CONTINUOUS MORTALITY INVESTIGATION
INSTITUTE OF ACTUARIES • FACULTY OF ACTUARIES

Continuous Mortality Investigation

Self-administered Pension Schemes Mortality Committee

Working Paper 44

Report on the preliminary results of an analysis into the mortality experience of pensioners of self-administered pension schemes for the period 2001 to 2008 based on data collected by 30 June 2009

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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 This report examines the experience of data collected to 30 June 2009. In previous working papers, when an additional year's data has become available this has been combined with the data for previous years back to 2000; in particular, the data underlying the "S1" series of mortality tables covered the years 2000 to 2006. However, the Committee now intends to limit the annual analyses 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 2009, examining the mortality experience during the period 2001-2008.

1.3 The CMI SAPS Mortality Committee issued a draft Working Paper analysing the mortality experience of pensioners using data submitted by 30 June 2008 to SAPS members in March 2009. It was intended that the final version of the Working Paper would be issued in autumn 2009; however for a minority of schemes the data was found to be unreliable and so was re-submitted.

1.4 Due to the time elapsed waiting for the data to be resubmitted and the fact that a substantial amount of new data was submitted the Committee decided to publish this working paper – analysing the mortality experience of pensioners using data submitted by 30 June 2009 – rather than finalising the previous draft paper.

1.5 Some of the data re-submitted had been originally submitted before 30 June 2007 and hence included in the dataset underlying the "S1" series of mortality tables. The Committee has investigated the effect of this on the "S1" tables and concluded that there was no effect on the "Lives" tables but that, at some ages, the observed rates may have been slightly heavier than the "Amounts" tables' rates. The effect was less noticeable for males than for females due to the lower proportion of males in the re-submitted schemes, relative to the whole dataset.

1.6 The Committee's analysis of the experience including the new data received between 30 June 2007 and 30 June 2009 indicated that the effect of the re-submitted data was not material in the context of the results produced using the larger and

more recent dataset. The Committee concluded that it would be most productive to publish an analysis of the latest dataset against the "S1" tables. Consequently this paper has been published in final form immediately and has not first been issued in draft form to members.

1.7 The Committee would like to thank contributors for their efforts in increasing the volume and quality of the data submitted. A review of the data checks that are currently undertaken is due to be carried out and, following this, the Committee will consider additional safeguards that can be implemented to try and identify potential issues in future data submissions.

1.8 The approach taken in this working paper differs from previous working papers in two respects. The first is that the results are all based on **central** exposure, with the exception of those presented in Appendix 2, which shows a comparison of results based on initial and central exposure. More information about the Committee's decision to amend the approach used to calculate exposure, from initial to central, is included in Working Paper 34 and the supplementary paper "Comparison of approaches for calculating initial exposure", which can be found alongside Working Paper 34 on the CMI section of the Profession's website http://www.actuaries.org.uk/knowledge/cmi.

1.9 The second difference is that this is the first working paper published that presents results of actual numbers of deaths relative to expected numbers of deaths based on the "S1" Series of mortality tables, as set out in Working Paper 35. Comparisons against the "00" Series Normal retirement tables continue to be presented since it was thought that these would still be of value to practitioners.

1.10 Comments and feedback on this working paper should be sent to:

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2 Data

2.1 Data has been received from 21 firms, with the majority of these being the larger actuarial consultancies. The requirement for data submissions is that schemes have more than 500 current pensioners.

2.2 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 2009, comprises 591 submissions, compared to 367 submissions[1] for the dataset underlying the "S1" series of mortality tables, which included schemes submitted prior to 30 June 2007. The latest dataset comprises data from around 435 different schemes.

2.3 The Committee has estimated the market 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 years with the greatest volume of data, it appears that around 40% of pensioner data has been captured by the investigation. The volume of SAPS Mortality data is large but this analysis indicates that it could be much larger. In particular, the Committee is aware that very little data has been submitted in respect of public sector schemes. 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.

2.4 The data received to date covers periods from 1994 to 2009, though this report only provides results for the eight year period 2001 to 2008.

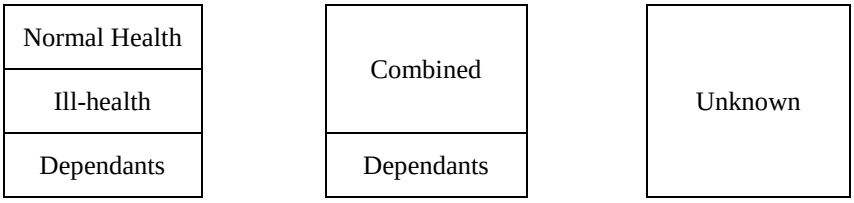
2.5 For the data summaries and results included in this report central exposure has been calculated, as was the case in Working Papers 34 and 35. This reflects the Committee's decision to move from calculating initial exposure, which had been the approach used for all analyses prior to Working Paper 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 Paper 34 on the CMI section of the Profession's website http://www.actuaries.org.uk/knowledge/cmi.

2.6 A comparison of the data and results produced using initial exposed to risk and central exposed to risk is included in Appendix 2 of this paper.

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

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

members and dependants). The standard combinations of pensioner types included in a data submission are shown in the following diagram.



However, not all submissions fall into these standard categories and, in particular, a common deviation is for only Pensioners or only Dependants to be provided for a scheme.

2.8 The following tables summarise the data for each year during the period 2001 to 2008. 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

	Pensioners Lives	**Pensioners Amounts (£'000)**	**Average Amounts (Pensioners) (£ pa)**	**Dependants Lives**	**Dependants Amounts (£'000)**	**Average Amounts (Dependants) (£ pa)***
Exposure						
2001	918,990	5,787,652	6,298	19,274	30,963	1,606
2002	1,208,081	7,685,091	6,361	25,517	42,696	1,673
2003	1,058,163	6,582,778	6,221	23,833	43,797	1,838
2004	1,040,914	6,836,503	6,568	22,660	37,051	1,635
2005	1,113,895	8,089,182	7,262	25,463	41,566	1,632
2006	869,406	6,350,242	7,304	23,666	38,102	1,610
2007	529,224	4,065,547	7,682	12,907	24,003	1,860
2008	136,009	1,201,412	8,833	3,087	6,311	2,044
All	6,874,683	46,598,408	6,778	156,407	264,489	1,691
WP35 2000-06 (grad. dataset)*	4,999,887	32,815,319	6,563	100,484	172,011	1,712
Deaths						
2001	34,169	155,696	4,557	841	1,059	1,259
2002	47,008	214,244	4,558	1,135	1,639	1,444
2003	42,465	184,434	4,343	973	1,586	1,630
2004	39,708	182,088	4,586	977	1,752	1,793
2005	40,477	211,374	5,222	1,063	1,813	1,706
2006	31,096	164,619	5,294	968	1,292	1,335
2007	19,338	106,015	5,482	590	956	1,620
2008	4,665	28,950	6,206	161	224	1,392
All	258,926	1,247,420	4,818	6,708	10,321	1,539
WP35 2000-06 (grad. dataset)*	194,025	864,065	4,453	4,426	6,587	1,488

***** These figures are taken from WP35 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						
2001	429,394	1,165,394	2,714	326,403	821,618	2,517
2002	560,754	1,516,093	2,704	423,995	1,155,576	2,725
2003	537,227	1,404,969	2,615	364,236	1,061,831	2,915
2004	533,792	1,411,037	2,643	351,823	1,074,622	3,054
2005	622,957	1,786,569	2,868	357,069	1,153,181	3,230
2006	521,369	1,537,380	2,949	304,067	998,847	3,285
2007	267,147	828,487	3,101	197,364	698,959	3,541
2008	70,089	230,278	3,286	44,302	167,844	3,789
All	3,542,729	9,880,205	2,789	2,369,258	7,132,478	3,010
WP35 2000-06 (grad. Dataset)*	2,364,767	6,420,049	2,715	1,672,940	4,697,266	2,808
Deaths						
2001	10,534	26,235	2,491	15,464	33,630	2,175
2002	14,129	34,066	2,411	21,709	52,780	2,431
2003	13,397	30,123	2,249	19,208	51,076	2,659
2004	12,813	29,639	2,313	16,988	47,400	2,790
2005	14,996	37,266	2,485	18,033	52,708	2,923
2006	11,770	29,986	2,548	15,632	44,216	2,829
2007	6,227	15,575	2,501	10,515	32,461	3,087
2008	1,746	3,822	2,189	2,395	7,781	3,249
All	85,612	206,713	2,415	119,944	322,052	2,685
WP35 2000-06 (grad. dataset)*	61,298	140,186	2,287	83,619	203,617	2,435

***** These figures are taken from WP35 and take no account of any subsequent changes or additions to the data.

2.9 For comparison, the total lives and amounts data, covering the period 2000-2006, used for the "S1" graduations has been included in Tables A and B.

