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Self-administered Pension Schemes Mortality Committee

Working Paper 62

Report on the preliminary results of an analysis into the mortality experience of pensioners of self-administered pension schemes for the period 2003 to 2010 based on data collected by 30 June 2011

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1 Introduction

1.1 This report continues the series of working papers that set out the results of the investigation on the experience of data submitted to the SAPS Mortality investigation up to 30 June. A summary of reports previously published by the SAPS Mortality Committee is given in Appendix 1.

1.2 The Committee has again 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 2011, examining the mortality experience during the period 2003-2010. The format of this paper closely follows that used for the most recent annual reports, including Working Paper 51, which examined the mortality experience during the period 2002-2009 based on data submitted to 30 June 2010.

1.3 The Committee would again like to thank contributors for their continued efforts in submitting data to the investigation. Despite a cut-off date being set at 30 June, data is welcomed as it becomes available throughout the year. This enables more prompt processing of the data and release of individual scheme analyses back to firms.

1.4 The CMI is continually reviewing its processes. During the past year, the Committed reviewed the checks that are carried out on data submitted by firms. In light of this review the procedures for the checking of data have been strengthened and a number of new data checks are now carried out (e.g. checking for overlaps in data submitted for a single scheme covering different investigation periods and reviewing the data extract date).

1.5 This paper complies with the material requirements of the principles in the Board for Actuarial Standards' 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:

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2 Data

2.1 Since the SAPS Mortality investigation started, data has been received from a range of firms, principally the larger actuarial consultancies. Additionally, the Pension Protection Fund (PPF) has submitted data to the investigation for the second successive year. Paragraph 2.6 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, as noted in Working Paper 51, the PPF provides its data in a single submission, which includes data in respect of all schemes that have transferred into the PPF (including those with fewer than 500 pensioners).

2.3 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 could potentially have implications for the amounts analysis and, in particular, could affect the analyses by pension band.

2.4 However, the PPF submissions currently account for only around 0.2% of the total exposure analysed and the Committee is satisfied that the inclusion or exclusion of the PPF data does not materially affect the results of the analysis. The Committee will continue to monitor the impact of including data from the PPF in the dataset.

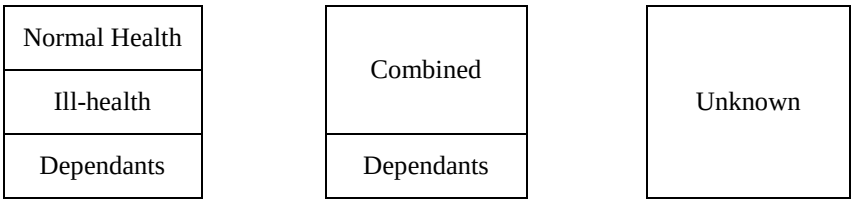
2.5 In recent years the CMI has carried out regular chasing exercises to encourage data submissions in advance of the 30 June cut-off each year. The total dataset, to 30 June 2011, comprises 749 submissions[1], compared to 680 submissions for the dataset underlying Working Paper 51. This comprises data from around 525 different schemes and continuation data has been submitted in respect of approximately 35% of these, covering later investigation periods. These submissions span a wide period from 1981-2011 and, consequently, a number of submissions are not analysed in this paper as they do not contribute exposure to the eight-year period being analysed, 2003-2010.

2.6 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 2004), it appears that over 50% of eligible pensioners have been captured by the investigation at some point throughout that year. This is compared with a similar level of coverage in the dataset underlying Working Paper 51. The volume of SAPS Mortality data is large

[1] Submissions and schemes are not the same. For each scheme there may be multiple data submissions covering different investigation periods.

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.

2.7 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:



2.8 The following tables summarise the data for each year during the period 2003 to 2010. 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). The only tables in which data for the Unknown pensioner category has been presented are Tables C and D in Section 4.

2.9 For the data summaries and results included in this report central exposure has been calculated, consistent with Working Papers 34 onwards.

Table A – Males

	Pensioners Lives	Pensioners Amounts (£'000)	Average Amounts (Pensioners) (£ pa)	Dependants Lives	Dependants Amounts (£'000)	Average Amounts (Dependants) (£ pa)
Exposure						
2003	1,157,970	7,523,060	6,497	27,974	49,822	1,781
2004	1,349,038	9,419,497	6,982	31,721	48,835	1,539
2005	1,427,949	10,473,044	7,334	36,709	56,523	1,540
2006	1,489,546	11,335,499	7,610	40,766	64,084	1,572
2007	1,422,112	11,364,128	7,991	38,840	64,844	1,670
2008	1,215,101	10,279,288	8,460	34,699	59,231	1,707
2009	769,405	6,567,727	8,536	23,709	38,803	1,637
2010	287,633	2,310,520	8,033	7,019	11,952	1,703
All	9,118,756	69,272,764	7,597	241,437	394,092	1,632
WP51 2002-09 *	9,276,776	69,442,599	7,486	230,889	383,760	1,662
Deaths						
2003	45,479	206,468	4,540	1,223	1,860	1,521
2004	50,661	255,766	5,049	1,366	2,137	1,565
2005	52,623	288,236	5,477	1,543	2,336	1,514
2006	53,667	306,588	5,713	1,710	2,170	1,269
2007	51,000	308,021	6,040	1,786	2,334	1,307
2008	43,213	280,330	6,487	1,624	2,050	1,262
2009	27,748	186,441	6,719	1,003	1,158	1,154
2010	10,701	69,427	6,488	295	390	1,323
All	335,092	1,901,277	5,674	10,550	14,436	1,368
WP51 2002-09 *	346,016	1,897,213	5,483	10,198	14,333	1,406

***** These figures are taken from WP51 and take no account of any subsequent changes or additions to the data.

Table B – Females

	Pensioners Lives	Pensioners Amounts (£'000)	Average Amounts (Pensioners) (£ pa)	Dependants Lives	Dependants Amounts (£'000)	Average Amounts (Dependants) (£ pa)
Exposure						
2003	582,470	1,572,652	2,700	401,390	1,179,156	2,938
2004	725,873	2,128,116	2,932	490,312	1,486,802	3,032
2005	841,732	2,590,358	3,077	524,203	1,671,689	3,189
2006	884,350	2,860,338	3,234	546,945	1,805,726	3,301
2007	808,906	2,756,623	3,408	532,023	1,882,443	3,538
2008	699,032	2,521,410	3,607	464,915	1,706,455	3,670
2009	500,429	1,900,306	3,797	307,708	1,154,596	3,752
2010	148,399	540,276	3,641	116,683	428,988	3,677
All	5,191,192	16,870,079	3,250	3,384,179	11,315,856	3,344
WP51 2002-09 *	4,992,465	16,133,784	3,232	3,423,908	11,229,124	3,280
Deaths						
2003	14,821	34,580	2,333	20,867	55,489	2,659
2004	18,581	48,870	2,630	23,843	64,872	2,721
2005	21,523	58,625	2,724	27,041	76,926	2,845
2006	22,426	65,073	2,902	28,700	83,454	2,908
2007	21,217	63,216	2,979	28,774	90,182	3,134
2008	18,429	59,014	3,202	26,554	87,227	3,285
2009	12,477	42,696	3,422	17,323	58,740	3,391
2010	3,688	12,652	3,430	7,055	23,814	3,376
All	133,162	384,725	2,889	180,157	540,705	3,001
WP51 2002-09 *	131,821	373,179	2,831	179,819	525,296	2,921

***** These figures are taken from WP51 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 eight-year period 2002-2009, presented in Working Paper 51 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 2008-2010 in future submissions. In particular, the data volumes for 2010 are very low so care should be taken when looking at figures presented for this year.

2.12 Some additional data has also been received covering earlier years, as some submissions partly cover historic periods. The impact of this is that exposure has

increased compared with Working Paper 51 for all years from 2004 onwards, instead of the exposure increasing just for the latter years, as may be expected.

2.13 A summary of the data split by pensioner type is shown alongside the results in Section 4, in Tables C and D.

2.14 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.

2.15 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.

2.16 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).

