SOCIETY OF ACTUARIES

Mortality and Longevity

Group Life COVID-19 Mortality Survey

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Group Life COVID-19 Mortality Survey

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Preface: Substantive Revisions Made to this Report Subsequent to 12/17/2020 Release

February 2021 Update

Table 7.4 (found in subsection 7.3) has a column entitled “% Count” that had incorrect values in the original publication. The values in this column have now been corrected.

A clarifying bullet has been added to the list at the beginning of Section 7 to explain what is represented by the “% COVID” columns in the ensuing tables.

Section 1: Purpose of the Survey

The purpose of this survey is to gather a high-level view of U.S. Group Term Life Insurance mortality results during the COVID-19 pandemic, as compared to prior period baseline mortality results. COVID-19 is caused by the "novel coronavirus" named "SARS-CoV-2," which was identified in 2019. As of the writing of this document, complications from COVID-19 have killed over 305,000 people in the United States alone, and over 1.6 million worldwide.

The survey has been conducted by the Group Life Experience Committee ("the Committee") of the Society of Actuaries and has been structured as a recurring monthly data collection and compilation process from U.S. Group Term Life insurers. The datasets for this report encompass all Group Term Life claims for the calendar years 2017-2020 reported to participating carriers as of August 31, 2020. The survey data include over 1.4 million claims and over $70 billion in earned premium. The Committee is grateful that 20 of the top 21 U.S. Group Term Life insurers are participating in this survey, with market share representing roughly 90% of the industry. Thus, the Committee believes the findings herein are representative of the COVID-19 mortality impact on the U.S. Group Term Life industry as a whole.

Guiding principles for the survey include the following:

- Providing timely information on total high-level Group Life mortality results versus baseline expectations during the pandemic is the most important goal. Thus, the survey is not a seriatim mortality study. Rather, it is a synopsis of monthly Group Life exposures, death counts and amounts.
- It's critical for this survey to compare current Group Life mortality from all causes of death to the baseline expected all-cause mortality levels. The Committee recognizes there are limitations in the ability to code deaths as COVID-19 related, within both the general population and Group Life exposures. Thus, tracking just Group Life deaths coded with a cause of COVID-19 may not accurately measure the total impact of the pandemic.
- The Committee asked carriers to provide segmentation data when feasible. However, the Committee did not want the additional detailed data request to become so onerous that it materially delayed the survey reporting process or shrunk the number of carriers willing and able to participate. Thus, the survey includes high-level exposure and claims data for all 20 carriers, but much of the segmentation data is based on results for just subsets of carriers.

Section 2: Overview

2.1 BACKGROUND

Carriers have provided a complete set of monthly Group Life exposures dating back to January 2017, along with all Group Life death claims reported in January 2017 or later. The reported death claims also identified the months of death, i.e., incurred months.

Exposures and deaths during the three-year period of 2017-2019 were used to set baseline mortality expectations. The dataset for this report encompasses all Group Life claims reported to participating carriers as of August 31, 2020. Reported claims are easier to measure than incurred claims, but they do not tell the full story about Group Life mortality through August, since the reported claims in a given month include deaths from prior periods. Therefore, claim reporting patterns from prior periods have been analyzed to develop completion factors, which are used to estimate incurred but not yet reported (IBNR) claims for each month. This enabled the Committee to estimate incurred claims for each month up through August 2020. Note that estimated incurred claims for August and other recent months are still subject to change in the future as more claims are revealed. For example, estimated incurred August claims in this report are less than 35% complete, while April 2020 incurrals are roughly 93% complete.

2.2 SCOPE

The following specifications were used to define claims and exposures within the survey:

- Include Group Term Life only. Exclude Group Whole Life; GUL; COLI; 10- or 20-year Group Term, etc.
- Include both list billed and self-administered business.
- Include employee, spouse and child exposures and deaths.
- Include both active and retired lives and claims.
- Include death benefits only; exclude riders, interest payments and claims expenses.
- Include only the life insurance benefit for accidental deaths; exclude any additional AD&D rider amounts.
- Exclude Waiver of Premium disabilities but include deaths from persons on Waiver of Premium status.
- Portability and Conversion exposures and claims may be either included or excluded based on each company's internal reporting procedures.

2.3 SURVEY HIGHLIGHTS

Tables 2.1 through 2.4[1] display high-level incidence results for 2020 compared to the 2017-2019 baseline period for each combination of a) incurred/reported basis and b) count/amount basis through August 2020. In these tables, the number of COVID-19 claims has not been adjusted for seasonality, but the ratios to baseline have been adjusted for seasonality. Note that the Q3 2020 numbers include July and August 2020 only.

Table 2.1
COUNT-BASED INCURRED INCIDENCE RESULTS RELATIVE TO 2017-2019 BASELINE PERIOD

	Q1 2020	Q2 2020	Q3 2020	Q2 & Q3 2020
Total / Baseline	96.9%	113.5%	111.9%	112.9%
COVID-19 Claims	1,154	11,694	5,046	16,740
COVID / Baseline	1.0%	11.0%	7.3%	9.5%
Non-COVID / Baseline	95.9%	102.6%	104.6%	103.4%

Table 2.2
AMOUNT-BASED INCURRED INCIDENCE RESULTS RELATIVE TO 2017-2019 BASELINE PERIOD

	Q1 2020	Q2 2020	Q3 2020	Q2 & Q3 2020
Total / Baseline	100.1%	120.1%	129.3%	123.8%
COVID-19 Claim Amount	$53,001 K	$427,357 K	$235,110 K	$662,466 K[2]
COVID / Baseline	1.3%	11.0%	9.3%	10.4%
Non-COVID / Baseline	98.9%	109.1%	120.0%	113.4%

Table 2.3
COUNT-BASED REPORTED INCIDENCE RESULTS RELATIVE TO 2017-2019 BASELINE PERIOD

	Q1 2020	Q2 2020	Q3 2020	Q2 & Q3 2020
Total / Baseline	94.0%	107.9%	109.5%	108.5%
COVID-19 Claims	132	9,534	4,979	14,513
COVID / Baseline	0.1%	8.5%	6.9%	7.9%
Non-COVID / Baseline	93.9%	99.4%	102.6%	100.6%

Table 2.4
AMOUNT-BASED REPORTED INCIDENCE RESULTS RELATIVE TO 2017-2019 BASELINE PERIOD

	Q1 2020	Q2 2020	Q3 2020	Q2 & Q3 2020
Total / Baseline	101.0%	118.3%	122.8%	120.1%
COVID-19 Claim Amount	$8,895 K	$365,101 K	$198,922 K	$564,023 K
COVID / Baseline	0.2%	9.7%	8.2%	9.1%
Non-COVID / Baseline	100.8%	108.6%	114.6%	111.0%

Group Life carriers generally started receiving a small number of COVID-19 death claims during the month of March 2020, but April was the first month in which the Group Life industry saw a material number of reported COVID-19 death claims. This drove April Group Life reported incidence to be measurably larger than baseline expected reported incidence. Reported incidence has remained higher than baseline, especially in the months of April, June and July.

[1] A small number of COVID-19 claims received were dated prior to 2020. The Committee assumes these dates are data errors. As they were not assigned to a particular date in 2020, these claims are excluded from Tables 2.1 – 2.4. They are, however, included in the total COVID claims that appear in Section 7.
[2] The claims from all causes for the period April 2020 through August 2020 represented $1,684,000,000 over the average of the totals from the corresponding months in the 2017-2019 baseline period.

From an incurred mortality viewpoint, each of the months April – August have shown excess mortality versus baseline expectations. April 2020 was far and away the highest incurred mortality spike, with actual incurred mortality 26% above baseline.

The five-month period of April through August 2020 has shown the following Group Life mortality results:

- Estimated reported Group Life claim incidence rates were up 8.5% compared to 2017-2019 reported claims for the same five-month timeframes.

- Estimated incurred Group Life incidence rates were 12.9% higher than baseline on a seasonally adjusted basis. The July and August incurred incidence rates are based on fairly incomplete data, so they are subject to change and should not be fully relied upon at this point.

Additional highlights include:

- Approximately 8% of all reported Group Life claims with death dates in April-August 2020 were determined to have a cause of death of COVID-19.

- The Blue Collar group has seen the smallest increase in mortality compared to the 2017-2019 baseline period, ranging between 3% and 10% higher on a month-to-month basis. White Collar and Grey Collar mortality have generally ranged from 10% to 30% higher than the baseline period from month to month.

- Group Life mortality patterns by region have evolved over time during the COVID-19 pandemic. During July and August, the Southeast region of the United States was experiencing the highest percentage increase in mortality compared to its baseline level of any U.S. region.

- Relative to prior years, the Group Life insured population studied within this survey experienced a smaller percentage increase in deaths than the U.S. population as a whole. The percentage of excess deaths in the Group Life survey data was observed to be 50% - 70% of the percentage of excess deaths in the U.S. population.

Section 3: Survey Methodology and Documentation

3.1 DOCUMENTATION

Participating companies provided both claims and exposure data on a monthly basis. The initial data request can be found in Appendix A. For claims information, the following fields were requested:

- Incurred Month
- Reported Month
- Product Type
- Cause of Death
- Number of Claims
- Total Claim Amount Covered/Paid

For exposure information, the following fields were requested:

- Exposure Month
- Product Type
- Exposed Premium
- Number of Inforce Lives

In addition to the above "core" request, participants were also optionally asked to provide the above information split by state, age/gender grouping, and industry (two-digit SIC code). The lone exception is that Reported Month was not requested for the claims portion of these three more granular cuts of the data.

Below is a summary of the key processing assumptions and decisions for each of these fields.

Claims – Incurred Month

Incurred Months were generally used as provided without adjustment. The primary exception was that data with an Incurred Month after the as-of-date were excluded. For example, for the August 2020 data submissions, claims with an Incurred Month of September 2020 were excluded.

Claims – Reported Month

Claims with a Reported Month prior to the Incurred Month were adjusted by setting the Reported Month equal to the Incurred Month.

Claims – Product Type

Carriers were asked to provide data with one of three Product Types: Employee Basic, Employee Sup/Vol, and Retiree Life. All alternative codes received for the Product Type field were sent as data questions to carriers and ultimately mapped to one of these three principal product types. Notably, dependent claims were mapped to one of the two employee types, depending on the code received.

Claims – Cause of Death

Contributors were asked to identify claims as due to COVID, Accident, All-Other Non-Accident (Illness), or Unknown.

Claims – Number of Claims and Total Claim Amount Covered/Paid

Claims by Reported Date were processed as-is without adjustment. However, on an incurred basis, the claims needed to be adjusted with completion factors as described in subsection 3.2.2 below; otherwise, the incidence rates in recent periods would be understated.

Exposure – Exposure Month and Product Type

Processing for these fields was analogous to the corresponding claims fields.

Exposure – Exposed Premium

The proximity of the survey request to the reporting dates of the data requested presented some challenges in the monthly collection process as recent exposure data may be unavailable. For example, one carrier indicated that their premium information for August 2020 was incomplete; therefore, the average premiums for January through July 2020 were imputed for August for this carrier.

Exposure – Number of Inforce Lives

Not all carriers provided the Number of Inforce Lives. For these carriers, this field was imputed using the average premium per life (PPL) from carriers that supplied both premiums and lives. A separate PPL was calculated for each year and product type, and the missing Number of Inforce Lives was populated by dividing the provided premium by the PPL appropriate to the year and product type for which the premium was earned. The committee acknowledges that PPL varies by company and that the exposure completion methodology may result in an aggregate incidence rate that differs materially from actual level of incidence but does not expect that it distorted the trends monitored in this study.

Segment Information – State Code

State codes that did not match a listing of valid U.S. state, U.S. overseas territory, or Canadian province codes were sent as data questions to the contributors. Some records with indeterminate codes after this questioning process were mapped to an “unknown” category.

Segment Information – Age and Gender

Companies provided age information according to the following categories: 0-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, and 85+. These age groupings were then lumped into the following broader groupings: 0-44, 45-64, and 65+. Gender information was collected as male, female and unknown.

