

Update on Development of New Mortality Tables

Society of Actuaries & American Academy of Actuaries Joint Project Oversight Group

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2012 Individual Annuity Mortality Basic, Period and Reserve Tables



Draft Model Regulation

- Purpose is to recognize the 2012 Individual Annuity Reserving Table (2012 IAR Table) for reserving purposes
- Defines 2012 Annuity Mortality Period Table
 - Table of mortality rates for a given year, e.g., q_x^{2012}
 - Based on Individual Annuity Mortality Basic Table and improvement factors to 2012 (2012 IAM Basic Table) with margin
- Defines 2012 IAR Table, which is a generational mortality table
 - Table of mortality rates is determined by applying a combination of a Period table and Projection Scale (e.g., q_x^{2012+n} where $n = \#$ years from 2012)
 - Results in a table where, for a given age, the mortality rate decreases from year to year



Draft Model Regulation

- Prescribes rounding rules
- Prescribes the method for determining the generational mortality
- Prescribes the use of projection factors, Scale G2
- Prescribes the 2012 IAR Table as the minimum standard of valuation for any individual annuity or pure endowment contract issued on or after effective date
- Recommends an effective date of January 1, 2013



Draft Model Regulation

- Development of generational mortality table rates
 - Mortality rate for a person age x in year $(2012 + n)$ determined as follows:

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

where,

- $G2_x$ is annual rate of mortality improvement for age x
- q_x is the mortality rate from 2012 Individual Annuity Mortality Period Table



Draft Model Regulation

Illustration of Development of 2012 IAR Mortality Table, which is a Generation Mortality Table from 2012 IAM Period Table

Age	2012	2013	2014	2015	2016	2017	2018	...	2070
65	q_{65}^{2012}	q_{65}^{2013}	q_{65}^{2014}	q_{65}^{2015}	q_{65}^{2016}	q_{65}^{2017}	q_{65}^{2018}	...	q_{65}^{2070}
66	q_{66}^{2012}	q_{66}^{2013}	q_{66}^{2014}	q_{66}^{2015}	q_{66}^{2016}	q_{66}^{2017}	q_{66}^{2018}	...	q_{66}^{2070}
67	q_{67}^{2012}	q_{67}^{2013}	q_{67}^{2014}	q_{67}^{2015}	q_{67}^{2016}	q_{67}^{2017}	q_{67}^{2018}	...	q_{67}^{2070}
68	q_{68}^{2012}	q_{68}^{2013}	q_{68}^{2014}	q_{68}^{2015}	q_{68}^{2016}	q_{68}^{2017}	q_{68}^{2018}	...	q_{68}^{2070}
69	q_{69}^{2012}	q_{69}^{2013}	q_{69}^{2014}	q_{69}^{2015}	q_{69}^{2016}	q_{69}^{2017}	q_{69}^{2018}	...	q_{69}^{2070}
...
120	q_{120}^{2012}	q_{120}^{2013}	q_{120}^{2014}	q_{120}^{2015}	q_{120}^{2016}	q_{120}^{2017}	q_{120}^{2018}	...	q_{120}^{2070}



Draft Model Regulation

- Example of mortality table for years 2013 through 2018 based on 2012 IAM Period Table for Males, Using Scale G2, for issue year 2013

Age	$1000q_x^{2012}$	$G2_x$	Values of $1000q_x$					
			2013	2014	2015	2016	2017	2018
65	8.106	0.015	7.984	7.865	7.747	7.630	7.516	7.403
66	8.548	0.015	8.420	8.293	8.169	8.047	7.926	7.807
67	9.076	0.015	8.940	8.806	8.674	8.544	8.415	8.289
68	9.708	0.015	9.562	9.419	9.278	9.138	9.001	8.866
69	10.463	0.015	10.306	10.151	9.999	9.849	9.701	9.556



Draft Model Regulation

- LATF voted to expose 2012 IAM Basic table, Projection Scale G2 and margin
- Written report now almost complete to go along with the table exposure to describe the table development
- We request exposure of model regulation