

# What Group Life Underwriters Should Know About COVID-19 Mortality Impacts

**Steve Rulis, 2<sup>nd</sup> VP & Group Actuary, Munich Re**

**Michael Krohn, Actuary, Gen Re**

March 9, 2021



# Disclaimers

The data shared in this presentation is published by the Society of Actuaries (SOA) and contains information from a variety of sources. The data presented is preliminary and has not been thoroughly peer-reviewed for public consumption. It may or may not reflect the experience of any individual company.

The study is for informational purposes only and should not be construed as professional or financial advice. The SOA does not recommend or endorse any particular use of the information provided in this study. The SOA makes no warranty, express or implied, or representation whatsoever and assumes no liability in connection with the use or misuse of this study.

# Group Life COVID-19 Survey Overview



# SOA COVID-19 Group Life Mortality Survey

- Recurring monthly survey to measure high level impact of COVID-19
- Sincere thanks to 20 participating Group Life carriers
- Compares overall Group Life mortality during pandemic to prior period (2017-2019) baseline results
- Monthly results published 7 to 8 weeks after month end
  - Pivot tables comparing each participant's results to entire survey
  - Brief write-up with high level analysis
- Detailed report published December 2020 on SOA website with data through August 2020.  
<https://www.soa.org/resources/experience-studies/2020/group-life-covid-mort-survey/>
- Data in this presentation includes reported data through December 2020, but is preliminary.

# SOA COVID-19 Group Life Mortality Survey

- Not a seriatim mortality study
- Survey of monthly exposures, death counts and amounts
- Required data splits:
  - Basic Life; Voluntary/Supplemental Life; Retiree Life
  - Cause of death: COVID-19; Accident; All Other
- Optional segments: Age; Gender; Industry; State
- Measures Reported deaths in total
- Calculates estimated Incurred deaths in total and by segment
- Excludes: GUL, COLI, Premium Waiver disabilities

# Group Life COVID-19 Survey Results

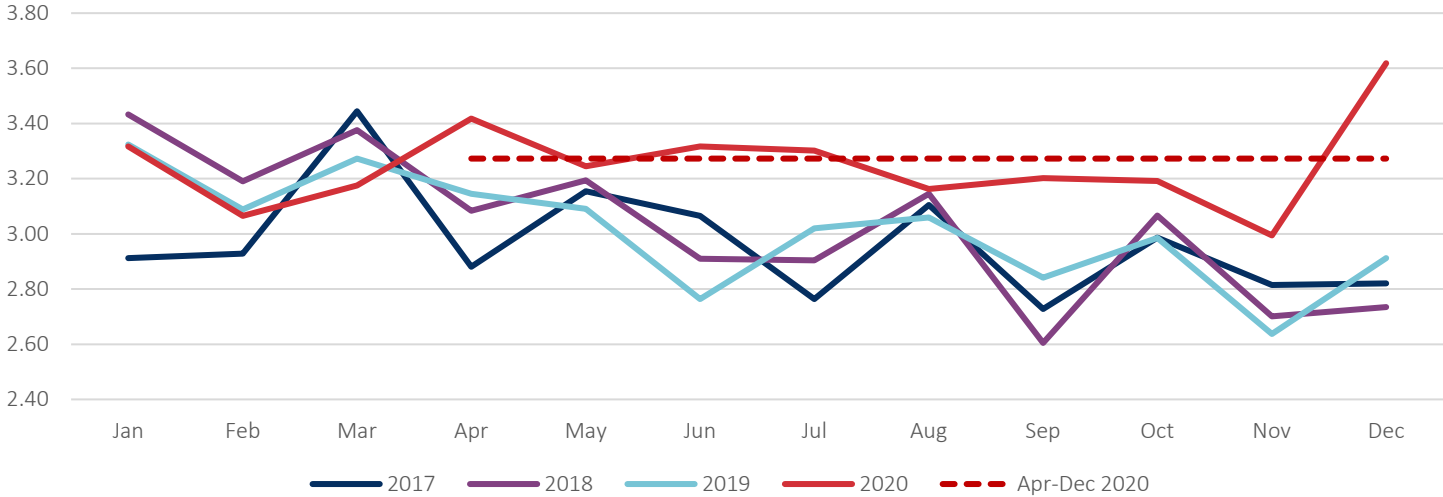
Through December 2020 Reporting



# Survey Results – Reported Incidence

- The last 9 months of 2020 Reported Incidence has remained elevated above the 2017-2019 baseline period, averaging 12% excess mortality vs. baseline.
- Reported Incidence includes deaths from months prior to reporting month and does not give a clear indication of a given month’s financial impact.
  - Implied Changes to IBNR are a missing piece in the reported incidence view.

