

# Three years forward, two steps back

Recent longevity trends and their underlying causes

2pm BST

24<sup>th</sup> May 2019



@ClubVita #longevitytrends



[linkedin.com/company/club-vita](https://www.linkedin.com/company/club-vita)

# Introducing today's panel



**Allan Baker**  
Deputy Head of Population  
Health Analysis  
Public Health England



**Doug Fullam**  
Senior Manager, Health and  
Life Modelling  
AIR Worldwide



**Steven Baxter**  
Head of Research &  
Development  
Club Vita



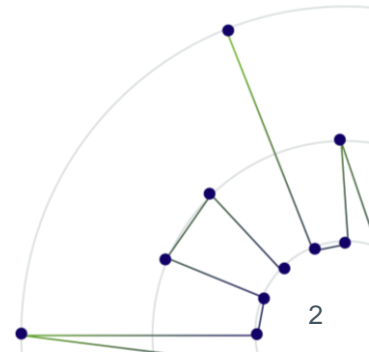
**Erik Pickett**  
Head of Content  
Club Vita



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# In the news..

THE WALL STREET JOURNAL.

## Life Was Short for Longevity Gains

Life expectancy at 65 is falling and that means cash windfalls for insurers

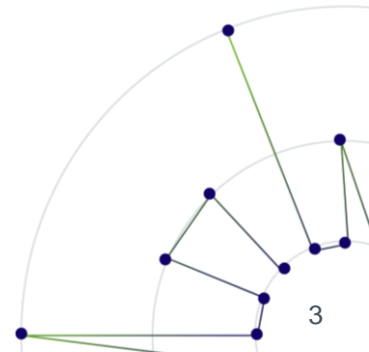
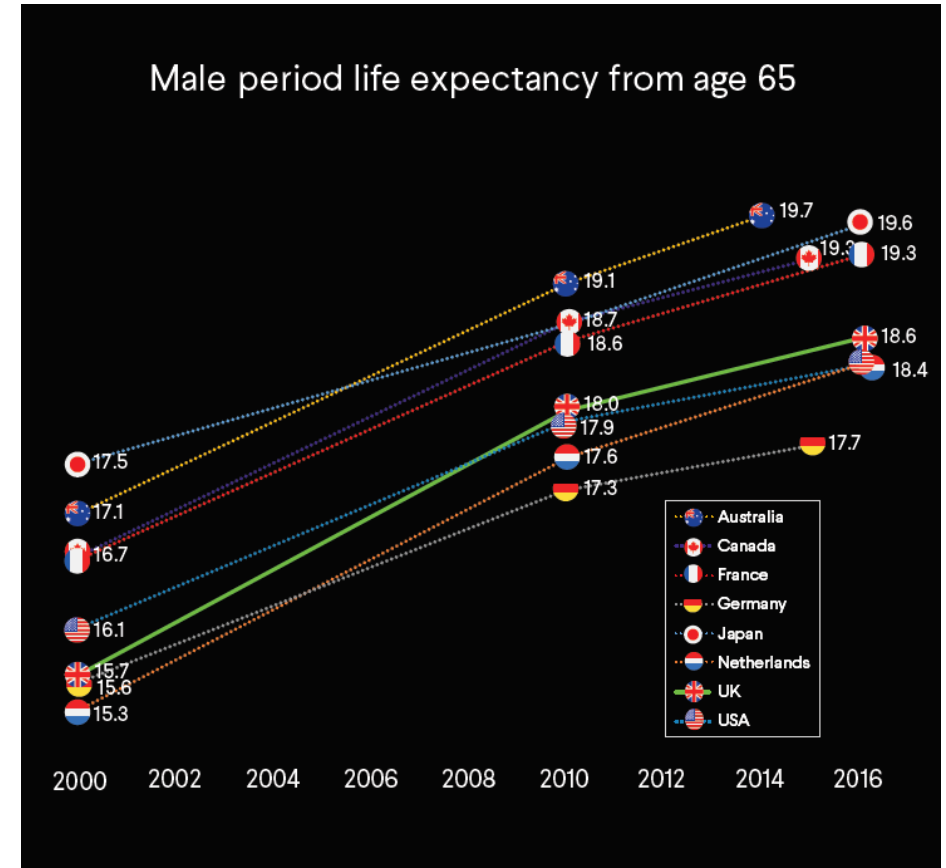
## FINANCIAL TIMES

Life expectancy for Britons aged 65 falls by 5 months

Decline has implications for pensions and insurance industry

## NATIONAL POST

As life expectancy growth slows in Canada, are our lifespans hitting the 'wall of death' limit?



