



Memorandum

To: All Fellows, Affiliates, Associates, and Correspondents of the Canadian Institute of Actuaries, and other interested parties

From: Conrad Ferguson, Chair
Actuarial Standards Board
Geoffrey Melbourne, Chair
Designated Group

Date: January 17, 2019

Subject: **Initial Communication of a Promulgation of the Mortality Table Referenced in the Standards of Practice for Pension Plans (Subsection 3530)**

Comment Deadline: March 31, 2019

Document 219007

Introduction

According to subsection 3530 of the Standards of Practice:

Demographic Assumptions

.01 Except for situations specifically noted below, the actuary should assume:

- Separate mortality rates for male and female members; and
- Mortality rates in accordance with a mortality table promulgated from time to time by the Actuarial Standards Board for the purpose of these calculations.

The Actuarial Standards Board (ASB) proposes to promulgate the use of the mortality rates underlying the 2014 Canadian Pensioners Mortality Table (CPM2014) combined with the mortality improvement scale MI-2017 for calculations, effective November 1, 2019. This effective date will be harmonized with the effective date of certain other changes to section 3500 of the Standards of Practice for Pension Plans, and the effective date may therefore be modified accordingly, if necessary.

The process being used to implement this is described in section I, Promulgation of the ASB's Policy on Due Process for the Adoption of Standards of Practice.

Executive Summary

When dealing with projections long into the future, as is the case for a mortality improvement scale, it is impossible to determine categorically that one basis is superior to the other. Valid arguments could be made in support of both CPM-B and MI-2017.

The Designated Group (DG) had mixed views on the relative merits of retaining CPM-B or adopting MI-2017 as the promulgated mortality improvement scale for Commuted Value (CV) purposes.

Key arguments for adopting MI-2017 include:

- It promotes consistency among practice areas (already adopted for life insurance), which is a requirement under the Policy on Due Process, unless a deviation is justified;
- It reflects the efforts of a multi-disciplinary committee based on the most recent experience at the time of publication, and is considered the most up-to-date estimate of future mortality improvements.

Key arguments for retaining CPM-B include:

- Changing the mortality improvement scale does not result in a material change in CVs;
- The burden of revising administration systems and communication materials could be seen as unwarranted, for reasons expressed in this initial communication.

Most DG members were in favour of retaining CPM-B, and this recommendation was brought to the ASB.

The ASB debated the recommendation of the DG and the underlying reasons. Ultimately, the ASB was not convinced that the reasons advanced were sufficiently valid to override the reflection of more recent mortality experience and the requirement for consistency across practice areas. It was noted that it is very clear under its Policy on Due Process that the ASB has the authority to disagree with a DG's recommendation. The DG accepted the ASB's position and proceeded to prepare this initial communication.

Nonetheless, comments received on the proposed change and the various arguments will help to inform a final decision on the promulgated assumption. In any event, the harmonization of any revised promulgation with certain other more extensive changes to the CV basis would be paramount.

Background

In 2014, a mortality improvement task force of the Canadian Institute of Actuaries (CIA) was created under the Member Services Council, with representatives from the life insurance, annuity, pension, and social security practices, and academics. The objective of the task force was to publish a research paper documenting the development of a

best estimate mortality improvement rates table applicable to the Canadian general population, using the most up-to-date Canadian population mortality data, and to provide an opinion on a range of reasonable adjustments for the different subgroups. One of the objectives of the task force was to improve consistency between practice groups for mortality improvement rates used by Canadian actuaries. The ASB indicated that it would consider making changes to both insurance and pension standards with respect to mortality improvement once the research was completed.

In September 2016, the ASB published a [notice of intent](#) to revise the practice-specific standards for insurance with regards to the use of mortality improvement in the calculation of insurance contract liabilities, and the accompanying promulgation of the prescribed mortality improvement rates referenced in the standards. This was in recognition of the many developments worldwide on mortality improvement models, and the publishing of a number of updated mortality improvement tables (e.g., the CPM-B table in Canada and the MP-2014 table in the United States), since the prior promulgation in 2011.