2.17 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 largely unchanged from that used for previous SAPS mortality experience reports. This methodology was described in full in Working Paper 34 and a summary was included in Section 3 of Working Paper 44. However, in light of recent volatility in RPI, the approach used to estimate missing pension amounts, i.e. if the start or end amount cannot be provided for a record, has been amended to try and better reflect the increases that may be applied in practice. The amended approach still uses RPI as a basis for the calculation but, given the recent negative RPI, now applies a minimum increase of 0% p.a. and incorporates a cap of 4.25% p.a. on RPI. This amendment has only been applied to data that has been submitted since the amendment was made earlier this year and hence applies to the vast majority of submissions made during the year to 30 June 2011.

3.2 For consistency, the approach used to estimate inter-valuation pension amounts, which underlie the amounts weighted exposure calculation, has been adjusted. It now also applies the same caps and collars used to estimate missing pension amounts. This amendment results in a slight change to the amounts weighted exposure that is derived. The amendment will affect amounts weighted exposure arising from all submissions in the dataset, including those whose data was received before the amendment was made.

3.3 As a result of these amendments, some sections of Working Paper 34, which sets out in detail the methodology and assumptions used for the SAPS Mortality analyses, are now out of date.

3.4 The remaining sections of Working Paper 34 are still valid and, apart from the changes noted above, the methodology and assumptions described in the paper are applicable for the results presented here.

3.5 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.

3.6 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.

3.7 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.

3.8 All tables have been applied **without** any projection for mortality improvements. As stated in Working Paper 35, the values of μ_x apply at different dates depending on which series of mortality tables they come from. The following table shows the designated dates for μ_x and, for comparison, q_x for each series of mortality tables used in this paper:

	"S1" Series	"00" Series
μ	1 March 2003	31 December 2000
q	1 September 2002	30 June 2000

3.9 The dataset analysed in this paper covers the period 2003-2010, 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 September 2006, which is three years and six months later than the designated midpoint for the "S1" series.

3.10 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.

3.11 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.

3.12 To provide readers with an indication of the range of, or uncertainty around, the mortality experience results, for the various subsets of data analysed, 95% confidence intervals have been estimated.

3.13 The 95% confidence intervals of the lives weighted 100A/Es are estimated by assuming that the number of deaths follows a Poisson distribution. The formulae below have been used:

$$Standard\ Deviation = \frac{\sqrt{A}}{E} \times 100$$

$$CI = \left[\frac{100A}{E} - 1.96 \times s.d., \frac{100A}{E} + 1.96 \times s.d. \right]$$

Where A is the actual number of deaths and E is the expected number of deaths according to the comparator table.

3.14 The formulae used for estimating 95% confidence intervals for amounts weighted 100A/Es are similar, with the standard deviation estimated as follows:

$$Standard\ Deviation = \sqrt{\frac{A}{E} \times \frac{\sum \pi_i{}^2 Exp_i}{(\sum \pi_i Exp_i)^2}} \times 100$$

Where π_i is the pension amount for life i and Exp_i is the exposure that life i contributes.

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 2003 to 2010.

Table C – Males

	Number or amount ETR	Number or amount of deaths	"00" Series Normal retirement tables		"S1" Series tables		"S1" Series table names
			100A/E	95% Confidence Interval for 100A/E	100A/E	95% Confidence Interval for 100A/E	
			2003-10	2003-10	2003-10	2003-10	
Lives:			PNML00	PNML00			
Normal Health	5,316,463	200,024	93	93 to 94	84	84 to 84	S1PML
Ill-health	867,153	29,808	151	149 to 153	132	130 to 133	S1PML
Combined	2,935,140	105,260	98	97 to 99	88	87 to 89	S1PML
All-Pensioner	*9,118,756*	*335,092*	*98*	*98 to 99*	*88*	*88 to 88*	*S1PML*
Dependant	241,437	10,550	108	106 to 110	97	96 to 99	S1PML
Unknown	750,912	29,986	104	102 to 105	93	92 to 94	S1PML
All	10,111,104	375,628	99	99 to 99	89	88 to 89	S1PML
Amounts (£'000):			PNMA00	PNMA00			
Normal Health	41,054,641	1,197,392	94	93 to 94	88	87 to 89	S1NMA
Ill-health	5,135,783	153,136	173	170 to 175	90	89 to 92	S1IMA
Combined	23,082,340	550,749	94	93 to 95	87	86 to 88	S1PMA
All-Pensioner	*69,272,764*	*1,901,277*	*97*	*97 to 98*	*90*	90 to 91	*S1PMA*
Dependant	394,092	14,436	128	123 to 132	119	114 to 123	S1PMA
Unknown	3,811,955	118,794	107	105 to 109	100	98 to 102	S1PMA
All	73,478,811	2,034,507	98	97 to 98	91	91 to 92	S1PMA

Note: the rounding conventions used lead to some confidence intervals appearing narrower than they are in practice. For example, the 95% confidence interval for 100A/E on a lives basis in fact extends from 98.6 to 99.2.

Table D – Females

	Number or amount ETR	Number or amount of deaths	"00" Series Normal retirement tables		"S1" Series tables		"S1" Series table names
			100A/E	95% Confidence Interval for 100A/E	100A/E	95% Confidence Interval for 100A/E	
			2003-10	2003-10	2003-10	2003-10	
Lives:			PNFL00				
Normal Health	3,118,589	83,780	90	89 to 91	85	85 to 86	S1PFL
Ill-health	605,523	13,273	146	144 to 149	131	129 to 133	S1PFL
Combined	1,467,080	36,109	100	99 to 101	94	93 to 95	S1PFL
All-Pensioner	*5,191,192*	*133,162*	*96*	*96 to 97*	*91*	*90 to 91*	*S1PFL*
Dependant	3,384,179	180,157	98	97 to 98	90	90 to 91	S1DFL
Unknown	522,075	22,158	103	102 to 104	98	97 to 100	S1PFL
All	9,097,446	335,477	98	97 to 98	93	92 to 93	S1PFL
Amounts (£'000):			PNFA00				
Normal Health	10,170,735	251,722	97	96 to 97	92	91 to 93	S1NFA
Ill-health	2,245,265	45,492	165	161 to 168	96	94 to 98	S1IFA
Combined	4,454,079	87,510	107	105 to 109	97	95 to 99	S1PFA
All-Pensioner	*16,870,079*	*384,725*	*104*	*103 to 105*	*96*	95 to 96	*S1PFA*
Dependant	11,315,856	540,705	99	98 to 100	94	93 to 94	S1DFA
Unknown	1,192,281	45,956	107	105 to 110	101	99 to 103	S1PFA
All	29,378,216	971,385	101	101 to 102	95	94 to 96	S1PFA

4.2 No analysis is carried out on records coded as "Unknown" because it is not possible to distinguish between Pensioners and Dependants, which we analyse separately. This subset of 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.

Results by calendar year

4.6 The following tables show the results for each year during the period 2003 to 2010. 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

	Males Pensioner Lives		**Male Pensioner Amounts**		**Male Dependant Lives**		**Male Dependant Amounts**	
	100A/E S1PML	**95% Confidence Interval for 100A/E S1PML**	**100A/E S1PMA**	**95% Confidence Interval for 100A/E S1PMA**	**100A/E S1PML**	**95% Confidence Interval for 100A/E S1PML**	**100A/E S1PMA**	**95% Confidence Interval for 100A/E S1PMA**
2003	101	100 to 102	103	101 to 105	102	96 to 107	119	106 to 131
2004	92	92 to 93	95	94 to 97	104	98 to 109	148	133 to 162
2005	90	89 to 91	94	93 to 96	102	97 to 108	139	126 to 151
2006	87	86 to 88	90	89 to 92	97	93 to 102	110	100 to 121
2007	85	84 to 85	88	87 to 89	97	92 to 101	111	100 to 122
2008	83	82 to 84	85	84 to 87	94	89 to 98	109	99 to 120
2009	80	79 to 81	82	81 to 84	90	84 to 96	102	90 to 115
2010	81	80 to 83	83	81 to 86	84	74 to 93	99	79 to 119
All	88	88 to 88	90	90 to 91	97	96 to 99	119	114 to 123
WP51 2002-09 *	90		92		99		118	

