

# SAPS mortality experience – current data and trends

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## Update from SAPS Committee

### ACA Pensions Conference

8 February 2013

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# Agenda

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- 2004-2011 mortality experience (data to 30 June 2012)
- “S2” Series
- Data collection
- Future work
- CMI projections
- CMI Review
- Questions

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# 2004-2011 mortality experience: overview

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- Working Paper has been issued in draft form to SAPS User group members
- Increase in the volume of data – approximately 8% increase in exposure over latest 8-year period
- PPF data was included for the third time
- Same dataset will be used for “S2” Series

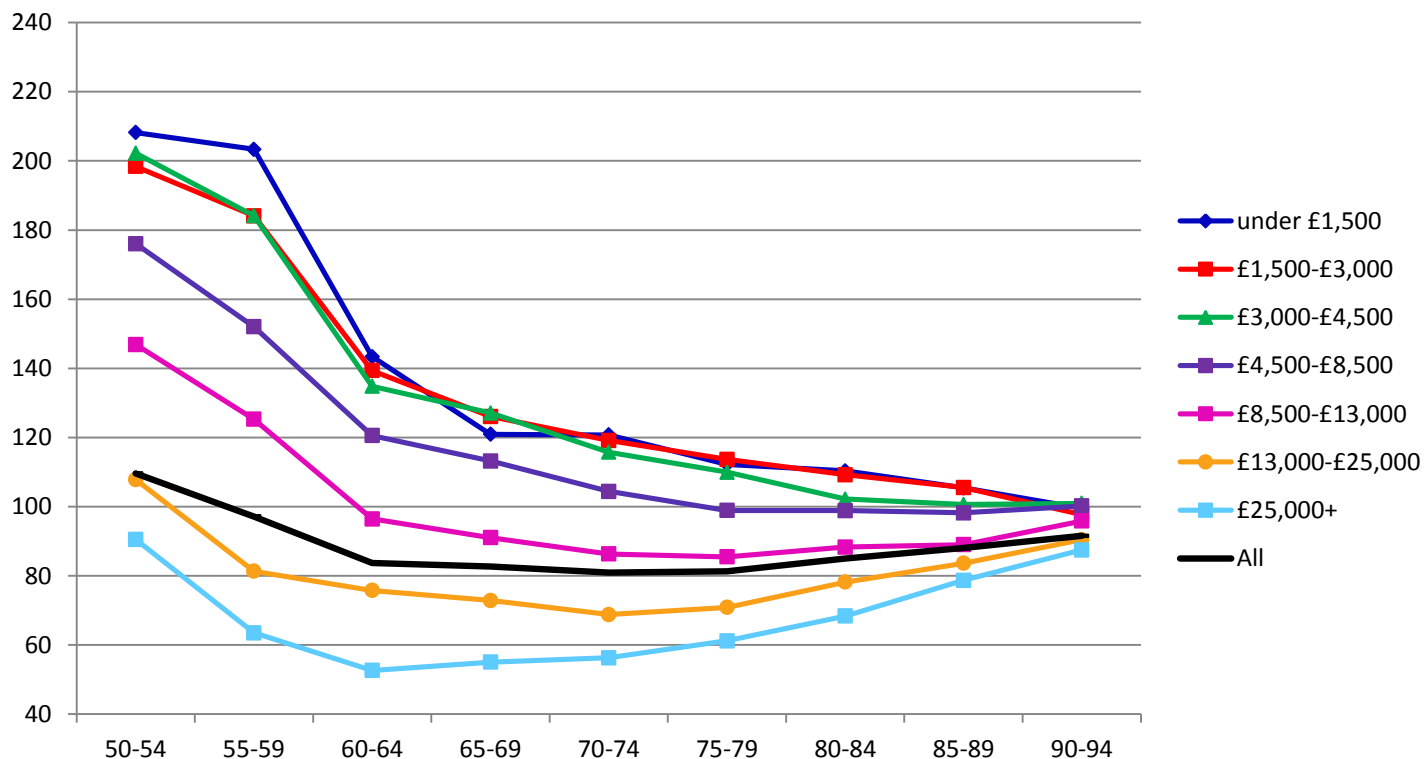
# 2004-2011 mortality experience: data by year



N.B. Additional data for 2003 may have been submitted up to June 2012 but analysis only covered 2004-2011. Similarly some 2011 data may have been submitted up to June 2011 but the analysis only covered 2003-2010.

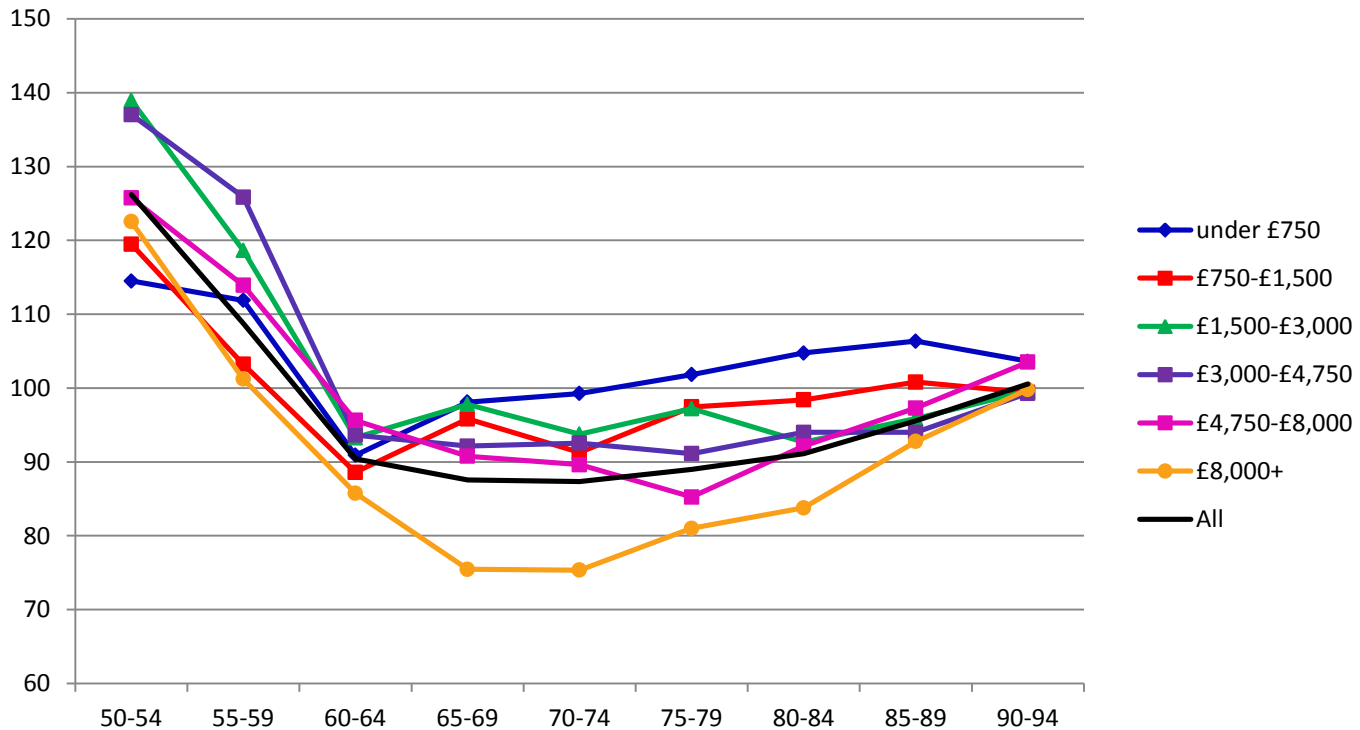
# 2004-2011 mortality experience: amounts bands

