Mortality and Longevity

U.S. Individual Life Mortality Quintile Analysis

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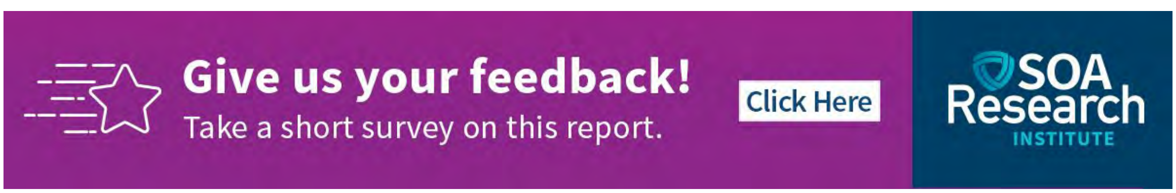
Executive Summary

This study was developed by the Mortality Quintile Analysis subgroup (Subgroup) of the SOA Individual Life Experience Committee (ILEC). The purpose of this study is to quantify the range of intercompany variability in mortality. To accomplish this, mean actual-to-expected (A/E) ratios based on amount were calculated in each quintile for every combination of six key variables. The companies assigned to each quintile were determined individually for each quintile in each category. In addition to calculating the ratios for each of the key variables, ratios for all combinations of two of the variables were calculated. In this report, Q1 represents the quintile with the highest A/E rating and Q5 the lowest. The data is based on experience consistent and contained in the ILEC fully underwritten reports. A full tabular listing of results is included as an accompanying Excel file.

Here are some of the key findings:

- **Overall:** The overall A/E for the study was 87.6%. The A/E was 73.7% for the most favorable quintile and 119.1% for the least favorable quintile, a difference of 45.4%. The largest difference between adjacent quintiles for this group was between the two highest quintiles, Q1 and Q2, which had a difference of 20.4%.
- **Largest Inter-quintile Differences:** The categories with the highest differentials in A/E between quintile 1 and quintile 5 were those in which the Attained Age was less than 40 or where Face Amounts were less than $100,000. In almost every category, the largest differentials between adjacent quintiles were between the two highest quintiles, Q1 and Q2. Three possible explanations for these differentials are that:
  - These groups may receive the least amount of underwriting scrutiny due to the low level of risk.
  - There may be wide variation in the level of underwriting scrutiny applied to these groups.
  - Some insurance companies may have a greater interest in these groups as a target market than others.
- **Plan Type:** Non-Term has a higher A/E than Term for the overall metric (92% vs. 82%) and each individual quintile.
- **Issue Era:** The overall A/E declines from older Issue Eras to more recent eras. The A/E declines with more recent eras for nearly every quintile as well, and the variation by quintile narrows. A notable exception is Q1 for Issue Years 2005+.
- **Smoker Status:** Smoker has a higher A/E than Non-Smoker for the overall metric and each individual quintile. Non-Smoker has a much larger percentage than Smoker of the total exposure; as a result, the All Smoker Status results have a strong resemblance to the Non-Smoker results.
- **Sex:** Overall A/E ratios for Female and Male insureds are similar (86% vs. 88%). The difference between A/E ratios for quintile 1 vs. quintile 5 for the two sexes are also similar (53% vs. 51%). Results for Male quintiles are slightly higher for every quintile than the A/E for the corresponding Female quintile.
- **Attained Age:** Attained Ages under 40 show a much greater spread between each quintile. This is especially true for Q1, where the A/E of 231% is 95% higher than that of Q2. A possible explanation for this inter-quintile spread could be the wider variation in required underwriting tests for the younger issue ages among companies. Differences in socio-economic groups and variations in Face Amounts may also contribute to these differences.
- **Face Amount:** Compared to Face Amounts 100,000+, there is a much greater spread between each quintile for Face Amounts <100,000, where A/E ratios range from Q5=100% to Q1=175% based on over 10,000 deaths. A possible explanation for this inter-quintile spread could be the wider variation among companies in required underwriting tests for these lower Face Amounts. Companies are likely placing widely varying

degrees of emphasis on underwriting requirements for these smaller policies, especially for younger issue ages. Policies marked as simplified issue have been excluded from this analysis, but there may be some companies identifying policies with non-medical underwriting and very few requirements as fully underwritten.



Section 1: Purpose of Study

The purpose of this study was to quantify the range of intercompany variability in mortality. Instead of showing one single point estimate for each selection of key variables, this research additionally shows the mean A/E ratio for each quintile, where the quintiles were determined by rank of Company A/E.

The goal was to demonstrate where industry experience is relatively consistent across companies and the spread across quintiles is narrow. Conversely, it should also demonstrate where A/E experience is drastically different across companies.

The expected basis was the 2015 VBT Male/Female Smoker Distinct 100% Relative Risk Table (RR100). The table controls for variables such as age, gender, duration, and smoker status. It does not, however, control for other variables captured in the data, such as Face Amount, preferred underwriting degree, observation year, plan type, etc. To the extent those variables are predictive of mortality, we would expect to see significant variations in A/Es by quintile, when differentiated against said variable.

By highlighting variables and combinations of variables that demonstrate notable intercompany spread patterns, users of this report can compare the findings to their proprietary results to evaluate the efficacy of their underwriting processes.

Section 2: Methodology

The data used for this analysis was the 2009-2017 individual life mortality experience data submitted to MIB, as the Statistical Agent under the requirements of Principle-Based Reserving and VM51. It is summarized below.

Table 2.1
DATA STATISTICS

Data Dimension	Statistic
Observation Period	2009-2017
Number of Companies	Between 48 and 101 companies, depending on the observation year
Number of Death Claims	711,800
Exposed Lives	244,400,675
Exposed Face Amount	$81.0 Trillion
Duration	1-25 years only (26+ excluded)
Underwriting Status	Only fully underwritten
Risk Classes	Substandard and Rated policies excluded
Sex	Only sex distinct policies
Smoker Status	Only Smoker distinct policies
Issue Years	1980 and Later
Issue Ages	0 to 99
Post-level Term	Both PLT and policies identified as Unknown Level Term Period were excluded

Using the VM51 submitted data, MIB calculated expected mortality for each policy using the 2015 VBT Male/Female Smoker Distinct 100% Relative Risk Tables (RR100) and the appropriate Age Nearest Birthday or Age Last Birthday basis corresponding to the basis issued by the contributing company. No mortality improvement was assumed. MIB also calculated A/E ratios for each quintile of each combination of groupings of the six key variables identified above. All A/E ratios were based on the amount of insurance exposed. Alternative analysis based on count of policies exposed was considered as a lens that might reduce bias driven by a relatively few extremely large policies. However, that approach did not ultimately add materially to the analysis and is not included in the report. The quintiles were grouped such that there was an equal number of companies in each quintile, not an equal number of death claims or an equal amount of exposure.

The Subgroup selected the following six key variables in the data that have been recognized to have a measurable impact on mortality.

- **Plan Type:** Term, Non-Term, and Combined
- **Issue Era:** 1980-1989, 1990-1999, 2000-2004, 2005 and later, and Combined
- **Smoker Status:** Non-Smoker, Smoker, and Combined
- **Sex:** Female, Male, and Combined
- **Attained Age:** Less than 40, 40-69, 70 and above, and Combined
- **Face Amount Band:** Less than $100,000, $100,000 and above, and Combined

The groupings for each variable were chosen with the intention of providing appropriate granularity, but keeping the subgroups large enough to limit volatility caused by low claim counts.

The Subgroup elected not to include Risk Class as a key variable, as the variability in the number of risk classes under preferred class structures varies across companies, as do their underwriting requirements. The percentage of business that a company issues as preferred will impact its A/E ratio, particularly since the mortality table used to calculate expected mortality (discussed below) does not vary by Risk Class. Companies that issue products that have a higher percentage of business that is rated preferred, such as Term business, should consider this as they review this study.

For every possible combination of the six key variables, the A/E by amount and the death count were identified as a categorical identifier for each quintile and overall. The death count categories were:

- >100,000
- 10,001-100,000
- 1,001-10,000
- 251-1,000
- 101-250
- 30-100
- <30 (note that A/E results were suppressed for these instances)

For example, the combination with 'Combined' for all dimensions is presented below:

Table 2.2
EXAMPLE QUINTILE A/E AND DEATH COUNT DATA

A/E by Amount						Death Count Category					
Q1	Q2	Q3	Q4	Q5	Overall	Q1	Q2	Q3	Q4	Q5	Overall
119%	99%	92%	85%	74%	88%	>100k	>100k	>100k	>100k	1k-10k	>100k

For the purposes of confidentiality, MIB grouped companies into quintiles based on ranking of company A/E for each variable combination and did not disclose to the Subgroup any company name or assignment to any quintile. In addition, combinations containing less than 30 deaths for one or more quintiles had A/E results for those quintiles suppressed.

This set of data produced 1,574 combinations with data. This is less than 3*3*3*4*5*3 = 1,620 possible combinations because combinations in which all quintiles had less than 30 death claims were excluded. It should be noted that the companies in each quintile within each combination were determined independently. For example, a company whose experience was grouped into quintile 5 for the "Term, All Sex" combination may have had their experience grouped into quintile 4 for the "Term, Female" combination.

A/Es were visualized for various groupings of the combinations in such a way as to observe both the spread of the A/E across quintiles and the number of deaths contributing to that A/E. While these data and visuals are not the typical metrics found in statistical textbooks, they gave the Subgroup and the reader a first glimpse as to how A/E results vary by company under different combinations, while still preserving the confidentiality of those companies.

The reader is highly advised to independently analyze the industry data, including the use of predictive models, before drawing strong conclusions. An Excel support file containing the A/Es and categorical death information was published in conjunction with this report for more detailed independent analysis.

Future updates to this report should add risk classes as a variable, especially within similar risk class structures, as that is an area where there is believed to be some strong variation by company.

Section 3: Analysis

The analysis is presented with one or two variables at a time. For example, Plan Type is analyzed individually in Section 3.1.1 and in conjunction with each of the other five variables in 3.1.2 through 3.1.6. See the figure below for a complete approach for the analysis of interactions.

Table 3.1
APPROACH FOR ANALYSIS OF INTERATIONS

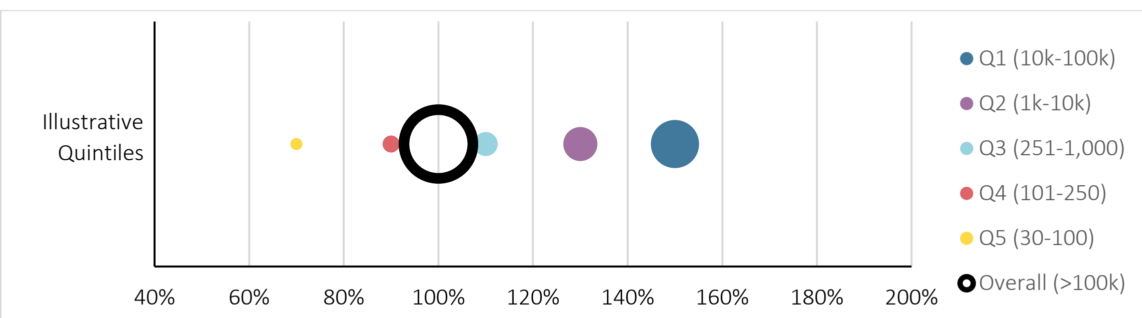
	Plan Type	Issue Era	Smoker Status	Sex	Attained Age	Face Amount
Plan Type	3.1.1	3.1.2	3.1.3	3.1.4	3.1.5	3.1.6
Issue Era		3.2.1	3.2.2	3.2.3	3.2.4	3.2.5
Smoker Status			3.3.1	3.3.2	3.3.3	3.3.4
Sex				3.4.1	3.4.2	3.4.3
Attained Age					3.5.1	3.5.2
Face Amount						3.6.1

Further interactions are presented when the data warrants greater investigation or an alternative presentation.

The following analysis presents observations about the credibility of the underlying data. The purpose is to identify where the range and spread across quintiles may be attributable to normal volatility where there are fewer deaths or fully credible true dispersion of inter-company experience. The analysis also identifies notable patterns about the inter-quintile range, or the difference between the quintiles with the highest and lowest A/E ratios. Other patterns, like relative dispersion of the highest and lowest quintiles, are also identified.

The data are presented as bubble charts with larger bubbles corresponding to more deaths and color representing the quintile. Instances where there are <30 deaths are suppressed and not shown. The goal of this presentation is to enable readers to focus on larger areas of color, which naturally corresponds to areas of deep data. See the following figure and table for a legend.

Figure 3.1
BUBBLE CHART LEGEND – QUINTILE (DEATH COUNTS)



3.1 PLAN TYPE

3.1.1 PLAN TYPE DIRECT COMPARISON (NO SUB-SPLITS)

Observations:

- At this level of granularity, death counts are very high, and each quintile has a minimum of 1,000 deaths.
- Non-Term has a higher A/E than Term for the overall metric (92% vs. 82%) and each individual quintile.
- For both Term and Non-Term, the widest jump between quintiles is between Q1 and Q2 at 35% and 25%, respectively. That jump is 3-4 times the distance between most other quintiles.