***** These figures are taken from WP51 and take no account of any subsequent changes or additions to the data.

Table F – Males "00" Series Normal retirements comparison

	Males Pensioner Lives		Male Pensioner Amounts		Male Dependant Lives		Male Dependant Amounts	
	100A/E PNML00	95% Confidence Interval for 100A/E PNML00	100A/E PNMA00	95% Confidence Interval for 100A/E PNMA00	100A/E PNML00	95% Confidence Interval for 100A/E PNML00	100A/E PNMA00	95% Confidence Interval for 100A/E PNMA00
2003	112	111 to 113	111	109 to 113	113	107 to 120	128	115 to 141
2004	103	102 to 104	103	101 to 104	115	109 to 122	159	143 to 175
2005	100	100 to 101	101	100 to 103	114	109 to 120	149	136 to 163
2006	97	96 to 98	97	96 to 99	108	103 to 114	119	108 to 130
2007	94	94 to 95	95	93 to 96	108	103 to 113	119	108 to 131
2008	92	91 to 93	92	90 to 93	104	99 to 109	117	106 to 129
2009	89	88 to 90	88	87 to 90	100	94 to 106	110	97 to 124
2010	90	89 to 92	89	86 to 92	93	82 to 104	107	85 to 128
All	98	98 to 99	97	97 to 98	108	106 to 110	128	123 to 132
WP51* 2002-09	101		99		110		127	

***** These figures are taken from WP51 and take no account of any subsequent changes or additions to the data.

4.7 As was the case in Working Paper 51, the male results indicate that the Pensioner mortality experience appears to have gradually improved during the period 2003-2010. The results for male Dependants are more volatile from year to year. Particular 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).

4.8 Experience for all male data subsets over the period 2003-2009 is very similar to the results presented, for the same period, in Working Paper 51. The extra data received in respect of these years has not significantly affected the results. The movement, for male Pensioners covering all years, from 90% S1PML in Working Paper 51 to 88% S1PML (shown in Table E) is primarily driven by the fact that calendar year 2002 is no longer included in the analysis, which exhibited relatively higher mortality.

4.9 The confidence intervals shown provide an indication of the significance of the results. Confidence intervals for the results on a lives basis are relatively narrow for most calendar years. However, the confidence interval around the results for 2010 is significantly wider owing to the small volume of data for this year. The fact that this confidence interval overlaps with that for 2009 suggests that the apparent increase in observed mortality from 2009 to 2010 is not of statistical significance.

Table G – Females "S1" Series Pensioner comparison

	Female Pensioner Lives		Female Pensioner Amounts		Female Dependant Lives		Female Dependant Amounts	
	100A/E S1PFL	95% Confidence Interval for 100A/E S1PFL	100A/E S1PFA	95% Confidence Interval for 100A/E S1PFA	100A/E S1DFL	95% Confidence Interval for 100A/E S1DFL	100A/E S1DFA	95% Confidence Interval for 100A/E S1DFA
2003	101	99 to 103	103	101 to 106	103	101 to 104	107	104 to 109
2004	94	93 to 96	100	98 to 102	90	89 to 91	94	92 to 96
2005	92	91 to 94	98	95 to 100	91	90 to 92	95	93 to 97
2006	90	89 to 91	97	95 to 99	90	89 to 91	92	90 to 94
2007	89	87 to 90	94	92 to 96	89	88 to 90	92	90 to 94
2008	88	87 to 89	93	91 to 95	90	89 to 91	94	92 to 96
2009	81	80 to 83	88	86 to 90	82	81 to 83	86	84 to 88
2010	87	84 to 90	95	90 to 99	88	86 to 90	91	87 to 95
All	91	90 to 91	96	95 to 96	90	90 to 91	94	93 to 94
WP51 2002-09 *	93		97		92		94	

***** These figures are taken from WP51 and take no account of any subsequent changes or additions to the data.

Table H – Females "00" Series Normal retirements comparison

	Female Pensioner Lives		Female Pensioner Amounts		Female Dependant Lives		Female Dependant Amounts	
	100A/E PNFL00	95% Confidence Interval for 100A/E PNFL00	100A/E PNFA00	95% Confidence Interval for 100A/E PNFA00	100A/E PNFL00	95% Confidence Interval for 100A/E PNFL00	100A/E PNFA00	95% Confidence Interval for 100A/E PNFA00
2003	108	106 to 110	113	110 to 116	112	111 to 114	114	111 to 117
2004	100	99 to 102	109	106 to 111	98	97 to 99	100	97 to 102
2005	98	97 to 100	106	104 to 108	99	98 to 100	100	98 to 103
2006	96	95 to 97	105	103 to 107	97	96 to 98	98	96 to 100
2007	94	93 to 95	102	99 to 104	96	95 to 97	97	95 to 99
2008	93	92 to 95	101	99 to 103	97	96 to 98	99	97 to 101
2009	86	85 to 88	95	93 to 98	88	87 to 90	91	89 to 93
2010	93	90 to 96	103	98 to 108	95	92 to 97	96	92 to 100
All	96	96 to 97	104	103 to 105	98	97 to 98	99	98 to 100
WP51 2002-09 *	98		105		100		100	

***** These figures are taken from WP51 and take no account of any subsequent changes or additions to the data.

4.10 Overall the mortality experience appears to have improved for female Pensioners during the period 2003-2010 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, and an increase in mortality from 2009 to 2010. With the exception of the apparent worsening of the mortality experience in 2010, which is visible for all subsets of the female data, on an amounts basis a more consistent improvement year on year is noticeable and the results for female Dependants also show an overall improvement from 2003 to 2010.

4.11 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

4.12 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.

4.13 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.

4.14 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

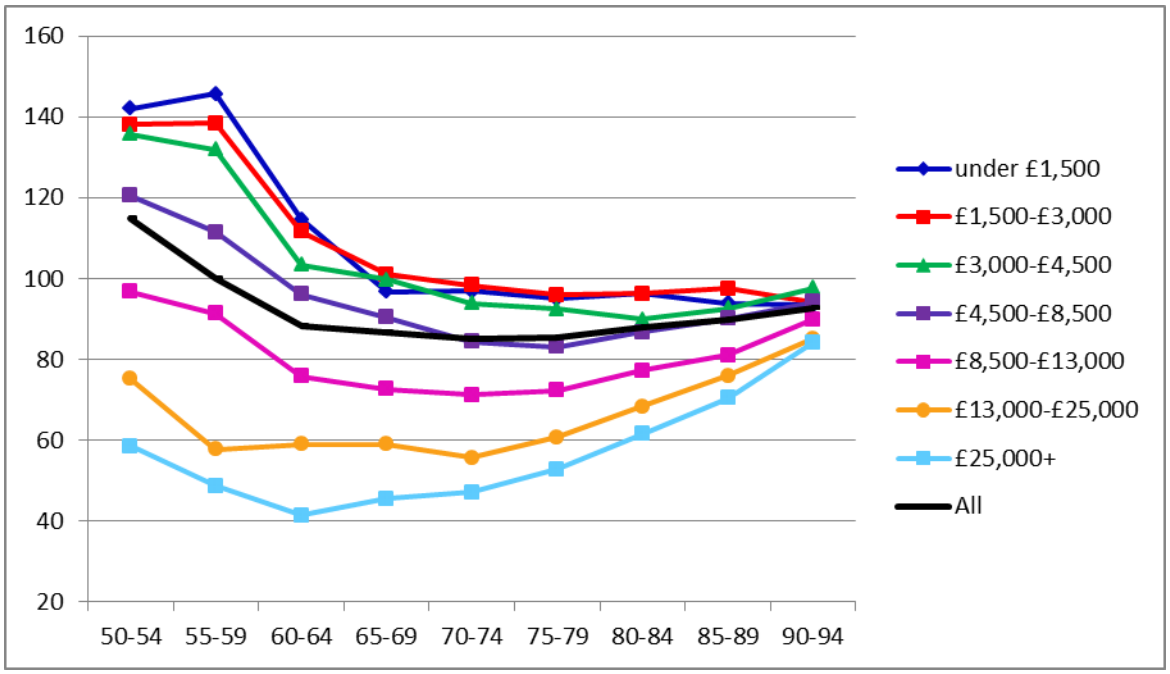
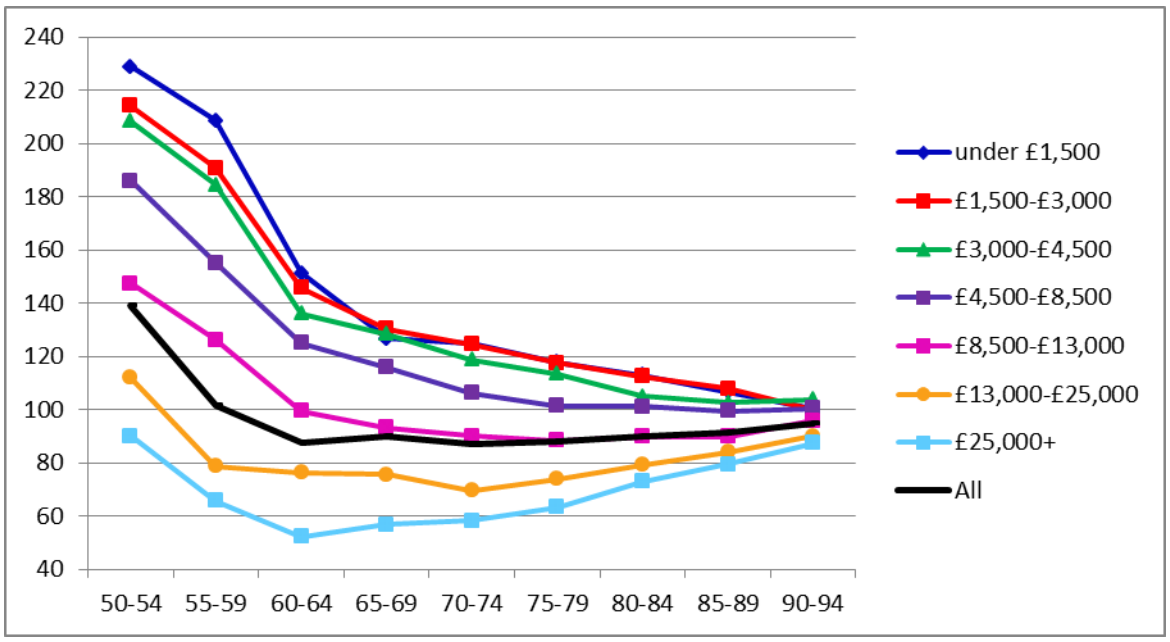


