

Memorandum

To: All Fellows, Affiliates, Associates, and Correspondents of the Canadian Institute of Actuaries and Other Interested Parties

From: James K. Christie, Chair
Actuarial Standards Board
Conrad Ferguson, Chair
Designated Group

Date: June 15, 2015

Subject: **Final Communication of a Promulgation of the Mortality Table Referenced in the Standards of Practice for Actuarial Evidence (Subsection 4530)**

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INTRODUCTION

According to subsection 4530 of the Standards of Practice:

Mortality rates

.02 *The actuary should assume mortality rates in accordance with a mortality table promulgated from time to time by the Actuarial Standards Board for the purpose of these calculations, modified, if appropriate, to reflect the member's or the member's spouse's impaired health, if medically determinable. [Effective January 1, 2012]*

At its meeting on June 9, 2015, the Actuarial Standards Board (ASB) decided to promulgate the use of the following mortality table, effective October 1, 2015: *Mortality rates equal to the 2014 Canadian Pensioners Mortality Table (CPM2014) combined with mortality improvement scale CPM Improvement Scale B (CPM-B).*

Use of mortality improvement scale CPM-B1D2014 is acceptable as an interim measure for calculations up to and including December 31, 2019.

An [initial communication](#) regarding this promulgation was published on March 19, 2015, with a comment period ending on May 18, 2015.

RATIONALE FOR PROMULGATION

The Standards of Practice require the promulgation from time to time by the ASB of a mortality table for capitalized value calculations.

The [Final Report on Canadian Pensioners' Mortality](#) shows significant variances between actual and expected mortality experience relative to the current promulgated table (i.e., mortality rates underlying the UP-94 table projected forward to the year 2020 using mortality projection scale AA). In addition, the report underlines a trend towards continued improvements in life expectancy over the long term at levels much stronger than those anticipated by the previously used scale AA.

Clearly, the evidence shows that a change in the mortality basis is required at this time.

In addition to underlying analysis presented in the initial communication, the designated group (DG) also considered the three factors discussed separately below in arriving at its recommendations. This provides relevant information and is repeated here from the initial communication for ease of reference.

Unique Nature of Equalization Calculations

In the case of the capitalized values of a pension on the dissolution of a couple's union, the goal is to value an asset that by definition is backed by a pension fund, by the funding arrangement under a supplemental employee retirement plan and/or by a promise, usually by the employer, to pay for the promised benefits.

In addition and perhaps more importantly, principles that have developed under family law require that equalization of all family property be based on a snapshot taken as of the date of separation. Our understanding is that, based on practices that have developed under the law in most provinces, an event that occurs after the date of separation is to be disregarded except in the most extraordinary of circumstances.

This raises the question as to whether use of observed trends in improvements of life expectancy is part of an actuary's best estimate of life expectancy or predicated on events that will happen after the date of separation. Our understanding is that, for actuarial evidence practitioners, this is a crucial element to consider in making a recommendation on life expectancy improvements that by definition will occur in the future. We also understand the primary issue is whether the courts can be satisfied that life expectancy improvement is anticipated based on information available at the date of separation or if it is driven largely or partially by future developments that may make it fail the principle that future events cannot be taken into account at the date of separation.

The DG believes that establishing a best estimate for future life expectancy is based on the recognition of both current mortality rates and observed trends with respect to changes in such mortality rates that could be reasonably expected in the future. The projected life expectancy for an individual is dependent not only on the mortality experience today but also on factors that, based on observed trends, are expected to affect life expectancy for the age/gender cohort the individual belongs to.

Trying to identify the reasons for future improvements is secondary to the estimate required for actuarial purposes. No doubt certain factors will contribute positively and some will contribute negatively over time. In the end actual experience will deviate from estimates, such is the nature of actuarial work.

On this point, the DG noted that actuarial practice is a constantly evolving process since past observations influence the choice of assumptions for the future. For the purposes of estimating life expectancy, actuarial practice has evolved in virtually all practice areas

from the use of a static table based on recent experience, to allowance for modest, usually short-term, improvements along with recent experience, to—in recent years—the recognition that life expectancy has an underlying trend that should also be recognized for the long-term future. For example, this latter view is now used for pension plan valuations, which influence the amount required to fund a benefit, and also for the pricing of annuities by financial institutions.

The trend in life expectancy improvement is now an essential component of assessing life expectancy for a multitude of actuarial purposes. To do otherwise would imply ignoring strong evidence, built up over several decades, of a material trend in life expectancy improvement and, in the view of the DG, would fall short of meeting the public interest.

The primary evidence on trends in life expectancy in Canada comes from the [study](#) conducted by the Office of the Chief Actuary for social security programs in Canada. This is supported by similar studies in the [U.S.](#) and UK (via work conducted by the Continuous Mortality Investigation).

