

The Actuarial Profession
making financial sense of the future

Mortality in 2011 and beyond – an update from the CMI SAPS committee



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Pensions Conference 2011

2 June 2011

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Agenda

- 2002-2009 mortality experience (data to 30 June 2010)
- Analysis of mortality improvements
- Analysis of experience by industry
- BAS TASs and the CMI
- Future work

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Agenda

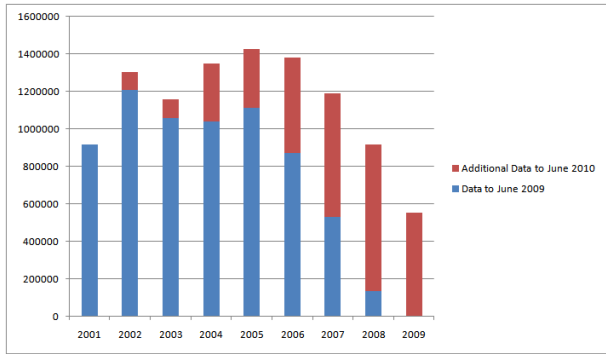
- 2002-2009 mortality experience (data to 30 June 2010)
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2002-2009 mortality experience: overview

- WP51 published in May 2011
- Underlying data files made available
- Substantial volumes of new data – nearly 40% increase in exposure over latest 8-year period
- PPF data was included for the first time

2002-2009 mortality experience: data by year

Male pensioners



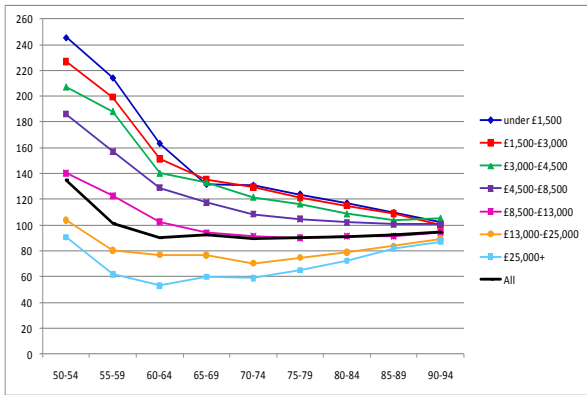
N.B. Additional data for 2001 may have been submitted up to June 2010 but analysis only covered 2002-2009. Similarly some 2009 data may have been submitted up to June 2009 but the analysis only covered 2001-2008.

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2002-2009 mortality experience: amounts bands

Male Pensioners Amounts compared against S1PMA

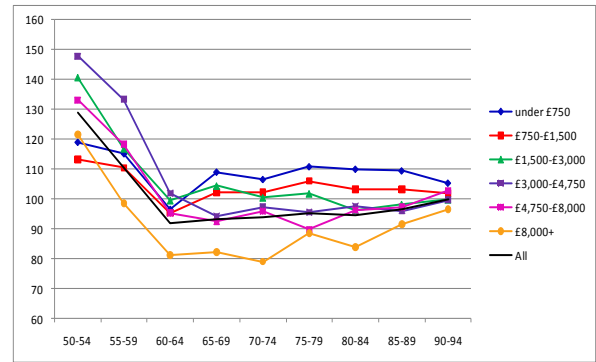


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2002-2009 mortality experience: amounts bands

Female Pensioners Amounts compared against S1PFA

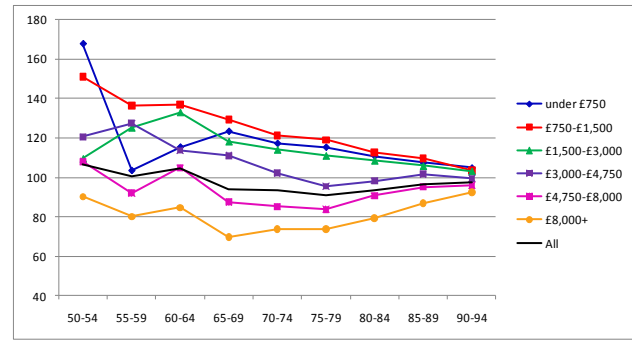


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2002-2009 mortality experience: amounts bands

Female Dependants Amounts compared against S1DFA

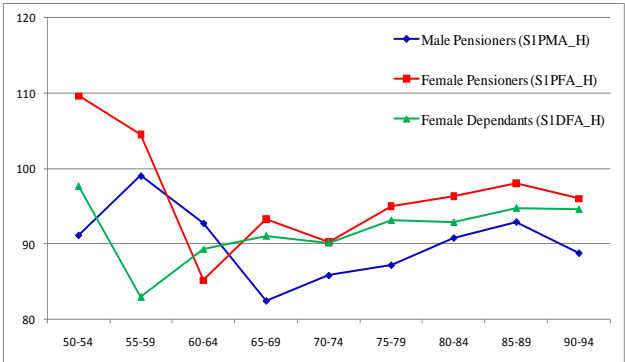


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2002-2009 mortality experience: “Heavy” tables

