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# Actuarial Factors

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## How Long Will You Live?

This is a question better addressed to your physician than your actuary. The domain of the actuary is statistical analysis of large groups, whereas the physician concerns himself with individual cases. Nevertheless, some insight into our allotted time can be gained by life expectancy statistics. Although life expectancies are not typically used in making actuarial calculations, they can be derived from mortality tables used for pension valuations. Such tables may be developed by the Census Bureau, insurance companies, or the Society of Actuaries. Part of the pension actuary's responsibility is to select a table which reflects the anticipated future experience of the pension plan which he values.

Typically, life expectancy among active employees or pensioners exceeds that of the population at large. Hence, general population tables are not suitable for use in pension valuations. Among various pension plans, tables are chosen according to the composition of the group and actual past mortality experience. Both of these factors give insight into the expected future mortality levels. Mortality varies by numerous factors – most obviously by age and sex. However, many other factors including occupation, geographical location, and even marital status have a bearing on the outcome. A commonly used pension mortality table indicates a life expectancy at birth of seventy-seven years for males and eighty-four years for females. Life expectancies at a range of ages is shown in the table below.

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## Inside this issue:



## Life Expectancies

| | Average Remaining Years of Life | |
|---|---|---|
| **Age** | **Male** | **Female** |
| At Birth | 77 | 84 |
| 55 | 25 | 30 |
| 60 | 21 | 26 |
| 65 | 17 | 21 |
| 70 | 13 | 17 |
| 75 | 10 | 14 |
| 80 | 8 | 11 |
| 85 | 6 | 8 |
| 90 | 5 | 6 |
| 95 | 4 | 4 |
| 100 | 3 | 3 |

Based on the 1983 Group Annuity Mortality Table (with extension to age zero)

## How Long Will You Live?

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Improvements in medicine have produced reductions in mortality rates at all ages. While this is good news for all of us, it has profound implications for pension plans which must fund for ever greater benefit payment periods as life expectancy continues to increase.

### Leading Causes of Death In the United States

Top Ten Causes of Death for Males:

1. Heart Disease
2. Cancer
3. Accidents
4. Stroke
5. Lung Disease
6. Flu and Pneumonia
7. Diabetes
8. Suicide
9. Liver Disease
10. Homicide

Top Ten Causes of Death for Females:

1. Heart Disease
2. Cancer
3. Stroke
4. Lung Disease
5. Flu and Pneumonia
6. Diabetes
7. Accidents
8. Alzheimer's Disease
9. Kidney Disease
10. Septicemia (Blood Poisoning)

Source: Center for Disease Control

## Insuring Your Spouse's Benefit

As they approach retirement, prospective retirees from governmental pension plans are often contacted by insurance agents and financial planners who set forth various proposals designed to maximize the member's net benefit. Such proposals often center around replacing option coverage for a spouse with insurance or annuity coverage which may appear less expensive.

Sometimes these proposals are indeed to the advantage of the member; other times there may be significant risks of hidden problems involved in replacing option coverage with commercial insurance or annuity coverage. Prior to retirement the member should confirm the details of any insurance or annuity contract. Some key factors to consider in the decision are such issues as whether premiums under a contract are guaranteed or merely illustrative premiums subject to change based on the company's asset and liability experience. Frequently, premiums for universal life products are based on assumptions which may not be sustainable in adverse economic conditions. This may leave the policy holder with the alternative of paying ever higher premiums or allowing the policy to lapse. Members should also consider the financial strength of the insurer. In addition, members should consider that survivor payments under most governmental plans are subject to ad hoc cost of living increases. Insurance and annuity contracts rarely have provisions for increases in periodic payments. Prior to making any final decision, a prospective retiree should carefully consider all the facts and circumstances and seek advice from a disinterested third party.

## Your bonds are up. Is this good news?

One must be considered gloomy indeed to look for the cloud behind the silver-lining, but the attention focused on the near term stock market decline may have diverted attention away from equally problematical structural problems in the fixed income market. Recent returns in fixed income securities have been the single bright element in the investment portfolios of many diversified pension plans. However, those returns consist of two elements – one of which is temporary.

Fixed income returns are provided by interest and capital gains. Recent interest rate declines have produced significant capital gains, and this has been fortuitous since equity returns have been very poor. However, as interest rates level off, we are left with the realization that the probability of future capital gains is small and the underlying lower interest rate on securities

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will provide even less income in future years. In the short run, the decline in rates has given us a one-time gain at the expense of a lower future income stream. Conversely, if rates rise in the future to provide higher levels of income, we will have to endure capital losses along the way to arrive at the higher rates. Given the current interest rate environment, fixed income securities cannot produce the necessary investment income to fund the plans under prevailing return assumptions. Equity markets have produced significant losses recently, and they are inherently risky. Nevertheless, funds have an incentive to maintain equity exposure at levels high enough to meet their return assumptions since the only alternative is to lower assumed rates of return and endure the resulting higher contribution rates. In the near term, no-one knows whether equity exposure will increase returns, but long term historical average returns for equities have exceeded fixed income returns and pension plans have long term liabilities.

## Defined Benefit Plans versus Defined Contribution Plans

Over a decade after the large movement of private pension funds away from defined benefit (DB) pension plans to the popular 401K and a variety of other defined contribution (DC) pension plans, the public pension arena has begun to see some of the same forces at work.

The move to DC plans among public employing agencies has been fueled by the desire of employees to have more portable pensions, to have a greater degree of control of pension vehicles, and to participate in the great Bull Market. Recent stock market performance has certainly cooled some employees' ardor for more direct exposure to the equity markets. Nevertheless, short-term employees still have an interest in recovering a greater portion of funds at termination.

Along with providing members greater control over their pension vehicles, defined contribution plans place investment and liability risk with the employee. Members may experience quite different investment environments over their careers. Recent market performance has made this quite clear. Members invested in the equity markets in the late 1990s earned extraordinary returns; the experience over the last eighteen months has been quite different.

Lack of supplemental benefits also can be problematical for DC participants. Should a member become disabled at a young age and incapable of work, a DC plan provides no direct disability benefits. DC plans also provide no lifetime survivor benefits should a member die while employed.

DC plans give the employee much greater flexibility in spending assets at retirement, but the member must contend with the possibility of exhausting his account balance prior to death. Unless a retiree purchases a lifetime annuity contract, there are few ways to guarantee that the retiree will be able to rely on a particular income level for the remainder of his life without preserving all his invested principal.

Defined benefit plans take the risk off of the employee and place it on the shoulders of retirement system. Based on the method of funding, this risk is spread over current and future employers and employees. Retirees receive benefits guaranteed for life. They also may be able to explicitly purchase lifetime coverage for their spouse (or named beneficiary) through the use of optional forms of retirement annuities.

There is no way to know at entry whether a particular employee will ultimately receive a retirement benefit of greater value under a DB plan or DC plan. This would depend on many variables, including the investment experience of the plan over the employee's career. But it is clear that a comparison of DB and DC plans should include more than expected investment returns and account balances. The underlying risk and guarantees are an essential part of the equation.

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## A Letter to Our Clients

We hope that the first issue of our newsletter will be helpful to our clients. Our objective is to supplement information on current topics as well as to provide answers to frequently asked questions. Often there is insufficient time to explore certain topics at board meetings, and some topics better lend themselves to written explanation. It is our objective not only to answer questions, but also to bring to our clients' attention current issues of importance to governmental plans. Please feel free to contact us to suggest topics you wish to see discussed or questions you wish to see answered in future issues. If our efforts are to be successful in this endeavor, input from our clients is essential.


Sincerely,

Gary S. Curran, FCA, ASA