

Longevity Science Panel

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UK lagging behind other countries' mortality trends

A new report, '[An analysis of mortality trends in developed countries](#)' - published today by the **Longevity Science Panel (LSP)** reveals that, contrary to what we might have expected from mortality trends over the last few decades, more people are dying sooner across many high-income countries, including the UK.

Of the sixteen developed countries with long-run data studied, the UK is among the worst performing three. But some Scandinavian populations managed to buck this trend.

Mortality rates have fallen, or '*improved*', in many developed countries. The yearly improvement is called '*mortality improvement rate*' in this report. However, the mortality improvement rates have recently been slowing in the UK and other countries, prompting many questions.

The report looks in detail at trends in death rates for men and women across sixteen developed countries, paying special attention to changes since 2010 for those above 50 years of age. It uses statistical models to study death trends between 1965 and 2010, as the basis for projections from 2011 onwards. These projections were then compared with what actually happened.

Key Findings:

The report concludes that for the above 50s:

- More people are dying than might otherwise have been expected had the earlier trends in the improvement in death rates continued in many countries, including the UK
- Our statistical models projected lower '*mortality improvement rates*' from 2011 than observed in the preceding decade among men in 14 countries and women in seven countries
- When we compare what actually happened since 2011 against our projections, there is a marked gender difference. Women in 14 countries, but men in just eight countries, have experienced lower mortality improvements than projected since 2011. We have observed that the rate of mortality improvement is slowing down. The UK, Spain and Germany are the three worst performing countries of the 16 in this study

- Some Scandinavian countries have bucked the trend, implying fewer deaths than projected. They include men and women in Denmark, and men in both Sweden and Finland

Comments from LSP:

The Chair of LSP, Dame Karen Dunnell commented: ‘We urge the government and academics to research the reasons behind the slowdown in mortality improvements in so many developed countries.’

Professor Debora Price, Professor of Social Gerontology at the University of Manchester said: ‘The gender issues highlighted by this report are very concerning and we need urgently to understand what is driving these. We know that austerity policies have fallen mostly on women – could this be part of the explanation for higher than expected deaths?’

Professor Steven Haberman, Professor of Actuarial Science at Cass Business School, City, University of London said: ‘Within the UK, there is also worrying evidence of widening gaps between the trends for the better off sections of society compared to the more deprived. We should expect continuing volatility in mortality rates as the population ages and with the increasing likelihood of more extreme weather events such as heat waves and cold snaps.’

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Download the Report:

[‘An analysis of mortality trends in developed countries, focusing on the recent slowdown in mortality improvements.’](#)

Notes to the editor

About The Longevity Science Panel

The Longevity Science Panel has been set up to monitor trends, generate discussion and form views on issues related to the UK’s population longevity trend. The Panel is interested in the drivers that are enhancing life expectancy for example, medical advances and social change, as well as the inhibitors such as aspects of lifestyle and delays in development of treatments. The Panel is supported by Legal & General.

Additional analysis:

Mortality rates have fallen or 'improved' in many developed countries. The yearly improvement is called mortality improvement rate here. There have been many questions asked about the recent slowing of mortality improvement in the UK and other countries (Reference 1).

The LSP has analysed population mortality trends of developed countries using data from the Human Mortality Database (HMD). These data have been consistently organised and adjusted, making them more suitable for coherent comparisons.

We have calculated average mortality improvement rates over different time periods for people age 50-95. The results show that mortality improvement rates after 2010 are lower than periods before it for most countries. For example, the average mortality improvement rate for females in the UK was 2.3% p.a. during 2000-2010, dropping to 0.4% p.a. during 2011-2015 (Table 1). However, the situation is reversed in some countries, for example Denmark where the average mortality improvement rate during 2000-2010 was 1.7% p.a. which was lower than 2.6% p.a. actually seen during 2011-2015.

Further information, please contact:

Timo Burbidge

Lansons

D +44 207 294 3684

Legalandgeneral@lansons.com

Table 1: Women: Average annual mortality improvement rates by countries and periods

	1965 - 1980	1980 - 1990	1990 - 2000	2000 - 2010	Projected 2011-2015	Actual 2011-2015
Australia	1.8%	1.4%	2.5%	1.9%	2.0%	0.9%
Austria	1.1%	2.0%	2.0%	2.1%	1.8%	0.7%
Belgium	1.3%	2.1%	1.6%	1.6%	1.7%	0.8%
Canada	1.7%	1.1%	0.9%	1.9%	1.5%	1.2%
Denmark	1.6%	0.3%	0.6%	1.7%	1.0%	2.6%
Finland	2.9%	1.0%	1.8%	2.2%	2.2%	1.5%
France	1.7%	2.1%	1.8%	2.0%	1.9%	0.9%
Germany			2.4%	1.5%	2.2%	0.7%
Japan	2.7%	2.6%	2.9%	2.4%	2.6%	1.6%
Netherlands	1.8%	0.8%	0.4%	1.9%	1.3%	0.5%
Portugal	1.0%	1.3%	1.2%	2.5%	2.1%	1.6%
Spain	1.5%	1.8%	1.9%	2.5%	2.5%	0.4%
Sweden	1.6%	1.3%	1.0%	1.4%	1.3%	1.2%
Switzerland	2.1%	1.5%	1.1%	1.7%	1.9%	0.7%
UK	0.8%	1.6%	1.6%	2.3%	1.9%	0.4%
USA	1.6%	0.6%	0.3%	1.7%	1.1%	0.5%

Table 2: Men: Average annual mortality improvement rates by countries and periods

