



TRENDS IN INSURED TO POPULATION MORTALITY RATIOS THROUGH COVID

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R. Dale Hall, FSA, CERA, MAAA, CFA
Managing Director, SOA Research Institute

The Back Story

- Early days of COVID
 - What will the impact of mortality in the emerging pandemic across the broader population be on insurance industry mortality?
- What are previous examples to draw from when experiencing quick mortality changes?
 - Antibiotics
 - War
 - Social Healthcare Programs

The Back Story

INDIVIDUAL LIFE INSURANCE AND POPULATION MORTALITY IN THE UNITED STATES¹⁶¹⁷

Year	Estimated Individual Life Death Claims (Millions)	Estimated Individual Life Face Amount Exposure (Millions)	Estimated Individual Life Crude Mortality Rate per 100,000 (A)	Population Deaths (Millions)	Population Exposure (Millions)	Population Crude Mortality Rate per 100,000 (B)	(A) / (B)
2009	\$38,306	\$10,289,417	372.3	2.44	306.77	794.50	46.9%
2010	\$39,045	\$10,403,986	375.3	2.47	308.75	799.50	46.9%
2011	\$41,869	\$10,738,509	389.9	2.52	311.59	807.30	48.3%
2012	\$43,109	\$11,104,319	388.2	2.54	313.91	810.20	47.9%
2013	\$43,405	\$11,290,289	384.4	2.60	316.13	821.50	46.8%
2014	\$46,419	\$11,595,684	400.3	2.63	318.86	823.70	48.6%
2015	\$52,436	\$12,084,040	433.9	2.71	321.42	844.00	51.4%
2016	\$54,214	\$12,166,850	445.6	2.74	323.13	849.30	52.5%
2017	\$54,960	\$11,959,400	459.6	2.81	325.72	863.80	53.2%
2018	\$56,749	\$12,023,849	472.0	2.84	327.17	867.80	54.4%

- Crude Rates vs. Age-adjusted Rates
- Claim amounts / Face amounts vs. Claim / Policy Counts

The Back Story

PERCENTAGE OF DEATHS FOR AGES 55-89, 2010-2015

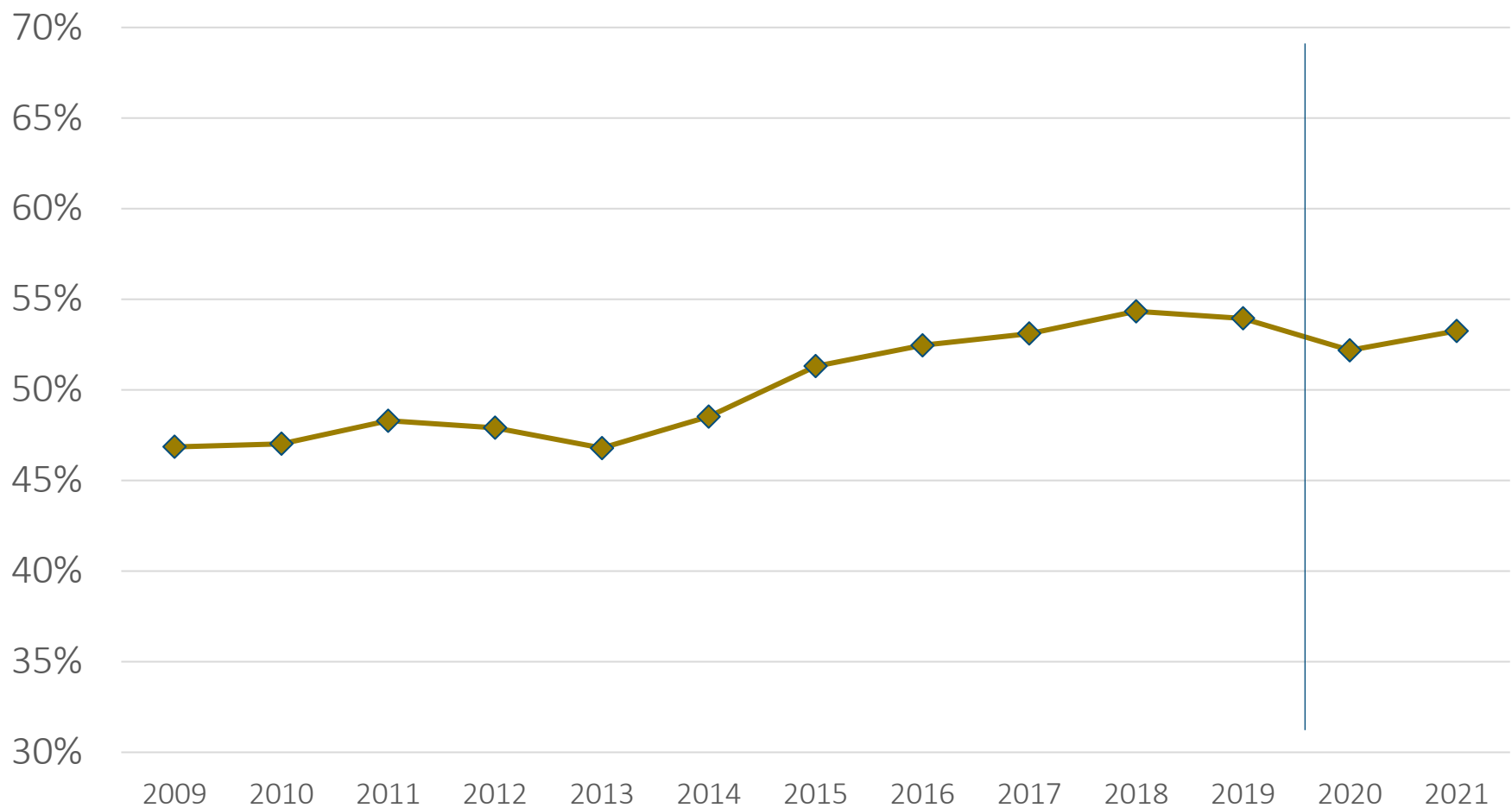
Selected Causes of Death	Population Proportion of Total Claims, Male	Population Proportion of Total Claims, Female	Individual Life Proportion of Total Claims, Male	Individual Life Proportion of Total Claims, Female
Circulatory System Disease	33.3%	33.0%	25.9%	22.1%
Cancer	26.4%	21.9%	38.7%	44.4%
Respiratory System Disease, Influenza and Pneumonia	10.8%	11.0%	6.8%	7.5%

