

GUARANTEED ISSUE & PRENEED MORTALITY TABLE UPDATE

Joint American Academy of Actuaries Life Experience Committee
and Society of Actuaries Preferred Mortality Oversight Group

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Chairperson

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Agenda

- LATF guidance requested
- Status of guaranteed issue (GI) and Preneed table development to date
- Valuation approach for each:
 - Base valuation tables on newly developed basic tables?
 - Use 2017 CSO with appropriate relative risk ratios?
- Nonforfeiture tables same as valuation tables?
- Lack of observable and credible mortality improvement for either



LATF Guidance Requested



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LATF Guidance Requested for Guaranteed Issue

- Loading structure for valuation table - two possible approaches:
 1. Create new GI valuation table by adding loads to new GI basic table
 - A 2017 CSO level of loading (17%) would cover 98.8% of exposure but only 56% of contributing companies, due to a few small company outliers
 - GI basic table is 5-year anti-select and ultimate; use of ultimate-only valuation table would produce lower reserves than use of anti-select and ultimate valuation table
 2. Use 2017 CSO for GI, with appropriate relative risk ratio
 - Would produce more conservative reserves but simplify valuation and nonforfeiture codification and implementation
- If Option 1, request guidance on the level of the loading or appropriate coverage level
- Appropriateness of PBR margins for GI in VM-20



LATF Guidance Requested for Preneed

- Loading structure - three possible approaches explored:
 1. Make no changes
 - Current valuation basis is 1980 CSO
 - Reserve differences with new table may not be sufficient to warrant a change
 - Simplifies valuation and nonforfeiture codification
 - Preferred approach from Preneed subgroup
 2. Create new Preneed valuation table by adding loads to new Preneed basic table.
 - A 2017 CSO level of loading (17%) would be excessive
 - A 3.9% load covers virtually 100% of exposure and 90% of contributing companies
 - Preneed basic table is 10-year anti-select and ultimate; use of ultimate-only valuation table would produce lower reserves than use of anti-select and ultimate valuation table
 3. Use 2017 CSO Composite Ultimate tables for Preneed
 - Reserve levels are inadequate relative to experience and current levels
 - Does simplify valuation and nonforfeiture codification and implementation
- If Option 2, request guidance on appropriate level of the loading



LATF Guidance Requested for Both Tables

- Inclusion/exclusion of mortality improvement to valuation date
 - Observed modest deterioration from 2004 to 2009
- Use of the table for nonforfeiture or only for reserves?

Guaranteed Issue Table Development



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Guaranteed Issue (GI) – Background

- Data from calendar years 2005 - 2009
- 15 contributing companies
- Used unismoke status (that is, smoker/nonsmoker not indicated) only
- Data essentially all direct marketed
- Majority of GI plans are whole life
- Excluded data had very different characteristics
 - ▣ Resulted in use of data from 11 contributing companies



GI – Background, cont'd

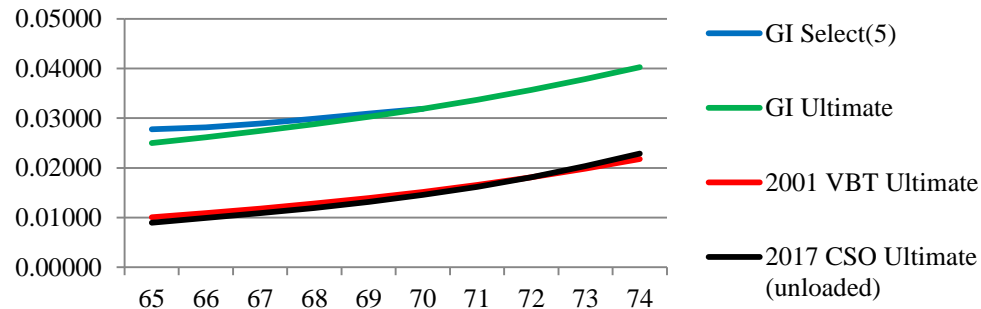
- Relative to data used
 - 4.8 million policy years exposed
 - 220,000 death claims
 - \$31 billion exposed
 - \$1.3 billion of claims



GI – Current Status

- Experience Basic Table created
 - ▣ Five-year select and ultimate - anti select pattern in first five years
 - ▣ Graduated results for ages 50 to 85
 - ▣ Younger and older ages will be extended with reference to Preneed mortality - minimal experience on GI
 - ▣ Single cell shown below

**Female issue age 65 experience mortality
(Composite, ALB)**



GI – Current Status, cont'd

- Table validated against experience data
 - ▣ Count: 98.9% select and ultimate, 102.3% ultimate-only
 - ▣ Units: 100.2% select and ultimate, 104.5% ultimate-only
 - ▣ Wide range of results by company
- Draft Valuation Table created
 - ▣ 2017 CSO loading formula used as starting point
 - ▣ No mortality improvement suggested
 - ▣ Model Office calculations have been performed
 - ▣ Used unismoke data submitted as model office basis

GI – Current Status, cont'd

- Table shows exposure and overall mortality ratio by contributing company
- Three highest mortality ratios were for companies submitting 0.21% of total exposure (combined); 5 highest ratios represent 1.13% of total exposure

Company	A/E Ratio by Unit
1	79.0%
2	95.3%
3	104.5%
4	107.9%
5	112.4%
6	117.3%
7	144.6%
8	156.6%
9	218.4%
10	234.5%
11	250.1%



