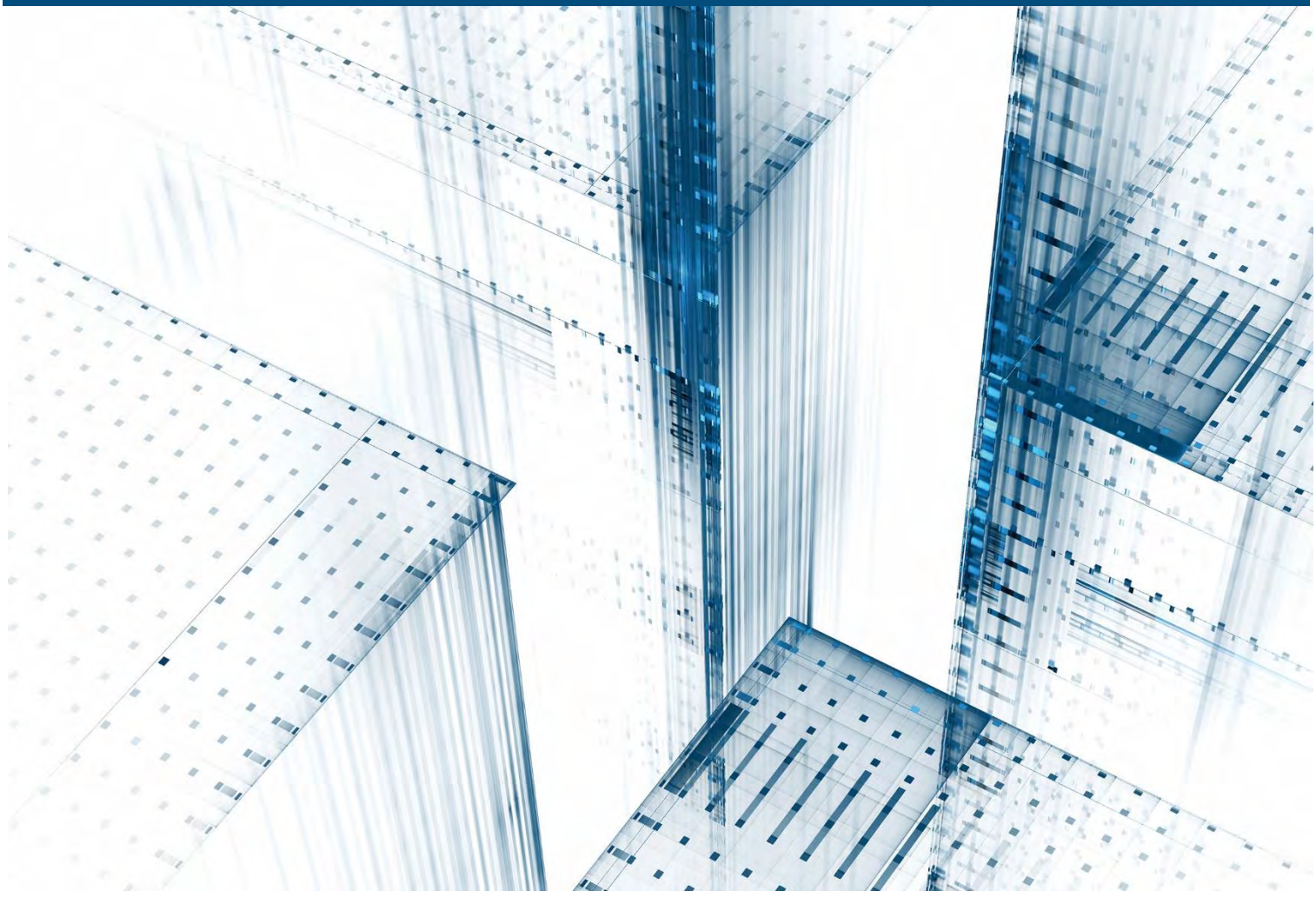
SOCIETY OF ACTUARIES

2019 Universal Life with Secondary Guarantees Survey

Survey of Assumptions for Policyholder Behavior in the Tail



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2019 Universal Life with Secondary Guarantees Survey

Survey of Assumptions for Policyholder Behavior in the Tail

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Survey Highlights

In 2019, the Policyholder Behavior in the Tail (PBITT) committee distributed its annual survey to insurers and asked for information on assumptions used in their modeling of Universal Life with Secondary Guarantees. The goal of the survey was to gain further insight into the ranges of companies' assumptions in the tail of a stochastic risk-based capital calculation.

Overview

- The latest survey regarding Universal Life with Secondary Guarantees reflects a different response group from those in the prior survey. Some of the changes described below reflect different respondents, not necessarily a change by any given company. The SOA research office was able to confirm that 7 of the participating companies this year also participated in the prior survey.
- Most companies continue to view the investment returns in tail scenarios (cited by 67% of respondents) and lapse assumptions (73%) to be their most critical risk assumptions when analyzing policyholder behavior in the tail for secondary guarantees (Figure 44).

Tail Scenarios

- Overall, 53% of companies use stochastic scenarios to set or analyze capital levels (Figure 2). It is less common for companies with a small block of business to use stochastic scenarios (Figure 3). Of the companies that do use stochastic scenarios, 75% projected more than 100 scenarios and 50% project 1,000 or more (Figure 4).
- A large majority of companies (85%) project for at least 51 years (Figure 5).
- The tail scenarios used are summarized in Figure 6 through Figure 18.

Lapse Assumptions

- Lapse rates in the tail continue to vary widely among insurers. This year companies were asked to provide projected lapse rates for various durations for ages 50-59 only. Median lapse rates for 2019 seem to show more variation across durations than in past years (Figure 22).
- The percentage of companies that reported using dynamic lapse assumptions was slightly lower this year than in the past two years (2018 & 2017). Dynamic lapses were used by 60% this year (Figure 19).
- Companies were asked how many policies on a block of business that experienced the tail scenario would be kept in force by the secondary guarantee. After 31 years, the average response was 67% of policies and median response was 84% of policies (Figure 23).
- For the fourth survey in a row, the 2019 survey saw a small percentage of companies that measure lapses by distribution system (25%; 2 of 8) (Figure 26). Two companies (25%) reported varying their lapse assumptions by distribution system in this year's survey (Figure 27).

- Half (7 of 14) of companies vary lapse assumptions by premium. This is in line with what has been seen in the recent surveys (Figure 28). Several respondents mentioned higher lapse rates for level premium patterns and/or lower lapse rates for single premiums.
- Regarding sources of base lapse assumptions, "Company Experience" (100%) and "Actuarial Best Estimate" (80%) were cited as the most common sources (Figure 29).
- When asked about the number of years of experience companies use in their lapse studies, the most common response was "5-7 years" (57%) with only 1 company (7%) using less than 5 years in this year's survey (Figure 31).
- Actuarial best estimate continues to be the most common source of dynamic assumptions at 89%. A variety of other sources were reported, similar to past surveys (Figure 32).

Mortality Assumptions

- Companies showed a wide range of mortality assumptions. Median mortality rates are comparable to the 2008 VBT and 2015 VBT (Figure 34 through Figure 39).
- This year's survey shows a cross-over point of companies shifting from using 2008 VBT (36%; 5 of 14) to using the 2014/15 VBT (43%; 6 of 14) as their reference table (Figure 33).
- Future mortality improvement is modeled by 60% of responding companies, a similar but slightly lower rate as compared to past surveys (Figure 42). Improvements vary by a variety of factors, particularly gender and age (Figure 43).

Background

In 2019, the Policyholder Behavior in the Tail (PBITT) committee distributed a survey to insurers and asked for information on assumptions used in their modeling of Universal Life with Secondary Guarantees. The goal of the survey was to gain insight into companies' assumptions in the tail of a stochastic capital calculation. This survey had 15 responses, up from 13 in 2018 and down from 23 in 2017. The survey was not distributed in 2016.

The distribution of responses by company size in 2019 trended toward mid-size companies. The number of responses from companies with medium and large block of UL ($15B+ face) was similar to past years. The number of responses from smaller companies (under $15B face), while similar to the previous year 2018, was much lower than in 2017 and 2014, as seen in **Figure 1.**

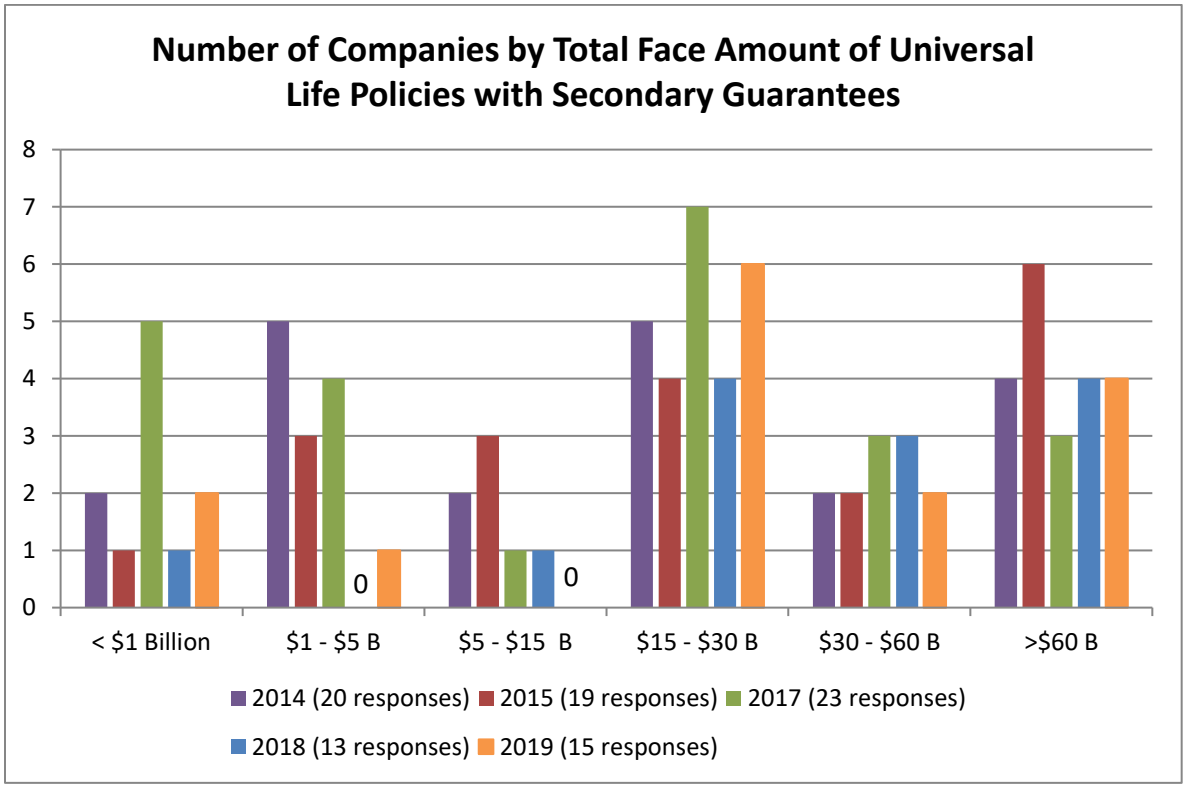

Figure 1

At the total survey level, we were able to confirm 7 respondents from 2018 repeated in 2019, out of 15 total responses in 2019. Therefore, some of the changes described in this report reflect different respondents, not necessarily a change by any given company. The relationship of new versus prior respondents varies by individual question as not every company answers every question. To suggest the credibility of results, most charts indicate how many

companies responded to the question. The reader should be aware that changes in the set of companies participating in each survey may influence some of the observed changes in survey responses over time.

It is the intention of the PBITT committee to continue to conduct this survey annually by distributing it each year in April. It is our hope that with the publication of these and future survey results, we will increase the awareness of expected industry experience for all companies to consider when setting assumptions or when extrapolating to the tail. Others may wish to consider the relative financial impact of the various assumptions shown. Individual companies may also want to use the results to help design stress tests and experience studies. The committee welcomes comments or suggestions for new or revised questions in future surveys.

Parameters of Stochastic Capital Calculation

Insurers were asked in Question 2 of the survey to indicate whether they analyze capital levels for UL with Secondary Guarantees using stochastic scenarios, as well as how many scenarios are used and the length of the projection. Figure 2 shows that 53% of insurers used stochastic scenarios to set or analyze capital levels, continuing a generally upward trend in affirmative responses. We refer to the companies that do not use stochastic scenarios as companies using deterministic scenarios. Figure 3 looks at stochastic scenario use by company size. Of those reporting company size and stochastic scenario usage, the companies with larger UL blocks are more likely to use stochastic modeling.

In the 2019 survey, 50% (4 of 8) of the respondents that reported using stochastic scenarios indicated that they use 1,000 or more scenarios, as shown in Figure 4. The number of companies that reported using "100 or fewer" was not so low as it was in the prior three surveys with 2 of 8 (25%) marking that selection.

