



# Preferred Class Structure Report Part 2



# Preferred Class Structure Report

## Part 2

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# Preferred Class Structure Analysis, Part 2

## Preamble

This report updates the analysis presented at the 2015 SOA Annual Meeting on preferred class structures using statistical agent data. A companion report is available on the SOA web site. The report can be found at the following link:

<http://www.soa.org/Research/Experience-Study/Ind-Life/Mortality/2015-preferred-class-structure.aspx>.

## Introduction

The purpose of these reports is to highlight the extent to which companies are changing their use of preferred class structures over time. The mortality data in the reports indicates the variation in mortality across companies and the need for companies to take care in setting their assumptions.

The data used for the prior Report was a subset of the data submitted to New York state and the state of Kansas as part of the Statistical Agent process. This report uses expanded data from the same sources.

Data specifications:

- The issue age of the policy is at least 18
- Single life issues
- Standard issues
- Exclude term conversions (ideally)

Policies are not included in the analysis if they were not in force at the start of the year of submission. This especially affects term policies. Issues from the year of submission are included.

Changes in the current dataset:

Data submissions from 2009 and 2013 have been added.

Data for face amounts under \$100,000 have been included.

Only issues of 1990 and later have been included.

Data submitted in at least one of the years 2009 to 2013 was included. Data with preferred class information was used in most of the analyses.

Data on term policies contain only level term within the term period. For submission years 2009 – 2011, only guaranteed level term period is available for level premium term policies. For submissions in 2012 and 2013, the guaranteed and anticipated level term periods are available. ‘Within Level Term’ is defined as level term policies within the guaranteed period in submission years 2009 through 2011, and within the anticipated period for 2012 and 2013.

An analysis of nonsmoker and smoker only policies was added.

Further information on these and related issues is given in Appendix A: Data Considerations.

This report contains three main sections. The first is an update to the Preferred Class Structure Analysis presented in the prior report. The second is an alternate presentation of the quartile actual-to-expected ratios presented in the prior report. The third is an analysis of the wear off of the preferred class underwriting that is done when the policy is issued.

Structured Excel pivot tables accompany this report. These contain more data than the tabular data that accompanied the prior report. Individual files are referenced below as appropriate. The expected mortality basis for the actual-to-expected calculations is the 2008 VBT.

This material was presented at the 2016 Life Insurance Conference. The PowerPoint from this presentation accompanies this report on the SOA web site. References to slides from this PowerPoint have been added to this report.

## Preferred Class Structure Analysis

As might be expected, the progression in preferred classes is similar to that presented in the prior report. The inclusion of the extra companies from 2010, 2011 and 2012 increases the overall numbers. (The inclusion of the 2009 and 2013 data may also have a small effect.)

The data supporting this analysis is in the No. Com and AE Ratio tabs in the Excel file: 2009-2013 Preferred Data for SOA 20160304.xlsx. References to specific material within these tabs are noted below. Values are given for M (for males), F (for females) and B (for both) in the Excel file. Most of this analysis will make use of the B data.

## Issue Year

This number of companies' analysis is based on selecting Issue Year within the No. Com tab. It examines the data in the All set of columns.

**Number:** By number of companies, the NT-2 (2 class, nontobacco) values, already significant in 1990, increased to a maximum in 2000, remained near that level until 2007 and dropped sharply thereafter. The drop off is likely the result of companies moving completely to NT-3 and NT-4 classes.

Some companies were selling NT-3 business in 1990. The number increased steadily through 2008. (The fall off after 2008 is the result of variation in reporting – not all companies' contributions were included for all years, either because they did not contribute, or because of issues with their contribution.)

Five companies were selling NT-4 business in 1996 and followed the same steadily increasing pattern as the NT-3 business. (Counts were included only if there were at least five companies in a cell. There may have been a smaller number of companies with NT-4 business before 1996.)

