

POLICYHOLDER BEHAVIOR IN THE TAIL UL WITH SECONDARY GUARANTEE SURVEY 2014 RESULTS

Survey Highlights

In 2014, 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.

Overview

- Most companies continue to view the investment returns in tail scenarios (cited by 75% of respondents) and lapsation (70%) assumptions to be their most critical risk assumptions when analyzing policyholder behavior in the tail for secondary guarantees. (Figure 41).
- The latest survey 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. There were a total of 21 respondents in 2014. While the identities of the responding companies remain anonymous to the Policyholder Behavior in the Tail (PBITT) committee, the SOA research office was able to confirm that 11 of these companies were the same as in the prior year.

Tail Scenarios

- Overall, 33% of companies use stochastic scenarios to set or analyze capital levels. There is no significant correlation by size of block of business. Of the companies that use stochastic scenarios, 57% project 100 or fewer scenarios and 29% project 1000 or more. (Figures 1-3).
- 94% of companies project for at least 31 years and nearly half (47%) project over 75 years. (Figure 4).
- The scenarios used are summarized in Figures 5 through 16.

Lapse Assumptions

- Lapse rates in the tail continue to vary widely amongst insurers, although the highest lapse rates are not as high compared to 2013 (Figure 18 and Figure 20). Assumed lapse rates do not show substantial variation by issue age for most individual insurers, but are lower for the highest issue ages (60-69 and 70+). Only select age groups are shown in the figures.
- Median lapse rates for 2014 are similar to those in past surveys (Figure 19 and Figure 21).
- The percentage of companies that reported using dynamic lapse assumptions is similar to prior years although trending downward. Dynamic lapses were used by 38% this year as compared to 40-45% for each of the last three years (Figure 17).
- Of those that specifically use dynamic lapse assumptions, nearly two-thirds, (5 of 8) 63%, state that they set lapses to zero if the guarantee is in-the-money and no further premium is required. This is a similar response rate as last year.
- Similar to last year, 2014 saw a significant percentage of companies that measure lapses by distribution system (46% in 2014 and 53% in 2013, but only 33% in 2012 and 2011). However, only 2 of those companies (15%) vary their lapse assumptions by distribution system which is similar to 18% last year.
- Half (10 of 20) of companies vary lapse assumptions by premium pattern (the same as 2013 and similar to 2012's 46%), with several responses mentioning higher lapse rates for level premium patterns and/or lower lapse rates for single premiums (Figure 24).
- Company experience and actuarial best estimates dominated as sources of base lapse assumptions (95% and 80% respectively) for the fourth consecutive year. Consultant advice had a positive response rate of 20% (4 of 20), down sharply from 38% in 2013 (9 of 24), but the same as in 2012 (5 of 25). (Figure 25).
- The majority of companies use 5-7 years of experience in their latest lapse study (61%, 11 of 18). Only 1 of 18 companies used less than 5 years of experience (6%) which is down sharply from 2013 when 29% of respondents used less than 5 years (Figure 27).
- All respondents selected actuarial best estimates as a source for dynamic lapse assumptions. Company experience (60%), industry studies (40%), and consultant advice (40%) also had significant response rates and each was higher than 2012 and 2013. (Figure 29).

Mortality Assumptions

- There was a significant shift in the reference table used for mortality in this year's survey. In 2014, 50% of companies cited 2008 VBT as their reference table, up from 17% in 2013's survey. On the other hand, only 30% cited 2001 VBT as compared to 48% last year. (Figure 30).
- Median mortality rates at higher attained ages continue to be lower than mortality rates from both the 2001 VBT and 2008 VBT except at the oldest ages (115+). However, companies showed a wide range of assumptions (Figure 31-36).
- Future mortality improvement is modeled by 75% of responding companies, a similar rate as in the last two years. Improvements vary by a variety of factors including gender, smoking status, age and policy duration (Figure 40).

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Acknowledgements

The Society of Actuaries' Policyholder Behavior in the Tail (PBITT) working group gratefully acknowledges Stephen Hodges, Chuck Bremer, and Jeffrey Hartman for all of their efforts in analyzing the survey data and drafting this report.

Special thanks to all of the companies that responded to the survey and provided helpful information. Without their efforts, this survey would not be possible. The identity of survey participants is kept confidential and known only to Society of Actuaries' staff.

The Policyholder Behavior in the Tail group is interested in comments on the survey and results. Please e-mail comments to either Jim Reiskytl, Chair of the Policyholder Behavior in the Tail group, at jimreiskytl@wi.rr.com or Steve Siegel, Society of Actuaries Research Actuary at ssiegel@soa.org.

Background

In 2014, 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 21 usable responses which was down from 25 in 2013, 26 in 2012, 32 in 2011, and 23 in 2009. Not every company answers every question. To suggest the credibility of results, most charts indicate how many companies responded to the question.

It is the intention of the PBITT committee to continue to conduct this survey. 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.

While the exact relationships of new versus prior respondents vary by individual question, at the level of the total survey we were able to confirm 11 respondents from both 2013 and 2014 out of 21 total responses in 2014. Therefore, some of the changes described below reflect different respondents, not necessarily a change by any given company. Figure 42 shows the change in the distribution by size over the last four surveys.

Parameters of Stochastic Capital Calculation

Insurers were asked in Question 2 of the survey to indicate whether or not 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. The following graphs (Figure 1, Figure 3, and Figure 4) below show the responses to these questions. 33% of insurers used stochastic scenarios to set or analyze capital levels, up from 24% in 2013 and consistent with 35% in 2012. Figure 2 looks at stochastic scenario use by company size. Of those reporting company size and stochastic scenario usage, total face amount does not appear to be a determining factor in the decision to use stochastic scenarios for this purpose.

29% (2 of 7) of the 2014 respondents using stochastic scenarios indicated that they use 1,000 or more scenarios. The percentage of respondents using 1,000 scenarios is consistent with past surveys.

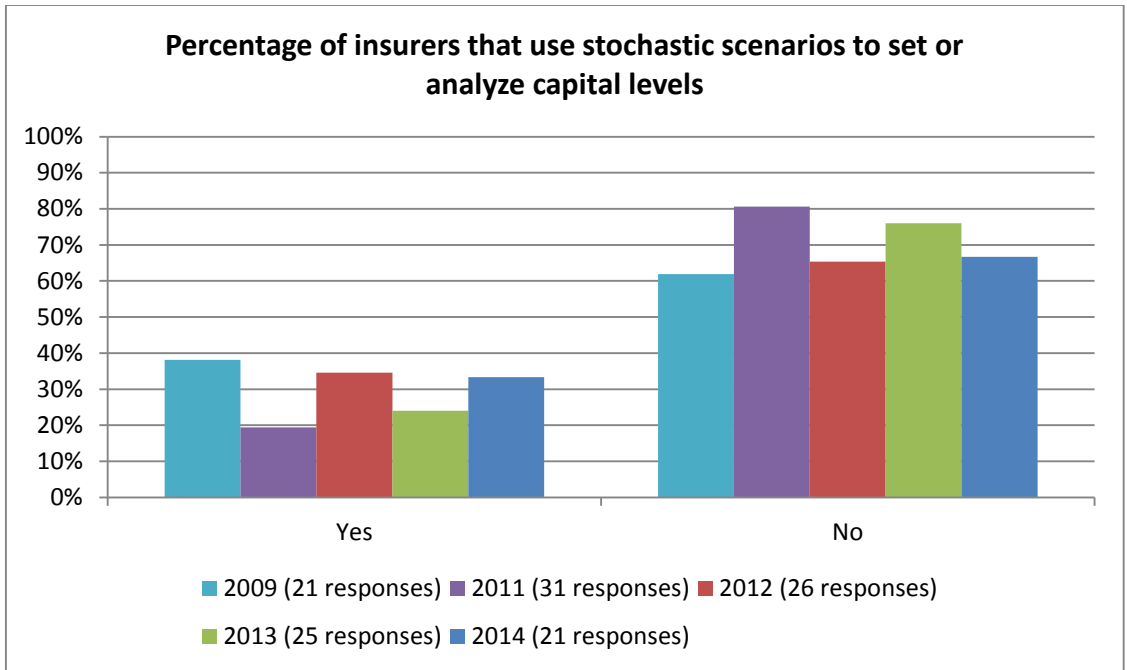


Figure 1

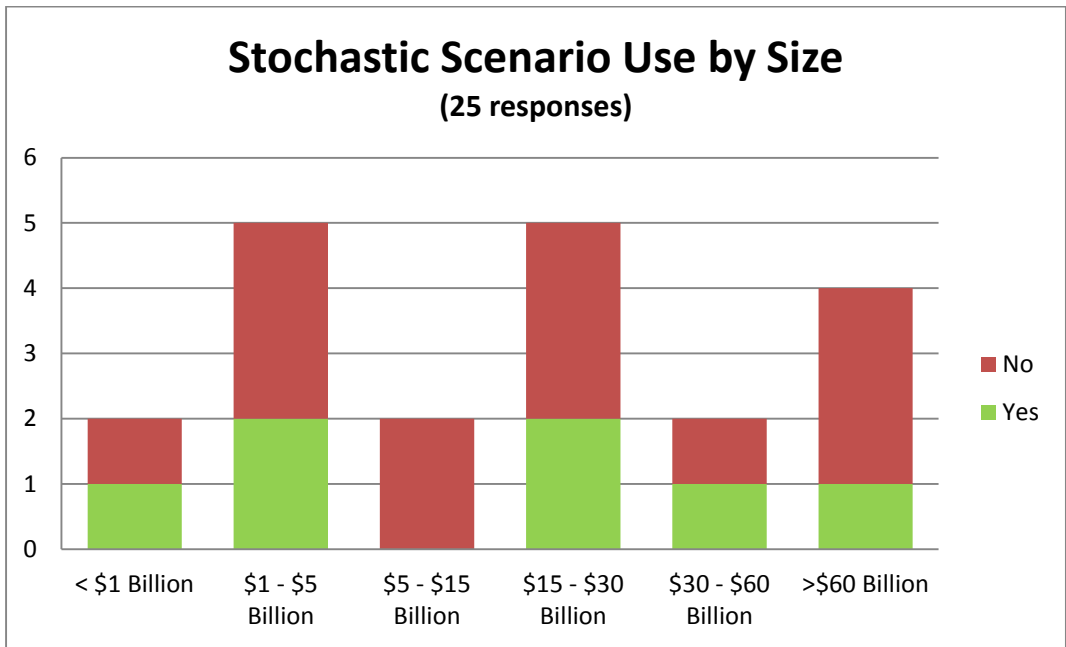


Figure 2

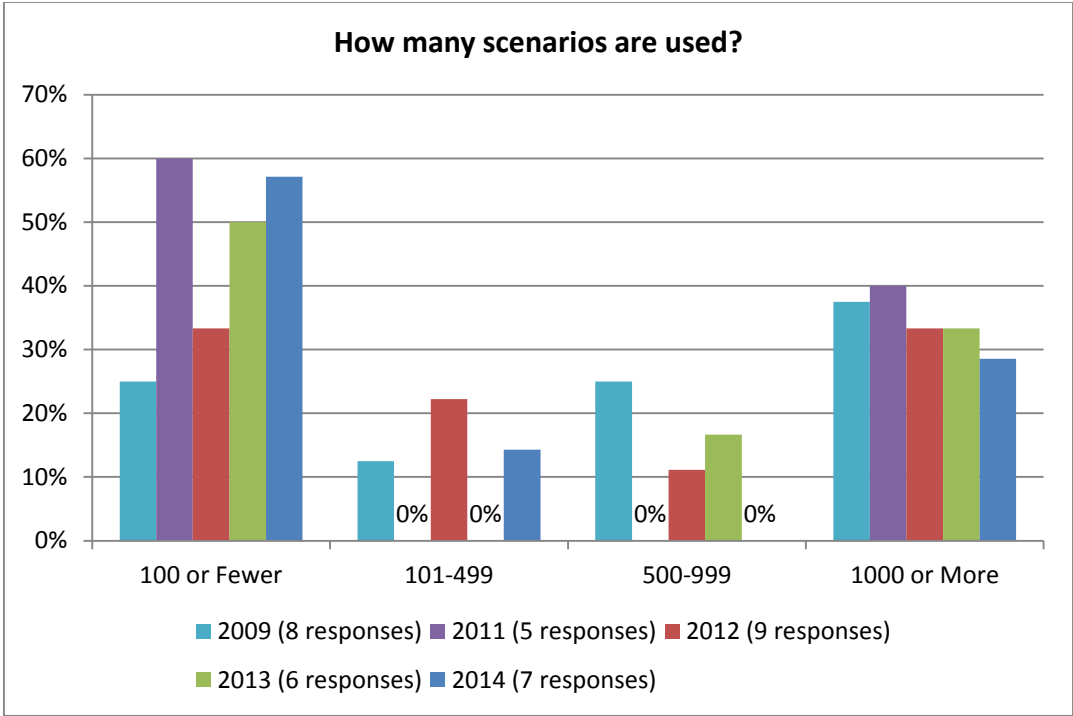


Figure 3

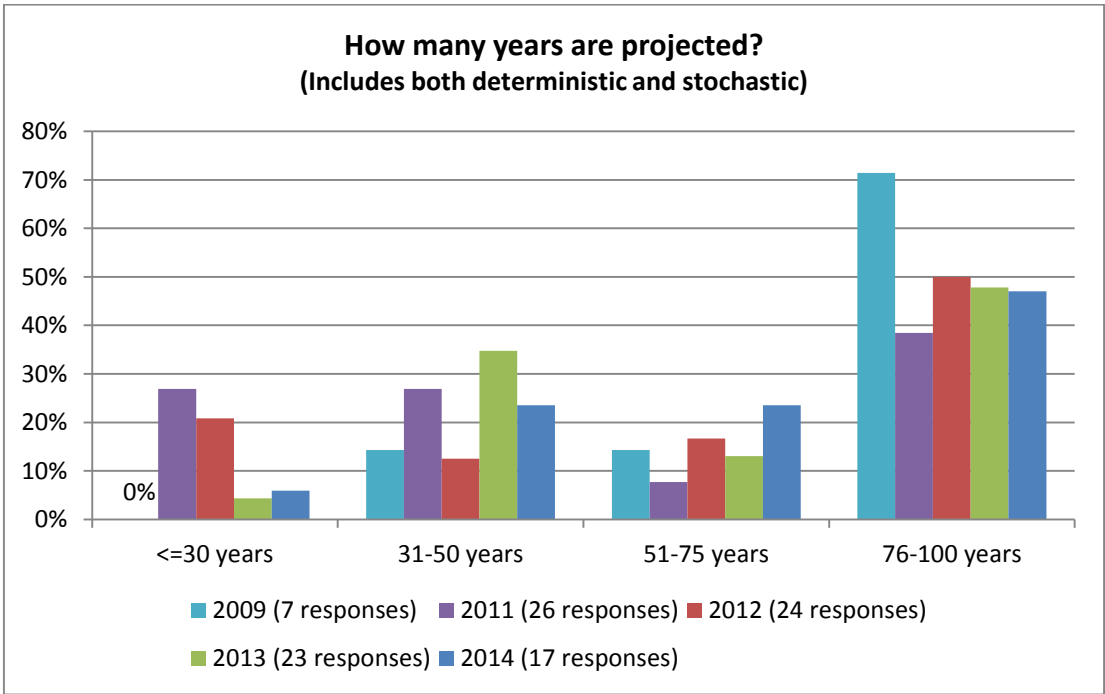


Figure 4

Tail Scenario

The tail scenario is defined as the scenario which gives 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 below 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. However, one company reporting the use of stochastic methodology ("Stochastic, 2") reported a tail interest rate path that appeared deterministic. Four companies reported not using stochastic methodology (labeled "Deterministic, 2 thru 5") nonetheless reported tail interest rate paths that appeared rather volatile. Perhaps their deterministic method is informed by earlier stochastic modeling.