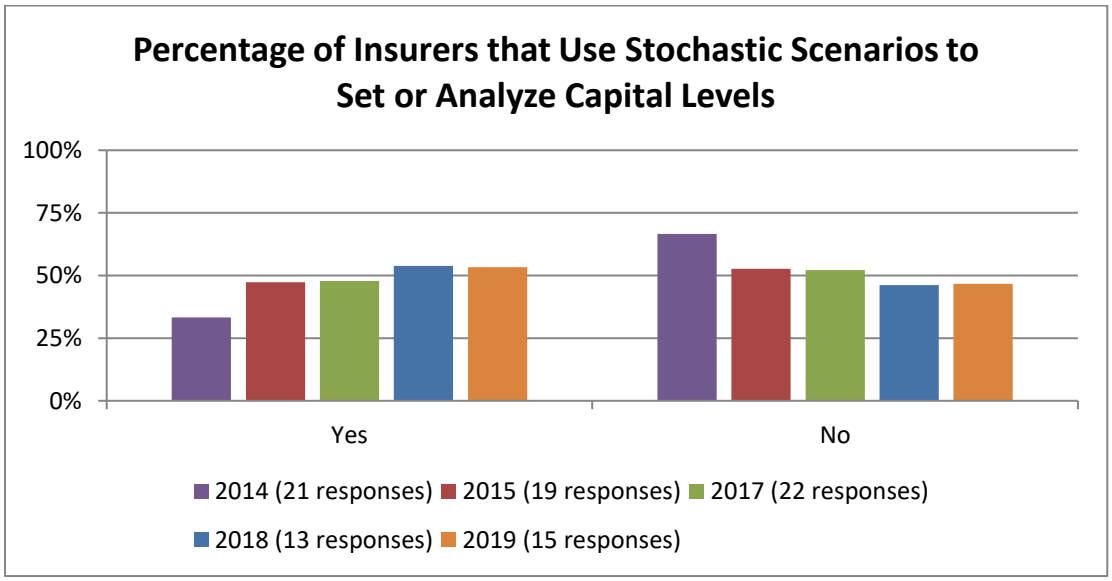

Figure 2

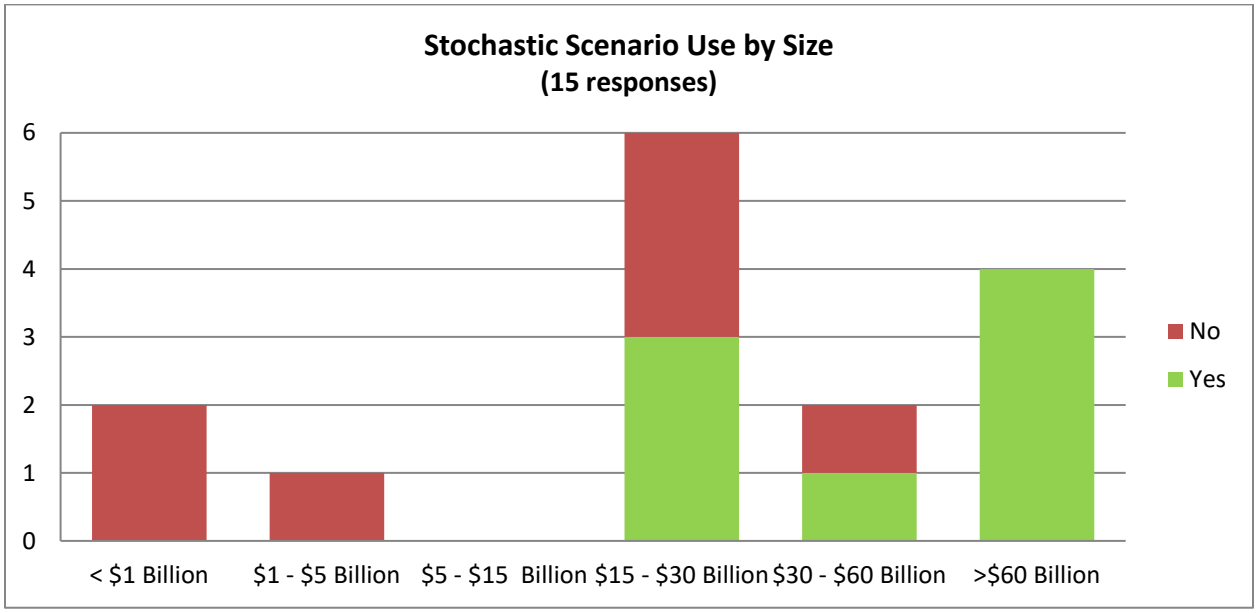

Figure 3

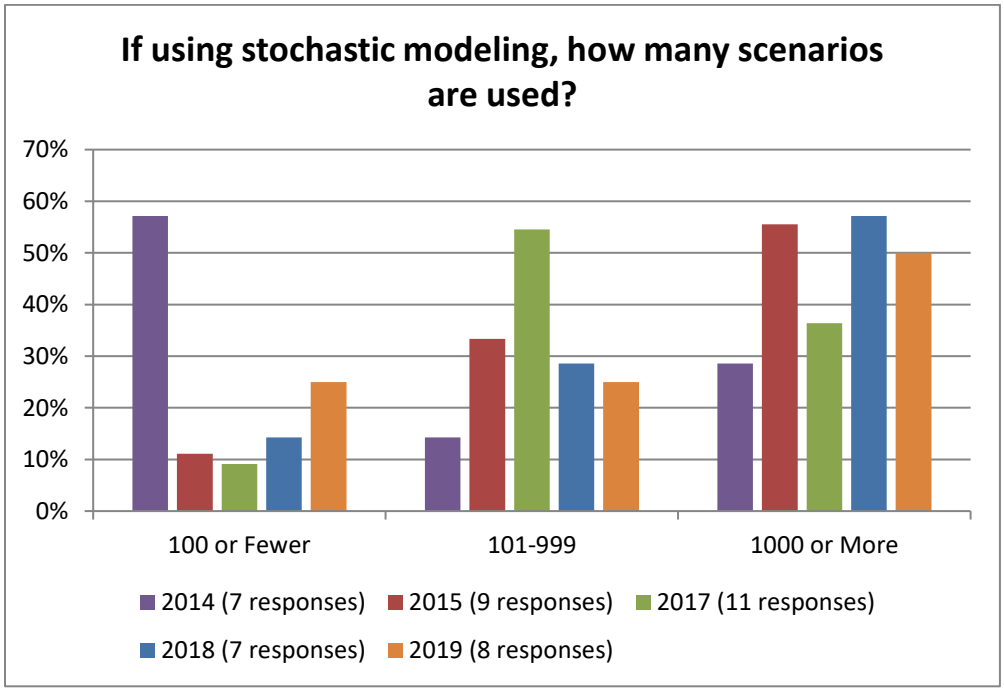

Figure 4

Figure 5 shows the distribution of number of years modeled, which includes both companies that use stochastic modeling as well as those that use a deterministic tail. The most common response continues to be over 75 years (8 of 13; 62%). It is possible to perceive a trend toward longer projection periods, but we again want to warn that different year surveys had different respondents, so there may not necessarily be a change by any given company.

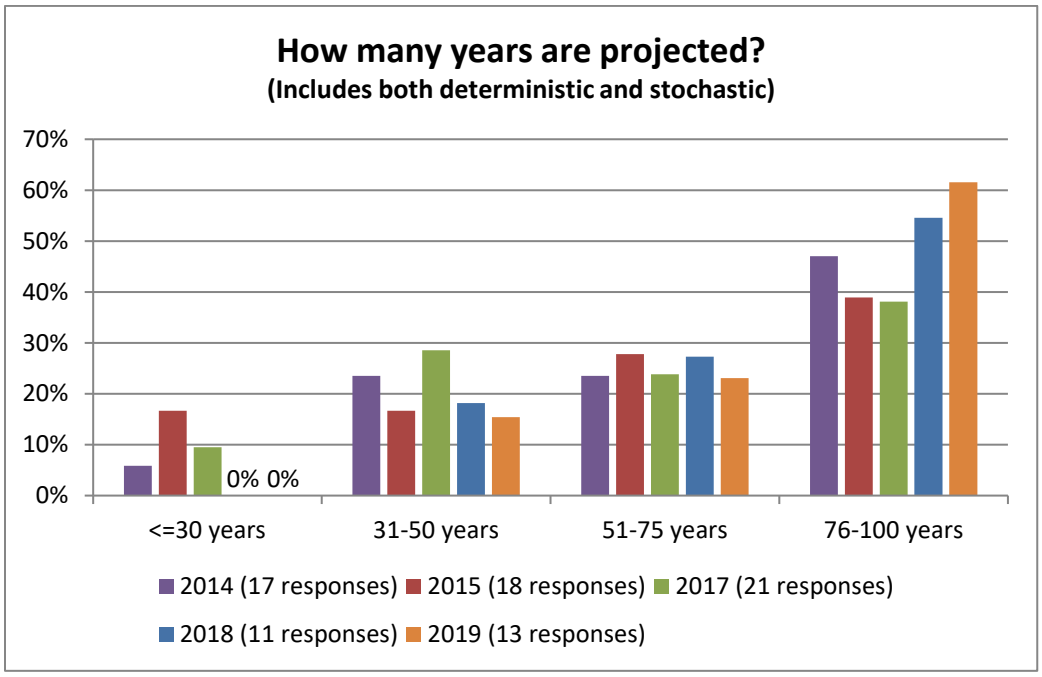

Figure 5

Tail Scenario

The tail scenario is defined as the scenario which results in the largest present value of the death benefits paid in all years where no COI is collected. (This differs from the tail scenario definition used in the committee's VA survey.) Insurers were asked to list 1 year, 7 year, and 30 year interest rates in the tail scenario (whether a stochastic scenario or a deterministic scenario depending on the respondent's methodology). Responses varied widely across insurers regarding the description of the tail scenario. The charts that follow show each insurer's tail scenario for the three maturities, separated between those that report using a stochastic methodology and those that report not using a stochastic methodology, which we then label "deterministic" methodology.

Of the eight companies that reported using stochastic modeling, five provided the requested interest rate scenarios. And of the seven that reported using deterministic modeling for capital analysis, three of them provided their deterministic interest rate scenarios.

The companies are comparable across the figures (e.g. Stochastic, 2 in Figure 6 is the same company as Stochastic, 2 in Figure 8 and Figure 10.)

To respect the confidential nature of responses, individual results are only shown when there are at least 5 companies responding to a particular question.

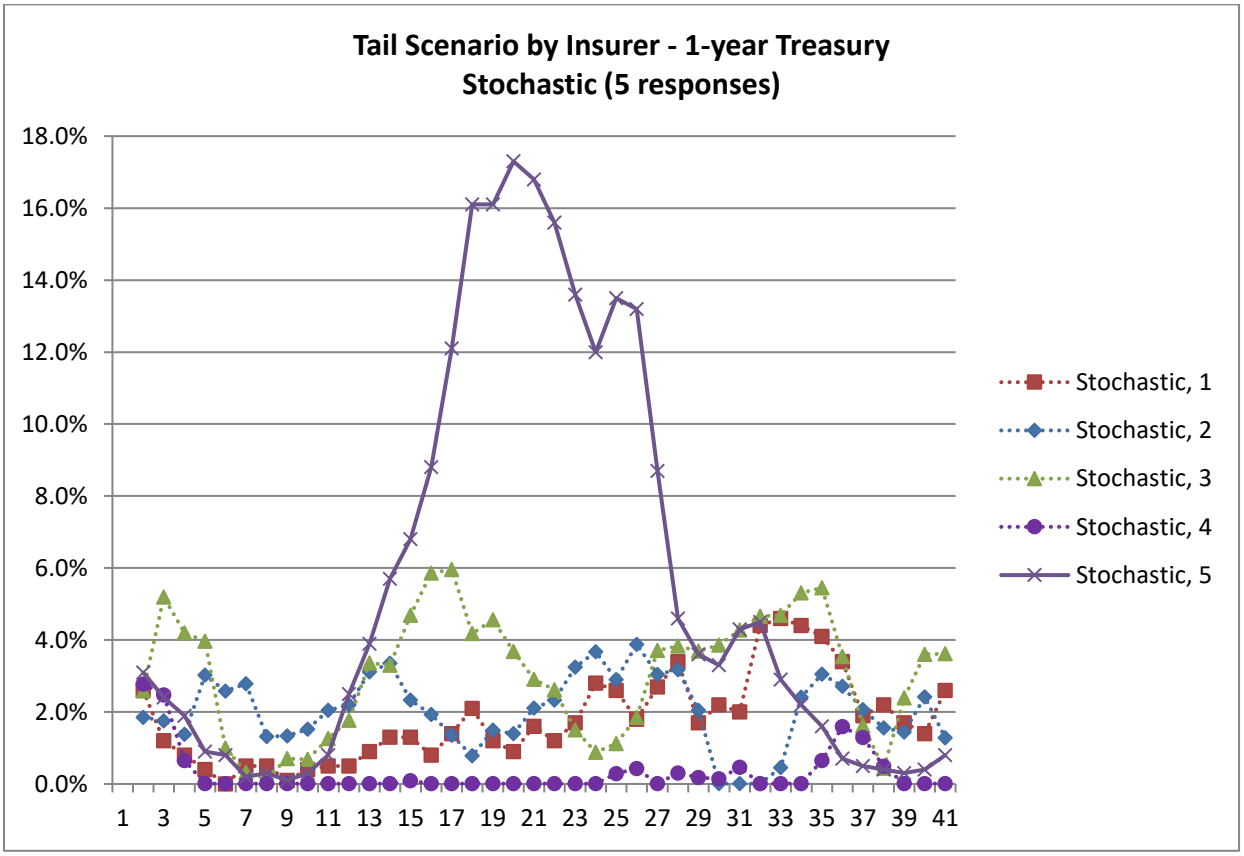

Figure 6

Tail Scenario by Insurer - 1-year Treasury Deterministic

Individual Responses Not Shown Since There Were Fewer Than 5 Responses.

