LEOFF
Plan 2 Retirement Board

Plan Design Outcomes

Educational Briefing
December 17, 2014

Overview

- Recent funding problems in other State's defined benefit (DB) plans has increased examination of defined contribution (DC) plans for public employees.
- Board requested briefing.
- Presentation reviews current research comparing outcomes between DB and DC plans.

Policy of Retirement Plan

In weighing advantages of different plan designs, useful to consider purpose of the plan:

- **Provide a retirement benefit to career employees.**
- **Provide tax deferred savings plan.**

Basic Plan Design Differences

Differences in Plan Design:

- **DB plan (LEOFF Plan 2):**
  - Benefit determined by formula.
  - Variable contribution rate to fund promised benefit.
  - Shared Risk of underfunding.
- **DC plan:**
  - Set contribution rate.
  - Benefit determined by fund balance at time of retirement.
  - Risk borne by employee.

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DB vs. DC: Pooled Risks and Assets vs. Individual Flexibility

- **DB plans enjoy significant economies of scale by pooling risks and assets for a group of employees.**
- **More efficient structure for providing retirement benefits.**
- **DB Less flexible than DC plan.**
  - DC benefit may be better for mobile employee.

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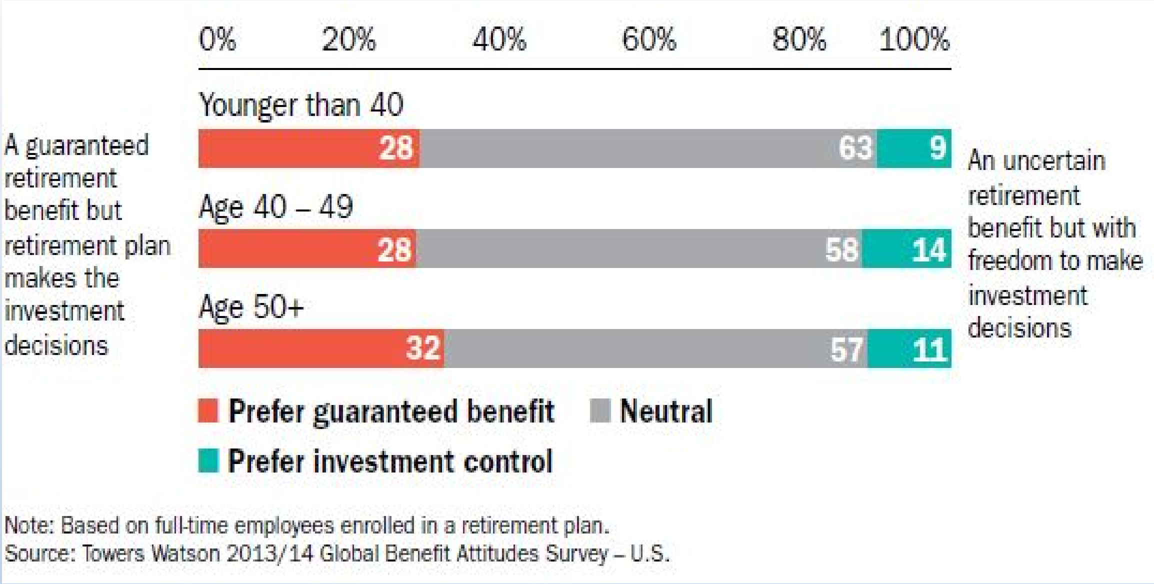
Flexibility of DC Plans Can Benefit Employees

- **DC more portable for those changing careers or location.**
- **DC can empower members.**



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DC Can Benefit Employers: Less Administrative Complexity and More Stable Rates.

- **DC can be less complex to administer:**
  - DB requires tracking assumptions.
  - Ramifications of plan design changes.
- **DC has stable contribution rates:**
  - Contrast to DB rate changes.

Fiscal Biennium	2015-17	2017-19
Increase in estimate General Fund-State contributions	$275 million	$498 million (in addition to the increases for the 2015-17 biennium)

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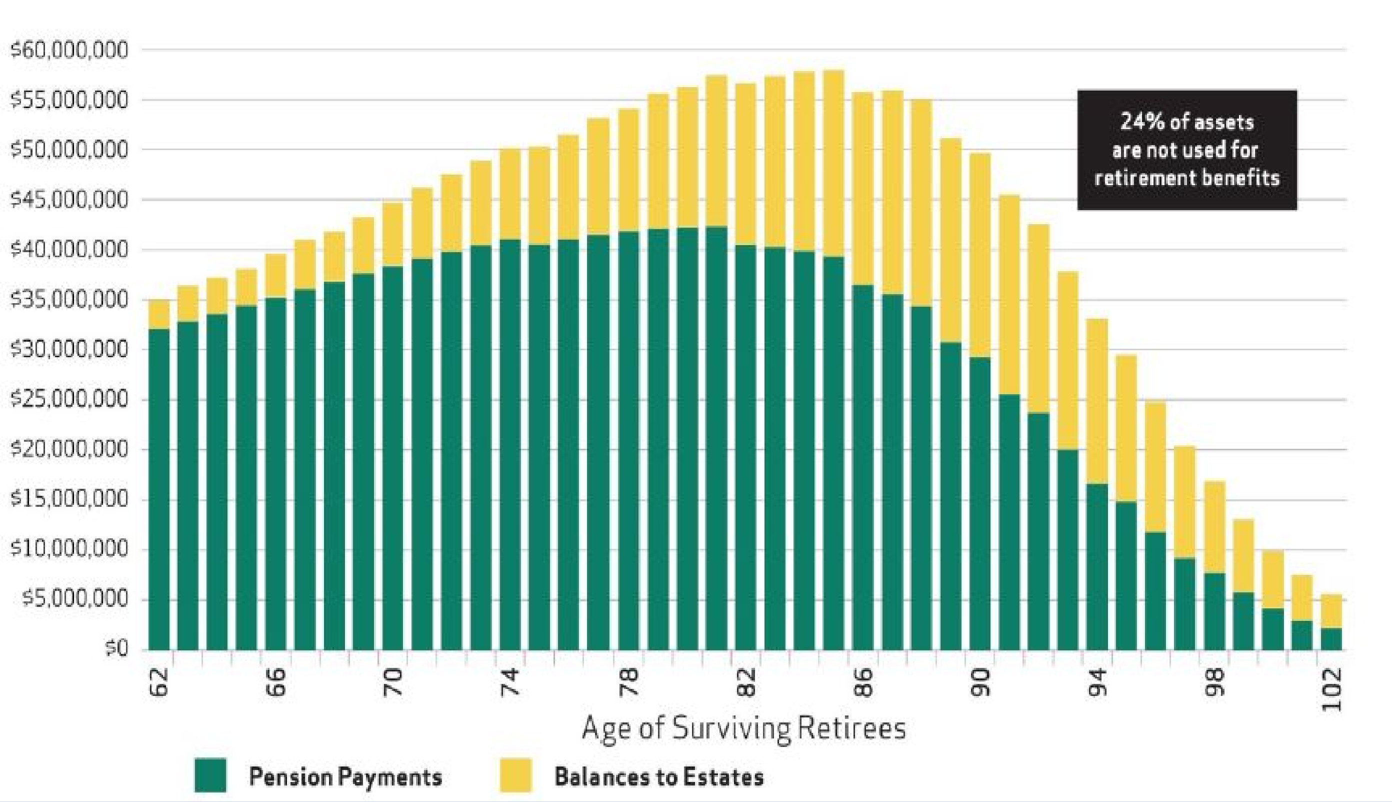
DB Plans Provide Higher Returns

