

# Technical Briefing

No. 40



## Mortality Assumptions

### Background

Mortality assumptions used to determine technical provisions for defined benefit schemes should include a view on the current rate of mortality as well as future improvements expected to this rate. Mortality assumptions will therefore require and incorporate views on:

1. Mortality base table – current mortality rates for a specific population
2. Future improvements – how mortality rates may change in future years

The lighter mortality rates are or the more they are assumed to improve in the future, the more expensive provision for pension benefits become as members are expected to live longer.

### Assumptions Used in Practice

The Pensions Regulator published data at the end of 2009 detailing the mortality assumptions used by defined benefit schemes in the UK for valuations with effective dates from 22 September 2005 to 21 September 2008. These are all first cycle valuations – that is the first valuation completed under part 3 of the Pensions Act 2004. The data was grouped into three tranches for the three years covered by the effective valuation dates.

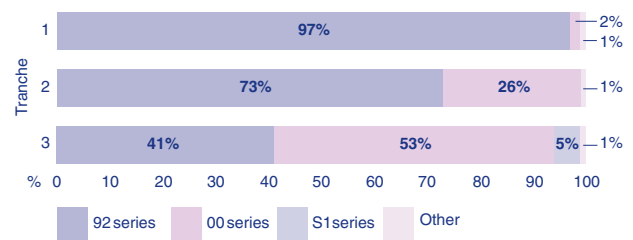
### Base Tables

The three most common industry base tables used were:

1. 92 series – Based on 1991-1994 experience collected from UK insurance companies, published in 1999.

2. 00 series – Based on 1999-2002 experience collected from UK insurance companies, first published in 2006.
3. S1 series – Based on 2000-2006 experience from UK self-administered pension schemes, published in 2008.

The figure below shows the percentage of schemes using these standard base tables.



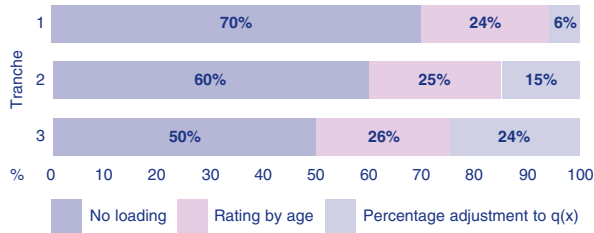
As can be seen, the trend is to use the most recently published table. The S1 series is arguably based on more relevant data since it is based on pension scheme experience as opposed to experience based on life office experience. Given that the S1 series tables were only published in 2008, it is not clear yet to what extent these tables will be used by trustees.

The tables mentioned above are based on large population sizes for lives across the UK. It is possible to adjust these tables by some percentage or apply an age rating to reflect the particular lives of the scheme that is being valued. As can be seen in the figure overleaf, the use of such adjustments has increased over the last three years with half of all third tranche schemes applying such factors. It is important to note that these adjustments could either improve or weaken the base table.





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The year-of-birth approach for projecting future improvements in mortality has increased to such an extent that 97% of third tranche schemes used this approach. This is the method used for cohort improvements. The table below shows the percentage of schemes using particular post-valuation date mortality improvements.

	Tranche 1	Tranche 2	Tranche 3
None	11%	2%	0%
92 base adjustment	23%	11%	3%
Short cohort	8%	3%	1%
Medium cohort	57%	69%	63%
Long cohort	1%	13%	32%
Other	0%	2%	2%

The table shows that by the third tranche of valuations, all schemes used at least some form of future mortality improvement and that the use of long cohort improvements has increased significantly. The use of an underpin (i.e. rather than future improvements tailing off to zero, a minimum percentage applies) increased from 1% of first tranche schemes to 62% of third tranche schemes.

### cprm Commentary

There have been various papers published on future mortality improvements and a number of working parties continue to look into methods of projecting these with more certainty. Some of these models are enormously complex and requires data on individual scheme members (such as medical history) that is not readily available and probably will not be available to trustees in the near future.

However, even with detailed member information there is no single expert view on what a reasonable mortality assumption would be. This makes the job of the trustees setting the longevity assumption particularly difficult.

Consequently, from the data published by the Pensions Regulator, it appears that the trigger point for further regulatory investigation seems to be a main driver for trustees in setting mortality assumptions. The use of long cohort improvements and an underpin significantly increased in the last three years and we expect this to increase even further for second cycle valuations.

For second cycle valuations, the Pensions Regulator will investigate schemes further where the mortality assumption appears weaker than long cohort with some sort of underpin to future improvements. Please contact your **cprm** consultant if you would like more information on the effect improved mortality rates might have on your scheme liabilities.

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