# The 2010s slowdown

## *Setting the scene*

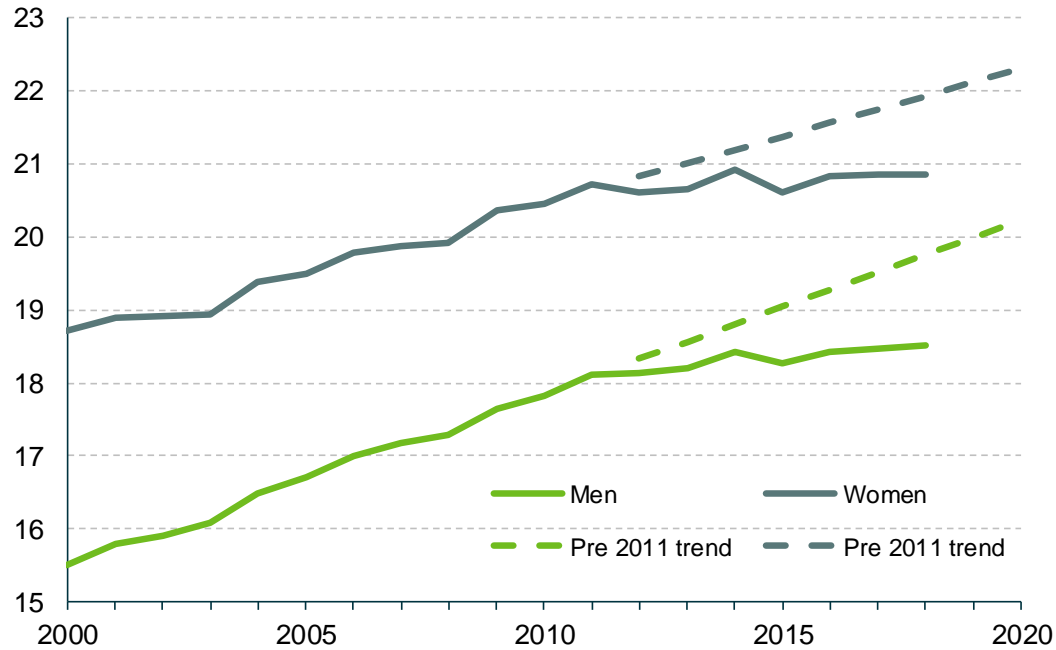


**Steven Baxter**  
*Head of Research &  
Development  
Club Vita*

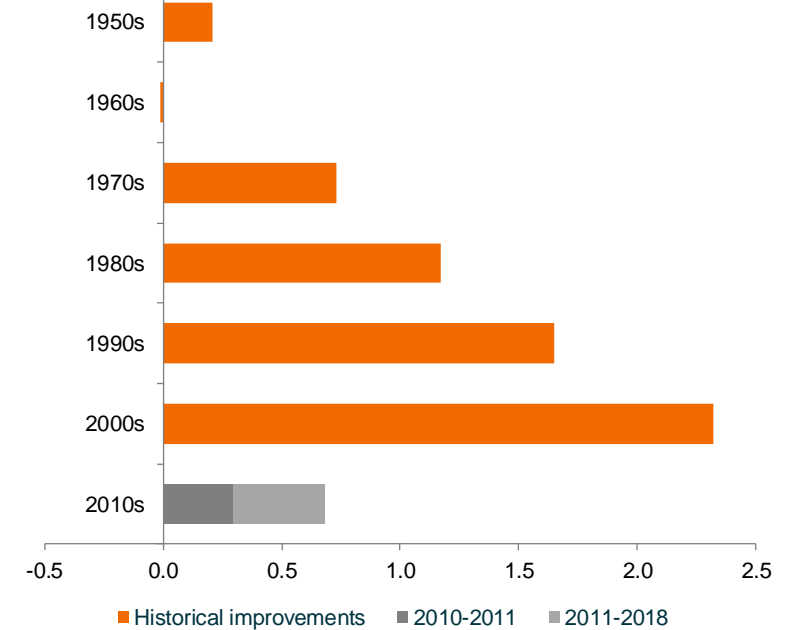
# UK longevity



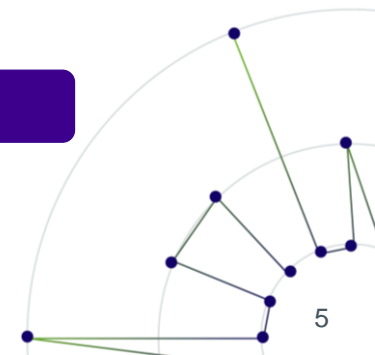
### Period life expectancy from age 65



### Increases in period life expectancy for men from age 65 in each decade

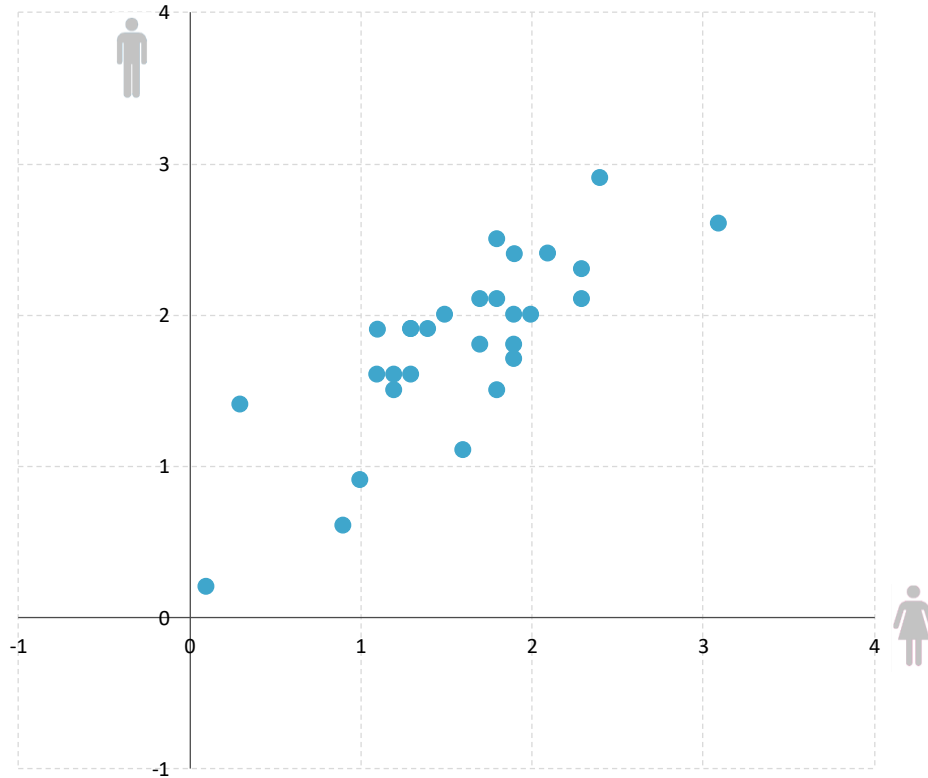


UK longevity is still improving

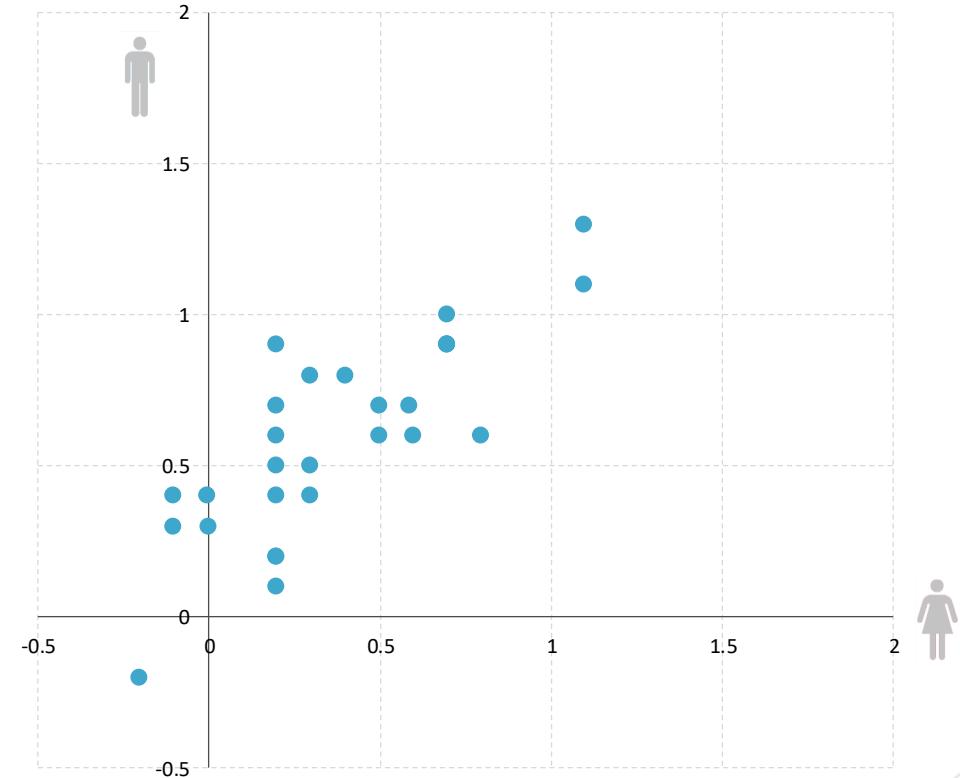


# International comparisons

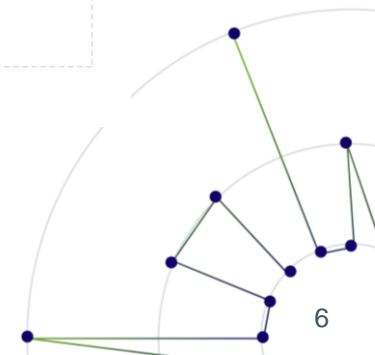
Changes in life expectancy from 65 (2001-2011)



Changes in life expectancy from 65 (2011-2016)

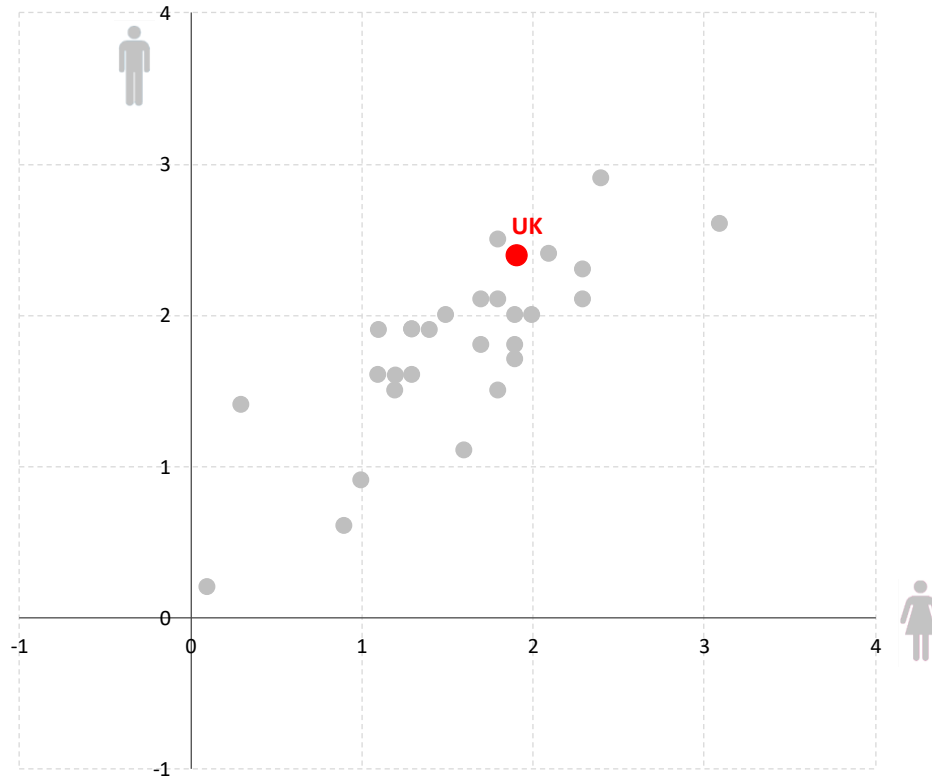


Slowdown in longevity *appears* to be happening in much of OECD and Europe

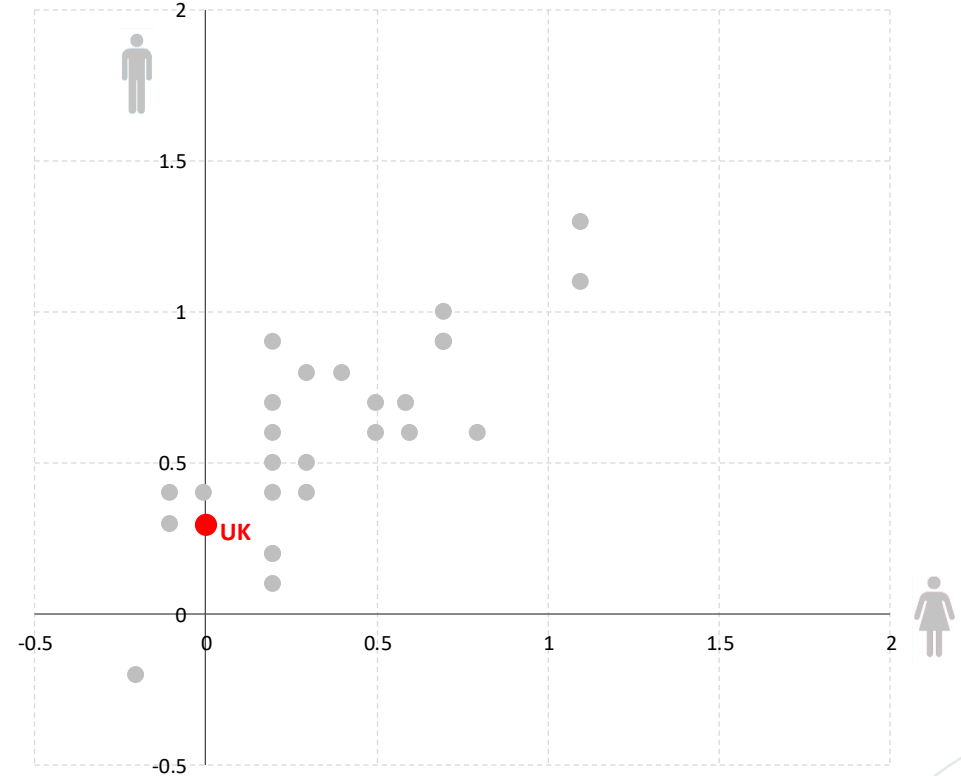


# UK slowdown in context

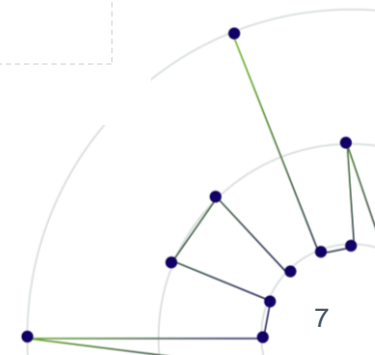
Changes in life expectancy from 65 (2001-2011)



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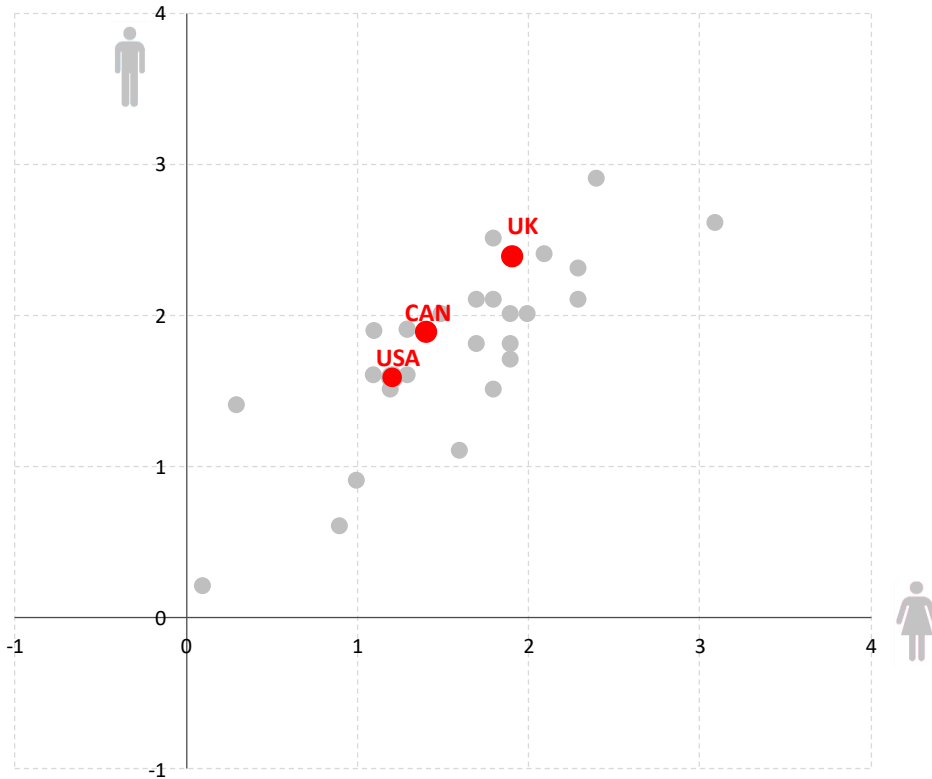


