

# BAS Discussion Paper: Actuarial Mortality Assumptions

## Norwich Union Life response to specific questions

Each section is covered below; the BAS's summary is in *italics* and their invitation to comment is in ***bold italics***. NU Life's response follows in **bold** and is indented for ease of reading.

### Section 2: Background

*As explained in paragraphs 2.7 to 2.27, both the over- and underestimation of future mortality can have adverse effects on pension scheme members, scheme sponsors, life insurance policyholders and life insurance companies.*

***The BAS would welcome respondents' views on the significance of the effects described in paragraphs 2.7 to 2.27.***

**The BAS has captured the main potential effects of over- or under-estimating future mortality. Their significance will depend on circumstances.**

### Section 3: Concepts

*The discussion in paragraphs 3.7 to 3.20 leads the BAS to believe that, in order for mortality assumptions to be communicated in a clear and transparent manner to the users of actuarial information, the extent and impact of the inherent uncertainty surrounding them must be explained.*

*For the reasons set out in paragraphs 3.21 to 3.30, the BAS believes that actuarial calculations should use separate assumptions for base mortality and future changes in mortality, and that mortality assumptions should not take the form of margins in other assumptions.*

*Paragraphs 3.35 to 3.45 discuss the significance of mortality assumptions in actuarial calculations. The BAS believes that it is the impact of assumptions on the overall result that is important.*

*For the reasons set out in paragraphs 3.47 to 3.54 the BAS believes that, while period life expectancy is a useful summary statistic, the term is misleading. It is the BAS's view that when the words "life expectancy" or "expectation of life" are used, they should be accompanied by a statement of whether the statistic in question incorporates subsequent changes to mortality rates or is based on rates prevailing at the date of the statistic. Paragraphs 3.55 to 3.58 discuss possible summary statistics for future changes in mortality. Paragraphs 3.59 to 3.61 discuss the use of benchmarks in the communication of mortality assumptions.*

***The BAS would welcome respondents' views on***

***• appropriate methods of communicating the extent and impact of the inherent uncertainty involved in mortality assumptions;***

**NU believes that the communication of uncertainty surrounding future mortality improvements should be communicated in words and, where possible, illustrated with figures.**

**The figures should show how the results might be different if assumptions were chosen at either end of a reasonable range. That reasonable range should be determined by reference to confidence intervals or to the various projections, projection methods and data sets available, as well as different opinions in the industry.**

**The potential consequences of the results under different reasonable assumptions should also be communicated clearly.**

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- *whether the use of separate assumptions for base mortality and future changes in mortality, not taking the form of margins in other assumptions, would be desirable;*

Yes.

- *appropriate methods of communicating the significance of assumptions, both in absolute terms and relative to that of other assumptions.*

We would normally expect the sensitivity of results to key assumptions to be included in any work relating to assumptions-setting, and that this would adequately communicate the significance of individual assumptions.

*The BAS would like to know whether respondents foresee any practical difficulties in communicating the assumptions about subsequent changes in mortality rates underlying life expectancy statistics. It also seeks views on and suggestions for summary statistics for changes in mortality, as discussed in paragraphs 3.55 to 3.58.*

The complexity of typical formats for future improvements (usually a matrix of improvements by age and calendar year) renders a simple explanation, particularly to intelligent lay people as opposed to actuaries, problematical. Whilst an economically-equivalent flat percentage improvement over all ages and years would be simpler to convey, even this is difficult to assess without putting assumptions into the context of historical improvement rates.

Of the summary statistics, the most straightforward is the cohort expectation of life (EoL). This could be used to summarise the base mortality rates and future changes in mortality within an organisation by stepping from EoLs based on current assumptions to EoLs based on alternative or recommended assumptions, changing one element at a time.

EoL is an easily-understood concept commonly used in both technical documents (e.g. FSA returns) and popular media (e.g. newspaper articles).

It might not be easy to compare the strength of the two elements (base table and improvements) of different entities' mortality assumptions from EoLs alone where the bases are not specified. However, we would expect that some of the difference in EoLs would be attributable to the different populations under consideration and therefore reasonable – this leads to the conclusion that comparison of summary statistics might be misleading in some cases.