Figure 3.1.1
QUINTILE DISTRIBUTION BY PLAN TYPE

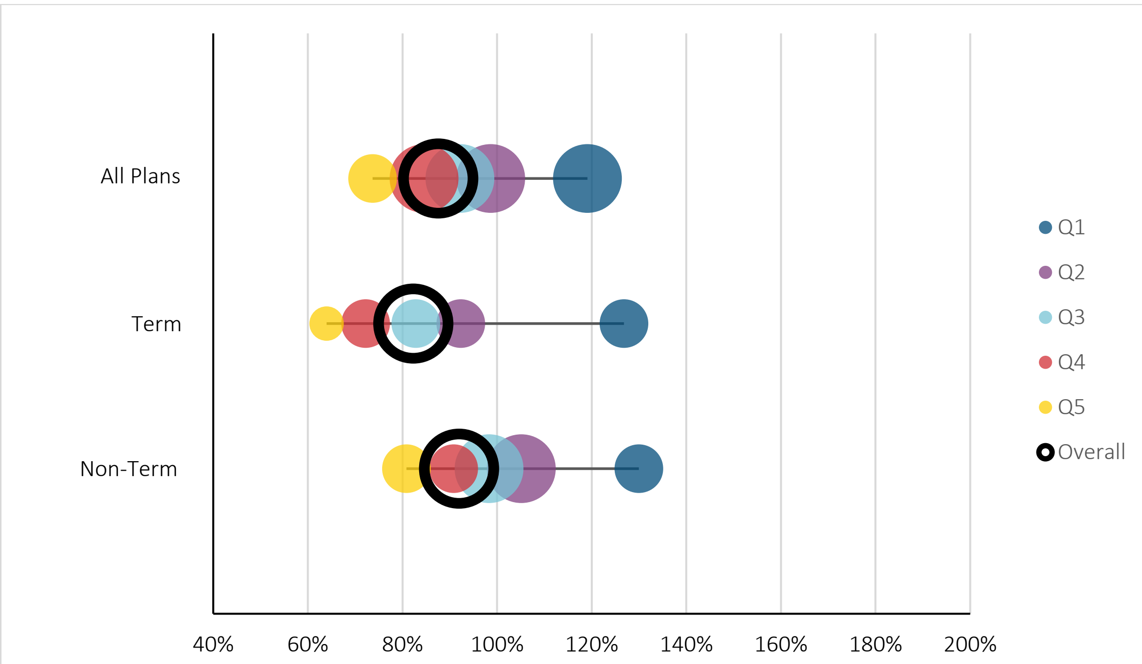


Table 3.1.1
PLAN TYPE DEATH COUNTS

Plan Type	Q1	Q2	Q3	Q4	Q5	Overall
All Plans	>100k	>100k	>100k	>100k	10k-100k	>100k
Term	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	>100k
Non-Term	10k-100k	>100k	>100k	10k-100k	10k-100k	>100k

3.1.2 PLAN TYPE AND ISSUE ERA

Observations:

- Term Quintiles appear to be narrowing in range over time with few deaths and very wide inter-quintile ranges in 1980-89 to narrow ranges in 2000-04 and 2005+ with an overall A/E stabilizing around 82%.
- Non-Term follows a very different pattern.
  - Overall A/E has gone down every time period since 1980 with Q3, Q4, and Q5 trending down.
  - At the upper end, Q1 has increased since 1990, widening the spread between companies.
- In general, most data points are still credible and have more than 1,000 deaths; the notable exception is Term in 1980-89.

Figure 3.1.2

QUINTILE DISTRIBUTION BY PLAN TYPE/ISSUE ERA

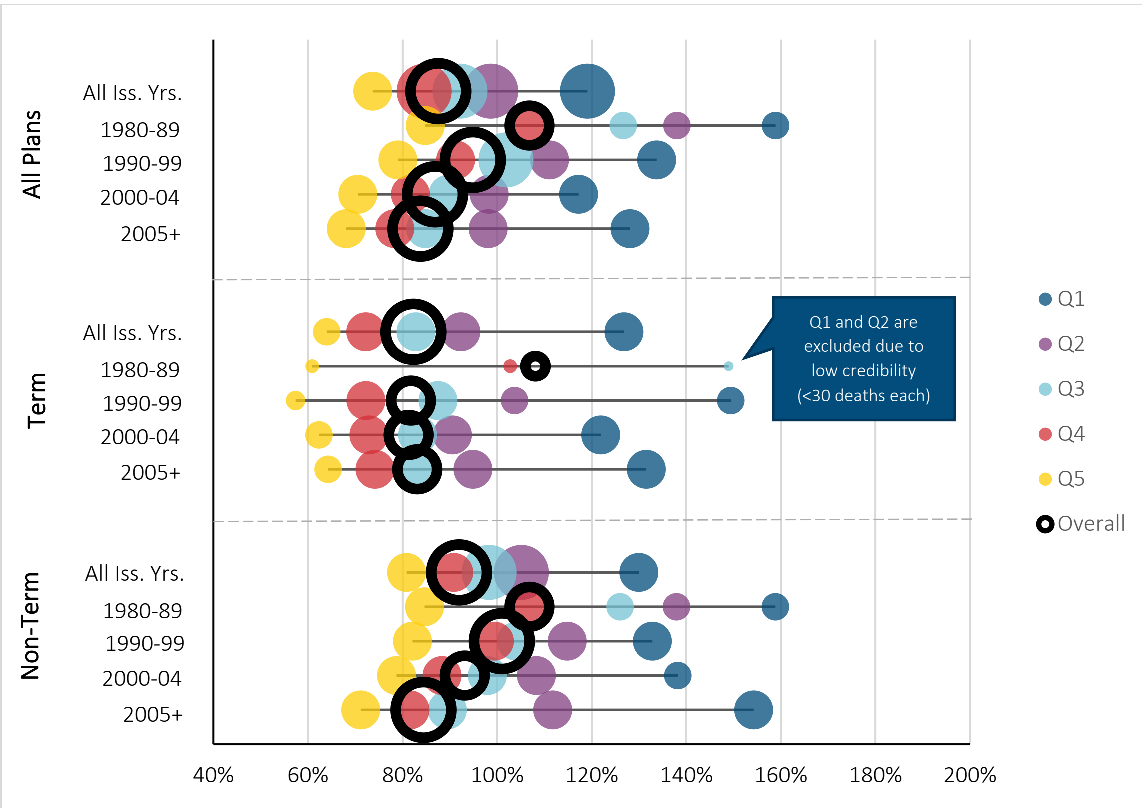


Table 3.1.2

PLAN TYPE/ISSUE ERA DEATH COUNTS

Plan Type, Smoker Status	Q1	Q2	Q3	Q4	Q5	Overall
All Plans, All Issue Years	>100k	>100k	>100k	>100k	10k-100k	>100k
All Plans, 1980-89	1k-10k	1k-10k	1k-10k	10k-100k	10k-100k	10k-100k
All Plans, 1990-99	10k-100k	10k-100k	>100k	10k-100k	10k-100k	>100k
All Plans, 2000-04	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
All Plans, 2005+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Term, All Issue Years	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	>100k
Term, 1980-89	<30*	<30*	30-100	101-250	101-250	251-1000
Term, 1990-99	1k-10k	1k-10k	10k-100k	10k-100k	251-1000	10k-100k
Term, 2000-04	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	10k-100k
Term, 2005+	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	10k-100k
Non-Term, All Issue Years	10k-100k	>100k	>100k	10k-100k	10k-100k	>100k
Non-Term, 1980-89	1k-10k	1k-10k	1k-10k	10k-100k	10k-100k	10k-100k
Non-Term, 1990-99	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Non-Term, 2000-04	1k-10k	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k
Non-Term, 2005+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k

**Q1 and Q2 for the “Term, 1980-89” grouping are excluded from figure 3.1.2 due to insufficient credibility.*

3.1.3 PLAN TYPE AND SMOKER STATUS

Observations:

- When split by Plan Types and Smoker Status, death counts remain high; each quintile has a minimum of 1,000 deaths.
- Term Smoker Q1 and Q5 appear to be very far from the central group of Q2, Q3, and Q4.
- Non-Term Smoker has quintiles that are fairly evenly spread out.
- Most other splits have a narrow Q2-Q3-Q4 inter-quintile range reaching a maximum spread of 21%.

Figure 3.1.3
QUINTILE DISTRIBUTION BY PLAN TYPE AND SMOKER STATUS

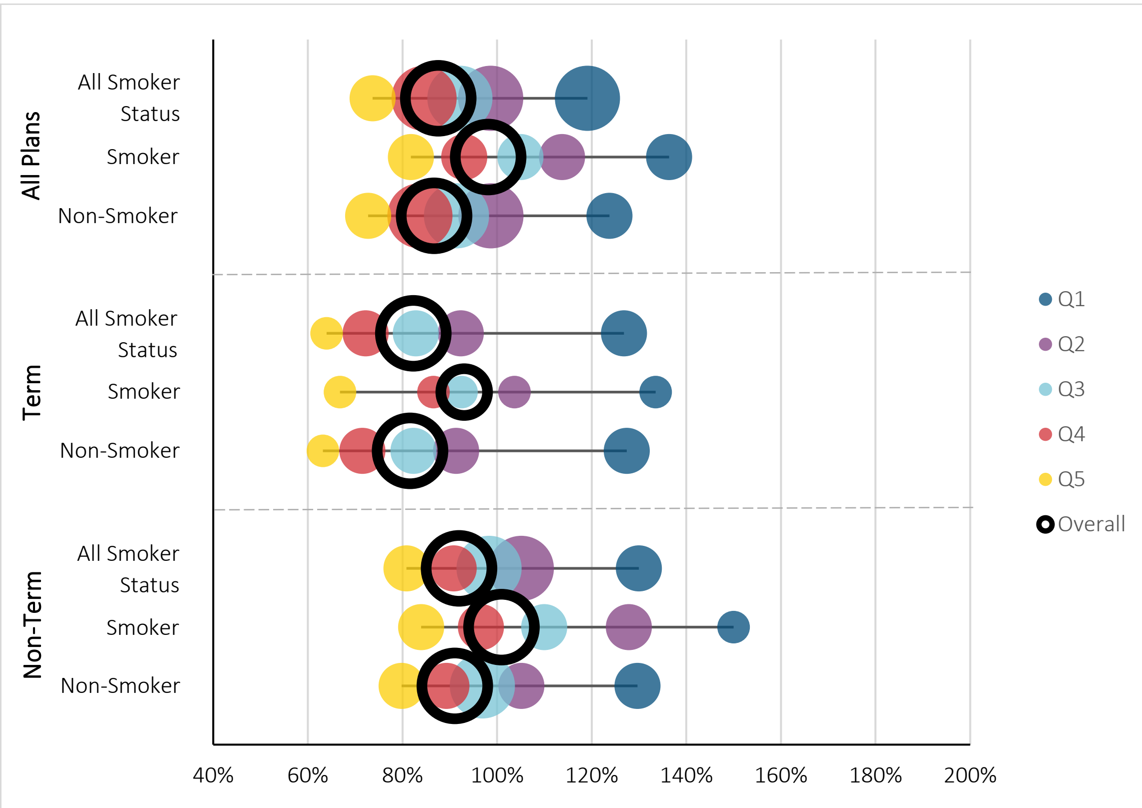


Table 3.1.3
PLAN TYPE/SMOKER STATUS DEATH COUNTS

Plan Type, Smoker Status	Q1	Q2	Q3	Q4	Q5	Overall
All Plans, All Smoker Type	>100k	>100k	>100k	>100k	10k-100k	>100k
All Plans, Smoker	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
All Plans, Non-Smoker	10k-100k	>100k	>100k	>100k	10k-100k	>100k
Term, All Smoker Type	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	>100k
Term, Smoker	1k-10k	1k-10k	1k-10k	1k-10k	1k-10k	10k-100k
Term, Non-Smoker	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	>100k
Non-Term, All Smoker Type	10k-100k	>100k	>100k	10k-100k	10k-100k	>100k
Non-Term, Smoker	1k-10k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Non-Term, Non-Smoker	10k-100k	10k-100k	>100k	10k-100k	10k-100k	>100k

3.1.4 PLAN TYPE AND SEX

Observations:

- At this level of granularity, death counts remain high; each quintile has a minimum of 1,000 deaths.
- Fewer deaths are occasionally observed in the upper and lower quintiles (e.g., Term Q5).
- For both Term plans and Non-Term plans, the spread between quintiles for Females is wider than for Males.
- A possible explanation is that death counts for Females appear to be slightly lower than for Males.
- The Q1 to Q2 inter-quintile range remains the widest by 3-4 times.

