

# Four golden rules for the golden years

## Executive summary

In recent times the life expectancy assumption has come to dominate funding discussions between sponsors and trustees. But, how do trustees know when they have received good longevity advice? In this article **Steven Baxter** describes his four golden rules to consulting on longevity.



The later years of life are often viewed as one's golden years – yet as a growing population of 'golden oldies' enjoy the prospects of a long-lived retirement, so the life expectancy assumption has come to dominate funding discussions between sponsors and trustees. It is perhaps no surprise therefore that earlier this year the Pensions Regulator issued draft guidance on the subject. But, how do trustees and sponsors alike know when they have received good longevity advice? Put simply, good advice follows four golden rules.

### Rule 1: Know your limitations

Any good consultant is mindful of his or her limitations. When it comes to longevity, trustees, sponsors and consultants alike need to be aware of the limitations of their knowledge.

To borrow the language of Donald Rumsfeld there are 'known knowns', and 'known unknowns'. In the context of a longevity assumption we can view these as:

- Known knowns**  
 Recent mortality rates are measurable, but vary considerably from one group of individuals to another. For big schemes the rates can be observed from the numbers dying in recent years. For smaller schemes, this is informed by analysis of pooled data of similar schemes. In the language of the Pensions Regulator this is baseline mortality – and is the most objective part of any longevity assumption.
- Known unknowns**  
 We know that mortality rates, and so life expectancies, will change in the future – but in which direction? And by how much? In the context of UK pension schemes this is a multi-billion pound question – no-one knows the right answer, which is why it is important to look at a range of possibilities for the future.

In regulator speak, these are mortality improvements.

Any assumption about future changes in life expectancy will therefore be subjective. Good advice will be very clear as to what allowance is made for future improvements – with transparency as to the reserve held in the Technical Provisions (or accounting liabilities) for future increases in life expectancy.

An example of how this might look in practice is given in Figure 1.

### Rule 2: A common language

Any advice needs to be accessible. A natural way to describe a longevity assumption is in terms of life expectancies – for example the life

Longevity allowance	Technical Provisions
Recent experience assuming no changes in the future	£100m
With provisions for future increases in life expectancy	£112m

*Figure 1; Illustration of separating technical provisions into baseline mortality and future improvements in longevity based on author's understanding of a reasonably typical valuation basis. It does not represent the personal views of the author as to what might constitute an appropriate provision, nor does it constitute a recommendation.*

expectancy from 65 would describe how long an average 65 year old will live for, or, more morbidly, the average age at which a 65 year old will die.

Although life expectancies are easy to understand, care is needed. Whether we like it or not, many of our opinions are influenced by what we read in the media – and this can 'anchor' our views as to what a reasonable longevity assumption might be. Good advice helps to reconcile the life expectancy assumption used with your everyday beliefs.

For example, the fake newspaper headline shown below captures the kind of number that we might see in the media – that manual workers will live to 81. Suppose now that you are the trustee or sponsor to a scheme from one of the UK's traditional manufacturing industries, let's say the Factory Ltd pension scheme. Then you might be seeing a typical life expectancy assumption closer to 85. Assuming both numbers relate to a 65 year old why is there such a large difference?

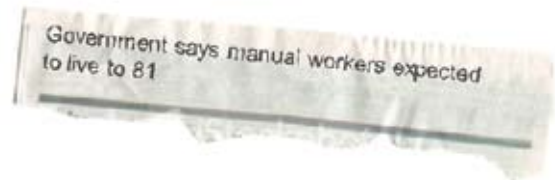


Figure 2 overleaf explains where the extra four years have come from. The two green bars represent the government data behind the news headline above. The various blue bars build up the life expectancy assumption for the Factory Ltd scheme.

Although Factory Ltd is a manufacturing company, a significant proportion of the workforce are involved in non-manual roles – for example sales, corporate accounts etc. Typically those working in non-manual roles have higher life expectancies by between one year (the

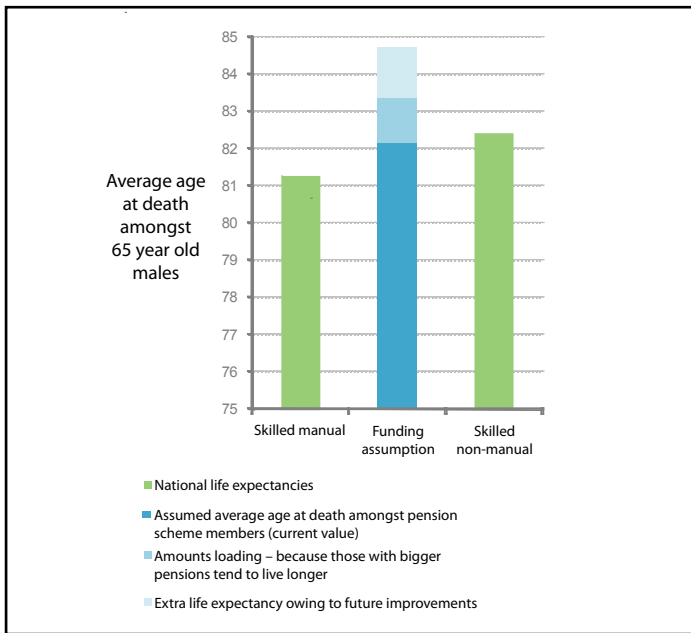


Figure 2: Reconciling a funding assumption to figures in the 'media'.