Chart 2: 100 A/E values for Male Pensioners Amounts compared to S1PMA



4.15 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.

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

4.17 The graduation of the S1PMA_H table was based upon the experience of pensioners receiving a pension of less than £1,500 p.a. From the results presented in Chart 2, it appears that, based on the latest dataset, pensioners receiving a pension of between £1,500 p.a. and £4,500 p.a. now experience similar levels of mortality to those in the lowest band. The Committee may consider broadening the band in the event that new "Heavy" and "Light" tables are graduated in the future.

Female Pensioner data subdivided by pension amount bands

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

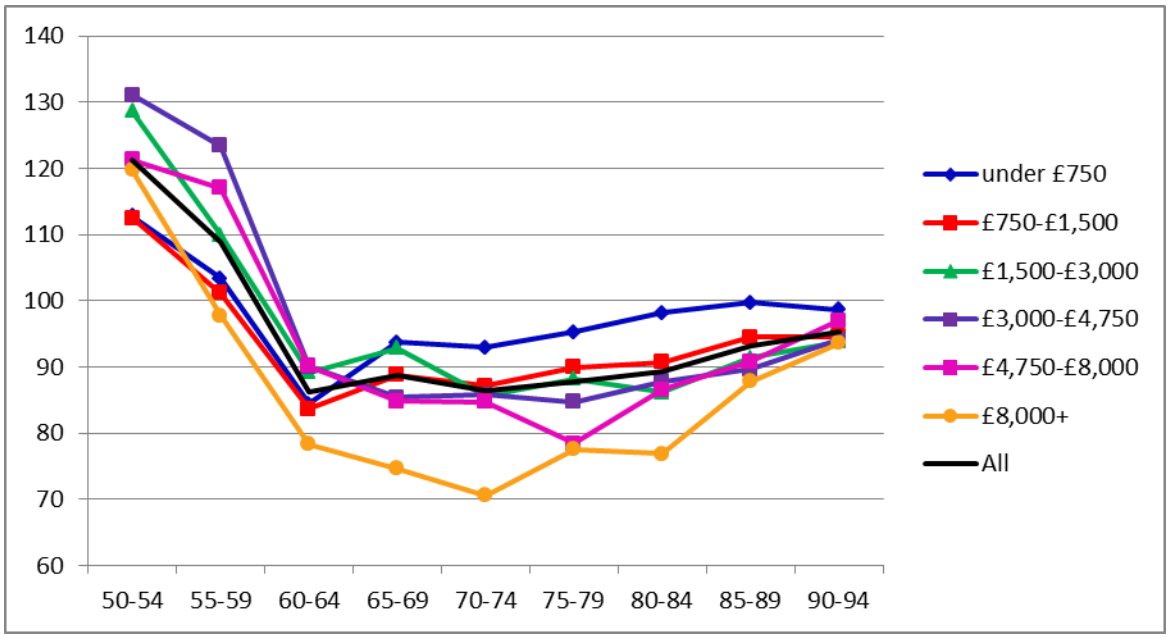
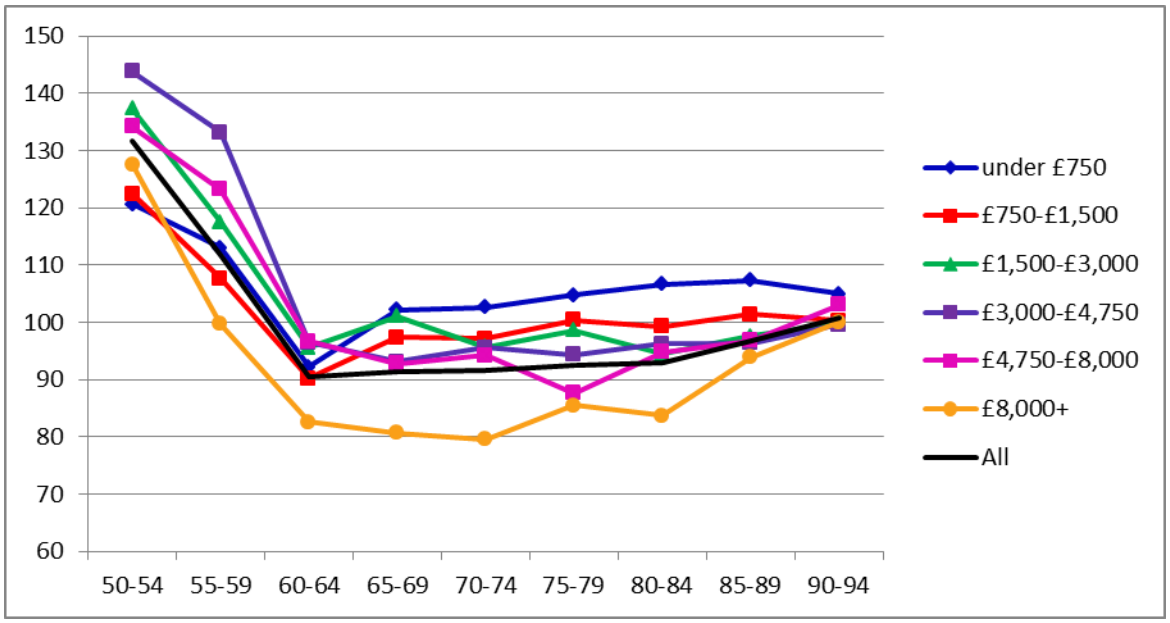


Chart 4: 100A/E values for Female Pensioner Amounts compared to S1PFA



4.18 Whilst the relative differences in mortality experience for the female Pensioner dataset are generally 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.

4.19 It was noted in Working Paper 51 that a greater proportion of female Pensioners in ill-health compared to male Pensioners would be consistent with the patterns observed above. However the Committee notes 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.

4.20 As has been observed previously, 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 p.a.) shows the heaviest mortality experience for Pensioners aged below 65. Above age 65, the relative differences are more in line with expectations.

4.21 An unusual feature of the graphs is that the mortality exhibited by the various pension bands appear to coalesce in the 60 to 64 age band. This same feature has been observed in previous datasets and is something that the Committee is considering investigating further.

