POLICYHOLDER BEHAVIOR IN THE TAIL
UL WITH SECONDARY GUARANTEE SURVEY
2012 RESULTS

Survey Highlights

- 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 are 11 new respondents in 2012, 12 respondents from both 2011 and 2012, and 3 respondents that were unidentified but had usable results. The size of the UL secondary guarantee (ULSG) blocks in the companies responding to this survey are larger than in 2009 and much larger than those in the 2011 survey.
- Most companies considered the lapsation assumption and the investment return assumption to be critical risks. The lapse assumption was critical for analyzing experience in the tail for 20 of 25 companies responding to the question. Investment return was felt to be a critical assumption by 17 of the respondents (Figure 41).
- Ten of the 25 (40%) are varying assumptions dynamically for UL policies with a secondary guarantee (Figure 28).
- Of those that specifically use dynamic lapse assumptions, 50% (5 of 10) specifically state that they set lapses to zero if the guarantee is in-the-money and no further premium is required, down from 58% in 2011 (Page 15).
- Median mortality rates at higher attained ages were generally lower than the mortality rates from the 2001 VBT, but companies showed a wide range of assumptions (Figure 31-36).
- About 35% of respondents use stochastic modeling to set or analyze capital levels for UL with secondary guarantees, up from 2011 and closer to the responses in the 2009 version of this survey (Figure 1).
- The two most popular durations of projection used to set or analyze capital levels are less than or equal to 30 years or greater than 76 years. About half of the respondents indicated using 76+ years in the projection; up from 2011 (38%) but still down from 2009 (71%) (Figure 4).

- Similar to 2011, lapse rates vary widely amongst insurers in tail scenarios. However, assumed lapse rates do not show substantial variation by issue age for any individual insurer, with the exception of being slightly lower for the highest issue ages (70+) (Figure 17 and Figure 19).
- Median lapse rates at age 40-49 decreased in early years, but increased near the end of the surrender charge period compared to 2011 (Figure 18).
- Only 5 of 15 (33%) measure lapses by distribution system, and only 1 of 15 (7%) has found that their lapse assumptions vary by distribution system (Page 21).
- Only 46% of companies vary lapse assumptions by premium pattern (down from 63% in 2011), generally assuming higher lapse rates for level premium patterns and lower lapse rates for single premiums (Figure 24).
- Company experience was cited as a source of base lapse assumptions by over 96% of respondents. Actuarial best estimates were an additional source for 92% of respondents (Figure 25).
- Actuarial best estimates were chosen by 89% of respondents as a source for dynamic lapse assumptions (Figure 29).
- The 2001 VBT table was the most common used mortality table (44% of responses, Figure 30), but its use is down from 2011.
- Future mortality improvement is modeled in 75% of responding companies up from 54% in 2011 (Figure 39). Improvements typically vary by gender and policy duration (Figure 40).

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Acknowledgements

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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 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 2012, the Policyholder Behavior in the Tail (PBITT) committee distributed a survey to insurers and asked for feedback 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 26 credible responses, down from 32 in 2011 and up from 23 in 2009; however, not every company answered every question. To illustrate the credibility of results, most charts indicate how many companies responded to the question.

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

The latest survey reflects a somewhat smaller response group than in the prior survey. While the exact relationships of new versus prior respondents vary by individual question, at the level of

the total survey there are 11 new respondents in 2012, 12 respondents from both 2011 and 2012, and three respondents that were unidentified but had usable results. 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 three 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) show the responses to these questions. About 35% of insurers used stochastic scenarios to set or analyze capital levels, up from the previous survey when 19% did so and nearly back to the level of 2009 (38%). Not all companies answered the stochastic modeling question. Figure 2 looks at stochastic scenario use by company size. Of those reporting company size and stochastic scenario usage, the smaller companies seem to be less likely to use stochastic scenarios and the larger companies more likely.

The number of scenarios used in 2012 has respondents in all categories. This result indicates that the surveyed companies vary widely in their use of scenarios to model guarantees. Last year the survey indicated either 100 or less or 1,000 or more. This year the survey shows a more distributed pattern of stochastic scenario use, more like that of 2009. Interestingly, some companies indicated that they used only tail scenarios to run their stochastic scenarios. This enabled them to run less than the 1,000 scenarios indicated by other companies, and to concentrate on the scenarios determined to be in the tail. Relative to last year's results, the indication is that companies are running longer projections.

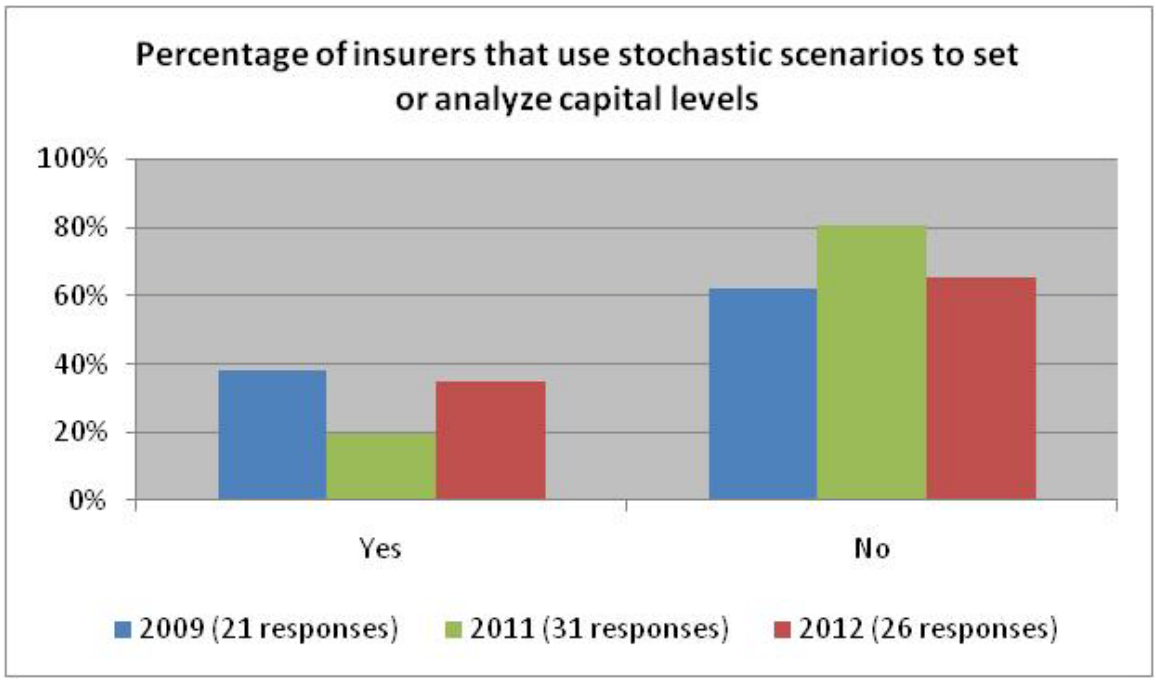


Figure 1

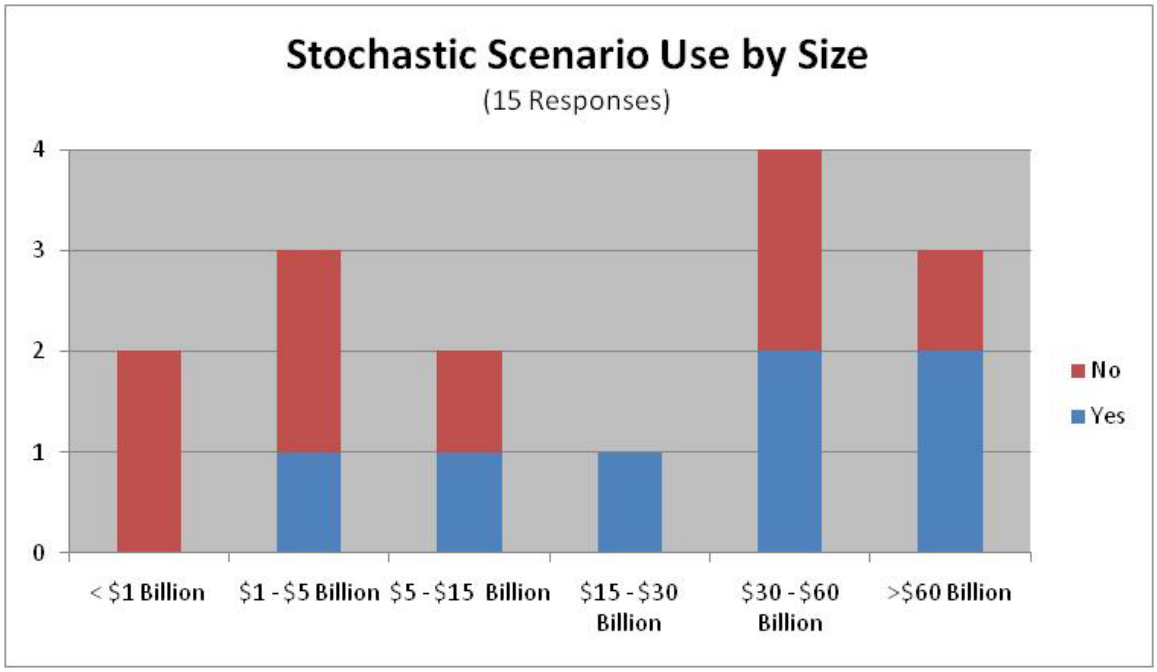


Figure 2

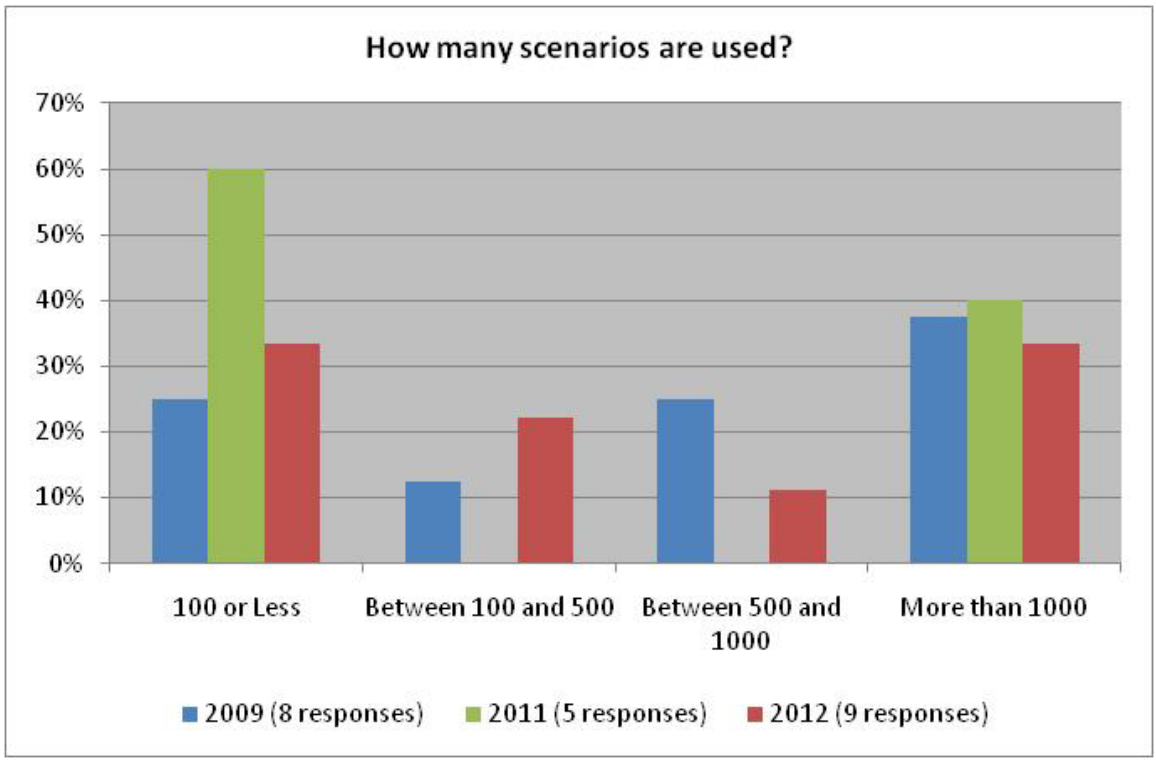


Figure 3

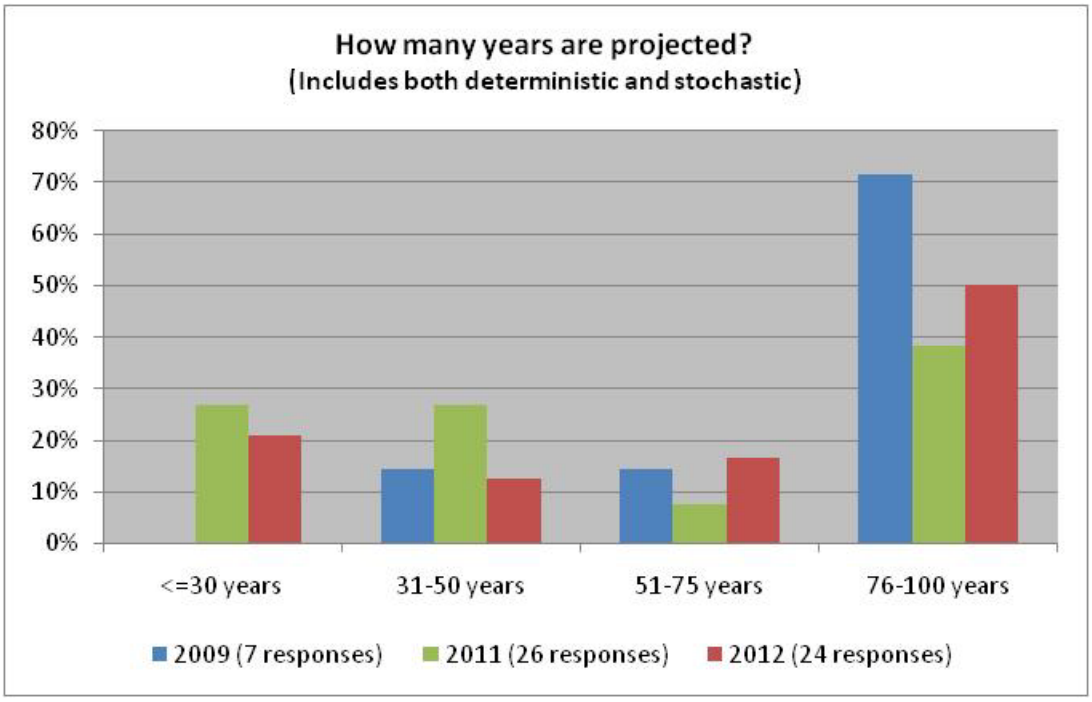


Figure 4

Tail Scenario

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 if that is the respondent's methodology) that gives the largest present value loss, defined in the survey as the greatest amount of death benefits paid in years where no COI is collected. 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.