Bahna-Nolan, Mary and David Wylde. (2017, April). "Mortality Trends in the U.S.: Differences Between the Insured Population and the General Population."

The Emerging Story

Year	Estimated Individual Life Death Claims (Millions)	Estimated Individual Life Face Amount Exposure (Millions)	Estimated Individual Life Crude Mortality Rate per 100	Population Deaths (Millions)	Population Exposure (Millions)	Population Crude Mortality Rate per 100,000 (B)	(A) / (B)
2019	57,477	12,254,372	469.0	2,854,838	328,329,953	869.5	53.9%
2020	67,217	12,619,142	532.7	3,383,729	331,501,080	1020.7	52.2%
2021	73,418	13,209,406	555.8	3,464,231	331,893,745	1043.8	53.2%

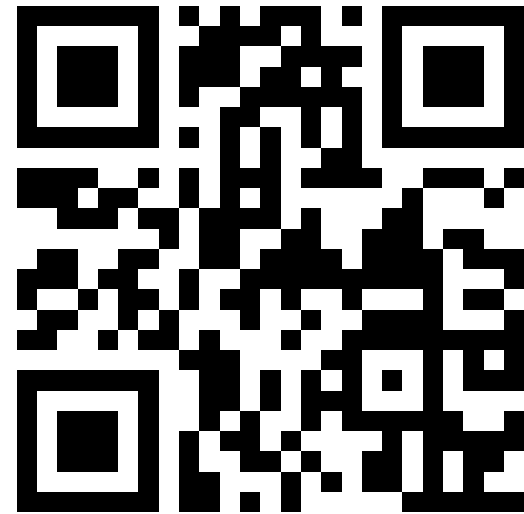
Ratio of Crude U.S. Insured Mortality to U.S. Population Mortality



Cause of Death Analysis in the COVID-19 Era

Study History and Overview

- In 2020, the Individual Life COVID-19 Project Work Group was formed as a collaboration among LIMRA, RGA, TAI, and the SOA.
- The Work Group has produced a number of publications to analyze the impact of COVID-19 on the individual life insurance industry's mortality experience.
- The regularly published analyses include:
 - Mortality experience study
 - Reported claims analysis
 - Cause of death (COD) study