Female Dependants data subdivided by amount bands

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

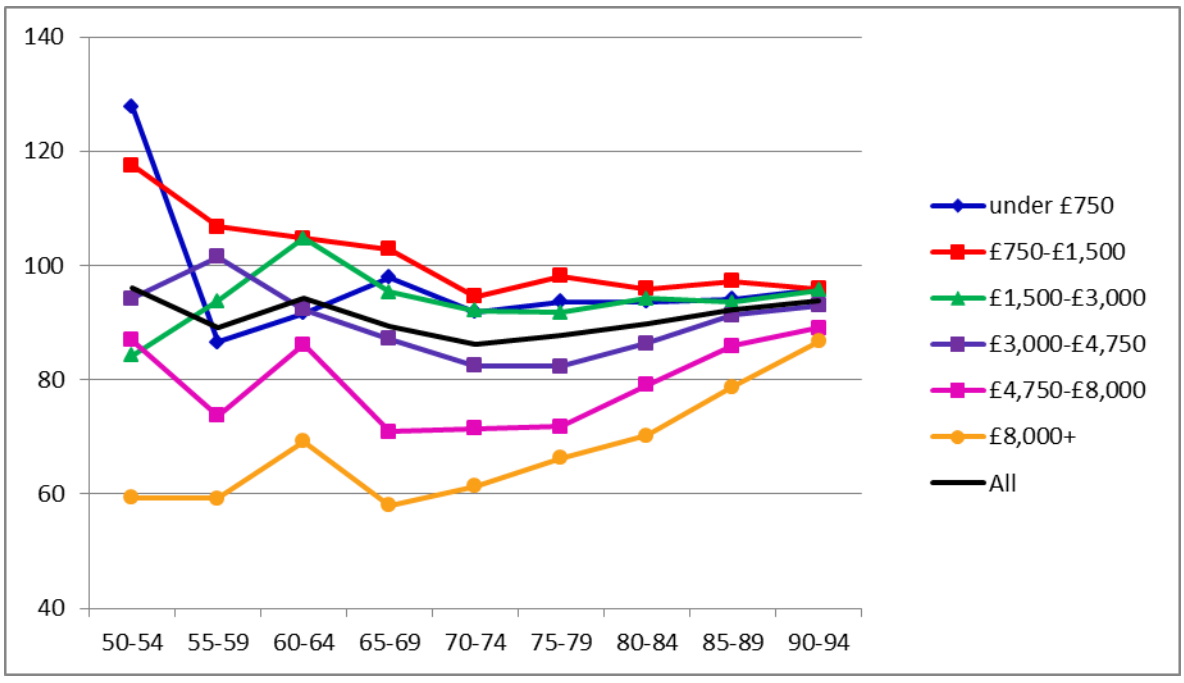
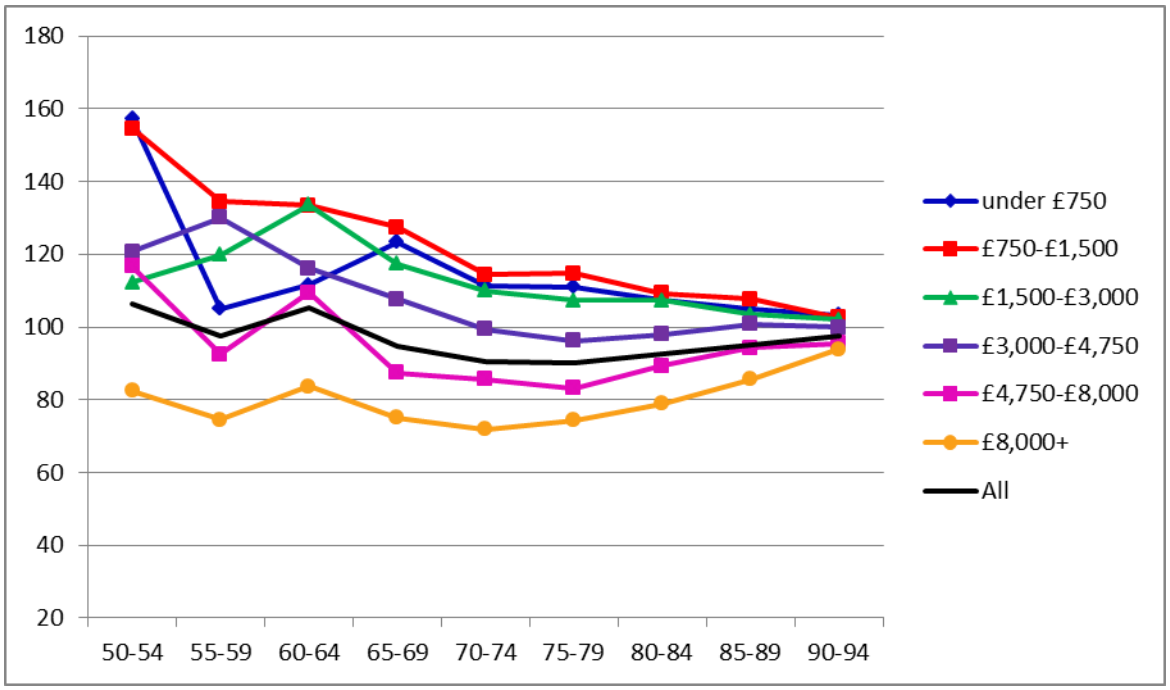


Chart 6: 100A/E values for Female Dependants Amounts compared to S1DFA



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. The same observations were also made about the previous dataset, covering years from 2002 to 2009, as noted in Working Paper 51.

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

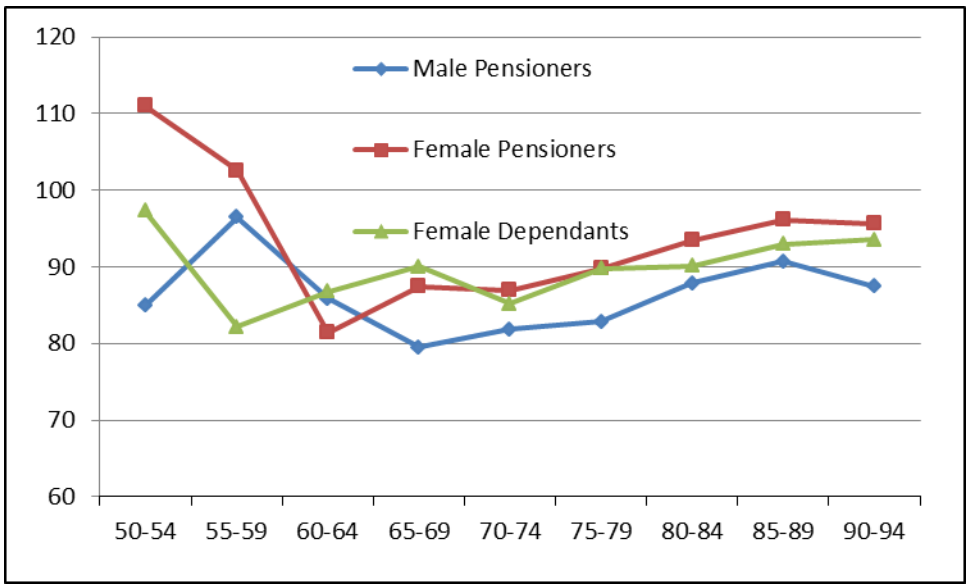
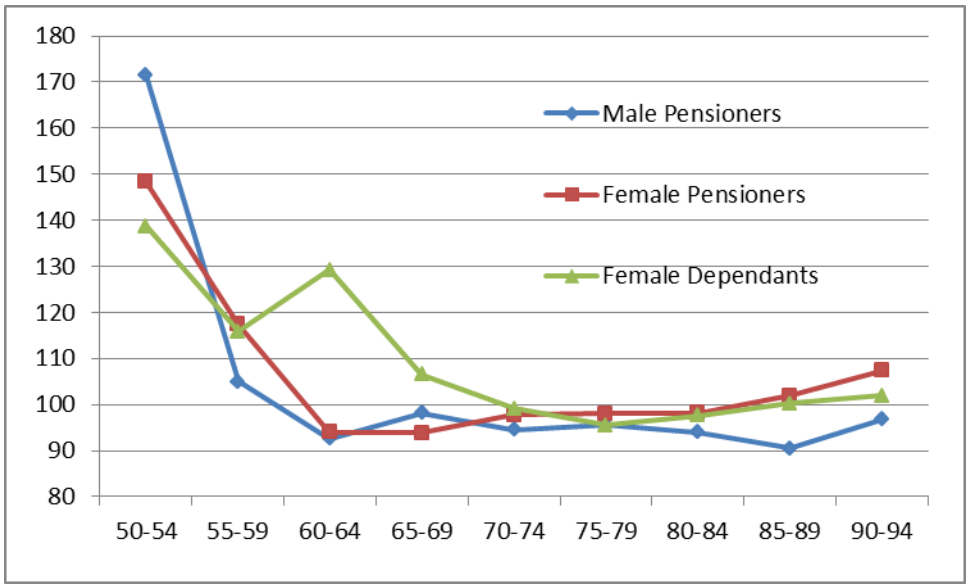


Chart 8: 100A/E values for Light pension band datasets



4.27 Charts 7 and 8 are little changed from their equivalents presented in Working Paper 51. 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 the "S1" Series graduated datasets.