There were six companies that reported stochastic results and eight companies that reported deterministic results. Not every company reported information for each of the requested interest rates in the tail scenario. The companies are comparable across the figures (i.e. Stochastic, 2 in Figure 5 is the same company as Stochastic, 2 in Figure 7.)

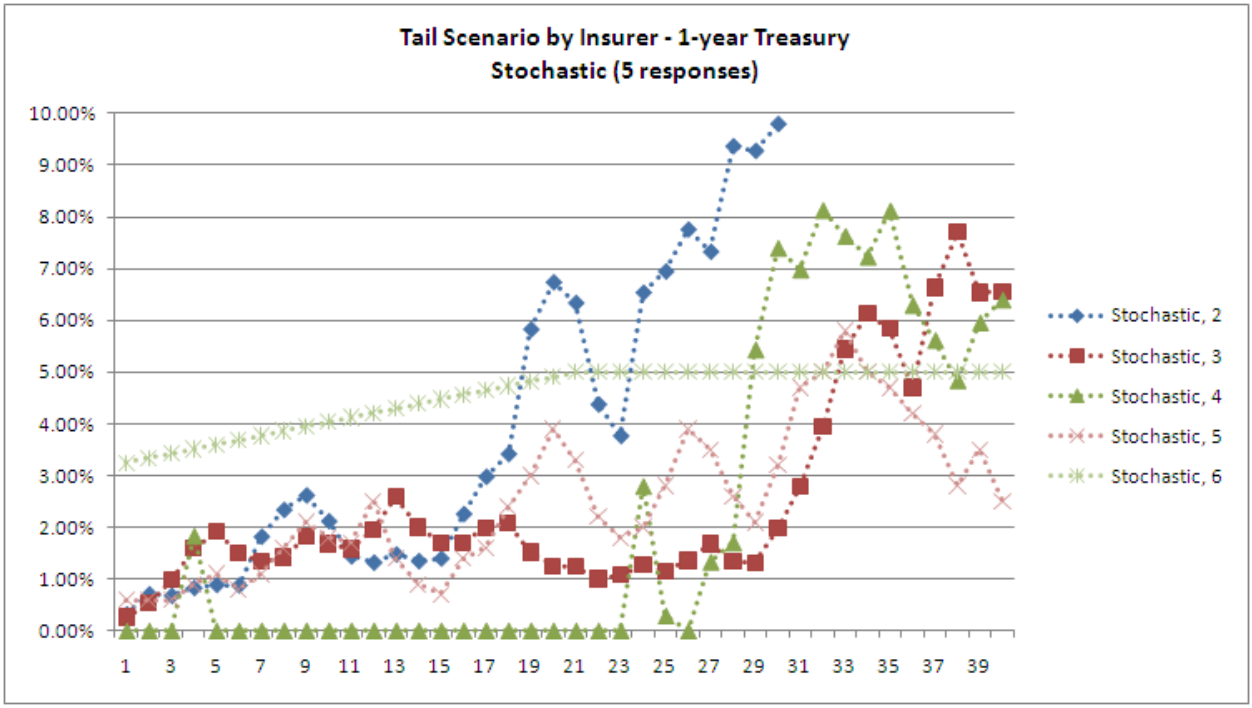


Figure 5

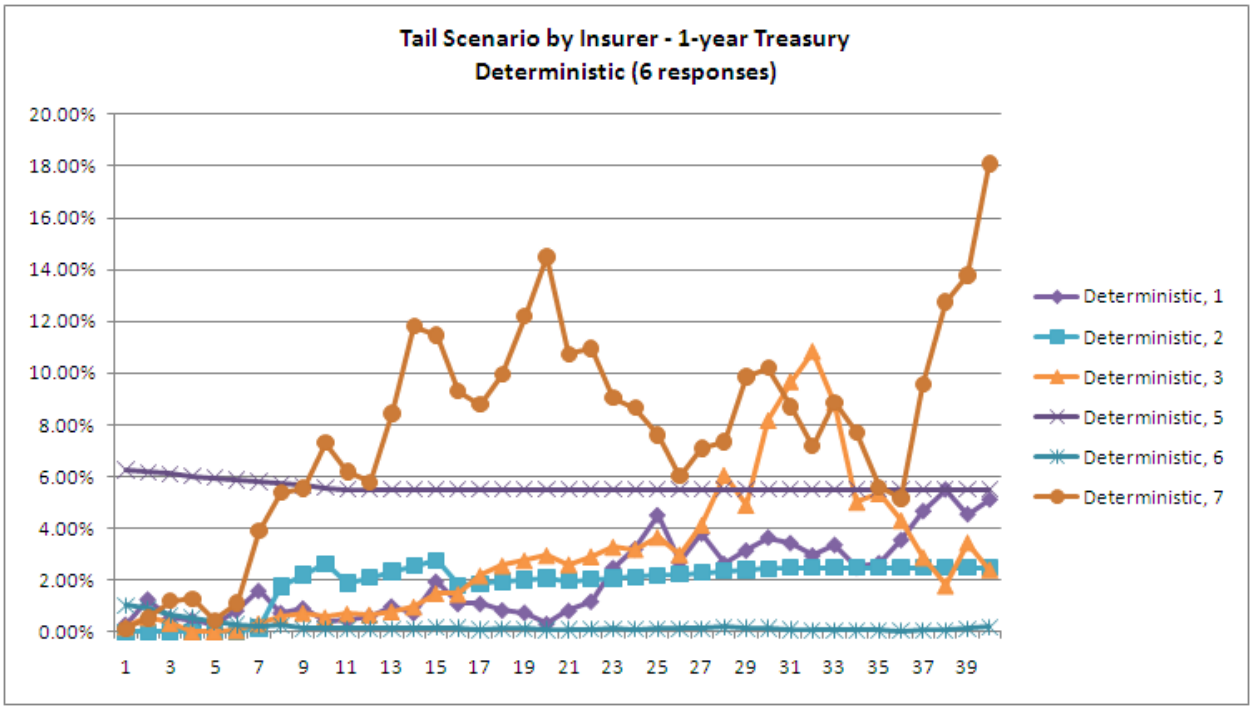


Figure 6

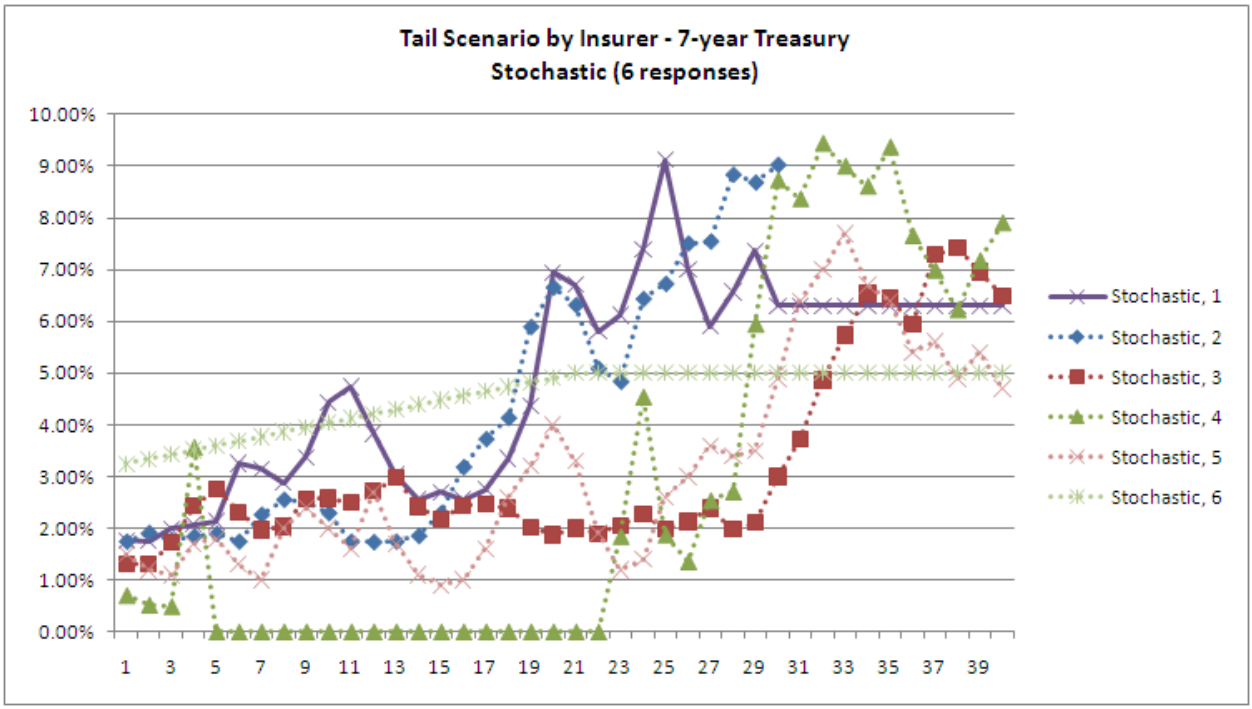


Figure 7

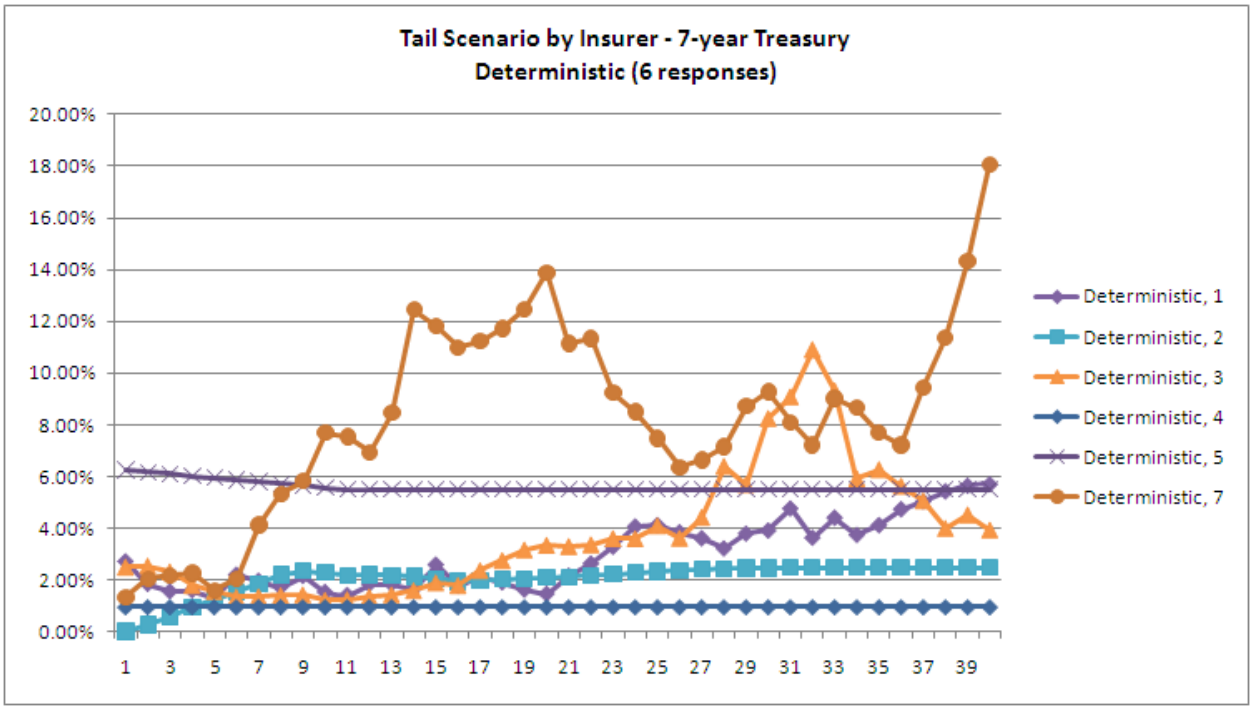


Figure 8

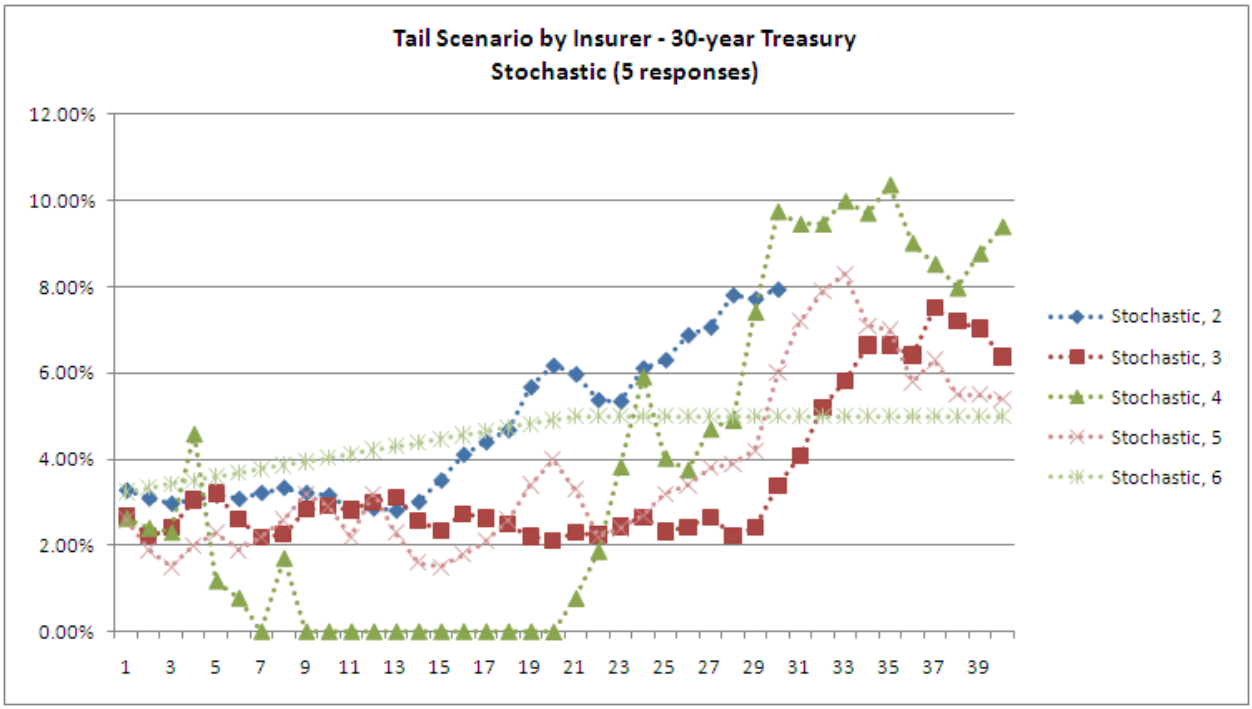


Figure 9

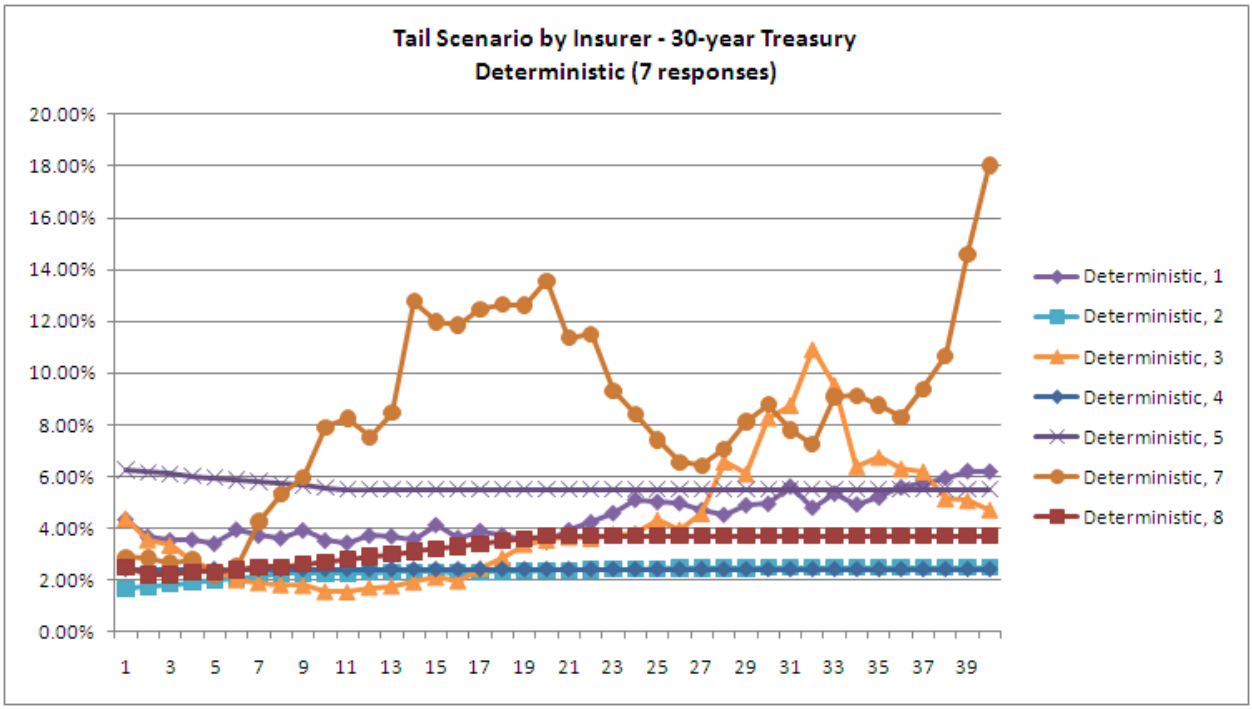


Figure 10