1) Pooling of Longevity Risk



Source: Fornia and Rhea, 2014

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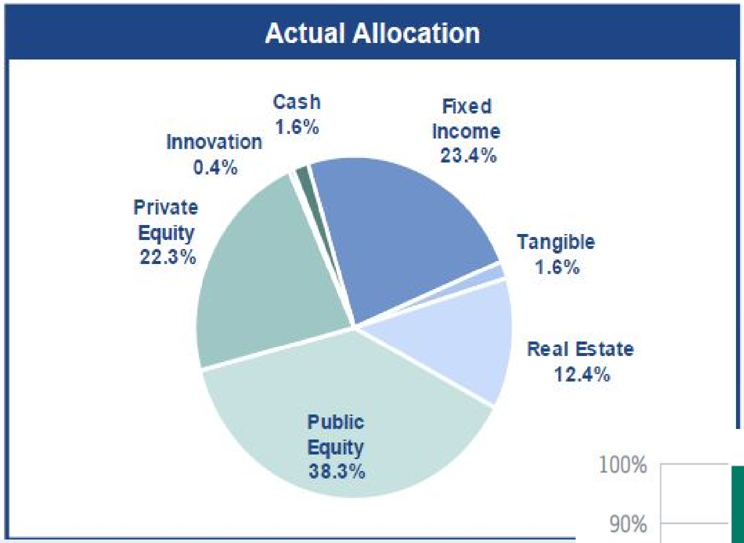
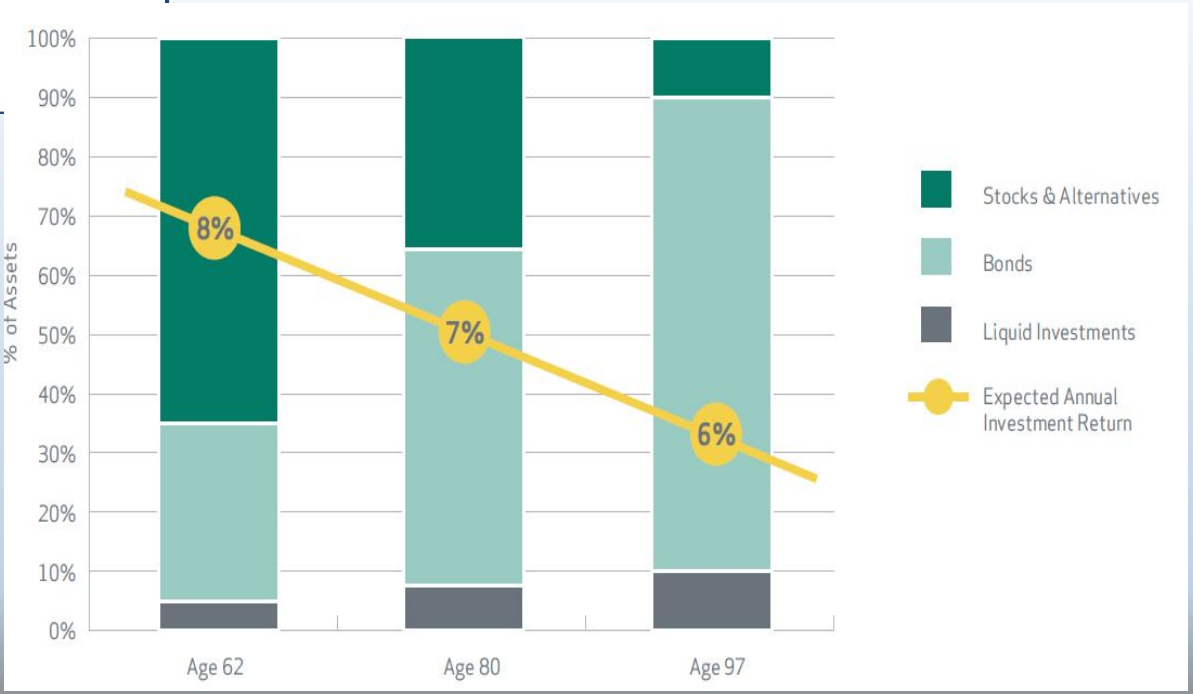
DB Plans Provide Higher Returns

2) Diversification



WSIB Asset Allocation as of June 30, 2014
source – WSIB



As Portfolio Allocation Shifts, Expected Return in DC Plan Falls

Source: Fornia and Almeida (2008)

DB Plans Provide Higher Returns

3) Professionally managed and lower fees

- Pooling provides economies of scale that provide lower fees. Conservative assessment: .4%
- Professional management yields consistently higher returns. Conservative assessment .6%

1% net annual difference with compounding = 24% difference in balance after 40 years

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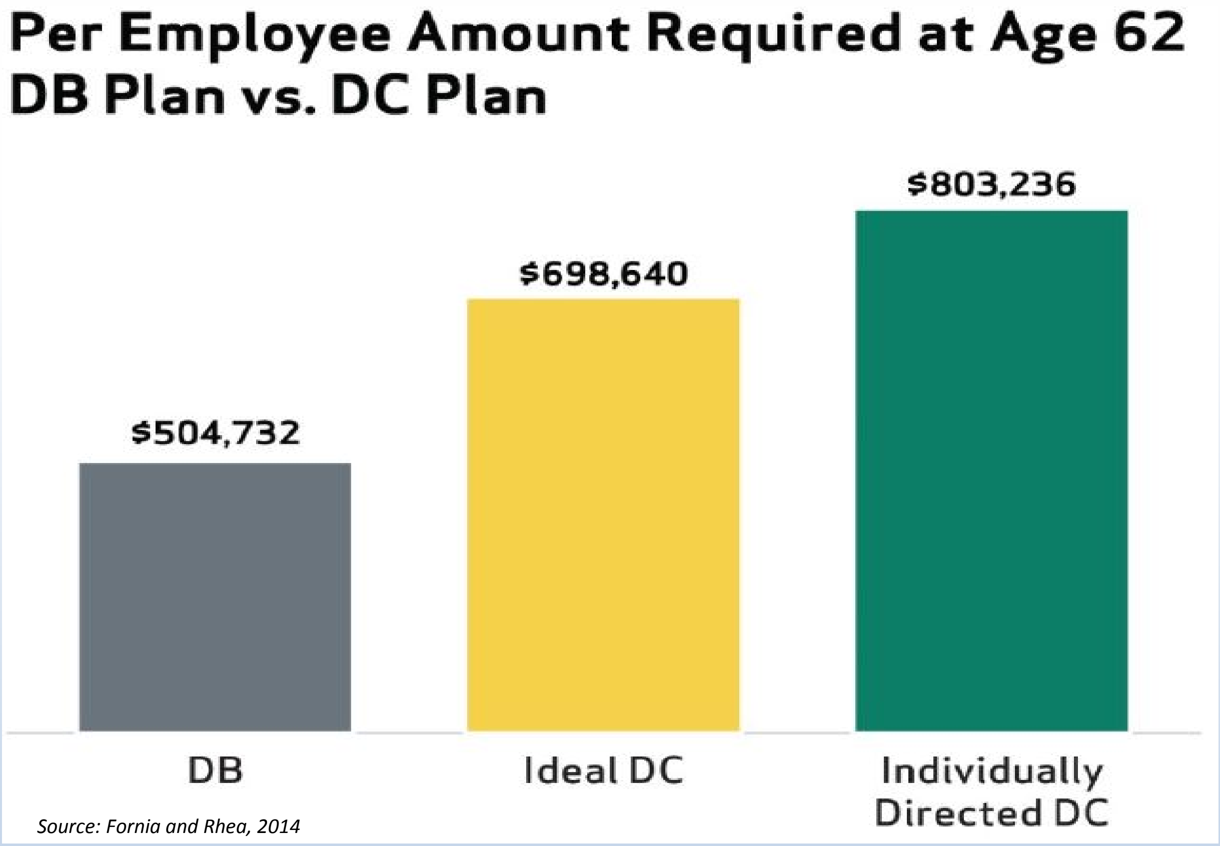
DB Plans Provide Retirement Benefits for Less than DC plans