Figure 3.1.4
QUINTILE DISTRIBUTION BY PLAN TYPE/SEX

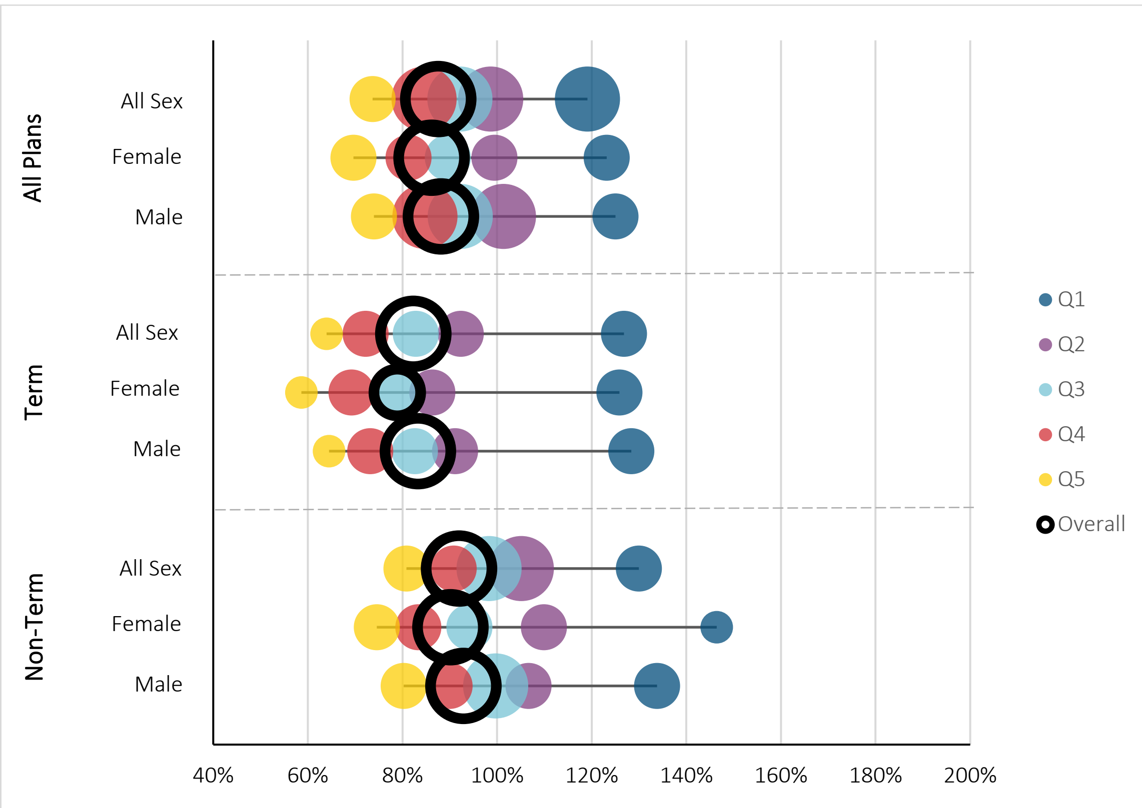


Table 3.1.4
PLAN TYPE/SEX DEATH COUNTS

Plan Type, Sex	Q1	Q2	Q3	Q4	Q5	Overall
All Plans, All Sex	>100k	>100k	>100k	>100k	10k-100k	>100k
All Plans, Female	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
All Plans, Male	10k-100k	>100k	>100k	>100k	10k-100k	>100k
Term, All Sex	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	>100k
Term, Female	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	10k-100k
Term, Male	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	>100k
Non-Term, All Sex	10k-100k	>100k	>100k	10k-100k	10k-100k	>100k
Non-Term, Female	1k-10k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Non-Term, Male	10k-100k	10k-100k	>100k	10k-100k	10k-100k	>100k

3.1.5 PLAN TYPE AND ATTAINED AGE

Observations:

- The inter-quintile ranges at this level of granularity are significantly larger for the Non-Term and Term groupings, likely due to there being more splits and, therefore, a lower number of deaths per split.
- Both All Plans and Non-Term <40 groups have a Q1 of greater than 200%; there are 251-1,000 deaths in the Non-Term group, which is skewing the average of the All Plans group.
- The Non-Term <40 row in general is significantly higher than other slices with Q4 = 110%, Q3 = 140%, and Q2 = 181%.
- The Term 70+ row is also notably wide with a very low Q5 at 55% and a very high Q1 at 170%.

Figure 3.1.5

QUINTILE DISTRIBUTION BY PLAN TYPE/ATTAINED AGE

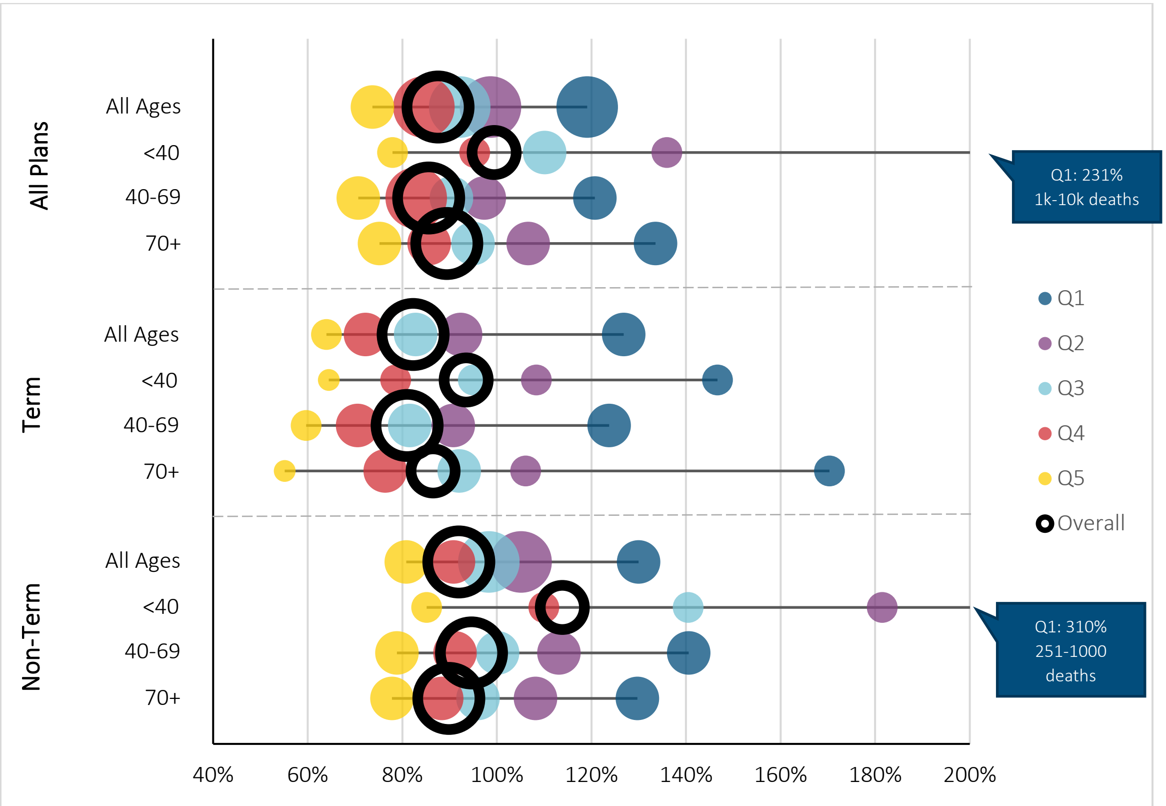


Table 3.1.5

PLAN TYPE/ATTAINED AGE DEATH COUNTS

Plan Type, Smoker Status	Q1	Q2	Q3	Q4	Q5	Overall
All Plans, All Ages	>100k	>100k	>100k	>100k	10k-100k	>100k
All Plans, <40	1k-10k	1k-10k	10k-100k	1k-10k	1k-10k	10k-100k
All Plans, 40-69	10k-100k	10k-100k	10k-100k	>100k	10k-100k	>100k
All Plans, 70+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Term, All Ages	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	>100k
Term, <40	1k-10k	1k-10k	1k-10k	1k-10k	251-1000	10k-100k
Term, 40-69	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	>100k
Term, 70+	1k-10k	1k-10k	10k-100k	10k-100k	251-1000	10k-100k
Non-Term, All Ages	10k-100k	>100k	>100k	10k-100k	10k-100k	>100k
Non-Term, <40	251-1000	1k-10k	1k-10k	1k-10k	1k-10k	10k-100k
Non-Term, 40-69	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Non-Term, 70+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k

3.1.6 PLAN TYPE AND FACE AMOUNT BAND

Observations:

- For both Term and Non-Term with Face Amounts less than $100,000, A/Es are significantly higher than those for Face Amounts exceeding $100,000.
- For both Term and Non-Term with Face Amounts greater than $100,000, the spread across Q2 through Q5 is roughly the same as the jump between Q2 and Q1.
- The Term <100,000 quintiles are much higher than others and have a very wide inter-quintile range.
    - o The Q1 A/E is greater than 1,000%; this is likely due to the very low number of deaths in this group, which is in the 30-100 range.
    - o Q2 is also high at 215% even with a death count between 10,000 and 100,000; this exceeds even Q1 for other Plan/Face Amount splits.

Figure 3.1.6

QUINTILE DISTRIBUTION BY PLAN TYPE AND FACE AMOUNT BAND

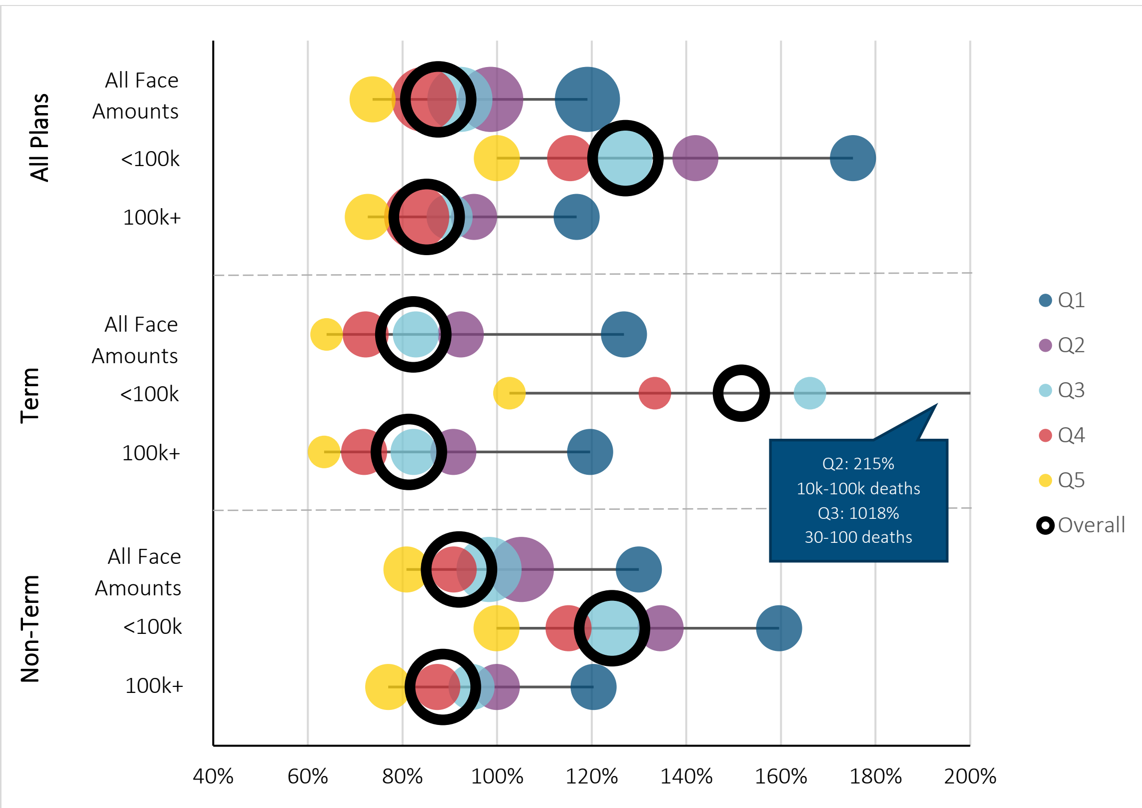


Table 3.1.6

PLAN TYPE DEATH COUNTS

Plan Type, Smoker Status	Q1	Q2	Q3	Q4	Q5	Overall
All Plans, All Face	>100k	>100k	>100k	>100k	10k-100k	>100k
All Plans, <100k	10k-100k	10k-100k	>100k	10k-100k	10k-100k	>100k
All Plans, 100k+	10k-100k	10k-100k	10k-100k	>100k	10k-100k	>100k
Term, All Face	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	>100k
Term, <100k	30-100	10k-100k	1k-10k	1k-10k	1k-10k	10k-100k
Term, 100k+	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	>100k
Non-Term, All Face	10k-100k	>100k	>100k	10k-100k	10k-100k	>100k
Non-Term, <100k	10k-100k	10k-100k	>100k	10k-100k	10k-100k	>100k
Non-Term, 100k+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k

3.2 ISSUE ERA

3.2.1 ISSUE ERA DIRECT COMPARISON (NO SUB-SPLITS)

Observations:

- The issue year eras are correlated with significant changes in risk class structures.
  - 1980-89: Very few, if any, preferred classes were available. Products were primarily Non-Smoker and Smoker.
  - 1990-99: This era saw the advent of a single preferred class structure and, in some cases, a second one for Non-Smokers.
  - 2000-04: With the introduction of Regulation XXX, four Non-Smoker class structures became more prevalent, especially for Term business.
  - 2005+: Risk class structures with four Non-Smoker classes were expanded to most products, and companies put more limitations on exceptions to their preferred criteria.
- The overall A/E declines from older eras to more recent eras.
  - There are some selection dynamics occurring between products with preferred structures and those without. Future reports should capture this variable explicitly.
- The A/E declines with more recent eras for nearly every quintile as well, and the variation by quintile narrows. A notable exception is Q1 for Issue Years 2005+.