The following graphs show the median reported value across insurers for each of the three maturities for each projected year from the 2009, 2011, and 2012 survey results. 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. The median tail scenarios of 2012 rise more than the prior years giving an overall higher ending rate. This is perhaps due to the recent steepness in the yield curve. While the 2009 median rates exhibited a slight upward trend over the projection years, the median rates in 2011 were relatively flat. The rate levels in 2012 are steeper, starting lower than each of the prior years and ending much higher.

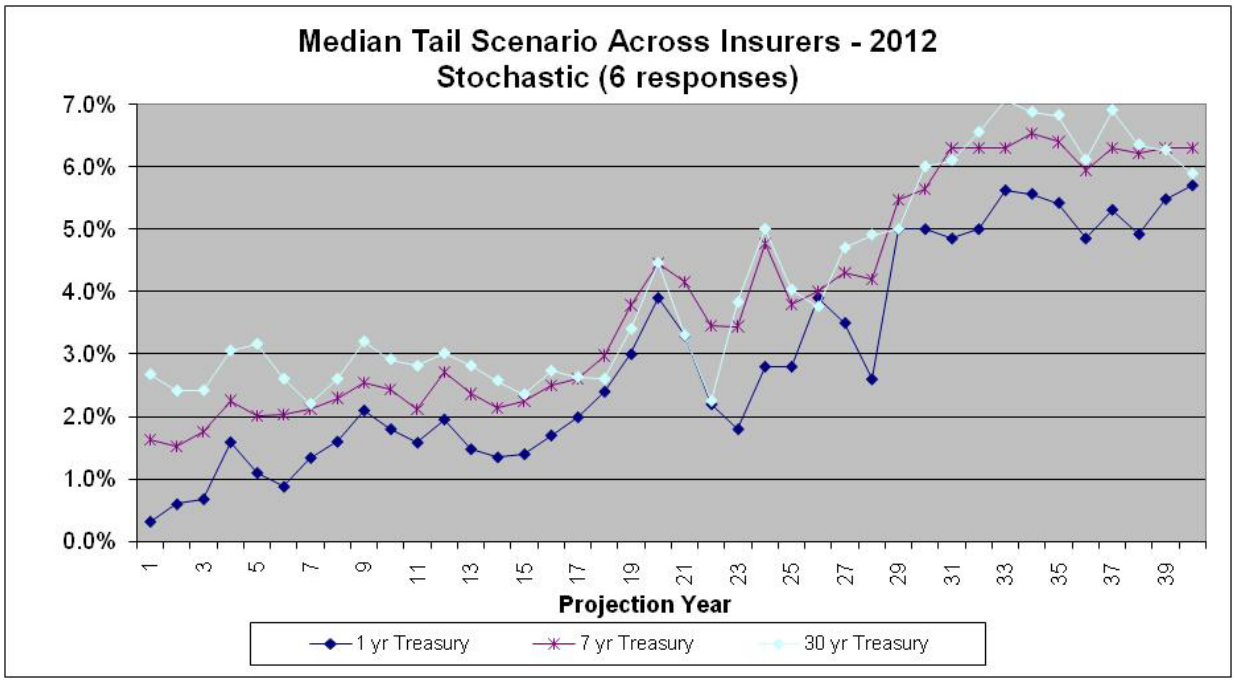
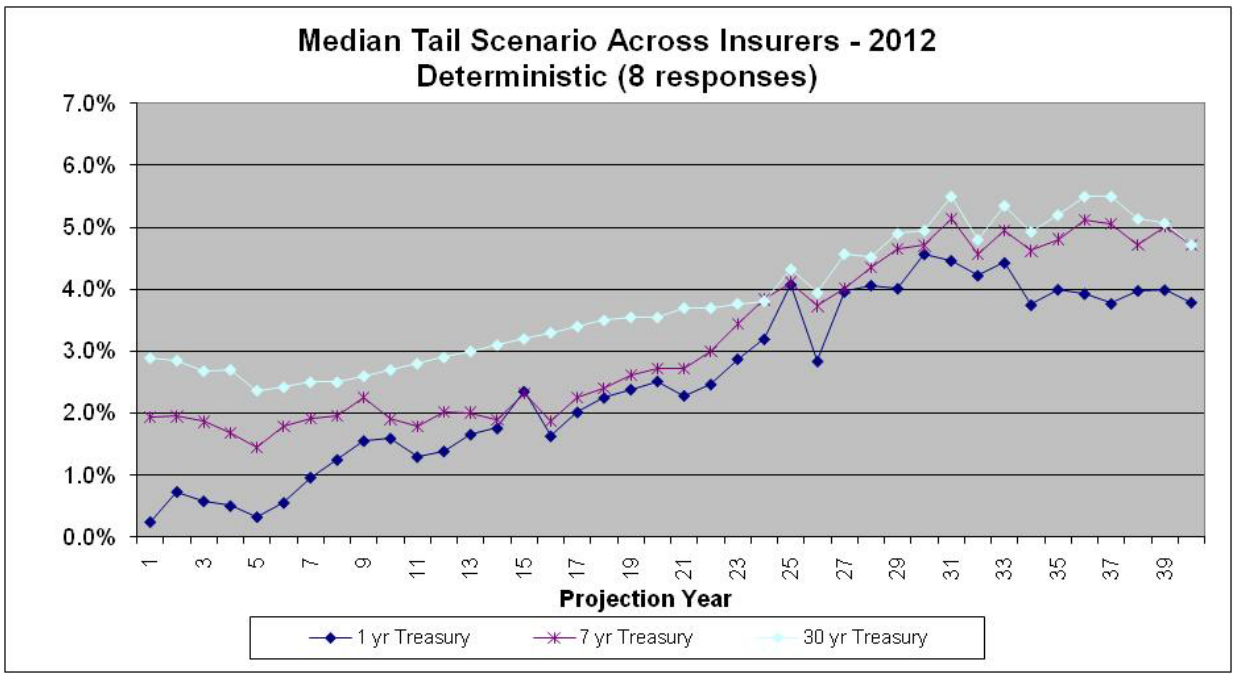


Figure 11



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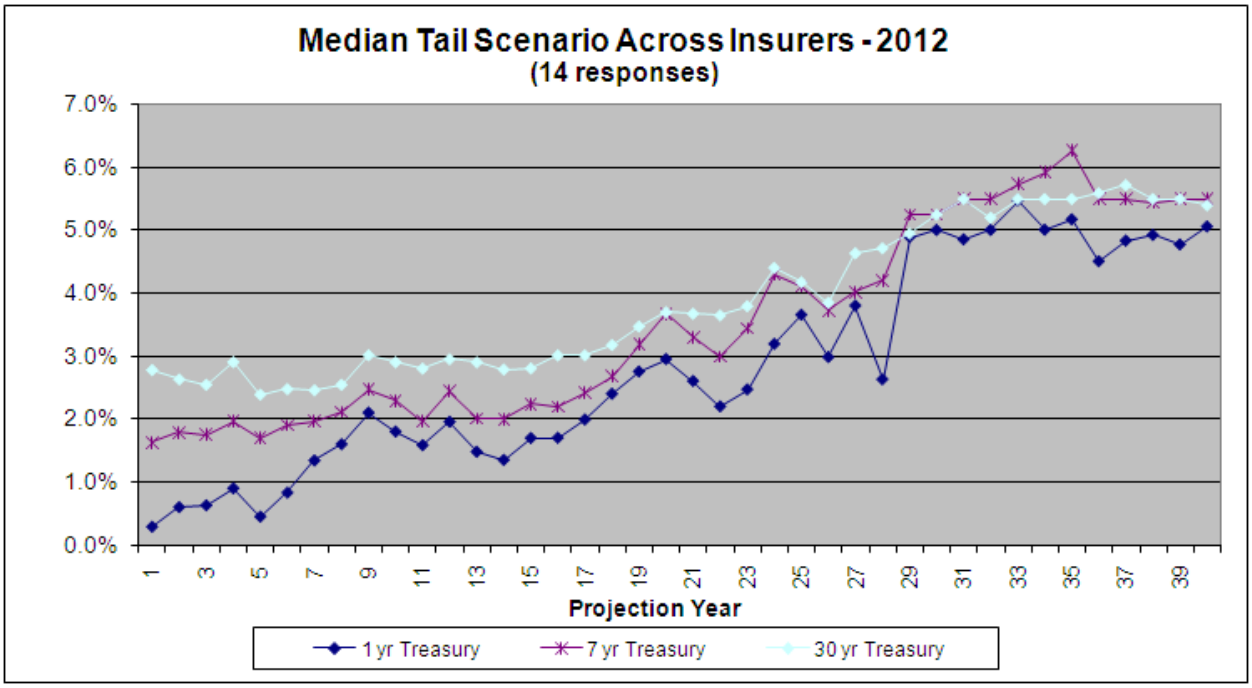

