The impact of Covid-19 on mortality analysis

Stephen J. Richards & Piero Cocevar
Tuesday 31st May 2022, 16:00hrs

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About today

16:00 - Saluti dei Presidenti

16:05 - "The impact of Covid-19 on assumption setting", Piero Cocevar

16:20 - "Allowing for shocks in portfolio mortality models", Stephen J. Richards

16:50 - Q&A

About the speaker – Piero Cocevar

- Iscritto all'Albo and FIA
- Reporting Actuary at Phoenix Group
- Member of the CMI Mortality Projections Committee and Annuities Committee
- Member of Gruppo di Lavoro Percettori di Rendite
- The views expressed in this presentation are those of the presenter and not necessarily those of his employer or the CMI.

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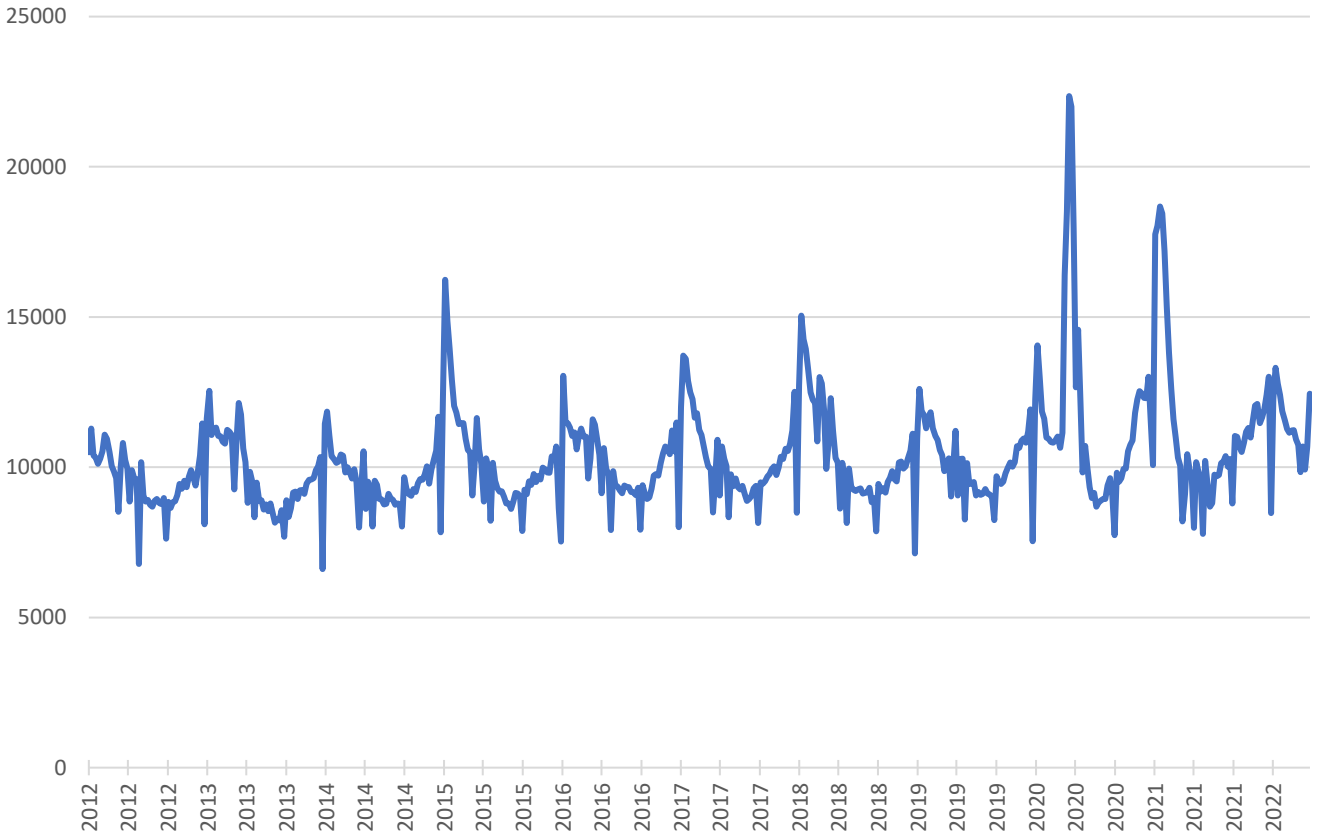
The impact of COVID-19 in England & Wales

- Weekly deaths data available from the Office for National Statistics for the England & Wales population.

The impact of COVID-19 in England & Wales

Weekly Deaths, England & Wales Males and Females ages 20+ (2012-2022)