Figure 3.2.1
QUINTILE DISTRIBUTION BY ISSUE ERA

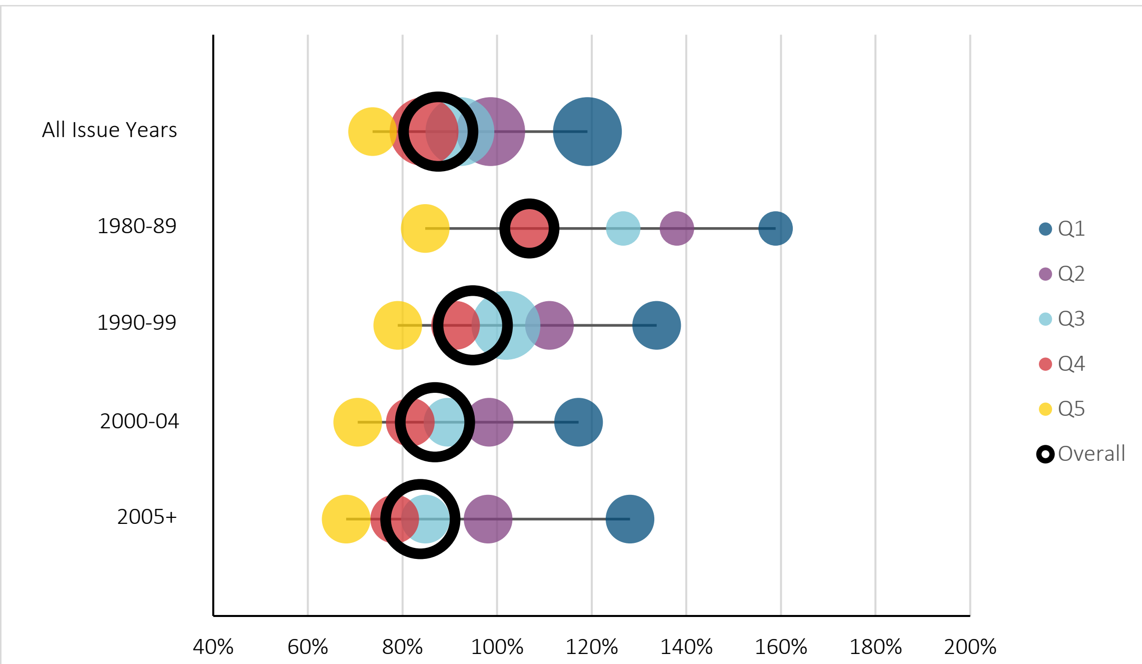


Table 3.2.1
ISSUE ERA DEATH COUNTS

Issue Era	Q1	Q2	Q3	Q4	Q5	Overall
All Issue Years	>100k	>100k	>100k	>100k	10k-100k	>100k
1980-89	1k-10k	1k-10k	1k-10k	10k-100k	10k-100k	10k-100k
1990-99	10k-100k	10k-100k	>100k	10k-100k	10k-100k	>100k
2000-04	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
2005+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k

3.2.2 ISSUE ERA AND SMOKER STATUS

Observations:

- The Smokers are a small portion of the overall data. Each Smoker A/E has fewer claims driving those results than the Non-Smoker classes.
- The widening of Non-Smoker A/E between the 2000-04 and 2005+ eras is due to increases in A/E for Q1 and decreases for Q3, Q4, and Q5.

Figure 3.2.2

QUINTILE DISTRIBUTION BY ISSUE ERA AND SMOKER STATUS

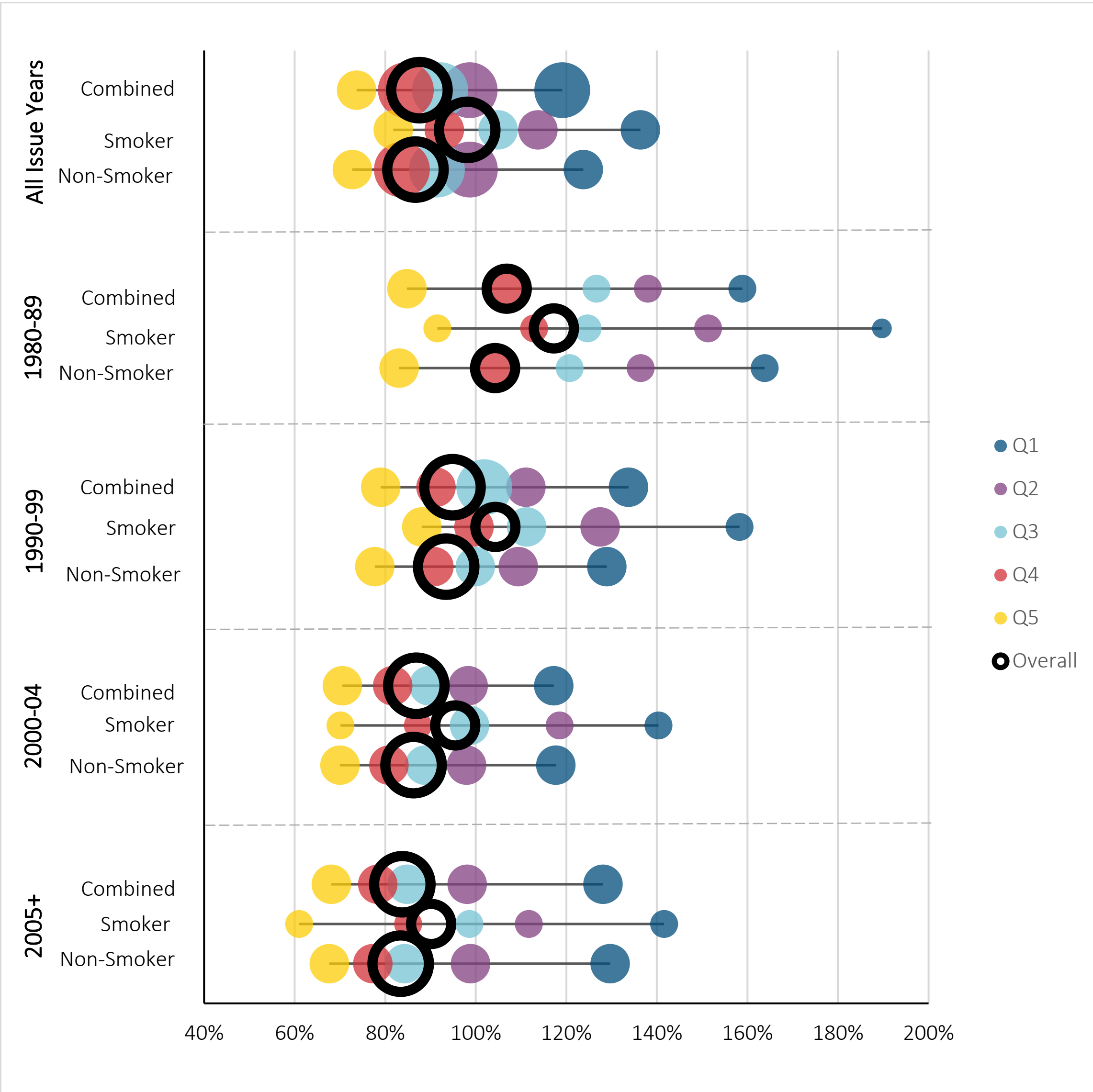


Table 3.2.2

ISSUE ERA AND SMOKER STATUS DEATH COUNTS

Issue Era, Smoker Status	Q1	Q2	Q3	Q4	Q5	Overall
All Issue Years, All Smoker Type	>100k	>100k	>100k	>100k	10k-100k	>100k
All Issue Years, Smoker	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
All Issue Years, Non-Smoker	10k-100k	>100k	>100k	>100k	10k-100k	>100k
1980-89, All Smoker Type	1k-10k	1k-10k	1k-10k	10k-100k	10k-100k	10k-100k
1980-89, Smoker	251-1000	1k-10k	1k-10k	1k-10k	1k-10k	10k-100k
1980-89, Non-Smoker	1k-10k	1k-10k	1k-10k	10k-100k	10k-100k	10k-100k
1990-99, All Smoker Type	10k-100k	10k-100k	>100k	10k-100k	10k-100k	>100k
1990-99, Smoker	1k-10k	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k
1990-99, Non-Smoker	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
2000-04, All Smoker Type	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
2000-04, Smoker	1k-10k	1k-10k	10k-100k	1k-10k	1k-10k	10k-100k
2000-04, Non-Smoker	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
2005+, All Smoker Type	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
2005+, Smoker	1k-10k	1k-10k	1k-10k	1k-10k	1k-10k	10k-100k
2005+, Non-Smoker	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k

3.2.3 ISSUE ERA AND SEX

Observations:

- Females represented a very small portion of the insurance issued in the 1980s.
- Both Male and Female A/Es decrease as the issue years become more recent.
  - The Female A/E is lower than the Male A/E in Issue Years 2005+.
  - This is driven by large decreases in the Q1 and Q2 A/Es.
- Again, the quintile spread widens in 2005+.
  - For Males, this is due to increases in Q1 and Q2 A/Es.
  - For Females, this is due to bigger decreases in Q4 and Q5 A/Es.

Figure 3.2.3
QUINTILE DISTRIBUTION BY ISSUE ERA AND SEX

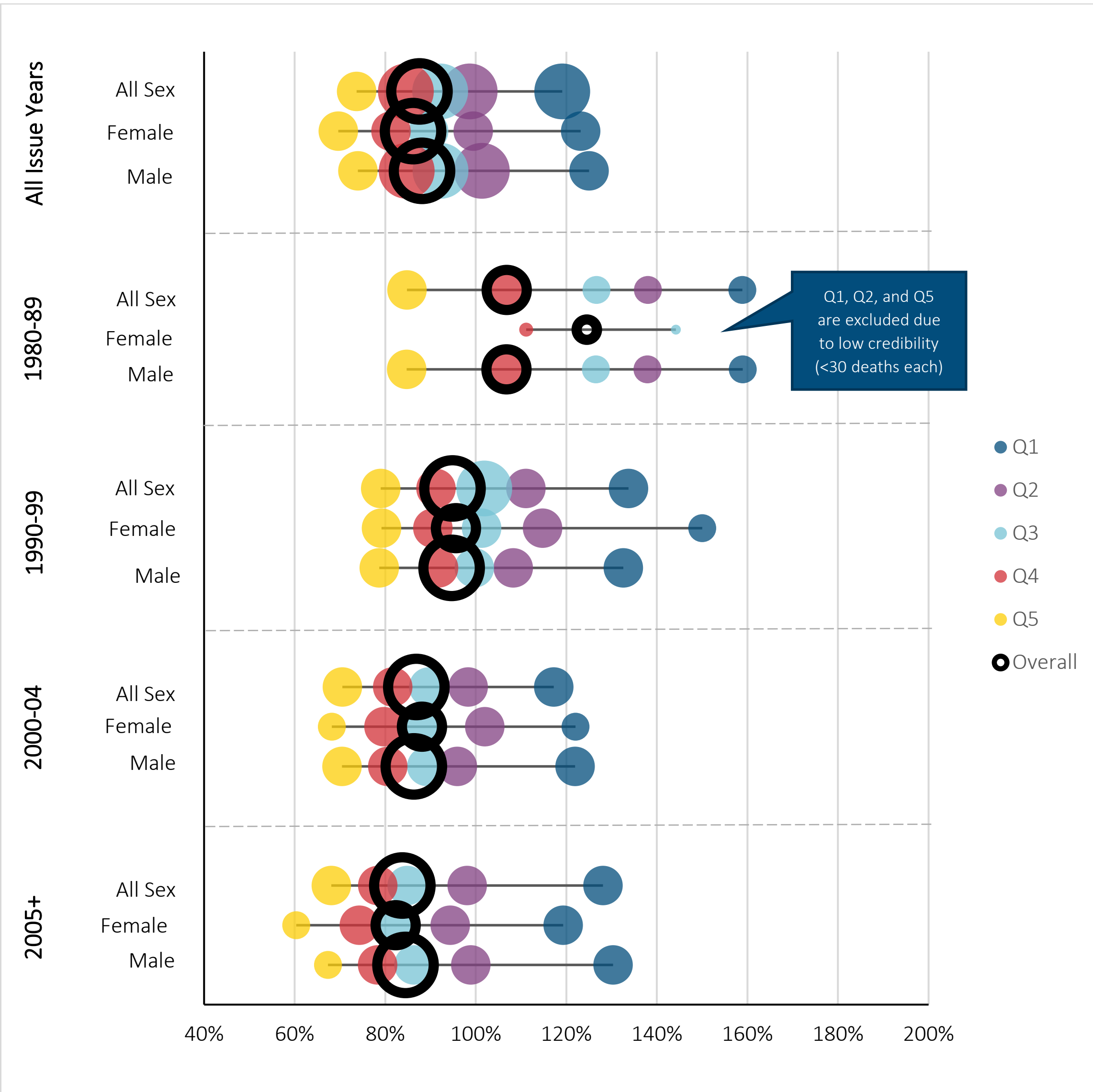


Table 3.2.3

ISSUE ERA AND SEX DEATH COUNTS

Issue Era, Sex	Q1	Q2	Q3	Q4	Q5	Overall
All Issue Years, All Sex	>100k	>100k	>100k	>100k	10k-100k	>100k
All Issue Years, Female	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
All Issue Years, Male	10k-100k	>100k	>100k	>100k	10k-100k	>100k
1980-89, All Sex	1k-10k	1k-10k	1k-10k	10k-100k	10k-100k	10k-100k
1980-89, Female	<30	<30	30-100	101-250	<30	251-1000
1980-89, Male	1k-10k	1k-10k	1k-10k	10k-100k	10k-100k	10k-100k
1990-99, All Sex	10k-100k	10k-100k	>100k	10k-100k	10k-100k	>100k
1990-99, Female	1k-10k	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k
1990-99, Male	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
2000-04, All Sex	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
2000-04, Female	1k-10k	10k-100k	10k-100k	10k-100k	1k-10k	10k-100k
2000-04, Male	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
2005+, All Sex	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
2005+, Female	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	10k-100k
2005+, Male	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	>100k

3.2.4 ISSUE ERA AND ATTAINED AGE

Observations:

- Attained Ages <40 have very large quintile spreads. In older Issue Year Eras, many of these were issued as juveniles, and there are far fewer claims than for other Attained Age groups.
- For Attained Ages 40-69 and 70+, the overall A/E declines, and the quintile spreads tighten up until the 2000-04 Issue Year Era before they widen again for 2005+.

