



# NAIC Model Office Impact Analysis for 2026 Scales

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# Agenda

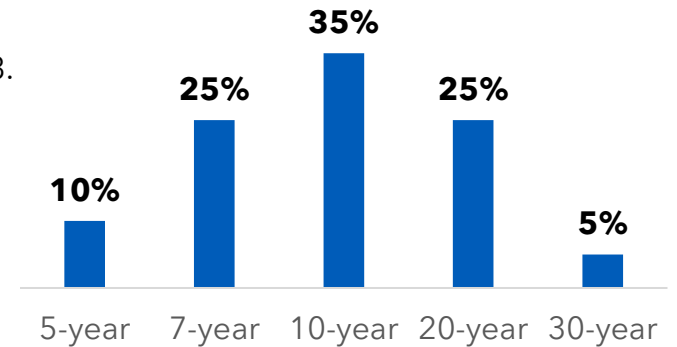
- Overview of ULSG Model Office Specifications
- Deterministic Reserve for All Model Office Cohorts
- Compare 2026 proposed mortality improvement scales to 2025 final scales

# VM-20 ULSG Model Office Specifications

Model assumptions and product features were selected based on industry benchmarks to be a simplified representation of products currently offered

## Projection model details

- Universal life with shadow design lifetime secondary guarantee issued in 2023.
- Valuation date 12/31/2026 (HMI applied to YE2026)
- Time 0 reserves held in 50% 5-year BBB bonds and 50% 7-year BBB bonds
- Reinvestment strategy uses 50% A/AA corporate bonds distributed across
  - 5, 7, 10, 20, and 30-year bonds (see chart)



## Best estimate assumptions

- Follows industry benchmark assumptions
- Mortality experience is 100% credible with 20 years of sufficient data
- UL crediting rate is dynamic and based on NAER less a spread, varying for each stochastic scenario

## Prudent estimate assumptions

- VM-20 prescribed mortality margins based on credibility and sufficient data period
- Minimal lapse when policy maintained in-force by NLG (i.e. CSV = 0)

# Review of Model Office Cohorts

## ULSG

Universal Life with Secondary Guarantees (ULSG) model—long-duration product, larger potential for reserve reduction

- Lifetime shadow account secondary guarantee
- No reinsurance in the model
- Mortality

### 2015 VBT Relative Risk Tables (ANB)

- Preferred NS = RR80
- Standard NS = RR100
- Standard SM = RR100

### Company Mortality

- High Band = 85% of RR Table
- Low Band = 90% of RR Table

Industry Mortality = 100% RR Table

## Impact Testing

| Component                     | Values                                                                    |
|-------------------------------|---------------------------------------------------------------------------|
| Issue Age Cohorts (6/30/2023) | All: Decennial issue ages 30-70<br>30-yo<br>50-yo<br>70-yo                |
| Gender                        | Male<br>Female                                                            |
| Risk Classes                  | Nonsmoker ( <i>Preferred and Standard</i> )<br>Smoker ( <i>Standard</i> ) |
| Face Bands                    | All = Low (\$250K) and High (\$1M)                                        |
| Impact Measure                | Deterministic Reserve                                                     |

# Deterministic reserve - Total

The Deterministic Reserve (“DR”) is produced using scenario 12 of the GOES SERT scenario set.

