Continuous Mortality Investigation
Self-administered Pension Schemes Mortality Committee

Working Paper 31

Report on the preliminary results of an analysis into the mortality experience of pensioners of self-administered pension schemes for the period 2000 to 2006 based on data collected by 30 June 2007

January 2008

Continuous Mortality Investigation

Working Paper 31

Report on the preliminary results of an analysis into the mortality experience of pensioners of self-administered pension schemes for the period 2000 to 2006 based on data collected by 30 June 2007

1 Introduction

1.1 This report is one of a series of Working Papers that set out the results of the SAPS mortality investigation. Working Papers 4 and 9, both published in 2004, were based on the same data, collected up to February 2004 and covering the period 2000 to 2002. Working Paper 9 offered a more detailed analysis than its predecessor, for example by looking at the effect of pension amounts on mortality experience for males.

1.2 In October 2005 the CMI published Working Paper 17, examining the experience of the data collected to May 2005 and covering the years 2000 to 2003. This did not contain detailed analysis other than looking at 100A/E figures against the "92" Series mortality tables. Again it split the male data into four amounts bands, using the short cohort projections for both year of exposure and calendar year 2000.

1.3 Working Paper 29, first released in draft form in March 2007 to CMI SAPS members and then made publicly available in October 2007, updated the dataset further by including all data submitted to June 2006 and extending the period of investigation to 2004. This paper provided a more extensive analysis than Working Paper 9 and in addition included comparisons with the "00" Series mortality tables.

1.4 This report is based on all data collected to June 2007, and two additional years of investigation have been included, extending the period of investigation to 2006. The detailed level of analysis attained in Working Paper 29 is not shown here; instead this paper follows the format of Working Paper 17. The intention is that this dataset will be analysed in more depth in further Working Papers, in particular looking at graduations, recent mortality improvements and analysis by industry sector.

1.5 This Working Paper was released in draft form to all CMI SAPS members in October 2007. No feedback was received on the draft paper, and the SAPS Mortality Committee is pleased to now make the Working Paper publicly available.

1.6 Working Paper 32, which contains proposed graduations of the data received by 30 June 2007, is being released alongside this Working Paper.

2 Data

2.1 Data has been received from 18 firms, with the majority of these being the larger actuarial consultancies.

2.2 The rate of data submission has been relatively steady, until a concerted exercise the CMI undertook to chase consultancies for data in January 2007 yielded a substantial increase in the number of submissions. Nearly 380 submissions have been made, with 350 of these being separate schemes and the remainder being resubmissions covering separate time periods. This compares with around 230 separate schemes plus 10 resubmissions in Working Paper 29.

2.3 The data received to date covers periods from 1996 to 2007, though this report concentrates on results for the seven year period 2000 to 2006 only, since most of the data lies in this range. Summary details are shown in Tables A to C.

2.4 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 could not be split between retired scheme members and dependants). Summary details are shown in Tables D to F.

2.5 We have also considered the effect of pension amount. In Working Paper 17 we showed the male lives data broken down into four amounts bands. For Working Paper 29 the lowest band was split into two as investigation showed that each of these subgroups appeared more homogeneous than in combined form. This report uses these same five amounts bands for male data. Summary details are shown in Table G.

2.6 For females, we have used the same four amounts bands as those in Working Paper 29 and Working Paper 17. Summary details are shown in Table H.

2.7 Fuller analyses, showing results for individual ages and grouped into 5 year age bands, are given in the Excel files released with this paper. The Working Party hopes that this form of presentation of the data will enable users of the report more readily to carry out their own analyses.

2.8 Postcode data was first requested in January 2007. However, we do not yet have sufficient data with postcode to be able to form any meaningful analysis based on postcode.

3 Exposure and Deaths

3.1 For the analyses shown below and in the Excel files, initial exposed to risk has been calculated.

3.2 Total figures for exposures and deaths are shown in Table A below, and include a comparison with the total 2000-2004 data analysed previously in Working Paper 29.

