LIFE MORTALITY IMPROVEMENT SUBGROUP (LMISG) 2020 LIFE MI SCALE RECOMMENDATION

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Life Actuarial (A) Task Force – NAIC Summer National Meeting 2020

Agenda for Discussion

1. Objective for the annual mortality improvement (MI) scale updates

2. Current annual update methodology (2013–2019)

3. Considerations for 2020

4. LMISG 2020 recommendation

5. Future issues

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Objective of Annual MI Scale Updates
Addresses VM20 Incorporation of MI: Section 9C3g

g. Mortality improvement shall not be incorporated beyond the valuation date. However, historical mortality improvement from the date of the industry basic table (e.g., Jan. 1, 2008, for the 2008 VBT and July 1, 2015, for the 2015 VBT) to the valuation date may be incorporated using the improvement factors for the applicable industry basic table as determined by the SOA and published on the SOA website, *https://www.soa.org/research/topics/indiv-val-exp-study-list/* (Mortality Improvement Rates for AG-38 for Year-End YYYY).

Guidance Note: The improvement factors for the industry basic table will be determined by the SOA. YYYY is the calendar year of valuation.

Guidance Note: The start date for the improvement factors to be applied to the industry basic tables differs from that used for determining company experience mortality rates as described in Section 9.C.2.h, as the industry basic tables have already been improved from the mid-point of the exposure period of the data underlying the table to the year of the table; e.g., the 2015 VBT has already been improved from the mid-point of the underlying data supporting the table to 2015.

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Objective of Annual MI Scale Updates
Level of Event Covered – Reserve vs Capital: VM Introduction

Overview of Reserve Concepts

Reserve requirements prescribed in the *Valuation Manual* are intended to support a statutory objective of conservative valuation to provide protection to policyholders and promote solvency of companies against adverse fluctuations in financial condition or operating results pursuant to requirements of Model #820.

A principle-based valuation is a reserve valuation that uses one or more methods, or one or more assumptions, determined by the insurer pursuant to requirements of Model #820 and the *Valuation Manual*. This is in contrast to valuation approaches that use only prescribed assumptions and methods. Although a reserve valuation may involve a method or assumption determined by the insurer, such valuation is a principle-based valuation only as specified in the *Valuation Manual* for a product or category of products.

A principle-based valuation must reflect risks that are:

1. Associated with the policies or contracts being valued, or their supporting assets.

2. Determined to be capable of materially affecting the reserve.

Risks not to be included in reserves are those of a general business nature, those that are not associated with the policies or contracts being valued, or those that are best viewed from the company perspective as opposed to the policy or contract perspective. These risks may involve the need for a liability separate from the reserve or may be provided for in capital and surplus.

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Source: VM20 – guidance provided on risks to be covered by reserves

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Objective for Annual MI Scale Updates
LMISG Thinking

Our annual update exercise seeks to apply judgment to historical mortality improvement (or deterioration) data to arrive at a set of mortality rates that can be used to calculate reserves for future events.

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Current annual update methodology (2013-2019)

Historical Data — Most recent relevant historical MI data (10-year moving average)

- Age- and gender-based
- Use of a 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 (Alt. II) available from SSA Trustees' Annual Report

Unsmoothed MI Scale — Weighted average of historical data and forecasted expectations

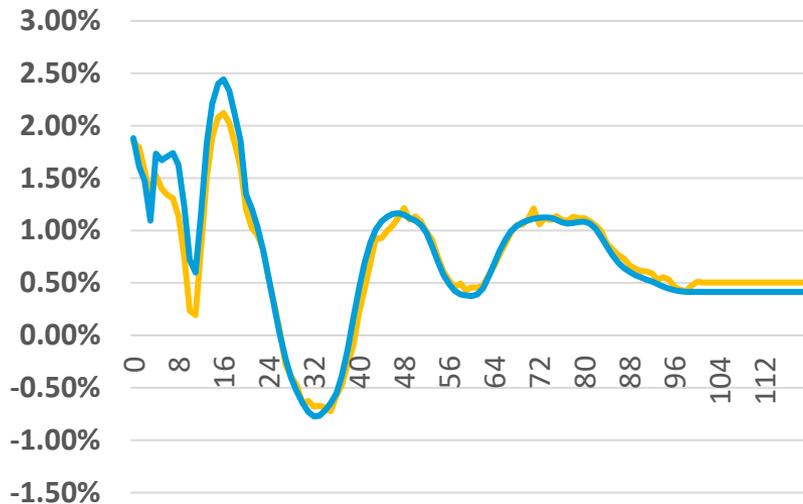- Average of historical data and forecasted expectations