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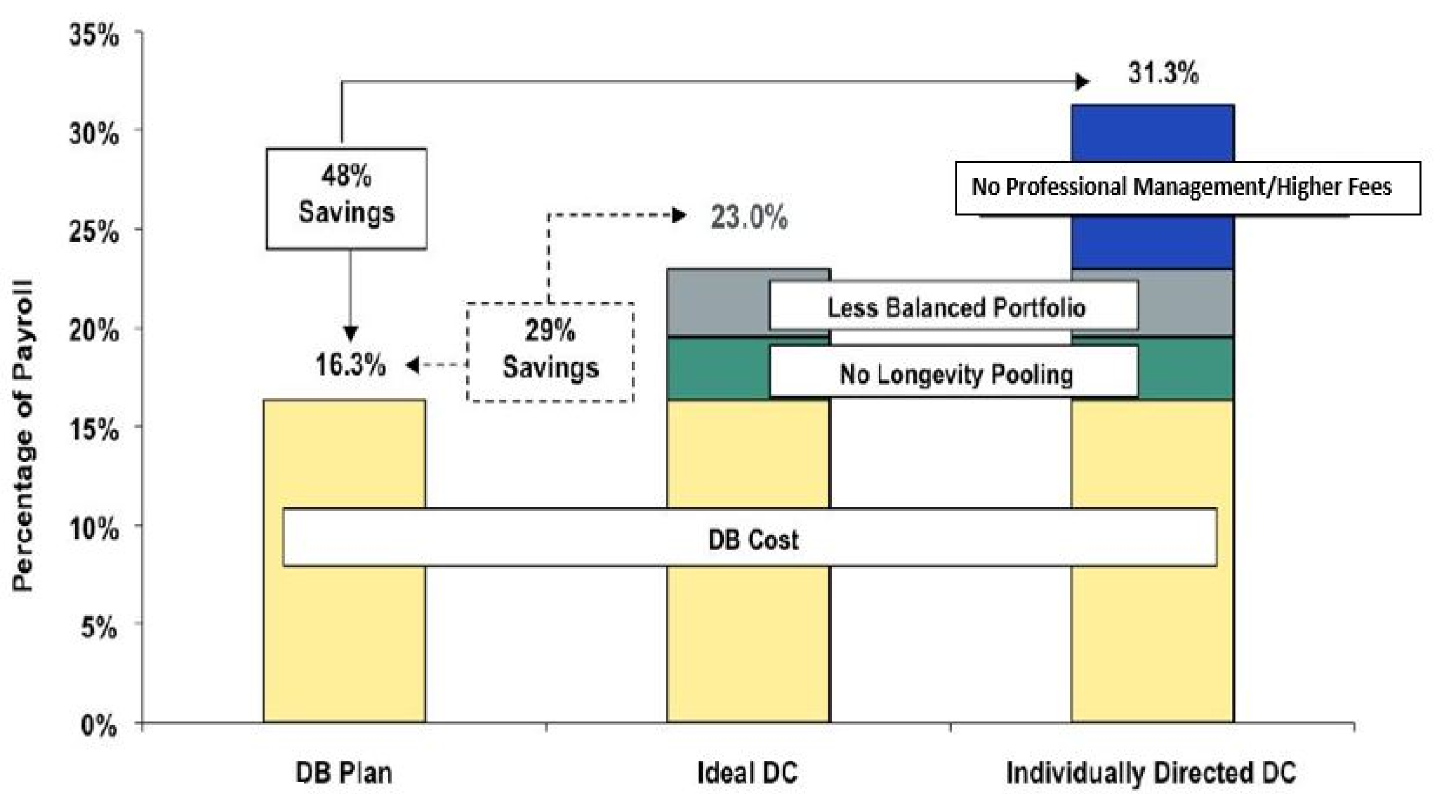
Putting it All Together: Sources of DB Investment Advantage

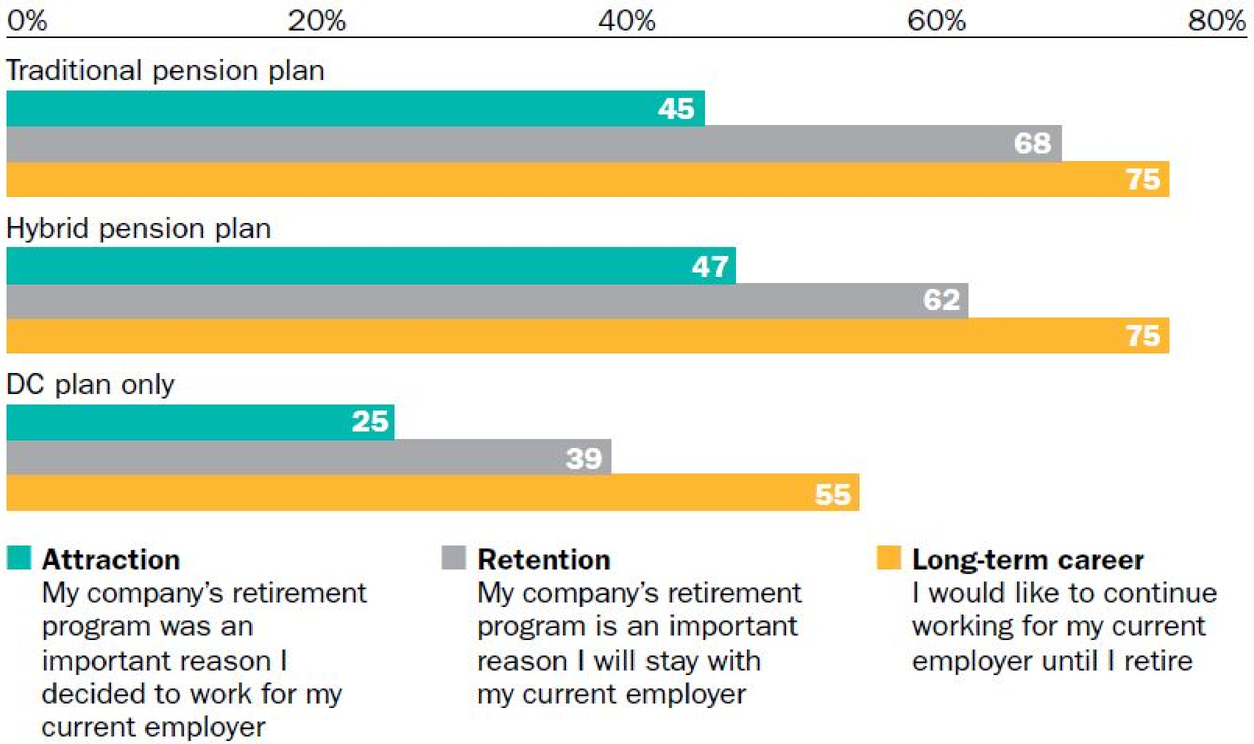


Source: Fornia and Rhea, 2014

Differences probably larger due to conservative assumptions.

DB Plans: Stronger Recruitment and Retention Incentive

Attraction, Retention and Long Term Career Plan by Plan Type



Source: Towers Watson 2013/2014 Global Benefit Attitudes Survey – U.S.

