



# Group Life COVID-19 Mortality Survey Report

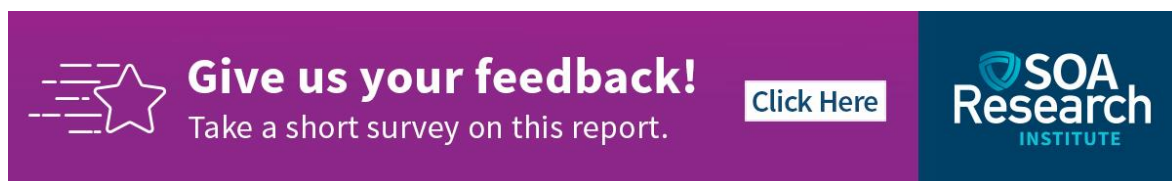
AUGUST | 2022





# Group Life COVID-19 Mortality Survey Report

**AUTHORS** Thomas J. Britt, FSA, MAAA  
Paul Correia, FSA, MAAA  
Patrick Hurley, FSA, MAAA  
Mike Krohn, FSA, CERA, MAAA  
Tony LaSala, FSA, MAAA  
Rick Leavitt, ASA, MAAA  
Robert Lumia, FSA, MAAA  
Cynthia S. MacDonald, FSA, MAAA, SOA  
Patrick Nolan, FSA, MAAA, SOA  
Steve Rulis, FSA, MAAA  
Bram Spector, FSA, MAAA

**SPONSORS** Group Life Experience Committee

A purple banner with a white star icon on the left, followed by the text "Give us your feedback!" and "Take a short survey on this report." To the right is a white button with the text "Click Here". On the far right is the SOA Research Institute logo.

 **Give us your feedback!**  
Take a short survey on this report. [Click Here](#) 

#### **Caveat and Disclaimer**

The opinions expressed and conclusions reached by the authors are their own and do not represent any official position or opinion of the Society of Actuaries Research Institute, Society of Actuaries, or its members. The Society of Actuaries Research Institute makes no representation or warranty to the accuracy of the information.

Copyright © 2022 by the Society of Actuaries Research Institute. All rights reserved.

## CONTENTS

<b>Section 1: Purpose of the Survey</b> .....	<b>5</b>
<b>Section 2: Overview</b> .....	<b>6</b>
2.1 Background .....	6
2.2 Scope .....	6
2.3 Survey Highlights .....	7
<b>Section 3: Group Life Mortality Results—Reported Death Claims</b> .....	<b>10</b>
3.1 Reported Claim Incidence by Count—All Causes.....	10
3.2 Reported Claim Incidence by Count—COVID-19 Versus All Other Causes.....	10
3.3 Reported Claim Incidence by Amount—All Causes .....	12
3.4 Reported Claim Incidence by Amount—COVID-19 Versus All Other Causes .....	13
<b>Section 4: Group Life Mortality Results—Estimated Incurred Death Claims</b> .....	<b>14</b>
4.1 Incurred Claim Incidence by Count—All Causes .....	14
4.2 Incurred Claim Incidence by Count—COVID-19 Versus All Other Causes .....	15
4.3 Incurred Claim Incidence by Amount—All Causes.....	17
4.4 Incurred Claim Incidence by Amount—COVID-19 Versus All Other Causes.....	17
<b>Section 5: Estimated Incurred Mortality Results by Segment</b> .....	<b>18</b>
5.1 Cause of Death .....	19
5.2 Industry .....	20
5.3 Geography.....	21
5.4 Age and Sex.....	23
5.5 Company Size.....	24
<b>Section 6: Exposure Trends</b> .....	<b>25</b>
6.1 Premiums .....	25
6.2 Lives .....	26
<b>Section 7: Company Variations</b> .....	<b>28</b>
7.1 Variations in COVID-19 Mortality Results.....	28
7.2 Variations in COVID-19 Claim Coding Procedures .....	29
7.3 Variations in Claim Reporting Patterns.....	29
<b>Section 8: Comparisons to General U.S. Population Mortality Results</b> .....	<b>30</b>
8.1 Aggregate Excess Mortality Comparisons .....	30
8.2 Excess Mortality Comparison by Geographic Region .....	32
8.3 Excess Mortality Comparison by Vaccination Uptake .....	34
<b>Section 9: Reliance and Limitations</b> .....	<b>38</b>
<b>Section 10: List of Participating Companies</b> .....	<b>39</b>
<b>Appendix A: 2020 SOA Group Term Life COVID-19 Mortality Survey Data Request</b> .....	<b>40</b>
<b>Appendix B: Geography and Industry Code Mappings</b> .....	<b>43</b>
<b>Appendix C: Survey Methodology and Documentation</b> .....	<b>48</b>
C.1 Documentation .....	48
C.2 Results Processing and Review .....	50
C.2.1 Completion of Claims.....	50
C.2.2 Broader Classification of Segment Information .....	50
C.2.3 Unknown Claim Diagnosis .....	50
C.2.4 COVID-19 Claims from 2019 or Earlier .....	50

C.2.5 Groupings by Company Size ..... 50

**Appendix D: Completion Factor Development ..... 52**

    D.1 By Claim Count ..... 52

    D.2 By Face Amount..... 54

    D.3 By Cause of Death ..... 54

    D.4 By Company Reporting Speed ..... 55

**About The Society of Actuaries Research Institute ..... 56**

# Group Life COVID-19 Mortality Survey Report

## Section 1: Purpose of the Survey

The purpose of this survey was 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. This report is an update to the previous [Group Life COVID-19 Mortality Survey](#) published in January 2022, which included pandemic data from April 2020 through September 2021. This update includes Group Life mortality results from April 2020 through March 2022 (referred to in this report as the “pandemic period”), representing 24 months of Group Life mortality experience during the COVID-19 pandemic. COVID-19 is caused by the novel coronavirus SARS-CoV-2, which was identified in 2019. As of the writing of this document, complications from COVID-19 have resulted in more than 1.0 million deaths in the U.S. alone, and more than 6.4 million worldwide.

The survey was 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 2017–2022 reported to participating carriers as of March 31, 2022, and include more than 2.3 million claims and more than \$103 billion in earned premium. The Committee is grateful that 20 of the top 21 U.S. Group Term Life insurers focused on employer groups are participating in this survey, with market share representing roughly 90% of the employer-based Group Term Life 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 is 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 that there are limitations in the ability to code deaths as COVID-19 related, within both the general population and Group Life exposures. Also, the survey seeks to analyze whether the pandemic has had indirect impacts on population mortality, beyond deaths associated directly with the COVID-19 virus. 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 shrank 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 are based on results for just subsets of carriers.



**Give us your feedback!**

Take a short survey on this report.

[Click Here](#)

**SOA**  
Research  
INSTITUTE

## Section 2: Overview

### 2.1 BACKGROUND

Carriers 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 March 31, 2022. Reported claims are easier to measure than incurred claims, but they do not tell the full story about Group Life mortality through March 2022 because 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 March 2022.

As in prior reports, the most recent one-to-two incurral months should not be fully relied upon because of the maturity of the completion of reported claims, with the completion factors for the most recent two months falling in the 30%–35% and 70%–75% ranges, respectively. The Committee has observed significant reporting lag volatility over the course of the study, resulting in volatility of incurred incidence development over time, especially in the most recent incurred months.

### 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, Group Universal Life, Company-Owned Life Insurance, 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 Accidental Death and Dismemberment 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<sup>1</sup> display high-level incidence results for the second quarter of 2020 through the first quarter of 2022 compared to the 2017-2019 baseline period for each combination of (a) incurred/reported basis and (b) count/amount basis as of March 31, 2022. 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 additional data reported in April and May 2022 indicated that the 1Q 2022 excess mortality would likely complete downward from the 19.9% shown below using March data. The fully complete 1Q 2022 excess mortality is expected to remain above 15%.

**Table 2.1**

### COUNT-BASED INCURRED INCIDENCE RESULTS RELATIVE TO 2017–2019 BASELINE

Count-Based	2Q20–4Q20	1Q21	2Q21	3Q21	4Q21	2021	1Q22	2Q20–1Q22
Total/Baseline	119.8%	122.5%	106.8%	133.7%	125.2%	122.0%	119.9%	120.9%
COVID-19 Claims	46,602	24,696	6,947	24,926	21,570	78,139	17,598	142,339
COVID/Baseline	14.7%	22.1%	6.7%	25.0%	20.1%	18.4%	15.5%	16.6%
Non-COVID/Baseline	105.1%	100.4%	100.1%	108.7%	105.1%	103.6%	104.4%	104.3%

**Table 2.2**

### AMOUNT-BASED INCURRED INCIDENCE RESULTS RELATIVE TO 2017–2019 BASELINE (CLAIMS IN \$ MILLIONS)

Amount-Based	2Q20–4Q20	1Q21	2Q21	3Q21	4Q21	2021	1Q22	2Q20–1Q22
Total/Baseline	126.1%	133.5%	121.6%	160.6%	145.0%	140.1%	132.4%	133.8%
COVID-19 Claims	1,720.5	1,021.1	371.2	1,465.3	1,133.2	3,990.8	795.9	6,507.2
COVID/Baseline	14.8%	25.0%	9.8%	40.2%	28.9%	25.9%	19.1%	20.9%
Non-COVID/Baseline	111.3%	108.5%	111.8%	120.4%	116.1%	114.2%	113.3%	112.9%

**Table 2.3**

### COUNT-BASED REPORTED INCIDENCE RESULTS RELATIVE TO 2017–2019 BASELINE

Count-Based	2Q20–4Q20	1Q21	2Q21	3Q21	4Q21	2021	1Q22	2Q20–1Q22
Total/Baseline	115.3%	128.9%	110.4%	123.5%	131.2%	123.5%	120.3%	120.0%
COVID-19 Claims	34,472	29,484	11,193	16,702	23,305	80,684	20,411	135,567
COVID/Baseline	11.2%	26.0%	10.4%	16.8%	23.3%	19.1%	17.8%	16.0%
Non-COVID/Baseline	104.1%	102.9%	100.0%	106.7%	107.9%	104.4%	102.5%	104.0%

<sup>1</sup> A small number of COVID-19 claims received were dated before 2020. The Committee assumes these dates are data errors. As they were not assigned to a particular date in 2020 or later, these claims are excluded from Tables 2.1–2.4. They are, however, included in the total COVID claims that appear in Section 5.

Table 2.4

## AMOUNT-BASED REPORTED INCIDENCE RESULTS RELATIVE TO 2017–2019 BASELINE (CLAIMS IN \$ MILLIONS)

Amount-Based	2Q20– 4Q20	1Q21	2Q21	3Q21	4Q21	2021	1Q22	2Q20– 1Q22
Total/Baseline	123.7%	137.2%	122.6%	148.0%	154.4%	140.5%	132.7%	133.2%
COVID-19 Claims	1,366.0	1,158.4	500.2	1,023.9	1,272.9	3,955.4	958.2	6,279.6
COVID/Baseline	12.2%	28.2%	12.8%	28.4%	35.0%	26.1%	23.0%	20.5%
Non-COVID/Baseline	111.5%	109.0%	109.8%	119.6%	119.4%	114.4%	109.7%	112.7%

Group Life carriers generally started receiving a small number of COVID-19 death claims during March 2020, but April 2020 was the first month in which the Group Life industry saw a material number of reported COVID-19 death claims. This drove April 2020 Group Life reported incidence to be measurably larger than baseline expected reported incidence. Reported incidence has remained materially higher than baseline in almost all months during the pandemic period. The lone exception was May 2021, during which reported incidence was approximately 1% lower than baseline.

It is important to note that incurred estimates for the most recent months lack credibility because of the low level of completion of the data used at the time of this analysis. Group Life claim completion has been especially volatile during the pandemic waves, driven both by the ultimate incurred levels fluctuating from month to month and by company-specific claim processing speeds fluctuating up and down because of increases or decreases in staffing levels and build-up or build-down of claim backlogs.

From an incurred mortality viewpoint, all 24 months from April 2020 through March 2022 showed excess mortality<sup>2</sup> versus baseline expectations. December 2020, August 2021, and September 2021 each had very high incurred mortality spikes of 40% or more, whereas the other 21 months ranged from a low of 5% excess incurred mortality to a high of 29% excess incurred mortality above baseline.

The 24-month period of April 2020 through March 2022 showed the following Group Life mortality results:

- Estimated reported Group Life claim incidence rates were up 20.0% on a seasonally-adjusted basis compared to 2017–2019 reported claims.
- Estimated incurred Group Life incidence rates were 20.9% higher than baseline on a seasonally-adjusted basis. As noted above, the incurred incidence rates in February and March 2022 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 the following:

- Approximately 13% of all reported Group Life claims with death dates in the pandemic period were determined to have a cause of death of COVID-19.
- The Grey-collar group had the lowest actual-to-expected ratios (A/Es) relative to baseline over the pandemic period at around 17%, followed by the Blue-collar group at 19%. The White-collar group continues to have the highest mortality A/E relative to baseline at 23% during the pandemic period.

<sup>2</sup> For the purposes of this report, “excess mortality” refers to the percentage change in incidence rates observed during the pandemic compared to the 2017–2019 baseline period.



