**Life Actuarial (A) Task Force/ Health Actuarial (B) Task Force**

**Amendment Proposal Form**

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

This APF was jointly prepared by the Office of Principle-Based Reserving, California Department of Insurance, and NAIC Support Staff.

Proposal to implement VAWG recommendations #35 and #36, i.e. need for greater clarity in the VM-20 explanation of rules for grading from company experience to industry table.

2. Identify the document, including the date if the document is “released for comment,” and the location in the document where the amendment is proposed:

Valuation Manual (January 1, 2019 edition), VM-20 Sections 9.C.6.a, 9.C.6.b, 9.C.3.c.ii, 9.C.4.b.ii and VM-31 Sections 3.C.3.k, 3.C.3.c.ii

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on “track changes” in Word®) version of the verbiage. (You may do this through an attachment.)

See attached Appendix.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

See attached Appendix.

NAIC Staff Comments:

|  |  |  |  |
| --- | --- | --- | --- |
| **Dates:** Received | Reviewed by Staff | Distributed | Considered |
| 2/27/19 |  |  |  |
| **Notes:** APF 2019-16 (CA OPBR/NAIC PBR) | | | |

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#### Appendix

#### ISSUE:

At 2017 year end, at least 6 companies misunderstood the rules for grading from company experience mortality rates to an industry table. We propose a different presentation (more of a formula-based one) aimed at making things clearer, including adding a Guidance Note with examples.

#### SECTIONS:

VM-20 Section 9.C.6 (parts a and b) and VM-31 Section 3.C.3.k

Reference changes in VM-20 Section 9.C.3.c.ii, VM-20 Section 9.C.4.b.ii, and VM-31 Section 3.C.3.c.ii

#### REDLINE:

VM-20 Section 9.C.6

6. Process to Determine Prudent Estimate Assumptions

a. If applicable industry basic tables are used in lieu of company experience, or if the level of credibility of the data as provided in Section 9.C.4 is less than 20%,the prudent estimate assumptions for each mortality segment shall equal the respective mortality rates in the applicable industry basic tables as provided in Section 9.C.3, including any applicable improvement pursuant to Section 9.C.3.g, plus the prescribed margin as provided in Section 9.C.5.c , plus any applicable additional margin pursuant to Section 9.C.5.d.v and/or Section 9.C.5.d.vi.

1. If the company determines company experience mortality rates, the following process shall be used to develop prudent estimate assumptions:

i. Determine the values of A, B, and C from the Grading Table below, based on the level of credibility of the data as provided in Section 9.C.4.







**Grading Table**

|  |
| --- |
|  |
|  |

|  |  |  |  |
| --- | --- | --- | --- |
| Credibility of company data (as defined in Section 9.C.4 above), rounded to nearest % | A | B | C |
| 20%–30% | 10 | 2 | 8 |
| 31%–32% | 11 | 3 | 8 |
| 33%–34% | 12 | 3 | 8 |
| 35%–36% | 13 | 3 | 9 |
| 37%–38% | 14 | 3 | 9 |
| 39%–40% | 15 | 3 | 10 |
| 41%–42% | 16 | 3 | 10 |
| 43%–44% | 17 | 3 | 10 |
| 45%–46% | 18 | 3 | 11 |
| 47%–48% | 19 | 3 | 11 |
| 49% | 20 | 3 | 11 |
| 50% | 20 | 4 | 12 |
| 51% | 21 | 4 | 12 |
| 52%–53% | 22 | 4 | 12 |
| 54% | 23 | 4 | 13 |
| 55% | 24 | 4 | 13 |
| 56% | 25 | 4 | 13 |
| 57% | 25 | 5 | 13 |
| 58% | 26 | 5 | 14 |
| 59% | 27 | 5 | 14 |
| 60%–61% | 28 | 5 | 14 |
| 62% | 29 | 5 | 15 |
| 63% | 30 | 6 | 15 |
| 64%–65% | 31 | 6 | 15 |
| 66% | 32 | 6 | 16 |
| 67% | 33 | 6 | 16 |
| 68%–69% | 34 | 6 | 16 |
| 70% | 35 | 7 | 17 |
| 71% | 36 | 7 | 17 |
| 72% | 37 | 7 | 17 |
| 73% | 38 | 7 | 18 |
| 74% | 39 | 7 | 18 |
| 75% | 40 | 7 | 18 |
| 76% | 41 | 7 | 19 |
| 77% | 42 | 8 | 19 |
| 78% | 43 | 8 | 19 |
| 79% | 44 | 8 | 20 |
| 80% | 45 | 8 | 20 |
| 81% | 46 | 8 | 20 |
| 82% | 47 | 8 | 21 |
| 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.

