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Life Conference 2022

23–25 November, ACC Liverpool

Matthew Edwards and Jamie Funnell

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Agenda

- Introduction
- Equity release mortgage analysis by the Annuities Committee
- Hot topics from the Mortality Projections Committee
- CMI plans

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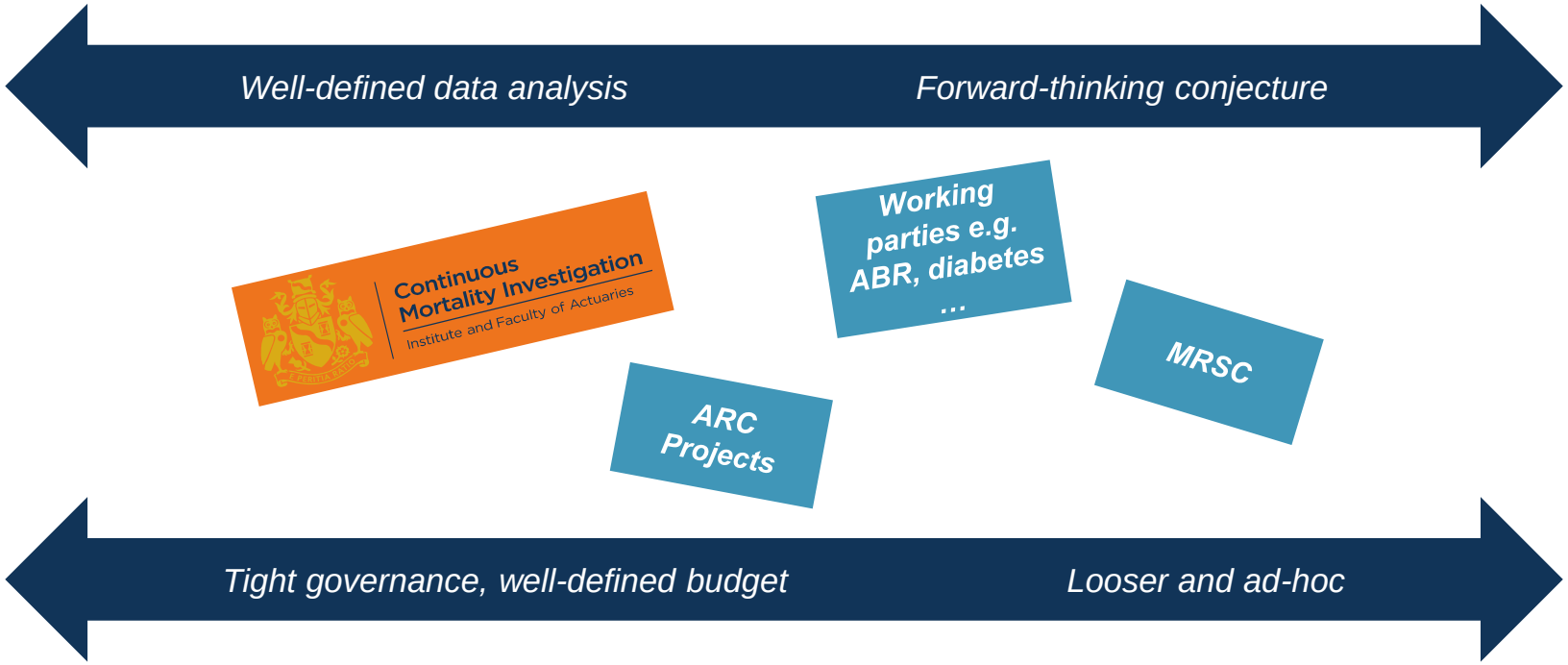
Where is the CMI in the IFoA universe?



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Annuities Committee

Equity release mortgage analysis

Background

- First analysis of ERMs by CMI, released on 10 October as WP164
- Data collected from nine ERM providers in 2021 and 2022
  - analysis of 2016-2019 and 2020
- Analysis of deaths and long-term care (LTC) exits but not voluntary early redemptions
- We are very grateful to all the ERM providers that submitted the data underlying the results

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Definition of an Equity Release Mortgage

In our paper we define an equity release mortgage as:

An equity release instrument, in which mortgage holders take out a loan secured against their property. The loan amount is repayable, with interest, when the property is sold due to either death of the mortgage holder(s) or their entry into long-term care. In addition, mortgage holders can volunteer to repay the outstanding loan amount before either death or long-term care entry occurs.

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Data

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Data considerations

- ERM data dominated by two large providers. To reduce dominance of largest provider:
  - Data for all providers restricted to commencements from 2005 onwards
  - Data for largest provider weighted by 80% (analogous to amounts-weighting methodology) to bring it close in size to second largest
    - Approach is new for CMI but we do not believe scaling would materially impact results
- Some other data considerations included:
  - Joint lives: possible under-reporting for first lives, particularly of LTC exits (tracing exercises for deaths)
  - Late reporting: no allowance as have no data on development (so may be some under-reporting). Hope relatively low impact for 2016-2019 as data collected in 2021 at the earliest

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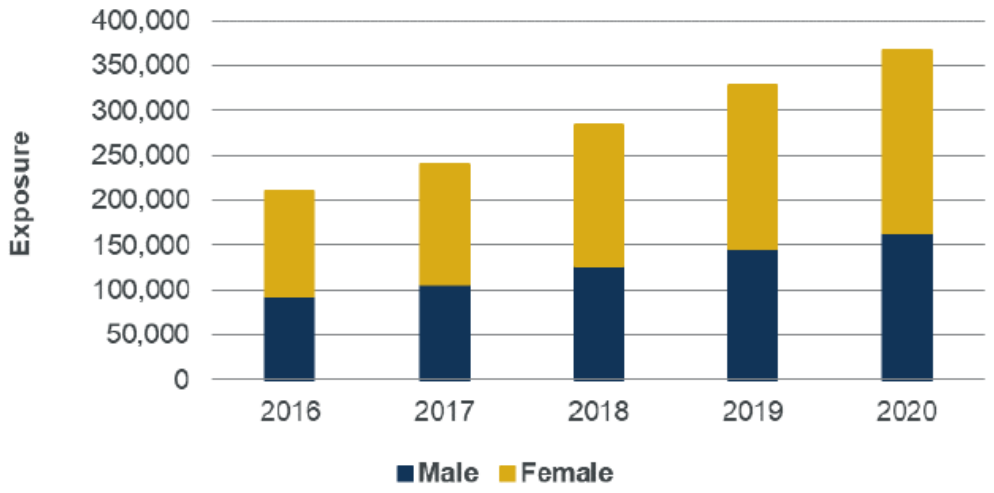
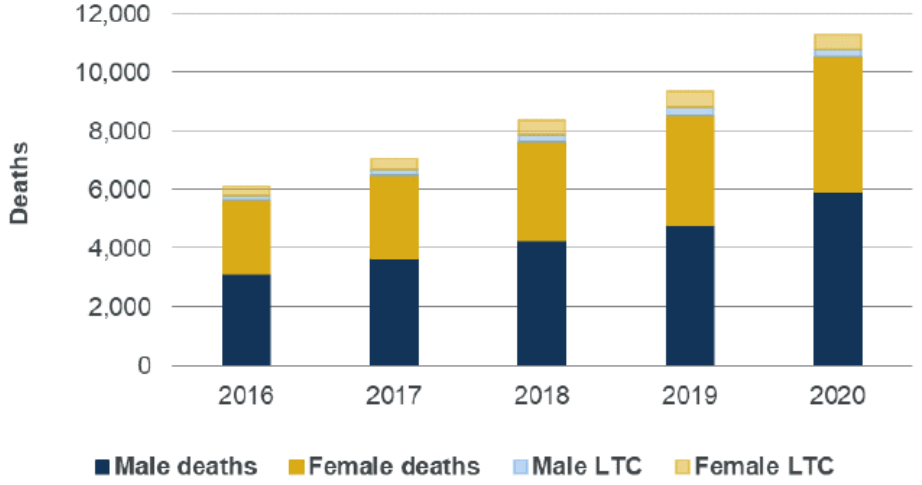
The ERM dataset