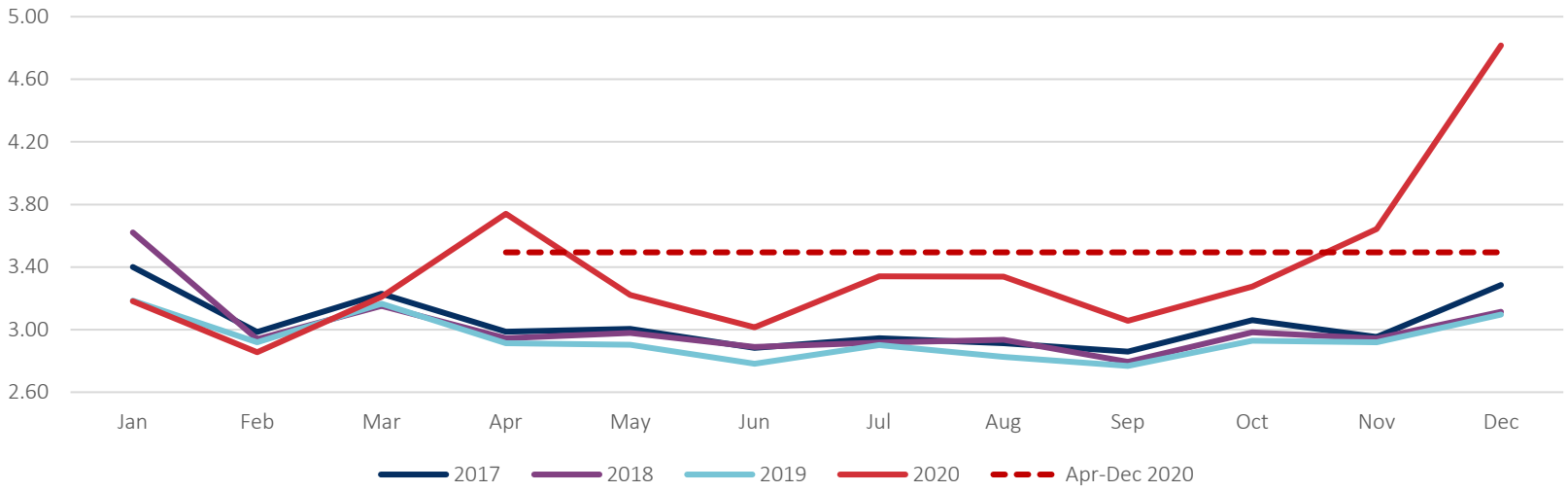
AGGREGATE REPORTED CLAIM INCIDENCE PER 1000 BY CALENDAR YEAR AND MONTH



# Survey Results - Incurred

- Like Reported Incidence, Incurred Incidence has consistently been above the baseline period since April, averaging 18% excess mortality vs. baseline.
- Incurred incidence is more in line with Group Life financial results, as companies make IBNR adjustments for their expected incurred losses.
  - But, this view relies on completion factors based on historical experience, and completion experience has been very volatile during the pandemic.

AGGREGATE INCURRED CLAIM INCIDENCE PER 1000 BY CALENDAR YEAR AND MONTH





# Quartiles of Company Experience

- The distribution of excess mortality by company quartile shows a wide dispersion of impacts from the COVID-19 pandemic.
- In 4Q20, the quartile of companies exhibiting “better” mortality than baseline is likely due to a slower reporting pattern in recent months than expected, as all Group Life companies are publishing unfavorable mortality results for 4Q2020.