Male Pensioners Amounts compared against S1PMA



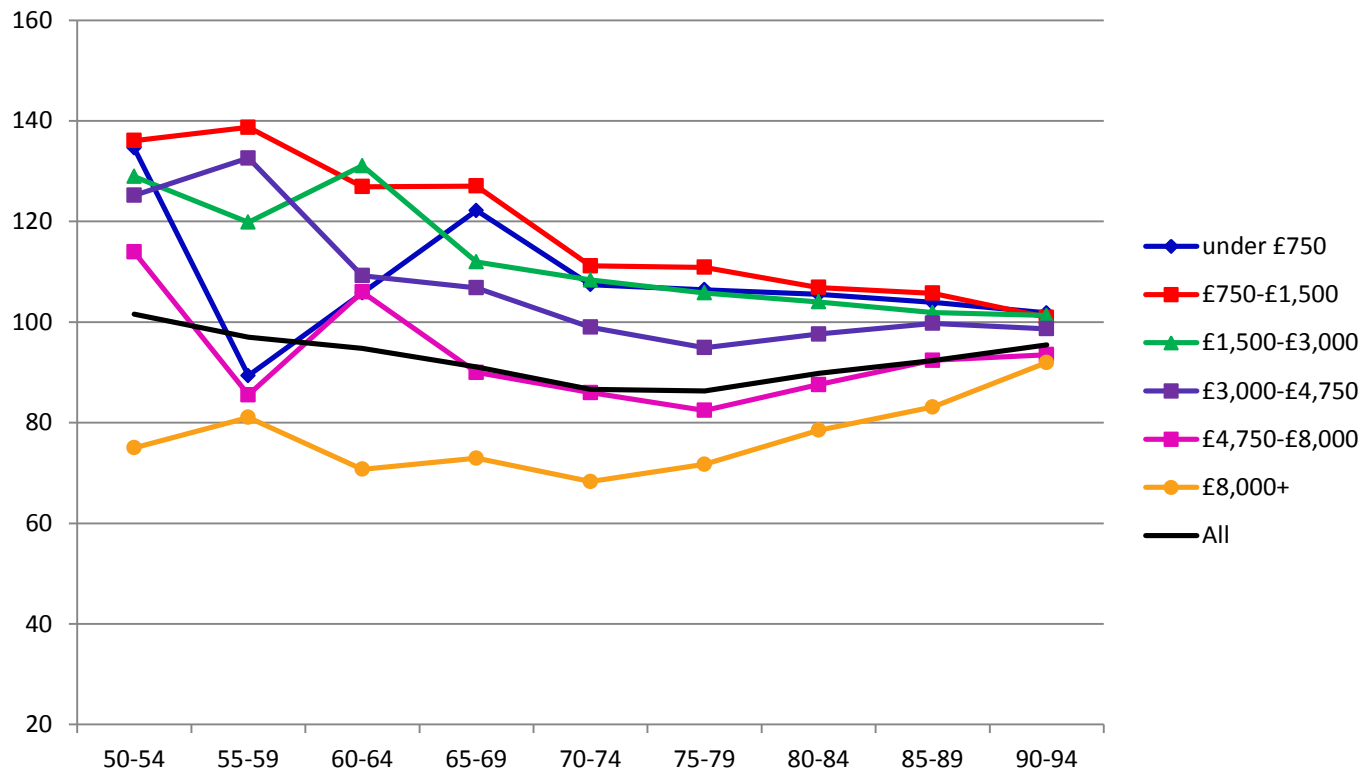
# 2004-2011 mortality experience: amounts bands

Female Pensioners Amounts compared against S1PFA



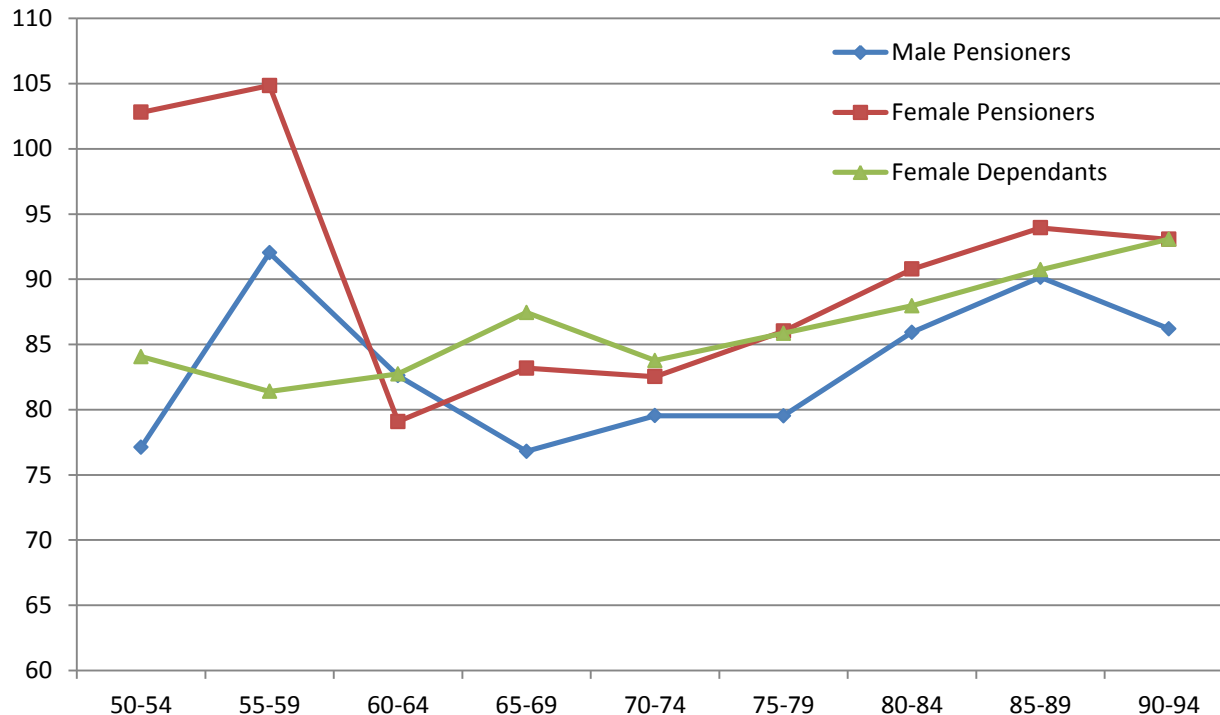
# 2004-2011 mortality experience: amounts bands

Female Dependants Amounts compared against S1DFA



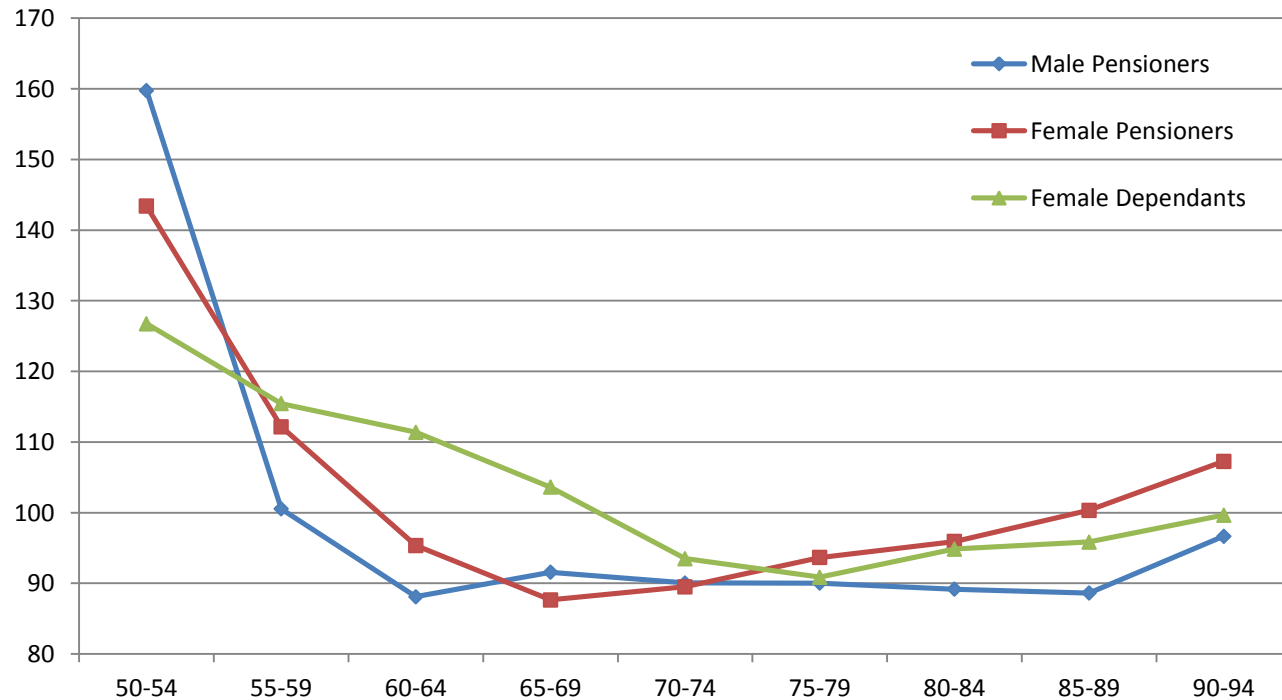
# 2004-2011 mortality experience: “Heavy” tables