There is broad acceptance within the actuarial profession in Canada and elsewhere that life expectancy improvement trends need to be considered to produce a reasonable estimate of life expectancy today. This is not about future events or reasons for such developments; this is about recognizing trends in developing mortality assumptions based on valid and observable experience today. In a sense, the assumption should not be viewed as two pieces—a mortality table and a projection scale—but as a best estimate of life expectancy today and in the future based on observable experience from the past.

On the uniqueness of capitalized value calculations, the DG concluded that the evidence supports the notion that the assumption should be driven by observable information regarding both the current mortality rates and trends. There is no explicit recognition of specific future events positive or negative; the projection scale reflects an unbiased expectation based on information to date. The future will no doubt occur differently and that is why assumptions are regularly reviewed and actuarial practice evolves over time.

Therefore, notwithstanding the differences in purpose of the calculation and the limitations that may have been imposed by principles under family law, the DG is of the view that the body of evidence is strong enough today to make a valid and strong argument that it is necessary to consider observed trends in life expectancy in valuing a pension for equalization purposes upon dissolution of a couple's union.

Consistency with Other Standards

The ASB aims to achieve consistency among the various standards of practice unless there is a sound rationale to introduce an inconsistency. The calculation of capitalized values is similar in some respects to the calculation for pension commuted values. However, the purpose of the calculation is different. Section 4500 allows for differences in the underlying calculation when compared to section 3500.

The DG struggled with the notion that the estimate of the life expectancy of the same individuals in the same plan, assessed on a basis intended for broad application, would be different for pension commuted value and pension capitalized value calculations.

For the reasons under the previous header, the DG could not come up with a sufficient rationale to conclude that the life expectancy estimate for the same person under the same

pension plan should be different whether a commuted value or a capitalized value calculation is required.

The DG is aware that the commuted value mortality basis is not always the same basis as used for the funding of a particular pension plan. That difference can be easily explained by the fact that each plan has its unique characteristics that may influence the choice of underlying mortality rates for funding that plan. However, the development of a basis to cover all plans under one rule is intended to be a de facto average for all plans so that the recommended basis does not result in different values payable to individuals depending on what they do, what plan they belong to, where they reside, and how much they earn.

The DG concluded that the current evidence for mortality experience and underlying trends is just too strong to allow for the development of a sufficient rationale to deviate from actuarial practice in other areas for purposes of estimating life expectancy for capitalized value calculations.

Constrain Practice to Reasonable Range

The DG, in making its recommendations, also allowed for practical considerations related to constraining actuarial practice to a reasonable range and the administrative ease of application of the promulgated table or tables.

The DG recognizes that life expectancy can be affected by many factors, including socio-economic conditions of a particular cohort, smoker versus non-smoker, single versus married, and so on. Section 4500 allows for deviation from standard mortality rates where the individual's health condition warrants it based on medical evidence, although it goes on to state that tobacco use would not, in itself, be sufficient reason to modify the mortality rates.

Ultimately, consideration of whether more than one mortality basis should be promulgated due to plan-specific characteristics for purposes of capitalized value calculations is one of balancing uniformity, ease of application, and consistency with other standards against limiting the effect of the projections scale, as is the case at present, and other impacts caused by use of a more complex approach.

The DG concluded that the public interest would be better served by one recommendation for capitalized values calculations that use the same mortality basis for all plans in Canada.

COMMENTS RECEIVED

The DG received three responses to the initial communication: one from the Committee on Actuarial Evidence (AEC) and two from individual members.

In response to the initial communication, the AEC indicated it had reviewed the proposed mortality table and had no issue with its contents. The AEC had commented on a preliminary draft of the initial communication prior to its release and these comments were taken into consideration in preparing the initial communication.

One member indicated support for including an allowance for continued mortality improvements and commented that actuaries must consider such an allowance so that assumptions are realistic and internally consistent.

Another member raised concerns about the use of a projection scale for capitalized value purposes. A number of questions were raised and are summarized below along with the DG response to each question/comment.

Impact of New Mortality Basis

The impact of the new mortality table is of the order of 10%. An actuary called to provide evidence in a case of marriage dissolution on October 1, 2015 would more than likely provide or be asked to provide the impact of the mortality basis change. This may be challenging to explain to non-actuaries.

DG Response

The DG sympathizes with the challenge of having to explain such a difference. However, the recommended mortality basis reflects the most current and complete information available to actuaries practicing in Canada and it is the result it produces. The previous table was promulgated based on information available at the time and turned out to be insufficient based on developing experience and additional studies on life expectancy improvement trends since the previous promulgation. The fact is that Canadians do live longer than they used to and this must be reflected in the calculation of the value of a pension.

Impact of Projection Scale CPM-B over AA to 2020

The initial communication did not show the specific impact of the projection scale change alone and such information could be useful to practitioners.