GI – Current Status, cont'd

- Use of 2017 CSO loading (roughly 17%) may be too low to reach goal of covering mortality of 70% to 80% of contributors but it does cover nearly all the exposure
- Important to note the study participants did not include some very large GI writers

Approximate Coverage Percent of Contributing Companies	Percentage of the GI Basic Table to Achieve Coverage Percent	Exposure Covered by Count
55%	17%	98.9%
64%	45%	99.5%
73%	57%	99.8%
82%	118%	99.9%

GI – Current Status, cont'd

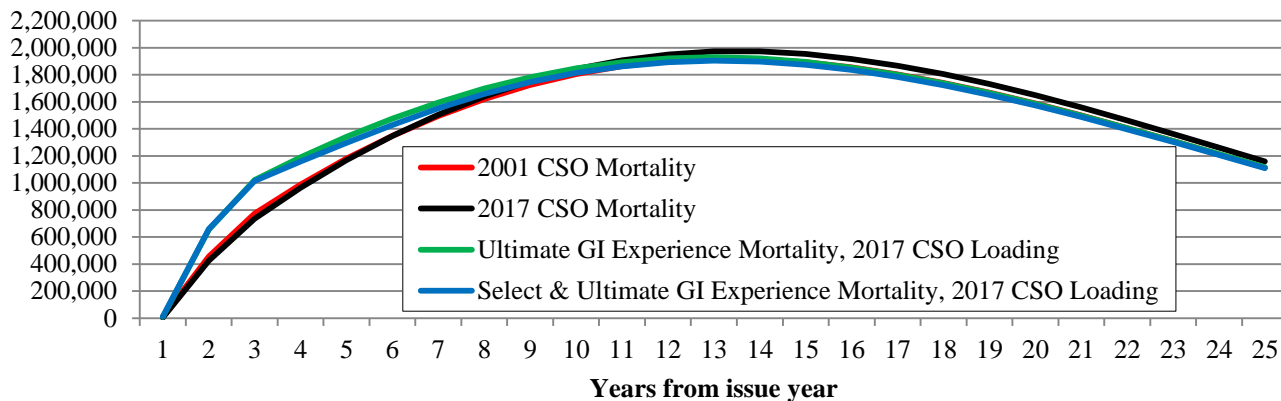
- Preliminary valuation tables, reserves, and nonforfeiture values were prepared using 2017 CSO loading which varied by attained age;
- Reserves and values were also developed using level 55% loading to achieve 70% to 80% coverage
- Seeking input on the appropriate approach for determining margins and target coverage level

GI – Model Office Results

- Based on mean reserves:
 - The mean reserves on all tables developed using GI data are higher than those on 2001 CSO and 2017 CSO through year 9 then very similar
 - The excess of the mean reserves using GI tables over the 2001 CSO in the third year is about 20% of single year of issue annual premium

GI – Model Office Results, cont'd

**Comparison of projected mean reserves
based on \$1 million of gross premium and single
year of issue**



GI – Model Office Results, cont'd

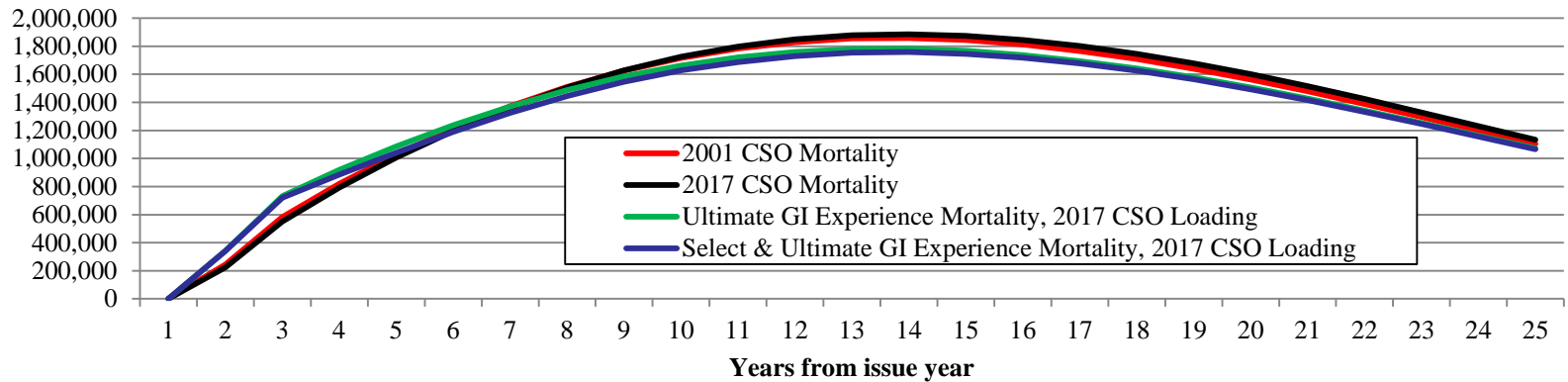
- The net premiums are higher on the tables developed using GI experience data versus the 2001 CSO or 2017 CSO
- The mean reserve figures shown do not reflect the deferred premium offset to the mean reserve, which will be greater when net premiums are higher
- To evaluate the offsetting impact of the higher net premiums, the model office was re-run using mid-terminal reserves and unearned premiums, assuming all contracts are on monthly mode

