



Mortality Insights

Life expectancy across the UK

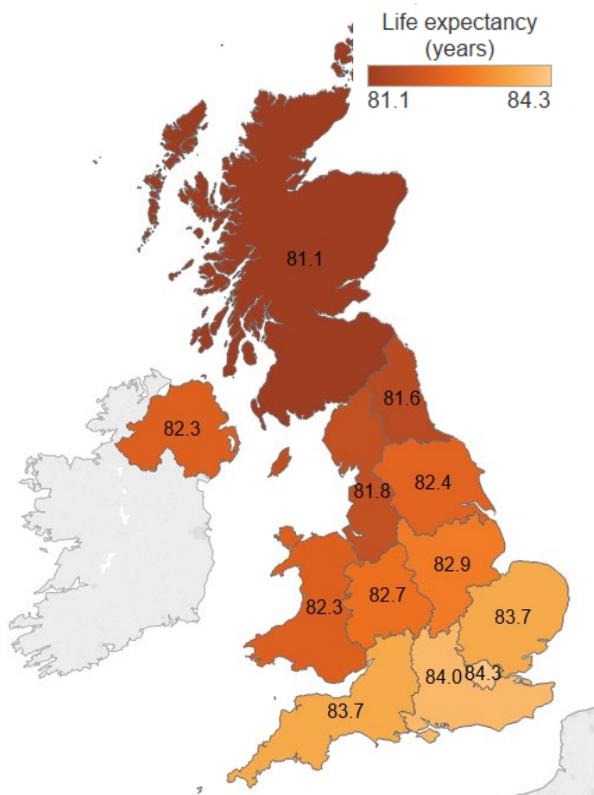
Welcome to **Mortality Insights**. In this edition we explore how life expectancies vary within the UK, depending on where people live and the characteristics of the group under consideration

In the [first edition of Mortality Insights](#) we focussed on mortality trends at a UK level. However, the life expectancy of any group of people may vary considerably from the UK average. So, it's important to understand the characteristics of the relevant group of people when determining cost projections that require assumptions to be made on how long people can expect to live. As an example, if a pension scheme underestimates life expectancy, this could lead to inadequate funds. Alternatively, if we overestimate life expectancy that may result in an inefficient use of resources.

Below, we look at how life expectancy varies according to geographical region and socio-economic status, before considering how mortality assumptions may be set in practice.

From Scotland to the south - geographical variations

Figure 1: Period life expectancy at birth by region, females, 2015 to 17



There is a range of life expectancy across the UK. On average it is generally higher in the south, with a female in London expecting to live for 3.2 years longer from birth than in Scotland. Looking at smaller geographical areas, such as local authorities, the variation becomes even more pronounced. As an example, the London borough of Camden has the highest life expectancy from birth, of 86.5 years. This is nearly 8 years longer than in Glasgow where a newborn girl is expected to live for 78.7 years.

This does not mean though, that if you moved from Camden to Glasgow that you'd reduce your own lifespan by 8 years. The differences will reflect underlying reasons which are more prevalent in one region or another, such as:

- lifestyle (such as smoking)
- socio-economic status (eg deprivation or wealth)
- education
- living and working conditions