Figure 7

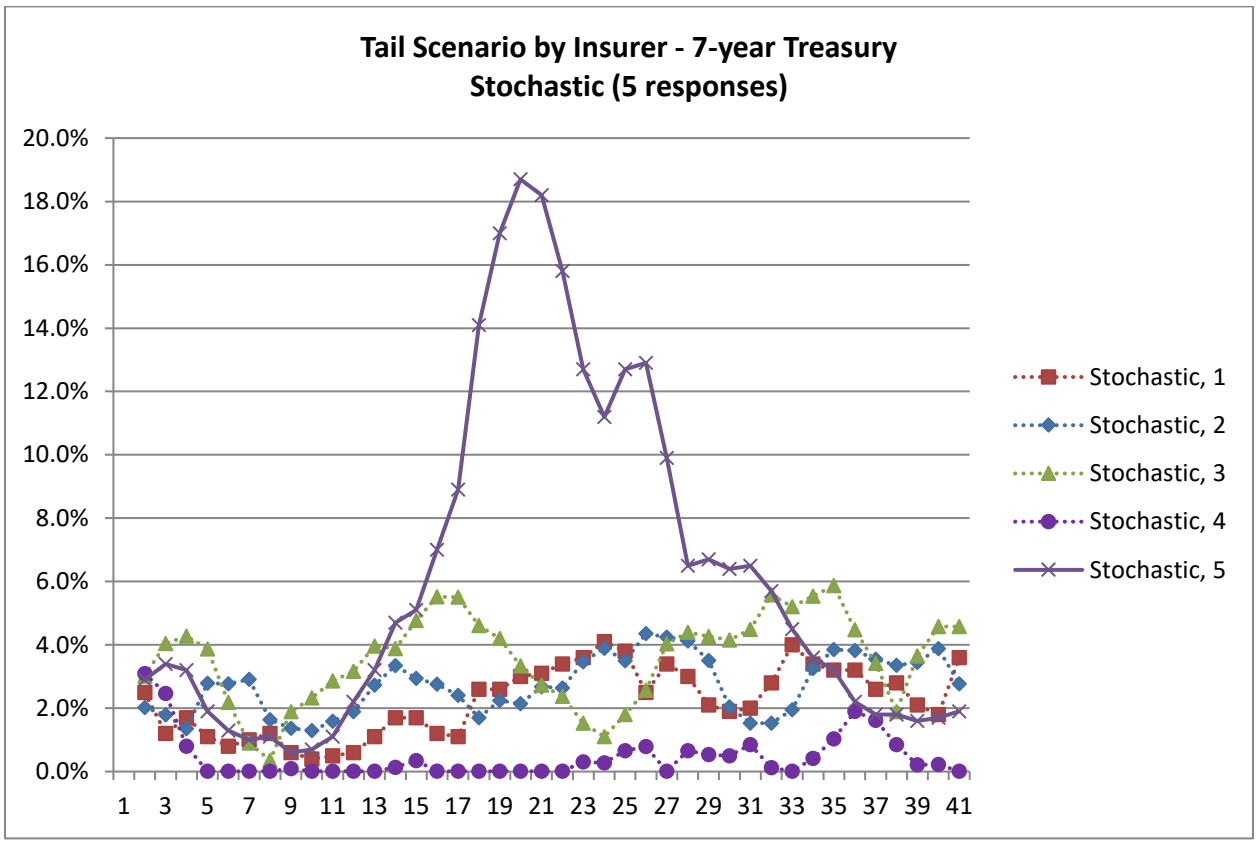

Figure 8

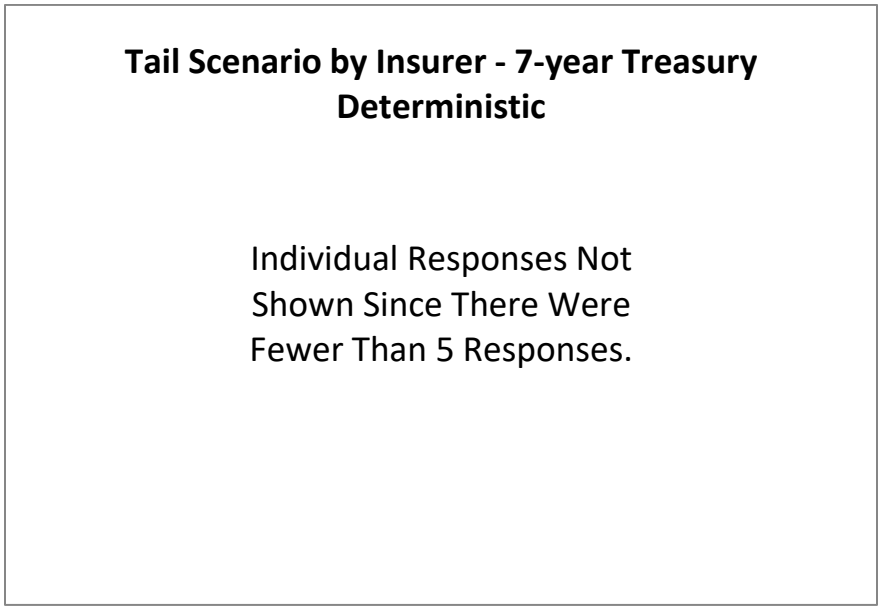

Figure 9

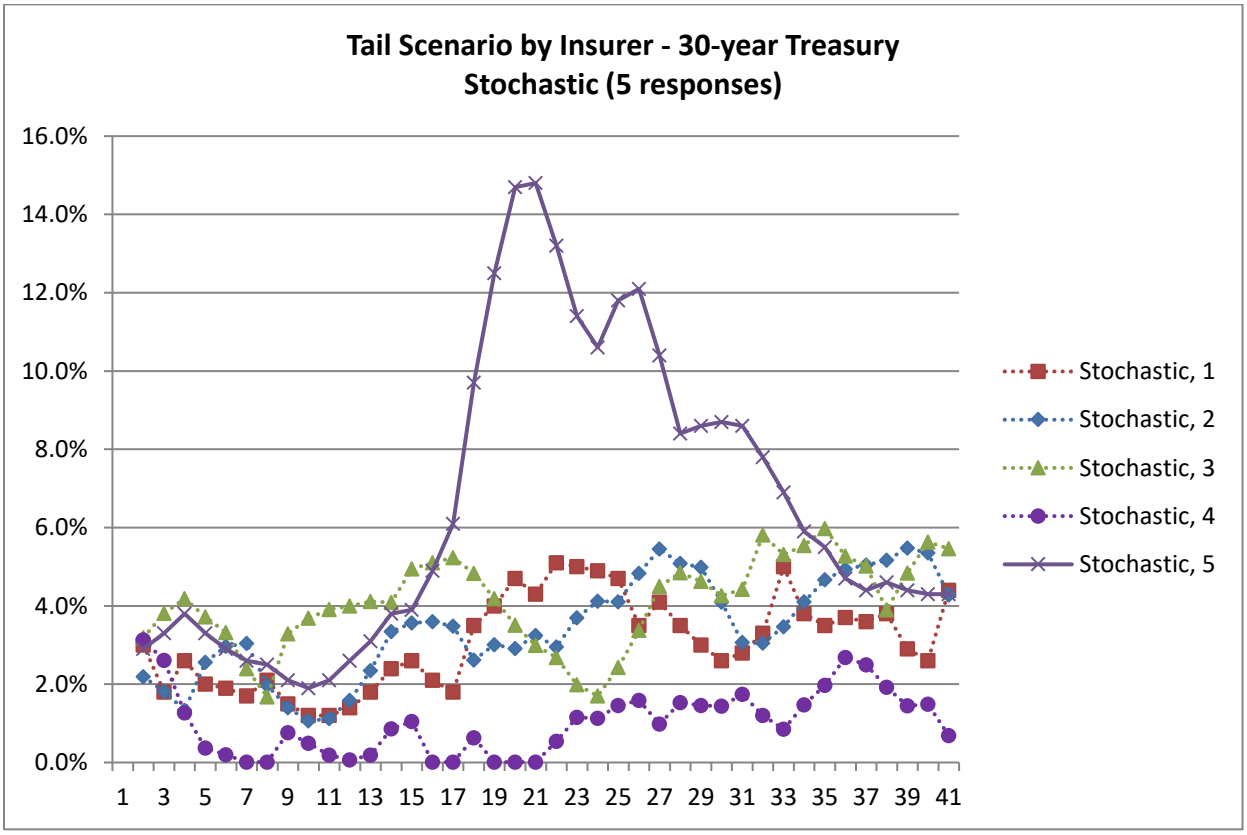

Figure 10

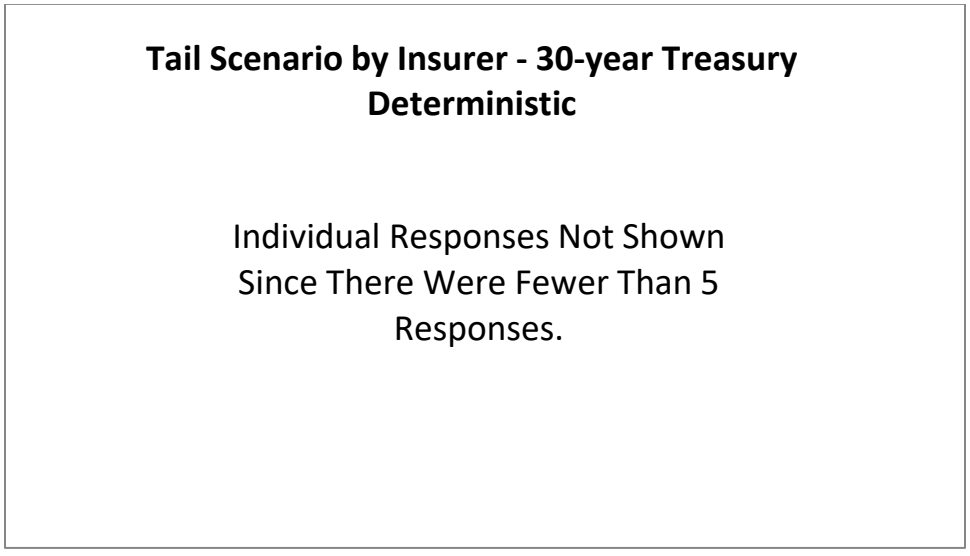

Figure 11

The following graphs of tail scenarios show the median reported value across insurers for each of three maturities (1, 7 and 30 Year Treasuries). The first pair of graphs separates stochastic from deterministic for 2019, followed by their combination. Thereafter, combinations only are shown from recent survey results.

These lines do not represent any one single company's response, but rather the median of the rates across all companies' responses calculated independently at each projection year duration. To respect the confidential nature of responses, the median deterministic rates are shown only when there are at least 5 companies responding.

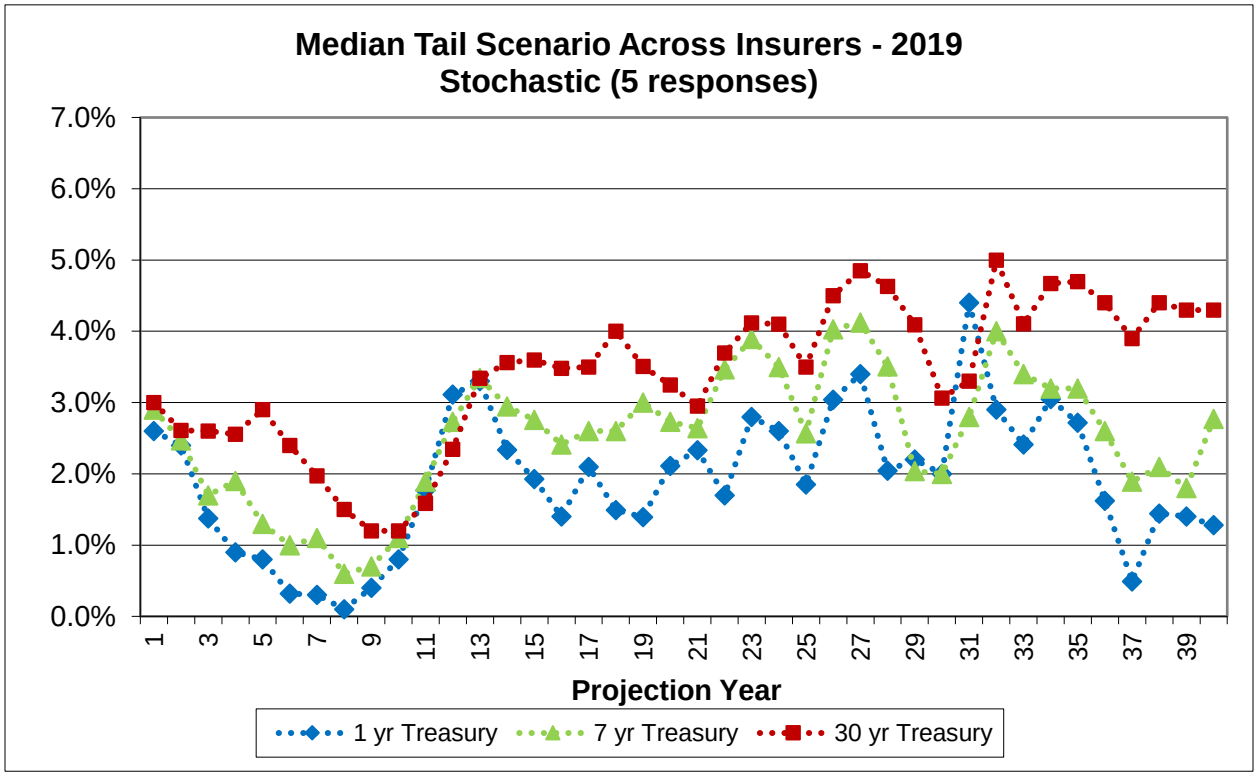

Figure 12

Median Tail Scenario Across Insurers - 2019 Deterministic

Median of Responses Not Shown Since There Were Fewer Than 5 Responses.