Cause of Death Analysis in the COVID-19 Era

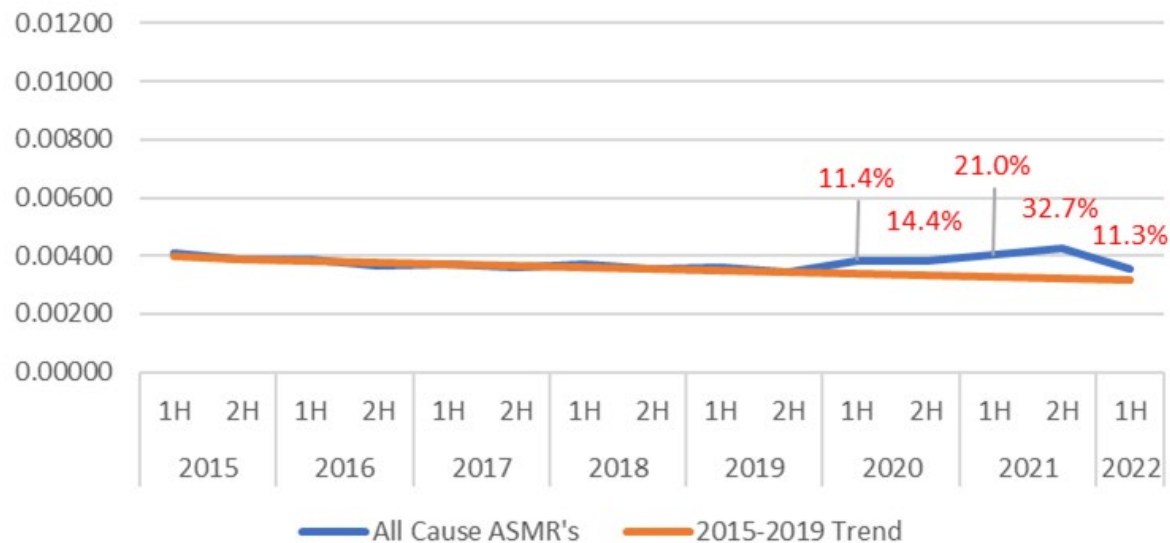
Study Methodology

- The analysis compares mortality in the pandemic period to an expectation developed from the 2015-2019 results; this analysis is broken down by age-and-sex-standardized data cohorts
- The age-and-sex-standardized cohorts are split by:
 - Male/Female
 - Ages <45, ages 45-64, ages 65-84, ages 85+
 - Each cohort has had its own age-and-sex-standardized mortality rate per 1000 developed for this analysis (we call these “ASMRs”)
- The analysis allows for comparison by various causes of death, including COVID-19

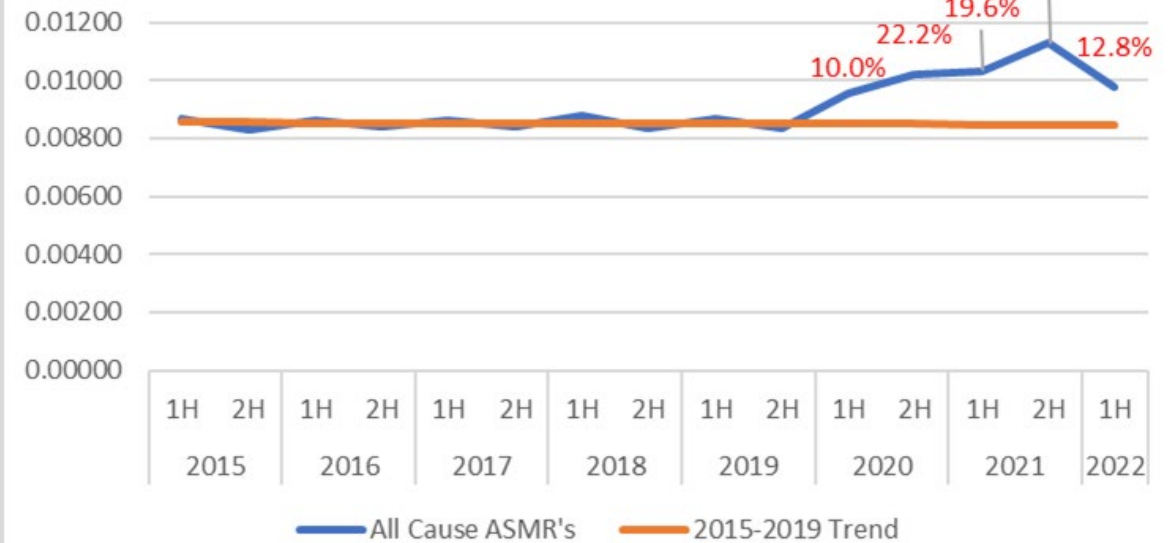
Cause of Death Analysis in the COVID-19 Era