## SEASONALLY ADJUSTED GROUP LIFE EXCESS INCURRED MORTALITY – COMPANY QUARTILES

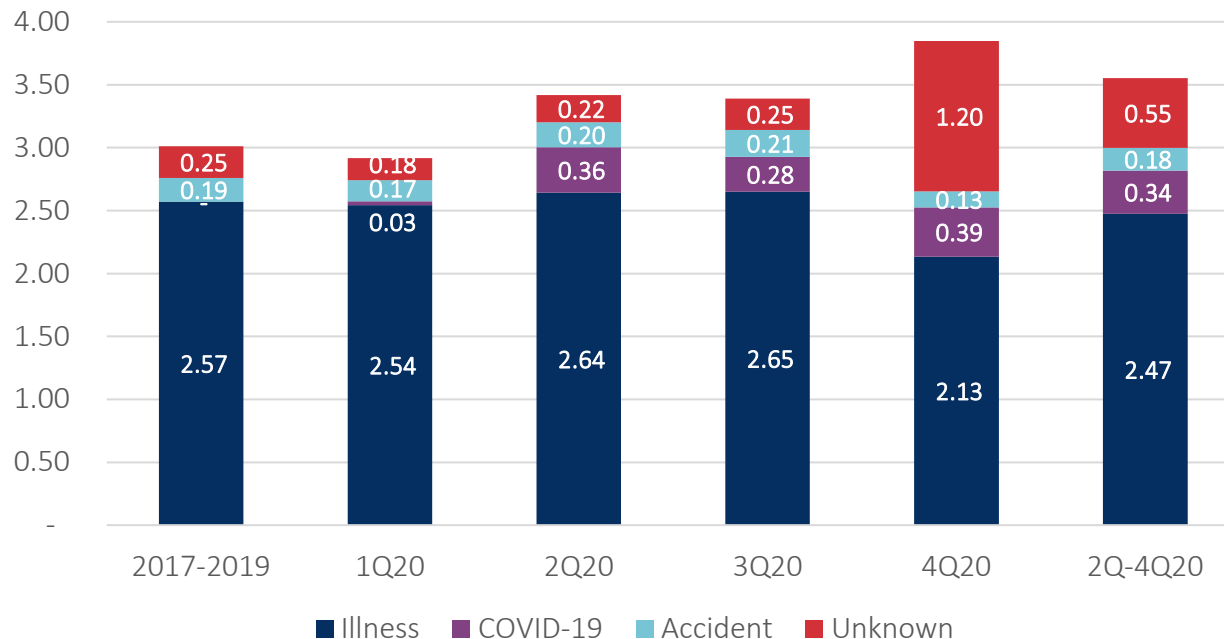
Company Quartile	2017-2019	Q2 2020	Q3 2020	Q4 2020	2Q-4Q20	Q2 Ratio	Q3 Ratio	Q4 Ratio	Q2-Q4 Ratio
Quartile 1	3.376	3.929	4.092	6.005	4.675	116.4%	121.2%	177.9%	138.5%
Quartile 2	1.899	2.280	2.297	2.286	2.288	120.1%	121.0%	120.4%	120.5%
Quartile 3	3.520	3.920	3.799	4.087	3.935	111.4%	107.9%	116.1%	111.8%
Quartile 4	2.794	3.074	2.968	2.159	2.735	110.0%	106.2%	77.3%	97.9%
Total	3.001	3.415	3.389	3.849	3.550	113.8%	112.9%	128.3%	118.3%

*\*\*Incidence rates show are the weighted average rates of the 5 companies in each quartile\*\**

# Results by Cause of Death

- Cause of death becomes more “known” after 3-4 months of reporting development for incurral periods.
- Accident deaths have remained stable throughout the pandemic.

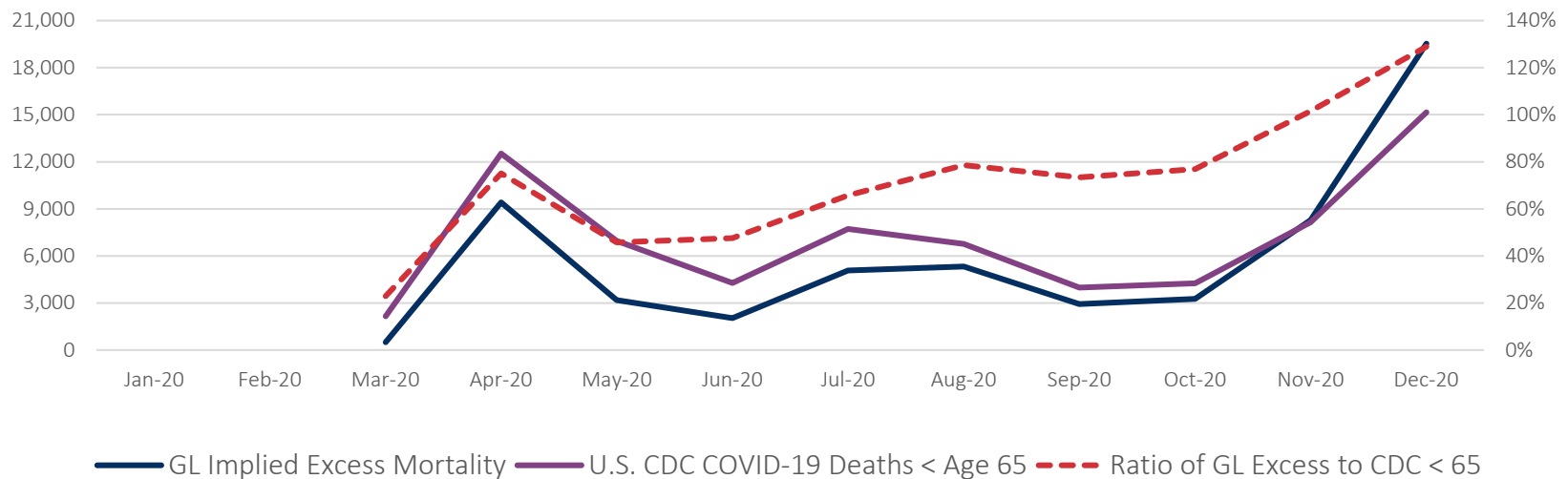
2020 INCURRED INCIDENCE RATES (SEASONALLY ADJUSTED) PER 1000 LIVES BY CAUSE OF DEATH