2.10 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 2006-2008 in future submissions. In particular, the data volumes for 2008 are very low so care should be taken when looking at figures presented for this year.

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

2.12 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.

2.13 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.

2.14 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).

2.15 To allay data contributors' concerns over data protection legislation regarding submitting postcode data, the CMI has recently 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/knowledge/cmi/cmi_data.

3 Methodology

3.1 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.

3.2 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.

3.3 In working papers prior to Working Paper 34, where initial exposed to risk (determined on a day-count basis based on the age definition of age last birthday) was used, the expected number of deaths was calculated by multiplying the exposure at each age, x, by the value of q_x from the selected comparison table. Using q_x, which applies from exact age x to x+1, is consistent with the use of initial exposure.

3.4 Where central exposed to risk is calculated, based on the age definition of age last birthday, the expected number of deaths can be approximated by multiplying the exposure at each age, x, by the value of $\mu_{x+½}$ for the comparison table. A more accurate calculation of the expected number of deaths could be obtained using m_x, however, since graduated values of m_x are not available, values of $\mu_{x+½}$ are used as an approximation. See Section 4 of Working Paper 34 for more information.

3.5 Although the various "S1" Series tables and the "00" Series Normal retirement tables have been used in the analyses included in this paper, values of $\mu_{x+½}$ are not contained in the published tables. The values for non-integer ages have been calculated using the formulae used to derive the graduated rates. Details of the formulae used for the "S1" Series are presented in Working Paper 35 and for the "00" Series they are presented in Working Paper 22 and CMIR 23.

3.6 The "00" Series Normal retirements tables were also used to obtain the expected number of deaths in Working Paper 31. Readers comparing the results need to be aware of the inconsistency between the figures in Working Paper 31, which were based on initial exposure and values of q_x, and those presented here, which are based on central exposure and values of $\mu_{x+½}$. However, the comparison of results using the two approaches, in Appendix 2, indicates that the differences between the two approaches are only noticeable at the older ages.

3.7 All tables have been applied **without** any projection for mortality improvements. 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

3.8 The actual point to which mortality rates graduated from a dataset apply depends on how data volumes are spread and how experience varies over the period covered by the dataset. The dataset underlying the "S1" graduations has a very uneven spread of exposure across the period, due to the frequency of pension scheme valuations, so the designated dates were selected based on the weighted mid-point of the data. There is less variability in the data volumes underlying the "00" Series so the designated dates were based on the un-weighted mid-point.

3.9 The dataset analysed in this paper covers the period 2001-2008, compared with 2000-2006, which the "S1" graduations were based on. As a result, the weighted mid-point of the dataset underlying this experience analysis has moved and is around 1 July 2004, which is one year and four months later than the designated midpoint taken for the "S1" series.

3.10 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.

3.11 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 is insufficient for an analysis to be performed.

3.12 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 2001 to 2008.

Table C – Males

	Number or amount EtR	Number or amount of deaths	"S1" Series		"00" Series	
			100A/E	Table	100A/E	Table
Lives:						
Normal Health	3,232,546	125,323	92	S1PML	103	PNML00
Ill-health	619,100	21,237	145	S1PML	167	PNML00
Combined	3,023,037	112,366	95	S1PML	106	PNML00
All-Pensioner	*6,874,683*	*258,926*	*97*	S1PML	*108*	PNML00
Dependant	156,407	6,708	104	S1PML	117	PNML00
Unknown	626,698	24,948	97	S1PML	107	PNML00
All	7,657,787	290,582	97	S1PML	108	PNML00
Amounts (£'000):						
Normal Health	21,986,822	623,799	98	S1NMA	104	PNMA00
Ill-health	3,309,335	96,903	97	S1IMA	194	PNMA00
Combined	21,302,251	526,717	95	S1PMA	102	PNMA00
All-Pensioner	*46,598,408*	*1,247,420*	*99*	S1PMA	*107*	PNMA00
Dependant	264,489	10,321	125	S1PMA	134	PNMA00
Unknown	3,087,318	94,582	103	S1PMA	111	PNMA00
All	49,950,214	1,352,322	99	S1PMA	107	PNMA00

Table D – Females

	Number or amount EtR	Number or amount of deaths	"S1" Series		"00" Series	
			100A/E	Table	100A/E	Table
Lives:						
Normal Health	1,672,353	41,739	92	S1PFL	97	PNFL00
Ill-health	417,528	8,353	139	S1PFL	157	PNFL00
Combined	1,452,848	35,520	97	S1PFL	103	PNFL00
All-Pensioner	*3,542,729*	*85,612*	*99*	S1PMA	*107*	PNMA00
Dependant	2,369,258	119,944	97	S1DFL	106	PNFL00
Unknown	426,454	18,439	102	S1PFL	107	PNFL00
All	6,338,441	223,995	100	S1PFL	105	PNFL00
Amounts (£'000):						
Normal Health	4,416,444	98,390	97	S1NFA	102	PNFA00
Ill-health	1,334,769	24,231	98	S1IFA	178	PNFA00
Combined	4,128,992	84,092	99	S1PFA	110	PNFA00
All-Pensioner	*9,880,205*	*206,713*	*101*	S1PMA	*111*	PNMA00
Dependant	7,132,478	322,052	98	S1DFA	105	PNFA00
Unknown	920,611	34,992	105	S1PFA	111	PNFA00
All	17,933,294	563,756	100	S1PFA	107	PNFA00

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. For all pensioner types except the male Dependants, the comparison table is a close fit

to the data. The experience of the male Dependants is noticeably heavier than that expected based on the Pensioner table.

4.6 Where direct comparison is possible, it appears that the mortality experience of this dataset is slightly lighter than that underlying the "S1" graduations. However, it is not necessarily possible to infer any information about improvements from this because the datasets do not form a proper longitudinal set. For example, different schemes will be represented in different periods.

Results by calendar year

4.7 The following tables show the results for each year during the period 2001 to 2008. 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			
	Male Pensioner Lives S1PML	**Male Pensioner Amounts S1PMA**	**Male Dependant Lives S1PML**	**Male Dependant Amounts S1PMA**
100A/E				
2001	103	109	109	115
2002	102	107	103	120
2003	102	103	99	115
2004	95	98	107	154
2005	93	96	106	141
2006	90	92	104	110
2007	88	89	102	114
2008	81	85	110	119
All	97	99	104	125
WP35 2000-06 (grad. dataset)*	100	100	103	123

***** These figures are taken from WP35 and take no account of any subsequent changes or additions to the data.

Table F – Males "00" Series Normal retirements comparison

	100A/E based on "00" Series Normal retirement tables			
	Male Pensioner Lives PNML00	**Male Pensioner Amounts PNMA00**	**Male Dependant Lives PNML00**	**Male Dependant Amounts PNMA00**
100A/E				
2001	115	118	121	123
2002	114	115	115	130
2003	113	112	111	124
2004	106	106	120	167
2005	104	104	119	152
2006	100	100	116	119
2007	98	96	114	122
2008	91	91	122	128
All	108	107	117	134

4.8 The male results indicate that the Pensioner mortality experience appears to have gradually improved during the period 2001-2007. The improvement to 2008 appears much greater, although (as noted earlier) there is relatively little data in respect of 2008 and so this may change as further data is included. The results for male Dependants are more volatile from year to year and do not show a corresponding overall improvement. 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). The Committee is currently undertaking further work to investigate any emerging trends.

