

# Does your pension plan have a hidden longevity cost?

A new longevity improvement scale that reflects recent Canadian experience has been developed for Canadian life insurers. Most Canadian pension plans, on the other hand, are still relying on a longevity improvement scale that was developed close to 20 years ago.

Not surprisingly, the new life insurer scale results in longer life expectancies than the older pension plan scale. This means that many pension plans are likely underestimating the life expectancies of their plan members and consequently, their liabilities.

This hidden longevity cost could be especially large for a pension plan with a high proportion of young members and/or a high proportion of female members – perhaps as much as 5% to 7% of liabilities.

This article examines how the new improvement scale compares to the old improvement scale.

## A ROSE BY ANY OTHER NAME

The way that actuaries express a pension plan's longevity assumption can seem complicated. Usually, one assumption is used for life expectancy at a certain point in time and a second assumption is used to determine how quickly life expectancy increases after that point.

For example, most pension plans are using some form of the UP94 mortality table, which predicts life expectancies for plan members as of 1994. However, life expectancy has continued to improve since 1994, so many plans then use the AA improvement scale to predict how much life expectancy will increase after 1994.

Though the AA scale is the most current scale in use for pension plan valuations, it is based on data that is over 20 years old. Very large pension plans may have enough experience to create their own industry-specific improvement scale, but this is next to impossible for most plans.

## CALCULATING LIFE EXPECTANCY:

Life Expectancy of 65-Year-Old Male			
	1994	2010	2050
UP94 mortality table	17.3	17.3	17.3
AA scale	0.9	2.2	5.1
Total life expectancy	18.2	19.5	22.4

The UP94 mortality table takes into account life expectancy improvements up to 1994. This means that no matter what the year of calculation, the UP94 mortality table will always yield the same life expectancy. On the other hand, the AA scale takes into account life expectancy improvements after 1994. For a 65-year-old man in 1994, the AA scale resulted in an additional 0.9 years of life expectancy, which represents the expected increase in life expectancy between 1994 and the date the man dies. For a 65-year-old man in 2050, the AA scale results in an additional 5.1 years of life expectancy. The difference of 4.2 years (5.1 – 0.9) represents the anticipated increase in life expectancy over the 56 years from 1994 to 2050.

## NEW TABLE FOR INSURERS

A new annuity product improvement scale has recently been published for the insurance industry by the Committee for Life Insurance Financial Reporting (CLIFR), a committee of the Canadian Institute of Actuaries (CIA).

The CLIFR improvement scale was developed based on a joint CIA and Society of Actuaries study of longevity improvement for Canadian lives. The study used Canadian population data and did not differentiate by smoker status or gender. The results of the study were one improvement scale for life insurance products and a second for annuity products. For the purpose of this article, when we refer to the CLIFR improvement scale we are referring to the annuity product improvement scale, adjusted to remove its margin of conservatism.

# DB SOLUTIONS Industry Watch

It is anticipated that the CLIFR improvement scale will be required to be used by Canadian life insurance companies by the end of 2011 for financial reporting. Some insurers are voluntarily adopting the CLIFR improvement scale before it becomes mandatory.

## HOW DOES THE CLIFR SCALE COMPARE TO THE AA SCALE?

To assess the differences between the AA scale and the CLIFR scale, we've calculated the life expectancy at age 65 for a male and female. In both cases we've used the UP94 mortality table to determine life expectancy as of 1994, and then used the improvement scales to determine improvements in life expectancy after 1994.

For a 65-year-old in 2010, the two improvement scales result in a difference of 0.3 years for males and 1.1 years for females.

Life Expectancy of 65-Year-Old in 2010			
	AA Scale	CLIFR Scale	Difference
Male	19.5	19.8	0.3
Female	22.0	23.1	1.1

For a 65-year-old in 2050, the two improvement scales result in a difference of 1.5 years for males and 3.0 years for females.

Life Expectancy of 65-Year-Old in 2050			
	AA Scale	CLIFR Scale	Difference
Male	22.4	23.9	1.5
Female	23.6	26.6	3.0

It's not surprising that there is a bigger difference for a 65-year-old in 2050 compared to 2010, as the 65-year-old in 2050 will have had 40 additional years of life expectancy improvement. In fact, in these examples the CLIFR scale results in about a 1-year-per-decade increase in life expectancy for both males and females.

This may seem like a lot, but it is very close to actual improvements over the last 40 years. That said, no one knows what future improvements will actually be.

The AA scale also adds 40 years of life expectancy improvement between 2010 and 2050. However, the AA scale only adds about 0.7 years per decade for males and 0.4 years per decade for females. This results in a larger difference between the two scales in 2050.

## WHAT IS THE IMPACT?

The exact cost of underestimating life expectancy will depend on the plan's demographics and assumptions. A simple rule of thumb is that an additional year of life expectancy for a 65-year-old results in about a 3% increase in pension liabilities.

There are two potential impacts to sponsors of defined benefit pension plans.

The first impact is that a pension plan that is doing all the right things by using the AA scale is likely underestimating the life expectancy of its plan members and, consequently, its liabilities. This may be particularly significant for pension plans with many young members and/or female members, where the hidden longevity cost could be as high as 5% to 7% of liabilities.

The second impact is that annuity pricing may look higher than expected for pension plans with a high proportion of young members and/or a high proportion of female members.

It's important to remember that our comparison assumed that the pension plan was already using the AA scale to calculate its liabilities. The impact will be even greater for pension plans that haven't yet adopted the AA scale.

For more information about how longevity improvement affects your pension plan, contact your pension consultant. For more information about Sun Life Financial's de-risking solutions for defined benefit pension plans, please contact:

**Brent Simmons**  
Senior Managing Director, Defined Benefit Solutions  
416 408-8935 | brent.simmons@sunlife.com

**Heather Wolfe**  
Assistant Vice-President, Defined Benefit Solutions  
416 408-7834 | heather.wolfe@sunlife.com