SAPS Amounts compared against “Heavy” tables

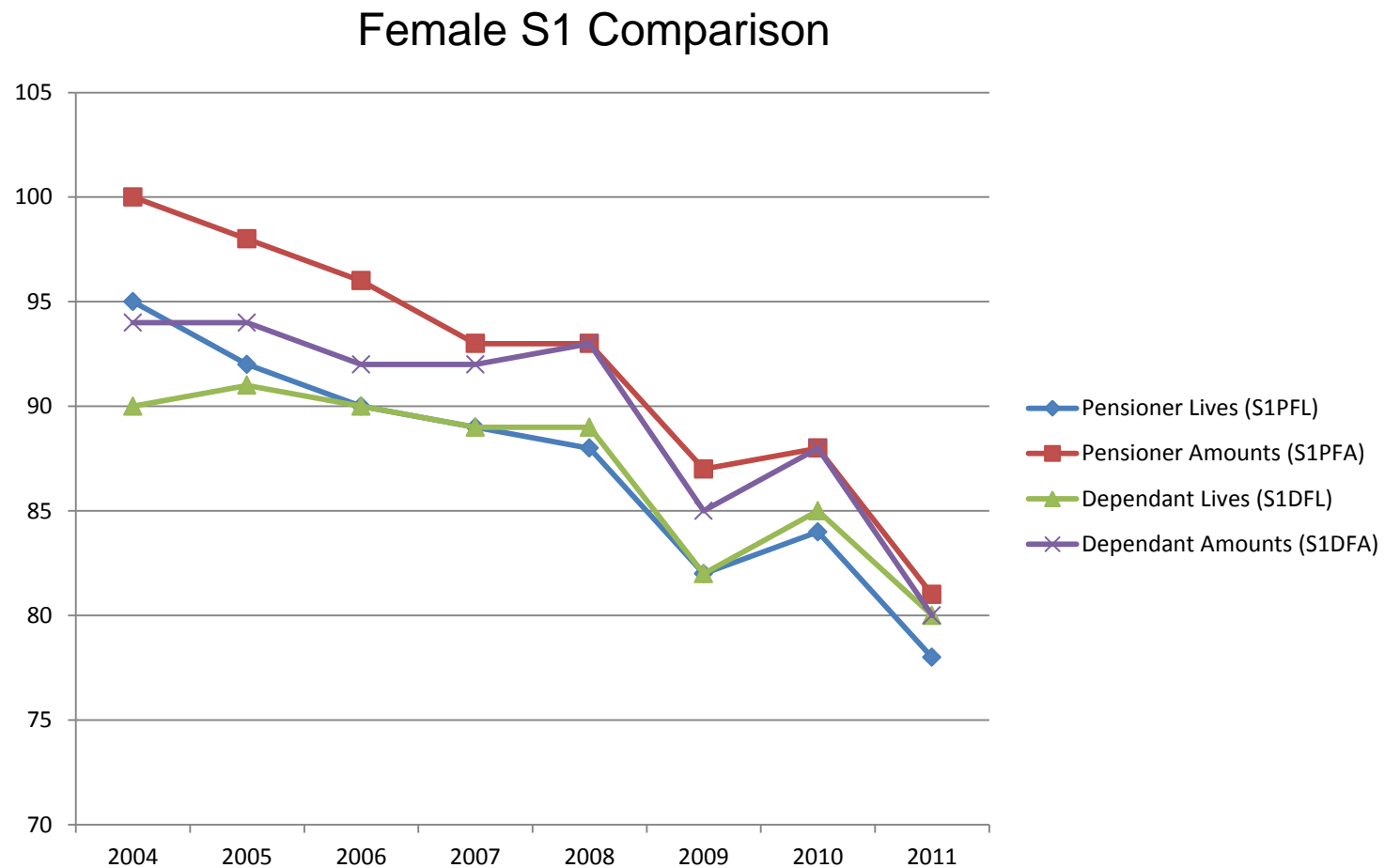


# 2004-2011 mortality experience: “Light” tables

SAPS Amounts compared against “Light” tables

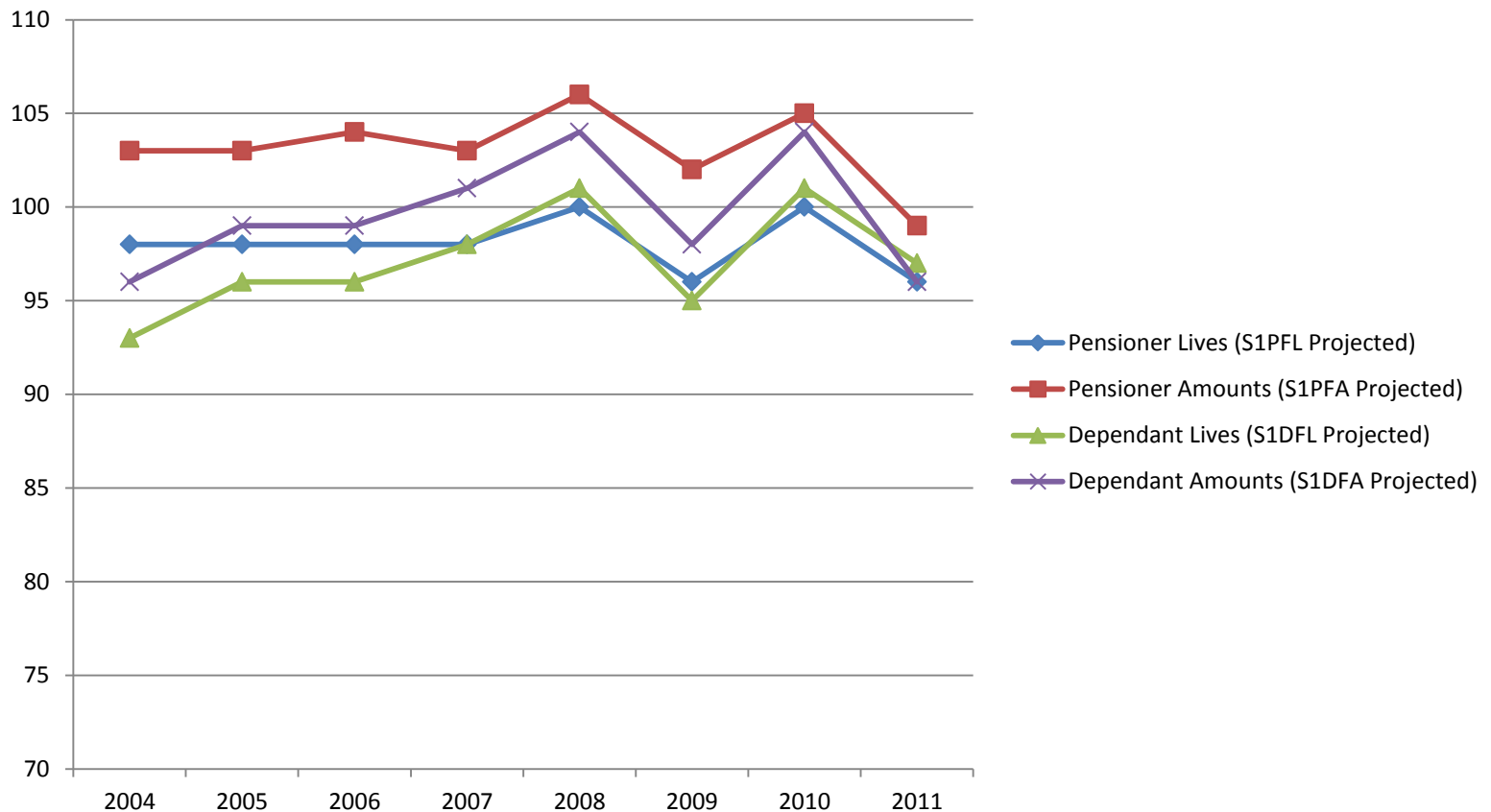


# 2004-2011 mortality experience: 100 A/Es



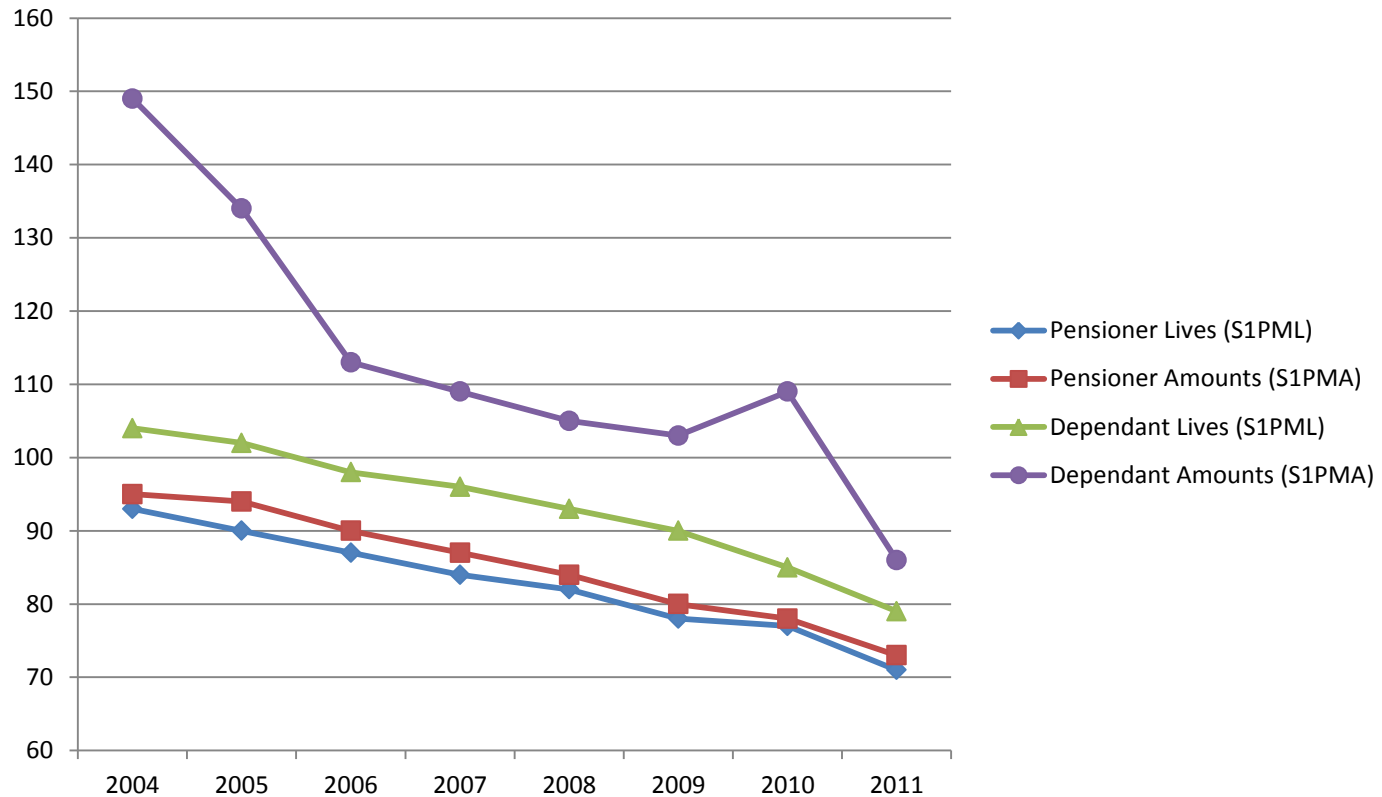
# 2004-2011 mortality experience: 100 A/Es