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**
100A/E				
2001	100	106	99	102
2002	100	105	103	107
2003	101	103	103	107
2004	97	102	93	96
2005	95	100	94	96
2006	92	97	93	90
2007	92	93	92	91
2008	93	85	92	90
All	97	101	97	98
WP35 2000-06 (grad. dataset)*	100	100	99	99

***** These figures are taken from WP35 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
100A/E				
2001	107	116	109	109
2002	107	115	113	114
2003	108	113	113	114
2004	104	112	101	102
2005	102	109	102	102
2006	98	106	101	96
2007	98	103	100	97
2008	100	94	100	96
All	104	111	106	105

4.9 Overall the mortality experience appears to have improved for female Pensioners during the period 2001-2008 but the level of improvement is lower than that observed for male Pensioners for the same period. The experience does not steadily improve during the period. The results indicate that the mortality experience on a lives basis was almost level for the period 2001-2003 and then improved during 2003-2006. This was followed by a slight deterioration in 2008. On an amounts basis a more consistent improvement year on year is noticeable, with a larger step improvement to 2008. The results for female Dependants also show an overall improvement from 2003-2008.

4.10 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.

Results by pension amount bands

4.11 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 3-5.

4.12 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

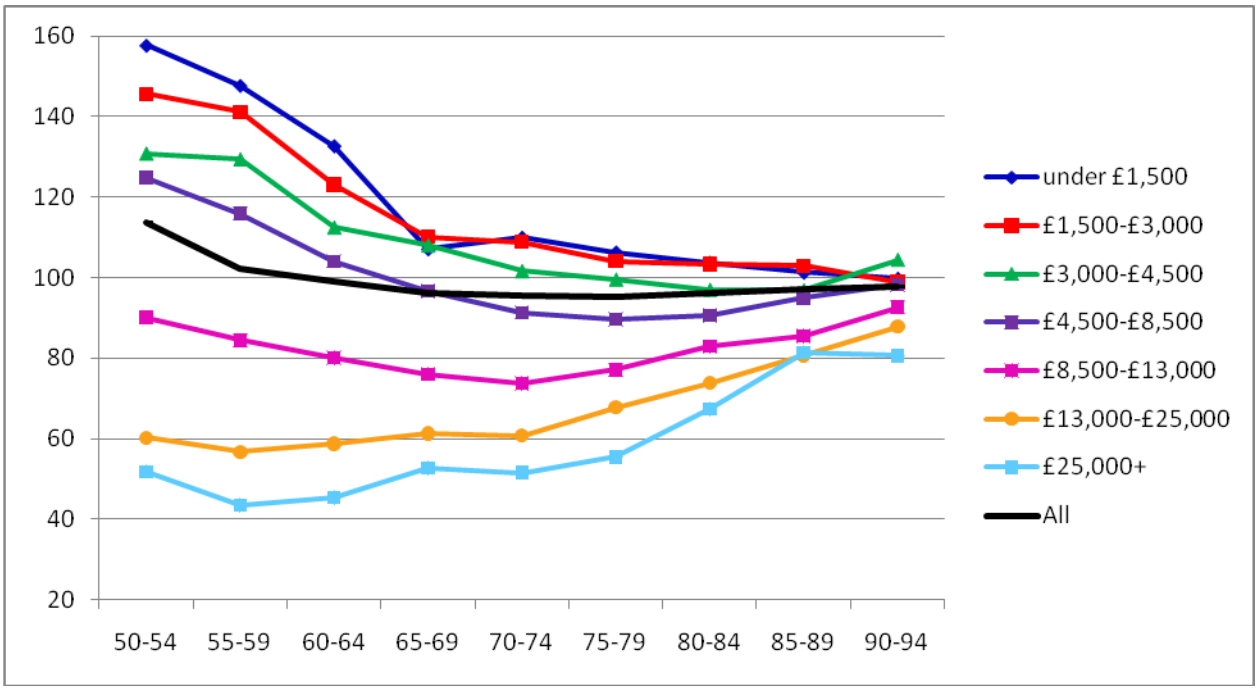
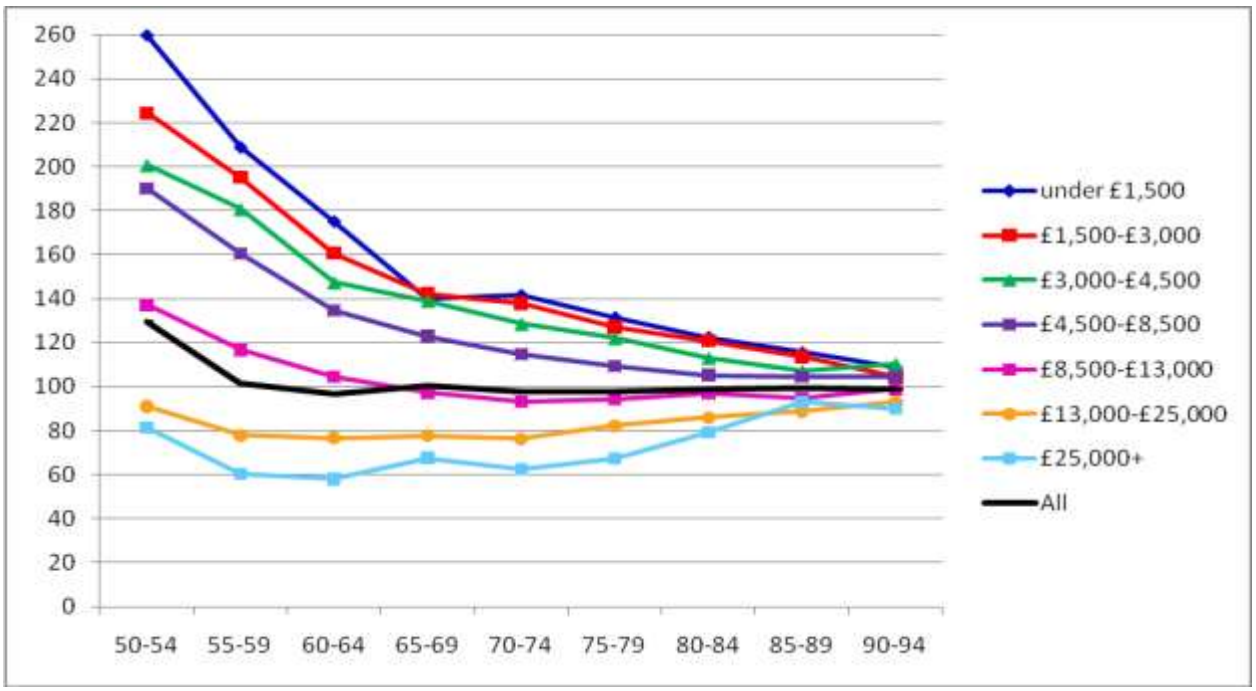


Chart 2: 100 A/E values for Male Pensioners Amounts compared to S1PMA



4.13 Analyses by pension amount have been presented in a number of previous working papers. These analyses have illustrated the relative difference in mortality experience for members with pensions of different sizes. This difference is also apparent in the latest dataset. The patterns observed are similar to those seen in the dataset underlying the "S1" graduations and earlier datasets.

4.14 The male Pensioner dataset shows a marked difference in mortality experience at the younger ages, which diminishes significantly, in relative terms, at older ages. This feature is consistent with the results presented in Working Paper 31.