All seven of the companies that reported using stochastic modeling provided requested interest rate scenarios, although only six provided rates across the entire yield curve. Seven of the 14 companies that do not use stochastic modeling to analyze capital also provided interest rate scenarios. One company indicated that their response is the portfolio yield assumption and not Treasury rates.

The companies are comparable across the figures (i.e. Stochastic, 2 in Figure 5 is the same company as Stochastic, 2 in Figure 7 and Figure 9.)

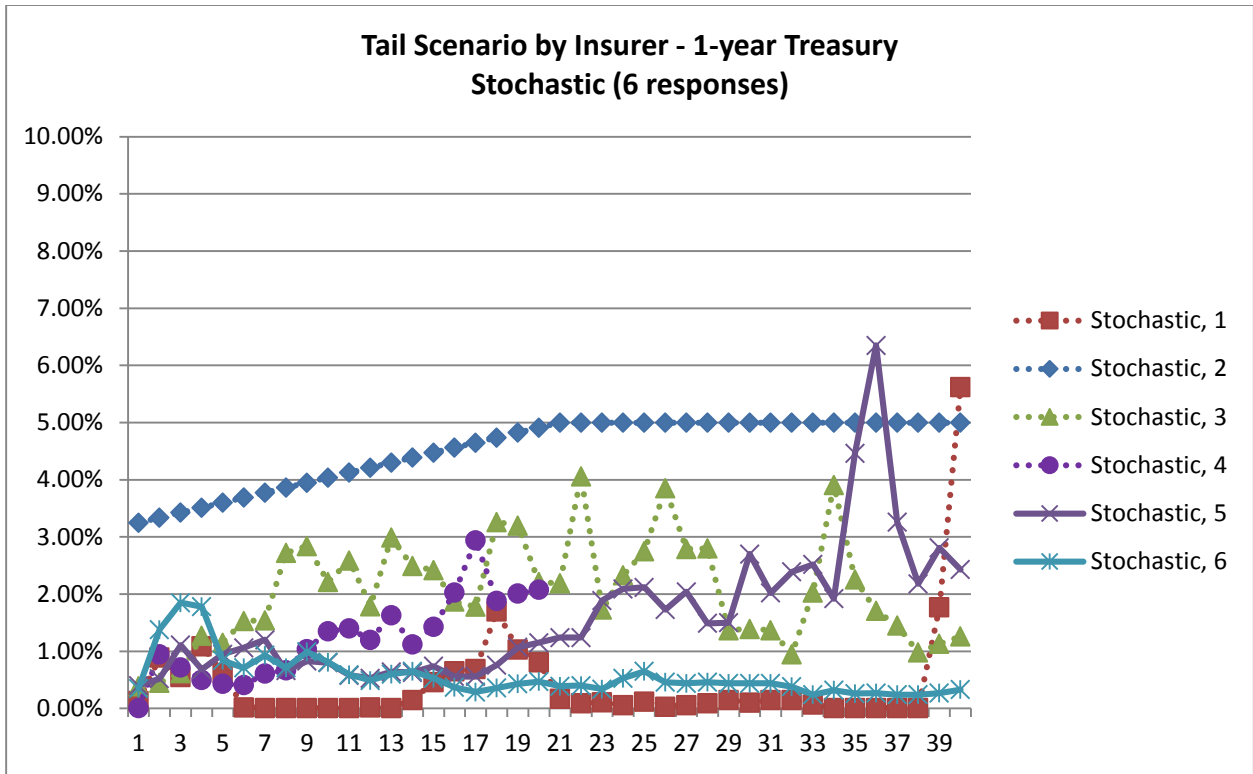


Figure 5

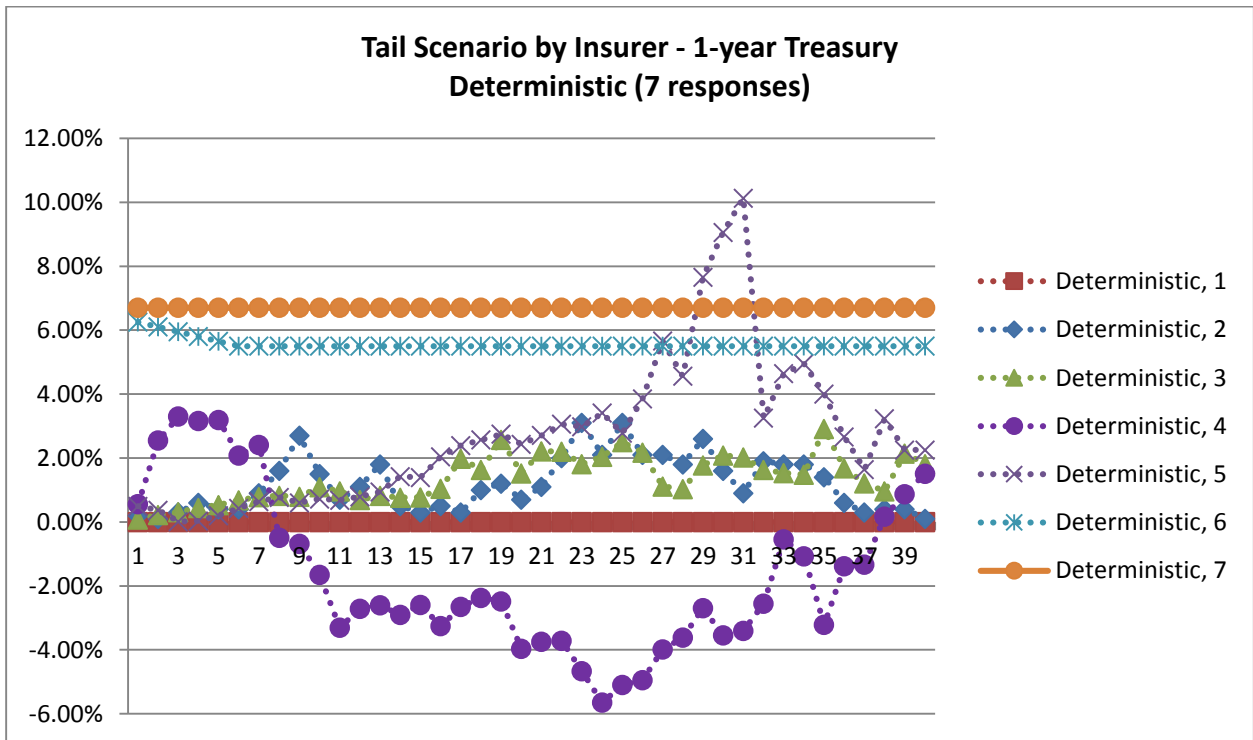


Figure 6

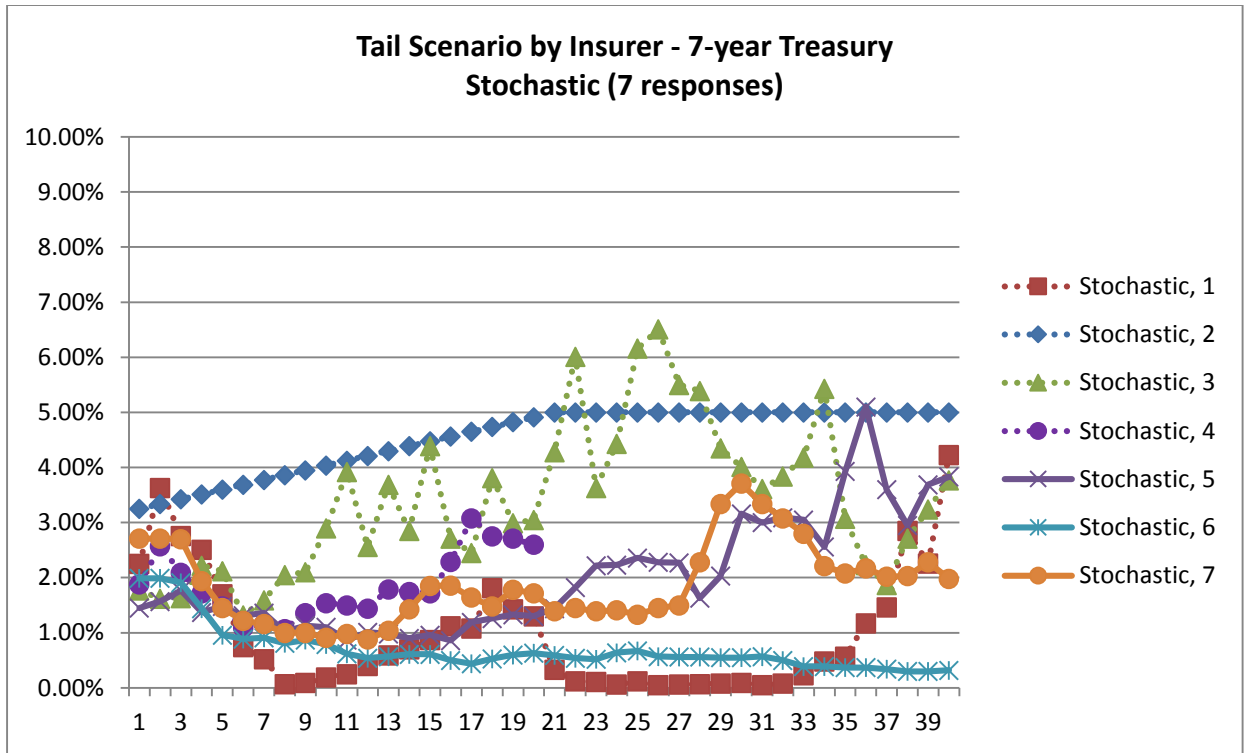


Figure 7

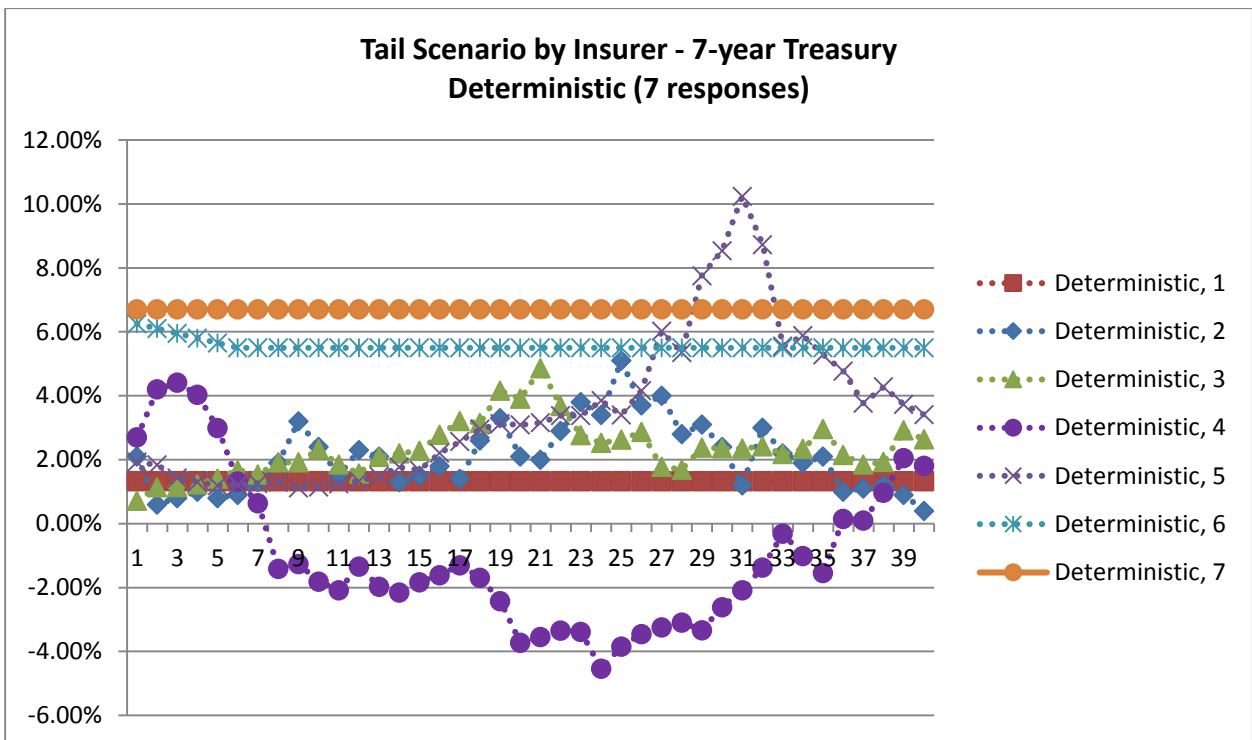


Figure 8

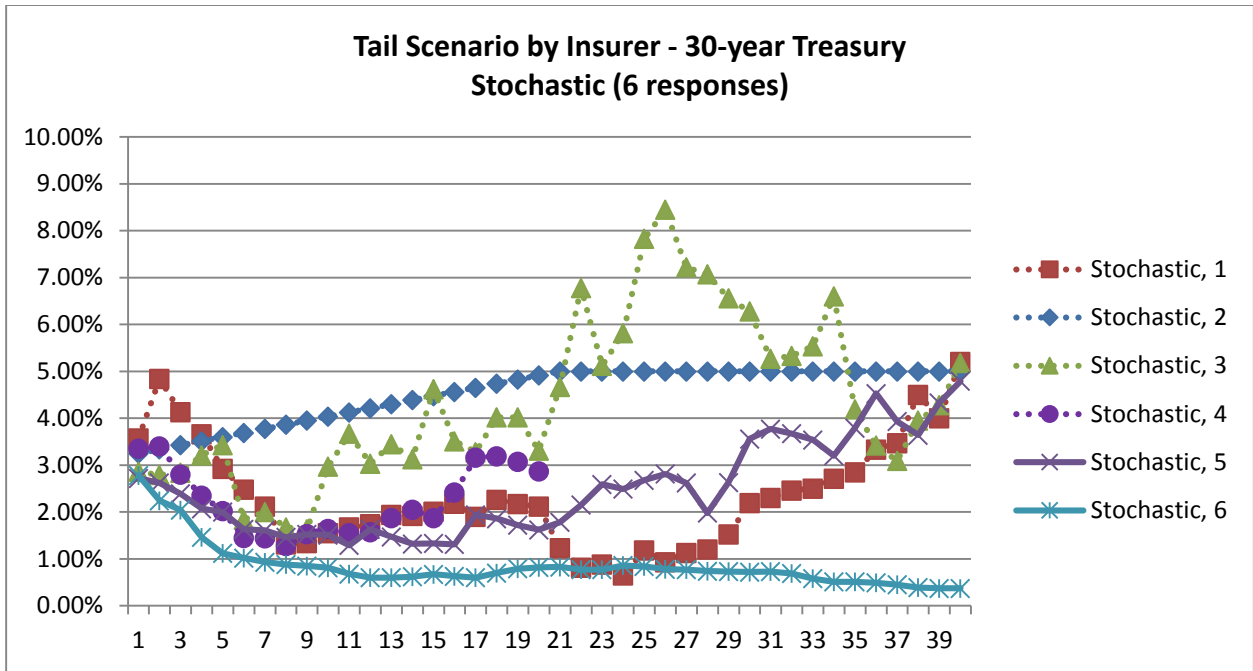


Figure 9

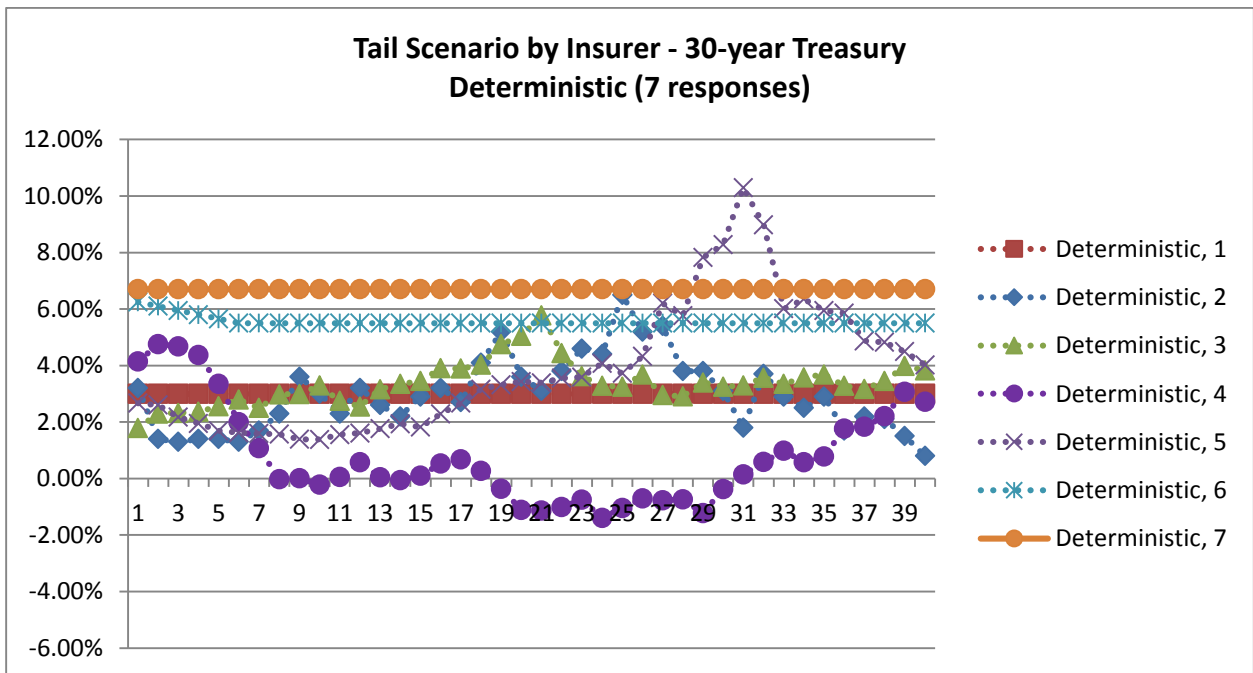


Figure 10

The following graphs of tail scenarios show the median reported value across insurers for each of three maturities (1, 7 and 30 Year Treasuries) for each projected year from the 2011, 2012, 2013, and 2014 survey results. The first pair of graphs separate stochastic from deterministic for 2014, followed by their combination. Thereafter, only combinations are shown. The 2014 median tail scenario for stochastic respondents was generally lower and flatter than the 2014 median tail scenario for deterministic respondents. Across all companies, the 2014 median tail scenario is similar to the 2013 median tail scenario but with lower short term rates in the later durations, producing a steeper yield curve.

It should be noted that these lines do not represent any one single company's response, but rather the median of the rates across all companies' responses at each projection year duration.

