

The Actuarial Profession
making financial sense of the future

Mortality and longevity seminar
Dave Grimshaw

CMI Update

22nd March 2011

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Overview

- Life Office Mortality: Per Policy
- SAPS Mortality
- Mortality Projections
 - CMI_2010 Projections Model
 - The CMI Library of Mortality Projections
- Questions

Per Policy: Aims

- In recent years the CMI has been switching to 'Per Policy' data collection for life office mortality and critical illness data.

Aims

- Capture more detailed information
- Improve accuracy
- Allow different analyses

Per Policy: Work completed

- Version 1.0 of Per Policy coding guide published in Dec 2005 – latest version published Jan 2010 (v1.6)
- Significant number of offices have submitted data – good progress but considerable time and effort
- Data converted into previous formats to produce Individual Office results
- WP45 published May 2010 – set out CMI Life Office Mortality Committee's proposed methodology

Per Policy: Current Work

- CMI Life Office Mortality Committee producing a Working Paper consulting on the format of future Per Policy results – including a proposed initial format
- Work on the CMI systems in order to produce Per Policy results as per the initial format
- Provision of individual and all office results in the initial format
- Undertaking a review of data requirements and processing

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SAPS Mortality: Regular analysis of experience

Latest paper

- Analysis of pensioner mortality experience over the period 2002-2009, based on data received by 30 June 2009

Overview:

- Issued in draft form, with accompanying data files, to members in November 2010 (publicly available in May 2011)
- Substantial volumes of new data – nearly 40% increase in exposure over latest 8-year period
- PPF data was included for the first time

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SAPS Mortality: Current work

Further analyses of the 30 June 2009 dataset

Analysis of mortality improvements

- Comparison of SAPS experience against ONS dataset
- Comparison of experience in different subsets of SAPS dataset
 - Males vs females
 - Heavy vs light

Analysis of experience by industry

- Experience by industry category and average pension
- Indication of variation of experience within industry categories

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SAPS Mortality: Analysis of mortality improvements

Progress

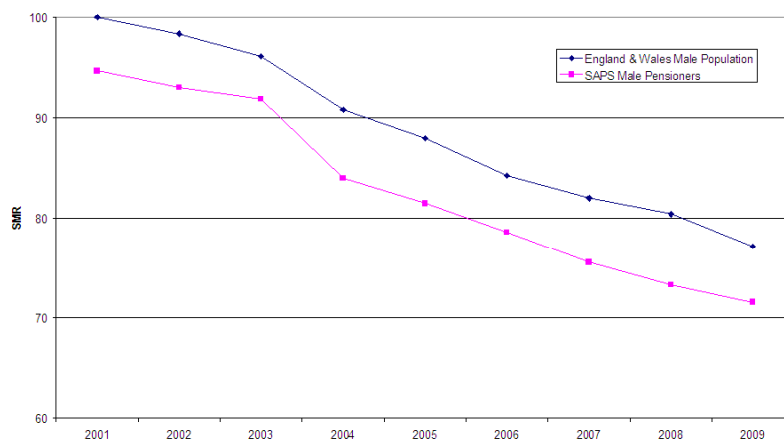
- Difficulties finding statistically robust methods to compare SAPS and ONS data – relating to the format of the available data
- Decision to produce high-level analysis, using standardised mortality ratios
- Hope to issue high-level analysis in draft form in April 2011 (made publicly available around 3 months later)
- Further research into alternative approaches to produce more detailed statistical analysis will follow

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SAPS Mortality: Analysis of mortality improvements

Comparison of mortality experience in SAPS and ONS datasets (Males)