Female Pensioner data subdivided by pension amount bands

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

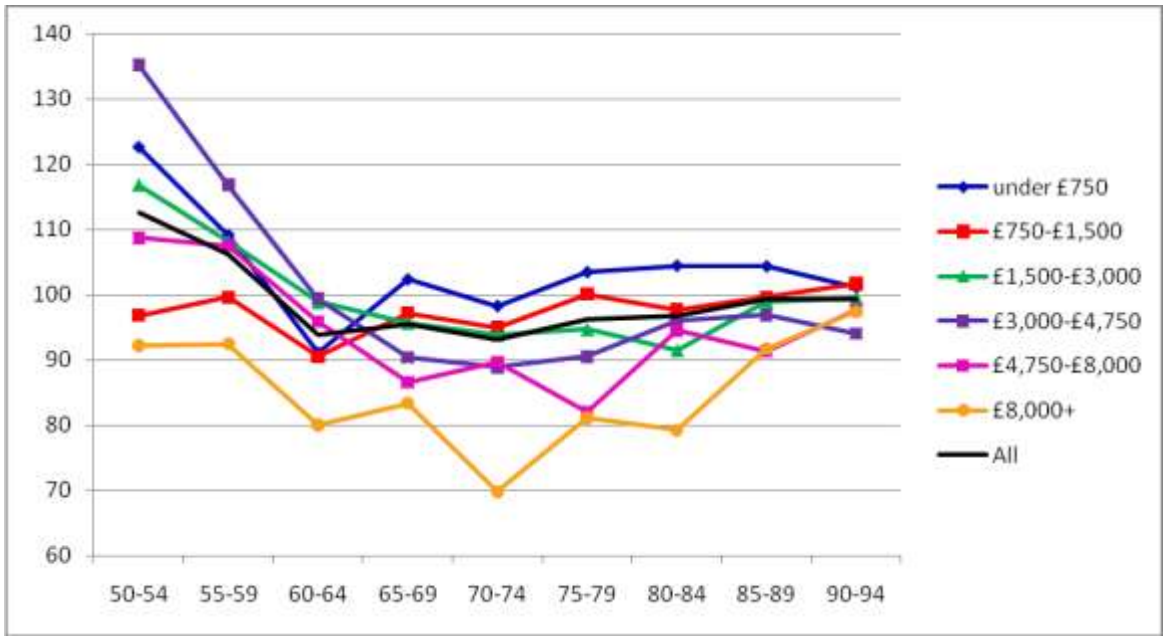
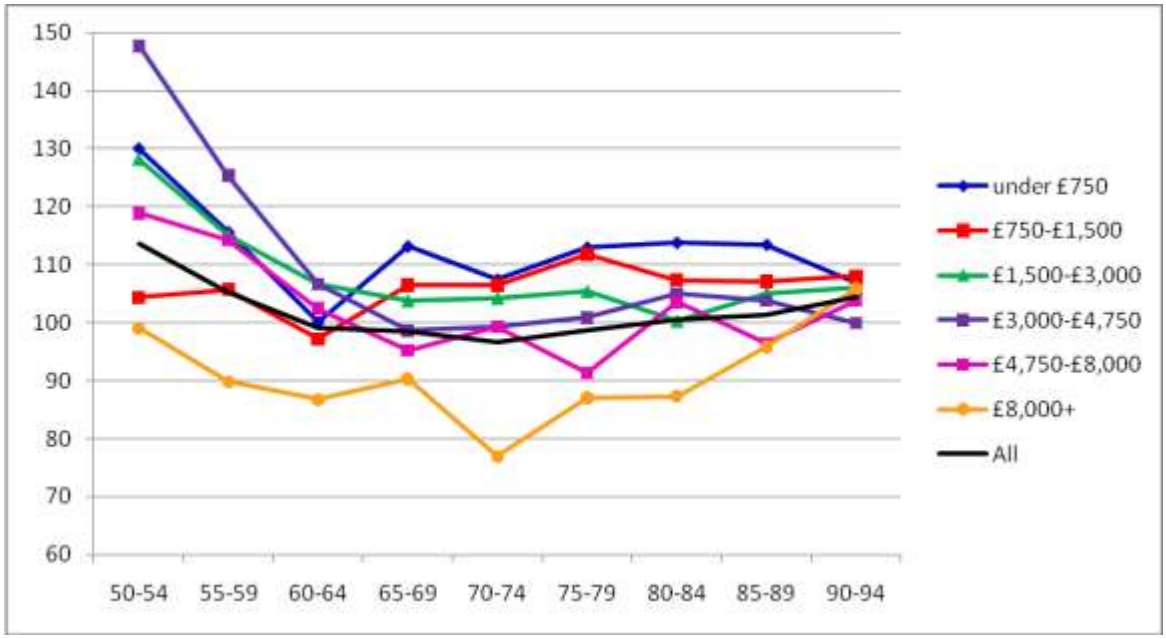


Chart 4: 100A/E values for Female Pensioner Amounts compared to S1PFA



4.15 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.

4.16 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

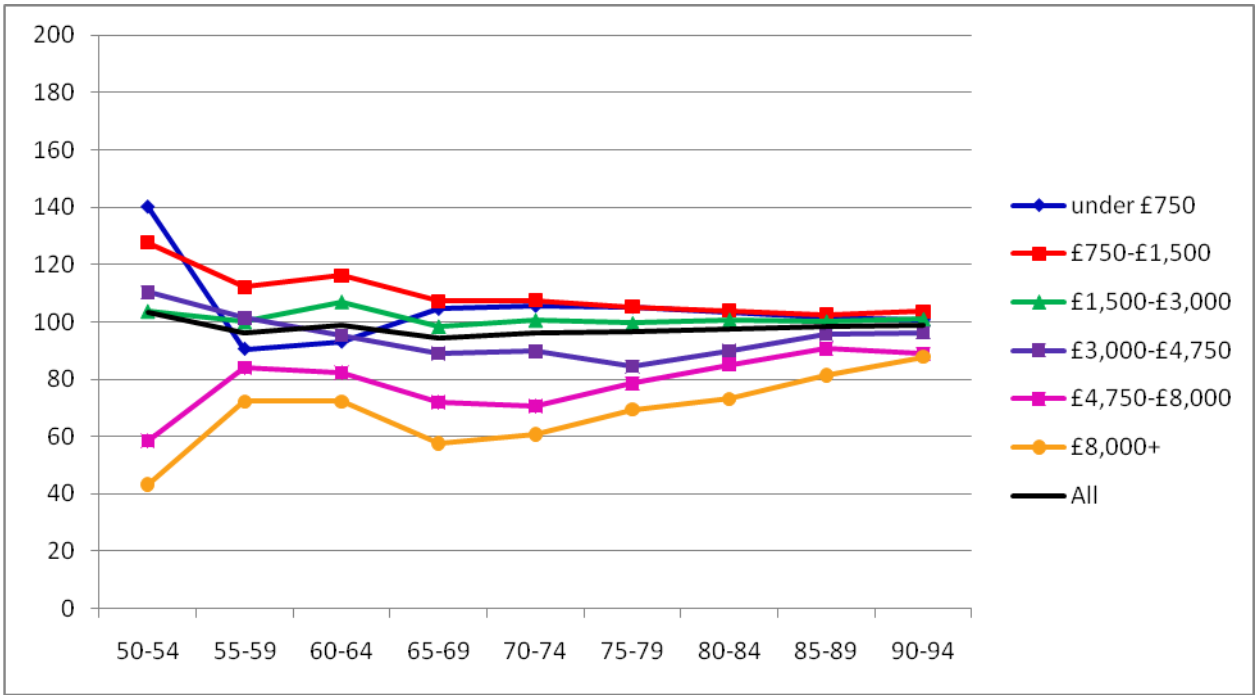
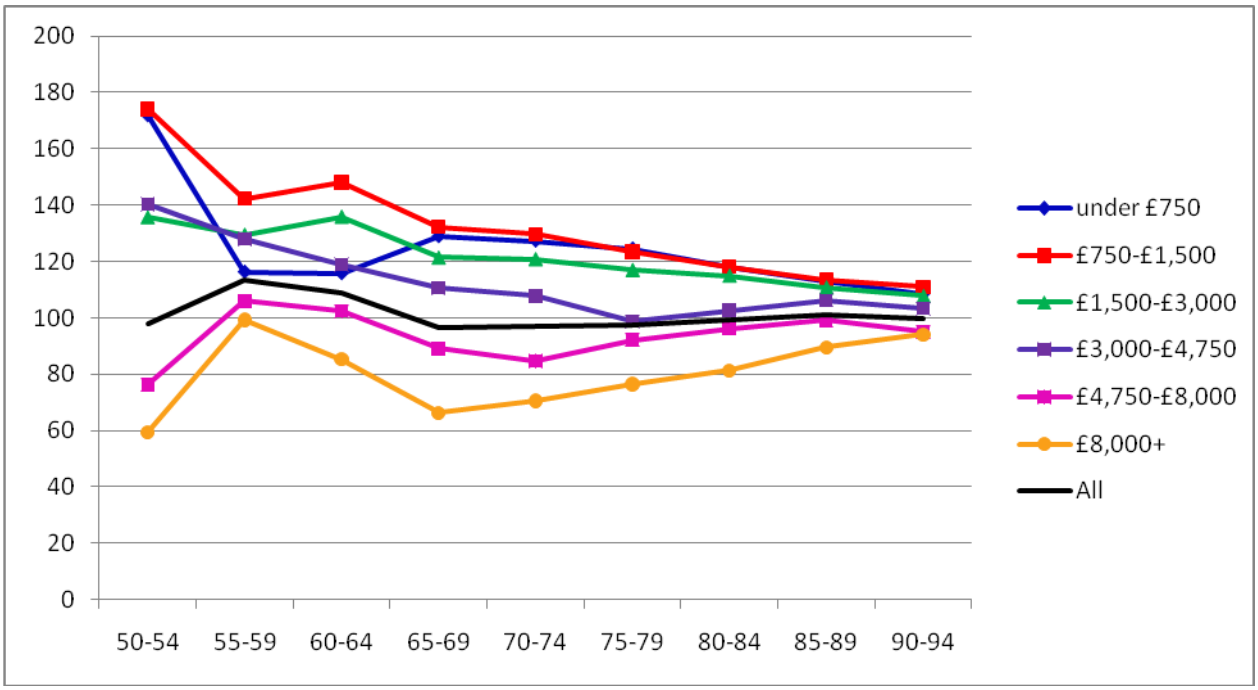


