

**Continuous Mortality Investigation**

**Self-administered Pension Schemes Mortality Committee**

**Working Paper 51**

**Report on the preliminary results of an analysis into the  
mortality experience of pensioners of self-administered  
pension schemes for the period 2002 to 2009 based on data  
collected by 30 June 2010**

May 2011

© 2011 Institute and Faculty of Actuaries

Information contained in this Working Paper or accompanying Excel files may be reproduced free of charge in any format providing that it is reproduced accurately and not used in a misleading context. The material must be acknowledged as Institute of Actuaries and Faculty of Actuaries copyright and the title of the document specified.

The Institute and Faculty of Actuaries, the CMI and its Committee Members do not accept or assume any responsibility for the use of this document by any party in any context. This document does not provide any form of guidance and should not be relied on as such.

## Contents

1	Introduction .....	1
2	Data.....	2
3	Methodology.....	7
4	Results .....	9
	Results by pensioner type .....	9
	Heavy and Light pension bands .....	18
5	Further investigations .....	21
	Appendix 1: CMI SAPS Mortality working papers.....	22
	Appendix 2: Male All Pensioner data split by pension amount bands .....	24
	Appendix 3: Female All Pensioner data split by pension amount bands.....	29
	Appendix 4: Female Dependants data split by pension amount bands.....	34

# **Continuous Mortality Investigation**

## **Working Paper 51**

### **Report on the preliminary results of an analysis into the mortality experience of pensioners of self-administered pension schemes for the period 2002 to 2009 based on data collected by 30 June 2010**

#### **1 Introduction**

- 1.1 This report is one of a series of working papers that set out the results of the SAPS Mortality investigation. The Committee decided in 2006 that annual reports would be produced to provide regular updates on the experience of data submitted to the investigation up to 30 June. A summary of reports previously published by the SAPS Mortality Committee is given in Appendix 1.
- 1.2 As was the case last year, the Committee has limited the annual analysis to a rolling eight year period, dropping the data for the earliest year and including the latest year's data. This report therefore provides a high level analysis of the data submitted to 30 June 2010, examining the mortality experience during the period 2002-2009. The format of this paper closely follows that of Working Paper 44, which examined the mortality experience during the period 2001-2008 based on data submitted to 30 June 2009.
- 1.3 The Committee would like to thank contributors for their efforts in increasing the volume and quality of the data submitted. The Committee would, however, like to encourage contributors to submit data as it becomes available throughout each year, rather than storing submissions and sending them in time for the 30 June cut-off date. The high volume of data inhibits prompt processing and therefore delays the release of individual scheme analyses back to firms and the annual analysis.
- 1.4 The CMI is continually reviewing its processes. A review of the data checks that are undertaken is currently being carried out and, following this, the Committee will implement any additional safeguards that may identify potential issues in future data submissions.
- 1.5 This paper complies with the material requirements of the principles in the Board for Actuarial Standard's generic TASs. In particular, TAS D and TAS M have been met insofar as their principles are applicable.
- 1.6 Comments and feedback on this working paper should be sent to:

Vivienne Maclure, CMI, Cheapside House, 138 Cheapside, London, EC2V 6BW

Email: [self-admin@cmib.org.uk](mailto:self-admin@cmib.org.uk)

## 2 Data

- 2.1 Since the SAPS Mortality investigation started, data has been received from a range of firms, including the larger actuarial consultancies. In addition the Pension Protection Fund (PPF) submitted data to the investigation for the first time this year. In previous working papers we have quantified the number of firms that have contributed data, however, with recent mergers this number keeps changing and has become less meaningful as a comparator. Paragraph 2.5 provides an estimate of the proportion of the market captured by the investigation, which may be more informative to readers and can be updated annually.
- 2.2 The requirement for data submissions is that schemes have more than 500 current pensioners, primarily for cost-benefit reasons. However, it should be noted that a single data submission was provided by the PPF that included data in respect of all schemes that have transferred into the PPF (including those with fewer than 500 pensioners).
- 2.3 Given the recent addition of data from the PPF, another point that should be borne in mind is that the amounts provided in the PPF dataset are the compensation amounts paid by the PPF. The compensation amounts are, in many cases, lower than the original pension amounts that were/would have been paid and will be subject to future increases that are likely to be lower than for schemes outside of the PPF. This has implications for the amounts analysis and, in particular, could affect the analyses by pension band.
- 2.4 In recent years the CMI has carried out regular chasing exercises to encourage data submissions in advance of the 30 June cut-off each year. The latest dataset, to 30 June 2010, comprises 680 submissions<sup>1</sup>, compared to 591 submissions for the dataset underlying Working Paper 44 and 367 underlying the “S1” Series of mortality tables. The latest dataset comprises data from around 480 different schemes and the Committee is pleased that continuation data is being submitted for many schemes, covering later investigation periods.
- 2.5 The Committee has estimated the coverage of the dataset analysed in this paper, using information on the number of schemes with more than 500 pensioners from the “Pension Funds and Their Advisors” database. Assuming that this represents the total market from which data is available, it is possible to obtain an estimate of the number of pensioners for which data could be submitted to the investigation. For the year with the greatest volume of data (currently 2005), it appears that over 50% of eligible pensioners have been captured by the investigation at some point throughout the year, this is compared with around 40% coverage, for the same year, in the dataset underlying Working Paper 44. The volume of SAPS Mortality data is large but this analysis indicates that it could be larger. The Committee is keen to increase the coverage of the investigation and would like to encourage firms to submit data for all schemes with more than 500 pensioners.

---

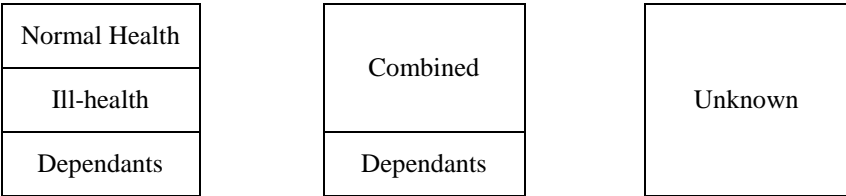
<sup>1</sup> Submissions and schemes are not the same. For each scheme there may be multiple data submissions covering different investigation periods.

2.6 The data received to date covers periods from 1981 to 2010, though this report only provides results for the eight year period 2002 to 2009.

2.7 For the data summaries and results included in this report central exposure has been calculated, as was the case in Working Papers 34, 35 and 44. This reflects the Committee’s decision to move from calculating initial exposure, which had been the approach used for all analyses prior to Working Paper 34, due to the limitations associated with this approach. These limitations are fully discussed in a document entitled ‘Comparison of approaches for calculating initial exposure’, which can be found alongside Working Papers 34 and 35 on the CMI section of the Profession’s website:

<http://www.actuaries.org.uk/research-and-resources/pages/continuous-mortality-investigation>

2.8 The data is subdivided by type of pensioner. The types of pensioner groupings are Normal Health retirements, Ill-health retirements, a Combined group (where the health of the pensioner at retirement was not known), Dependants of deceased pensioners, and Unknown (where the data cannot be split between retired scheme members and dependants). The usual combinations of pensioner types included in a data submission are shown in the following diagram.



However, not all submissions label data in these ways and, in particular, the most common deviation is for only Pensioners or only Dependants to be provided for a scheme.

2.9 The following tables summarise the data for each year during the period 2002 to 2009. Please note that for these tables the “Pensioners” include Normal Health, Ill-health and Combined retirements. Data for the Unknown pensioner category has not been included in these tables (and was also excluded from the “S1” Pensioner graduations) but can be found in Tables C and D in Section 4.

**Table A – Males**

	<b>Pensioners Lives</b>	<b>Pensioners Amounts (£'000)</b>	<b>Average Amounts (Pensioners) (£ pa)</b>	<b>Dependants Lives</b>	<b>Dependants Amounts (£'000)</b>	<b>Average Amounts (Dependants) (£ pa)</b>
<b>Exposure</b>						
<b>2002</b>	1,304,602	8,530,790	6,539	29,291	47,531	1,623
<b>2003</b>	1,157,972	7,525,967	6,499	27,975	49,849	1,782
<b>2004</b>	1,348,943	9,421,966	6,985	31,723	48,902	1,542
<b>2005</b>	1,424,648	10,451,587	7,336	36,645	56,458	1,541
<b>2006</b>	1,379,603	10,644,865	7,716	37,418	58,800	1,571
<b>2007</b>	1,190,798	9,876,676	8,294	30,103	52,317	1,738
<b>2008</b>	915,671	8,234,636	8,993	23,041	43,534	1,889
<b>2009</b>	554,538	4,756,112	8,577	14,694	26,368	1,795
<b>All</b>	9,276,776	69,442,599	7,486	230,889	383,760	1,662
<b>WP44 2001-08 *</b>	6,874,683	46,598,408	6,778	156,407	264,489	1,691
<b>Deaths</b>						
<b>2002</b>	49,923	233,134	4,670	1,347	1,813	1,346
<b>2003</b>	45,479	206,468	4,540	1,227	1,873	1,526
<b>2004</b>	50,653	255,729	5,049	1,366	2,137	1,565
<b>2005</b>	52,516	287,505	5,475	1,544	2,338	1,514
<b>2006</b>	50,039	287,015	5,736	1,562	1,961	1,256
<b>2007</b>	43,251	265,732	6,144	1,401	1,901	1,357
<b>2008</b>	33,364	222,261	6,662	1,096	1,483	1,353
<b>2009</b>	20,791	139,369	6,703	655	828	1,264
<b>All</b>	346,016	1,897,213	5,483	10,198	14,333	1,406
<b>WP44 2001-08 *</b>	258,926	1,247,420	4,818	6,708	10,321	1,539

\* These figures are taken from WP44 and take no account of any subsequent changes or additions to the data.