Segment Information – Industry

For the Industry field, contributors were asked to provide two-digit SIC codes. Codes that did not match a list of valid two-digit SIC codes were sent as data questions to the contributor for resolution. Some records with indeterminate codes after this questioning process were mapped to an “Unknown” category.

3.2 RESULTS PROCESSING AND REVIEW

3.2.1 DAMPENING OF EXPERIENCE

For the Employee Basic and Employee Sup/Vol product types, all 20 carriers were able to provide data and no carrier had more than 27% of the total exposure. Thus, no dampening was needed for these two product types. However, for Retiree Life, there were only five carriers that separately identified exposure and claim experience[3], and one carrier had the majority of Retiree Life exposure. Dampening factors were applied to this carrier's exposure and claims, and factors greater than one were applied to the other four carriers so that the total Retiree Life exposures matched the original submissions after application of the factors. After the dampening process, no carrier's data represented more than 40% of the total.

3.2.2 COMPLETION OF CLAIMS

A table of claim counts by Incurred Month and Reported Month was compiled to develop completion factors. Month-to-month completion factors were estimated using the accumulated totals for a particular incurred month in consecutive reported months. It was observed that there was some seasonal variation in the completion factors, so adjustments to the factors for calendar month were incorporated.

The total completion factors were computed by cumulatively applying the month-to-month completion factors to all subsequent months. For example, the total completion factor for a claim in month zero is the factor for month zero to one, times the factor for month one to two, times the factor for month two to three, and so forth. In total, 36 months of completion were used.

3.2.3 ADJUSTMENT FOR MISSING REPORTED MONTH

Approximately 4% of the submitted claims were missing a Reported Month. This necessitated an adjustment to the incidence rates such that the incurred and reported incidence rates were similar. This adjustment was performed by considering the fraction of claims each year by product type that were missing a Reported Month and multiplying the exposure for each product type by its respective fraction before calculating an incidence rate.

3.2.4 BROADER CLASSIFICATION OF SEGMENT INFORMATION

For credibility and confidentiality reasons, the industry codes and state codes were grouped into broader segments for analysis. State codes were mapped to one of 11 divisions, with the New England division being split into northern and southern portions. The state codes were also mapped to four broader U.S. regions (Northeast, Midwest, Southeast, West), with Canada, overseas territory, and unknown codes grouped into a fifth "Other" region.

The two-digit SIC codes were organized into 23 different groupings and then more broadly into one of four codes for collar color (White, Grey, Blue, Unknown).

A table showing the details of these mappings can be found in Appendix B.

3.2.5 UNKNOWN CLAIM DIAGNOSIS

The Unknown claim diagnosis category is artificially large for June through August 2020. This is primarily due to the newness of these claims. As claims data has been collected and refreshed each month, it has been observed that

[3] The majority of carriers included Retiree Life experience with Employee Basic or Employee Sup/Vol and did not split it out separately, see subsection 9.5.

the concentration of claims with an unknown Cause of Death decreases as the number of months between the original reporting date and the data collection date increases.

3.2.6 COVID-19 CLAIMS FROM 2019 AND 2018

The data show a handful of COVID-19 claims with dates of death in 2019 or 2018. The Committee believes that these are coding errors where incorrect cause of death codes were supplied. These claims remain in the data as submitted without adjustment.

3.2.7 GROUPINGS BY COMPANY SIZE

To review results by company size (see subsection 7.6), contributors were split into three groups based on premium amounts from 2019. The Small group consists of companies with less than $300 million in 2019 premiums, the Medium group consists of companies with between $300 million and $1 billion, and the Large group consists of companies with over $1 billion. The breakpoints were chosen to ensure that there were at least six companies in each group. The Small group contains six companies, while the Medium and Large groups contain seven companies each.

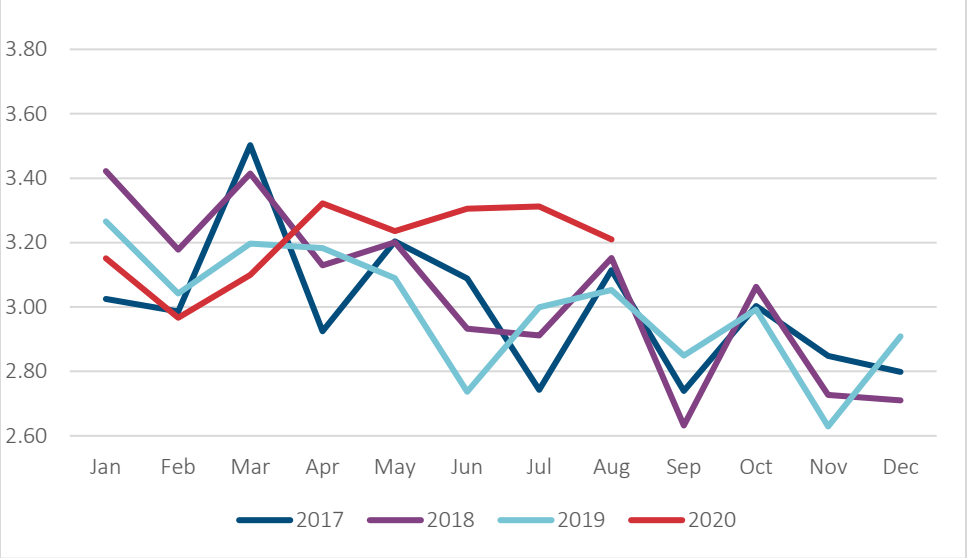
Section 4: Group Life Mortality Results – Reported Death Claims

4.1 REPORTED CLAIM INCIDENCE BY COUNT – ALL CAUSES

Excess reported-basis mortality was observed in April through August 2020.

a. Reported overall Group Life claim incidence rates by count during April through August of 2020, as shown in Figure 4.1, were up roughly 8.5% compared to 2017-2019 reported claims. Reported claims are easier to measure than incurred, but they do not provide definitive information about experience in the most recent several months since they include deaths from prior periods.
b. As additional context, the Committee noted that the following percentages of reported claims were incurred after March 2020:
    i. August 2020 – 94%
    ii. July 2020 – 91%
    iii. June 2020 – 84%
    iv. May 2020 – 72%

Figure 4.1
AGGREGATE REPORTED[4] CLAIM INCIDENCE PER 1000 BY CALENDAR YEAR AND MONTH



[4] About 4% of survey claim data did not have a report date, resulting in a lower 2017-2019 reported incidence level compared to incurred incidence.

4.2 REPORTED CLAIM INCIDENCE BY COUNT – COVID-19 VERSUS ALL OTHER CAUSES

A total of 14,645 COVID-19 claims were reported through August 2020. However, the table below shows that COVID-19 claims do not fully explain the increase in reported claim incidence.

Table 4.1

2020 REPORTED EXCESS MORTALITY[5] BY CLAIM COUNT COMPARED TO 2017-2019 BASELINE

	Claim Counts	Seasonally Adjusted
Q3 2020 (through August)		
All Claims	8.3%	9.5%
Attributable to COVID	6.8%	6.9%
Not Attributable to COVID	1.5%	2.6%
Q2 2020		
All Claims	9.2%	7.9%
Attributable to COVID	8.7%	8.5%
Not Attributable to COVID	0.5%	-0.7%

Reported claim details by month are shown below, along with calculated monthly reported incidence rates.

Table 4.2

REPORTED CLAIMS AND INCIDENCE RATES, 2017-2020

	Raw Submitted Numbers			Calculated Amounts				
	Reported Claims		Premium (000)	Life Years Exposed (000)		Annual Incidence per 1,000	Adjusted for Seasonality	
Report Date	Total	COVID		By Month	Yrly Avg		Total	Total/Baseline
8/1/2020	39,130	2,411	1,684,587	12,136	12,190	3.21	3.13	103.8%
7/1/2020	40,379	2,568	1,655,512	11,912	12,190	3.31	3.47	115.2%
6/1/2020	40,289	2,953	1,710,067	12,097	12,190	3.30	3.41	113.4%
5/1/2020	39,448	3,757	1,741,781	12,391	12,190	3.24	3.09	102.4%
4/1/2020	40,494	2,825	1,698,682	12,059	12,190	3.32	3.25	107.8%
3/1/2020	37,781	130	1,705,770	12,181	12,190	3.10	2.78	92.2%
2/1/2020	36,165	0	1,733,259	12,539	12,190	2.97	2.82	93.6%
1/1/2020	38,408	2	1,697,711	12,207	12,190	3.15	2.90	96.2%
Baseline	**32,792**	**0**	**1,586,826**	**10,892**	**10,892**	**3.01**	**3.01**	**100.0%**
2019 Monthly	34,038	0	1,657,008	11,363	11,363	3.00	3.00	99.6%
2018 Monthly	32,748	0	1,577,864	10,775	10,775	3.04	3.04	100.8%
2017 Monthly	31,590	0	1,525,607	10,537	10,537	3.00	3.00	99.6%

[5] For the purposes of this report, "excess mortality" refers to the percentage change in incidence rates observed in 2020 compared to the 2017-2019 baseline period.

4.3 REPORTED CLAIM INCIDENCE BY AMOUNT – ALL CAUSES

Reported overall Group Life claim incidence rates by amount during April through August were up roughly 20% compared to 2017-2019 reported amounts. This increase in incidence rates by amount is notably higher than the corresponding incidence rate increase by count. The Committee estimated that roughly half the difference is due to changes in age and gender mix, and the remainder is likely due to salary and face amount inflation over the four-year period.

4.4 REPORTED CLAIM INCIDENCE BY AMOUNT – COVID-19 VERSUS ALL OTHER CAUSES

Table 4.3

2020 REPORTED EXCESS MORTALITY BY TOTAL CLAIM AMOUNT COMPARED TO 2017-2019 BASELINE

	Claim Amounts	Seasonally Adjusted
Q3 2020 (through August)		
All Claims	21.5%	22.8%
Attributable to COVID	8.1%	8.2%
Not Attributable to COVID	13.4%	14.6%
Q2 2020		
All Claims	20.0%	18.3%
Attributable to COVID	9.8%	9.7%
Not Attributable to COVID	10.1%	8.7%

Section 5: Completion Factor Development

5.1 BY CLAIM COUNT

Historic Group Life claim reporting patterns by claim count have been studied to develop completion factors, which were then used to translate reported claims through August 2020 by incurral month into estimated ultimate incurred claims for each month. The completion factors for this report are based on the total set of claims by all causes from all 20 participating carriers, with incurred dates of January 2017 or later and reported dates up through August 2020.

Claims were batched together into a claim triangle with incurred month on the horizontal axis and reported month on the vertical axis. Lag is defined as the number of months between when a death occurs and when the claim is reported to a carrier. Thus, a death that was both incurred and reported in August 2020 would have a lag of zero, while a death incurred in June 2020 but reported in August 2020 would have a lag of two, etc. A subset of the claim triangle is displayed below.

Table 5.1
2020 INCURRED CLAIMS BY INCURRED MONTH AND REPORTING LAG

	Incurred Month							
Months of Reporting Lag	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20
0	11887	10137	10932	13971	11276	10786	13014	12826
1	14647	14412	15443	16559	16158	14850	15686	
2	5822	4961	5713	6916	6109	5517		
3	2159	1867	2656	2785	2249			
4	1350	1242	1283	1386				
5	910	623	732					
6	559	374						
7	438							

Month-to-month completion factors were developed using the accumulated totals for a particular incurred month in consecutive reported months. Seasonal variations were observed during the first two months of lag, so adjustments to the factors for calendar month were incorporated. The total completion factors, as displayed in Table 5.2, were computed by cumulatively applying the month-to-month completion factors to all subsequent months.