Figure 13

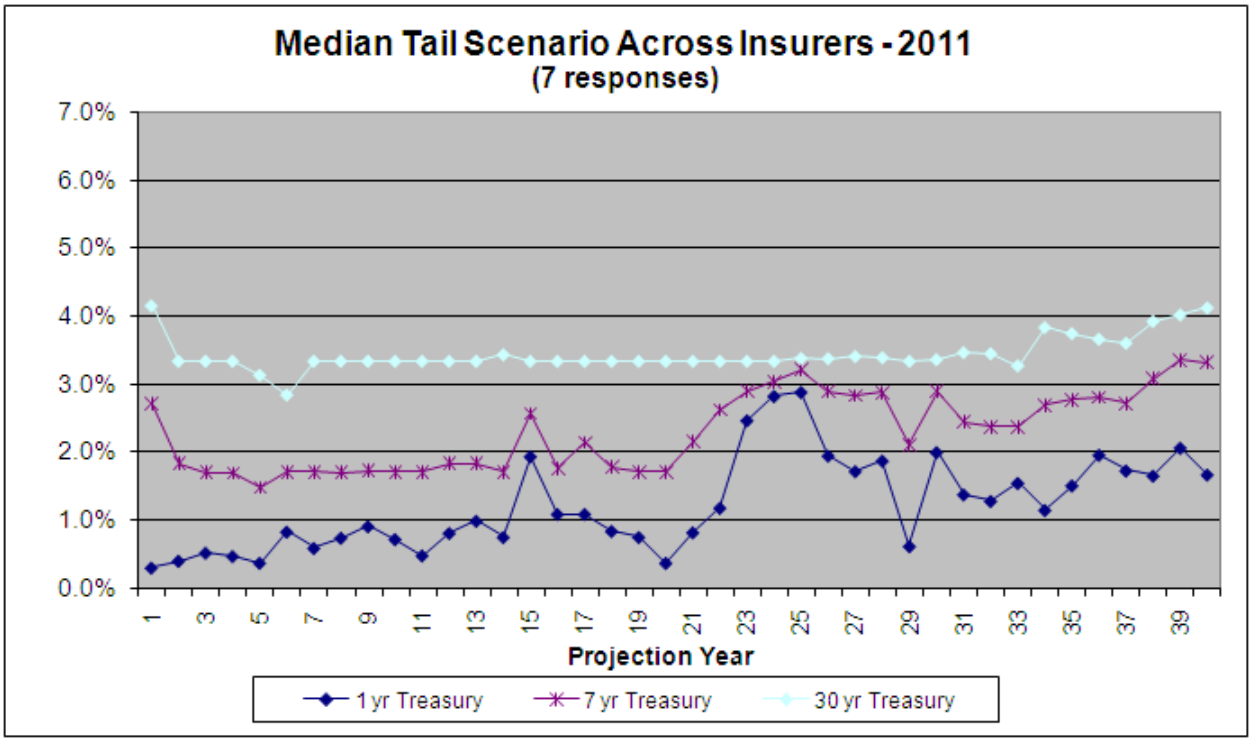

Figure 14

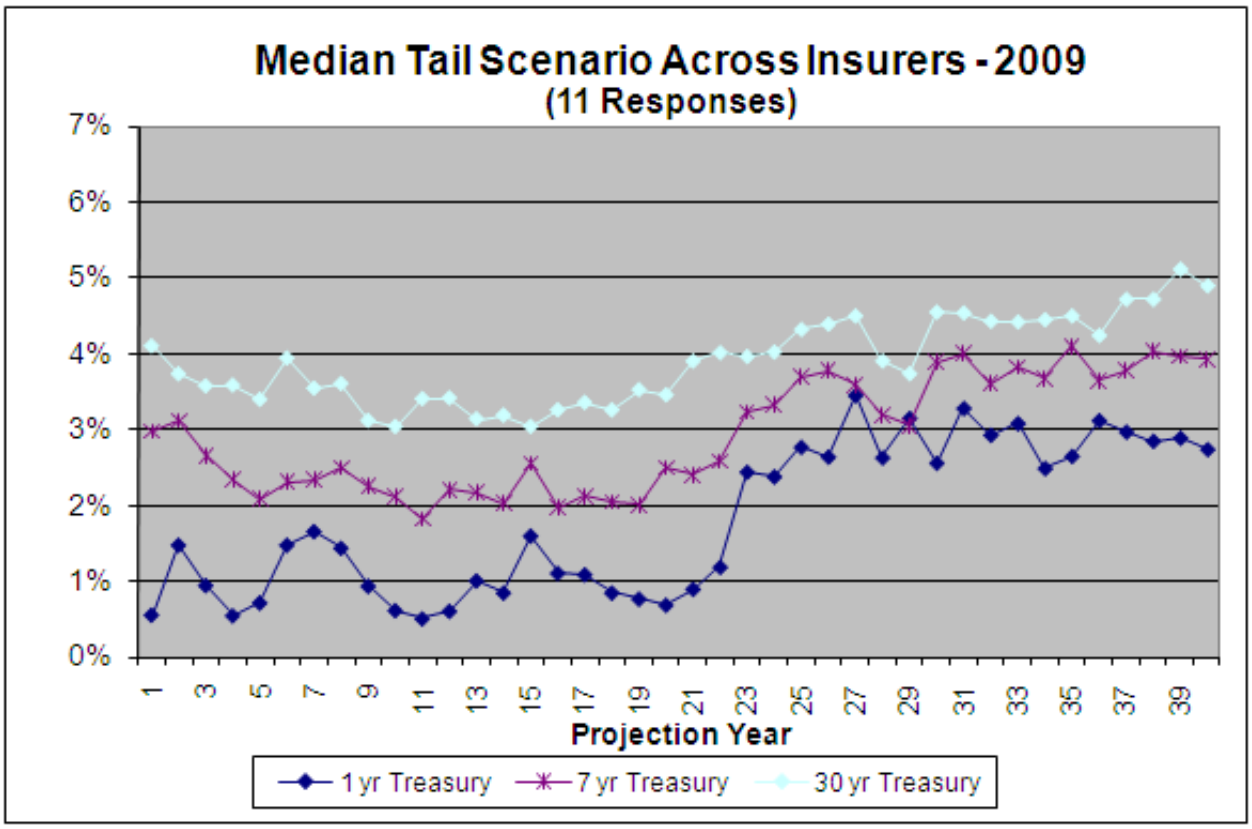

Figure 15

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 about the same this year (40% of responses) as last year (41%). Of those that do use dynamic lapse functions, only 50% (5 of 10) 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 compared to 58% from last year and 91% from the 2009 survey. Other factors considered in the dynamic lapse function included the relationship of the current account credited rate to the competitor rate and the relationship of the current credited rate to the guaranteed rate.

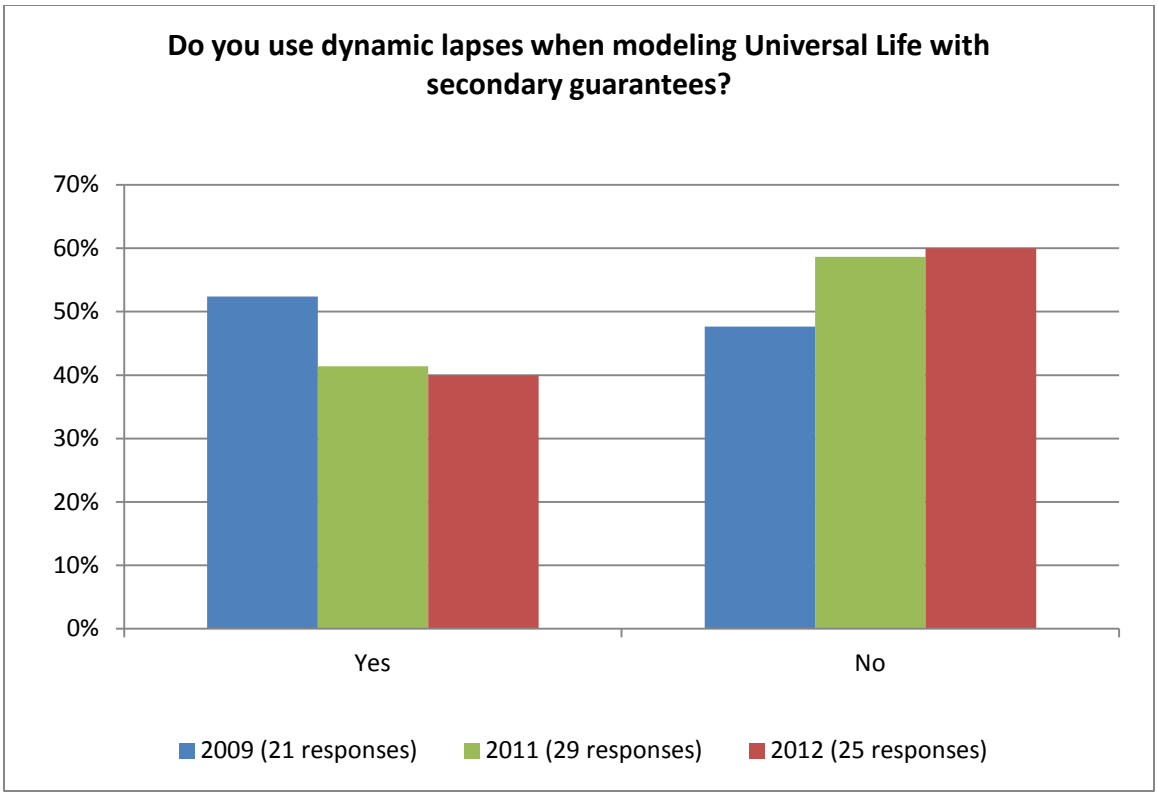

Figure 16

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. In 2012, responses for other issue ages were very similar to those for age 40-49. The lapse rates for the first three years of the policy seem to be lower in 2012 than last year.