# Group Life Excess Mortality vs. U.S. CDC COVID-19 deaths – Under age 65

- Group Life excess mortality counts were 50-80% of U.S. CDC population COVID-19 deaths under the age of 65 for April-October 2020.
- Group Life excess mortality could exceed U.S. CDC COVID-19 deaths due to retiree inclusion in GL data, one death contributing 2 claim counts (basic and supplemental), and excess mortality not attributable to COVID-19.

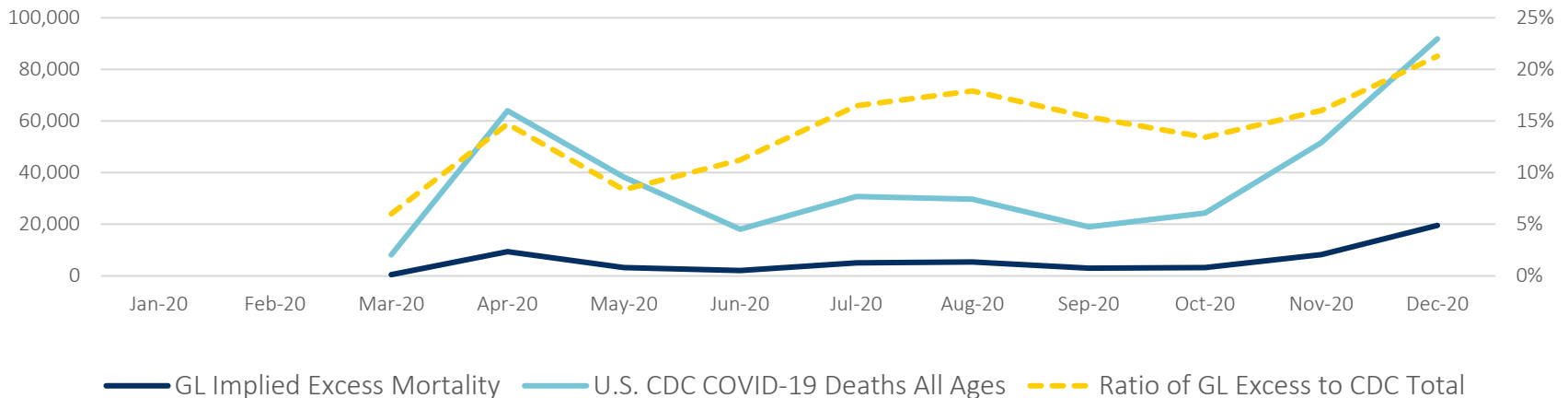
GROUP LIFE INCURRED EXCESS MORTALITY COUNTS VS U.S. CDC COVID-19 DEATHS FOR AGES 0 TO 64



# Group Life Excess Mortality vs. U.S. CDC COVID-19 deaths – All Ages

- Group Life excess mortality counts relative to the U.S. CDC population COVID-19 deaths for all ages has been relatively stable in 2020.
- Note that the relationship has increased to record levels in the early read for December 2020 results.