Chart 6: 100A/E values for Female Dependants Amounts compared to S1DFA



4.17 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.

4.18 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

4.19 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.

4.20 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.

	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

4.21 Tables summarising the data and results for the Heavy and Light pension amounts bands are shown in Appendices 3-5. 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

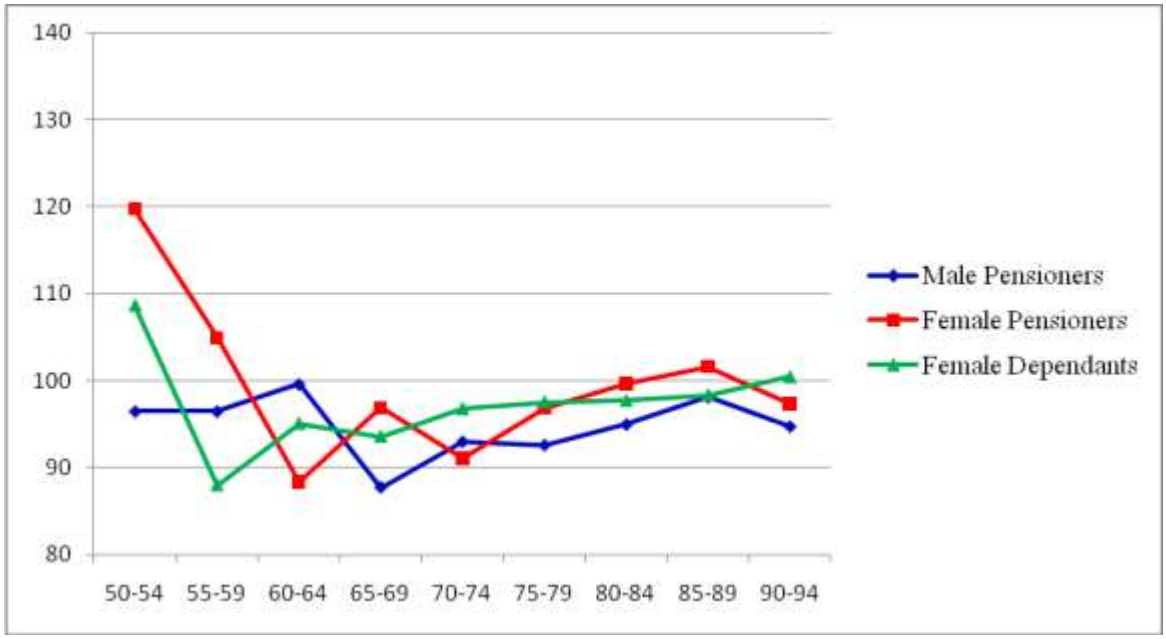
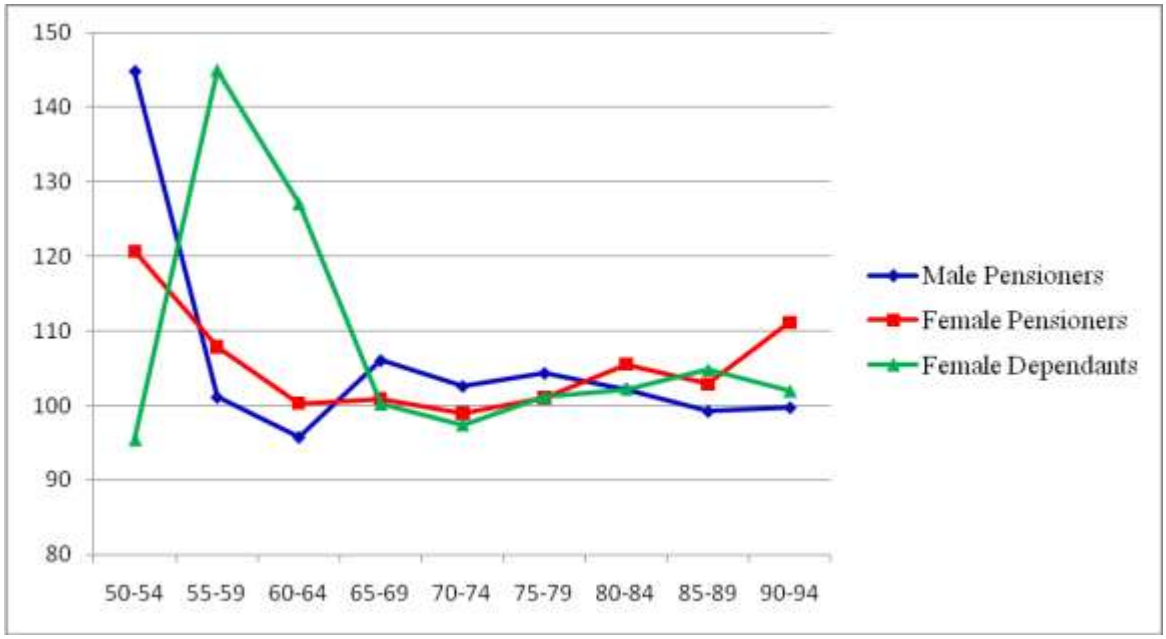


Chart 8: 100A/E values for Light pension band datasets



4.22 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 marginally heavier than the "S1" Series graduated datasets.

5 Further investigations

5.1 The Committee plans to undertake further analyses of the data submitted to 30 June 2009, in particular, it intends to investigate the trend of improvements in mortality rates over the period 2001-2008.

5.2 The next regular update on experience of CMI SAPS Mortality data will be based on data submitted to 30 June 2010. The Committee intends to use this dataset to look at results by industry sector. The Committee will also consider producing "S2" tables, to take account of more recent data and increased data volumes. However, when making this decision the Committee will consider how the experience to 30 June 2010 compares to the "S1" tables. During the period since the "S1" tables were produced the SAPS Mortality Investigation has received (and the Committee hopes will continue to receive) significant volumes of data, which would form part of the next graduation dataset.