Figure 13

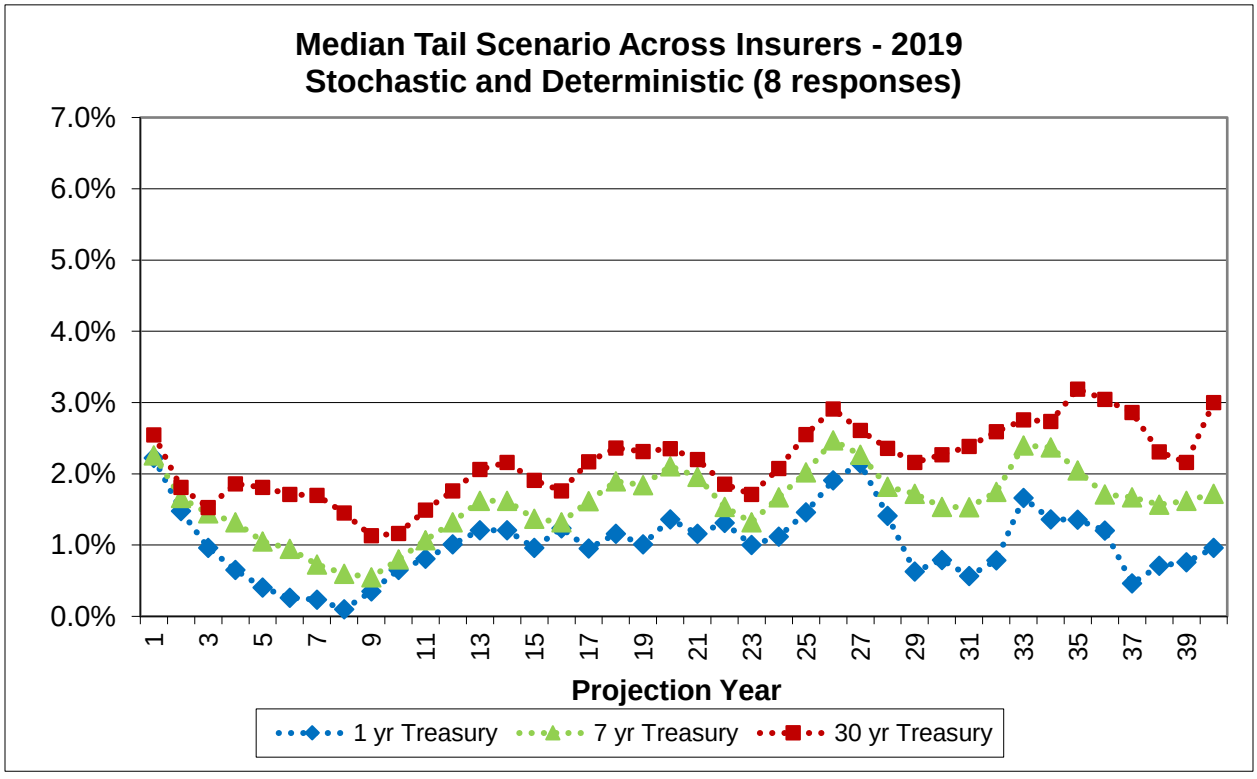

Figure 14

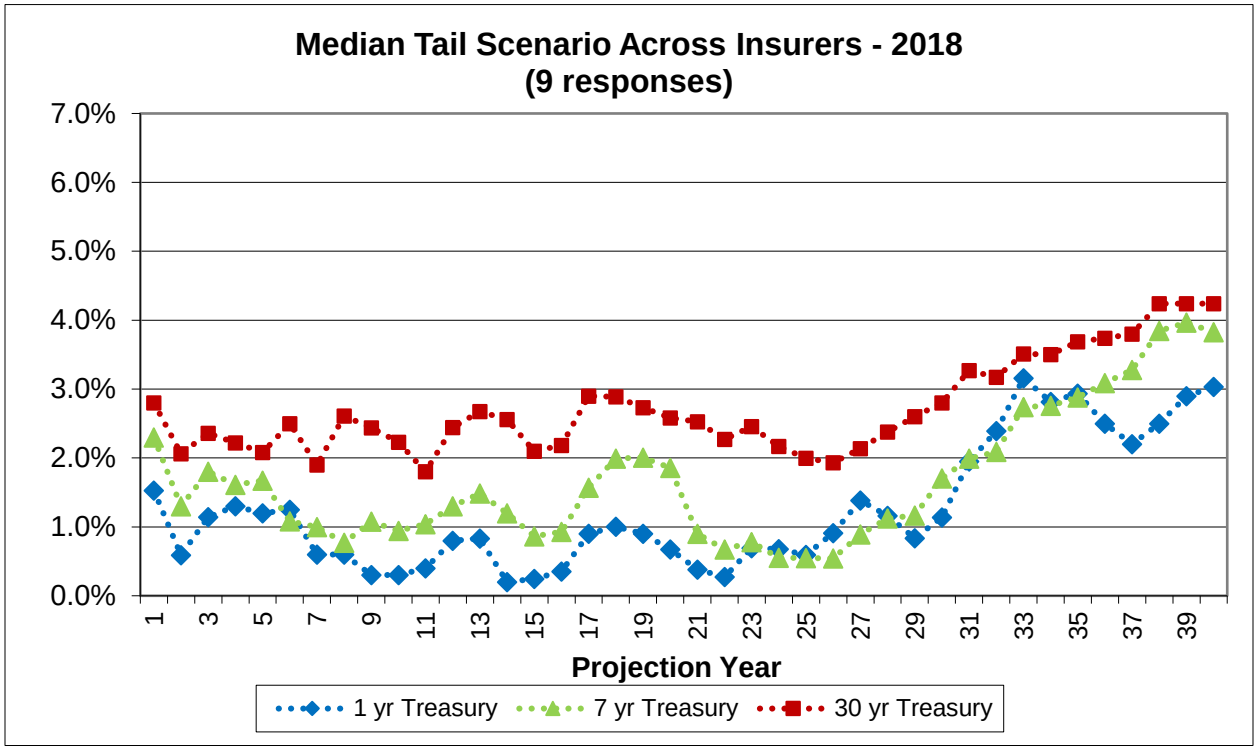

Figure 15

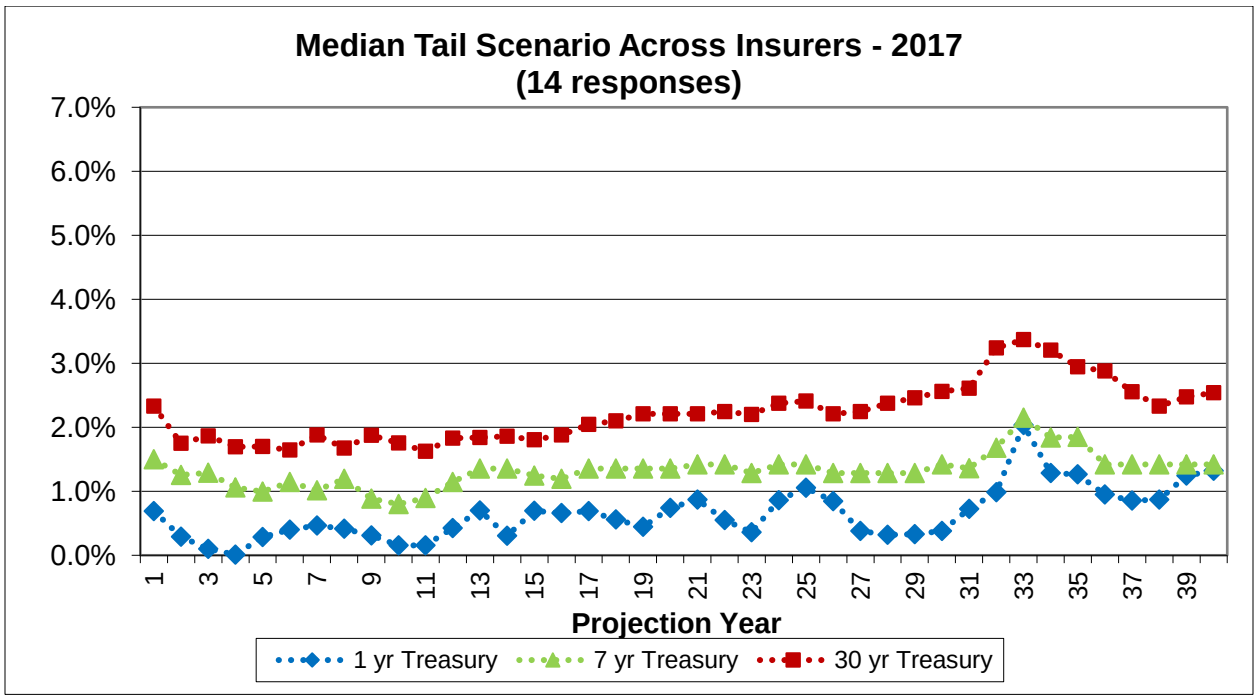

Figure 16

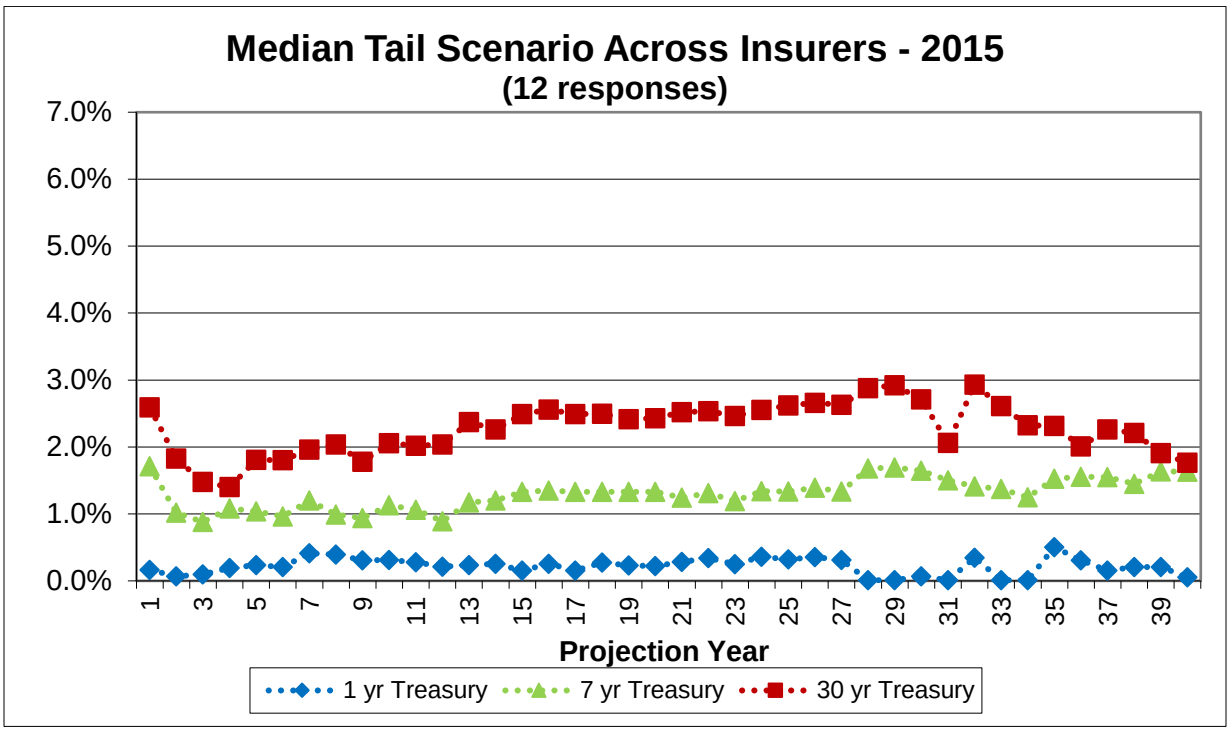

Figure 17

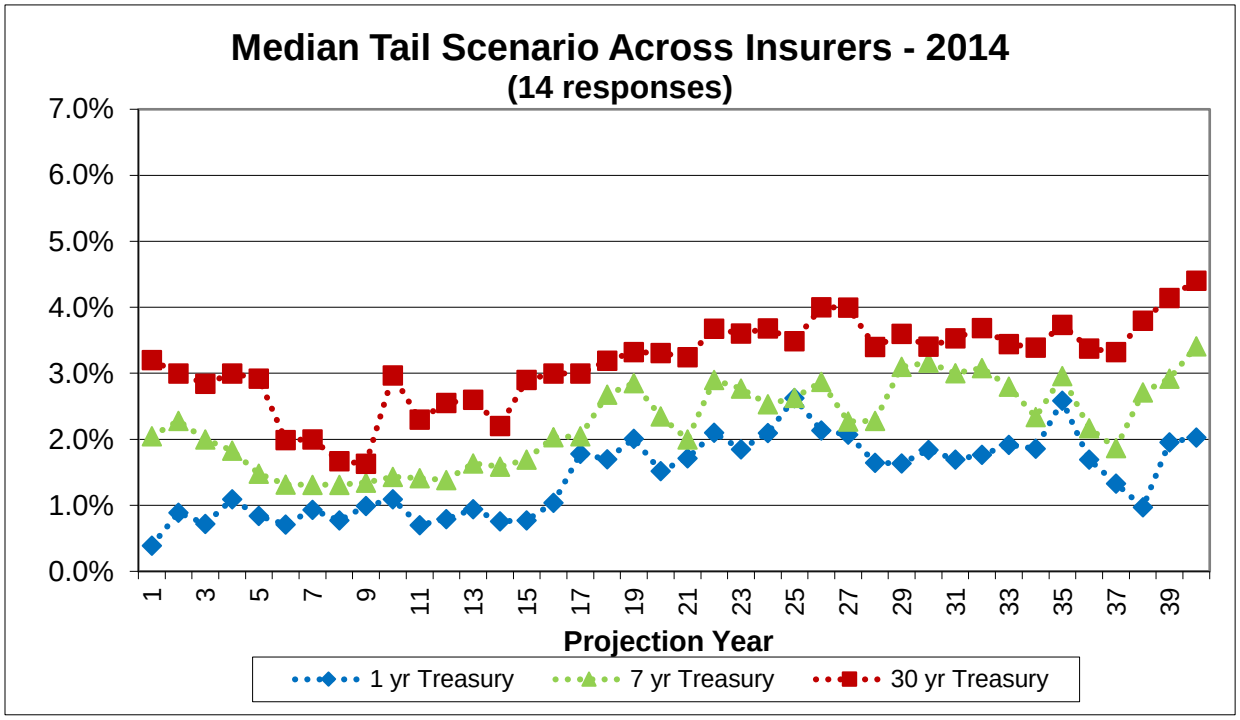

Figure 18

Lapse Assumptions

Question 3 asked about lapse assumptions. The following chart shows the percentage of insurers who use dynamic lapse functions for policies with secondary guarantees. The number of insurers using dynamic lapse functions is slightly lower than in the past two years with 60% doing so in 2019 (9 of 15). See **Figure 19**.

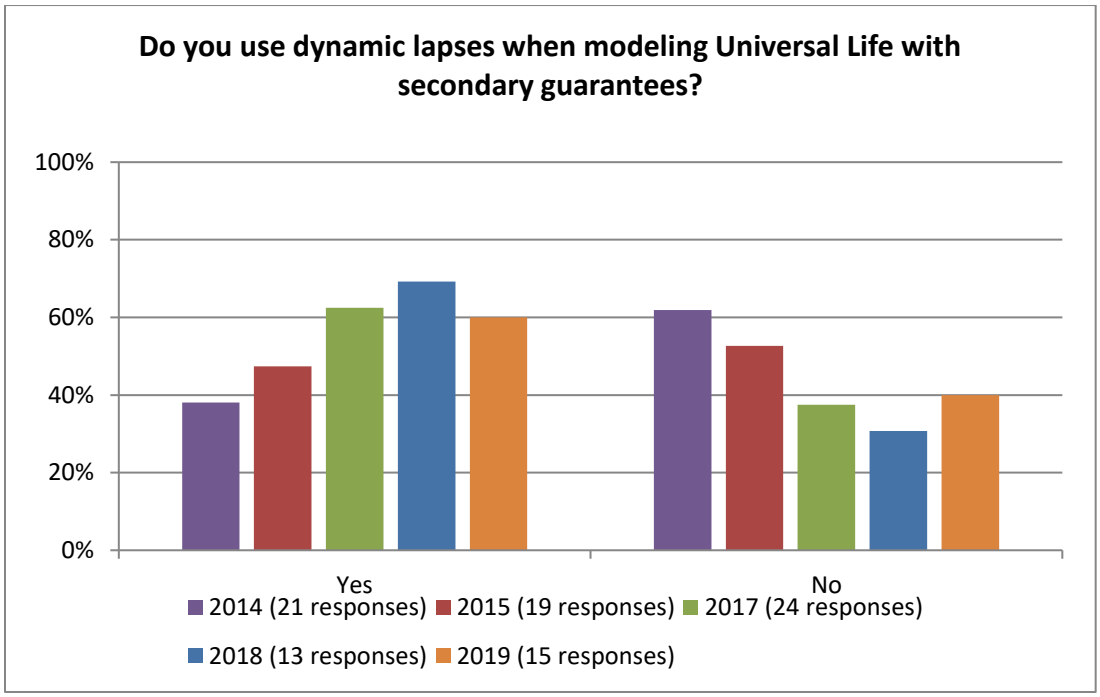

Figure 19

A follow-up question asked those companies that had dynamic lapses whether lapses could be greater than zero if a secondary guarantee renders a policy to be paid-up. In 2019, five of the eight that responded to this follow-up question (63%) indicated that it could. This is the highest percentage in recent surveys, as seen in Figure 20. Additional commentary indicated that this was generally only possible if the policy was paid up, but the policy still had a positive cash surrender value.

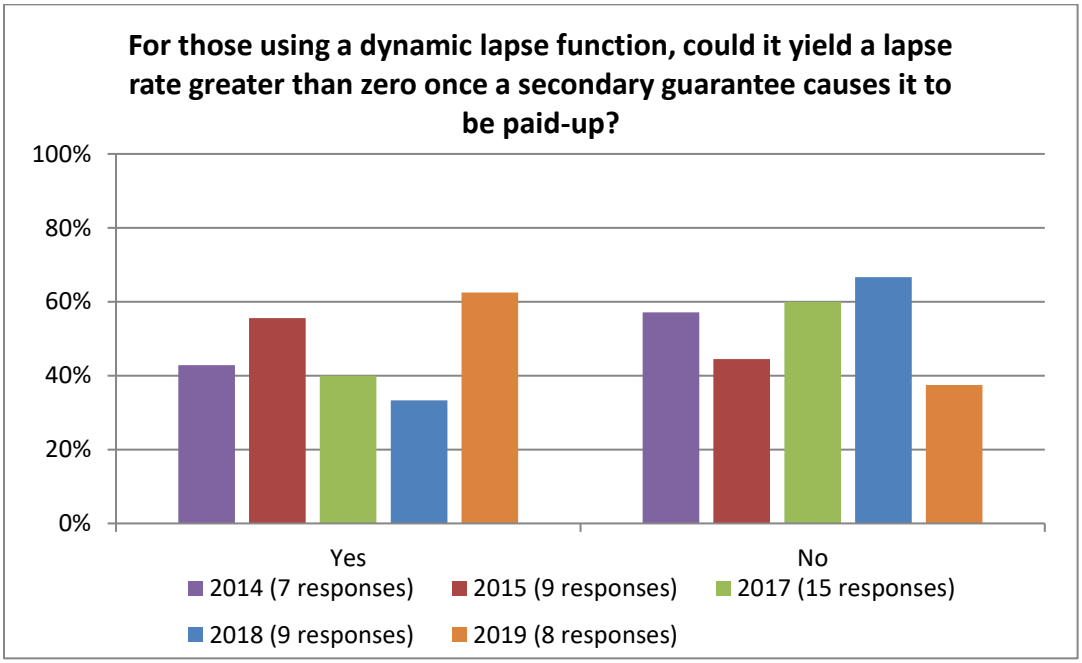

Figure 20

In Question 4, insurers were asked to list their lapse assumption in the tail scenario by duration for issue ages 50-59. In previous surveys, this was done for various issue ages and graphs were provided for issue ages 40-49 and 70-79. This year, the charts to follow show the highest, median, and lowest lapse rates used across duration for issue ages 50-59 only. The 2019 median responses for issue ages 50-59 are a little more volatile this year across durations than what had been seen in the earlier surveys for the same ages.

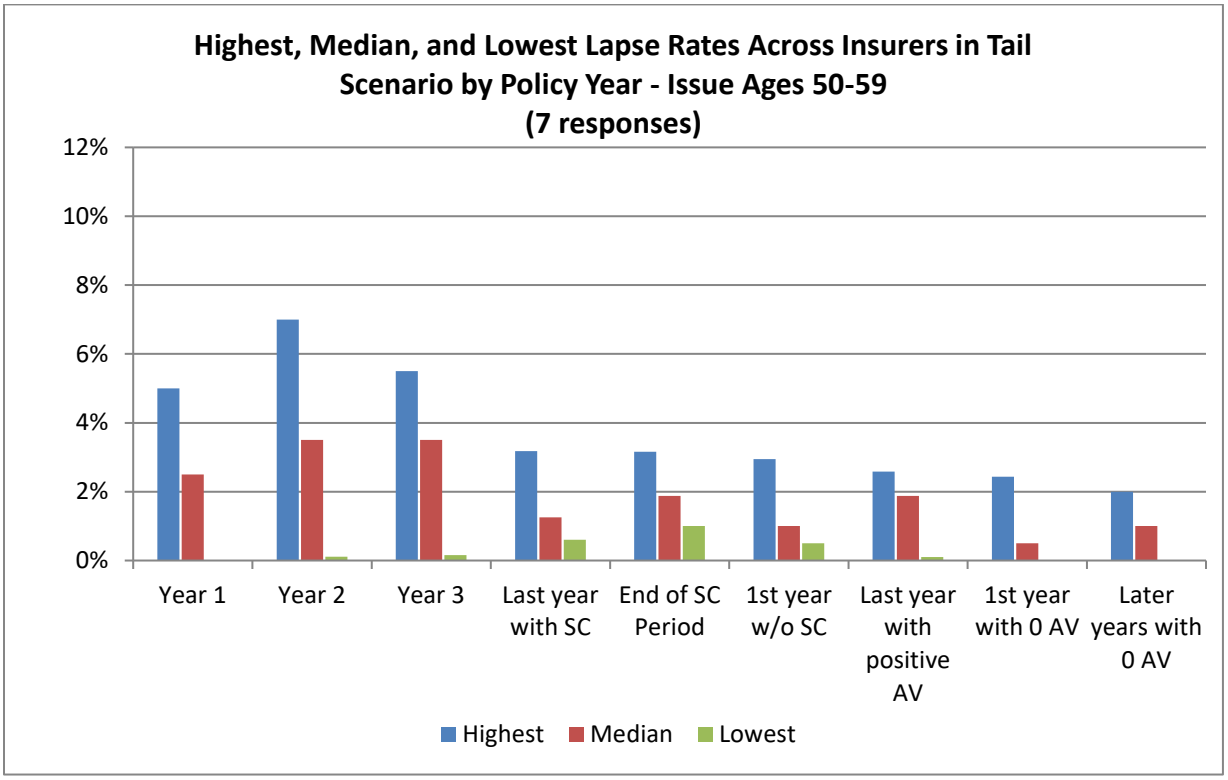

Figure 21

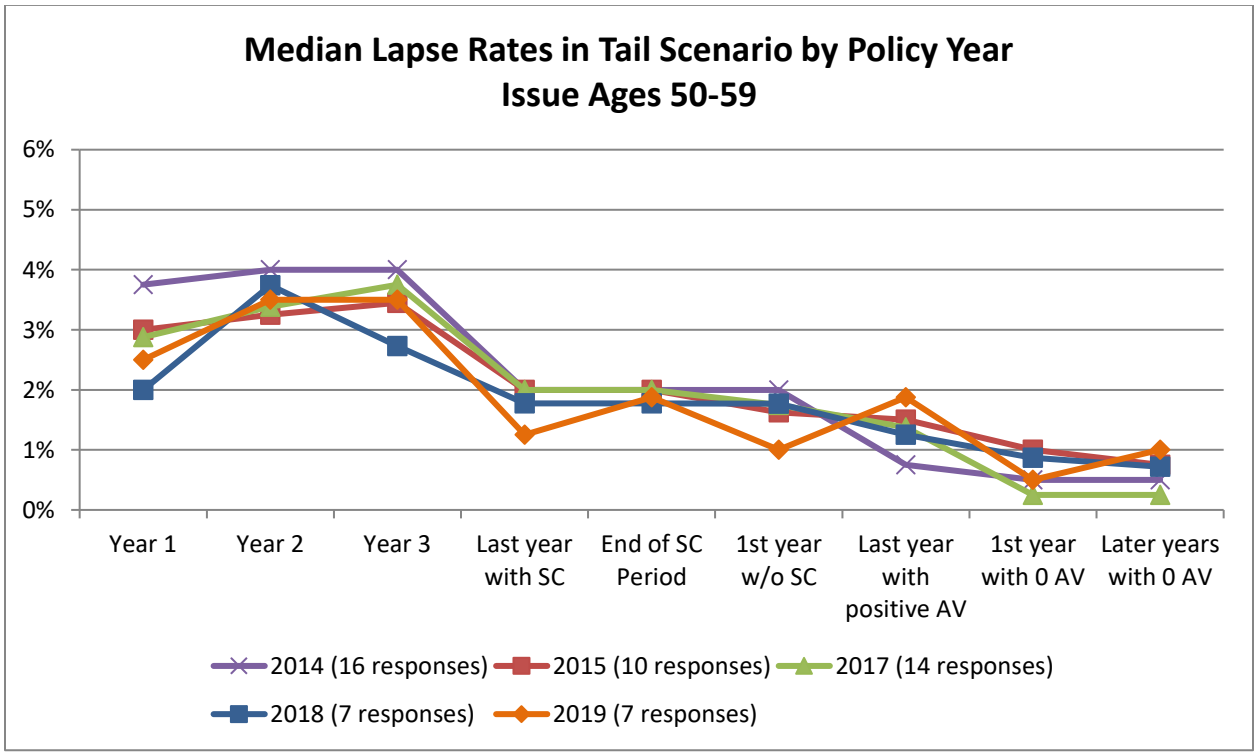

Figure 22

Next, in Question 5, the insurers were asked, out of 10,000 newly issued policies that would experience the tail scenario, how many would first have a zero cash surrender value but be kept in force by the secondary guarantee at a given duration for issue ages 50-59. The results were then converted to a cumulative basis in Figure 23.