Smoothed MI Scale — Unsmoothed MI scale with smoothing process applied
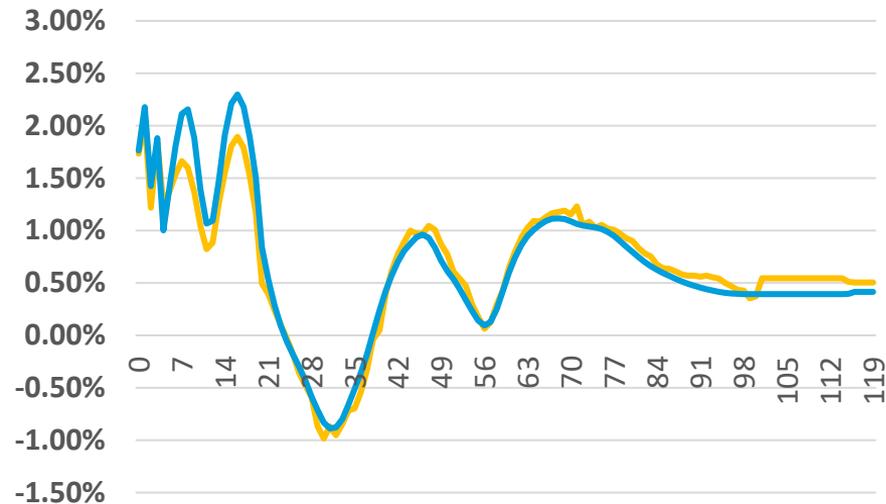
Preliminary 2020 – Current Methodology
Before manual smoothing

Male

Female

Male 2020 ⎯⎯ Male 2019

Female 2020 ⎯⎯ Female 2019

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Considerations for 2020 & beyond

- **Data** - we don't have sufficient data to fully understand the impact of the COVID-19-related mortality shock on the insured population (anecdotal reports from companies indicate they are seeing a smaller shock).

- **MI scale updates** - reflecting a shock in 2020 does not seem in line with the goals for the MI scale updates
  - Are shock events more appropriately reflected in capital planning rather than reserves?
  - An effective vaccine may make COVID-19's impact on MI much shorter than the long-term impact arising from the opioid epidemic.
  - However, COVID-19 may have potential longer-term impacts that may arise from survivor impaired health, health impacts from delays in health care, and/or testing for early detection of dread disease, etc.
  - Conversely, some experts and models indicate the 2020/2021 COVID-19 shock is mainly a moving forward of deaths that would have occurred due to other causes and/or comorbidities. Might that improve future mortality improvement?

- **Precedent for other excess mortality events**
  - First group to consider the impact of a short-term shock event – setting a precedent for other future MI scale work
  - The current methodology uses a moving average to "smooth out" the impact of any one year or event
  - 2008/2009 influenza season and the effect of the opioid epidemic – the methodology was not adjusted for those events

LMISG 2020 Recommendation

Apply the historical methodology for 2020 consistent with the past scale updates (2013–2019).

Implications:
- There will be no specific impact included for the 2020 scale for the pandemic shock effect.
- The 10-year historical average in the 2022 scale update will include a "smoothed" impact of the shock as part of the usual methodology.

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Future Issues

- Insured vs. general population impacts
  - Some evidence that impact on insured population will be less
  - SOA "socioeconomic decile" study will provide some guidance here
  - Consideration of consistent framework and changes to the current methodology (ex., averaging periods)

- Will COVID-19 have a long-term impact on mortality improvement rates, and what will the impact be?
  - Lower due to survivor impaired health as well as the indirect effect arising from the virus delaying the early condition diagnosis of dread diseases and preventive treatments?
  - Higher due to greater application of good hygienic habits (e.g., social distancing and washing hands) and/or higher utilization of other vaccines (such as the annual flu shot)?
  - Need to understand the impact in terms of potential effects on future slope and size of MI
  - Impact in light of a COVID-19 vaccine availability and effectiveness

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Questions?