Female S1 Projected with CMI\_2011 [0.0%] comparison



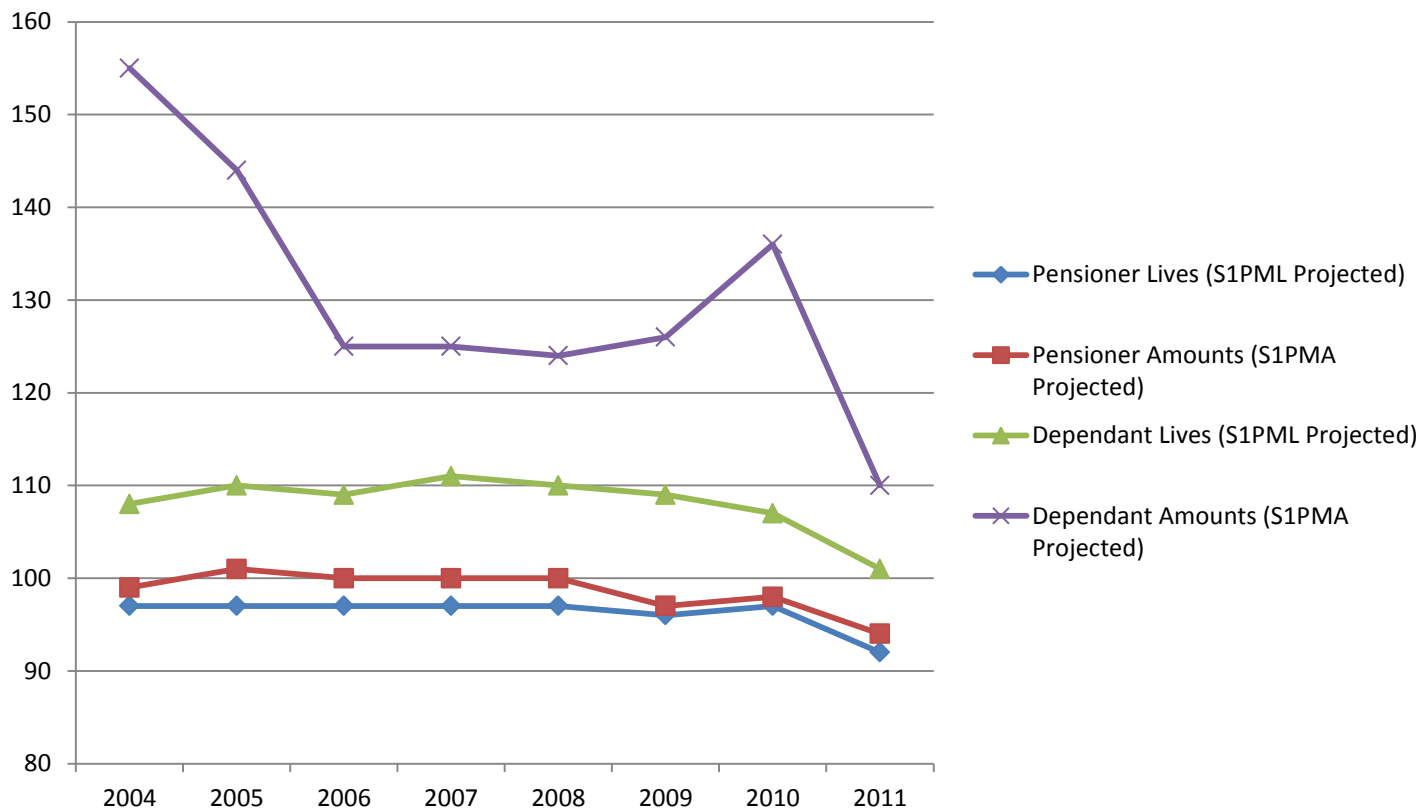
# 2004-2011 mortality experience: 100 A/Es

## Male S1 Comparison



# 2004-2011 mortality experience: 100 A/Es

Male S1 Projected with CMI\_2011 [0.0%] comparison



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# “S2” Series: Summary of “S1” Series

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## “S1” tables recap

- Covered the period 2000-2006, data submitted by 30 June 2007
- Designated mid-point for  $\mu_x$  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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# “S2” Series: Summary of “S2” Series

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## “S2” tables summary

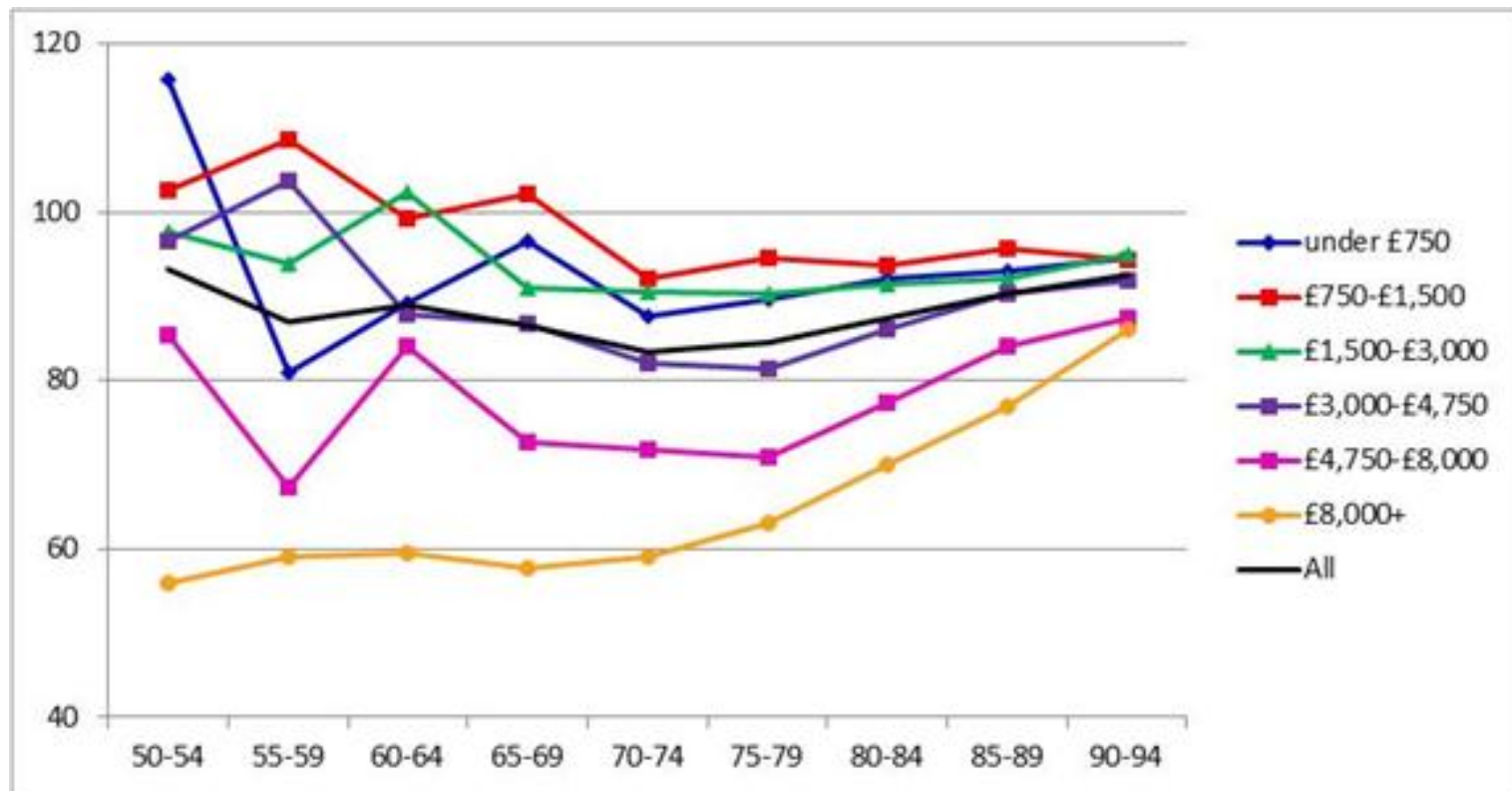
- Covers the period 2004-2011, data submitted by 30 June 2012
- Designated mid-point for  $\mu_x$  of 1 March 2007
- Tables proposed
  - Male and female pensioners
  - Female dependants
  - Normal health and ill-health
  - Heavy, Middle and Light (for some categories)
- Gompertz-Makeham graduation approach

