



AMERICAN ACADEMY *of* ACTUARIES

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**Report of the American Academy of Actuaries’  
Illustrations Work Group**

**Presented to the National Association of Insurance Commissioners’  
Life and Health Actuarial Task Force**

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The American Academy of Actuaries is the public policy organization for actuaries practicing in all specialties within the United States. A major purpose of the Academy is to act as the public information organization for the profession. The Academy is non-partisan and assists the public policy process through the presentation of clear and objective actuarial analysis. The Academy regularly prepares testimony for Congress, provides information to federal elected officials, comments on proposed federal regulations, and works closely with state officials on issues related to insurance. The Academy also develops and upholds actuarial standards of conduct, qualification and practice and the Code of Professional Conduct for all actuaries practicing in the United States.

Illustrations Work Group

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## **Background**

The Illustration Work Group (IWG) of the American Academy of Actuaries (Academy) Life Products Committee is a group charged with researching and reviewing issues with respect to life insurance illustrations. Based on the particular issue, the IWG will provide feedback to constituents such as the National Association of Insurance Commissioners (NAIC), NAIC's Life and Health Actuarial Task Force (LHATF), and the general membership of the Academy.

The first subject area the IWG has researched is the use of flat multipliers in setting the mortality assumption underlying the Illustration Actuary's Reports.

## **Discussion**

The purpose of the Model Illustration Regulation adopted by the NAIC in 1995 was to "provide rules for life insurance policy illustrations that will protect consumers and foster consumer education." The illustrative values shown in an illustration may not exceed the disciplined current scale where this scale is "reasonably based on actual recent historical experience." Neither the disciplined current scale nor the underlying experience assumptions should "include any projected trends of improvements in experience or any assumed improvements in experience beyond the illustration date."

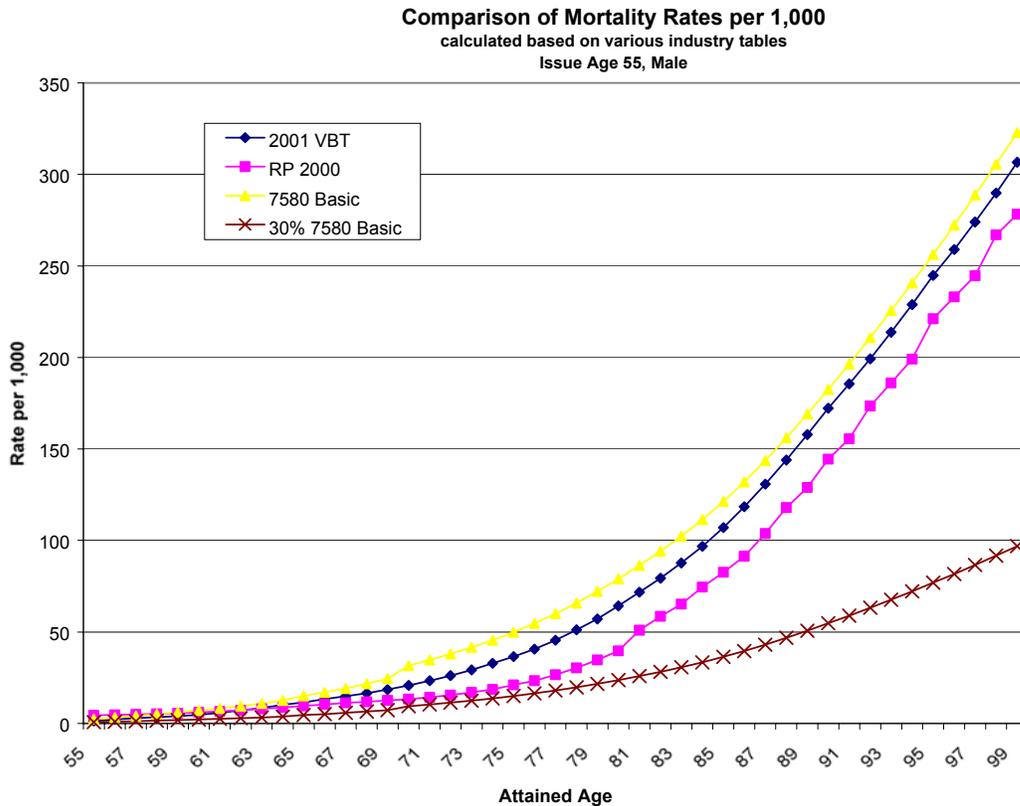
When developing the underlying mortality assumption, especially at older ages and later policy durations (and especially at attained ages above 80), the illustration actuary must use a significant amount of professional judgment. This is due to the fact that there is little recent, credible mortality data on insured lives at these durations and ages. This is particularly true when an illustration actuary goes in search of data broken down by the multiple underwriting classes that are common today (e.g., super preferred, preferred non-nicotine, standard non-nicotine, etc), but which were almost non-existent a decade ago.