3.3 Data volumes have increased considerably since the previous report. Overall exposures and deaths for the period 2000-04 have increased by around 60% from the equivalent figures in Working Paper 29, whilst the grand totals for exposure and deaths have almost doubled.

4 Comparison Bases

4.1 When splitting the data by year of exposure and then by pensioner type, we have compared the results against both the relevant "92" Series tables with short cohort projection to the year of exposure and the relevant "00" Series Normal retirement tables without any projection. This enables direct comparison with the 100A/E figures in Working Paper 29.

4.2 When splitting the data in pension amounts bands we have used all (i.e. not split by pensioner type) male and female data and we have used as a basis the "00" Series Combined retirement tables, again with no projection.

5 Results

5.1 The following tables summarise the data over the seven year period 2000 to 2006.

Table A

	Males Lives	Males Amounts (£'000)	Average Amounts (Males) (£ pa)*	Females Lives	Females Amounts (£'000)	Average Amounts (Females) (£ pa)*
Exposure						
2000	506,154	3,190,669	6,304	361,057	958,095	2,654
2001	956,992	5,743,737	6,002	777,141	1,984,051	2,553
2002	1,267,219	7,724,181	6,095	1,023,193	2,706,551	2,645
2003	1,197,060	7,116,734	5,945	991,696	2,638,695	2,661
2004	963,691	6,082,438	6,312	723,304	2,000,039	2,765
2005	665,720	4,997,072	7,506	480,788	1,475,366	3,069
2006	156,307	1,223,590	7,828	120,702	359,996	2,983
All	5,713,143	36,078,421	6,315	4,477,881	12,122,793	2,707
WP29 2000-04	2,978,949	18,358,967	6,163	2,417,761	6,326,894	2,617
Deaths						
2000	18,620	80,554	4,326	12,817	28,353	2,212
2001	35,941	152,382	4,240	26,547	57,681	2,173
2002	50,052	213,677	4,269	37,779	86,780	2,297
2003	47,928	191,701	4,000	35,871	80,076	2,232
2004	38,483	161,754	4,203	26,777	62,973	2,352
2005	24,398	127,787	5,238	17,848	47,003	2,634
2006	5,470	29,815	5,451	4,149	10,408	2,509
All	220,892	957,670	4,335	161,788	373,274	2,307
WP29 2000-04	112,540	484,996	4,310	83,574	188,088	2,251

*Note: Average pensions vary in different years of exposure and death. The SAPS committee do not know why this is. It may be a phenomenon that will change when fuller data is received for more recent years. This is partially borne out by the current dataset as in Working Paper 29 average male amounts for males for 2003 were significantly below the average for 2002. This difference is now much reduced. However, average pension amounts for 2005 and 2006 now look high compared to those for earlier years.

Table B

	100A/E based on "92" Series with short cohort (C = year of exposure)			
	Males Lives	**Males Amounts**	**Females Lives**	**Females Amounts**
100A/E				
2000	120	124	117	123
2001	123	129	119	125
2002	127	131	128	135
2003	128	126	126	127
2004	126	126	124	126
2005	123	127	125	130
2006	119	126	124	132
All	125	128	124	128
WP29 2000-04	124	130	122	129

Table C

	100A/E based on "00" Series Normal retirement tables			
	Males Lives	**Males Amounts**	**Females Lives**	**Females Amounts**
100A/E				
2000	119	117	111	113
2001	117	117	110	111
2002	117	116	115	116
2003	114	108	111	106
2004	109	105	106	103
2005	105	103	105	104
2006	99	100	103	104
All	113	110	110	109
WP29 2000-04	115	116	110	112