Slowdown in UK longevity one of the most dramatic

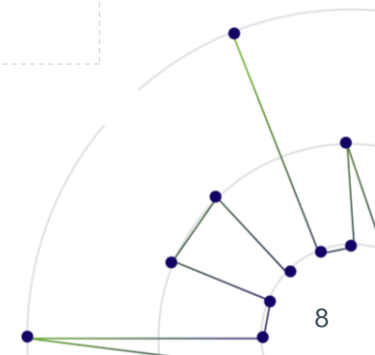
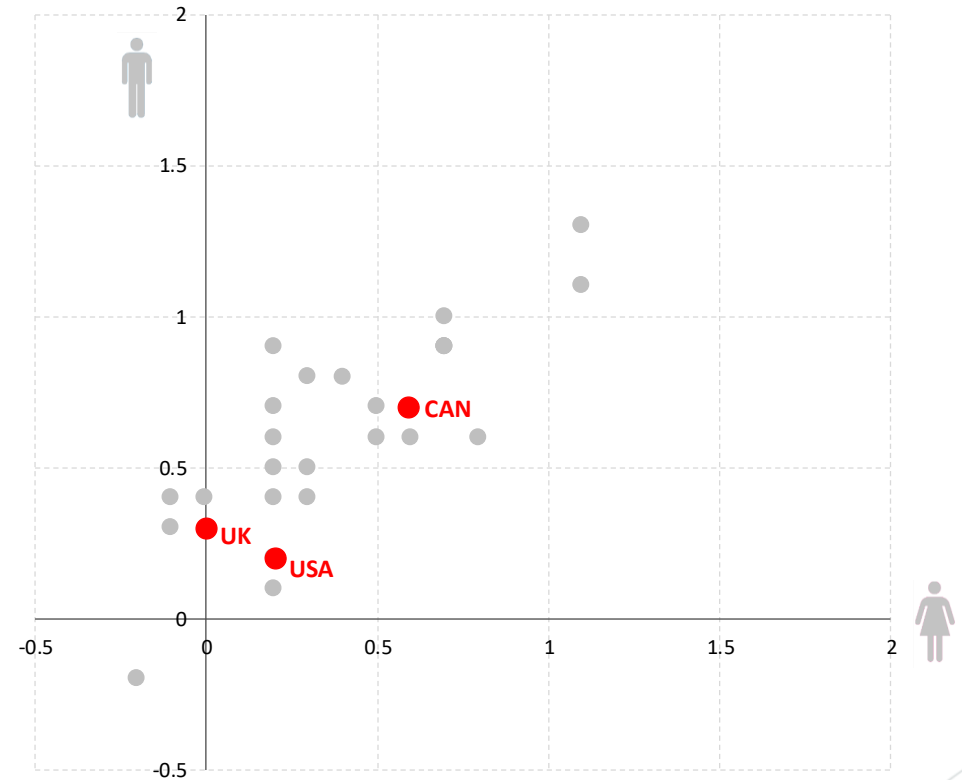


# UK, USA & Canada

Changes in life expectancy from 65 (2001-2011)



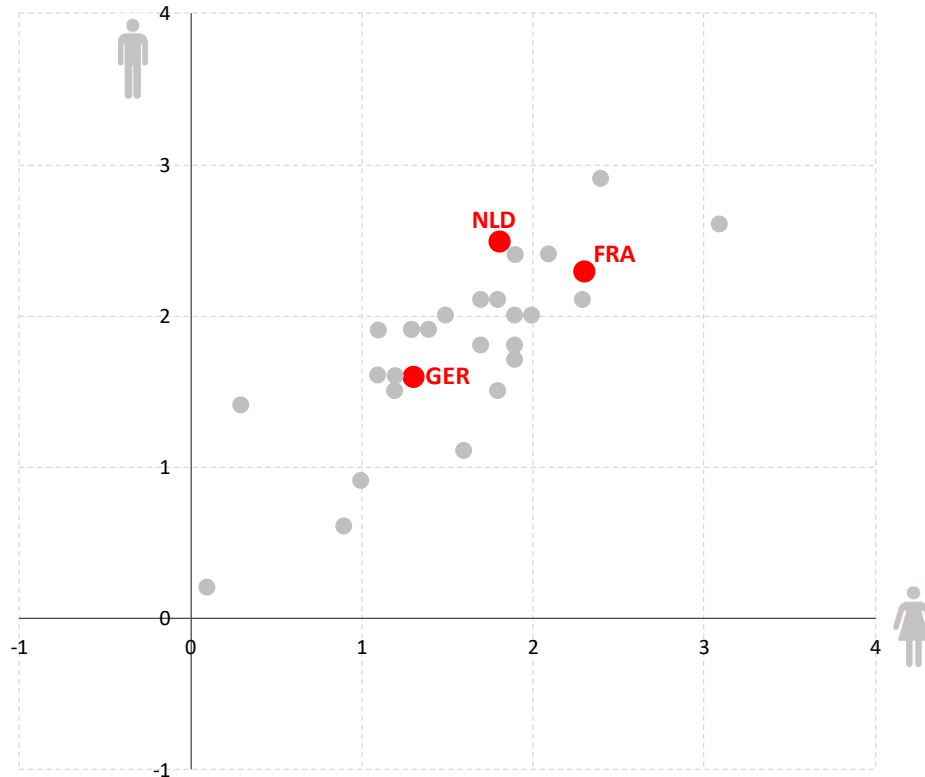
Changes in life expectancy from 65 (2011-2016)



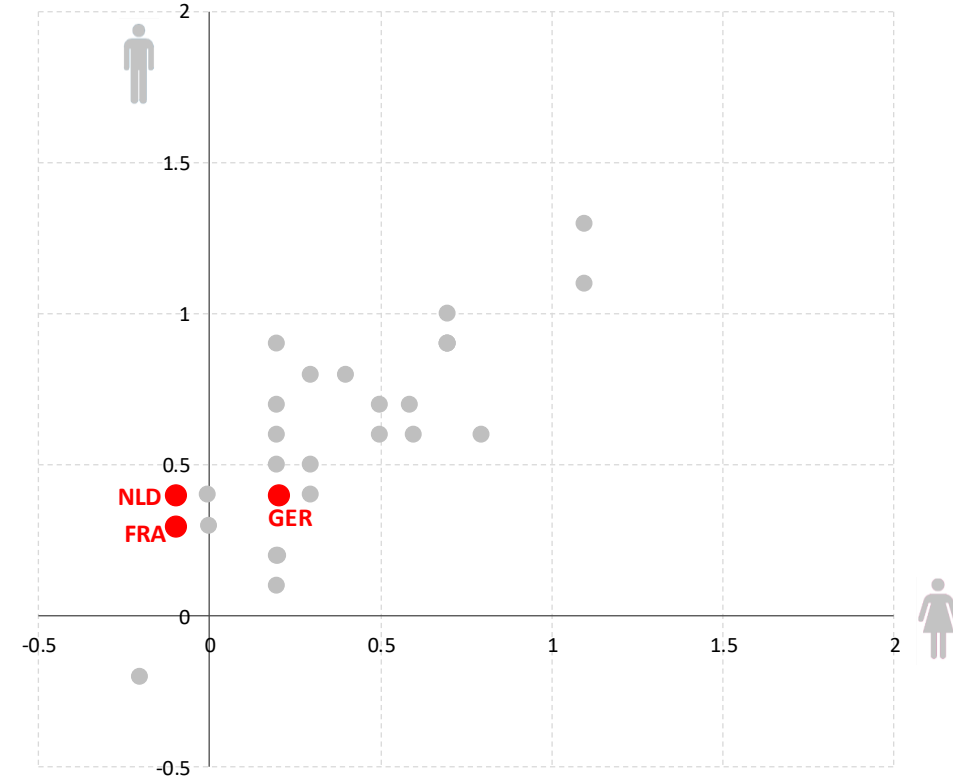


# Big falls in other “high-income countries”

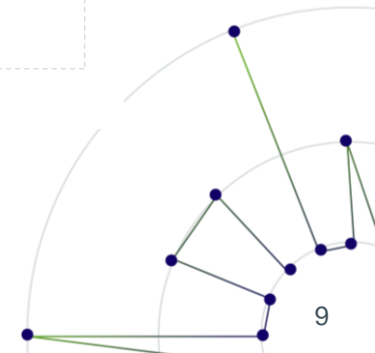
Changes in life expectancy from 65 (2001-2011)



Changes in life expectancy from 65 (2011-2016)

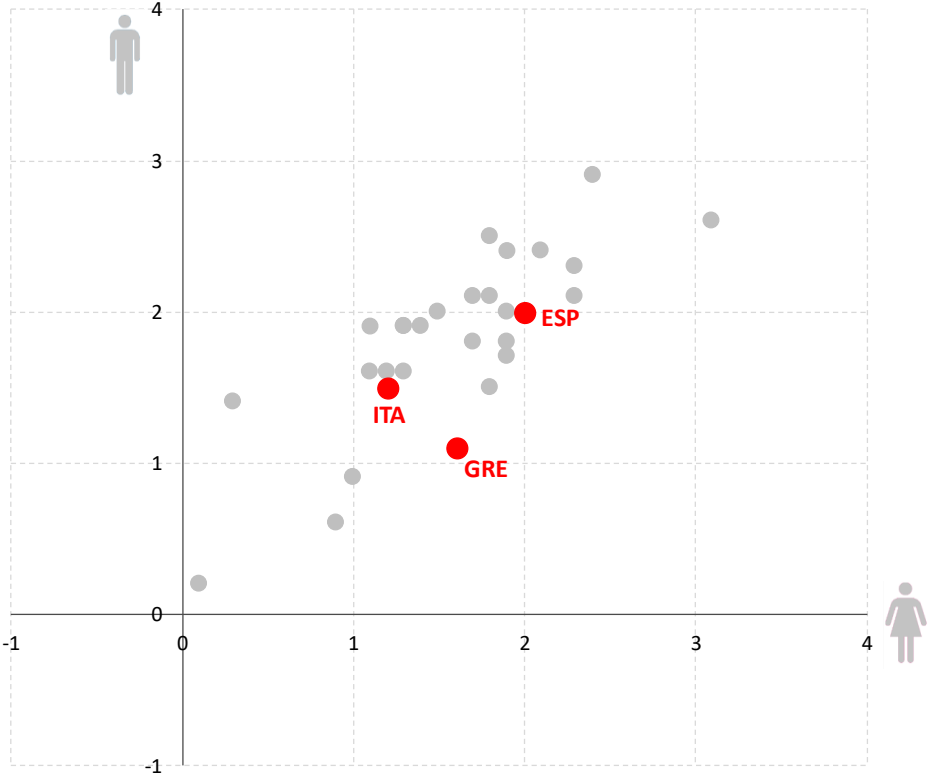


Slowdown in longevity impacting high income countries

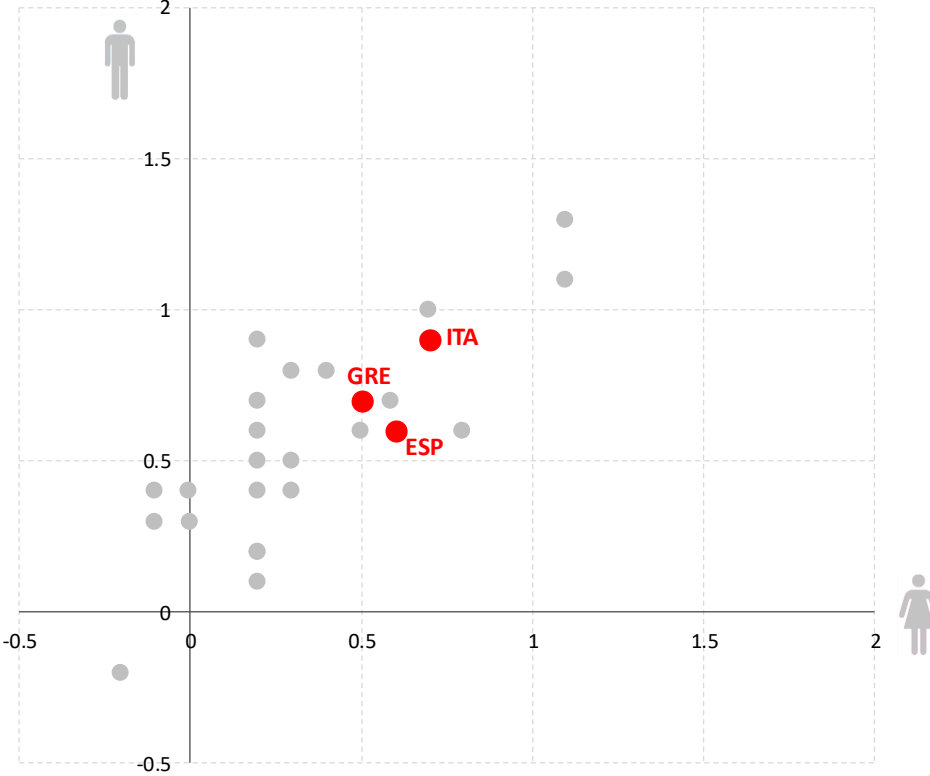


# More than austerity: Mediterranean Europe

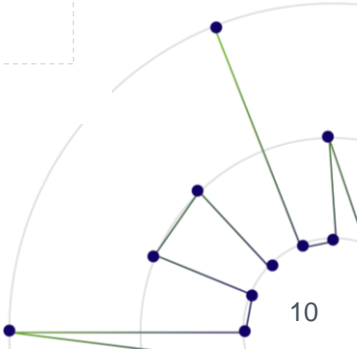
Changes in life expectancy from 65 (2001-2011)