**Table B – Females**

	<b>Pensioners Lives</b>	<b>Pensioners Amounts (£'000)</b>	<b>Average Amounts (Pensioners) (£ pa)</b>	<b>Dependants Lives</b>	<b>Dependants Amounts (£'000)</b>	<b>Average Amounts (Dependants) (£ pa)</b>
<b>Exposure</b>						
<b>2002</b>	603,740	1,665,835	2,759	459,344	1,253,601	2,729
<b>2003</b>	582,466	1,572,073	2,699	401,404	1,180,323	2,940
<b>2004</b>	725,742	2,129,153	2,934	490,322	1,487,952	3,035
<b>2005</b>	838,260	2,586,949	3,086	523,294	1,670,144	3,192
<b>2006</b>	829,764	2,712,016	3,268	505,452	1,701,447	3,366
<b>2007</b>	643,413	2,300,170	3,575	447,724	1,658,414	3,704
<b>2008</b>	464,696	1,866,562	4,017	362,098	1,408,405	3,890
<b>2009</b>	304,385	1,301,026	4,274	234,271	868,838	3,709
<b>All</b>	4,992,465	16,133,784	3,232	3,423,908	11,229,124	3,280
<b>WP44 2001-08 *</b>	3,542,729	9,880,205	2,789	2,369,258	7,132,478	3,010
<b>Deaths</b>						
<b>2002</b>	15,401	38,146	2,477	23,180	55,862	2,410
<b>2003</b>	14,818	34,567	2,333	20,873	55,513	2,660
<b>2004</b>	18,577	48,857	2,630	23,843	64,872	2,721
<b>2005</b>	21,457	58,487	2,726	27,002	76,775	2,843
<b>2006</b>	21,206	61,785	2,914	26,489	78,650	2,969
<b>2007</b>	17,722	53,385	3,012	24,188	78,904	3,262
<b>2008</b>	13,748	45,606	3,317	20,824	70,599	3,390
<b>2009</b>	8,892	32,345	3,638	13,420	44,122	3,288
<b>All</b>	131,821	373,179	2,831	179,819	525,296	2,921
<b>WP44 2001-08 *</b>	85,612	206,713	2,415	119,944	322,052	2,685

\* These figures are taken from WP44 and take no account of any subsequent changes or additions to the data.

2.10 For comparison, the total lives and amounts data, covering the period 2001-2008, presented in Working Paper 44 has been included in Tables A and B.

2.11 Typically triennial data is submitted for schemes, reflecting the frequency of pension scheme valuations. Consequently the data available for the latter investigation years is incomplete, as we expect to receive further data in respect of 2007-2009 in future submissions. In particular, the data volumes for 2009 are low so care should be taken when looking at figures presented for this year. Data is also received in respect of the earlier investigation years despite the time that has elapsed.

- 2.12 A summary of the data split by pensioner type is shown alongside the results in Section 4, in Tables C and D.
- 2.13 We have also illustrated the experience by pension amount. Summary details of the data for each pension band are shown alongside the results in Appendices 3-5. Charts illustrating the experience are included in Section 4.
- 2.14 The data and results, for individual ages and grouped into 5 year age bands, are given in the Excel files released with this paper. The Committee hopes that this form of presentation of the data will enable users of the report more readily to carry out their own analyses.
- 2.15 Postcode data was first requested in January 2007. The Committee intends to carry out analyses based on postcode when sufficient data has been collected and would like to encourage data providers to include postcodes in their data submissions wherever possible (although data without postcode is still very useful where this information is not available).
- 2.16 To allay data contributors' concerns over data protection legislation regarding submitting postcode data, the CMI has developed a set of standard terms to regulate the relationship between data contributors and the CMI, with the CMI acting as a "data processor". More information and the terms can be found in the "CMI data" area of the Profession's website:  
<http://www.actuaries.org.uk/research-and-resources/pages/continuous-mortality-investigation-data>.



### 3 Methodology

- 3.1 The methodology used to produce the results presented in this paper is the same as that used and described in Working Paper 44. A summary of the approach is included below but further information can be found in Section 3 of Working Paper 44.
- 3.2 The results show the actual number of deaths for various subsets of the data compared to the expected number of deaths calculated using a table from the “S1” Series of mortality tables and the “00” Series Normal retirement tables. The “S1” table used for each subset of data is shown below:

Male Lives All Pensioners	S1PML
Male Amounts All Pensioners	S1PMA
Female Lives All Pensioners	S1PFL
Female Amounts All Pensioners	S1PFA
Male Lives Normal Health Pensioners	S1PML *
Male Amounts Normal Health Pensioners	S1NMA
Female Lives Normal Health Pensioners	S1PFL *
Female Amounts Normal Health Pensioners	S1NFA
Male Lives Ill Health Pensioners	S1PML *
Male Amounts Ill Health Pensioners	S1IMA
Female Lives Ill Health Pensioners	S1PFL *
Female Amounts Ill Health Pensioners	S1IFA
Male Lives Combined Pensioners	S1PML
Male Amounts Combined Pensioners	S1PMA
Female Lives Combined Pensioners	S1PFL
Female Amounts Combined Pensioners	S1PFA
Male Lives Dependants	S1PML *
Male Amounts Dependants	S1PMA *
Female Lives Dependants	S1DFL
Female Amounts Dependants	S1DFA
Male Lives Unknown	S1PML
Male Amounts Unknown	S1PMA
Female Lives Unknown	S1PFL
Female Amounts Unknown	S1PFA

\* S1 tables were not produced in respect of every dataset, and where there is no corresponding table, the Pensioner table is used instead.

- 3.3 The term “Normal” means different things depending whether it is used in reference to the “00” Series or the “S1” Series. For the “00” Series it reflects individuals retiring at or after normal retirement age and for the “S1” Series it reflects individuals retiring in normal health.

3.4 Central exposed to risk has been calculated for this paper and was first adopted for results in Working Paper 44; previous working papers presented initial exposed to risk. For details on the differences between the two methodologies please see Sections 3.3 - 3.6 of Working Paper 44.

3.5 All tables have been applied **without** any projection for mortality improvements. As stated in Working Paper 44, the values of  $\mu_x$  apply at different dates depending on which series of mortality tables they come from. The following table shows the designated dates for  $\mu_x$  and, for comparison,  $q_x$  for each series of mortality tables used in this paper:

	“S1” Series	“00” Series
$\mu$	1 March 2003	31 December 2000
$q$	1 September 2002	30 June 2000

3.6 The dataset analysed in this paper covers the period 2002-2009, whereas the “S1” graduations were based on data covering the period 2000-2006. As a result, the weighted mid-point of the dataset underlying this experience analysis is around 1 December 2005, which is two years and nine months later than the designated midpoint for the “S1” series.

3.7 The “S1” Series of mortality tables provides a range of tables based on different pensioner types. However, not every pensioner category analysed in this report has a corresponding mortality table, and, in some cases, only an Amounts table is available without a corresponding Lives table. For each set of results based on the “S1” Series the comparison table used is indicated.

3.8 For the analyses where the data is split into pension amounts bands we have used male and female Pensioner data, i.e. excluding Dependants and Unknowns, and we have used the “S1” Series All Pensioners mortality tables. A separate analysis of female Dependants by pension amount bands has also been carried out using the “S1” Series Dependants mortality tables. The volume of data for male Dependants has increased but the Committee still considers this insufficient for an analysis by pension amount band to be performed.

3.9 In addition to the seven male pension bands and six female pension bands that were considered by the Committee for the “S1” graduations, the pension bands that correspond to those underlying the Light and Heavy mortality tables have also been analysed. The male and female Pensioner data in the Light and Heavy pension amounts bands has been compared against “S1” Series All Pensioners Light/Heavy mortality tables. The female Dependants data in the Light and Heavy pension amounts bands has been compared against the “S1” Series Dependants Light/Heavy tables.

## 4 Results

### Results by pensioner type

4.1 The following two tables show a summary of the data and results by pensioner type for the eight year period 2002 to 2009.

**Table C – Males**

	Number or amount ETR	Number or amount of deaths	100A/E		“S1” Series table names
			“00” Series Normal retirement tables	“S1” Series tables	
			2002-09	2002-09	
<i>Lives:</i>			PNML00		
<b>Normal Health</b>	5,165,541	196,256	96	86	S1PML
<b>Ill-health</b>	796,295	27,424	158	137	S1PML
<b>Combined</b>	3,314,941	122,336	101	91	S1PML
<i>All-Pensioner</i>	9,276,776	346,016	101	90	S1PML
<b>Dependant</b>	230,889	10,198	110	99	S1PML
<b>Unknown</b>	768,349	31,250	105	94	S1PML
<b>All</b>	10,276,014	387,464	101	91	S1PML
<i>Amounts (£'000):</i>			PNMA00		
<b>Normal Health</b>	40,436,932	1,163,669	95	89	S1NMA
<b>Ill-health</b>	4,658,454	136,527	179	92	S1IMA
<b>Combined</b>	24,347,213	597,017	98	91	S1PMA
<i>All-Pensioner</i>	69,442,599	1,897,213	99	92	S1PMA
<b>Dependant</b>	383,760	14,333	127	118	S1PMA
<b>Unknown</b>	3,829,600	118,728	107	100	S1PMA
<b>All</b>	73,655,958	2,030,274	100	93	S1PMA

**Table D – Females**

	Number or amount ETR	Number or amount of deaths	100A/E		“S1” Series table names
			“00” Series Normal retirement tables	“S1” Series tables	
			2002-09	2002-09	
<i>Lives:</i>			PNFL00		
<b>Normal Health</b>	2,864,138	80,065	92	87	S1PFL
<b>Ill-health</b>	560,997	11,991	150	134	S1PFL
<b>Combined</b>	1,567,331	39,765	102	95	S1PFL
<i>All-Pensioner</i>	4,992,465	131,821	98	93	S1PFL
<b>Dependant</b>	3,423,908	179,819	100	92	S1DFL
<b>Unknown</b>	516,031	22,734	105	100	S1PFL
<b>All</b>	8,932,404	334,374	100	95	S1PFL
<i>Amounts (£'000):</i>			PNFA00		
<b>Normal Health</b>	9,538,368	239,675	97	93	S1NFA
<b>Ill-health</b>	2,071,305	40,395	168	96	S1IFA
<b>Combined</b>	4,524,110	93,109	108	98	S1PFA
<i>All-Pensioner</i>	16,133,784	373,179	105	97	S1PFA
<b>Dependant</b>	11,229,124	525,296	100	94	S1DFA
<b>Unknown</b>	1,148,916	45,574	108	101	S1PFA
<b>All</b>	28,511,824	944,048	102	96	S1PFA

- 4.2 The number of records shown as “Unknown” is relatively high. However, this is the only analysis of this subset of data because it is not possible to distinguish between Pensioners and Dependants, which we analyse separately. The data was also not used for the “S1” graduations. To make the most effective use of the data submitted, data providers are asked to differentiate between pensioners and dependants wherever possible.
- 4.3 From the tables above, it is possible to compare the relative mortality experiences for each pensioner type using the results based on the “00” Series Normal retirement tables, as the same comparison table has been used for each pensioner type. This shows that the mortality experiences of male and female Ill-health pensioners are heavier than for all other pensioner categories, as expected.
- 4.4 The tables selected from the “S1” Series differ for the Lives and Amounts comparisons. For males, the only Lives table available in the “S1” Series is based on Pensioner data, so the Lives datasets for each pensioner type have all been compared against this table. This enables a comparison of the relative mortality experiences similar to that described in paragraph 4.3. For females, a Lives table is also available based on female Dependants so this has been used for the comparison with the Dependants dataset, but the Pensioner table has been used for all others.