- Group Life mortality patterns by region have changed over time during the COVID-19 pandemic. The Midwest region had the highest excess mortality for the two most recent quarters included in this update. The following regions had the highest excess mortality in each quarter shown:
  - Q2 2020: Northeast (48%)
  - Q3 2020: Southeast (33%)
  - Q4 2020: Midwest (38%)
  - Q1 2021: Southeast (39%)
  - Q2 2021: Southeast (16%)
  - Q3 2021: Southeast (70%)
  - Q4 2021: Midwest (38%)
  - Q1 2022: Midwest (34%)
- Relative to prior years, the Group Life insured population studied within this survey experienced a greater 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 105% - 125% of the percentage of excess deaths in the U.S. population.
- Early quarters of the pandemic period (Q2 and Q3 2020) showed the Group Life insured population studied within this survey experienced a lower percentage of excess deaths than the U.S. population. Beginning in the fourth quarter of 2020, this relationship flipped, with subsequent quarters indicating higher excess mortality for the Group Life insured population by a percentage difference ranging from 2% to 10% (additive) by quarter. The Q1 2022 relationship appears to be reverting back toward the pattern from 2020, as shown in Table 2.5.
  - Note that additional data reported in April and May 2022 indicated the Q1 2022 Group Life excess mortality would likely complete downward from the 20% shown below using March data. It is expected that the fully complete Group Life excess mortality will be lower than U.S. population excess mortality for Q1 2022.

**Table 2.5****GROUP LIFE AND U.S. POPULATION EXCESS MORTALITY PERCENTAGES BY QUARTER**

Age	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022
Group Life	16%	15%	28%	23%	7%	34%	25%	20%
U.S. Population	20%	16%	26%	17%	6%	24%	20%	18%
<b>Difference</b>	<b>-4%</b>	<b>-1%</b>	<b>2%</b>	<b>6%</b>	<b>1%</b>	<b>10%</b>	<b>5%</b>	<b>2%</b>

- In the third quarter of 2021, a moderate negative correlation was seen between vaccination rate and excess mortality by state. However, this correlation weakened during the fourth quarter of 2021 and the first quarter of 2022. Other factors potentially influencing this relationship are climate, seasonality, preventative measures (e.g., social distancing and masking), deaths from causes other than COVID-19, varying degrees of vaccine effectiveness against different variants of the virus, and a higher degree of natural immunity due to past infections in the later period. This is explained in further detail in subsection 8.3.

## Section 3: Group Life Mortality Results—Reported Death Claims

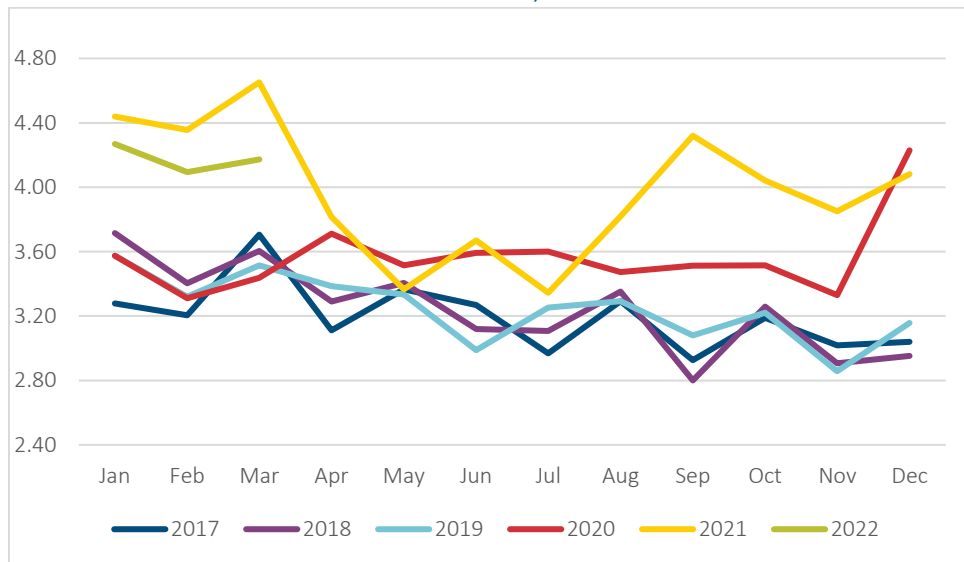
### 3.1 REPORTED CLAIM INCIDENCE BY COUNT—ALL CAUSES

Excess reported-basis mortality was observed in almost every month of the pandemic period, with May 2021 being the lone month where reported incidence was consistent with or less than the corresponding baseline months.

Reported overall Group Life claim incidence rates during the pandemic period, as shown in Figure 3.1, are up roughly 20% compared to 2017–2019 reported claims. Reported claims are easier to measure than incurred, as no estimation of completeness is required. However, reported claims do not tell the true economic impact of what is happening in the claim experience of a particular reported period, because those reported claims include deaths associated with prior periods, which may or may not have been accurately expected and accrued in prior period claim liabilities.

Note that incidence rates shown here are higher than in the January 2022 report. This is due to data corrections from participating companies that lowered the exposure by approximately 8% versus the previous report. It is not due to claim runout versus previous expectations. The corrections applied to both the baseline period and the pandemic period, so excess mortality calculations were not materially affected.

**Figure 3.1**  
**AGGREGATE REPORTED CLAIM INCIDENCE PER 1,000 BY CALENDAR YEAR AND MONTH**



### 3.2 REPORTED CLAIM INCIDENCE BY COUNT—COVID-19 VERSUS ALL OTHER CAUSES

A total of 135,567 COVID-19 death claims were reported during the pandemic period. Roughly 75% of the COVID-19 claims were for Basic Group Life coverage and roughly 25% for Supplemental/Voluntary coverage, with both figures including active employees and retirees. Note that the exposures and claim counts for insureds with both Basic and Supplemental/Voluntary coverage were included in both product lines. Thus, some deaths were counted as both Basic and Supplemental/Voluntary deaths, so the total number of Group Life insureds with COVID-19 deaths is less than 135,567.

Table 3.1 shows the total death claim incidence level (mortality rate) for each quarter during the pandemic relative to the baseline period metric. The table also shows a relativity for COVID-19 claims and non-COVID claims. As the

table illustrates, COVID-19 claims do not fully explain the increase in reported claim incidence over the baseline period.

**Table 3.1**

**COUNT-BASED REPORTED INCIDENCE RESULTS RELATIVE TO 2017–2019 BASELINE**

Count-Based	2Q20– 4Q20	1Q21	2Q21	3Q21	4Q21	2021	1Q22	2Q20– 1Q22
Total/Baseline	115.3%	128.9%	110.4%	123.5%	131.2%	123.5%	120.3%	120.0%
COVID-19 Claims	34,472	29,484	11,193	16,702	23,305	80,684	20,411	135,567
<i>COVID/Baseline</i>	<i>11.2%</i>	<i>26.0%</i>	<i>10.4%</i>	<i>16.8%</i>	<i>23.3%</i>	<i>19.1%</i>	<i>17.8%</i>	<i>16.0%</i>
<i>Non-COVID/Baseline</i>	<i>104.1%</i>	<i>102.9%</i>	<i>100.0%</i>	<i>106.7%</i>	<i>107.9%</i>	<i>104.4%</i>	<i>102.5%</i>	<i>104.0%</i>

Reported claim details by month are shown in Table 3.2, along with calculated monthly reported incidence rates. Note that a small number of COVID-19 claims have reported dates of death in 2019 or prior, which are likely due to data errors.

**Table 3.2**  
**REPORTED CLAIMS AND INCIDENCE RATES, 2017 THROUGH Q1 2022**

Report Date	Raw Submitted Numbers			Calculated Amounts				
	Reported Claims		Premium (000)	Life Years Exposed (000)		Annual Incidence per 1,000	Adjusted for Seasonality	
	Total	COVID		By Month	Yrly Avg		Total	Total/Baseline
3/1/22	46,266	4,521	1,760,267	11,048	11,088	4.17	3.73	115.4%
2/1/22	45,394	7,638	1,750,432	11,073	11,088	4.09	4.02	124.3%
1/1/22	47,329	8,252	1,770,073	11,144	11,088	4.27	3.91	121.1%
12/1/21	44,454	6,842	1,735,650	11,012	10,893	4.08	4.40	136.2%
11/1/21	41,953	7,012	1,705,754	10,830	10,893	3.85	4.25	131.6%
10/1/21	44,033	9,451	1,722,793	10,872	10,893	4.04	4.06	125.8%
9/1/21	47,061	10,044	1,708,788	10,785	10,893	4.32	4.77	147.7%
8/1/21	41,599	4,826	1,702,648	10,850	10,893	3.82	3.71	114.8%
7/1/21	36,432	1,832	1,723,257	10,831	10,893	3.34	3.49	108.1%
6/1/21	39,964	2,737	1,727,470	10,933	10,893	3.67	3.78	117.0%
5/1/21	36,661	3,520	1,736,591	10,935	10,893	3.37	3.20	99.0%
4/1/21	41,546	4,936	1,740,253	10,960	10,893	3.81	3.72	115.1%
3/1/21	50,667	8,185	1,729,922	10,917	10,893	4.65	4.16	128.6%
2/1/21	47,437	10,314	1,723,230	10,913	10,893	4.35	4.27	132.2%
1/1/21	48,342	10,985	1,718,532	10,877	10,893	4.44	4.07	125.9%
12/1/20	46,533	8,044	1,687,974	10,990	11,003	4.23	4.57	141.5%
11/1/20	36,632	3,685	1,667,520	10,903	11,003	3.33	3.69	114.1%
10/1/20	38,667	2,810	1,669,259	10,807	11,003	3.51	3.54	109.6%
9/1/20	38,655	3,159	1,672,467	10,883	11,003	3.51	3.89	120.4%
8/1/20	38,217	3,453	1,675,033	10,928	11,003	3.47	3.38	104.7%
7/1/20	39,616	2,941	1,694,959	11,017	11,003	3.60	3.77	116.7%
6/1/20	39,528	3,180	1,684,246	10,980	11,003	3.59	3.71	114.9%
5/1/20	38,664	4,024	1,740,116	11,238	11,003	3.51	3.35	103.7%
4/1/20	40,840	3,176	1,696,358	10,922	11,003	3.71	3.63	112.3%
3/1/20	37,811	156	1,700,112	11,011	11,003	3.44	3.08	95.3%
2/1/20	36,424	3	1,727,170	11,333	11,003	3.31	3.15	97.3%
1/1/20	39,336	4	1,682,846	11,019	11,003	3.58	3.29	101.7%
<b>2017-2019 Baseline</b>	<b>34,707</b>	<b>0</b>	<b>1,591,403</b>	<b>10,746</b>	<b>10,746</b>	<b>3.23</b>	<b>3.23</b>	<b>100.0%</b>
2019 Monthly	35,504	0	1,647,054	10,930	10,930	3.25	3.25	100.6%
2018 Monthly	34,752	1	1,587,433	10,715	10,715	3.24	3.24	100.3%
2017 Monthly	33,867	0	1,539,723	10,593	10,593	3.20	3.20	99.0%

### 3.3 REPORTED CLAIM INCIDENCE BY AMOUNT—ALL CAUSES

Reported overall Group Life claim incidence rates by amount during the pandemic period were up roughly 33% 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 estimates 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.

### 3.4 REPORTED CLAIM INCIDENCE BY AMOUNT—COVID-19 VERSUS ALL OTHER CAUSES

Table 3.3

AMOUNT-BASED REPORTED INCIDENCE RESULTS RELATIVE TO 2017–2019 BASELINE (CLAIMS IN \$ MILLIONS)

Amount-Based	2Q20– 4Q20	1Q21	2Q21	3Q21	4Q21	2021	1Q22	2Q20– 1Q22
Total/Baseline	123.7%	137.2%	122.6%	148.0%	154.4%	140.5%	132.7%	133.2%
COVID-19 Claims	1,366.0	1,158.4	500.2	1,023.9	1,272.9	3,955.4	958.2	6,279.6
COVID/Baseline	12.2%	28.2%	12.8%	28.4%	35.0%	26.1%	23.0%	20.5%
Non-COVID/Baseline	111.5%	109.0%	109.8%	119.6%	119.4%	114.4%	109.7%	112.7%

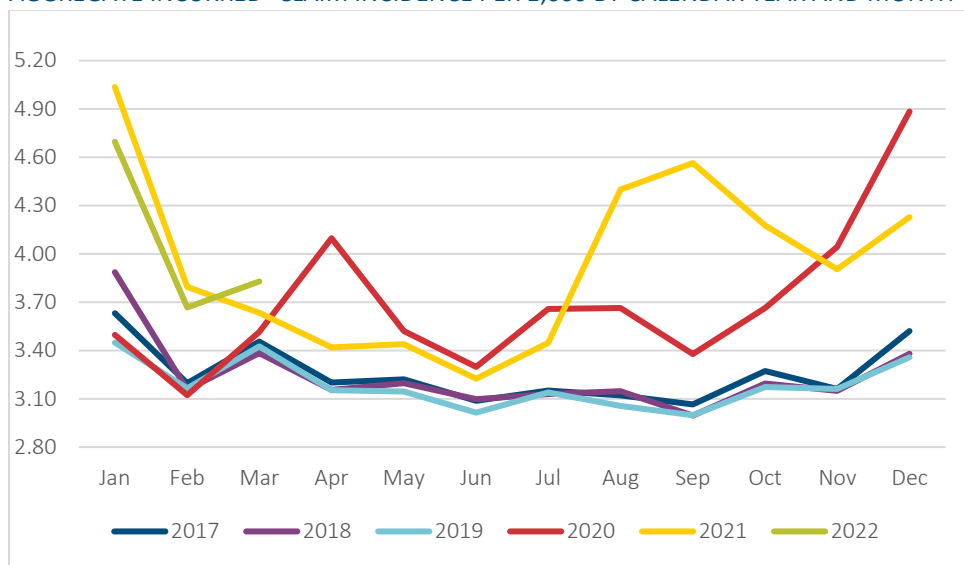
## Section 4: Group Life Mortality Results—Estimated Incurred Death Claims

### 4.1 INCURRED CLAIM INCIDENCE BY COUNT—ALL CAUSES

A completed estimate of incurred incidence rates by count indicates that excess mortality for the pandemic period was 20.9% higher than the 2017–2019 baseline incurred incidence on a seasonally-adjusted basis. Figure 4.1 displays the various monthly estimated incurred incidence rates.