5.2 The following two tables show the same data summarised by pensioner type for the seven year period 2000 to 2006.

Table D – Males

		Number or amount EtR	Number or amount of deaths	100A/E	
				"92" Series short cohort (C = year of exposure)	"00" Series Normal retirement tables
				2000-06	2000-06
Lives	**Normal health**	2,117,244	83,600	120	110
	Ill health	360,862	12,372	202	181
	Combined	2,673,806	102,358	123	111
	Dependant	103,596	4,496	128	117
	Unknown	457,635	18,066	124	110
	All	5,713,143	220,892	125	113
Amounts (£'000)	**Normal health**	14,553,682	400,914	123	107
	Ill health	1,896,868	53,620	250	206
	Combined	17,170,190	425,268	123	106
	Dependant	177,431	6,674	151	134
	Unknown	2,280,249	71,194	134	113
	All	36,078,421	957,670	128	110

Table E – Females

		Number or amount ETR	Number or amount of deaths	100A/E	
				"92" Series short cohort (C = year of exposure)	"00" Series Normal retirement tables
				2000-06	2000-06
Lives	**Normal health**	987,700	26,755	119	106
	Ill health	216,434	4,149	193	171
	Combined	1,230,909	32,628	123	108
	Dependant	1,724,400	84,616	123	110
	Unknown	318,438	13,640	125	109
	All	4,477,881	161,788	124	110
Amounts (£'000)	**Normal health**	2,664,753	62,059	126	108
	Ill health	675,865	11,326	224	191
	Combined	3,267,453	70,722	129	108
	Dependant	4,831,839	204,903	125	107
	Unknown	682,883	24,265	135	111
	All	12,122,793	373,274	128	109

The number of records shown as "Unknown" has increased very significantly and providers of data are asked to differentiate between pensioners and dependants wherever possible.

5.3 A summary of the above results for 100A/E is shown below:

Table F

Sex	Pensioner Type	100 A/E			
		"92" Series short cohort (C = year of exposure)		"00" Series Normal retirement tables	
		Lives	Amounts	Lives	Amounts
M	All	125	128	113	110
F	All	124	128	110	109
M	Normal health	120	123	110	107
M	Ill health	202	250	181	206
M	Combined	123	123	111	106
M	Dependants	128	151	117	134
F	Normal health	119	126	106	108
F	Ill health	193	224	171	191
F	Combined	123	129	108	108
F	Dependants	123	125	110	107

5.4 Male data divided by amount bands

Table G shows the results of analysing the male data for 2000-2006 into the five age bands adopted for Working Paper 29. This is all male data i.e. not split by pensioner type.

Table G

All Males with pension under £3,000 pa						
	Amounts			Lives		
Age group	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E PCMA00	Exposed to risk	Actual deaths	100A/E PCML00
50-54	103,728	968	162	68,948	646	125
55-59	192,970	2,223	175	127,395	1,516	145
60-64	384,342	5,560	167	253,437	3,825	142
65-69	642,844	13,857	160	425,081	9,303	130
70-74	716,591	26,256	153	461,511	17,470	124
75-79	659,822	39,397	138	454,656	28,205	116
80-84	420,122	39,790	127	313,428	30,427	113
85-89	173,114	26,082	122	128,829	19,745	119
90-94	53,112	11,466	118	36,479	8,139	122
Total (ages 50-94)	3,346,645	165,598	136	2,269,764	119,276	119
WP29 2000-04	1,720,283	82,328	137	1,178,094	60,121	118

All Males with pension £3,000 pa - £4,499 pa						
	Amounts			Lives		
Age group	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E PCMA00	Exposed to risk	Actual deaths	100A/E PCML00
50-54	134,133	1,054	136	36,029	287	106
55-59	247,075	2,485	153	66,099	669	124
60-64	443,506	5,777	149	118,836	1,554	123
65-69	679,013	13,575	148	182,987	3,672	119
70-74	621,163	19,795	135	168,442	5,378	106
75-79	436,094	24,150	129	118,354	6,561	105
80-84	261,462	23,097	118	71,027	6,290	103
85-89	105,992	15,063	115	28,742	4,090	110
90-94	30,664	6,979	124	8,315	1,900	124
Total (ages 50-94)	2,959,103	111,973	129	798,830	30,401	109
WP29 2000-04	1,548,728	57,833	135	417,903	15,683	114