- 4.5 For the Amounts comparisons, tables based on Normal Health and Ill-health retirements and, for females, Dependants are available in addition to the Pensioner table, so the most appropriate table has been selected for each pensioner type.
- 4.6 Where direct comparison is possible, it appears that the mortality experience of this dataset is lighter than that underlying the “S1” graduations.
- 4.7 Care should be taken when comparing the latest results against those presented in Working Paper 44 (overall results from Working Paper 44 are shown in the following tables) as the apparent improvements in mortality have primarily arisen from the addition of new data for previous years, which exhibits lighter mortality experience.
- 4.8 The Committee has recently investigated, in more depth, emerging trends in the mortality experience within the SAPS dataset and has released a paper in draft form to SAPS members. It is expected that this paper will be finalised and published in July 2011.

### Results by calendar year

- 4.9 The following tables show the results for each year during the period 2002 to 2009. Please note that for these tables the Pensioner category includes Normal Health, Ill-health and Combined retirements. The “Unknown” pensioner data is not included in this analysis. Tables E and G show comparisons against “S1” Series Pensioner tables and Tables F and H show comparisons against the “00” Series Normal retirement tables.

**Table E – Males “S1” Series Pensioner comparison**

		100A/E based on “S1” Series			
		Males Pensioner Lives S1PML	Male Pensioner Amounts S1PMA	Male Dependant Lives S1PML	Male Dependant Amounts S1PMA
<b>100A/E</b>	<b>2002</b>	102	106	104	120
	<b>2003</b>	101	103	102	120
	<b>2004</b>	92	95	104	147
	<b>2005</b>	90	94	103	139
	<b>2006</b>	87	90	99	111
	<b>2007</b>	84	87	97	111
	<b>2008</b>	82	83	90	97
	<b>2009</b>	80	82	87	88
	<b>All</b>	90	92	99	118
<b>WP44 2001-08 *</b>	97	99	104	125	

\* These figures are taken from WP44 and take no account of any subsequent changes or additions to the data.

**Table F – Males “00” Series Normal retirements comparison**

		<b>100A/E based on “00” Series Normal retirement tables</b>			
		<b>Male Pensioner Lives PNML00</b>	<b>Male Pensioner Amounts PNMA00</b>	<b>Male Dependant Lives PNML00</b>	<b>Male Dependant Amounts PNMA00</b>
<b>100A/E</b>	<b>2002</b>	114	115	116	129
	<b>2003</b>	112	111	114	129
	<b>2004</b>	103	103	116	159
	<b>2005</b>	100	101	114	149
	<b>2006</b>	97	96	110	119
	<b>2007</b>	94	93	108	119
	<b>2008</b>	92	89	100	104
	<b>2009</b>	89	88	96	94
	<b>All</b>	101	99	110	127
<b>WP44 2001-08 *</b>	108	107	117	134	

\* These figures are taken from WP44 and take no account of any subsequent changes or additions to the data.

- 4.10 As was the case in Working Paper 44, the male results indicate that the Pensioner mortality experience appears to have gradually improved during the period 2002-2009. The results for male Dependents are more volatile from year to year. Care should be taken when interpreting these results due to the low volumes of data in the latest years and due to the heterogeneity in the data for different years (for example, due to data for different schemes being submitted in different periods).
- 4.11 Experience for all male groups has, on average, improved in years 2002-2008 compared to the results presented in Working Paper 44, and as noted above in Paragraph 4.7 this is primarily driven from the addition of new data in previous years. In particular, a user should not infer that the movement, for data covering all years, from 97% S1PML in Working Paper 44 to 90% S1PML (shown in Table E) necessarily represents a large improvement in mortality rates within the SAPS investigation for the latest years, as the new data has had a marked effect on the reported experience in most of the individual calendar years.

**Table G – Females “S1” Series Pensioner comparison**

		100A/E based on “S1” Series			
		Female Pensioner Lives S1PFL	Female Pensioner Amounts S1PFA	Female Dependant Lives S1DFL	Female Dependant Amounts S1DFA
<b>100A/E</b>	<b>2002</b>	100	106	103	107
	<b>2003</b>	101	103	103	107
	<b>2004</b>	94	100	90	94
	<b>2005</b>	92	97	91	95
	<b>2006</b>	90	97	89	92
	<b>2007</b>	89	92	88	91
	<b>2008</b>	89	91	89	91
	<b>2009</b>	83	89	82	85
	<b>All</b>	93	97	92	94
<b>WP44 2001-08 *</b>	97	101	97	98	

\* These figures are taken from WP44 and take no account of any subsequent changes or additions to the data.

**Table H – Females “00” Series Normal retirements comparison**

		100A/E based on “00” Series Normal retirement tables			
		Female Pensioner Lives PNFL00	Female Pensioner Amounts PNFA00	Female Dependant Lives PNFL00	Female Dependant Amounts PNFA00
<b>100A/E</b>	<b>2002</b>	107	116	112	114
	<b>2003</b>	108	113	112	114
	<b>2004</b>	100	109	98	100
	<b>2005</b>	98	106	99	100
	<b>2006</b>	96	105	97	97
	<b>2007</b>	95	100	96	96
	<b>2008</b>	94	98	96	97
	<b>2009</b>	88	95	88	90
	<b>All</b>	98	105	100	100
<b>WP44 2001-08 *</b>	104	111	106	105	

\* These figures are taken from WP44 and take no account of any subsequent changes or additions to the data.

4.12 Overall the mortality experience appears to have improved for female Pensioners during the period 2002-2009 but the level of improvement is lower than that observed for male Pensioners for the same period. The experience on a lives basis does not steadily improve during the period, for example, there is a larger change from 2003 to 2004. On an amounts basis a more consistent improvement year on year is noticeable. The results for female Dependants also show an overall improvement from 2002 to 2009.

4.13 As for the male results, care should be taken when interpreting these results due to low volumes of data in the latest years and due to heterogeneity in the data for different years. In addition it should be noted that there is less female data compared to male data, and therefore one would expect to see a greater amount of variability in the female results.

**Results by pension amount bands**

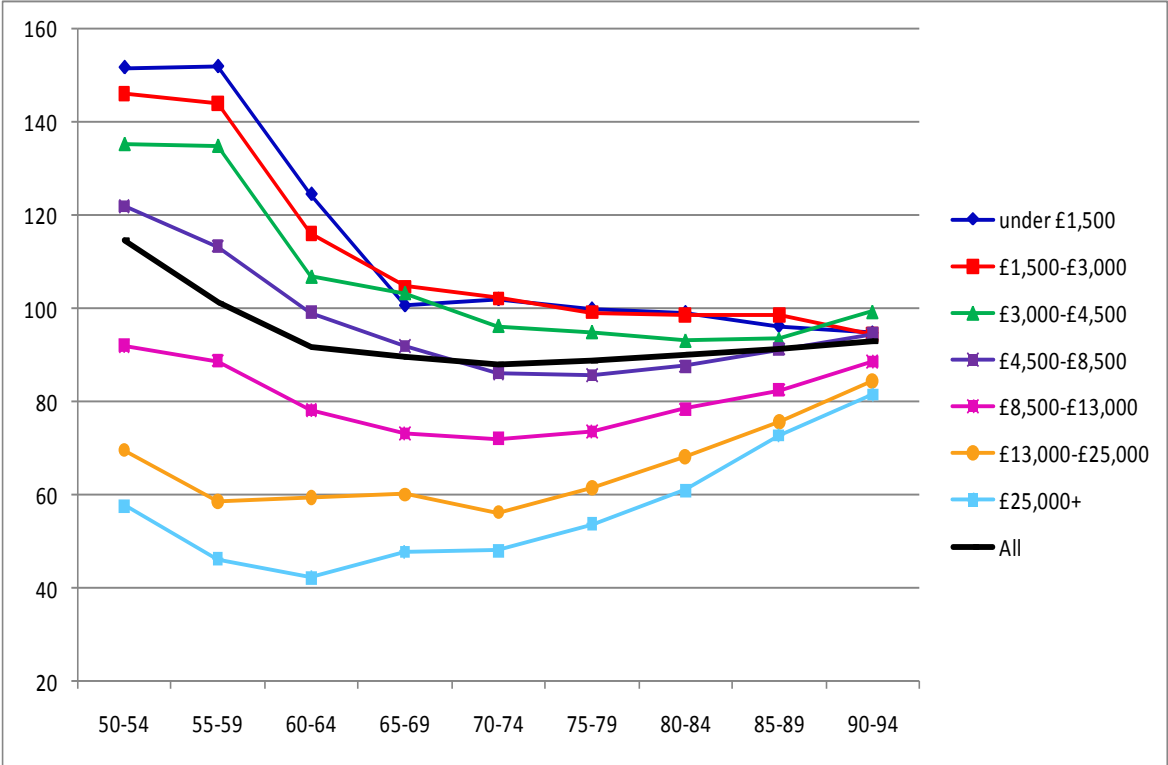
4.14 Analyses by pension amount have been presented in a number of previous working papers and have illustrated the relative difference in mortality experience for members with pensions of different sizes.

4.15 Results have been produced separately for male and female Pensioner data and for female Dependants data subdivided by various pension amount bands. Tables summarising the data and results for each pension amount band are shown in Appendices 2-4.

4.16 Charts illustrating the results of 100A/E by age band for each pension amount band are shown below. The Pensioner data comprises Normal Health, Ill-health and Combined retirements.