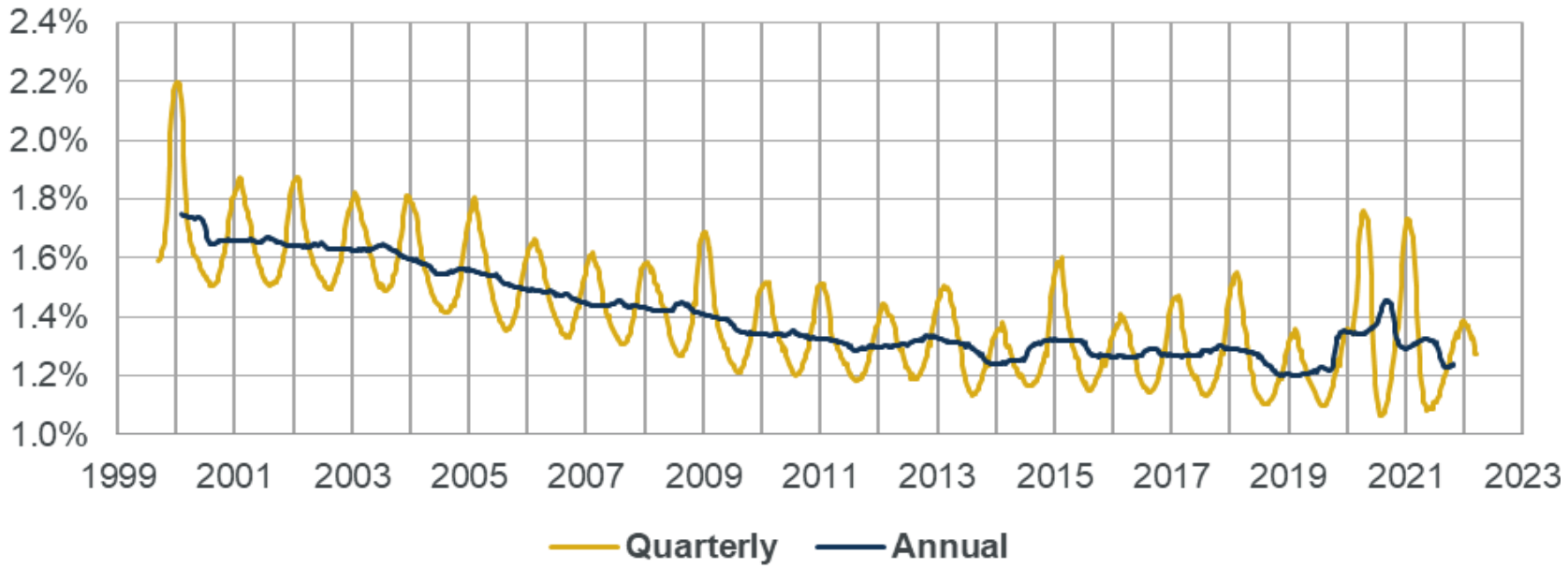
Source: ONS

The impact of COVID-19 in England & Wales

- Weekly deaths data available from the Office for National Statistics for the England & Wales population.
- The number of deaths are affected by changes in the average age and the size of the population.
- As actuaries we want to focus on mortality rates. To remove the effect of a growing and ageing population we calculate Standardised Mortality Rates (SMR). This will enable us to compare mortality in different years.
- To remove weekly volatility we can plot annual and quarterly average SMR.

The impact of COVID-19 in England & Wales

Weekly Deaths, England & Wales Males and Females ages 20+ (1999-2022)



Source: Mortality Monitor, © Continuous Mortality Investigation Limited

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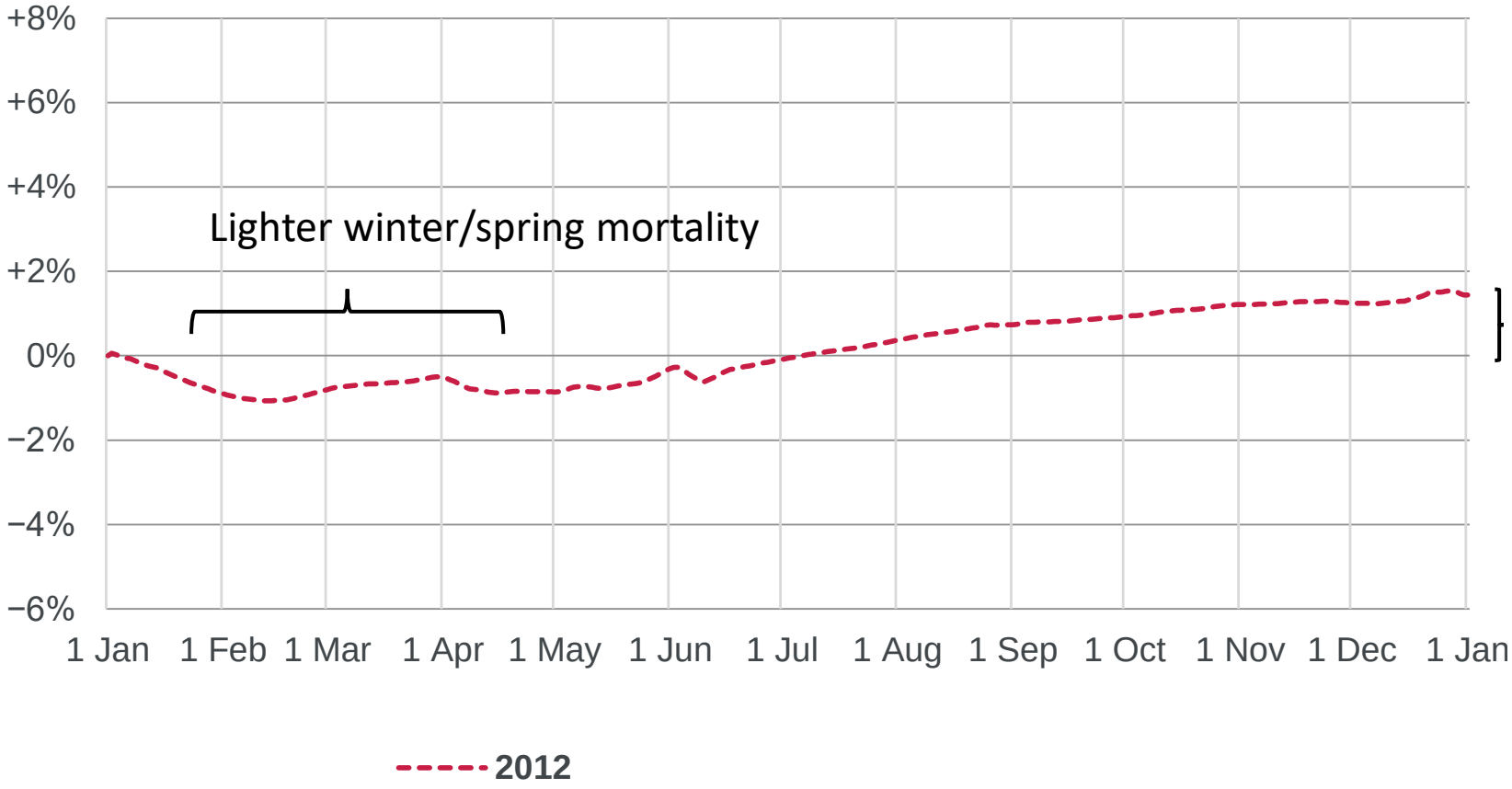
- To remove weekly volatility we can plot annual and quarterly average SMR.
- To highlight recent features in mortality rates we consider for each year the cumulative Standardised Mortality Rate (cSMR) and compare to 10-year averages. This helps removing seasonal effects.
- In the following slides we examine yearly cSMR over ten year averages for the period 2012-2020.

The impact of COVID-19 in England & Wales

Cumulative standardised mortality rate (cSMR) compared to the ten-year average (2012-2022)