All Males with pension £4,500 pa - £8,499 pa						
	Amounts			Lives		
Age group	**Exposed to risk (£'000)**	**Actual deaths (£'000)**	**100A/E PCMA00**	**Exposed to risk**	**Actual deaths**	**100A/E PCML00**
50-54	410,382	3,029	128	64,788	484	99
55-59	870,169	7,870	138	135,942	1,242	112
60-64	1,397,165	15,575	129	220,782	2,516	108
65-69	1,646,153	28,624	130	265,505	4,669	105
70-74	1,338,794	38,564	122	217,006	6,318	97
75-79	944,355	46,793	115	152,818	7,629	94
80-84	593,198	49,216	111	95,711	7,991	97
85-89	250,009	34,303	111	40,394	5,584	107
90-94	77,391	16,458	115	12,470	2,666	116
Total (ages 50-94)	7,527,615	240,433	118	1,205,415	39,099	101
WP29 2000-04	4,033,592	127,359	123	645,265	20,735	105

All Males with pension £8,500 pa - £12,999 pa						
	Amounts			Lives		
Age group	**Exposed to risk (£'000)**	**Actual deaths (£'000)**	**100A/E PCMA00**	**Exposed to risk**	**Actual deaths**	**100A/E PCML00**
50-54	520,081	2,645	88	49,149	255	69
55-59	1,157,317	6,770	89	109,381	648	72
60-64	1,451,215	12,881	103	138,393	1,242	86
65-69	1,306,376	18,011	103	125,219	1,742	83
70-74	1,006,324	23,941	101	96,597	2,310	80
75-79	735,209	30,570	97	70,628	2,960	79
80-84	454,642	33,873	100	43,687	3,259	87
85-89	182,386	22,233	99	17,480	2,132	95
90-94	61,174	12,385	110	5,876	1,188	110
Total (ages 50-94)	6,874,723	163,309	100	656,409	15,736	85
WP29 2000-04	3,643,574	85,731	105	348,581	8,269	89

All Males with pension £13,000 pa or above						
	Amounts			Lives		
Age group	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E PCMA00	Exposed to risk	Actual deaths	100A/E PCML00
50-54	1,104,277	3,471	54	53,132	161	40
55-59	3,064,908	11,314	56	135,467	517	47
60-64	3,321,556	20,141	71	149,065	946	61
65-69	2,669,892	27,128	76	120,062	1,287	64
70-74	2,027,076	34,398	72	91,922	1,658	60
75-79	1,454,845	48,126	77	66,471	2,317	66
80-84	807,097	50,094	83	37,772	2,380	74
85-89	326,794	39,623	98	15,240	1,826	93
90-94	112,134	21,137	102	5,292	985	100
Total (ages 50-94)	14,888,580	255,431	79	674,422	12,077	69
WP29 2000-04	7,143,027	122,416	83	327,200	5,785	71

The breakdown by amount of pension for males strengthens the conclusions on the significant difference in mortality for members with pensions of different size in Working Paper 29. This “amounts effect” is more pronounced at younger ages and diminishes significantly at the highest ages. Compared against the results in Working Paper 29, mortality appears slightly lighter overall, with exceptions found in most ages (lives) and the oldest ages (amounts) of the lowest band and the youngest ages (lives and amounts) of the highest bands.