GI – Model Office Results, cont'd

- With change to mid-terminal reserves and unearned premiums:
 - Overall, reserve levels are lower (to be expected since only 1/24 of annual net premium is included, rather than 1/2)
 - The total mid-terminal reserves plus unearned premiums on tables developed using GI data are higher than those on 2001 CSO or 2017 CSO through roughly year 6 then are lower for all years starting in about year 8

GI - Model Office Results, cont'd

Comparison of projected midterminal reserves with modal unearned premium (all monthly mode) based on \$1 million of gross premium and single year of issue

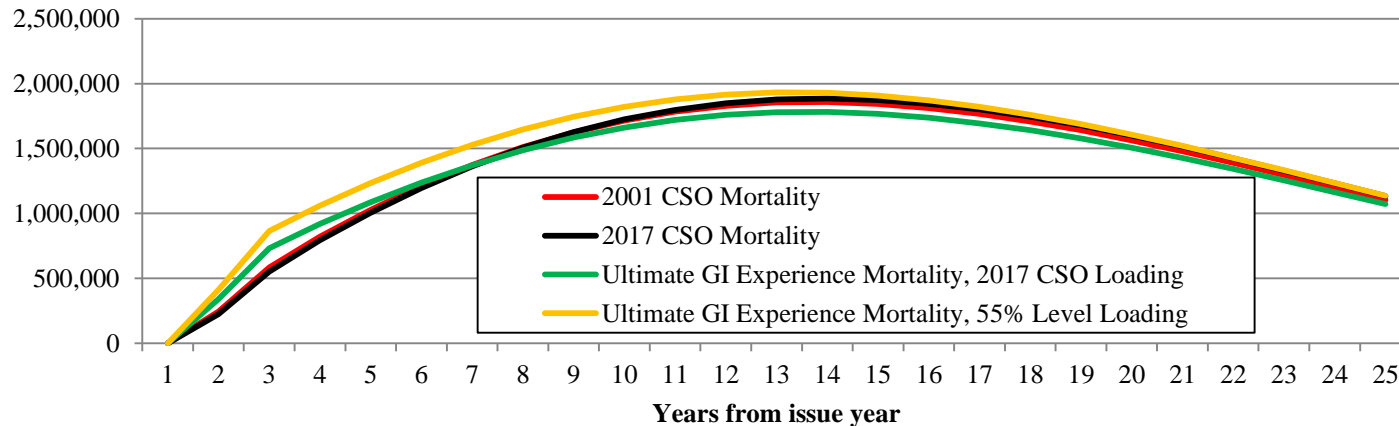


GI – Model Office Results, cont'd

- Reserves using 2017 CSO loading are generally greater when using ultimate mortality
 - Greater than select and ultimate due to antiselection pattern
- Attained age mortality table (ultimate) is felt preferable due to overall higher reserves and potential use for nonforfeiture
- Chart on following page shows effect of using 55% loading at all ages (suggested by the results by company using the graduated experience table)

GI – Model Office Results, cont'd

Comparison of projected midterminal reserves with modal unearned premium (all monthly mode) based on \$1 million of gross premium and single year of issue



GI – Next Steps

- Review younger ages (50 and below) and older age values in conjunction with preneed mortality
- Finalize determination for mortality improvement and loading
- Decide whether final table should be ultimate, or select and ultimate
 - Recommendation: Publish experience table as select and ultimate, valuation basis as ultimate only

Preneed Table Development



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Preneed – Background

- Data from calendar years 2005 - 2009
- 11 contributing companies
- 7.9 million policy years exposed
- 635,000 death claims
- \$35 billion exposed
- \$3.0 billion of claims
- Single premium policies accounted for approximately 60% of exposure and 75% of deaths