But overall ca1.5% heavier compared to the ten-year average

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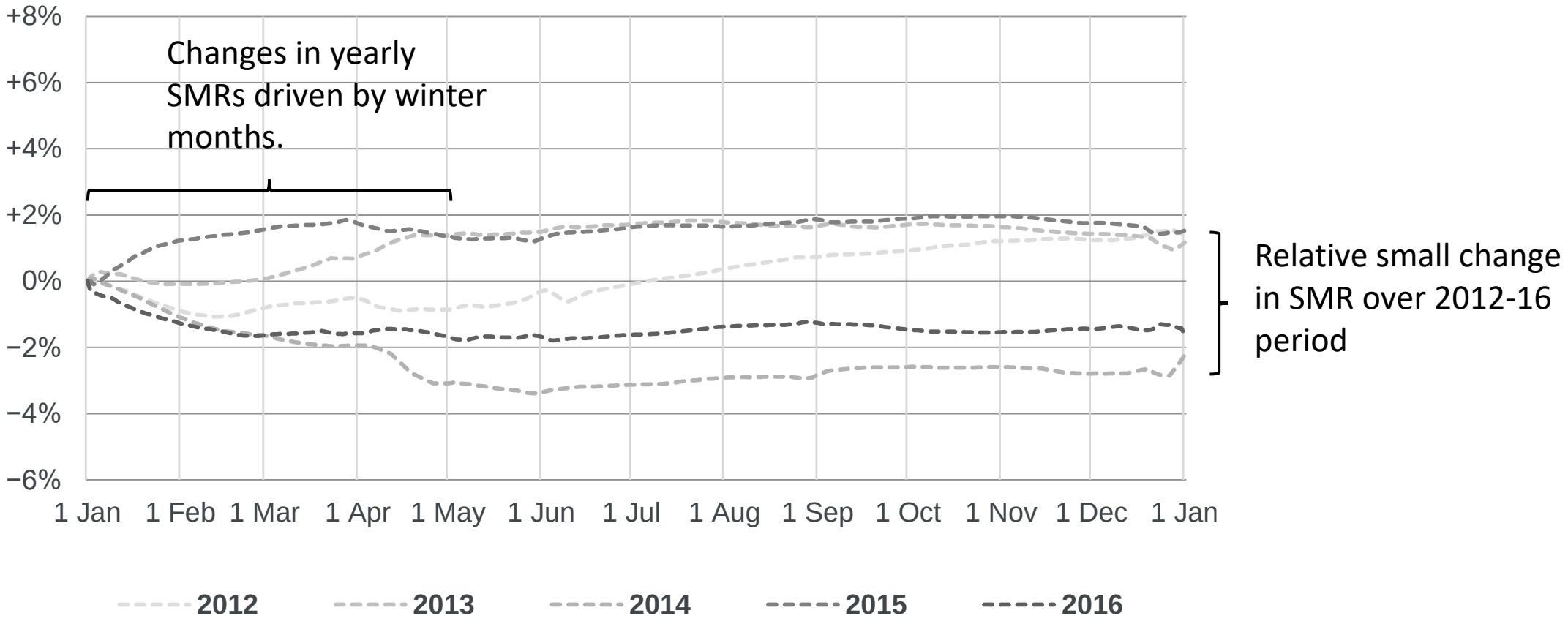

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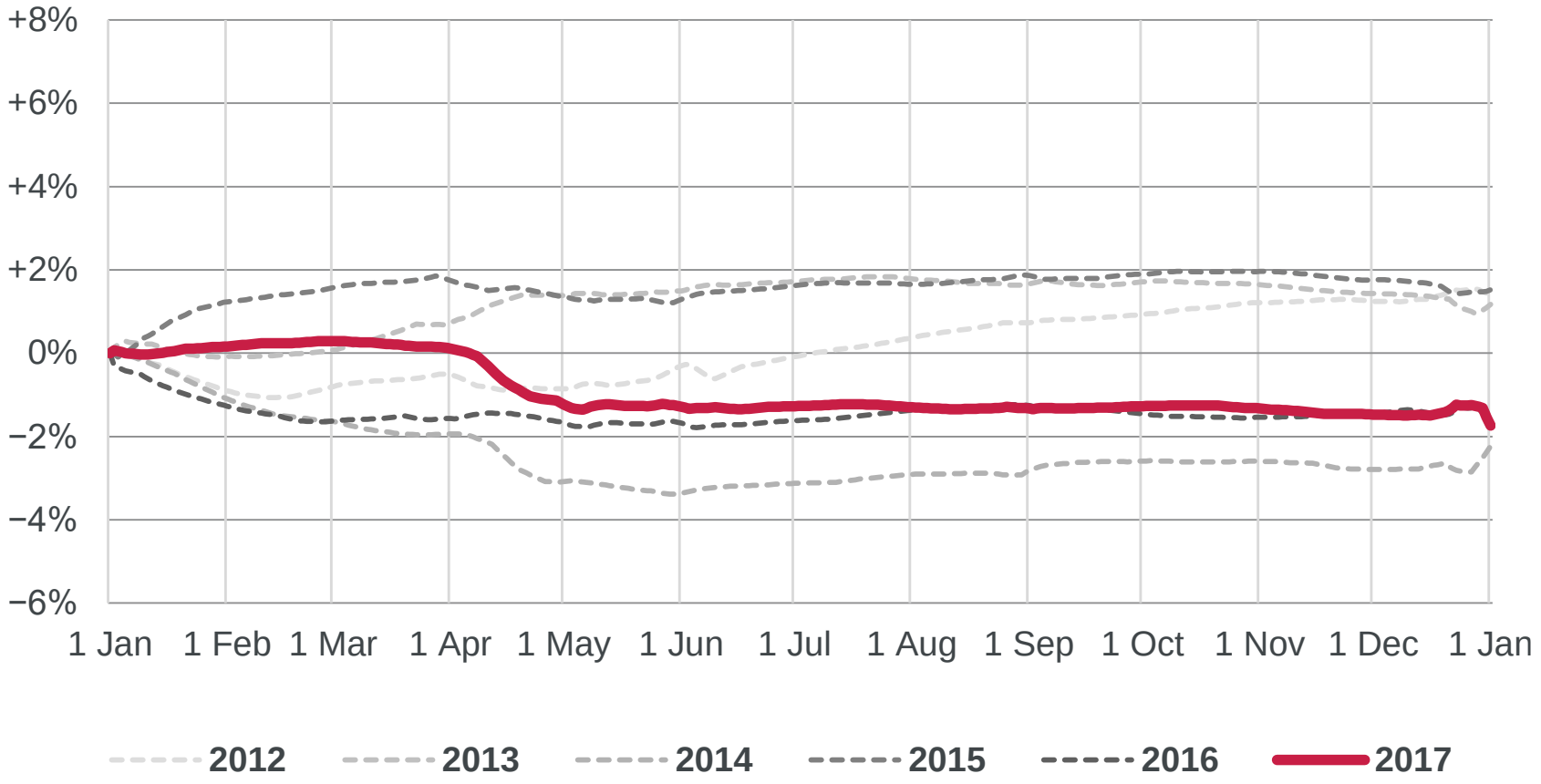