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Appendix

General Population:
Pattern of excess deaths vs general mortality

A/E Ratios – COVID-19 vs 2015 VBT

- ☐ Actual deaths = COVID-19

- ☐ Expected deaths = 2015 Unismoke, ANB 2015 VBT rates, weighted by 7/2019 estimated U.S. population

- ☐ Slope of VBT matches COVID-19 female rates better than male rates

- ☐ Small ratios >>> only 1 cause of death (COD) in numerator; all CODs in denominator

U.S. Male

Age Group	%
All Ages	5.7%
	4.6%
75–84	5.7%
	6.8%
55–64	8.0%
	7.5%
35–44	4.1%
	2.5%
15–24	0.6%
	0.5%
1–4	0.3%
	1.1%

U.S. Female

Age Group	%
85+	4.6%
	4.7%
	4.6%
65–74	4.6%
	5.0%
45–54	4.6%
	3.1%
25–34	2.7%
	0.9%
5–14	0.2%
	0.4%
<1	0.9%

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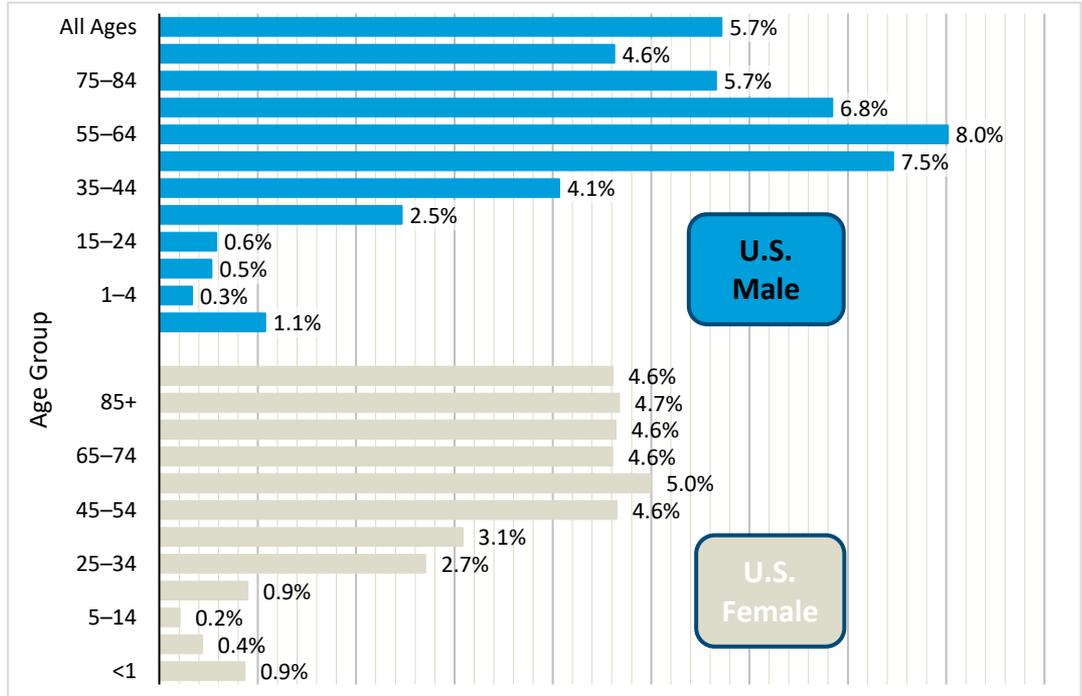
2013-2019 MI Scale Update Reports

2019 Scale: https://www.soa.org/resources/experience-studies/2019/mortality-improvement/

2018 Scale: https://www.soa.org/resources/experience-studies/2018/2018-mortality-improvement/

2017 Scale: https://www.soa.org/resources/experience-studies/2017/mortality-improvement-2017/

2016 Scale: https://www.soa.org/resources/experience-studies/2016/research-mortality-improvement-2016/

2015 Scale: https://www.soa.org/resources/experience-studies/2015/research-2015-mortality-improvement-rate-year-end

2014 Scale: https://www.soa.org/resources/experience-studies/2014/research-2014-mort-improve-rates-ag-38-year-end-2014/

2013 Scale: https://www.soa.org/resources/experience-studies/2014/research-2014-mort-imp-rates