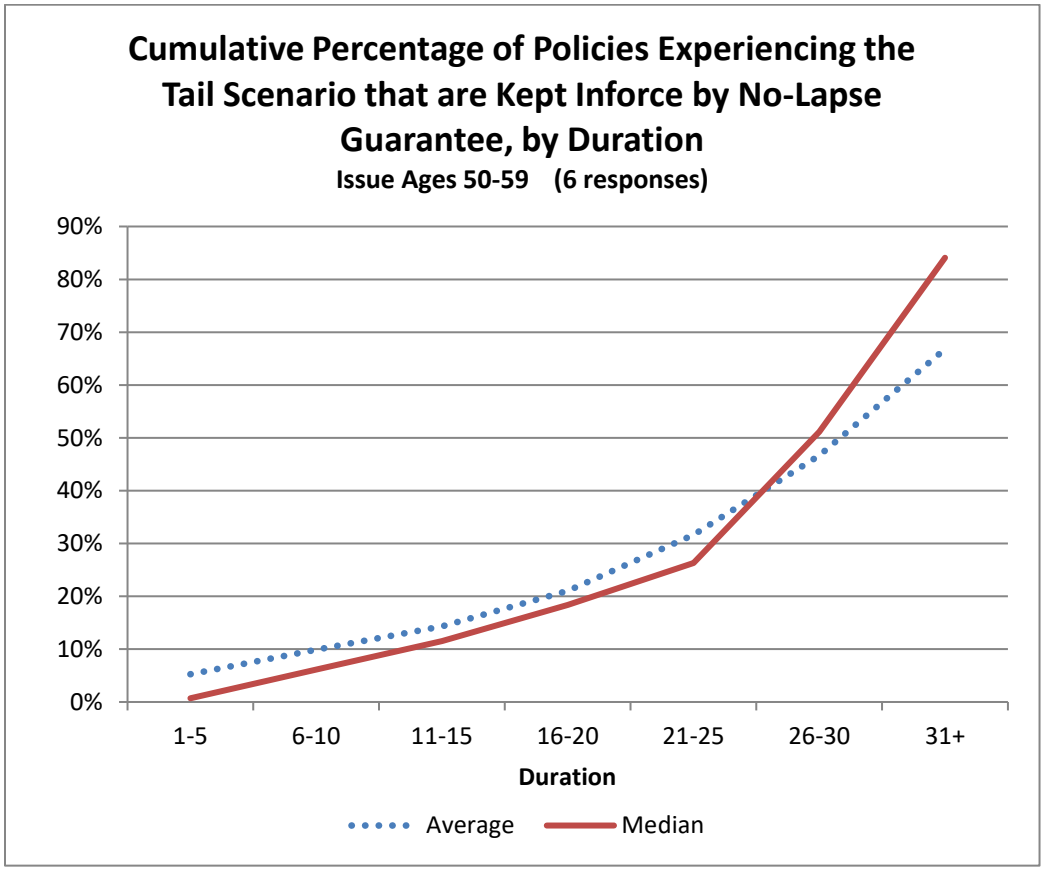

Figure 23

Comparing the median results over time, the 2019 survey showed similar numbers of policies being kept in force by the secondary guarantee in the early durations relative to the last few surveys. At later durations, the current survey, in comparison to earlier surveys, shows a greater proportion of policies being kept in force by the no-lapse guarantee. This is shown in Figure 24.

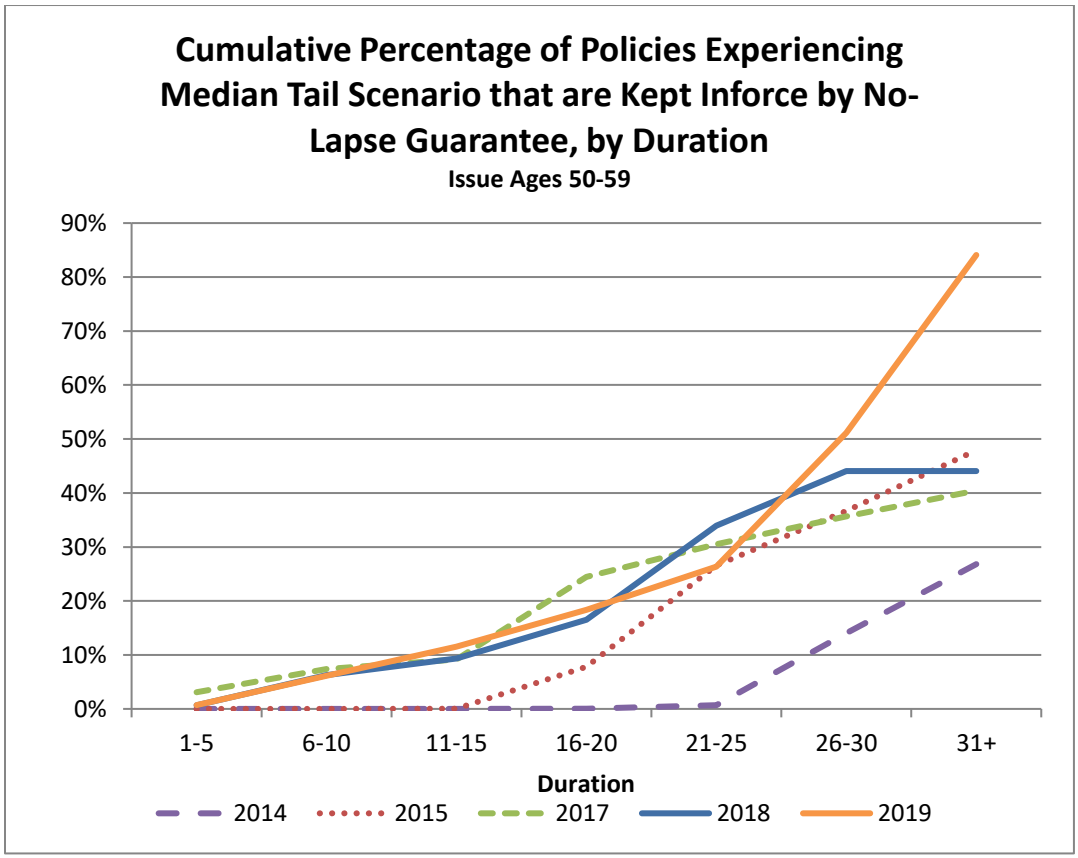

Figure 24

Lapses by Distribution System

In Question 6, the survey asked insurers whether their lapse assumptions vary by distribution. Out of fifteen respondents, eight (53%) indicated that they sell through multiple distributions. This is a similar positive response rate to past years.

Figure 25 indicates the distribution systems used by these respondents, with respondents able to select more than one distribution. A lower proportion cited using wirehouse distributions relative to prior years.

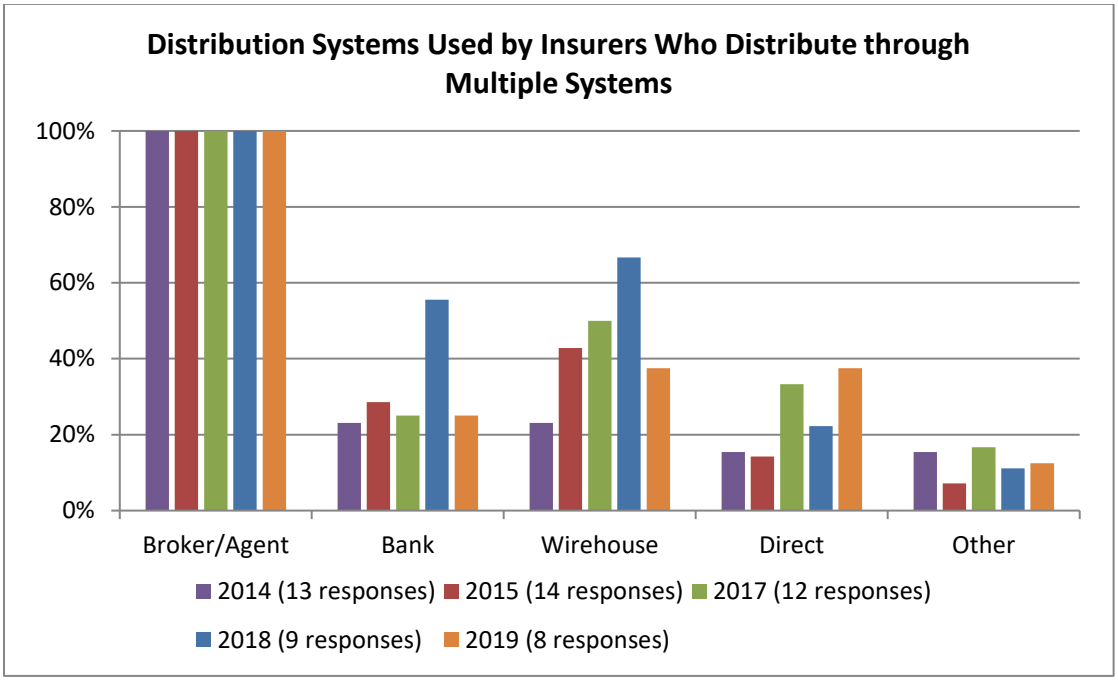

Figure 25

An additional question asked insurers whether they measure lapses by distribution system. Of the eight insurers who responded, two (25%; 2 of 8) measure lapses by distribution system as seen in Figure 26.

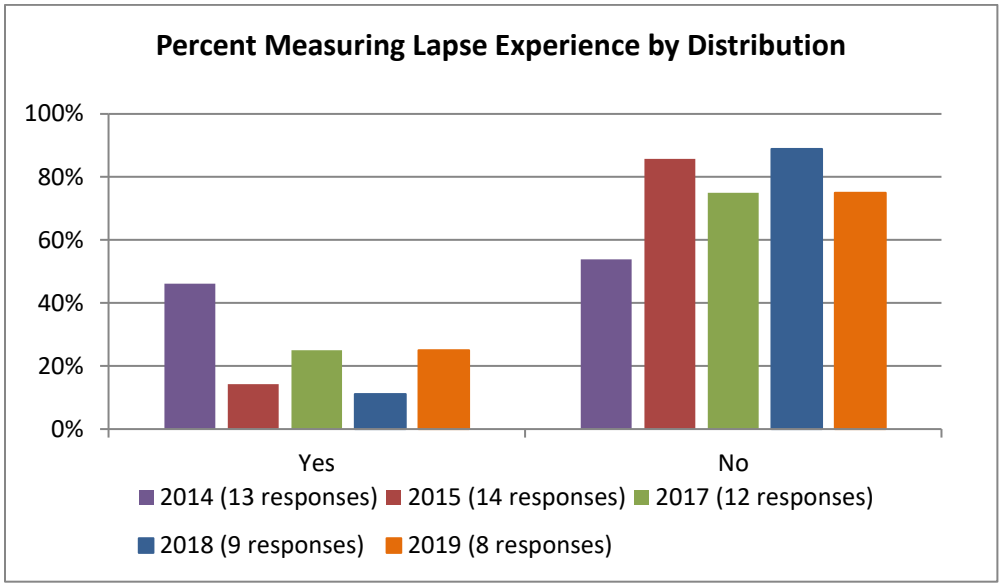

Figure 26

Two companies (25%) reported varying lapse assumptions by distribution system. Apart from 2018, in each of the recent surveys, two companies per year indicated that they varied lapse assumption by distribution system. This is shown in Figure 27.

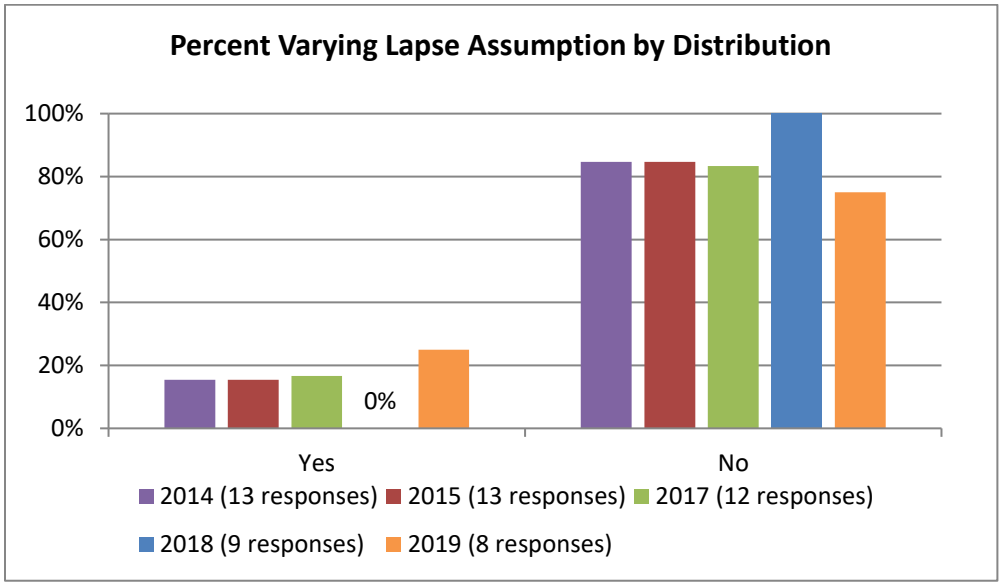

Figure 27

Lapses by Premium Assumption

Question 7 asked about lapses relative to premium assumptions. Half the respondents (7 of 14; 50%) indicated that lapse rates vary by premium assumption, which is lower than 2018 but fairly similar to the other recent years (Figure 28). Where the lapse rates do vary by premium assumption, they are typically bucketed by single pay, level pay, 10-pay, and paid up or else by the level of funding (high/medium/low) relative to, for example, planned premium. Comments indicated that commonly single pay has lower lapse rates, followed by 10-pay, and then level with relatively higher lapse rates. Also, paid up policies have lower lapse rates.

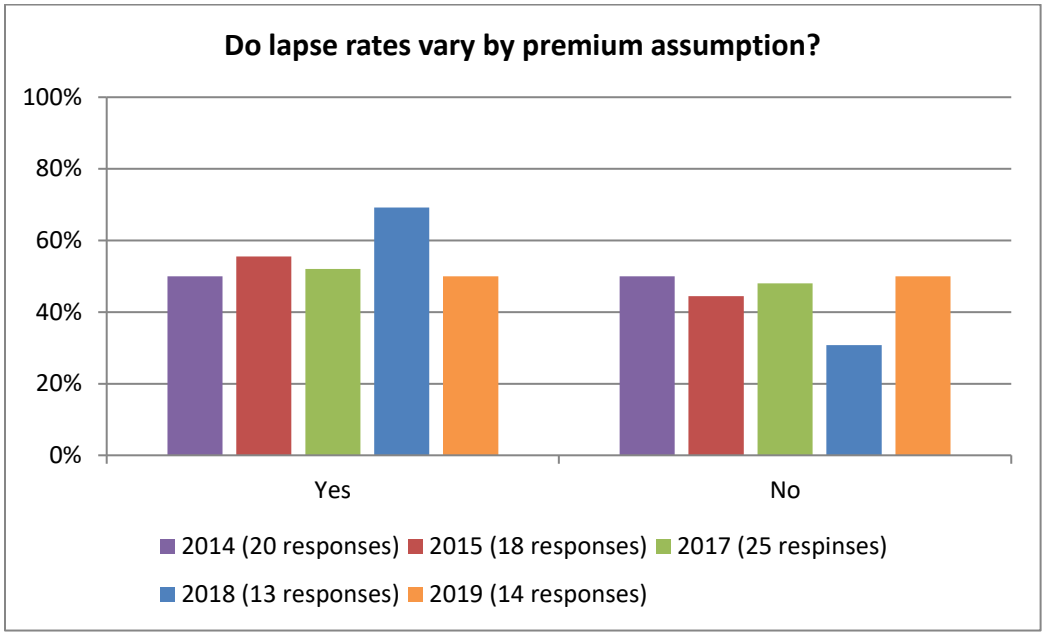

Figure 28

Sources of Base Lapse Assumption

In question 8, insurers were asked about the source of their base lapse assumptions. Respondents could include more than one source. Responses were similar to past surveys including a reduced number selecting "Industry Study" (27%; 4 of 15 in 2019). A lower number of respondents selected "Consultant Advice" (only 7%; 1 of 15 in 2019) than in the past years. "Company experience" (100%) and "Actuarial best estimate" (80%) remained the most commonly cited sources (Figure 29).

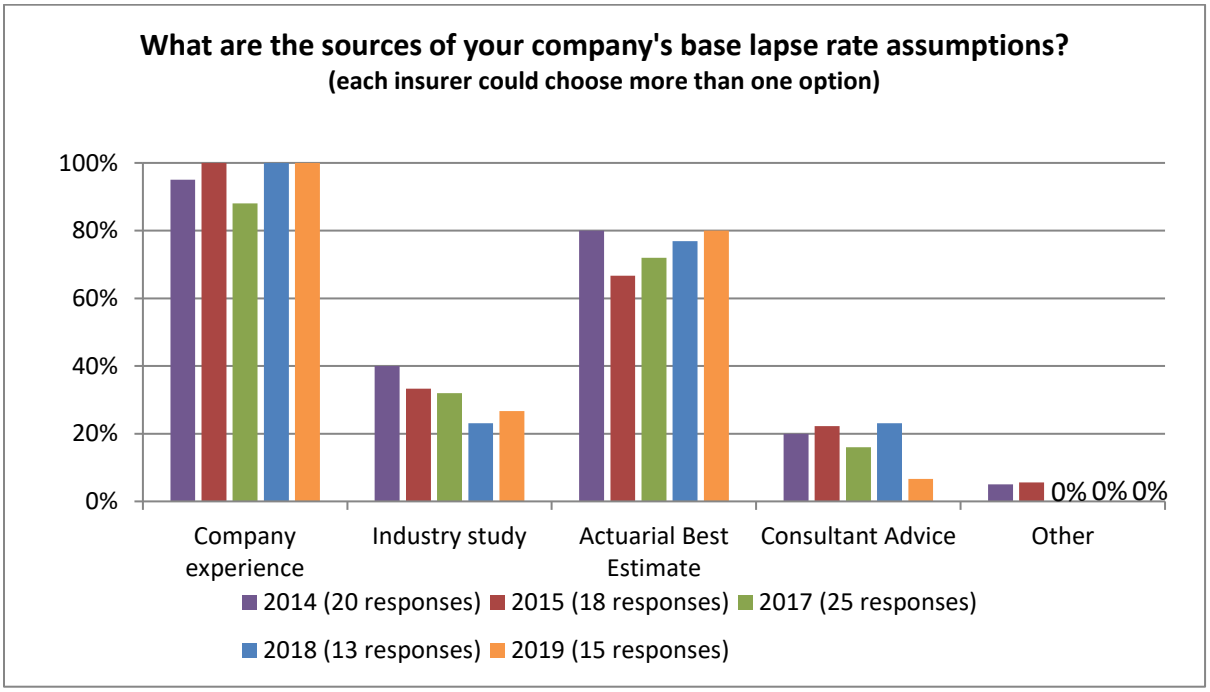

Figure 29

The survey then asked if companies perform lapse studies for UL policies with secondary guarantees, and if so, how frequently. As in past surveys, a strong majority of companies (93%; 14 of 15 in 2019) perform such lapse studies. Of those 14 companies that perform lapse studies of UL polices with secondary guarantees, "Annually" remained the dominant frequency for doing so (10 of 14; 64%) (Figure 30).