The initial estimates of the first quarter of 2022 incurred incidence rates indicate that excess mortality was 19.9% higher than baseline on a seasonally-adjusted basis. The Q1 2022 results are not yet fully credible, but the current view of monthly results for Q1 2022 indicates a material reduction in excess mortality as the months progressed. Excess mortality for January by count was 32%, whereas excess mortality was 16% for February and 12% for March. The February and March results are still highly incomplete and likely to change as more months of reported claims are revealed.

**Figure 4.1**  
**AGGREGATE INCURRED<sup>3</sup> CLAIM INCIDENCE PER 1,000 BY CALENDAR YEAR AND MONTH**

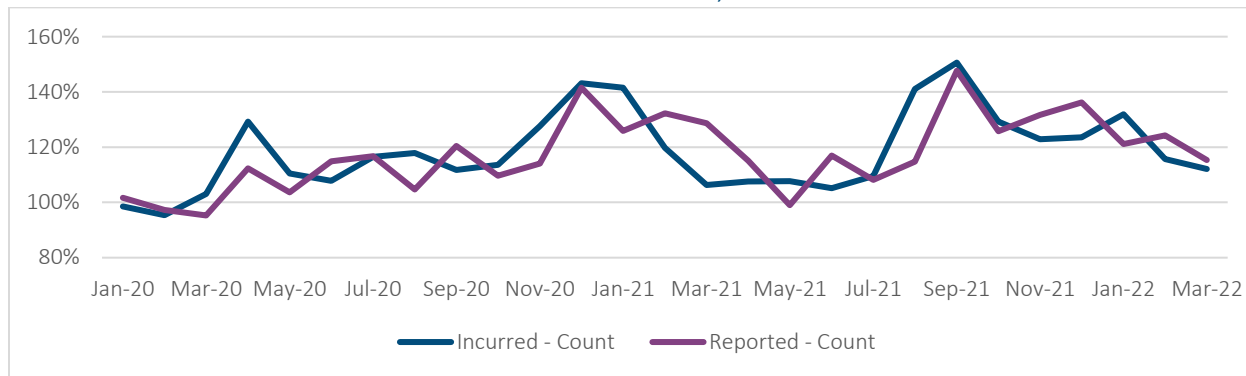


<sup>3</sup> Adjusted for assumed completion.

Figure 4.2 is a different view of the data displayed in Figures 3.1 and 4.1 and illustrates the flow of excess mortality over the entire pandemic period.

**Figure 4.2**

**AGGREGATE REPORTED AND INCURRED<sup>4</sup> CLAIM INCIDENCE PER 1,000 BY CALENDAR YEAR AND MONTH**



**4.2 INCURRED CLAIM INCIDENCE BY COUNT—COVID-19 VERSUS ALL OTHER CAUSES**

Similarly to reported claim metrics, Table 4.1 shows that COVID-19 claims do not fully explain the increase in incurred claim incidence on a count basis. COVID-19 claims account for roughly 80% of the excess incurred Group Life mortality during the second quarter of 2020 through the first quarter of 2022, with the other 20% coming from claims that were not coded with COVID-19 as cause of death.

**Table 4.1**

**INCURRED EXCESS MORTALITY BY CLAIM COUNT COMPARED TO 2017–2019 BASELINE**

Count-Based	2Q20–4Q20	1Q21	2Q21	3Q21	4Q21	2021	1Q22	2Q20–1Q22
Total/Baseline	119.8%	122.5%	106.8%	133.7%	125.2%	122.0%	119.9%	120.9%
COVID-19 Claims	46,602	24,696	6,947	24,926	21,570	78,139	17,598	142,339
COVID/Baseline	14.7%	22.1%	6.7%	25.0%	20.1%	18.4%	15.5%	16.6%
Non-COVID/Baseline	105.1%	100.4%	100.1%	108.7%	105.1%	103.6%	104.4%	104.3%

<sup>4</sup> Adjusted for assumed completion.

Incurred claim details by month are shown in Table 4.2, along with calculated monthly incurred incidence rates. Note that a small number of COVID-19 claims have incurred dates of death in 2019 or prior, which are likely due to data errors.

**Table 4.2**  
**INCURRED CLAIM COUNTS AND INCIDENCE RATES, 2017 THROUGH Q1 2022**

Incurred Date	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	
	Total	COVID					Total	Total/Baseline
3/1/22	12,740	403	1,760,267	11,048	42,298	3.83	3.62	112.0%
2/1/22	28,642	3,791	1,750,432	11,073	40,608	3.67	3.73	115.7%
1/1/22	44,611	9,120	1,770,073	11,144	52,331	4.70	4.26	132.0%
12/1/21	42,266	7,185	1,735,650	11,012	46,560	4.23	3.99	123.6%
11/1/21	39,497	5,224	1,705,754	10,830	42,280	3.90	3.97	122.9%
10/1/21	43,086	7,638	1,722,793	10,872	45,409	4.18	4.17	129.2%
9/1/21	47,186	12,265	1,708,788	10,785	49,214	4.56	4.86	150.6%
8/1/21	46,057	9,815	1,702,648	10,850	47,728	4.40	4.55	141.1%
7/1/21	36,210	1,903	1,723,257	10,831	37,347	3.45	3.54	109.5%
6/1/21	34,306	1,332	1,727,470	10,933	35,256	3.22	3.39	105.1%
5/1/21	36,705	2,439	1,736,591	10,935	37,614	3.44	3.48	107.7%
4/1/21	36,671	3,012	1,740,253	10,960	37,482	3.42	3.47	107.6%
3/1/21	38,910	3,272	1,729,922	10,917	39,675	3.63	3.43	106.3%
2/1/21	40,686	6,689	1,723,230	10,913	41,406	3.79	3.86	119.7%
1/1/21	53,905	14,321	1,718,532	10,877	54,777	5.04	4.57	141.5%
12/1/20	52,890	13,211	1,687,974	10,990	53,671	4.88	4.62	143.2%
11/1/20	43,489	7,102	1,667,520	10,903	44,082	4.04	4.12	127.6%
10/1/20	39,109	3,078	1,669,259	10,807	39,601	3.66	3.67	113.6%
9/1/20	36,325	2,376	1,672,467	10,883	36,745	3.38	3.61	111.7%
8/1/20	39,615	3,677	1,675,033	10,928	40,039	3.66	3.80	117.8%
7/1/20	39,894	3,713	1,694,959	11,017	40,286	3.66	3.76	116.5%
6/1/20	35,887	1,954	1,684,246	10,980	36,210	3.30	3.48	107.8%
5/1/20	39,236	3,858	1,740,116	11,238	39,561	3.52	3.57	110.5%
4/1/20	44,411	7,096	1,696,358	10,922	44,748	4.10	4.17	129.2%
3/1/20	38,431	1,077	1,700,112	11,011	38,695	3.51	3.33	103.1%
2/1/20	35,170	20	1,727,170	11,333	35,389	3.12	3.08	95.4%
1/1/20	38,305	63	1,682,846	11,019	38,521	3.50	3.18	98.5%
<b>2017-2019 Baseline</b>	<b>34,636</b>	<b>1</b>	<b>1,591,403</b>	<b>10,746</b>	<b>34,678</b>	<b>3.23</b>	<b>3.23</b>	<b>100.0%</b>
2019 Monthly	34,741	2	1,647,054	10,930	34,830	3.19	3.19	98.8%
2018 Monthly	34,686	2	1,587,433	10,715	34,705	3.24	3.24	100.3%
2017 Monthly	34,480	1	1,539,723	10,593	34,499	3.26	3.26	100.9%



### 4.3 INCURRED CLAIM INCIDENCE BY AMOUNT—ALL CAUSES

Overall, seasonally-adjusted incurred Group Life claim incidence rates by amount during the pandemic period were up 33.8% compared to the 2017–2019 baseline. This increase in incidence rates by amount is notably higher than the corresponding increase in incidence rates by count. The Committee estimates that roughly half the difference is due to changes in age and sex mix, and the remainder is likely due to salary and face amount inflation over the experience period.

Note that excess incurred mortality by amount during Q3 and Q4 of 2021 was more inflated than typical as compared to excess incurred mortality by count. However, the relationship between count- and amount-based excess mortality has reverted to more typical relationships during 1Q 2022.

### 4.4 INCURRED CLAIM INCIDENCE BY AMOUNT—COVID-19 VERSUS ALL OTHER CAUSES

Similar to Table 4.1, Table 4.3 shows that COVID-19 claims do not fully explain the increase in incurred claim incidence on an amount basis.

**Table 4.3**

#### AMOUNT-BASED INCURRED INCIDENCE RESULTS RELATIVE TO 2017–2019 BASELINE (CLAIMS IN \$ MILLIONS)

Amount-Based	2Q20– 4Q20	1Q21	2Q21	3Q21	4Q21	2021	1Q22	2Q20– 1Q22
Total/Baseline	126.1%	133.5%	121.6%	160.6%	145.0%	140.1%	132.4%	133.8%
COVID-19 Claims	1,720.5	1,021.1	371.2	1,465.3	1,133.2	3,990.8	795.9	6,507.2
COVID/Baseline	14.8%	25.0%	9.8%	40.2%	28.9%	25.9%	19.1%	20.9%
Non-COVID/Baseline	111.3%	108.5%	111.8%	120.4%	116.1%	114.2%	113.3%	112.9%

## Section 5: 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 follow similar patterns as results by claim count.

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

- Claims and A/E ratios are presented on an incurred basis. The “expected” basis is the 2017–2019 baseline.
- Although most companies were able to provide segment detail, some did not. Results by Company Size reflect all companies. Results for Industry reflect approximately 97% of total company claims, results for Geography reflect 94% of total company claims, and results by Age / Sex reflect approximately 91% 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 Segments” row in the tables in subsection 5.2 includes only data from companies that were able to supply claims data by Industry.
- The “% COVID” columns in the tables below show the monthly average COVID claims during the pandemic period as a percentage of the average total monthly claims from the 2017–2019 baseline period. The “% Non-COVID” column in the Age and Sex tables reflects the same for non-COVID claims.
- The “% Count” columns in the tables below show 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 the following tables, because they tended to account for a small percent of the total.