In 2017, the task force published a research paper documenting the development of a best estimate mortality improvement rates table applicable to the Canadian general population, MI-2017, using the most up-to-date Canadian population mortality data. The promulgated base mortality improvement rates for the insurance practice for both life insurance and annuities were derived from the work done by the task force.

The ASB is seeking to achieve consistency of standards among practice areas unless there are valid reasons to be different.

The ASB established a DG to Review the Mortality Improvement Scale for Commuted Value Purposes in light of the release of MI-2017. The current members of the DG are Geoffrey Melbourne (Chair), Tom Ault, Stephen Butterfield, Laurence Frappier, Paul Grant, and Simon Nelson.

Scope

Commuted values on termination of plan membership are primarily intended to provide for portability of pension benefits from a defined benefit pension plan to another form of registered retirement savings program. Once transferred, there is no guarantee that the proceeds so transferred will ultimately reproduce the pension that would have been payable from the defined benefit plan. The CV standard covers a very broad range of pension plans with widely differing demographic profiles.

The CV standard could also affect required pension funding requirements under pension legislation through its incorporation in the basis for solvency and/or (hypothetical) wind-up valuations.

The focus of the DG was on a mortality assumption for the CV standard that provides a fair value to individuals or their beneficiaries upon a voluntary decision to commute their benefits from their defined benefit pension plan or in the case of a lump sum payout on death of the member prior to retirement, using a basis that can be broadly and easily applied consistently for all defined benefit pension plans and their members.

The recommendation is a minimum standard for CVs in these situations. CVs in excess of those produced by the minimum standard are acceptable under the current standard where the basis is prescribed by legislation or, subject to legislation, by the plan document or where the administrator has the authority to recommend the use of another basis.

Rationale

The DG acknowledges that it is impossible to predict longevity improvements. Population mortality projections are produced using a combination of statistical techniques (necessarily prone to statistical errors and model risk), as well as subjective judgments about macro trends and medical developments in the very long term.

This notwithstanding, the DG considered two reasonable alternatives for the mortality improvement scale for CV purposes:

- Adoption of MI-2017; and
- Maintenance of CPM-B.

There were mixed views among DG members on the relative merits of these alternatives, as indicated by the arguments set out below.

The DG also considered but ultimately discarded a hybrid approach reflecting the short-term improvement rates underlying MI-2017 (reflecting more recent experience data), in conjunction with the average long-term improvement rate of 0.8% per annum applicable under CPM-B and the Canada Pension Plan (CPP) actuarial reports.

The case for the adoption of MI-2017

A member receives their CV at a single point in time. There is no opportunity to revise it later, in contrast with the assumption-setting process for the actuarial valuation of an ongoing pension plan. It should therefore be based on the best, most publicly defensible data available at the time of the calculation.

CPM-B was released in 2014, based on CPP/QPP mortality experience until the end of 2007. MI-2017 was released in 2017, based on Human Mortality Database (HMD) data to 2011 and supplemented by Old Age Security (OAS) data to 2015. It was produced by a specialist task force from a range of actuarial backgrounds, tasked with developing a common view of mortality improvements across the Canadian actuarial profession. It would be reasonable for the external public to believe that the findings of this task force therefore represent the actuarial profession's best, most recent study and judgment, in relation to the average expected mortality improvements across the large heterogeneous population of Canada.

As noted earlier, the promulgated base mortality improvement rates for the insurance practice for both life insurance and annuities were derived from MI-2017, which may add to its weight in the eyes of the public.

Pension plan members receiving CVs are a subset of the Canadian population. While there may be impressions about different mortality improvement rates for this subset

relative to the general Canadian population, due to factors such as anti-selection (with possible offsetting effects from differences for pension plan members generally as compared to broader Canadian residents), the DG is not aware of any credible studies that substantiate this belief. As such, there seems to be no basis for adjustment in this respect.