SAPS Amounts compared against “Heavy” tables

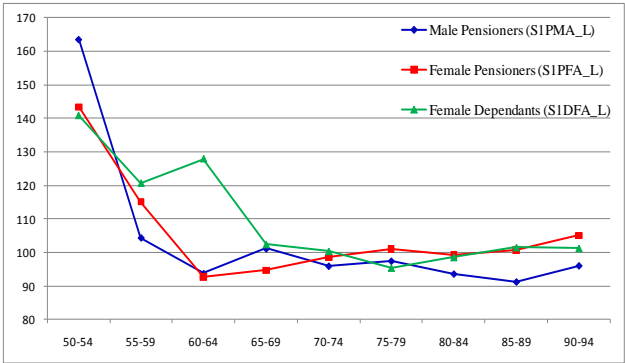


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2002-2009 mortality experience: “Light” tables

SAPS Amounts compared against “Light” tables



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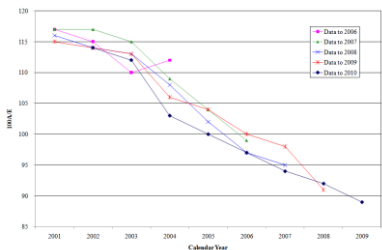
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Mortality improvements: trends

- Shown trends in mortality in annual experience papers

Male Pensioner Lives compared against PNML00



Female Pensioner Lives compared against PNFL00



Mortality improvements: methodology

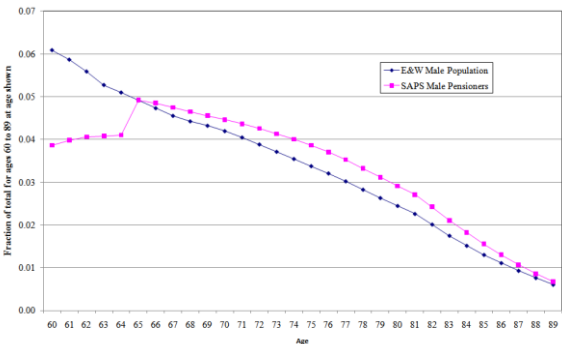
- Commonly used to compare populations with different age structures

$$SMR_y = \frac{\sum (Reference Exposure_x \times Dataset m_x)}{\sum (Reference Exposure_x \times Reference m_x)} \times 100$$

- Age range of 60-89 used for all datasets analysed

Mortality improvements: age structures (males)

Age distribution of SAPS Pensioners and E&W Population datasets – Males



Mortality improvements: ONS vs SAPS (males)

SMRs for SAPS Pensioners and E&W Population – Males



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Mortality improvements: ONS vs SAPS (males)

Improvement in SMRs for SAPS Pensioners and E&W Population – Males

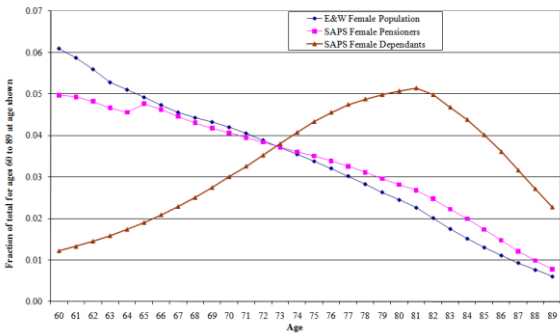


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Mortality improvements: age structures (females)

Age distribution of SAPS and E&W Population datasets – Females

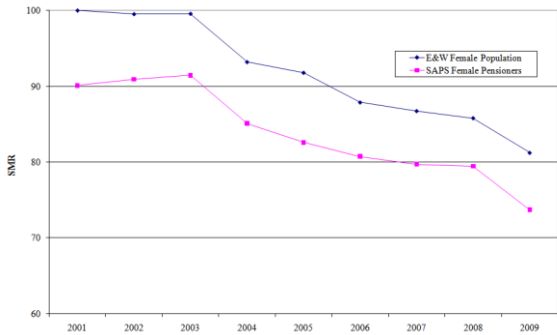


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Mortality improvements: ONS vs SAPS (females)

SMRs for SAPS Pensioners and E&W Population – Females



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Mortality improvements: ONS vs SAPS (females)

Improvement in SMRs for SAPS Pensioners and E&W Population – Females

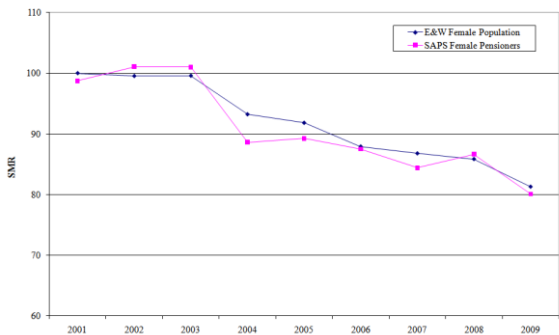


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Mortality improvements: ONS vs SAPS (females)

SMRs for SAPS Dependants and E&W Population – Females



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Mortality improvements: ONS vs SAPS (females)