Chart 1

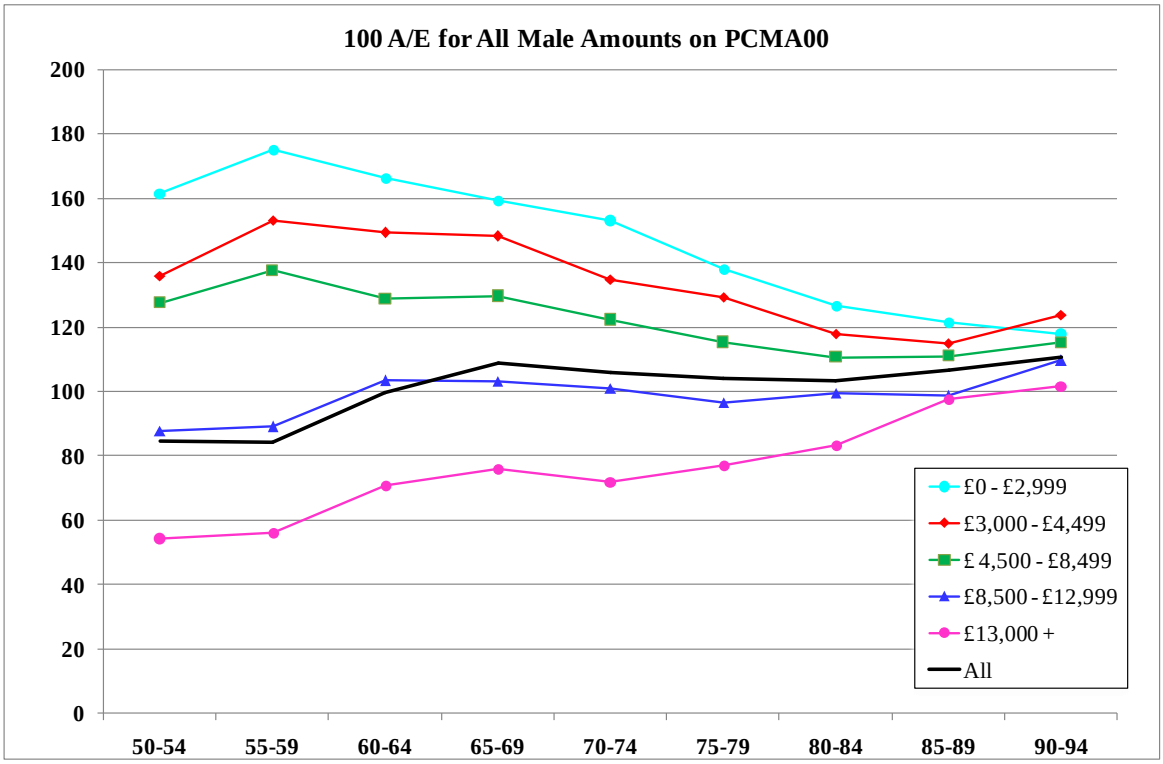
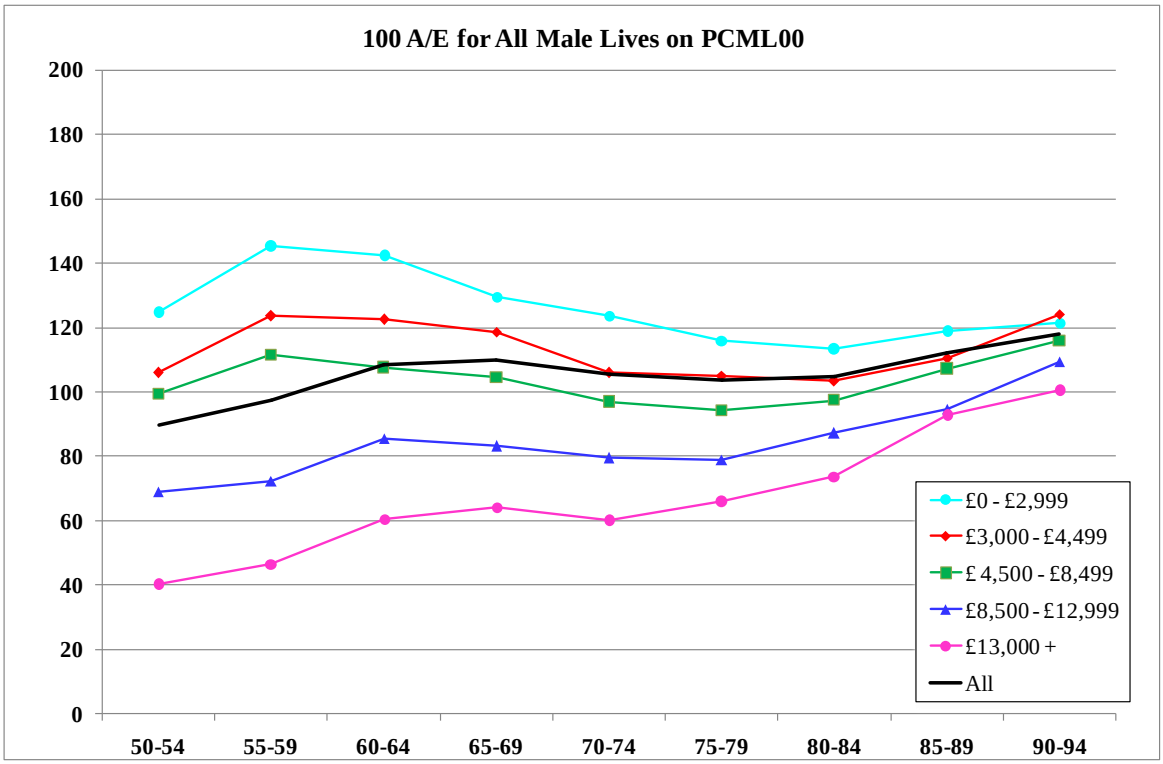