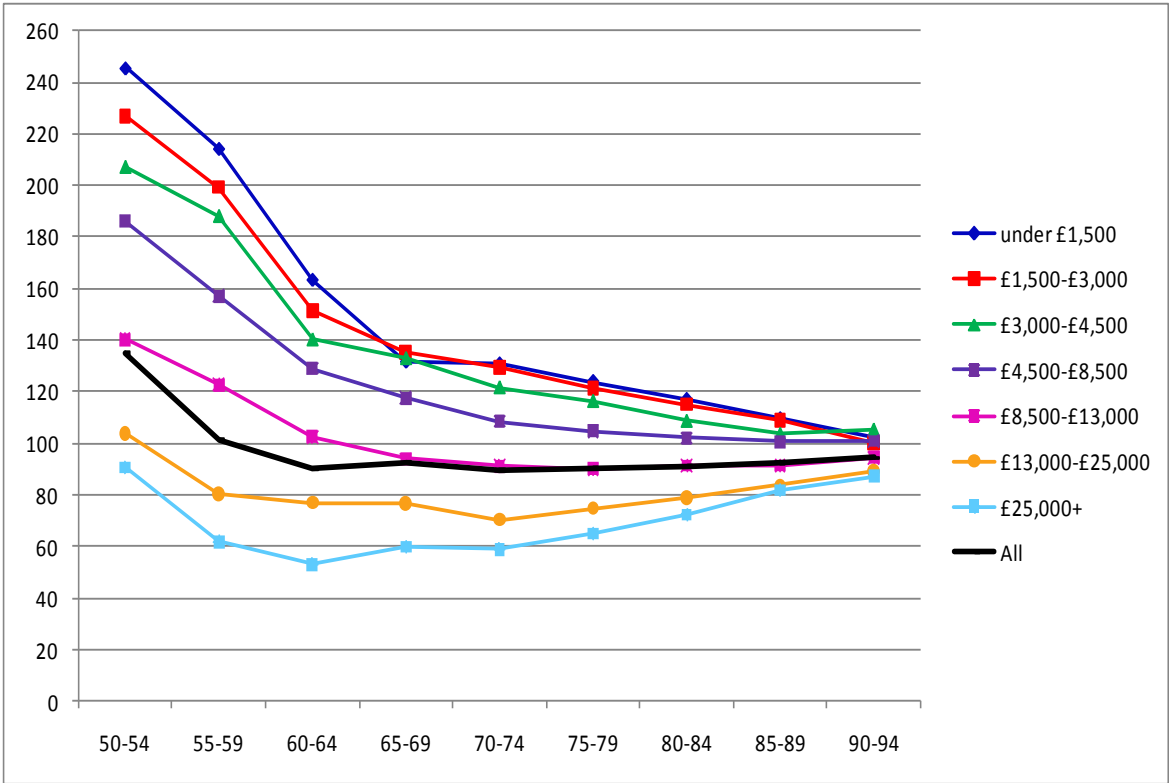
*Male Pensioner data subdivided by pension amount bands*

**Chart 1: 100A/E values for Male Pensioners Lives compared to S1PML**





**Chart 2: 100 A/E values for Male Pensioners Amounts compared to S1PMA**

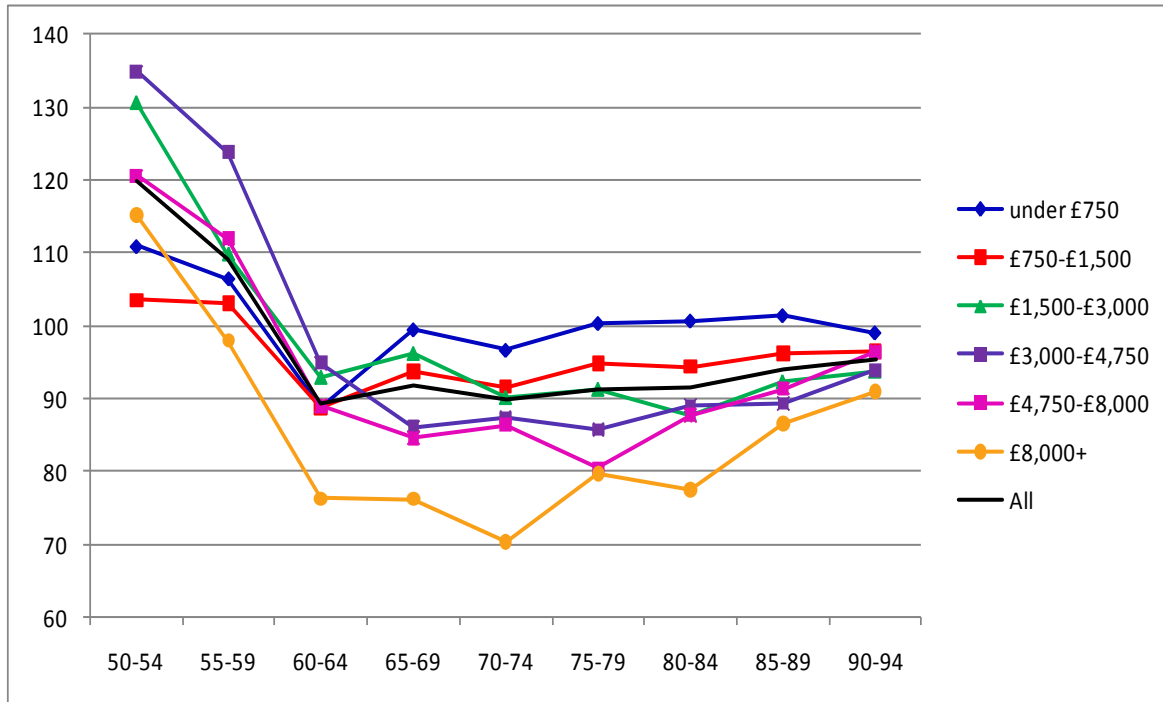


4.17 The relative differences in mortality experience seen in previous working papers are also apparent in the latest dataset. The patterns observed are similar to those seen in the dataset underlying the “S1” graduations and other datasets.

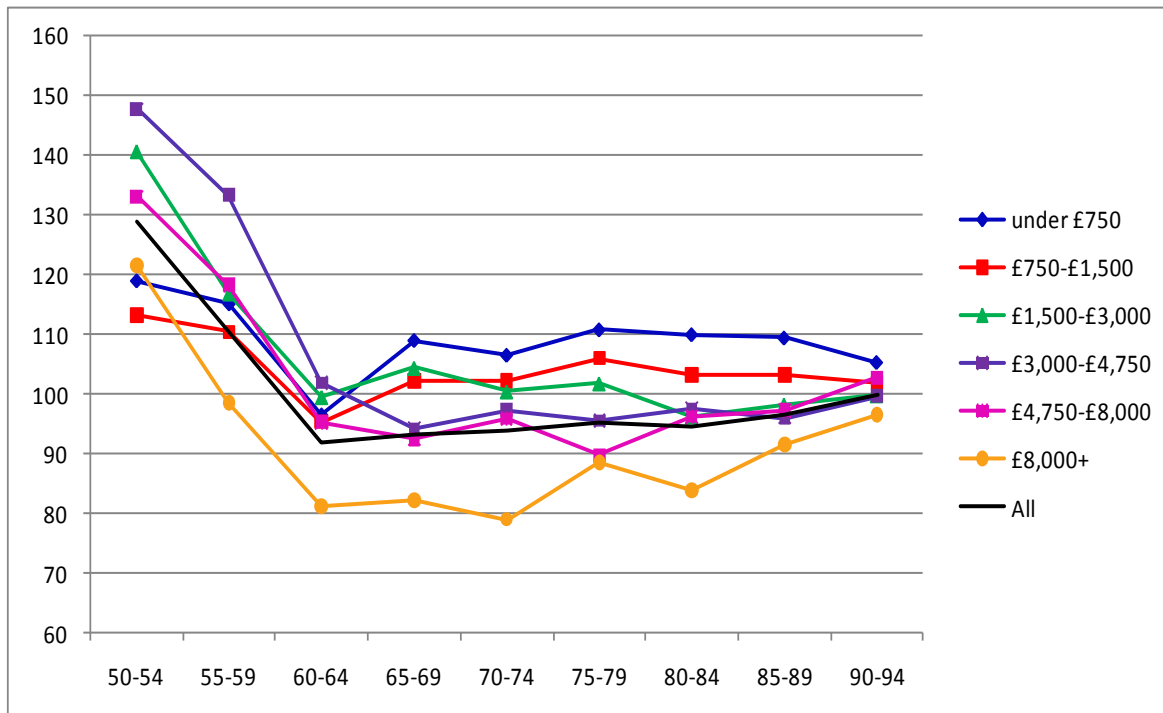
4.18 The male Pensioner dataset shows a marked difference in mortality experience at the younger ages, which diminishes significantly, in relative terms, at older ages.

*Female Pensioner data subdivided by pension amount bands*

**Chart 3: 100A/E values for Female Pensioners Lives compared to S1PFL**



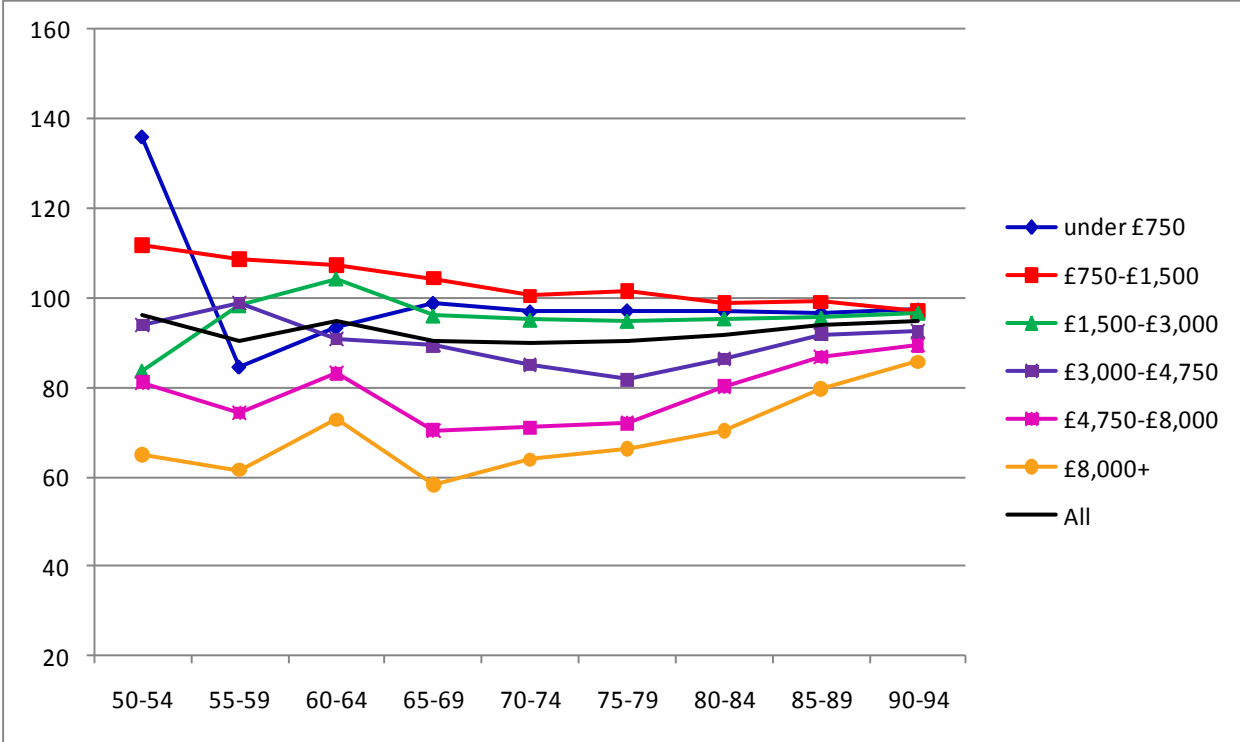
**Chart 4: 100A/E values for Female Pensioner Amounts compared to S1PFA**