A reasonable number of companies were selling Tob-2 (2 class, tobacco) business in 1990. That pattern was also steadily increasing

Seventy-three companies contributed to the yearly NT-2 numbers, but the maximum number of companies in 2006 was 68. This probably means the progression by year was somewhat uneven. Similar numbers for NT-3 were 70 and 76, for NT-4, 49 and 58 and Tob-2, 77 and 81.

**Amount:** Amount exposed data is found in the AE Ratio tab. This analysis comes from selecting one of the Issue Year selections and observing the Overall sets of columns. (Only the A/E r (r=ratio) columns change between selecting Amt. Issue Age and Pol. Issue Age.)

By amount exposed, the NT-2 business reached a maximum in 2005, but was at a similar level from 2000 on. (The fall off after 2008 is the result of the reporting pattern that results in only about one-half year of issues in 2013, for instance.)

The NT-3 exposure increased steadily, reaching a maximum in 2007, but at a similar level from 2004 on. The NT-4 exposure increased steadily through 2009. The Tob-2 exposure followed a similar pattern as NT-3.

The NT-3 exposure maximum was about three times that of NT-2. The NT-4 exposure maximum was slightly above the NT-3 maximum. The Tob-2 exposure maximum was about one quarter of the NT-2 maximum.

**Other Analyses:** This analysis is based on the No. Com Pref Smoker NS tab. A company may issue policies in any combination of NT-2, NT-3 and NT-4 at the same time. The prior report did not include any information across these combinations. The current database includes a count of the number of companies with at least one NT set. This increased steadily over the period to a value of 84 in 2008. Eighty-five companies contributed to this set of data.

A related issue is the extent to which companies issue NT business and not Tob business. The NT company count exceeded the Tob company count by at least 12 through 2004. The values converged somewhat thereafter, but remained at a difference of 7 or 8 for most subsequent years.

These results are summarized in slide 10 of the PowerPoint.

## Duration

Duration results can be obtained by selecting Duration in the No. Com tab and Duration as appropriate in the AE Ratio tab.

The patterns by duration are generally the reverse of the issue year patterns given above. Some differences occur because five contribution years contribute to each duration in most cases. By number of companies, NT-2 peaks at durations 8 to 10, while the other peak at durations 1 to 6 or 7. Similar patterns are present by amount exposed.

## Issue Age

Issue Age results can be obtained by selecting Issue Age in the No. Com tab and either the Amt. Issue Age or Pol. Issue Age selection in the AE Ratio tab.

The pattern by number is similar across the issue age range from 18 to 79 for NT-2 and NT-3. Values fall off somewhat for issue ages 80 to 89 with a minimal number of companies for issue ages 90+. For NT-4 and Tob-2, the fall off is more significant for issue ages 80 to 89.

By exposure, for all structures, values peaked for issue ages 30-49, with lesser values for issue ages 18-29 and falling off sharply for higher issues ages.

## Gender

As noted above, values are given for males, females and both in the Excel files. There are small differences between the male and female values throughout the tables, but they are not considered significant and probably the result of minor differences over the issue and other periods.

## Plan Code

**Number:** In the No. Com tab, values are given separately for each of the six plan categories. In the AE Ratio tab, each of the six plan categories can be selected separately. These are the basis for the following analysis.

Not surprisingly, more companies reported term issues on a preferred class basis than any other. This was true for any four of the class types. Regular Universal Life and Universal Life with Secondary Guarantees were next in line. The only exception was for NT-2 where regular Variable Life was reported by more companies than Universal Life with Secondary Guarantees.

The Term results by Issue Year for older issue years are reduced somewhat because of term policies expiring before the reporting periods used in this study. A smaller number of companies reported issues in the NT-4 class for Permanent insurance and both Variable Life coverages. Where this did occur, they were relatively recent occurrences.

The results by duration were the expected converse of those by issue year, with later durations and earlier issue years having similar results.