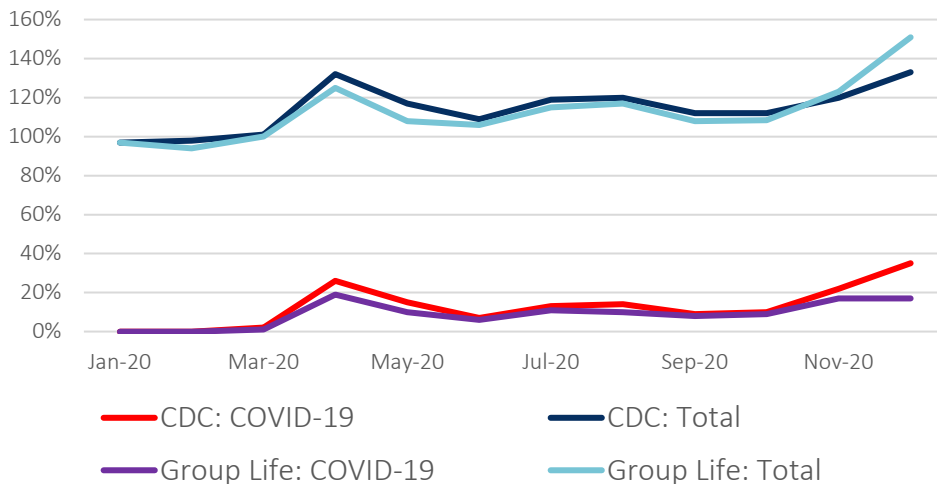
GROUP LIFE INCURRED EXCESS MORTALITY COUNTS VS U.S. CDC COVID-19 DEATHS FOR ALL AGES



# Group Life vs. US Population Actual to Expected Mortality

- Group Life excess mortality has tightly tracked U.S. population excess mortality for most of 2020.
- Interesting to note that the Group Life survey data is attributing ~1/3 of excess mortality to non-COVID-19 cause of deaths.

INCURRED MORTALITY A/E: GROUP LIFE VS. US POPULATION\*\*

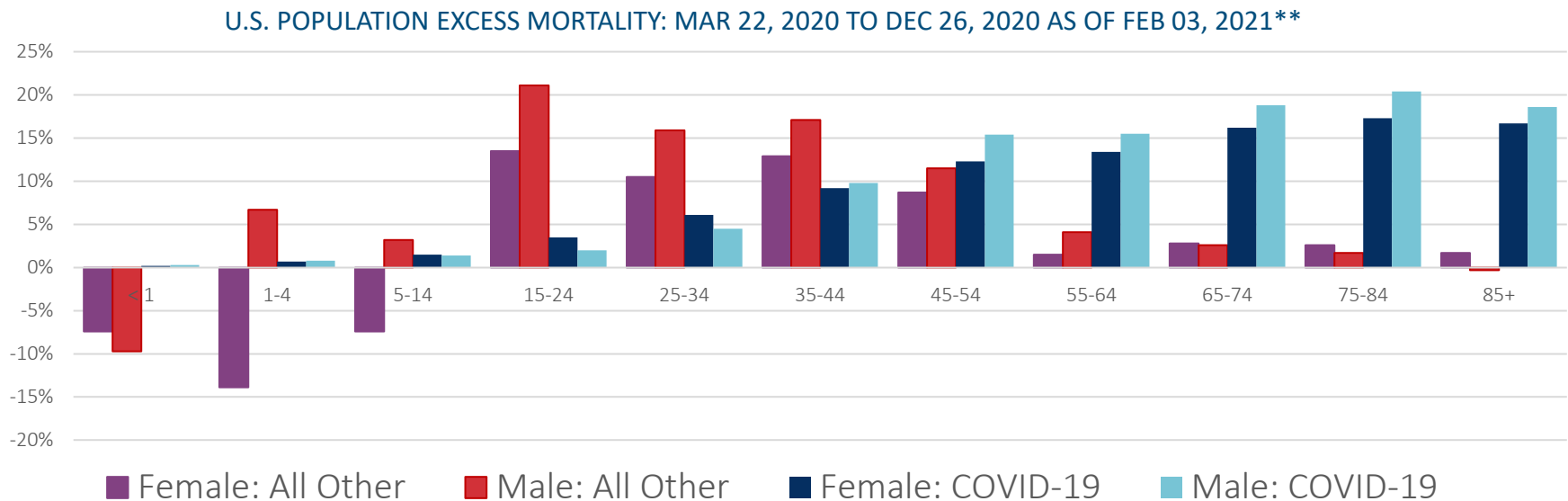


Comparison of Group Life Survey Results to U.S. Population **			
	Group Life	U.S. Population	Ratio
Period (in 2020)	4/1 to 12/31	3/29 to 12/26	
Population (000)	143,172	330,384	43.3%
Total Deaths	375,075	2,541,982	14.8%
Annual Rates per 1,000	3.477	10.287	33.8%
COVID-19 Deaths	35,957	355,210	10.1%
Expected	317,031	2,149,006	15.5%
Excess Deaths as Percent of Expected			
Total	18.3%	18.3%	100.1%
COVID-19	11.4%	16.5%	69.1%
Exclude COVID-19	6.9%	1.8%	392.2%

\*\* US population analysis sourced from "2020 Excess Deaths in the US general Population by Age and Sex" by Rick Leavitt. Page 5: <https://www.soa.org/resources/research-reports/2021/excess-deaths-gen-population/>

# U.S. Population Actual to Expected Mortality

- From March through December, COVID-19 identified causes of death explain most of the excess mortality for ages 55+.
- For ages under 55, at most half of excess mortality is explained by COVID-19.
- Favorable mortality has been observed for females under the age of 15 and males under the age of 5.