Chart 2



5.5 Female data divided by amount bands

Table H shows the results of analysing the female data for 2000-2006 into the four age bands adopted for Working Paper 29. Again, this is all female data so is not split by pensioner type.

Table H

All Females with pension under £1,500 pa						
	Amounts			Lives		
Age group	**Exposed to risk (£'000)**	**Actual deaths (£'000)**	**100A/E PCFA00**	**Exposed to risk**	**Actual deaths**	**100A/E PCFL00**
50-54	38,062	256	170	51,197	363	154
55-59	82,601	533	159	106,989	707	147
60-64	194,303	1,551	155	261,983	2,165	140
65-69	240,002	3,035	142	309,228	4,030	127
70-74	280,406	6,420	135	354,114	8,175	119
75-79	303,653	11,954	126	383,709	15,402	114
80-84	260,006	16,923	119	328,556	21,674	110
85-89	133,588	14,499	117	167,753	18,318	109
90-94	50,310	8,859	119	62,412	11,036	112
Total (ages 50-94)	1,582,931	64,029	123	2,025,940	81,870	113
WP29 2000-04	851,009	33,260	123	1,098,959	42,797	112

All Females with pension £1,500 pa - £2,999 pa						
	Amounts			Lives		
Age group	**Exposed to risk (£'000)**	**Actual deaths (£'000)**	**100A/E PCFA00**	**Exposed to risk**	**Actual deaths**	**100A/E PCFL00**
50-54	76,860	426	140	35,034	190	118
55-59	176,496	1,064	148	80,515	481	133
60-64	334,543	2,567	149	154,665	1,177	129
65-69	405,010	4,884	136	188,000	2,276	118
70-74	434,246	9,037	124	203,311	4,259	109
75-79	413,133	15,303	119	194,537	7,218	106
80-84	317,993	19,516	113	150,361	9,224	102
85-89	158,263	16,909	115	74,610	7,971	107
90-94	63,000	11,076	118	29,457	5,190	111
Total (ages 50-94)	2,379,545	80,783	119	1,110,491	37,986	111
WP29 2000-04	1,291,157	42,250	120	600,546	19,775	109

All Females with pension £3,000 pa - £4,749 pa						
	Amounts			Lives		
Age group	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E PCFA00	Exposed to risk	Actual deaths	100A/E PCFL00
50-54	94,282	561	150	24,867	145	127
55-59	207,607	1,260	149	54,885	331	134
60-64	334,071	2,573	150	88,644	680	130
65-69	372,063	3,739	114	99,076	992	98
70-74	358,441	6,435	107	95,785	1,731	94
75-79	321,782	10,206	102	85,863	2,729	91
80-84	249,475	13,857	102	66,520	3,702	93
85-89	133,498	13,292	107	35,594	3,532	99
90-94	57,039	9,447	111	15,238	2,527	105
Total (ages 50-94)	2,128,256	61,369	108	566,473	16,369	98
WP29 2000-04	1,187,123	32,903	110	316,074	8,767	99

