Mortality update

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isio.

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Summary

Isio has considered the recent release of the CMI 2023 mortality projection model in light of experience since the COVID-19 pandemic and the current economic outlook. We continue to model a consistent range of scenarios for mortality in the coming years, reflecting the factors we believe will drive mortality experience. In our view, the core parameters set out in the CMI 2023 model fail to fully allow for the most likely impact of these factors and, as acknowledged by the CMI, appear to be set in between the polarised views of users and to control model features, rather than based on the actual data coming from 2022 and 2023 experience.

Indeed, the CMI noted that the core parameters are not aligned with any user group's views. This paper sets out a high-level view of the modelling we have undertaken and our views on potential future mortality experience in the UK, together with our approach to adjusting the core model to reflect those views.

Broadly, Isio considers that greater credibility could be placed on mortality experience from 2022 onwards and that on balance, in the long-term, mortality improvements are likely to be slower than projected by the core model. Our view is consistent with prior years and means that our central scenario for life expectancies and, consequently, best estimate liabilities is lower than the core CMI 2023 model is projecting.

Improvements in bulk annuity pricing seen over the last few years have resulted from several factors, including an evolving understanding of longevity. If this continues, we could see further falls in the price of insurance. However, companies and trustees managing their pension schemes will be interested in the CMI's observation that (re)insurers supported stronger core parameters at the latest review (i.e. longer life expectancies) than pension consultancies like Isio.

If interpretations of future longevity begin to diverge meaningfully between sellers (insurers) and buyers (schemes and their advisers), gaining certainty over longevity through a scheme buy-out will start to appear more costly. Alongside various other developments in regulation and policy, this could be an interesting new ingredient in weighing up whether to buy out liabilities or run a scheme on into the future.

Key parameters

There are a few terms used in this paper that relate to the key parameters used in the CMI model:

- **Weighting ('w') parameters:** Since 2020, the model has allowed users to vary how much weight is applied to data in individual years. The CMI 2020 and CMI 2021 Models had core weighting parameters ('w2020' and 'w2021') of 0% - i.e. no allowance for 2020 or 2021 population mortality data reflecting a view that the extreme mortality rates seen early in the Covid-19 pandemic would not be reflective of future mortality. The core CMI 2022 Model introduced a partial weighting for 2022 data ('w2022') of 25%, reflecting a view that the mortality data seen was becoming more reflective of the future. The core CMI 2023 model reduced w2022 to 15% and introduced a partial weighting for 2023 data ('w2023') also set at 15%.
- **Initial Addition ('A') parameter:** This parameter was introduced in the CMI 2018 Model to allow users to reflect their view of differences in improvement rates between the England & Wales population (used in the development of the model) and the population they are interested in (e.g. pension scheme members).
- **Long-term improvement rate parameter:** This parameter has existed since the inception of the CMI model and is particularly subjective given it represents the expected rate of mortality improvement many years into the future. The CMI Model effectively generates a progression of changing mortality improvement rates that target achieving this user-defined long-term improvement rate over a defined period of time.

Introduction

This paper sets out Isio's thoughts on future mortality following the publication of the latest actuarial mortality projection model, CMI 2023. It also includes a high-level description of the thinking and factors underpinning this view.

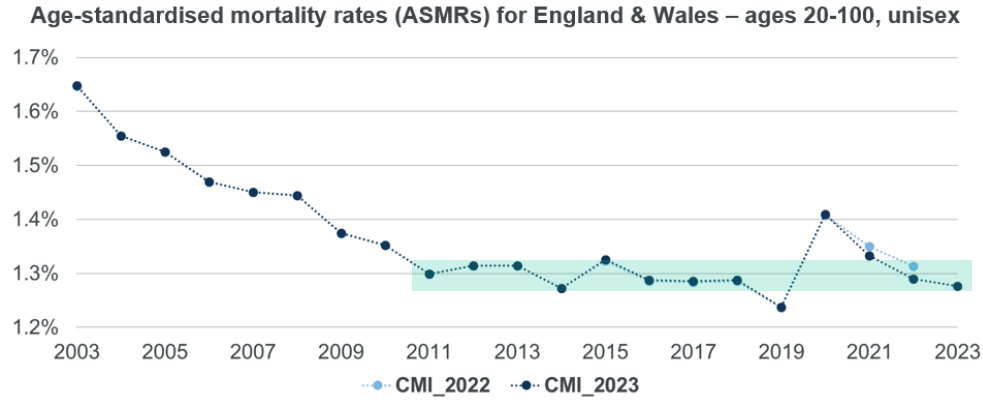
During the COVID-19 pandemic, UK mortality experience was much worse than had been experienced in preceding years and very volatile from week to week. However, in 2022 this volatility fell away and the pattern of death rates became more consistent with previous years.