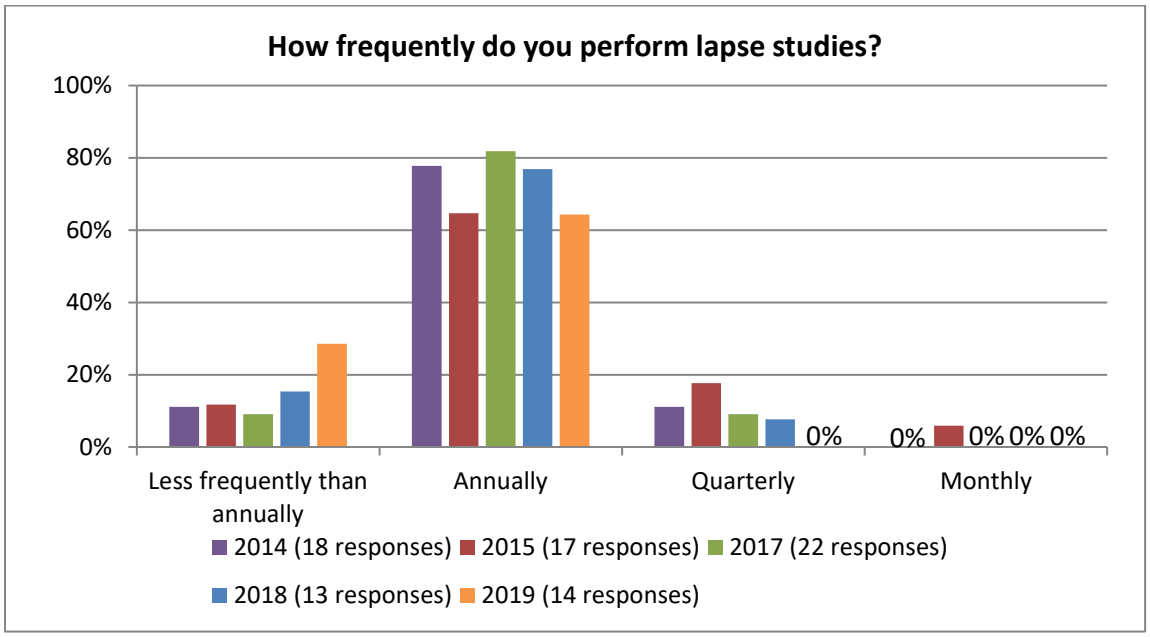

Figure 30

Companies were asked how many years of experience data were used in their latest lapse study. The dominant response remains "5-7 years" (57%; 8 of 14) (Figure 31). Longer time periods were also cited, with only one company using less than 5 years in the 2019 survey.

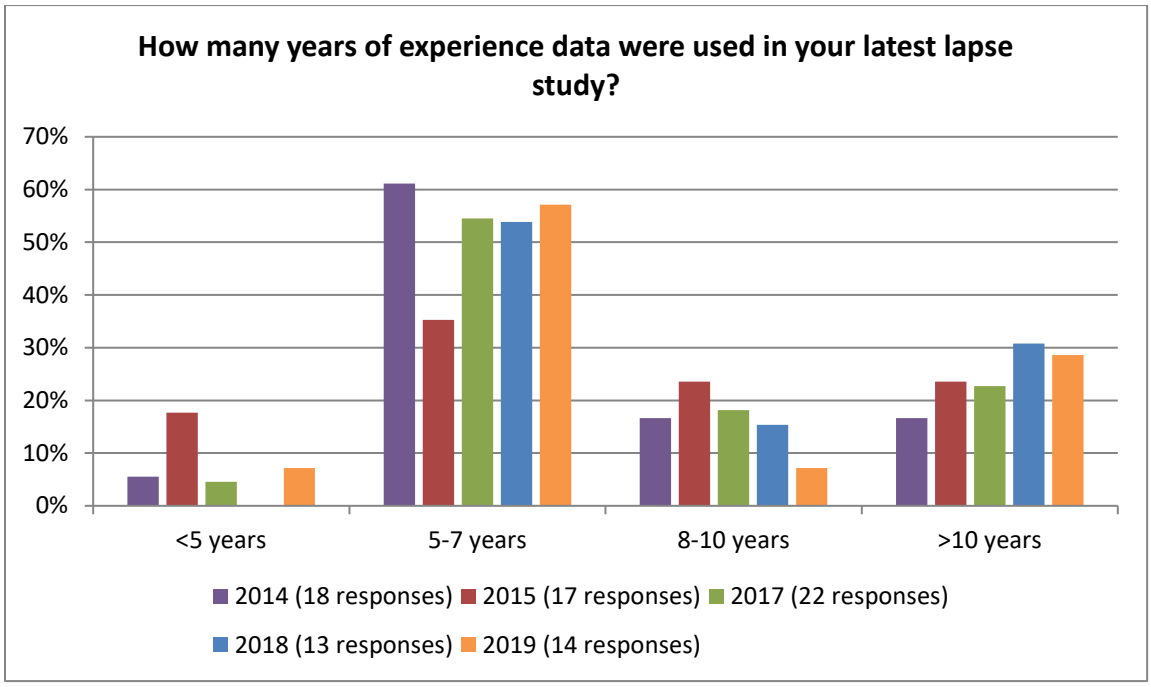

Figure 31

Companies were asked about their dynamic lapse assumptions specifically. See Figure 19. Of the 15 respondents in 2019, 9 (that is, 60%) vary their assumptions dynamically. Of those 9 companies that vary assumptions dynamically, "Actuarial Best Estimate" continues to be the most commonly cited source. Fewer companies reported using industry studies as compared to prior surveys (Figure 32).

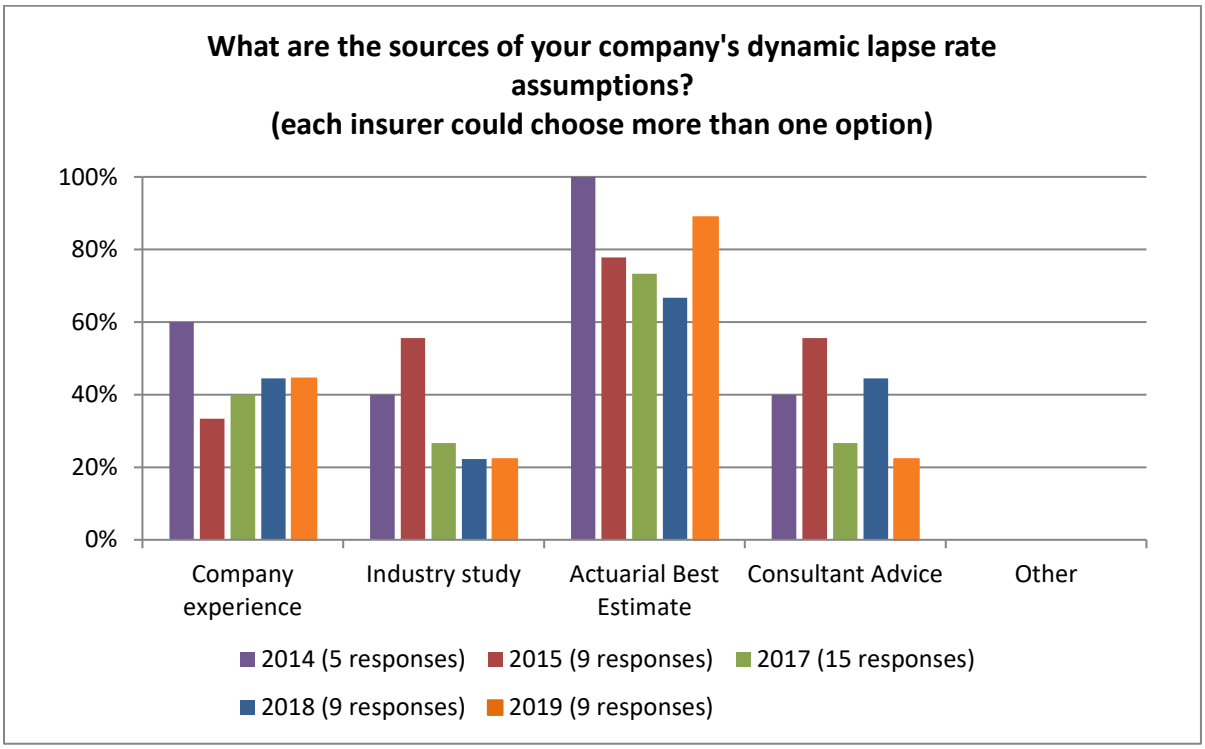

Figure 32

Mortality Assumptions

Companies were asked about their mortality assumptions in the tail in Question 9. This year's survey shows a cross-over point of companies shifting from using 2008 VBT (36%; 5 of 14) to using the 2014/15 VBT (43%; 6 of 14) as their reference table. Only one company reported using the 2001 VBT table in the 2019 survey; see Figure 33. Those marking "Other" indicated that they derived mortality from company experience or tables from reinsurer experience.

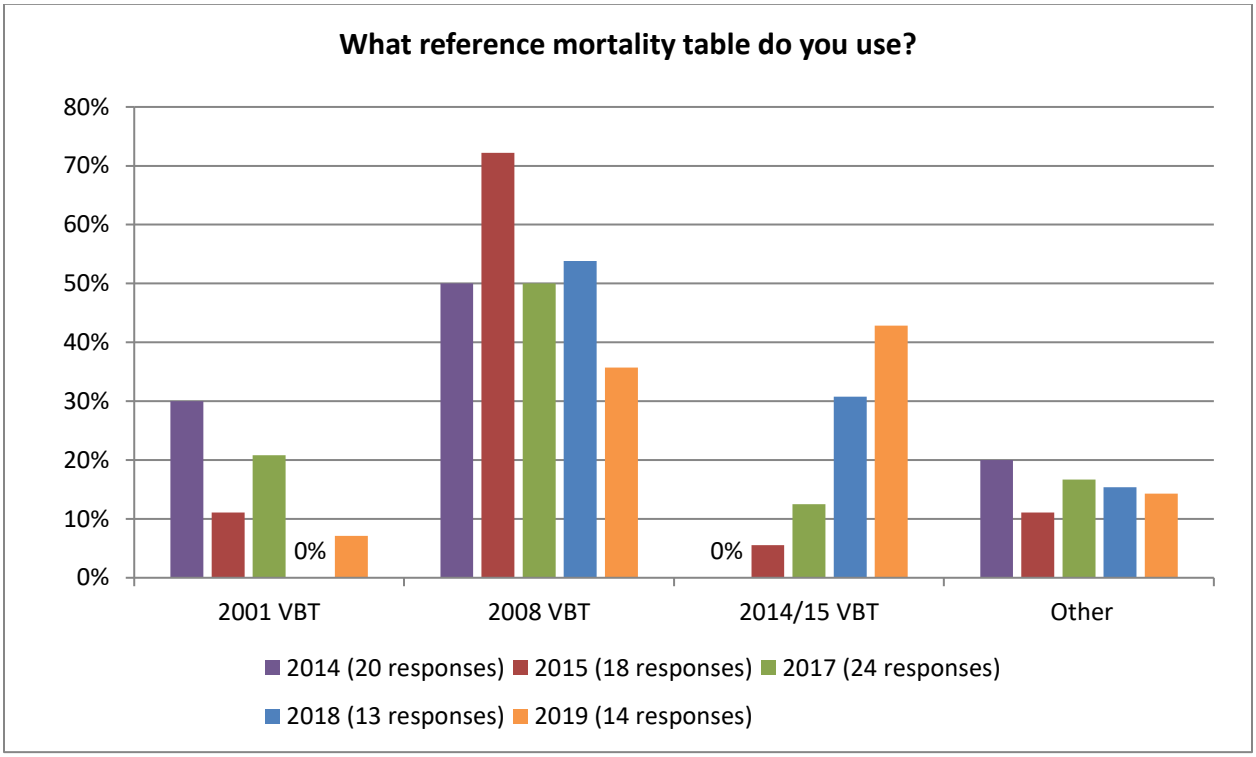

Figure 33

Nine companies provided ultimate mortality rates per 1,000 assumed at higher attained ages for various underwriting classes for males and females. The minimum, maximum and median of those responses are summarized below, alongside the 2008 VBT and 2015 VBT rates (ultimate, gender and tobacco distinct, age nearest birthday) for comparison (Figure 34 through Figure 39). (Note that at advanced ages, the 2015 VBT rates are often higher than the 2008 VBT rates.) For the best underwriting class, only the set of maximum rates is near the VBT tables, while other rates are lower than the VBT tables. For other underwriting classes, the VBT tables tend to fall between the set of maximum rates and the set of median rates. Note that the minimum, maximum, and median responses do not necessarily represent the response of any given company but are determined independently for each age. In addition, some companies did not provide mortality rates for the older ages.