By issue age, the plan results generally mirrored the overall results of consistent values through age group 70-79 and fall off in age group 80-89. One exception was term insurance where the fall off occurred with age group 70-79, except for NT-4. Another

exception was Universal Life with Secondary Guarantees where there was little drop off in age group 80-89 for NT-2 and NT-3. It was interesting to note that seven companies reported term insurance in age group 80-89 for NT-3 and 14 so reported for NT-4.

**Amount:** By amount, for permanent insurance, values were quite similar by issue year for NT-2. For NT-3, the exposure increased steadily by issue year with a significant jump in 2002. Tob-2 was similar with a jump in 2005. There was not much exposure for NT-4.

The term insurance values by issue year are affected by the term expiries prior to the reporting years. The pattern generally is one of increasing exposure. The anomalous jump in exposure in 1999 for NT-3 noted in the prior report was also in this data.

For universal life, the exposure was similar by issue year for NT-2 with some fall off in 2007 and 2008. For NT-3, there was a general steady increase with noticeable jumps in 2002 and 2007. NT-4 was similar with a jump in 2007. There was a steadily increasing pattern in Tob-2.

For universal life with secondary guarantees, there was an increasing pattern by issue year with a jump in 2003 and a falloff in 2007 and 2008. There was a steadily increasing pattern for NT-3 with a noticeable increase in 2005. For both NT-4 and Tob-2, significant exposure was reported in issue years 2010 and 2011 in spite of these being incomplete reporting years.

For variable life, for NT-2, the exposure rose to a peak in 2000 and fell off sharply thereafter. For NT-3, there was a generally increasing pattern with some fall off after 2007. There was not a lot of exposure in NT-4, with the general increasing pattern in what there was. There was a generally increasing pattern in Tob-2.

For variable life with secondary guarantees, exposure peaked in 2001 and fell off sharply thereafter. For NT-3, there was an increasing pattern with, perhaps, some fall off after 2007. For NT-4, significant exposure was reported in 2010, 2011 and, to some extent, 2012 in spite of the limited reporting during these years. For Tob-2, there was a generally increasing pattern with some fall off after 2006.

By issue age, for permanent insurance, exposure peaked in the issue age 30-39 band for all four categories. For term insurance, that was true for categories NT-2 and NT-3 with the age 40-49 age band becoming more significant for NT-4 and Tob-2.

For universal life, the age bands from 30-49 were significant for all four categories. The same was true for variable life with secondary guarantees. For regular variable life, the age band 30-39 was most significant for NT-2, NT-4 and Tob-2 with the extended band of 30-49 being significant for NT-3.

Universal life with secondary guarantees showed more variation. For NT-2, the age band 70-79 had the most exposure with the whole age range of 40-70 being significant. For NT-3, the peak was in age band 50-59. For NT-4 and Tob-2, the age range 40-59 was significantly large.

These results are summarized in slide 14 of the PowerPoint.

## Policy Size

In the No. Com tab, values are given separately for each six amount bands. In the AE Ratio tab, each of the six amount bands can be selected separately. Also, in each case, a summary amount bands for amounts of \$100,000 and over is available. These are the basis for the following analysis.

The data by policy size by number of companies showed a decrease in the number of companies as the size band increased from the \$100,000 level for essentially all duration categories. Seventy-three companies contributed data for bands \$100,000+ through \$1,000,000+ for NT-2, but only 70 companies supplied data for the \$2,500,000+ band. There were similar patterns for NT-3 and Tob-2. Only in NT-4 was there an increase in the number of companies as the size band increased. However, it should be noted that all of these changes were quite small.

Seventy companies also supplied NT-2 data for the under \$100,000 band. The detail values in this band were generally a bit less than those in the \$100,000+ band for NT-2 for most issue years, starting to fall off noticeably around the year 2006. For the other three categories, the older issue years showed a similar pattern with divergence occurring in the late 1990's.



By issue age, there was a falloff in the number of companies in the \$2,500,000+ band for issue ages 60 and over. In general, there was a falloff in the number of companies starting at issue age 80 and over.