# “S2” Series: Proposed tables

Pensioner type	“S1” Series	Proposed “S2” Series
All pensioners	Males/Females Lives/Amounts Amounts: Light/Heavy	Males/Females Lives/Amounts Amounts: Light/Middle/Heavy
Normal Health	Males/Females Amounts only Amounts: Light/Heavy	Males/Females Amounts only Amounts: Light/Heavy
Ill-health	Males/Females Amounts only	Males/Females Amounts only
Combined	None	None
Dependants	Females only Lives/Amounts Amounts: Light/Heavy	Females only Lives/Amounts Amounts: Light/Heavy
Unknown	None	None

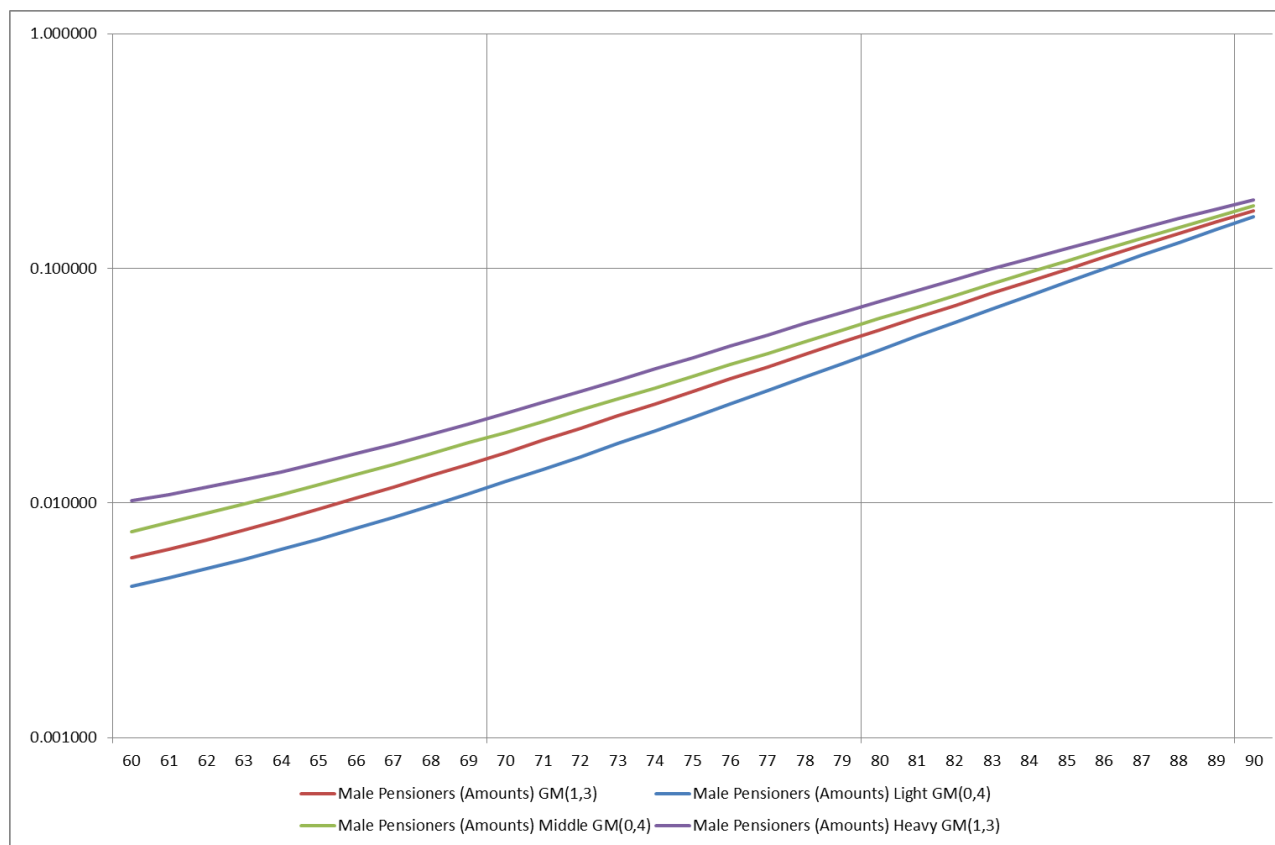
# “S2” Series: Not producing Light and Heavy graduations for Female Dependants

- 100A/E values for Female Dependants Lives compared to S1DFL



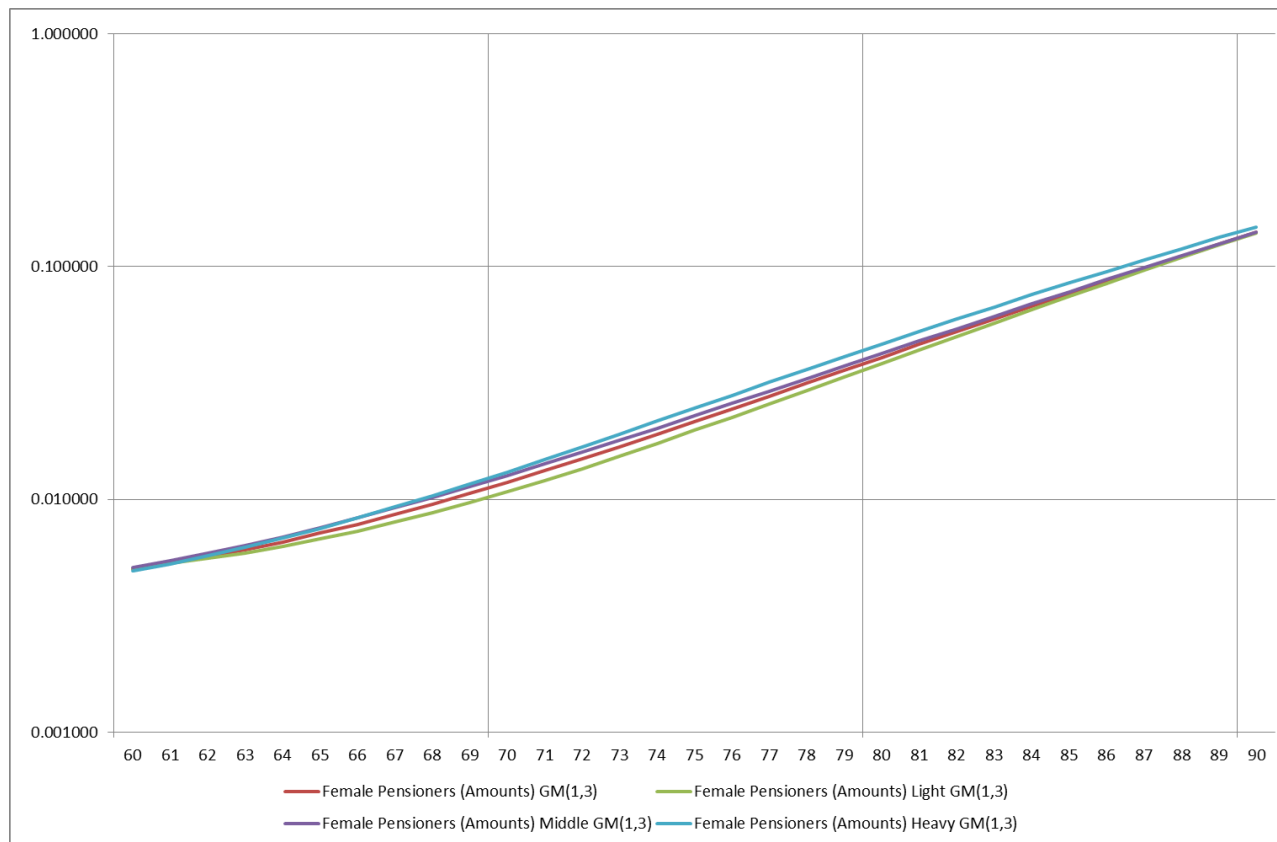
# “S2” Series: Discard Middle graduation for Female Pensioners?