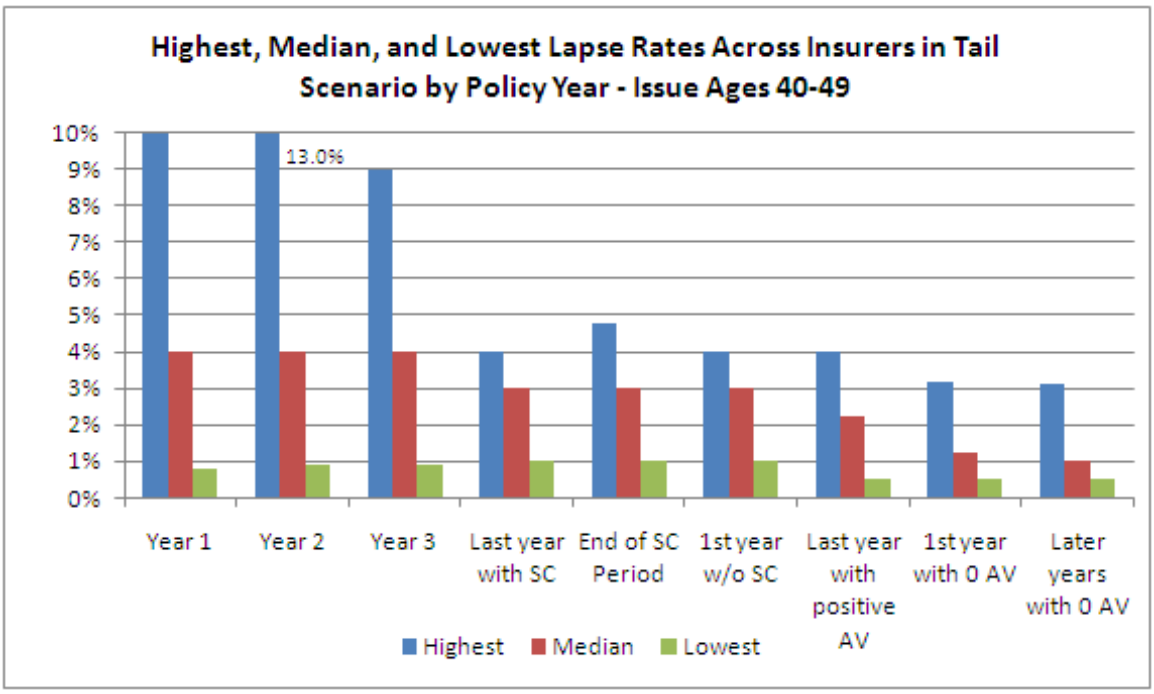

Figure 17

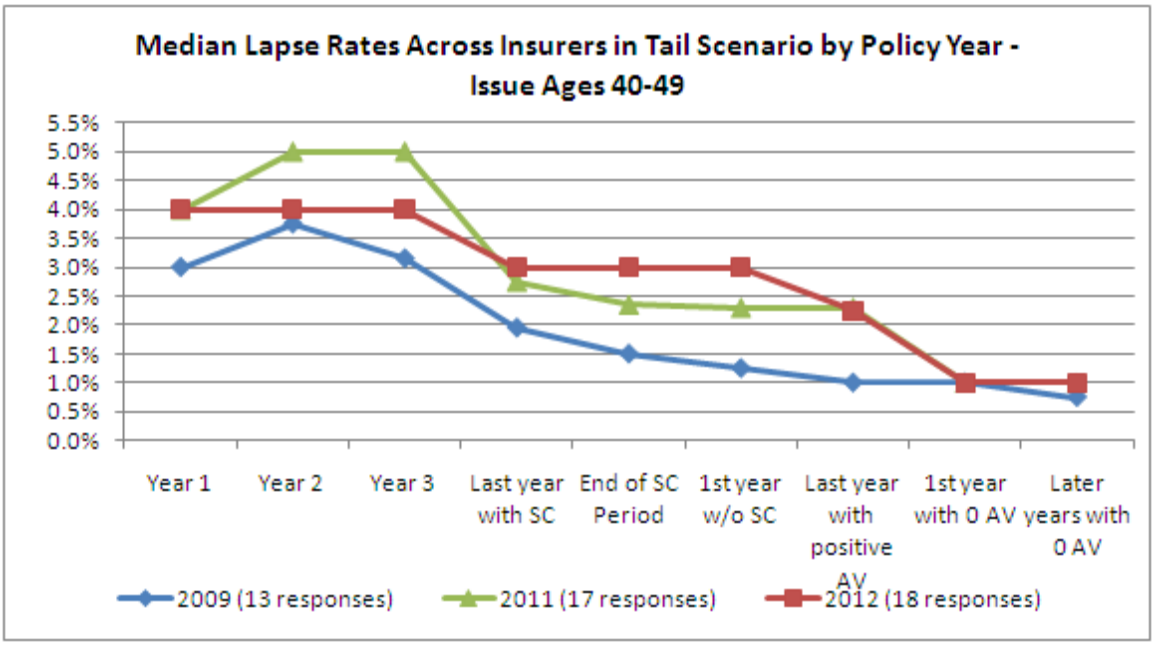

Figure 18

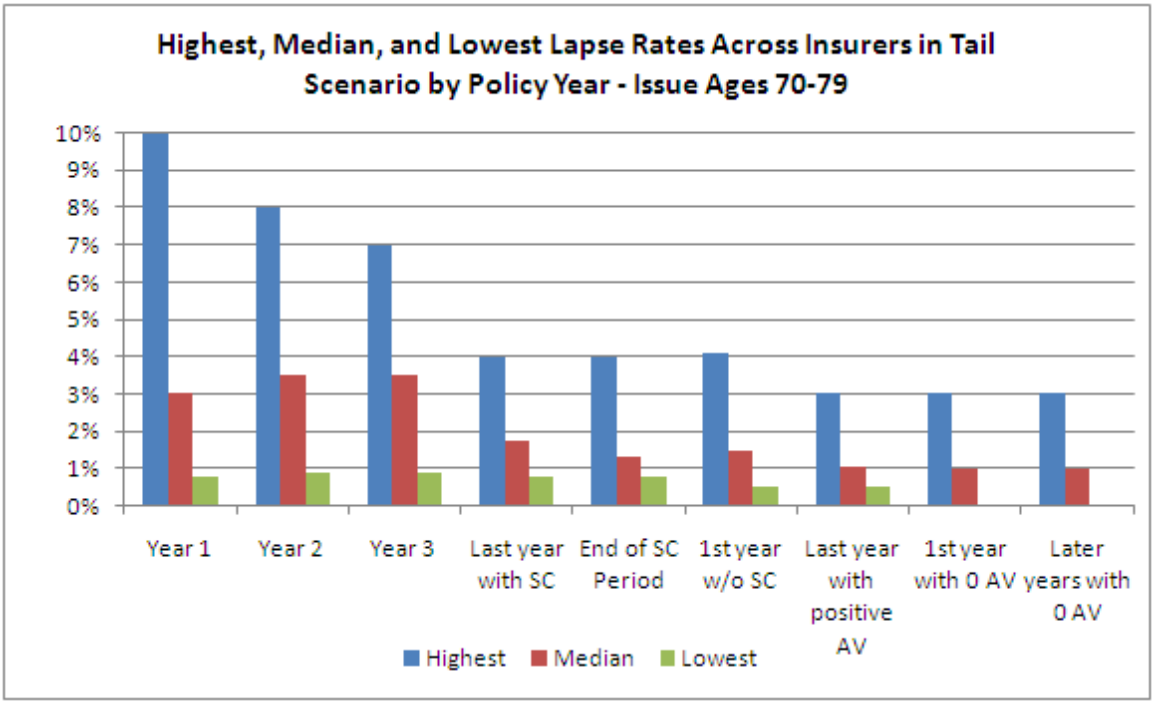

Figure 19

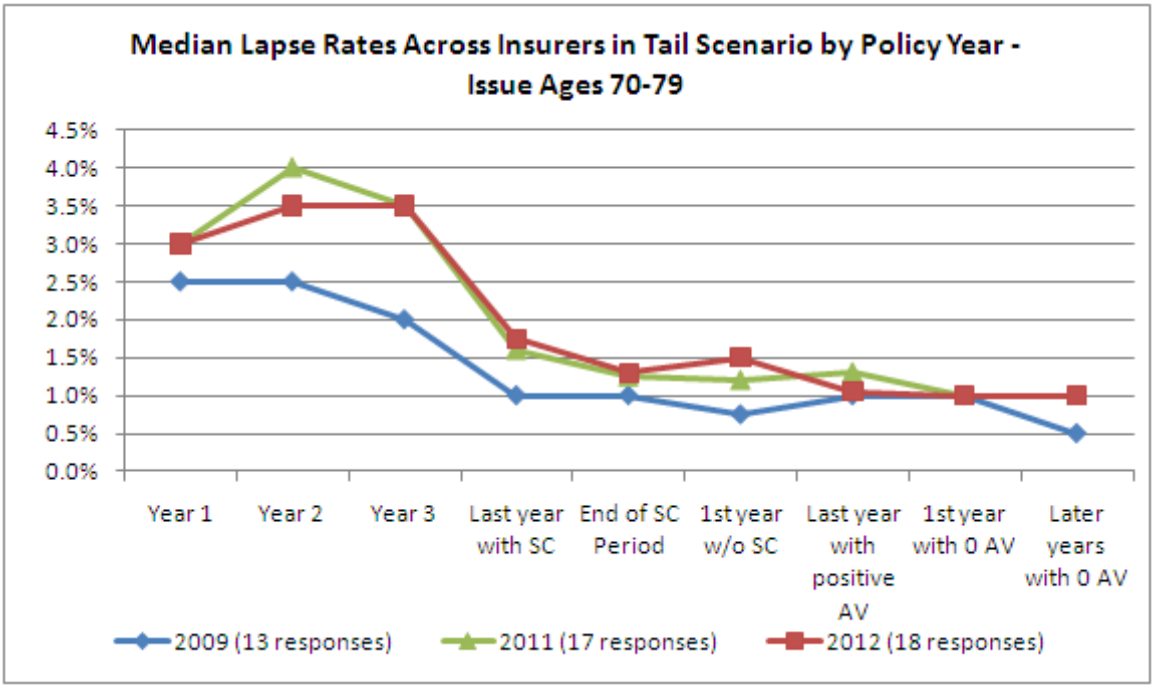

Figure 20

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. There were seven responses for this age range with the respondents answering in two different ways. The first way (4 responses) assumed 10,000 policies at the beginning and then the population was decremented over time. The second way (3 responses) assumed 10,000 policies at the end and then illustrated the effect of the no-lapse guarantee going back to the point of issue.

Start with 10,000 Policies

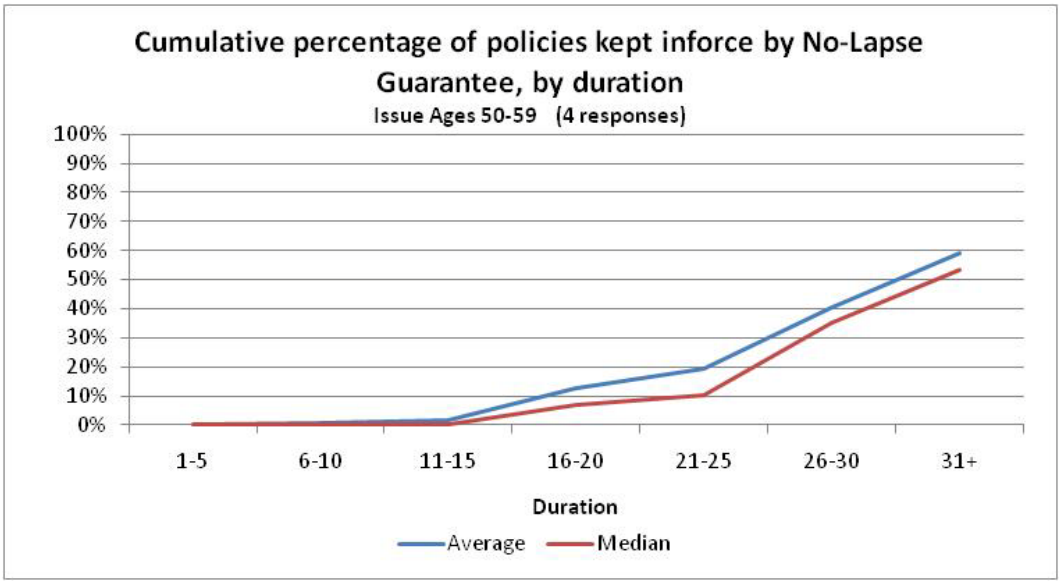

Figure 21

End with 10,000 Policies

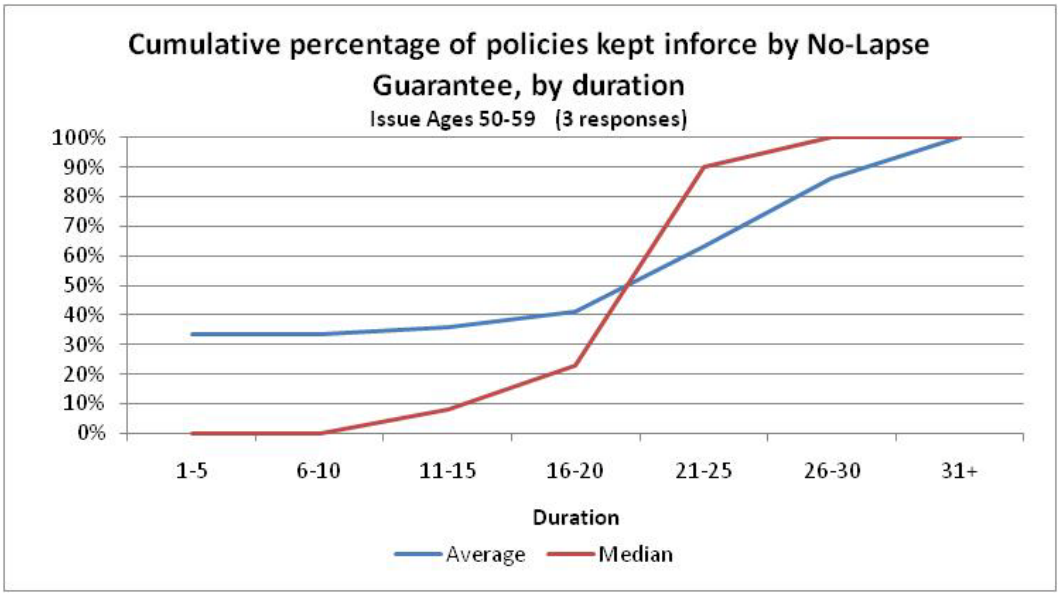

Figure 22

The survey asked insurers in Question 6, if their lapses varied by distribution. Out of 24 respondents, 14 (58%) indicated that they sold through multiple distributions. The following graph (Figure 23) indicates the distribution systems used by these respondents.

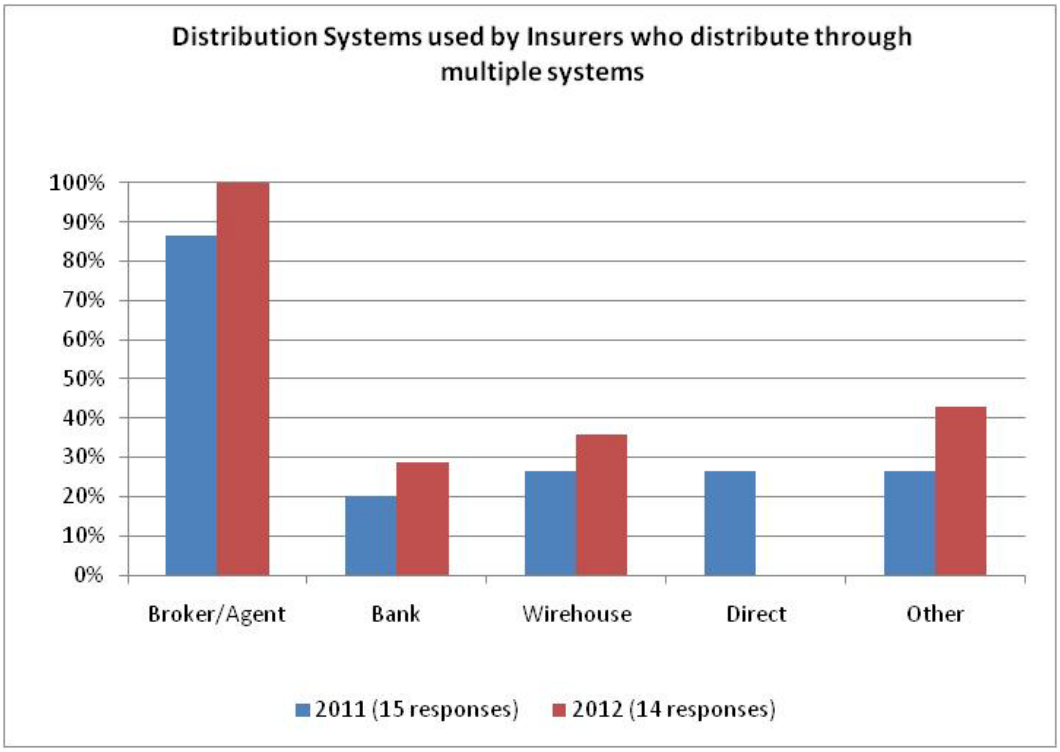

Figure 23

An additional question asked insurers if they measure lapses by distribution system. Of the 15 insurers who responded only five (33%) measure lapses by distribution system, and only one (7%) has found that their lapse assumptions vary by distribution system. These results are similar to those seen in 2011.

Question 7 asked about lapses and premium assumptions. Only 11 of the 24 respondents (46%) indicated that lapse rates vary by premium assumption, a departure from 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.

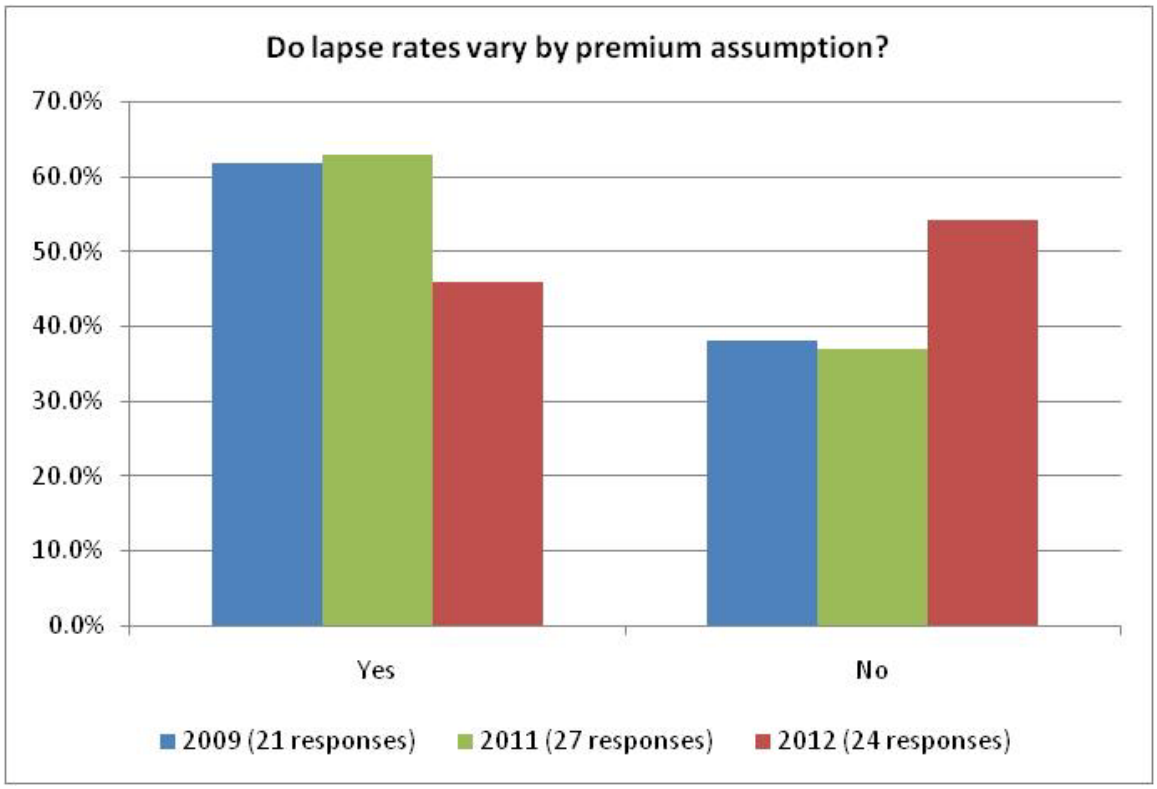

Figure 24

Insurers were asked about the source of their lapse assumptions. Respondents could include more than one source, and 24 of 25 respondents (96%) included "Company experience" among their answers. "Actuarial best estimate" was the next most popular answer with 92% of respondents. About half of the companies chose "Industry study." This year "Consultant Advice" was 20% or almost double the value of 2011, but this could be an example of survey bias because it is the first year that this was explicitly included as an answer.