By duration, for NT-2 and Tob-2, there was a general falloff in the number of companies as the amount band increased for most of the early durations. For NT-3 and NT-4, there was some increase in the number of companies as the amount band increased. However, in all categories, there was a falloff in the number of companies between the \$1,000,000+ and the \$2,500,000+ band.

## Quartile and General Actual to Expected Analysis

In the prior report, companies were ranked by actual-to-expected (A/E) ratio in each cell and the three quartile points were then determined. A slightly different approach was taken for this report. Companies were similarly divided into four groups by A/E ratio, but the composite A/E ratio of the companies in each group was calculated. This was done for each set of cells separately. The amount exposed in each cell is also reported.

The 2008 VBT was used to calculate the expected mortality. These mortality tables distinguish between nonsmokers and smokers, as well as males and females, but make no distinction by preferred class. Thus, the expected mortality basis is the same across a set of classes, but the actual level of mortality is expected to vary.

This analysis is supported by the [Quartiles](#) tab in the Excel Spreadsheet: [2009-2013 Preferred Quartiles for SOA 20160223.xlsx](#).

This spreadsheet provides for viewing results by different plan codes and different amount bands as did the spreadsheet used above. Likewise, values by Policy and Amount across Duration, Issue Age and Issue Year are available. However, plans UL and ULSG are grouped into one category in this spreadsheet; likewise with VL and VLSG.

The spreadsheet used above, in the [AE Ratio](#) tab, does present A/E ratios by individual durations and individual issue years. This spreadsheet groups these values into quinquennial groups. (The issue age groups are the same.) No analysis of the individual values has been done.

This report will present results using the \$100,000 and over amount band. Note when a particular plan code is selected, it includes results for all amounts (including under \$100,000).

At least 20 companies (five per quartile) had to be present in a cell for the results to be shown. This does limit the NT-3 and NT-4 results somewhat. The spreadsheet does contain a tab that gives the number of companies represented in a cell. These values are generally consistent with the values discussed in the previous section.

In the rest of this section, reference will be to the A/E ratios by number of policies. Male and female results will be viewed separately since they do have different patterns.

## Policy Duration

Note the A/E ratios for durations 01-05 was zero, or close to zero, for the first quartile (Q1) companies for both males and females for the best preferred class in each criteria set. When the amount exposed is taken into account, it will be seen that these results come from contributions of smaller companies. Across the set of data, there are other instances the A/E ratios are zero or quite low. These instances are generally associated with low exposure amounts as well. Otherwise, categories all have a significant number of claims.

For NT-2, Class 1, the overall A/E ratios by duration group are generally in the 70-80% range. Interestingly, the overall A/E ratios are similar to the Q3 A/E ratios in most cells. The Q4 are, by definition, higher and generally fall in the 90-100% range for males, except for durations 01-05. For females, the Q4 A/E ratios are higher with a broader set of values, approaching 135%.

For Class 2, the male overall A/E ratios are generally in the 100-110% range with a noticeably higher value for durations 01-05. Three of the Q4 values are over 150% and two somewhat less. The female overall A/E ratios are somewhat higher, in the 100-130% range. The Q4 values are in the 150-190% range.

For NT-3, for Class 1, the male overall A/E ratios are in the 55-60% range and the female values are five points higher. The male Q4 values are in the 75-85% range. Three of the female Q4 values are about 90%, with the duration 16-20 group value quite a bit higher. (There are no duration 21+ values for NT-3.)

For Class 2, the male overall A/E is generally in the range of 65-75% with the duration 16-20 value a bit less based on limited exposure. The Class 3 range is 95-100%, with the duration 16-20 value quite a bit less based on limited exposure. Both sets of Q4 values have a wider range and the duration 16-20 values for Class 3 particular have limited exposure.

The female Class 2 overall A/E ratios are in the 60-70% range and the Class 3 A/E ratios, 90-100%. Both sets of Q4 values have a wider range.