- Male Pensioner “S2” graduations



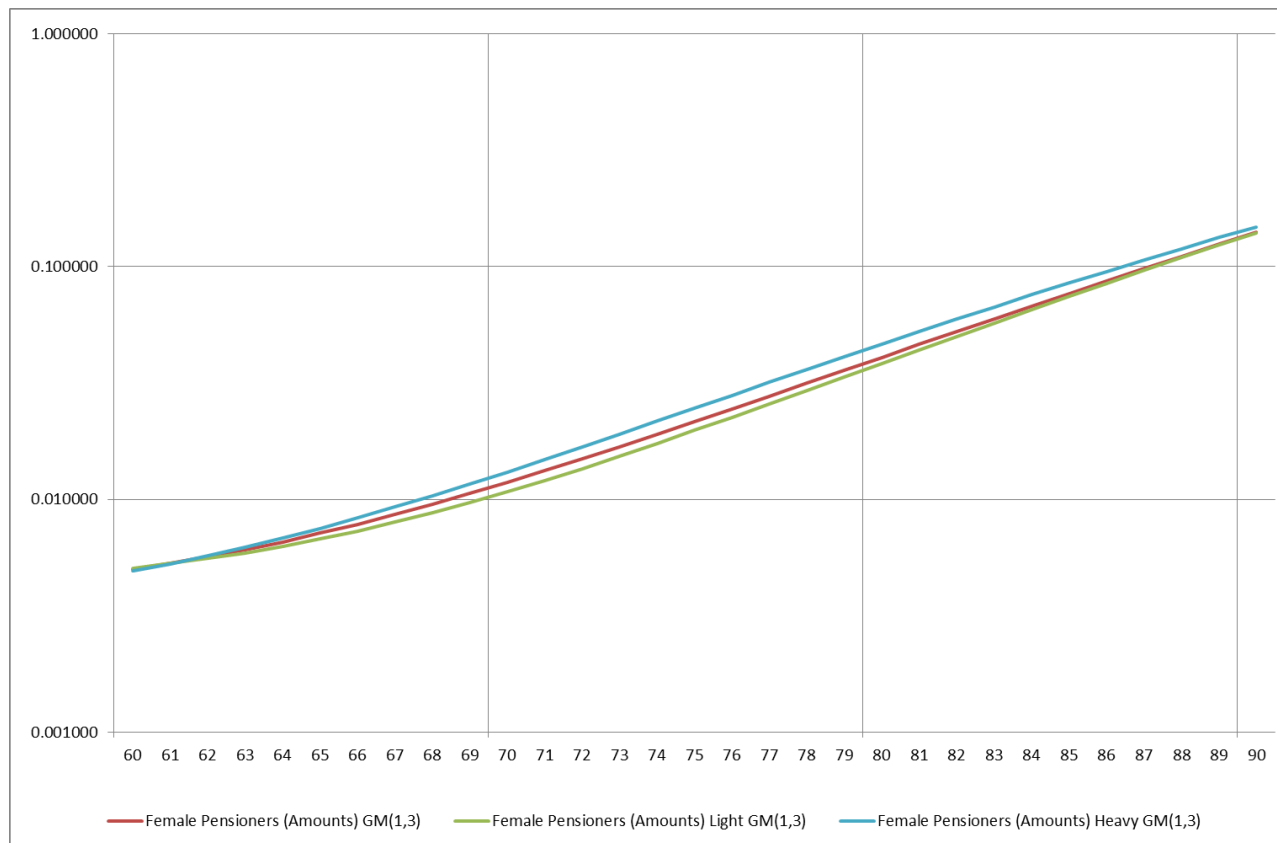
# “S2” Series: Discard Middle graduation for Female Pensioners?

- Female Pensioner “S2” graduations



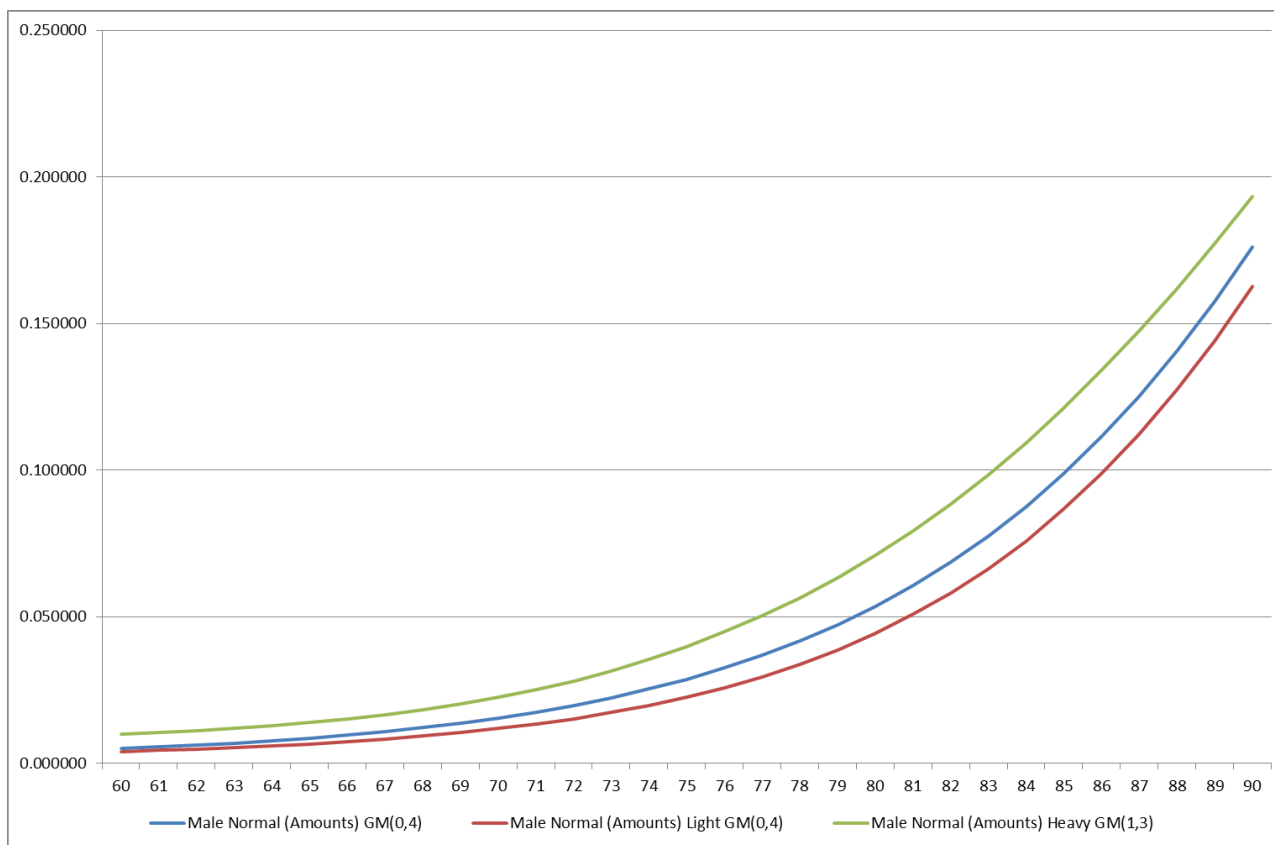
# “S2” Series: Discard Middle graduation for Female Pensioners?

- Female Pensioner “S2” graduations (excluding Middle)



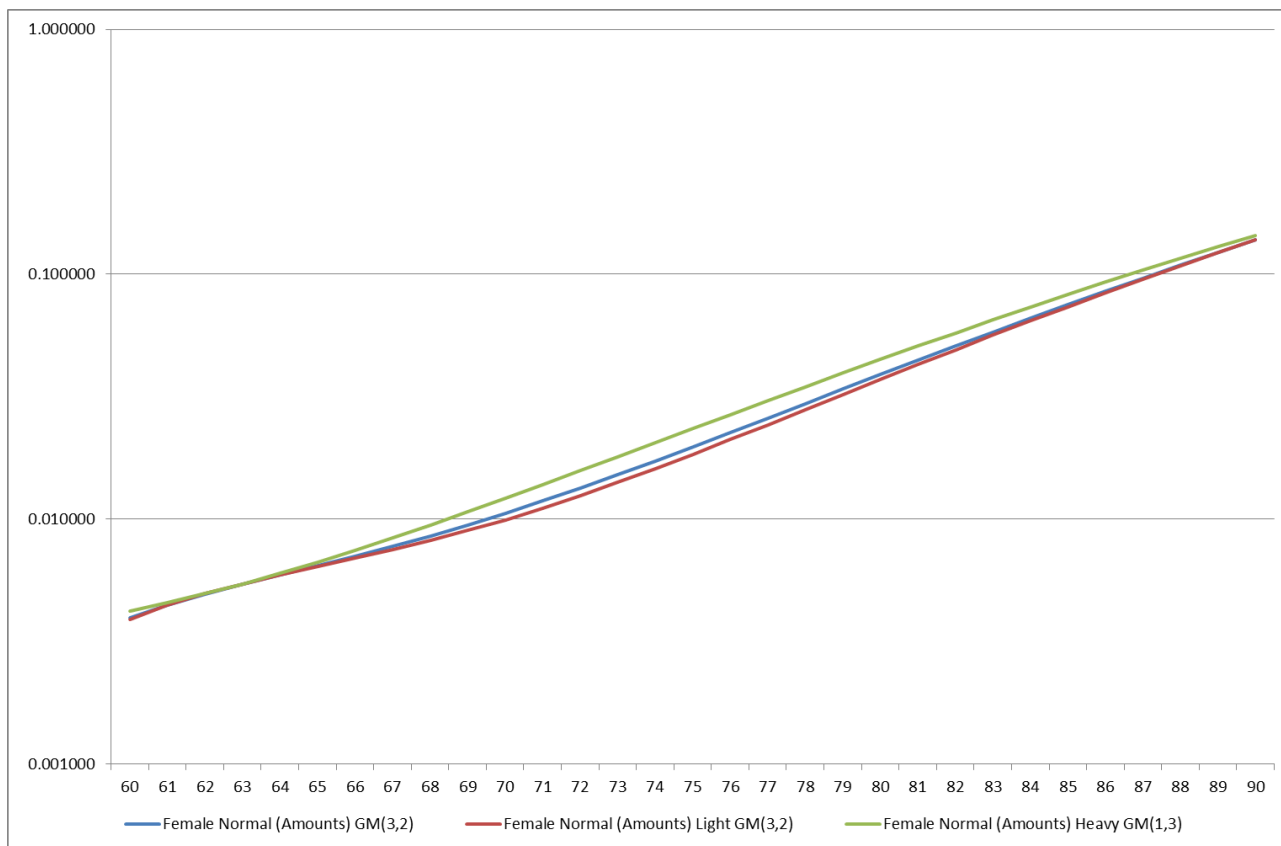
# “S2” Series: Discard Light graduation for Female Normal Health Retirements?