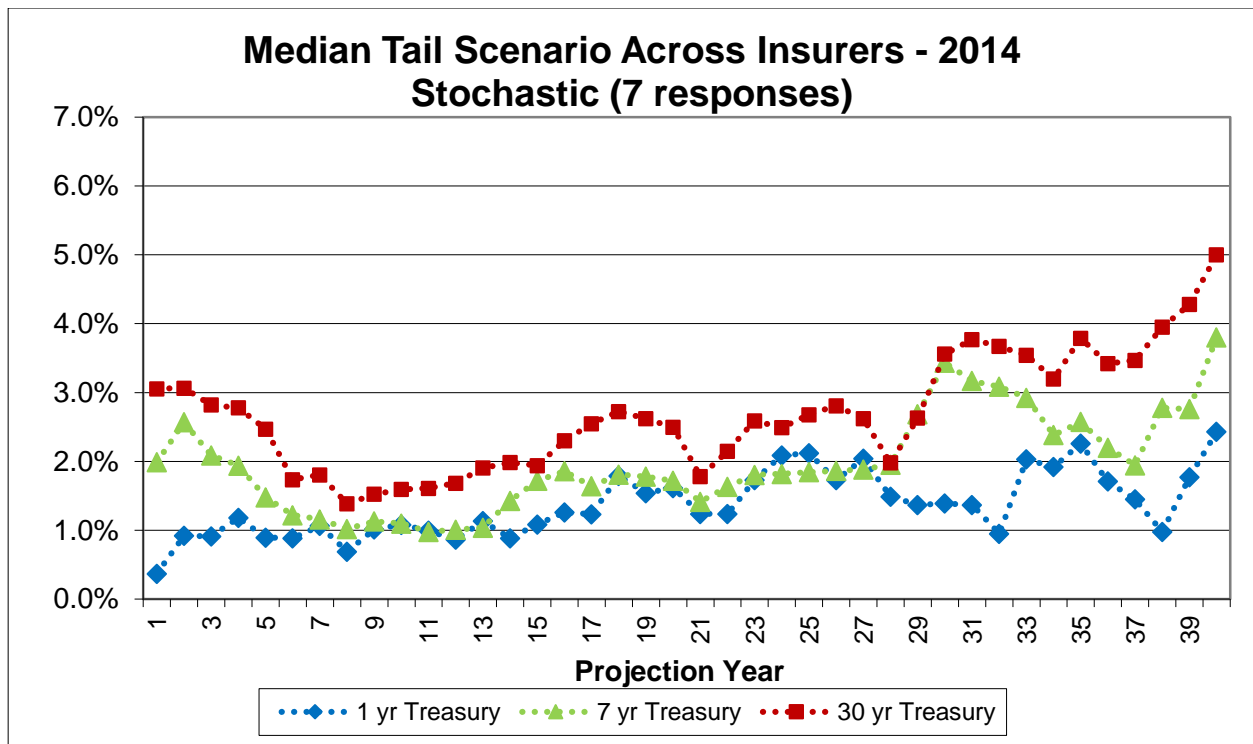


Figure 11

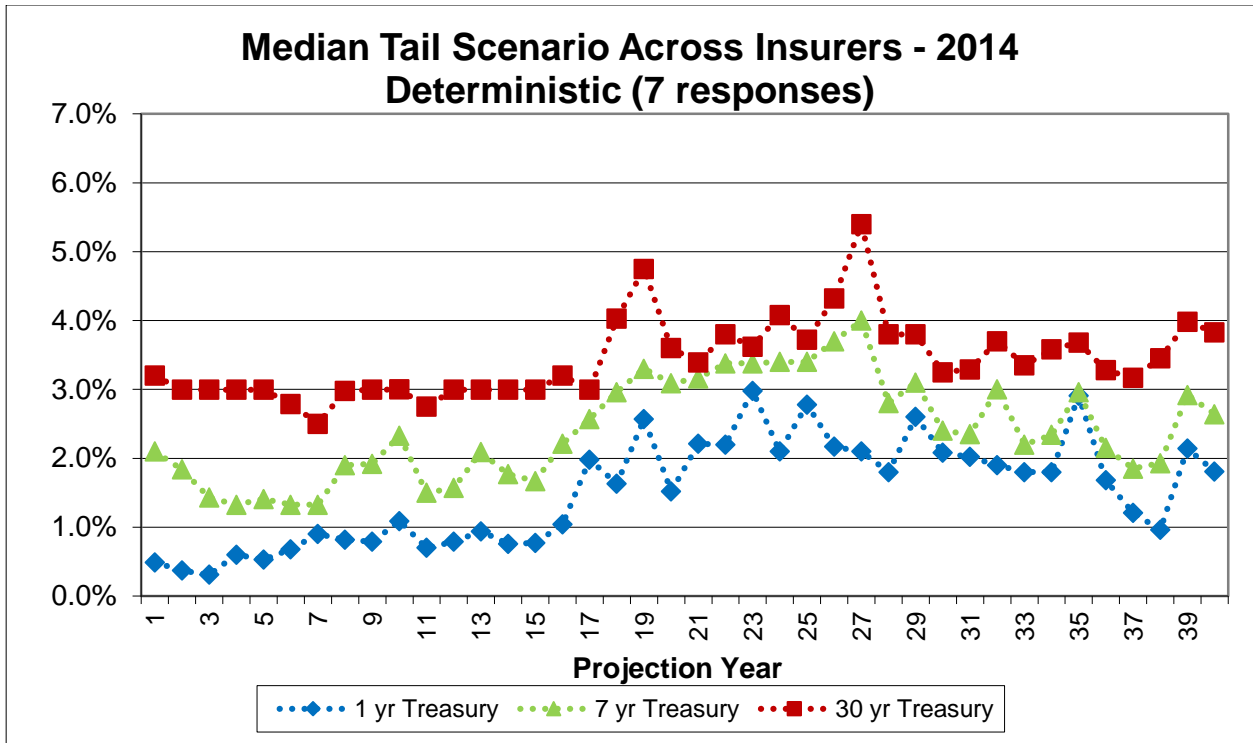


Figure 12

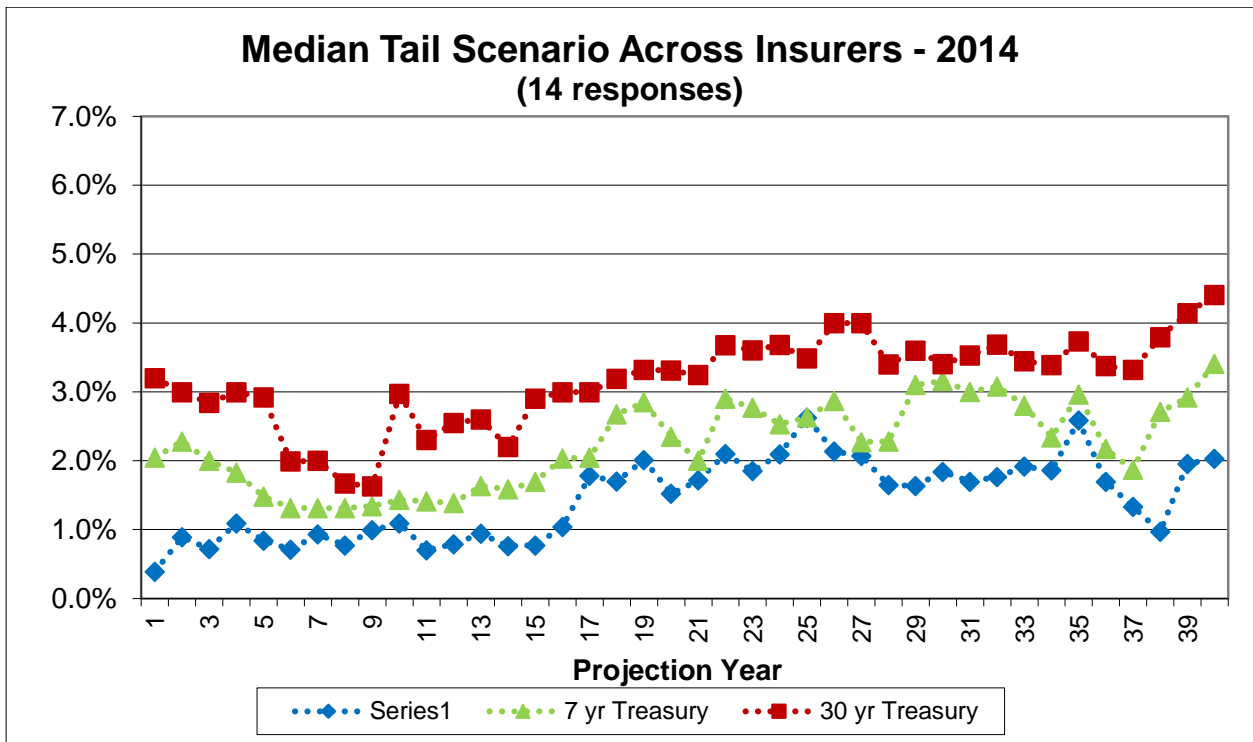


Figure 13

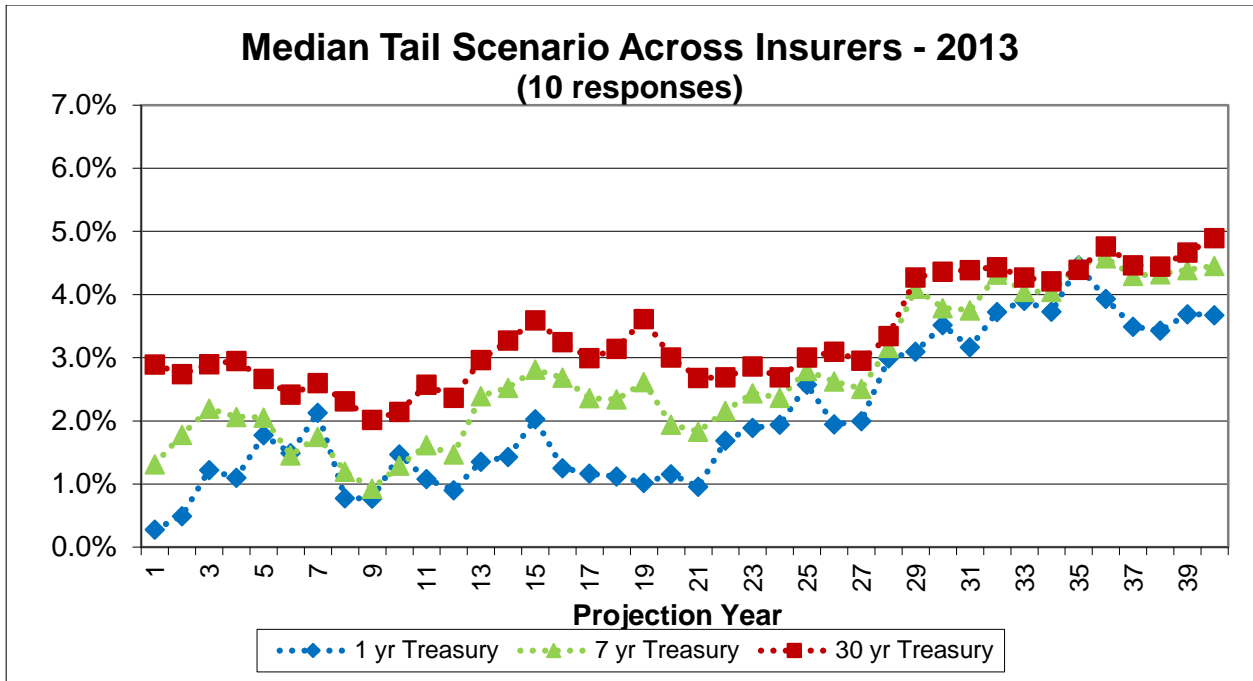


Figure 14

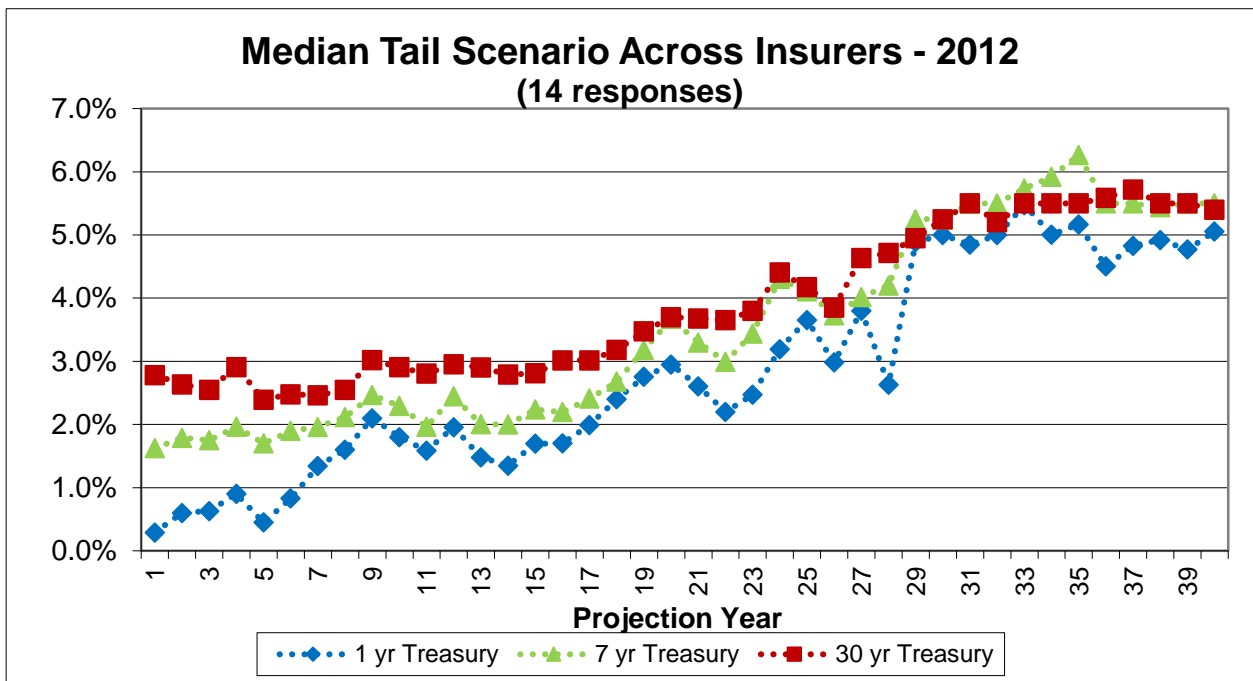


Figure 15

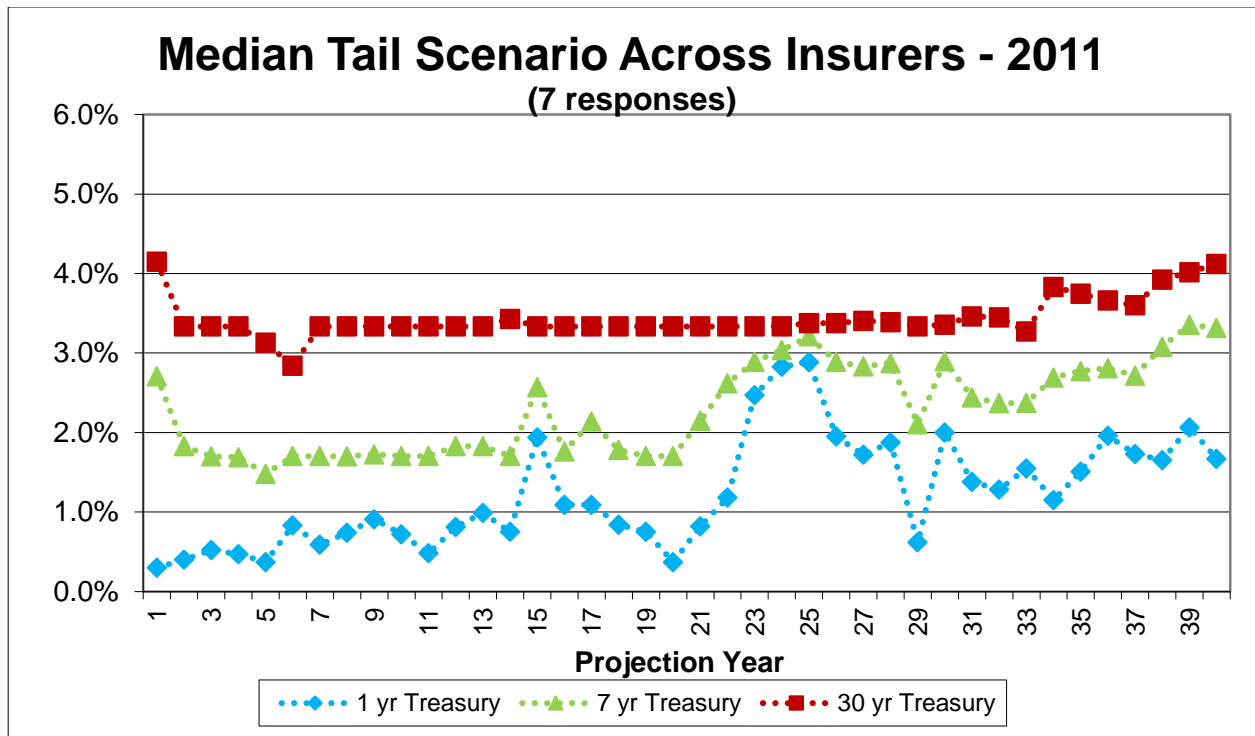


Figure 16

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 was slightly lower this year (35% of responses) compared to the last three years (44%, 40%, & 41%). Of those that do use dynamic lapse functions, 63% (5 of 8) specifically said they set the lapse rate to 0% for years where the guarantee is in-the-money and there is no additional premium required. This compares to 64% from last year and is up slightly from 50% in the 2012 survey. Other factors considered in the dynamic lapse function included the relationship of the current account credited rate to the competitor rate and a stochastic function.

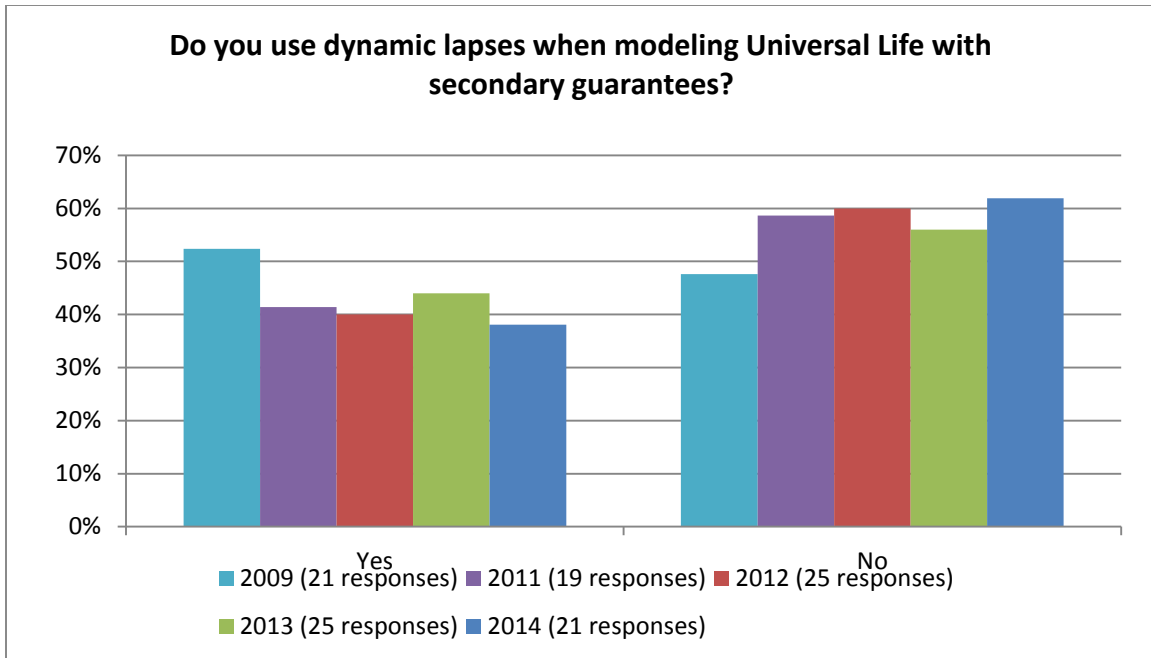


Figure 17

A new follow-up question in this year’s survey asked those companies that had dynamic lapses whether lapses could be greater than zero when the secondary guarantee is “in-the-money”. Four responders indicated that it could not, 2 indicated that it could if the cash value were positive, and one indicated that it could depending on the relationship between the credited rate and competitor rate.

In Question 4, insurers were asked to list their lapse assumption in the tail scenario by duration and by various issue ages. The charts below show the highest, median, and lowest lapse rates used across duration. The graphs show the responses for issue ages 40-49 and 70-79. The 2014 median responses are in line with those from the past two years. However, the highest responses are lower when compared to 2013 for the first two policy years. The responses for other issue ages were very similar to those for age 40-49.