Preneed Findings

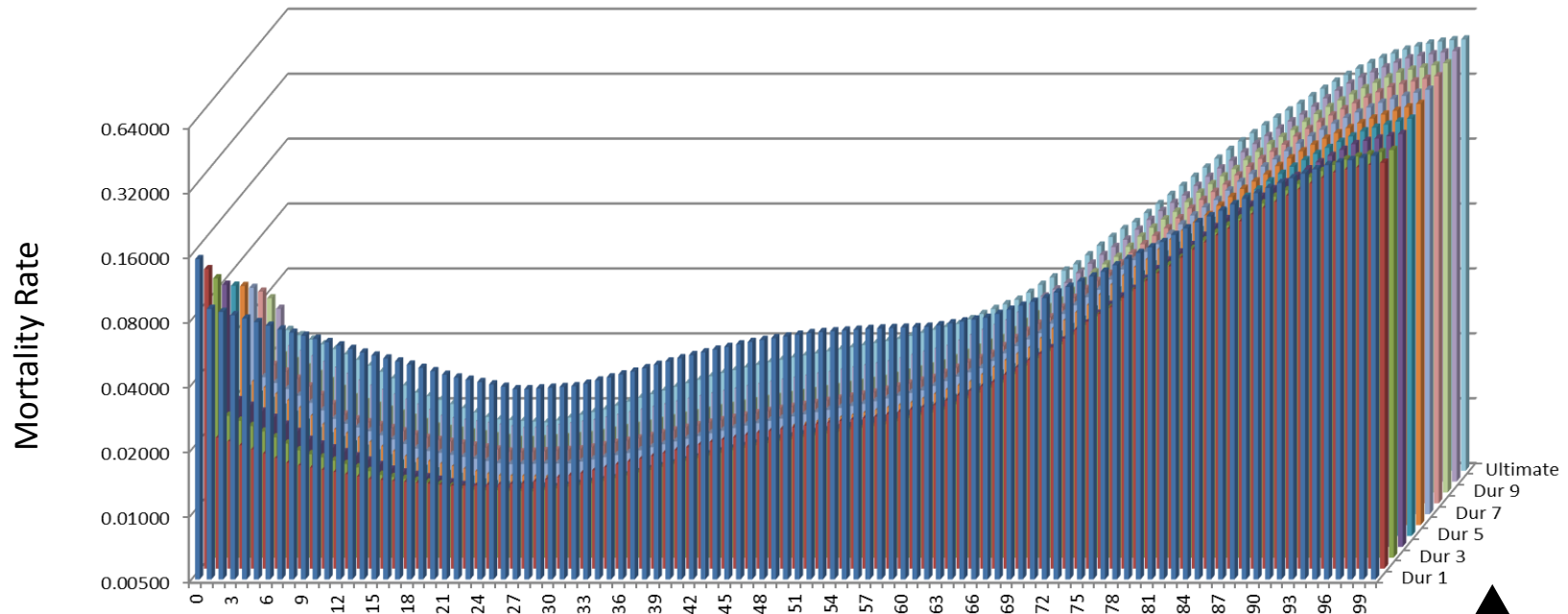
- Three main product/underwriting segments
 - Guaranteed Issue (GI) Single premium, level benefit
 - Simplified Issue (SI) Multi pay, level benefit
 - SI and GI Multi pay, modified benefit
- Mortality varied significantly by segment
- Mortality was much less volatile by company when all segments were combined
 - Consistent with similar overall risk pools for each company
 - Evidence that companies coded SI vs. GI differently could account for variations by product/underwriting segment
- 96% of business was issued on a unisex basis



Development of Preneed Mortality Table

- A 2015 Preneed mortality table was developed for all Preneed business
 - Separate rates for unisex and male/female, graduated in 5-year issue age groups, 10-year select and ultimate
 - “Select” mortality was generally anti-select, especially policy year 1
 - For issue ages 0-64, mortality became select around policy year 5
 - Rates for issue ages under 40 were smoothed: Overall data for ages 0-39 were significant but very lumpy by duration
 - Rates for attained ages 97+ set consistently higher than 2015 VBT, grading to a rate of 0.5000 for attained ages 110+
 - Developed rates for individual issue ages 0-100

2015 Preneed Unisex Basic Table, largely masked by Duration 1



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Issue Age

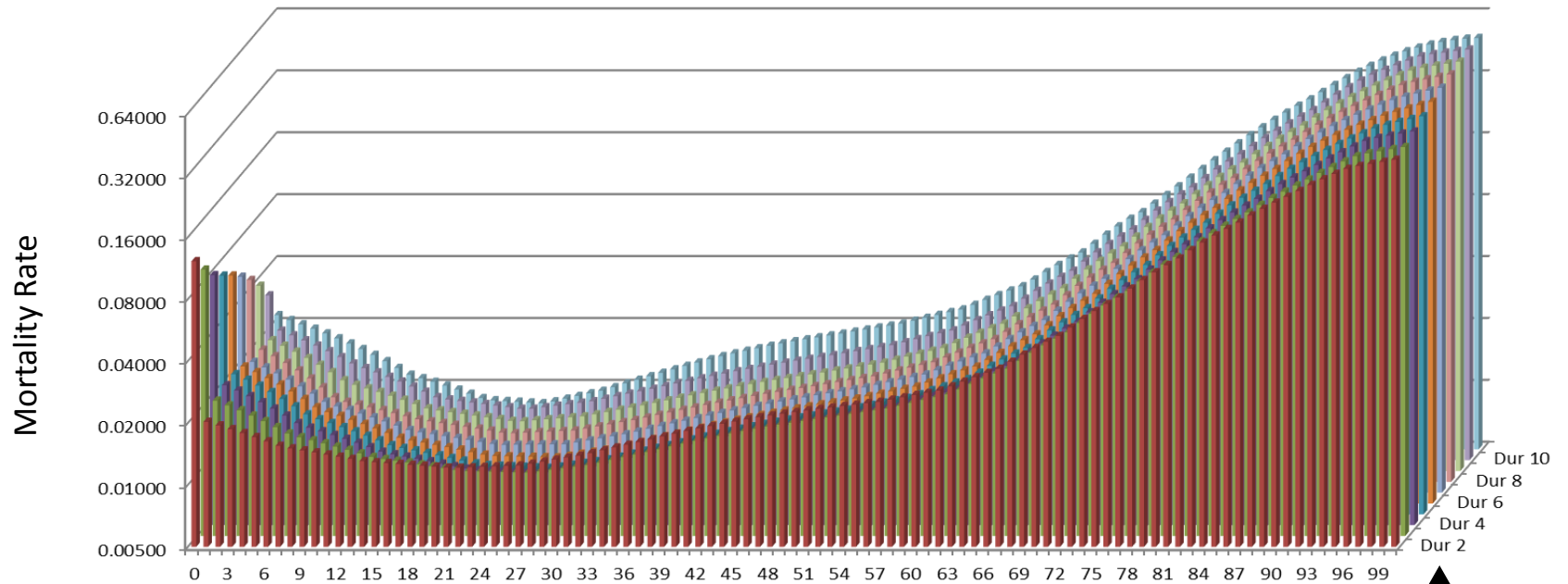


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2015 Preneed Unisex Basic Table with Duration 1 omitted