It may be noted that, in the UK, the Continuous Mortality Investigation (CMI) use national England and Wales data for their annually released template mortality improvements model, which is used across the UK actuarial profession. The CMI has judged this the most credible approach, despite the existence of sizeable occupational pension-plan-specific data sets in the UK. By analogy, it would seem appropriate for Canadian CV mortality improvement rates to be based on the national population data underlying MI-2017.

MI-2017 is based on more recent data than CPM-B and hence should provide a better estimate of how recent Canadian trends impact short-term mortality improvement rates. Mortality trends are subject to variation over time and noticeably shifting dynamics have been observed over recent decades. In particular, mortality improvement rates have been decreasing recently in many developed countries including Canada, turning negative in some countries. The public would reasonably expect actuaries to use the most recently available, credible data in forecasting fair values for the pension benefits. MI-2017 currently represents the best available option on this front in Canada.

The largest uncertainty in a mortality improvement assumption is in the long-term improvement rate. This cannot be predicted from any amount of analysis based on the past and is inherently uncertain. The research on MI-2017 reported that the annual improvement rate in Canada for those under 85 has been:

- Between 1.17% and 1.33% per annum over the last 50 years; and
- Between 1.67% and 1.74% per annum over the last 20 years.

The MI-2017 task force looked at the work of various actuarial and social security bodies around the globe, including Statistics Canada projections and the CPP. The work of these bodies indicated a range of 0.8% to 1.2% per annum could be appropriate as a long-term improvement rate. MI-2017 uses the centre of this range as its long-term assumption for most ages, which could be viewed as a natural choice.

CPM-B broadly uses a long-term rate of 0.8% per annum on average which, while consistent with the CPP actuarial report, is at the low end of the historic range used by comparable actuarial and social security bodies. We note that even a 1.0% per annum long-term rate is low compared to the typical values used in the UK, which would be in the 1.25% to 1.75% per annum range. Having said that, the CMI in the UK does not build any particular long-term rates into its standard projections, leaving that instead to the professional judgment of individual actuaries.

The administrative costs and effort involved in updating administration systems and procedures should not be unduly onerous, as the existing CPM-B table is also a two-

dimensional improvement scale and, more importantly, any change would be harmonized with certain other more extensive changes to the CV basis, for which a separate DG has been established.

The calculations performed by this DG in the current economic environment show that the impact on CVs of adopting MI-2017 is expected to be less than 3% in most situations and significantly less than that in many cases. Given typical pension plan maturity, CV payment volume, and the fact that the impacts are higher for younger members where the CVs would be lower than for older members, the incremental funding costs may not be material for some pension plans. Conversely, the impact for an individual receiving a CV payment is likely to be more meaningful.

The case against the adoption of MI-2017

As noted earlier, the current mortality improvement scale that is promulgated, CPM-B, was published in 2014. While it is recognized that MI-2017 was developed using more recent data than CPM-B, and there is no particular concern with the validity of the source data, there has been no explanation for the change in expected future improvements in the short time since CPM-B was published. Mortality improvement scales involve a large degree of subjectivity, particularly the long-term improvement rate, and many arguments to support one scale over another are largely qualitative. In its [final report publishing MI-2017](#), that task force stated that *“the main driver {in the difference between CPM-B and MI-2017} is the ultimate mortality improvement rates”*, which is entirely subjective. A change should be made only if it can be shown that the revision is better than the status quo. In this instance, it is felt that there is no particular reason to believe that MI-2017 is superior to CPM-B for CV purposes.

As also noted earlier, the long-term improvement rate of 0.8% per annum on average under CPM-B is consistent with the assumption adopted for CPP actuarial reports, which are subject to external peer review, including an opinion from the UK Government Actuary’s Department (renowned for its expertise in social security) that affirms the reviewers carried out a sufficiently thorough review and that the work was adequate and reasonable.