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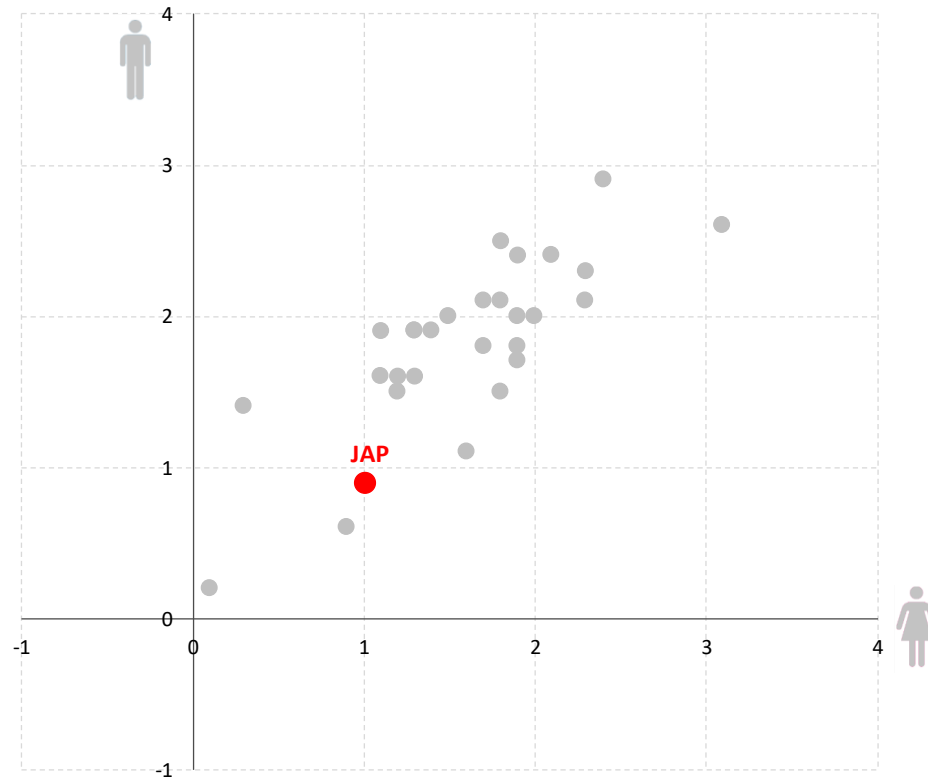


Slowdown in longevity not happened in austerity hit Mediterranean Europe

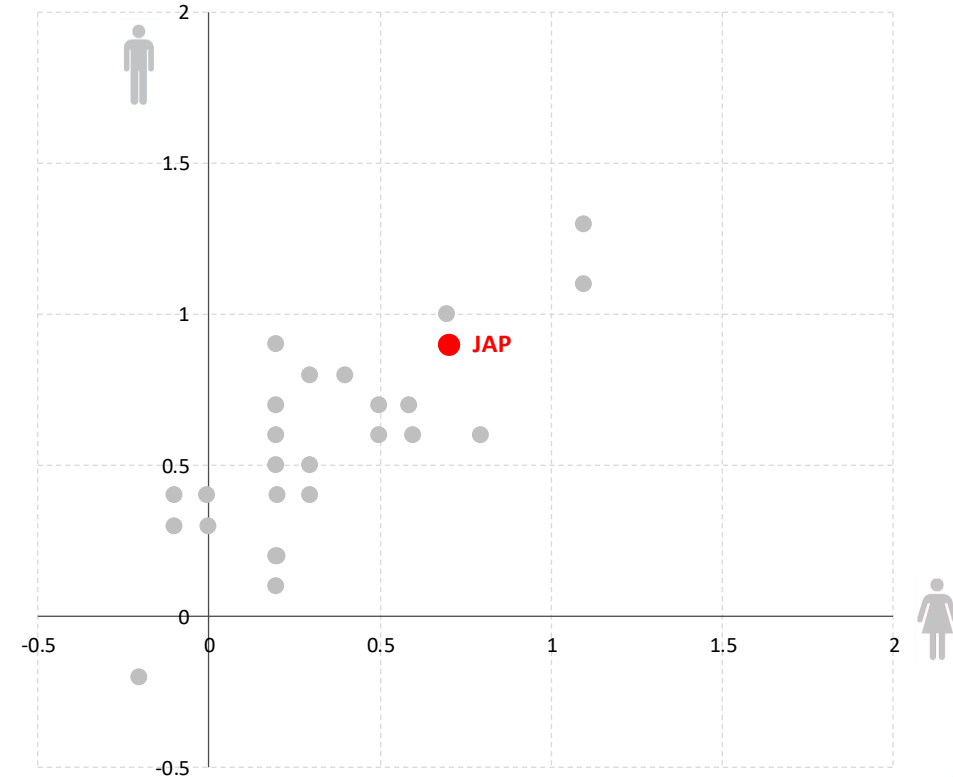


# ..and some countries are having a good decade

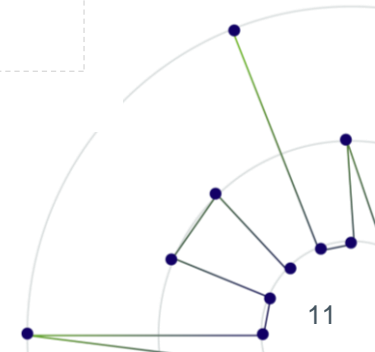
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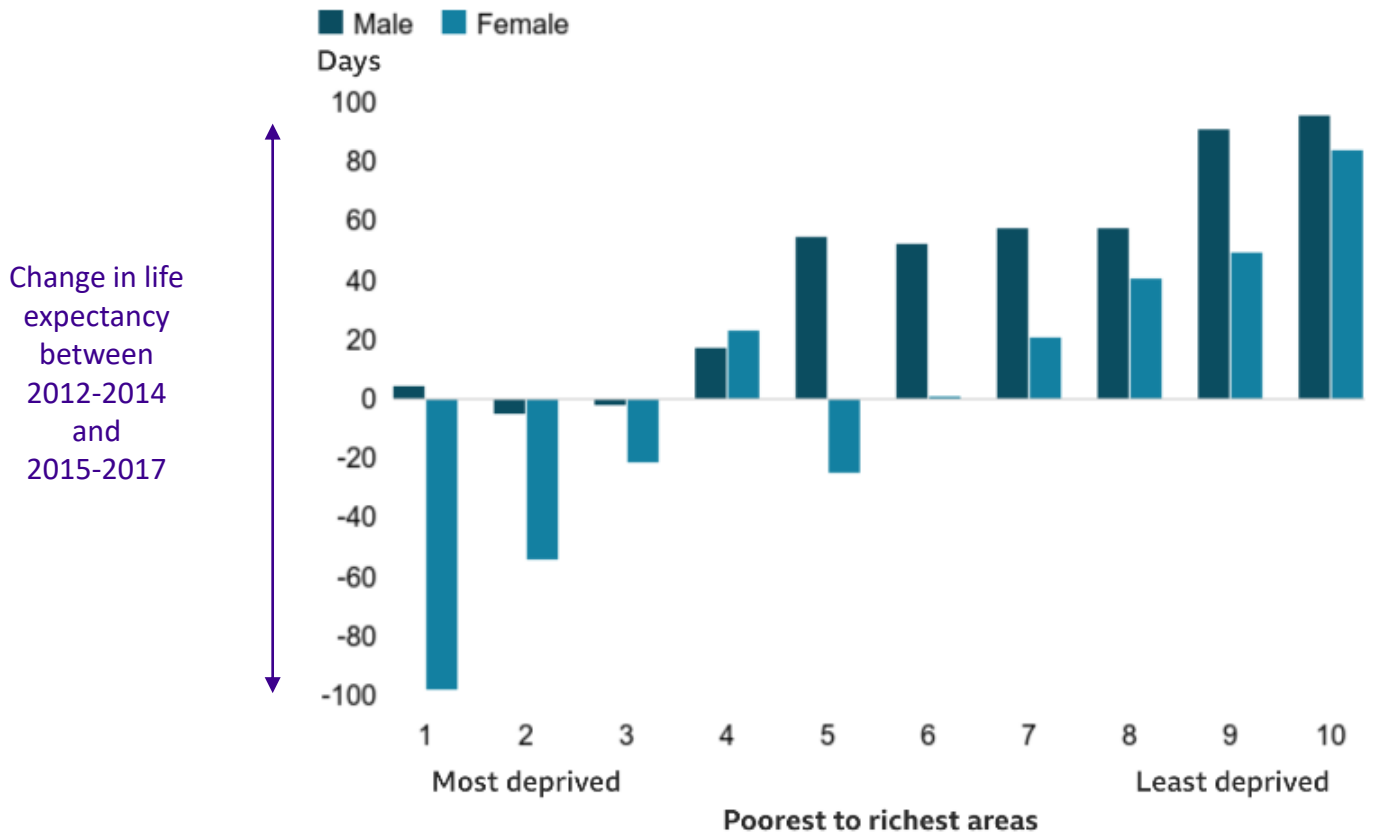


Japanese longevity is increasing faster this decade than last



# Socio-economic trends

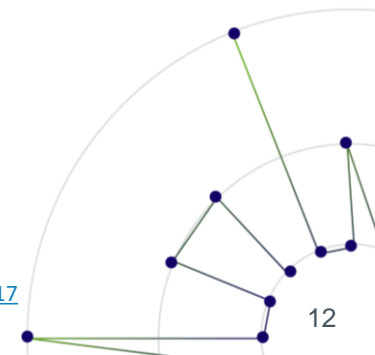
*Office for National Statistics data*



Longevity gap **widened by**

- 3 months
- 6 months

Source: ONS



# Socio-economic trends

## Latest Club Vita analysis



		Deprivation of the area			
		High deprivation		Low deprivation	
Pension amount	< £5k p.a.	Hard-Pressed		Making-Do	
	£5k - £7.5k p.a.				
	> £7.5k p.a.		Comfortable		

Group	Annualised mortality improvement (age-standardised)		
	2001-2006	2006-2011	2011-2016
England & Wales (core CMI)	3.0% ( $\pm 0.1\%$ )	2.6% ( $\pm 0.1\%$ )	0.9% ( $\pm 0.1\%$ )
Comfortable	2.0% ( $\pm 0.6\%$ )	2.6% ( $\pm 0.4\%$ )	1.5% ( $\pm 0.4\%$ )
Making-Do	2.9% ( $\pm 0.4\%$ )	2.9% ( $\pm 0.3\%$ )	1.1% ( $\pm 0.3\%$ )
Hard-Pressed	2.6% ( $\pm 0.4\%$ )	3.1% ( $\pm 0.3\%$ )	0.7% ( $\pm 0.3\%$ )

Improvements for pension plan members in UK continue to differ by socio-economics



# Recent longevity trends



**Allan Baker**  
*Deputy Head of Population  
Health Analysis  
Public Health England*



Public Health  
England

Protecting and improving the nation's health

# A review of recent trends in mortality in England

Allan Baker  
Deputy Head of Population Health Analysis  
Public Health England

## Context and aims of the review

### Reports of:

- A recent increase in the number of deaths in England, particularly in some winter periods from 2014/15 through to 2017/18.
- A reduction in the rate of improvement (slowdown in improvement) in life expectancy and age-standardised mortality rates in recent years, particularly since 2011.