	1965-1980	1980-1990	1990-2000	2000-2010	Project 2011-2015	Actual 2011-2015
Australia	1.2%	1.6%	2.8%	2.4%	1.9%	1.6%
Austria	0.8%	1.8%	2.1%	2.2%	1.5%	1.1%
Belgium	0.5%	1.5%	1.6%	2.2%	1.6%	1.7%
Canada	0.9%	1.1%	1.5%	2.6%	1.8%	1.7%
Denmark	0.3%	0.4%	1.1%	2.0%	1.2%	2.5%
Finland	1.4%	1.0%	1.7%	2.3%	1.9%	2.3%
France	1.1%	1.8%	1.6%	2.2%	1.5%	1.5%
Germany			2.2%	2.0%	2.2%	1.0%
Japan	2.3%	1.5%	1.5%	1.8%	1.9%	2.0%
Netherlands	0.3%	0.4%	1.1%	2.7%	1.9%	1.6%
Portugal	0.7%	0.9%	0.9%	2.1%	1.5%	1.7%
Spain	0.9%	1.2%	1.2%	2.3%	1.8%	1.1%
Sweden	0.4%	1.2%	1.4%	2.0%	1.3%	1.7%
Switzerland	1.2%	1.0%	1.7%	2.2%	1.9%	1.3%
UK	0.5%	1.8%	2.1%	3.0%	2.0%	1.0%
USA	1.1%	1.0%	1.1%	2.1%	1.4%	0.8%

Notes for Tables 1 & 2: Annual rate of mortality improvement in 16 countries. The underlying yearly rates are derived from standardized mortality rates for age bands 50-95.

The LSP then analysed the international data using nine statistical models to assess historical long-term trends during the period 1965 to 2010 and allow for features of different cohorts. These trends were used for projections beyond 2010. For each country, a default model and two other models, chosen based on statistical and other criteria, were used to project mortality trends from 2011 to 2015.

We sought to understand:

- Given historical mortality trends, would we project any slowdown in mortality improvement rates since 2011, when compared with the recent past?
- What actually happened to the 'mortality improvement rate' since 2011 when compared with projections?

The answer to the first question is: Yes, for many countries and with a gender difference. When we look at the period from 2000, the projected mortality improvement rates in 2011-2015 were lower than the actual improvement rates, by more than 0.25% p.a., in the preceding decade among men in 14 countries and women 7 (Tables 3 and 4). These results are consistent with hypotheses for stalling mortality improvements that emerged before 2010. Examples may include unfavourable trends in obesity, diabetes, cardiovascular-related deaths, dementia deaths and frailty.

Regarding the second question, we compare the projections with actual mortality improvement rates since 2011. Again we observe a gender difference. Women in 14 countries but men in 8 have experienced lower mortality improvements than projected during 2011-2015, by more than 0.25% p.a. (Tables 3 and 4). The UK, Spain and Germany are the 3 worst performing countries by this measure. This observation, at least for some countries, is consistent with suggestions that austerity and the unusually high winter deaths during this period may have adversely affected mortality trends.

A number of the Scandinavian populations have bucked the stalling mortality improvement trend, experiencing higher mortality improvement rates than projections.

In conclusion, part of the slowdown in mortality improvement rates of the over 50s since 2011 would have been expected from historical trends in many countries, especially among men. There has been a notable slowdown, compared with projections, since 2011 in many countries especially among women. But, there are some countries with higher mortality improvement rates than projected. A better understanding of the drivers behind these complex trends will inform policies.

Table 3: Women - Comparison of projected mortality improvement rates with observed from different periods

	Projected 2011-2015 minus Actual 2000-2010 ¹	Actual 2011-2015 minus Projected 2011-2015 ²
Denmark	-0.71%	<i>1.57%</i>
Netherlands	-0.61%	-0.81%
USA	-0.51%	-0.63%
UK	-0.44%	-1.52%
Portugal	-0.37%	-0.50%
Canada	-0.33%	-0.29%
Austria	-0.30%	-1.12%
Sweden	-0.15%	-0.08%
France	-0.08%	-1.01%
Spain	-0.03%	-2.04%
Finland	0.02%	-0.71%
Belgium	0.07%	-0.85%
Australia	0.11%	-1.10%
Switzerland	0.19%	-1.22%
Japan	0.20%	-1.07%
Germany	<i>0.67%</i>	-1.54%

Bold = less than -0.25%

Italic = higher than 0.25%

Notes for Tables 3 and 4:

1: Three statistical models were first chosen for each country. Then for each model, the difference between projected rates and observed in preceding decade was calculated. The average results of the 3 models are shown in the table.

2: Three statistical models were chosen as above. Then for each model, the difference between observed rates and projected rates in 2011-2015 was calculated. The average results of the 3 models are shown in the table.

Table 3: Men - Comparison of projected mortality improvement rates with observed from different periods

	Projected 2011-2015 minus Actual 2000-2010 ¹	Actual 2011-2015 minus Projected 2011-2015 ²
UK	-0.98%	-0.98%
Canada	-0.81%	-0.13%
Netherlands	-0.81%	-0.31%
Denmark	-0.74%	1.31%
USA	-0.74%	-0.60%
France	-0.66%	-0.03%
Sweden	-0.65%	0.32%
Austria	-0.65%	-0.47%
Belgium	-0.59%	0.15%
Portugal	-0.57%	0.21%
Australia	-0.51%	-0.30%
Spain	-0.51%	-0.78%
Finland	-0.43%	0.46%
Switzerland	-0.35%	-0.61%
Japan	0.06%	0.17%
Germany	0.25%	-1.24%

Reference:

1. Mortality and life expectancy trends in the UK: Stalling progress.
<https://www.health.org.uk/publications/reports/mortality-and-life-expectancy-trends-in-the-uk>