The NT-4 experience is significant only through durations 11-15. The three overall male Class 1 A/E ratios are all about 55%, the Class 2, 75%, the Class 3, 85% and the Class 4, 105%. The range in Q4 values is more varied. For females, the three overall Class 1 A/E ratios are all about 60%, the Class 2, 70%, the Class 4, 90-100%. Only the Class 3 values have a wider range, as do all sets of Q4 values.

For Tob-2, the male overall A/E ratios grade up from 70% to 95% over the five duration groups for Class 1. For Class 2, the A/E ratios are about 100% for the first four duration groups and somewhat higher for duration group 21+. The range in Q4 values is quite varied in these two sets with many values higher than with the NT data.

For females, the overall A/E ratios increase from about 65% to 100% over the first four duration groups and fall off somewhat for duration group 21+ on limited exposure. In Class 2, most of the overall A/E ratios are about 105%, with duration group 5-10 somewhat less. As with the males, the Q4 values are varied and somewhat elevated.

The pattern of the Q3 values being quite close to the overall A/E ratio, noted above, does continue through most of this data.

## Policy Issue Year

As might be expected, the Issue Year pattern is the reverse of the Duration pattern.

## Policy Issue Age

For males NT-2, Class 1 the A/E ratios are about 70-80% across the whole age range. For Q4, the A/E ratios are close to 95% for most of the age range, with higher values at the two ending age ranges. For Class 2, there is a general decreasing pattern from about 120% to 95% in the overall values. For Q4, the values are about 145% across most of the age range and higher for issue age 70+.

For females, for Class 1, the overall A/E ratios are about 75% for the first four issue age ranges and a bit higher for the last two (60+). The Q4 values are relative high for all the issue age range except 40-49. The overall Class 2 A/E ratios decrease from about 160% to 100% over the age ranges. The Q4 values are quite high over the age ranges, moderating only slightly for issue ages 70+.

For NT-3, the male overall A/E ratios for Class 1 are about 55-65%, 70-80% for Class 2 and decreasing downward from about 135% to 85% over the age ranges. The Q4 values for Class 1 are generally 80-90%, except higher at the youngest age range. The Q4 values for Class 2 decrease from about 130% to 80% over the age ranges. The Q4 values for Class 3 also trend downward (180-110%) and are quite high for issue age range 18-29 (~275%).

For females, the Class 1 overall A/E ratios are about 60-65% over the age ranges, except a bit higher for issue age 70+. The Q4 values are 85-95% over the middle age ranges and higher at the two extremes. The Class 2 overall ratios are generally 65-75% over the age ranges, but somewhat higher for age range 18-29. The Q4 values are less consistent over the age ranges.

For males, for NT-3, Class 1, the Overall A/E ratios are generally 55-65%. The Q4 values are generally 75-90% except higher for issue age range 18-29. The overall Class 2 values are generally 65-75%. The Q4 values trend downward over the issue age ranges (130-80%). For Class 3, the overall A/E ratios trend downward by issue age band from about 135% to 95%. The Q4 values similarly trend downward (275 -110%).

For females, for Class 1, the overall A/E ratios are generally 60-65%, except a bit higher for issue age range 70+. The Q4 values are generally 85-95% for the middle age ranges, but higher at the two extremes. For Class 2, the overall values are generally 65-76%, except higher in the 18-29 issue age group. The Q4 values vary quite a bit for this Class. For Class 3, the overall values center about 97%, with the issue age range 30-39 a bit higher, and 70+ a bit lower. The Q4 values trend somewhat downward over the issue age ranges.

For NT-4, Class 1, the overall male A/E ratios are 55-60%. Four of the Q4 values are close to 70%, but two are noticeably higher. For Class 2, the overall values are generally 70-75%. Four of the Q4 values are 155% or higher, but two are about 87%. For Class 3, the overall values are 80-90%. Three of the Q4 values are 110-120%, but three are quite a bit higher. For Class 4, the overall

values trend downward from about 115% for the first three issue age range to about 80%. The Q4 values trend downward over a wide range.