Table 5.2
ESTIMATED COMPLETION FACTORS BY NUMBER OF MONTHS OF LAG AND CALENDAR MONTH

Lag	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	3.4170	3.6149	3.3028	3.3028	3.3028	3.3028	3.2051	2.9884	3.2051	3.1088	3.4170	3.8544
1	1.4808	1.4313	1.4313	1.4313	1.4313	1.4313	1.3890	1.4313	1.3890	1.4313	1.4808	1.4313
2	1.1752	1.1752	1.1752	1.1752	1.1752	1.1752	1.1752	1.1752	1.1752	1.1752	1.1752	1.1752
3	1.1015	1.1015	1.1015	1.1015	1.1015	1.1015	1.1015	1.1015	1.1015	1.1015	1.1015	1.1015
4	1.0697	1.0697	1.0697	1.0697	1.0697	1.0697	1.0697	1.0697	1.0697	1.0697	1.0697	1.0697
5	1.0530	1.0530	1.0530	1.0530	1.0530	1.0530	1.0530	1.0530	1.0530	1.0530	1.0530	1.0530
6	1.0430	1.0430	1.0430	1.0430	1.0430	1.0430	1.0430	1.0430	1.0430	1.0430	1.0430	1.0430
7	1.0363	1.0363	1.0363	1.0363	1.0363	1.0363	1.0363	1.0363	1.0363	1.0363	1.0363	1.0363
8	1.0314	1.0314	1.0314	1.0314	1.0314	1.0314	1.0314	1.0314	1.0314	1.0314	1.0314	1.0314
9	1.0277	1.0277	1.0277	1.0277	1.0277	1.0277	1.0277	1.0277	1.0277	1.0277	1.0277	1.0277
10	1.0248	1.0248	1.0248	1.0248	1.0248	1.0248	1.0248	1.0248	1.0248	1.0248	1.0248	1.0248
11	1.0221	1.0221	1.0221	1.0221	1.0221	1.0221	1.0221	1.0221	1.0221	1.0221	1.0221	1.0221
12	1.0197	1.0197	1.0197	1.0197	1.0197	1.0197	1.0197	1.0197	1.0197	1.0197	1.0197	1.0197
13	1.0177	1.0177	1.0177	1.0177	1.0177	1.0177	1.0177	1.0177	1.0177	1.0177	1.0177	1.0177
14	1.0162	1.0162	1.0162	1.0162	1.0162	1.0162	1.0162	1.0162	1.0162	1.0162	1.0162	1.0162
15	1.0148	1.0148	1.0148	1.0148	1.0148	1.0148	1.0148	1.0148	1.0148	1.0148	1.0148	1.0148
16	1.0136	1.0136	1.0136	1.0136	1.0136	1.0136	1.0136	1.0136	1.0136	1.0136	1.0136	1.0136
17	1.0126	1.0126	1.0126	1.0126	1.0126	1.0126	1.0126	1.0126	1.0126	1.0126	1.0126	1.0126
18	1.0116	1.0116	1.0116	1.0116	1.0116	1.0116	1.0116	1.0116	1.0116	1.0116	1.0116	1.0116
19	1.0107	1.0107	1.0107	1.0107	1.0107	1.0107	1.0107	1.0107	1.0107	1.0107	1.0107	1.0107
20	1.0098	1.0098	1.0098	1.0098	1.0098	1.0098	1.0098	1.0098	1.0098	1.0098	1.0098	1.0098
21	1.0090	1.0090	1.0090	1.0090	1.0090	1.0090	1.0090	1.0090	1.0090	1.0090	1.0090	1.0090
22	1.0083	1.0083	1.0083	1.0083	1.0083	1.0083	1.0083	1.0083	1.0083	1.0083	1.0083	1.0083
23	1.0076	1.0076	1.0076	1.0076	1.0076	1.0076	1.0076	1.0076	1.0076	1.0076	1.0076	1.0076
24	1.0069	1.0069	1.0069	1.0069	1.0069	1.0069	1.0069	1.0069	1.0069	1.0069	1.0069	1.0069
25	1.0062	1.0062	1.0062	1.0062	1.0062	1.0062	1.0062	1.0062	1.0062	1.0062	1.0062	1.0062
26	1.0056	1.0056	1.0056	1.0056	1.0056	1.0056	1.0056	1.0056	1.0056	1.0056	1.0056	1.0056
27	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051
28	1.0046	1.0046	1.0046	1.0046	1.0046	1.0046	1.0046	1.0046	1.0046	1.0046	1.0046	1.0046
29	1.0042	1.0042	1.0042	1.0042	1.0042	1.0042	1.0042	1.0042	1.0042	1.0042	1.0042	1.0042
30	1.0038	1.0038	1.0038	1.0038	1.0038	1.0038	1.0038	1.0038	1.0038	1.0038	1.0038	1.0038
31	1.0033	1.0033	1.0033	1.0033	1.0033	1.0033	1.0033	1.0033	1.0033	1.0033	1.0033	1.0033
32	1.0030	1.0030	1.0030	1.0030	1.0030	1.0030	1.0030	1.0030	1.0030	1.0030	1.0030	1.0030
33	1.0025	1.0025	1.0025	1.0025	1.0025	1.0025	1.0025	1.0025	1.0025	1.0025	1.0025	1.0025
34	1.0022	1.0022	1.0022	1.0022	1.0022	1.0022	1.0022	1.0022	1.0022	1.0022	1.0022	1.0022
35	1.0006	1.0006	1.0006	1.0006	1.0006	1.0006	1.0006	1.0006	1.0006	1.0006	1.0006	1.0006

5.2 BY FACE AMOUNT

Our analysis has shown that larger face amount claims report faster than lower face amount claims. Thus, over time the average face amount for an incurral month decreases as claims continue to be reported in later months. For example, the average face amount of claims reported in the first month of an incurral period may be $40,000, but three years later it may be $36,000. This would imply an adjustment factor of 90% is needed to more accurately complete the total claim amounts.

The development of average claim amounts over time was studied from 2017 to 2019 for each month, and a set of factors were developed to adjust the projected claim amounts in future reports. Table 5.3 shows a summarized version of the proposed adjustment factors. These adjustment factors have not been incorporated into the completion factors used within this report, but the Committee may consider incorporating them in the future.

Table 5.3
AVERAGE CLAIM AMOUNT ADJUSTMENT FACTORS BY REPORTING LAG MONTH (ILLUSTRATIVE)

Reporting Lag Month	Adjustment to Average Size
0	86.0%
1	92.7%
2	95.8%
3	97.2%
10	99.1%
20	99.7%
35	100.0%

5.3 BY CAUSE OF DEATH

It is too early in the pandemic to accurately conclude whether Group Life deaths caused by COVID-19 are being reported more quickly or slowly than other claims. However, we have created separate lag and completion factors by cause of death to begin this analysis and provide an early indicator.

For deaths in April through July of 2020, it does appear that COVID-19 claims are being reported slightly faster than the entire set of claims (see Table 5.4 below). We will need to observe many more months of reported claims before determining whether this early indication of faster claim reporting is definitive.

Table 5.4
REPORTING LAG FOR DEATHS IN APRIL – JULY 2020

Lag Months	COVID	All Causes	COVID / All Causes
0	2.209	2.300	96.0%
1	1.205	1.221	98.6%
2	1.058	1.071	98.8%
3	1.022	1.034	98.8%
0-3	**2.876**	**3.112**	**92.4%**

5.4 BY CALENDAR YEAR

The Committee has observed a trend that Group Life claims may now be reporting slightly faster within the first two months than they were three years ago. This trend is illustrated with the cumulative month 0 to 2 completion factors shown in Table 5.5 below.

Table 5.5
CUMULATIVE INCURRAL COMPLETION FACTORS FOR THE FIRST TWO MONTHS BY INCURRAL YEAR

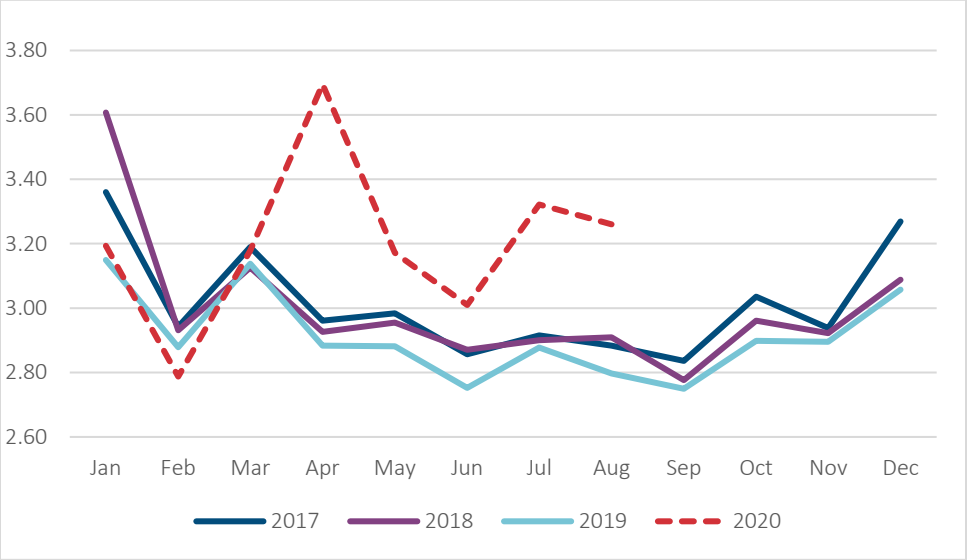
Incurral Year	Cumulative Incurral Completion Factor for Months 0-2	Percentage of Prior Year	Percentage of 3-Year Average
2017	3.023		102.4%
2018	2.925	96.7%	99.1%
2019	2.907	99.4%	98.5%
Average	2.951		

Section 6: Group Life Mortality Results – Estimated Incurred Death Claims

6.1 INCURRED CLAIM INCIDENCE BY COUNT – ALL CAUSES

A completed estimate of incurred incidence rates by count indicates that excess mortality for April through August 2020 was 12.9% higher than the baseline 2017-2019 incurred incidence on a seasonally-adjusted basis. This includes July and August incurred incidence rates, which currently indicate excess mortality of 10% to 15% as well, but **the July and August figures should not be fully relied upon at this point.** As described in subsection 5.3, there are some indications that COVID-19 deaths may be reported faster than other claims, which means the early incurred estimates may be overstated for COVID-19 claims.

Figure 6.1
AGGREGATE INCURRED[6] CLAIM INCIDENCE PER 1000 LIVES BY CALENDAR YEAR AND MONTH



[6] Adjusted for assumed completion.

6.2 INCURRED CLAIM INCIDENCE BY COUNT – COVID-19 VERSUS ALL OTHER CAUSES

Table 6.1 below shows that COVID-19 claims do not fully explain the increase in incurred claim incidence on a count basis.

Table 6.1
2020 INCURRED EXCESS MORTALITY BY CLAIM COUNT COMPARED TO 2017-2019 BASELINE

	Claim Counts	Seasonally Adjusted
Q3 2020 (through August)		
All Claims	8.3%	11.9%
Attributable to COVID	7.1%	7.3%
Not Attributable to COVID	1.3%	4.6%
Q2 2020		
All Claims	10.5%	13.5%
Attributable to COVID	10.8%	11.0%
Not Attributable to COVID	-0.2%	2.6%

Incurred claim details by month are shown below, along with calculated monthly incurred incidence rates. Roughly 10 COVID-19 claims have reported dates of death in 2019 or prior, which we expect are due to data errors.

Table 6.2
INCURRED CLAIMS AND INCIDENCE RATES, 2017-2020

	Raw Submitted Numbers			Calculated Amounts				
	Average Incurred Claim Counts		Average Premium ($ 000)	Average Life Years Exposed (000)	Average Completed Claim Counts	Annual Incidence per 1,000 (Lives Basis)	Adjusted for Seasonality	
Incurral Date	Total	COVID					Total	Total/Baseline
8/1/2020	12,881	714	1,684,587	12,136	37,988	3.13	3.25	109.2%
7/1/2020	28,533	2,129	1,655,512	11,912	39,534	3.32	3.41	114.7%
6/1/2020	30,993	1,510	1,710,067	12,097	36,383	3.01	3.17	106.6%
5/1/2020	35,655	3,097	1,741,781	12,391	39,262	3.17	3.21	107.9%
4/1/2020	41,631	6,088	1,698,682	12,059	44,524	3.69	3.76	126.3%
3/1/2020	36,745	1,039	1,705,770	12,181	38,688	3.18	3.01	101.1%
2/1/2020	33,494	11	1,733,259	12,539	34,932	2.79	2.75	92.3%
1/1/2020	37,600	46	1,697,711	12,207	38,964	3.19	2.90	97.6%
2017-19 Baseline	34,218	0	1,586,826	11,599	34,510	2.98	2.98	100.0%
2019 Monthly	34,141	1	1,657,008	11,934	34,772	2.91	2.91	98.0%
2018 Monthly	34,381	0	1,577,864	11,532	34,593	3.00	3.00	100.8%
2017 Monthly	34,130	0	1,525,607	11,331	34,167	3.02	3.02	101.3%

6.3 INCURRED CLAIM INCIDENCE BY AMOUNT – ALL CAUSES

Overall, seasonally-adjusted incurred Group Life claim incidence rates by amount during April through August were up roughly 25% compared to the 2017-2019 baseline period. This increase in incidence rates by amount is notably higher than the corresponding increase in incidence rates by count. The Committee has estimated that roughly half the difference is due to changes in age and gender mix, and the remainder is likely due to salary and face amount inflation over the experience period. Table 6.3 illustrates that average claim amounts have generally been increasing by calendar year for each product type over the last four years.