- 2016-2019
  - Over 1m life-years of exposure
  - Over 30,000 combined death and LTC exits
- 2020
  - Over 350,000 life-years of exposure
  - Over 11,000 combined death and LTC exits

Volumes of exposure, deaths and long-term care exits





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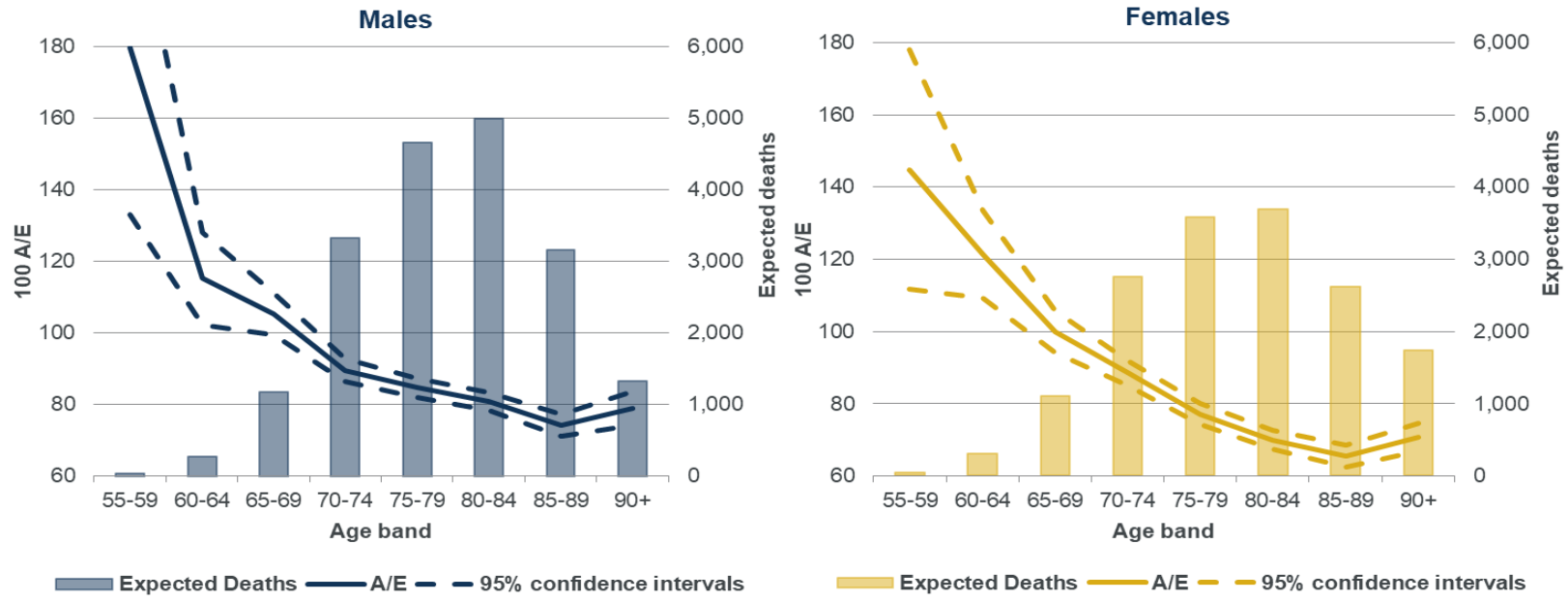
Analysis Results

Mortality experience in 2016-2019

- Experience relative to graduated UK population tables shows much higher A/Es below age 70, falling with age then increasing for 90+ age band
- Similar patterns relative to “16” Series tables



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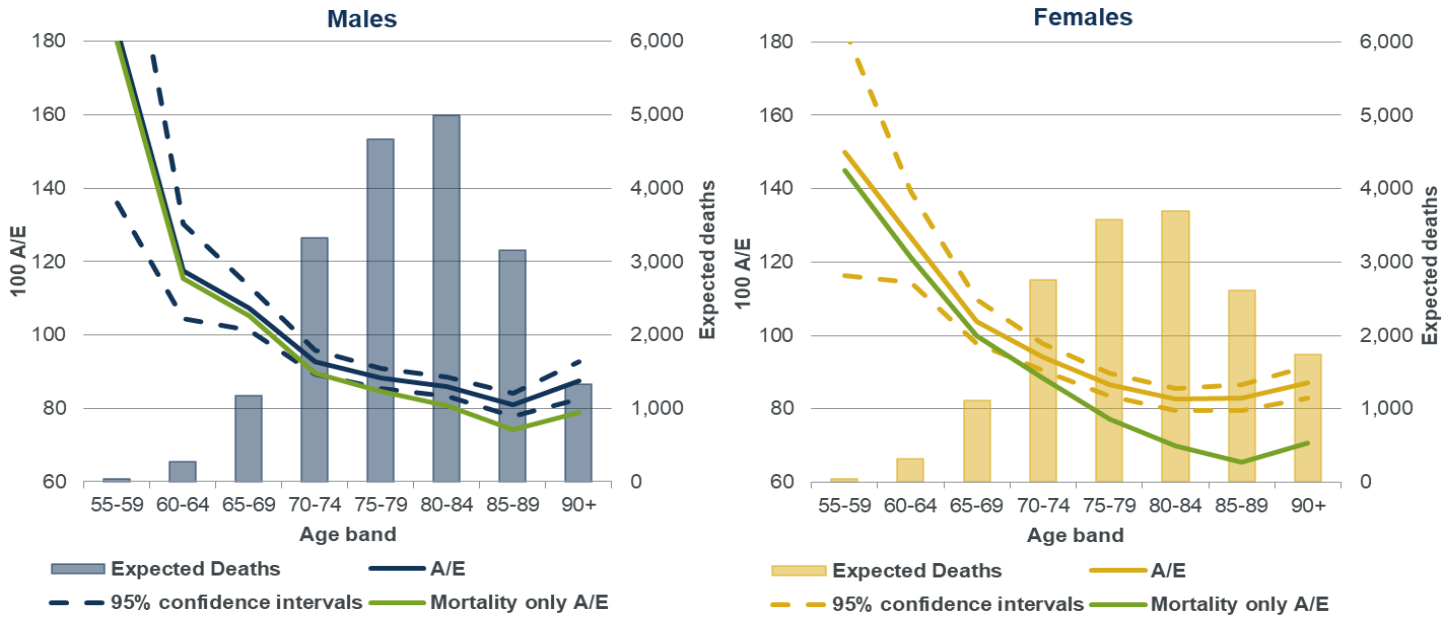
Combined mortality and LTC experience in 2016-2019

