal challenges facing employers and taxpayers, now more than ever, policy makers ought to focus their attention and energy on this important goal. The very features that make DB plans attractive to employees drive cost savings for employers and taxpayers. In this way, DB plans represent a rare “win-win” approach to achieving economic security in retirement that should be recognized and replicated.