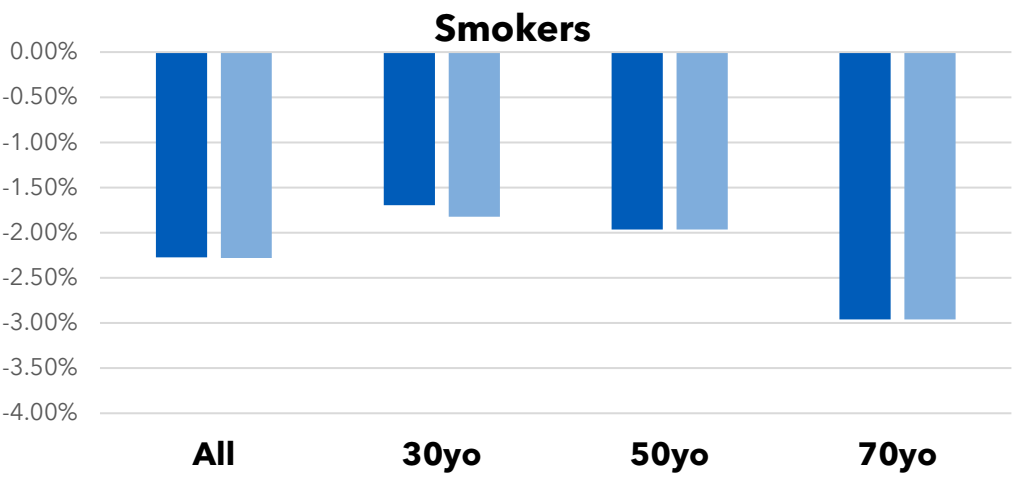
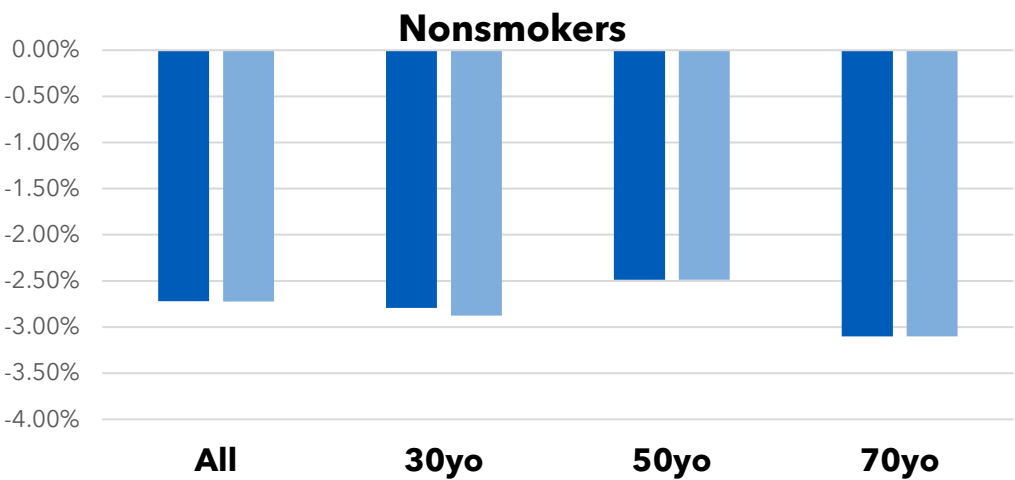
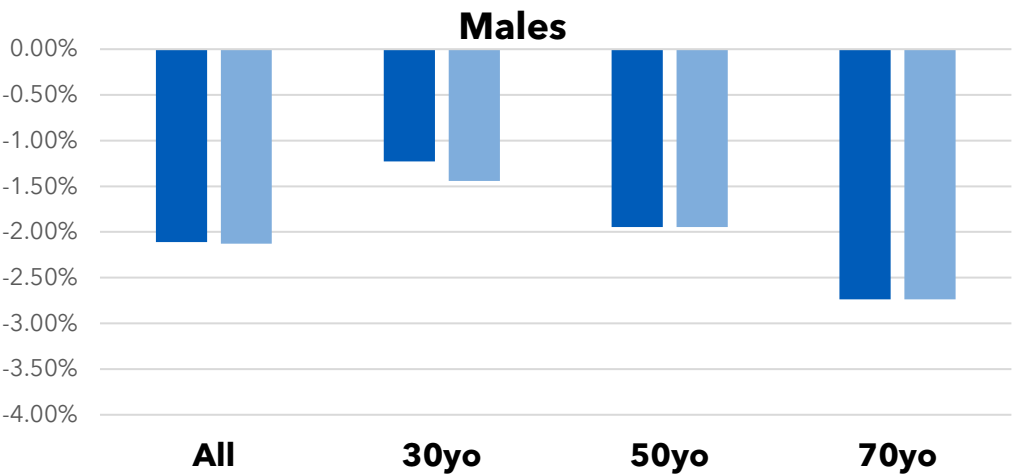
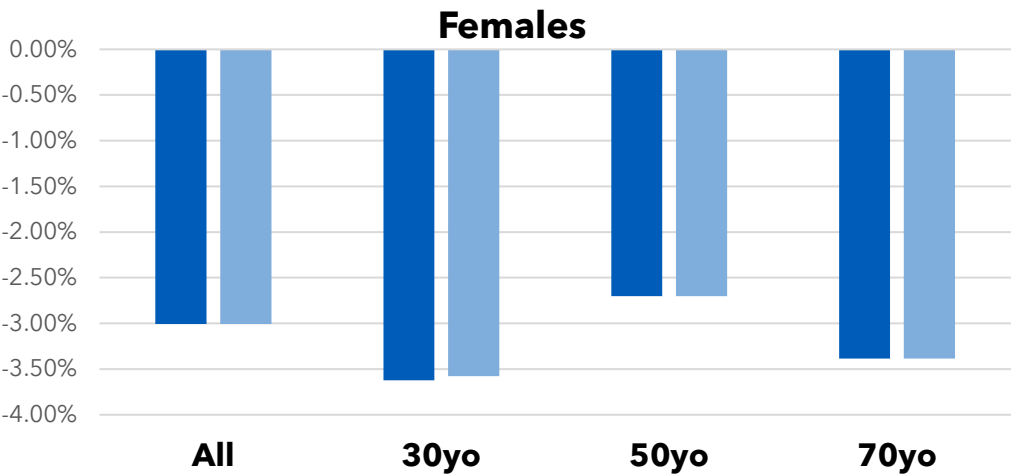
**ULSG Results = 2026 Scale DR / 2025 Published Scale DR - 1**