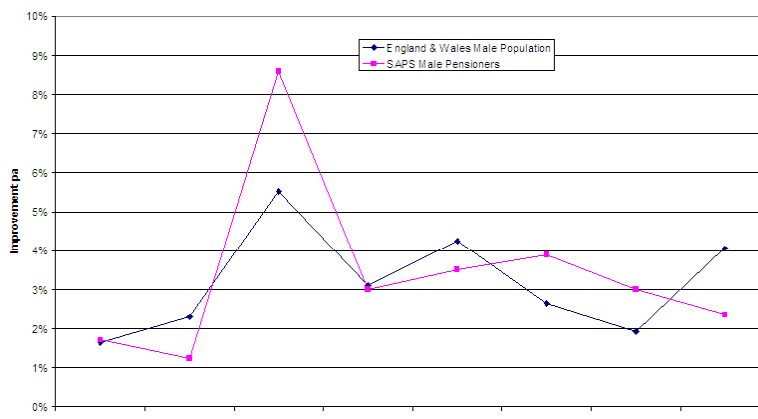


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SAPS Mortality: Analysis of mortality improvements

Comparison of annual mortality improvements in SAPS and ONS datasets (Males)



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SAPS Mortality: Analysis of experience by industry

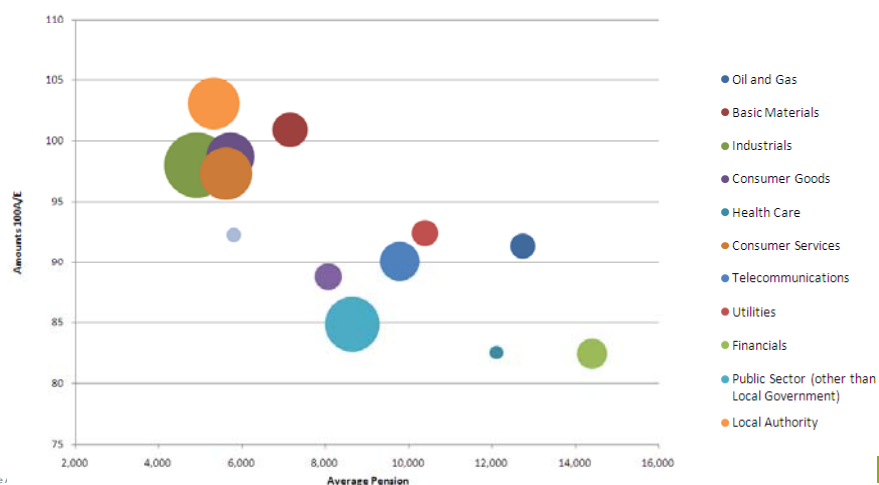
- Last analysis of experience by industry in WP29 (Oct 2007)
- Current paper will update this analysis and provide additional information about variation within industry categories
- Hope to issue latest analysis in draft form in April 2011 (made publicly available around 3 months later)

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SAPS Mortality: Analysis of experience by industry DRAFT RESULTS

Relative mortality experience by industry classification and average pension
(Males)

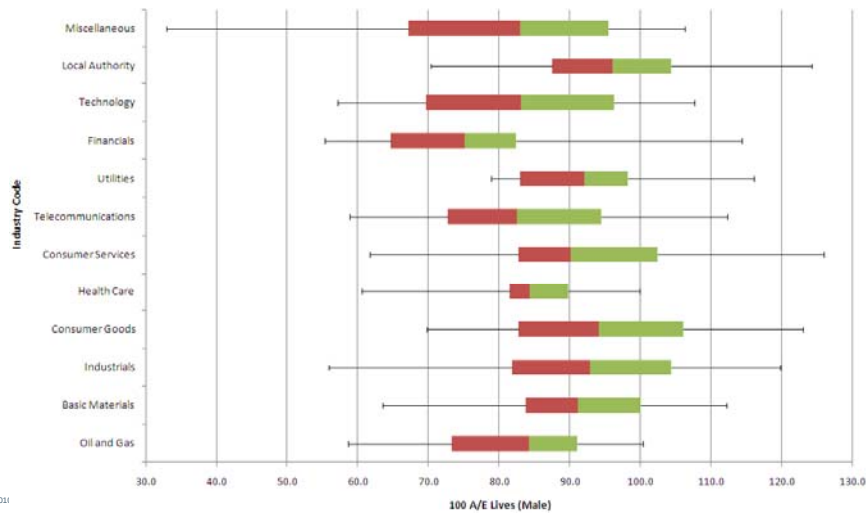


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SAPS Mortality: Analysis of experience by industry DRAFT RESULTS