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% 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.5.b, plus any additional margin pursuant to Section 9.C.5.d.

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.6.c, 9.C.6.d, and 9.C.6.e below, is:

(Wt)(comq[x]+t-1) + (1-Wt)(indq[x]+t-1)

Where

Wt = 1 for 1<t<E

= [G+1-t] /[G+1-E] for E<t≤G

= 0 for t>G

comq[x]+t-1 is the company experience mortality rate, including  
 any applicable improvement pursuant to Section 9.C.2.g, 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

vii. For each policy within a given mortality segment, the sufficient data period and grading period and policy durations are measured from the issue date of the policy, not from the valuation date. The projection for a policy commences at the valuation date, using the prudent estimate mortality rate for whatever duration the policy is in at that point.

**Guidance Note:** The following examples for a policy issued at age 35 on 1/1/2021 illustrate how grading is to be performed.

Example 1

Suppose the valuation date is 12/31/2025. Assume a credibility score of 96%. Based on the Grading Table:

A=50

B=10

C=25

Assume the last policy duration that has 50 or more claims is 30, so D=30.

S = min{A,D} = min{50, 30} = 30 = sufficient data period

M = min{(S + B), 100-x} = min{(30 + 10), 65} = 40

E = 40

Z = min{(S + C), 100-x} = min{(30 + 25), 65} = 55

G= 55

In this example, the company would set the prudent estimate mortality assumption at 100% of company experience mortality, plus the prescribed margin, plus any additional margin, for policy durations 1 through 40. (However, policy durations 1-5 are already in the past and would not come into play. For this particular policy, only the first 35 years of the projection (policy durations 6-40) would use prudent mortality rates that are 100% company experience. Starting in policy duration 41, the company would linearly grade from the company experience mortality rates with margins to 100% of the applicable industry basic table with margins. The company must be using 100% of the applicable industry basic table with margins no later than the beginning of policy duration 56. Thus for policy duration 47, for instance, the prudent estimate mortality rate would be:

(9/16)(comq[35]+47-1) + (7/16)(indq[35]+47-1)

At a valuation date two years later at 12/31/2027, if a new mortality study had not been run and S was still 30, only the first 33 years of the projection (policy durations 8-40) would be using prudent mortality rates that are 100% company experience.

More newly issued policies with issue age 35 would be using more years of 100% company experience than the policy in this example.

Example 2

Suppose that for the same case the company elected to begin grading five years earlier than required, but not end the grading any sooner than required. In this case, grading must be completed no later than the beginning of policy duration 56, just as in the example above. Electing to begin grading early does not change the policy duration by which grading to 100% of the applicable industry basic table with margins must be completed. The policy duration 47 prudent mortality rate would be:

(9/21)(comq[35]+47-1) + (12/21)(indq[35]+47-1)

Example 3

Same as Example 1, but company elected to end grading seven years earlier than required. The company would therefore reach 100% of industry rates at the start of policy duration 49 instead of the start of policy duration 56. In this case, the company would set the prudent estimate mortality assumption at 100% of company experience mortality, plus the prescribed margin, plus any additional margin, for policy durations 1 through 40. The policy duration 47 prudent rate would be:

(2/9)(comq[35]+47-1) + (7/9)(indq[35]+47-1)

VM-31 Section 3.C.3.k

k. Setting Prudent Estimate Assumptions for Mortality – If company experience is used, a summary of the approach used to determine the final set of prudent estimate assumptions for mortality, including:

i. The start and ending period of time used to grade company experience to the industry basic table, including the approach used to grade company experience mortality rates to the industry table for advanced ages (attained age 100 and up).

VM-20 Section 9.C.3.c.ii

ii. The applicable industry basic table for grading company experience mortality to industry experience mortality using the grading method described in Section 9.C.6.b.

VM-20 Section 9.C.4.b.ii

ii. Determine the grading period (based on the credibility percentage shown in the first column in the Grading Table in Section 9.C.6.b.i) for grading company experience mortality rates into the applicable industry basic table.

VM-31 Section 3.C.3.c.ii

ii. For mortality segments where company experience with margins is graded to industry basic table with margins per VM-20 Section 9.C.6.b, the rationale for the choice of industry basic table to the extent not covered in Section 3.C.3.e and Section 3.C.3.f below.

#### REASONING:

1. Table A and B are obsolete for the 2020 Valuation Manual.
2. The remainder of the section needed greater clarity.
3. The 15 year rule for advanced issue ages has been eliminated for simplicity.