Males 45-64 – All Cause Mortality

Males 45-64, All Cause, Insured ASMR's



Males 45-64, All Cause, Population ASMR's

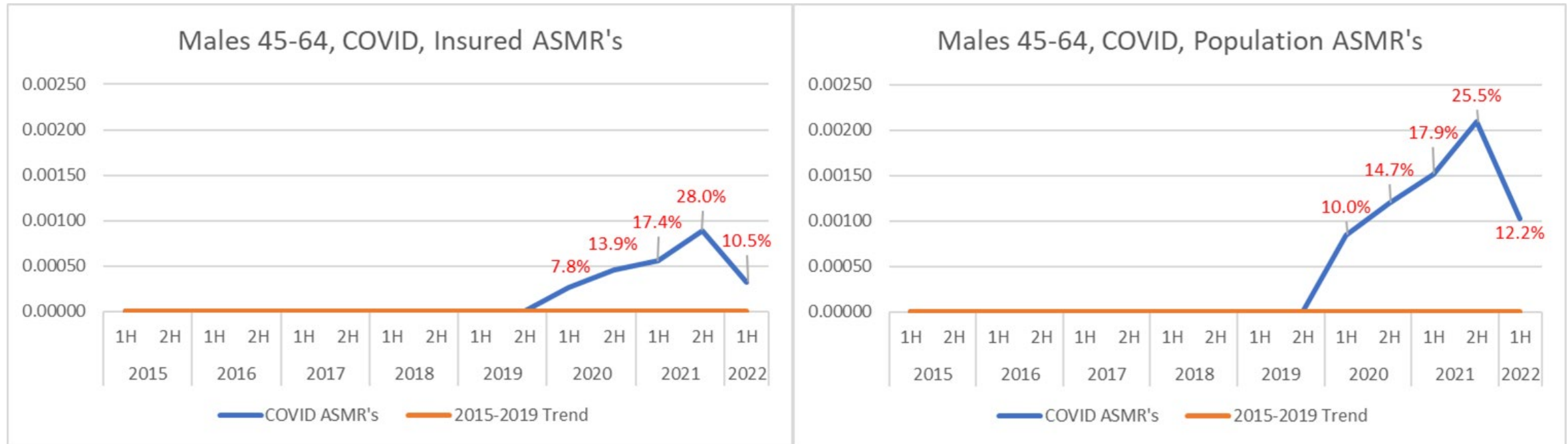


- Red %'s represent excess mortality over 2015-2019 trend
- The red %'s show up when increased ASMRs are **outside** the 99% CI for trend
- All-cause excess mortality for insureds peaked during 2H 2021

- Population ASMRs are ~2x insured ASMRs
- All-cause excess mortality for population also peaked during 2H 2021