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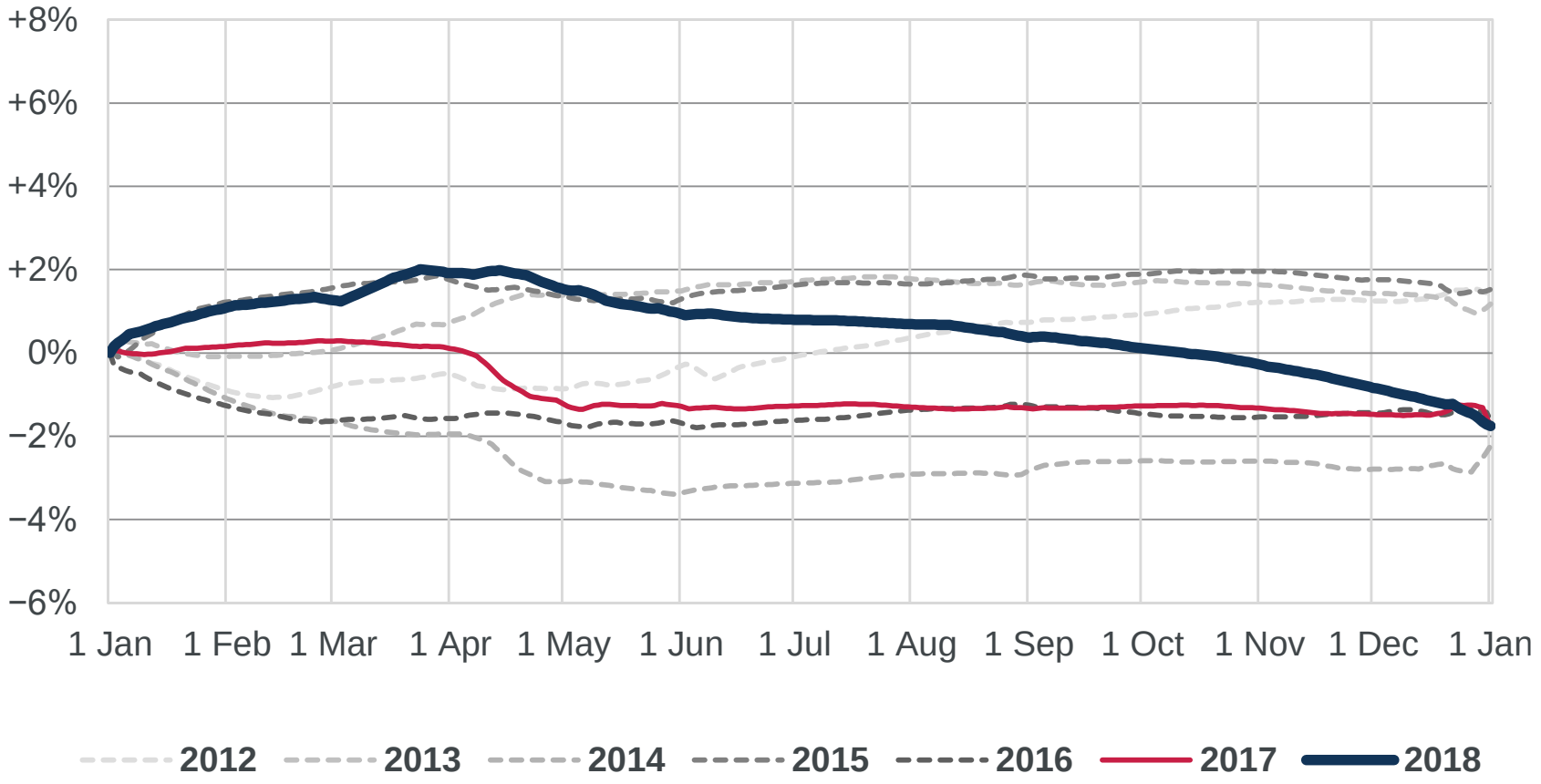

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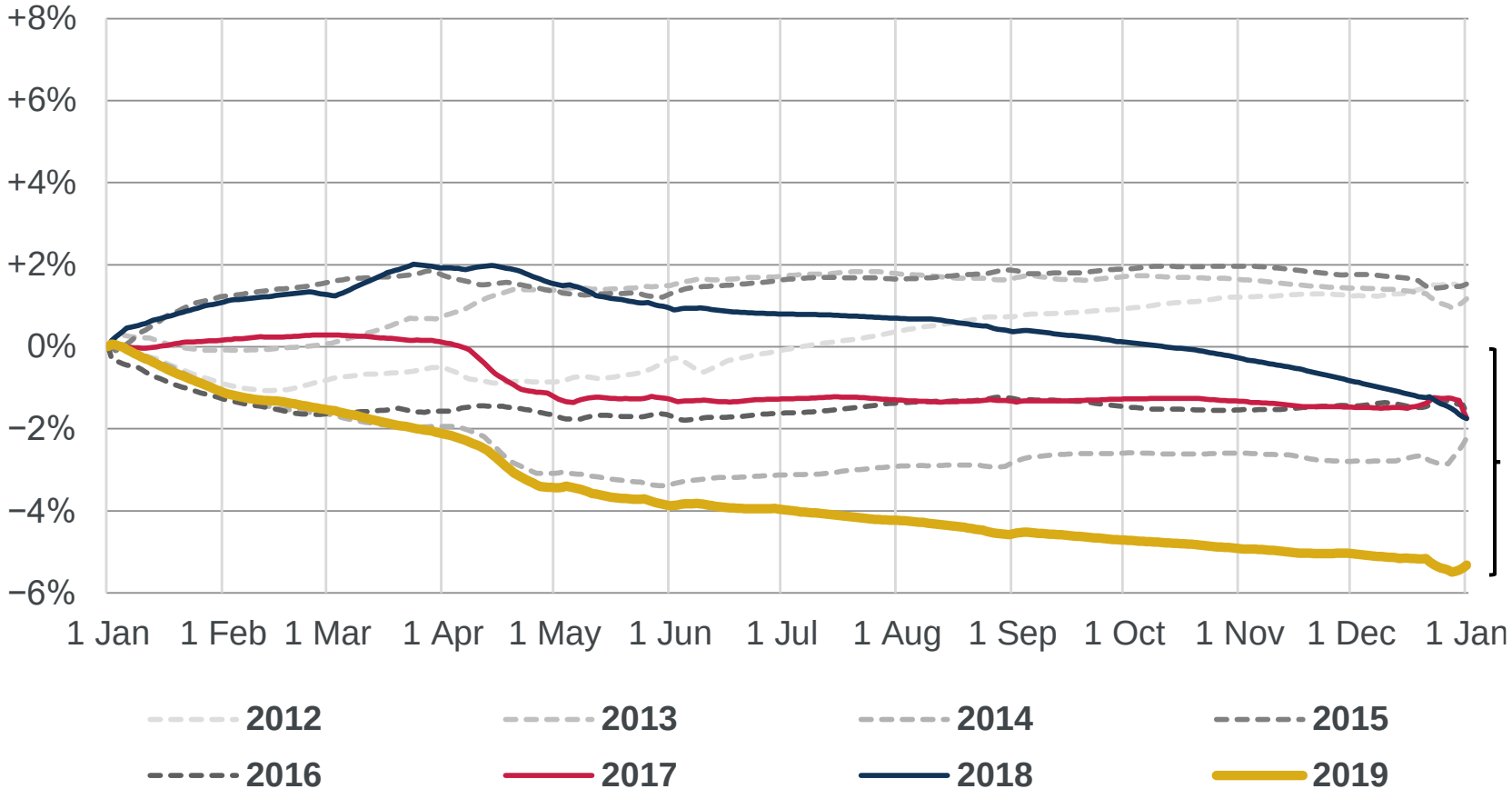