green bar on the right in the chart) and three years. The mix of staff means that the average life expectancy for the membership is closer to 82 years – the dark blue bar in the chart.

This explains one of the four years difference, but what about the rest? Here we return to Mr Rumsfeld...

The life expectancies quoted by the government usually relate to current conditions – they reflect how long individuals would be expected to live, assuming that nothing changes in the future. In the technical language of actuaries these are known as period life expectancies and relate to the 'known known' of recent mortality rates. Period life expectancies are objective – however, they do not relate to any 'individual'. Someone aged 65 will benefit (or suffer) from changes in mortality rates over the next couple of decades.

For this reason the life expectancies typically quoted to trustees are after the allowance for future improvements. In the chart above this is the lightest blue bar – an extra one and a half years. But what about the middle blue bar?

When valuing pension liabilities what we care about is how long pensions will be paid for. Affordability of health care and other lifestyle factors mean that the most affluent individuals will tend to live longest. Put simply – the biggest pensions are expected to be paid for longest. This typically means that the life expectancy of the 'pensions' is longer than the life expectancy of the individuals involved, by one to two years – this is the middle of the three blue bars.

**Rule 3: Keep it real**

A major part of any longevity assumption is the allowance which is made for how life expectancies will change in the future. There are lots of options available to trustees and sponsors here. The majority of the approaches rely on mathematical models of varying complexity. Good advice will not dwell on the nuances of these models, instead interpreting the model in a way the consumer of the advice can understand.

Indeed the kind of question I am invariably asked by trustees is: "What has to happen for the increases in life expectancy you are projecting to occur?" Or simpler still: "So does that mean you are assuming a cure for cancer?"

Most of the projection approaches used by actuaries are based on statistical analysis of historic trends in changes in mortality rates, and extrapolating these trends into the future. Very few models actually make an explicit assumption as to the medical advances or lifestyle changes which will drive the trends.

However, good advice 'keeps it real'. Looking at possible scenarios for medical advances and lifestyle changes offers an alternative perspective and can help trustees judge whether an assumption might be a reasonable 'best estimate' or 'prudent'.

**Rule 4: Don't be blinkered**

When quoting a single value for pension liabilities, be it the Technical Provisions or an accounting liability, it is very easy for this to appear a certainty. The harsh reality is that any single value is highly unlikely to be right. There is considerable uncertainty as to how long individuals will live. Daunting although it can be – good longevity advice acknowledges this, and illustrates the range of possible outcomes.

A simple way to do this is to look at the impact on the Technical Provisions of different scenarios – for example if medical advances happen faster or slower than assumed (Figure 3).

Helpful although scenarios are, they are also 'point estimates', they tell you nothing about the relative chance of the scenario occurring. Or more importantly, how likely it is that the funding target will prove adequate.

An alternative approach is shown in Figure 4. Here, the trustees are shown the possible range of funds needed – the light blue bars. The dark blue bar represents the 'best estimate' longevity assumption – one where it is believed to be equally likely that actual experience will result in the funds being adequate as being insufficient. This offers one possible way of setting the longevity assumption by the 'prudent principles' required under the funding regulations. The trustees could elect to hold an explicit longevity reserve designed to protect against the surprise of greater than expected rises in life expectancy. The green line in the chart represents the funds needed to reduce the chance of them being inadequate to one in five.

In light of this uncertainty, it is especially important to monitor how the emerging experience compares to the assumption made – this can help avoid nasty surprises and helps 'release' the reserve if it proves unnecessary!

Mortality allowance	Technical Provisions
Medical advances – faster than government targets	£110m
Best estimate	£100m
Medical advances – lower than government targets	£95m

The above is illustrative. It does not represent the personal views of the authors, or their employers, as to what a reasonable spread for future improvements is, nor does it constitute a recommendation.

Figure 3: Illustration of showing the impact on Technical Provisions of different scenarios for longevity.