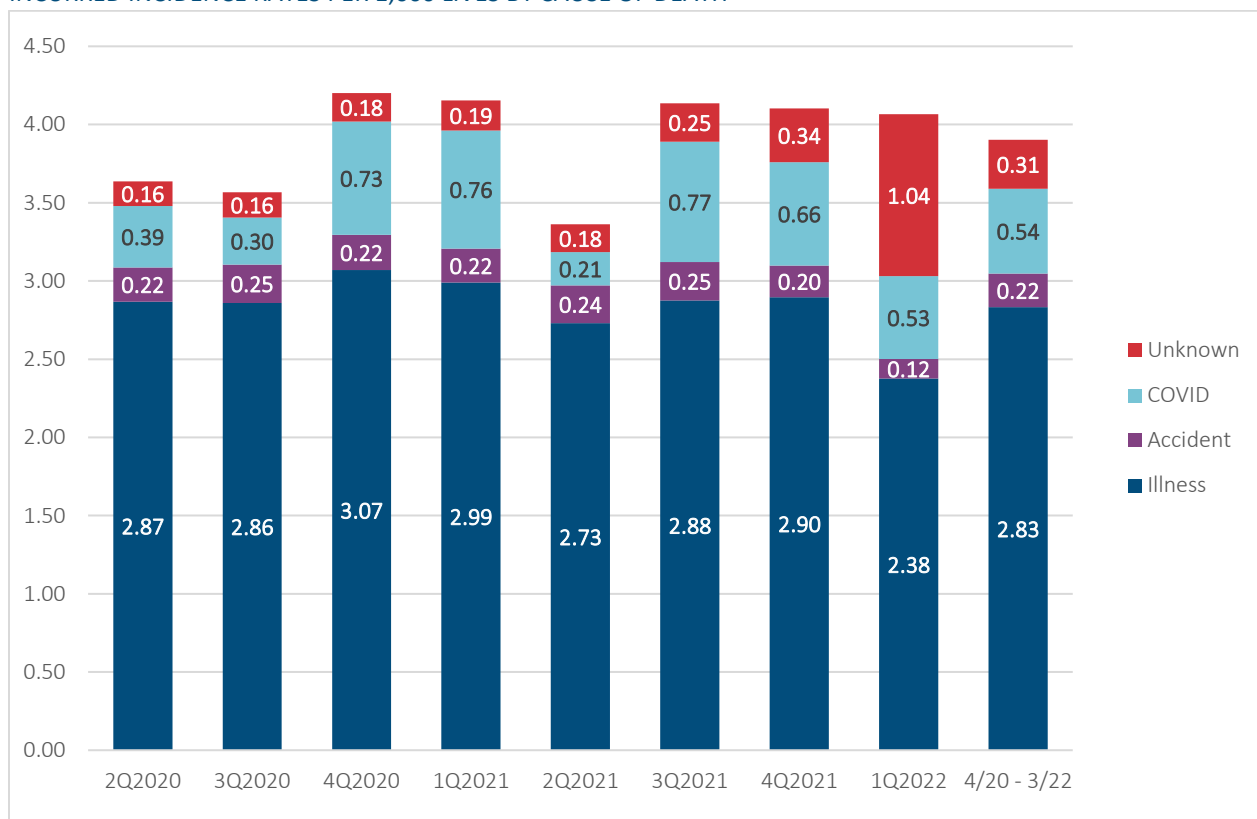
### 5.1 CAUSE OF DEATH

Cause of death continues to be difficult to study, because a significant delay is seen in assignment of this parameter during the claim adjudication cycle. In the first quarter of 2022, for example, an incidence rate of 1.04 (over 25% of first quarter incidence) is still attributable to claims with Unknown causes of death as of March 31, 2022, which comprises both reported claims without diagnosis and unreported claims. In 2020 and early 2021, the Unknowns appear to have settled at 4% to 5% of total incidence, as shown in Figure 5.1.

Whereas the mortality rate due to COVID for the second quarter of 2021 was the lowest of the pandemic period, the subsequent three quarters (3Q 2021, 4Q 2021 and 1Q 2022) saw a return to higher excess mortality levels. Accident incidence continues to be consistent over the study period.

As noted in Section 3, the incidence rates shown here are higher than in the January 2022 report.

**Figure 5.1**  
**INCURRED INCIDENCE RATES PER 1,000 LIVES BY CAUSE OF DEATH**



## 5.2 INDUSTRY

Over the entire pandemic period, the White-Collar category has experienced a higher A/E ratio than the Blue- and Grey-Collar industries. The White-Collar industry spiked early in the pandemic, with high claims relative to baseline beginning in the second quarter of 2020. The Blue- and Grey-Collar categories had similar experience to the White-Collar category in the fourth quarter of 2020, with all categories experiencing high A/E ratios. All categories saw declining excess mortality in early 2021, particularly in the second quarter of 2021, followed by a sharp increase in A/E ratios in subsequent quarters. The percentage of claims identified as COVID is similar across collar segments, as shown in Table 5.1.

Table 5.1

### EXCESS MORTALITY BY INDUSTRY COLLAR

Industry Collar	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	4/20-3/22	% COVID	% Count
Blue	112%	110%	127%	123%	107%	129%	125%	119%	119%	17.2%	40%
Grey	113%	115%	127%	117%	104%	132%	119%	108%	117%	17.9%	19%
White	120%	120%	129%	123%	107%	138%	125%	120%	123%	16.5%	40%
<b>All Collars<sup>5</sup></b>	<b>116%</b>	<b>115%</b>	<b>128%</b>	<b>122%</b>	<b>107%</b>	<b>134%</b>	<b>125%</b>	<b>120%</b>	<b>121%</b>	<b>17.1%</b>	<b>100%</b>

Tables 5.2 and 5.3 show more detailed industry results for the top ten industry segments by number of COVID claims. These are the same top ten industry groupings from the January 2022 report as well. Public Administration (White-Collar), Manufacturing–Auto, Airplanes (Blue-Collar), Misc. Services (Grey-Collar) and Doctors' Offices (Healthcare, also White-Collar) have had the highest A/E ratios since April 2020. Heavy Steel Manufacturing (Blue-Collar) had a much lower A/E ratio than the other top ten industries. In Table 5.2, “B,” “W”, and “G” refer to Blue-Collar, White-Collar, and Grey-Collar, respectively.

Table 5.2

### EXCESS MORTALITY FOR TOP TEN INDUSTRIES BY NUMBER OF COVID CLAIMS

Industry	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	4/20-3/22
W: Public Administration	119%	120%	134%	122%	108%	147%	137%	134%	127%
B: Transport; Communication; Utilities	113%	111%	127%	121%	103%	130%	122%	120%	118%
B: Manufacturing–Auto, Airplanes	112%	106%	126%	131%	118%	133%	141%	147%	127%
B: Manufacturing–Heavy; Steel	107%	104%	126%	111%	96%	113%	114%	95%	108%
W: Educational Services	114%	119%	124%	123%	106%	134%	114%	109%	118%
W: Doctors' Offices	122%	122%	124%	120%	104%	134%	115%	113%	119%
G: Manufacturing–Paper; Drugs	104%	110%	127%	123%	106%	127%	119%	106%	115%
G: Retail–Trade	106%	106%	113%	118%	101%	138%	121%	107%	114%
G: Wholesale Trade	125%	120%	138%	102%	95%	119%	115%	106%	115%
G: Misc. Service/Data Processing	117%	122%	128%	127%	114%	152%	123%	115%	125%
<b>All Segments<sup>6</sup></b>	<b>116%</b>	<b>115%</b>	<b>128%</b>	<b>122%</b>	<b>107%</b>	<b>134%</b>	<b>125%</b>	<b>120%</b>	<b>121%</b>

<sup>5</sup> Includes only companies that provided Industry splits; see second bullet at the beginning of Section 5.

<sup>6</sup> Includes only companies that provided Industry splits; see second bullet at the beginning of Section 5.

**Table 5.3**  
**COVID CLAIMS FOR TOP TEN INDUSTRIES BY NUMBER OF COVID CLAIMS**

Industry	4/20-3/22	% COVID	% Count	# COVID
W: Public Administration	127%	15.6%	14%	18,486
B: Transport; Communication; Utilities	118%	17.0%	13%	18,225
B: Manufacturing—Auto, Airplanes	127%	17.4%	9%	12,913
B: Manufacturing—Heavy; Steel	108%	15.6%	9%	11,107
W: Educational Services	118%	16.2%	6%	8,511
W: Doctors' Offices	119%	18.3%	6%	8,405
G: Manufacturing—Paper; Drugs	115%	15.3%	6%	7,443
G: Retail—Trade	114%	19.6%	4%	7,012
G: Wholesale Trade	115%	17.8%	5%	6,729
G: Misc. Service/Data Processing	125%	20.0%	3%	5,265
<b>All Segments<sup>7</sup></b>	<b>121%</b>	<b>17.1%</b>	<b>100%</b>	<b>139,764</b>

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 (Standard Industry Classification [SIC] codes 9100–9199). This segment does not include police and fire and represents more than 85% of claims in the broader Public Administration segment.

### 5.3 GEOGRAPHY

Experience has varied by quarter by broad geographic region. Since April 2020, the Southeast region shows the highest overall A/E ratio, as well as the highest percentage of claims identified as COVID. The Southeast also had a significantly higher A/E ratio in the third quarter of 2021 than other regions. Other results of note include the Northeast higher ratio in the second quarter of 2020 and the recent spike for the Midwest in Q4 2021 and Q1 2022 following several quarters of relatively more favorable results. All regions showed a significant decrease in A/E ratios in the second quarter of 2021, followed by higher ratios in the third and fourth quarters of 2021. Results appear to be consistent with broad population results in terms of timing of regional spikes across the country, as shown in Table 5.4.

**Table 5.4**  
**EXCESS MORTALITY BY GEOGRAPHIC REGION**

Region	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	4/20-3/22	% COVID	% Count
Northeast	148%	113%	131%	131%	114%	122%	128%	125%	127%	15.0%	20%
West	112%	126%	134%	135%	108%	136%	128%	106%	123%	17.1%	15%
Midwest	117%	110%	138%	112%	108%	121%	138%	134%	122%	16.6%	27%
Southeast	112%	133%	135%	139%	116%	170%	128%	128%	132%	21.4%	33%
<b>All Regions<sup>8</sup></b>	<b>116%</b>	<b>115%</b>	<b>128%</b>	<b>123%</b>	<b>107%</b>	<b>134%</b>	<b>125%</b>	<b>120%</b>	<b>121%</b>	<b>17.1%</b>	<b>100%</b>

<sup>7</sup> Includes only companies that provided Industry splits; see second bullet at the beginning of Section 5.

<sup>8</sup> Includes only companies that provided Geography splits; see second bullet at the beginning of Section 5.

Note that the All Regions total contains some business with a region of "Other" (not shown in table above). This "Other" Region had a low A/E ratio in most quarters, due to a significantly higher number of claims in the baseline period with unknown geographic region. For this reason, most time periods show an All-Regions A/E ratio that appears low relative to the A/E ratios for the four regions shown in the table.

A closer look at the states with the highest number of COVID claims (Table 5.5) shows results that are not surprising, given the regional results in Table 5.4. The second quarter of 2020 saw very high A/E ratios for several states in the Northeast (seen for NY below). States in other regions saw ratios increase beginning in the third quarter of 2020 (TX, FL, CA, GA, TN), whereas still others did not see a significant spike until the fourth quarter of 2020 (MI, IL, OH, PA). Most states saw a decrease in A/E ratios in the second quarter of 2021, and most saw a return to high ratios in the third quarter of 2021. Several Southeast states (FL, GA, TN, TX) showed extreme spikes in the third quarter of 2021, although those ratios have improved considerably except for TN. High A/E ratios in MI and OH contributed to the deterioration in Midwest region results in the fourth quarter of 2021 and the first quarter of 2022.

**Table 5.5**

**EXCESS MORTALITY FOR TOP TEN STATES BY NUMBER OF COVID CLAIMS**

State	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	4/20- 3/22	% COVID	% Count	# COVID
TX: Southeast	111%	139%	139%	142%	108%	165%	120%	110%	129%	24.8%	8%	16,381
CA: West	112%	130%	141%	154%	106%	133%	115%	100%	124%	17.7%	6%	8,894
FL: Southeast	110%	136%	123%	134%	123%	195%	123%	123%	134%	17.9%	6%	8,692
MI: Midwest	132%	106%	134%	112%	120%	113%	151%	141%	126%	17.8%	6%	8,179
OH: Midwest	108%	110%	135%	116%	105%	120%	144%	132%	121%	18.1%	5%	7,040
GA: Southeast	122%	142%	137%	153%	124%	188%	139%	135%	142%	23.7%	3%	6,427
PA: Northeast	124%	113%	138%	128%	114%	120%	140%	126%	125%	15.9%	5%	6,103
IL: Midwest	118%	111%	138%	112%	106%	116%	124%	136%	120%	14.6%	5%	5,911
NY: Northeast	171%	114%	124%	138%	112%	116%	117%	116%	126%	13.7%	4%	4,798
TN: Southeast	104%	127%	140%	136%	121%	167%	142%	152%	136%	22.5%	2%	4,669
<b>All States<sup>9</sup></b>	<b>116%</b>	<b>115%</b>	<b>128%</b>	<b>123%</b>	<b>107%</b>	<b>134%</b>	<b>125%</b>	<b>120%</b>	<b>121%</b>	<b>17.1%</b>	<b>100%</b>	<b>142,292</b>

<sup>9</sup> Includes only companies that provided geography splits; see second bullet at the beginning of Section 5.

## 5.4 AGE AND SEX

For the Age and Sex segments, excess mortality for the pandemic period was split between COVID and non-COVID claims. For example, for the 45–64 age group, the 25.1% COVID and 8.1% Non-COVID total 33% excess mortality, which equates to the 133% A/E ratio since April 2020. Generally, the 65+ age band continues to have lower A/E ratios. However, the bulk of excess mortality for this age group (which includes retirees) was identified as COVID. Cumulative A/E ratios have been similar since April 2020 for the 0–44 and 45–64 age bands, but the recent improvement has been more dramatic for the 0–44 age band after experiencing an extremely high A/E ratio in Q3 2021. A much greater proportion of excess mortality was identified as COVID for the 45–64 age band, whereas the 0–44 age band has experienced significant non-COVID excess mortality, as shown in Table 5.6.

**Table 5.6**

### EXCESS MORTALITY BY AGE BAND

Age	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	4/20-3/22	% COVID	% Non-COVID	% Count
0-44	123%	131%	121%	121%	130%	179%	140%	124%	133%	16.4%	17.1%	8%
45-64	119%	124%	129%	131%	116%	162%	144%	139%	133%	25.1%	8.1%	28%
65+	114%	110%	129%	120%	100%	116%	116%	114%	115%	13.7%	1.1%	64%
<b>All<sup>10</sup></b>	<b>116%</b>	<b>115%</b>	<b>129%</b>	<b>123%</b>	<b>107%</b>	<b>134%</b>	<b>126%</b>	<b>122%</b>	<b>121%</b>	<b>17.1%</b>	<b>4.3%</b>	<b>100%</b>

The greater age band detail in Table 5.7 provides further insight on excess mortality by age. The youngest age bands saw significant improvement in the last two quarters, but the working age population continues to see the highest A/E ratios. The overall A/E ratios are similar (but slightly higher) by amount versus count for age bands below 65. For age bands over 65, A/E ratios tend to be higher by amount than count by approximately 10%.