Figure 3.2.4

QUINTILE DISTRIBUTION BY ISSUE ERA AND ATTAINED AGE

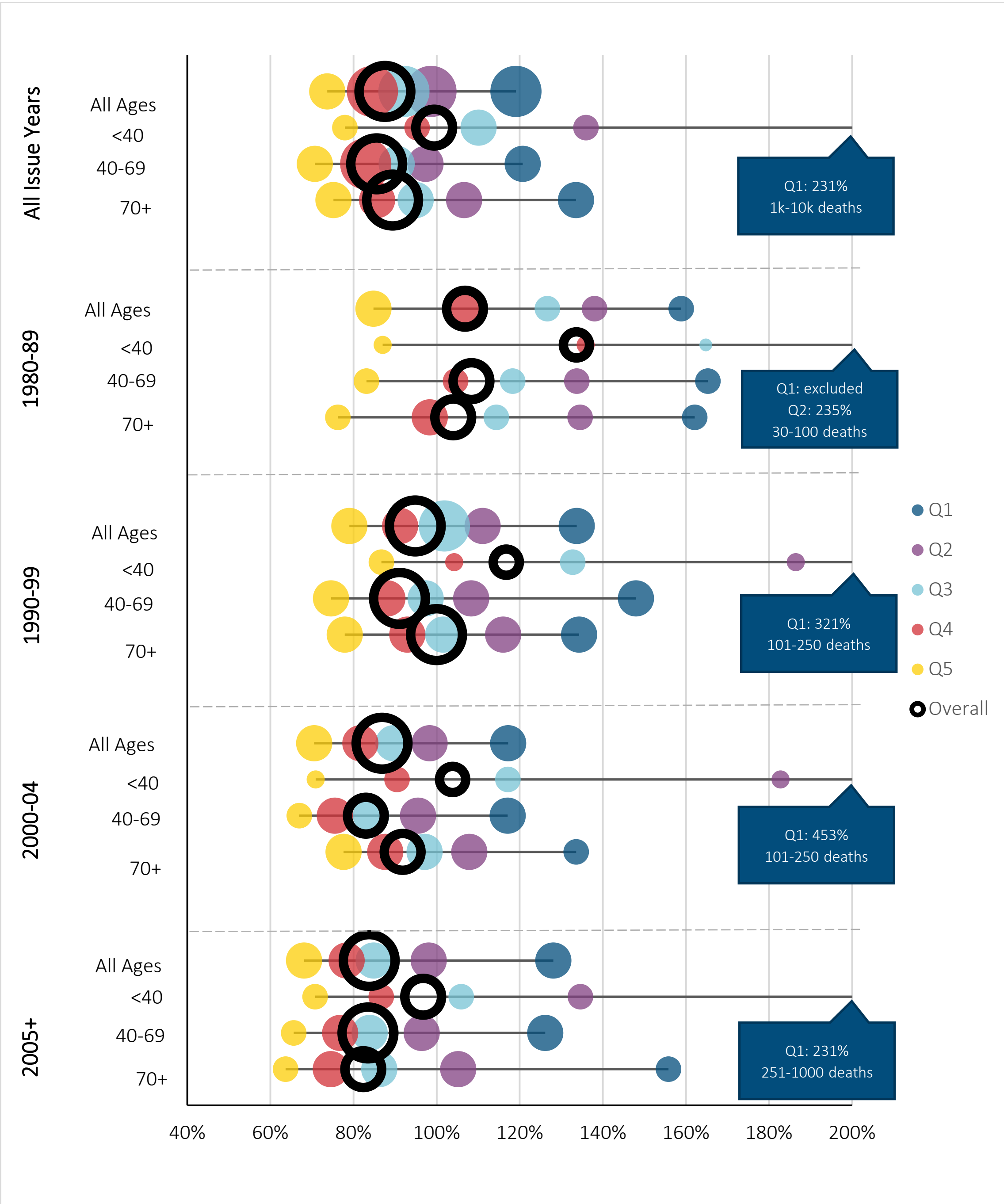


Table 3.2.4

ISSUE ERA AND ATTAINED AGE DEATH COUNTS

Issue Era, Attained Age	Q1	Q2	Q3	Q4	Q5	Overall
All Issue Years, All Ages	>100k	>100k	>100k	>100k	10k-100k	>100k
All Issue Years, <40	1k-10k	1k-10k	10k-100k	1k-10k	1k-10k	10k-100k
All Issue Years, 40-69	10k-100k	10k-100k	10k-100k	>100k	10k-100k	>100k
All Issue Years, 70+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
1980-89, All Ages	1k-10k	1k-10k	1k-10k	10k-100k	10k-100k	10k-100k
1980-89, <40	<30	30-100	101-250	251-1000	251-1000	1k-10k
1980-89, 40-69	1k-10k	1k-10k	1k-10k	1k-10k	1k-10k	10k-100k
1980-89, 70+	1k-10k	1k-10k	1k-10k	10k-100k	1k-10k	10k-100k
1990-99, All Ages	10k-100k	10k-100k	>100k	10k-100k	10k-100k	>100k
1990-99, <40	101-250	251-1000	1k-10k	251-1000	1k-10k	1k-10k
1990-99, 40-69	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
1990-99, 70+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
2000-04, All Ages	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
2000-04, <40	101-250	251-1000	1k-10k	1k-10k	251-1000	1k-10k
2000-04, 40-69	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	10k-100k
2000-04, 70+	1k-10k	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k
2005+, All Ages	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
2005+, <40	251-1000	1k-10k	1k-10k	1k-10k	1k-10k	10k-100k
2005+, 40-69	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	>100k
2005+, 70+	1k-10k	10k-100k	10k-100k	10k-100k	1k-10k	10k-100k

3.2.5 ISSUE ERA AND FACE AMOUNT BAND

Observations:

- The overall A/E for both Face Amount groups steadily decreases as Issue Year Era becomes more recent.
- An exception is <100,000 face in 2005+. There are far fewer policies and claims of this size. Nearly every quintile A/E increased; Q1 is beyond the chart.
- Q2 through Q5 decrease and tighten for the 100,000+ policies in issue years 2005+. Only Q1 increased from its level in 2000-04.

Figure 3.2.5

QUINTILE DISTRIBUTION BY ISSUE ERA AND FACE AMOUNT

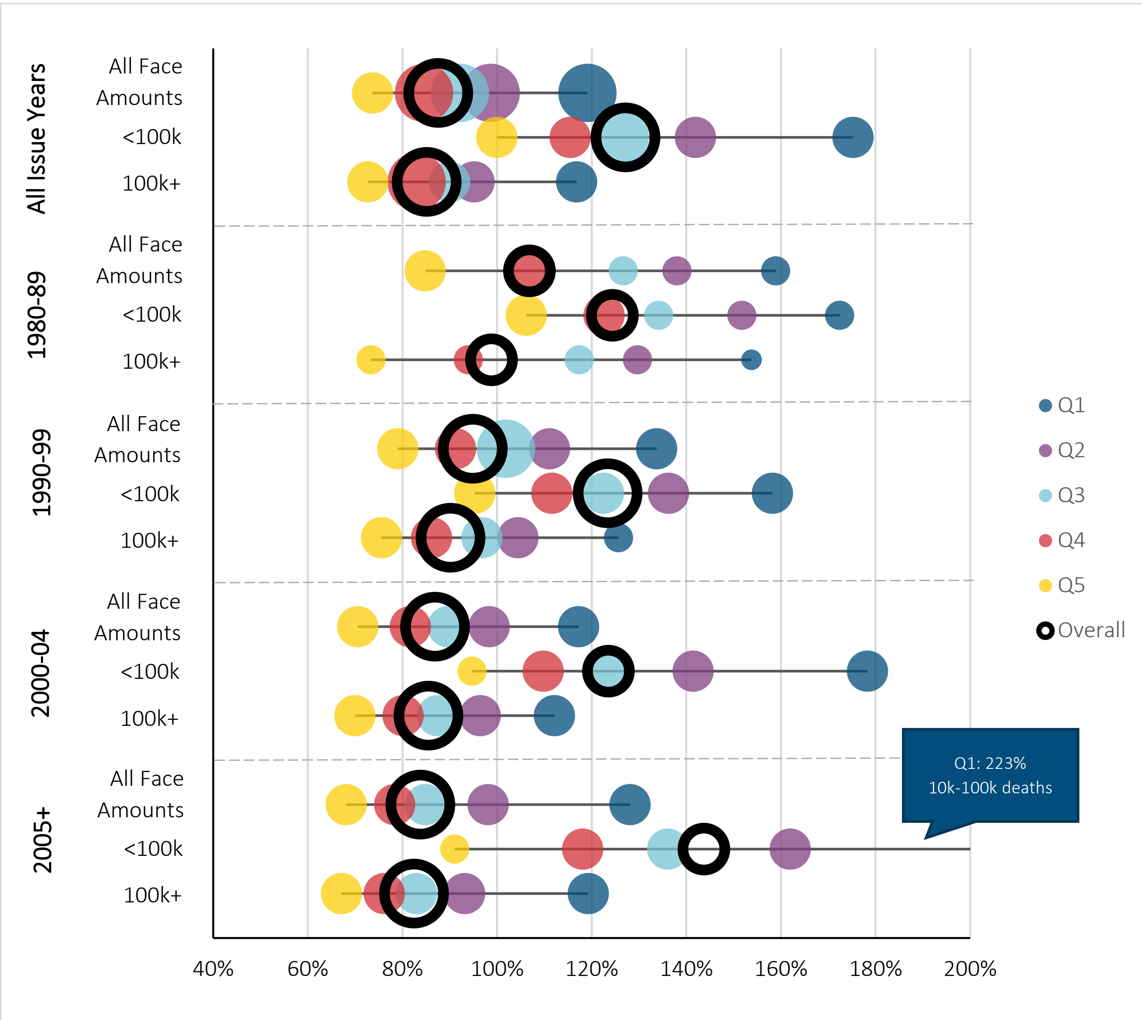


Table 3.2.5
ISSUE ERA AND FACE AMOUNT DEATH COUNTS

Issue Era, Face Amount	Q1	Q2	Q3	Q4	Q5	Overall
All Issue Years, All Face Amounts	>100k	>100k	>100k	>100k	10k-100k	>100k
All Issue Years, <100k	10k-100k	10k-100k	>100k	10k-100k	10k-100k	>100k
All Issue Years, 100k+	10k-100k	10k-100k	10k-100k	>100k	10k-100k	>100k
1980-89, All Face Amounts	1k-10k	1k-10k	1k-10k	10k-100k	10k-100k	10k-100k
1980-89, <100k	1k-10k	1k-10k	1k-10k	10k-100k	10k-100k	10k-100k
1980-89, 100k+	251-1000	1k-10k	1k-10k	1k-10k	1k-10k	10k-100k
1990-99, All Face Amounts	10k-100k	10k-100k	>100k	10k-100k	10k-100k	>100k
1990-99, <100k	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
1990-99, 100k+	1k-10k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
2000-04, All Face Amounts	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
2000-04, <100k	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	10k-100k
2000-04, 100k+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
2005+, All Face Amounts	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
2005+, <100k	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	10k-100k
2005+, 100k+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k

3.3 SMOKER STATUS

3.3.1 SMOKER STATUS DIRECT COMPARISON (NO SUB-SPLITS)

Observations:

- At this level of granularity, death counts are very high, and each quintile has a minimum of 10,000 deaths.
- Smoker has a higher A/E than Non-Smoker for both overall metric and each individual quintile.
- For both Smoker and Non-Smoker, the widest jump between quintiles is between Q1 and Q2.
- Non-Smoker has a much larger percentage than Smoker of the total exposure. As a result, the All Smoker Status results have a strong resemblance to the Non-Smoker results.

Figure 3.3.1
QUINTILE DISTRIBUTION BY SMOKER STATUS (# OF DEATHS)

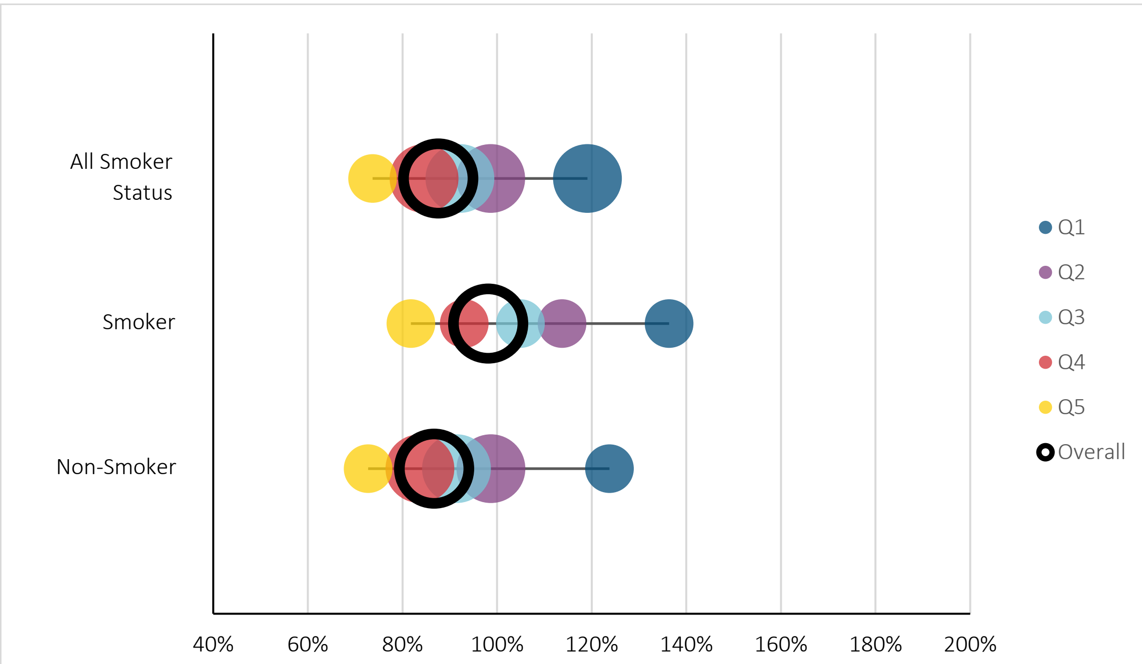


Table 3.3.1
SMOKER STATUS DEATH COUNTS

Smoker Status	Q1	Q2	Q3	Q4	Q5	Overall
All Smoker Status	>100k	>100k	>100k	>100k	10k-100k	>100k
Smoker	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Non-Smoker	10k-100k	>100k	>100k	>100k	10k-100k	>100k

3.3.2 SMOKER STATUS AND SEX

Observations:

- Smoker and Non-Smoker subgroups show a similar pattern, including that the widest jump between quintiles is between Q1 and Q2.
- Female Smokers have the smallest amount of exposure, which may account for the fact that they show the largest differential between Q1 and Q5.