Preneed Loading Analysis

- Overall Preneed mortality was 99.8% of the 2015 Preneed Table
- Preneed Loadings:
 - Percentage loading needed to cover 70% of contributing companies: -0.2%
 - Percentage loading needed to cover 80% of contributing companies: 2.3%
 - Percentage loading needed to cover 90% of contributing companies: 3.9%
 - The one company not covered by 3.9% loading was the smallest in the study, with 46 claims and less than 0.01% of total exposure

Preneed – Older Ages

- Data available for ages 100+ shows mortality rates level off between 0.4000 and 0.5000, consistent with Preneed old age experience
- Actual mortality rates do not reach 1.0000 as assumed in older mortality tables such as 1980 CSO
- 2015 VBT reaches its ultimate mortality rate of 0.5000 at attained age 112
- 2015 Preneed reaches its ultimate mortality rate of 0.5000 two years earlier, at attained age 110

Year 1 Mean Reserve Impact

Estimated Year 1 mean reserve increase per \$1000 face amount
Calculated using 2015 Preneed Basic Mortality, CRVM method, 3.50% interest

Single Pay

	Year 1 Mean Reserve Change Relative to 1980 CSO-E	
Issue Age	2015 Preneed Basic	2017 CSO Composite Ultimate
65	-\$6	-\$74
75	-\$6	-\$63
85	\$0	-\$39

Ten Pay Full DB

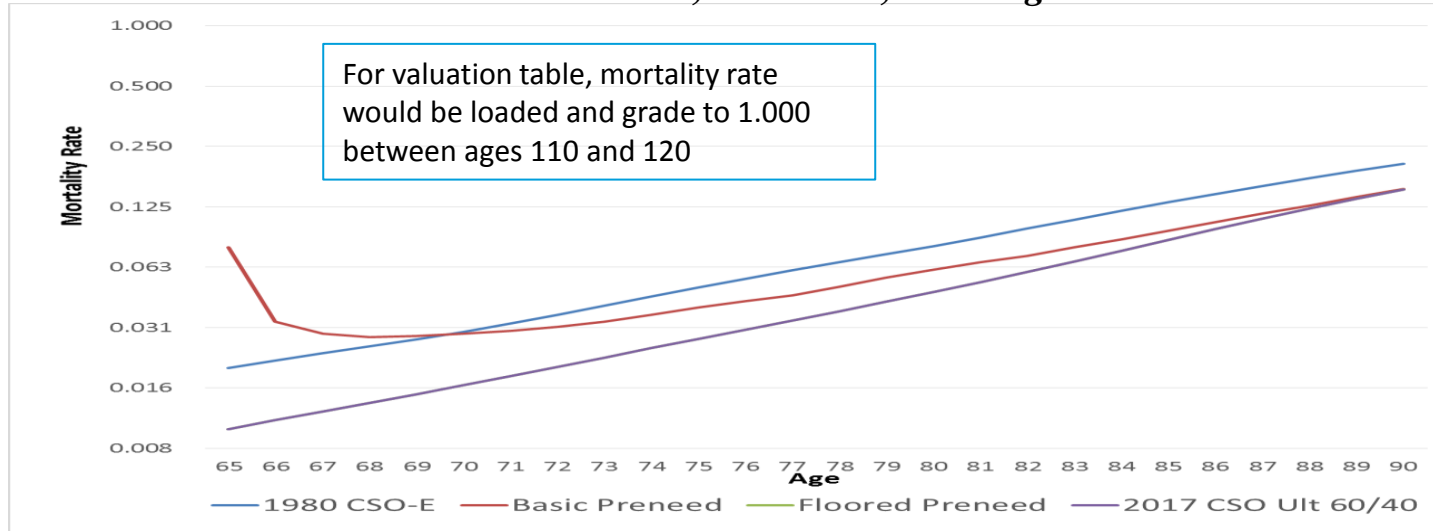
	Year 1 Mean Reserve Change Relative to 1980 CSO-E	
Issue Age	2015 Preneed Basic	2017 CSO Composite Ultimate
65	+\$10	-\$6
75	+\$15	-\$8
85	+\$29	-\$17

- 10-pay projected mean reserves increase with the 2015 Preneed Basic Mortality. This is due to the reverse select and ultimate structure resulting in an expense allowance of \$0.