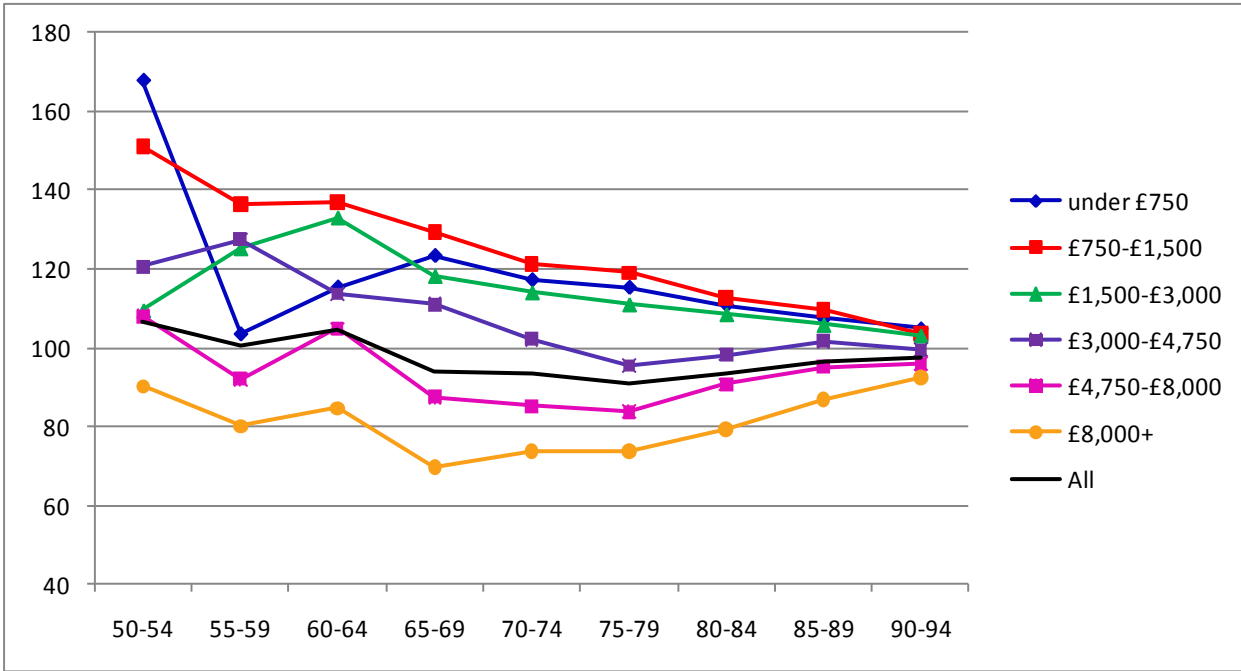
- 4.19 Whilst the relative differences in mortality experience for the female Pensioner dataset are greater at the younger ages than for the older ages, the pattern is far less pronounced than that observed for the male Pensioner dataset. This has also been the case in analyses of previous datasets.
- 4.20 A greater proportion of female Pensioners in ill-health compared to male Pensioners would be consistent with the patterns observed above. However the Committee note that the female dataset is more sparse than the male dataset which will lead to more volatility in results. The Committee will update users in light of any new information regarding the differences in male and female experience by pension band as it arises.
- 4.21 The relative differences in mortality experience for each of the pension bands do not always behave as expected, i.e. lighter mortality experience for female Pensioners with higher pensions, which could partly be due to volatility arising from low data volumes. This is particularly noticeable at the younger ages where the third highest pension amount band (£3,000-£4,750) shows the heaviest mortality experience for Pensioners aged below 65. Above age 65, the relative differences are more in line with expectations.

*Female Dependants data subdivided by amount bands*

**Chart 5: 100A/E values for Female Dependants Lives compared to S1DFL**



**Chart 6: 100A/E values for Female Dependants Amounts compared to S1DFA**



4.22 As for the male and female Pensioners, the feature of pronounced difference in mortality experience for the younger ages, which reduces for the older ages, is also observed for the female Dependants dataset.

4.23 The relative differences in mortality experience are generally as expected for the three highest pension bands, with the lightest mortality rates being observed for the highest pension band and the heaviest mortality rates observed for the lowest of these three bands. The relative differences in mortality experience for the three lowest pension bands are less pronounced, particularly for ages 80 and above. It is also the case that the pattern of mortality rates for these three bands is not always as expected and the second lowest band often shows the highest mortality.

**Heavy and Light pension bands**

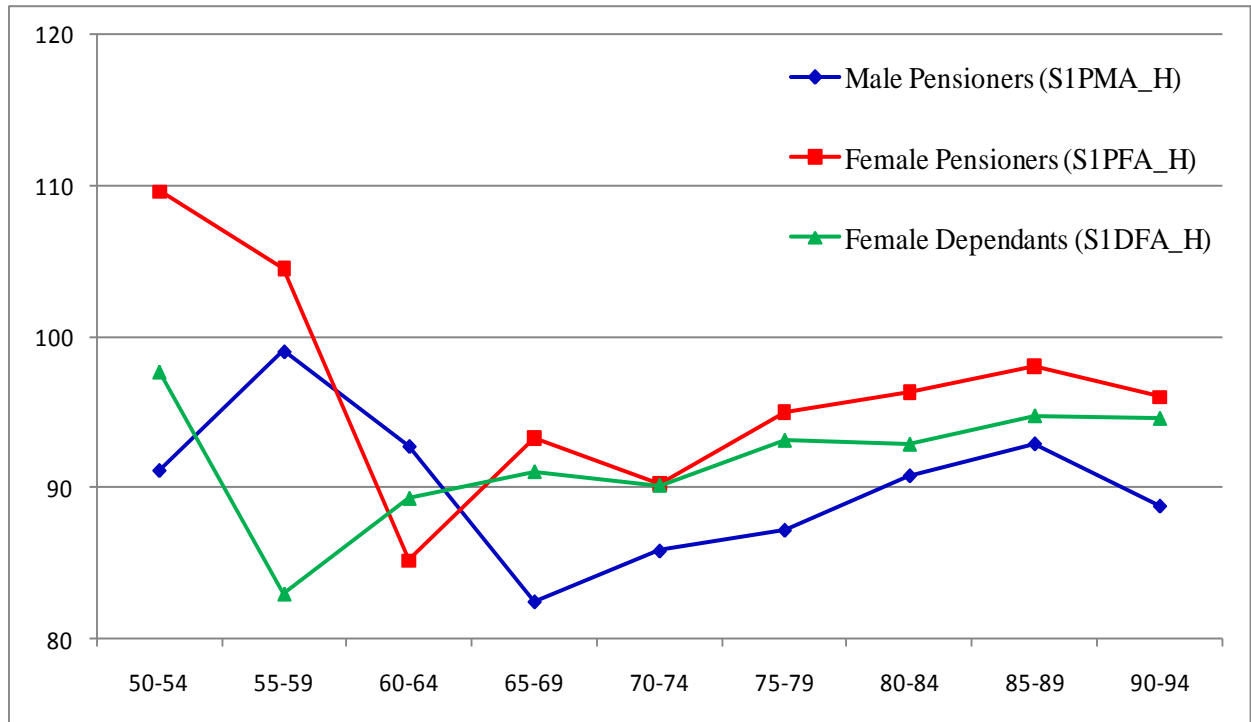
4.24 The “S1” Series of mortality tables includes tables that are based on graduations of datasets referred to as Heavy and Light. These datasets are so named to reflect the fact that they include pensioners with the lowest pensions and highest pensions respectively, and are expected to demonstrate the heaviest and lightest mortality experience. Heavy and Light tables are available for male Pensioners, female Pensioners and female Dependants on an amounts basis only.

4.25 Results have been produced separately for male and female Pensioner data and for female Dependants data subdivided into the pension bands corresponding to those underlying the Heavy and Light tables. The following table summarises the pension amounts bands for each of the pensioner types. Note that these bands are unchanged in monetary terms from those underlying the “S1” tables.

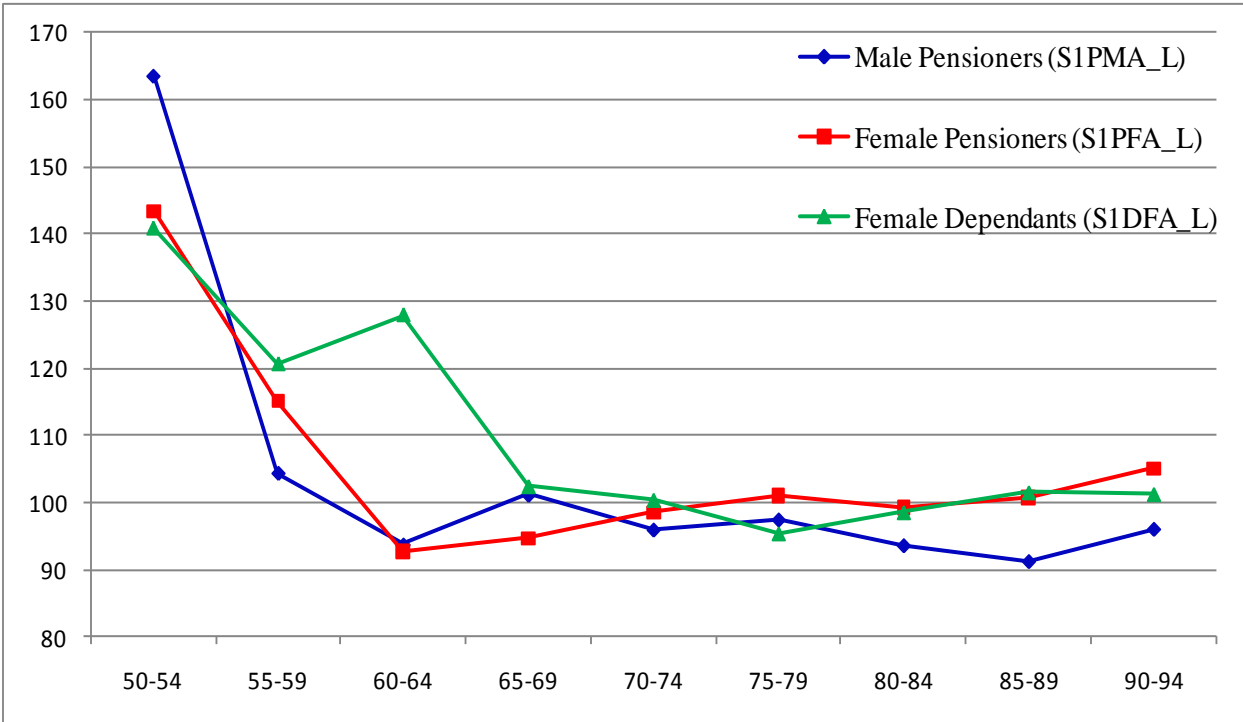
	Heavy pension band	Light pension band
Male Pensioners	Under £1,500 p.a.	£13,000 p.a. or above
Female Pensioners	Under £750 p.a.	£4,750 p.a. or above
Female Dependants	Under £1,500 p.a.	£4,750 p.a. or above

4.26 Tables summarising the data and results for the Heavy and Light pension amounts bands are shown in Appendices 2-4. Charts 7 and 8 illustrate the 100A/E values by age band for each of the pensioner types using the relevant Heavy or Light comparison table, on an amounts basis.

