

CMI Annual Review 2006-2007

Background

This review summarises work undertaken by the Continuous Mortality Investigation (CMI) over the past year, as well as some of our future plans.

The CMI is the largest single research project organised by the UK Actuarial Profession. It has been accumulating and analysing data on mortality and morbidity risks arising under life assurance, annuity and pension business for over 80 years. Although organised by the professional body, it is constituted independently as a research organisation. Individual contributors' data is carefully protected, but the vast aggregate database is a valuable resource to contributors, to the industry and supervisors, and to actuaries and other professionals with a commercial or research interest. The CMI benefits from the volunteer effort of many actuaries and others with an interest in its subject matter.

Traditionally the work of the CMI has been funded by life offices and reinsurers, and we thank them for their continued support.

During 2006, the CMI formally took over the running of the SAPS investigation, with funding from actuarial consultancies who also supply the data for this important investigation. We thank them too for their support

The Executive Committee is grateful for the continued support for its work from CMI members and welcomes feedback on all aspects of its activities.

New Mortality tables

Working Papers 21 and 22, published in August 2006, contained the final version of a new set of tables of mortality – the “00” Series – which were adopted by the Actuarial Profession from 1 September. These new tables were based on life office data for 1999-2002 and reflect the significant improvement in mortality that has occurred since the “92” Series tables were published.

The “00” Series tables are not just an update of previous tables though. Before embarking on the graduations themselves, the Life Office Mortality Committee studied the data underlying each investigation to assess if any of these no longer warranted graduation, or if any new graduations should be produced, and consulted with the Profession on its proposals. The outcome is that a number of tables have been published for the first time, including:

- Separate smoker and non-smoker tables for assured lives and temporary assurances (as well as the traditional aggregate tables); and
- Experience under Personal Pension contracts. Such contracts have only existed since 1988, so there has not been sufficient experience (especially for pensions in payment) to produce tables previously.

As a result the “00” Series contains forty tables, each of which represents a different segment of the mortality data collected by the CMI.

One of the points raised during the consultation on the draft tables was that actuaries would welcome an extension of the annuitant and pensioner tables to younger ages. These extensions were published in Working Paper 26 in April 2007 but, in view of the paucity of data at these ages, do not form part of the official “00” Series tables adopted by the Profession.

Better Analyses

The CMI's capability to analyse mortality data is set to be transformed with major changes to the data submitted by life insurers. The move to 'Per Policy' data involves collecting an individual record for each in-force policy and claim, replacing the current tabulation of data by age and duration, and will in this sense put the life office mortality investigations on a similar footing to all the other investigations run by the CMI.

However we have also taken the opportunity to review other aspects of the data collected (for critical illness, as well as mortality) with the addition of data fields such as distribution channel and postcode. The ultimate outcome should be substantially improved analyses.

There was considerable progress on this initiative during 2006-7, with a number of data contributors adapting their procedures and systems to submit data in the new format. In most cases the submissions cover a wider range of their business than was previously submitted. Within the CMI a major initiative to develop the systems to support the new data has been virtually completed. The first submissions have proved extremely valuable for testing the systems and these data contributors deserve particular thanks.

We were heartened with responses from other offices regarding their plans to submit data in the new format when surveyed last year and encourage all offices to seek our assistance during the course of their development work to ensure a successful transition.

It will take time before the full value of this initiative is realised through a range of new analyses, but we believe the wait will be worthwhile!

A new area of research: Mortality in Pension Schemes

During the year, the investigation into the mortality of pensioners in self-administered pension schemes (SAPS) was formally brought within the governance of the CMI, with all the members of the previous working party joining the CMI SAPS Mortality Committee.

Considerable progress has been made in analysing 2000-2004 data and a draft Working Paper has been circulated to consultancies that provide the financial support for this investigation. It is hoped that a revised version of the paper will be published in autumn 2007. Prior to undertaking this analysis, the data validation processes were extended in order to improve the quality of the data.

A renewed effort to collect data in order to perform initial graduations achieved considerable support. The volumes of data submitted in two days at the end of February 2007 exceeded that for the whole of 2006 resulting in an inevitable delay to this work whilst the data was processed and verified! Analysis of this data is now being undertaken and the graduations will be based on all data received to the end of June 2007 – over 300,000 deaths. This work should result in the first graduated tables of UK non-insured pensioner experience and prove valuable for all pensions actuaries.

The SAPS investigation is particularly important in increasing our understanding of female mortality, under-represented in the insurance data the CMI has traditionally analysed, and our understanding of variations in mortality between pension schemes, for example by industry classification and by size of pension.

Into the unknown – projecting mortality

Perhaps the most notable feature of the "00" Series tables is the absence of projections of future mortality. Previous series of tables for pensioners and annuitants, up to and including the "92" Series, incorporated a single projection of future mortality. These projections were

principally based on analyses of past trends in the various CMI investigations and in the wider population and were widely used by actuaries.

The projections incorporated in the “92” Series tables were quickly found to understate the level of mortality improvements that were actually occurring in CMI experience. Indeed this had tended to happen with previous projections too, although to lesser extents. In addition, evidence was emerging of the “cohort effect” in both population and CMI data, where a group of lives (born around the late 1920s/early 1930s) was experiencing even more rapid improvements in mortality than other age groups. Given these people had recently reached (or would soon reach) retirement age, this had considerable significance for the Profession, if actuaries continued to use the “92” Series tables. The CMI responded by publishing the “interim cohort projections” late in 2002. These projections were ad hoc adjustments to the original “92” Series projections for lives in the key generation that reflected actual improvements in mortality to 1999. A choice of three projection bases was offered – Short, Medium and Long – in which the “cohort effect” was assumed to persist for different periods. The three bases were not intended to carry any probabilistic interpretation and there was no indication of which one an actuary should use – if any!