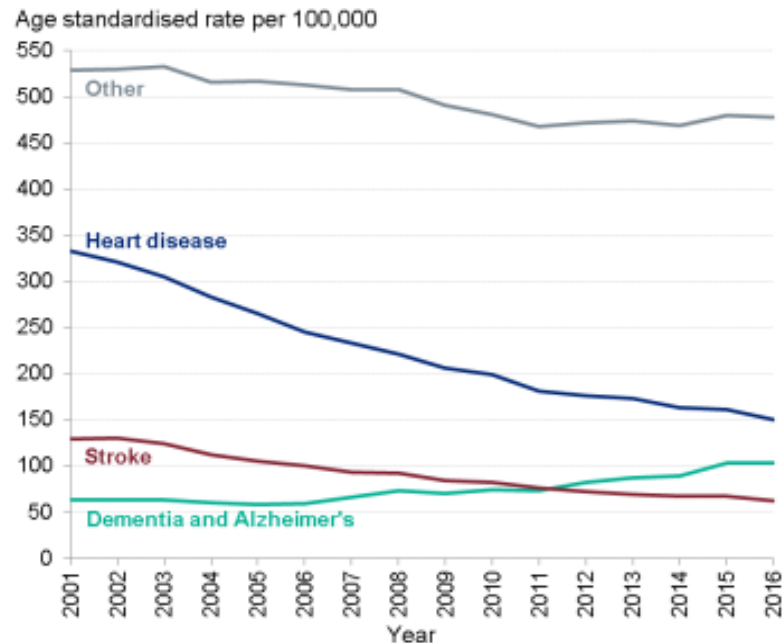
### Aims

1. Review recent trends in numbers of deaths, mortality rates and life expectancy in England. Focus on differences in trends by specific groups of the population and specific causes of death.
2. Using official data, consider available evidence for potential explanatory factors which may have influenced any changes in mortality rates or affected patterns of winter deaths, and make suggestions for further work that is required.

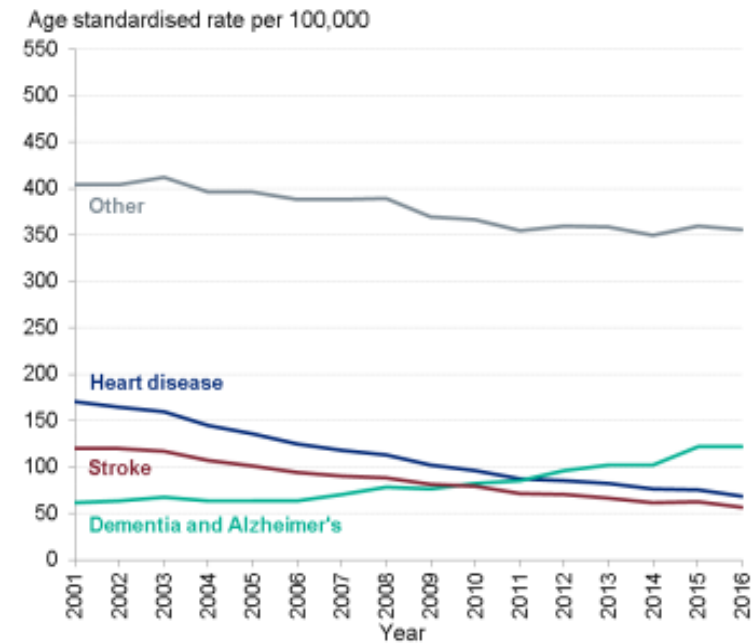


Mortality rates from heart disease, stroke and 'other' causes have fallen but the level of improvement has decreased. More people are living with dementia and other conditions that may make them particularly vulnerable to the effects of flu and other winter risk factors.

### Males



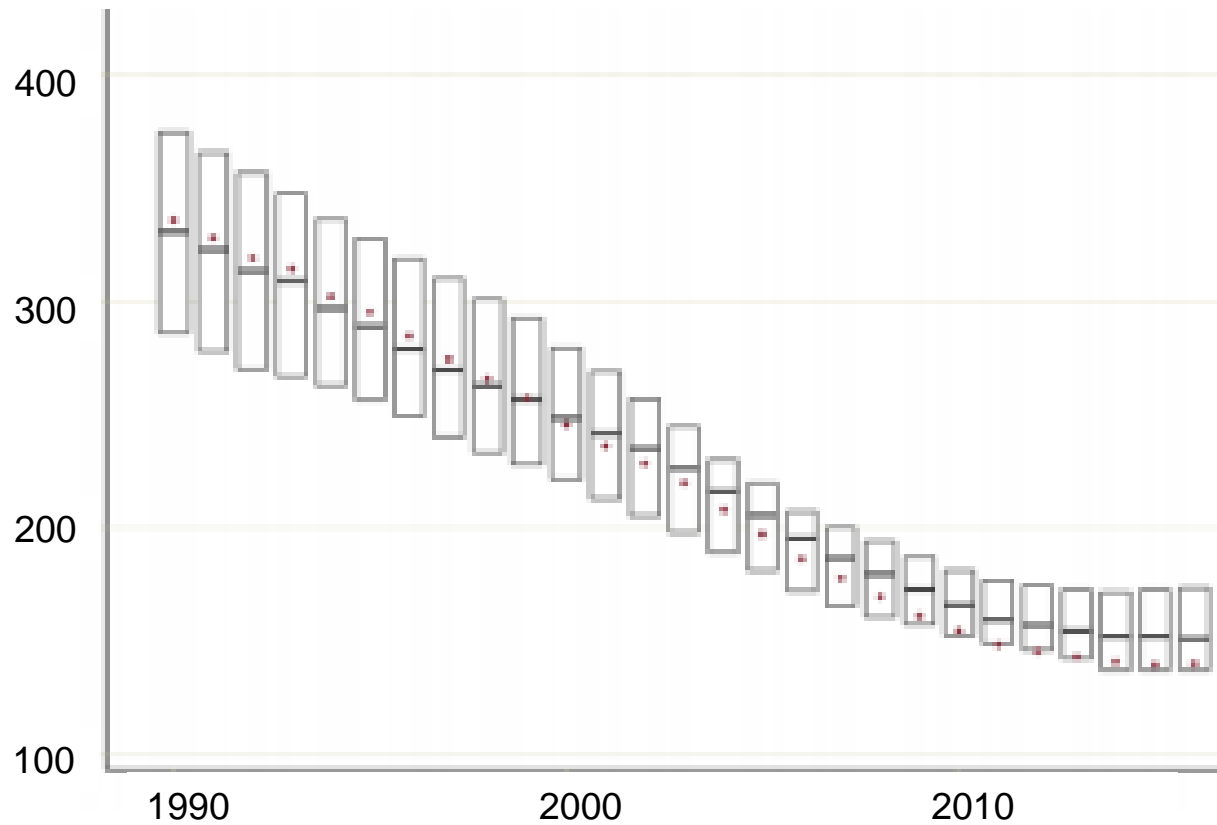
### Females



Source: PHE analysis of ONS data

# Trends for cardiovascular disease for England and 22 peer countries, 1990 to 2016

Age-standardised rate per 100,000 population



Source: Global Burden of Disease, 2016

As heart disease and stroke are leading causes of death, the slowdown in improvement from these causes has had a large impact on the trend in overall mortality and life expectancy.

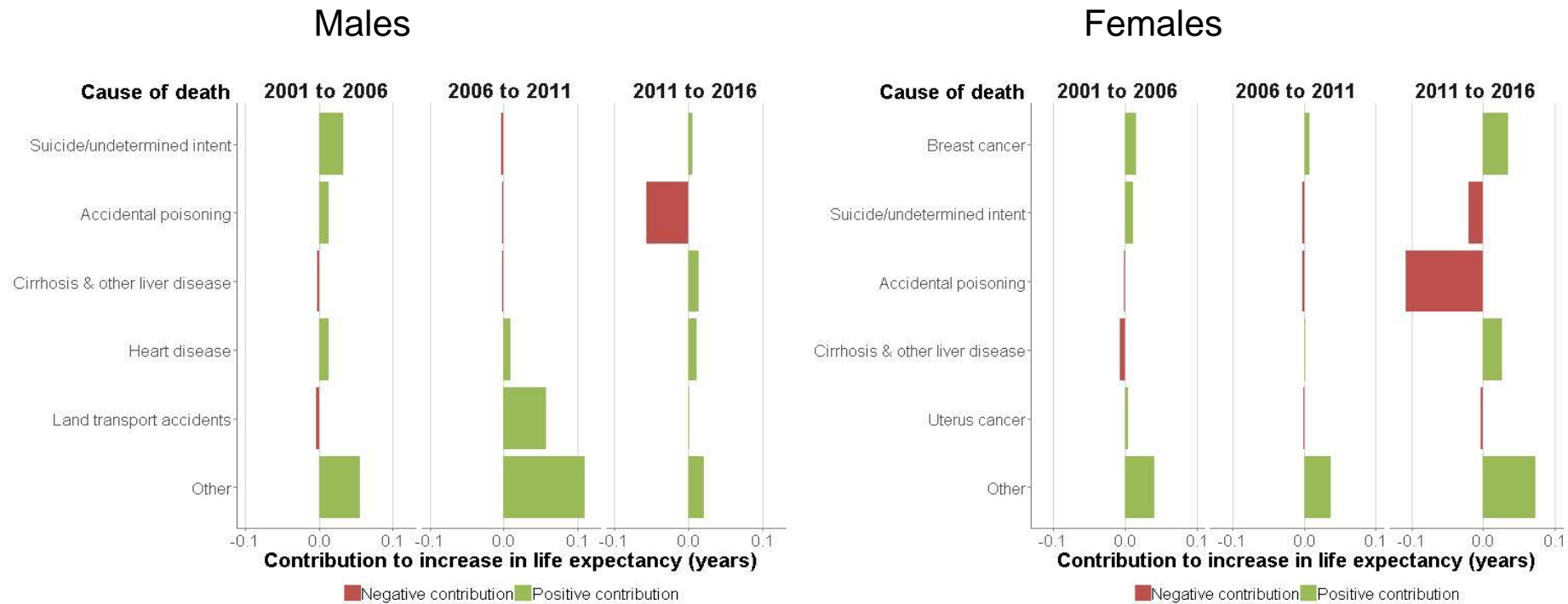
Contribution of 10 leading causes of death to changes in life expectancy, England



Source: PHE analysis of ONS data

The cause of death that had the most noticeable impact on the slowdown at younger ages was accidental poisoning, with a large proportion due to drug misuse.