- Data volumes low for LTCs so looked at combined mortality and LTC experience (compared with graduated UK population tables)
- LTC exits affect females more than males and particularly at higher ages



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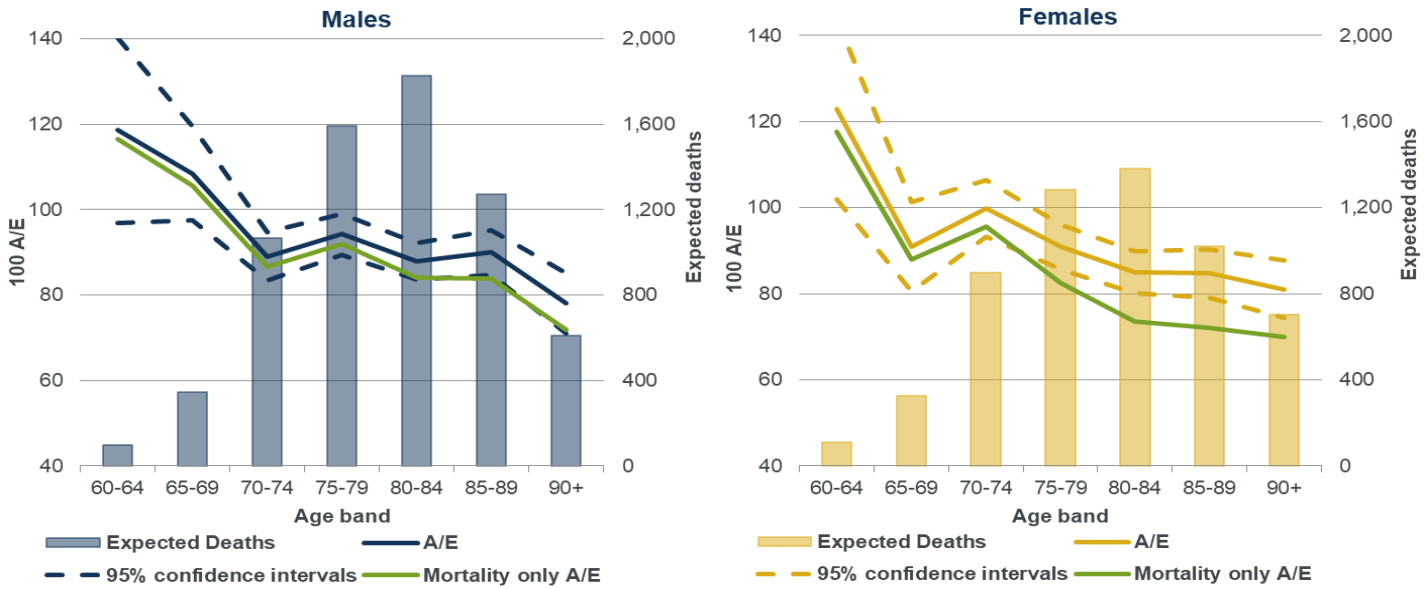
Combined mortality and LTC experience in 2020

- Experience in 2020 heavier than in 2016-2019 but less of an increase than for annuities and UK population
- LTC exits lower overall in 2020 than 2016-2019 – perhaps lack of availability/reluctance to enter LTC during COVID-19 pandemic



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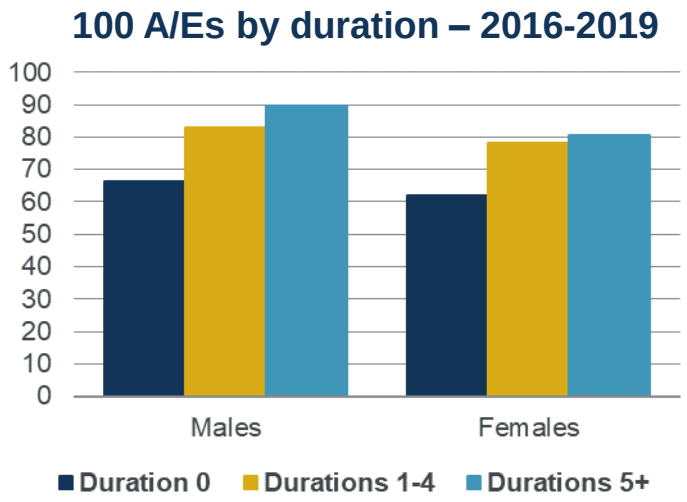
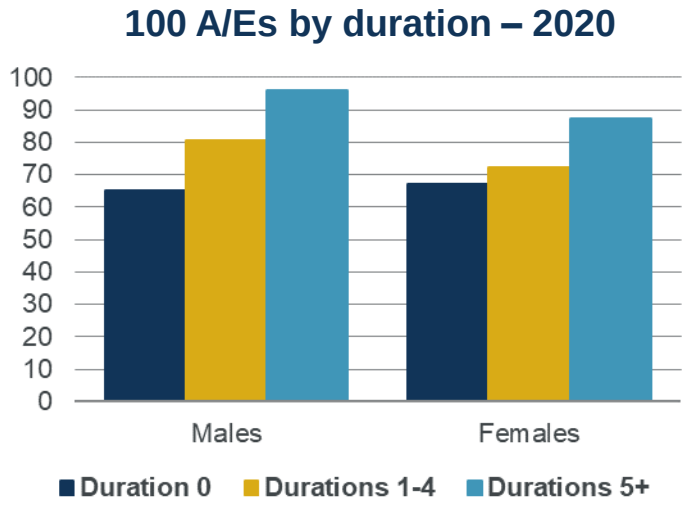
Mortality experience by duration

- Analysis suggests significant durational effects comparing mortality experience by duration with UK population tables
- Dataset still relatively immature want to repeat this as part of any future analysis