The use of the term “interim” in the name reflected the ad hoc nature of these projections and that the CMI would undertake further work in this area. Since publishing the interim projections, the CMI has undertaken research into possible approaches to mortality projections, most recently evaluating two methodologies for mortality projections – P-spline and Lee-Carter. The CMI has tried to assist actuaries by explaining the features and benefits of these methodologies in Working Paper 20 (P-splines) and Working Paper 25 (Lee-Carter), accompanied by illustrative software.

The CMI has recognised the difficulties facing actuaries through the absence of mortality projections in the “00” Series and has established a task force that is aiming to make its research more accessible to actuaries. However it will still be for individual actuaries to consider the appropriateness of assumptions of future mortality in a particular situation, and to explain to others the inherent uncertainty in any set of assumptions.

The Critical Illness investigation

The CMI’s early work on critical illness claims experience heightened awareness amongst actuaries of the sometimes considerable delays in claims settlement on this important line of business. Making proper allowance for these delays has hampered progress on producing definitive critical illness results but the Critical Illness Committee has now identified an approach that it thinks makes best use of the available data and is hoping to publish details of the approach with initial results in the summer of 2007.

This work has been supported by the use of Generalised Linear Modelling techniques which have yielded some valuable results, indicating the more important influences on claim rates and claim delays.

Dates of claim are of great importance to critical illness experience and the CMI therefore initiated discussions with the Health Claims Forum to seek to standardise the definitions of these dates within the industry. A joint consultation paper was issued in May 2006, resulting in the HCF issuing guidance which its members were asked to adopt from 1st January 2007. It is hoped that this will eliminate some of the inconsistencies in claim dates that have been apparent from our analyses.

Understanding cause of disability

CMI Working Paper 23 analysed trends in experience for individual Income Protection policies from 1975 to 2002 by cause of disability. Initial findings had previously been presented at the 2006 Healthcare conference. The Working Paper requested feedback on whether this should lead to graduations of terminations by cause of claim (or groups of similar causes) to assist the industry in producing more reliable reserving calculations for claims in payment. Disappointingly, limited feedback was received, but the CMI will try to seek further views before deciding whether this work should be taken further.

Communicating with the Profession

The CMI has taken a number of steps to keep the Profession better informed of its work in recent years – regular activity updates are sent to other parts of the Profession and the CMI’s pages of the Profession’s website contain all our publications, slides from presentations and a “Latest News” section. These pages are accessible directly via: www.cmib.org.uk. Nevertheless, we have not always felt that we were getting feedback on our work, meaning that future work may not have been directed at the areas of most importance to the Profession and, indeed, to those who fund our work.

To try and overcome this, the CMI has established two forums of interested users to share recent work and discuss future developments. One, specific to the SAPS investigation, met in October 2006. The other, spanning the life office investigations met for the first time in May 2007. These attracted considerable support and we hope they ensure we better understand and reflect the needs of our users, as well as providing us with a well-defined line of communication to our major stakeholders.

Finally, I would like to record the thanks of the CMI Executive Committee and the profession to our data providers, our supporters, and most particularly to the secretariat and our volunteers, whose continuing efforts are essential to the provision of this service to the profession.

Brian Ridsdale
Chairman
July 2007

Appendix 1

CMI Publications during 2006-7

- Working Papers 21 and 22: The Graduation of the CMI 1999-2002 Mortality Experience: Final "00" Series Mortality Tables (August 2006)
- Working Paper 23 Analysis of Individual Income Protection experience by cause of disability (August 2006)
- Working Paper 24 Sickness Experience 1999-2002 for Group Income Protection Policies (December 2006)
- Working Paper 25: Stochastic projection methodologies: Lee-Carter model features, example results and implications (April 2007)
- Working Paper 26: Extensions to Younger Ages of the "00" Series Pensioner Tables of Mortality (April 2007)

CMI results released to members during 2006-7

Life Office Mortality

- 2004 'All Office' results for Assured Lives (April 2006).
- 2004 'All Office' results for Pensioners and Annuitants (July 2006).
- 2005 'All Office' results (June 2007).

Critical Illness

- 2003 'All Office' results (April 2006).
- 2004 'All Office' results (April 2007). Revised results for 2003 were issued at the same time, reflecting revisions to inaccurate data and changes to the mix of offices included, significantly increasing the coverage of the market by this investigation.

Income Protection

- 1999-2002 'All Office' results for Group business (April 2006).
- 2002 'All Office' results for Group business (April 2006).
- 2003 'All Office' results for Group business (December 2006).
- 2003 'All Office' results for Individual business (February 2007).

Self Administered Pension Schemes Mortality

- Analysis of data received to 30 June 2006 (March 2007)

CMI seminar presentations during 2006-7

The CMI presents material at many of the Profession's seminars, during 2006-7 these included:

- Income Protection Cause of Disability; Healthcare Conference (May 2006)
- SAPS Mortality; Mortality & Longevity seminars (April 2007)
- Critical Illness – Learning from Experience; Healthcare Conference (May 2007)
- Mortality Projections; CILA (May 2007) and Pensions Convention (June 2007).

Copies of the slides from all of these can be found on the CMI's pages of the Actuarial Profession's website (www.actuaries.org.uk)