Figure 3.3.2
QUINTILE DISTRIBUTION BY SMOKER STATUS AND SEX

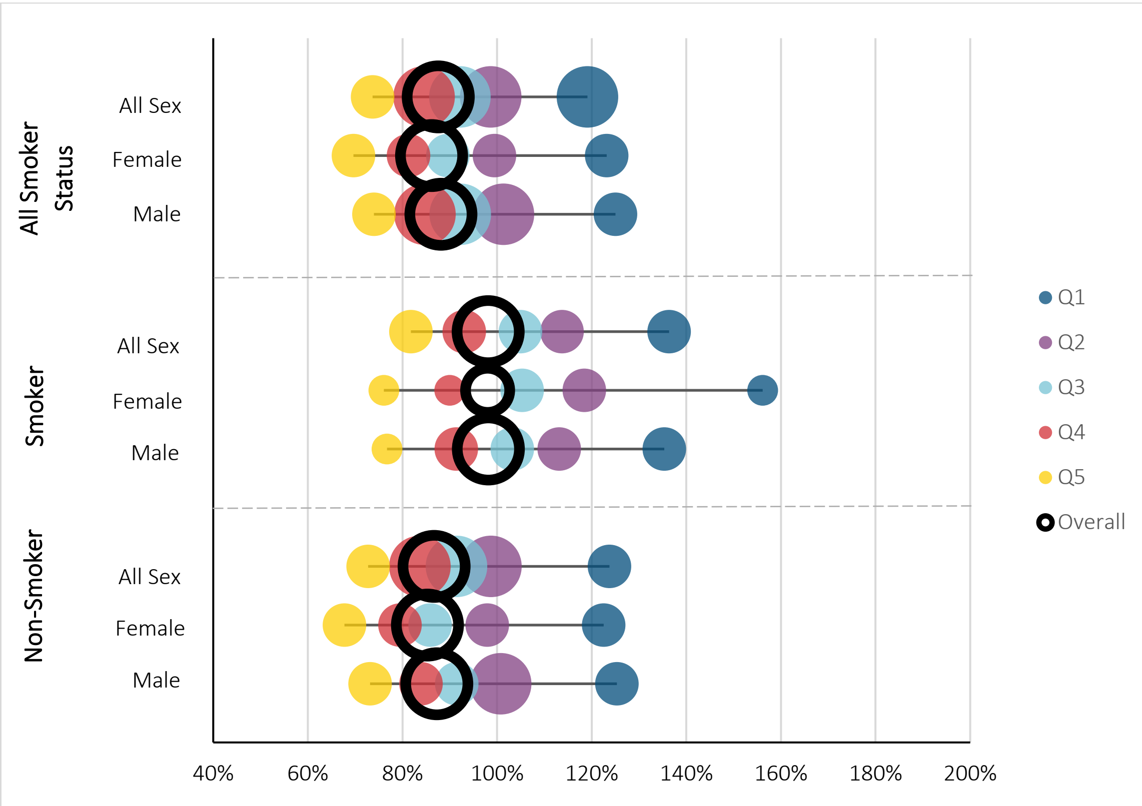


Table 3.3.2
SMOKER STATUS AND SEX DEATH COUNTS

Smoker Status, Sex	Q1	Q2	Q3	Q4	Q5	Overall
All Smoker Status, All Sex	>100k	>100k	>100k	>100k	10k-100k	>100k
All Smoker Status, Female	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
All Smoker Status, Male	10k-100k	>100k	>100k	>100k	10k-100k	>100k
Smoker, All Sex	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Smoker, Female	1k-10k	10k-100k	10k-100k	1k-10k	1k-10k	10k-100k
Smoker, Male	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	>100k
Non-Smoker, All Sex	10k-100k	>100k	>100k	>100k	10k-100k	>100k
Non-Smoker, Female	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Non-Smoker, Male	10k-100k	>100k	10k-100k	10k-100k	10k-100k	>100k

3.3.3 SMOKER STATUS AND ATTAINED AGE

Observations:

- The inter-quintile ranges at this level of granularity are significantly larger for the Smoker and Non-Smoker groupings.
- When results are viewed in the Attained Age subgroups, Smoker seems to exhibit a slightly wider spectrum than Non-Smoker, likely due to limited size, thus, more volatility. Note that the overall A/E for Smokers under 40 is extremely high (128%). Over one-quarter of the death claims for the <40 Attained Age group are from policies issued to minors. The classification of Smoker Status of these policies may vary across companies.
- All <40 groups have a Q1 greater than 200%, likely due to limited credibility and, thus, more volatility.

Figure 3.3.3
QUINTILE DISTRIBUTION BY SMOKER STATUS AND ATTAINED AGE

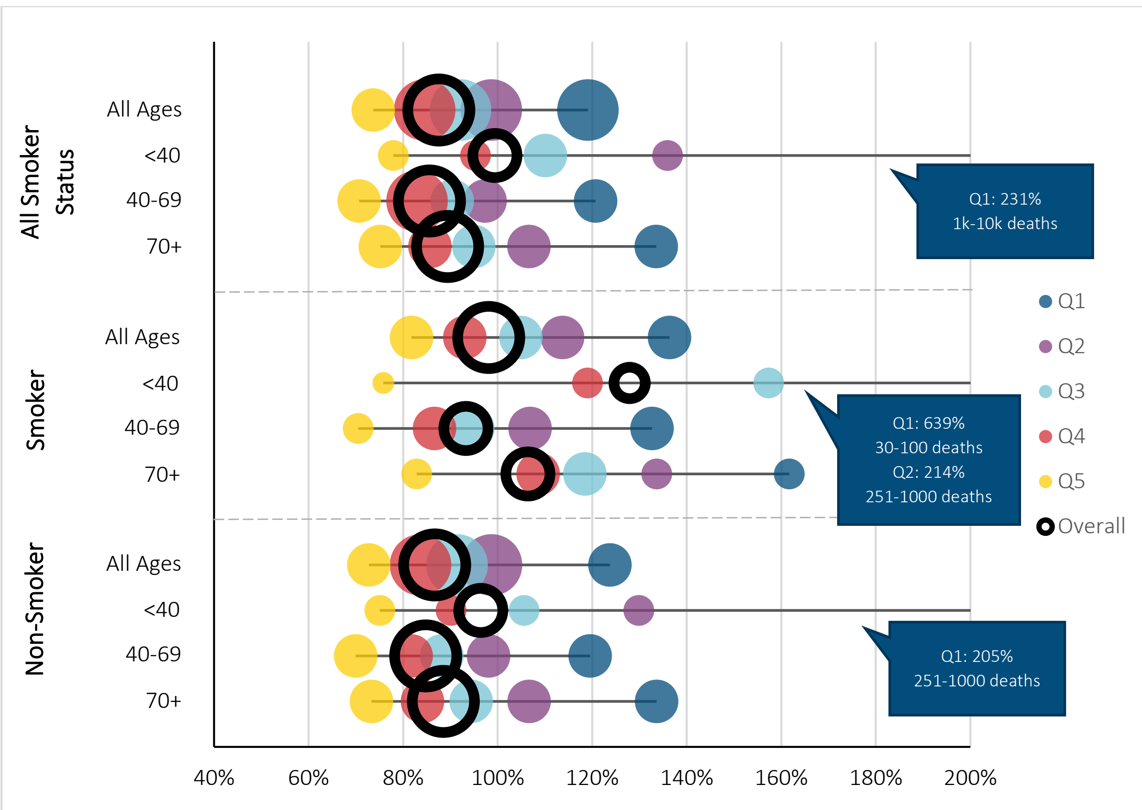


Table 3.3.3

SMOKER STATUS AND ATTAINED AGE DEATH COUNTS

Smoker Status, Attained Age	Q1	Q2	Q3	Q4	Q5	Overall
All Smoker Status, All Ages	>100k	>100k	>100k	>100k	10k-100k	>100k
All Smoker Status, <40	1k-10k	1k-10k	10k-100k	1k-10k	1k-10k	10k-100k
All Smoker Status, 40-69	10k-100k	10k-100k	10k-100k	>100k	10k-100k	>100k
All Smoker Status, 70+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Smoker, All Ages	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Smoker, <40	30-100	251-1000	1k-10k	1k-10k	251-1000	1k-10k
Smoker, 40-69	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	10k-100k
Smoker, 70+	1k-10k	1k-10k	10k-100k	10k-100k	1k-10k	10k-100k
Non-Smoker, All Ages	10k-100k	>100k	>100k	>100k	10k-100k	>100k
Non-Smoker, <40	251-1000	1k-10k	1k-10k	1k-10k	1k-10k	10k-100k
Non-Smoker, 40-69	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Non-Smoker, 70+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k

3.3.4 SMOKER STATUS AND FACE AMOUNT BAND

Observations:

- For both Smokers and Non-Smokers, policies with Face Amounts under $100,000 have higher A/E ratios for every quintile as compared to policies with Face Amounts over $100,000.
- A/E ratios for Smokers are higher than the corresponding A/E ratios for Non-Smokers in every case.
- Non-Smoker has a much larger percentage than Smoker of the total exposure. As a result, the All Smoker Status results have a strong resemblance to the Non-Smoker results.

Figure 3.3.4
QUINTILE DISTRIBUTION BY SMOKER STATUS AND FACE AMOUNT

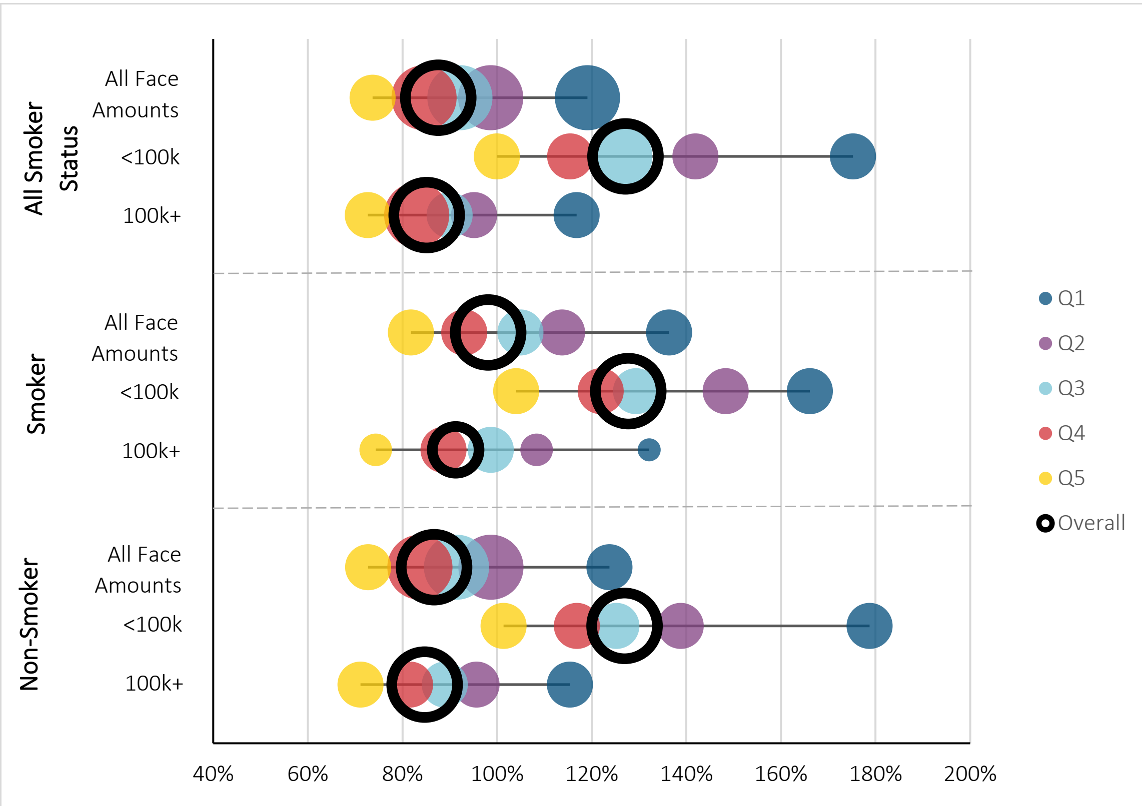


Table 3.3.4
SMOKER STATUS AND FACE AMOUNT DEATH COUNTS

Smoker Status, Face Amount	Q1	Q2	Q3	Q4	Q5	Overall
All Smoker Status, All Face Amounts	>100k	>100k	>100k	>100k	10k-100k	>100k
All Smoker Status, <100k	10k-100k	10k-100k	>100k	10k-100k	10k-100k	>100k
All Smoker Status, 100k+	10k-100k	10k-100k	10k-100k	>100k	10k-100k	>100k
Smoker, All Face Amounts	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Smoker, <100k	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Smoker, 100k+	251-1000	1k-10k	10k-100k	10k-100k	1k-10k	10k-100k
Non-Smoker, All Face Amounts	10k-100k	>100k	>100k	>100k	10k-100k	>100k
Non-Smoker, <100k	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Non-Smoker, 100k+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k

3.4 SEX

3.4.1 SEX DIRECT COMPARISON (NO SUB-SPLITS)

Observations:

- Overall A/E ratios for Female and Male insureds are similar (86% vs. 88%).
- The difference between A/E ratios for Q1 and Q5 for the two sexes are also similar (53% vs. 51%).
- Results for Male quintiles are slightly higher for every quintile than the A/E for the corresponding Female quintile.

