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Update on the latest work of the CMI


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Agenda

- CMI library of mortality projections
- Benchmark scenarios?
- CMI analyses by cause of death
- SAPS



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CMI library of mortality projections

Background to the CMI library of mortality projections

- CMI recognised some of its research was inaccessible to many actuaries
- Task Force formed that developed the library
- Draft library published alongside Working Paper 27 in July 2007
- Consultation meetings held in London & Edinburgh
- Version 1.0 of the library + user guide published alongside Working Paper 30 in November 2007
- Intended to collate variety of projections and standardise usage
- ... but the “library” was NOT intended to offer guidance on choice of projection

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The “library” of Mortality Projections

Version 1.0 of “library” of projections includes:

- Existing projections:
 - “92” Series
 - Cohort Projections
 - ONS 2004-based population projections
 - ONS 2006-based population projections
- Variations on existing projections in current use:
 - Imposing a minimum improvement on a Cohort Projection
 - Using a percentage of a Cohort Projection
- Examples of P-spline and Lee-Carter projections

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The structure of the “library”

- 55 “projections” in version 1.0 of the library
- Each projection can be combined with any base table
- Each sheet contains data:
 - From age 20 to 120
 - From calendar year 1992 (or later) to 2100
- Each cell is the cumulative reduction factor:

$$RF(x,t) = q_{x,t} / q_{x,0}$$
- Some “projections” include smoothed actual improvements between 1992 and 2005

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Future Updates

- No set times, updates for:
 - New data
 - Intuitive scenarios
 - New methodologies
- Indicative criteria in User Guide ...new projections should be:
 - A worthwhile addition to the current library
 - Publicly available
 - Clearly described and documented
 - 'Road-tested' on different datasets and for different time-periods; and
 - Adequately exposed to the Actuarial Profession for discussion

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Projections - what happens next?

- Task Force has completed its work and disbanded ...
- ... but library is envisaged to be a living document
- New "Library Management Group" now being established:
 - Envisage a small nucleus of members
 - Representation from CMI Life Office and SAPS Mortality Committees
 - May supplement for specific exercises, e.g. reviewing a new methodology

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Cause of death analysis

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Cause of death analysis: background

- Historically, the CMI collected cause of death from life insurers (paper death certificates)
- Most recent report covered 1987-1994 in CMIR 20
- Investigation stopped due to the reducing numbers of certificates being supplied
- Life office mortality data has been collected in aggregated form - no individual death records

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Cause of death analysis: the future

- Life office mortality data is now being collected in individual record form; so we know date of birth, gender, date of death, etc
- SAPS data has similar fields...
- ONS also collect individual death data including name, date of birth, gender, date of death and *cause of death*
- *So can we match the two?*

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Cause of death analysis: benefits

Possible benefits:

- Data contributors could receive information on the split of deaths by cause for their office/scheme
- Data contributors can benchmark against the combined experience
- Insights into
 - effectiveness of underwriting
 - socio-economic profile
 - cause of death by smoking status
 - cause of death by early/normal retirement
 - changes in mortality over time by cause

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Cause of death analysis:

- Trial exercise undertaken in 2007:
 - 1000 records containing date of birth, gender, date of death and postcode (if known)
 - 532 corresponded to a unique ONS record on date of birth, gender, date of death
 - 73% for life office but only 30% for SAPS (scheme match-rate varied from 8% to 90%+)
- A number of areas to be considered:
 - How to improve the match-rate
 - Obtain clarification from ONS on what details on cause of death we would receive
 - Cost of regular full-scale exercises?
- ONS resource constraints delaying further progress

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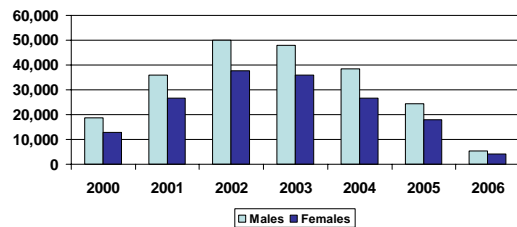
SAPS Update

Background

- Self Administered Pension Schemes
- Earlier working papers
- Working Paper 32

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Data overview - Deaths by year



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WP32 proposed graduations

Data Type	Light / Heavy	Lives		Amounts	
		Female	Male	Female	Male
Pensioners (excluding dependants)	-	SPFL03	SPML03	SPFA03	SPMA03
	Light			SPFA03Light	SPMA03Light
	Heavy			SPFA03Heavy	SPMA03Heavy
Normal health pensioners	-			SNFA03	SNMA03
	Light			SNFA03Light	SNMA03Light
	Heavy			SNFA03Heavy	SNMA03Heavy
Ill-health pensioners	-			SIFA03	SIMA03
	-	SWL03		SWA03	
Dependants	Light			SWA03Light	
	Heavy			SWA03Heavy	

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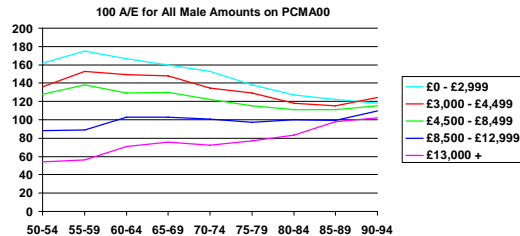
Final graduations (tables and names)

Data Type	Light / Heavy	Lives		Amounts	
		Female	Male	Female	Male
Pensioners (excluding dependants)	-	S1PFL	S1PML	S1PFA	S1PMA
	Light			S1PFA_L	S1PMA_L
	Heavy			S1PFA_H	S1PMA_H
Normal health pensioners	-			S1NFA	S1NMA
	Light			S1NFA_L	S1NMA_L
	Heavy			S1NFA_H	S1NMA_H
Ill-health pensioners	-			S1IFA	S1IMA
	-	S1DFL		S1DFA	
Dependants	Light			S1DFA_L	
	Heavy			S1DFA_H	

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Light / Heavy bands

- What data should Light / Heavy bands contain?



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Technical amendments

- Discrepancy in age definition (half year) will reduce q_x and μ_x
- Move from initial exposed to risk (multiple approaches possible for calendar year investigations) to central exposed to risk may reduce q_x and μ_x particularly at higher ages

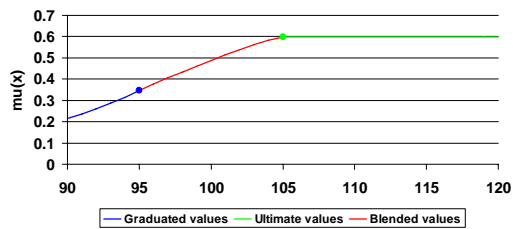
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Lower ages

- Extend which tables to, say, 20? **All**
- Should "All Pensioner" table stop at 50? **No**
- Would 16 or 17 be preferable to 20? **Yes**
- Are the proposed extensions suitable? **Yes**
- Committee considering "All Pensioner" extension

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Older ages – WP32 proposal



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Older ages

- Most responses indicated general support...
- ...but review of exposed to risk affects older ages most...
- ...so comments will be reviewed in light of those revisions...
- ...and approach may be modified

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