|                                              | All Ages | 30-yo Issue | 50-yo Issue | 70-yo Issue |
|----------------------------------------------|----------|-------------|-------------|-------------|
| 2026 Standard Methodology (FMI and HMI)      | -2.52%   | -2.27%      | -2.27%      | -3.04%      |
| 2026 HMI and the Recommended (Alternate) FMI | -2.53%   | -2.37%      | -2.27%      | -3.04%      |

# Compare Deterministic Reserve of High Band

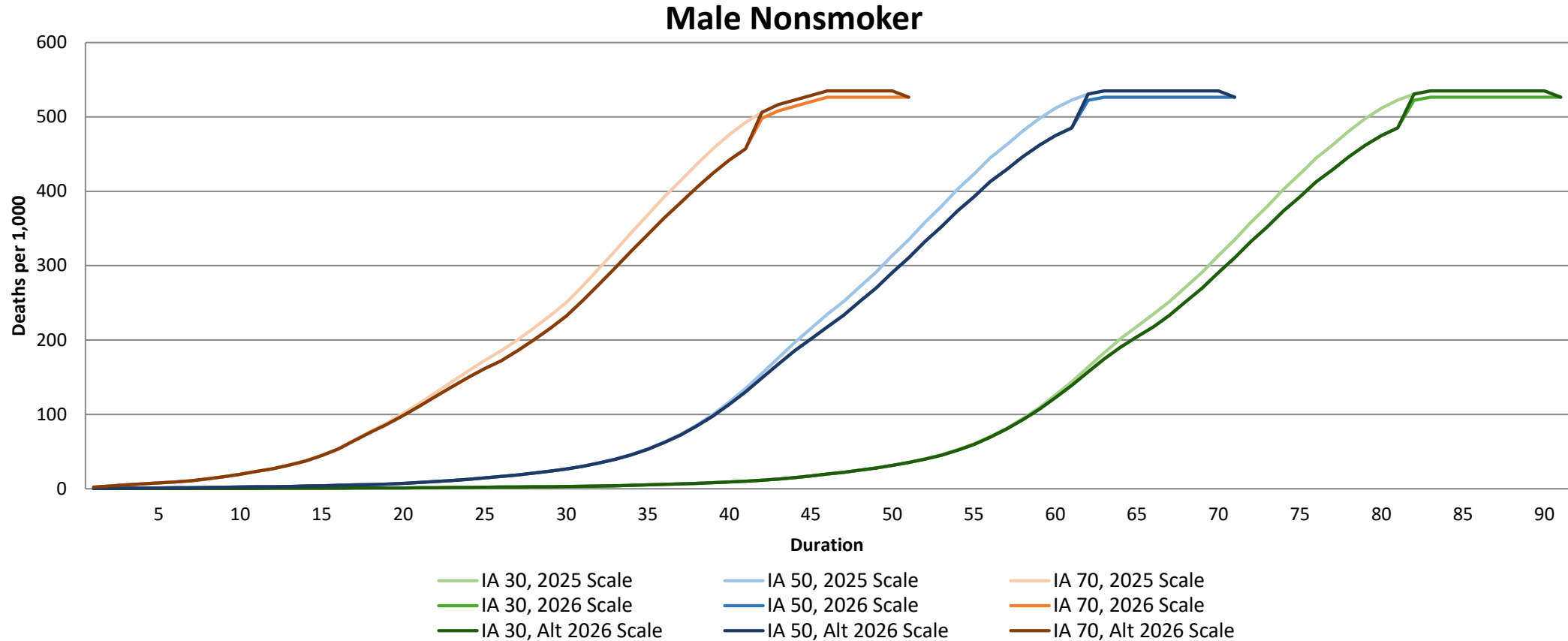
The Deterministic Reserve (“DR”) is produced using scenario 12 of the GOES SERT scenario set and high face amount policies.