**Table 5.7**

### EXCESS MORTALITY BY DETAILED AGE BAND

Age	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	4/20-3/22	% COVID	% Non-COVID	% Count
0-24	116%	124%	104%	101%	119%	127%	110%	91%	111%	3.3%	8.1%	2%
25-34	127%	132%	121%	118%	131%	178%	131%	125%	133%	13.3%	19.6%	2%
35-44	123%	134%	128%	129%	133%	200%	156%	136%	142%	23.1%	19.2%	4%
45-54	123%	127%	129%	133%	119%	180%	151%	143%	138%	27.4%	10.8%	9%
55-64	117%	123%	130%	130%	114%	153%	141%	137%	131%	24.0%	6.7%	18%
65-74	117%	115%	133%	130%	108%	131%	125%	122%	122%	18.6%	3.9%	17%
75-84	114%	114%	133%	123%	106%	119%	121%	121%	119%	14.0%	4.6%	20%
85+	112%	103%	124%	111%	92%	104%	105%	103%	107%	10.3%	-3.5%	27%
<b>All<sup>11</sup></b>	<b>116%</b>	<b>115%</b>	<b>129%</b>	<b>123%</b>	<b>107%</b>	<b>134%</b>	<b>126%</b>	<b>122%</b>	<b>121%</b>	<b>17.1%</b>	<b>4.3%</b>	<b>100%</b>

<sup>10</sup> Includes only companies that provided age splits; see second bullet at the beginning of Section 5.

<sup>11</sup> Includes only companies that provided age splits; see second bullet at the beginning of Section 5.

By sex, A/E ratios have been higher in aggregate for males, as is the excess mortality due to claims identified as COVID. While not shown, A/E ratios for males within the 35–64 age bands run approximately 10% higher than female ratios, whereas ratios tend to be more similar by sex for other age bands, as shown in Table 5.8.

**Table 5.8**  
**EXCESS MORTALITY BY SEX**

Sex	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	4/20- 3/22	% COVID	% Non- COVID	% Count
Female	114%	114%	124%	119%	105%	130%	120%	115%	118%	14.8%	2.9%	32%
Male	117%	115%	130%	124%	107%	135%	127%	122%	122%	18.1%	4.0%	66%
All <sup>12</sup>	116%	115%	128%	123%	107%	134%	126%	121%	121%	17.1%	4.2%	100%

## 5.5 COMPANY SIZE

Contributing companies were assigned a size indicator of Large, Medium, or Small per the criteria described in Appendix C.2.5. Results since April 2020 have indicated higher excess mortality (and higher % claims identified as COVID) by decreasing company size, although the results by Company Size were generally of the same magnitude and were generally consistent in pattern from quarter to quarter. Ratios for Large Companies tended to be lower than other companies for most quarters. All company size categories saw a drop in A/E ratios in the second quarter of 2021, followed by a steep increase in the third quarter of 2021. Small Companies were the only category not to experience an improvement in A/E ratio in Q1 2022, as shown in Table 5.9.

**Table 5.9**  
**EXCESS MORTALITY BY COMPANY SIZE**

Company Size	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	4/20- 3/22	% COVID	% Non- COVID	% Count
Large	115%	113%	127%	122%	106%	132%	124%	120%	120%	16.5%	3.4%	79%
Medium	121%	122%	132%	121%	108%	140%	131%	117%	124%	19.4%	4.8%	16%
Small	115%	123%	137%	132%	111%	145%	133%	133%	129%	20.0%	8.7%	4%
All	116%	115%	128%	123%	107%	134%	125%	120%	121%	17.1%	3.8%	100%

<sup>12</sup> Includes only companies that provided sex splits; see second bullet at the beginning of Section 5.

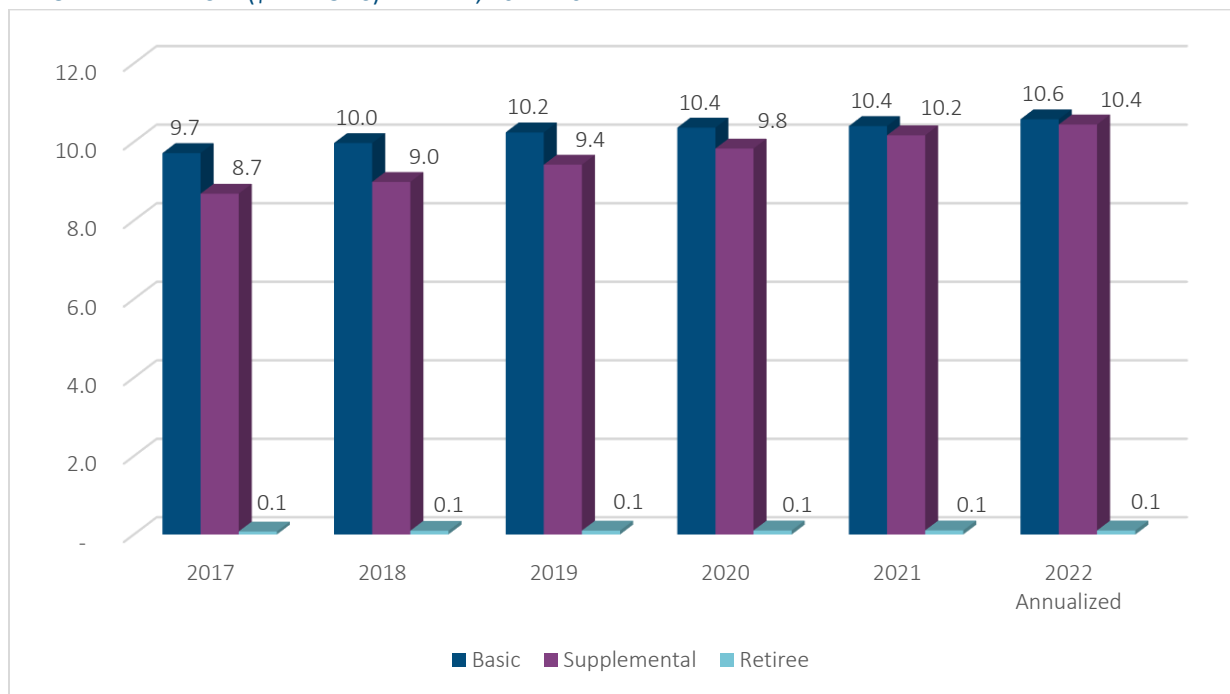


## Section 6: Exposure Trends

### 6.1 PREMIUMS

The Committee reviewed the premiums submitted for the study to determine if the premium exposure was stable or exhibited volatility during the experience period. Figure 6.1 indicates a gradual increase in premium exposure during the experience period, as expected when wage inflation is considered. Basic premium has been relatively stable for the past few years, whereas supplemental premium has increased monotonically. The 2022 premiums in Figure 6.1 were annualized based on the monthly premiums from January through March 2022. The stable trends in premiums by year shown below are helpful for validating the premium data, which were used for calculating premium per life (PPL) metrics and estimating covered lives when carriers could not provide this information.

**Figure 6.1**  
**REPORTED PREMIUM (\$ BILLIONS) BY YEAR, 2017–2022<sup>13</sup>**



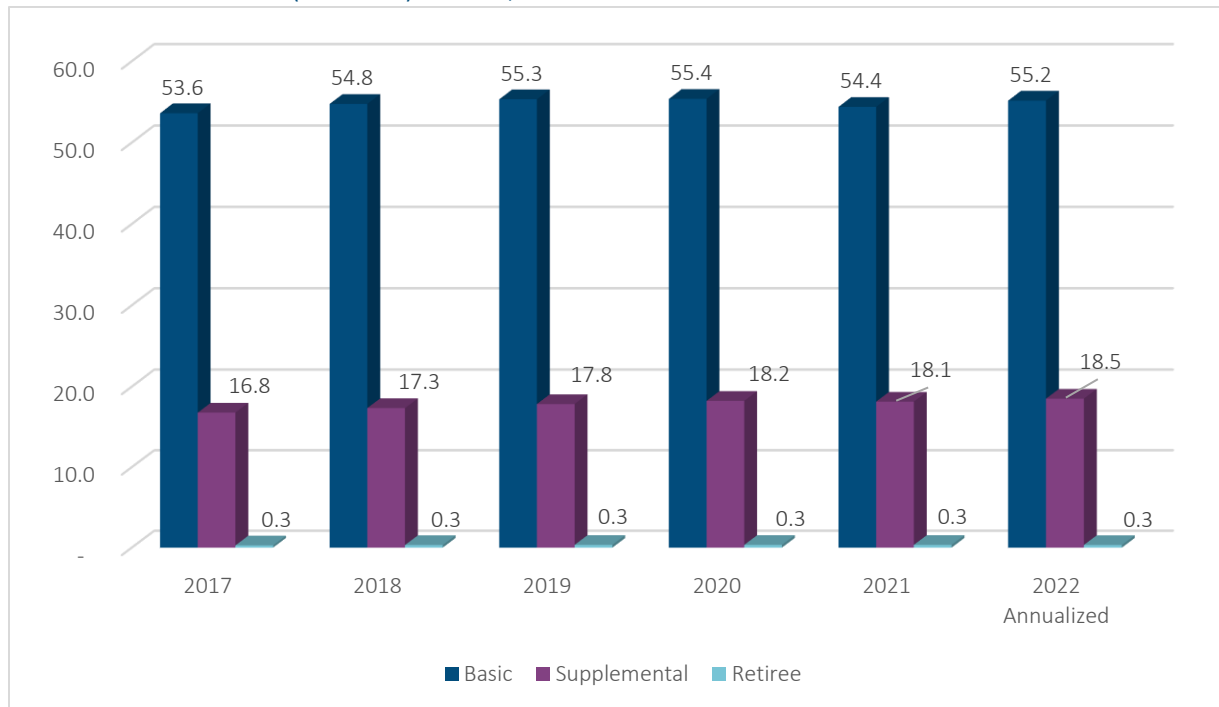
<sup>13</sup> 2022 Premium in Figure 6.1 was annualized based on the monthly premiums reported from January through March 2022.

## 6.2 LIVES

The Committee also reviewed life-years of exposure (LYE) reported for the study. Figure 6.2 shows reported LYE from 2017 through 2022, where the 2022 LYE was annualized based on three months of exposure from January through March 2022. A slight drop in LYE occurred in 2021, possibly because of disruptions from the COVID-19 pandemic. Otherwise, basic LYE was relatively stable during the experience period and supplemental LYE has been increasing gradually.

**Figure 6.2**

**LIFE-YEARS OF EXPOSURE (MILLIONS) BY YEAR, 2017–2022<sup>14</sup>**



<sup>14</sup> The 2022 LYE in Figure 6.2 was annualized based on experience from January through March 2022.

Table 6.1 shows average premium per LYE based on the data provided for the study along with the change from the prior year. In 2021, the average premium per LYE increased by 2.2% for basic coverages and 4.0% for supplemental coverages. Before 2021, the changes in average premium per LYE were more modest and possibly linked to wage growth. The 4.0% increase in the supplemental premium per LYE in 2021 may be attributed to employees increasing their supplemental benefit amounts because of the COVID-19 pandemic.

**Table 6.1**

**AVERAGE PREMIUM PER LIFE-YEARS OF EXPOSURE BY YEAR AND COVERAGE TYPE**

Year	Average Premium per LYE			Change in Average Premium per LYE		
	Basic	Supplemental	Retiree	Basic	Supplemental	Retiree
2017	\$181.3	\$517.5	\$267.7	NA	NA	NA
2018	\$182.1	\$517.9	\$290.3	0.5%	0.1%	8.5%
2019	\$185.1	\$528.0	\$288.6	1.7%	2.0%	-0.6%
2020	\$187.2	\$539.1	\$295.5	1.1%	2.1%	2.4%
2021	\$191.3	\$560.6	\$299.7	2.2%	4.0%	1.4%
2022	\$191.8	\$564.0	\$307.1	0.2%	0.6%	2.5%

## Section 7: Company Variations

### 7.1 VARIATIONS IN COVID-19 MORTALITY RESULTS

The survey showed that all participating companies had elevated Group Life mortality experience during the pandemic. However, the level of excess mortality varied between carriers. To provide insight into the dispersion of industry experience, Tables 7.1 and 7.2 provide the quartile baseline and pandemic experience, ranked by highest implied excess mortality percentage (by claim count) to lowest over the full pandemic period. The quartile incidence rates and excess mortality ratios are the weighted average of the five contributing companies' incidence rates in each quartile.