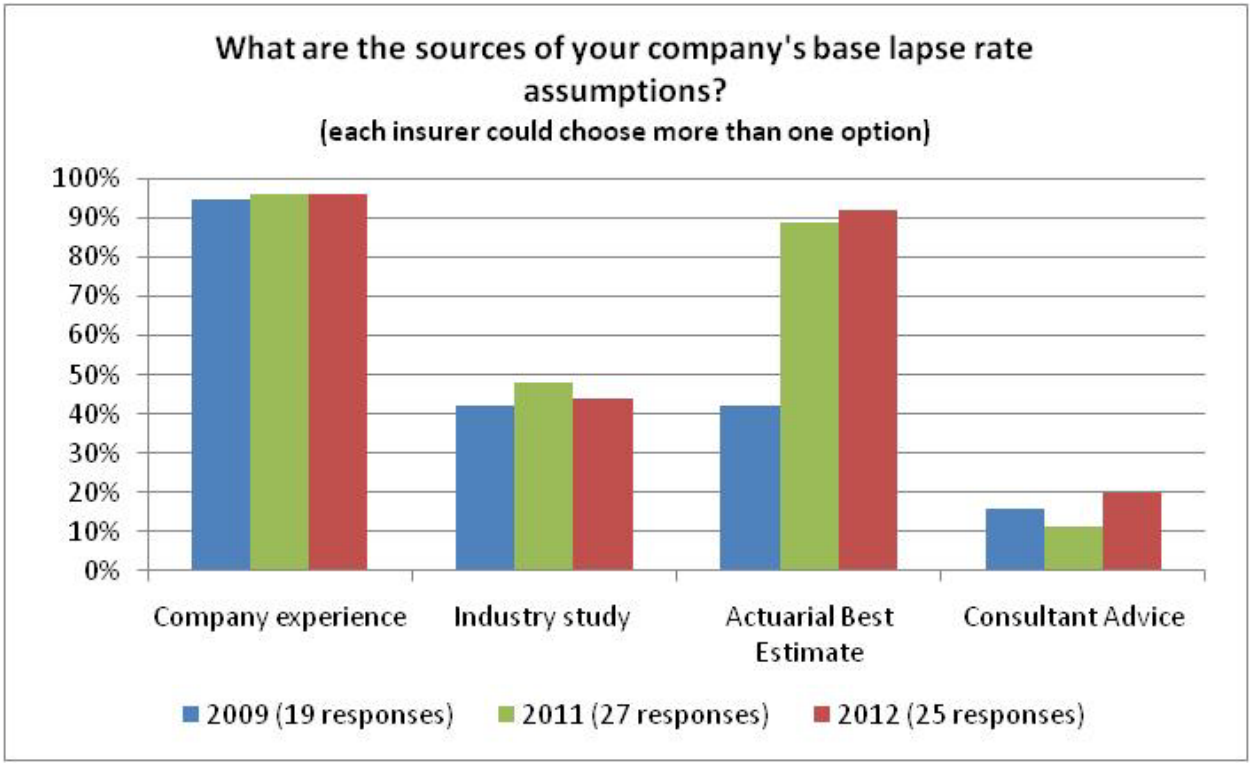

Figure 25

The survey then asked if companies perform lapse studies for UL policies with secondary guarantees, and if so, how frequently. Almost all companies (92% - 23 of 25) perform such lapse studies. Interestingly, one of the companies that selected "Company experience" did not indicate that they performed lapse studies. Most of those companies perform the studies annually, but this number is down from 2011. There seems to be a trend of companies performing experience studies at durations less frequently than annual.

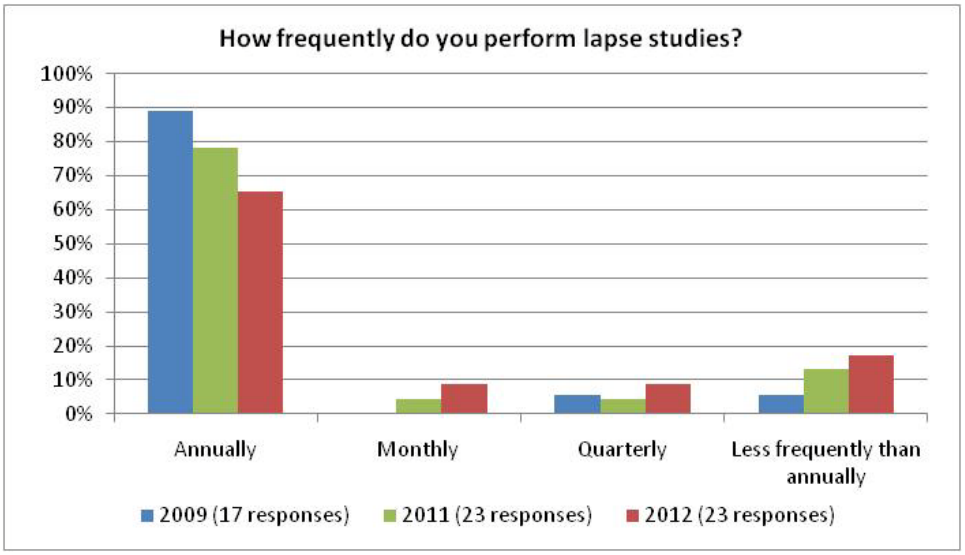

Figure 26

Companies were asked how many years of experience data were used in their latest study. Consistent with the last survey, companies are using more experience data in their lapse studies.

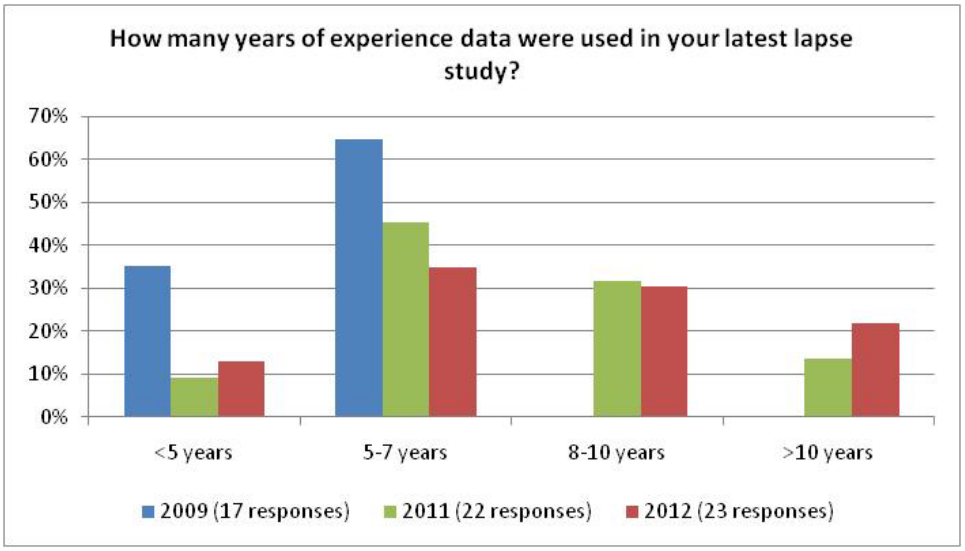

Figure 27

In this survey companies were asked about their dynamic lapse assumptions specifically. Of the 25 respondents, only 10 (40%) vary their assumptions dynamically (Figure 28). Those companies that vary assumptions dynamically overwhelmingly use (89%) actuarial best estimates in setting those assumptions (Figure 29).

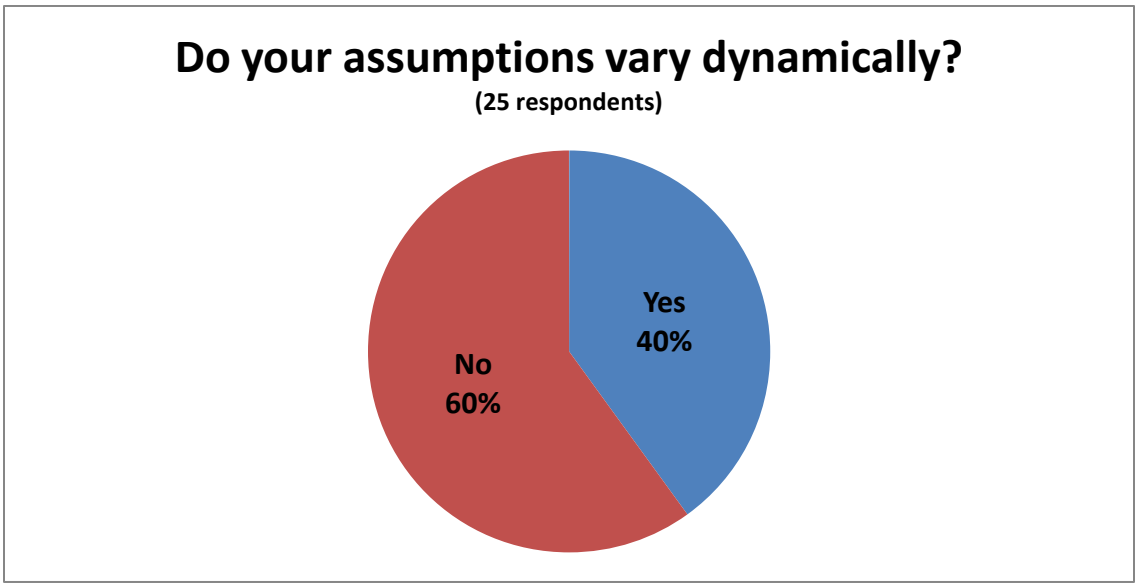

Figure 28

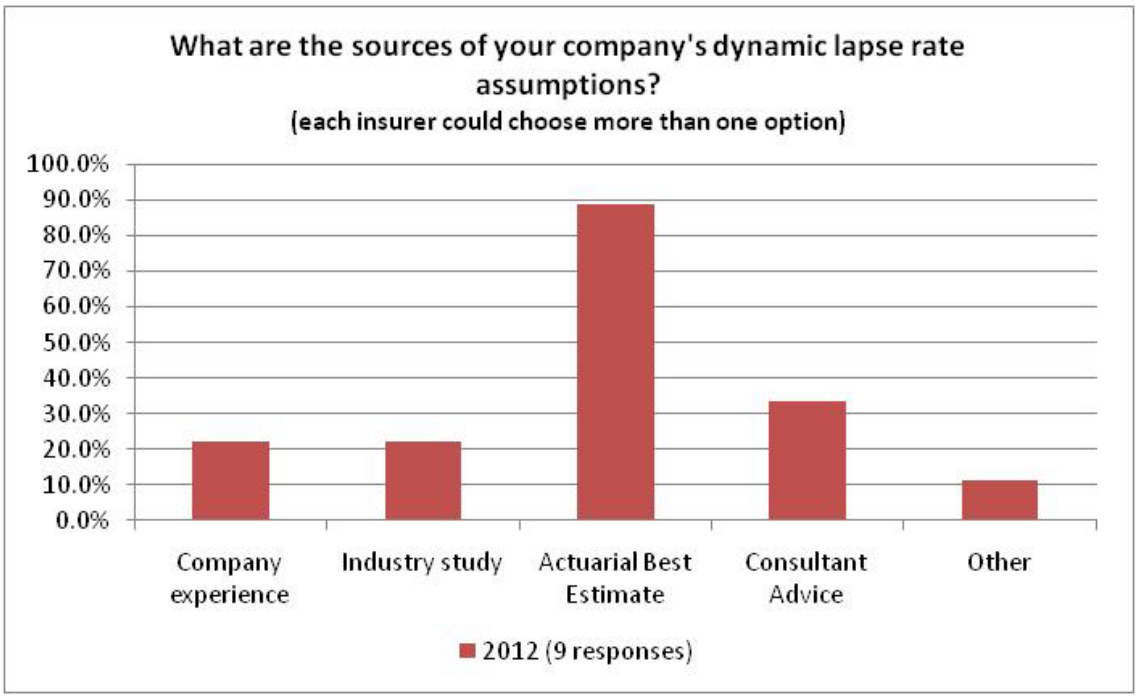

Figure 29

Mortality Assumptions

Companies were then asked in Question 9 about their mortality assumptions in the tail.

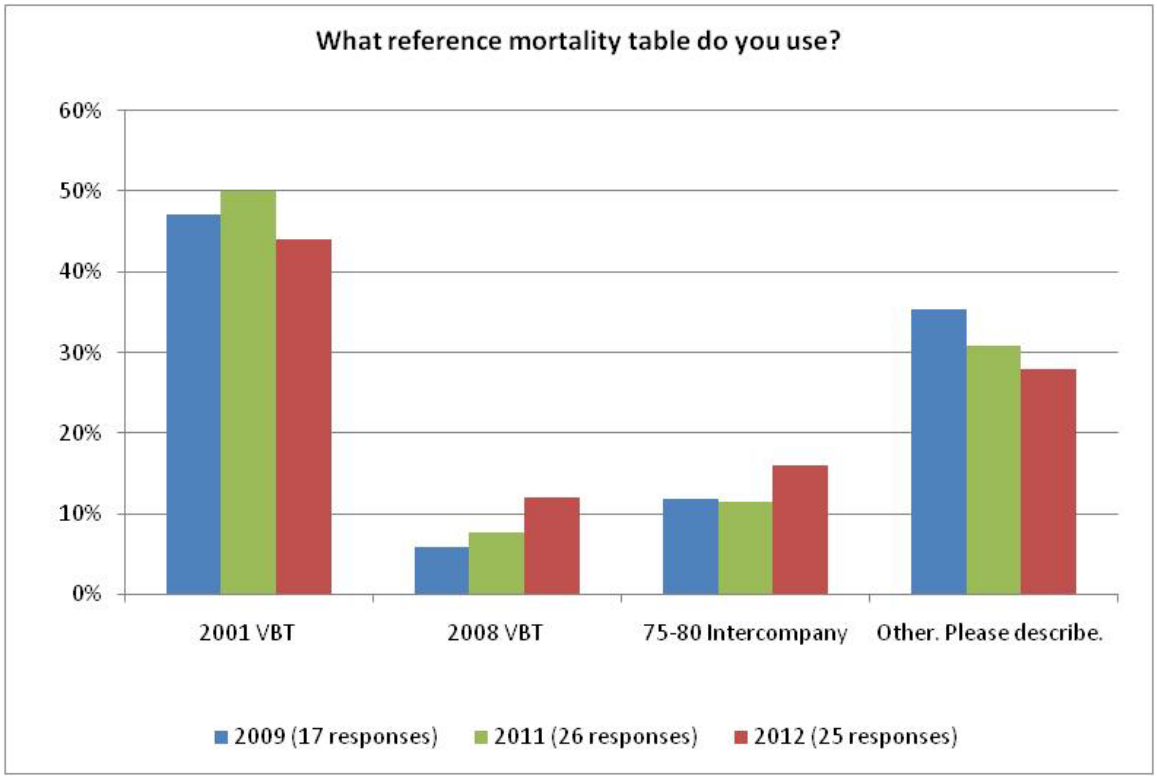

Figure 30

Of the seven companies that responded "Other", responses included the 2001 CSO, the 90-95 Select and Ultimate Table, tables derived from company experience, and tables derived from consultant or reinsurer experience.