Improvement in SMRs for SAPS Dependants and E&W Population – Females



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Mortality improvements: SAPS high vs low

Male Pensioners



Female Pensioners



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Mortality improvements: SAPS males vs females

Improvement in SMRs for SAPS Males and Females



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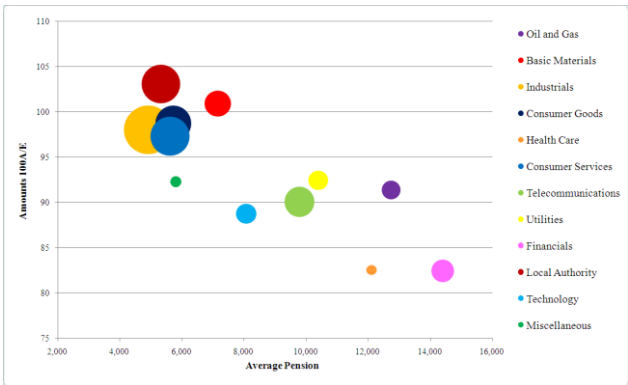
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Industry analysis: overview

- 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 Q4 2011

Industry analysis: overall mortality by industry *Draft*

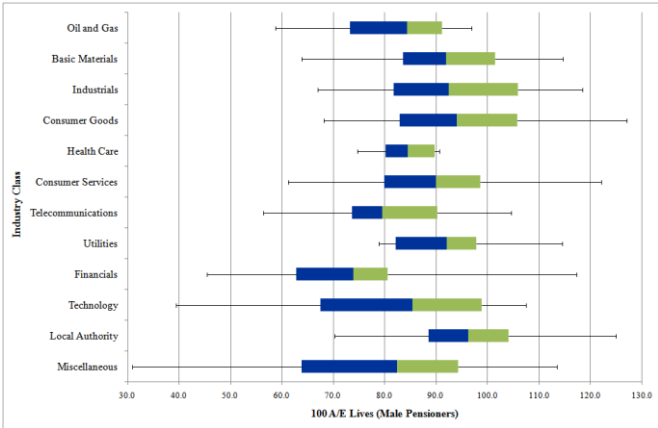
Relative mortality experience by industry classification and average pension
(Male Pensioners Amounts compared against S1PMA)



Industry analysis: variation – box & whisker plots

Draft

Variation of experience within industry classifications
(Distribution of scheme 100A/Es – Males)



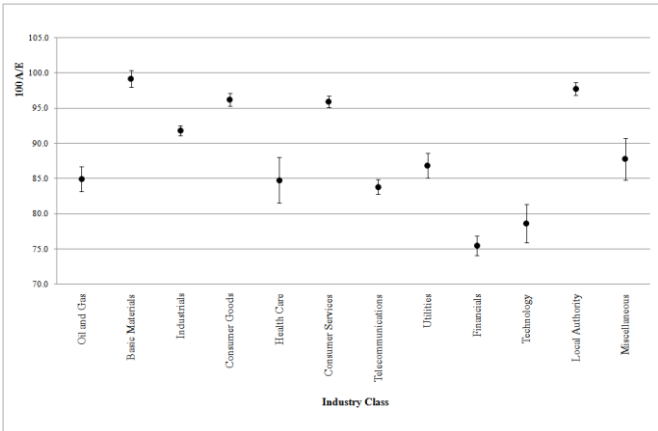
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Industry analysis: variation – confidence intervals

Draft

Variation of experience within industry classifications
(Distribution around overall 100A/E – Males)



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BAS TASs

- CMI work is not directly in scope for BAS standards
- But:
 - Outputs are used for reserved work
 - CMI's work is closely linked with traditional actuarial disciplines of life and pensions
- CMI Executive agreed it should comply with relevant aspects of TASs
- Compliance is via processes and associated documentation internal to CMI and via external consultation documents and working papers

BAS TASs

- TAS D
 - Data needs are reviewed, data used is defined, appropriately checked and documented
- TAS M
 - Models used are fit for purpose
 - They are appropriately checked and documented
 - Data used for models is appropriate
 - Assumptions used are neutral and consistent with one another

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Future work: “S2” Tables?

“S1” tables recap

- WP35 presented “S1” tables, published in 2008
- Covered the period 2000-2006, data submitted by 30 June 2007
- Designated mid-point for μ_x of 1 March 2003
- 20 different tables produced
 - Male and female pensioners
 - Female dependants
 - Normal health and ill-health
 - Heavy and Light (for some categories)
- Gompertz-Makeham graduation approach

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Future work: “S2” Tables?

- Do practitioners consider it important for “S2” tables to be produced?
- Should “S2” tables be produced even if early analyses indicate that the shape has not changed considerably?
- What tables would practitioners find useful?
- What is practitioners’ preferred approach for graduating the data?

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Future/other work:

Other

- Individual scheme analysis
- Late reported deaths

Future

- Month of birth analysis
- Priority of mortality improvements research
- Is there any other work that practitioners would like the Committee to consider?

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AOB

Questions?



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