

Mortality Improvement Scale Methodology AG38 and VM20



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SOA Preferred Mortality Oversight Group (“Joint Committee”) and Life Mortality Improvements Subgroup (“LMIS”)

Agenda

- Purpose of Individual Life Mortality Improvement (MI)
Recommended Scale
- Current methodology for annual recommendations
- Application of recommended scale
- Next steps



Purpose of the Individual Life MI Recommended Scale

- ✓ Used in conjunction with AG38 and VM20 reserve development
- ✓ Updated each year to account for an additional year of mortality improvement
- ✓ Applied to improve Valuation Basic Table mortality from the table date (e.g., 2015 for the 2015 VBT) to current valuation date



Current methodology for annual recommendations

- In use since year-end 2013 for AG38
- Approach is consistent with development process for the MI scale used in the 2015 VBT and 2017 Commissioners Standard Ordinary table development work

Current Methodology for annual recommendations

Historical Data

Most recent relevant historical MI data (10 years)

- Age and gender-based data
- Use of long-term consistent source of population data (Social Security Administration (SSA))

Forecasted Expectations

Most recent forecast of future improvements over future period (20 years)

- Age and gender-based data
- Consistent with historical data and projections available through SSA publication of annual Trustees Report (Alt 2)

Unsmoothed MI Scale

Weighted average of historical data and forecasted expectations

- Average of historical data and forecasted expectations

Smoothed MI Scale

With smoothing process applied

Limitations of current scale

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- One-dimensional (age/gender only)
- Basis risk due to use of population data
- Not intended for long-term projections



Mortality improvement scales for US insured mortality tables varies by use and product but none use actual insured data

	Scale	Use	Last updated	Use Period	Underlying Basis
Annuity/Retirement	G2	Individual payout annuities	2011	2012+	SSA actual (1990-2006) + SSA (Alt. II) through 2022
	AA	Group annuities	1994	1994-2011	SSA and CSRS (1977-1993) Retrospective only
	MP-2019	Pension	2019	2014+	SSA with assumed LTR = 1.0%
Life	AG38-MI	AG38 + VM-20	2019**	2013+	SSA actual + SSA (Alt. II)
All	MI-2017	Canadian projections	2017	2017+	HMD (1967-2011) + OAS (2005-2015); graduated to long term rate over 10-20 years; LTR varies between 0% and 1%

* X = latest period of data estimated by SOA from SSA;
 **. Updated annually

Current methodology considerations

1. Strive to limit volatility in year-to-year recommendations unless warranted by emerging trends
2. Provide for a repeatable and data-based methodology with minimal actuarial judgement



Next Steps

Develop a consistent framework for producing MI scales

- **Objective:** Develop a common tool, which would be made available to SOA members, to be used by practitioners from individual life, individual and group annuity, and pension/retirement (Target: 2020)
 - Tool, currently in development, will use 2-dimensional approach
 - Similar to CMI and RPEC MP table development, with some modifications
 - For life tables, intent is to use gender specific SSA data for the US population and SOA non-smoker and smoker experience with consideration to eventually allow users to input their own data
 - Will allow practitioner decisioning to convergence period
 - Requires significant testing from multiple practitioners across practice areas



Suggested Next Steps

- Revise prescribed methodology to remove any material actuarial judgement – Develop a threshold level of change to indicate update to the scale in any given year (timeline: for 2020 scale update)
- Include a description of the methodology used each year to updated the life MI scale in the current valuation manual (timeline: TBD)
- Scale updates would be made each year without required formal approval by LATF as long as no changes are made to the prescribed methodology (next change: expected only after recommended MI framework is released by SOA Mortality and Longevity Steering Committee)



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