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Late Duration Mortality Assumptions for Illustrated Life Insurance Values

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Editor's Note: Tracey is chair of the AAA Illustration Work Group.

In the July 2003 issue of *Product Matters!* an article on the AAA Illustrations Work Group (IWG) described how the IWG was created to provide feedback to constituents on issues with respect to life insurance illustrations. The first issue addressed by the IWG is mortality assumptions in late durations. The IWG concluded that no new regulation is needed, but that additional education of illustration actuaries regarding this issue



would be beneficial. This article describes the issue and some considerations that an illustration actuary should take.

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.” To accomplish this objective, the regulation requires, among other things:

1. The illustrative values shown in an illustration may not exceed the lesser of the current payable scale and the disciplined current scale. The disciplined current scale should be “reasonably based on actual recent historical experience.”

2. The experience assumptions underlying the disciplined current scale, which are also used in the lapse and self-support tests, should not “include any projected trends of improvements in experience or any assumed improvements in experience beyond the illustration date.”

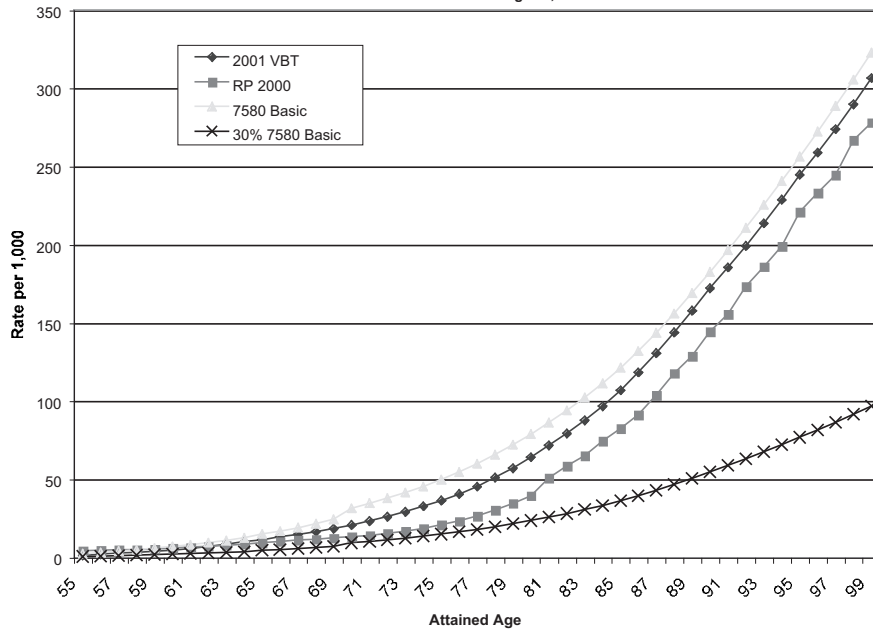
On its surface, these requirements seem pretty straightforward. But, when setting mortality assumptions, illustration actuaries may discover that it is harder than they thought to ensure that they are in compliance with these requirements. This article will attempt to explain why that is true.

When developing mortality assumptions, especially at older ages and later policy durations, 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 nonexistent a decade ago.

What do illustration actuaries do when faced with this issue? According to the SOA Mortality Improvement Survey, one approach often adopted is to use a constant, level percentage of a recognized inter-company mortality table (e.g. the 1975-80 Basic Table, the 1990-95 Basic Table, the 2001 Valuation Basic Table), where that percentage replicates the early duration experience, since this may be the only experience available.

At first blush, setting assumptions in this manner may seem both reasonable and consistent with the prohibition against assuming future mortality improvement. However, upon closer investigation, one may begin to question the validity of the approach since the resulting mortality rates:

Comparison of Mortality Rates per 1,000
calculated based on various industry tables
Issue Age 55, Male



1. May not begin to approach 1.00—even at ages like 100 or 110 and
2. May be much lower than mortality rates observed in other studies.

The graph above sheds light on this issue. It includes three common mortality tables: 1) The 1975-1980 Basic Ultimate Table, 2) The 2001 VBT Ultimate 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 shows a line that is 30 percent of the 1975-80 table. You can see how much flatter the slope of this curve is at the older attained ages and, as a result, how much lower the late duration mortality is than any of the three tables.

As there is no clear-cut answer as to the appropriate mortality assumptions for each new class of business, where can the actuary turn for guidance? Actuarial Standard of Practice (ASOP) No. 24, *Compliance with the NAIC Life Insurance Illustrations Model Regulation*, provides some guidance. However, Standards of Practice are generally not intended to provide guidance at this level of specificity.

So, whatever assumption the illustration actuary winds up using should be compared to the level and slope of other available mortality data—even if that data isn't based on insured lives. This is especially

true at the older attained ages where the assumptions can have a large impact on the illustrated values and where the many years since underwriting should minimize the error introduced by the fact that the data is not based on insured lives. Alternatively, given the lack of credible data, the actuary may choose to use more conservative assumptions. □

For more discussion on this topic, consider the following resources.

- 1) Warren, Larry. 2002. "The Relationship of Mortality Projections and the Underlying Mortality Tables Used," *Product Matters!* (August): 53.
- 2) Fitch, Timothy. 2001. "Low Mortality Assumptions Could Hurt Buyers Confidence in Life Insurance," *National Underwriter* (July 16).
- 3) Fitch, Timothy. 2001. "Don't Shoot Yourself in the Foot with Policy Illustrations," *National Underwriter*, (July 8).
- 4) Taht, Michael. 2002. "Mortality Table Slope and Future Improvements," *Product Matters!* (November): 54.

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