For females for NT-4, the overall Class 1 A/E ratios are generally 55-65%. The Q4 values vary widely. The overall Class 2 values are generally 65-80% with the issue age 70+ value a bit less. The Q4 values also vary widely. The overall Class 3 values are generally 80-95% with the issue age 70+ value a bit less. Four of the Q4 values are 100-110%, but two are about 190%. Four of the overall Class 4 A/E ratios are in the range of 95-100%, but the issue age 18-29 value is quite a bit higher and the issue age 70+ value is a bit less. The Q4 values trend downward over the issue age ranges with the 18-29 value quite high.

The Tob-2 overall A/E ratios are generally 70-75% for Class 1, but noticeably higher for issue ages 18-29 and a bit lower for issue age 70+. The Q4 values vary quite a bit and are quite high at the two extreme issue age ranges. The Class 2 values trend downward somewhat by issue age range from about 155-90%. The exposure does drop off quite a bit for the two higher issue age ranges.

For females for Class 1, the overall A/E ratios are generally 70-80%, but a bit higher for the 18-29 issue age range. The Q4 values vary quite a bit and are quite high at the two extreme issue age ranges. For Class 2, the overall values increase with the issue age ranges except for issue ages 70+. The Q4 values vary quite a bit and three are quite high (>170%).

Slides 19 to 22 of the PowerPoint present graphically A/E ratios and number of claims for each of the four preferred structures. Slides 23 to 25 present similar results by preferred class for each of preferred structures (as appropriate). These reflect the above comments.

## Exposure Amount

The spreadsheet also contains values by exposure amount for these three measures. These were not analyzed.

## Duration – Amount Band Analysis

Data was extracted from this spreadsheet to look at the patterns by Duration and Amount Band for the NT-2 and Tob-2 classes. In NT-2, no strong patterns emerged, but there was a small uptick in A/E ratio for the \$2.5M+ category, especially for Class 1. By Duration, the Class 1 A/E ratios generally increased by duration and the Class 2 A/E ratios decreased. In both cases, the \$2.5M+ amount band was an exception. Both patterns, and the \$2.5M+ exception, also generally appeared in the Tob-2 results.

## Additional Analyses Presented in the PowerPoint

Slide 33 presents graphically A/E ratios by plan. Values were given by class for each preferred structure. Except for some plans in structure NT-4, values increased by class for each plan.

Slide 34 presents graphically A/E ratios by policy size group by class for each preferred structure. With one exception because of very limited data, values increased by class for each policy size group.

Slides 35 to 38 presented graphically A/E ratios by policy size group and issue age group by class for each preferred structure individually. In a number of the slides, the values are higher for the younger issue age groups.

## Additional Quartile Analyses Presented in the PowerPoint

Slides 42 to 45 present graphically quartile A/E ratios and number of claims by gender and issue age group for each preferred structure. In many of the presentations, the Q4 ratios result in there being a concave upward pattern across the four quartile values.

Slides 46 to 49 present graphically quartile A/E ratios and number of claims by gender and duration group for each preferred structure. There are a number of concave upward patterns in the NT-2 structure, but less so in the other preferred structures.

Slides 53 and 54 present graphically quartile A/E ratios and number of claims by size and issue age groups for preferred structure NT-2 classes one and two individually. Only age group 40-49 of class one shows a noticeable concave upwards pattern. There are more instances of a concave upwards pattern for class two.

Slides 55 and 56 present graphically quartile A/E ratios and number of claims by plan and issue age group for preferred structure NT-2 class one and two individually. The class one graphs are “well behaved”. Universal life dominates the number of claims in the two higher age groups. For class two, the Q4 values tend to be quite high. Level term dominates Q4 number of claims for the four issue age groups through 50-59.