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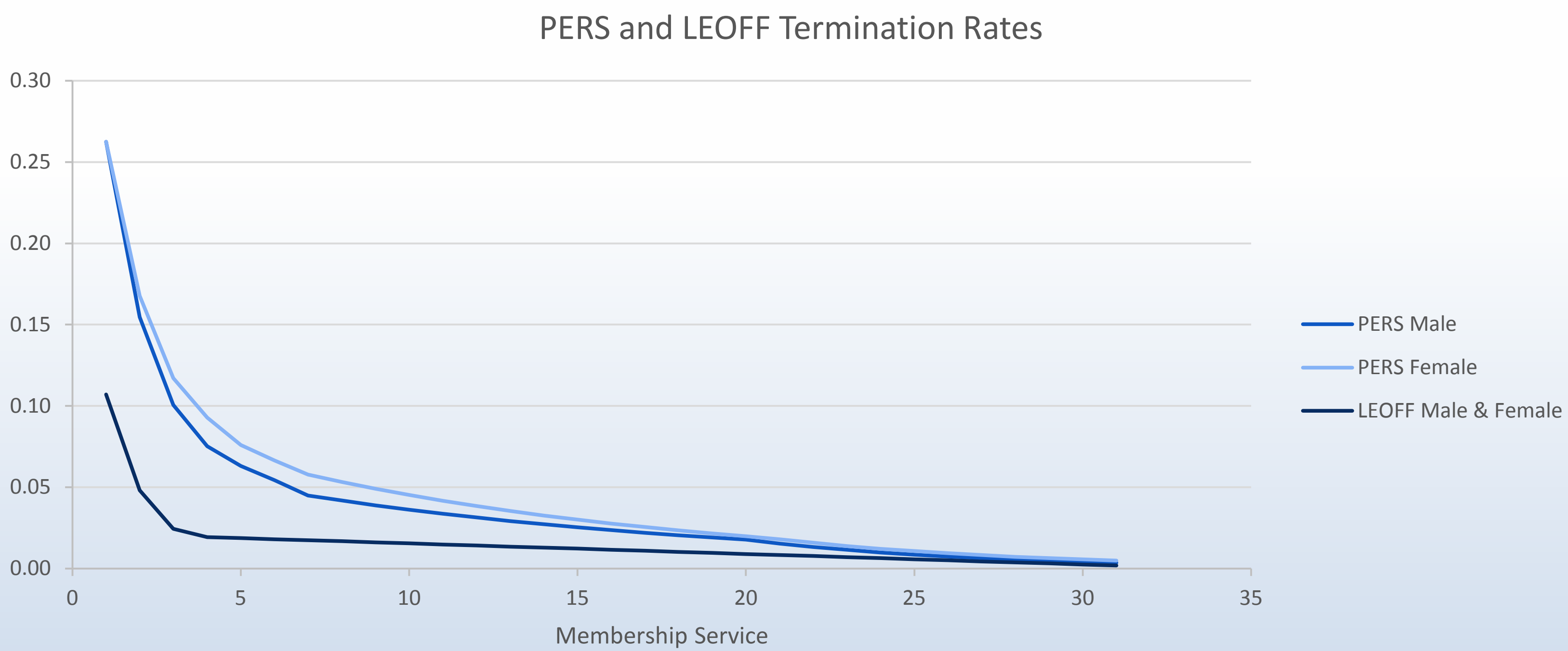
DB Plans Better Serve Public Safety Employees

LEOFF Plan 2 Members Tend to be Career Employees.



Source: Office of the State Actuary

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DB Plans Better Serve Public Safety Employees

- **"Insurance" needs due to dangerous and physically demanding careers.**
  - Disability benefits.
  - Survivor benefits.
- **Absence of Social Security.**

Conclusion

- **Threshold plan design question: What is the purpose of the plan?**
  - To provide retirement benefit to career employees.
  - To provide tax deferred plan.
- **LEOFF Plan 2 employees are predominantly long-term career employees. DB is most effective and efficient way to provide retirement benefit.**
- **Board's full funding policy avoids DB pitfalls and takes full advantage of DB efficiencies and economies of scale.**

Questions?

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ISSUE STATEMENT

The Board requested information on the differences between defined benefit (DB) plans and defined contribution (DC) plans. This paper examines differences in retirement outcomes between DB and DC plans.

OVERVIEW

The funding problems with some public DB plans outside of Washington State have sparked interest in evaluating DC plans for public employees.

Pooling assets and risks is an effective and efficient way to manage uncertainty. If the goal of the retirement system is to efficiently provide members with a reliable retirement income, the research shows a DB plan is the best way to do that. That is, best for long term employees who stay with a covered employer until they reach retirement eligibility. Generally speaking, law enforcement officers and fire fighters follow a more stable career path and are thus more likely to be around to benefit from the advantages of a DB plan. Employees who switch employers and contribute to different plans may be better served by a DC plan.

That distinction raises policy questions about the function of the pension plan. Is its purpose to provide a retirement benefit to those who remain long enough to qualify, or is it to provide a tax deferred savings option? The answer to that question informs in large part the DB vs. DC decision.

This paper summarizes and builds on existing research comparing outcomes in DB and DC plans.

BACKGROUND & POLICY ISSUES

DB plan design is fundamentally different from DC plans. Members of a DB plan are guaranteed a lifetime benefit based on a formula, typically years of service X final compensation X a multiplier (2% in Washington). Due to changes over time in investment return and other assumptions such as mortality, the contributions required to fund a DB plan vary.

The members of a DC plan are guaranteed a certain level of employee and employer contributions, resulting in a lump sum of money that is converted to a stream of income upon retirement. The actual amount of retirement income from a DC is uncertain.

Studies reviewing differences in retirement outcomes between DB and DC plans have identified a number of significant differences between the two basic plan designs.

DB vs DC: Pooled Risks and Assets vs Individual Flexibility

Both DB and DC plans require employer and employee contributions over the working life of the employee, then use those contributions to provide a retirement benefit. A major difference is the pooling of risks and assets found in a DB plan versus the more individualized management of risks and assets in a DC plan. This difference drives many of the different outcomes examined in this paper.

Pooling in a DB plan provide efficiencies in accruing capital and managing risk. These advantages come at the expense of the greater flexibility of a DC plan. Further, the DB plan advantages for the individual are contingent on the employee working a full career with a participating employer. If an employee moves in and out of covered employment their DB benefit may be less than what could be accumulated with a DC.

Employees Can Benefit From the Flexibility of DC Plans

The pooling of risks and assets available to DB plans provides less individual flexibility and mobility than a DC plan.

Portability

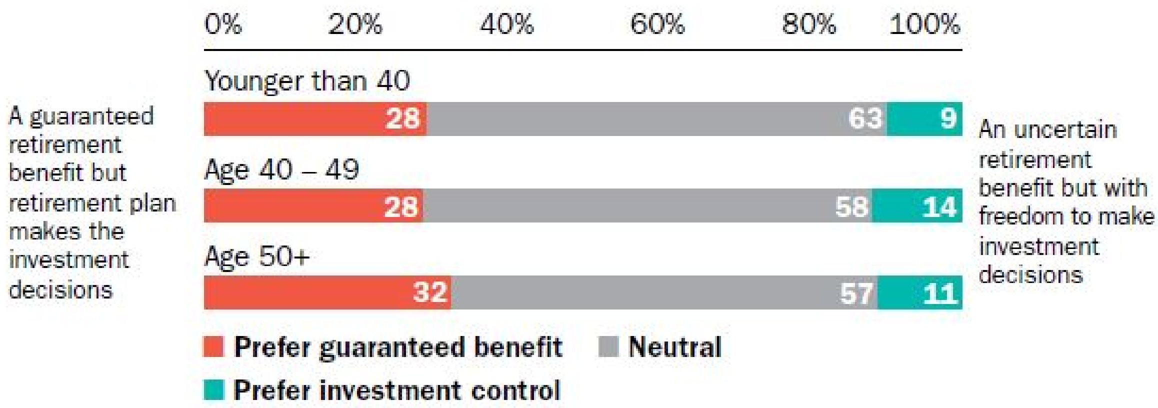
If a member of LEOFF Plan 2 changes to a non-public career or moves to another state before reaching retirement eligibility the value of their defined benefit is fixed by their past salary and service credit. It will not grow over time. If the member decides to withdraw from LEOFF Plan 2 they receive a refund of their own contributions plus interest. The member may not withdraw the employer funds contributed on their behalf. Those funds stay in the trust to provide retirement benefits for others.