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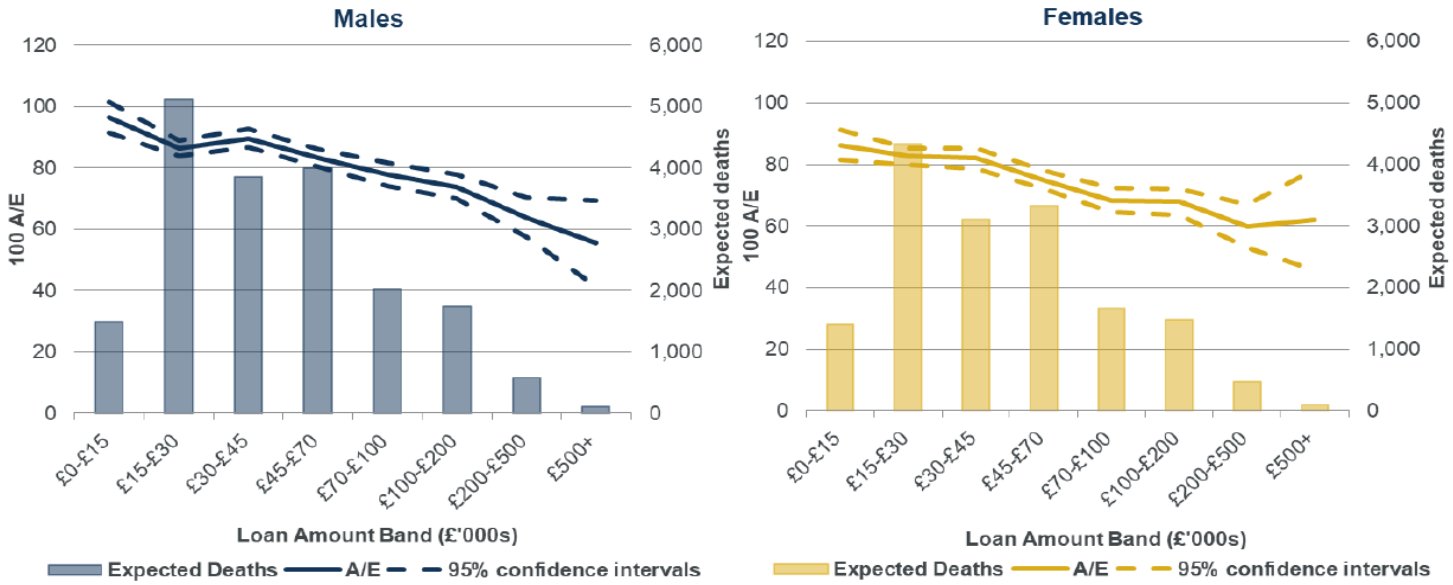
Mortality experience by initial loan amount band

- Not much variation in experience at the lowest bands
- Experience decreases as initial loan amount increases
- High proportion of initial loan amounts between £15,000 and £70,000

100 A/Es by initial loan amount – 2016-2019



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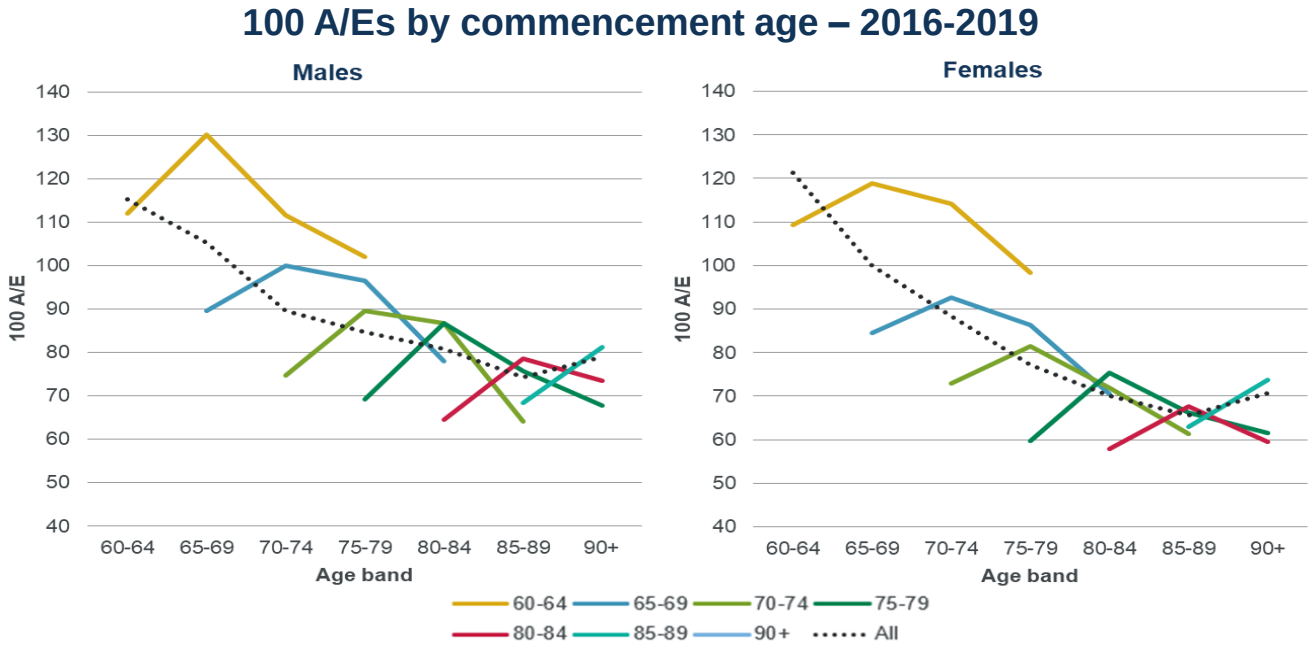
Mortality experience by age at date of commencement

- Mortality experience by age band at date of mortgage commencement suggests significant differences in experience
- Dataset restricted to shorter durations – keen to explore with longer durations if analysis repeated



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Mortality Projections Committee

Hot Topics

Background

- CMI Mortality Projections Model is a model of mortality improvements
- It interpolates between:
  - Initial improvements – calibrated to historical data
  - Long-term improvements – chosen by users
- The “Core” model is for the general population of England & Wales
  - Users encouraged to tailor it for specific populations, and their views
- Model updated annually since 2009 to reflect emerging mortality experience
- “Weights” introduced in CMI_2020 and retained for CMI_2021 to reduce/remove the impact of exceptional mortality during the pandemic

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Hot topics for the CMI Model

- Recent mortality
  - 2020 and 2021 were unusual due to the pandemic
  - Is 2022 more normal, or a “new normal”?
- “Benchmarking” survey
  - How insurers and reinsurers use the CMI Model
- Emerging results of the 2021 census
  - Affects our views of recent improvements
  - Likely to delay the release of CMI_2022

Note: Except where stated, charts and figures do not reflect results of the 2021 census

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Recent mortality

Notes on recent mortality

- For frequent analysis of recent mortality, see the CMI Mortality Monitor
  - Currently published weekly, with more detail quarterly
- Analysis in this section is for England & Wales, the population used to calibrate the CMI Model, and covers the period to 11 November 2022
- We show “age-standardised mortality rates” (ASMRs) which control for changes in the age and gender mix of population over time, to allow a like-for-like comparison.