5 Further investigations

5.1 The Committee is considering whether future analyses should also include a comparison of actual experience to that expected based on a comparator that has been adjusted to reflect historic improvements. To date the comparisons that have been presented are based on base mortality rates. It is proposed that the improvements that will be incorporated will be determined using the CMI Mortality Projections Model. The expected improvements will therefore be based on the smoothed rates of mortality improvements that have been observed in the population of England and Wales as a whole. It is hoped that this change in methodology will help readers understand whether the improvement in mortality experience by the SAPS dataset has been in line with expectations.

5.2 Given the perceived demand, the Committee has decided to proceed with the "S2" graduations, based on the 30 June 2011 dataset. Work is already underway and it is hoped that draft graduations will be available for consultation by the end of the year.

5.3 The Committee would also like to take this opportunity to encourage firms to submit data in advance of 30 June 2012, 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).

Working Paper 51: First released in draft form in November 2010 to CMI SAPS members and then made publicly available in May 2011. This presented the results of the experience analysis for the period 2002 to 2009 based on data collected by 30 June 2010.

Working Paper 53: First released in draft form in April 2011 to CMI SAPS members and then made publicly available in July 2011. This presented the results of an initial investigation into rates of mortality improvement for pensioners of self-administered pension schemes, over the period 2001 to 2009, and included a comparison of the experience against that of the England & Wales population dataset.

Working Paper 61: First released in draft form in January 2012 to CMI SAPS members and then made publicly available in April 2012. This presented the investigation into the mortality experience by industry classification of pensioners of self-administered pension schemes.

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

All Male Pensioners with pensions under £1,500						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1PML	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PMA
50-54	47,170	415	142	36,178	332	229
55-59	87,446	987	146	68,033	786	209
60-64	217,470	2,774	115	170,106	2,168	151
65-69	329,015	5,828	97	258,612	4,662	127
70-74	282,873	8,869	97	235,397	7,496	125
75-79	266,581	14,328	95	223,979	12,143	118
80-84	228,962	20,821	96	187,247	17,064	113
85-89	111,603	15,777	94	85,081	12,288	107
90-94	30,878	6,833	93	23,805	5,335	100
Total (ages 50-94)	1,601,997	76,632	96	1,288,439	62,273	116
WP51 2002-09	1,653,097	83,388	100	1,331,944	67,363	120

All Male Pensioners with pensions £1,500 pa - £3,000 pa						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1PML	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PMA
50-54	47,263	403	138	105,601	905	214
55-59	90,145	969	138	202,034	2,138	191
60-64	205,380	2,559	112	457,806	5,643	146
65-69	302,383	5,641	101	676,097	12,614	130
70-74	311,170	9,945	98	696,501	22,211	125
75-79	289,567	15,588	96	640,415	34,358	117
80-84	198,760	17,946	96	434,907	39,235	113
85-89	90,191	13,266	98	198,386	29,084	108
90-94	28,017	6,274	94	62,023	13,799	100
Total (ages 50-94)	1,562,877	72,591	98	3,473,770	159,987	116
WP51 2002-09	1,612,596	76,371	100	3,579,503	167,812	119

All Male Pensioners with pensions £3,000 pa - £4,500 pa						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1PML	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PMA
50-54	43,654	366	136	162,949	1,358	208
55-59	87,398	895	132	327,204	3,350	185
60-64	175,479	2,035	103	654,673	7,569	136
65-69	256,234	4,733	100	951,886	17,520	128
70-74	248,561	7,529	94	920,299	27,760	119
75-79	191,761	9,870	92	708,357	36,399	113
80-84	116,028	9,757	90	429,003	36,000	105
85-89	51,175	7,129	93	189,591	26,379	103
90-94	14,875	3,460	98	55,152	12,803	104
Total (ages 50-94)	1,185,166	45,774	94	4,399,115	169,137	113
WP51 2002-09	1,197,967	46,469	97	4,444,916	171,468	116

All Male Pensioners with pensions £4,500 pa - £8,500 pa						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1PML	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PMA
50-54	74,153	554	120	465,442	3,486	186
55-59	180,391	1,565	111	1,152,855	9,954	155
60-64	341,162	3,653	96	2,167,683	22,836	125
65-69	391,920	6,520	90	2,445,333	40,406	116
70-74	345,567	9,376	84	2,146,271	57,715	106
75-79	261,669	12,126	83	1,625,150	74,909	101
80-84	169,691	13,812	87	1,064,008	86,348	101
85-89	81,255	11,038	90	512,195	69,176	99
90-94	24,998	5,620	94	156,592	35,280	100
Total (ages 50-94)	1,870,804	64,264	88	11,735,528	400,109	105
WP51 2002-09	1,892,399	64,857	90	11,884,496	403,517	107

All Male Pensioners with pensions £8,500 pa - £13,000 pa						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1PML	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PMA
50-54	50,699	306	97	536,656	3,209	147
55-59	153,826	1,097	91	1,642,783	11,587	126
60-64	257,239	2,157	76	2,728,679	22,734	99
65-69	232,394	3,089	73	2,449,542	32,336	93
70-74	186,851	4,265	71	1,964,138	44,655	90
75-79	146,857	5,959	72	1,543,171	62,329	88
80-84	107,527	7,816	77	1,132,628	81,973	90
85-89	52,670	6,440	81	554,588	67,567	90
90-94	15,222	3,256	90	159,580	34,136	96
Total (ages 50-94)	1,203,286	34,385	77	12,711,764	360,526	92
WP51 2002-09	1,231,932	34,673	78	13,001,120	362,926	93

All Male Pensioners with pensions £13,000 pa - £25,000 pa						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1PML	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PMA
50-54	49,634	234	75	864,384	3,964	112
55-59	184,143	832	58	3,231,493	14,234	79
60-64	292,113	1,899	59	5,127,539	32,637	76
65-69	226,785	2,443	59	3,957,675	42,291	76
70-74	171,198	3,051	56	2,980,842	52,274	70
75-79	128,019	4,350	61	2,221,507	74,800	74
80-84	87,921	5,661	68	1,520,016	96,753	79
85-89	43,947	5,032	76	759,835	86,632	84
90-94	13,356	2,718	85	231,953	46,836	90
Total (ages 50-94)	1,197,116	26,220	66	20,895,244	450,421	78
WP51 2002-09	1,198,991	25,708	66	20,879,502	440,660	79

All Male Pensioners with pensions £25,000 pa or above						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1PML	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PMA
50-54	13,594	50	58	505,428	1,870	90
55-59	59,108	226	49	2,235,347	8,252	66
60-64	96,894	441	41	3,710,236	16,149	52
65-69	69,248	574	46	2,693,438	21,530	57
70-74	52,440	792	47	2,049,306	30,083	58
75-79	38,340	1,130	53	1,474,715	42,328	63
80-84	23,706	1,365	62	885,943	51,467	73
85-89	11,133	1,184	70	393,117	42,537	79
90-94	3,788	769	84	133,889	26,543	87
Total (ages 50-94)	368,252	6,531	57	14,081,420	240,758	68
WP51 2002-09	356,658	6,249	57	13,627,811	230,292	68

All Male Pensioners						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1PML	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PMA
50-54	326,168	2,328	115	2,676,638	15,124	139
55-59	842,457	6,571	100	8,859,749	50,300	101
60-64	1,585,737	15,518	88	15,016,723	109,735	87
65-69	1,807,978	28,828	87	13,432,583	171,358	90
70-74	1,598,660	43,827	85	10,992,753	242,195	87
75-79	1,322,794	63,351	85	8,437,295	337,267	88
80-84	932,596	77,178	88	5,653,752	408,839	90
85-89	441,973	59,866	90	2,692,792	333,663	91
90-94	131,134	28,930	93	822,995	174,731	95
Total (ages 50-94)	8,989,497	326,397	88	68,585,280	1,843,210	90
WP51 2002-09	9,143,640	337,715	90	68,749,292	1,844,037	92