All Females with pension £4,750 pa or above						
	Amounts			Lives		
Age group	Exposed to risk (£'000)	Actual deaths (£'000)	100A/E PCFA00	Exposed to risk	Actual deaths	100A/E PCFL00
50-54	417,161	1,776	107	44,147	182	90
55-59	745,797	3,240	107	81,398	398	109
60-64	820,967	5,243	125	97,258	635	111
65-69	793,994	6,692	95	96,289	852	87
70-74	795,909	11,328	85	94,689	1,426	78
75-79	794,231	21,319	86	92,889	2,615	80
80-84	669,069	31,817	87	77,122	3,883	84
85-89	385,956	34,178	95	43,124	3,949	91
90-94	179,285	26,837	100	19,514	2,929	95
Total (ages 50-94)	5,602,370	142,428	93	646,430	16,869	87
WP29 2000-04	2,772,342	69,364	97	331,606	8,416	91

The breakdown by amount of pension for females shows that pension size has a clear effect, with lighter mortality experienced in the larger pension bands and the effect in general being greater at younger ages. Compared against the results in Working Paper 29, mortality appears slightly lighter overall (the lowest amounts band being the exception), with the greatest differences seen in the younger ages and the higher pension bands. The feature noted in that report, that the 100A/Es in the 55-59 and 60-64 age groups appear relatively high and those in the 50-54 age group appear relatively low, is still seen in all but the lowest band. It is less pronounced, however, particularly on an amounts basis.