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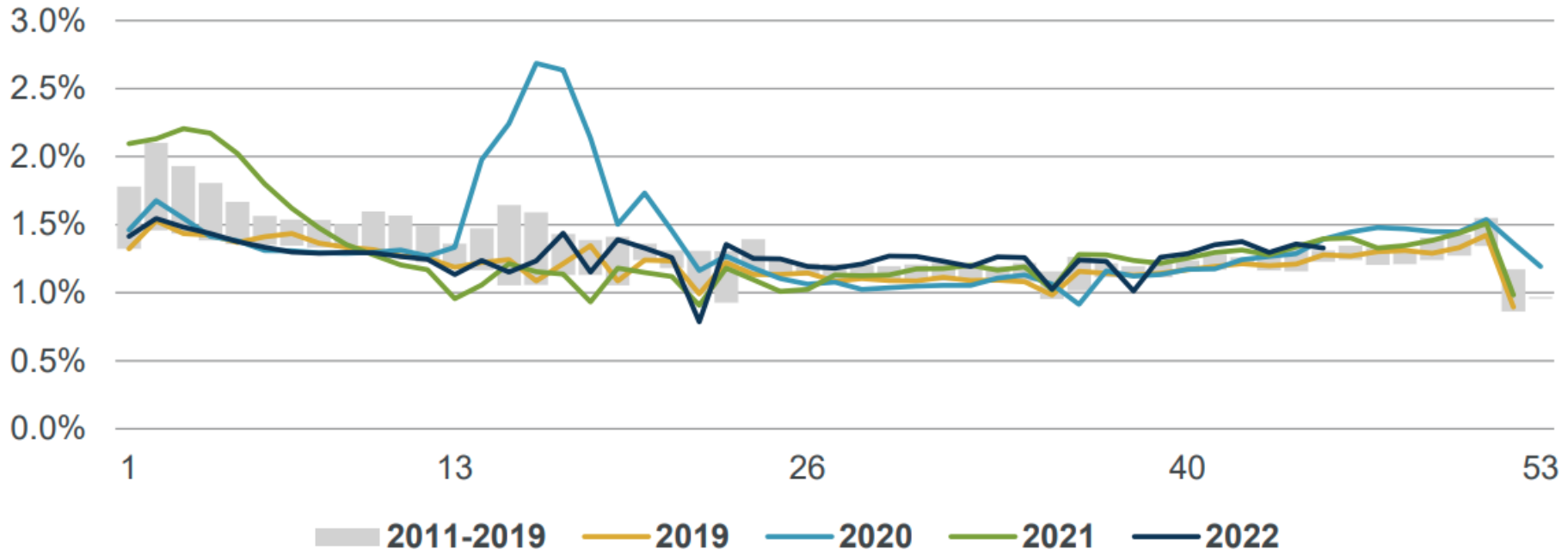
Weekly mortality

Weekly age-standardised mortality rates compared to the 2011-19 range



- Exceptional mortality particularly in April 2020 and January 2021.
- Mortality in early 2022 more similar to that in 2019.

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Actual and excess deaths in 2022

Actual and expected deaths observed in 2022 to week 45

2022, weeks 1 to 45	Male	Female	Total
Expected deaths (based on 2019)	239,400	233,400	472,800
Actual deaths	251,100	243,300	494,400
Excess	**11,700 +4.9%**	**9,900 +4.2%**	**21,600 +4.6%**
Deaths with COVID-19 listed on the death certificate	16,600	13,900	30,500

- Overall excess mortality is +4.6%, however this hides different periods of distinct mortality in 2022.

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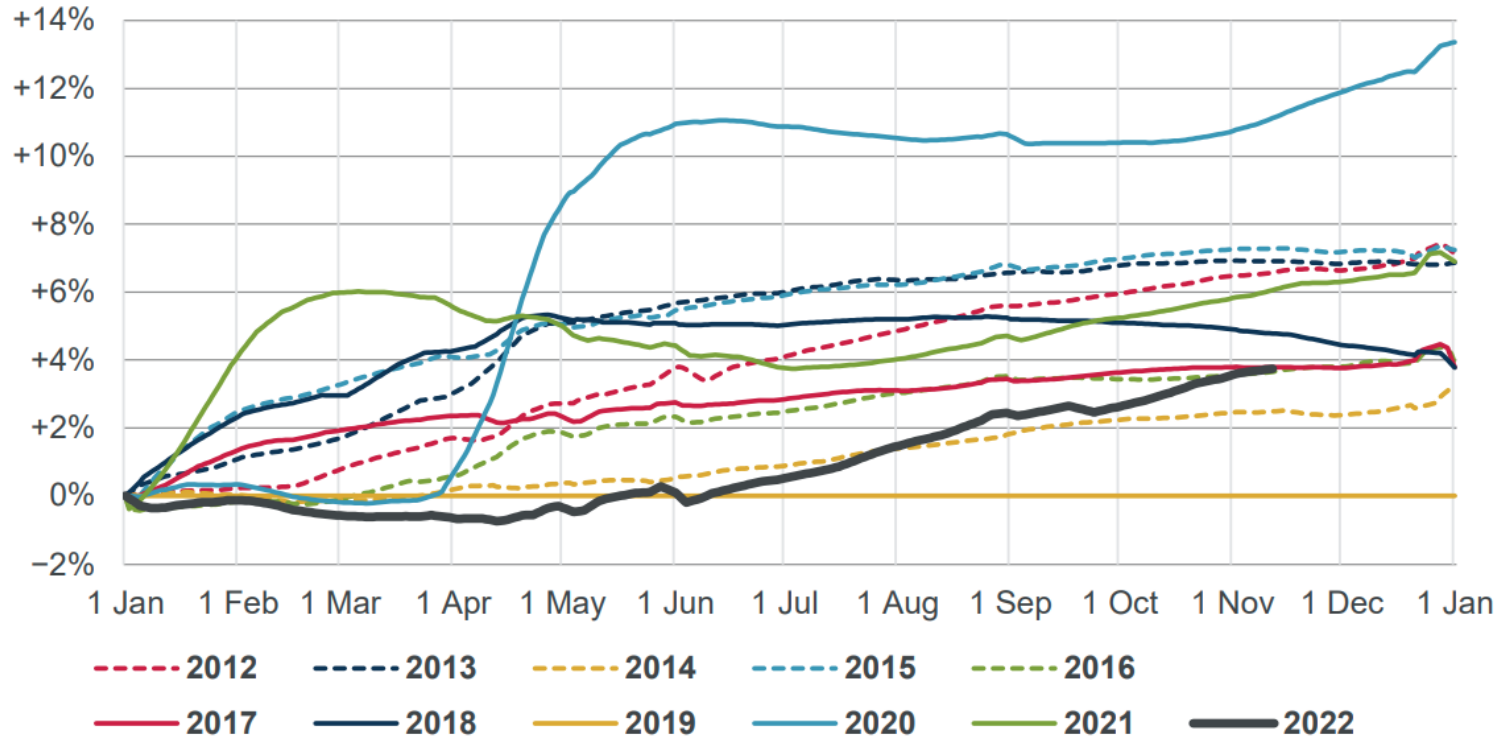
Cumulative mortality

Cumulative age-standardised mortality rates relative to 2019



- Mortality in Q3 of 2022 the highest since 2010.