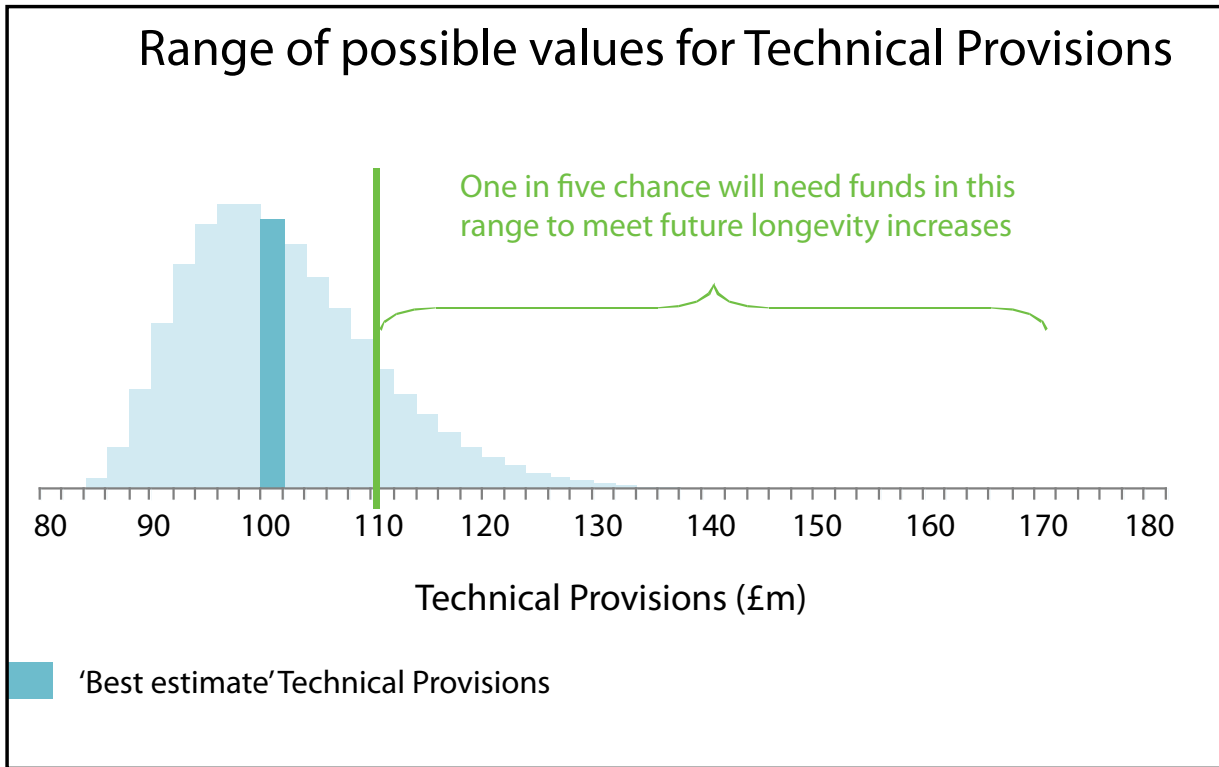


Figure 4: Illustration of a way of showing the impact of the range of possibilities for future longevity on Technical Provisions.

**JARGON BUSTER**

**Mortality rates**

Mortality rates are a measure of the number of deaths in a given population. Although the rate can be defined in a number of different ways, the most commonly used definition is the likelihood of an individual dying within the following year. For example, the mortality rate for someone aged 70 (exactly) is the probability that he or she will die before they reach their 71st birthday.

**Life expectancy**

The average length of time that an individual can expect to live. For example, if we had 1,000 men aged 65 then some might die before they reach 70, whilst some might live in to their 90s. If the average age at death is 85 then we would say the life expectancy of a 65 year old is 20 years. Life expectancy can be based upon mortality rates for one particular period (period life expectancy) or using projected death rates for one particular birth cohort (cohort life expectancy)

**Mortality improvements**

Over time, the average life expectancy in the UK (and most other developed countries) has increased – for example we expect to live longer than our great-grandparents did. The term ‘mortality improvement’ usually refers to reduction in mortality rates – which in turn implies longer life expectancy.

**Minimum improvements or ‘underpin’**

Many projections for future mortality improvements assume that these improvements will rapidly tail off – or equivalently that we are close to a maximum for human life expectancy. Many actuaries are questioning whether we are as close to such a limit as previously assumed, since increases in UK life expectancy are showing little, if any, signs of slowing. As a result it is increasingly common for projections of mortality improvements to allow for some minimum level of year-on-year reductions in mortality rates, or ‘underpin’.

*Found these jargon busters useful? Then email Steven at [steven.baxter@hymans.co.uk](mailto:steven.baxter@hymans.co.uk) for a free copy of Hymans Robertson’s Lexicon of Life – a dictionary of commonly used longevity terms aimed at trustees and sponsors of defined benefit pension schemes.*

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*Hymans Robertson, founded in 1921, is a limited liability partnership and is one of the longest established independent consulting and actuarial firms in the UK. The firm has developed a full range of services including the provision of actuarial, investment consultancy, administration and general consultancy services to defined benefit and defined contribution pension schemes.*