

Q&A Document for Implementation of 2012 Individual Annuity Reserve Table

1. Why was a generational table developed?

- A. In developing the 2012 Individual Annuity Reserve table, the Payout Annuity Table Team recommended and LATF concluded that it made sense to develop a generational mortality table through the use of projection factors. This represented a departure from previous individual annuity mortality tables, which were all static tables. However, using a generational table overcomes the disadvantage of using a static table that can become quickly dated in light of continuing mortality improvement. Additionally, the projection of future mortality rates on a generational basis is not a new concept in actuarial practice, as it has been used for pension valuations since the introduction of Scale AA in connection with the 1994 series of base tables.

Both United States population and annuitant experience mortality have demonstrated increased longevity over extended periods of time. The Team reviewed mortality improvement rates in the general population from a variety of different sources and over a number of historical periods. This included U.S. Life Tables developed by the Centers for Disease Control and Prevention, data published by the Human Mortality Database, and, most significantly, data from the Social Security Administration (SSA). While the studies showed that there were some shorter periods of time where “dis-improvement” took place, the undeniable conclusion was that the trend of mortality improvement evidenced in the 20th century had continued into the first decade of the 21st century. Furthermore, the SSA projected that further mortality improvements would occur for the years 2012 – 2022 in their 2010 Trustees report. Validation that this improvement was consistent with changes in annuitant mortality was evident when the 2000 – 2004 life annuity mortality experience underpinning the 2012 table was compared to preliminary 2005 – 2008 annuitant experience data.

Given the expectations for the continuation of the trend of improvement in human longevity going forward, it seemed prudent to introduce a generational table that would reflect such expected mortality improvements on an ongoing basis.

2. How were differences by size of payout incorporated into the table?

Review of the source data used for the development of IAM-2012 showed mortality varied by factors such as benefit amount. Why was the IAM-2012 developed without further refinement?

- A. The Society of Actuaries’ Individual Annuity Experience Committee (IAEC) Individual Payout Study showed variations with experience mortality by factors such as benefit amount. Consideration was given by the committee for splitting the table for other factors such as benefit amount. Mortality generally decreased as the benefit amount increased. One consideration involved the number of deaths. For some ages, the data provided an inadequate number of deaths to produce a reliable rate. Another consideration was the relationship between benefit amount and the reserve produced and the potential for the reserve to be reduced by splitting the benefit amount into multiple contracts. However, given the IAEC’s observed difference in mortality by the size of the benefit amount, companies may want to consider these differences in pricing and cash flow testing.

3. Please clarify the application of age nearest birthday basis and the point at which the age is determined. For example, most individuals have two ages in any given calendar year. Using the age-near method, an individual's age changes six months after his or her birthday. Because the mortality rate is a function of age and calendar year, it is unclear how to determine the appropriate mortality rate(s) for a given calendar year. Possible interpretations include, but are not limited to, the following:

- One mortality rate applies for a calendar year and is based on the person's:
 - age at the beginning of that calendar year;
 - age at the beginning of the contract year that commences in that calendar year;
 - age that is attained in that calendar year; or
 - age on the valuation date (or anniversary of such valuation date).
- Two mortality rates apply for a calendar year. One rate applies prior to the person attaining a new age. Another rate applies once the person attains a new age.

A. The table is on an age nearest birthday (ANB) basis. For purposes of the valuation, it would be ANB as of the valuation date. This could be determined using an exact method at the valuation date or by some other method, such as using proxy to be ANB at issue/contract month plus number of months to the valuation date.

4. Is there an ALB table? If not, would it be appropriate to use a standard conversion from ALB to ANB?

A. There is no ALB table. A standard conversion from ALB to ANB should be used.

5. The 2012 IAR Table is a "generational" mortality table. In prescribing the methodology for using the table, the model rule makes use of the terms "calendar year" and "year" (see Sections 3E, 3F, 3H, 3I, and 5). It appears that these two terms are synonymous. However, these terms are not defined, and it is unclear what is meant by these terms. Possible interpretations as to the meaning of these terms include, but are not limited to, the following:

- calendar year of policy issue (issue year)
- calendar year of valuation (valuation year)
- calendar year of projection (projection year) as required by Actuarial Guideline XXXIII

The meaning of the terms is critical for determining n in the prescribed formula:

$$q_x^{2012+n} = q_x^{2012} (1 - G2_x)^n$$

Can you please clarify if these references are to calendar year or projection year?