**ULSG Results = 2026 Scale DR / 2025 Scale as of YE2026 DR - 1**      ■ Δ DR ('26 vs '25 MI)      ■ Δ DR ('26 ALT vs '25 MI)



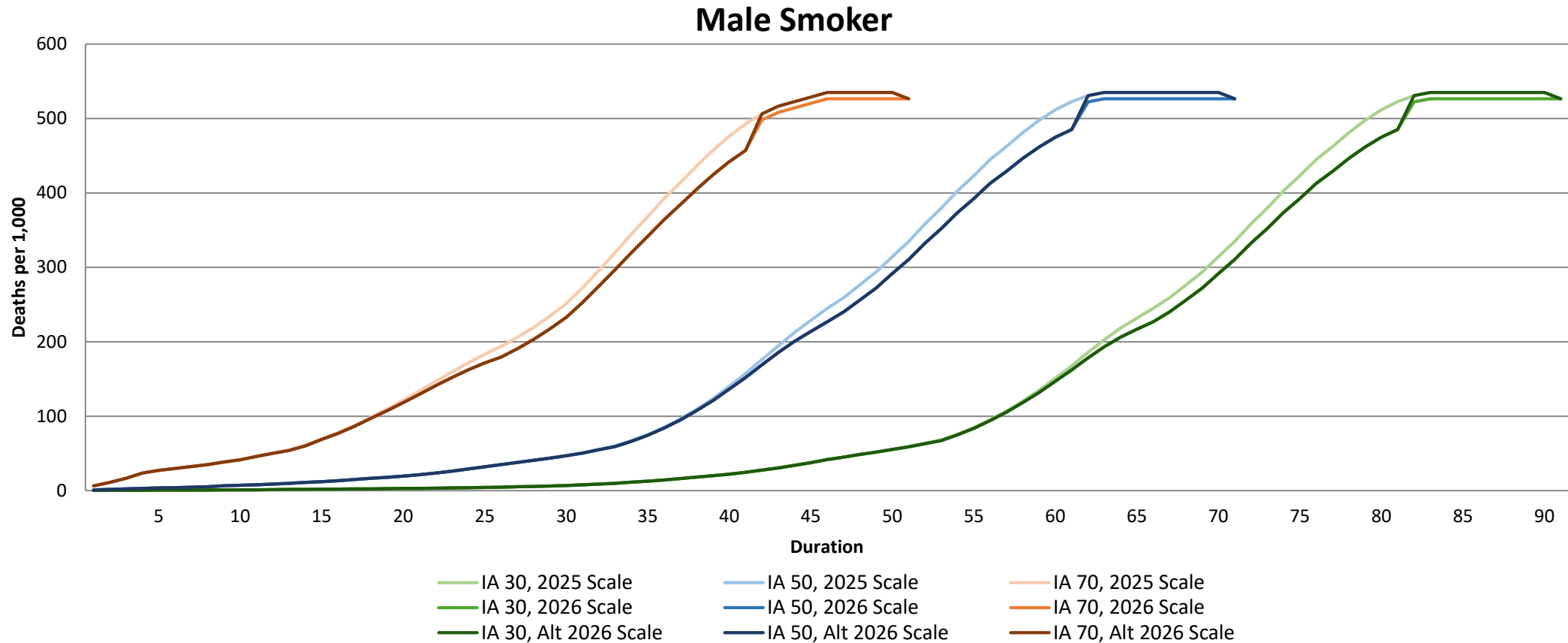
# Male Nonsmoker Mortality Comparison

Mortality curves by issue age using 2025, 2026, and Alternative 2026 MI scales



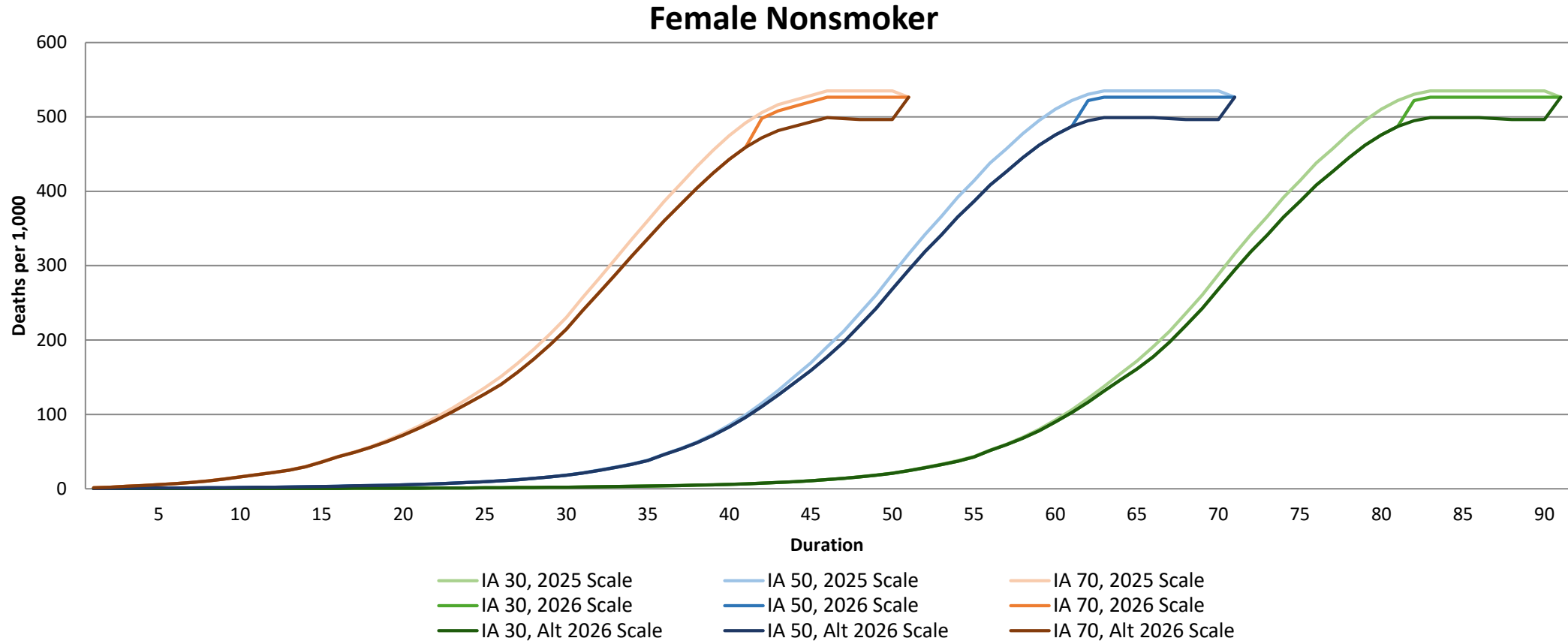
# Male Smoker Mortality Comparison

Mortality curves by issue age using 2025, 2026, and Alternative 2026 MI scales



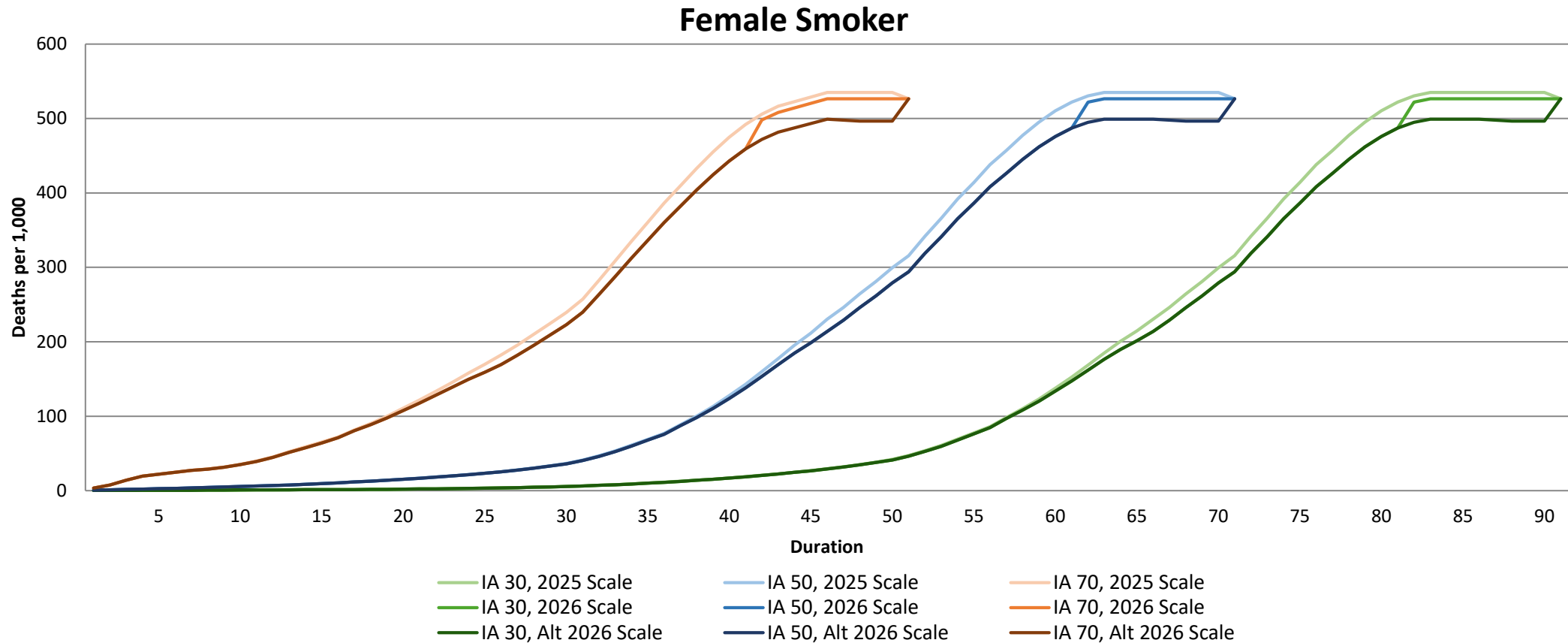
# Female Nonsmoker Mortality Comparison

Mortality curves by issue age using 2025, 2026, and Alternative 2026 MI scales



# Female Smoker Mortality Comparison

Mortality curves by issue age using 2025, 2026, and Alternative 2026 MI scales



# Appendix

# Prudent Estimate Mortality Calculation

## VM-20 Section 9.C.7.b

| Credibility of company data<br>(as defined in Section 9.C.5<br>above) rounded to nearest % | A  | B  | C  |
|--------------------------------------------------------------------------------------------|----|----|----|
| 83%                                                                                        | 48 | 9  | 21 |
| 84%                                                                                        | 49 | 9  | 21 |
| 85%–87%                                                                                    | 50 | 9  | 22 |
| 88%–89%                                                                                    | 50 | 9  | 23 |
| 90%                                                                                        | 50 | 10 | 23 |
| 91%–93%                                                                                    | 50 | 10 | 24 |
| 94%–100%                                                                                   | 50 | 10 | 25 |

- ii. Determine the value of D, which represents the last policy duration that has a substantial volume of claims, using the chosen data source(s) as specified in Section 9.C.2.b. D is defined as the last policy duration at which there are 50 or more claims (not the first policy duration in which there are fewer than 50 claims), not counting riders. This may be determined at either the mortality segment level or at a more aggregate level if the mortality for the individual mortality segments was determined using an aggregate level of mortality experience pursuant to Section 9.C.2.d.