Mortality rates ca 5% lighter by end 2019 compared to ten-year average

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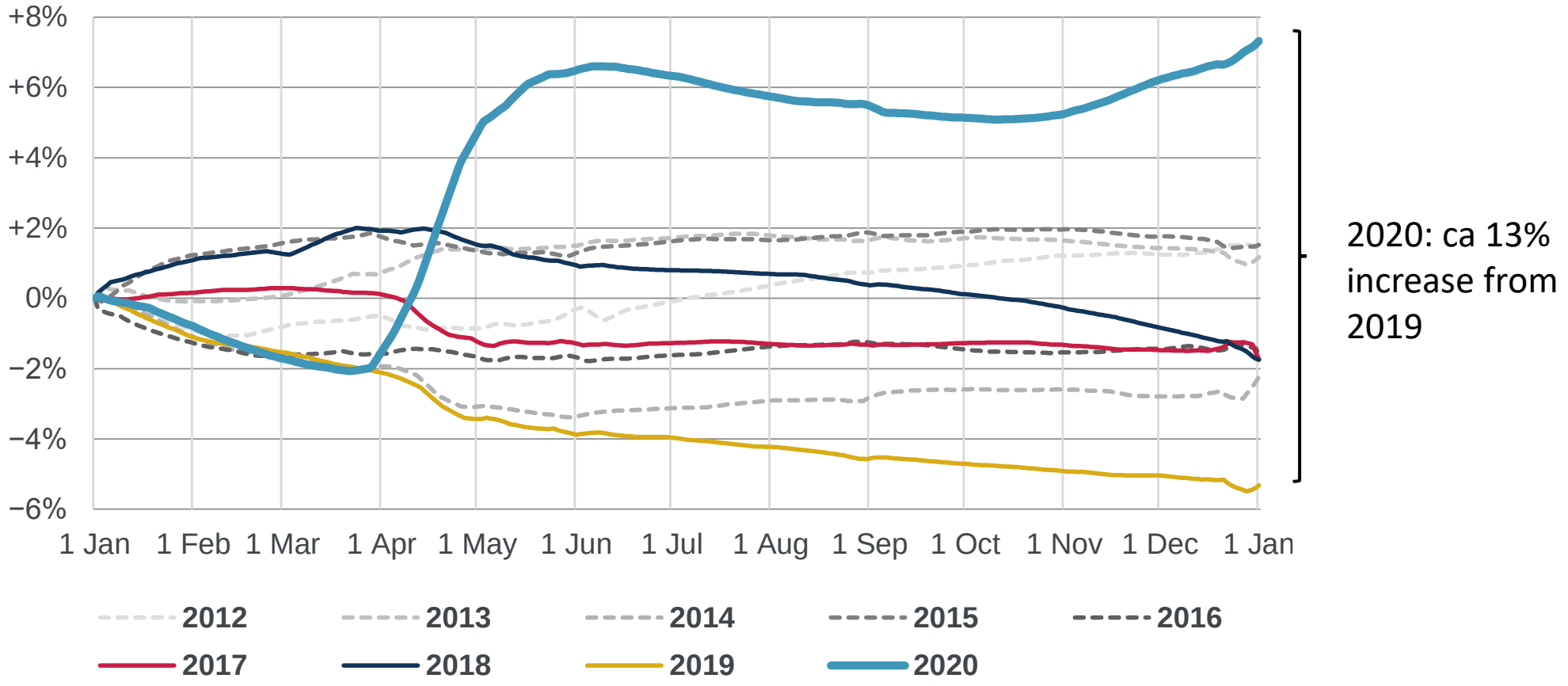

2020: ca 13% increase from 2019

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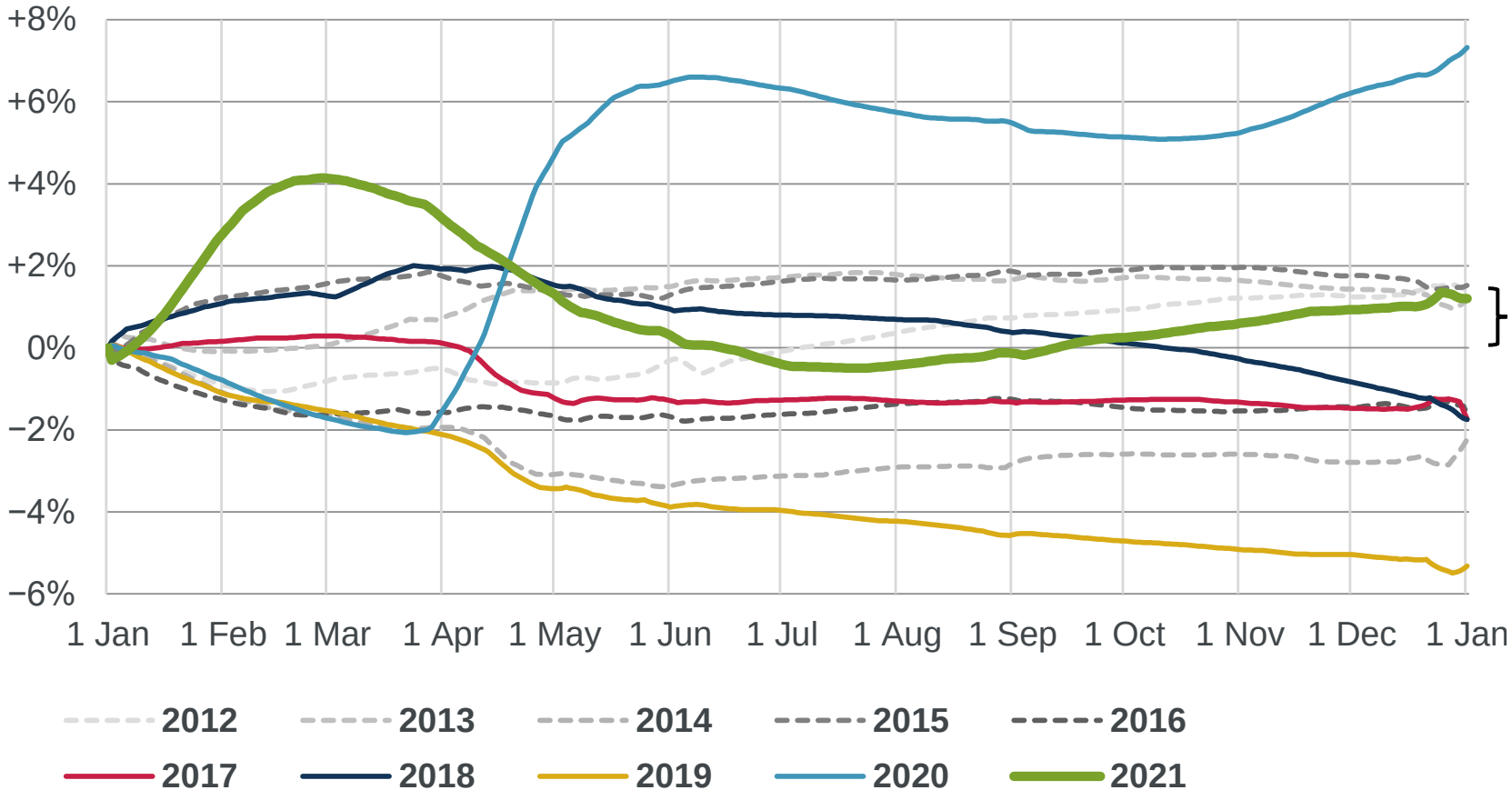