Actuarial Standard of Practice (ASOP) No. 24, *Compliance with the NAIC Life Insurance Illustrations Model Regulation*, provides additional guidance. ASOP's are generally not intended to provide guidance at this level of specificity, but the guidance on appropriate practice provided in this ASOP is viewed to be sufficient with respect to this discussion. Pertinent sections of ASOP No. 24 are included in the Practice Note example in Appendix A.

However, according to the SOA Mortality Improvement Survey, one approach being used to set mortality factors at the older attained ages, is to use a recognized inter-company mortality table (e.g. the 1975-80 Basic Table, the 1990-95 Basic Table, the 2001 Valuation Basic Table) as a base in creating mortality assumptions. This approach involves analyzing the experience that is available – generally at the early durations – and expressing it as a percentage of the recognized inter-company table.

In using this approach, the actuary applies his/her judgment to set an assumption at later policy durations (for which there is no applicable data). If a constant, low level percentage of the table is continued to later durations, the resulting mortality tables can exhibit an interesting slope behavior. Specifically, the slope of the resulting mortality rates is flatter than the original table.

The graph below includes three common mortality tables: 1) The 1975-1980 Basic Table, 2) The 2001 VBT Table, and 3) The RP 2000 Table. While each has a different overall mortality rate by attained age, the slopes of these tables appear to be quite similar. The graph also illustrates the impact of using a low level percentage of the 1975-80 table (in this case 30 percent). While the resulting mortality tracks well in earlier durations, the slope is flatter at the older attained ages.



This graph illustrates the relationships between various industry mortality tables and the impact of using flat multipliers. There is no clear-cut answer as to the appropriate mortality assumptions for each new class of business, so the actuary must use a significant amount of professional judgment. Along with this judgment, the actuary may consider the late-duration effects of using mortality assumptions such as a fixed level percentage of industry mortality tables. The work group believes that additional guidance is needed for the situations described above.

## **Alternative Approaches to Provide Additional Guidance**

As part of our exploration, the IWG came up with a list of various ways to provide additional guidance to illustration actuaries with respect to the setting of mortality assumptions for older ages and later policy durations along with their associated pros and cons:

***Approach #1: Increased Education.*** One way to expand awareness amongst illustration actuaries is to increase the education of actuaries on this subject.

**The IWG recommends that this approach should be followed regardless of whether or not any other approaches are followed.**

The education can be done through various vehicles offered by the Society of Actuaries including:

- Articles published in newsletters;
- Workshops at meetings sponsored by the Society of Actuaries or local actuarial clubs; and
- Specialty seminars that focus on the issue.

The information conveyed in these vehicles can include:

- A “refresher course” on the requirements of the Illustration Regulation;
- A sensitivity to the need to exercise professional judgment when setting mortality assumptions as a multiple of a recognized table;
- A list of sources of non-insured mortality data that may help the actuary in validating his/her mortality assumptions at these later durations, where the fact that the data is not based on insured lives is expected to have less of an impact since the effect of underwriting decreases over time; and
- Material that informs the actuary on the characteristics of the inter-company mortality tables.

*Pros:*

- 1) This approach is very easy and gets the word out quickly.

*Cons:*

- 1) It could be difficult to measure objectively the effectiveness of this approach.