### Model Office

D = 20

Credibility = 100%

**Guidance Note:** The same level of aggregation is used in Section 9.C.2.d for determining company experience mortality rates, Section 9.C.5.b for determining credibility, and Section 9.C.7.b.ii for determining the value of D. Thus, when determining the value of D, all claims being aggregated will have used the same credibility method in Section 9.C.5.

- iii. Establish the sufficient data period S, as follows:

$$S = \min\{A, D\}$$

- iv. For each issue age x, determine the values of M, E, Z and G, where:

$M = \min\{(S + B), 100 - x\}$  = the maximum number of policy durations for which the company is permitted to use 100% of the company experience mortality rates.

E = the last policy duration at which the company chooses to use 100% of the company experience mortality rates, equal to any policy duration chosen by the company that is less than or equal to M.

$Z = \min\{(S + C), 100 - x\}$  = the last policy duration at which the company is permitted to use less than 100% of the industry mortality rate.

G = the last policy duration at which the company chooses to use less than 100%

National Association of Insurance Commissioners 20-70

#### Requirements for Principle-Based Reserves for Life Products

VM-20

of the industry mortality rate, which must be greater than or equal to E and less than or equal to Z.

- v. For each policy in a given mortality segment, from the start of the projection through policy duration E, the prudent estimate mortality assumptions are the company experience mortality rates (as defined in Section 9.C.2), plus the prescribed margin pursuant to Section 9.C.6.b, and further adjusted by any applicable margin changes pursuant to Section 9.C.6.d or Section 9.C.6.e.

**Sufficient Data Period (SDP)** = Min(A, D)

A = VM-20 Section 9.C.7.b.i Grading Table Column A. Based on company data credibility (20%-100%). Section 9.C.7.a specifies < 20% credibility.

D = The last policy duration that has a substantial volume of claims.... The **last policy duration at which there are 50 or more claims (not the first policy duration in which there are fewer than 50 claims), not counting riders.**

- vi. Beginning in the first policy duration after policy duration E, the prudent estimate mortality assumptions for each policy in a given mortality segment are determined as a weighted average of the company experience mortality rates with margins and the applicable industry basic table with margins, in which the weights on the company rates grade linearly from 100% down to 0%. This grading must be completed—i.e., must reach 100% of industry table—no later than the beginning of the first policy duration after policy duration Z (the determination of the applicable industry basic table is described in Section 9.C.3). Thus, the prudent estimate mortality rate, prior to any adjustments pursuant to Sections 9.C.7.c, 9.C.7.d, 9.C.7.e, and 9.C.7.f below, is:

$$(W_t)(comQ[x]_{t+1}) + (1-W_t)(indQ[x]_{t+1})$$

Where

$$W_t = 1 \text{ for } 1 \leq t \leq E$$

$$= [G+1-t] / [G+1-E] \text{ for } E < t \leq G$$

$$= 0 \text{ for } t > G$$

$comQ[x]_{t+1}$  is the company experience mortality rate, including any applicable improvement pursuant to Section 9.C.2.h, with margin for policy year t.