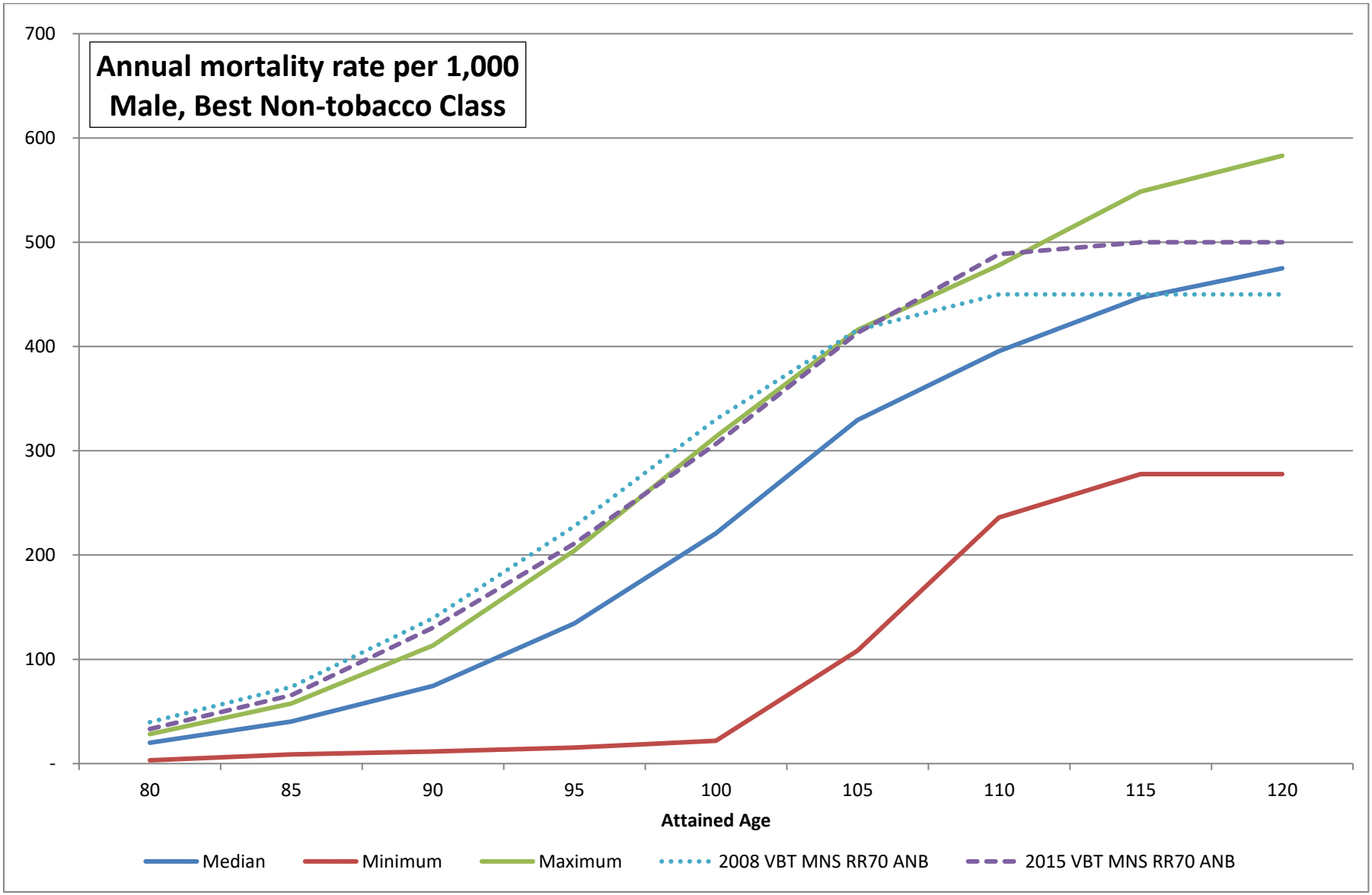

Figure 34

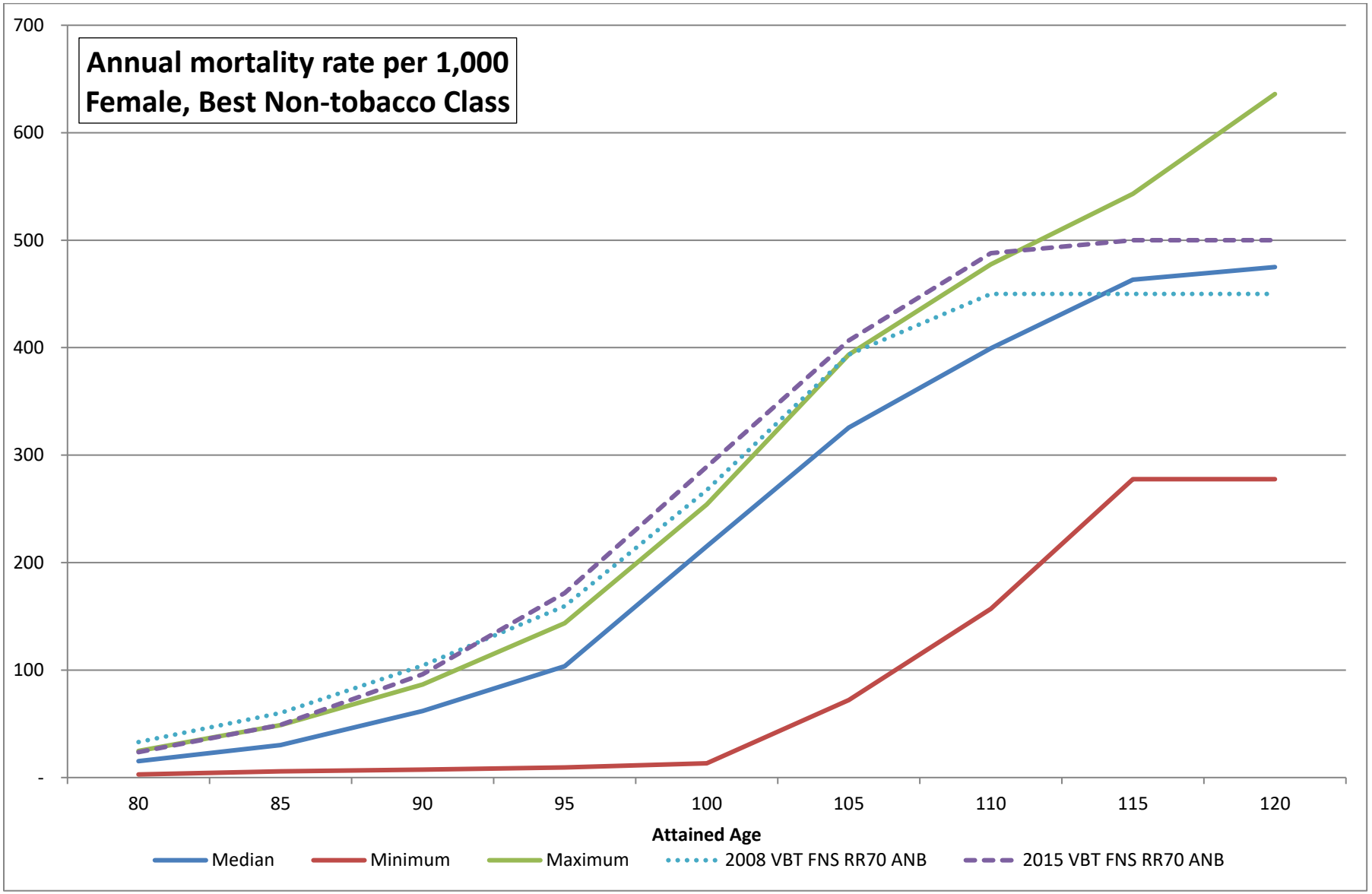

Figure 35

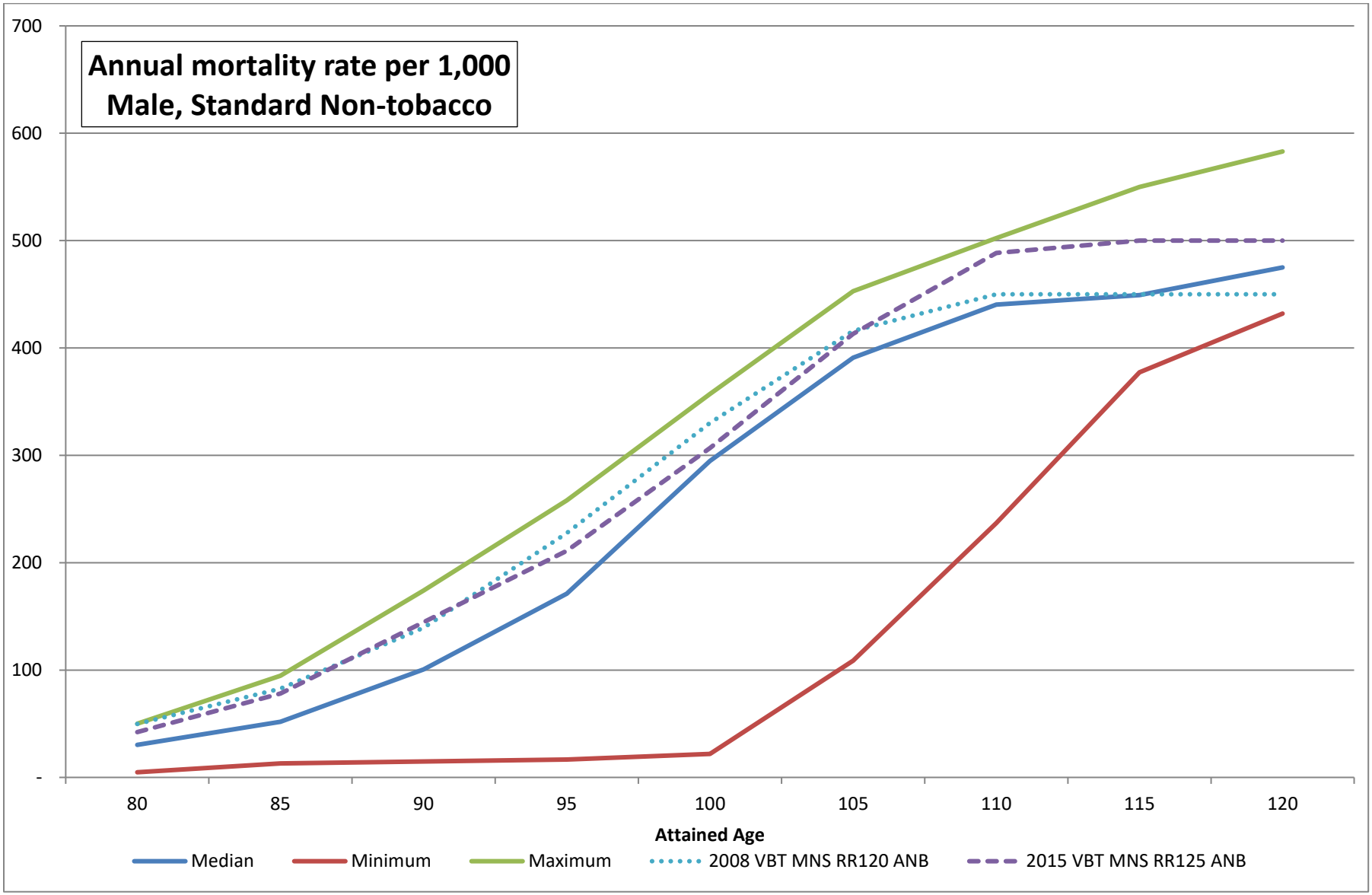

Figure 36

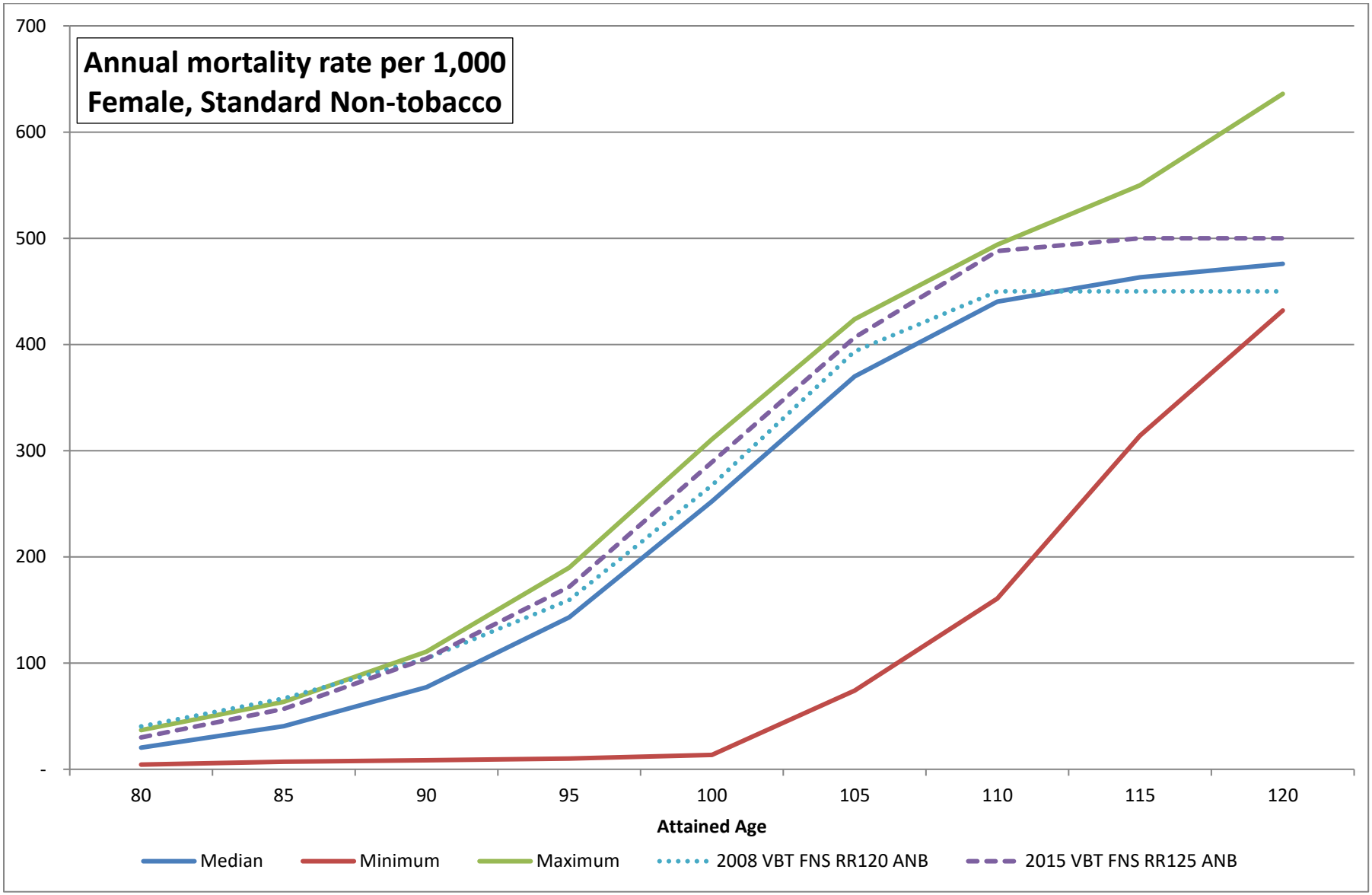

Figure 37

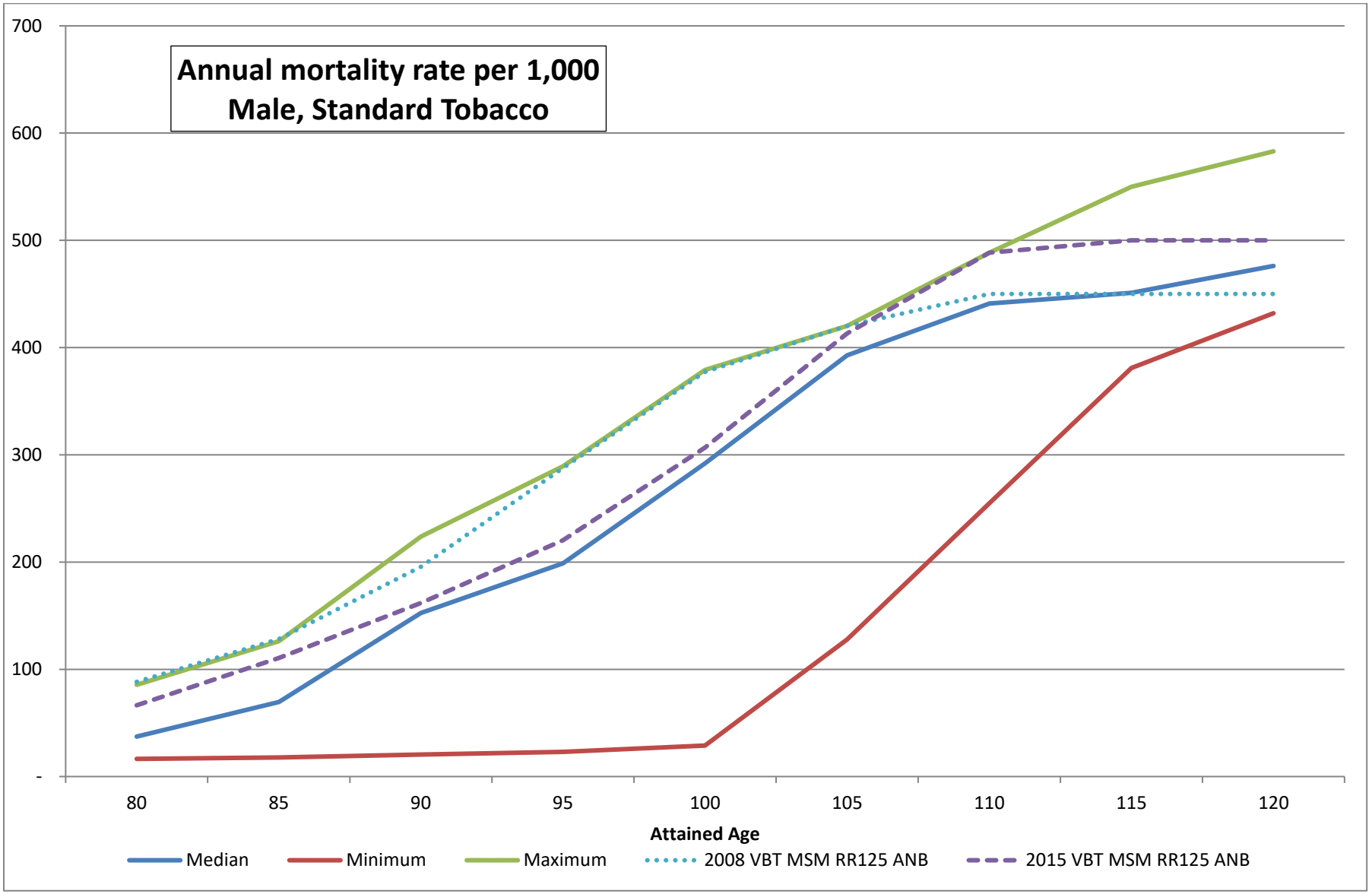

Figure 38

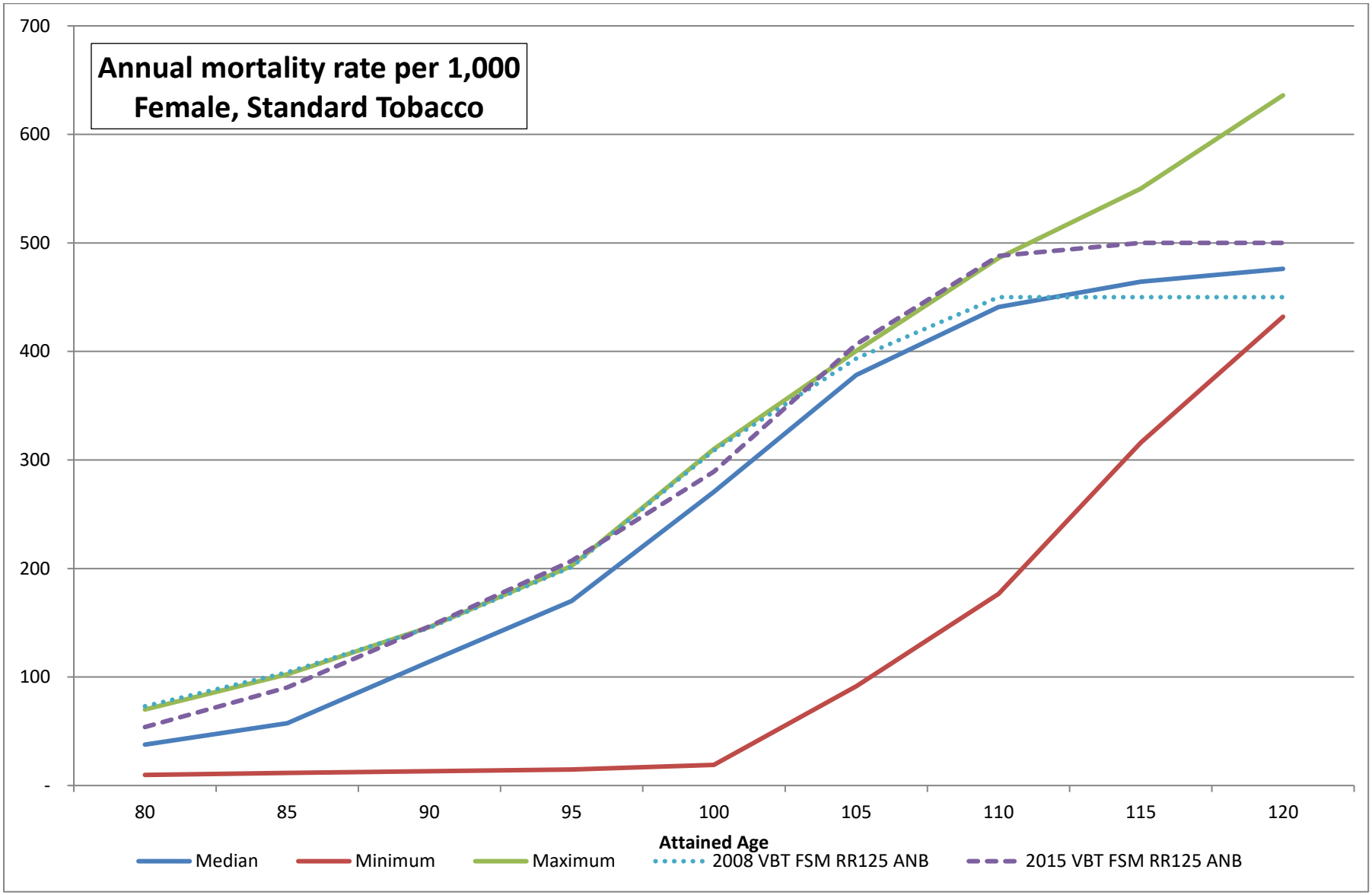

Figure 39

Companies were asked again this year about the number of underwriting classes used. Most companies (57%; 8 of 14) responded with three non-tobacco classes, and 5 of 14 (36%) responded with four non-tobacco classes (Figure 40). For tobacco classes, two continues to be the predominant response with 93% (13 of 14) citing two tobacco classes this year (Figure 41).

