



# Mortality Insights

Twice yearly bulletin from GAD's mortality experts

Issue 1, December 2018

## Welcome to the first edition of GAD's new bulletin on mortality insights

**Why is mortality important for government financial planning?** How long people in the UK can expect to live is important for those responsible for planning public service provision and keeping track of the cost of government commitments. It impacts on a broad range of areas such as future demand for health and care services, long term workforce projections, and the cost of providing state and workplace pensions. As these examples show, the longevity of the UK population has major implications for public sector finances for both expenditure and revenues.

**How are actuaries involved?** Extensive data has been collected on the progression of lifespans over recent decades. Demographers and actuaries study this information and generate analysis that, while acknowledging the uncertainty of future outcomes, can with good judgement provide a basis for making informed decisions. There are many factors influencing longevity that change over time, for example lifestyles, medical advances and environmental conditions. Therefore ongoing analysis is essential to keep this knowledge up to date and of practical use.

**GAD's expertise:** GAD has a long track record both in contributing to the advancement of mortality analysis and applying it practically to inform and support public sector decisions. These twice annual bulletins will provide succinct and accessible information on current developments in the area of longevity research. We hope this will be a useful information resource for public sector decision makers.

This debut edition focuses on the emerging pattern of stalling increases in life expectancy

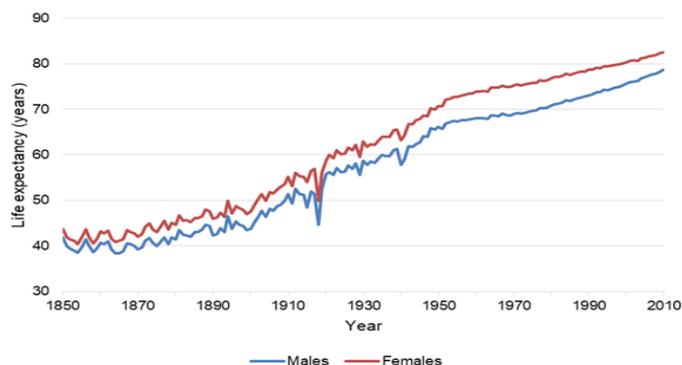
## Stalling increases in life expectancy

### Historical increases in lifespan

**Period life expectancy** at birth increased significantly in England & Wales over the 20<sup>th</sup> century from around 44 years for a male in 1900 to around 76 years in 2000, an increase of 32 years. This improvement is generally attributed to a variety of factors, such as an increase in the availability and quality of healthcare and improvements in lifestyle factors such as working conditions.

**Period life expectancy** is a theoretical measure which represents the average number of years of life that a person would survive calculated using the observed death rates at all ages for a particular year.

Figure 1: Period life expectancy at birth, England & Wales, 1850-2010

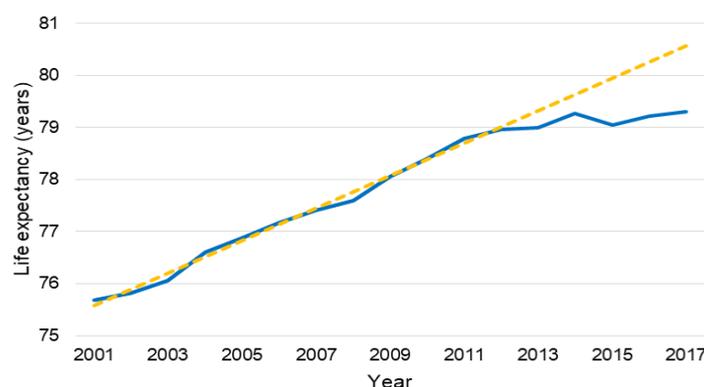


Source: GAD analysis of ONS data

### Recent mortality trends

The rapid increases in life expectancy continued in the 21<sup>st</sup> century at most ages until around 2012, after which the observed improvements slowed down dramatically. This slowdown is illustrated in the graph below for males, and a similar trend has occurred for females. This shows there was a relatively linear increase in period life expectancy between 2001 and 2011 (illustrated by the dotted line); however, since 2012 there has been very little improvement.