2021: large than usual winter mortality but just over 1% from ten-year average

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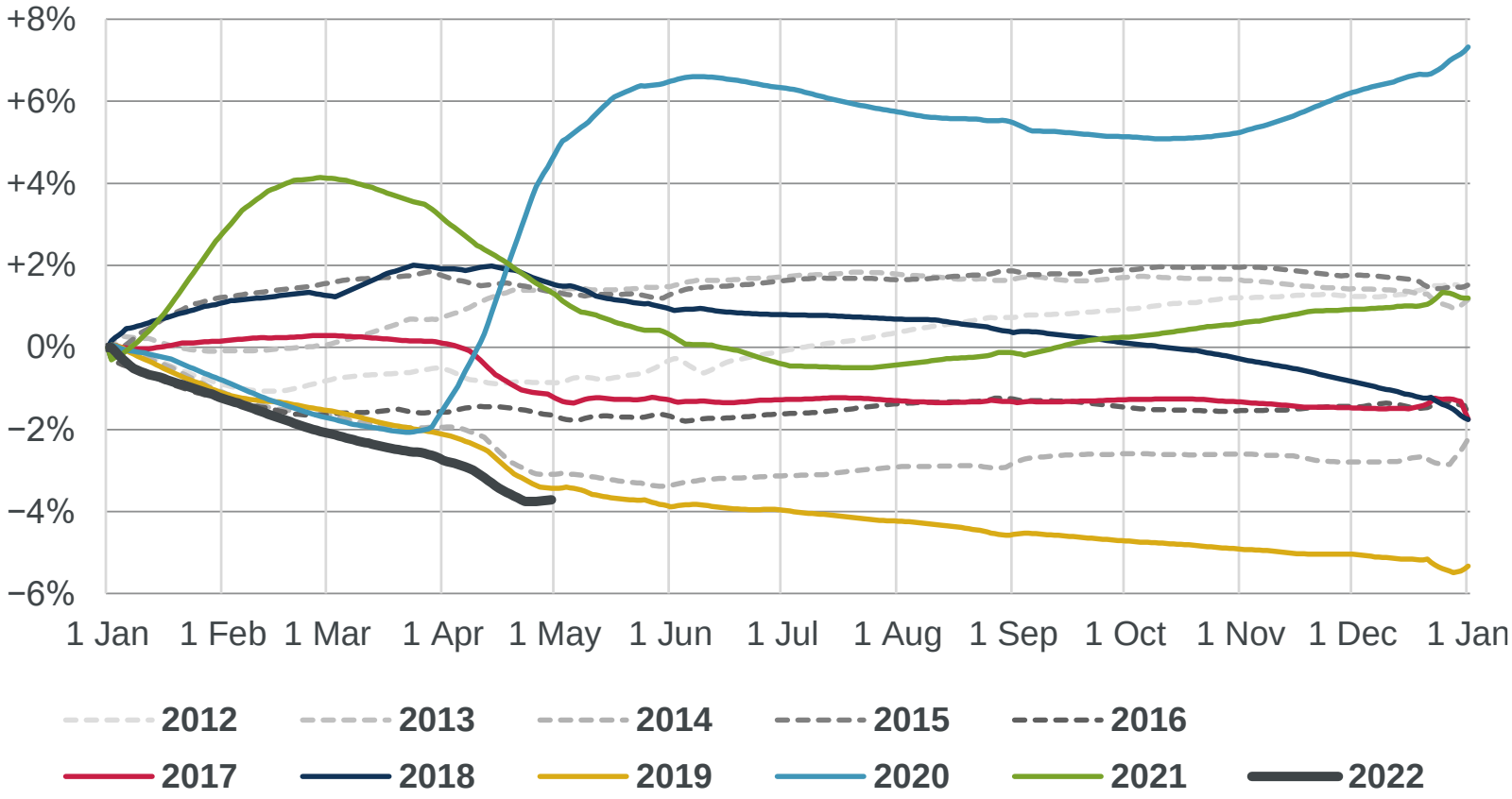
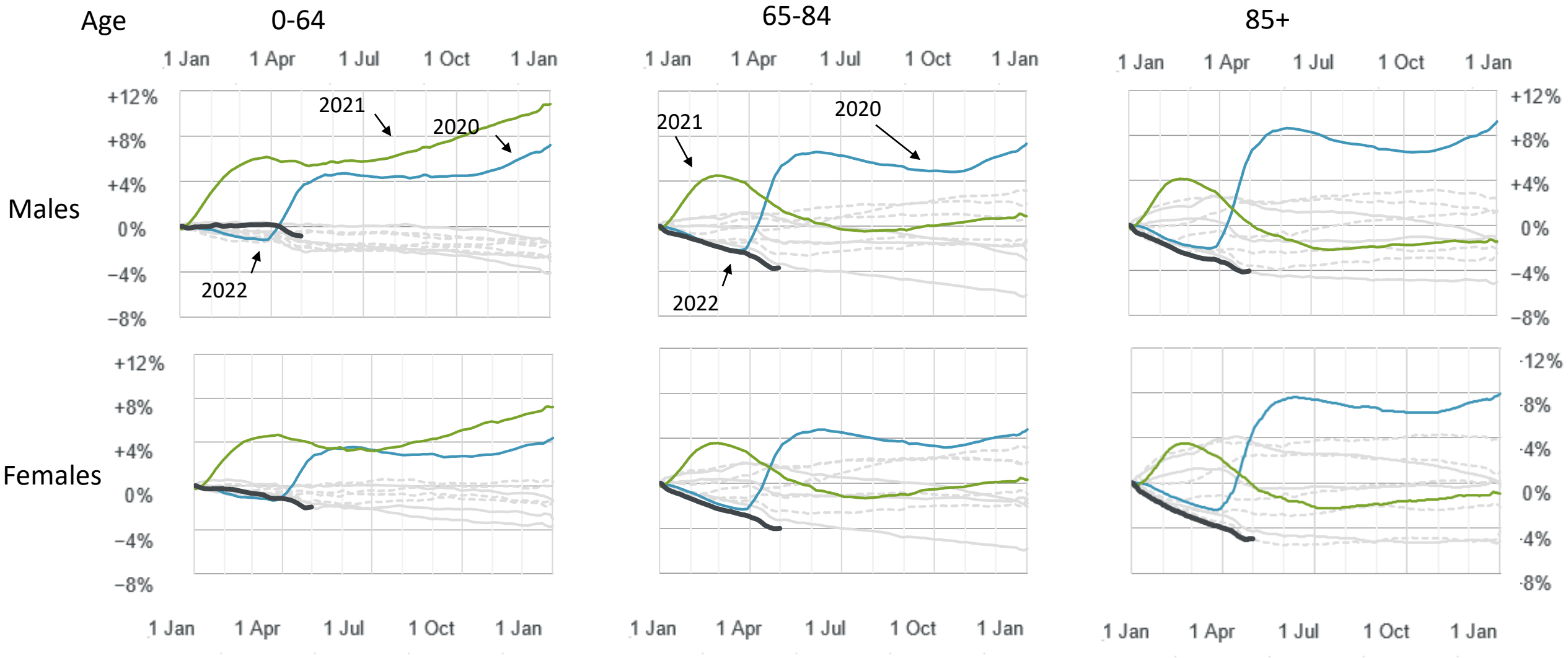
Cumulative standardised mortality rate (cSMR) compared to the ten-year average (2012-2022)