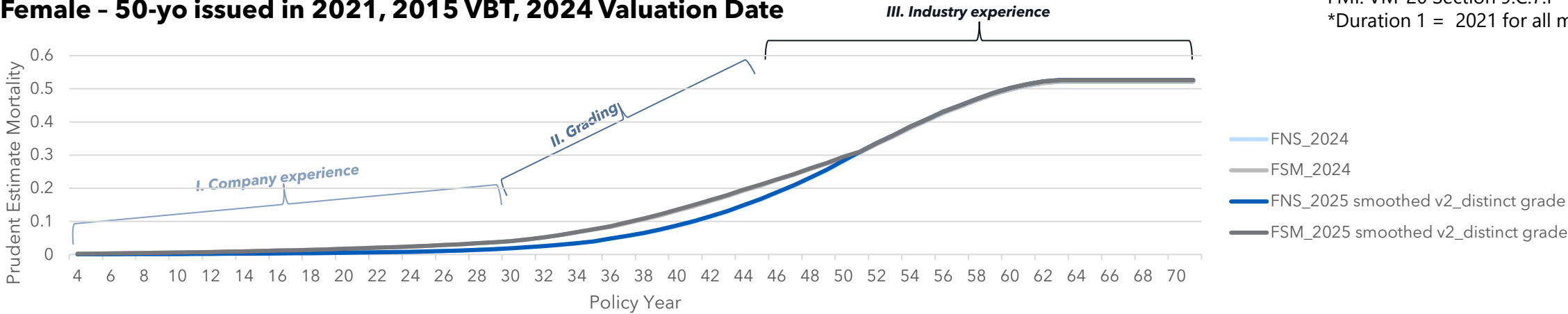
$indQ[x]_{t+1}$  is the industry table mortality rate, including any applicable improvement pursuant to Section 9.C.3.g, plus margin for policy year t.

[https://content.naic.org/sites/default/files/pbr\\_data\\_valuation\\_manual\\_current\\_edition.pdf](https://content.naic.org/sites/default/files/pbr_data_valuation_manual_current_edition.pdf)

# Prudent Estimate Mortality Example

Female - 50-yo issued in 2021, 2015 VBT, 2024 Valuation Date

HMI: VM-20 Section 9.C.3.g  
FMI: VM-20 Section 9.C.7.f  
\*Duration 1 = 2021 for all model cells



|      | PBR mortality components       | Applicable duration                                                                                                                                                                                                                                                                  | Assumption structure                                                                                                                                                                                                                                                                                                                                 |
|------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| I.   | 100% company experience phase  | Duration < sufficient data period + maximum years before grading start                                                                                                                                                                                                               | Anticipated experience x (1 + Experience Margin)<br>EX. $q_{[50]+31-1}^{company} = q_{[50]+31-1}^{anticipated} * (1 + Experience\ Margin)$                                                                                                                                                                                                           |
| II.  | Grading to industry phase      | Duration between I and III                                                                                                                                                                                                                                                           | Linearly grade from 100% of Company (I.) to 100% of Industry (III.) using weight ( $W_t$ ) consistent with VM-20 Section 9.C.7.b.<br>EX. $W_{31} = (end\ grading+1-Dur) / (end\ grading + 1 - start\ grading) = 15/16$                                                                                                                               |
| III. | 100% industry experience phase | Duration > sufficient data period + maximum end of point for grading                                                                                                                                                                                                                 | HMI Improved 2015 VBT x (1 + Industry Margin)<br>EX. $q_{[50]+31-1}^{industry} = q_{[50]+31-1}^{2015\ VBT} * (1 - HMI_{80})^{9.5} * (1 + Industry\ Margin)$                                                                                                                                                                                          |
| IV.  | Future mortality improvement   | Twenty years of future mortality improvement that the company anticipates beyond the valuation date shall be applied to the prudent estimate assumptions for mortality, using prudent future mortality improvement factors no greater than the loaded factors determined by the SOA. | Consistent with <a href="#">SOA Example</a> . FMI is a final adjustment to the prudent estimate mortality.<br>EX. Attained age 80 prudent estimate mortality $q_{[50]+31-1} = [W_{31} * q_{[50]+31-1}^{company}$ from I. + $(1-W_{31}) * q_{[50]+31-1}^{industry}$ from III. ] * $(1-FMI_{80,2025}) * (1-FMI_{80,2026}) * \dots * (1-FMI_{80,2044})$ |

The logo for the National Association of Insurance Commissioners (NAIC) is displayed in white against a blue background. The letters 'N', 'A', and 'I' are in a bold, sans-serif font. The 'C' is a stylized, thick-lined circle. The background features a large, faint, light blue circular graphic that overlaps the text.

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