Heavy pension amount band

All Male Pensioners with pensions under £1,500 pa						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1PMA_H	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PMA_H
50-54	47,170	415	81	36,178	332	85
55-59	87,446	987	94	68,033	786	96
60-64	217,470	2,774	86	170,106	2,168	86
65-69	329,015	5,828	78	258,612	4,662	80
70-74	282,873	8,869	81	235,397	7,496	82
75-79	266,581	14,328	82	223,979	12,143	83
80-84	228,962	20,821	87	187,247	17,064	88
85-89	111,603	15,777	89	85,081	12,288	91
90-94	30,878	6,833	87	23,805	5,335	87
Total (ages 50-94)	1,601,997	76,632	85	1,288,439	62,273	86
WP51 2002-09	1,653,097	83,388	88	1,331,944	67,363	89

Light pension amount band

All Male Pensioners with pensions £13,000 pa or above						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1PMA_L	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PMA_L
50-54	63,228	284	181	1,369,812	5,833	171
55-59	243,252	1,058	111	5,466,840	22,486	105
60-64	389,006	2,340	101	8,837,775	48,786	93
65-69	296,033	3,017	104	6,651,113	63,821	98
70-74	223,638	3,843	99	5,030,149	82,357	95
75-79	166,360	5,480	99	3,696,222	117,129	96
80-84	111,627	7,026	96	2,405,960	148,220	94
85-89	55,080	6,216	91	1,152,952	129,169	90
90-94	17,144	3,487	98	365,842	73,378	97
Total (ages 50-94)	1,565,368	32,751	98	34,976,665	691,179	95
WP51 2002-09	1,555,649	31,957	99	34,507,313	670,952	96

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

All Females Pensioners with pensions under £750 pa						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1PFL	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PFA
50-54	33,524	193	113	13,101	75	121
55-59	70,434	409	103	29,284	173	113
60-64	240,518	1,394	84	99,202	588	92
65-69	206,265	2,047	94	89,574	889	102
70-74	165,935	2,951	93	73,260	1,291	103
75-79	140,162	4,717	95	61,884	2,056	105
80-84	105,099	6,483	98	46,520	2,843	107
85-89	53,112	5,613	100	23,878	2,529	107
90-94	16,927	3,006	99	7,786	1,384	105
Total (ages 50-94)	1,031,975	26,813	96	444,489	11,827	105
WP51 2002-09	997,840	27,544	100	429,077	12,098	108

All Females Pensioners with pensions £750 pa - £1,500 pa						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1PFL	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PFA
50-54	24,528	141	112	27,216	157	122
55-59	64,121	365	101	71,244	403	108
60-64	206,756	1,189	84	227,677	1,318	90
65-69	186,375	1,761	89	204,991	1,944	97
70-74	163,157	2,723	87	179,282	2,994	97
75-79	143,888	4,585	90	158,257	5,048	100
80-84	116,343	6,663	91	127,900	7,301	99
85-89	63,548	6,372	94	70,169	7,024	101
90-94	20,549	3,507	95	22,713	3,863	100
Total (ages 50-94)	989,266	27,306	91	1,089,450	30,051	99
WP51 2002-09	942,057	27,120	95	1,037,224	29,818	103

All Females Pensioners with pensions £1,500 pa - £3,000 pa						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1PFL	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PFA
50-54	35,005	230	129	76,626	496	137
55-59	91,253	565	110	200,241	1,235	117
60-64	242,016	1,490	89	524,311	3,225	96
65-69	229,224	2,266	93	498,772	4,910	101
70-74	203,268	3,339	86	443,328	7,300	96
75-79	179,586	5,608	88	392,082	12,283	99
80-84	143,153	7,772	86	311,038	16,860	94
85-89	75,220	7,279	91	162,289	15,599	98
90-94	22,934	3,886	94	49,294	8,365	100
Total (ages 50-94)	1,221,659	32,435	90	2,657,982	70,274	98
WP51 2002-09	1,171,424	31,869	92	2,550,193	69,044	100

All Females Pensioners with pensions £3,000 pa - £4,750 pa						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1PFL	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PFA
50-54	29,371	196	131	112,440	761	144
55-59	68,358	475	123	260,336	1,820	133
60-64	156,912	977	90	595,506	3,708	97
65-69	153,807	1,400	85	583,265	5,298	93
70-74	136,071	2,235	86	513,913	8,432	96
75-79	110,165	3,283	85	414,011	12,327	94
80-84	76,674	4,217	88	286,991	15,766	96
85-89	37,235	3,535	90	139,525	13,237	96
90-94	11,731	2,004	94	44,219	7,527	100
Total (ages 50-94)	780,325	18,322	89	2,950,206	68,874	97
WP51 2002-09	757,204	18,064	90	2,863,092	67,962	98

All Females Pensioners with pensions £4,750 pa - £8,000 pa						
	Lives			Amounts		
Age group	**Exposed to risk**	**Actual deaths**	**100A/E S1PFL**	**Exposed to risk (£'000)**	**Actual deaths (£'000)**	**100A/E S1PFA**
50-54	32,714	202	121	201,462	1,272	134
55-59	69,728	459	117	431,340	2,786	123
60-64	139,898	871	90	858,255	5,346	97
65-69	125,320	1,126	85	761,067	6,840	93
70-74	96,147	1,549	85	579,040	9,315	94
75-79	73,216	2,023	78	441,762	12,232	88
80-84	53,522	2,913	86	325,775	17,724	95
85-89	29,055	2,807	91	177,957	17,053	97
90-94	9,996	1,753	97	61,085	10,701	103
Total (ages 50-94)	629,596	13,703	88	3,837,743	83,269	96
WP51 2002-09	611,127	13,419	89	3,723,593	81,464	97

All Females Pensioners with pensions £8,000 pa or above						
	Lives			Amounts		
Age group	**Exposed to risk**	**Actual deaths**	**100A/E S1PFL**	**Exposed to risk (£'000)**	**Actual deaths (£'000)**	**100A/E S1PFA**
50-54	32,574	199	120	446,164	2,686	128
55-59	71,011	390	98	966,180	5,049	100
60-64	110,636	594	78	1,433,337	7,549	83
65-69	71,625	560	75	874,766	6,764	81
70-74	47,972	644	71	577,521	7,851	80
75-79	37,853	1,036	78	461,394	12,488	86
80-84	31,436	1,535	77	371,752	17,984	84
85-89	19,799	1,853	88	237,305	22,130	94
90-94	7,126	1,215	94	88,330	15,161	100
Total (ages 50-94)	430,032	8,026	83	5,456,748	97,661	89
WP51 2002-09	404,257	7,586	82	5,105,165	91,902	89

All Female Pensioners						
	Lives			Amounts		
Age group	**Exposed to risk**	**Actual deaths**	**100A/E S1PFL**	**Exposed to risk (£'000)**	**Actual deaths (£'000)**	**100A/E S1PFA**
50-54	187,716	1,161	121	877,009	5,447	132
55-59	434,905	2,663	109	1,958,625	11,467	112
60-64	1,096,735	6,515	86	3,738,289	21,734	91
65-69	972,617	9,160	89	3,012,435	26,644	91
70-74	812,550	13,441	86	2,366,344	37,182	92
75-79	684,871	21,252	88	1,929,391	56,434	92
80-84	526,226	29,583	89	1,469,977	78,477	93
85-89	277,968	27,459	93	811,124	77,572	97
90-94	89,263	15,371	95	273,426	47,001	101
Total (ages 50-94)	5,082,853	126,605	91	16,436,619	361,957	95
WP51 2002-09	4,883,909	125,602	93	15,708,344	352,288	96

Heavy pension amount band

All Females Pensioners with pensions under £750 pa						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1PFA_H	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PFA_H
50-54	33,524	193	112	13,101	75	111
55-59	70,434	409	101	29,284	173	103
60-64	240,518	1,394	80	99,202	588	81
65-69	206,265	2,047	88	89,574	889	87
70-74	165,935	2,951	88	73,260	1,291	87
75-79	140,162	4,717	91	61,884	2,056	90
80-84	105,099	6,483	94	46,520	2,843	93
85-89	53,112	5,613	96	23,878	2,529	96
90-94	16,927	3,006	96	7,786	1,384	96
Total (ages 50-94)	1,031,975	26,813	92	444,489	11,827	92
WP51 2002-09	997,840	27,544	95	429,077	12,098	95