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Actual and excess deaths in 2022

Actual and expected deaths observed in 2022 split by different periods

2022, weeks 1 to 13	Male	Female	Total
Excess	**(200) -0.3%**	**(2,100) -2.8%**	**(2,300) (-1.5%)**
Deaths with COVID-19 listed on the death certificate	7,100	5,700	12,800

2022, weeks 14 to 26	Male	Female	Total
Excess	**2,900 +4.3%**	**3,200 +4.9%**	**6,100 4.6%**
Deaths with COVID-19 listed on the death certificate	4,200	3,700	7,900

2022, weeks 27 to 45	Male	Female	Total
Excess	**9,000 +9.5%**	**8,800 +9.6%**	**17,800 +9.6%**
Deaths with COVID-19 listed on the death certificate	5,300	4,500	9,800

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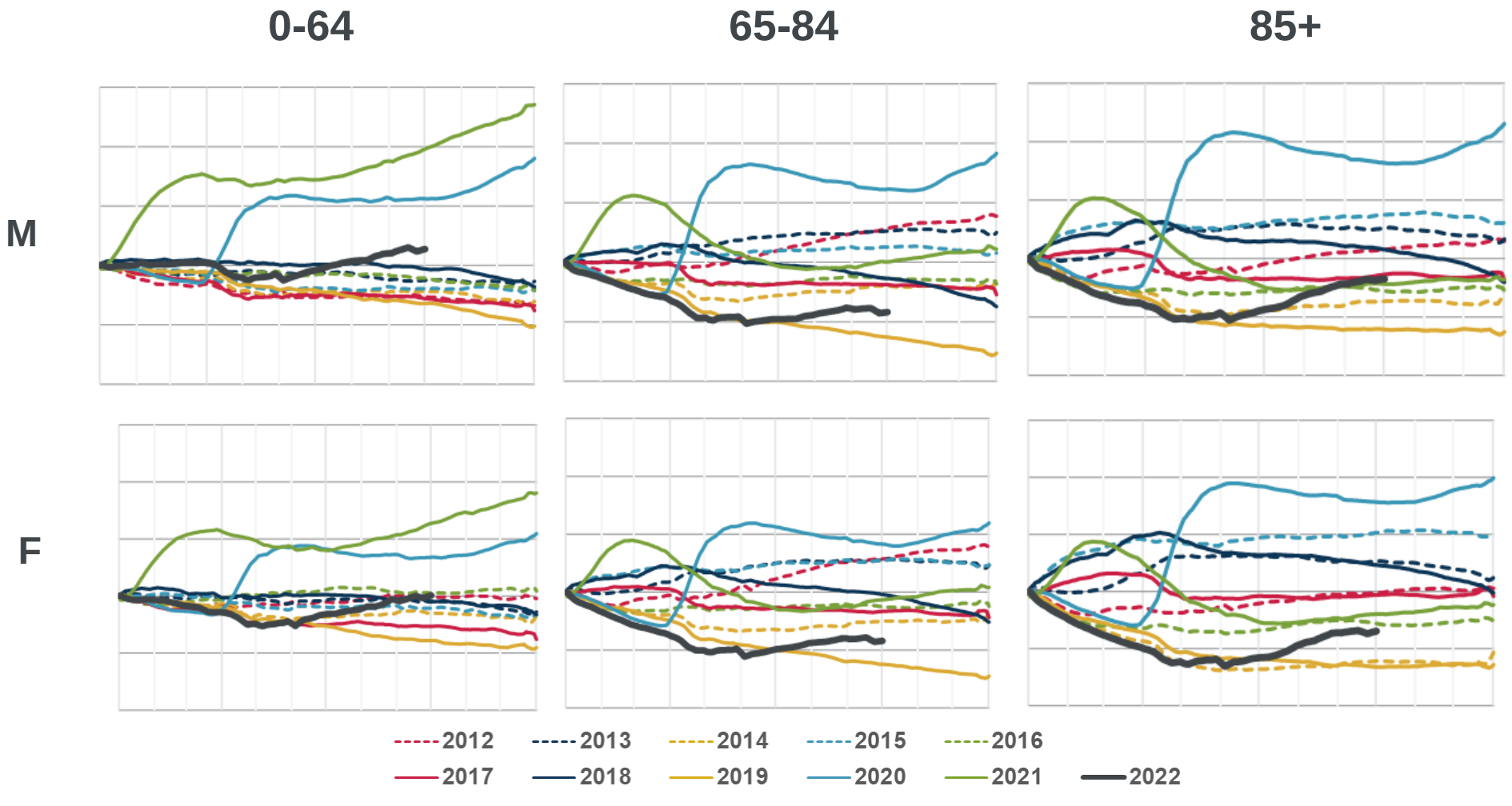
Cumulative mortality – by age and gender

Cumulative age-standardised mortality rates relative to 2019



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Implications for CMI_2022

- Need to decide on weight for 2022 data. Inclined to use:
  - High (100%?) weight if 2022 mortality is "normal"
  - Low/nil weight if 2022 mortality is clearly "abnormal"
- Mortality for 2022 to date is above 2019 – "new normal" or not?
- Mortality for Q4 2022 is unclear

Life expectancy change at age 65 between CMI_2021 and CMI_2022

Gender	Male	Female
+6% improvement	+2.3%	+2.1%
+3% improvement	+0.7%	+0.8%
Nil improvement	**-0.9%**	**-0.5%**
-3% improvement	-2.6%	-1.9%
-6% improvement	-4.3%	-3.3%
0% weight for 2022	**-0.3%**	**-0.3%**

Improvements are relative to 2019.

At 1 January 2022, using 1.5% long-term rate and S3PxA tables.

Excludes impact of the 2021 census.

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Benchmarking survey

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Overview

- CMI conducted surveys in 2021 and 2022 to ask insurers and reinsurers about their current and planned use of the CMI Model:
  - What they use the CMI Model for
  - Which version they use
  - What parameter values they use
  - Base, best-estimate, and trend stress life expectancies
- For the 2022 survey we also asked for views on the impact of the pandemic on future improvements
- We had 20 responses (12 insurers and 8 reinsurers) to the 2022 survey, providing assumptions for 40 books of business – both longevity and mortality protection.

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What the CMI Model is used for

- The main uses of the CMI Model are setting a best-estimate assumption and communicating bases with others.

	Yes – more important	Yes – less important	No
Directly setting a best-estimate assumption	85%	0%	15%
Communicating bases with others	50%	30%	20%
Validating a best-estimate assumption	10%	50%	40%
Smoothing historical mortality improvements	30%	25%	45%
For non-UK countries	30%	10%	60%
Directly setting a 1-in-200 assumption	10%	25%	65%
Validating a 1-in-200 assumption	15%	15%	70%