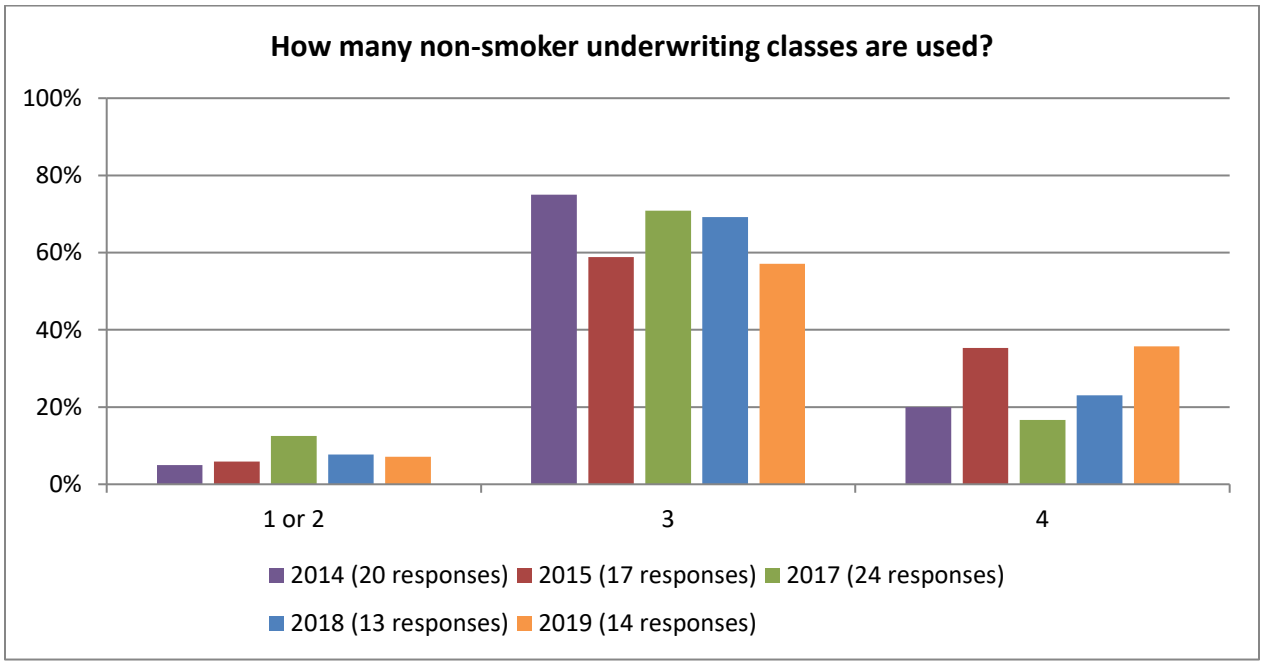

Figure 40

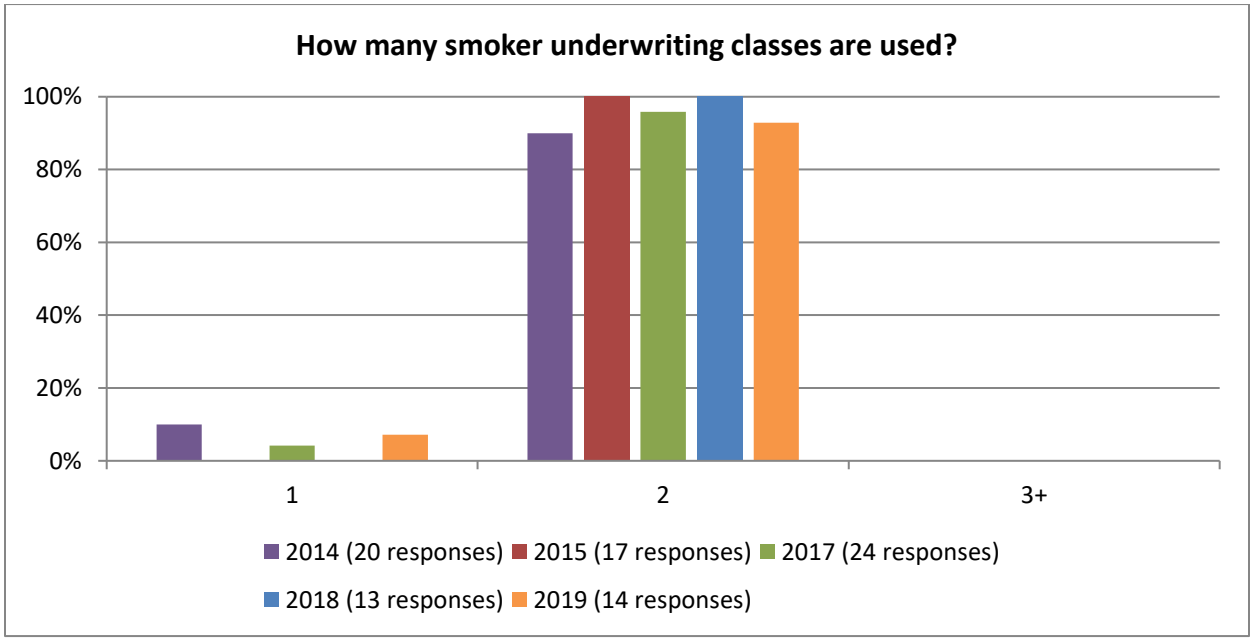

Figure 41

The percentage of respondents incorporating future mortality improvement into their models has reduced to 60% (9 of 15) as shown in Figure 42.

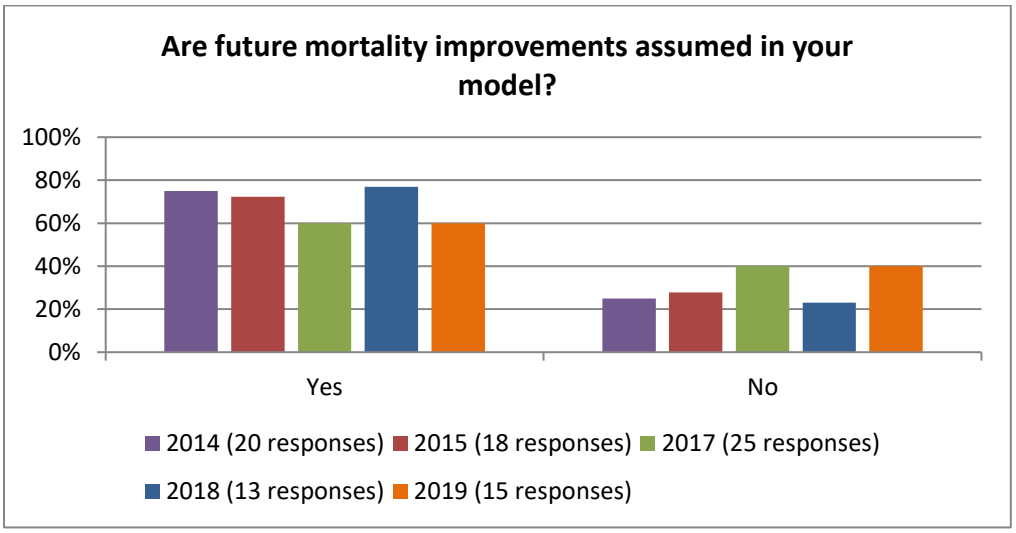

Figure 42

Most of the 9 companies modeling future mortality improvements had improvement assumptions that were gender or age distinct, and about half made a distinction by duration. A smaller proportion (33%; 3 of 9) made a distinction by smoker status for this year's survey (Figure 43).

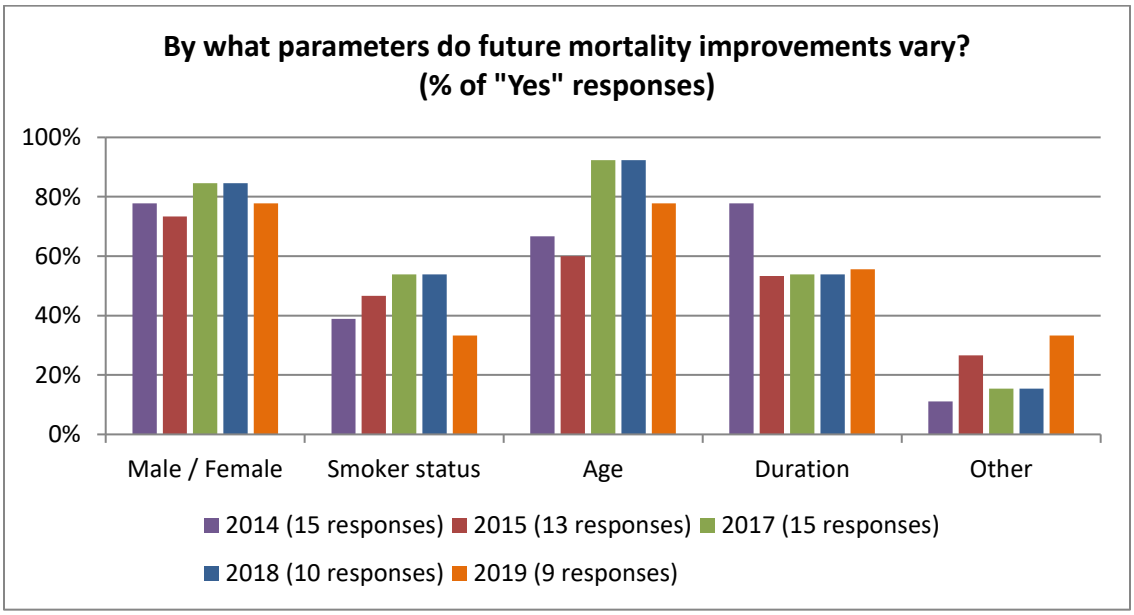

Figure 43

Companies responded to a question about whether mortality assumptions change when the secondary guarantee is in-the-money and the account value is zero. In the 2019 survey, all 15 companies indicated that they do not, similar to the 100% in the 2018 survey.

Critical Assumptions

The survey finally asked for assumptions that the companies considered critical to analyzing experience in the tail. A company could indicate more than one response. Investment return and lapse assumptions continue to be cited as the most critical assumptions for analyzing experience in the tail, although lower than in past years. One company noted that it had not responded with "Lapses" because its ultimate lapse rate assumptions were so low that there was little room for material loss from actual lapses being experienced at even lower rates (**Figure 44**). While few, if any, companies chose "Life Settlement" as a critical assumption, it may be that they are responding in terms of the more direct inputs of Lapses and Premium Pattern, whether caused by a Life Settlement owner or the original policy owner.

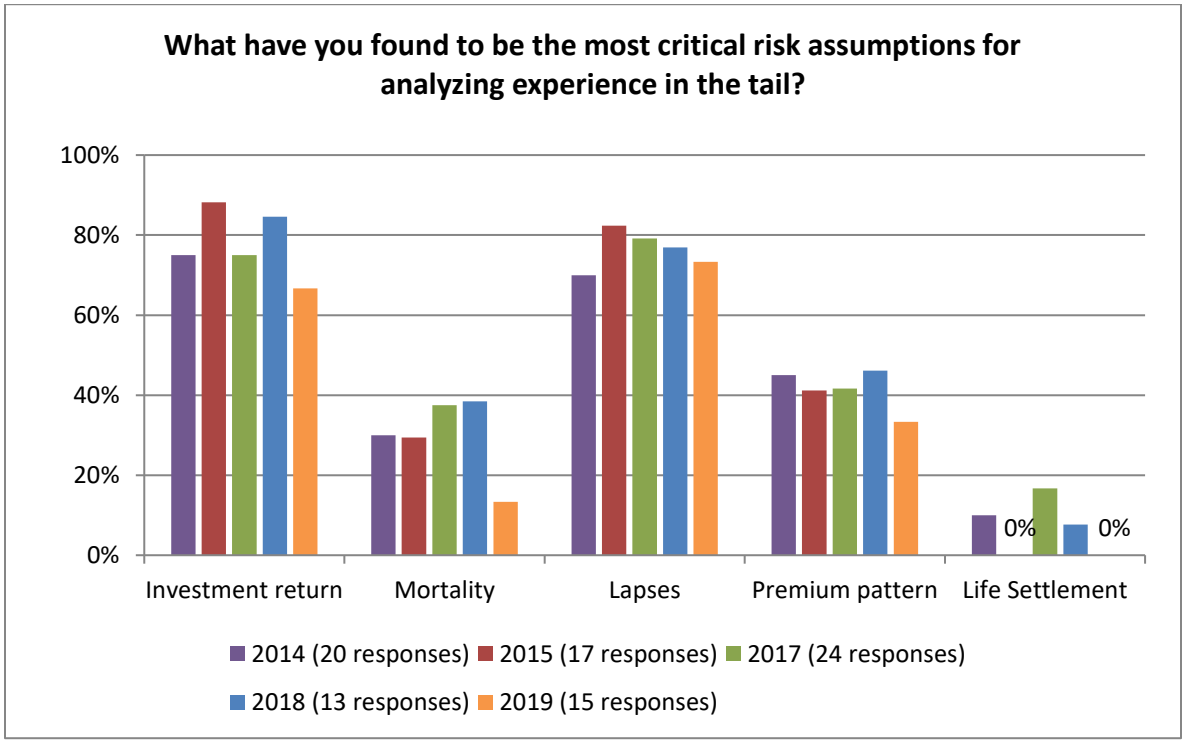

Figure 44

About The Society of Actuaries

The Society of Actuaries (SOA), formed in 1949, is one of the largest actuarial professional organizations in the world dedicated to serving more than 32,000 actuarial members and the public in the United States, Canada and worldwide. In line with the SOA Vision Statement, actuaries act as business leaders who develop and use mathematical models to measure and manage risk in support of financial security for individuals, organizations and the public.

The SOA supports actuaries and advances knowledge through research and education. As part of its work, the SOA seeks to inform public policy development and public understanding through research. The SOA aspires to be a trusted source of objective, data-driven research and analysis with an actuarial perspective for its members, industry, policymakers and the public. This distinct perspective comes from the SOA as an association of actuaries, who have a rigorous formal education and direct experience as practitioners as they perform applied research. The SOA also welcomes the opportunity to partner with other organizations in our work where appropriate.

The SOA has a history of working with public policymakers and regulators in developing historical experience studies and projection techniques as well as individual reports on health care, retirement and other topics. The SOA's research is intended to aid the work of policymakers and regulators and follow certain core principles:

Objectivity: The SOA's research informs and provides analysis that can be relied upon by other individuals or organizations involved in public policy discussions. The SOA does not take advocacy positions or lobby specific policy proposals.

Quality: The SOA aspires to the highest ethical and quality standards in all of its research and analysis. Our research process is overseen by experienced actuaries and nonactuaries from a range of industry sectors and organizations. A rigorous peer-review process ensures the quality and integrity of our work.

Relevance: The SOA provides timely research on public policy issues. Our research advances actuarial knowledge while providing critical insights on key policy issues, and thereby provides value to stakeholders and decision makers.

Quantification: The SOA leverages the diverse skill sets of actuaries to provide research and findings that are driven by the best available data and methods. Actuaries use detailed modeling to analyze financial risk and provide distinct insight and quantification. Further, actuarial standards require transparency and the disclosure of the assumptions and analytic approach underlying the work.

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