We would expect assumed mortality improvement assumptions to be specified in sufficient detail to allow another party to draw its own conclusions as to the strength of those assumptions.

*The BAS would welcome views on the use of benchmarks, as discussed in paragraphs 3.59 to 3.61, and whether the development of standard benchmarks for future changes in mortality should be encouraged.*

The BAS's observations regarding benchmarks in 3.59 to 3.61 raises a question about the extent to which "possible scenarios" are really compatible with future mortality improvements as we have come to understand them.

Historical mortality improvements have rarely, if ever, included events as dramatic as a "cure for cancer". Whilst there have been significant incremental developments in medical science, historical mortality improvements (after allowing for random fluctuations) have progressed fairly smoothly and the improvement assumptions that we tend to use also progress smoothly.

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We would not expect to frame mortality assumptions in terms of reductions in death rates from specific diseases and therefore it does not seem to make sense to equate assumptions to similar scenarios. Further, we cannot easily know how likely the possible scenario is to happen, and therefore how weak or strong are the comparable improvements.

Whilst benchmark improvements might facilitate evaluation of the relative strength of improvement assumptions, the BAS would presumably not wish to ascribe any concept of strength or weakness to the benchmarks and this would make them less useful.

### Section 4: Standards

*The BAS has stated its intention to issue two types of standard: generic and specific. Paragraphs 4.9 to 4.12 set out some of the advantages and disadvantages of each as a mechanism for addressing mortality assumptions. Paragraphs 4.13 to 4.26 outline possible forms standards might take, including no standards at all, reporting standards, standards specifying criteria that assumptions should meet, through to standards specifying limits to be placed on assumptions. For the reasons set out in paragraphs 4.17 to 4.19, the BAS believes that reporting standards are vital in increasing the transparency of assumptions and their comprehensibility to users of actuarial information.*

*There are two types of impacts that BAS standards for mortality assumptions might have:*

- *Impacts on funding levels of pension schemes, or capital requirements for insurance companies, and the related social effects*
- *Impacts on the costs incurred by the users of actuarial information*

*For the reasons set out in paragraphs 4.27 to 4.30, the BAS believes that it will be especially difficult to assess the first type of impact.*

***The BAS would welcome any general comments that respondents may have on the various possibilities for standards, and in particular whether they agree that***

- ***there should be some standards for mortality assumptions, as argued in paragraphs 4.15 to 4.16; and***

**Agreed.**

- ***that reporting standards would play a significant role in increasing the transparency of mortality assumptions and their comprehensibility to users of actuarial information, as argued in paragraphs 4.17 to 4.19.***

**The possible reporting standards in 4.17 would add to the transparency of mortality assumptions by setting a reasonable standard for disclosure and a degree of consistency in reported information.**

***Concrete examples of possible standards follow in Sections 5 and 6, which therefore provide an opportunity for making detailed comments.***

***The BAS would also welcome any general comments that respondents may have on how to assess the likely impact of possible BAS standards for mortality assumptions.***

**We do not expect that the potential BAS standards mentioned in the paper would affect NU's mortality assumptions in any way, because we already materially adopt the principles expressed. However, it will be useful to have the principles for setting mortality assumptions formally codified by the BAS.**

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We cannot comment on other organisations in any detail, but we can envisage situations where a formal and explicit requirement to report in a particular format might lead to a re-evaluation of assumptions.

### Section 5: Base mortality

*Paragraphs 5.23 to 5.27 set out reasons why it may be desirable to use the most recent published tables when deriving assumptions for base mortality, rather than older ones that may provide a better fit to experience.*

*Paragraphs 5.37 to 5.49 outline some possible standards for reporting on assumptions about base mortality. Paragraphs 5.50 to 5.55 outline some possible standards specifying criteria that assumptions should meet, and paragraphs 5.56 to 5.57 explain why the BAS believes that standards setting limits for base mortality would not be practicable, with one possible exception.*

***The BAS welcomes respondents' views on the desirability or otherwise of using the most recent applicable published tables, taking into account both the communication problems and the practicality of setting a limit on the tables to be used.***

NU agrees with the exposition in 5.23 – 5.27, and in particular that assumptions based on recently published tables would carry more credibility. However where there is sufficient reliable data to lend full credibility to the experience this can lead to any table, up-to-date or otherwise, being adjusted out of recognition for use in pricing, reporting and reserving.