\*\* Sourced from "2020 Excess Deaths in the US general Population by Age and Sex" by Rick Leavitt. Page 7: <https://www.soa.org/resources/research-reports/2021/excess-deaths-gen-population/>

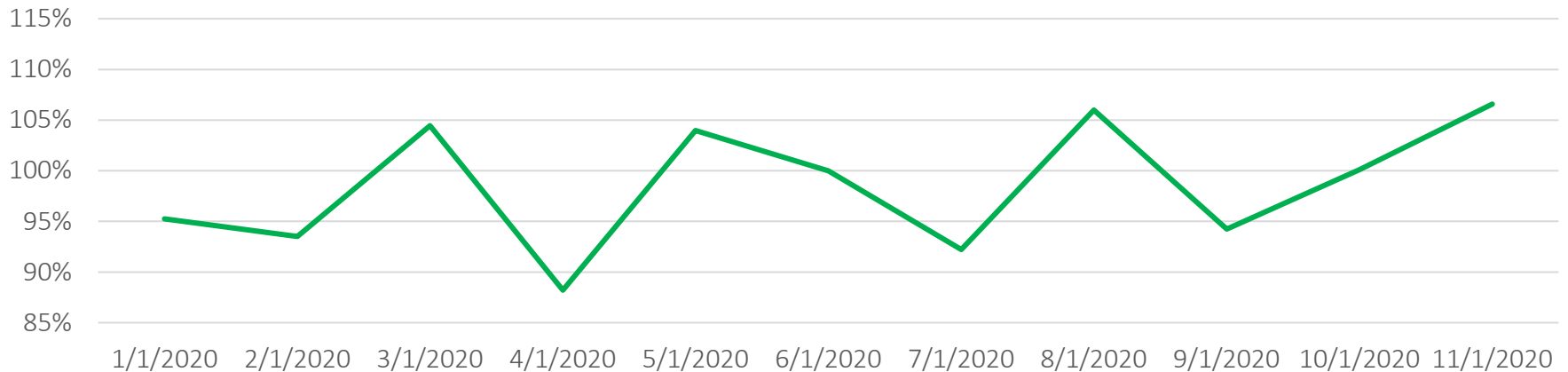
# Data Considerations



# Incurral Period Completion

- Variability in completion speed of incurral months has contributed to the month-to-month volatility of incurral period results for the Group Life COVID-19 survey.
  - The expected completion patterns were set based on 2017-2019 data. All but 2 incurral month's completion rates were at least 5% different than expected.
- In general, the survey data shows ~15,000 incurred claims to be reported in the month following incurral, so a 5% variability in completion results in at least a 750 claim, or 2%, change in incurred claim estimates.

REPORTED CLAIM A/E FOR 2ND REPORTING MONTH, BY INCURRAL MONTH





# Cause of Death Coding

- 18 carriers documented varying levels of thoroughness to code a COVID-19 death
- 17 of 18 code as COVID-19 death if COVID-19 appears anywhere on the death certificate (DC)
- 8 of 18 do exhaustive research to track all claims where COVID was a contributing cause, using 5 or more of the following sources:
  - Primary cause of death on DC
  - Secondary cause of death on DC
  - Claim form
  - Communication with employer or beneficiary
  - Obituary
  - Communication with medical examiner or funeral home
- 1 carrier codes uses only the primary cause of death on the death certificate.
- The other 9 carriers generally classify deaths as COVID-19 only if it is listed as either primary or secondary cause of death on the DC

# Underwriting Considerations for 2021 and Beyond



# Incurred GL Mortality A/E by Age & Gender

<b>Males</b>	<b>1Q20</b>	<b>2Q20</b>	<b>3Q20</b>	<b>10/20</b>	<b>11/20</b>	<b>12/20</b>
<b>Age</b>						
00-44	100.4%	122.7%	124.29%	114.76%	111.6%	120.5%
45-64	97.8%	121.3%	125.26%	115.28%	131.5%	162.7%
65-99	96.9%	111.4%	106.44%	106.71%	125.4%	148.8%
<b>Total Males</b>	<b>97.4%</b>	<b>114.8%</b>	<b>112.68%</b>	<b>109.53%</b>	<b>125.9%</b>	<b>150.2%</b>