**Chart 7: 100A/E values for Heavy pension band datasets**



**Chart 8: 100A/E values for Light pension band datasets**



4.27 Current indications are that the mortality experiences of the Heavy datasets are lighter than those of the “S1” Series graduated datasets, using the same amount bands, whereas the Light datasets are showing experiences that are broadly the same as than the “S1” Series graduated datasets.

## **5 Further investigations**

- 5.1 Investigations into the emerging trends in the mortality experience within the SAPS dataset commenced some time ago. However, the statistical techniques used to produce the results have been subject to some debate following peer review within the CMI. The Committee discussed alternative analysis approaches at its last Committee meeting and concluded that significant work and further investigation is required to enable the statistical significance of mortality improvements in the SAPS dataset to be demonstrated. Consequently, the Committee has produced a high-level paper presenting mortality improvements within the SAPS dataset. This paper was issued in draft form to SAPS members in April 2011, which it expects to finalise and make publicly available in July 2011, with a view to producing a more in depth paper in due course.
- 5.2 The Committee is currently undertaking further analyses of the data submitted to 30 June 2010, in particular, to investigate the experience by industry sector. The Committee will also consider whether there is merit in producing the “S2” Series of mortality tables at this stage, to take account of more recent data and increased data volumes.
- 5.3 The Committee would like to take this opportunity to encourage firms to submit data in advance of 30 June 2011, for inclusion in the next analysis.

## **Appendix 1: CMI SAPS Mortality working papers**

A summary of the working papers that have been produced based on data submitted to the CMI SAPS Mortality investigation is given in this Appendix. Additional information about the datasets underlying these working papers is provided in Working Paper 34. Copies of the working papers and accompanying data can be found at the following address: <http://www.actuaries.org.uk/research-and-resources/pages/continuous-mortality-investigation-working-papers>.

Working Paper 4: Published in March 2004. This was based on data collected up to February 2004 and covered the period 2000 to 2002.

Working Paper 9: Published in November 2004. This was based on the same data as Working Paper 4 but included more detailed analysis, for example looking at the effect of pension amounts on mortality experience for males.

Working Paper 17: Published in October 2005. This was based on data collected to May 2005 and covered the period 2000 to 2003. This provided a summary of the data and a comparison of the actual deaths against those expected using two sets of comparison tables. An analysis of the male data split into four amounts bands was also included.

Working Paper 29: First released in draft form in March 2007 to CMI SAPS members and then made publicly available in October 2007. This was based on the data submitted to June 2006 and covering the period 2000 to 2004. This paper provided a more extensive analysis than Working Paper 17 and included comparisons with the “00” Series mortality tables, an analysis by pension amount band and an analysis by industry classification.

Working Paper 31: First released in draft form in October 2007 to CMI SAPS members and then made publicly available in January 2008, alongside Working Paper 32. This was based on the data submitted to June 2007 and covered the seven year period 2000-2006. The level of detail of the analyses was in line with that presented in Working Paper 17.

Working Paper 32: Published in January 2008. This was a consultation paper that presented proposed graduations of the data underlying Working Paper 31. Please note that following the publication of this Working Paper a discrepancy was identified between the age definition used in the data and that used by the software, which led to the draft tables over-stating mortality rates by half a year. Additionally, the Committee decided to amend its approach used to calculate exposed to risk for the revised graduations and calculate central exposed to risk instead of initial exposed to risk.



- Working Paper 34: Published in October 2008. This set out the methodology and assumptions underlying the dataset used for the graduations contained in Working Paper 35. A supplementary paper entitled “Comparison of approaches for calculating initial exposure” is available alongside Working Paper 34 on the CMI section of the Profession’s website.
- Working Paper 35: Published in October 2008. This presented the “S1” Series of mortality tables based on graduations of the CMI SAPS mortality experience for the period 2000-2006, using data collected to 30 June 2007 and included responses to feedback on Working Paper 32. Please note that the dataset underlying the final graduations differed from that underlying the draft graduations presented in Working Paper 32; the differences were as a result of additional data testing, revised assumptions and the move from initial exposed to risk to central exposed to risk.
- Draft Paper: A draft Working Paper was issued to SAPS members in March 2009, showing the experience analysis of data collected to 30 June 2008. Because some data submissions relied on for that investigation were revised, this draft working paper was not published in final form.
- Working Paper 44: Published in April 2010. This presented the results of the experience analysis for the period 2001 to 2008 based on data collected by 30 June 2009. The approach taken in this working paper differed from that taken in previous papers in two respects – results were based on central exposure and the actual numbers of deaths were compared against those expected based on the “S1” Series of mortality tables (in addition to the “00” Series of mortality tables).

## Appendix 2: Male All Pensioner data split by pension amount bands

All Male Pensioners with pensions under £1,500						
Age group	Lives			Amounts		
	Exposed to risk	Actual deaths	100A/E S1PML	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PMA
50-54	46,588	438	152	35,636	351	246
55-59	88,251	1,039	152	68,692	814	214
60-64	205,687	2,858	125	162,393	2,242	163
65-69	330,139	6,094	101	262,823	4,921	132
70-74	297,381	9,842	102	248,739	8,323	131
75-79	294,431	16,660	100	247,104	14,116	124
80-84	245,374	22,913	99	197,236	18,514	117
85-89	114,075	16,549	96	85,463	12,659	109
90-94	31,171	6,995	95	23,860	5,423	102
Total (ages 50-94)	1,653,097	83,388	100	1,331,944	67,363	120
WP44 2001-08	1,339,593	69,769	106	1,065,976	55,318	128

All Male Pensioners with pensions £1,500 pa - £3,000 pa						
Age group	Lives			Amounts		
	Exposed to risk	Actual deaths	100A/E S1PML	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PMA
50-54	47,357	428	146	105,842	963	227
55-59	92,686	1,036	144	207,622	2,295	199
60-64	202,634	2,634	116	452,280	5,808	151
65-69	313,136	6,067	105	700,792	13,587	135
70-74	332,551	11,063	102	743,637	24,682	130
75-79	304,586	16,940	99	670,470	37,132	121
80-84	202,509	18,664	99	441,634	40,626	115
85-89	89,552	13,351	99	196,462	29,192	109
90-94	27,586	6,188	95	60,764	13,528	100
Total (ages 50-94)	1,612,596	76,371	100	3,579,503	167,812	119
WP44 2001-08	1,301,470	62,463	106	2,890,430	137,034	126

<b>All Male Pensioners with pensions £3,000 pa - £4,500 pa</b>						
<b>Age group</b>	<b>Lives</b>			<b>Amounts</b>		
	<b>Exposed to risk</b>	<b>Actual deaths</b>	<b>100A/E S1PML</b>	<b>Exposed to risk (£'000)</b>	<b>Actual deaths (£'000)</b>	<b>100A/E S1PMA</b>
50-54	45,289	379	135	169,133	1,405	207
55-59	90,585	948	135	339,324	3,539	188
60-64	174,775	2,101	107	652,237	7,799	140
65-69	266,132	5,091	103	988,152	18,846	133
70-74	254,938	7,916	96	942,707	29,127	122
75-79	190,597	10,071	95	703,771	37,086	116
80-84	113,446	9,865	93	419,187	36,342	109
85-89	48,186	6,783	93	178,406	25,074	104
90-94	14,018	3,315	99	52,000	12,249	105
Total (ages 50-94)	1,197,967	46,469	97	4,444,916	171,468	116
WP44 2001-08	961,785	36,624	102	3,564,755	134,952	122

<b>All Male Pensioners with pensions £4,500 pa - £8,500 pa</b>						
<b>Age group</b>	<b>Lives</b>			<b>Amounts</b>		
	<b>Exposed to risk</b>	<b>Actual deaths</b>	<b>100A/E S1PML</b>	<b>Exposed to risk (£'000)</b>	<b>Actual deaths (£'000)</b>	<b>100A/E S1PMA</b>
50-54	81,459	617	122	513,998	3,858	186
55-59	193,425	1,706	113	1,239,119	10,819	157
60-64	339,916	3,768	99	2,159,958	23,542	129
65-69	400,599	6,786	92	2,499,649	41,883	118
70-74	347,289	9,631	86	2,157,790	59,297	109
75-79	260,483	12,465	86	1,620,650	77,100	105
80-84	167,797	13,776	88	1,054,189	86,132	102
85-89	77,395	10,678	91	488,290	66,797	101
90-94	24,037	5,430	95	150,853	34,089	101
Total (ages 50-94)	1,892,399	64,857	90	11,884,496	403,517	107
WP44 2001-08	1,425,126	46,659	94	8,896,491	287,217	113

<b>All Male Pensioners with pensions £8,500 pa - £13,000 pa</b>						
<b>Age group</b>	<b>Lives</b>			<b>Amounts</b>		
	<b>Exposed to risk</b>	<b>Actual deaths</b>	<b>100A/E S1PML</b>	<b>Exposed to risk (£'000)</b>	<b>Actual deaths (£'000)</b>	<b>100A/E S1PMA</b>
50-54	59,371	341	92	628,789	3,580	140
55-59	169,453	1,172	89	1,808,089	12,350	123
60-64	259,036	2,247	78	2,745,571	23,594	103
65-69	235,718	3,162	73	2,480,038	33,056	94
70-74	188,311	4,360	72	1,976,355	45,567	91
75-79	148,036	6,116	74	1,552,971	63,830	90
80-84	106,736	7,875	78	1,123,281	82,475	91
85-89	50,534	6,293	83	531,622	65,914	91
90-94	14,737	3,107	89	154,403	32,560	94
Total (ages 50-94)	1,231,932	34,673	78	13,001,120	362,926	93
WP44 2001-08	799,174	20,204	80	8,383,369	210,000	97

<b>All Male Pensioners with pensions £13,000 pa - £25,000 pa</b>						
<b>Age group</b>	<b>Lives</b>			<b>Amounts</b>		
	<b>Exposed to risk</b>	<b>Actual deaths</b>	<b>100A/E S1PML</b>	<b>Exposed to risk (£'000)</b>	<b>Actual deaths (£'000)</b>	<b>100A/E S1PMA</b>
50-54	56,321	246	70	976,991	4,147	104
55-59	194,955	891	59	3,408,446	15,301	80
60-64	286,009	1,871	59	5,008,476	32,126	77
65-69	224,625	2,466	60	3,913,889	42,466	77
70-74	170,131	3,070	56	2,955,742	52,523	70
75-79	127,053	4,374	62	2,200,282	74,886	75
80-84	85,547	5,479	68	1,476,379	93,501	79
85-89	41,691	4,761	76	719,829	81,828	84
90-94	12,659	2,550	84	219,469	43,881	89
Total (ages 50-94)	1,198,991	25,708	66	20,879,502	440,660	79
WP44 2001-08	705,241	14,082	69	12,272,857	242,007	83