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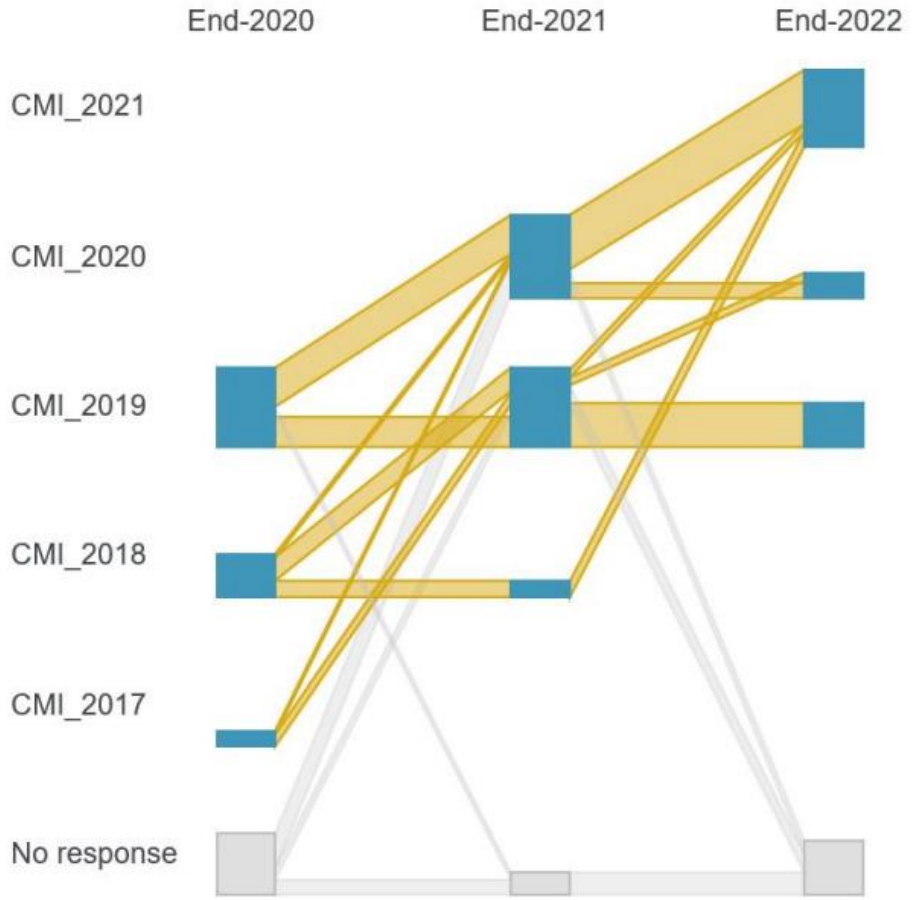
CMI Model versions used

- The Sankey diagram shows how many books of business used (or planned to use) each model version at each year end.
- There is expected to be widespread adoption of CMI_2021 at end-2022, but some retention of the last “pre-pandemic” version, CMI_2019.
- Choice of CMI Model version differs for insurers and reinsurers. For end-2022 a much higher proportion of insurers than reinsurers intend to adopt CMI_2021.



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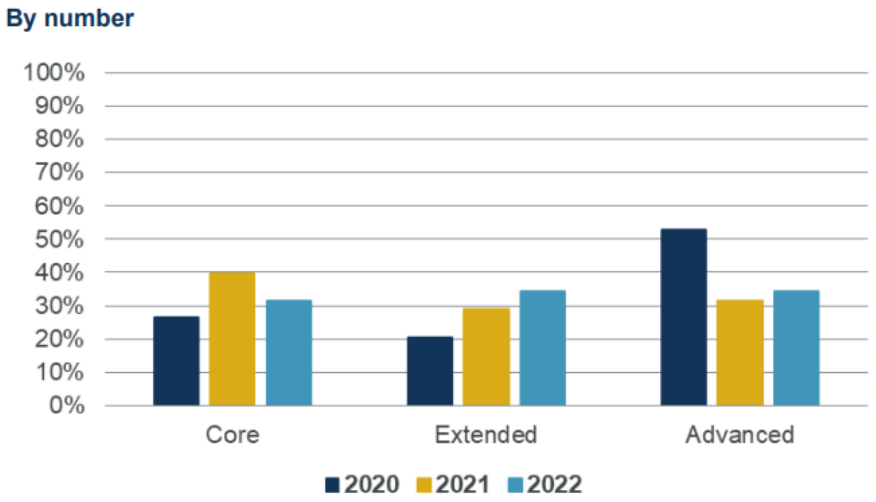
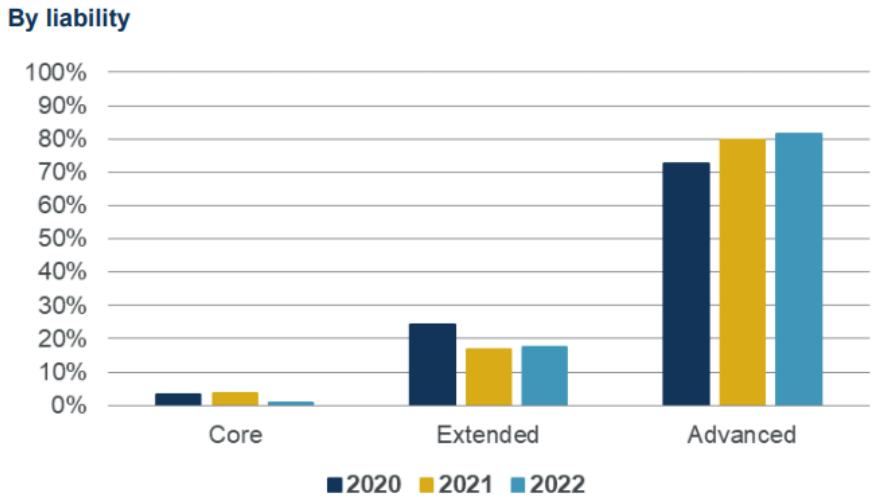
CMI Model parameters used

- Core parameters are widely used but many users adjust parameters. This is particularly true when weighting results by liability.
- The most commonly varied parameters are:
  - the initial addition to mortality improvements (A); and
  - the period smoothing parameter (S_κ).





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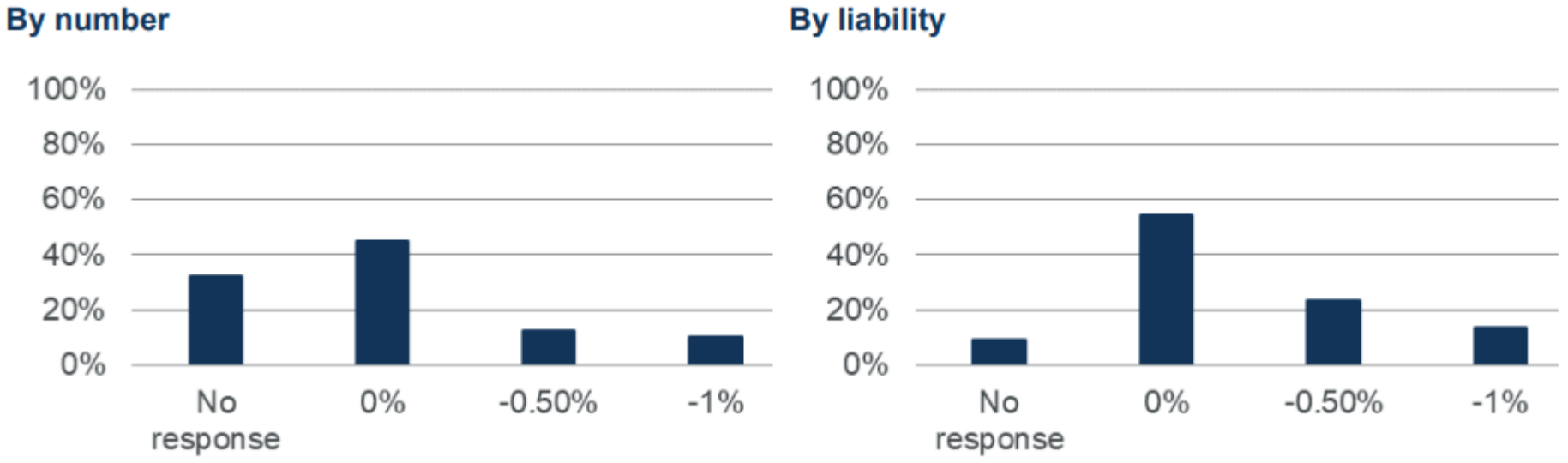
Impact of the pandemic

- We asked respondents to provide an indication of their best estimate view of the specific impact of the pandemic on the trend component of life expectancy at age 65 at end-2022.
- Over half indicated no change in life expectancy, with the rest indicating falls of either 0.5% or 1%.