An employee with a DC plan can usually withdraw both employer and employee contributions plus earnings if vested. By allowing full withdrawal, DC plans can provide a larger balance to mobile employees.

Member Empowerment

DB plans operate independently of individual member financial decisions, whereas those same decisions are a central feature of defined DC plans. Employees with DC plans may feel a greater sense of empowerment with their ability to affect their financial security. This empowerment brings with it the individual risk of the performance of an individual portfolio.

A recent survey by Towers Watson shows that while some employees would prefer individual investment choice, a larger percentage prefer a guaranteed retirement benefit to the ability to control their own investments[i]:



Note: Based on full-time employees enrolled in a retirement plan.
Source: Towers Watson 2013/14 Global Benefit Attitudes Survey – U.S.

Employers Can Benefit From Less Administrative Complexity and More Stable Contribution Rates of DC Plans

Administrative Complexity

DB plans rely on a combination of assumptions that must be tracked and adjusted over time as actual experience deviates from those assumptions. The complexities of DB plans can also lead to plan design decisions made without a full understanding of all the various implications. Because of this, DC plans tend to be easier to administer and have greater financial certainty for employers.

Stable Contribution Rates

As recent experience in Washington State has shown, DB contribution rates can fluctuate significantly. While this has been less true for LEOFF plan 2, this fluctuation creates a strain on employer and member budgets.

Contributions to DC plans are, as the name indicates, defined. They are set in the plan document and often, as with Washington's plan 3 systems, cannot be altered during employment. DC plan contributions are stable and known, both for employee and employer.

A November 2014 presentation to the Select Committee on Pension Policy by Legislative Budget staff included the following estimates of additional DB pension contributions needed in the next two biennia:

Fiscal Biennium	2015-17	2017-19
Increase in estimate General Fund-State contributions	$275 million	$498 million (in addition to the increases for the 2015-17 biennium)

Employers with DC plans never have to deal with charts like this. While the contribution amount will change with salary growth, that is much more manageable when budgeting.

DB Plans Provide Higher Investment Returns

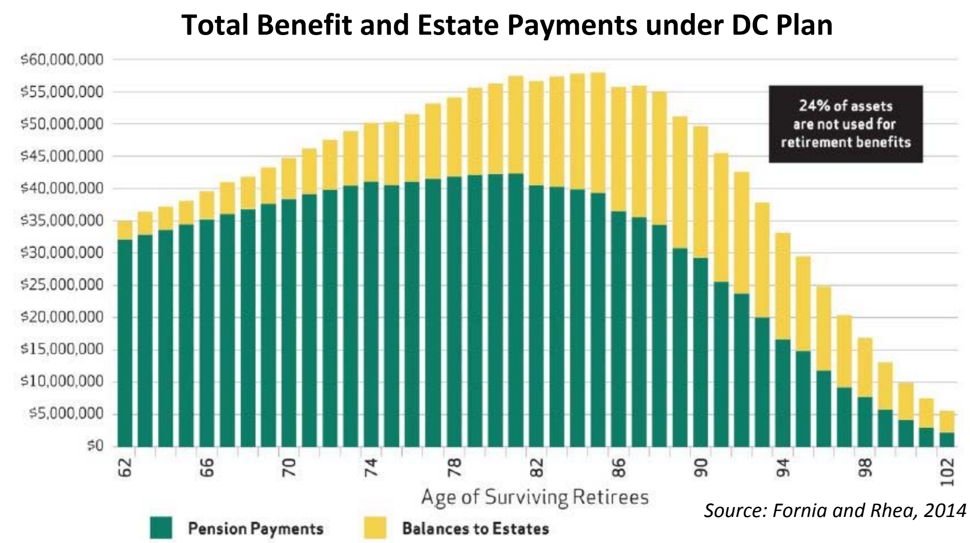
DB plans cost advantages stem from 3 sources: 1) Longevity risk pooling; 2) Maintenance of portfolio diversification; and 3) Lower fees and professional management. These differences were discussed and modeled by Fornia and Rhee (2014)[ii].

Longevity Risk Pooling

"Demographic risk" includes factors such as expected mortality, which will shift and change the cost of a lifetime benefit. Like investment risk, a DB plan distributes demographic risk over the group of members and can address that risk by adjusting contribution rates. In a DC plan that risk lies solely on the employee, who must either adjust contributions or adjust their own retirement income expectations.

A DB plan manages individual differences in lifespan between members. It plans asset accumulations necessary to pay for the average life expectancy of all individuals in the plan. The fact that a particular individual dies earlier or later is already actuarially accounted for and built into the underlying contribution rates.

In a DC plan, it is up to the individual to either organize a payment stream that will last throughout their life or live with the risk that they may outlive their savings. This causes an "over saving" effect. Individuals do not know how long they are going to live and are strongly averse to outliving their retirement savings. Because of this, many DC retirees do not exhaust their pension savings, with remaining funds passing to heirs. Research shows 24% of DC plan assets do not provide retirement income.



Source: Fornia and Rhea, 2014

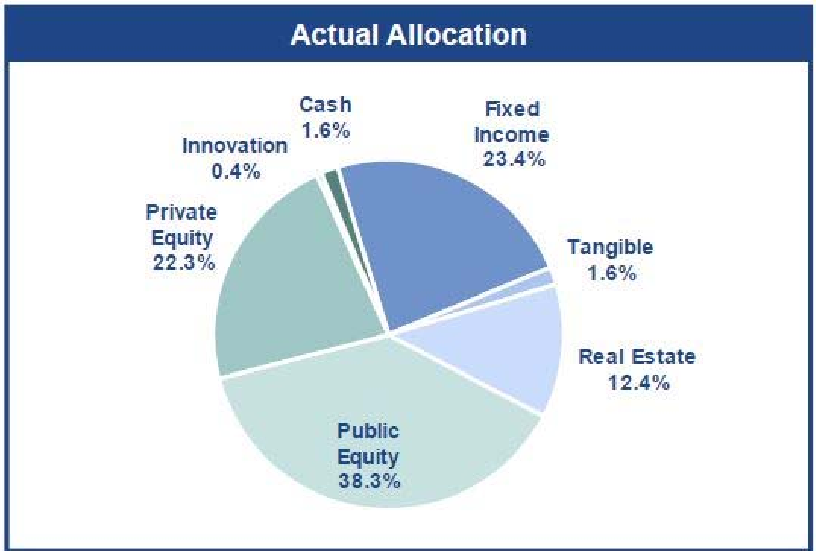
With longevity pooling, DB plans fund the average life expectancy for a plan, therefore providing the same level of benefit with less money.