Table 6.3

AVERAGE CLAIM AMOUNTS ($) BY CALENDAR YEAR AND PRODUCT TYPE

Year	Employee Basic	Employee Sup/Vol	Retiree Life
2017	31,138	64,267	12,786
2018	31,560	66,227	12,744
2019	32,399	67,751	13,123
2020	33,489	70,822	14,232

6.4 INCURRED CLAIM INCIDENCE BY AMOUNT – COVID-19 VERSUS ALL OTHER CAUSES

Similar to Table 6.1, Table 6.4 below shows that COVID-19 claims do not fully explain the increase in incurred claim incidence on an amount basis.

Table 6.4

2020 INCURRED EXCESS MORTALITY BY TOTAL CLAIM AMOUNT COMPARED TO 2017-2019 BASELINE

	Claim Amounts	Seasonally Adjusted
Q3 2020 (through August)		
All Claims	25.3%	29.3%
Attributable to COVID	9.0%	9.3%
Not Attributable to COVID	16.3%	20.0%
Q2 2020		
All Claims	16.9%	20.1%
Attributable to COVID	10.8%	11.0%
Not Attributable to COVID	6.1%	9.1%

Section 7: Estimated Incurred Mortality Results by Segment

Analysis of results by segment will focus on claim count experience for simplicity and credibility. In general, results by claim amount appear to follow the same patterns as results by count.

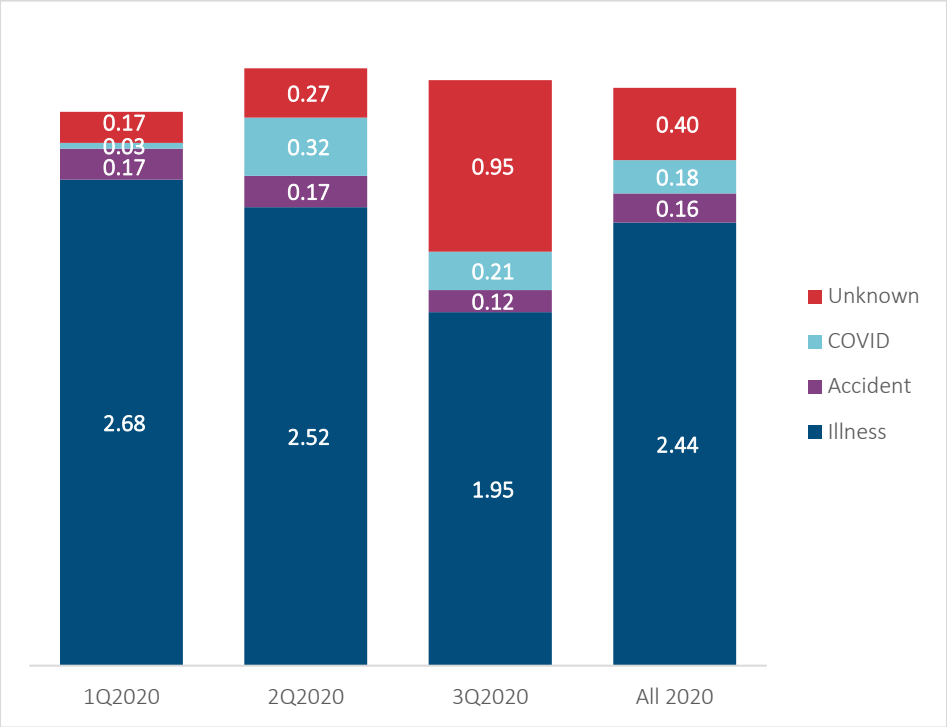
The following notes apply to the data presented in the subsections below:

- Claims and actual-to-expected (A/E) ratios are presented on an incurred basis. The "expected" basis is the 2017-2019 baseline period.
- While most companies were able to provide segment detail, some did not. Results by Product and Company Size reflect all companies, with the recognition that only five companies supplied separate Retiree Life data, while the other 15 included it within Employee Basic or Employee Sup/Vol. Results for Geography and Industry reflect approximately 98% or more of total company claims, while results by Age & Gender reflect approximately 90% of total company claims. The total claim counts and A/E ratios in each subsection include only the data from companies that produced the breakout being analyzed. For example, the "All" row in the table in subsection 7.2 includes only data from companies that were able to supply claims data by Industry.
- The "% COVID" column in the tables below show the monthly average COVID claims as a percentage of the average total monthly claims from the 2017-2019 baseline period.
- The "% Count" column in the tables below shows the proportion of Baseline claims in each segment. For some segments, there were claims with "Unknown" segmentation value. The Unknowns and their ratios were omitted from subsequent tables, as they tended to account for a small percent of the total.
- Data shown for "Q3 2020" includes July 2020 and August 2020 only.

7.1 CAUSE OF DEATH

Cause of death is difficult to study, as there is a significant delay in assignment of this parameter. In Q3 2020, for example, an incidence rate of 0.95 (approximately 30% of Q3 incidence) is still attributable to Unknowns as of August 31, 2020, which is comprised of both reported claims without diagnosis and unreported claims. Even so, COVID incidence rates are already higher in Q2 than Q1, while Accident incidence is constant. Q3 COVID incidence is also higher than Q1, but the relationship to Q2 is inconclusive due to the magnitude of Unknowns.

Figure 7.1
2020 INCURRED INCIDENCE RATES PER 1000 LIVES BY CAUSE OF DEATH



7.2 INDUSTRY

Relative to baseline, the Blue Collar industry category has lower A/E ratios than the Grey and White Collar categories. While second quarter 2020 shows a spike for all industries, White Collar industries spiked much more than Blue or Grey. White and Grey Collar A/E ratios continue to be high in third quarter. The percentage of claims identified as COVID generally follows the pattern of A/E ratios by collar segment.

Table 7.1
2020 EXCESS MORTALITY BY INDUSTRY COLLAR

Collar	All 2020	Q1 2020	Q2 2020	Q3 2020	% COVID	% Count
Blue	102%	95%	107%	104%	6.1%	40%
Grey	106%	93%	111%	120%	6.2%	19%
White	117%	105%	126%	118%	7.4%	37%
All[7]	**107%**	**97%**	**114%**	**112%**	**6.5%**	**100%**

Table 7.2 shows more detailed industry results for the top 10 industry segments by COVID claims. Drivers of higher than average A/E ratios include Public Administration, Wholesale & Retail Trade, Educational Services, and Social Services. Most of these industries had a significant spike in April / May. Some of the industries with more favorable A/E ratios include Heavy/Steel Manufacturing, Textiles, Paper Manufacturing, Data Processing, Engineering, and Museums. In the table below, "B," "W," and "G" indicate Blue Collar, White Collar, and Grey Collar, respectively.

Table 7.2
2020 EXCESS MORTALITY FOR TOP 10 INDUSTRIES BY NUMBER OF COVID CLAIMS

Industry	All 2020	Q1 2020	Q2 2020	Q3 2020	% COVID	% Count	# COVID
B-Transport; Communication; Utilities	105%	99%	112%	104%	6.4%	13%	2,228
W-Public Administration	142%	130%	151%	146%	7.3%	10%	2,004
B-Manufacturing - Auto, Airplanes, ….	109%	100%	111%	121%	6.2%	9%	1,537
W-Doctors' Offices	112%	97%	123%	118%	9.7%	6%	1,500
B-Manufacturing - Heavy; Steel;	90%	88%	97%	84%	4.5%	10%	1,177
W-Educational Services	116%	104%	123%	124%	7.1%	6%	1,174
G-Wholesale Trade	120%	100%	122%	146%	7.2%	5%	996
W-Insurance; Other Finance	107%	95%	121%	104%	6.9%	4%	755
G-Manufacturing - Paper; Drugs	101%	92%	105%	108%	5.1%	5%	737
B-Manufacturing - Food	109%	93%	124%	109%	12.2%	2%	726
All Segments[8]	**107%**	**97%**	**114%**	**112%**	**6.5%**	**100%**	**17,557**

It should be noted that the high A/E ratios for Public Administration are driven by experience in the Executive, Legislative, and General Government segment (SIC codes 9100-9199). This segment does not include police and fire and represents over 85% of claims in the broader Public Administration segment.

[7] Includes only companies that provided Industry splits; see second bullet at the beginning of Section 7.
[8] Includes only companies that provided Industry splits; see second bullet at the beginning of Section 7.

7.3 GEOGRAPHY

Experience has certainly varied by broad geographic region. The Northeast has seen the highest A/E ratios and the highest percentage of claims identified as COVID. The Q2 2020 spike is largely driven by the month of April. Northeast ratios appear to be back to baseline levels in Q3 2020. Ratios in the Southeast have spiked in Q3 2020, while ratios in the West and Midwest, while higher than baseline, have held steady in both Q2 and Q3 2020.

Table 7.3
2020 EXCESS MORTALITY BY GEOGRAPHIC REGION

Region	All 2020	Q1 2020	Q2 2020	Q3 2020	% COVID	% Count
Northeast	119%	108%	142%	100%	10.0%	20%
West	103%	99%	106%	105%	5.0%	15%
Midwest	110%	101%	118%	113%	5.7%	26%
Southeast	113%	100%	112%	132%	6.7%	33%
All[9]	**107%**	**97%**	**114%**	**112%**	**6.5%**	**100%**

A closer look at the states with the highest number of COVID claims (Table 7.4) shows results that are not surprising. Q2 2020 saw very high A/E ratios for several states in the Northeast (NY, NJ, MA), along with higher-than-average COVID percentages. The ratios for many of these states decreased significantly in Q3 2020. Several states in the Southeast region are driving the third quarter spike (TX, FL, GA).

Table 7.4
2020 EXCESS MORTALITY FOR TOP 10 STATES BY NUMBER OF COVID CLAIMS

State	All 2020	Q1 2020	Q2 2020	Q3 2020	% COVID	% Count	# COVID
TX-Southeast	113%	96%	110%	142%	7.9%	8%	1,722
NY-Northeast	127%	110%	159%	105%	13.3%	5%	1,660
MI-Midwest	122%	108%	135%	122%	10.6%	5%	1,603
NJ-Northeast	131%	107%	178%	97%	19.4%	2%	1,102
FL-Southeast	112%	101%	109%	133%	6.5%	6%	1,016
IL-Midwest	110%	100%	119%	110%	6.7%	5%	859
GA-Southeast	127%	114%	124%	150%	8.7%	3%	785
CA-West	100%	102%	102%	93%	4.7%	6%	784
PA-Northeast	108%	105%	119%	96%	5.5%	5%	731
MA-Northeast	112%	108%	142%	70%	10.8%	2%	663
All States[10]	**107%**	**97%**	**114%**	**112%**	**6.5%**	**100%**	**17,889**

[9] Includes only companies that provided Geography splits; see second bullet at the beginning of Section 7.
[10] Includes only companies that provided Geography splits; see second bullet at the beginning of Section 7.

7.4 AGE AND GENDER

Somewhat surprisingly, A/E ratios are lowest for the 65-99 age band. Aside from a moderate increase in Q2 2020, results tend to hover around expected. Note this age band includes Retiree Life. The 0-44 and 45-64 age bands appear to have worsening ratios and are highest in Q3 2020.