Figure 3.4.1

QUINTILE DISTRIBUTION BY SEX

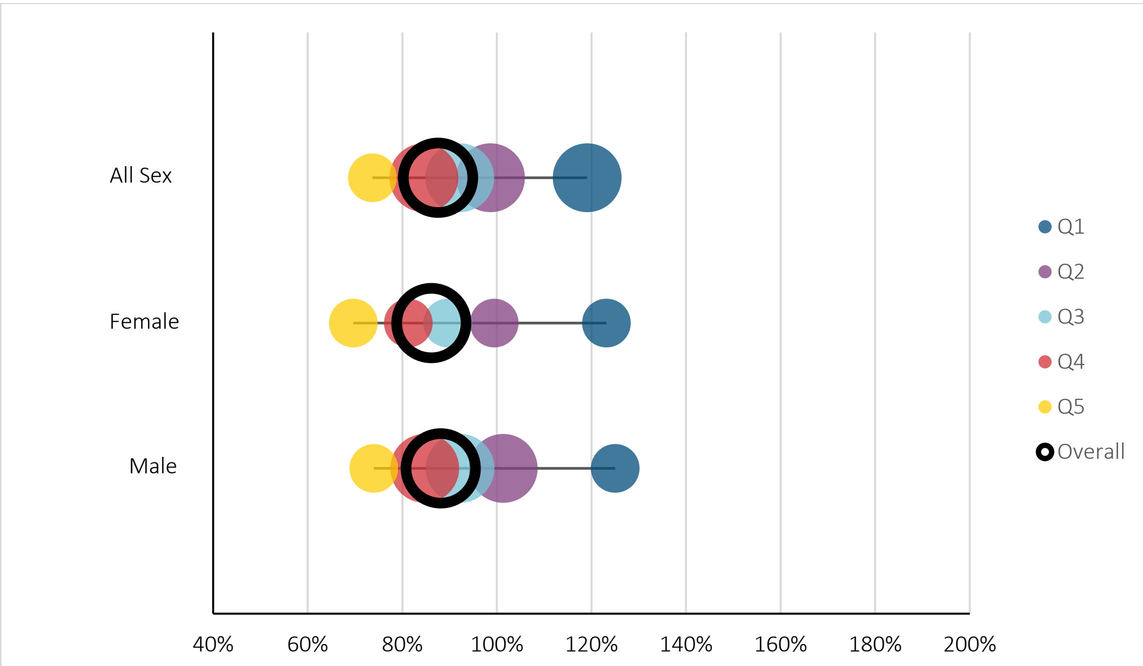


Table 3.4.1

SEX DEATH COUNTS

Sex	Q1	Q2	Q3	Q4	Q5	Overall
All Sex	>100k	>100k	>100k	>100k	10k-100k	>100k
Female	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Male	10k-100k	>100k	>100k	>100k	10k-100k	>100k

3.4.2 SEX AND ATTAINED AGE

Observations:

- For both Male and Female, insureds under 40 showed much larger differences between quintiles than insureds aged 40-69 or 70+. This is likely because underwriting is less restrictive at the younger ages.
- The overall A/E ratio for Males under age 40 is the highest in this chart at 108%.
- A/E ratios by quintile for Males under age 40 showed the largest difference between Q1 and Q5 (168% = 256% - 88%).
- A/E ratios by quintile for Females under age 40 also showed a large difference between Q1 and Q5 (131% = 190% - 59%).

Figure 3.4.2

QUINTILE DISTRIBUTION BY SEX AND ATTAINED AGE

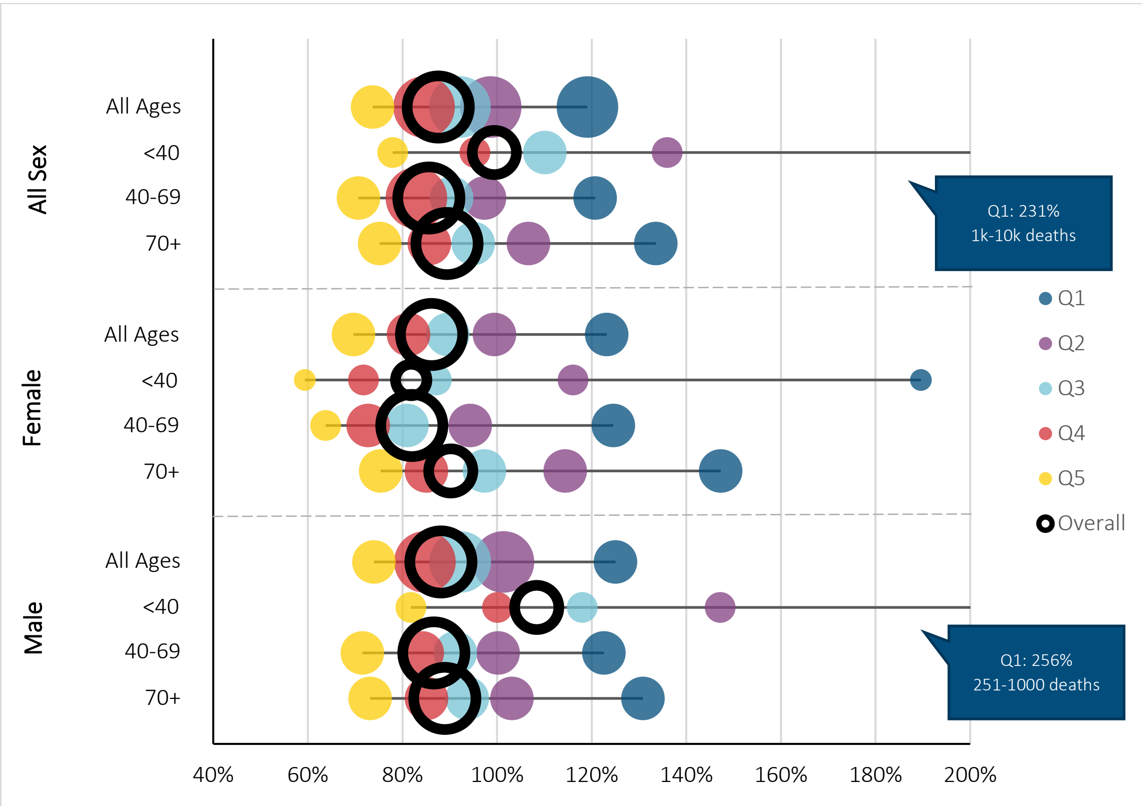


Table 3.4.2

SEX AND ATTAINED AGE DEATH COUNTS

Sex, Attained Age	Q1	Q2	Q3	Q4	Q5	Overall
All Sex, All Ages	>100k	>100k	>100k	>100k	10k-100k	>100k
All Sex, <40	1k-10k	1k-10k	10k-100k	1k-10k	1k-10k	10k-100k
All Sex, 40-69	10k-100k	10k-100k	10k-100k	>100k	10k-100k	>100k
All Sex, 70+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Female, All Ages	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Female, <40	251-1000	1k-10k	1k-10k	1k-10k	251-1000	1k-10k
Female, 40-69	10k-100k	10k-100k	10k-100k	10k-100k	1k-10k	>100k
Female, 70+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k
Male, All Ages	10k-100k	>100k	>100k	>100k	10k-100k	>100k
Male, <40	251-1000	1k-10k	1k-10k	1k-10k	1k-10k	10k-100k
Male, 40-69	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Male, 70+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k

3.4.3 SEX AND FACE AMOUNT BAND

Observations:

- For both Female and Male insureds, A/E ratios are higher for every quintile for Face Amounts less than $100,000 than for amounts of $100,000 and greater.
- For both Female and Male insureds, the differences between the A/E ratios for Q1 and Q5 is much greater for Face Amounts less than $100,000 as compared to the A/E ratios for Face Amounts of $100,000 or greater.

Figure 3.4.3

QUINTILE DISTRIBUTION BY SEX AND FACE AMOUNT

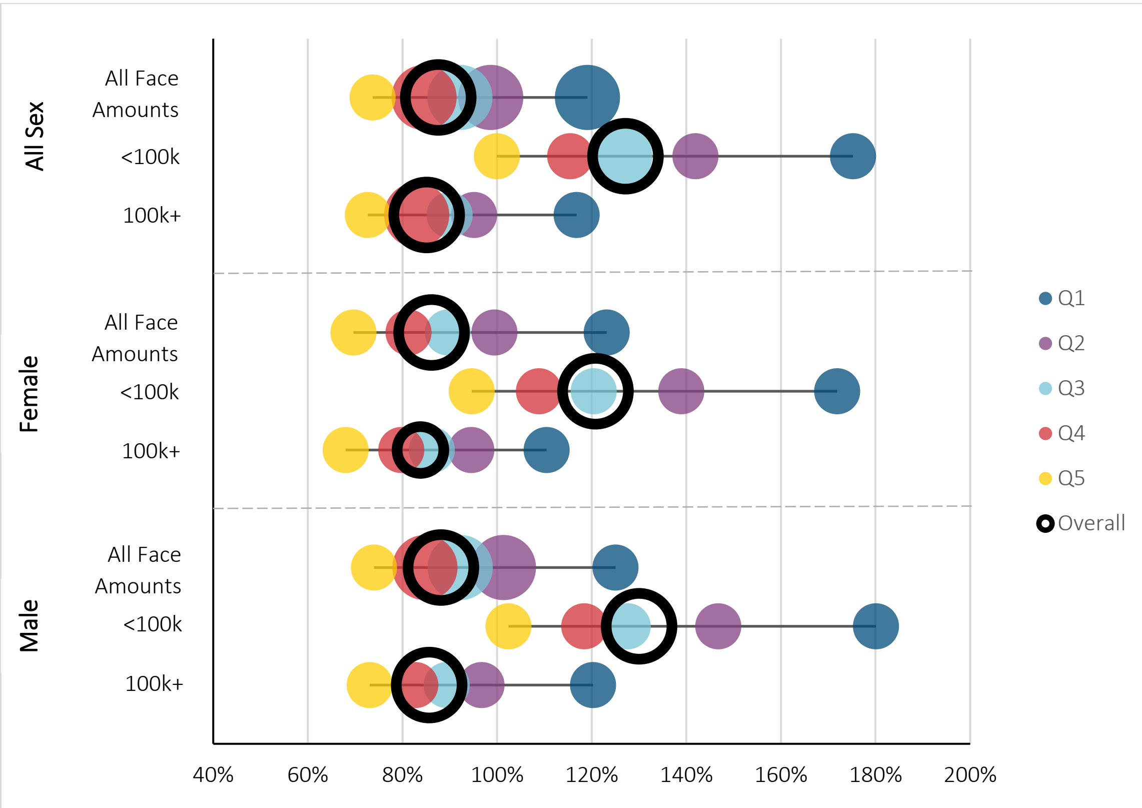


Table 3.4.3

SEX AND FACE AMOUNT DEATH COUNTS

Sex, Face Amount	Q1	Q2	Q3	Q4	Q5	Overall
All Sex, All Face Amounts	>100k	>100k	>100k	>100k	10k-100k	>100k
All Sex, <100k	10k-100k	10k-100k	>100k	10k-100k	10k-100k	>100k
All Sex, 100k+	10k-100k	10k-100k	10k-100k	>100k	10k-100k	>100k
Female, All Face Amounts	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Female, <100k	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Female, 100k+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k
Male, All Face Amounts	10k-100k	>100k	>100k	>100k	10k-100k	>100k
Male, <100k	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
Male, 100k+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k

3.5 ATTAINED AGE

3.5.1 ATTAINED AGE DIRECT COMPARISON (NO SUB-SPLITS)

Observations:

- All quintiles in the Attained Age splits have at least 1,000 claims.
- Attained Ages under 40 show a much greater spread between each quintile.
    - This is especially true for Q1, where the A/E of 231% is 95% higher than that of Q2.
    - A possible explanation for this inter-quintile spread could be the wider variation in required underwriting tests for the younger issue ages among companies.
- Attained Ages 40-69 and 70+ each show a similar pattern among the quintiles.
    - As with Attained Ages under 40, Q1 shows a significant departure from Q2 for both of these older age groups as well.
    - The lower ends of the distributions are very compact, with Q2 through Q5 very close to one another in these age ranges, particularly for ages 40-69.