***Approach #2: Suggest Revision to the Practice Note.*** Practice Notes are intended to document practices in common use by actuaries. Appendix A provides a proposed addition to the Practice Notes with respect to late duration mortality.

**The IWG recommends that this approach should be followed since it provides additional, non-binding guidance on commonly used practices relative to the proliferation of new underwriting classes.**

*Pros:*

- 1) The level of detail of this topic is more in line with those covered in the Practice Notes.
- 2) While non-prescriptive, the Practice Notes can provide actuaries with guidance concerning commonly used practices.
- 3) This would be part of an overall push for greater education in this area.

*Cons:*

- 1) Practice Notes are non-prescriptive in nature, so this approach may not ensure that actuaries will engage in appropriate practice.
- 2) Practice Notes are meant to document commonly used practice. In this instance, no particular practice(s) may have evolved to the point of being commonly used.

***Approach #3: Suggest Modifying the Actuarial Standard of Practice.*** Actuarial Standard of Practice No. 24, *Compliance with the NAIC Life Insurance Illustrations Model Regulation*, could be modified to address this specific subject area in more detail. For example, the ASOP could perhaps be modified to require that the mortality assumptions for each class be reasonable on a stand-alone basis.

**The IWG recommends that this approach not be pursued since the “cons” outweigh the “pros.”**

*Pros:*

- 1) The ASOP is prescriptive in nature and, therefore, could require appropriate practice with respect to this issue.

*Cons:*

- 1) The ASOP is written in the context of the Regulation, so any changes to the ASOP must remain consistent with the Regulation.
- 2) This subject is more detailed than ASOPs typically are. ASOP No. 24 is generally viewed as broad enough to cover this topic.
- 3) Determining reasonableness of each class on a stand-alone basis is difficult to achieve without actual data based on the new risk classification structure.
- 4) It takes time and substantial effort to revise an ASOP.
- 5) This approach would eliminate cross underwriting subsidizations and would make the mechanics of performing the self-support and lapse support tests more cumbersome.
- 6) It may not make sense to modify the ASOP to reflect this specific mortality issue but be silent on details related to all other assumptions.

***Approach #4: Suggest Review of the Illustration Disclosures.*** The current illustration regulation requires a statement that non-guaranteed values assume that the illustrated values will continue unchanged in all years. In addition, the life insurance applicant must sign a statement that they understand that non-guaranteed elements are subject to change and could be either higher or lower. These disclosures could be reviewed in more detail to determine if changes could help clarify this subject.

**The IWG recommends that this approach not be pursued since the “cons” outweigh the “pros.”**

*Pros:*

1) Clarification could help educate the consumer as to the potential impact of late duration mortality assumptions.

*Cons:*

1) This approach would require a change to the Illustration Model Regulation, which would take time.

2) It is far from clear whether a modified regulation would require anything different since, when debated extensively a number of years ago, other alternatives for illustrations (such as no non-guarantees or only histories) were rejected.

3) It is unclear whether this approach would lead to more appropriate illustrations.

4) This approach is inconsistent with the Life Insurance Model Regulation that states in Section 1, “Insurers will, as far as possible, eliminate the use of footnotes and caveats.”

## Appendix A

### PROPOSED LIFE PRACTICE NOTE Q&A REGARDING LATE DURATION MORTALITY IN THE CONTEXT OF ASOP #24

**Q.** Several years ago, we developed a new risk classification structure, but do not have any actual late-duration mortality experience for the new risk classes. Due to this lack of mortality data at late durations, we chose to define our experience at all durations as a fixed multiple of the 1975-80 Basic Table. The resulting rates fit well with our early-duration experience and we are extrapolating this ratio to hold constant into the future.