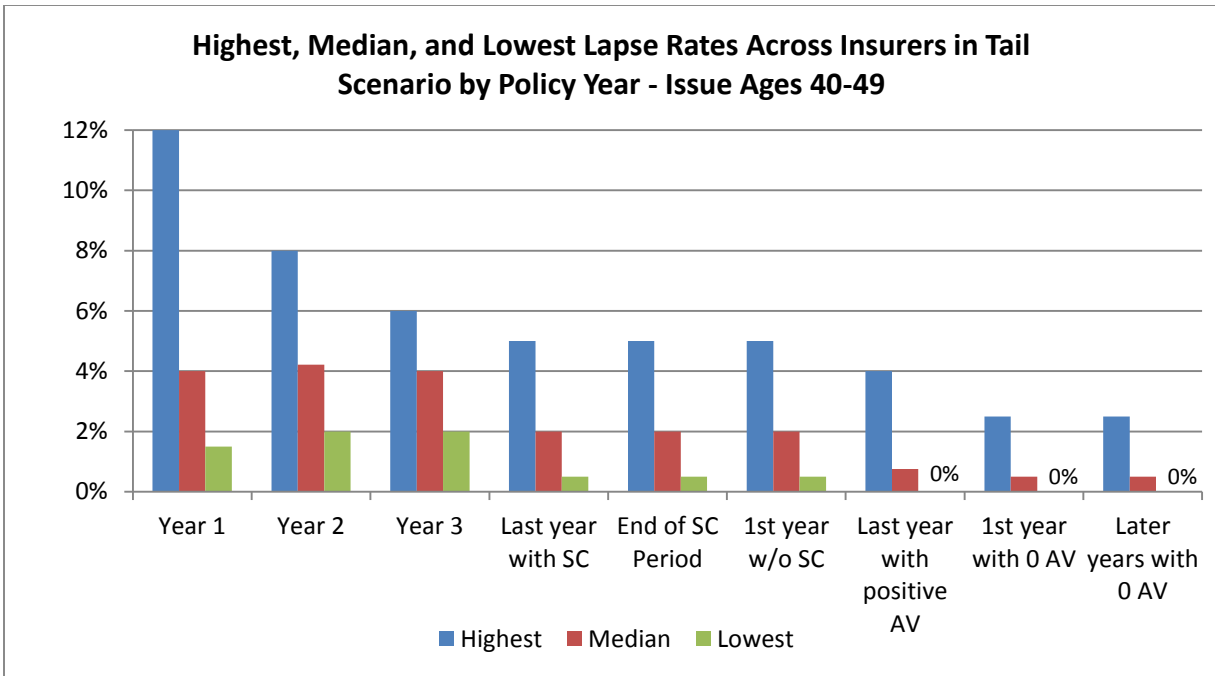


Figure 18

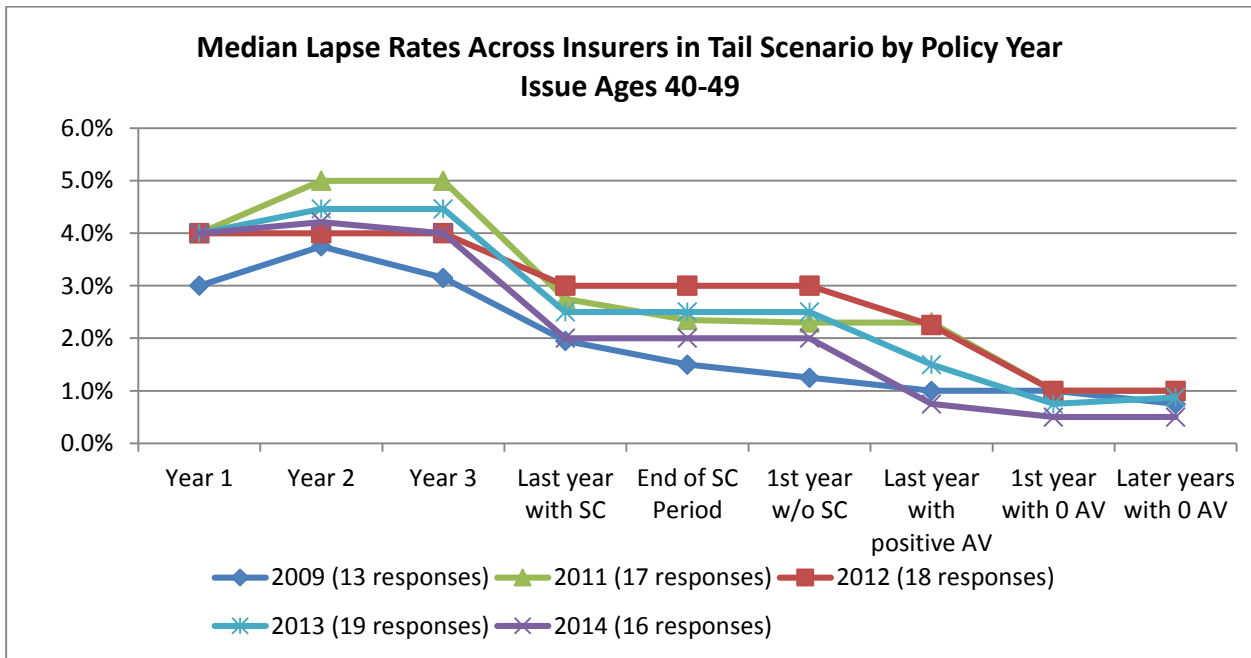


Figure 19

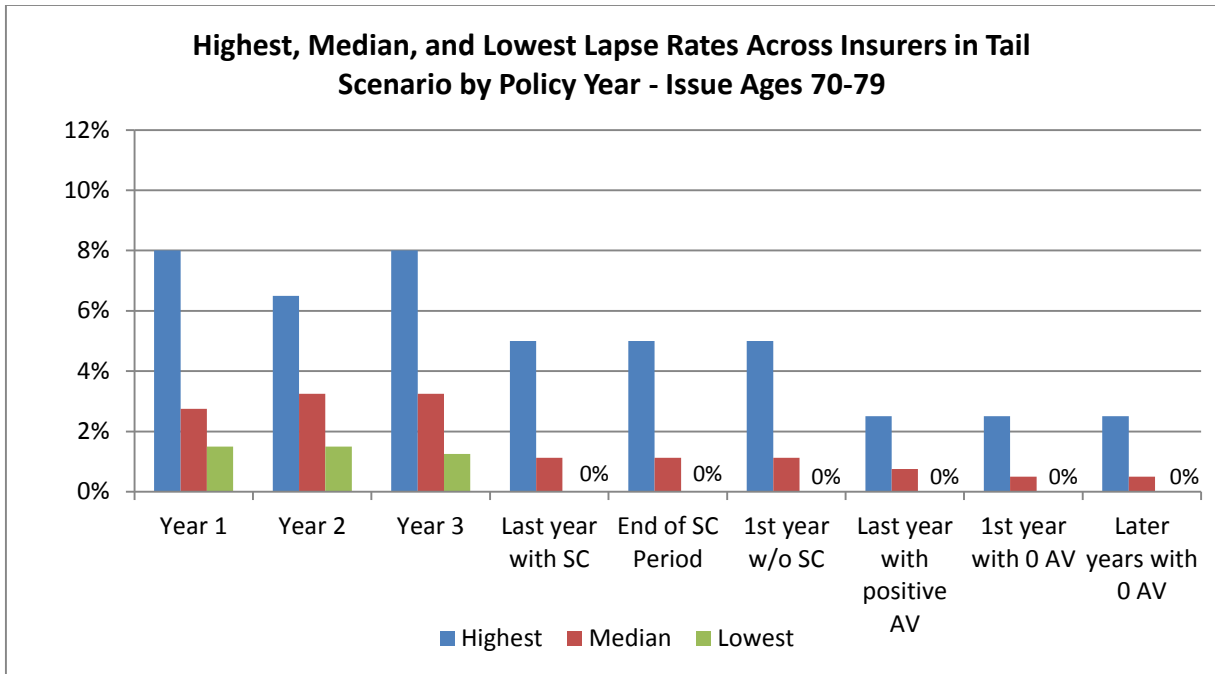


Figure 20

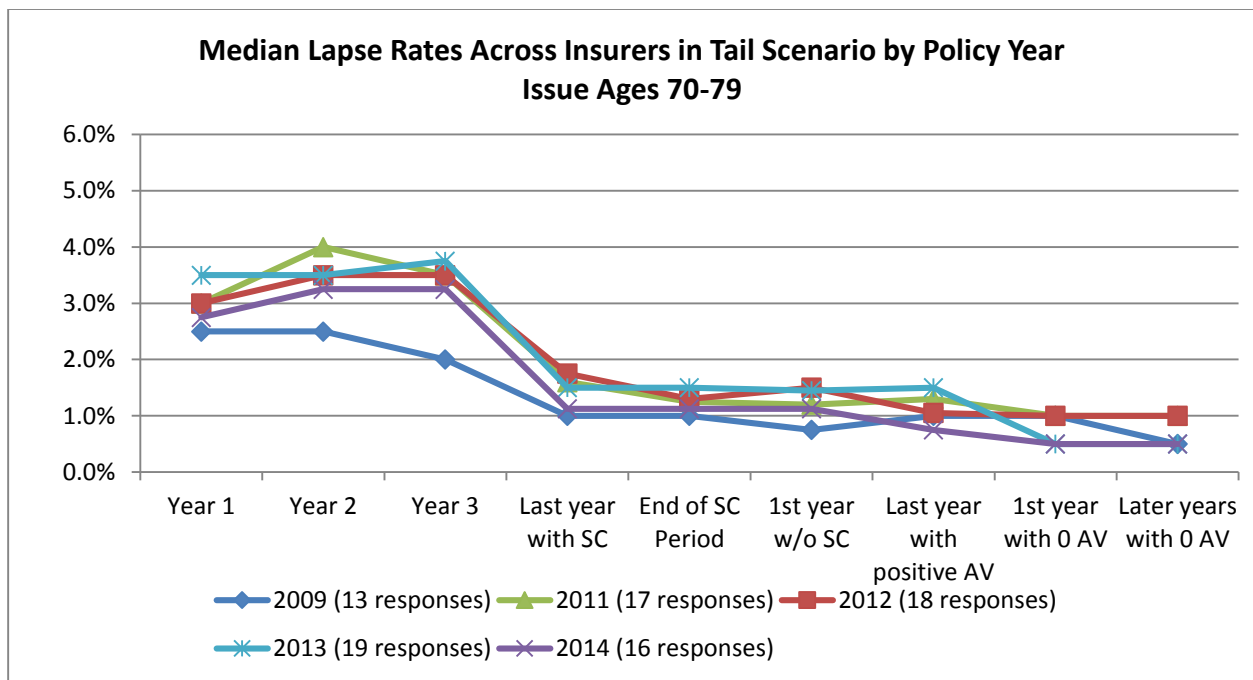


Figure 21

Next, in Question 5, the insurers were asked, out of 10,000 newly issued policies in the given issue age range, how many would first have a zero cash surrender value but be kept in force by the secondary guarantee at a given duration. Insurers were asked to focus on issue ages 50-59 if the requested data was not easily available for all issue ages. The results were then converted to a cumulative basis in Figure 22.

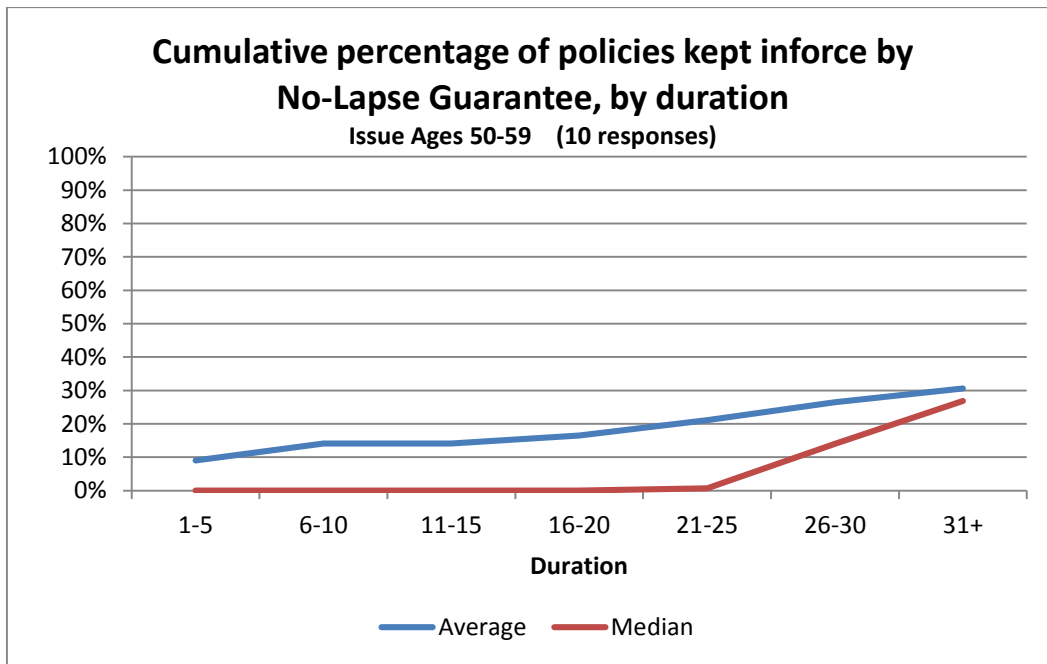


Figure 22

The survey asked insurers in Question 6 whether their lapse assumptions vary by distribution. Out of 20 respondents, 13 (65%) indicated that they sell through multiple distributions. The following graph (Figure 23) indicates the distribution systems used by these respondents.

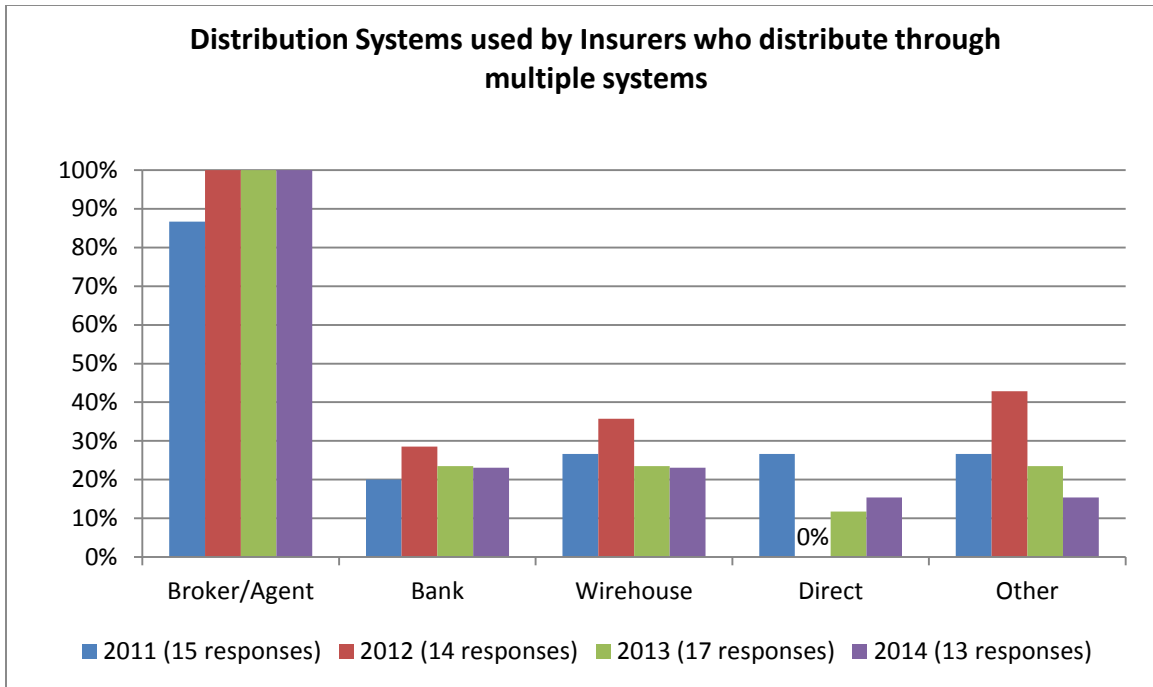


Figure 23

An additional question asked insurers if they measure lapses by distribution system. Of the 13 insurers who responded, 6 (46%) measure lapses by distribution system, and 2 (15%) have lapse assumptions that vary by distribution system. These results are in line with the 2013 survey (53% and 18%) and represent an increase from 2012 (33% and 7%).

Question 7 asked about lapses and premium assumptions. Half of the 20 respondents (50%) indicated that lapse rates vary by premium assumption, which is similar to the response in 2013 and 2012 but remains lower than the results of prior surveys where it had been more common for companies to show a difference in lapse rates by premium assumption. Where the lapse rates do vary by premium assumptions, nearly all of these respondents indicated that lapse rates vary with the ongoing premium requirement. Single pays have the lowest lapse rates and level minimum pays have the highest. Lapse rates tend to drop when the end of the premium paying period is reached and the policy is paid up.

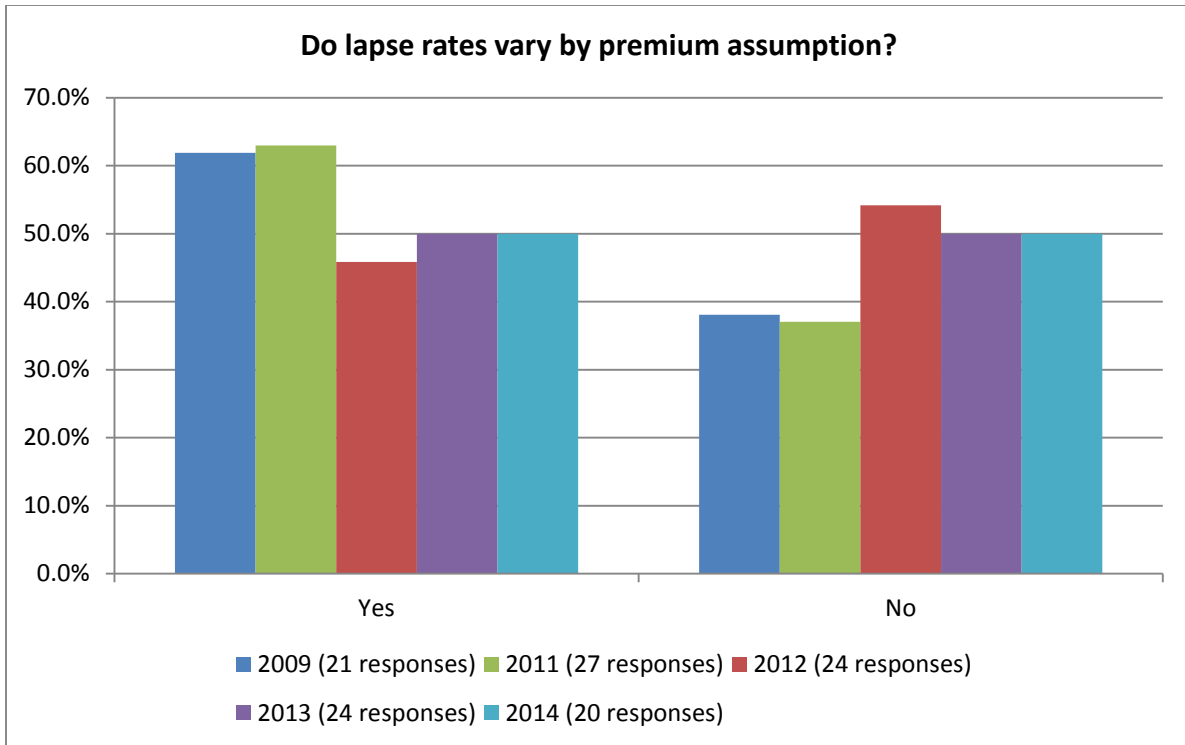


Figure 24

In question 8, insurers were asked about the source of their base lapse assumptions. Respondents could include more than one source, and 19 of 20 respondents (95%) included “Company experience” among their answers. “Actuarial best estimate” was the next most popular answer with 80% of respondents. About half of the companies indicated “Industry study” (40%). “Consultant Advice” (20%) was down from 2013 (38%) but in line with 2012 (20%).