## Preferred Class Wear Off

Significant mortality differences by class within a preferred structure are expected because of the different underwriting criteria applied by class when a policy is issued. There is an expectation that these mortality differences will disappear over time. This is similar to the wear off of traditional underwriting over time, but is in addition to any traditional underwriting wear off.

One indication of preferred wear off is an increasing pattern of mortality rate by duration for a lower mortality class, coupled with a decreasing pattern of mortality rate for a higher mortality class. This was noted, to some extent, in the Duration – Amount Band analysis above. A more analytic approach is to “normalize” the class values within a structure so the overall A/E ratio for the structure becomes 100%. This will emphasize the difference by class more.

Another expectation is that preferred wear off will occur more quickly at older ages. Again, this mirrors the pattern of regular underwriting wear off.

An analysis of this material is presented in the spreadsheet: [Preferred Wear-Off by Structure and Issue Age.xlsx](#).

In tab NS2 (NT-2) of this spreadsheet, on the normalized basis, for issue ages 18-39, there is some evidence of preferred wear off as the Class 1 values increase from 78.4% to 86.3%, and the Class 2 values decrease from 132.6% to 127.5% over the duration range through 21+. However, the pattern is not smooth. In the issue age 40-59 range, there is a bit more evidence of wear off with values of 73.3% to 82.8% and 140.1% to 124.0%, but again the pattern is not smooth. For the higher issue ages, the Class 1 pattern is relatively smooth from 73.5% to 91.8%. However, the Class 2 values are almost flat from 116.8% to 110.2%. In all three cases, there is still considerable wear off to occur beyond the last values given.

However, remembering the number of companies with NT-2 business rose to a peak and then fell off sharply, it may be that this set of data is too heterogeneous to give good results.

In the SM2 (Tob-2) tab, where the data might be expected to be a bit more homogenous, but where the data is more limited, only issue ages 40-59 have the expected pattern, relatively smooth from 83.8% to 105.0% and 94.9%, albeit with crossover at the end. For issue ages 18-39, there is a mixed pattern, and for issue age 60+, the pattern, if anything, is the reverse of that expected.

Slides 28 and 29 of the PowerPoint present graphically A/E ratios and number of claims by preferred class and duration for each of the preferred structures (as appropriate). Slide 30 presents graphically preferred class one A/E ratios and number of claims by both duration and issue year for the four preferred structures. These reflect the above comments.

## Appendix A: Data Considerations

1990 and Later Issues: As noted in the prior report, although some companies had submitted information on preferred issues as early as the late 1970's, it is believed the criteria associated with these policies are not consistent with the criteria used for later preferred issues. Furthermore, there is no easy way to distinguish these earlier policies. Accordingly, for purposes of this report, we have decided to include only issues of 1990 and later. This is consistent with the expansion in fluid testing that occurred for underwriting in the later 1980's.

Amounts under \$100,000: Many companies reported preferred class business on policies under \$100,000. It is known that some companies do issue such business, but it is suspected that some such bases are an accommodation within a company's administrative files. It was decided to include such reported cases for completeness, but such cases may not be consistent with higher face amount business.

All Company Inclusion: In the prior report, only companies that had contributed data in each of the three years 2010, 2011 and 2012 were included. In the current work, a company was included if it had contributed data in at least one of the pertinent years. With the addition of the 2013 data, we decided to move away from the "common company" basis.

Other Distribution Concerns: From prior work, it is known that some companies had reported all their business as being issued with the greatest number of preferred classes, even though not all segments of the business were being issued with that number of classes. It is not known if there are any situations like this in the current data.

Exposure by Issue Year: It should be noted that issue years 1990 -2009 contain data that was contributed over five observation years. Two-thousand ten comprises four observation years, 2011 has three observation years and so on. This is the cause for the significant drop in exposure post 2009. In the prior report, this effect applied to 2010, 2011 and 2012.

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## 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 24,000 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 non-actuaries 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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