**In particular, the old unismoke Standard class was split into**

- **Super-Preferred Non-Smoker**
- **Preferred Non-Smoker**
- **Standard Non-Smoker**
- **Preferred Smoker**
- **Standard Smoker**

**These five classes combined equate to the old Standard class. Is it appropriate to assume a fixed multiple of the 1975-80 Basic Table for these new risk classes?**

#### **Pertinent Sections of ASOP:**

Section 5.3.2 “In performing the self-supporting test for a policy form, the illustration actuary may test the underwriting classification and policy owner choice factors in aggregate. The assumed distribution between classes should be based on actual experience if available, recognizing shifts in distribution that may be expected to occur toward any portions of business that do not meet the self-supporting test in their own right.”

Section 5.3.3 “As used in this standard, *actual experience of an experience factor class* means experience and past trends in experience to the extent that such experience is current, determinable, and credible. When such suitable data are lacking, experience factors may be derived in a reasonable and appropriate manner from actual experience and past trends in experience of other similar classes of business either in the same company, of other companies, or from other sources, generally in that order of preference. Following is a list of considerations for determining the major experience factors:

- a. Interest – The earned interest rate factor...

b. Mortality – The mortality experience factors should be based on the insurer’s recent mortality experience, adjusted for risk class. To the extent that the insurer’s recent experience is not fully credible, other credible inter-company mortality experience, appropriately modified to reflect the insurer’s underwriting practices, may be used.”

Section 5.3.4 “The assumptions underlying an insurer’s disciplined current scale should be logically and reasonably related to recent historical experience. Changes in experience should be reflected promptly once they have been determined to be significant and continuing. When incorporating recent historical experience into the assumptions, the actuary should comply with the following guidelines:

a. Historical experience may exhibit improvements from year to year. Such trends in improvement may not be assumed to continue into the future beyond the effective date of the scale underlying the illustration.

b. Similarly, if trends indicate that significant and continuing deterioration in an experience factor has occurred or, in the actuary’s judgment is likely to occur between the date of the historical experience and the effective date of the scale underlying the illustration, the actuary should recognize such deterioration in determining the assumptions to be used.

c. When an insurer introduces a change in underwriting practice (e.g., blended to smoker/nonsmoker), the actuary should divide the historical experience into the new underwriting classes in such a way that historical experience is reproduced in the aggregate.”

Section 5.4 “An insurer may introduce certain changes in the way it conducts its business, which will have a significant positive or negative effect on future experience. If the action has already occurred, but not enough time has elapsed for it to be reflected in the insurer’s actual experience, it may nevertheless be reflected in the assumptions underlying the disciplined current scale. As prescribed by the *Model*, any trends in improvement may not be assumed to continue into the future beyond the effective date of the scale underlying the illustrations. The changes should be *real* in order to be reflected in the disciplined current scale. An action leading to an expected change in experience should actually have taken place, and not simply be planned for in the future. Examples of actions that may be recognized are as follows:

a. Changing Underwriting Standards – Introduced preferred risk, guaranteed issue, or simplified underwriting may impact the mortality assumptions.”

A. The ASOP provides for application of reasonable actuarial judgment when a change in practice has been implemented but insufficient time has passed for the change to be reflected in the insurer's own experience.

If suitable data are lacking, one common practice is to derive experience factors using a simplifying assumption such as a fixed (or varying) multiple applied to an inter-company mortality table. The 1975-80 Basic Table has been used extensively for this purpose. Recently, there has been movement towards using more current tables such as the 1990-95 Basic Table and the 2001 Valuation Basic Table.

Many actuaries consider this approach to be reasonable. Typically, however, when a multiple lower than 1.00 is used, the resulting mortality table will have a flatter slope than the original table. So, when multiples less than 1.00 are used, actuaries typically test the resulting mortality rates to make sure that the simplifying assumptions do not imply projected mortality improvements - especially at the later durations/older attained ages.

Consistent with Section 5.3.4.c, actuaries usually divide the historical experience into the new underwriting classes in such a way that historical experience is reproduced in the aggregate.

In some cases, a change in underwriting classes and rates may be expected to have an important effect on the distribution of risks covered. Section 5.4 would appear to allow the actuary to reflect such expectation in the assumptions underlying the DCS, provided the changes are "real" and the actions leading to the expected change in experience have already taken place.

Finally, the actuary may find it desirable to make a conservative assumption for an experience factor when suitable data are lacking.