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Impact of the 2021 census results

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Background

- A census took place on 21 March 2021 in England & Wales
- Results are being published gradually:
  - Census day population by age band – available now
  - Mid-2021 population estimate – expected December 2022
  - Revised mid-2012 to mid-2020 population estimates – “early 2023”
- These results affect our view of past mortality improvements, which in turn affects our view of future improvements

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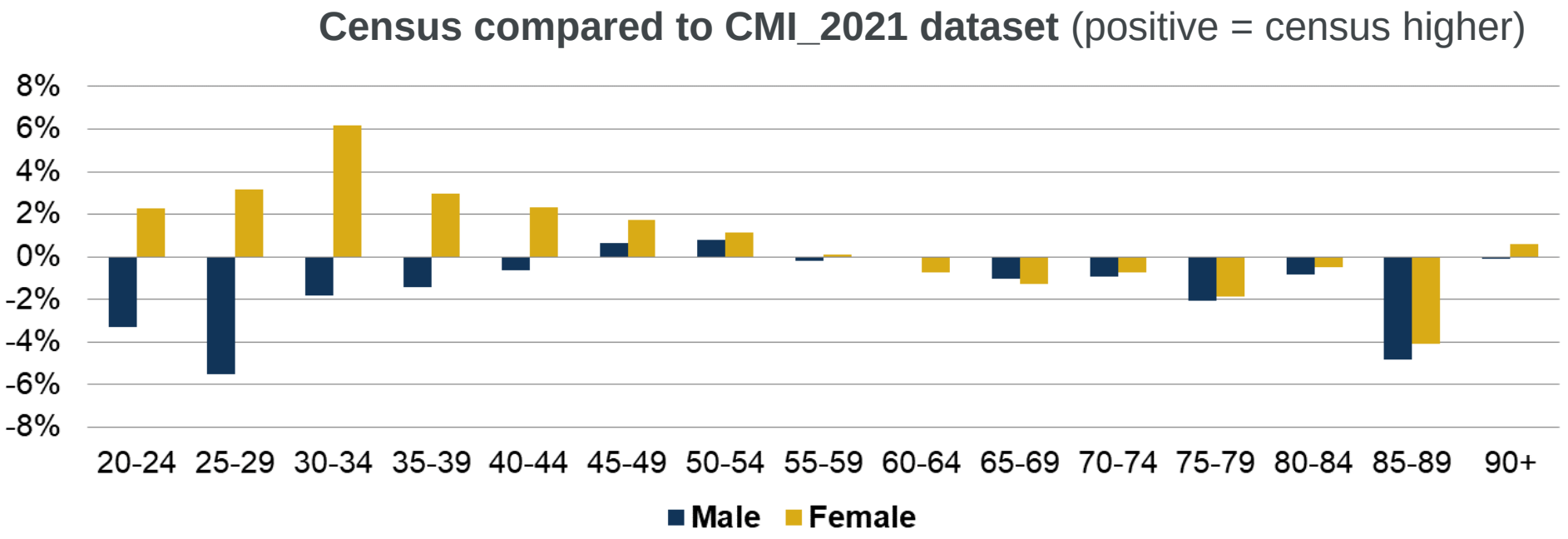
Initial results

- Comparing initial census results on census day with the CMI_2021 dataset:
  - the total 20+ population is very close; but
  - there are significant variations by age and gender.



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CMI treatment of ONS data

- While the CMI Model is calibrated to ONS data, we adjust the population data before using it.
- We use a version of the Kannisto-Thatcher extinct generations method:
  - we adjust the age distribution for ages 85+ within a year
  - but we do not change the total 85+ population

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Impact on the CMI Model

- We have considered the impact on results from CMI_2021 if we:
  - adjust the mid-2021 population to reflect initial census results; and
  - adjust the mid-2012 to mid-2020 populations so the impact of the census is recognised steadily.
- Using the Core version of CMI_2021, for the general population:
  - Considering only improvements from 1 January 2022, cohort life expectancies fall by 0.3% for males and 0.2% for females.
  - Considering improvements from 1 January 2013 onwards (the date of the “S3” Series tables), cohort life expectancies fall by 0.7% for males and 0.3% for females.
- Where views of initial improvements are based on other data, and the initial addition parameter (A) is used, the impact of the census figures on life expectancy is likely to differ.

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Next steps

- Our view of the impact of the census is likely to change as the ONS publishes more detailed information.
- We intend to update our analysis once we have the official ONS estimate of the mid-2021 population, expected in December.
- We expect to delay the publication of CMI_2022 beyond its usual March release date to allow for restated population estimates.
- ONS previously stated that they intend to publish revised mid-2012 to mid-2020 population estimates in ‘early 2023’, but in a recent conversation with them they said it may be ‘Spring 2023’.

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Summary

Expectations for CMI_2022

- Publication of CMI_2022 likely to be delayed beyond March 2023, to incorporate ONS revisions to population estimates.
- Initial census results seems likely to reduce cohort life expectancies – but more detailed results may affect that view.
- Mortality in 2022 to date suggests a further reduction in cohort life expectancies – but mortality in the final quarter of 2022 is uncertain.
- A thorough review (high level, as opposed to “fixes”) of the CMI Model is currently being undertaken, reviewing the overall structure, complexity and the software.

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CMI’s Plans

2022-23 Objectives

- Annuities Committee:
  - Combined analysis
  - Pension annuities in payment to end-2021
- Assurances Committee:
  - Term assurances to end-2021
  - Cause of claim analysis
- Income Protection Committee:
  - Income protection to end-2020
- SAPS Committee:
  - Experience analysis to half-year 2021

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2022-23 Objectives

- Mortality Projections Committee:
  - Weekly pandemic mortality monitors
  - Quarterly mortality monitor for end 2022
  - Annual interim update
  - Applying UK and US mortality projection models to each other's data
  - CMI_2022

2023-24 Objectives

- The CMI is planning for the next CMI year
- Various over-arching themes include data, COVID-19, and international outlook

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Questions

Comments

Expressions of individual views by members of the Institute and Faculty of Actuaries and its staff are encouraged.

The views expressed in this presentation are those of the presenter.

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Thank you

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Registered in England & Wales (Company number: 8373631)
Registered Office: 7th floor, Holborn Gate, 326-330 High Holborn, London, WC1V 7PP

Correspondence address: Two London Wall Place, 123 London Wall, London, EC2Y 5AU, United Kingdom
Email: info@cmilimited.co.uk
Tel: +44 20 7776 3820

Website: www.cmilimited.co.uk (redirects to www.actuaries.org.uk)

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