MI-2017 may not be appropriate for pension purposes, having been developed from general population data, whereas CPM-B was developed specifically for defined benefit pension plans. As a group, pension plan members’ life expectancy is currently longer than that observed in the general population. As such, future improvements in life expectancy may be expected to be greater for the general population than for members of defined benefit pension plans. This would support a lower long-term projection scale for pension plan purposes. There are also noteworthy differences in the age profiles of the typical pension plan membership versus insured populations that would argue against consistency in improvement scales between these groups.

While consistency in assumptions between actuarial practice areas is desirable, this alone is not a sufficient rationale for adopting MI-2017. The questions about validity raised above, the materiality of the change as well as the administrative costs and effort

involved in updating administration systems and procedures should also be taken into consideration.

Based on calculations performed by this DG in the current economic environment, the impact on CVs of adopting MI-2017 is expected to be less than 3% in most situations, and significantly less than that in many cases. It is not clear that such a change is warranted, particularly when contrasted against other simplifications already embedded within the CV basis (e.g., unisex mortality where applicable, assumed dates/ages of commencement, 10 basis point rounding). In its [Initial Communication of a Promulgation of the Mortality Table Referenced in the Standards of Practice for Pension Plans](#), the ASB indicated that “an impact on a commuted value of less than 5% would seem reasonable” in assessing whether plan-specific adjustments should be allowed in the commuted value basis. This would suggest that the impact of adopting MI-2017 is not sufficiently material to warrant a change, particularly considering the administrative and validity concerns noted elsewhere. There is also concern that adopting MI-2017 would establish a quantitative precedent for future changes, and that the threshold(s) for the elapsed time since a prior change and/or impact of the change should be set higher.

The administrative costs and effort of implementing a change in the CV standard are not trivial. This effort is not limited to the actual calculation of the CV, but extends to revising forms and communication materials, and updating valuation systems, which can be costly and not justified based on the arguments expressed above. This is of particular concern in plans where administrative costs are borne directly by the plan’s assets, thereby reducing the assets available to pay for members’ benefits. The impact of adopting MI-2017 is not sufficient to warrant this effort.

Adopting MI-2017 for CV purposes could have a cascading effect on regulator and auditor expectations for going concern funding and accounting valuations, and potentially undermine the recent guidance from the CIA Committee on Pension Plan Financial Reporting that suggests that either CPM-B or MI-2017 may be appropriate for these purposes.

Analysis

The appendix to this memorandum illustrates the impacts of updating the promulgated mortality improvement scale to MI-2017 on CVs for sample members in different circumstances. The baseline is the CV basis prevailing for the month of November 2018.

Promulgation

The CPM2014 mortality table combined with projection scale MI-2017 is recommended for use for pension commuted value calculations starting on November 1, 2019.

Criteria for the Adoption of Standards of Practice

The proposed mortality table meets the criteria set out in section C 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 Canadian mortality experience 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 practical for actuaries as the underlying elements (mortality rates and projection scale) are similar in structure as those currently in use.
4. The promulgated table is considered to be unambiguous.

Proposed Effective Date

It is proposed that the promulgated table would be used for pension commuted value calculations on or after November 1, 2019, and that early implementation would not be permitted.

Intended Date of Final Communication

The intended date for the final communication of the promulgated table is July 1, 2019.

Comments

Comments on the proposed change are invited by **March 31, 2019**. Please send them to Chris Fievoli at chris.fievoli@cia-ica.ca with a copy to Geoffrey Melbourne at geoffrey.melbourne@willistowerswatson.com. No other specific forums for submitting comments are planned.