Maintenance of Portfolio Diversification

DB plans can pursue more robust diversification by accessing investments that are simply not available to DC plans. DB access to more diverse investments is due to numerous factors including regulatory requirements, management requirements, infrastructure requirements, dollar size requirements, and cash flow "lumpiness". Investments more accessible to DB plans include: private real estate, private equities, commodities, and venture capital, as well as other alternative investments. Because of this, DB plans should be able to achieve similar returns to

DC plans with less risk. The current mix of assets maintained by the Washington State Investment Board (WSIB) reflects the broader array of investments available to an institutional investors:

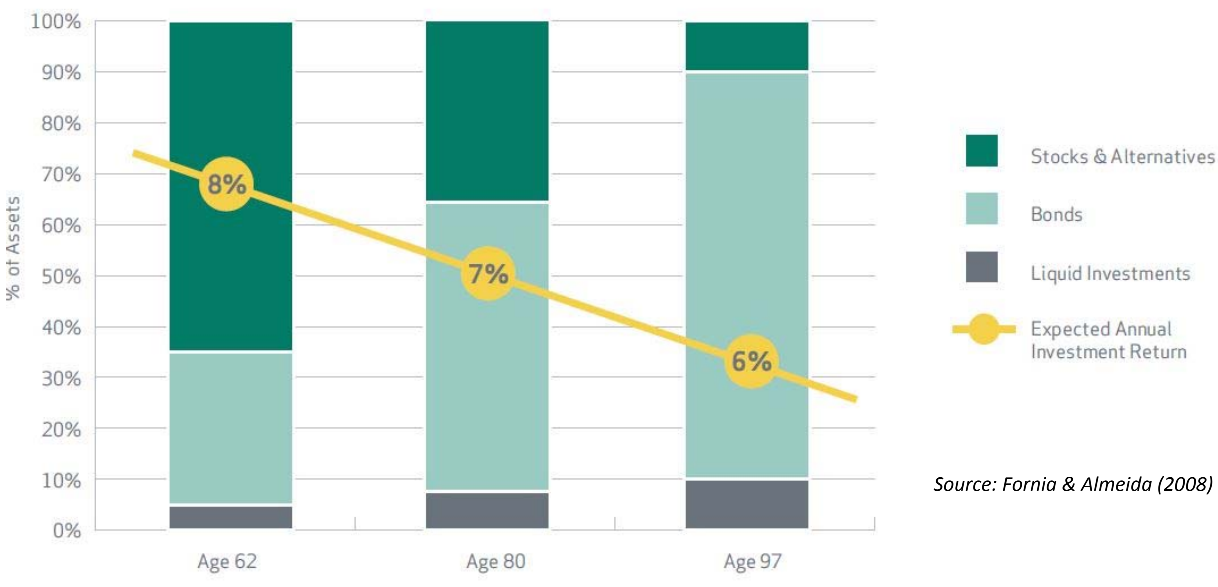
WSIB Asset Allocation as of June 30, 2014 *source – WSIB*



The on-going nature of the DB plan also facilitates diversification. The pooled risk profile allows DB funds to make systemic investments without being effected by experience of a particular member, such as individual aging. This allows an investment structure with a higher risk/return tradeoff that usually yields higher returns than a DC plan.

By contrast, an individual with a DC plan must modify their investment risk profile as they age, modifying their portfolio into less risky lower returning assets. This shift may be modest in a given year, but the cumulative effect can result in a significant reduction in investment return.

As Portfolio Allocation Shifts, Expected Return in DC Plan Falls



Source: Fornia & Almeida (2008)

Lower Fees and Professional Management Generate Higher Investment Return

Over the course of one's career, investment returns should make up the bulk of plan assets. But investment returns do not happen by themselves. DB plan assets in Washington are invested by the State Investment Board (SIB), which has an excellent record of investment return. In a DC plan the individual typically lacks the expertise to maximize asset allocation decisions.

In DB plans, pooling risks and assets reduce investment costs. DC plan investment costs increase almost linearly with the number of participants. DB plan costs, beyond a certain size, increase much more slowly because of pooling. Administrative costs, (salaries, rents, etc.,) also benefit from the cumulative effects of pooling.

The professional investment management provided by DB plans has consistently provided higher rates of return than DC plans. For example, during the 2008 financial crisis, individual participants generally failed to re-balance their asset allocations, and those who did shift assets incurred significant losses by fleeing from equities near the bottom of the market.[iii] Because of investment expertise and a greater diversity of available investments, DB plans average higher rates of return than DC plans.

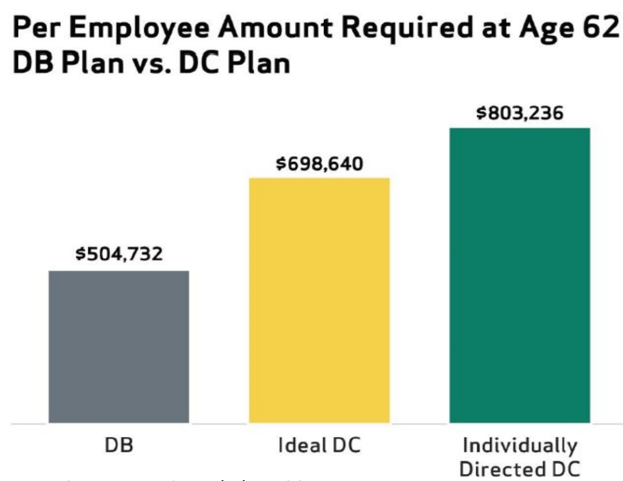
After reviewing studies of long term returns for DB vs. DC plans, Fornia and Rhee adopted a modest assumption of a 40 basis points (.4%) DC disadvantage due to fees and 60 basis points (.6%) DC disadvantage due to "behavioral drag" i.e. lack of expertise, for a total 1% annual difference in return. Over 40 years the compound effect of this 1% leads to a 24 percent reduction in the value of assets available to pay retirement benefits.

DB Plans Provide Retirement Benefits at a Lower Cost than DC Plans

For employees who spend a career working within the same retirement system, benefits can be provided much more efficiently by a DB plan. Fornia and Rhee targeted a retirement allowance of $2,700 a month for an employee retiring at age 62 after a 30 year career in a DB system. They concluded that this amount, plus COLAs, provided an adequate retirement when combined with Social Security. They then compare the amount of money needed at retirement to provide that benefit.

They constructed 3 scenarios:

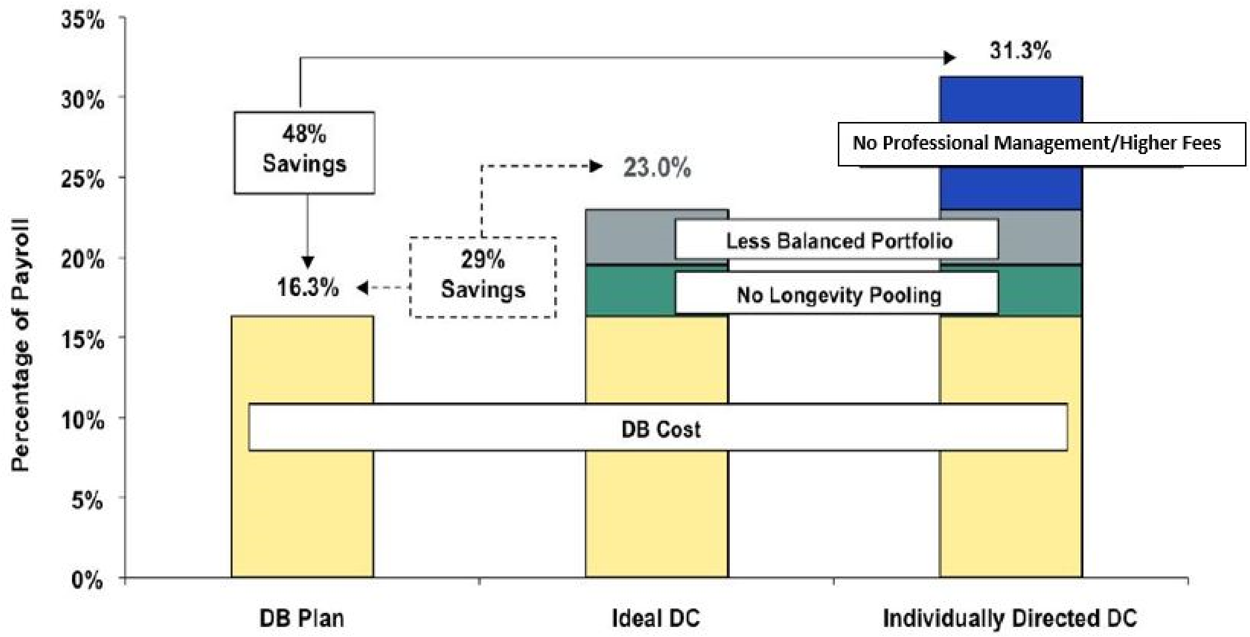
- A DB plan with an assumed annual return of 7.36%.
- An "ideal" DC plan with the same lower fees and professional management as a DB plan. This is similar to the state deferred compensation plan option using the Total Allocation Portfolio (TAP option.
- An individually directed DC plan.