Variation of experience within industry classifications (Males)



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SAPS Mortality: Forthcoming work

- Research approaches to enable more detailed statistical analysis of mortality improvements
- Investigate validity of assumption made for late-reported deaths
- Consideration of “S2” Series – whether latest experience justifies production of new tables
- Consideration of analysing experience by month of birth

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CMI_2010 Projections Model: Update

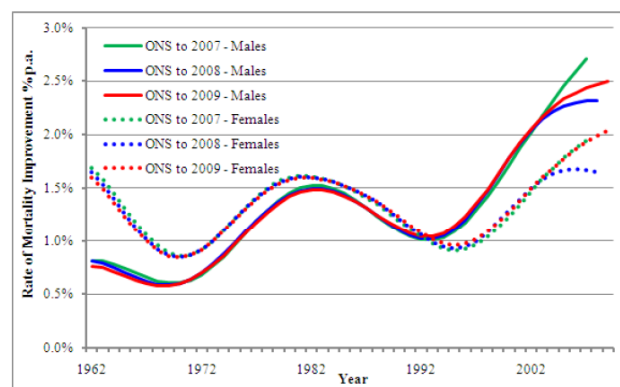
- Released in November 2010
- Structure of CMI_2010 Model is identical to CMI_2009 Model
- Updated to reflect E&W population mortality data for calendar year 2009
- Observed crude improvement in 2009 +4.4% for males (+6.2% for females)
- Default Initial Rates of Mortality Improvement have increased from those in CMI_2009.

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CMI_2010 Projections Model: Update

- It remains difficult to draw conclusions regarding the current trajectory of rates of mortality improvement.



Period Component of the Rate of Mortality Improvement,
by year, dataset, and gender; England & Wales Population
Estimates derived by fitting APC models to smoothed mortality improvement rates

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Potential Issues with the CMI P-Spline model

- Projections Committee identified two potential issues with the CMI P-Spline model and population data:
 - Software sometimes fails to reach an optimal solution;
 - “Overdispersion” in data causes software to under-smooth by year and by age.
- Investigations showed this has not affected the results of the age-cohort models used for CMI_2010 Model
- But it may impact other projections produced using the software!

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The CMI Library of Mortality Projections

- First released in November 2007

Aims

- First developed as no projections in 00 Series mortality tables
- Formalise the various projections in use
- Establish a well-defined vocabulary for mortality projections
- Open source of projections
- Currently six volumes with 69 benchmark projections
- Volume seven to be released soon

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The CMI Library of Mortality Projections

Volume Seven – 32 new projections:

- P-Spline age-cohort on ONS data for 2008 and 2009
- Lee Carter on ONS data for 2008 and 2009
- ONS 2008-based National Population Projections
- CMI_2009 & CMI_2010 Projections:
 - LTR = 1%, proportion of convergence at mid point = 50%
 - LTR = 1%, proportion of convergence at mid point = 75%
 - LTR = 2%, proportion of convergence at mid point = 50%

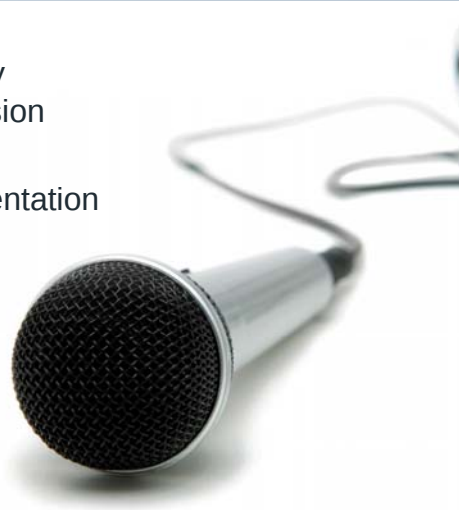
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Questions or comments?

Expressions of individual views by members of The Actuarial Profession and its staff are encouraged.

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