Table 7.5
2020 EXCESS MORTALITY BY AGE BAND

Age Band	All 2020	Q1 2020	Q2 2020	Q3 2020	% COVID	% Count
0-44	113%	99%	119%	127%	4.6%	8%
45-64	115%	99%	121%	129%	7.9%	28%
65-99	103%	97%	110%	101%	5.9%	63%
All[11]	**107%**	**97%**	**114%**	**111%**	**6.4%**	**100%**

By gender, A/E ratios do not vary significantly, though ratios for Males are consistently higher than Females.

Table 7.6
2020 EXCESS MORTALITY BY GENDER

Gender	All 2020	Q1 2020	Q2 2020	Q3 2020	% COVID	% Count
Female	104%	96%	111%	107%	5.9%	32%
Male	107%	97%	115%	111%	6.6%	66%
All[12]	**107%**	**97%**	**114%**	**111%**	**6.4%**	**100%**

7.5 PRODUCT

Both A/E ratios for 2020 and COVID % are lowest for Retiree Life, with the limitation that only five companies supplied separately identified Retiree Life data. Employee Sup/Vol ratios were slightly higher than Employee Basic, though they show a spike in the third quarter. Note that Employee Basic also includes Retiree Life for most carriers, so an additional category is shown in Table 7.7 combining the two. Results for the combined Employee Basic & Retiree Life category are very consistent with the Basic category.

Table 7.7
2020 EXCESS MORTALITY BY PRODUCT

Product	All 2020	Q1 2020	Q2 2020	Q3 2020	% COVID	% Count
Basic	107%	97%	115%	110%	6.9%	66%
Sup/Vol	110%	97%	113%	124%	6.4%	21%
Retiree	102%	94%	108%	104%	4.5%	13%
Basic & Retiree	106%	97%	114%	109%	6.5%	79%
All	**107%**	**97%**	**114%**	**112%**	**6.5%**	**100%**

[11] Includes only companies that provided age splits; see second bullet at the beginning of Section 7.
[12] Includes only companies that provided gender splits; see second bullet at the beginning of Section 7.

A closer look at the third quarter spike in Employee Sup/Vol shows that this trend may be driven by a greater proportion of exposures in the Southeast region as well as more in the 45-64 age band compared to Employee Basic.

7.6 COMPANY SIZE

Contributing companies were assigned a size indicator of Large, Medium, or Small per the criteria described in subsection 3.2.7. For 2020 YTD, A/E ratios to baseline differ slightly, but with no clear pattern. Ratios for the Small companies do appear to be increasing. A closer look shows that this trend, in part, could be driven by a disproportionate amount of activity in the Southeast region.

Table 7.8
2020 EXCESS MORTALITY BY COMPANY SIZE

Co Size	All 2020	Q1 2020	Q2 2020	Q3 2020	% COVID	% Count
Large	106%	96%	112%	111%	6.3%	78%
Medium	110%	100%	119%	112%	6.8%	16%
Small	109%	97%	113%	121%	7.9%	5%
All	107%	97%	114%	112%	6.5%	100%

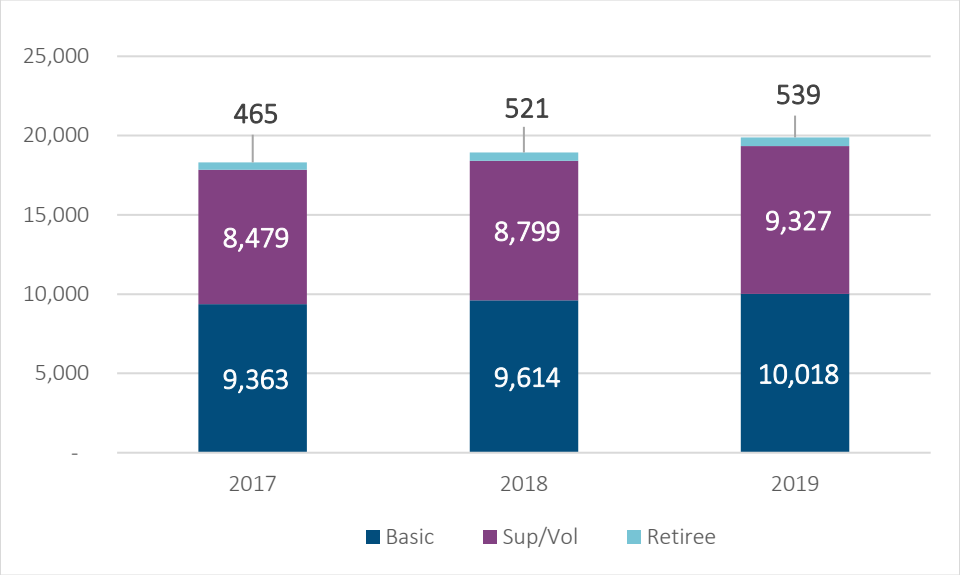
Section 8: Exposure Trends

8.1 PREMIUMS

As part of the data validation process, the Committee analyzed the premiums submitted by carriers for this study. Consistency in the premiums reported during the experience period would indicate that the premiums provide a reasonable basis for calculating PPL metrics and estimating lives for carriers that could not provide data for covered lives.

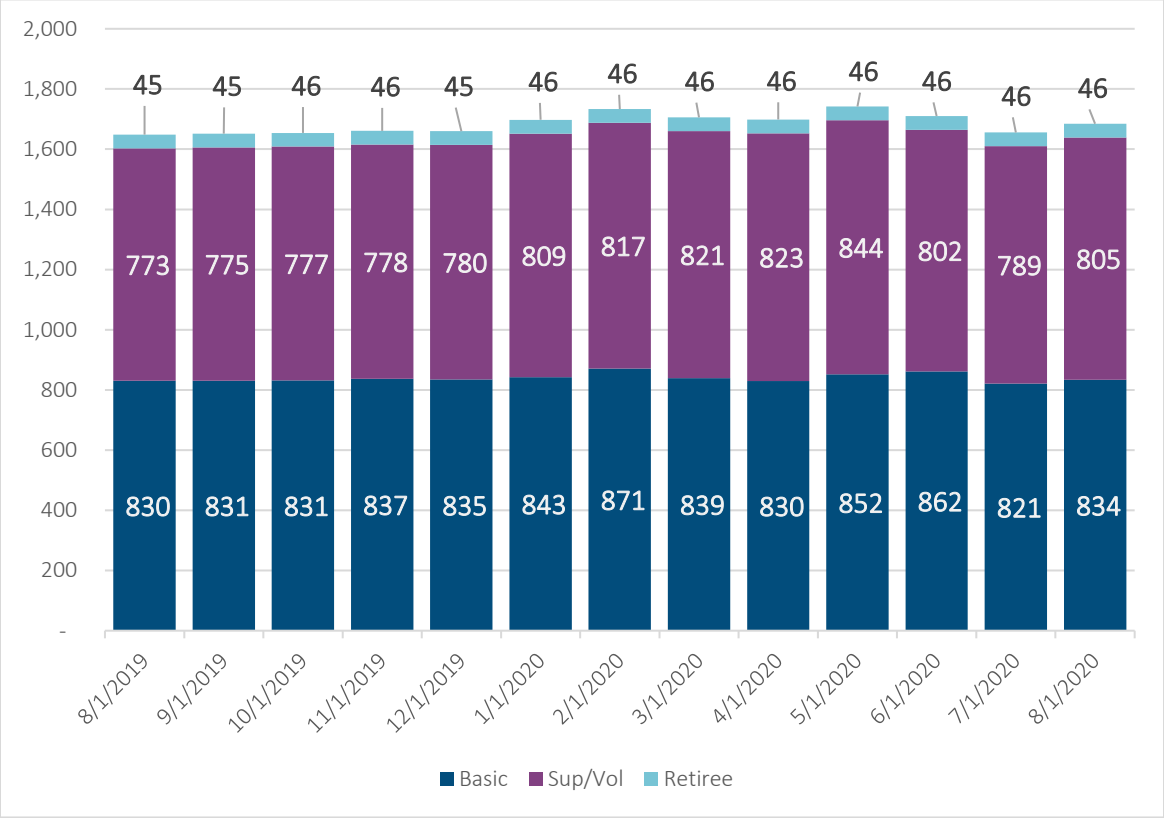
The Committee noticed an increasing trend in the premiums reported for Employee Basic, Employee Sup/Vol, and Retiree Life from 2017 through 2019, as shown below.

Figure 8.1
REPORTED PREMIUM ($ MILLIONS) BY YEAR AND PRODUCT TYPE, 2017-2019



The Committee also compared the monthly premiums reported from August 2019 through August 2020 to ensure that 2020 premiums were in line with historical amounts. Although the monthly premiums were slightly more volatile in 2020 than in 2019, the levels appear consistent with prior periods.

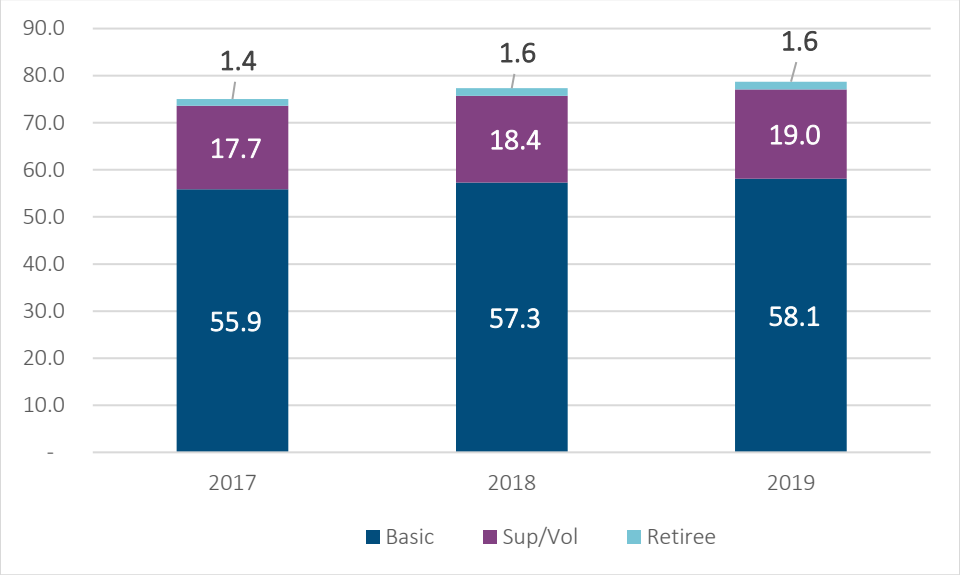
Figure 8.2
REPORTED PREMIUM ($ MILLIONS) BY MONTH AND PRODUCT TYPE, AUGUST 2019 THROUGH AUGUST 2020