Source: Fornia and Rhea, 2014

Both the ideal DC plan and the individually directed DC plan require significantly higher accumulations of capital to provide the same benefit.

The plan design cost differences identified above are displayed showing the cost differential driven by each factor. Fornia and Rhee calculated the percentage of payroll needed for lifetime contributions to provide the benefit from a DB (16.3%), an ideal DC (23%), and a self-directed DC (31.3%):



Source: Fornia and Rhea, 2014

Fornia and Rhee note that the relative cost of DC plans are likely higher than their estimate because they chose very conservative assumptions, including the assumption that DC participants did not make any preretirement withdrawals.

This result contradicts the claim that DC plans are cheaper. Lower total cost numbers for DC plans are usually driven by lower benefits, not by plan design efficiencies. Employers who switch from a DB to a DC plan almost always cut the benefits in the process. A recent UK study found that the average contribution per employee to a DB plan is 16-18% while the average contribution for a DC plan is 9**%.**[iv] Cutting benefits reduces cost regardless of plan design.

DB Plans Provide a Stronger Recruitment and Retention Incentive

Employers with DB plans enjoy a competitive advantage in recruitment and retention. A survey report released by Towers Watson in 2014[v] provides recent statistically reliable data comparing recruitment and retention effects of DB plans vs. DC plans.

Recruitment

Towers Watson's survey of employee attitudes revealed a significant difference in employee recruitment between DB and DC plans. DB plan participants are more likely to cite the retirement plan as a reason for joining their employer than DC participants.

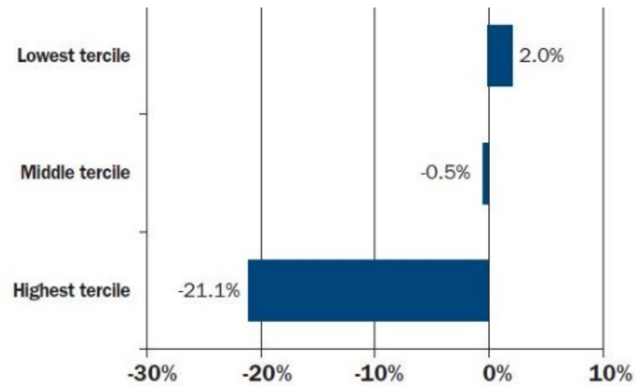
	Age	DB Plan	DC Plan
"My company's retirement program was an important reason I decided to work for my current employer." (2013 responses)	<40	39%	22%
	40-49	45%	27%
	50+	49%	28%

Source: Towers Watson 2013/2014 Global benefit attitudes survey – U.S.

While the Towers Watson data comes from a survey of private employees, research also examines the recruitment effect of public pension plans. Those studies show private sector wages overall are approximately 10% higher than public sector wages. When the value of benefits is factored in, public sector and private sector compensation is "roughly equal".[vi] This distribution is not present throughout the wage scale, however.

The relative scale of public vs. private compensation varies greatly depending on which third of the compensation plan the worker finds themselves in. As shown in the chart on the right, controlling for education and other characteristics, the public-private wage differential is roughly zero for the middle third of public sector workers. However, state-local workers in the lower third of the earnings distribution earn slightly more, while those in the top third earn dramatically less than private sector workers with similar characteristics.

State & Local wages relative to private sector by wage tercile, 2006-2010



Source: Munnell et al. (2011).

Potential workers consider benefits as part of total compensation. Public employee pensions can help to bridge the wage gap, helping to attract workers that might otherwise opt for a higher wage in the private sector. For professional career employees like teachers recent research has shown benefits are as important as wages when deciding whether to take a job.[vii] The researchers speculate this may be because most teachers, like most law enforcement officers and firefighters, plan to retire from the same profession within the same state, allowing them to collect full pensions.

Retention

As one advances in their public career through vesting and higher levels of service accumulation, the accumulation of a pension benefit encourages a person to stay at their job. Munnell, Aubry, and Sanzenbacher,[viii] constructed a public sector DB model to examine the retention effect exerted by a pension. They found that benefits available to employees who had a DB plan only (i.e. no Social Security) were significantly "back-loaded":

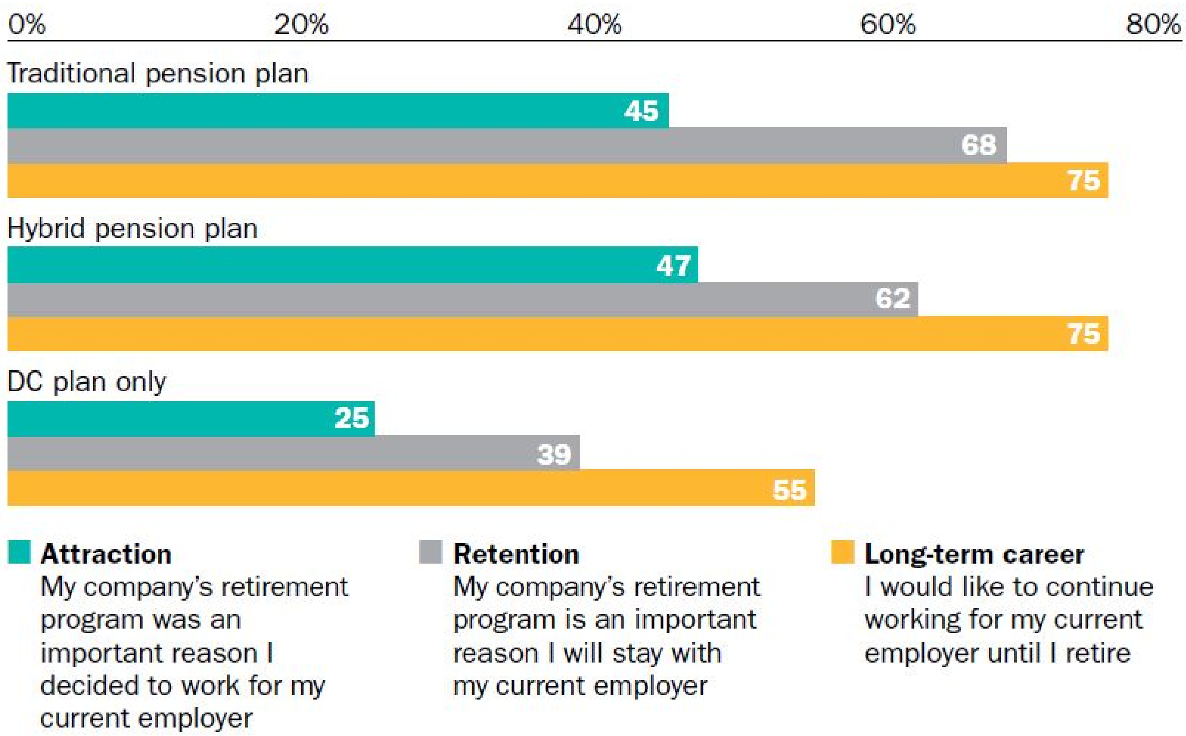
> An employee starting at age 35 with a 30-year career will earn more than 30 percent of their lifetime pension benefits in the last five years of employment; those leaving with 10 years of service receive only about 14

percent of the possible lifetime benefits. Thus, participants face a very strong incentive to keep working until full benefits are available.[ix]

The design of LEOFF PLAN 2 provides a significant incentive for employees to stay until full retirement eligibility. This retention effect is a benefit to employers, particularly in the public safety field, which requires significant employer investment in continuing training.