2022: Below pre-pandemic levels



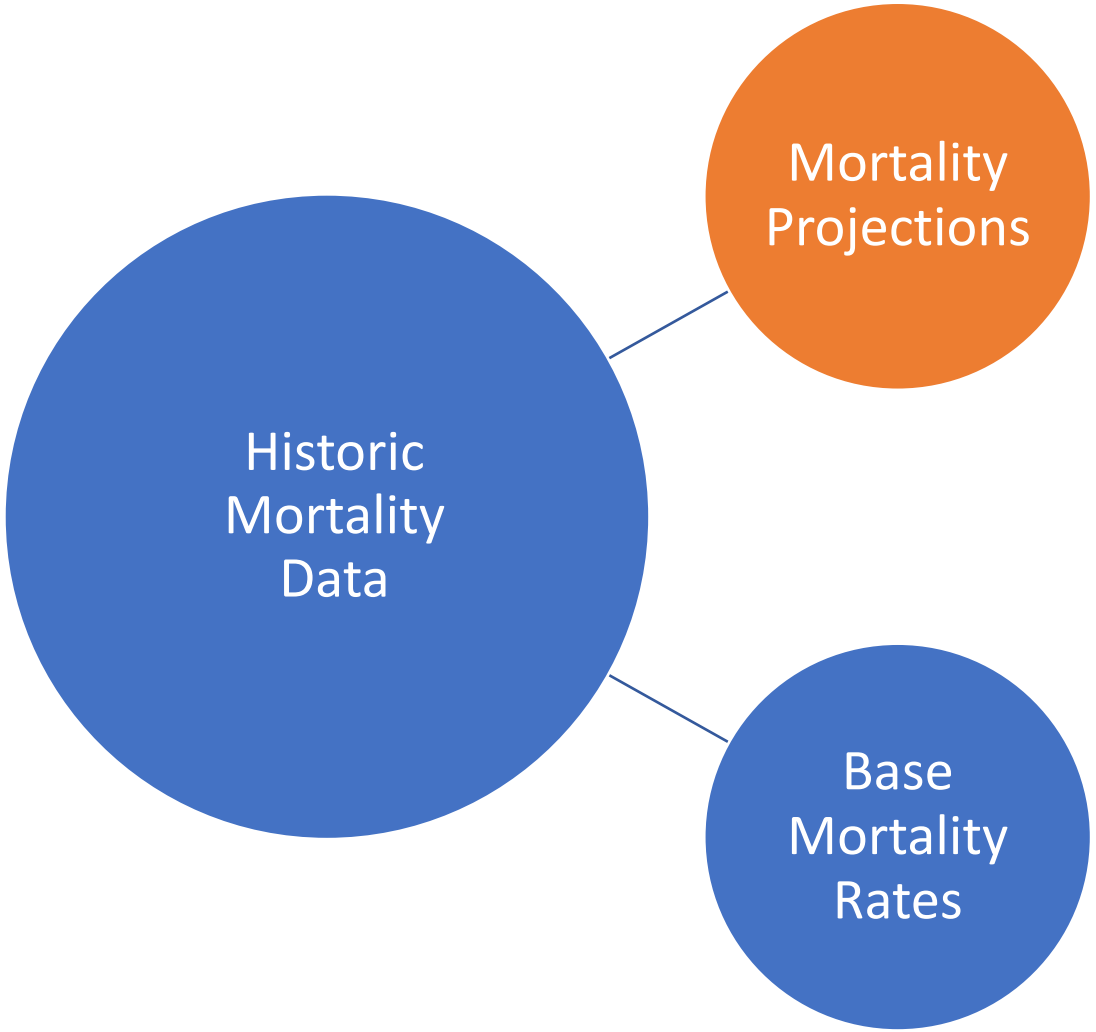
Source: Mortality Monitor, © Continuous Mortality Investigation Limited