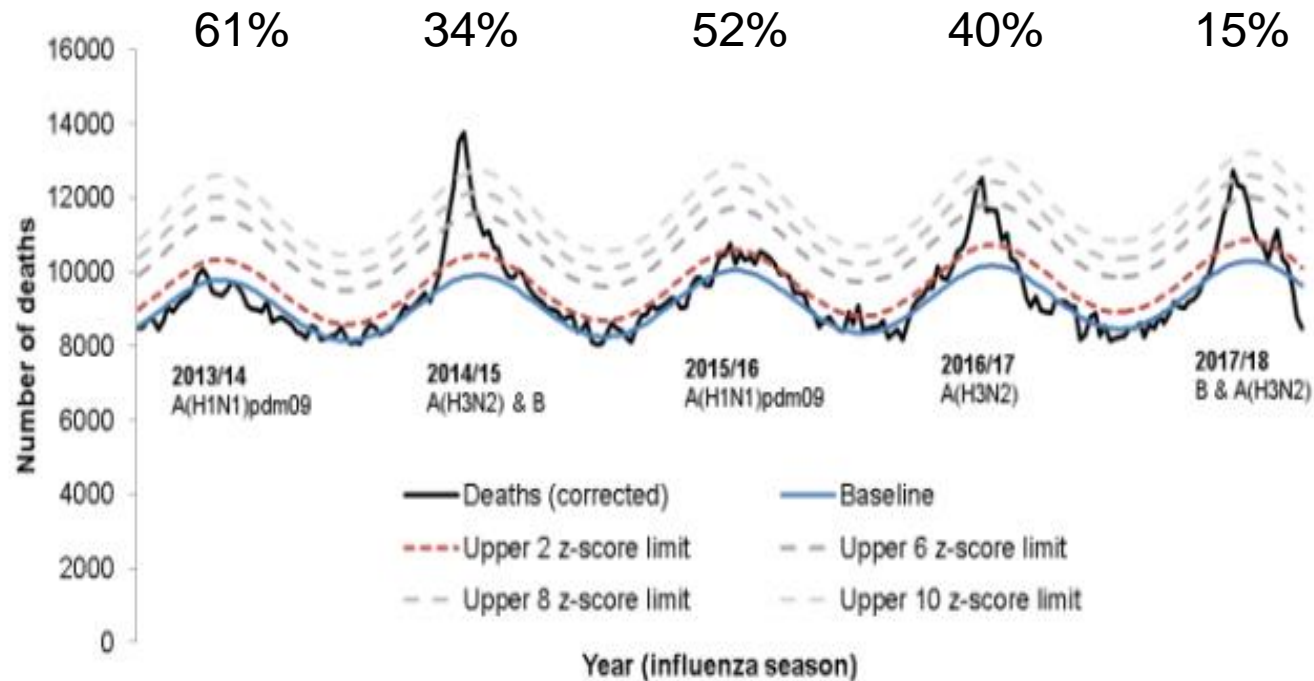
**Contribution of 5 leading causes of death to changes in life expectancy, aged 20-44, England**



Source: PHE analysis of ONS data

The size and frequency of recent winter peaks in mortality which is determined by the type of flu circulating, vaccine effectiveness, and is sometimes exacerbated by cold weather, has contributed to the slowdown in improvement in life expectancy.

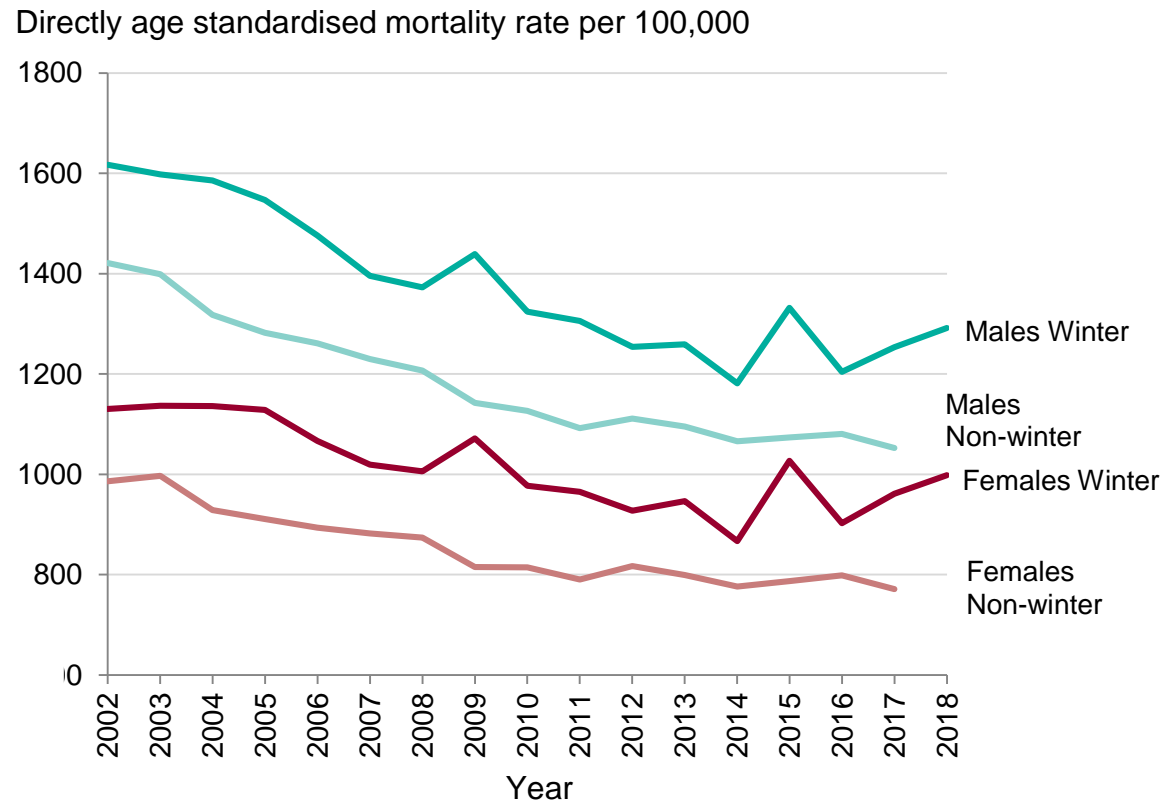
**Weekly observed and expected number of all-age all-cause deaths, with the dominant circulating strain type(s), and percentage vaccine effectiveness, England, 2013/14 to 2017/18**



Source: PHE flu annual report: 2017 to 2018 (Figure 33)

However improvement in mortality rates for the non-winter months has also slowed in recent years.

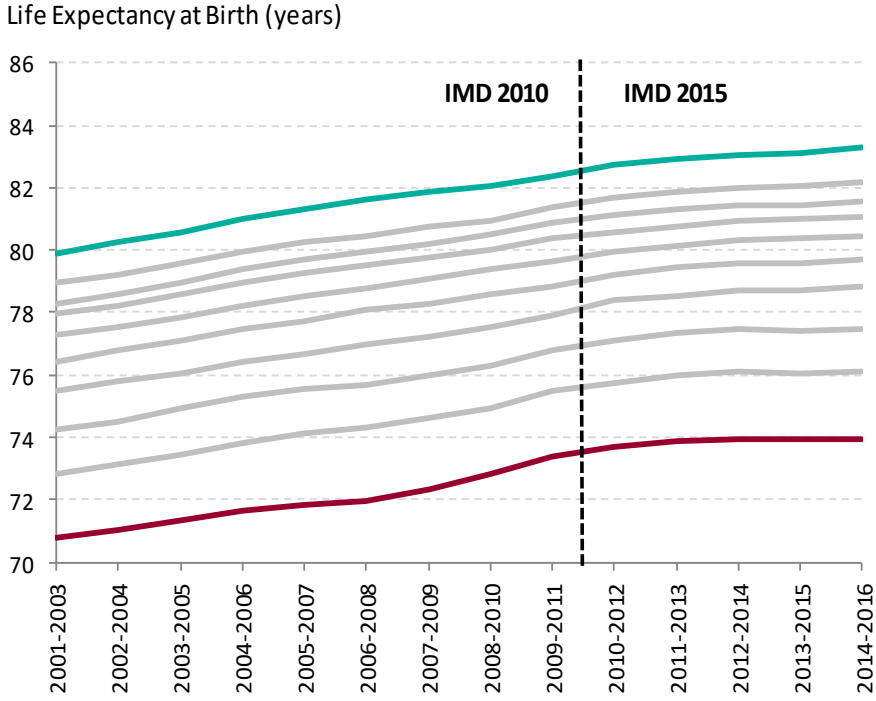
### Trend in age-standardised mortality rate for winter and non-winter months for males and females