CF, GM

ASB - Designated Group to Review the Mortality Improvement Scale

Base Mortality	CPM-2014 Combined - Sex Distinct	
Year	2018	
Month	11	
Int_Select	3.4%	NON-INDEXED
Int_Ultimate	3.5%	

Gender	Male
Payment Form	Life Only
Payment Age	65

	CPM-B	MI-2017	
25	4.072	4.170	2.4%
30	4.805	4.909	2.2%
35	5.669	5.777	1.9%
40	6.687	6.797	1.6%
45	7.887	7.995	1.4%
50	9.301	9.401	1.1%
55	10.966	11.051	0.8%
60	12.911	12.975	0.5%
65	15.154	15.199	0.3%

Gender	Male
Payment Form	J&S60%
Payment Age	65
	F spouse; age – 3

	CPM-B	MI-2017	
25	4.570	4.669	2.2%
30	5.402	5.511	2.0%
35	6.385	6.502	1.8%
40	7.546	7.669	1.6%
45	8.917	9.045	1.4%
50	10.535	10.664	1.2%
55	12.446	12.570	1.0%
60	14.689	14.802	0.8%
65	17.300	17.399	0.6%

Gender	Female
Payment Form	Life Only
Payment Age	65

	CPM-B	MI-2017	
25	4.301	4.400	2.3%
30	5.080	5.188	2.1%
35	6.000	6.116	1.9%
40	7.085	7.207	1.7%
45	8.366	8.491	1.5%
50	9.876	10.002	1.3%
55	11.658	11.778	1.0%
60	13.746	13.855	0.8%
65	16.178	16.268	0.6%

Gender	Female
Payment Form	J&S60%
Payment Age	65
	M spouse; age + 3

	CPM-B	MI-2017	
25	4.498	4.602	2.3%
30	5.317	5.431	2.1%
35	6.284	6.408	2.0%
40	7.427	7.559	1.8%
45	8.776	8.914	1.6%
50	10.369	10.509	1.4%
55	12.249	12.387	1.1%
60	14.456	14.586	0.9%
65	17.032	17.145	0.7%

ASB - Designated Group to Review the Mortality Improvement Scale

Base Mortality	CPM-2014 Combined - Sex Distinct	
Year	2018	
Month	11	
Int_Select	1.7%	INDEXED
Int_Ultimate	1.7%	

Gender	Male
Payment Form	Life Only
Payment Age	65

	CPM-B	MI-2017	
25	9.987	10.306	3.2%
30	10.781	11.092	2.9%
35	11.636	11.934	2.6%
40	12.556	12.837	2.2%
45	13.547	13.803	1.9%
50	14.614	14.837	1.5%
55	15.761	15.944	1.2%
60	16.988	17.124	0.8%
65	18.275	18.372	0.5%

Gender	Male
Payment Form	J&S60%
Payment Age	65
	F spouse; age – 3

	CPM-B	MI-2017	
25	11.512	11.850	2.9%
30	12.451	12.789	2.7%
35	13.464	13.798	2.5%
40	14.558	14.883	2.2%
45	15.738	16.049	2.0%
50	17.011	17.300	1.7%
55	18.385	18.644	1.4%
60	19.863	20.085	1.1%
65	21.440	21.622	0.9%

Gender	Female
Payment Form	Life Only
Payment Age	65

	CPM-B	MI-2017	
25	10.688	11.008	3.0%
30	11.550	11.869	2.8%
35	12.480	12.794	2.5%
40	13.483	13.787	2.2%
45	14.565	14.853	2.0%
50	15.731	15.996	1.7%
55	16.987	17.223	1.4%
60	18.338	18.536	1.1%
65	19.782	19.936	0.8%

Gender	Female
Payment Form	J&S60%
Payment Age	65
	M spouse; age + 3

	CPM-B	MI-2017	
25	11.242	11.582	3.0%
30	12.158	12.500	2.8%
35	13.148	13.487	2.6%
40	14.215	14.548	2.3%
45	15.368	15.687	2.1%
50	16.611	16.911	1.8%
55	17.952	18.224	1.5%
60	19.396	19.632	1.2%
65	20.943	21.136	0.9%