Light pension amount band

All Females Pensioners with pensions £4,750 pa or above						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1PFA_L	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1PFA_L
50-54	65,288	401	149	647,626	3,958	148
55-59	140,739	849	126	1,397,520	7,836	117
60-64	250,534	1,465	97	2,291,592	12,895	94
65-69	196,945	1,686	96	1,635,833	13,604	94
70-74	144,119	2,193	100	1,156,561	17,166	98
75-79	111,069	3,059	99	903,156	24,720	98
80-84	84,958	4,448	101	697,527	35,707	98
85-89	48,853	4,660	103	415,262	39,183	102
90-94	17,122	2,968	108	149,415	25,862	107
Total (ages 50-94)	1,059,628	21,729	103	9,294,491	180,931	101
WP51 2002-09	1,015,384	21,005	103	8,828,757	173,366	101

Appendix 4: Female Dependants data split by pension amount bands

All Females Dependants with pensions under £750 pa						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1DFL	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1DFA
50-54	10,561	57	128	4,640	24	157
55-59	18,340	95	87	8,140	40	105
60-64	28,998	239	92	13,072	103	112
65-69	45,333	634	98	20,924	297	123
70-74	72,309	1,555	92	34,230	740	111
75-79	104,301	3,806	94	49,493	1,826	111
80-84	122,324	7,506	94	57,862	3,570	107
85-89	86,501	8,867	94	40,673	4,205	105
90-94	36,206	6,390	96	17,609	3,131	103
Total (ages 50-94)	524,871	29,149	94	246,644	13,935	107
WP51 2002-09	553,114	30,959	97	260,693	14,813	110

All Females Dependants with pensions £750 pa - £1,500 pa						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1DFL	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1DFA
50-54	10,901	54	118	12,099	61	155
55-59	20,314	130	107	22,708	142	134
60-64	35,857	339	105	40,215	382	133
65-69	61,991	913	103	69,798	1,025	127
70-74	102,365	2,269	95	115,133	2,554	114
75-79	148,454	5,671	98	166,339	6,330	115
80-84	167,538	10,515	96	187,329	11,769	109
85-89	117,397	12,455	97	131,174	13,946	108
90-94	52,121	9,237	96	58,066	10,277	103
Total (ages 50-94)	716,938	41,583	97	802,862	46,486	109
WP51 2002-09	745,532	42,927	99	833,865	47,895	112

All Females Dependants with pensions £1,500 pa - £3,000 pa						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1DFL	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1DFA
50-54	16,000	57	84	34,938	128	112
55-59	30,907	174	94	67,517	377	120
60-64	53,668	507	105	116,364	1,104	134
65-69	88,335	1,204	95	190,824	2,578	117
70-74	137,109	2,949	92	294,416	6,253	110
75-79	183,745	6,535	92	392,864	13,930	107
80-84	187,167	11,486	94	397,991	24,412	107
85-89	124,049	12,614	94	263,513	26,839	104
90-94	49,432	8,706	96	105,216	18,454	102
Total (ages 50-94)	870,413	44,232	94	1,863,642	94,075	106
WP51 2002-09	866,571	43,346	96	1,852,902	92,224	108

All Females Dependants with pensions £3,000 pa - £4,750 pa						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1DFL	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1DFA
50-54	11,057	44	94	42,027	166	121
55-59	21,195	129	102	80,403	487	130
60-64	34,194	283	92	129,334	1,061	116
65-69	49,937	621	87	188,788	2,334	108
70-74	72,374	1,390	82	272,790	5,226	99
75-79	94,475	3,017	82	355,702	11,325	96
80-84	97,698	5,502	86	369,276	20,728	98
85-89	64,725	6,422	91	244,496	24,217	101
90-94	26,056	4,464	93	97,925	16,825	100
Total (ages 50-94)	471,711	21,872	88	1,780,741	82,368	100
WP51 2002-09	468,890	21,203	88	1,771,046	80,009	100

All Females Dependants with pensions £4,750 pa - £8,000 pa						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1DFL	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1DFA
50-54	10,079	37	87	61,931	236	117
55-59	18,805	83	74	114,910	495	93
60-64	29,811	230	86	182,236	1,407	109
65-69	40,856	412	71	249,152	2,494	87
70-74	58,070	967	71	353,762	5,836	86
75-79	76,754	2,139	72	468,922	12,910	83
80-84	81,860	4,229	79	500,385	25,653	89
85-89	55,252	5,155	86	339,259	31,414	94
90-94	22,150	3,636	89	136,590	22,449	95
Total (ages 50-94)	393,637	16,888	81	2,407,146	102,893	91
WP51 2002-09	392,021	16,494	82	2,394,804	100,517	92

All Females Dependants with pensions £8,000 pa or above						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1DFL	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1DFA
50-54	7,191	18	59	97,023	261	83
55-59	14,067	50	59	190,554	663	75
60-64	22,457	139	69	308,509	1,820	84
65-69	29,256	241	58	401,414	3,441	75
70-74	39,438	564	61	533,592	7,389	72
75-79	52,270	1,344	66	705,792	17,328	74
80-84	56,316	2,586	70	751,194	34,023	79
85-89	40,444	3,471	79	542,943	45,922	86
90-94	17,423	2,796	87	241,778	39,196	94
Total (ages 50-94)	278,862	11,209	75	3,772,799	150,043	83
WP51 2002-09	273,424	10,781	75	3,688,183	143,630	83

All Female Dependants						
	Lives			Amounts		
Age group	**Exposed to risk**	**Actual deaths**	**100A/E S1DFL**	**Exposed to risk (£'000)**	**Actual deaths (£'000)**	**100A/E S1DFA**
50-54	65,789	267	96	252,658	876	106
55-59	123,628	661	89	484,232	2,204	98
60-64	204,985	1,737	94	789,731	5,877	105
65-69	315,708	4,025	89	1,120,900	12,170	95
70-74	481,665	9,694	86	1,603,923	27,998	90
75-79	659,999	22,512	88	2,139,110	63,648	90
80-84	712,904	41,824	90	2,264,038	120,154	93
85-89	488,368	48,984	92	1,562,058	146,542	95
90-94	203,388	35,229	94	657,184	110,332	97
Total (ages 50-94)	3,256,433	164,933	91	10,873,834	489,801	94
WP51 2002-09	3,299,552	165,710	93	10,801,493	479,087	95

Heavy pension amount band

All Females Dependants with pensions under £1,500 pa						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1DFA_H	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1DFA_H
50-54	21,461	111	99	16,739	85	97
55-59	38,654	225	81	30,847	182	82
60-64	64,855	578	85	53,288	485	87
65-69	107,324	1,547	89	90,723	1,322	90
70-74	174,674	3,824	85	149,364	3,294	85
75-79	252,755	9,477	89	215,831	8,156	90
80-84	289,861	18,021	90	245,192	15,338	90
85-89	203,898	21,322	92	171,848	18,151	93
90-94	88,327	15,627	94	75,675	13,408	94
Total (ages 50-94)	1,241,809	70,732	91	1,049,506	60,421	91
WP51 2002-09	1,298,645	73,886	93	1,094,558	62,708	94

Light pension amount band

All Females Dependants with pensions £4,750 pa or above						
	Lives			Amounts		
Age group	Exposed to risk	Actual deaths	100A/E S1DFA_L	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E S1DFA_L
50-54	17,270	55	141	158,955	497	139
55-59	32,872	133	124	305,464	1,158	116
60-64	52,268	369	139	490,745	3,227	129
65-69	70,112	653	109	650,566	5,935	107
70-74	97,509	1,531	104	887,354	13,224	99
75-79	129,024	3,483	100	1,174,713	30,238	96
80-84	138,177	6,815	101	1,251,579	59,676	98
85-89	95,696	8,626	103	882,201	77,336	100
90-94	39,573	6,432	102	378,368	61,645	102
Total (ages 50-94)	672,500	28,097	103	6,179,945	252,936	100
WP44 2002-09	665,445	27,275	103	6,082,987	244,146	100