Thirteen companies provided ultimate mortality rates per 1,000 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 rates (ultimate, sex and tobacco distinct, age nearest birthday) for comparison.

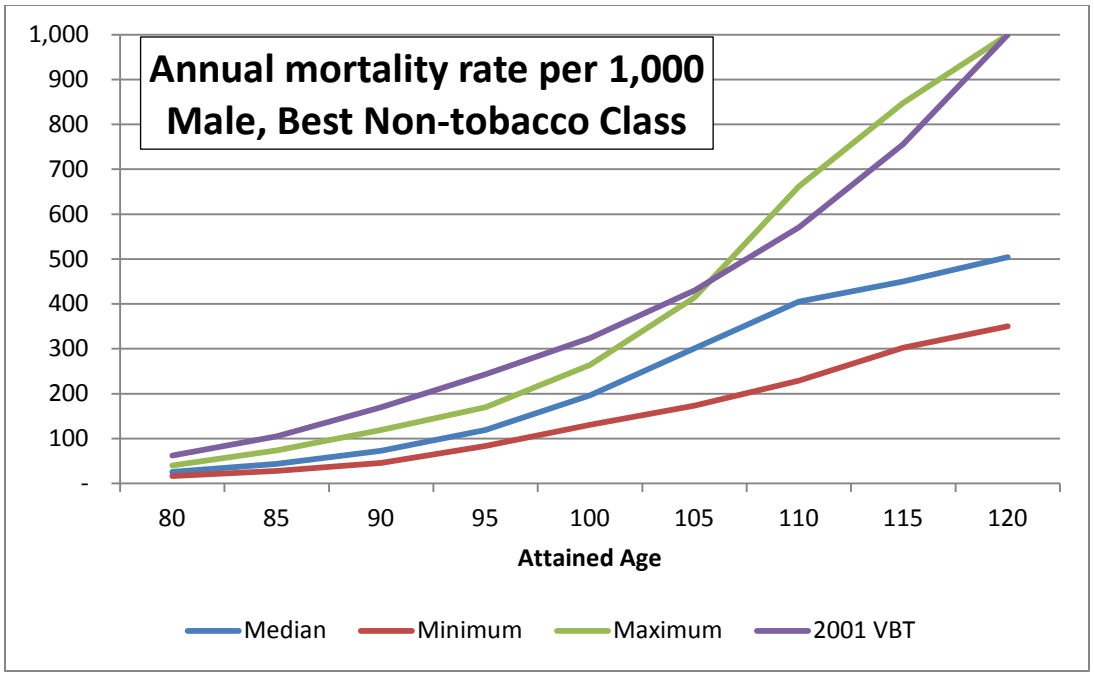

Figure 31

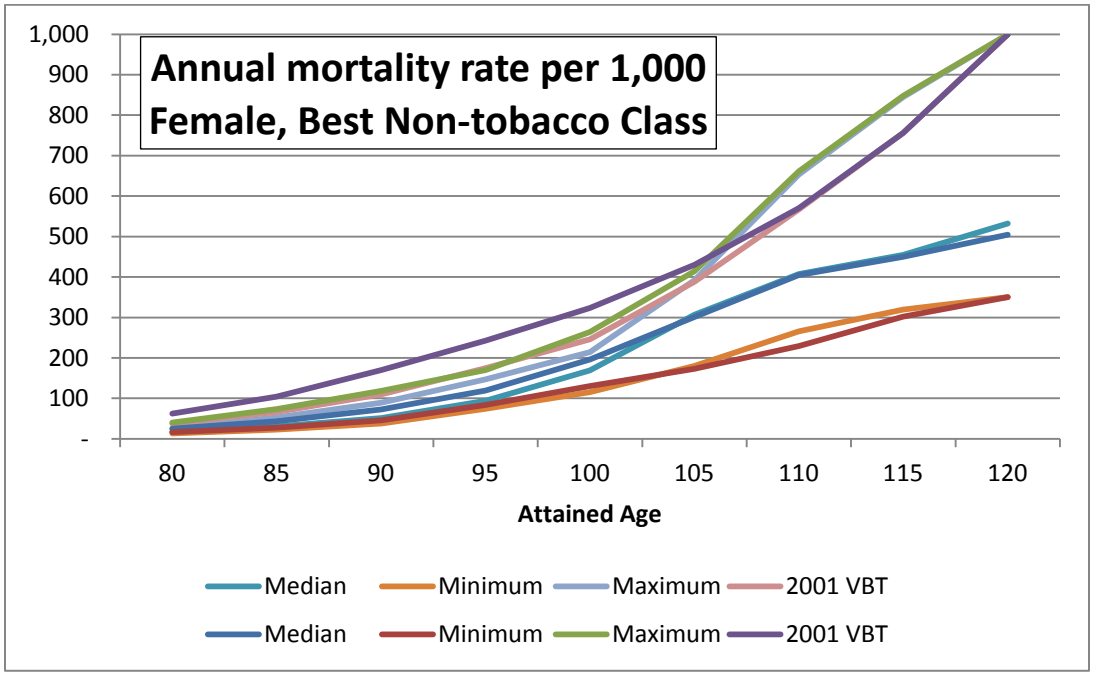

Figure 32

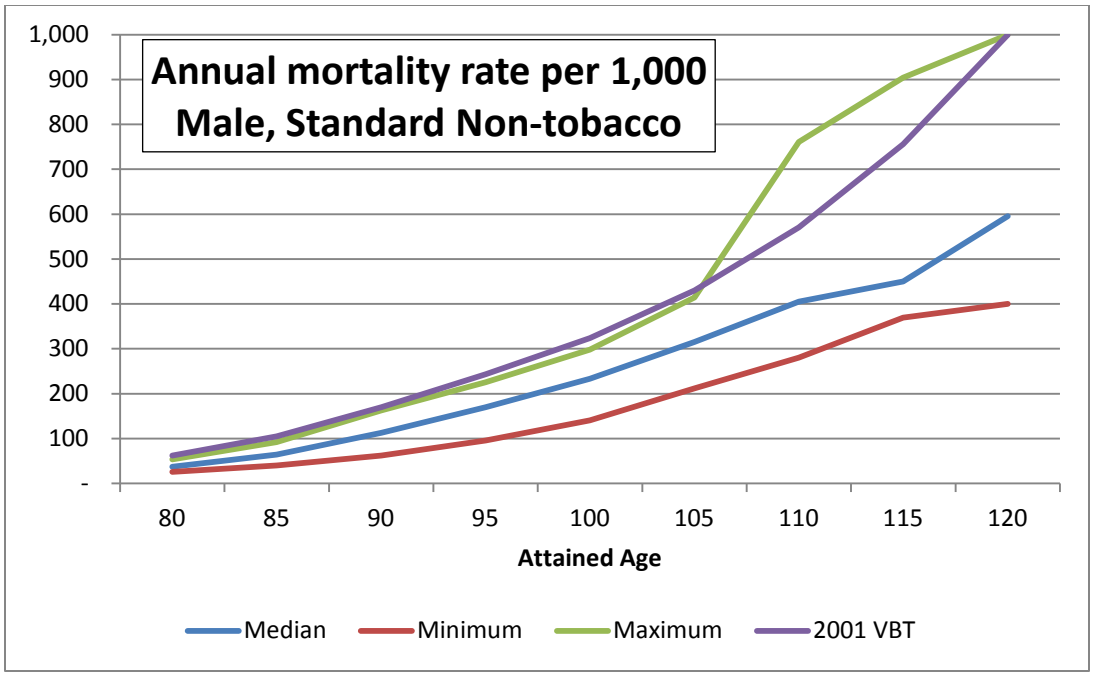

Figure 33

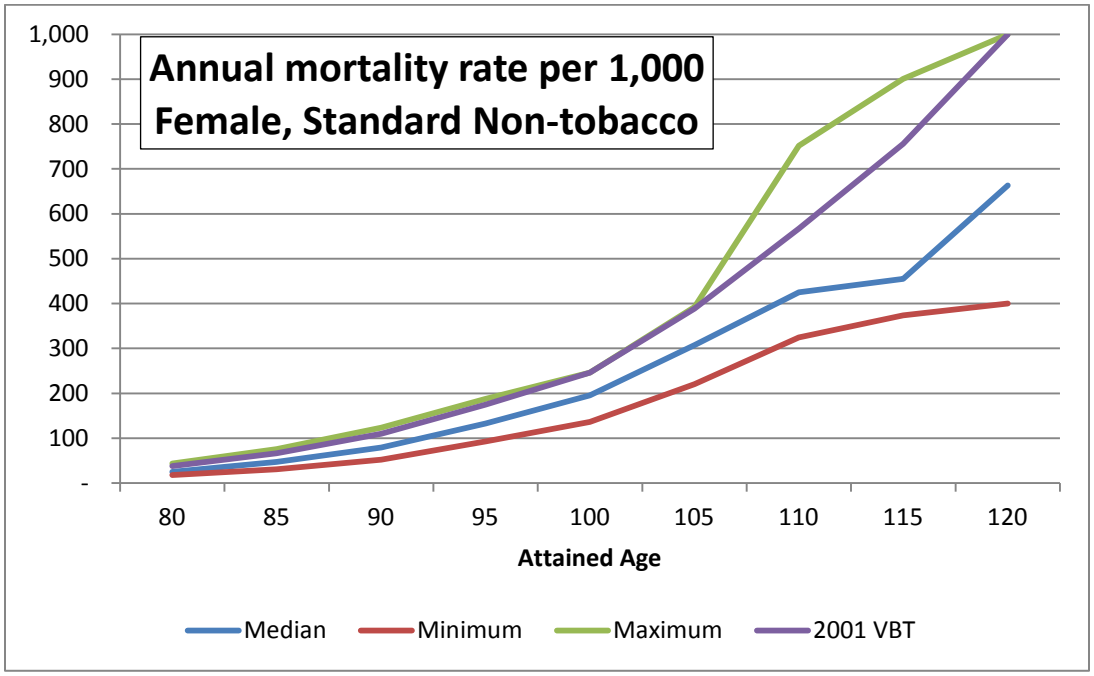

Figure 34

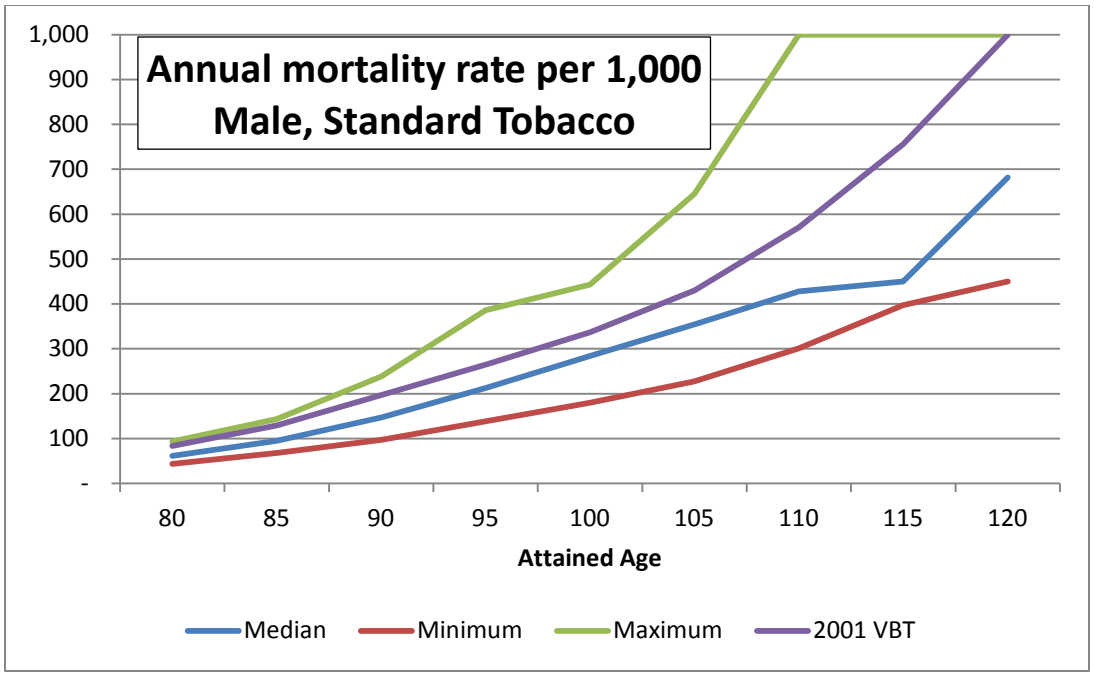

Figure 35

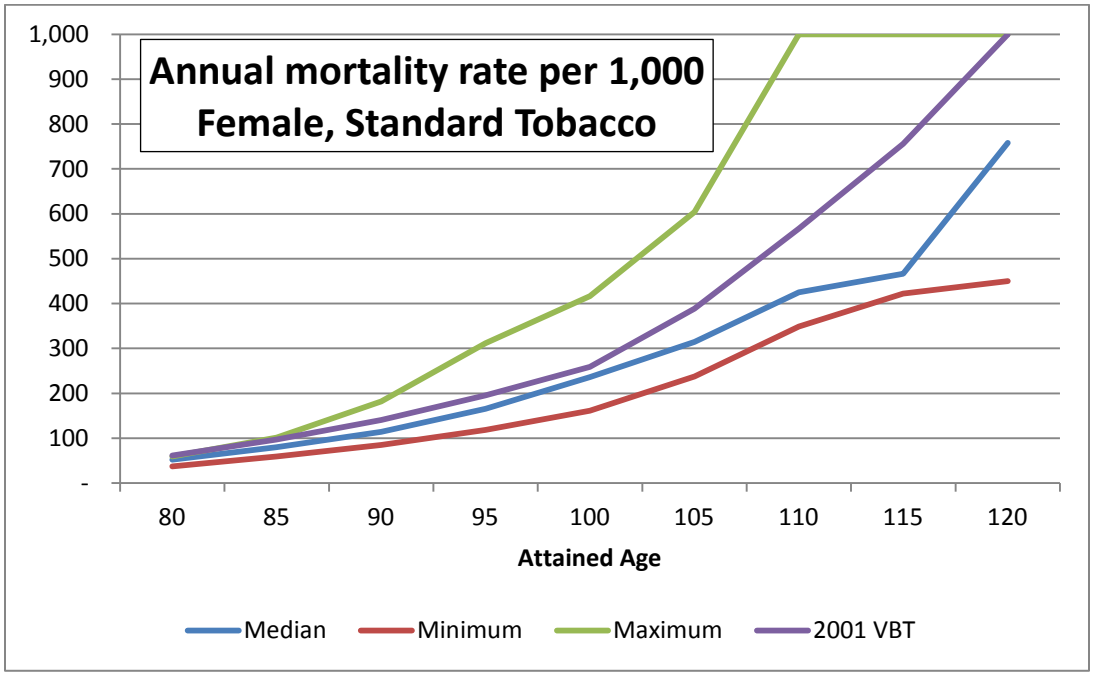

Figure 36

When companies were asked in this survey about underwriting classes, the data are showing a trend of increasingly using more underwriting classes. Several companies indicated that they are using two classes for part of the business and four for other parts. An example of this would be where a company used two non-smoker underwriting classes for older business, but their newer business uses four non-smoker underwriting classes.