Because of these facts, the Continuous Mortality Investigation ('CMI') – the body that develops the modelling tools that are used by pensions actuaries in setting assumptions – concluded that mortality in 2022 "may be indicative of future mortality to some extent". The 2022 version of the CMI model therefore contained, for the first time since the start of the COVID-19 pandemic, some weighting (25% of 2022) to post-2019 mortality data in the core version of the model.

In last year's update, we shared our scenario modelling that concluded the allowance being made in the core CMI 2022 model most likely overstated future improvement. Overleaf we discuss our updated analysis and how we have used this to develop our views on setting mortality assumptions using CMI 2023.

First, we note that inconsistencies in the timing of reporting of deaths over December and January led the CMI to move away from focusing on different weights for each calendar year. Instead, the approach now focuses on the general post-2021 experience, with a single weighting covering both 2022 and 2023. The core CMI 2023 model places a weight of 15% on these two years – meaning a lower weight is now being applied to 2022 experience and a lower weight than previously intimated is being applied to 2023 experience.

This lower weight is being applied despite 2021 Census population data leading to the conclusion that mortality rates in 2022 and 2023 are now back within a "normal" range if we look at the period since 2010.



Source: CMI Working Paper 183, based on ONS data

With full weighting applied to the data from the period before the pandemic, it appears unusual to only apply 15% weighting to more recent data that conforms with the existing trend and has mortality rates consistent with prior years. We conclude therefore that the low weighting has been proposed to try to control model features and, perhaps understandably, satisfy conflicting user demands rather than utilising the maximum amount of credible data available.

Whilst there are two main building blocks to the mortality assumptions that actuaries use, we have focused in this paper on the projection assumption, set using the CMI model to predict the future path of mortality improvements. When setting their 'base' mortality tables, interested parties should note the release of the latest 'SAPS 4' tables in February 2024 which users should take into account.

It should be noted that the views set out in this paper do not consider the potential direct impacts of climate change on life expectancies.

Scenario modelling

At the time of writing, we do not know how the excess deaths trend will continue in 2024 and beyond. Indeed the start of 2024 has looked like 2019, a low mortality year, albeit as we saw in previous years the first few months are not a good predictor for the final outcome. However, we can be clear that recent mortality experience remains higher than in 2019, which was itself a low point, and that there is a wide set of factors that we expect to impact mortality in the medium-to-longer term:

- **Healthcare within the NHS** - Waiting lists for hospital treatment remain high. Increased waiting times are highly correlated with deaths. Further, demand pressure on the NHS is unlikely to be resolved by the necessary significant increase in functional capacity in the near term due to wider economic constraints affecting the UK economy.
- **Ongoing negative impact on health from the COVID-19 pandemic** – The UK is still experiencing deaths from COVID-19, but deaths from other causes are now higher and have been increasing. This may be the effect of delayed identification and treatment for other conditions due to repeated lockdowns, amongst other factors.
- **Unknown nature of the long-term effects of long-covid** – This is a current area of research, as the effect of long-covid on population longevity is yet to be understood. However, it is widely expected that this may be a contributing factor to poor health in affected individuals, e.g. those who develop cardiovascular diseases and other long-term conditions that could be expected to shorten life expectancy.

Since 2010 improvements in life expectancy have been stagnating and, consequently, the data from 2022 and 2023 could be given more credibility.

Based on these factors and the recent heavier mortality experience compared to 2019, which is more consistent with the 2010-19 period, in 2023 we modelled three scenarios for the development of mortality rates in the coming years. These were designed to reflect the shock to mortality experience that has occurred and look at the length of time this shock might persist before mortality rates start to improve again. The data we've seen since our previous scenario modelling has not changed our view on mortality; we can see that improvements in general have been stagnating.

As a reminder, the scenarios we have previously modelled are linked to the relationship between improvements in life expectancy and economic growth/productivity rises. Our model assumes that future longevity improvements in the UK will be linked to the period during which economic growth restarts and increased NHS spending is made available to drive change or increase functional capacity.

At the time of writing, in the second quarter of 2024, there remain significant headwinds to the strong economic growth seen in the past, which aligned with strong improvements in life expectancy. Post-Brexit trading challenges, rising government debt, higher interest rates, political unknowns such as the UK and US elections and instability in various locations around the world are creating challenging conditions and imposing constraints on tax raising and expenditure.