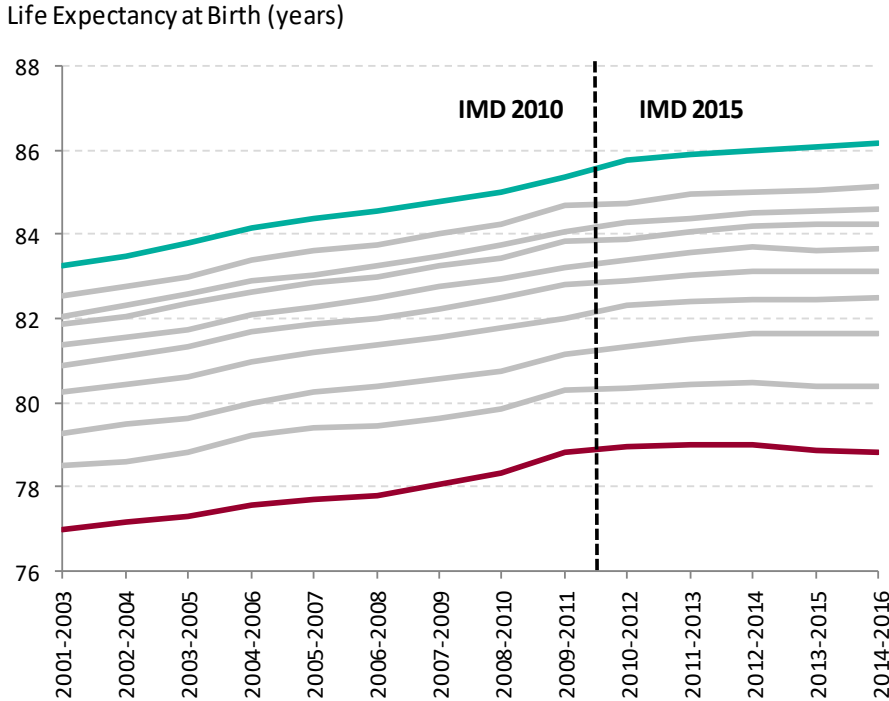
Source: PHE analysis of ONS data

# The causes of the slowdown in improvement are having the greatest impact in the most deprived areas.

## Males



## Females

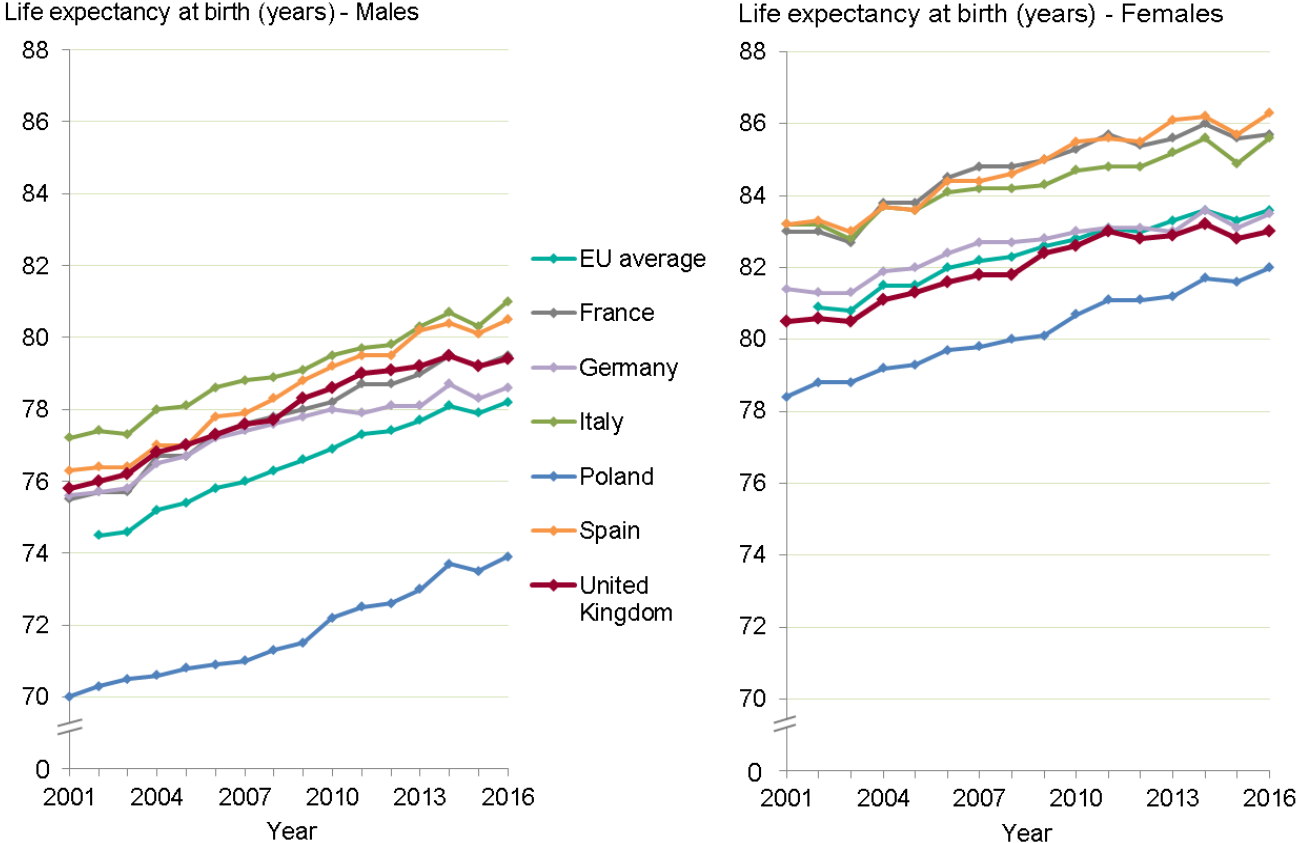


- Least deprived decile
- All other deciles
- Most deprived decile

Source: PHE analysis of ONS data

# The slowdown in improvement in the UK has also been seen in other countries across Europe

Trends in life expectancy at birth, by sex, large EU countries, 2001 up to 2016



Source: PHE analysis of data from Eurostat database



# Conclusions

- It is not possible to attribute the recent slowdown in improvement to any single cause and it is likely due to a number of factors, operating simultaneously across a wide range of age groups, geographies and causes of death.
- This slowdown in improvement has been seen in other large EU countries, but of these, the UK has had the slowest rate of improvement since 2011.
- The causes of the slowdown in improvement are having the greatest impact in the more deprived areas.
- Our ageing population means there are likely to be more people living with dementia and other long-term conditions, who are particularly vulnerable to effects of flu and other winter risk factors, and who may be particularly reliant on health and social care services.
- Recent winter peaks in mortality, determined by the intensity and dominant type of influenza circulating, flu vaccine uptake and effectiveness, and sometimes exacerbated by cold weather, have contributed to fluctuations in annual age-standardised rates and the slowdown in improvement.

# Further work

- A slowdown in improvement in mortality rates from heart disease and stroke has had a large impact on the trend in life expectancy. In young people, accidental poisoning deaths had the biggest negative impact on the trend. Further research focused on these causes, could aid understanding of the trends seen.
- Other authors have reported an association between trends in mortality and changes in public spending, and health and social care provision. Further work would be required to understand any potential causal mechanisms which may be operating between changes in health and social care provision and trends in mortality within England and across different countries.
- There is a need to support the most vulnerable in society, particularly older people, to minimise the impact of poverty and extremes of temperature, and diseases such as dementia and influenza. Additional research could focus on understanding the interactions between these factors and suggest actions to address widening health inequality.

# Links

## **A review of recent trends in mortality in England**

Report and data packs:

<https://www.gov.uk/government/publications/recent-trends-in-mortality-in-england-review-and-data-packs>

## **Why have increases in life expectancy slowed down in England?**

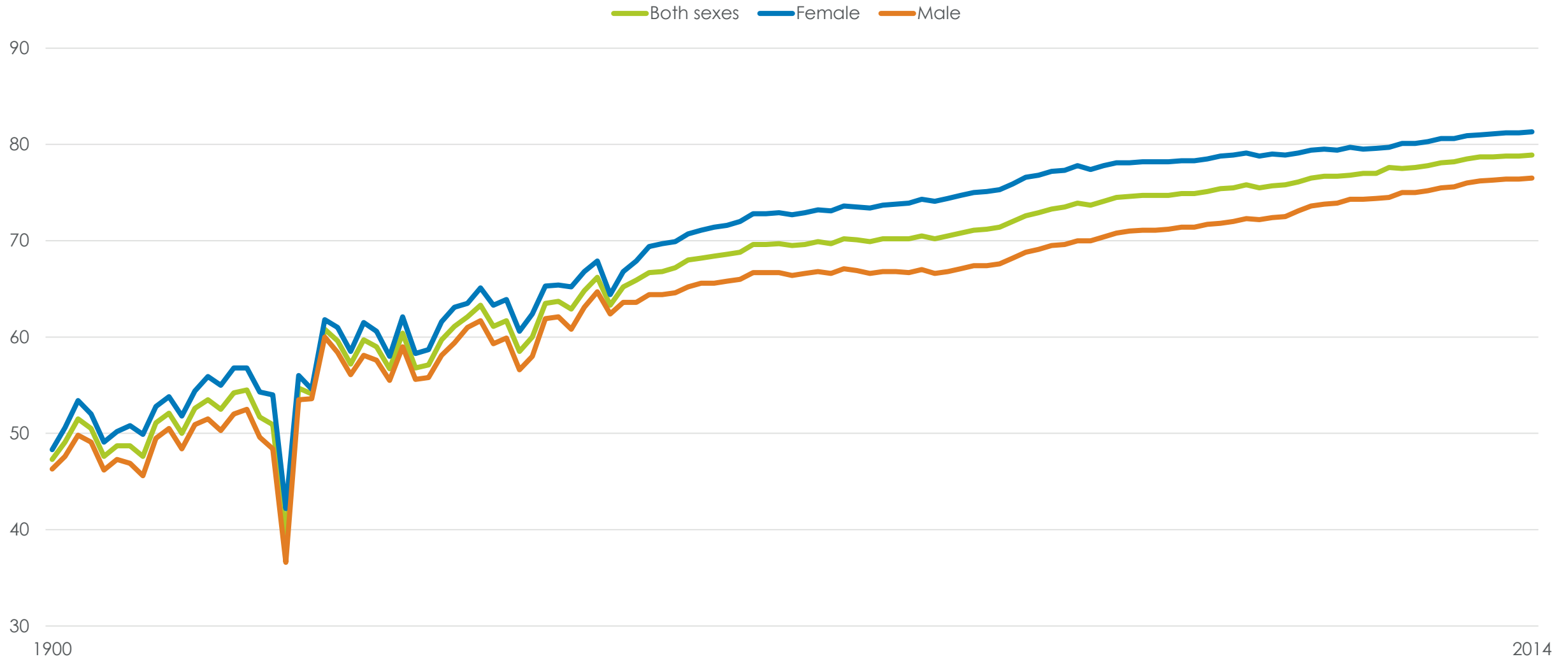
<https://publichealthmatters.blog.gov.uk/2018/12/11/why-have-increases-in-life-expectancy-slowed-down-in-england/>

# Recent longevity trends



**Doug Fullam**  
*Senior Manager, Life and  
Health Modelling  
AIR Worldwide*

# Years of Life Expectancy at Birth, 1900-2014

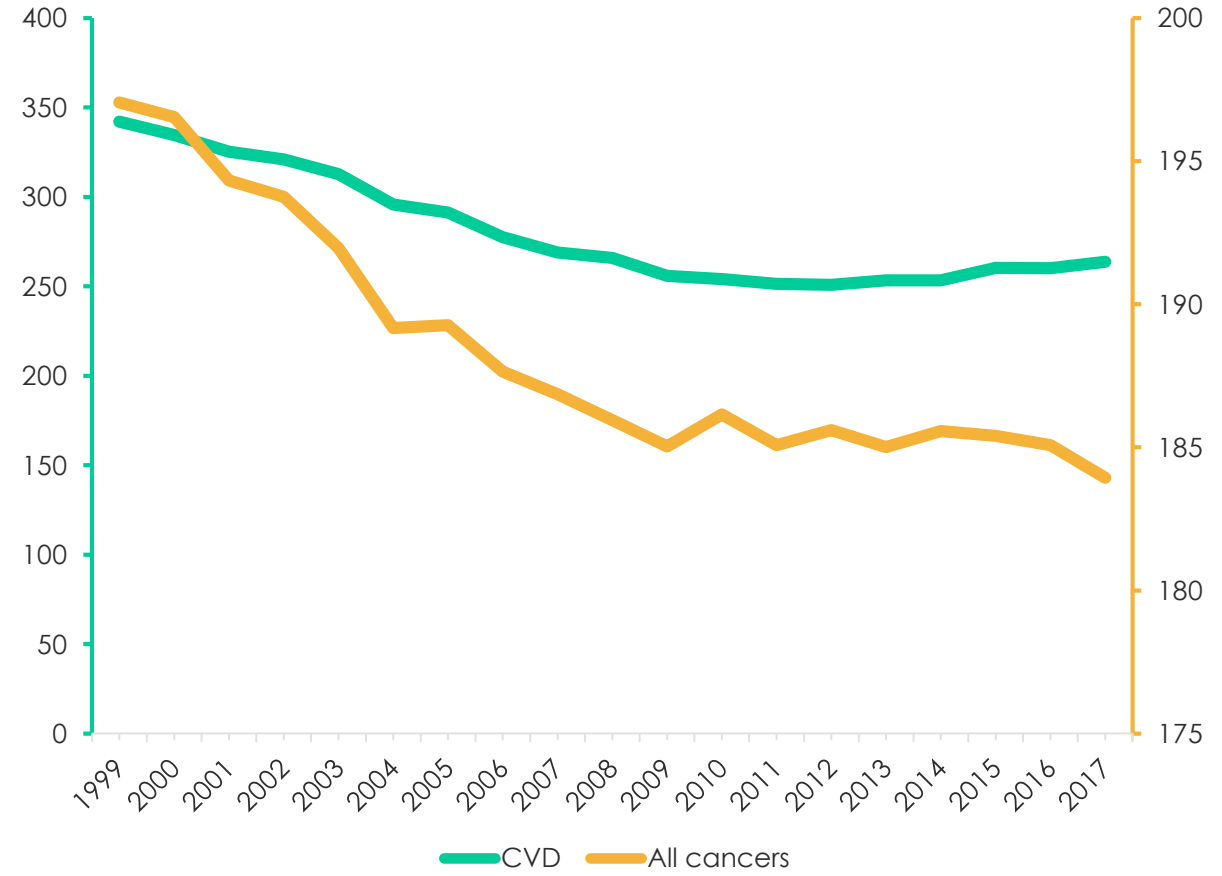
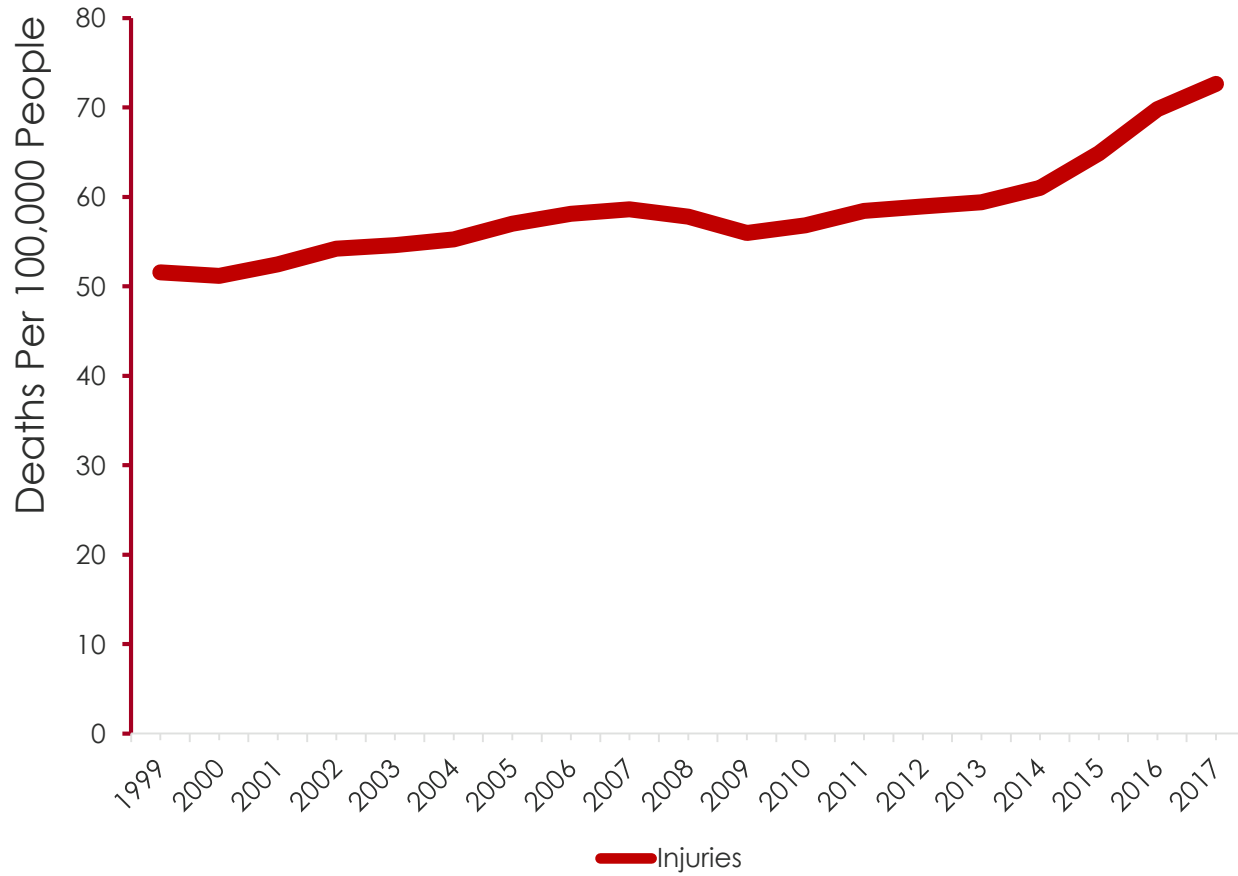