8.2 LIVES

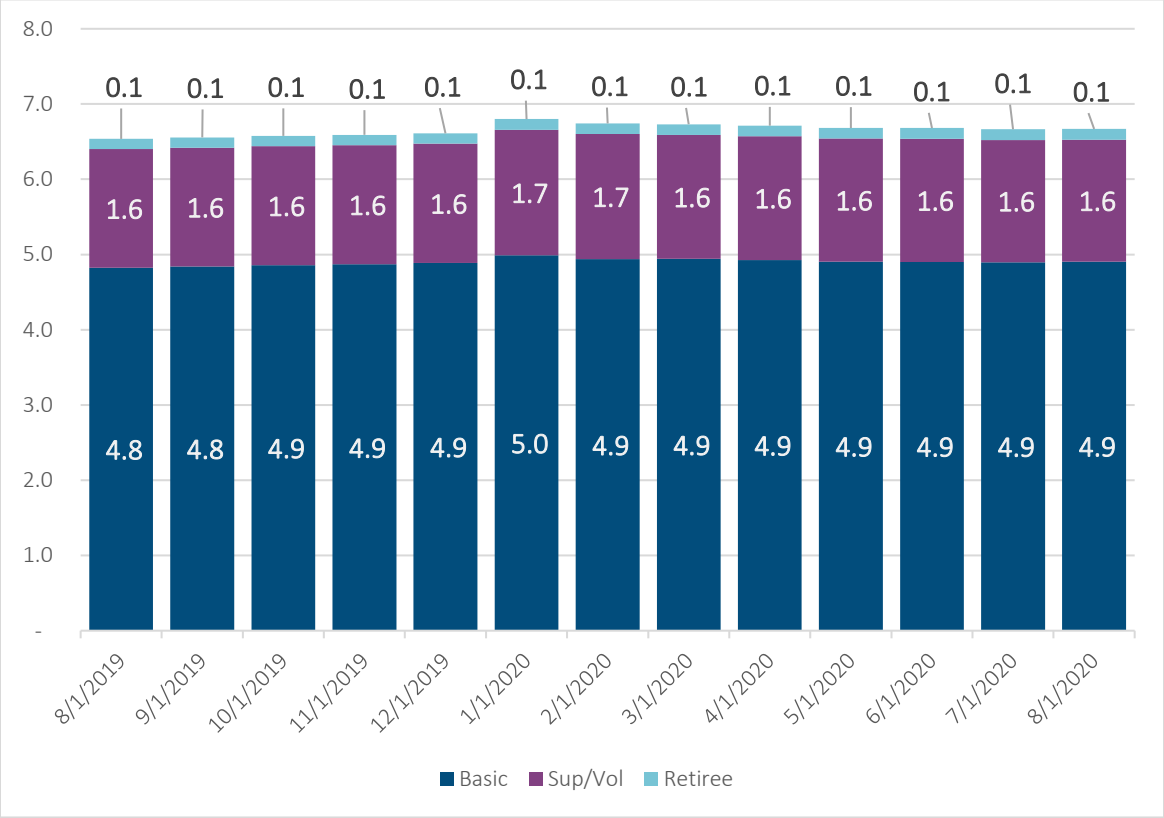
Similarly, the Committee validated the data for covered lives by analyzing trends in life years of exposure (LYE) during the study period. The following chart shows reported LYE from 2017 through 2019.

Figure 8.3
LIFE-YEARS OF EXPOSURE (MILLIONS) BY YEAR AND PRODUCT TYPE, 2017-2019



The Committee then compared the monthly LYE reported from August of 2019 through August of 2020 to ensure the 2020 LYE was in line with historical amounts. Based on this analysis, shown below, the Committee feels that the reported data for covered lives is reasonable for the study.

Figure 8.3
LIFE-YEARS OF EXPOSURE (MILLIONS) BY MONTH AND PRODUCT TYPE, AUGUST 2019 THROUGH AUGUST 2020

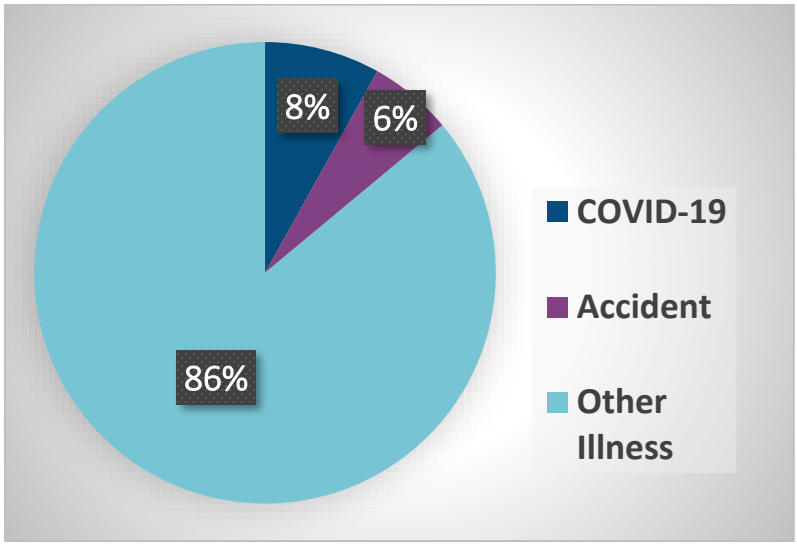


Section 9: Company Variations

9.1 VARIATIONS IN COVID-19 MORTALITY RESULTS

The graph below shows the cause of death distribution for claims reported in April through August 2020, considering only claims where the cause of death is known[13]. COVID-19 deaths represent 8.1% of these claims for the survey as a whole.

Figure 9.1
REPORTED CLAIMS WITH KNOWN CAUSE OF DEATH, APRIL – AUGUST 2020



All 20 participating companies showed increased mortality during April through August of 2020, but the prevalence of COVID-19 deaths varied among the participating carriers. Table 9.1 below shows the variability of COVID-19 deaths by company, where the companies have been segmented into quartiles based on percentage of COVID-19 claims versus total reported claims with a known cause of death in April through August 2020. The least impacted quartile had an average of 5.4% of their reported claims during this period from COVID-19, while the most impacted quartile had an average of 10.0% of their reported claims as COVID-19 deaths.

Table 9.1
PERCENTAGE OF CLAIMS WITH KNOWN CAUSE OF DEATH DUE TO COVID BY QUARTILE, APRIL – AUGUST 2020

Company Quartile	Average % COVID-19
Quartile 1	5.4%
Quartile 2	6.7%
Quartile 3	9.0%
Quartile 4	10.0%

[13] Two companies provided deaths that were identified only as either "COVID" or "Unknown." For these companies, the "Unknown" group was assumed to be non-COVID and treated as having a known cause of death for purposes of the calculations in this subsection.

9.2 VARIATIONS IN COVID-19 CLAIM CODING PROCEDURES

Participating carriers were asked about the data sources and procedures they use to determine whether a claim should be coded as a COVID-19 cause of death. Eighteen of the 20 carriers in the survey provided details on their claim coding procedures, and the Committee learned the following:

- Seventeen of the 18 respondents include the claim as a COVID-19 death if COVID-19 appears anywhere on the death certificate.

- Eight of the 18 appear to do everything in their power to research all available sources to create an exhaustive tracking of all claims where COVID was a contributing cause. These companies used five or more of the following sources to identify whether a death was caused by COVID-19:
    - Primary cause of death on death certificate
    - Secondary cause of death on death certificate
    - Claim form
    - Communication with employer or beneficiary
    - Obituary
    - Communication with medical examiner or funeral home

- One carrier codes claims with cause of COVID-19 only when COVID-19 is identified as the primary cause of death on the death certificate.

- The other nine participating carriers generally classify deaths as COVID-19 only if it is listed as either primary or secondary cause of death on the death certificate.

9.3 VARIATIONS IN CLAIM REPORTING PATTERNS

Survey data show that claim completion rates vary dramatically by company. The 20 companies were grouped into five reporting "speeds" based on similar reporting patterns, and completion ratios were studied from 2017 through 2020 for these five groups. The completion patterns for the five groups were compared to the aggregate completion factors and expressed as ratios in Table 9.2 below.

Material differential in completion time was observed for the first six reporting months for each incurred period. The Committee did not discern any credible difference in the speed by incurral calendar month, hence only one vector of ratios is provided for each group.

Table 9.2
COMPLETION ADJUSTMENT FACTORS BY REPORTING SPEED GROUP

Lag	1	2	3	4	5	Aggregate
0	64.8%	81.6%	111.2%	122.0%	143.7%	100.0%
1	86.1%	94.6%	100.7%	101.4%	125.7%	100.0%
2	94.3%	98.5%	100.5%	100.9%	107.1%	100.0%
3	96.9%	99.3%	100.3%	100.7%	103.7%	100.0%
4	98.0%	99.6%	100.2%	100.5%	102.5%	100.0%
5	98.5%	99.8%	100.1%	100.4%	101.9%	100.0%

Groups 1 and 2 report claims faster than the aggregate completion factors, evidenced by reducing the magnitude of completion factors for the first six months of reporting. Groups 3 through 5 report claims slower than the aggregate completion factors. Company-specific reporting patterns are important to consider when analyzing mortality results

for a specific company. The reporting variation by company should not impact the overall Group Life mortality findings in this report, and they have not been incorporated into the completion factors used within this report.

The Committee investigated whether the company reporting speed groupings would be correlated to company size. However, Table 9.3 below shows this is not the case.

Table 9.3
COMPANY SIZE BY REPORTING SPEED GROUP

Company Size	Reporting Speed Group
Medium	Fastest - 1
Medium	Fastest - 1
Large	Fastest - 1
Small	Fastest - 1
Small	Fast - 2
Large	Fast - 2
Large	Fast - 2
Small	Fast - 2
Medium	Fast - 2
Small	Medium - 3
Medium	Medium - 3
Large	Medium - 3
Large	Medium - 3
Small	Slow - 4
Medium	Slow - 4
Medium	Slow - 4
Small	Slowest - 5
Medium	Slowest - 5
Large	Slowest - 5
Large	Slowest - 5

9.4 VARIATIONS IN EXPOSURE REPORTING

It came to the Committee's attention that the incidence rate for carriers that supplied lives (in addition to premium) is lower than the incidence rate for carriers that did not supply lives. The Committee investigated this and determined that the issue is related to how carriers handle retiree experience. In particular, it was observed that the incidence rates are higher for carriers that did not provide Retiree Life experience as a separate Product Type. Many of these carriers confirmed that Retiree Life experience was included along with the other product types (see subsection 9.5). This drove up the Employee Basic and Employee Sup/Vol incidence rates for those carriers that did not break out Retiree Life experience. It turns out that all carriers that supplied Retiree Life information also supplied lives, which is one reason that the 'With Lives" incidence rates are lower.

However, even for those carriers that did not separate out Retiree Life experience, higher incidence rates were observed for those carriers that did not supply lives. Since the Committee estimated the missing lives by dividing the premiums by the premium per life, it is possible that the actual premium per life for those carriers missing lives is different from what is being assumed, leading to the discrepancies in incidence rates. This potential for bias means the overall level of incidence should be interpreted as an estimate only. Whatever the case, any bias that may exist extends to both the baseline period and 2020.

The following table highlights the incidence rates for the different cohorts:

Table 9.4
INCIDENCE RATES SEGMENTED BY RETIREE AND EXPOSED LIVES SUBMISSIONS

"Basic" Product Segment	# of Carriers	Baseline	4/20-8/20	Ratio
Incidence for carriers that submitted Lives	**14**	**2.11**	**2.45**	**116%**
With Retiree Identified	*5*	*1.57*	*2.11*	*134%*
W/O Retiree Identified	*9*	*2.71*	*2.88*	*106%*
Incidence for carriers that did not submit lives	**6**	**3.30**	**3.52**	**107%**
Total study	**20**	**2.64**	**2.93**	**111%**
Incidence for carriers that did not identify retirees whether or not they submitted lives	*15*	*3.08*	*3.28*	*107%*

9.5 VARIATIONS IN RETIREE REPORTING

15 of the 20 companies were not able to separate Retiree Life experience from their Employee Basic and Employee Sup/Vol experience. These companies were asked to provide an estimate of the percentage of their exposure that was Retiree Life. Nine of the 15 companies were able to give such an estimate. Seven of the nine companies reported a concentration of Retiree Life experience below 10%, with one estimating between 10% and 20% and another estimating variations between 17% and 46% from year-to-year. Those Retiree Life data remain included with the Employee Sup/Vol or Employee Basic results shown in this report.

Section 10: Comparisons to U.S. General Population Mortality Results

From April through August 2020, there were estimated to be 16,740 incurred COVID claims in the Group Life survey data, compared with over 180,000 COVID deaths in the U.S. population during the same time span according to the Centers for Disease Control and Prevention (CDC)[14]. The Committee analyzed the pattern of deaths by month due to COVID in the U.S. population alongside the mortality experience in the Group Life survey. It was observed that from March through August, 25,000 COVID deaths in the U.S. per month indicated, on average, an extra 10% in Group Life mortality. However, there has been significant month-to-month variance in this relationship.

