



Mortality Projections Committee

Summary of Working Paper 103: “CMI Mortality Projections Model: Mid-year update”

November 2017

NOTE: This document is being made available publicly and its use is not subject to CMI's Terms and Conditions for Subscribers or Terms and Conditions for Academics and CMI Committee Members.

Introduction

This document provides a brief synopsis of Working Paper 103, which describes updates to the CMI_2016 software and sets out a number of analyses intended to be helpful to users of the CMI Mortality Projections Model (the “Model”).

For more detailed analysis and full results, readers are encouraged to refer to the full Working Paper¹.

Software

The Committee is releasing an updated version of the CMI_2016 software, version 02. The main change is that users can now easily calibrate the Model to international data from the Human Mortality Database (HMD). We have also taken the opportunity to improve the usability of the software. These changes do not affect the CMI_2016 projections.

Smoothing parameter

In order to assist users with putting values of the period smoothing parameter (S_K) into context, we have compared actual Standardised Mortality Rates (SMRs) and their mortality improvements to those obtained from the Age-Period-Cohort Improvement (APCI) model for various values of S_K . For *all* the values of S_K considered (6.5 to 8.5):

- the actual SMR in 2016 was higher than the APCI model, and
- the mortality improvement for the five-year period to 2016 (and to 2015) was lower than the APCI model,

indicating that the Model assumes initial rates that are less extreme than a five-year running average of recent experience.

Recent mortality

Analysis of weekly deaths data from the Office for National Statistics shows that mortality in 2017 to date has been broadly similar to the corresponding period of 2016, after controlling for changes in the population:

- Mortality in England & Wales for the first 39 weeks of 2017 has continued to be materially heavier relative to the 2000-2011 trend.
- Barring unexpectedly light mortality in the remaining 13 weeks of the year, standardised mortality for the whole of 2017 is likely to be above expectations based on CMI_2016 for the range of S_K we have considered (6.5 to 8.5).

Mortality improvements for specific populations

¹ Most of the CMI's research is only available to employees of subscribers and to researchers, for non-commercial use. Details of how to access the full paper and the CMI's other research can be found on the CMI's [web pages](#).



Working Paper 97 showed that mortality improvements in the CMI's Self-Administered Pension Schemes (SAPS) dataset were higher than in the general population from 2011-2015. Further analysis shows that this was also true in 2007-2011.

Analysis of mortality improvements by Index of Multiple Deprivation (IMD) shows that less or more deprived groups have had higher or lower mortality improvements respectively in the periods 2000-2011 and 2011-2015 compared with the national population, but that all deprivations experienced a similar fall in average improvements from the period 2001-11 to 2011-15.

Improvements for the CMI SAPS dataset have been higher than for the least deprived group that we consider, and those for the CMI Annuities dataset have been lower than for the most deprived group.

Using the Model for other populations

The revised software, noted above, makes it easier to apply the Model to international data from the HMD. We compare results for England & Wales with other populations, focussing on other constituents of the British Isles, and other G7 members.

Initial mortality improvements show broadly similar patterns for different parts of the British Isles. Some other populations can show markedly different results, particularly due to cohort parameters.

Disclaimer: This Document has been prepared by and/or on behalf of Continuous Mortality Investigation Limited (CMI). The CMI does not accept any responsibility and/or liability whatsoever for the content or use of this Document. Whilst care has been taken during the development of the Document, CMI does not (i) warrant its accuracy; or (ii) guarantee any outcome or result from the application of this Document or of any of CMI's work (whether contained in or arising from the application of this Document or otherwise). You assume sole responsibility for your use of this Document, and for any and all conclusions drawn from its use. CMI hereby excludes all warranties, representations, conditions and all other terms of any kind whatsoever implied by statute or common law in relation to this Document, to the fullest extent permitted by applicable law. If you are in any doubt as to using anything produced by CMI, please seek independent advice.

Copyright: You may reproduce the contents of this Document free of charge in any format or medium provided it is:

1. reproduced accurately and is unaltered;
2. not used in a misleading context; and
3. correctly referenced and includes both CMI's Disclaimer notice set out above and CMI's copyright notice, as follows:

© Continuous Mortality Investigation Limited.

Continuous Mortality Investigation Limited ("CMI") is registered in England & Wales
Company number: 8373631
Registered Office: 7th Floor, Holborn Gate, 326-330 High Holborn, London, WC1V 7QJ

Correspondence address: Cheapside House, 138 Cheapside, London, EC2V 6BW
Email: info@cmilimited.co.uk
Tel: 020 7776 3820

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

Continuous Mortality Investigation Limited is wholly owned by the Institute and Faculty of Actuaries.