



Public Health
England

Protecting and improving the nation's health

Recent Trends in Life Expectancy at Older Ages

February 2015

About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. It does this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. PHE is an operationally autonomous executive agency of the Department of Health.

PHE's knowledge and intelligence teams produce high quality public health intelligence and insight to protect and improve the nation's health and reduce health inequalities.

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Foreword

This report on life expectancy among those aged 65 and over in England summarises the relevant trends and provides some context for those trying to assess the significance of recent apparent changes.

The report confirms an overall upward trend in life expectancy in this age group in England since the early 1980s. However, the data also show that there was a small fall in female life expectancy at age 65, 75, 85 and 95 in 2012 compared with 2011, and a small fall in male life expectancy at ages 85 and 95. There were no further falls in 2013 compared with 2012. There has been significant interest and concern already expressed over these findings. However, the analysis presented in this report suggests it is too early to conclude that there has been a significant change in the overall upward trend in life expectancy at older ages. PHE will continue to monitor these trends closely and will report on the figures for 2014 as soon as they are available.

It is striking that the fall in life expectancy at older ages in 2012 was also seen in many other European countries. Possible reasons for this fall are considered in the report, including statistical artefact, influenza and the weather. However, it is clear that further research will be needed to confirm or refute the potential contribution of these and other factors to the observed short-term trends in life expectancy.

We have also made trends available for individual local authorities in England, using recently released data from the Office for National Statistics. Due to the small populations in older age groups in many local authorities, more year-on-year fluctuation in life expectancy is to be expected than in the national figures. Comparing 2008-10 and 2011-13, 89% of lower tier and unitary local authorities had an increase in male life expectancy at 65 years, and 81% had an increase in female life expectancy at this age.

PHE is planning further analysis of these recent trends in life expectancy and mortality. We will be inviting external experts to join a steering group for this work and publishing the results of further work as soon as it is available.

In the meantime, I hope this report provides a clear summary of what is currently known about the most recent data.

Professor John Newton
Chief Knowledge Officer

Key points

- over the last 30 years there has been an upward trend in life expectancy at older ages in England. Life expectancy among those aged 65 has increased at an average rate of 1.2% per year for men and 0.7% per year for women
- within England, although female life expectancy at age 65, 75, 85 and 95 fell in 2012, and for males it fell at ages 85 and 95 and remained static at ages 65 and 75, it is too early to say whether this represents a slowing down in the upward trend or the start of a downward trend
- the overall upward trend and the fall described for 2012 in England were reflected across many of the countries of the European Union
- between 2008 to 2010 and 2011 to 2013, 89% of lower tier and unitary local authorities had an increase in male life expectancy at 65 years, and 81% had an increase in female life expectancy at this age. There does not appear to be a relationship between change in life expectancy at age 65 and the level of life expectancy in 2008 to 2010 or level of deprivation for a local authority. Local authorities that did not show an increase are not confined to specific areas of the country
- PHE will continue to monitor life expectancy and mortality in England and other geographies, and will make the findings available in future reports

Life expectancy in England

Over the last 30 years there has been an upward trend in life expectancy at older ages in England. Figures 1 and 2 show life expectancy in England at ages 65, 75, 85 and 95 from 1981 to 2013.

Trend lines have been fitted to the data which show the upward trend in life expectancy for all four ages for both sexes. Although the trend line for life expectancy at age 95 appears relatively flat in the chart, the average growth rates in Table 1 show that there has been an increase, although not as great as for the other three ages.

Table 1 also shows that at each age, life expectancy for males is increasing at a faster rate than for females. Consequently the gap in life expectancy between the sexes at older ages is narrowing.

Life expectancy in the European Union

In the EU there has been an overall upward trend in life expectancy at older ages. The charts in Figures 3 and 5 show this for male and female life expectancy at ages 65, 75 and 85 for the EU as a whole and its largest countries, including the UK.

In 2012, however, there was a fall in life expectancy at older ages for the EU, when compared with life expectancy in 2011. This fall was reflected in many of the largest countries in the EU (Figures 3 and 5). At age 85, male life expectancy fell by 0.1 years in the EU, and female life expectancy by 0.2 years.

The charts in Figures 4 and 6 show changes between 2011 and 2012 for all EU countries for life expectancy at ages 65, 75 and 85. It is striking that the fall in 2012 occurs across the majority of EU countries. For male life expectancy at age 85, only four of the EU's 28 countries had an increase between 2011 and 2012 (Denmark, Greece, Estonia and Luxembourg). In all other countries, life expectancy at 85 either fell or remained the same. For female life expectancy at age 85, only four of the 28 countries had an increase between 2011 and 2012 (Malta, Slovenia, Denmark and Estonia).

Life expectancy at older ages in the UK is very similar to the EU average (Figures 3 and 5) and the trends in the UK are consistent with the overall EU trend.

Life expectancy in the English regions

Life expectancy at age 65 has been increasing in all English regions for both sexes (Figure 7). The regional life expectancy figures are not directly comparable with the England figures reported in Figures 1 and 2, partly because they are based on three-years of data rather than single years of data, but also because a different life table methodology is used by ONS. Further details are in a methodology note at the end of this report. Between the two most recent independent periods (2008 to 2010 and 2011 to 2013), life expectancy increased in all regions, and this change was statistically significant for both sexes in all regions. For males, the largest percentage increase was in the North East and the North West (4.1%). For females, the largest percentage increase was in London (2.8%).