Cause of Death Analysis in the COVID-19 Era

Males 45-64 – COVID-19 Mortality

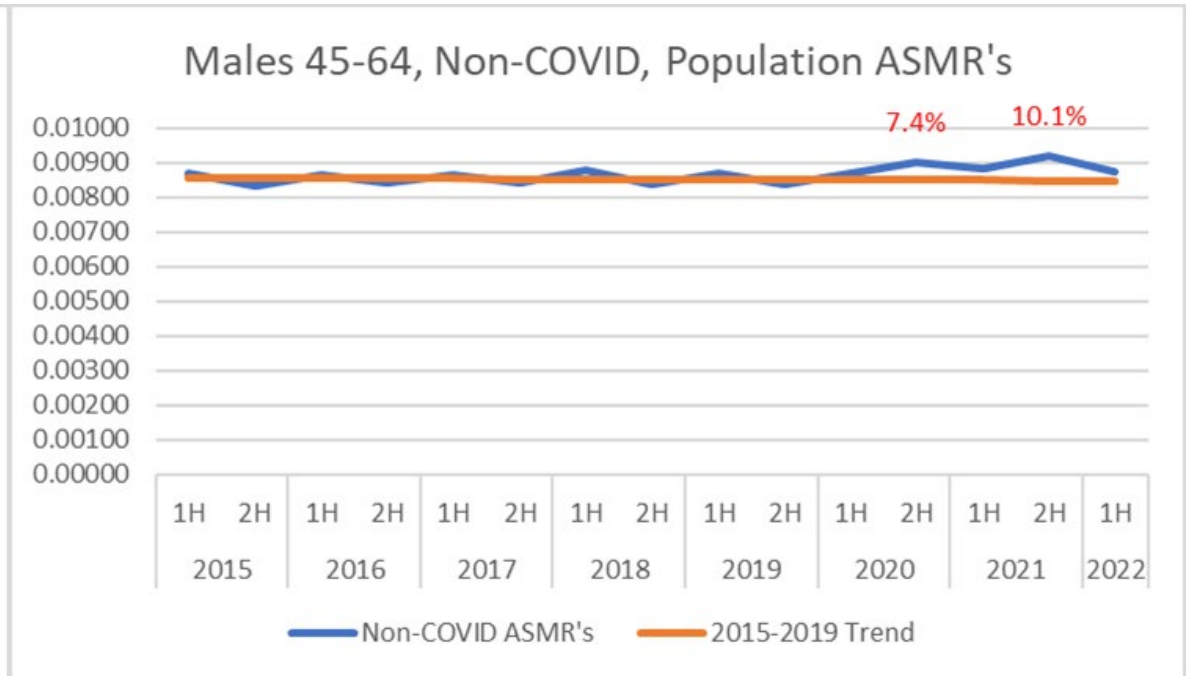
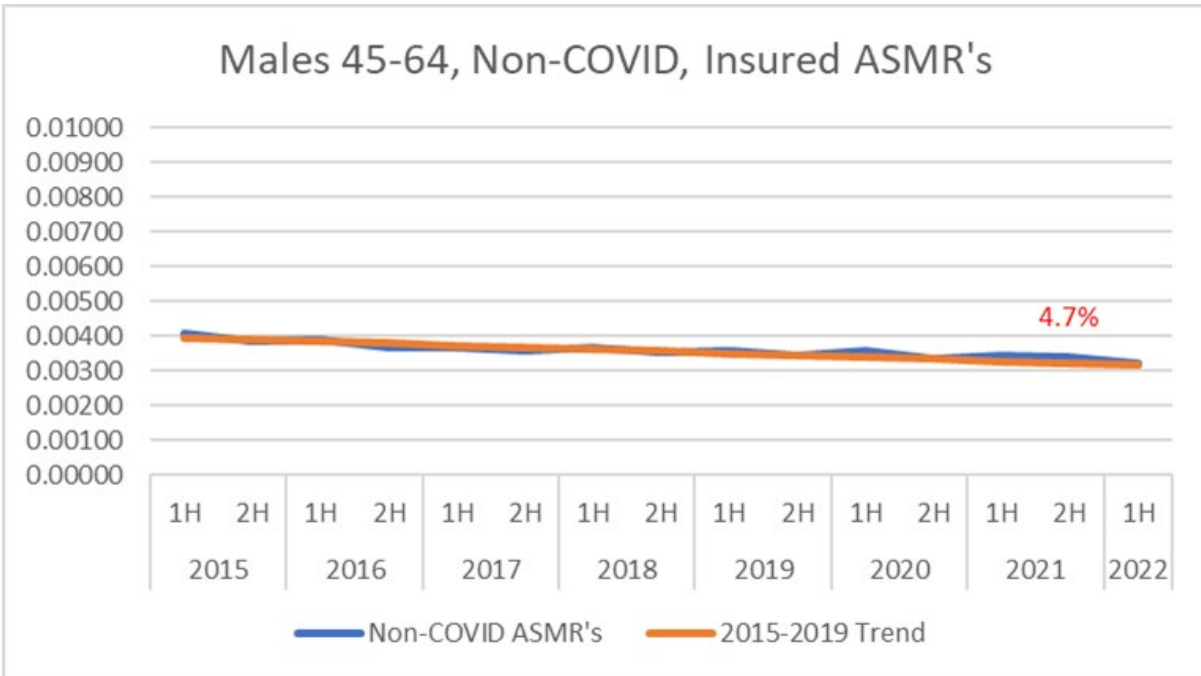


- Similar to all-cause, excess COVID-19 mortality for insureds peaked during 2H 2021
- Companies were instructed to report deaths as due to COVID-19 if COVID appeared anywhere on the death certificate

- Population ASMRs due to COVID-19 are >2x insured ASMRs due to COVID-19
- CDC WONDER records deaths as COVID-19 if COVID appeared anywhere on the death certificate

Cause of Death Analysis in the COVID-19 Era

Males 45-64 – Non-COVID Mortality



- Non-COVID includes: non-medical, non-communicable, and communicable causes of death
- Insured has some excess but is largely in line with trend

- Population has more observed non-COVID excess compared to insured
- Next slides get into more detail

Questions and Feedback

@soactuaries

<https://www.soa.org/research/research-institute/>

<https://www.soa.org/newresearch>

@rdalehall

<https://www.linkedin.com/in/rdalehall/>

dhall@soa.org



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