- Male Normal Health “S2” graduations



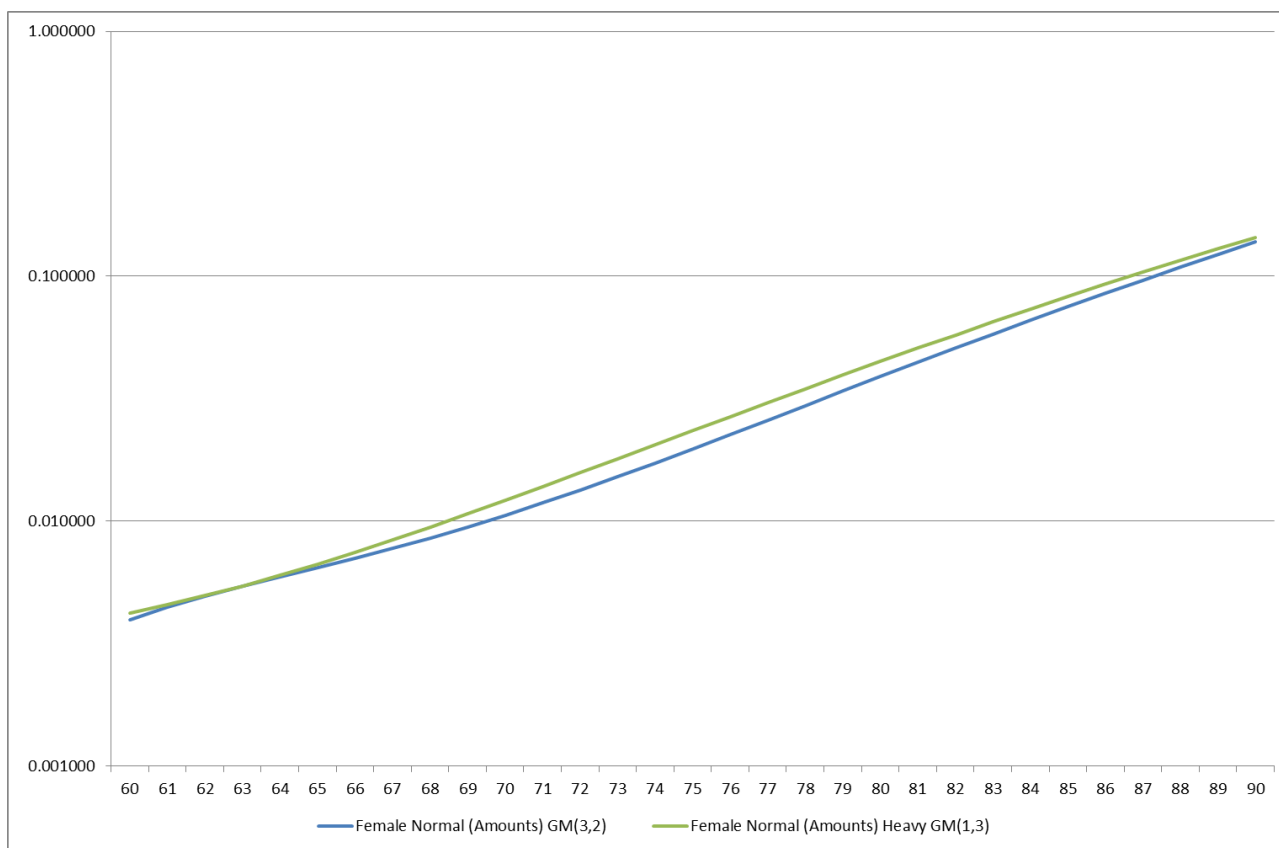
# “S2” Series: Discard Light graduation for Female Normal Health Retirements?

- Female Normal Health “S2” graduations



# “S2” Series: Discard Light graduation for Female Normal Health Retirements?

- Female Normal Health “S2” graduations (excluding Light)



# “S2” Series: Extensions to younger ages

- Chose a population  $q_{16}$  using the latest figures available (same approach as used for the “S1” Series).
  - Used the Interim Life Tables 2007-2009 published by ONS
- Projected this  $q_{16}$  using the CMI\_2011 model to be consistent with the centre of the data being used for the “S2” tables (1 March 2007).
- Using  $q_{16}$  solve for suitable Gompertz-Makeham parameters using appropriate constraints.

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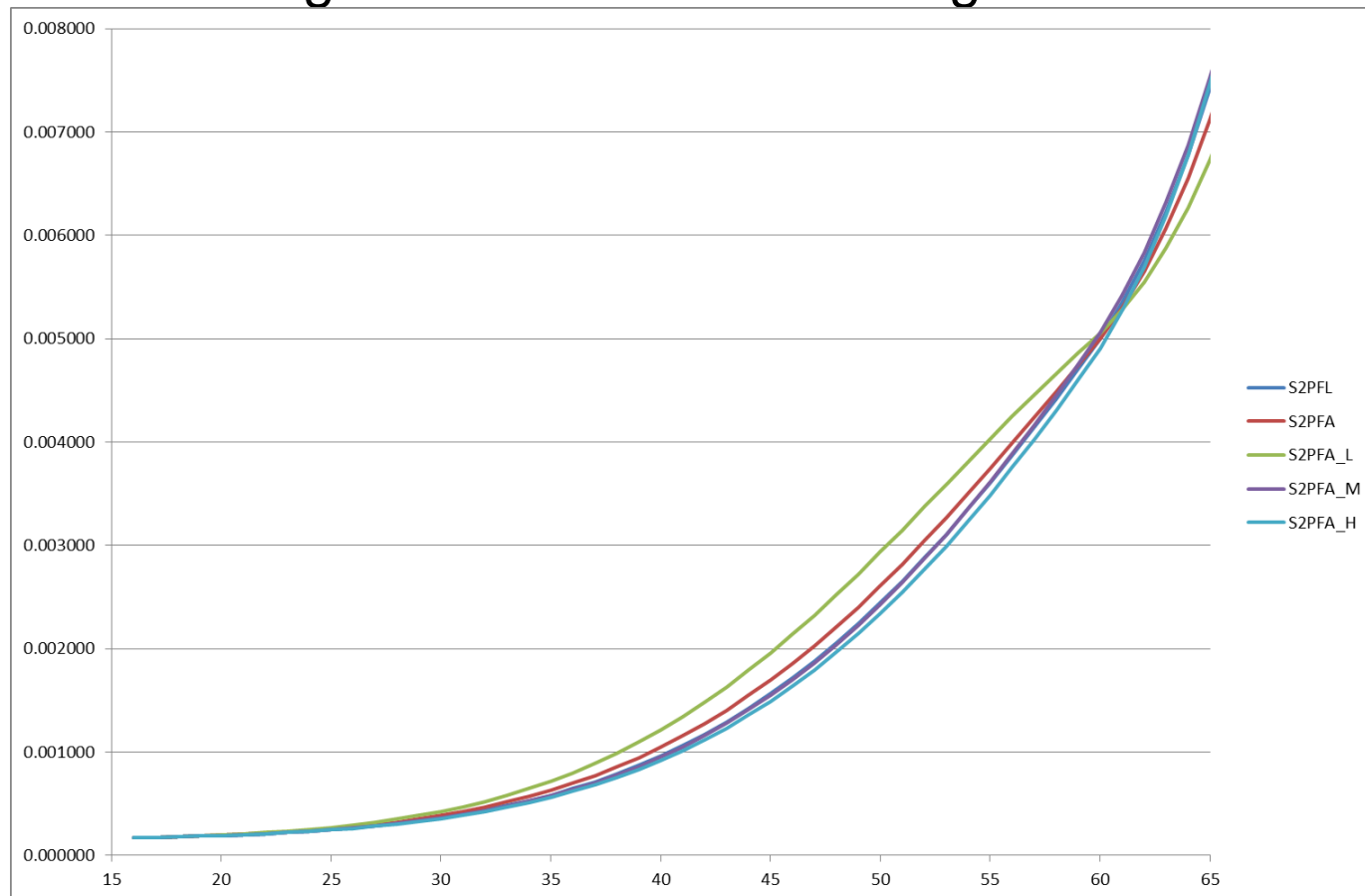
# “S2” Series: Extensions to younger ages

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- Tables projected from age 16 to 60 for most tables.
- Exceptions are:
  - to age 45 for Female Dependents
  - to age 35 for Ill-health Retirements

# “S2” Series: Extensions to younger ages – ordering issue

- A number of graduations have ordering issues at lower ages:

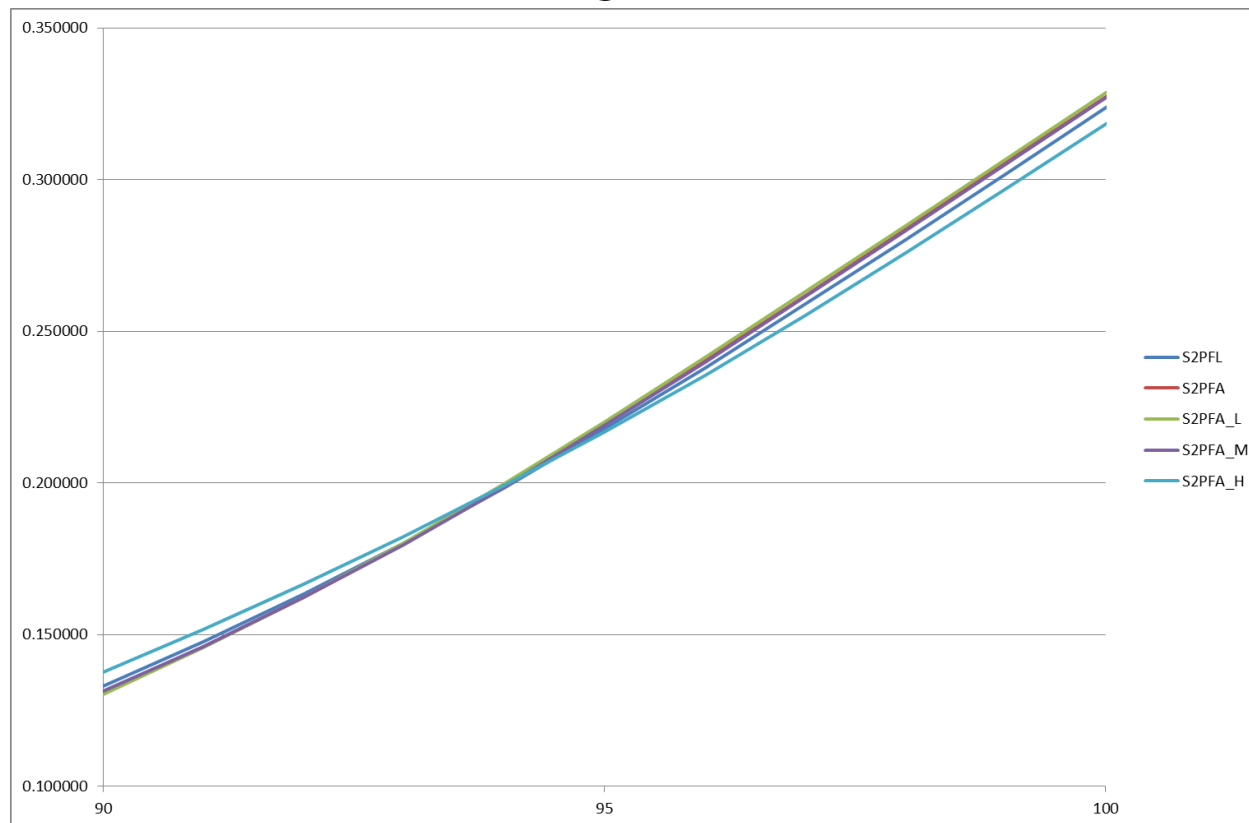


## “S2” Series: Extensions to younger ages – ordering issue

- The Committee propose to use the same  $q_x$  from below age 60 (based on the ‘all’ data) for the same set of tables.
  - eg  $q_{59}$  for S2NMA\_L, S2NMA\_M and S2NMA\_H will be made the same as for S2NMA. (The Lives table will not be made the same as the Amounts table though.)
- This will cause a discontinuity for some of the graduations.
- In order to reduce the discontinuity the Committee proposes to start from a different age if the data suggests it (eg from below age 62 for S2FNA tables).

# “S2” Series: Extensions to older ages

- Initially followed same approach as used for “S1” Series, however the same ordering issues found:



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## “S2” Series: Extensions to older ages

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- As a result of the ordering issues the Committee propose to use the ‘all’ amounts extension beyond age 95 (ie the “Light”, “Middle” and “Heavy” graduations would all be the same as the ‘all’ amounts extension after this age);
- The Committee propose to construct a convergence to age 95 to the ‘all’ amounts graduation by extrapolating between age 90 and age 95 for the “Light”, “Middle” and “Heavy” graduations.

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# Data collection

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- “Continuation” data is being submitted – however, fewer than half the schemes in the June 2012 dataset have submissions covering multiple periods
- Postcode data is being submitted but is still insufficient to warrant analysis

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# Data collection: assisting with processing

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- Pension amounts
  - Encourage firms to provide pension details at both at the start and end of period (estimated if necessary) and for deaths.
- Checking consistency with data previously submitted for a scheme (i.e. continuation data).
- If possible submit data for more than just most recent period (ie resubmit data from previous years) as this will help with late reporting deaths issue.
- Provide information about extract dates.
- Send data throughout the year not just in time for the deadline.

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# Future work: “S2” Tables?

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- What analyses would practitioners find useful?

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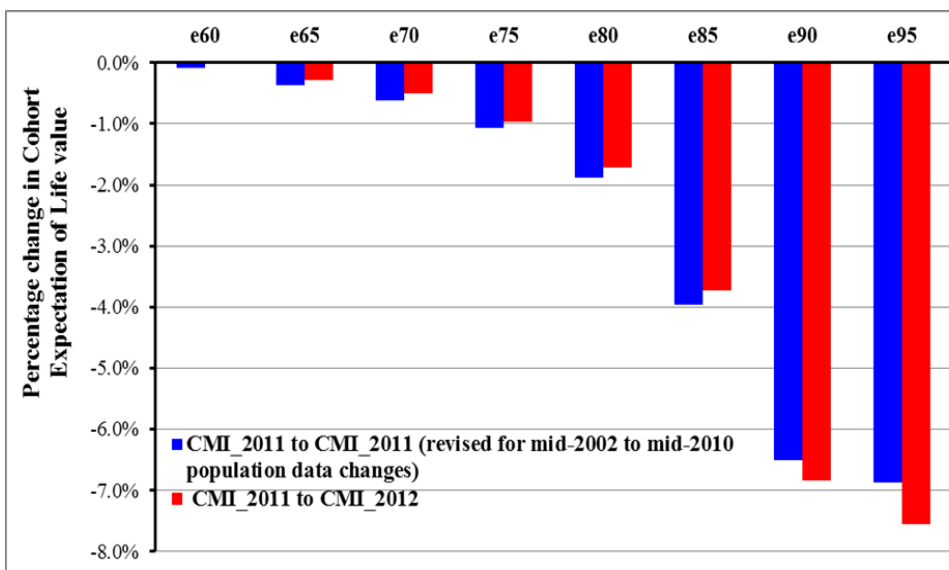
# CMI Mortality Projections Model: CMI\_2012

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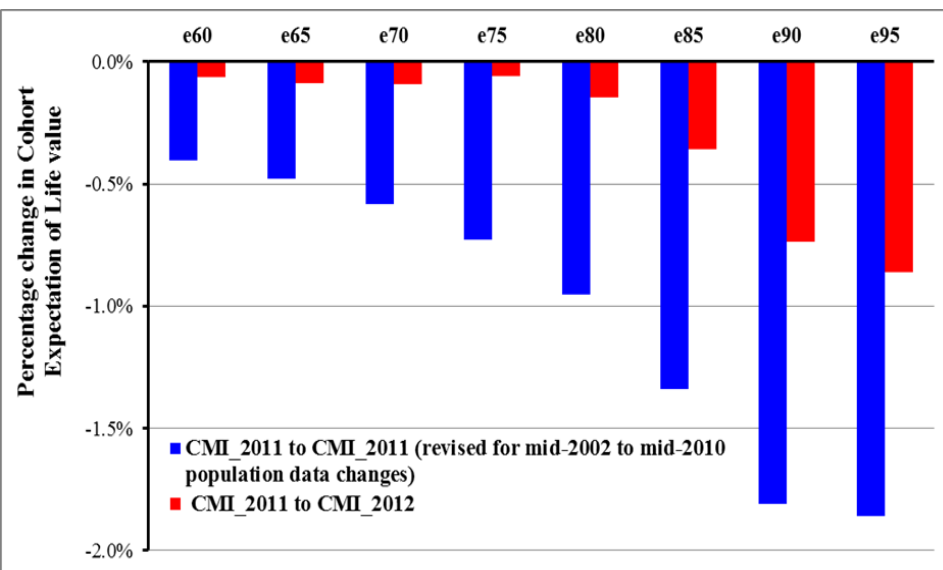
- Release of CMI\_2012 deferred to await revised population estimates (mid-2002 to mid-2010) following the 2011 Census.
- ONS published the revised estimates in December 2012:
  - Changes vary significantly by age (typically greatest for ages 10 to 39)
  - For the highest ages (90+), significant reductions to the population estimates (particularly for males).
- CMI\_2012 published in February 2013 alongside Working Paper 63
- Core Projections produce lower expectations of life (generally!) than those produced by CMI\_2011 (most significant reductions for males age 80+, driven by the revisions to population estimates)

# CMI Mortality Projections Model: CMI\_2012

Percentage change in Cohort  
Expectation of Life Value compared  
with CMI\_2011; Males



Percentage change in Cohort  
Expectation of Life Value compared  
with CMI\_2011; Females



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# CMI Review: Key changes for users

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- Subscriptions
  - Structure unchanged for existing contributors
  - Small increase in fees for 2013/14
  - New “per actuary” fee introduced for very small firms - £250 per qualified actuary per year
- Registration system
  - Full outputs – such as S2 tables – will be accessible only to registered users
  - All actuaries at existing firms will be pre-registered (normal log-in details for the Profession’s website)

**Questions?**