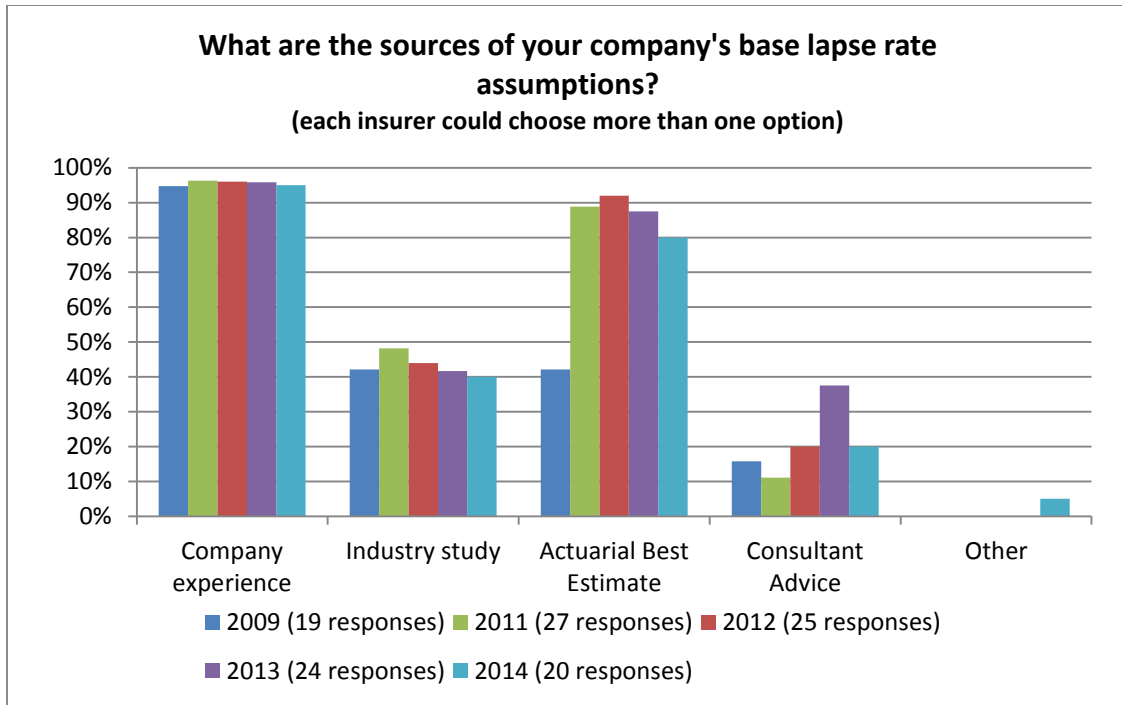


Figure 25

The survey then asked if companies perform lapse studies for UL policies with secondary guarantees, and if so, how frequently. Almost all companies (90%, 18 of 20) perform such lapse studies. Interestingly, two of the companies that selected “Company experience” did not indicate that they performed lapse studies. Most (78%) of those companies performing the studies do so annually.

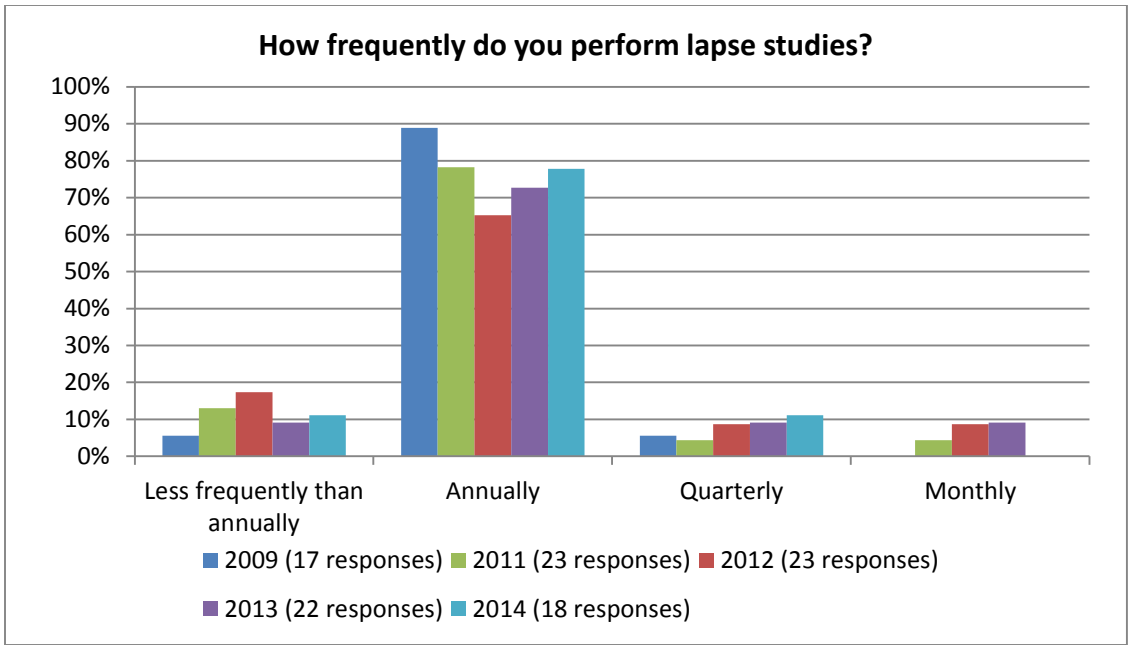


Figure 26

Companies were asked how many years of experience data were used in their latest study. Less than 35% of the companies responding used 8 years or more of experience data in their latest lapse study. This is similar to 2013, but in 2012 over 50% of respondents used 8 years or more.

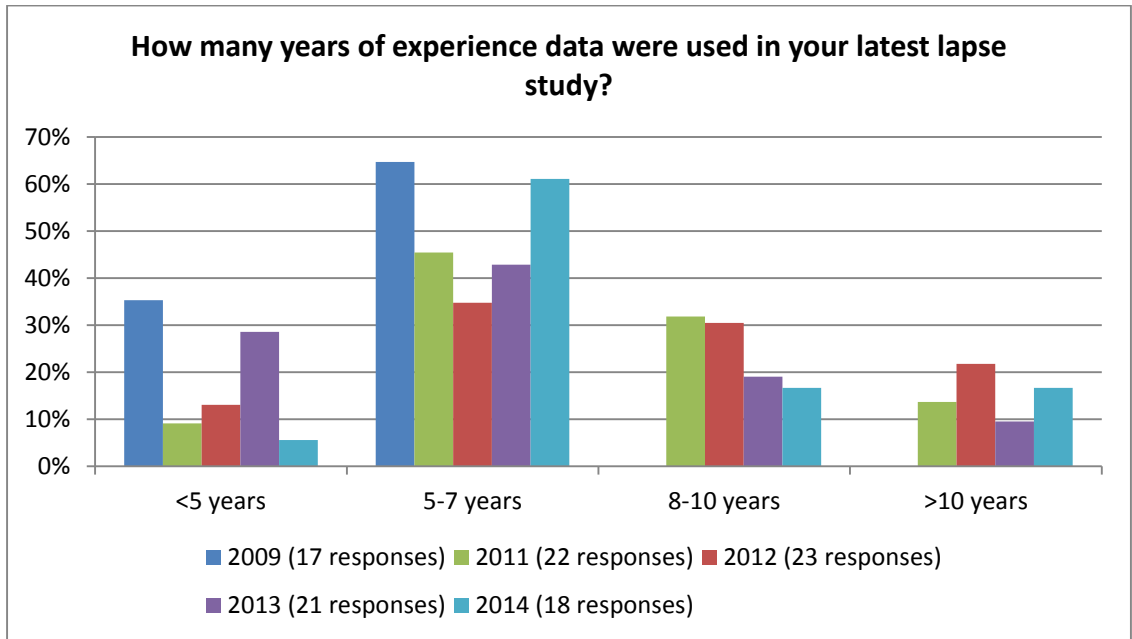


Figure 27

Companies were asked about their dynamic lapse assumptions specifically. Of the 20 respondents, only 5 (25%) vary their assumptions dynamically (Figure 28). Of those companies that vary assumptions dynamically, all (100%) used actuarial best estimates in setting those assumptions (Figure 29). Company experience is becoming a more common answer with 60% of companies listing it this year compared to 45% in 2013 and 22% in 2012. (Figure 29).

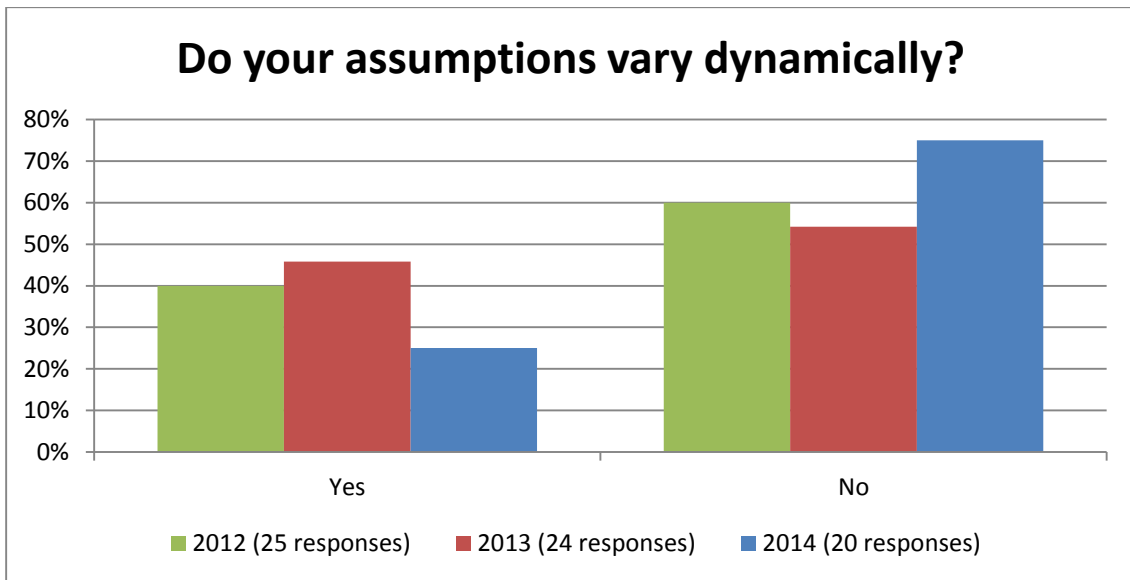


Figure 28

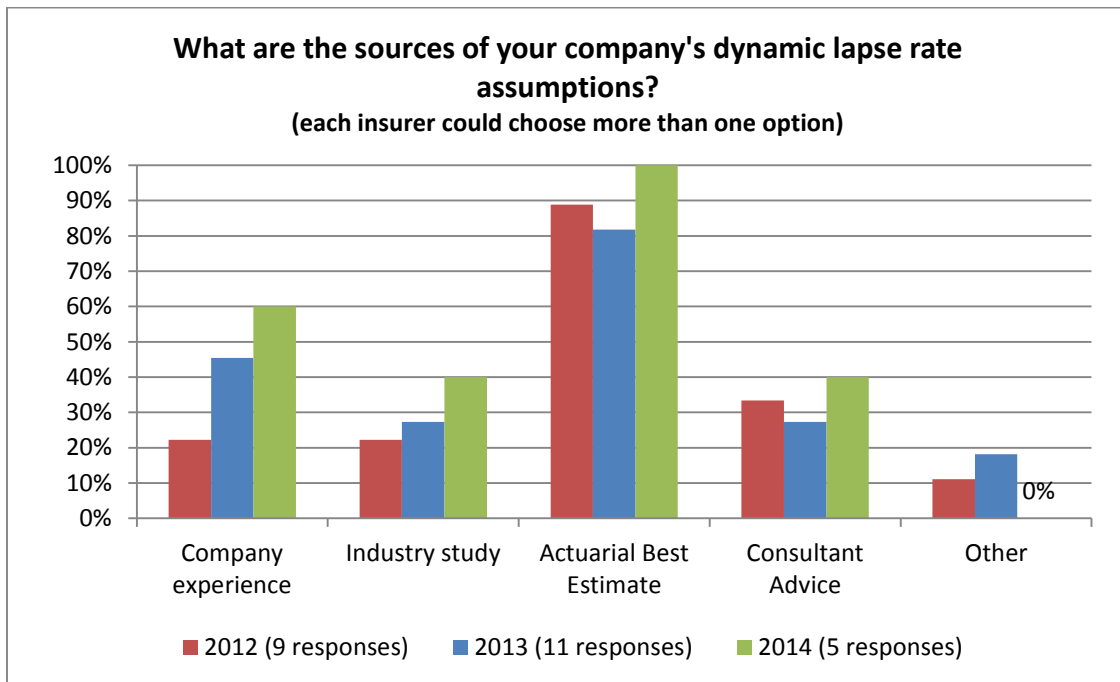


Figure 29

Mortality Assumptions

Companies were asked about their mortality assumptions in the tail in Question 9. Use of the 2008 VBT table increased sharply in 2014 with half of the companies now using it as their reference table. 2001 VBT is the second most common at 30%. Companies marking “Other” cited the 90-95 Select and Ultimate Table, tables derived from company experience, and tables derived from consultant or reinsurer experience. (Figure 30).

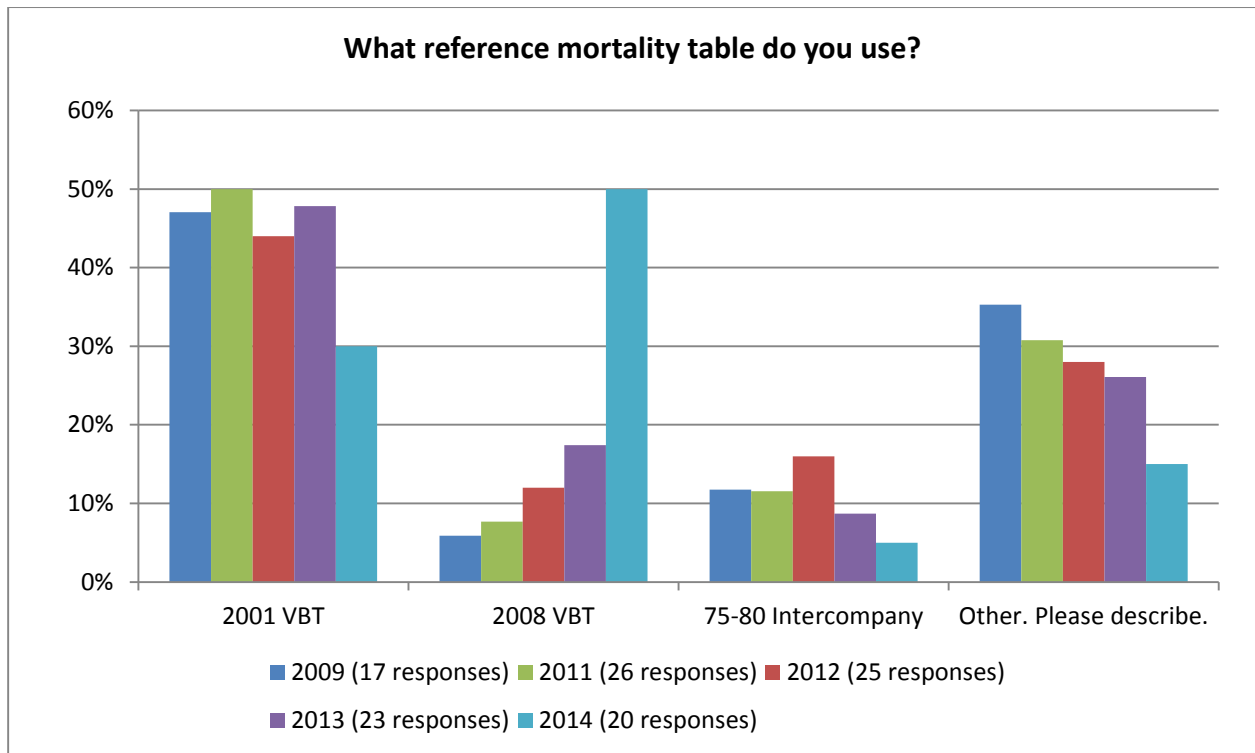


Figure 30

Thirteen companies provided ultimate mortality rates per 1000 assumed at higher attained ages for various underwriting classes for males and females. The minimum, maximum and median of those responses are summarized below, with the 2001 VBT and 2008 VBT rates (ultimate, sex and tobacco distinct, age nearest birthday) for comparison. (Figures 31-36).