Figure 2: Period life expectancy at birth, Males, UK, 2001 onwards



Source: GAD analysis of ONS data

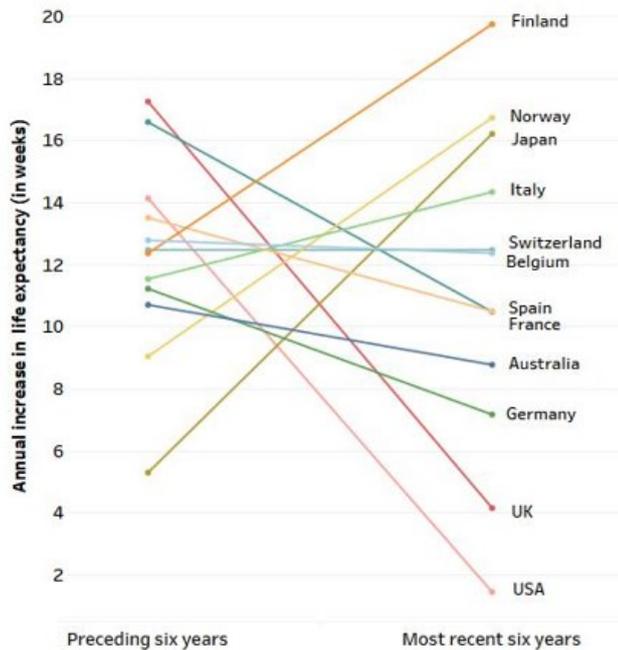
### Has this recent trend been observed in other countries?

Figure 3 shows the average increase in period life expectancy at birth for males in a range of countries over the latest 6 year and the preceding 6 year periods, illustrating how the increase in life expectancy has changed over time. There have been slowdowns in the increases in life expectancy in other countries, in particular the USA, Spain, Germany and France (represented by a downward slope in figure 3). Conversely, countries such as Japan, Norway and Finland have experienced accelerated increases in life expectancy (an upward slope in figure 3).

## Stalling increases in life expectancy (continued)

The relative increases partially depend on whether the life expectancies at the start and end of each period were particularly high or low. In other words, these results can be very sensitive to the exact time periods used.

**Figure 3: Average annual increase in period life expectancy at birth for males in selected countries**



Source : ONS analysis of Human Mortality Database data

### What can we expect in the future?

At present it is unclear what has been causing the stalling of increases in life expectancy since 2012. It is also unclear whether this trend will continue or if it is a blip, albeit over a longer period than has been experienced in past years. Some commentators have speculated that austerity measures have been the main cause. While the onset of austerity does broadly coincide with the change in mortality trend, this has not been reflected elsewhere, for example in countries such as Italy and Greece which have had accelerated increases in life expectancy in recent years.

It may be that the limits are being reached for some of the underlying causes of the relatively large increases in life expectancy over the last few decades. For example, the reductions in smoking and advances against cardiovascular

disease. Rising levels of obesity and diabetes may also be having an impact. In recent years we have also seen strong and widespread strains of influenza which have had a direct impact on the number of deaths, especially in the elderly. Also, the period 2001 to 2011 saw particularly high gains in life expectancy in the UK compared to earlier decades and also compared to other countries. Therefore the slowdown may partly reflect a return to the rate of improvements experienced over earlier years.

### Implications

The observed slowing of increases in lifespans has resulted in recent ONS UK population projections assuming reduced increases occurring in the future, at least in the early years of the projection period. This results in lower projected life expectancies compared to previous projections. This is also the case for the mortality projections model produced by the Institute and Faculty of Actuaries Continuous Mortality Investigation (CMI).

For the unfunded public sector pension schemes the impact of moving from the ONS population projections based on UK experience to 2012 to those produced based on experience to 2016 is significant. All else being equal, this change in assumed future life expectancy has had the effect of reducing one of the key measures of the expected cost of providing benefits by typically around 1.5% to 2% of pensionable pay for these schemes. Various member options may also be affected, for example transfer values would reduce, all else being equal.

### Final thoughts

Given the inherent uncertainty regarding future increases in lifespan, any assumption that is adopted should be appropriate for the purpose to which it is put and the characteristics of the group of lives it concerns. For instance investigations have been carried out into the socio-economic impact on increases in life expectancy. Some evidence suggests that the stalling of increases to life expectancy over time has primarily affected those groups with relatively lower wealth and that the life expectancies of wealthier groups are still continuing to improve at similar rates to previously.

Our next bulletin on mortality insights will be published in the first half of 2019.

**New mortality tables:** The CMI 'S3' mortality tables were released on 5 December. Please see the October 2018 issue of eNews for details of [how GAD contributed public sector data to be used in preparing the tables.](#)

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