5.3 The Committee would like to take this opportunity to encourage firms to submit data in advance of 30 June 2010, 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/knowledge/cmi/cmi_wp

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. Instead, the Committee decided to publish the more up-to-date analysis to 30 June 2009 including the additional data received to that date.

Appendix 2: Comparison using initial and central exposed to risk

The Committee made a decision to amend the approach used to calculate exposure, from initial to central, and the effect of this decision on the data and results is presented in this appendix. The rationale for this is outlined in Working Paper 34 and the supplementary paper "Comparison of approaches for calculating initial exposure".

The following tables show the initial and central exposed to risk and the corresponding expected numbers of deaths for the 2001-2008 dataset. Figures are shown for male and female Pensioners (excluding Dependants and Unknowns) on both a Lives and Amounts basis. A comparison of the expected number of deaths against the actual number of deaths is also included.

The method used to calculate initial exposure is consistent with earlier analyses and is referred to as "Approach 2" in the supplementary paper. For more information about calculating the expected number of deaths see Section 3.

Male Pensioners – Lives

Ages	Actual Deaths	Initial			Central		
		Exposure	Expected	100A/E S1PML	Exposure	Expected	100A/E S1PML
20-24	8	229	0	5,401	226	0	5,477
25-29	6	566	1	968	565	1	969
30-34	23	3,522	6	387	3,515	6	387
35-39	82	12,319	31	266	12,295	31	266
40-44	234	30,336	108	217	30,262	108	217
45-49	622	55,877	268	232	55,699	268	232
50-54	2,203	312,415	1,938	114	311,763	1,940	114
55-59	5,571	704,731	5,450	102	703,041	5,456	102
60-64	12,061	1,095,794	12,171	99	1,092,126	12,192	99
65-69	24,486	1,391,836	25,381	96	1,384,356	25,465	96
70-74	38,398	1,256,318	39,914	96	1,244,594	40,169	96
75-79	54,205	1,032,428	56,187	96	1,015,784	56,833	95
80-84	58,974	676,582	60,163	98	658,250	61,301	96
85-89	39,604	282,732	39,577	100	270,454	40,793	97
90-94	18,151	84,146	17,728	102	78,404	18,556	98
95-99	3,872	12,833	3,906	99	11,589	4,212	92
100-104	409	1,617	652	63	1,472	762	54
105-110	17	293	139	12	286	185	9
Total	258,926	6,954,574	263,620	98	6,874,683	268,278	97

Male Pensioners – Amounts

Ages	Actual Deaths (£'000s)	Initial			Central		
		Exposure (£'000s)	Expected (£'000s)	100A/E S1PMA	Exposure (£'000s)	Expected (£'000s)	100A/E S1PMA
20-24	22	907	0	5,906	898	0	5,965
25-29	19	1,870	1	2,078	1,866	1	2,082
30-34	119	11,817	8	1,429	11,782	8	1,434
35-39	423	45,287	49	858	45,154	49	860
40-44	1,112	132,345	232	479	131,980	231	480
45-49	3,235	296,728	811	399	295,741	809	400
50-54	13,820	2,622,901	10,658	130	2,618,885	10,663	130
55-59	39,628	7,043,890	38,999	102	7,032,079	39,021	102
60-64	75,500	9,348,247	78,136	97	9,325,238	78,227	97
65-69	129,175	9,102,862	128,444	101	9,063,946	128,737	100
70-74	183,532	7,496,244	187,272	98	7,440,351	188,147	98
75-79	244,120	5,582,061	247,586	99	5,507,608	249,785	98
80-84	257,954	3,375,089	257,360	100	3,295,007	261,313	99
85-89	179,466	1,385,773	176,156	102	1,329,665	180,810	99
90-94	93,258	450,728	90,218	103	421,512	94,193	99
95-99	23,726	77,228	22,618	105	69,717	24,195	98
100-104	2,173	6,744	2,630	83	6,018	2,982	73
105-110	140	1,014	479	29	959	613	23
Total	1,247,420	46,981,736	1,241,658	100	46,598,408	1,259,783	99

Female Pensioners – Lives

Ages	Actual Deaths	Initial			Central		
		Exposure	Expected	100A/E S1PFL	Exposure	Expected	100A/E S1PFL
20-24	8	204	0	14,545	201	0	14,746
25-29	4	568	0	1,315	567	0	1,319
30-34	40	3,447	3	1,148	3,435	3	1,152
35-39	85	11,079	20	426	11,056	20	427
40-44	179	21,588	63	286	21,528	63	286
45-49	299	34,326	142	211	34,233	142	211
50-54	898	156,445	797	113	156,175	798	113
55-59	2,090	351,085	1,966	106	350,457	1,968	106
60-64	4,680	724,051	4,987	94	722,638	4,991	94
65-69	7,087	701,099	7,415	96	698,961	7,427	95
70-74	10,369	586,259	11,099	93	583,141	11,140	93
75-79	15,513	463,321	16,019	97	458,579	16,130	96
80-84	18,509	313,362	18,875	98	307,736	19,116	97
85-89	14,323	140,413	14,130	101	136,015	14,427	99
90-94	8,350	49,241	8,124	103	46,607	8,406	99
95-99	2,727	10,385	2,705	101	9,542	2,884	95
100-104	429	1,769	657	65	1,620	755	57
105-110	22	246	112	20	237	145	15
Total	85,612	3,568,886	87,116	98	3,542,729	88,415	97

Female Pensioners – Amounts

Ages	Actual Deaths (£'000s)	Initial			Central		
		Exposure (£'000s)	Expected (£'000s)	100A/E S1PFA	Exposure (£'000s)	Expected (£'000s)	100A/E S1PFA
20-24	24	781	0	11,142	775	0	11,252
25-29	22	1,303	1	3,349	1,297	1	3,362
30-34	140	10,067	10	1,451	10,024	10	1,457
35-39	375	37,082	62	601	36,971	62	603
40-44	751	82,947	223	338	82,698	222	338
45-49	1,380	138,010	524	263	137,607	524	263
50-54	3,652	681,851	3,209	114	680,627	3,212	114
55-59	7,624	1,388,127	7,241	105	1,385,837	7,246	105
60-64	12,740	2,000,965	12,839	99	1,997,071	12,849	99
65-69	17,203	1,803,756	17,448	99	1,798,531	17,472	98
70-74	23,950	1,455,971	24,701	97	1,448,832	24,776	97
75-79	33,946	1,102,560	34,198	99	1,092,228	34,400	99
80-84	40,938	732,425	40,295	102	719,986	40,734	100
85-89	33,320	342,084	32,290	103	331,861	32,905	101
90-94	22,238	132,288	20,676	108	125,189	21,281	104
95-99	7,216	28,480	7,035	103	26,173	7,428	97
100-104	1,092	4,353	1,561	70	3,994	1,780	61
105-110	102	534	240	43	506	301	34
Total	206,713	9,943,584	202,552	102	9,880,205	205,203	101

The differences between the results based on initial and central are very small for the majority of ages, but increase slightly at the younger and older ages.

At older ages the differences in the 100A/Es are due to the approach used to calculate initial exposure, which may overstate mortality at older ages, as highlighted in Working Paper 34. Hence the 100A/Es based on initial exposure are higher than those based on central exposure.