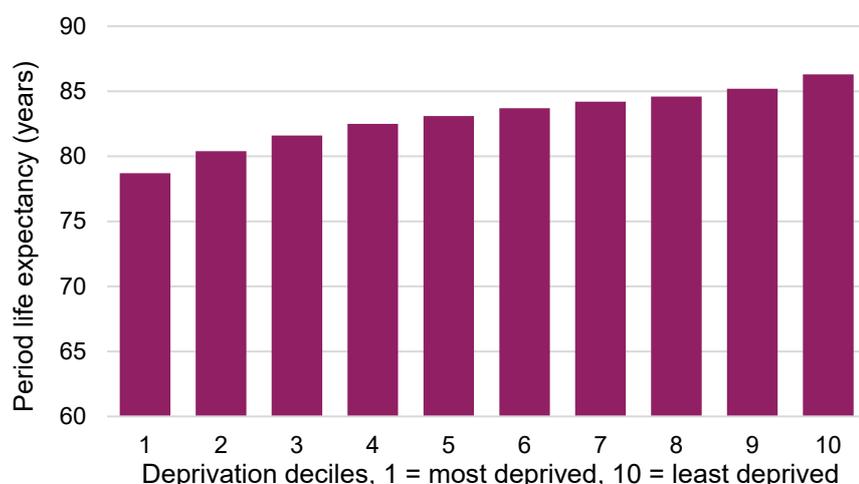
Source: GAD graphic of ONS data



Socio-economic variations

The bar chart in Figure 2 illustrates the impact of socio-economic status by showing how the life expectancy of a newborn girl in England varies according to the **deprivation decile** they are in. It suggests the level of deprivation has a material impact on life expectancy with a newborn girl expecting to live for 86.3 years in the least deprived areas. That's more than 7 and a half years longer than the 78.7 years expected in the most deprived areas.

Figure 2: Period life expectancy at birth by deprivation decile in England, females, 2015-17

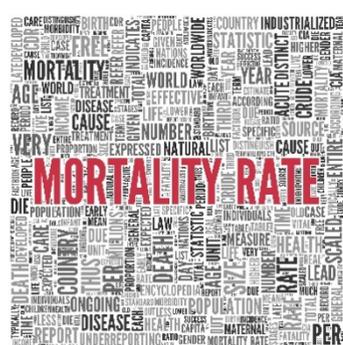


Broadly speaking, each **deprivation decile** represents 10% of the population, ranked in order according to the level of deprivation where they live. This is assessed using information on a range of areas including income, employment, education and health deprivation.

Source: ONS

Figures 1 and 2 consider **period life expectancy**, a theoretical measure of expected lifespan calculated using the observed death rates at all ages for a particular year or years.

Setting mortality assumptions



Mortality rates vary in different geographical regions, with the level of assessed deprivation seemingly a contributing factor. However, it does not necessarily mean a specific group of individuals will experience the mortality rate of that region.

For example, life expectancies for members of a final salary pension scheme covering a wealthy group of employees could be longer than the average of the geographical region they live in.

So, when setting mortality assumptions, it is important to carry out an **analysis of experience**. This has the advantage of reflecting the specific characteristics of the relevant population, without having to explicitly quantify the impact of the underlying causes of mortality. Also, postcode analysis is increasingly being used, where rating factors which relate to where a person lives, will feed into the mortality-assumption setting process.



In the context of a pension scheme, an **analysis of experience** will use deaths and numbers of scheme members to determine the past death rates experienced at each age. These rates will not usually be used directly as a future mortality assumption as there is unlikely to be enough data for the analysis to be statistically credible at all ages. Instead, the analysis will be used to adjust an existing national mortality table.

As an example of how the mortality assumptions might vary, in the 2016 Public Service Pension Scheme valuations carried out by GAD, it was assumed the **cohort life expectancy** of a 65-year-old man in the Judicial Pension Scheme was 24.4 years, which is nearly 3 years longer than the equivalent 21.7 years in the Firefighters' Pension Scheme.



Cohort life expectancy differs from period life expectancy in that death rates are assumed to change over time with future mortality trends. Arguably this produces a more appropriate measure of how long a person might expect to live. However, it is more subjective as it depends on an assumption for what will happen to mortality in the future whereas period life expectancy would typically only reflect observed data.

Life expectancy – planning ahead



One model that can be used to set assumptions on what will happen to mortality in the future is the Continuous Mortality Investigation (CMI) model produced by the Actuarial Profession. The most recent CMI model (for 2018) was published in March 2019. The 2018 'core' model results in a reduction in cohort life expectancies at age 65 by around 0.5 years compared to the 2017 model.

CMI's [briefing note](#) cites a growing consensus that the stalling in life expectancy observed in the general population since around 2011 represents a new trend rather than a 'blip'. However, there are some early indications that life expectancy in the general population may have increased at a greater rate in the first half of 2019 than has been witnessed since 2011.

Assumptions on what will happen to mortality in the future will be the focus of our next edition of Mortality Insights, due out towards the end of 2019.

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