

SIA meeting, Edinburgh

SAPS S2 mortality tables

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1. S2 series

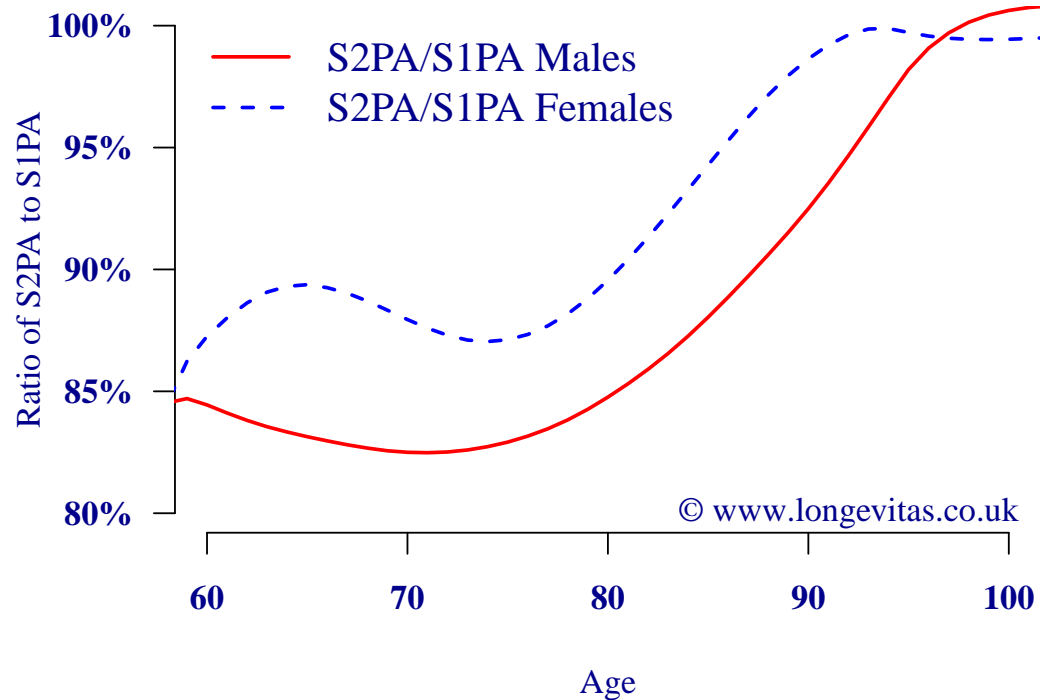
- Latest CMI tables released in February 2014.
- Tables effective from 1st January 2007.

1. S2 series

- First tables published since CMI changed status in March 2013.
 - S2 tables are only available to subscribers.
 - S2 tables cannot be freely exchanged.

2. Comparison against S1 series

Plot of $\frac{q_x^{S2PA}}{q_x^{S1PA}}$:



Source: [Own calculations.](#)

2. Comparison against S1 series

Mortality rates per 100,000 and cumulative improvements:

Age	S1PA:		S2PA:		Cumulative improvement:	
	Males	Females	Males	Females	Males	Females
65	1,124	794	934	710	17%	11%
70	1,973	1,332	1,628	1,172	17%	12%
75	3,538	2,437	2,933	2,123	17%	13%
80	6,263	4,445	5,308	3,980	15%	10%
85	10,715	7,815	9,434	7,368	12%	6%

Source: [Own calculations](#).

2. Comparison against S1 series

Life expectancies:

Age	S1PA:		S2PA:		Change:	
	Males	Females	Males	Females	Males	Females
65	18.1	20.6	19.2	21.2	6.2%	3.1%
70	14.2	16.5	15.2	17.1	7.0%	3.4%
75	10.8	12.8	11.6	13.2	7.5%	3.4%
80	7.9	9.5	8.5	9.8	7.5%	2.8%
85	5.6	6.8	6.0	6.9	6.4%	1.6%

Source: [Own calculations of complete life expectancies](#). These are the life expectancies at current rates, i.e. with no allowance for any likely future improvements in mortality and life expectancy.