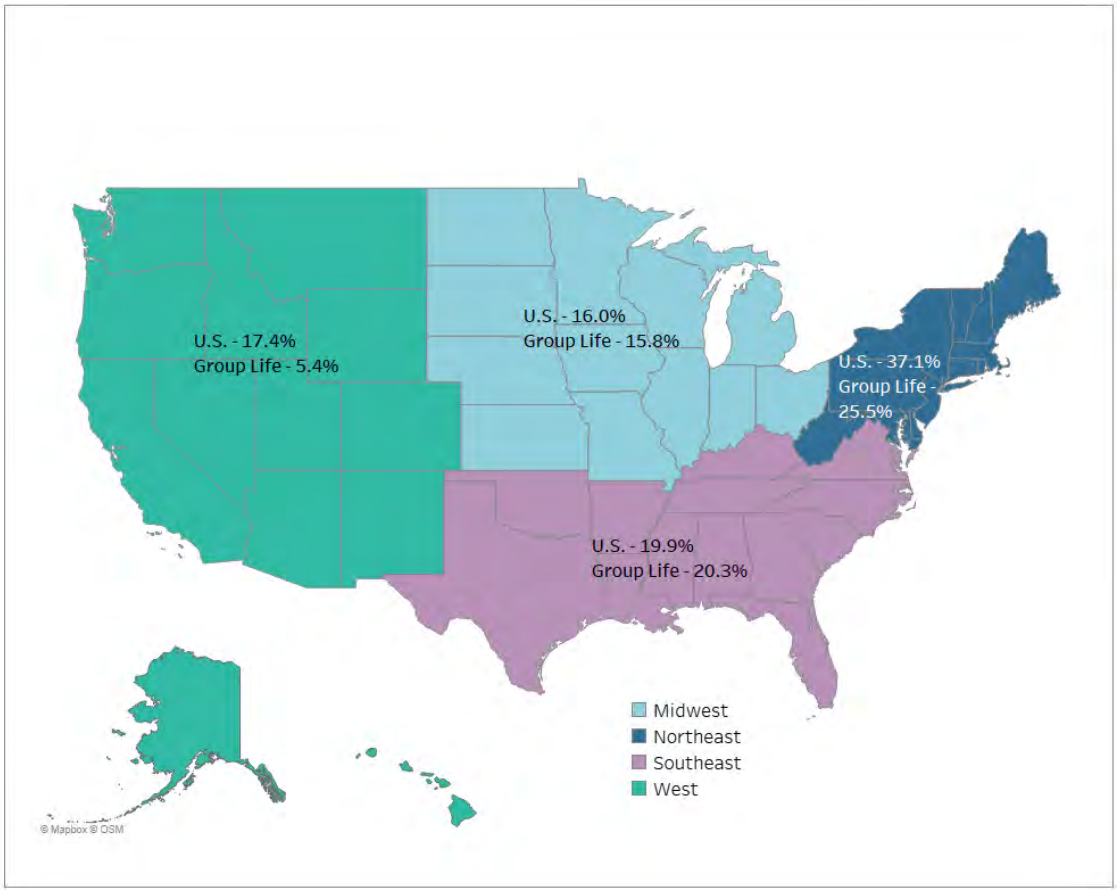
Past studies that have compared insured mortality to population mortality have found that mortality among insured lives tends to be lower. In particular, the SOA's 2016 Group Term Life Mortality Study[15] found that in the key working ages, insured mortality is between 30% and 40% of general population mortality. Because the mortality rates between the two populations tend to differ, the Committee analyzed the relative impact of the COVID-19 pandemic on the Group Life data and the U.S. population by considering excess death percentages, defined as the percentage increase over a baseline expectation for deaths.

The excess deaths in the Group Life data were determined via a comparison to average incidence rates in the Group Life data from the 2017-2019 baseline period, adjusted for seasonality. For the U.S. population, the Committee considered two different expected bases. The first are the expected deaths published by the CDC[16], which are developed using Farrington surveillance algorithms and historical data from 2013 to the present[17]. For the second method, the Committee estimated expected deaths by computing the average CDC deaths from 2017 through 2019 and adjusting this average for changes in U.S. population size, changes in U.S. population mix by age and sex, and the trend for death rates by age group. Based on the results from these two methods, the Committee estimates that the excess death percentage in the Group Life data is approximately 50% - 70%[18] of the U.S. population excess death percentage for April through August 2020, with the first method informing the lower end of the range and the second method informing the higher end of the range.

[14] https://www.cdc.gov/nchs/nvss/vsrr/covid19/index.htm
[15] https://www.soa.org/resources/experience-studies/2016/2016-group-life-mortality-study/
[16] https://www.cdc.gov/nchs/nvss/vsrr/covid19/excess_deaths.htm
[17] More information can be found in the technical notes at the following website, where the CDC publishes excess deaths: https://www.cdc.gov/nchs/nvss/vsrr/covid19/excess_deaths.htm#techNotes
[18] Due to differences in development of expected bases, population differences, differences in seasonality adjustments, and the assumption for IBNR claims, this could not be computed with precision. The particular assumption set underlying Tables 10.1 and 10.2 results in a ratio of 12.9% / 21.9% = 58.9%.

Using the CDC-developed expected basis described above for U.S. population deaths, a comparison of excess death percentages by month and geographic region is possible. Figure 10.1 below shows the excess death percentages from April 2020 through August 2020 for the U.S. population and the Group Life survey data for each of the four U.S. regions.

Figure 10.1
EXCESS DEATH PERCENTAGES, AUGUST 2019 THROUGH AUGUST 2020



Tables 10.1 and 10.2 display the excess death percentages by month and region for the U.S. population and the Group Life survey data, respectively. In each table, the "Total" row includes a small portion of data (less than 1%) that could not be definitively allocated to a geographic region.

Table 10.1
U.S. POPULATION EXCESS DEATH PERCENTAGE BY MONTH AND GEOGRAPHIC REGION

Region	April	May	June	July	August	Apr-Aug	Total COVID Deaths
Midwest	22.8%	19.7%	11.2%	11.1%	14.1%	16.0%	27,992
Northeast	114.0%	47.3%	9.3%	6.1%	7.0%	37.1%	72,533
Southeast	10.9%	11.2%	12.2%	31.5%	33.4%	19.9%	57,313
West	12.8%	10.2%	12.8%	25.1%	26.3%	17.4%	25,730
Total	**34.8%**	**20.0%**	**11.4%**	**20.3%**	**22.3%**	**21.9%**	**183,973**

Table 10.2
GROUP LIFE COVID-19 SURVEY EXCESS DEATH PERCENTAGE BY MONTH AND GEOGRAPHIC REGION

Region	April	May	June	July	August	Apr-Aug	Total COVID Deaths
Midwest	29.1%	12.2%	12.4%	11.7%	13.8%	15.8%	3,825
Northeast	85.5%	29.9%	11.4%	7.3%	-6.5%	25.5%	5,090
Southeast	13.5%	9.3%	14.1%	36.5%	28.2%	20.3%	5,830
West	11.4%	1.5%	5.0%	12.4%	-3.1%	5.4%	1,915
Total	**26.2%**	**7.9%**	**6.6%**	**14.6%**	**9.0%**	**12.9%**	**16,727**

The above tables indicate that the U.S. population has experienced a higher excess death percentage than what has been seen in the Group Life COVID-19 survey population. In particular, the excess death percentages for the Northeast and West regions are substantially lower in the COVID-19 survey than in the U.S. population, while the Midwest and Southeast regions are very similar between the two datasets.

The Committee notes that the age and sex profiles of the Group Life dataset and the U.S. population vary considerably and considered this as a possible cause of the difference in excess death percentage. The Committee developed an aggregate excess mortality measure by applying the group term life demographics to the general population excess death rates. However, based on the Committee's analysis, after adjusting for the distribution of exposed lives and mortality experience by age and sex, there is still a material difference in excess mortality that is not explained by population differences by age and sex.

Section 11: Reliance and Limitations

In producing this report, the Committee relied upon data furnished by contributing companies and data published by the CDC. The Committee would like to stress that the data presented in this survey is emerging data. Contributing companies may true-up this data over time. The Committee also notes that carriers submitted data in different formats; it is possible that the homogenization of data submissions could introduce some unintended distortion in the survey results. The reader should review the limitations noted throughout the report.

Section 12: Acknowledgments

The Committee would like to extend its deep and sincere gratitude for the additional peer review provided by Susan R. Sames, FSA, MAAA and Amy Suzanne Whinnett, FSA.

Section 13: List of Participating Companies

The Committee would like to thank the following companies that submitted data and made this COVID-19 mortality survey possible:

Anthem
Cigna
Dearborn National
Guardian
The Hartford
Lincoln Financial Group
MetLife
Mutual of Omaha
OneAmerica
Principal Financial
Reliance Standard
Renaissance
Securian Financial Group
Standard Insurance Group
SunLife Financial Group
Symetra
Unum
USAble
Voya
Zurich Group Benefits

Appendix A: 2020 SOA Group Term Life COVID-19 Mortality Survey Data Request

Purpose

This is the data request for a Group Term Life Claim study intended to allow a quick assessment of the impact of the COVID-19 pandemic on the Group Life industry – primarily by measuring the extra mortality occurring during the pandemic as compared to prior periods. This high level study will become a valuable data source for Group Life insurers, since the industry wide COVID-19 claims will be significantly more credible than the claims experience for any one carrier.

Timing

We are requesting the initial data submission be provided by **Friday, June 19th**. We acknowledge that this is a tight turnaround, but due to the rapidly changing environment, time is of the essence. Please let us know ASAP if you have a problem with this date or any element of this request. We plan to act quickly on the data – releasing an initial summary report to participating carriers the week of July 6th.

The initial data request is for data from January 2017 through May 2020. We also plan to update the study monthly throughout the duration of the pandemic. Please consider this when you build your queries for the initial request, so that the monthly updates are easier to produce. We request that updates be submitted by the 3rd Friday of each month. Contributors will receive a detailed summary report of their submitted data with some analysis of all the contributed data after each monthly submission. The SOA will also be releasing summary reports of the aggregated results periodically throughout the duration of the study.

General Comments

Our goal is to measure patterns and trends rather than actual mortality rates. For the data request, this means we are more interested in how things change by month than whether they are 100% accurate or even consistent with other carrier submissions. We understand this data assembly will take some effort, and want to minimize unnecessary data manipulation. To this end, please develop your submission as best you can to align with our request, but more importantly, please ensure it is consistent over subsequent monthly updates.

Claim Data Request

Broadly, we are requesting summarized death claim information for your group life business with limited segmentation. The limited segmentation will support further analysis/validation of observed trends. We hope all carriers will be able to provide the Baseline data below. Please also provide the Segmentation if feasible, but we can include your submission in the study even if these components are not readily available.

1. Baseline – The essential data requested is claim counts by incurred month, reported month, product segment, and limited cause of death. Ideally, claim amounts can also be provided.
    - Product Segment = Basic Life, Supp/Optional/Voluntary Life, and Retiree Life
    - Cause of Death = COVID, Accident, and All Other

2. Segmentation – We are also requesting claim counts and amounts for three separate segments – industry, state, and age/gender. Data for each requested segment would be further split into the product and cause of death categories referenced above.
    - Industry = 2-digit SIC code is ideal
    - State = Based on residence, or work location if residence not available
    - Age/Gender = M/F/U, and 10-year age bands

Claim Data Specifics

Again, as we will be looking at trends and patterns rather than actual mortality, it is most important that your submission be consistent month to month. Nevertheless, the ideal submission should consider the following specific criteria:

- Include only group term life business. Exclude any GUL/GVUL, COLI/BOLI, 10/20-year group term, etc.
- Include both self-administered and list-billed business
- Include employee, spouse, and child claims
- Include or exclude portability and conversion claims – whichever is easier - based on your company reporting.
- Include deaths from persons on waiver of premium; exclude active waivers
- Include only death claims; exclude counts or amounts for various riders, especially living benefit riders or critical illness riders
- Include only the life insurance amount for accidental deaths
- Exclude any interest payments or expenses

Exposure Data Request

As stated, this is not a mortality rate study, and we do not intend to calculate mortality rates. The purpose of exposure data is to help explain and validate any observed trends. As with claims, we are requesting both high-level exposure data, as well as exposure data by segment. However, the most critical information is exposures by month.