Comparison of Mortality Rates

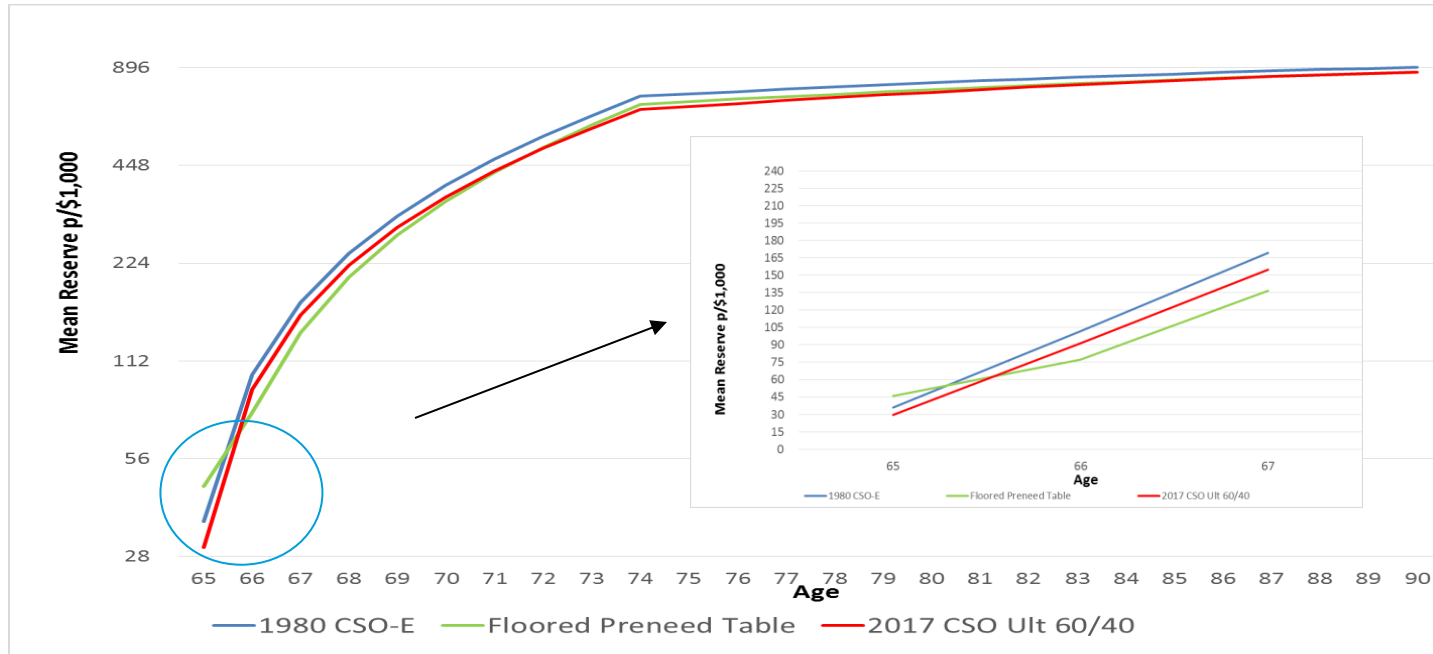
2015 Preneed Unisex Unloaded Mortality Rates Compared to 2017 CSO Composite Ultimate and 1980 CSO Table E
CSO Tables are 60% Female, 40% Male; Issue Age 65 is illustrated



Note: Floored preneed mortality rates are masked behind the basic preneed and 2017 CSO rates.