<b>All Male Pensioners with pensions £25,000 pa or above</b>						
<b>Age group</b>	<b>Lives</b>			<b>Amounts</b>		
	<b>Exposed to risk</b>	<b>Actual deaths</b>	<b>100A/E S1PML</b>	<b>Exposed to risk (£'000)</b>	<b>Actual deaths (£'000)</b>	<b>100A/E S1PMA</b>
50-54	14,329	52	58	531,496	1,983	91
55-59	60,406	219	46	2,310,868	8,009	62
60-64	92,084	428	42	3,531,178	15,595	53
65-69	66,727	582	48	2,588,617	21,847	60
70-74	50,451	776	48	1,957,642	29,076	59
75-79	36,571	1,097	54	1,395,053	41,028	65
80-84	22,213	1,265	61	822,584	47,348	72
85-89	10,363	1,140	73	365,557	40,758	82
90-94	3,515	690	81	124,815	24,648	87
Total (ages 50-94)	356,658	6,249	57	13,627,811	230,292	68
WP44 2001-08	226,385	3,852	60	8,960,415	149,924	73

<b>All Male Pensioners</b>						
<b>Age group</b>	<b>Lives</b>			<b>Amounts</b>		
	<b>Exposed to risk</b>	<b>Actual deaths</b>	<b>100A/E S1PML</b>	<b>Exposed to risk (£'000)</b>	<b>Actual deaths (£'000)</b>	<b>100A/E S1PMA</b>
50-54	350,714	2,501	115	2,961,885	16,287	135
55-59	889,760	7,011	101	9,382,160	53,127	101
60-64	1,560,141	15,907	92	14,712,093	110,706	90
65-69	1,837,076	30,248	90	13,433,961	176,606	93
70-74	1,641,051	46,658	88	10,982,612	248,595	89
75-79	1,361,757	67,723	89	8,390,301	345,177	90
80-84	943,622	79,837	90	5,534,489	404,938	91
85-89	431,796	59,555	91	2,565,629	322,223	92
90-94	127,723	28,275	93	786,163	166,378	94
Total (ages 50-94)	9,143,640	337,715	90	68,749,292	1,844,037	92
WP44 2001-08	6,758,774	253,653	97	46,034,291	1,216,452	99

## Heavy pension amount band

All Male Pensioners with pensions under £1,500 pa						
Age group	Lives			Amounts		
	Exposed to risk	Actual deaths	100A/E S1PMA_H	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PMA_H
50-54	46,588	438	87	35,636	351	91
55-59	88,251	1,039	98	68,692	814	99
60-64	205,687	2,858	93	162,393	2,242	93
65-69	330,139	6,094	82	262,823	4,921	83
70-74	297,381	9,842	85	248,739	8,323	86
75-79	294,431	16,660	86	247,104	14,116	87
80-84	245,374	22,913	90	197,236	18,514	91
85-89	114,075	16,549	91	85,463	12,659	93
90-94	31,171	6,995	88	23,860	5,423	89
Total (ages 50-94)	1,653,097	83,388	88	1,331,944	67,363	89
WP44 2001-08	1,339,593	69,769	93	1,065,976	55,318	94

## Light pension amount band

All Male Pensioners with pensions £13,000 pa or above						
Age group	Lives			Amounts		
	Exposed to risk	Actual deaths	100A/E S1PMA_L	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PMA_L
50-54	70,651	298	170	1,508,487	6,130	164
55-59	255,361	1,110	111	5,719,314	23,310	104
60-64	378,093	2,299	102	8,539,654	47,721	94
65-69	291,352	3,048	107	6,502,507	64,313	101
70-74	220,581	3,846	101	4,913,384	81,599	96
75-79	163,624	5,471	101	3,595,335	115,915	97
80-84	107,760	6,744	95	2,298,962	140,850	94
85-89	52,054	5,901	92	1,085,386	122,586	91
90-94	16,174	3,240	97	344,283	68,529	96
Total (ages 50-94)	1,555,649	31,957	99	34,507,313	670,952	96
WP44 2001-08	931,626	17,934	105	21,233,272	391,931	102

### Appendix 3: Female All Pensioner data split by pension amount bands

All Females Pensioners with pensions under £750 pa						
Age group	Lives			Amounts		
	Exposed to risk	Actual deaths	100A/E S1PFL	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PFA
50-54	31,416	178	111	12,414	70	119
55-59	67,221	402	107	28,005	169	115
60-64	216,707	1,324	89	90,022	559	97
65-69	195,952	2,068	100	84,755	899	109
70-74	166,295	3,086	97	72,626	1,332	107
75-79	143,939	5,105	100	63,044	2,214	111
80-84	107,067	6,758	101	47,026	2,954	110
85-89	52,586	5,653	101	23,573	2,545	109
90-94	16,658	2,970	99	7,614	1,356	105
Total (ages 50-94)	997,840	27,544	100	429,077	12,098	108
WP44 2001-08	852,038	22,536	102	361,663	9,735	111

All Females Pensioners with pensions £750 pa - £1,500 pa						
Age group	Lives			Amounts		
	Exposed to risk	Actual deaths	100A/E S1PFL	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PFA
50-54	24,178	128	104	26,864	144	113
55-59	61,620	357	103	68,485	397	110
60-64	186,192	1,138	89	204,951	1,256	95
65-69	177,369	1,773	94	195,065	1,946	102
70-74	159,462	2,804	92	175,109	3,084	102
75-79	141,467	4,756	95	155,481	5,236	106
80-84	113,073	6,716	94	124,383	7,361	103
85-89	59,148	6,045	96	65,323	6,664	103
90-94	19,548	3,403	97	21,564	3,729	102
Total (ages 50-94)	942,057	27,120	95	1,037,224	29,818	103
WP44 2001-08	734,847	19,258	98	805,758	21,044	107

<b>All Females Pensioners with pensions £1,500 pa - £3,000 pa</b>						
<b>Age group</b>	<b>Lives</b>			<b>Amounts</b>		
	<b>Exposed to risk</b>	<b>Actual deaths</b>	<b>100A/E S1PFL</b>	<b>Exposed to risk (£'000)</b>	<b>Actual deaths (£'000)</b>	<b>100A/E S1PFA</b>
50-54	34,347	229	131	75,384	500	140
55-59	88,907	549	110	195,354	1,197	117
60-64	221,408	1,420	93	480,370	3,083	100
65-69	219,479	2,249	96	477,888	4,869	104
70-74	198,783	3,436	90	433,379	7,501	100
75-79	176,256	5,695	91	384,706	12,449	102
80-84	139,831	7,714	88	303,698	16,746	96
85-89	70,677	6,900	92	152,617	14,763	98
90-94	21,736	3,677	94	46,797	7,935	100
Total (ages 50-94)	1,171,424	31,869	92	2,550,193	69,044	100
WP44 2001-08	830,475	19,188	96	1,793,841	41,102	105

<b>All Females Pensioners with pensions £3,000 pa - £4,750 pa</b>						
<b>Age group</b>	<b>Lives</b>			<b>Amounts</b>		
	<b>Exposed to risk</b>	<b>Actual deaths</b>	<b>100A/E S1PFL</b>	<b>Exposed to risk (£'000)</b>	<b>Actual deaths (£'000)</b>	<b>100A/E S1PFA</b>
50-54	28,082	193	135	107,288	747	148
55-59	67,876	473	124	258,550	1,810	133
60-64	148,042	973	95	562,336	3,702	102
65-69	149,584	1,375	86	567,247	5,219	94
70-74	132,862	2,223	87	501,609	8,386	97
75-79	107,983	3,261	86	405,834	12,242	96
80-84	75,158	4,183	89	281,477	15,649	98
85-89	36,028	3,410	89	135,081	12,778	96
90-94	11,588	1,973	94	43,670	7,428	100
Total (ages 50-94)	757,204	18,064	90	2,863,092	67,962	98
WP44 2001-08	473,721	10,072	95	1,785,389	37,894	103



<b>All Females Pensioners with pensions £4,750 pa - £8,000 pa</b>						
<b>Age group</b>	<b>Lives</b>			<b>Amounts</b>		
	<b>Exposed to risk</b>	<b>Actual deaths</b>	<b>100A/E S1PFL</b>	<b>Exposed to risk (£'000)</b>	<b>Actual deaths (£'000)</b>	<b>100A/E S1PFA</b>
50-54	31,591	194	121	194,616	1,220	133
55-59	69,117	435	112	427,213	2,650	118
60-64	132,603	816	89	812,786	4,996	95
65-69	120,475	1,080	85	731,184	6,553	92
70-74	94,027	1,548	86	566,354	9,285	96
75-79	72,891	2,066	80	440,242	12,495	90
80-84	53,128	2,926	88	323,235	17,800	96
85-89	27,803	2,701	91	170,073	16,371	97
90-94	9,493	1,653	96	57,890	10,094	103
Total (ages 50-94)	611,127	13,419	89	3,723,593	81,464	97
WP44 2001-08	352,394	7,173	92	2,140,907	43,399	100

<b>All Females Pensioners with pensions £8,000 pa or above</b>						
<b>Age group</b>	<b>Lives</b>			<b>Amounts</b>		
	<b>Exposed to risk</b>	<b>Actual deaths</b>	<b>100A/E S1PFL</b>	<b>Exposed to risk (£'000)</b>	<b>Actual deaths (£'000)</b>	<b>100A/E S1PFA</b>
50-54	30,811	181	115	419,141	2,405	122
55-59	67,551	372	98	909,971	4,704	99
60-64	101,123	529	76	1,301,966	6,753	81
65-69	66,789	534	76	814,083	6,421	82
70-74	45,849	614	70	551,061	7,444	79
75-79	36,306	1,021	80	440,881	12,368	89
80-84	30,377	1,495	78	358,422	17,380	84
85-89	18,722	1,727	87	225,493	20,512	92
90-94	6,729	1,113	91	84,146	13,917	97
Total (ages 50-94)	404,257	7,586	82	5,105,165	91,902	89
WP44 2001-08	216,834	3,592	84	2,692,602	42,437	90

All Female Pensioners						
Age group	Lives			Amounts		
	Exposed to risk	Actual deaths	100A/E S1PFL	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PFA
50-54	180,425	1,103	120	835,707	5,085	129
55-59	422,291	2,588	109	1,887,578	10,927	110
60-64	1,006,076	6,200	89	3,452,431	20,348	92
65-69	929,648	9,079	92	2,870,221	25,908	93
70-74	797,277	13,711	90	2,300,137	37,033	94
75-79	678,842	21,904	91	1,890,187	57,005	95
80-84	518,634	29,792	91	1,438,241	77,890	94
85-89	264,964	26,436	94	772,160	73,634	97
90-94	85,752	14,789	95	261,681	44,460	100
Total (ages 50-94)	4,883,909	125,602	93	15,708,344	352,288	96
WP44 2001-08	3,460,309	81,819	97	9,580,160	195,611	100