1. Baseline – The essential data requested is earned premium by report month and product segment. Optional data would include exposed lives by month.
    - Product Segment = Basic Life, Supp/Optional/Voluntary Life, and Retiree Life

2. Segmentation – We are also requesting exposure data for the segments – industry, state, and age/gender. Data for each requested segment would be further split by product.
    - Industry = 2-digit SIC code is ideal
    - State = Based on residence, or work location if residence not available
    - Age/Gender = M/F/U, and 10-year age bands

Exposure Data Specifics

We recognize that it can be difficult to provide exposed lives data, which is why we have selected earned premium as the primary exposure metric. Exposed lives is certainly a valuable addition, if it is available. As with claims, we stress the importance of consistency month to month, and reiterate that we are interested in the information you can provide with relative ease. Some specific (ideal) considerations include:

- Include only group term life business. Exclude any GUL/GVUL, COLI/BOLI, 10/20-year group term, etc.
- Include or exclude premium for accident riders depending on how they are handled in your system; just be consistent and identify what is included.
- Include both self-administered and list-billed business.
- For exposed lives, we recognize that some data (list billed groups, for example) may be more current and accurate than other data. Please provide your best representation of exposed lives, and identify any particular limitations or special considerations in your submission.

Final Notes on Requested Data

We intend to turn around results rapidly to maximize value on internal decision-making for participating carriers. With that in mind, we have tried to keep the request as simple as possible. We have tried to define exactly what we are requesting, but if your own tracking does not align and the customization is difficult, then please provide what you normally track rather than trying to match our definitions. The period-over-period change will be most

valuable, so consistency is more important than precise definitions. We understand there can be nuances in how carriers count claims and track exposures, but we think the recently observed changes will be valuable. If you have any questions at all about what we are asking, please reach out.

PLEASE NOTE: YOUR DATA SUBMISSIONS SHOULD NOT CONTAIN ANY INDIVIDUAL POLICY LEVEL INFORMATION. PLEASE SEND ONLY THE AGGREGATED SUMMARY INFORMATION REQUESTED.

SOA staff will be receiving and compiling your submissions and the SOA is not able to receive any personal information on your policyholders.

Reports

Our minimal request is for the monthly results without industry, geographic, or demographic segmentation. Please provide the additional segment data as you are able, and we will return cross-industry information consistent with your submission. We do not plan to provide individual carrier-level experience.

We plan to show cross-industry extra mortality by calendar month. We will compare the most recent months to the prior periods, including prior months, and the same month a year ago.

We will not show individual carrier experience, but may comment on the consistencies of changes across carriers.

Technical Notes

The accompanying Excel workbook contains specific templates for the data submission. You can use the Excel templates or submit data in a format of your choosing. The workbook includes an "Outline" tab to guide your submission.

Please return the submission via e-mail to Korrel Crawford at kcrawford@soa.org. If you have concerns about file security, please contact her and she will provide you with an alternate means of submitting data in a more secure fashion.

Appendix B: State and Industry Code Mappings

Table B.1

STATE CODE MAPPINGS

State / Province Name	Abbrev	Division	Region
U.S. Armed Forces – Americas	AA	Division 11: Unknown	Other
Alberta	AB	Division 10: Canada	Other
U.S. Armed Forces – Europe	AE	Division 11: Unknown	Other
Alaska	AK	Division 09: Pacific	West
Alabama	AL	Division 06: East South Central	Southeast
U.S. Armed Forces – Pacific	AP	Division 11: Unknown	Other
Arkansas	AR	Division 07: West South Central	Southeast
American Samoa	AS	Division 09: Pacific	Other
Arizona	AZ	Division 08: Mountain	West
British Columbia	BC	Division 10: Canada	Other
California	CA	Division 09: Pacific	West
Colorado	CO	Division 08: Mountain	West
Connecticut	CT	Division 01A: Southern New England	Northeast
District of Columbia	DC	Division 02: Middle Atlantic	Northeast
Delaware	DE	Division 02: Middle Atlantic	Northeast
Florida	FL	Division 05: South Atlantic	Southeast
Micronesia	FM	Division 09: Pacific	Other
Georgia	GA	Division 05: South Atlantic	Southeast
Guam	GU	Division 09: Pacific	Other
Hawaii	HI	Division 09: Pacific	West
Iowa	IA	Division 04: North Central	Midwest
Idaho	ID	Division 08: Mountain	West
Illinois	IL	Division 03: Great Lakes	Midwest
Indiana	IN	Division 03: Great Lakes	Midwest
Kansas	KS	Division 04: North Central	Midwest
Kentucky	KY	Division 06: East South Central	Southeast
Louisiana	LA	Division 07: West South Central	Southeast
Massachusetts	MA	Division 01A: Southern New England	Northeast
Manitoba	MB	Division 10: Canada	Other
Maryland	MD	Division 02: Middle Atlantic	Northeast
Maine	ME	Division 01B: Northern New England	Northeast
Marshall Islands	MH	Division 09: Pacific	Other
Michigan	MI	Division 03: Great Lakes	Midwest
Minnesota	MN	Division 04: North Central	Midwest
Missouri	MO	Division 04: North Central	Midwest
Northern Mariana Islands	MP	Division 09: Pacific	Other
Mississippi	MS	Division 06: East South Central	Southeast
Montana	MT	Division 08: Mountain	West

New Brunswick	NB	Division 10: Canada	Other
North Carolina	NC	Division 05: South Atlantic	Southeast
North Dakota	ND	Division 04: North Central	Midwest
Nebraska	NE	Division 04: North Central	Midwest
New Hampshire	NH	Division 01B: Northern New England	Northeast
New Jersey	NJ	Division 02: Middle Atlantic	Northeast
Newfoundland and Labrador	NL	Division 10: Canada	Other
New Mexico	NM	Division 08: Mountain	West
Nova Scotia	NS	Division 10: Canada	Other
Nunavut	NU	Division 10: Canada	Other
Nevada	NV	Division 08: Mountain	West
Northwest Territories	NW	Division 10: Canada	Other
New York	NY	Division 02: Middle Atlantic	Northeast
Ohio	OH	Division 03: Great Lakes	Midwest
Oklahoma	OK	Division 07: West South Central	Southeast
Ontario	ON	Division 10: Canada	Other
Oregon	OR	Division 09: Pacific	West
Other	Other	Division 11: Unknown	Other
Pennsylvania	PA	Division 02: Middle Atlantic	Northeast
Prince Edward Island	PE	Division 10: Canada	Other
Puerto Rico	PR	Division 05: South Atlantic	Other
Palau	PW	Division 09: Pacific	Other
Quebec	QC	Division 10: Canada	Other
Rhode Island	RI	Division 01A: Southern New England	Northeast
South Carolina	SC	Division 05: South Atlantic	Southeast
South Dakota	SD	Division 04: North Central	Midwest
Saskatchewan	SK	Division 10: Canada	Other
Tennessee	TN	Division 06: East South Central	Southeast
Texas	TX	Division 07: West South Central	Southeast
Unknown	UN	Division 11: Unknown	Other
Unknown	Unknown	Division 11: Unknown	Other
Utah	UT	Division 08: Mountain	West
Virginia	VA	Division 05: South Atlantic	Southeast
Virgin Islands	VI	Division 05: South Atlantic	Other
Vermont	VT	Division 01B: Northern New England	Northeast
Washington	WA	Division 09: Pacific	West
Wisconsin	WI	Division 03: Great Lakes	Midwest
West Virginia	WV	Division 02: Middle Atlantic	Northeast
Wyoming	WY	Division 08: Mountain	West
Yukon	YK	Division 10: Canada	Other

Table B.2

INDUSTRY CODE MAPPINGS

2-Digit SIC Code	Industry Group	Collar Color
00	Unknown/Invalid	Unknown
01	Agricultural; Forestry; Fishing	Blue
02	Agricultural; Forestry; Fishing	Blue
03	Agricultural; Forestry; Fishing	Blue
04	Agricultural; Forestry; Fishing	Blue
05	Agricultural; Forestry; Fishing	Blue
07	Agricultural; Forestry; Fishing	Blue
08	Agricultural; Forestry; Fishing	Blue
09	Agricultural; Forestry; Fishing	Blue
10	Mining	Blue
11	Mining	Blue
12	Mining	Blue
13	Mining	Blue
14	Mining	Blue
15	Construction	Blue
16	Construction	Blue
17	Construction	Blue
18	Construction	Blue
19	Construction	Blue
20	Manufacturing - Food	Blue
21	Manufacturing - Food	Blue
22	Manufacturing - Clothes; Textile; Wood	Blue
23	Manufacturing - Clothes; Textile; Wood	Blue
24	Manufacturing - Clothes; Textile; Wood	Blue
25	Manufacturing - Clothes; Textile; Wood	Blue
26	Manufacturing - Clothes; Textile; Wood	Blue
27	Manufacturing - Paper; Drugs	Grey
28	Manufacturing - Paper; Drugs	Grey
29	Manufacturing - Paper; Drugs	Grey
30	Manufacturing - Paper; Drugs	Grey
31	Manufacturing - Paper; Drugs	Grey
32	Manufacturing - Paper; Drugs	Grey
33	Manufacturing - Heavy; Steel;	Blue
34	Manufacturing - Heavy; Steel;	Blue
35	Manufacturing - Heavy; Steel;	Blue
36	Manufacturing - Heavy; Steel;	Blue
37	Manufacturing - Auto, Airplanes, Precision Equipment	Blue
38	Manufacturing - Auto, Airplanes, Precision Equipment	Blue
39	Manufacturing - Auto, Airplanes, Precision Equipment	Blue
40	Transport; Communication; Utilities	Blue

41	Transport; Communication; Utilities	Blue
42	Transport; Communication; Utilities	Blue
43	Transport; Communication; Utilities	Blue
44	Transport; Communication; Utilities	Blue
45	Transport; Communication; Utilities	Blue
46	Transport; Communication; Utilities	Blue
47	Transport; Communication; Utilities	Blue
48	Transport; Communication; Utilities	Blue
49	Transport; Communication; Utilities	Blue
50	Wholesale Trade	Grey
51	Wholesale Trade	Grey
52	Retail - Trade	Grey
53	Retail - Trade	Grey
54	Retail - Trade	Grey
55	Retail - Trade	Grey
56	Retail - Trade	Grey
57	Retail - Trade	Grey
58	Retail - Trade	Grey
59	Retail - Trade	Grey
60	Banks and Securities	White
61	Banks and Securities	White
62	Banks and Securities	White
63	Insurance; Other Finance	White
64	Insurance; Other Finance	White
65	Insurance; Other Finance	White
66	Insurance; Other Finance	White
67	Insurance; Other Finance	White
68	Insurance; Other Finance	White
69	Insurance; Other Finance	White
70	Hotels/Personal Services	Grey
71	Hotels/Personal Services	Grey
72	Hotels/Personal Services	Grey
73	Misc Service/Data Processing	Grey
74	Misc Service/Data Processing	Grey
75	Misc Service/Data Processing	Grey
76	Misc Service/Data Processing	Grey
78	Misc Service/Data Processing	Grey
79	Misc Service/Data Processing	Grey
80	Doctors' Offices	White
81	Legal Services	White
82	Educational Services	White
83	Social Services	White
84	Museums and Membership Orgs	White

85	Museums and Membership Orgs	White
86	Museums and Membership Orgs	White
87	Engineering, Architecture, Business Consulting	White
88	Engineering, Architecture, Business Consulting	White
89	Engineering, Architecture, Business Consulting	White
90	Public Administration	White
91	Public Administration	White
92	Public Administration	White
93	Public Administration	White
94	Public Administration	White
95	Public Administration	White
96	Public Administration	White
97	Public Administration	White
99	Unknown/Invalid	Unknown
Unknown	Unknown/Invalid	Unknown

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With roots dating back to 1889, the Society of Actuaries (SOA) is the world's largest actuarial professional organization with more than 31,000 members. Through research and education, the SOA's mission is to advance actuarial knowledge and to enhance the ability of actuaries to provide expert advice and relevant solutions for financial, business and societal challenges. The SOA's vision is for actuaries to be the leading professionals in the measurement and management of risk.

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

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

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

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

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

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

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