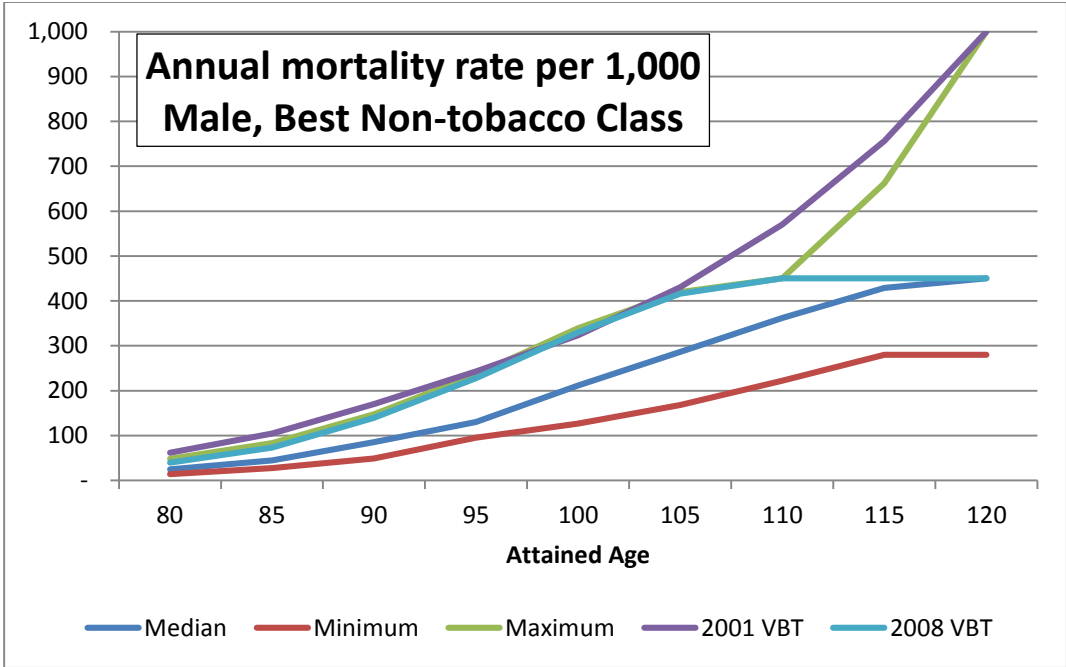


Figure 31

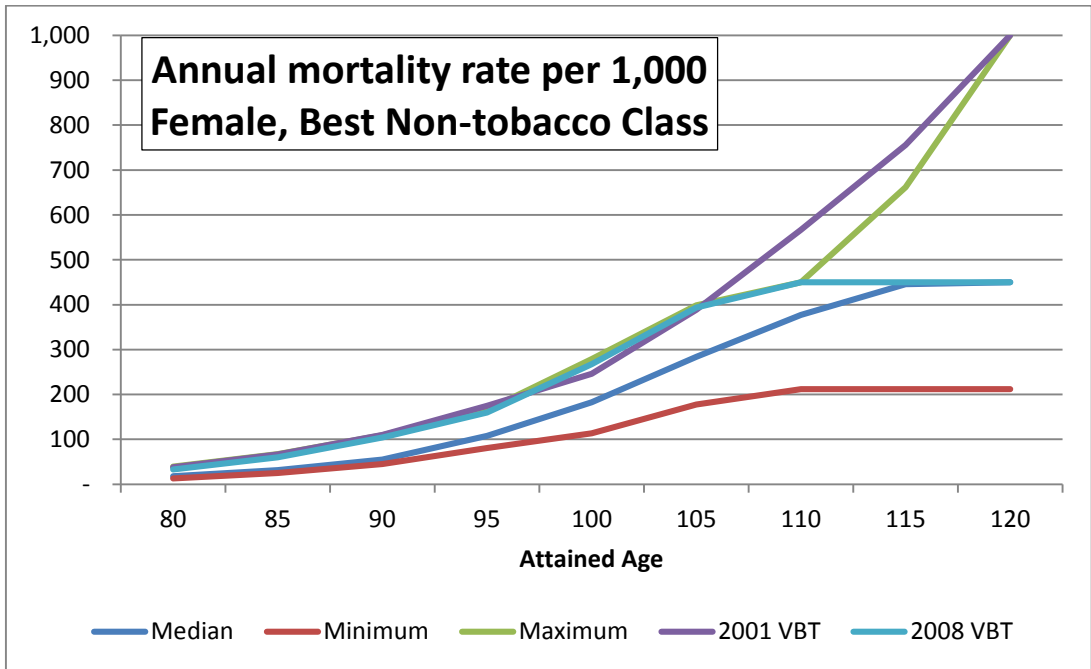


Figure 32

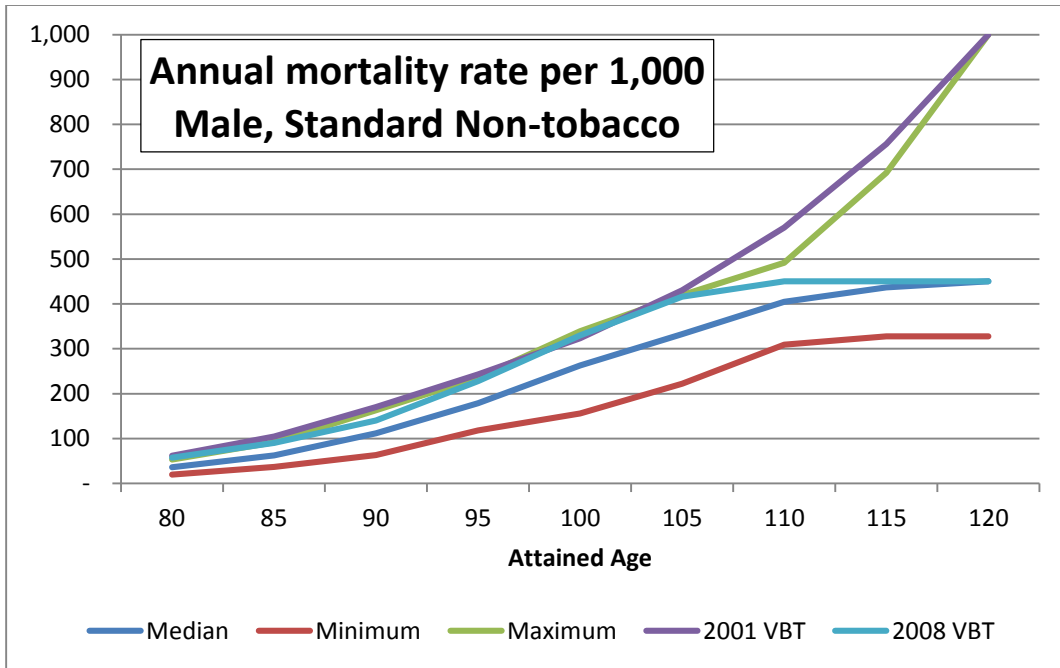


Figure 33

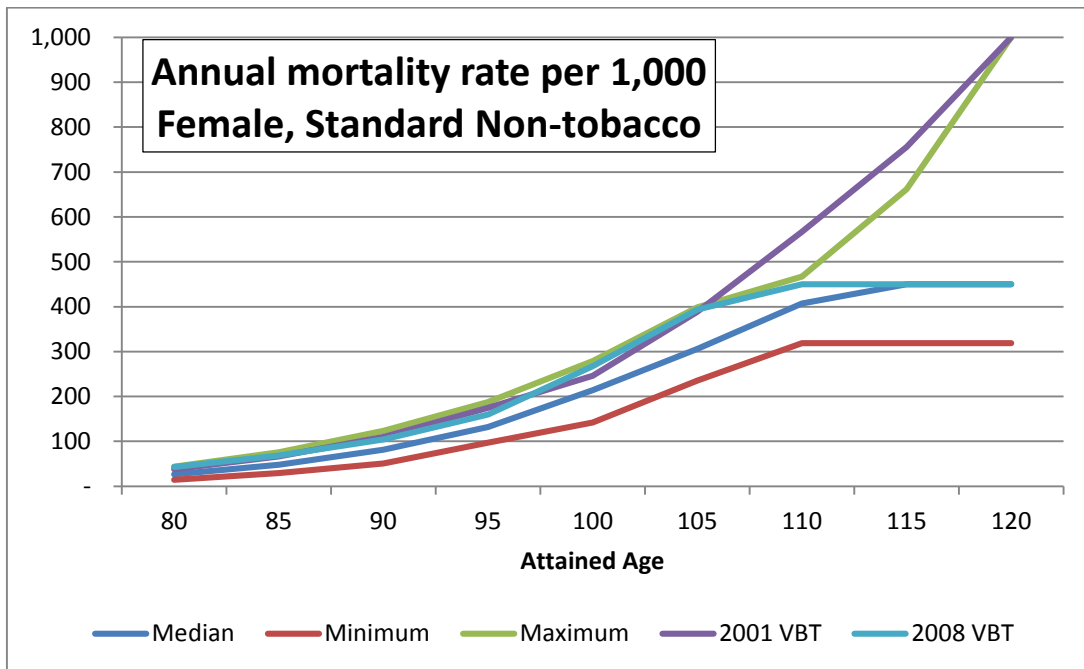


Figure 34

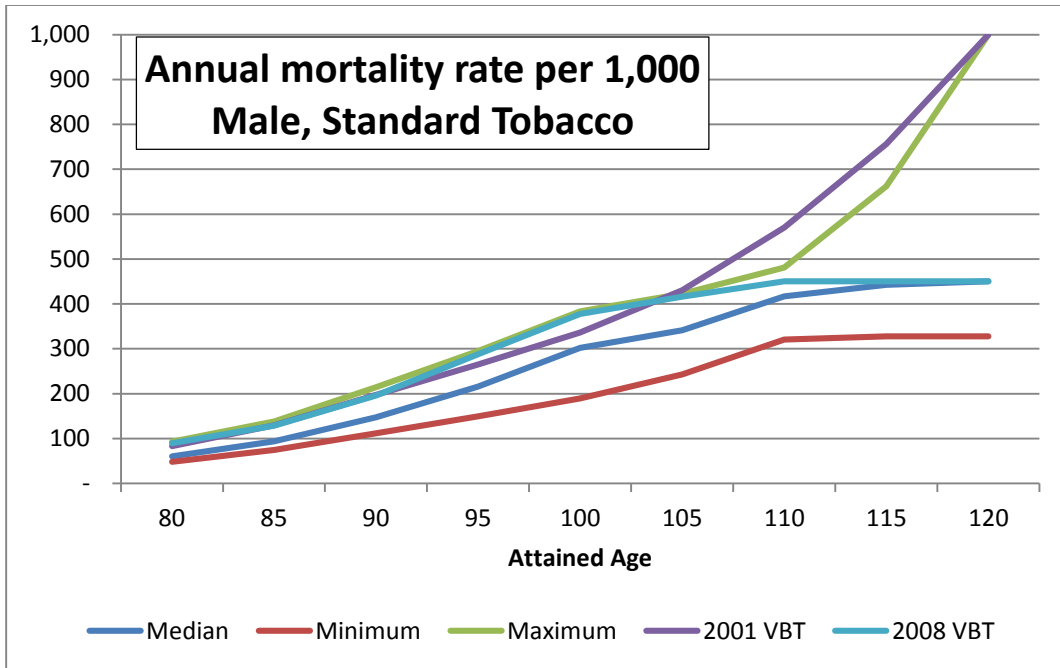


Figure 35

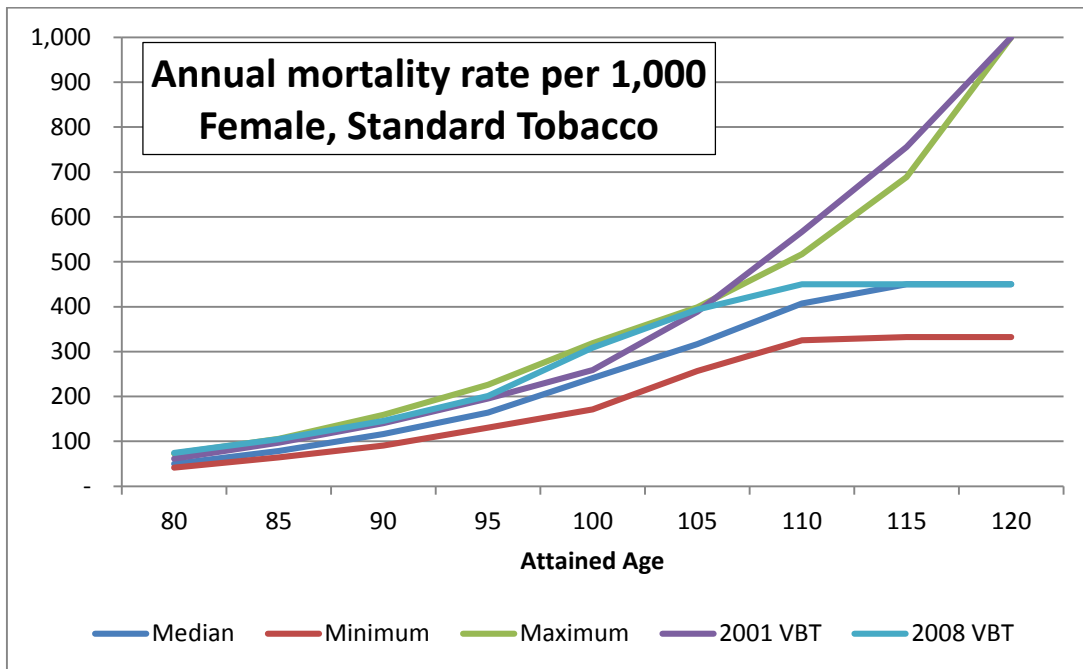


Figure 36

Companies were asked again this year about the number of underwriting classes used. The vast majority of companies responded with three non-tobacco classes. There was a reversal of a recent trend toward four classes over the last couple of years. (Figure 37). For tobacco classes, two continues to be the predominant response. (Figure 38).