Table 7.1

#### QUARTERLY SEASONALLY-ADJUSTED INCURRED INCIDENCE RATES (BY COUNT)—COMPANY QUARTILES

Quartile	Baseline	2Q–4Q 2020	1Q 2021	2Q 2021	3Q 2021	4Q 2021	2021	1Q 2022	2Q20– 1Q22
Quartile 1	2.429	<b>3.107</b>	3.222	2.871	3.795	3.365	<b>3.313</b>	3.043	<b>3.200</b>
Quartile 2	2.508	<b>3.182</b>	3.151	2.783	3.593	3.222	<b>3.187</b>	2.968	<b>3.157</b>
Quartile 3	3.580	<b>4.229</b>	4.349	3.757	4.619	4.468	<b>4.297</b>	4.411	<b>4.286</b>
Quartile 4	4.093	<b>4.579</b>	4.641	4.010	4.935	4.614	<b>4.548</b>	4.441	<b>4.546</b>
<b>Total</b>	<b>3.227</b>	<b>3.865</b>	<b>3.953</b>	<b>3.446</b>	<b>4.315</b>	<b>4.041</b>	<b>3.938</b>	<b>3.870</b>	<b>3.902</b>

Table 7.2

#### QUARTERLY SEASONALLY-ADJUSTED INCURRED A/E RATIOS (BY COUNT)—COMPANY QUARTILES

Quartile	Baseline	2Q– 4Q20	1Q21 Ratio	2Q21 Ratio	3Q21 Ratio	4Q21 Ratio	2021	1Q22 Ratio	2Q20– 1Q22
Quartile 1	2.429	<b>127.9%</b>	132.6%	118.2%	156.2%	138.5%	<b>136.4%</b>	125.2%	<b>131.7%</b>
Quartile 2	2.508	<b>126.9%</b>	125.7%	111.0%	143.3%	128.5%	<b>127.1%</b>	118.4%	<b>125.9%</b>
Quartile 3	3.580	<b>118.1%</b>	121.5%	105.0%	129.1%	124.8%	<b>120.0%</b>	123.2%	<b>119.7%</b>
Quartile 4	4.093	<b>111.9%</b>	113.4%	98.0%	120.6%	112.7%	<b>111.1%</b>	108.5%	<b>111.1%</b>
<b>Total</b>	<b>3.227</b>	<b>119.8%</b>	<b>122.5%</b>	<b>106.8%</b>	<b>133.7%</b>	<b>125.2%</b>	<b>122.0%</b>	<b>119.9%</b>	<b>120.9%</b>

## 7.2 VARIATIONS IN COVID-19 CLAIM CODING PROCEDURES

Participating carriers were asked about the data sources and procedures they used 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 included the claim as a COVID-19 death if COVID-19 appeared anywhere on the death certificate.
- Eight of the 18 appeared 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 coded claims with cause of COVID-19 only when COVID-19 was identified as the primary cause of death on the death certificate.
- The other nine participating carriers generally classified a death as COVID-19 if it appeared anywhere on the death certificate.

## 7.3 VARIATIONS IN CLAIM REPORTING PATTERNS

Appendix D.4 documents that incurred claim completion rates varied significantly from company to company. Upon analyzing the differences, the 20 contributing companies were grouped into five “reporting speed” groups based on similar reporting patterns.

The Committee investigated whether the company reporting speed groupings would be correlated to company size. However, this was not the case. The Large, Medium and Small companies are well dispersed among the five reporting speed categories.

## Section 8: Comparisons to General U.S. Population Mortality Results

### 8.1 AGGREGATE EXCESS MORTALITY COMPARISONS

From April 2020 through March 2022, 142,339 incurred COVID claims were estimated to be in the Group Life survey data, compared with more than 997,000 COVID deaths in the U.S. population during the same time span according to the Centers for Disease Control and Prevention (CDC).<sup>15</sup> 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 2020 through March 2022, 25,000 COVID deaths in the U.S. per month indicated, on average, approximately an extra 10%–15% in Group Life mortality. However, significant month-to-month variance is seen 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<sup>16</sup> found that, in the key working ages, insured mortality is between 30% and 40% of general population mortality. This is often considered to be a function of the fact that an employee generally is in good health to be actively at work, often has access to health care, and tends to have a higher level of income (which is correlated with better health). 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 in mortality rate over a baseline expectation.

The excess deaths in the Group Life data were determined via a comparison to average death rates in the Group Life data from the 2017–2019 baseline, adjusted for seasonality. For the U.S. population, the Committee considered two different expectation bases. The first basis was expected deaths published by the CDC,<sup>17</sup> which were developed using Farrington surveillance algorithms and historical data<sup>18</sup> (CDC method). 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 the U.S. population demographic mix by age and sex, and the trend for death rates by age group (Committee method).

Based on the results from these two methods, the Committee estimates that the excess death percentage in the Group Life data is approximately 105%–125%<sup>19</sup> of the U.S. population excess death percentage for the pandemic period, with the first method informing the lower end of the range and the second method informing the higher end of the range. This range is the same as the one presented in the January 2022 report. However, the Committee notes that the higher Group Life excess death percentage as compared to U.S. population is driven by comparatively high results in three quarters of 2021.

---

<sup>15</sup> National Center for Health Statistics. Provisional Death Counts for Coronavirus Disease 2019 (COVID-19).

<https://www.cdc.gov/nchs/nvss/vsrr/covid19/index.htm>

<sup>16</sup> Society of Actuaries. 2016 Group Term Life Mortality Study & Tables. <https://www.soa.org/resources/experience-studies/2016/2016-group-life-mortality-study/>

<sup>17</sup> National Center for Health Statistics. Excess Deaths Associated with COVID-19. [https://www.cdc.gov/nchs/nvss/vsrr/covid19/excess\\_deaths.htm](https://www.cdc.gov/nchs/nvss/vsrr/covid19/excess_deaths.htm)

<sup>18</sup> 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](https://www.cdc.gov/nchs/nvss/vsrr/covid19/excess_deaths.htm#techNotes)

<sup>19</sup> Because of 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 8.1 and 8.2 results in a ratio of 20.9%/18.6% = 112.0%.

Table 8.1 shows the evolution of this comparison by quarter using the Committee method for U.S. population results. The results for Q1 2022 show higher excess mortality in the Group Life population than the U.S. population, although the relationship appears to be reverting toward the pattern from 2020. Moreover, additional data reported in April and May of 2022 indicate that the Q1 2022 Group Life excess mortality will likely complete downward, and it is expected that the fully complete Group Life excess mortality will be lower than U.S. population excess mortality for Q1 2022.

**Table 8.1**

**GROUP LIFE AND U.S. POPULATION EXCESS MORTALITY PERCENTAGES BY QUARTER**

Age	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022
Group Life	16%	15%	28%	23%	7%	34%	25%	20%
U.S. Population	20%	16%	26%	17%	6%	24%	20%	18%
<b>Difference</b>	<b>-4%</b>	<b>-1%</b>	<b>2%</b>	<b>6%</b>	<b>1%</b>	<b>10%</b>	<b>5%</b>	<b>2%</b>

To fully explore the differences in excess mortality, it is important to first understand the relative demographics of the two populations. As might generally be expected, the U.S. population data are much more evenly dispersed across the age categories, whereas a smaller portion of the Group Life survey data exposure is for children and retirees. It is also important to consider that mortality rates increase materially as age increases. Table 8.2 compares the age distribution of expected deaths between the Group Life survey data and the U.S. population, taking into consideration the same expected mortality applied to the two different demographics. Again, given the differences in demographics, a significantly higher proportion of deaths would be expected to occur in the working age population for the Group Life exposure.

**Table 8.2**

**DISTRIBUTION OF EXPECTED DEATHS BY AGE GROUP**

Age	Group Life Survey Data <sup>20</sup>	U.S. Population <sup>21</sup>
0–44	8%	7%
45–64	28%	18%
65+	64%	75%
<b>All</b>	<b>100%</b>	<b>100%</b>

<sup>20</sup> Percentages represent allocation of deaths in the 2017–2019 baseline period.

<sup>21</sup> Percentages represent expected deaths based on estimates using the Committee method.

However, the demographic differences constitute only a partial explanation. A comparison of the excess mortality between the Group Life survey data and the U.S. population data by age group indicates that the Group Life population has experienced higher excess mortality within the under-65 age groups. Table 8.3 shows the difference in excess mortality percentages between the Group Life and U.S. populations across the pandemic. Early in the pandemic, the Group Life population experienced lower excess mortality than the U.S. population, but this trend shifted beginning in the fourth quarter of 2020. In aggregate, excess mortality has been 3% higher (additive) in the Group Life population, driven primarily by the 45–64 age group and the experience of the 0–44 age group during the third quarter of 2021.

**Table 8.3**

**GROUP LIFE EXCESS DEATH PERCENTAGES MINUS U.S. POPULATION EXCESS DEATH PERCENTAGES**

Age	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	4/20- 3/22
0–44	0%	6%	-2%	-6%	2%	32%	2%	-7%	3%
45–64	-2%	4%	5%	7%	1%	21%	14%	16%	8%
65+	-5%	-4%	2%	5%	-1%	-2%	0%	-3%	-1%
<b>All</b>	<b>-4%</b>	<b>-1%</b>	<b>2%</b>	<b>6%</b>	<b>1%</b>	<b>10%</b>	<b>5%</b>	<b>2%</b>	<b>3%</b>

Because of variability in claim completion patterns, and the maturity of the most recent quarter’s incurred claim experience, these observations may change over time.

## 8.2 EXCESS MORTALITY COMPARISON BY GEOGRAPHIC REGION

The CDC method described above for U.S. population expected deaths enables a comparison of excess death percentages by month and geographic region. Tables 8.4 and 8.5 display the excess death percentages by quarter and region for the U.S. population and the Group Life survey data, respectively. As described in subsection 5.3, the baseline period for the Group Life data contains significantly more claims of unknown geography than pandemic periods. As a result, the Group Life results by region appear inflated compared to the overall total. The “Total Excl. Other” row shows the weighted average A/E ratio for claims that could be allocated to the four regions, which helps illustrate which regions had particularly high or low excess mortality.

**Table 8.4**

**U.S. POPULATION EXCESS DEATH PERCENTAGE BY QUARTER AND GEOGRAPHIC REGION<sup>22</sup>**

Region	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2020 – Q1 2022	% of Total COVID Deaths
Midwest	14.1%	9.4%	33.1%	9.6%	4.0%	13.0%	25.0%	18.9%	16.0%	21.1%
Northeast	50.1%	3.2%	16.3%	17.2%	2.8%	6.6%	15.9%	18.3%	16.5%	21.3%
Southeast	7.3%	25.7%	22.6%	25.4%	7.2%	37.2%	18.5%	20.9%	20.5%	38.3%
West	6.6%	17.9%	24.5%	29.9%	5.8%	24.2%	26.1%	20.2%	19.5%	19.2%
<b>Total Excl. Other</b>	<b>17.4%</b>	<b>15.9%</b>	<b>24.1%</b>	<b>21.0%</b>	<b>5.3%</b>	<b>22.8%</b>	<b>21.0%</b>	<b>19.8%</b>	<b>18.5%</b>	<b>99.6%</b>
<b>Total</b>	<b>17.3%</b>	<b>15.8%</b>	<b>23.9%</b>	<b>20.8%</b>	<b>5.4%</b>	<b>22.8%</b>	<b>20.8%</b>	<b>19.7%</b>	<b>18.4%</b>	<b>100.0%</b>

<sup>22</sup> Note that since the July 2021 iteration of this report, the CDC has made a change to their methodology of estimating excess deaths to use six years of prior historical data rather than four. This change resulted in an increase in the weekly expected number of deaths by an average of 2% throughout the pandemic, which, in turn, decreased the estimates of total excess deaths. Further details can be found at [https://www.cdc.gov/nchs/nvss/vsrr/covid19/excess\\_deaths.htm](https://www.cdc.gov/nchs/nvss/vsrr/covid19/excess_deaths.htm).