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

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	39,811	389	158	30,405	317	260
55-59	74,160	848	148	57,648	665	209
60-64	154,991	2,299	133	120,518	1,791	175
65-69	266,308	5,230	107	211,930	4,219	140
70-74	247,681	8,850	110	205,621	7,460	142
75-79	253,103	15,236	106	209,655	12,707	132
80-84	199,758	19,381	104	155,346	15,135	122
85-89	82,837	12,615	101	59,098	9,235	116
90-94	20,945	4,921	100	15,755	3,790	109
Total (ages 50-94)	1,339,593	69,769	106	1,065,976	55,318	128

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	41,939	378	146	94,271	848	224
55-59	80,279	879	141	180,260	1,949	195
60-64	156,637	2,169	123	350,992	4,809	161
65-69	257,583	5,254	110	577,858	11,777	142
70-74	278,936	9,877	109	623,519	22,016	138
75-79	247,790	14,423	104	543,122	31,407	127
80-84	154,001	14,798	103	335,115	32,172	121
85-89	64,440	10,053	103	141,581	21,979	114
90-94	19,863	4,632	99	43,712	10,077	104
Total (ages 50-94)	1,301,470	62,463	106	2,890,430	137,034	126

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	42,333	343	131	157,926	1,271	201
55-59	80,945	812	129	302,867	3,028	181
60-64	140,985	1,790	112	525,947	6,632	147
65-69	222,125	4,436	108	824,088	16,416	139
70-74	204,832	6,691	102	755,996	24,614	129
75-79	145,576	8,037	99	536,700	29,591	122
80-84	83,100	7,490	97	306,369	27,521	113
85-89	32,846	4,789	97	121,392	17,661	107
90-94	9,042	2,236	104	33,470	8,218	110
Total (ages 50-94)	961,785	36,624	102	3,564,755	134,952	122

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	73,835	573	125	464,360	3,566	190
55-59	162,319	1,460	116	1,034,730	9,204	160
60-64	257,866	3,006	104	1,628,486	18,598	135
65-69	313,539	5,571	97	1,943,862	34,039	123
70-74	261,210	7,656	91	1,614,400	46,816	115
75-79	185,666	9,266	90	1,149,337	56,943	109
80-84	111,039	9,352	91	690,612	57,740	105
85-89	45,908	6,572	95	285,301	40,448	104
90-94	13,743	3,203	98	85,403	19,864	104
Total (ages 50-94)	1,425,126	46,659	94	8,896,491	287,217	113

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	52,287	294	90	552,929	3,079	137
55-59	126,686	830	84	1,344,416	8,694	117
60-64	168,133	1,494	80	1,769,329	15,513	104
65-69	155,691	2,166	76	1,625,820	22,394	97
70-74	122,463	2,896	74	1,277,161	30,022	93
75-79	89,609	3,852	77	933,610	39,941	94
80-84	55,087	4,243	83	574,759	44,176	97
85-89	22,045	2,844	86	230,398	29,587	95
90-94	7,173	1,585	93	74,946	16,596	99
Total (ages 50-94)	799,174	20,204	80	8,383,369	210,000	97

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	48,989	185	60	848,364	3,161	91
55-59	134,028	591	57	2,343,227	10,137	78
60-64	159,954	1,036	59	2,794,071	17,848	77
65-69	127,896	1,431	61	2,223,169	24,448	78
70-74	97,793	1,905	61	1,694,822	32,628	76
75-79	71,049	2,680	68	1,231,929	45,920	82
80-84	42,236	2,900	74	732,033	49,925	86
85-89	17,414	2,120	81	302,874	36,589	89
90-94	5,882	1,234	88	102,365	21,352	93
Total (ages 50-94)	705,241	14,082	69	12,272,857	242,007	83

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	12,569	41	52	470,629	1,578	81
55-59	44,623	151	43	1,768,930	5,951	60
60-64	53,559	267	45	2,135,893	10,310	58
65-69	41,214	398	53	1,657,219	15,883	68
70-74	31,679	523	52	1,268,833	19,977	63
75-79	22,991	711	55	903,255	27,612	67
80-84	13,028	810	67	500,773	31,285	79
85-89	4,964	611	81	189,020	23,967	93
90-94	1,756	340	81	65,862	13,362	90
Total (ages 50-94)	226,385	3,852	60	8,960,415	149,924	73

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	311,763	2,203	114	2,618,885	13,820	130
55-59	703,041	5,571	102	7,032,079	39,628	102
60-64	1,092,126	12,061	99	9,325,238	75,500	97
65-69	1,384,356	24,486	96	9,063,946	129,175	100
70-74	1,244,594	38,398	96	7,440,351	183,532	98
75-79	1,015,784	54,205	95	5,507,608	244,120	98
80-84	658,250	58,974	96	3,295,007	257,954	99
85-89	270,454	39,604	97	1,329,665	179,466	99
90-94	78,404	18,151	98	421,512	93,258	99
Total (ages 50-94)	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						
	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	39,811	389	90	30,405	317	96
55-59	74,160	848	96	57,648	665	96
60-64	154,991	2,299	100	120,518	1,791	100
65-69	266,308	5,230	87	211,930	4,219	88
70-74	247,681	8,850	92	205,621	7,460	93
75-79	253,103	15,236	92	209,655	12,707	93
80-84	199,758	19,381	94	155,346	15,135	95
85-89	82,837	12,615	96	59,098	9,235	98
90-94	20,945	4,921	93	15,755	3,790	95
Total (ages 50-94)	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						
	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	61,558	226	148	1,318,993	4,739	145
55-59	178,652	742	107	4,112,158	16,088	101
60-64	213,513	1,303	102	4,929,964	28,158	96
65-69	169,110	1,829	110	3,880,388	40,330	106
70-74	129,472	2,428	108	2,963,655	52,604	103
75-79	94,040	3,391	109	2,135,184	73,532	104
80-84	55,264	3,710	104	1,232,807	81,210	102
85-89	22,378	2,731	98	491,895	60,556	99
90-94	7,638	1,574	100	168,227	34,713	100
Total (ages 50-94)	931,626	17,934	105	21,233,272	391,931	102

Appendix 4: 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	28,584	179	123	11,189	69	130
55-59	61,067	374	109	25,108	152	116
60-64	188,874	1,184	91	77,097	497	100
65-69	173,626	1,882	102	74,362	818	113
70-74	144,464	2,721	98	62,428	1,154	107
75-79	121,315	4,425	103	52,884	1,891	113
80-84	84,862	5,515	104	36,872	2,378	114
85-89	37,655	4,152	104	16,597	1,852	113
90-94	11,590	2,104	101	5,126	924	107
Total (ages 50-94)	852,038	22,536	102	361,663	9,735	111

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	22,412	111	97	24,946	123	104
55-59	56,642	317	100	63,156	350	106
60-64	143,592	899	91	157,707	989	97
65-69	149,140	1,545	97	163,792	1,701	107
70-74	131,730	2,397	95	144,376	2,642	106
75-79	110,384	3,897	100	120,481	4,259	112
80-84	77,495	4,702	98	83,919	5,100	107
85-89	32,960	3,472	100	35,868	3,776	107
90-94	10,493	1,918	102	11,511	2,103	108
Total (ages 50-94)	734,847	19,258	98	805,758	21,044	107

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	31,480	188	117	69,058	418	128
55-59	80,430	489	108	176,074	1,062	115
60-64	168,984	1,157	99	365,519	2,520	107
65-69	174,375	1,777	96	377,316	3,820	104
70-74	149,613	2,683	94	322,688	5,765	104
75-79	113,546	3,772	95	243,525	8,076	105
80-84	71,239	4,037	92	152,251	8,614	100
85-89	30,122	3,163	99	64,361	6,674	105
90-94	10,685	1,922	100	23,050	4,152	106
Total (ages 50-94)	830,475	19,188	96	1,793,841	41,102	105

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	23,629	163	135	89,863	626	148
55-59	56,043	368	117	212,615	1,397	125
60-64	100,841	694	99	380,972	2,623	107
65-69	100,842	969	90	379,531	3,642	99
70-74	80,197	1,352	89	300,745	5,085	99
75-79	55,398	1,753	91	207,789	6,569	101
80-84	34,524	2,055	96	129,787	7,703	105
85-89	15,991	1,650	97	60,401	6,210	104
90-94	6,257	1,068	94	23,687	4,038	100
Total (ages 50-94)	473,721	10,072	95	1,785,389	37,894	103