In no regions was there a fall in life expectancy at age 65 between 2010 to 2012 and 2011 to 2013, although as can be seen in Figure 7, for some regions there was little change. This is particularly evident for females and this flattening off is likely to reflect the effect of lower life expectancy in 2012. This will impact on the regional life expectancy figures for 2010 to 2012 and 2011 to 2013, as well as the results for 2012 to 2014 when those become available later in 2015.

Life expectancy data is not routinely available for those aged 75 and 85 for the English regions.

Life expectancy in English local authorities

Life expectancy at age 65 increased in all English local authorities between 2000 to 2002 and 2011 to 2013. The local authority life expectancy figures are produced following the same methodology as the regional figures and are therefore not directly comparable with the figures for England. Further details are in a methodology note at the end of this report.

Table 2 compares life expectancy at age 65, 75 and 85 for the two most recent independent (ie non-overlapping) time periods: 2008 to 2010 and 2011 to 2013. For the 324 lower tier and unitary authorities,ⁱ life expectancy increased at age 65 in 89% of areas for men and 81% of areas for women. At age 75, there were increases in 82% of areas for men and 76% of areas for women. The number of local authorities where life expectancy increased at age 85 was lower: 60% of areas for men and 48% of areas for women.

Given that the trend in life expectancy in England as a whole has been upwards over this period, it is expected that life expectancy in many local authorities would increase between these time points. However, due to the small populations in older age groups in many local authorities, more year-on-year fluctuation in life expectancy is to be expected than in the national figures. There does not appear to be a relationship between change in life expectancy at age 65 and the level of life expectancy in 2008 to 2010 or level of deprivation for a local authority. Local authorities that did not show an increase are not confined to specific areas of the country.

The data for each individual local authority can be found on the PHE website with this report.

ⁱ Unitary authorities, country districts, metropolitan county districts and London boroughs

Other factors, which might affect many European countries at the same time and which could conceivably have an impact on life expectancy, include environmental factors, the level of influenza type illness circulating in the population, and economic recession. A first step towards any explanation is to monitor the trend to see whether any further falls in life expectancy occur, and if so at what ages and in which areas.

A PHE report examining the level of influenza type illness in the population also concludes that there were no excess all-cause deaths in the winter of 2011/12 (using a different methodology to ONS and defined as excess over what is expected in winter months).⁷ The winter of 2012/13 had the highest excess since 2008/09, however, the majority of the excess was seen in March and April 2013.⁸ These findings are consistent with those published by ONS. We expect the impact of these seasonal fluctuations in mortality on the overall long-term trends in life expectancy to be small.

Preliminary analysis of the number of deaths in England in those aged over 65 and over 85 for 2014, indicates that there is unlikely to be a rise in the overall number when compared with 2013, but equally that there will have been no return to the lower numbers occurring in 2010 and 2011. However, it is not possible to estimate the effect on life expectancy without an estimate of the age-specific population for 2014. This will be calculated as soon as the population data are available, currently expected in June 2015.

Therefore, despite the recent fluctuations described here, the main conclusion remains that the overall trend in life expectancy at older ages has been upwards and similar fluctuations have been observed in the past. It is therefore too soon to say whether these fluctuations represent a change in the overall trend.

Next steps

Further work on the monitoring of life expectancy and mortality in England and other geographies is important. PHE has a developing work programme to monitor such changes in mortality and life expectancy:

1. Population estimates for 2014 are expected in June 2015. Once these are available PHE will calculate provisional life expectancy for England to monitor change
2. In order to fully understand trends in life expectancy it is necessary to understand trends in age-specific and cause-specific mortality as well. Future reports on these are planned

Methodology

ONS uses different methods to calculate its national and sub-national life tables. The national life expectancy results illustrated in Figures 1 and 2 were calculated using a single-year life table. This is based on death rates by single year of age from 0 to 100+.

For sub-national life expectancy outputs, ONS uses an abridged life table that is based on death rates in five-year age groups, up to 85+. A copy of the template is on the ONS website: <http://www.ons.gov.uk/ons/rel/subnational-health4/life-expectancy-at-birth-and-at-age-65-by-local-areas-in-england-and-wales/2011-13/stb-life-expectancy-at-birth-2011-13.html#tab-Methods>

Using this abridged method, for the final age group the probability of survival is zero (as everyone in the 85+ age band must die). As the probability of survival is zero, this method assumes that the associated variance is also zero. If there is no variance for the final age band, there can be no confidence intervals for life expectancy at age 85.

The abridged life tables currently used by PHE follow a recommendation that for the final age band in an abridged life table, variance should be based not on the probability of survival but on the mean length of survival.⁹ This assumption is employed in the abridged life table template used by PHE:

<http://www.sepho.org.uk/viewResource.aspx?id=8943>

PHE is in discussion with ONS about the methods used to calculate abridged life tables, including raising the upper age band from 85+ to 90+ and adopting a common method for calculating confidence intervals.

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