The impact of COVID-19 in England & Wales



Source: Mortality Monitor, © Continuous Mortality Investigation Limited

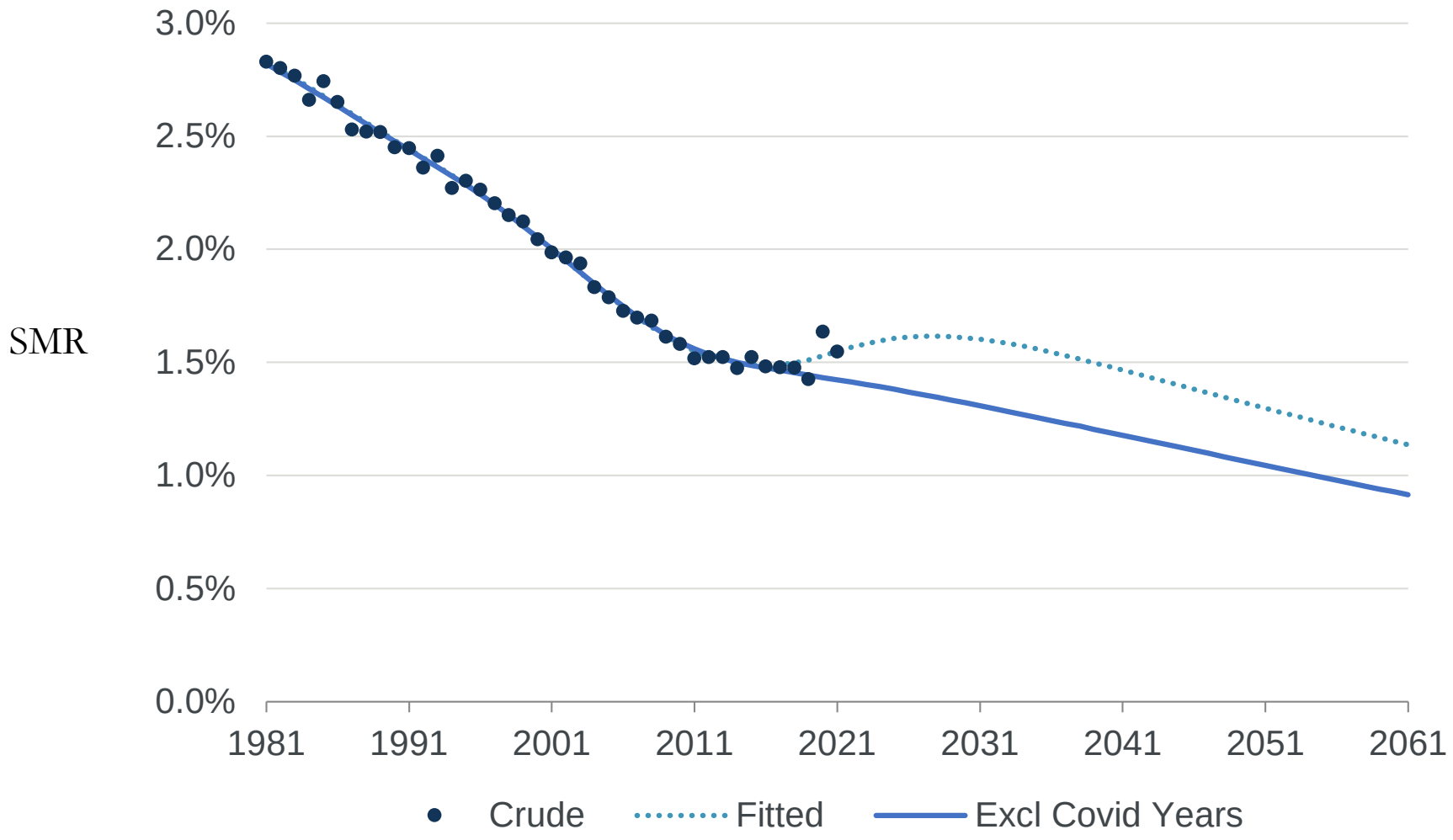
Assumption setting with Covid data



Assumption setting with Covid data

- Mortality projections models typically use historic population data to estimate parameters that are used in the projection.
- The use of a dataset affected by mortality shocks particularly at the edge can produce distortions in the projection.
- The calendar year of data with mortality shocks can be "turned-off" (by assigning zero weight). This is a loss of two years over a dataset of typically 40+ years.

Assumption setting with Covid data



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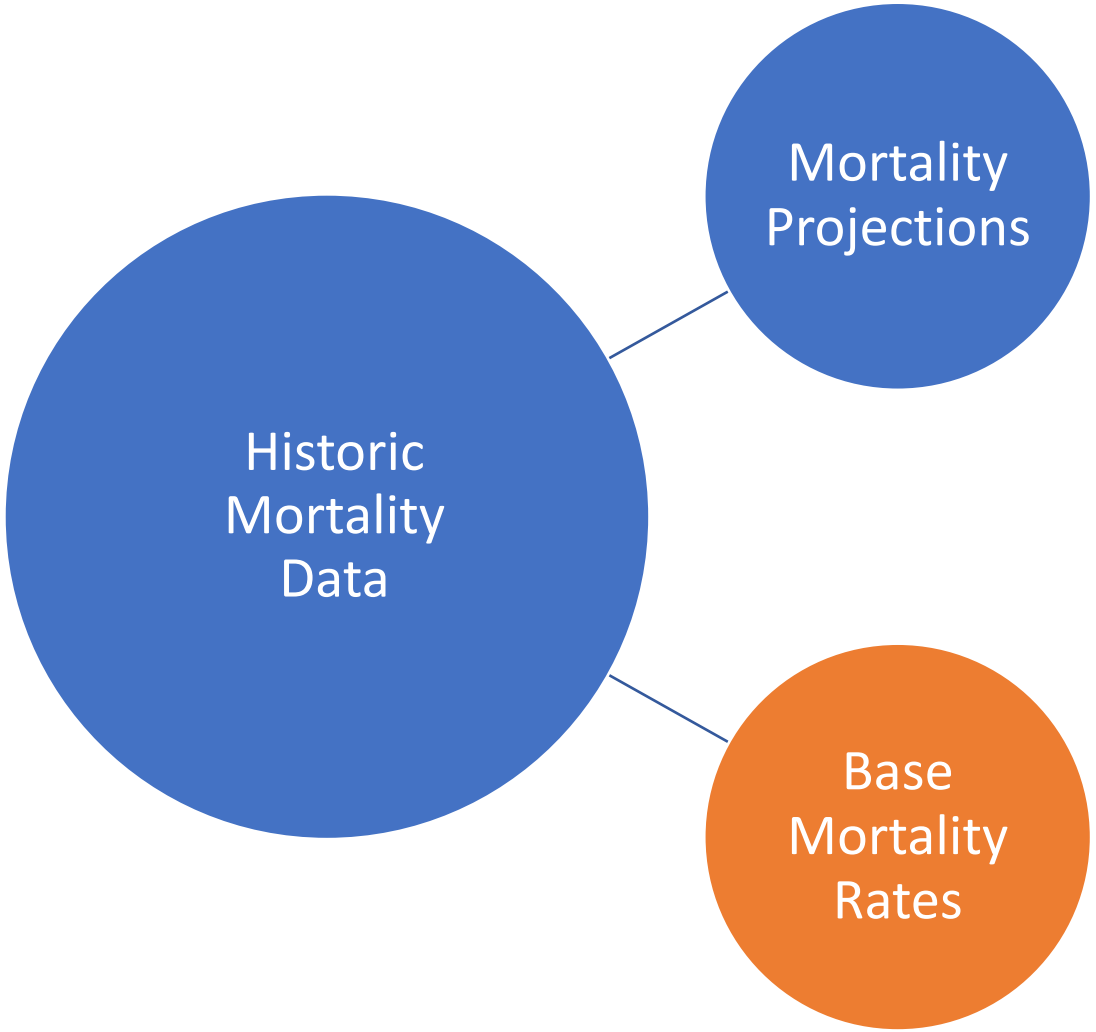

Assumption setting with Covid data

- Base mortality rates are usually calibrated to historic experience. However by including data for 2020 and 2021 one would implicitly assume that pandemic deaths will recur in the future.
- Companies have generally used "wait-and-see" approach excluding 2020 data for determining base rates for reserving. In some cases for term assurances, additional short-term provisions COVID reserves were included.
- Ignoring 2 years of data with few years of data available is much more significant.
- More on how to deal with Covid deaths in mortality analysis in the next presentation!