<b>Females</b>	<b>1Q20</b>	<b>2Q20</b>	<b>3Q20</b>	<b>10/20</b>	<b>11/20</b>	<b>12/20</b>
<b>Age</b>						
00-44	96.6%	113.8%	127.05%	107.60%	113.3%	116.0%
45-64	96.0%	111.4%	119.44%	110.91%	121.2%	152.1%
65-99	97.3%	110.8%	105.00%	105.35%	114.4%	124.7%
<b>Total Females</b>	<b>96.8%</b>	<b>111.2%</b>	<b>111.19%</b>	<b>107.20%</b>	<b>116.4%</b>	<b>132.4%</b>

# Incurred GL Mortality A/E by Industry

	4-12/20	All 2020	1Q20	2Q20	3Q20	4Q20
Blue	114%	110%	96%	110%	108%	124%
Grey	118%	113%	96%	113%	114%	128%
White	126%	120%	102%	121%	121%	136%
Unknown	50%	51%	53%	53%	49%	47%
No SIC	90%	86%	74%	85%	83%	102%
All	118%	113%	97%	114%	113%	128%

- Blue collar consistently closest to baseline expected
  - Low mortality from heavy steel/manufacturing and textiles
- White collar highest A/Es
  - Public administration excluding police and fire with high A/Es

# Incurred GL Mortality A/E by Region

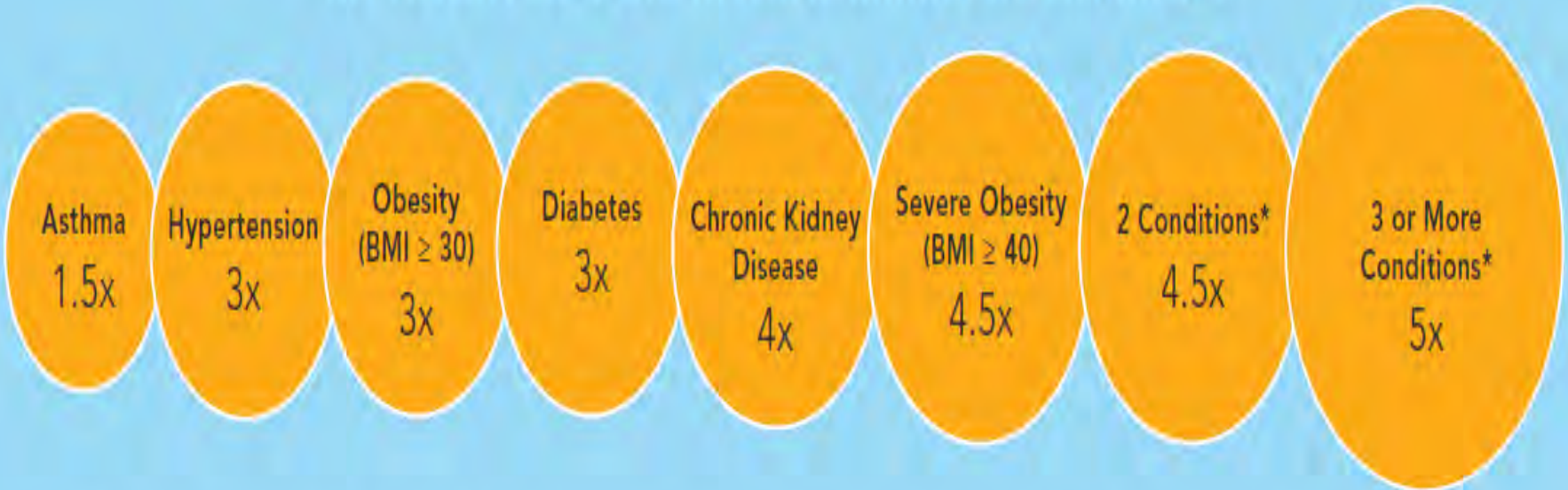
Region	1Q20	2Q20	3Q20	10/20	11/20	12/20
Midwest	98.5%	115.0%	109.4%	118.0%	151.8%	189.0%
Northeast	108.7%	145.0%	109.2%	109.5%	116.0%	141.6%
Other	40.0%	33.6%	18.9%	21.3%	37.2%	91.9%
Southeast	98.4%	110.7%	130.5%	118.7%	127.9%	149.8%
West	98.2%	108.1%	119.5%	105.2%	106.5%	127.1%
<b>Total</b>	<b>97.1%</b>	<b>113.8%</b>	<b>112.9%</b>	<b>109.2%</b>	<b>123.6%</b>	<b>151.8%</b>

- Excess mortality by region has evolved over time
- NY, NJ contributed to poor Q2 Northeast A/E
- GA, FL, TX high A/Es in Q3
- MI, WI high A/Es in Q4

# Impact of Comorbidities

1. Nearly 90% of those hospitalized for COVID-19 have underlying conditions
2. Roughly 24% of COVID-19 deaths have other contributing conditions

RISK FOR HOSPITALIZATION IF YOU HAVE ANY OF THESE CONDITIONS AND GET COVID-19 COMPARED TO PEOPLE WITHOUT THE CONDITION(S).