The scenarios we have modelled are focused on an assumption of an initial 5% heavier mortality shock (vs. 2019 mortality rates), with no mortality improvements for 5, 10 and 15 years, before returning to the path of improvements seen in the CMI 2023 model. A 5% shock to 2019 mortality rates can also be described as a continuation of the average rates for the 2010-19 period. These are described below:

Scenario one – a 5-year pause in mortality improvements:

- Initial 5% heavier mortality shock vs. 2019 mortality rates
- For the 5 years after 2022, mortality rates remain at the same level and do not show any improvement.
- The first improvement in mortality rate is seen in 2028 where CMI 2023 model improvements are then observed.

Scenario two - a 10-year pause in mortality improvements:

- Initial 5% heavier mortality shock vs. 2019 mortality rates
- For the 10 years after 2022, mortality rates remain at the same level and do not show any improvement.
- The first improvement in mortality rate is seen in 2033 where CMI 2023 model improvements are then observed.

Scenario three - a 15-year pause in mortality improvements:

- Initial 5% heavier mortality shock vs. 2019 mortality rates
- For the 15 years after 2022, mortality rates remain at the same level and do not show any improvement.
- The first improvement in mortality rate is seen in 2038 where CMI 2023 model improvements are then observed.

The following table sets out the 'weights' parameters that broadly match the liability impact of these scenarios against the CMI 2023 Core Model, i.e. w2020/ w2021 parameters of 0% and w2022/w2023 parameters of 15%.

Scenario	Typical liability impact relative to the CMI 2023 Core Model (joint life basis)	Equivalent CMI 2023 'weights' parameter
One	0.5% -1%	100%
Two	1% - 1.5%	100% + further adj.
Three	1.5% - 2%	100% + further adj.

Previously we have applied additional weighting above the 'core parameters' which gave non-zero weighting to 2020 and 2021 data. We have changed our approach for the 2023 model to only adjust 2022 and 2023 weights, to align with the core CMI 2023 approach. We expect other users in the market to also focus on adjusting 2022 and 2023 weightings so our revised approach should help avoid unnecessary confusion.

All of these scenarios lead to a reduction in life expectancy and, consequently, pension scheme liabilities, compared to the use of the CMI core model. However, we recognise that we aren't in the business of making long-term economic forecasts, which therefore leads us to favour Scenario One as a possible best estimate position for mortality trends at present. This is consistent with our view last year and Scenario One above should give similar life expectancies to our Scenario One from our August 2023 analysis.

Any users favouring Scenarios Two or Three would need to make further adjustments beyond the weighting parameter to reflect these situations.

Other parameters

Long-term improvement rate parameter:

- Given recent UK mortality experience it makes sense to reassess the "target" rate of improvement the CMI Model calibrates to in the longer term.
- Market practice gravitates to a long-term assumption of 1.5% p.a. for funding purposes and 1-1.25% p.a. for best-estimate purposes (e.g. accounting).
- Improvement rates had historically been less than 1% p.a. until a period from the mid-1970s to around 2010, when much stronger rates of improvement were seen.
- However, the last c.10 years have seen a sharp downturn with 5-year average improvement rates at or below 1% across the population.
- Further, we question whether there will be sufficient economic resources available to drive further rapid improvements to life expectancy through the necessary climate transition during the lifetime of most DB scheme members.
- Our view, therefore, is that it may be appropriate to utilise 1% p.a. for best estimate purposes at this current time.
- We recognise the subjectivity in this assumption and are comfortable that 1.5% p.a. is likely to remain commonly used for funding purposes, where Trustees are required to set a prudent assumption.

Initial Addition ('A') parameter:

- CMI improvement models are calibrated to the general population within England & Wales, which may not reflect a specific scheme's population.
- The 'A' parameter was introduced as a way of easily reflecting views on appropriate improvements for specific populations.
- The latest data on differences in mortality improvements between the general population and pension scheme populations cover the period 2011-2021 but are heavily distorted by the significant mortality seen in 2020 and 2021, which is likely not materially indicative of future trends.
- Looking at the period 2010-2019 there is no significant difference between improvements in the general population and the pension scheme population.
- Our view, therefore, is that for most pension schemes an A parameter of 0% is likely appropriate, but up to 0.25% may be appropriate for additional prudence in funding valuations or where there is reason to believe a particular population may benefit from higher rates of mortality improvement in the short term. The latter may be the case where the scheme has higher than average pensions or a postcode analysis shows the population is expected to enjoy lower than average mortality.

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