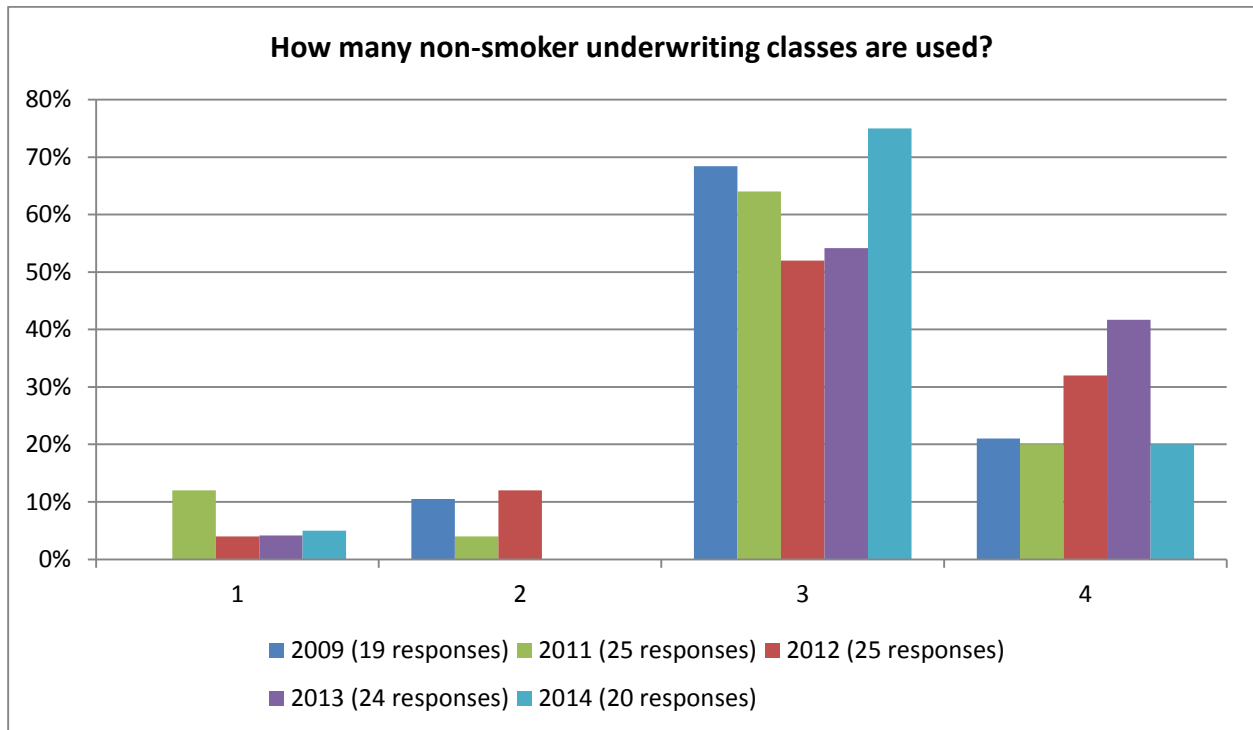


Figure 37

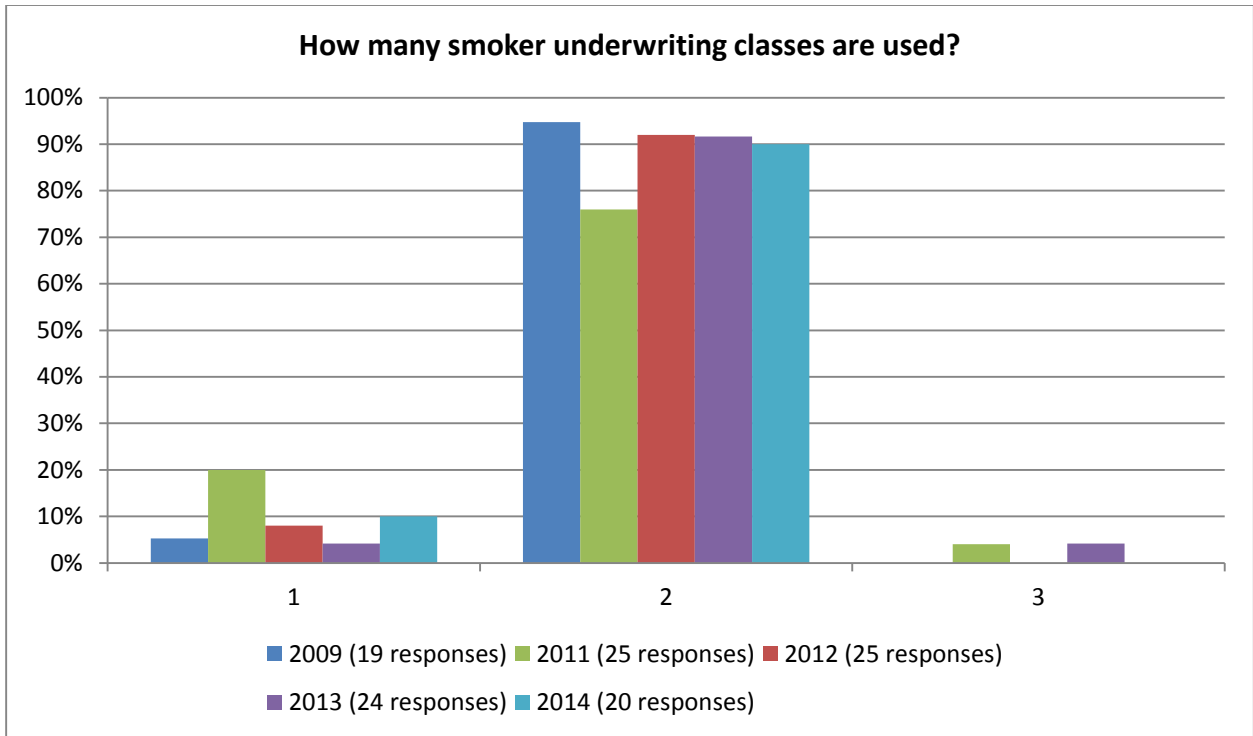


Figure 38

The percentage of respondents incorporating future mortality improvement into their models remains steady at 75% (15 of 20).

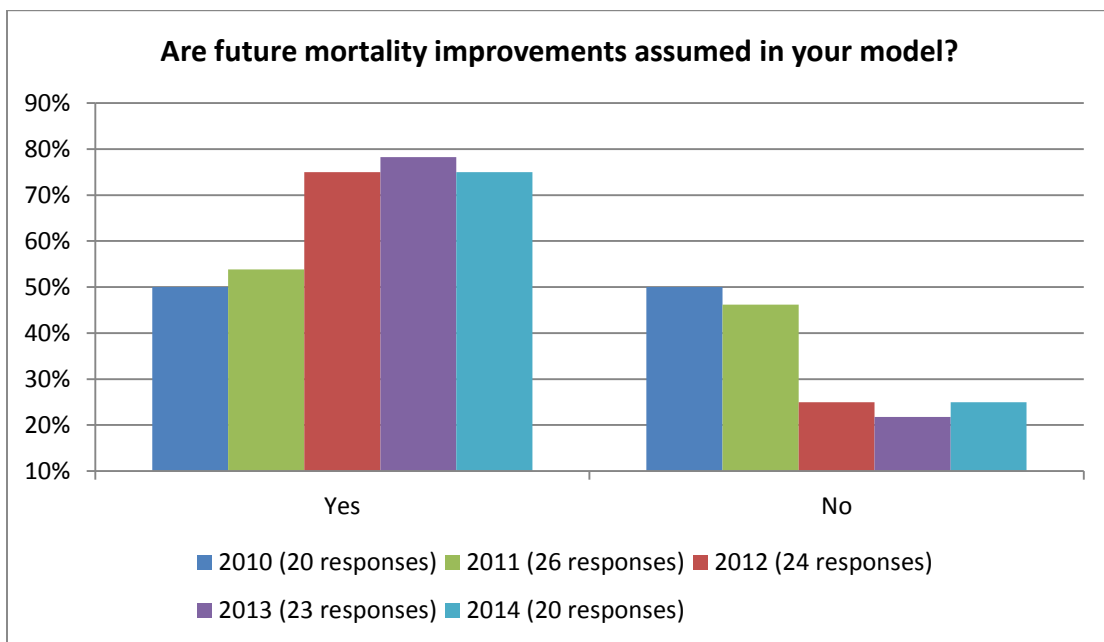


Figure 39

Most of the 15 companies modeling future mortality improvements had assumptions that were sex, age and/or duration distinct. There is also an upward trend toward using smoker status to vary future mortality improvement assumptions.

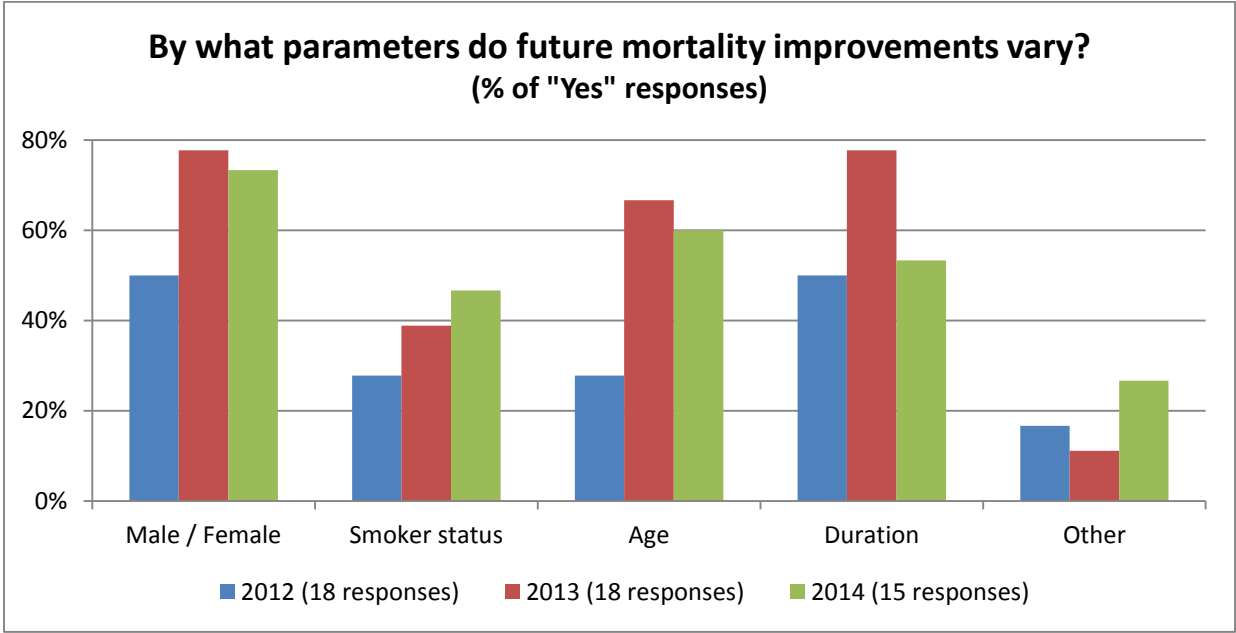


Figure 40

Twenty companies responded to a question about whether mortality assumptions change when the secondary guarantee is in-the-money. For the fifth consecutive survey respondents were unanimous in their stance that mortality assumptions do not vary by the in-the-moneyness of the secondary guarantee.

Critical Assumptions

The survey then asked for other 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. There is also a significant response that mortality and premium patterns are critical. It

should be noted that 2012 was the first year that premium pattern and life settlement were specifically included as suggested answers to the question.

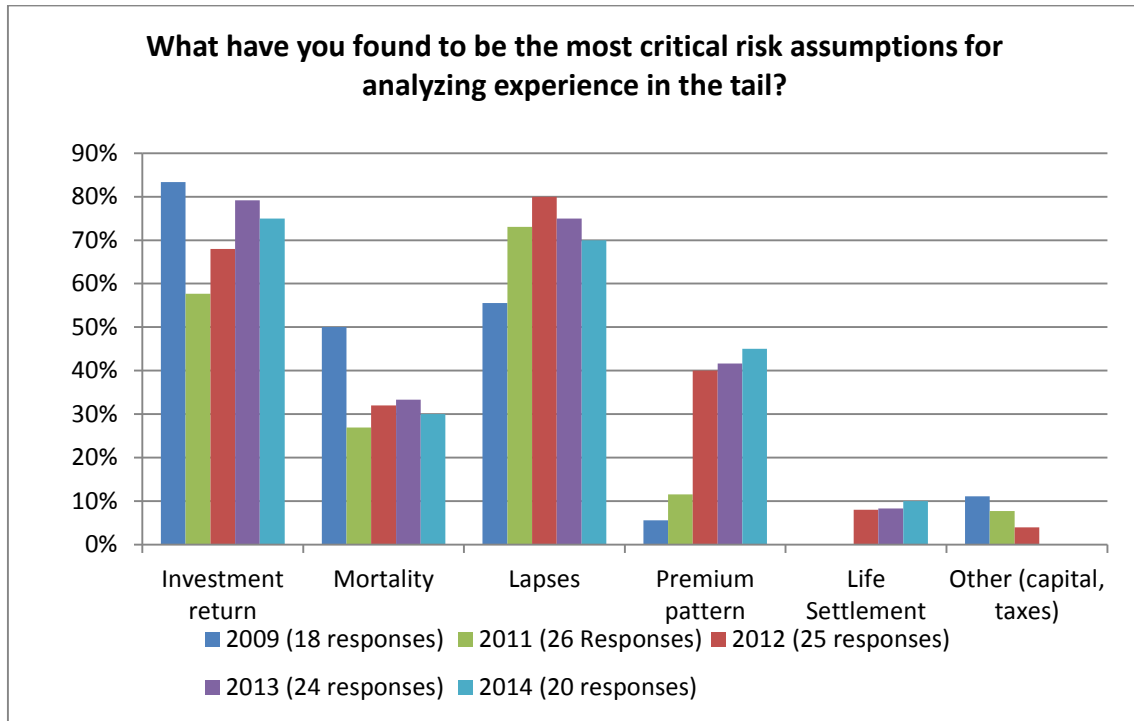


Figure 41

Respondents Profile

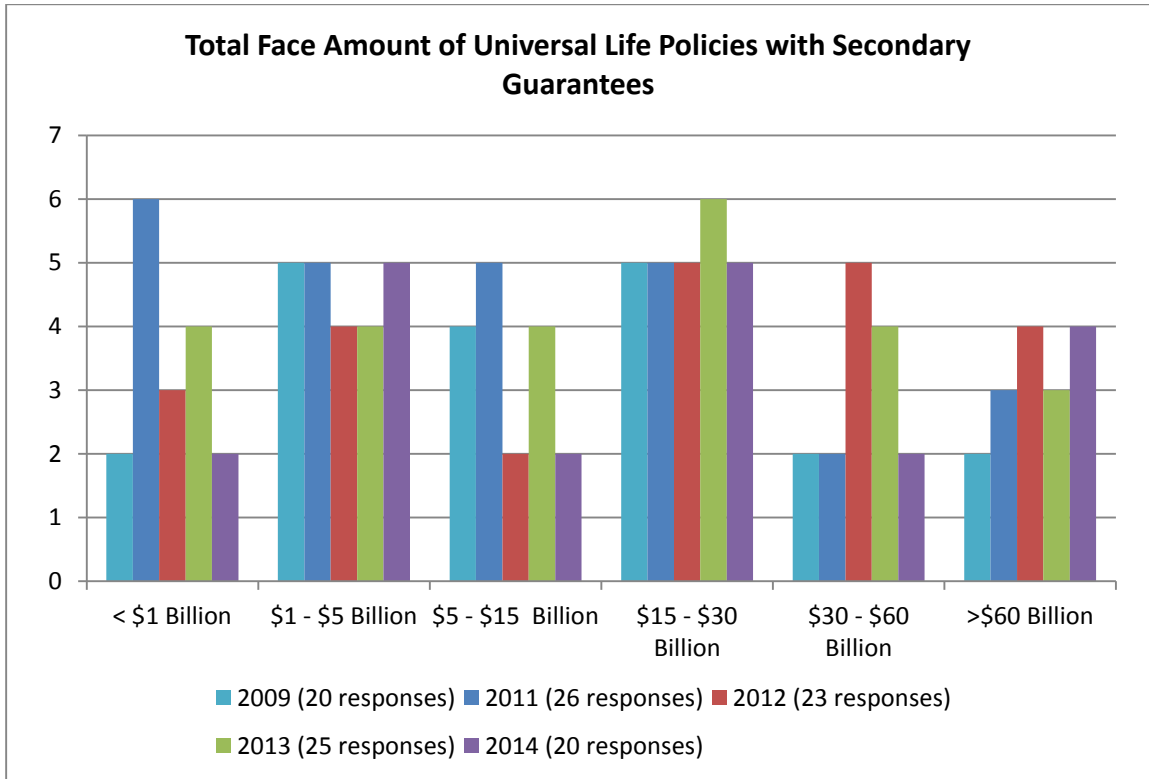


Figure 42