Chart 3

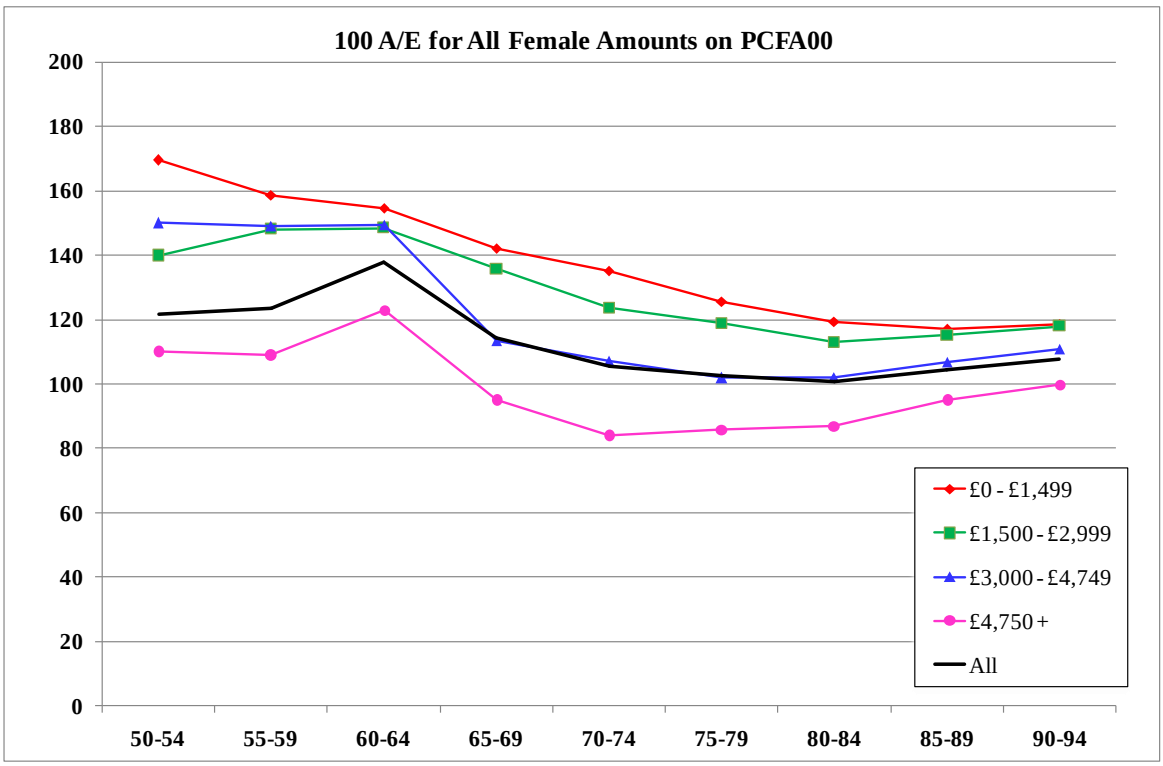
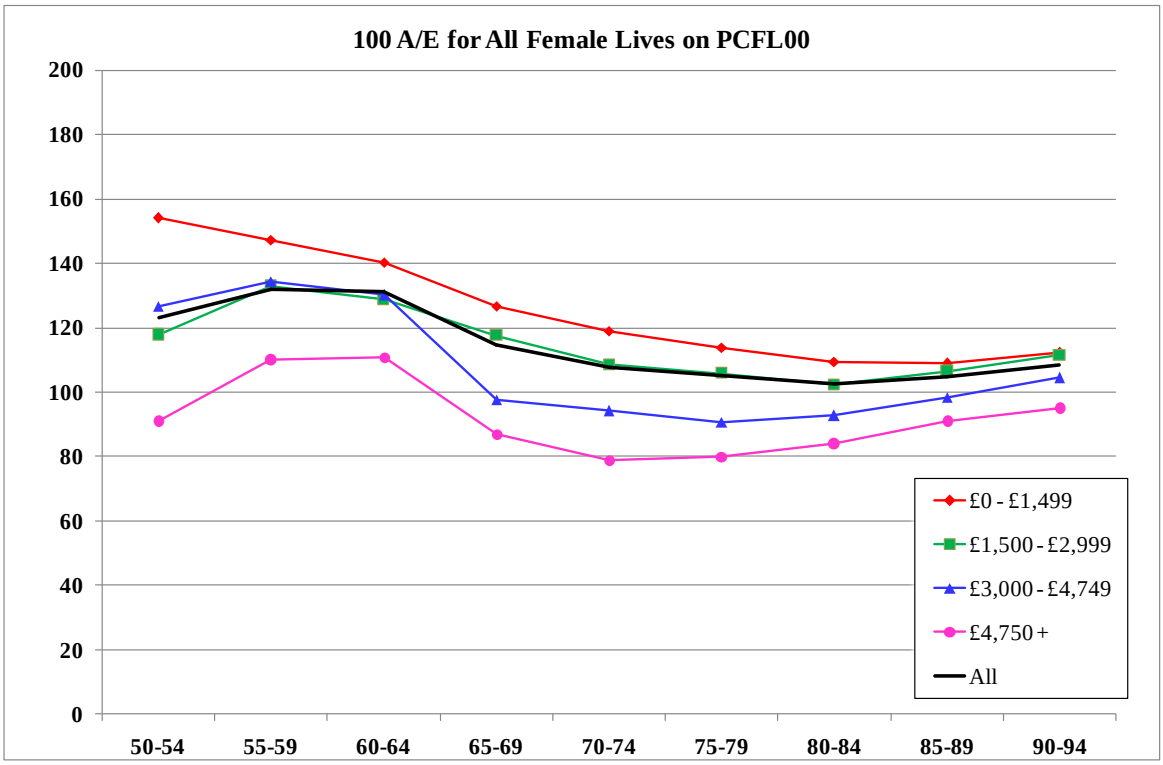


Chart 4



6 Further investigations

6.1 The Committee has simultaneously issued graduations of the data underlying this report in Working Paper 32. It is intended that further analyses, as mentioned on page 2, will follow later in 2008.