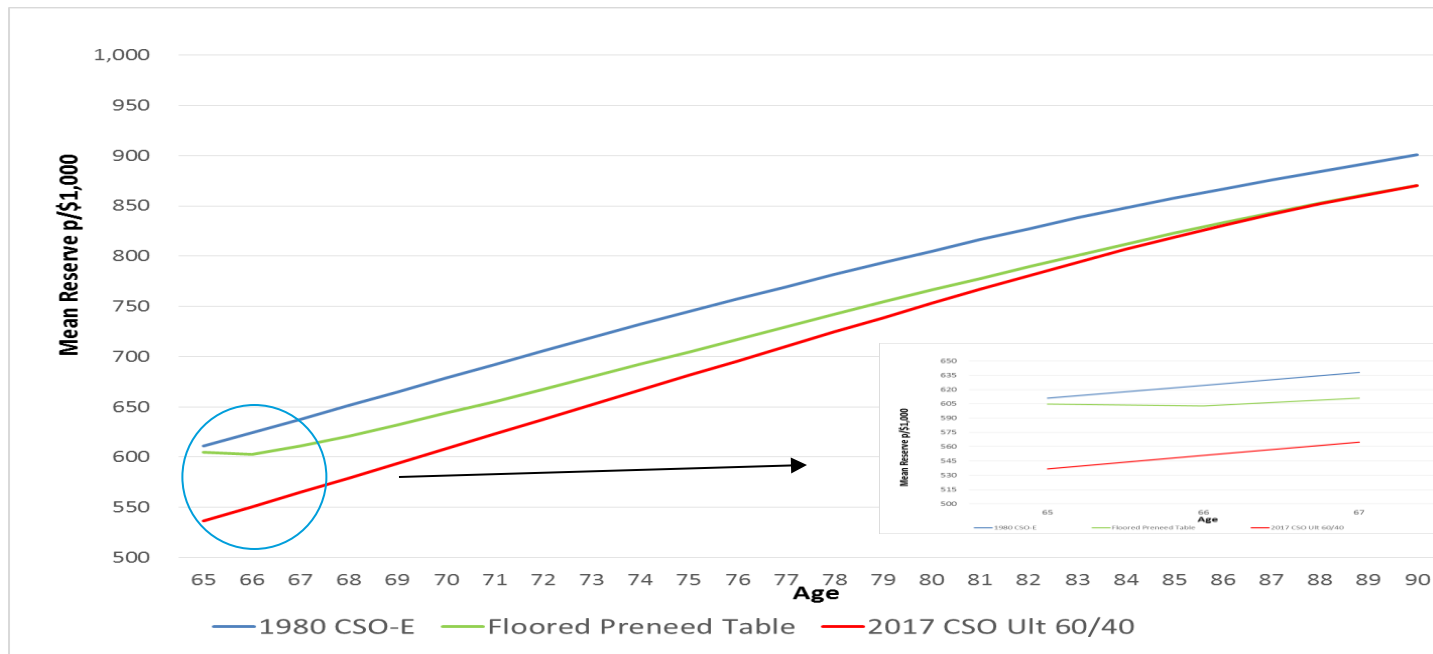


Preneed Mean Reserve Comparison Issue Age 65 Unisex, 10-Pay



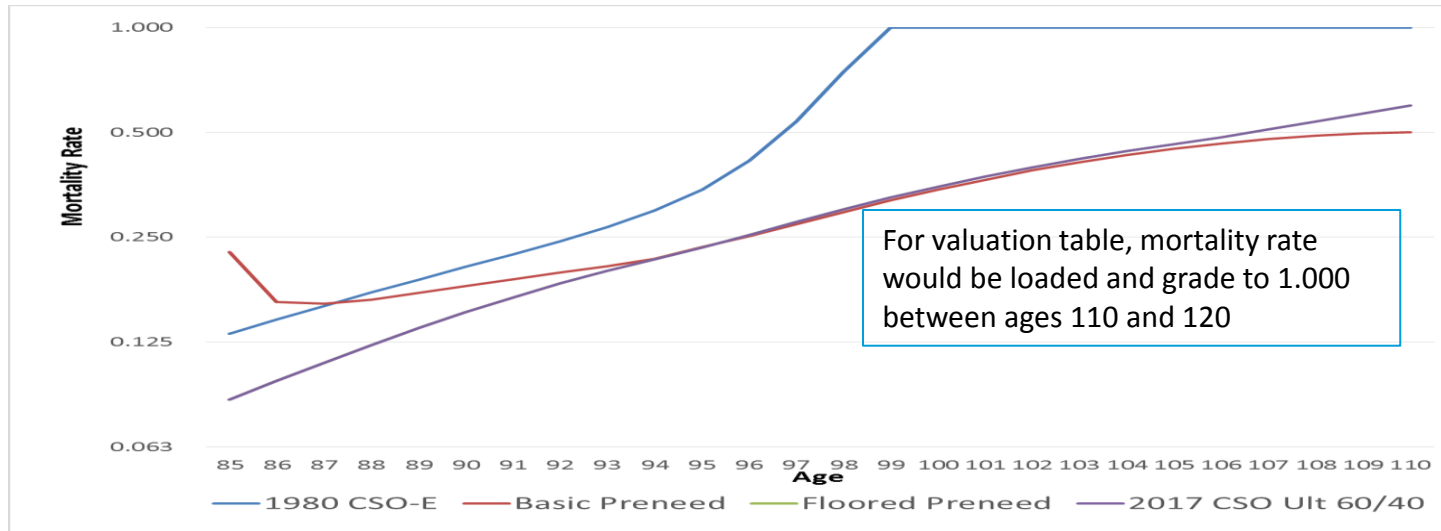
Preneed Mean Reserve Comparison

Issue Age 65 Unisex, Single Pay



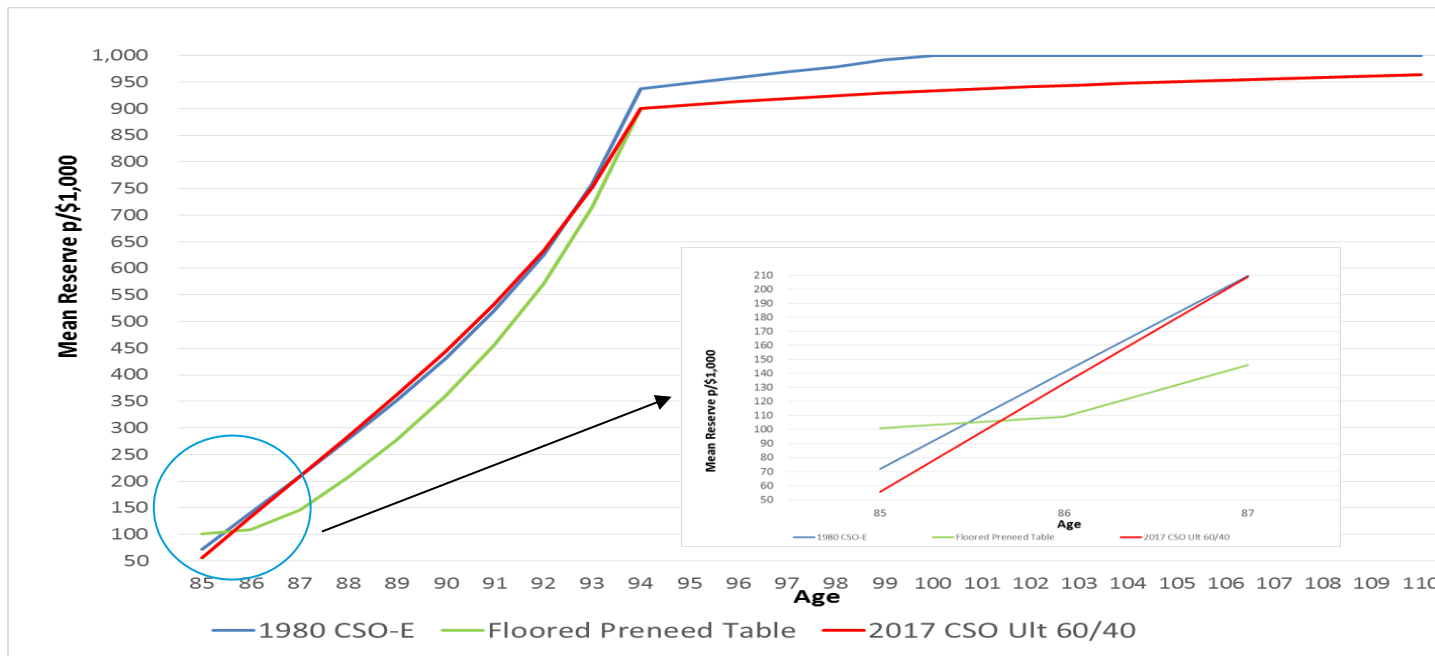
Comparison of Mortality Rates

2015 Preneed Unisex Unloaded Mortality Rates Compared to 2017 CSO Composite Ultimate and 1980 CSO Table E
CSO Tables are 60% Female, 40% Male; Issue Age 85 is illustrated



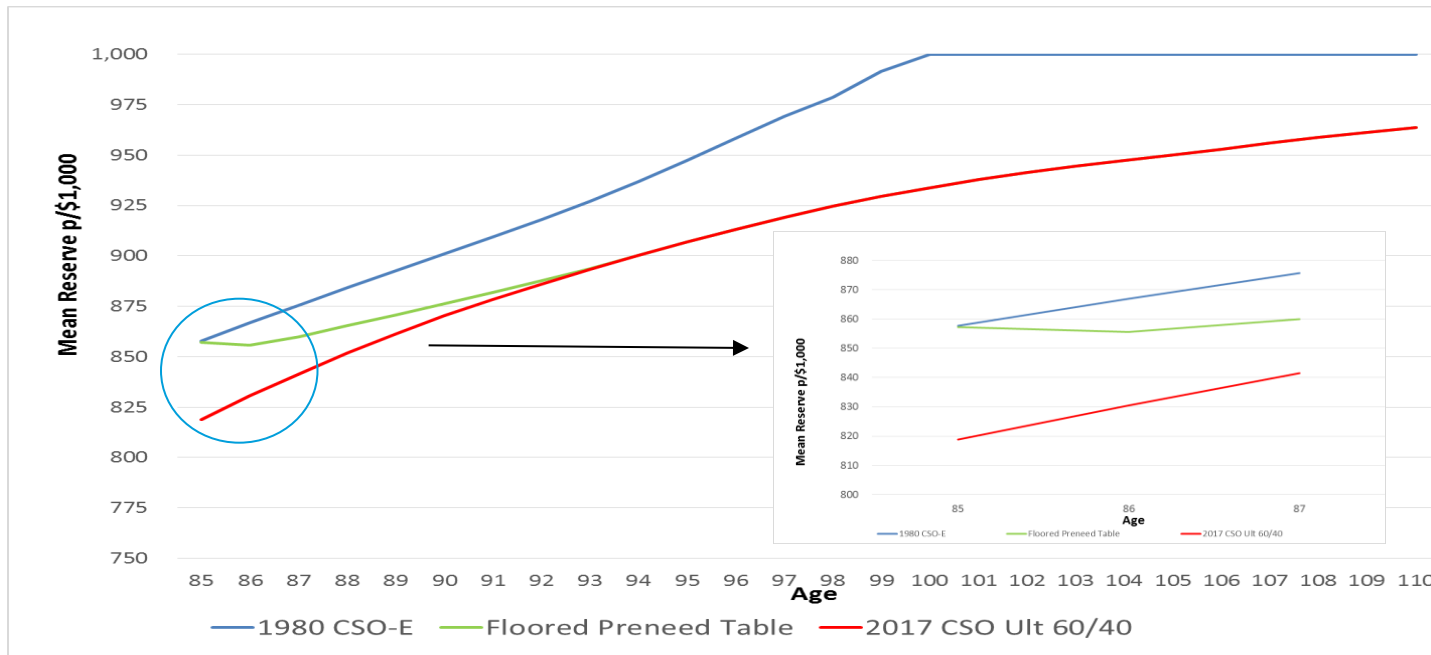
Preneed Mean Reserve Comparison

Issue Age 85 Unisex, 10-Pay



Preneed Mean Reserve Comparison

Issue Age 85 Unisex, Single Pay



Next Steps for GI and Preneed tables

- Need to consider approach to loading
 - ▣ GI used 2017 loading as first approach
 - ▣ Level of loading varies significantly by table and coverage target
 - ▣ Coverage level versus percentage load
- Need to consider appropriateness of mortality improvement
 - ▣ Observed mortality improvement ranged from modest deterioration to slight improvement, depending on table
- GI products will likely meet the deterministic exclusion test; however, if required to calculate a deterministic reserve:
 - ▣ PBR margins may need to be reconsidered as designed specifically for the underlying VBT/fully underwritten business and alignment with CSO loading for lowest credibility