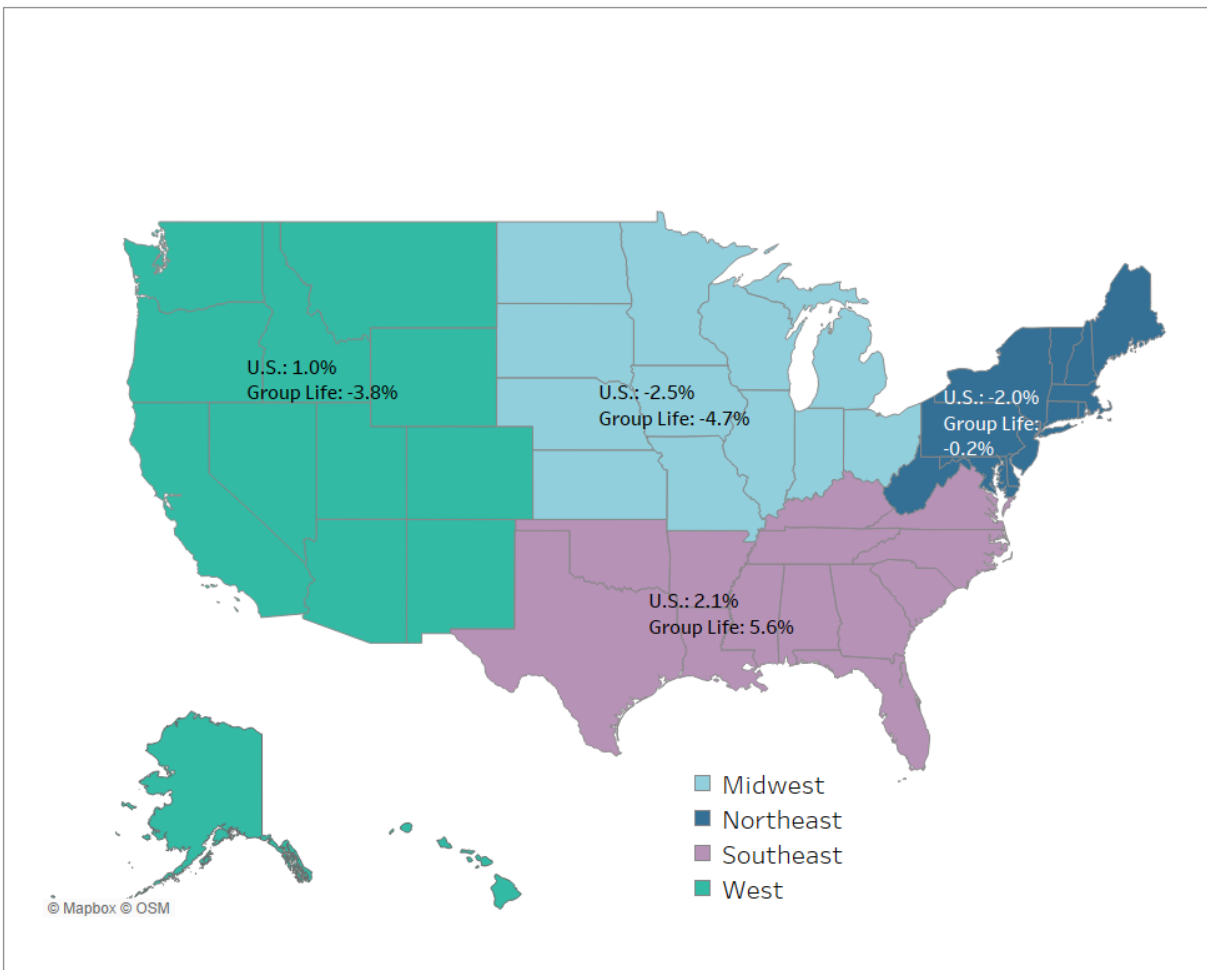


**Table 8.5**  
**GROUP LIFE COVID-19 SURVEY EXCESS DEATH PERCENTAGE BY QUARTER AND GEOGRAPHIC REGION**

Region	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2020 – Q1 2022	% of Total COVID Deaths
Midwest	16.6%	10.5%	37.6%	11.9%	8.0%	20.8%	38.2%	33.9%	22.2%	21.1%
Northeast	48.5%	13.0%	31.3%	30.6%	14.3%	22.2%	28.4%	25.5%	26.7%	21.3%
Southeast	12.2%	32.8%	34.5%	38.6%	15.8%	69.7%	28.2%	28.0%	32.5%	38.3%
West	11.5%	25.8%	34.4%	34.6%	8.5%	35.7%	27.8%	6.0%	23.0%	19.2%
<b>Total Excl. Other</b>	<b>20.8%</b>	<b>21.3%</b>	<b>34.7%</b>	<b>28.7%</b>	<b>12.1%</b>	<b>40.6%</b>	<b>31.0%</b>	<b>25.7%</b>	<b>24.2%</b>	<b>99.6%</b>
<b>Total</b>	<b>15.8%</b>	<b>15.3%</b>	<b>28.1%</b>	<b>22.5%</b>	<b>6.8%</b>	<b>33.7%</b>	<b>25.2%</b>	<b>19.9%</b>	<b>20.9%</b>	<b>100.0%</b>

Figure 8.1 shows the difference in excess death percentages by region relative to the average (excluding “Other”) for both the Group Life data and the U.S. population data. Positive numbers indicate that the region has higher excess mortality than average.

**Figure 8.1**  
**DIFFERENCES FROM AVERAGE EXCESS DEATH PERCENTAGES, APRIL 2020 THROUGH MARCH 2022**



For the April 2020 through March 2022 period, the Southeast region shows the highest excess mortality for both the Group Life data and the U.S. population. The Midwest region experienced the lowest excess mortality for both datasets during the pandemic period, though significant variations by season have been seen. For the Group Life data, the Southeast region is the only region with higher-than-average excess mortality. The largest contrast between the Group Life data and the U.S. population data is in the West region, where the U.S. population has excess mortality 1.0% (additive) higher than average and the Group Life data show excess mortality 3.8% lower than average. This difference is largely driven by the first quarter of 2022 experience in the Group Life data, where excess mortality was particularly low for the West region.

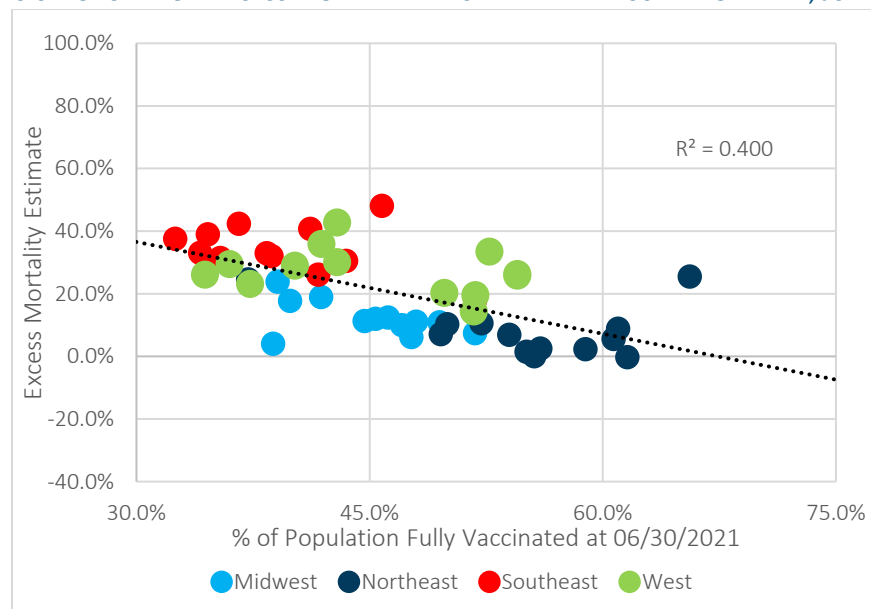
### 8.3 EXCESS MORTALITY COMPARISON BY VACCINATION UPTAKE

The Committee researched vaccination uptake statistics as of June 30, 2021 by state using data furnished by the CDC.<sup>23</sup> Using this information, the Committee analyzed excess mortality percentages by statewide vaccination rates<sup>24</sup> in the Group Life population and the U.S. population (using the CDC method for expected deaths).<sup>25</sup>

The scatterplots in Figures 8.2 through 8.7 show the correlation between the statewide vaccination rate and excess mortality in the U.S. population and the Group Life data. Figures 8.2 and 8.3 present true-ups of the third quarter of 2021 plots shown in the January 2022 report. Figures 8.4 and 8.5 display this analysis for the subsequent period of October 2021 through March 2022. Finally, Figures 8.6 and 8.7 show the correlation for the combined period of July 2021 through March 2022.

**Figure 8.2**

#### U.S. POPULATION EXCESS MORTALITY BY STATEWIDE VACCINATION RATE, JULY THROUGH SEPTEMBER 2021



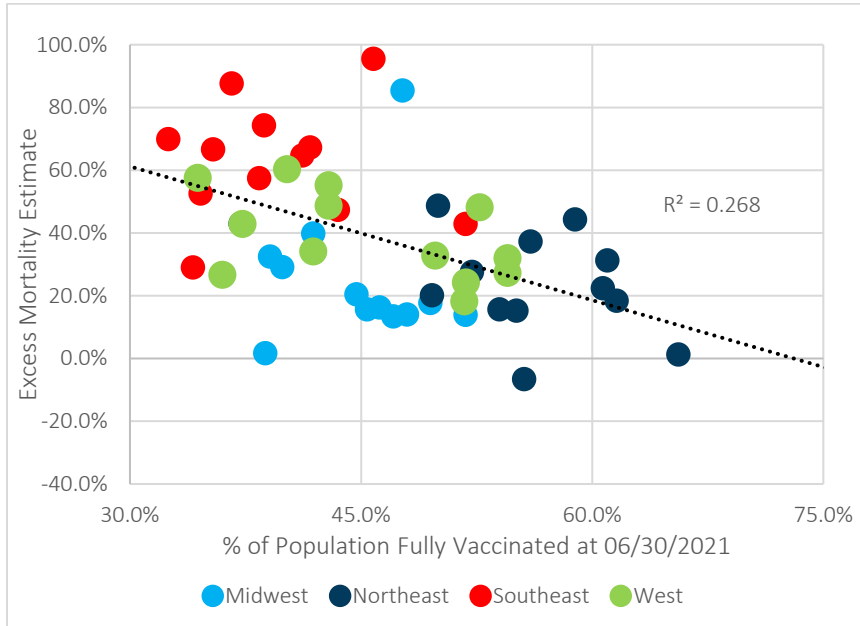
<sup>23</sup> <https://data.cdc.gov/Vaccinations/COVID-19-Vaccinations-in-the-United-States-Jurisdi/uns-k-b7fc>. In these CDC data, the percent fully vaccinated means the percent of people who have had the second dose of a two-dose vaccine or one dose of a single-dose vaccine.

<sup>24</sup> Although COVID-19 vaccines were approved only for ages 12 and up as of June 30, 2021, the denominators for the vaccination rates shown in this subsection are total state populations including all ages.

<sup>25</sup> [https://www.cdc.gov/nchs/nvss/vsrr/covid19/excess\\_deaths.htm](https://www.cdc.gov/nchs/nvss/vsrr/covid19/excess_deaths.htm). Note that the CDC excess deaths are reported on a weekly basis. In this section of the report, for the population graphs, actual and excess deaths for a particular reporting period are for weeks that ended in that reporting period.

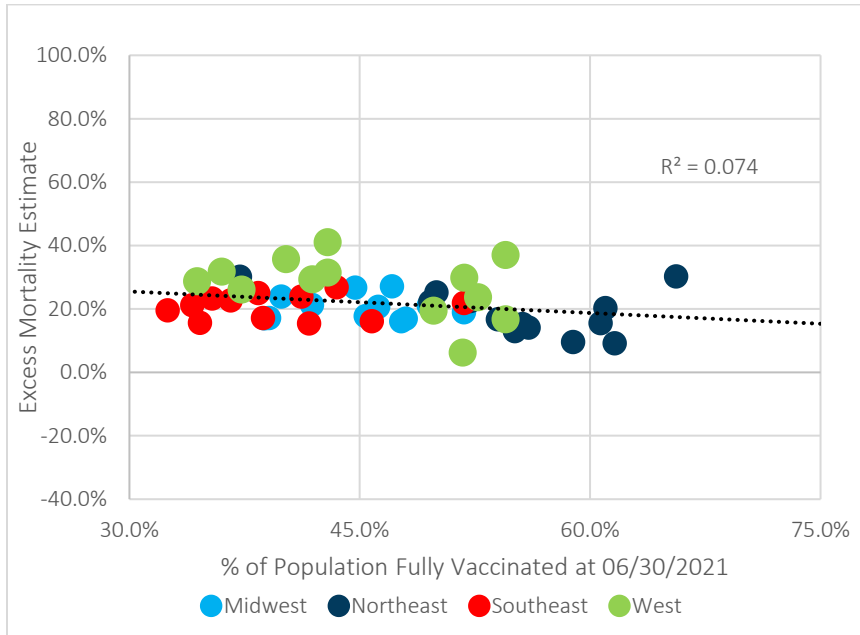
**Figure 8.3**

**GROUP LIFE EXCESS MORTALITY BY STATEWIDE VACCINATION RATE, JULY THROUGH SEPTEMBER 2021**



**Figure 8.4**

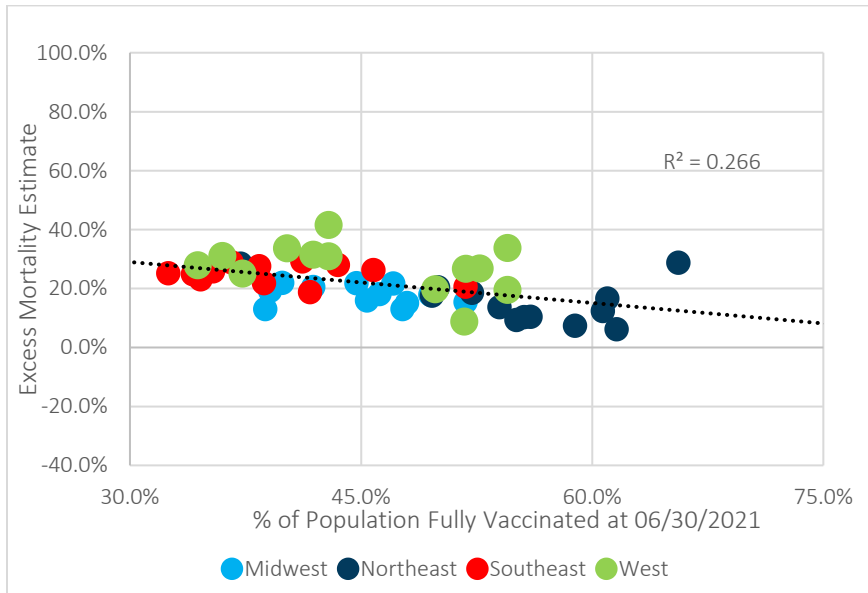
**U.S. POPULATION EXCESS MORTALITY BY STATEWIDE VACCINATION RATE, OCTOBER 2021 THROUGH MARCH 2022**