2. Comparison against S1 series

Annuity factors, level benefits discounted at 3% per annum:

Age	S1PA:		S2PA:		Change:	
	Males	Females	Males	Females	Males	Females
65	13.42	14.83	14.08	15.20	4.9%	2.4%
70	11.1	12.52	11.74	12.88	5.8%	2.8%
75	8.84	10.17	9.41	10.48	6.5%	3.0%
80	6.76	7.94	7.21	8.14	6.7%	2.6%
85	4.99	5.95	5.28	6.04	5.9%	1.5%

Source: [Own calculations of continuously paid annuities](#). These are calculated at current rates, i.e. with no allowance for any likely future improvements in mortality and life expectancy.

2. Comparison against S1 series

Pension factors, benefits escalating at 2% per annum and discounted at 3% per annum:

Age	S1PA:		S2PA:		Change:	
	Males	Females	Males	Females	Males	Females
65	16.27	18.34	17.20	18.86	5.8%	2.8%
70	13.03	14.97	13.89	15.45	6.6%	3.2%
75	10.06	11.78	10.78	12.17	7.2%	3.3%
80	7.49	8.93	8.02	9.17	7.2%	2.7%
85	5.39	6.51	5.73	6.62	6.2%	1.6%

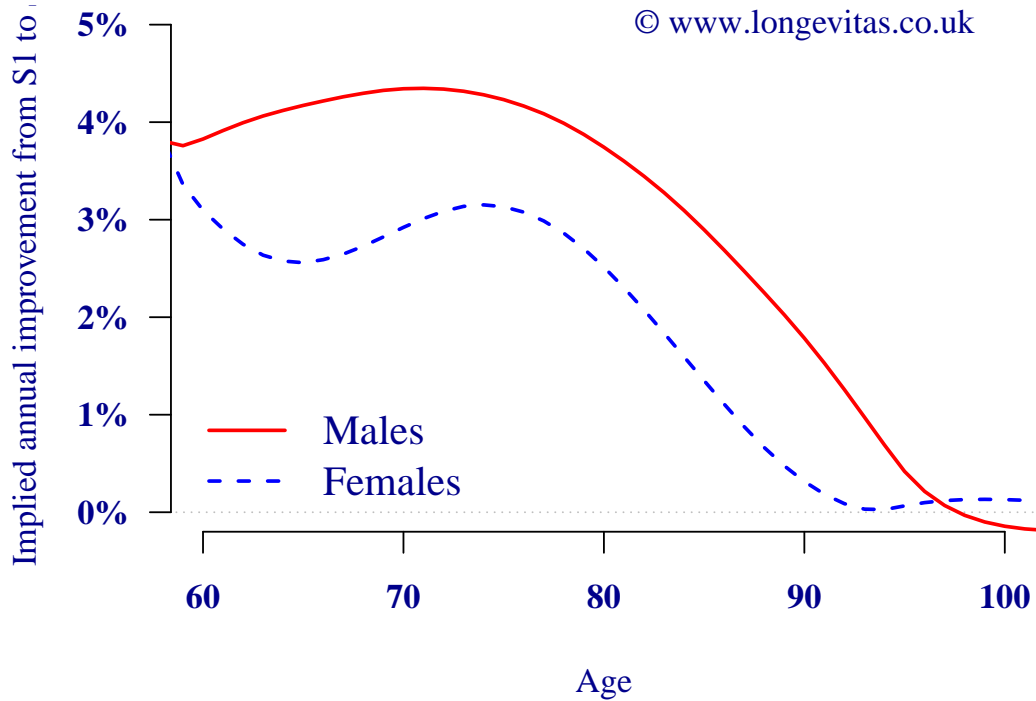
Source: [Own calculations of continuously paid pensions](#). These are calculated at current rates, i.e. with no allowance for any likely future improvements in mortality and life expectancy.

3. Implied improvement rates

- $4\frac{1}{3}$ years between effective dates for S1 and S2 series.
- Can use this to work out implied annual improvement rates.
- Results potentially vulnerable to:
 1. Shift in composition — CMI (2014) says this is modest.
 2. Artificial shapes caused by GM(r, s) graduation formula.

3. Implied improvement rates

Plot solution to $(1 - x)^{4\frac{1}{3}} = \frac{q_x^{S2PA}}{q_x^{S1PA}}$:



Source: [Own calculations.](#)

5. Conclusions

- Large falls in mortality over a short period.
- Low discount rates mean impact on annuity factors is large.

References

CMI LTD **2014** *Graduations of the CMI SAPS 2004–2011 mortality experience based on data collected by 30 June 2012 — Final S2 Series of Mortality Tables*, ISSN 2044–3145

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