***Views would also be welcomed on any of the possible requirements for reporting on assumptions about base mortality, criteria that assumptions should meet, or limits that should be observed when setting assumptions. The BAS is particularly interested in***

- any practical problems that might arise in complying with them; and***

The assumptions chosen for base mortality should represent the estimate (with an appropriate degree of prudence dependent on the purpose) of the current mortality experience of the population to which the assumptions are to be applied.

Since mortality assumptions are applied to many different populations, it would be extremely difficult to specify a minimum strength of assumptions.

NU would advocate principles by which mortality assumptions are derived that could be applied to any situation for which assumptions were required, which would ensure that a thorough process had been followed in deriving the assumptions. In essence, we agree with the BAS's analysis in 5.41 to 5.49.

We do not envisage any practical problems with compliance with reporting standards for base mortality.

- whether they would further the BAS's aim of increasing the transparency of assumptions and their comprehensibility to users of actuarial information.***

Whilst we support any reporting requirements that would allow a better understanding of assumptions by the users of the information, we should be careful not to specify a mass of information that is simply confusing or information that could easily be misinterpreted.

It is a feature of mortality assumptions that they are necessarily complicated and the search for a simple 'one size fits all' reporting requirement runs the risk of omitting nuances in the assumptions-setting that might be important (particularly where summary statistics for different purposes or different companies are compared out of context).

## Section 6: Future changes in mortality

*For the reasons set out in this section, and especially in paragraphs 6.35 to 6.39, the BAS believes that there is no objective basis for differentiating the future changes in mortality likely to be experienced by a particular small group of lives from those likely to be experienced by the population as a whole.*

*Paragraphs 6.47 to 6.58 outline some possible standards for reporting on assumptions about future changes in mortality, Paragraphs 6.59 to 6.64 outline some possible standards specifying criteria that assumptions should meet, and paragraphs 6.65 to 6.66 explain why the BAS believes that standards setting limits for future changes would not be practicable, with one possible exception.*

***The BAS would like to know whether respondents agree that there is no objective basis for differentiating the future changes in mortality likely to be experienced by a particular small group of lives from those likely to be experienced by the population as a whole. If respondents disagree, the BAS would be interested in examples to the contrary, together with supporting evidence.***

**We agree that there is unlikely to be an objective basis for differentiating future mortality changes for a small group from those of the general population, although this depends on one's definition of "small". For example, it is commonly the case that assumptions for males and females are different. Perhaps a more helpful reference might be to groups for which credible evidence is lacking.**

***Views would also be welcomed on any of the possible requirements for reporting on assumptions about future changes in mortality, criteria that assumptions should meet, or limits that should be observed when setting assumptions. The BAS is particularly interested in***

- any practical problems that might arise in complying with them; and***

**We do not envisage any practical problems with compliance with reporting standards for base mortality.**

- whether they would further the BAS's aim of increasing the transparency of assumptions and their comprehensibility to users of actuarial information.***

**If we assume that there is no particular aspect of the group of lives in question that make them likely to exhibit different future improvements than a general population, then future improvements lend themselves better to summary statistics and benchmarks. The reasons for the choice of future improvement assumptions could be explained, together with a comparison with results derived from using some of the projections in the CMI library. However this runs the risk of creating a 'gold standard' in the CMI library whereas the projections are intended only to be illustrative and to represent part of a range of possible views.**

**The uncertainty surrounding future mortality improvement assumptions is a crucial message to convey, and we would support a requirement to attempt this. Our preferred method would be through confidence intervals and/or sensitivity testing that gave a picture of a reasonable range of results.**

**Although this would add complexity to reporting, we believe that communicating uncertainty around an estimate (and the potential consequences of that uncertainty) is fundamental to proper communication to users.**

**In essence, we agree with the BAS's analysis in 6.51 to 6.58.**

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