\*Conditions include asthma, obesity, diabetes, chronic kidney disease, severe obesity, coronary artery disease, history of stroke and COPD.

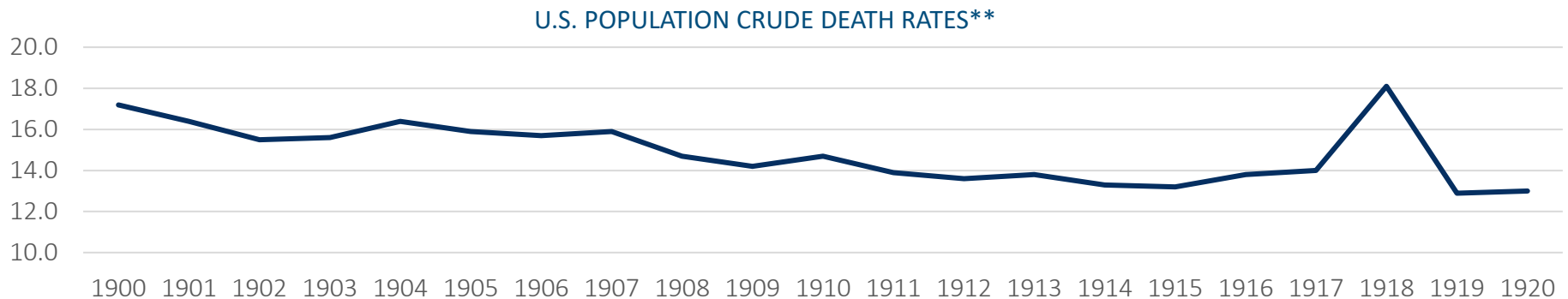
Sources: [JEMS](#), [cdc.gov](#)

# Group Life – Potential Good News 2021+

- Vaccinations
- Progress toward herd immunity (typically assumed at 70% +/-)
  - Obtained through vaccine or those already infected
  - Will allow for material slow down of infection rates
  - Herd immunity threshold =  $1 - (1/R_0)$ 
    - $R_0$  = avg. # new people infected by each person with COVID-19
    - Current view of  $R_0$  in 2-3 range
- Advancing of Deaths
  - Likely that some 2020 deaths with underlying conditions were advanced from 2021+ expected deaths
- Favorable flu seasons

# Historical Perspective: Spanish Flu

- The Spanish Flu has provided a commonly referenced analogue to the COVID-19 pandemic for U.S. mortality experience
- While not a nuanced analysis (not controlled for demographic mix, methodology changes, medical advancements, etc.), the lowest death rates from 1900-1920 occur in the two years after the Spanish Flu peaked in 2018.



\*\* Sourced from "Vital Statistics Rates in the United States 1900-1940", Table 3: [https://data.nber.org/vital-stats-books/vsrates1900\\_40.CV.pdf](https://data.nber.org/vital-stats-books/vsrates1900_40.CV.pdf)



# Group Life – Potential Bad News 2021+

- Vaccine prevalence and effectiveness
  - Vaccines not mandatory or universally available
  - Viral mutations expected and ongoing
- Residual lung scarring and heart damage
  - COVID-19 associated myocarditis (inflammation of heart muscle)
  - Not always explained by severity of the illness
- Deferred healthcare
  - New cancer diagnoses down 40%+ during early weeks of the pandemic
  - Heart surgeries down 50%+ in 2020
- Suicides and deaths of despair

# Group Life Underwriting Considerations

Renewal vs.  
New  
Business  
data  
availability

Industry  
dynamics &  
potential  
K shaped  
economic  
recovery

Impact of  
furloughs or  
demographic  
changes

Waiving  
suicide  
exclusions  
or actively  
at work  
provisions?

Extended  
Rate  
Guarantees?

# Questions & Comments

Steve Rulis

[SRulis@munichre.com](mailto:SRulis@munichre.com)

770.356.9184

---

Mike Krohn

[Mike.Krohn@genre.com](mailto:Mike.Krohn@genre.com)

570.412.1703





**SOCIETY OF  
ACTUARIES®**