The stronger retention effect of DB plans is confirmed in the Towers Watson survey. "60 % of employees who plan to work for their company until they retire also identify their retirement program as a very important reason for staying."[x] The graphic here compares the attraction, retention, and long-term career incentives of DB, Hybrid, and DC plans. The effects for DB plans and Hybrids are very close, but there is a marked reduction in all 3 effects for DC plans.

Attraction, Retention and Long Term Career Plan by Plan Type



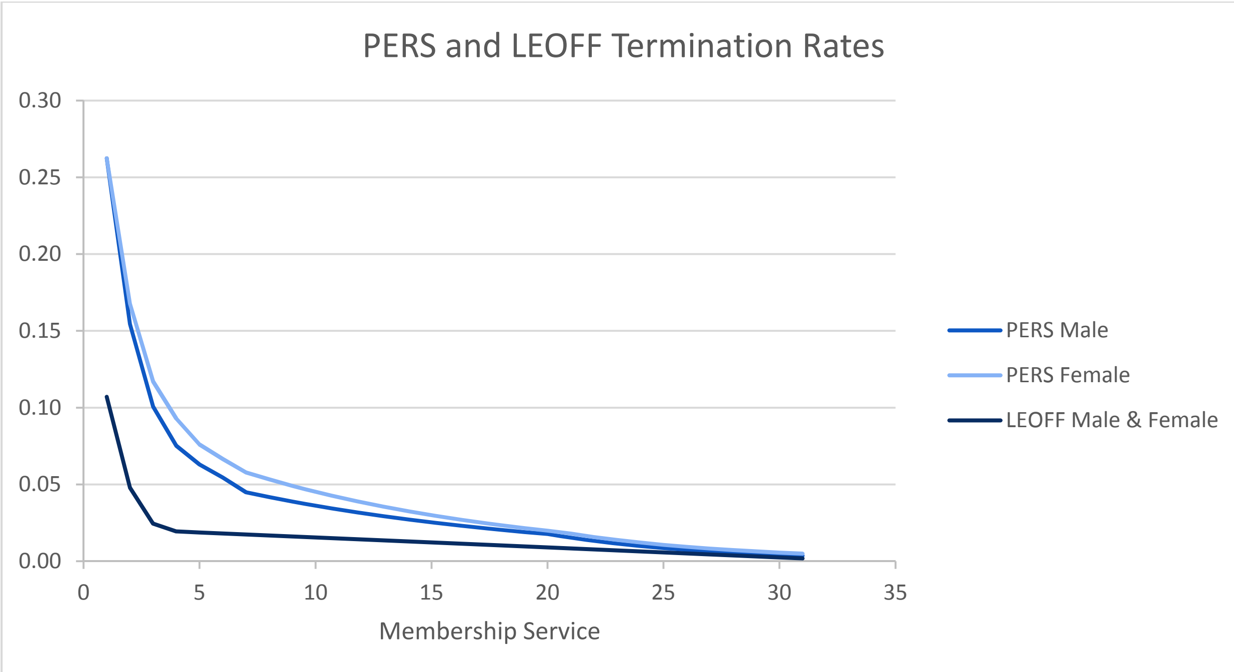
Source: Towers Watson 2013/2014 Global Benefit Attitudes Survey – U.S.

DB Plans Better Serve the Unique Needs of Public Safety Employees

The Board focuses specifically on LEOFF Plan 2 rather than general pension policy. With that in mind it is useful to consider the DB vs. DC issues within the context of public safety plans.

Most LEOFF Plan 2 Members are Career Employees

Being a fire fighter or a law enforcement officer is not just a job - it is a career. A recruit must pass rigorous training before beginning their career, and not everybody makes it. The most recent data from the Office of the State Actuary confirms a much lower pre-retirement attrition rate from LEOFF Plan 2 than from the non-career specific PERS Plan 2. As shown in the charts below, the PERS termination rate is more than twice as high as the LEOFF rate:



Data Source: Office of the State Actuary

Disability Protection

Firefighting and law enforcement are physically demanding, often dangerous, careers. The nature of the jobs demands a higher level of disability protection. The pooling of assets and risks found in a DB plan is better suited to providing what is essentially a disability insurance program. Disability insurance could be provided as an additional benefit from a DC plan, however, it is unlikely that law enforcement officers and fire fighters could purchase stand alone disability insurance given the dangerous nature of their job responsibilities.

Survivor Coverage

The increased risk of dying on the job requires the availability of a higher level of survivor benefits. Again, this is much like an insurance benefit made necessary by the nature of the job, and that can be well managed by the pooling of assets and risks found in a DB plan. Survivor coverage could be available through individual insurance policies, but the cost associated with the individual insurance protection will far exceed the cost of providing this protection through a pooled DB plan.

Absence of Social Security

While all LEOFF Plan 2 members have been mandated into Medicare after April 1, 1986, many do not have Social Security coverage. This is particularly true for fire fighters, where only 6.5% participate in Social Security. Law enforcement officers have a much higher participation rate, 58.5%, but there are still many without. The absence of this supplement makes pension earned through the employer even more important.

Conclusion

DB risk and asset pooling provide the most effective and efficient way to provide a lifetime retirement benefit for career public employees. The more predictable benefit provided by a DB plan provides a measurable influence on recruitment and retention. In the public safety context, a system that encourages recruitment and retention benefits both employers and employees. A more mobile workforce could be better served by a DC plan, but that mobility is not a common characteristic of LEOFF Plan 2 members.

This is not to say that DB plans are without problems. But one could argue that the problem is not with the plan design, but with the failure to fully fund the plan in order to maximize the significant investment return advantage. The Board's consistent policy of ensuring full funding for LEOFF Plan 2 maximizes the efficiencies and economies of scale inherent in DB plan design.

Endnotes

[i] *Retirement Security Tops List of Employee Concerns*, Towers Watson 2013/2014 Global Benefits Attitudes Survey – U.S. (2014)

[ii] "Still a Better Bang for the Buck: *An Update on the Economic Efficiencies of Defined Benefit Pensions"* Fornia and Rhee; National Institute on Retirement Security (2014)

[iii] N. Tang, O. Mitchell, and S.Utkus, 2011 "Trading in 401(k) Plans During the Financial Crisis," PRC Working Paper 2011-12, Pension Research Council, Philadelphia, PA.

[iv] Ghilarducci, T & W. Sun. 2006. How defined contribution plans and 401(k)s affect employer pension costs. *Journal of Pension Economics and Finance, 5(2),* 175-96.

[v] Towers Watson outlined the report methodology as follows: "Towers Watson's 2013/2014 Global Benefit Attitudes Survey is a nationally representative survey fielded in 12 countries.8 The U.S. survey includes 5,070 respondents employed by nongovernment organizations with 1,000 or more employees. It builds on several previous Towers Watson surveys to track evolving employee attitudes. This article reflects responses from a subset of 4,248 retirement plan participants working full time. All respondents are provided a DB and/or DC retirement plan by their current employer. DB plan participants are those who currently participate in an active DB plan. Respondents with only a DC plan include both those who contribute to the plan and those who decline to participate. All results are weighted by age, gender and salary to the national average of similar workers."

[vi] *Compensation matters: the Case of Teachers*, Munnell and Fraenkle, p.4.

[vii] *Id.* p. 8.

[viii] *How Retirement Provisions Affect Tenure of State and Local Workers*, Munnell, Aubry, Hurwitz, and Quinby; Center for Retirement Research at Boston College, *State & Local Pension Plans*, Number 27, November 2012, p. 4.

[ix] *Id.* p. 4.

[x] *Attracting and Keeping Employees: the Strategic Value of Employee Benefits*, Towers Watson 2013/2014 Global Benefits Attitudes Survey – U.S. (2014).