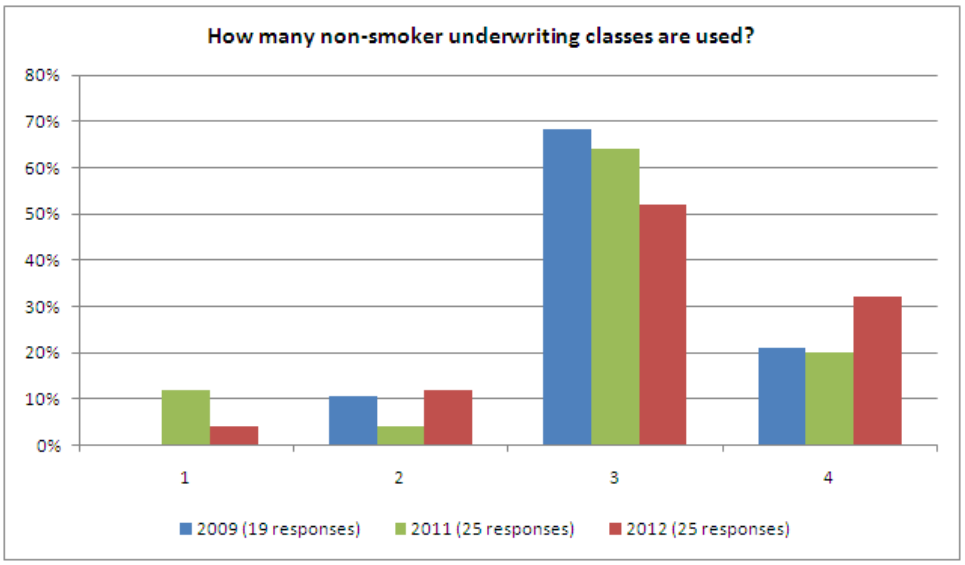

Figure 37

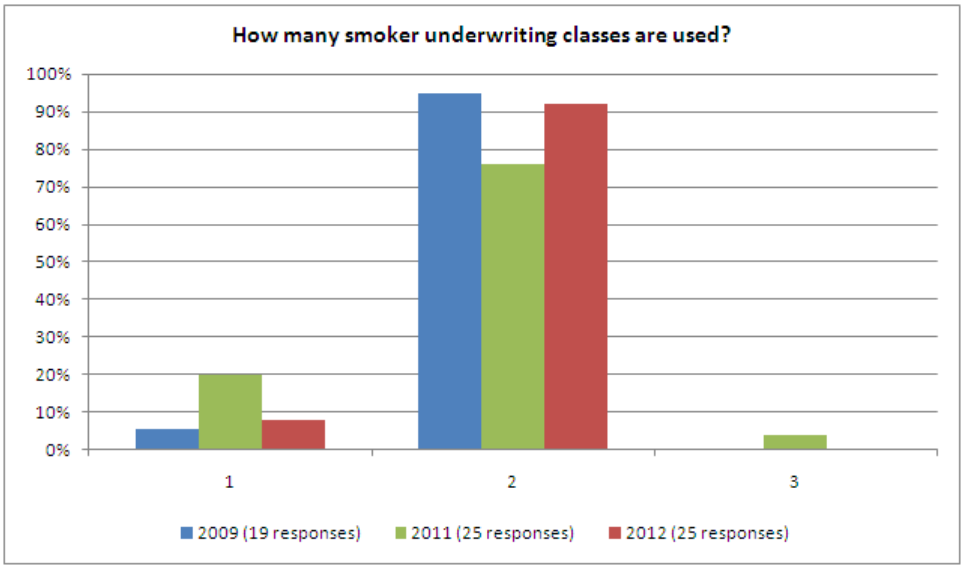

Figure 38

Assumed future mortality improvement became an even more common feature of models than last year.

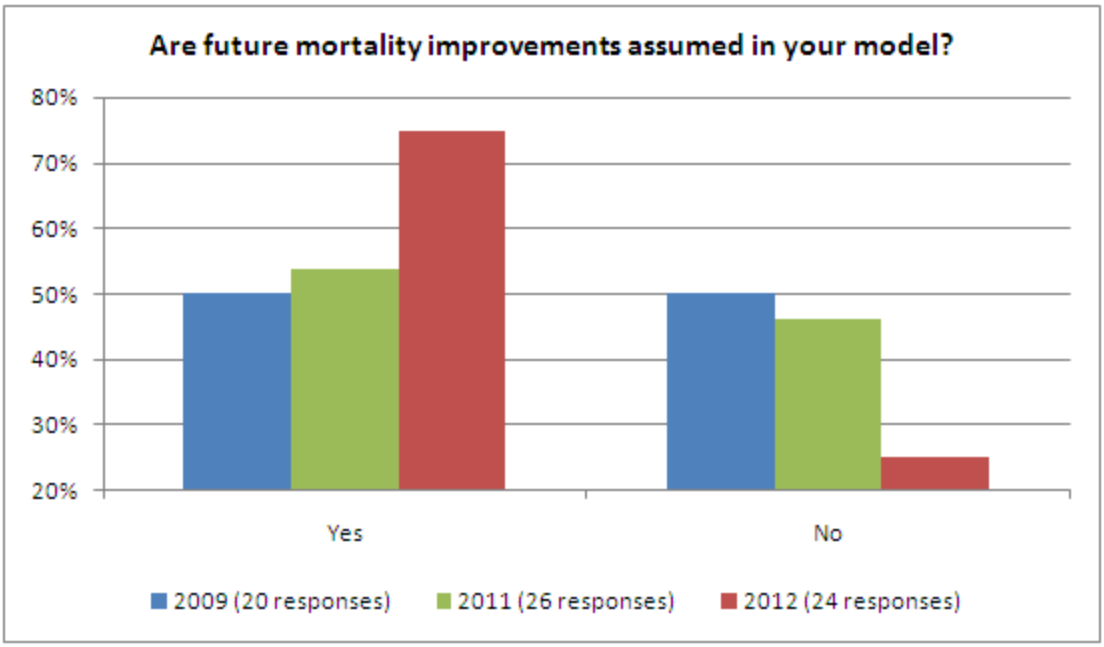

Figure 39

Of the 24 companies that responded to how they categorized future mortality improvements, 75% indicated that they included future mortality improvements in their modeling. Most had improvement assumptions that were sex-distinct and duration distinct. Several used attained age and categorized it as using both Age and Duration.

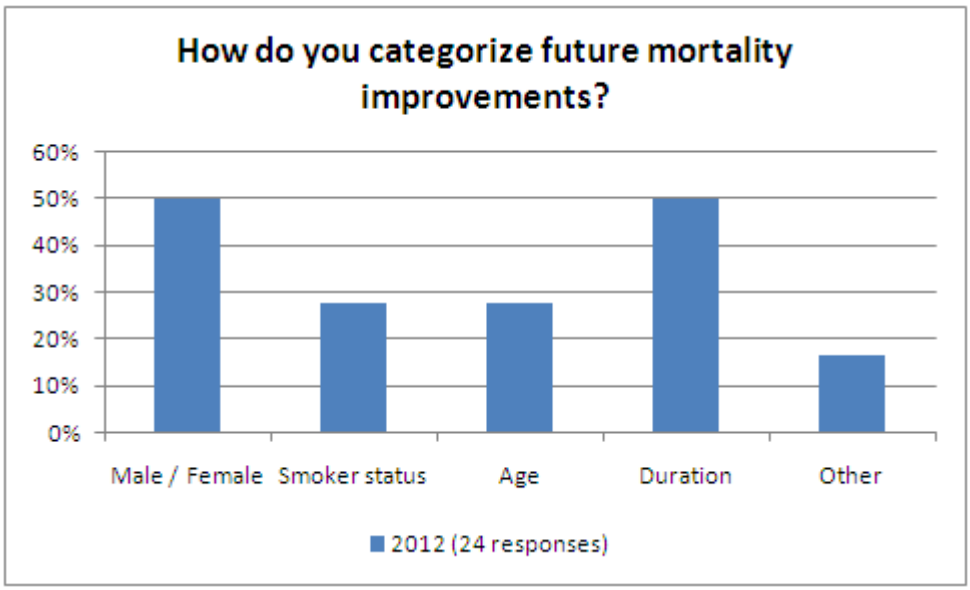

Figure 40

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

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.

Critical Assumptions

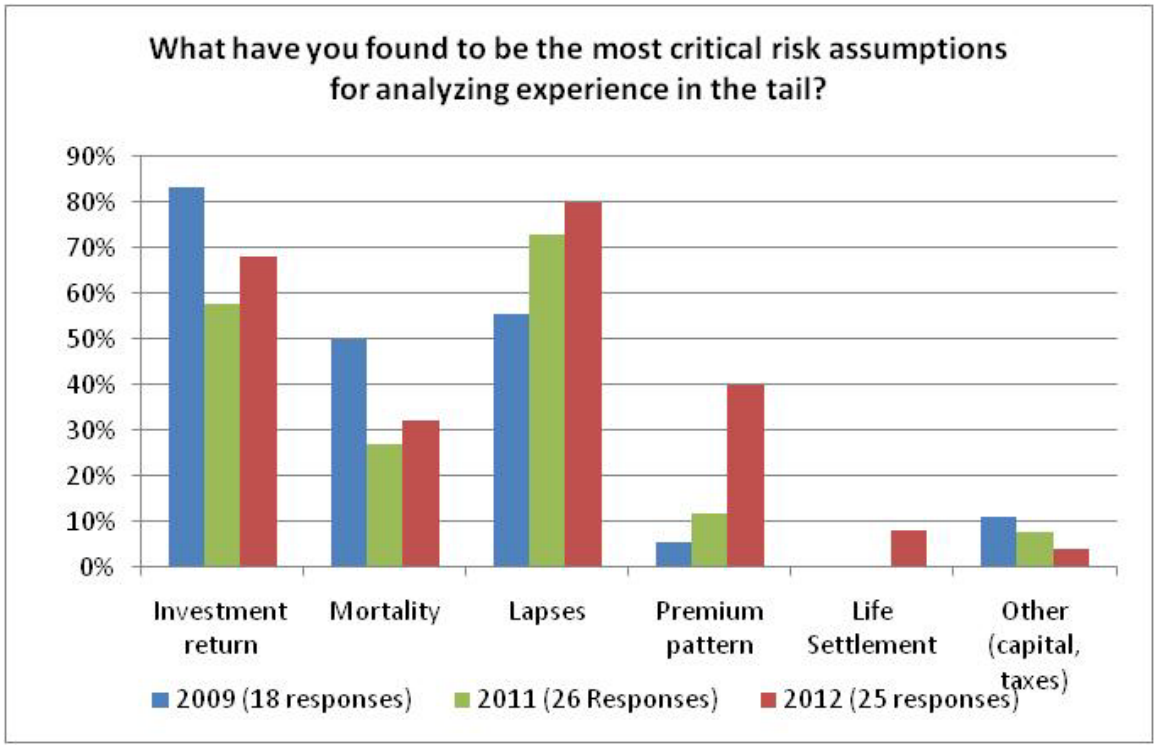

Figure 41

In 2011 we saw a shift in attention from investment return assumptions and mortality assumptions towards lapse assumptions. This year the importance of investment return and the importance of mortality assumptions saw slight increases along with the importance of lapse assumptions. There is a large increase in the importance of premium pattern and life settlement assumptions, but this is the first year that they were specifically included as a suggested answer to the question and so the comparison may not be meaningful. We will continue to monitor these results in future surveys.

Respondents Profile

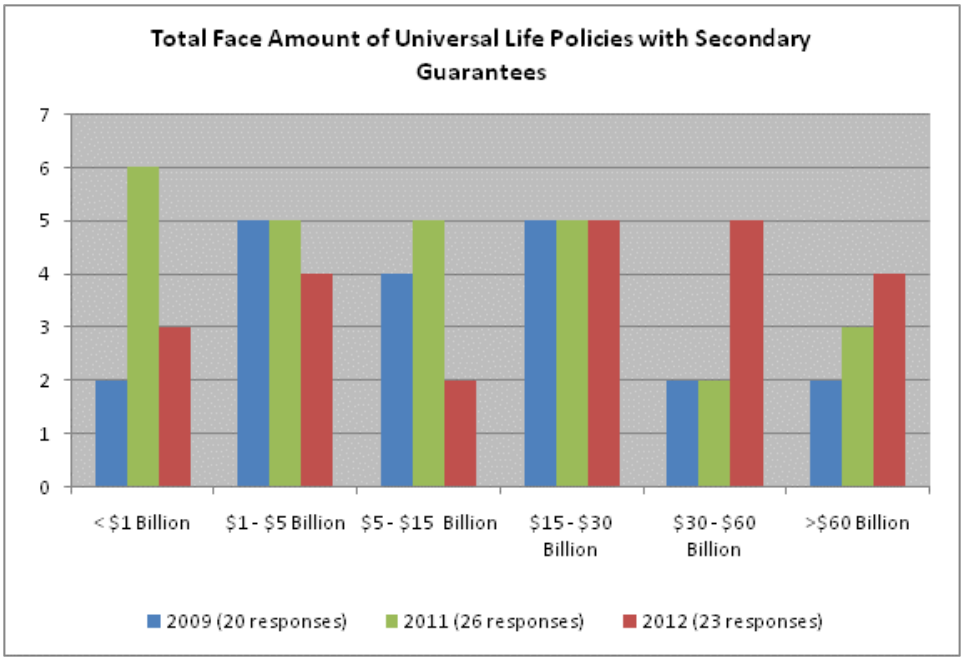

Figure 42