DG Response

The initial communication presented percentage increases first moving from the current static table (UP94 proj. to 2020 using Scale AA) to an intermediate static table (CPM 2014 at 2015) and then the additional increase resulting from introducing the projection scale CPM-B. While this approach is not the sole method of illustrating the impact of the projection scale, the DG feels that the initial communication provided useful information in quantifying the impact of the improvement scale. All data are available for actuaries to analyze other approaches.

Sensitivity to Interest Rates

A question was raised as to the sensitivity of the impact of the new mortality basis with changes in the discount rates.

DG Response

As interest rates increase, the impact of the new table is less, as less weight is put on older ages. This is illustrated on page 8 of the initial communication, where the impact on indexed pensions (lower net discount rate) is greater than for the non-indexed pension (higher net discount rate).

Appropriateness of CPP Projection Scale for CPM Tables

Since the February 2014 Report states that the projection scale should not be used with any other table and since the projection scale comes from Canada Pension Plan (CPP) experience, how can we be certain that this scale is appropriate for use with CPM tables?

DG Response

The group that reviewed the pensioner mortality experience made a recommendation to use this projection scale with the CPM tables presumably because it felt it was appropriate. The DG's mandate was not to develop new tables or projection scales. The CPM tables and projection scale were developed, exposed, discussed, and approved for use by the CIA.

The CIA has appointed a task force to review mortality projection scales for all areas of practice. Therefore, the projection scale should be revised when the work of the Mortality Improvement Task Force is completed.

Comments Related to CPP Actuarial Study No 12

Excerpts from pages 36 and 37 of the above report allude to the possibility that future improvements for certain age cohorts may come mainly from medical breakthroughs or lifestyle changes. What if a judge questions an actuary on the appropriateness of the promulgated mortality basis given the above?

Another excerpt from page 42 implies that it is plausible that health and environmental factors or pandemics may offset some of the impact of observed trends today.

DG Response

As explained in the initial communication, continued mortality improvement is now well documented and represents a trend that actuaries can no longer ignore in developing proper estimates of future payment streams contingent on life expectancy. The issue is not to speculate on what may or may not happen in the future, but to use knowledge that strongly suggests and supports an assumption of continued improvement in life expectancy based on existing observable trends.

Concern about Contrary Views in Available Publications

Reference is made to certain published documents in the UK that raise questions about continued improvements in life expectancy. A concern is expressed that actuaries may be blindly applying mathematical formulas by extrapolating the past into the future without considering the real world or learned opinion from other professions interested in mortality trends.

DG Response

Again, the mortality trends based on observable data show continued improvement in life expectancy for the past several decades. Furthermore, they show an acceleration of improvements beyond previously expected levels. For actuaries to ignore that fact in assessment of a future payment stream contingent on life expectancy is unacceptable in the view of the DG.

If the learned opinions referred to in the submission prove to be true, they will no doubt be recognized in future promulgations. However, when looking at learned opinions, assuming this would be allowed under family law, the DG believes an unbiased and balanced view should be considered. For each pessimistic opinion there likely is an optimistic opinion going the other way. On balance, if both sides of the life expectancy improvement arguments are considered, the DG believes we would likely get to the same place. Until experience develops to suggest something other than presently available

information, the DG does not feel it can speculate on the future development of life expectancy and arbitrarily change the projection scale to an unknown and unquantifiable level.

PROMULGATION

The CPM2014 mortality table combined with projection scale CPM-B for calculations effective October 1, 2015, is recommended for use for capitalized value calculations. A calculation using scale CPM-B1D2014 is an acceptable interim measure for calculations up to and including December 31, 2019. However, practitioners should be aware that the continued use of the CPM-B1D2014 scale for years beyond 2015 may produce values that diverge from the CPM-B scale and there may also be divergence based on different interest rates. It is encouraged that the interim period during which the CPM-B1D2014 scale is used is as short as possible.

Paragraph 4520.17 addresses issues related to potential multiple calculation dates and there is no need to elaborate on the subject here. However, early implementation is not permitted.

CRITERIA FOR THE ADOPTION OF STANDARDS OF PRACTICE

The newly promulgated mortality table meets the criteria set out in section B of the ASB's Policy on Due Process for the Adoption of Standards of Practice:

1. It advances the public interest through the use of a mortality basis that is aligned with current mortality experience for Canadian pensioners and provides a fair and consistent assessment of life expectancy for a wide range of pension plan member cohorts.
2. The actuary will continue to apply professional judgment within a reasonable range as was the case previously. Although the use of the table is prescribed, there continue to be circumstances where an actuary should or may use judgment.
3. Compliance with the promulgated table is still practical for actuaries as the underlying elements (mortality rates and projection scale) are now common in actuarial practice even though the structure is different than that used in the past (lifetime two-dimensional projection versus one dimensional projection to 2020).
4. The promulgated table is considered to be unambiguous.

EFFECTIVE DATE

The newly promulgated mortality table should be used for capitalized value calculations effective on or after October 1, 2015 and early implementation is *not* permitted.

JKC, CF