A. For the period table, it is the table for any given calendar year. The " n " in the prescribed formula is really the projection year minus 2012, consistent with AG33. For example, for policies with valuation year 2013, the period table would start with the 2013 table (which would be the 2012 table projected forward 1 year). For the valuation, the second

projection year (2014) would use the 2013 table improved 1 year, the third projection year (2015) would use the 2013 table improved 2 years and so on. Therefore,

- for 3E, it is already clear that this is calendar year;
- for 3F, it would be projection year;
- for 3H, it is already clearly stated as calendar year ;
- for 3I, it is projection years beyond 2012;
- for 5, it would work as stated in the point above (combination of calendar year and projection year).

6. There is evidence in the underlying experience or select and ultimate mortality. Why was a select and ultimate table not developed?

A. The mortality experience data underlying the new table did exhibit indications of a select and ultimate effect for life annuities. However, the impact of selection appears to vary somewhat based on issue age, refund feature, income amount, as well as the source of the life payout annuity (i.e. immediate annuity, annuitization, or life settlement option). Additionally, the effect of selection appears to largely occur in the first ten years after issue, and most life annuities have a refund feature, with a ten year certain period being very typical. For these reasons, it was decided that attempting to introduce a select and ultimate table would result in an undesirable level of complexity that produced little if any added precision as compared to an aggregate table.

7. For what statutory reserve determination methods are the 2014 IAR applicable?

A. Below are the Actuarial Guidelines and Model Laws that either specifically reference the Annuity 2000 mortality table or reference the mortality table from the SVL. The 2014 IAR would be the table required under these methods for contracts issued on or after the effective date.

Actuarial Guidelines that refer to mortality tables in the Standard Valuation Law:

- AG IX-A - Use of Substandard Annuity Mortality Tables in Valuing Impaired Lives Under Structured Settlements
- AG IX-B - Clarification of Methods Under Standard Valuation Law for Individual Single Premium Immediate Annuities, Any Deferred Payments Associated Therewith, Some Deferred Annuities, and Structured Settlements Contracts
- AG IX-C - Use of Substandard Annuity Mortality Tables in Valuing Impaired Lives Under Individual Single Premium Immediate Annuities
- AG XXXIII - Determining CARVM Reserves for Annuity Contracts with Elective Benefits
- AG XXXV - The Application of the Commissioners Annuity Reserve Method to Equity Indexed Annuities
- AG XLIII - CARVM for Variable Annuities

NAIC Model Laws:

- Model 235 - Interest-Indexed Annuity Contracts Model Regulation (Refers to standards in the SVL)
 - Model 250 - Model Variable Annuity Regulation (Specifically references the Annuity 2000 Table)
 - Model 820 - Standard Valuation Law (No specific reference to Annuity 2000 Table)
 - Model 821 - NAIC Model Rule for Recognizing a New Annuity Mortality Table for Use in Determining Reserve Liabilities for Annuities (Specifically references the Annuity 2000 Table).
8. For joint and last survivor annuities, how does the generational table work, for example, is the mortality improvement applied to individual lives and then frasierized or is it blended and applied to frasierized table rate?
- A. Whether using either first principles or a frasierized methodology, first project the mortality rates with improvement for each individual and then combine or frasierize the projected rates.
9. How is the blending done for unisex policies such as required in Massachusetts? Is the blending done before or after improvement is reflected?
- A. Since requiring a specific ordering for the blending may pose implementation issues for some valuation systems, this determination will be left up to individual companies. That being said, a company should be prepared to justify to interested regulators the appropriateness of whichever calculation methodology they select.
10. When the table states it is effective as of a certain date, does that mean that it is required to be used for issues on or after that date or is there a phase-in period where it allowed to be used for a certain period of time prior to it becoming required?
- A. For statutory valuation, there is typically a phase-in period for new life mortality tables; however, there is not a phase-in for annuities (as reserves are going up, not down). It is possible that the tables could become effective for tax reserves prior to becoming effective in a particular state for statutory valuation.
11. Please provide an example of the generational table development?



Projection Scale
example.xlsx