### Heavy pension amount band

All Females Pensioners with pensions under £750 pa						
Age group	Lives			Amounts		
	Exposed to risk	Actual deaths	100A/E S1PFA_H	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PFA_H
50-54	31,416	178	111	12,414	70	110
55-59	67,221	402	104	28,005	169	105
60-64	216,707	1,324	84	90,022	559	85
65-69	195,952	2,068	93	84,755	899	93
70-74	166,295	3,086	91	72,626	1,332	90
75-79	143,939	5,105	96	63,044	2,214	95
80-84	107,067	6,758	97	47,026	2,954	96
85-89	52,586	5,653	98	23,573	2,545	98
90-94	16,658	2,970	96	7,614	1,356	96
Total (ages 50-94)	997,840	27,544	95	429,077	12,098	95
WP44 2001-08	852,038	22,536	98	361,663	9,735	97

### Light pension amount band

All Females Pensioners with pensions £4,750 pa or above						
Age group	Lives			Amounts		
	Exposed to risk	Actual deaths	100A/E S1PFA_L	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PFA_L
50-54	62,402	375	146	613,757	3,624	143
55-59	136,668	807	124	1,337,184	7,354	115
60-64	233,726	1,345	96	2,114,752	11,748	93
65-69	187,264	1,614	97	1,545,266	12,974	95
70-74	139,875	2,162	102	1,117,415	16,729	99
75-79	109,198	3,087	101	881,124	24,863	101
80-84	83,504	4,421	102	681,658	35,179	99
85-89	46,525	4,428	103	395,566	36,883	101
90-94	16,222	2,766	106	142,036	24,011	105
Total (ages 50-94)	1,015,384	21,005	103	8,828,757	173,366	101
WP44 2001-08	569,228	10,765	106	4,833,509	85,836	104

#### Appendix 4: Female Dependants data split by pension amount bands

All Females Dependants with pensions under £750 pa						
Age group	Lives			Amounts		
	Exposed to risk	Actual deaths	100A/E S1DFL	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1DFA
50-54	10,793	62	136	4,755	26	168
55-59	18,954	96	85	8,480	41	104
60-64	30,228	254	93	13,731	112	115
65-69	48,683	688	99	22,615	321	123
70-74	78,777	1,789	97	37,386	850	117
75-79	113,421	4,295	97	53,913	2,064	115
80-84	129,499	8,199	97	61,234	3,885	111
85-89	86,905	9,157	97	41,018	4,347	107
90-94	35,853	6,419	97	17,561	3,164	105
Total (ages 50-94)	553,114	30,959	97	260,693	14,813	110
WP44 2001-08	424,436	23,113	103	201,482	11,098	117

All Females Dependants with pensions £750 pa - £1,500 pa						
Age group	Lives			Amounts		
	Exposed to risk	Actual deaths	100A/E S1DFL	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1DFA
50-54	11,259	53	112	12,504	62	151
55-59	21,510	140	109	24,095	153	137
60-64	37,952	368	107	42,605	416	137
65-69	66,867	999	104	75,227	1,122	129
70-74	111,598	2,624	100	125,398	2,947	121
75-79	158,666	6,266	102	177,492	6,999	119
80-84	172,618	11,115	99	192,735	12,414	113
85-89	115,046	12,428	99	128,277	13,883	110
90-94	50,015	8,934	97	55,532	9,900	104
Total (ages 50-94)	745,532	42,927	99	833,865	47,895	112
WP44 2001-08	568,949	31,709	104	634,977	35,295	118

Please note that the “WP44 2001-08” comparison figures in the table above are switched around from those presented previously as they were incorrectly labelled in Working Paper 44.

<b>All Females Dependants with pensions £1,500 pa - £3,000 pa</b>						
<b>Age group</b>	<b>Lives</b>			<b>Amounts</b>		
	<b>Exposed to risk</b>	<b>Actual deaths</b>	<b>100A/E S1DFL</b>	<b>Exposed to risk (£'000)</b>	<b>Actual deaths (£'000)</b>	<b>100A/E S1DFA</b>
50-54	16,651	59	84	36,285	130	110
55-59	32,583	192	98	71,094	414	125
60-64	55,709	524	104	120,680	1,140	133
65-69	92,375	1,268	96	199,074	2,709	118
70-74	142,672	3,167	95	305,282	6,724	114
75-79	184,154	6,762	95	392,450	14,369	111
80-84	181,500	11,230	95	385,468	23,833	109
85-89	114,548	11,899	96	243,635	25,377	106
90-94	46,380	8,245	97	98,933	17,529	103
Total (ages 50-94)	866,571	43,346	96	1,852,902	92,224	108
WP44 2001-08	616,312	29,429	100	1,309,818	62,336	114

<b>All Females Dependants with pensions £3,000 pa - £4,750 pa</b>						
<b>Age group</b>	<b>Lives</b>			<b>Amounts</b>		
	<b>Exposed to risk</b>	<b>Actual deaths</b>	<b>100A/E S1DFL</b>	<b>Exposed to risk (£'000)</b>	<b>Actual deaths (£'000)</b>	<b>100A/E S1DFA</b>
50-54	11,576	46	94	44,071	174	121
55-59	22,290	132	99	84,619	502	128
60-64	35,002	285	91	132,571	1,064	114
65-69	51,406	654	89	194,393	2,476	111
70-74	73,622	1,457	85	277,519	5,466	102
75-79	94,129	2,978	82	354,772	11,183	95
80-84	94,990	5,330	86	359,236	20,142	98
85-89	60,995	6,085	92	230,340	23,020	102
90-94	24,880	4,236	92	93,526	15,982	99
Total (ages 50-94)	468,890	21,203	88	1,771,046	80,009	100
WP44 2001-08	293,912	12,653	92	1,105,150	47,550	104

<b>All Females Dependants with pensions £4,750 pa - £8,000 pa</b>						
<b>Age group</b>	<b>Lives</b>			<b>Amounts</b>		
	<b>Exposed to risk</b>	<b>Actual deaths</b>	<b>100A/E S1DFL</b>	<b>Exposed to risk (£'000)</b>	<b>Actual deaths (£'000)</b>	<b>100A/E S1DFA</b>
50-54	10,502	36	81	64,388	227	108
55-59	19,603	87	74	119,571	511	92
60-64	30,072	224	83	183,621	1,360	105
65-69	41,662	417	70	253,769	2,542	88
70-74	59,098	977	71	359,844	5,908	85
75-79	77,067	2,150	72	470,372	13,017	84
80-84	80,651	4,213	80	492,607	25,564	91
85-89	52,359	4,932	87	321,021	30,016	95
90-94	21,007	3,458	89	129,611	21,371	96
Total (ages 50-94)	392,021	16,494	82	2,394,804	100,517	92
WP44 2001-08	222,579	9,091	84	1,355,509	55,324	95

<b>All Females Dependants with pensions £8,000 pa or above</b>						
<b>Age group</b>	<b>Lives</b>			<b>Amounts</b>		
	<b>Exposed to risk</b>	<b>Actual deaths</b>	<b>100A/E S1DFL</b>	<b>Exposed to risk (£'000)</b>	<b>Actual deaths (£'000)</b>	<b>100A/E S1DFA</b>
50-54	7,298	20	65	98,491	290	90
55-59	14,360	53	62	194,500	727	80
60-64	22,125	144	73	303,237	1,810	85
65-69	29,107	241	58	396,851	3,164	70
70-74	39,367	585	64	530,947	7,537	74
75-79	51,637	1,325	66	695,066	16,907	74
80-84	55,053	2,519	70	731,793	33,192	79
85-89	38,072	3,296	79	509,852	43,691	87
90-94	16,406	2,598	86	227,447	36,312	93
Total (ages 50-94)	273,424	10,781	75	3,688,183	143,630	83
WP44 2001-08	159,936	6,077	76	2,247,623	84,879	85

All Female Dependants						
Age group	Lives			Amounts		
	Exposed to risk	Actual deaths	100A/E S1DFL	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1DFA
50-54	68,079	276	96	260,494	909	107
55-59	129,301	700	90	502,360	2,349	100
60-64	211,089	1,799	95	796,445	5,901	105
65-69	330,100	4,267	91	1,141,929	12,334	94
70-74	505,134	10,599	90	1,636,376	29,432	93
75-79	679,073	23,776	90	2,144,064	64,539	91
80-84	714,310	42,606	92	2,223,072	119,030	94
85-89	467,925	47,797	94	1,474,142	140,334	97
90-94	194,541	33,890	95	622,611	104,259	97
Total (ages 50-94)	3,299,552	165,710	93	10,801,493	479,087	95
WP44 2001-08	2,286,123	112,072	98	6,854,560	296,481	99

### Heavy pension amount band

All Females Dependants with pensions under £1,500 pa						
Age group	Lives			Amounts		
	Exposed to risk	Actual deaths	100A/E S1DFA_H	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1DFA_H
50-54	22,052	115	100	17,260	88	98
55-59	40,464	236	81	32,575	194	83
60-64	68,180	622	87	56,336	528	89
65-69	115,551	1,687	90	97,842	1,444	91
70-74	190,375	4,413	90	162,784	3,797	90
75-79	272,086	10,561	92	231,405	9,063	93
80-84	302,117	19,314	92	253,969	16,299	93
85-89	201,951	21,585	94	169,294	18,230	95
90-94	85,868	15,353	95	73,093	13,064	95
Total (ages 50-94)	1,298,645	73,886	93	1,094,558	62,708	94
WP44 2001-08	993,385	54,822	98	836,459	46,393	98

### Light pension amount band

All Females Dependants with pensions £4,750 pa or above						
Age group	Lives			Amounts		
	Exposed to risk	Actual deaths	100A/E S1DFA_L	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1DFA_L
50-54	17,800	56	139	162,879	517	141
55-59	33,963	140	126	314,071	1,238	121
60-64	52,197	368	138	486,858	3,169	128
65-69	70,769	658	109	650,620	5,706	102
70-74	98,465	1,562	105	890,791	13,445	100
75-79	128,704	3,475	100	1,165,437	29,924	95
80-84	135,703	6,732	102	1,224,400	58,756	98
85-89	90,431	8,228	104	830,873	73,707	101
90-94	37,413	6,056	102	357,058	57,683	101
Total (ages 50-94)	665,445	27,275	103	6,082,987	244,146	100
WP44 2001-08	382,515	15,168	107	3,603,132	140,203	103