Figure 3.5.1

QUINTILE DISTRIBUTION BY ATTAINED AGE (# OF DEATHS)

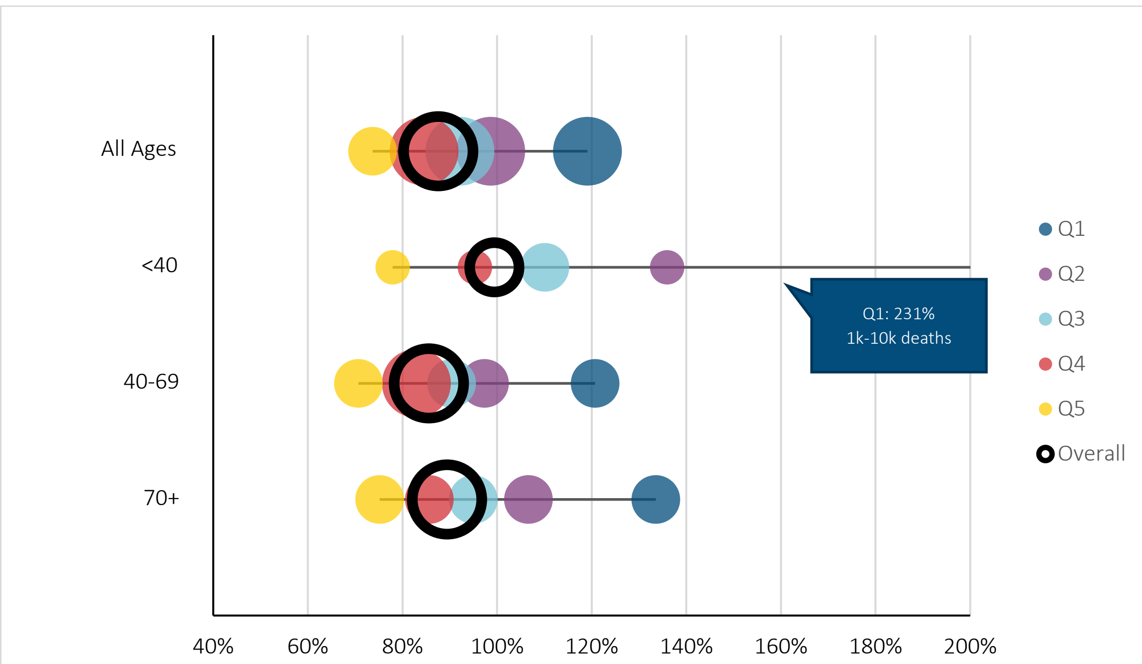


Table 3.5.1

ATTAINED AGE DEATH COUNTS

Attained Age	Q1	Q2	Q3	Q4	Q5	Overall
All Ages	>100k	>100k	>100k	>100k	10k-100k	>100k
<40	1k-10k	1k-10k	10k-100k	1k-10k	1k-10k	10k-100k
40-69	10k-100k	10k-100k	10k-100k	>100k	10k-100k	>100k
70+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k

3.5.2 ATTAINED AGE AND FACE AMOUNT BAND

Observations:

- All but two quintiles in the Attained Age/Face Amount splits have at least 1,000 claims, with the only exceptions being Q2 for ages <40 and amounts <100,000 and Q1 for ages <40 and amounts 100,000+.
- Attained Ages under 40 show a much greater spread between each quintile, especially for Face Amounts <100,000, where A/E ratios range from Q5=100% to Q1=371% based on over 1,000 deaths.
    - o A possible explanation for this inter-quintile spread could be the wider variation among companies in required underwriting tests for the younger issue ages.
    - o It is also likely that different companies place varying degrees of emphasis on underwriting requirements at the younger ages for these smaller policies.
    - o Policies marked as simplified issue have been excluded from this analysis, but there may be some companies identifying policies with non-medical underwriting and very few requirements as fully underwritten.
- The spread among quintiles for amounts <100,000 becomes progressively tighter as the Attained Ages increase.
- Relative to the very clustered Q2 through Q5 for amounts 100,000+ at ages 70+, Q1 stands out as an outlier more so than with the other Attained Age/Face Amount splits.

Figure 3.5.2

QUINTILE DISTRIBUTION BY ATTAINED AGE AND FACE AMOUNT (# OF DEATHS)

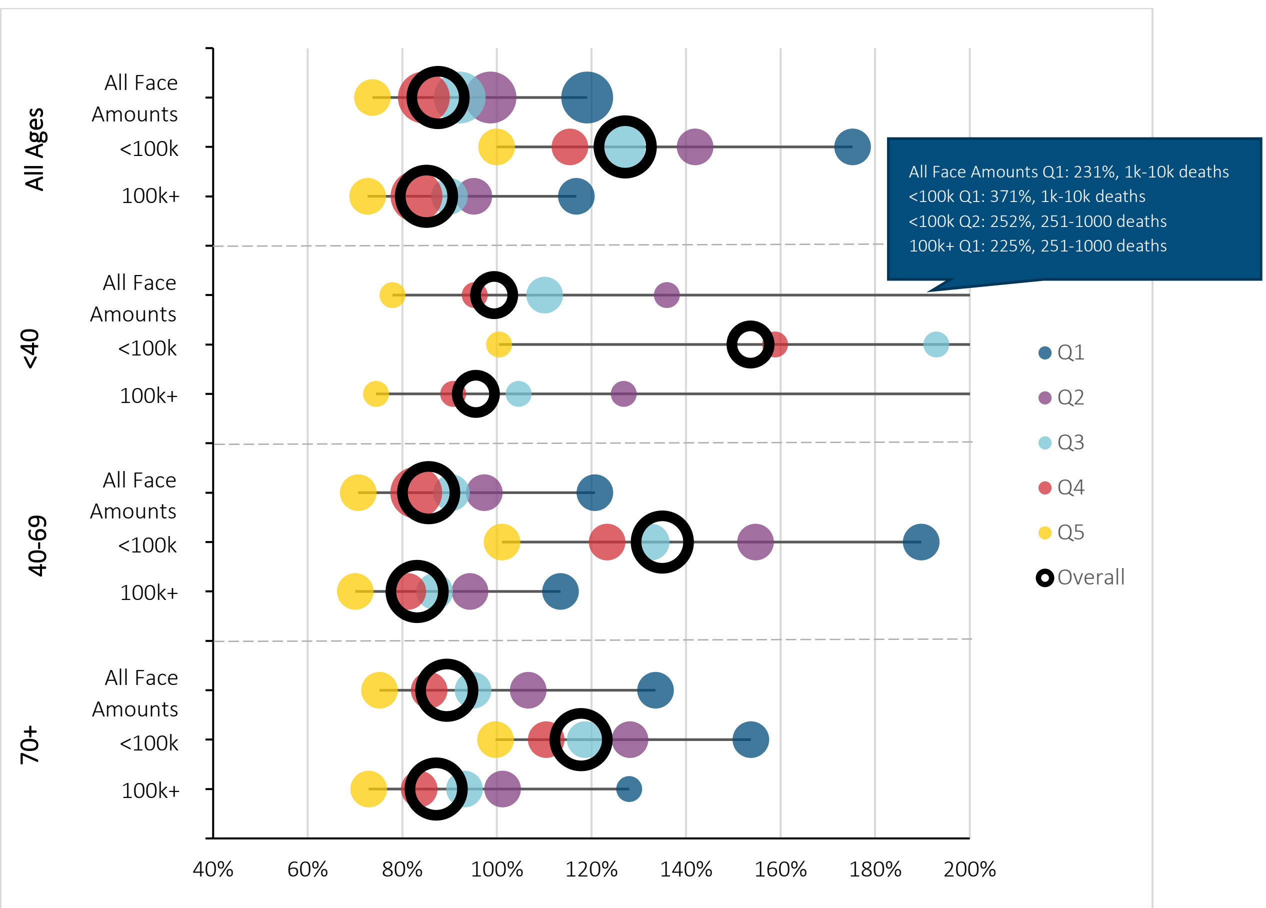


Table 3.5.2

ATTAINED AGE AND FACE AMOUNT DEATH COUNTS

Attained Age, Face Amount	Q1	Q2	Q3	Q4	Q5	Overall
All Ages, All Face Amounts	>100k	>100k	>100k	>100k	10k-100k	>100k
All Ages, <100k	10k-100k	10k-100k	>100k	10k-100k	10k-100k	>100k
All Ages, 100k+	10k-100k	10k-100k	10k-100k	>100k	10k-100k	>100k
<40, All Face Amounts	1k-10k	1k-10k	10k-100k	1k-10k	1k-10k	10k-100k
<40, <100k	1k-10k	251-1000	1k-10k	1k-10k	1k-10k	10k-100k
<40, 100k+	251-1000	1k-10k	1k-10k	1k-10k	1k-10k	10k-100k
40-69, All Face Amounts	10k-100k	10k-100k	10k-100k	>100k	10k-100k	>100k
40-69, <100k	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
40-69, 100k+	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
70+, All Face Amounts	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
70+, <100k	10k-100k	10k-100k	10k-100k	10k-100k	10k-100k	>100k
70+, 100k+	1k-10k	10k-100k	10k-100k	10k-100k	10k-100k	>100k

3.6 FACE AMOUNT BAND

3.6.1 FACE AMOUNT BAND DIRECT COMPARISON (NO SUB-SPLITS)

Observations:

- The minimum death count for any quintile group in this breakdown is 10,000 claims, indicating a significant amount of credibility within each quintile.
- Compared to Face Amounts 100,000+, there is a much greater spread between each quintile for Face Amounts <100,000, where A/E ratios range from Q5=100% to Q1=175% based on over 10,000 deaths.
    - A possible explanation for this inter-quintile spread could be the wider variation among companies in required underwriting tests for these lower Face Amounts.
    - Companies are likely placing widely varying degrees of emphasis on underwriting requirements for these smaller policies, especially for younger issue ages.
    - Policies marked as simplified issue have been excluded from this analysis, but there may be some companies identifying policies with non-medical underwriting and very few requirements as fully underwritten.

Figure 3.6.1

QUINTILE DISTRIBUTION BY FACE AMOUNT (# OF DEATHS)

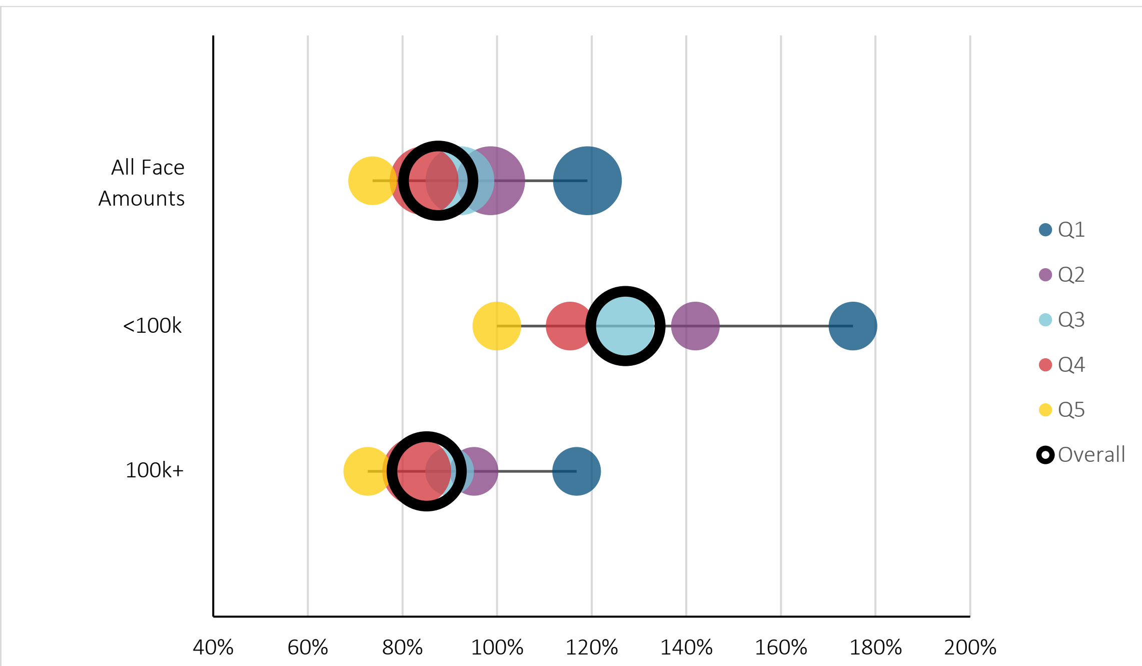


Table 3.6.1

FACE AMOUNT DEATH COUNTS

Face Amount	Q1	Q2	Q3	Q4	Q5	Overall
All Face Amounts	>100k	>100k	>100k	>100k	10k-100k	>100k
<100k	10k-100k	10k-100k	>100k	10k-100k	10k-100k	>100k
100k+	10k-100k	10k-100k	10k-100k	>100k	10k-100k	>100k

Section 4: Reliance and Limitations

No assessment has been made concerning the applicability of this experience to other purposes. In developing this report, the SOA relied upon data and information supplied by company contributors via MIB, as the Statistical Agent for VM51. For each contributor this information includes, but is not limited to, the data submission for mortality experience and the responses to follow-up questions.

The results in this report are technical in nature and are dependent on certain assumptions and methods. No party should rely upon these results without a thorough understanding of those assumptions and methods. Such an understanding may require consultation with qualified professionals. This report should be distributed and reviewed only in its entirety.

Section 5: Acknowledgments

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References

2015 Valuation Basic Report and Tables (https://www.soa.org/resources/experience-studies/2015/2015-valuation-basic-tables)

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