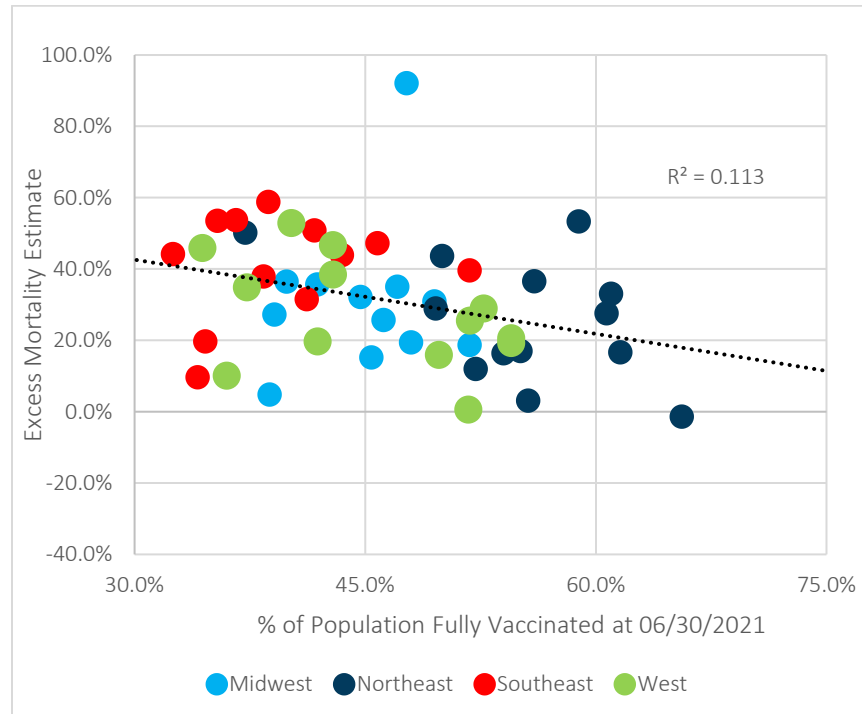


**Figure 8.5**  
**GROUP LIFE EXCESS MORTALITY BY STATEWIDE VACCINATION RATE, OCTOBER 2021 THROUGH MARCH 2022**



**Figure 8.6**  
**U.S. POPULATION EXCESS MORTALITY BY STATEWIDE VACCINATION RATE, JULY 2021 THROUGH MARCH 2022**



**Figure 8.7****GROUP LIFE EXCESS MORTALITY BY STATEWIDE VACCINATION RATE, JULY 2021 THROUGH MARCH 2022**

Comparing state-level excess mortality percentage estimates to estimated COVID-19 vaccinated percentages shows a moderate negative correlation for both the U.S. population and the Group Life data for the third quarter of 2021. For the subsequent period of October 2021 through March 2022, while some negative correlation was still seen, it was much less pronounced than the third quarter of 2021. Other variables in addition to COVID-19 vaccination rates are certainly relevant to explaining the excess mortality trends observed in the United States, and various potential reasons likely can be identified for the lower degree of negative correlation in the later period relative to the earlier period. Contributing factors for this shift might include varying degrees of vaccine effectiveness against different variants of the virus or a higher degree of natural immunity because of past infections in the later period.

The color-coded geographic regions in Figures 8.2 through 8.7 show a noticeable clustering of excess mortality results regardless of vaccination percentage, especially in the U.S. population data. Climate and seasonality are possible contributing factors to this observation, because weather patterns in broad geographic regions may contribute to similar behavior patterns and levels of viral transmission for states within the same region, which may lead to different waves of the pandemic affecting different geographic regions at different times. State-level differences may also be seen in preventative measures (e.g., social distancing and masking) that produce different transmission and death rates. Finally, COVID-19 deaths do not explain all of the excess mortality observed in the datasets presented here, and mortality patterns for other causes of death also influence the patterns shown above.

Given the range of potential contributing factors for the shifting level of correlation between the vaccination rate and excess mortality, and for the clustering of results by geographic region, the Committee urges caution in drawing definitive conclusions regarding the degree of correlation between the vaccination rate and excess mortality or the geographic clustering. To help add more detail in future versions of this report, the Committee is exploring the feasibility of developing expected death counts at the county level to conduct similar analysis at the county level. This would help the Committee to see whether the trends seen at the state level hold true at the county level.

## Section 9: 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 are emerging. 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.



**Give us your feedback!**

Take a short survey on this report.

[Click Here](#)

 **SOA**  
**Research**  
INSTITUTE

## Section 10: List of Participating Companies

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

Aflac  
Anthem  
Dearborn National  
Guardian  
The Hartford  
Lincoln Financial Group  
MetLife  
Mutual of Omaha  
New York Life Group Benefit Solutions  
OneAmerica  
Principal Financial  
Reliance Standard  
Renaissance  
Securian Financial Group  
Standard Insurance Group  
SunLife Financial Group  
Symetra  
Unum  
USABLE  
Voya

## 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 19<sup>th</sup>**. 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 6<sup>th</sup>.

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 3<sup>rd</sup> 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/sex. 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/Sex = 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/sex. 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/Sex = 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](mailto: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: Geography and Industry Code Mappings

Table B.1

### GEOGRAPHY CODE MAPPINGS

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

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

2-Digit SIC Code	Industry Group	Collar Color
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

2-Digit SIC Code	Industry Group	Collar Color
84	Museums and Membership Organizations	White
85	Museums and Membership Organizations	White
86	Museums and Membership Organizations	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

## Appendix C: Survey Methodology and Documentation

### C.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/sex 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 March 2022 data submissions, claims with an Incurred Month of April 2022 were excluded.

#### *Claims–Reported Month*

Claims with a Reported Month before 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 Supplemental/Voluntary, 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 C.2.1; 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, because recent exposure data may be unavailable. For example, one carrier indicated that their premium information for March 2022 was incomplete; therefore, the average premiums for October through December 2021 were imputed for March 2022 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 the 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 Sex*

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+. Sex 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.

## **C.2 RESULTS PROCESSING AND REVIEW**

### **C.2.1 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. Some seasonal variation was observed 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.

Completion factors vary by calendar month, reflecting the seasonal nature of claim reporting and claim processing speeds. The Committee also incorporated factor variation by reporting speed groups. The rate at which the contributing companies' claims complete was analyzed and categorized into five groups, with three to five companies in each reporting speed group.

### **C.2.2 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 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 territories, 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 by collar color (White, Grey, Blue, Unknown).

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

### **C.2.3 UNKNOWN CLAIM DIAGNOSIS**

The Unknown claim diagnosis category is artificially large for December 2021 through March 2022. This is primarily because of the newness of these claims and a reflection of the claim adjudication lifecycle. It is not uncommon to find an additional time lag between the claim reporting date and the point in the claim adjudication process when the cause of death is known, allowing for the claim to be categorized. As claims data have been collected and refreshed each month, the Committee has observed that 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.

### **C.2.4 COVID-19 CLAIMS FROM 2019 OR EARLIER**

The data show a handful of COVID-19 claims with dates of death in 2019 or earlier. 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.

### **C.2.5 GROUPINGS BY COMPANY SIZE**

To review results by company size (see subsection 5.5), contributors were split into three groups based on annualized 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 more than \$1 billion. The breakpoints were chosen to ensure at least six companies in each group. The Small group contains six companies, and the Medium and Large groups contain seven companies each.

## Appendix D: Completion Factor Development

### D.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 incurred 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 September 2020. Since that time, completion factors have been reviewed periodically and no changes were made to them.

Claims were batched 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, whereas a death incurred in June 2020 but reported in August 2020 would have a lag of two, and so on. A subset of the claim triangle is displayed below.

**Table D.1**  
**2020 INCURRED CLAIMS BY INCURRED MONTH AND REPORTING LAG**

Months of Reporting Lag	Incurred Month							
	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20
0	11,887	10,137	10,932	13,971	11,276	10,786	13,014	12,826
1	14,647	14,412	15,443	16,559	16,158	14,850	15,686	
2	5,822	4,961	5,713	6,916	6,109	5,517		
3	2,159	1,867	2,656	2,785	2,249			
4	1,350	1,242	1,283	1,386				
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 D.2, were computed by cumulatively applying the month-to-month completion factors to all subsequent months. The data presented in both Tables D.1 and D.2 have not been changed since the July 2021 publication of this report.

Table D.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	3.5594	3.7656	3.4405	3.4405	3.4405	3.4405	3.3387	3.1129	3.3387	3.2384	3.5594	4.0150
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

## D.2 BY FACE AMOUNT

Our analysis showed 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 that 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 D.3 shows a summarized version of the resulting adjustment factors. These adjustment factors have since been incorporated into the completion factors used within this report.

**Table D.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%

## D.3 BY CAUSE OF DEATH

It was unknown early in the pandemic whether COVID-19 claims would be reported more quickly or slowly than other claims. Assignment of the cause of death is typically later in the claim adjudication cycle than reporting of the claim, so COVID claims in general were expected to complete a bit more slowly than average claims because of the need to complete that step in the adjudication cycle. For deaths in June 2020 through February 2021, it appears that COVID-19 claims were being reported at roughly the same rate as the non-COVID-19 set of claims (see Table D.4). The Committee has reviewed the relative reporting speed of COVID-19 claims at multiple intervals during the pandemic and has concluded that it is not materially different than average; for this reason, the analysis has not been revisited for this report.

**Table D.4**

### CHAIN-LINK FACTORS FOR DEATHS IN JUNE 2020 – FEBRUARY 2021

Lag Months	COVID	All Other Causes	COVID / All Other Causes
0	2.188	2.202	99.3%
1	1.203	1.198	100.4%
2	1.062	1.068	99.4%
3	1.031	1.034	99.7%
<b>0-3</b>	2.888	2.916	99.1%


#### D.4 BY COMPANY REPORTING SPEED

The Committee observed that incurred claim completion rates vary significantly from company to company. Upon analyzing the differences, the 20 contributing companies were grouped into five “reporting speed” groups based on similar reporting patterns. The completion ratios were studied from 2017 through 2020 for these five groups, but more significant weight was placed on data from 2020 as was the case for the base completion factor development. The completion patterns for the five groups were compared to the aggregate completion factors and expressed as adjustments in Table D.5. The Committee observed that the differential in completion time was material for the first six reporting months for each incurred period. Further, the Committee did not discern any credible difference in the speed by incurral calendar month; hence only one vector of adjustments is provided for each group. These adjustments provide a more representative picture for the individual company reports and, to a lesser extent, improve the predictive fit of completed claims in total. Thus, the current speed group factors have been updated as compared to subsection 9.3 of the December 2020 publication.

**Table D.5**  
**COMPLETION ADJUSTMENT FACTORS BY REPORTING SPEED GROUP**


Lag	1	2	3	4	5	Aggregate
0	64.8%	81.6%	111.2%	122.0%	250.0%	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 reported 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 reported claims slower than the aggregate completion factors.



**Give us your feedback!**  
Take a short survey on this report.

[Click Here](#)



## About The Society of Actuaries Research Institute

Serving as the research arm of the Society of Actuaries (SOA), the SOA Research Institute provides objective, data-driven research bringing together tried and true practices and future-focused approaches to address societal challenges and your business needs. The Institute provides trusted knowledge, extensive experience and new technologies to help effectively identify, predict and manage risks.

Representing the thousands of actuaries who help conduct critical research, the SOA Research Institute provides clarity and solutions on risks and societal challenges. The Institute connects actuaries, academics, employers, the insurance industry, regulators, research partners, foundations and research institutions, sponsors and non-governmental organizations, building an effective network which provides support, knowledge and expertise regarding the management of risk to benefit the industry and the public.

Managed by experienced actuaries and research experts from a broad range of industries, the SOA Research Institute creates, funds, develops and distributes research to elevate actuaries as leaders in measuring and managing risk. These efforts include studies, essay collections, webcasts, research papers, survey reports, and original research on topics impacting society.

Harnessing its peer-reviewed research, leading-edge technologies, new data tools and innovative practices, the Institute seeks to understand the underlying causes of risk and the possible outcomes. The Institute develops objective research spanning a variety of topics with its [strategic research programs](#): aging and retirement; actuarial innovation and technology; mortality and longevity; diversity, equity and inclusion; health care cost trends; and catastrophe and climate risk. The Institute has a large volume of [topical research available](#), including an expanding collection of international and market-specific research, experience studies, models and timely research.

Society of Actuaries Research Institute  
475 N. Martingale Road, Suite 600  
Schaumburg, Illinois 60173  
[www.SOA.org](http://www.SOA.org)