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	25,626	142	109	157,699	884	119
55-59	51,063	308	107	313,933	1,876	114
60-64	75,157	498	96	456,135	3,011	102
65-69	67,859	622	87	409,374	3,779	95
70-74	50,887	867	90	306,866	5,198	99
75-79	38,270	1,105	82	231,942	6,689	91
80-84	25,976	1,527	95	157,888	9,260	104
85-89	12,610	1,230	91	76,865	7,366	96
90-94	4,945	874	98	30,205	5,336	104
Total (ages 50-94)	352,394	7,173	92	2,140,907	43,399	100

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	24,445	115	92	327,873	1,533	99
55-59	45,212	234	92	594,949	2,787	90
60-64	45,190	248	80	559,640	3,100	87
65-69	33,119	292	83	394,156	3,443	90
70-74	26,251	349	70	311,729	4,105	77
75-79	19,665	561	81	235,607	6,462	87
80-84	13,640	673	79	159,271	7,881	87
85-89	6,676	656	92	77,769	7,442	96
90-94	2,637	464	97	31,609	5,684	106
Total (ages 50-94)	216,834	3,592	84	2,692,602	42,437	90

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	156,175	898	113	680,627	3,652	114
55-59	350,457	2,090	106	1,385,837	7,624	105
60-64	722,638	4,680	94	1,997,071	12,740	99
65-69	698,961	7,087	95	1,798,531	17,203	98
70-74	583,141	10,369	93	1,448,832	23,950	97
75-79	458,579	15,513	96	1,092,228	33,946	99
80-84	307,736	18,509	97	719,986	40,938	100
85-89	136,015	14,323	99	331,861	33,320	101
90-94	46,607	8,350	99	125,189	22,238	104
Total (ages 50-94)	3,460,309	81,819	97	9,580,160	195,611	100

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	28,584	179	122	11,189	69	120
55-59	61,067	374	106	25,108	152	105
60-64	188,874	1,184	86	77,097	497	88
65-69	173,626	1,882	96	74,362	818	97
70-74	144,464	2,721	93	62,428	1,154	91
75-79	121,315	4,425	99	52,884	1,891	97
80-84	84,862	5,515	100	36,872	2,378	100
85-89	37,655	4,152	101	16,597	1,852	102
90-94	11,590	2,104	98	5,126	924	97
Total (ages 50-94)	852,038	22,536	98	361,663	9,735	97

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	50,071	257	125	485,572	2,416	121
55-59	96,274	542	118	908,883	4,663	108
60-64	120,347	746	103	1,015,776	6,111	100
65-69	100,978	914	102	803,530	7,222	101
70-74	77,138	1,216	104	618,595	9,303	99
75-79	57,935	1,666	103	467,548	13,151	101
80-84	39,616	2,200	108	317,158	17,142	106
85-89	19,287	1,886	105	154,634	14,807	103
90-94	7,582	1,338	110	61,814	11,021	111
Total (ages 50-94)	569,228	10,765	106	4,833,509	85,836	104

Appendix 5: 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	8,769	52	140	3,920	22	172
55-59	15,164	82	90	6,886	37	116
60-64	24,451	205	93	11,284	93	116
65-69	40,673	608	105	19,161	285	129
70-74	66,522	1,645	106	31,874	787	127
75-79	93,331	3,816	105	44,651	1,841	124
80-84	97,422	6,490	103	46,257	3,085	118
85-89	56,464	6,232	102	26,835	2,983	113
90-94	21,639	3,983	101	10,613	1,967	108
Total (ages 50-94)	424,436	23,113	103	201,482	11,098	117

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	10,082	57	174	9,091	49	128
55-59	19,850	132	142	17,723	119	112
60-64	35,222	372	148	31,397	330	116
65-69	63,474	968	132	56,508	867	107
70-74	105,228	2,642	130	93,946	2,363	108
75-79	141,444	5,773	124	126,897	5,180	105
80-84	141,032	9,452	118	126,495	8,486	104
85-89	84,435	9,432	113	75,982	8,470	102
90-94	34,209	6,466	111	30,910	5,845	104
Total (ages 50-94)	634,977	35,295	118	568,949	31,709	104

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	13,420	59	104	29,086	130	136
55-59	26,035	156	100	56,528	341	130
60-64	44,023	425	107	94,911	919	136
65-69	74,113	1,043	98	158,692	2,218	121
70-74	111,563	2,613	101	236,999	5,517	121
75-79	133,265	5,120	100	281,602	10,825	117
80-84	119,817	7,767	101	252,256	16,384	115
85-89	67,395	7,317	100	142,807	15,531	111
90-94	26,681	4,929	101	56,936	10,472	108
Total (ages 50-94)	616,312	29,429	100	1,309,818	62,336	114

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	8,350	39	110	31,619	145	140
55-59	16,155	98	101	61,137	364	128
60-64	24,337	208	95	91,745	772	119
65-69	35,927	455	89	135,343	1,715	111
70-74	50,327	1,049	90	188,731	3,913	108
75-79	59,294	1,930	84	222,534	7,219	99
80-84	53,974	3,129	90	203,142	11,802	103
85-89	31,797	3,314	96	119,363	12,496	106
90-94	13,751	2,431	96	51,535	9,123	103
Total (ages 50-94)	293,912	12,653	92	1,105,150	47,550	104

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	6,860	17	59	41,770	104	76
55-59	12,361	62	84	75,047	369	106
60-64	18,167	134	82	110,046	796	102
65-69	26,003	266	72	157,662	1,609	89
70-74	36,749	603	71	223,253	3,637	85
75-79	43,832	1,330	79	266,438	8,081	92
80-84	41,898	2,306	85	255,558	13,965	96
85-89	25,123	2,480	91	154,106	15,081	99
90-94	11,587	1,893	89	71,629	11,683	95
Total (ages 50-94)	222,579	9,091	84	1,355,509	55,324	95

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	4,910	9	43	67,092	131	59
55-59	9,252	40	72	126,972	587	99
60-64	13,138	85	72	185,476	1,117	85
65-69	18,068	148	58	253,739	1,927	66
70-74	25,102	355	61	347,716	4,723	70
75-79	31,038	833	69	436,429	10,982	76
80-84	30,296	1,434	73	424,897	19,668	81
85-89	18,958	1,690	81	271,781	24,144	90
90-94	9,173	1,483	88	133,519	21,601	94
Total (ages 50-94)	159,936	6,077	76	2,247,623	84,879	85

All Females 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	51,400	225	103	183,569	589	98
55-59	96,689	557	96	346,421	1,829	114
60-64	155,513	1,387	99	528,686	4,069	109
65-69	251,292	3,387	94	788,072	8,722	96
70-74	384,210	8,628	96	1,133,802	21,218	97
75-79	487,657	18,209	96	1,393,098	44,721	98
80-84	469,903	29,612	98	1,323,143	74,355	99
85-89	275,719	29,503	98	799,327	79,666	101
90-94	113,741	20,564	99	358,442	61,312	100
Total (ages 50-94)	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						
	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	17,860	101	108	14,002	79	109
55-59	32,887	201	85	26,736	169	88
60-64	55,848	535	91	46,506	465	95
65-69	97,180	1,475	94	82,635	1,253	94
70-74	160,469	4,008	97	137,102	3,428	97
75-79	220,228	8,996	97	186,095	7,614	98
80-84	223,918	14,976	98	187,289	12,537	98
85-89	132,446	14,702	98	111,270	12,414	98
90-94	52,549	9,828	100	44,822	8,433	100
Total (ages 50-94)	993,385	54,822	98	836,459	46,393	98

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	11,770	26	98	108,862	235	95
55-59	21,612	102	145	202,020	956	145
60-64	31,305	219	137	295,523	1,913	127
65-69	44,072	414	109	411,401	3,536	100
70-74	61,852	958	103	570,969	8,360	97
75-79	74,870	2,163	108	702,867	19,063	101
80-84	72,194	3,740	107	680,456	33,632	102
85-89	44,081	4,170	108	425,887	39,225	105
90-94	20,760	3,376	102	205,148	33,283	102
Total (ages 50-94)	382,515	15,168	107	3,603,132	140,203	103