# Capturing Future Life Expectancy Trends

Year	Life Expectancy
2014	78.84
2015	78.69
2016	78.69
2017	<b>78.60</b>

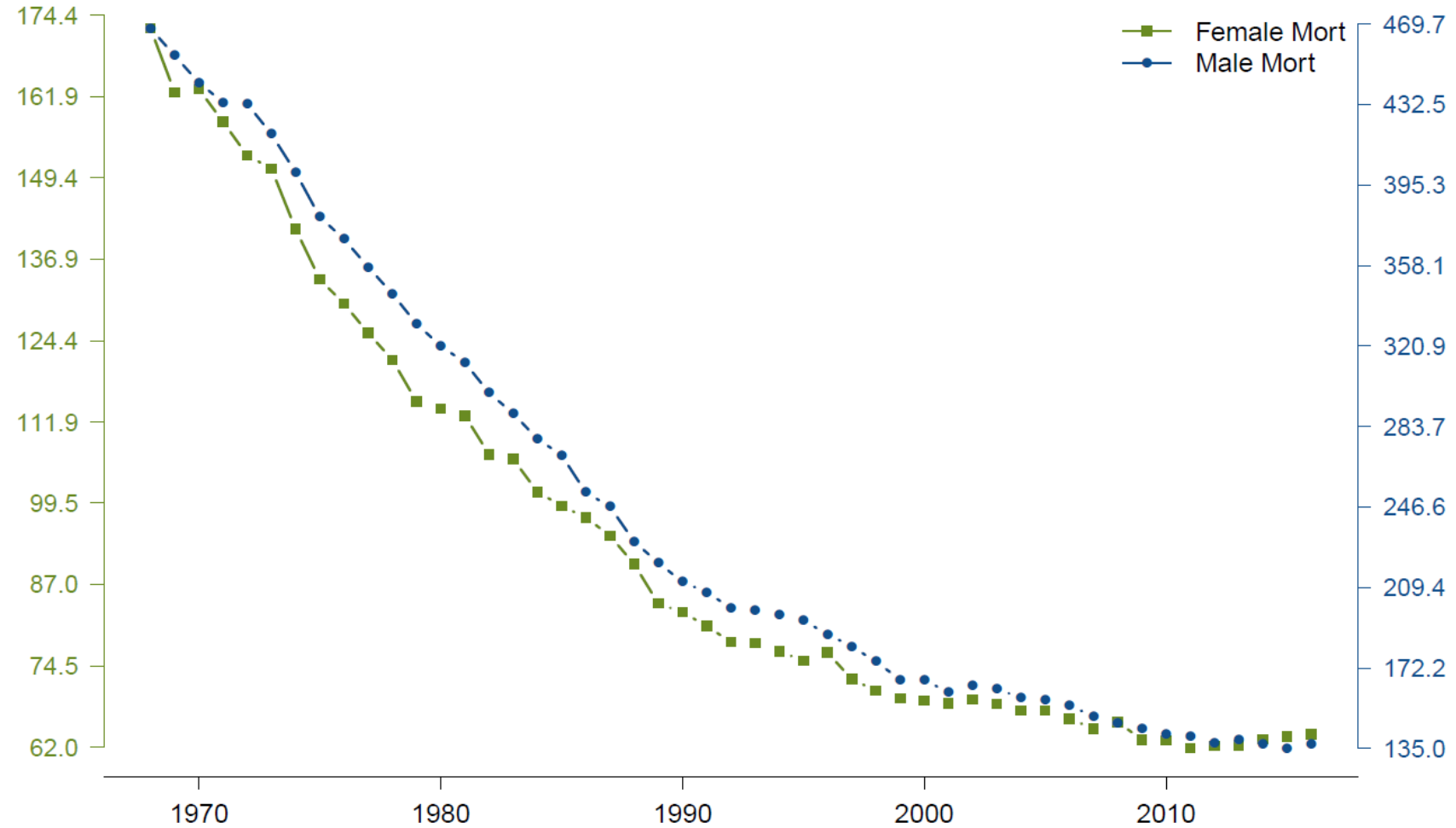
- While it is impossible to predict future trends with complete accuracy, we can significantly reduce the uncertainty
- Simple deviations relative to the best estimate (current data) have proven insufficient

# Mortality Trends Are Not One Size Fits All



# US CVD Slow-up


## 45-54 Mortality Rates Per 100k






# Mortality Trends By Cause


Median annualized improvement:  
**Overall**

	2000-09	2009-15
	1.90%	0.76%

Median annualized improvement:  
**Cancer**

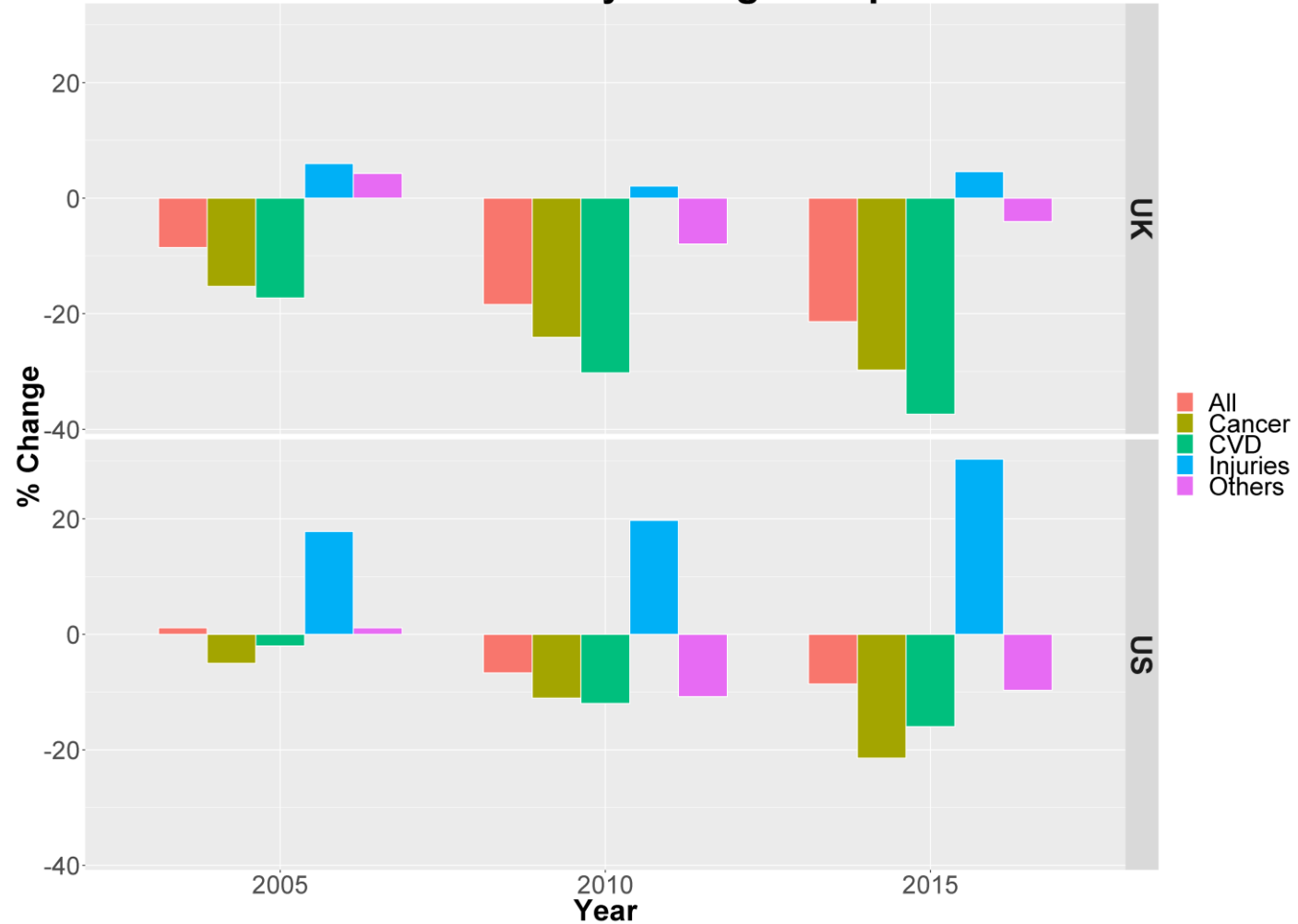
	2000-09	2009-15
	1.66%	2.21%

Median annualized improvement:  
**Heart Disease**

	2000-09	2009-15
	3.95%	1.45%

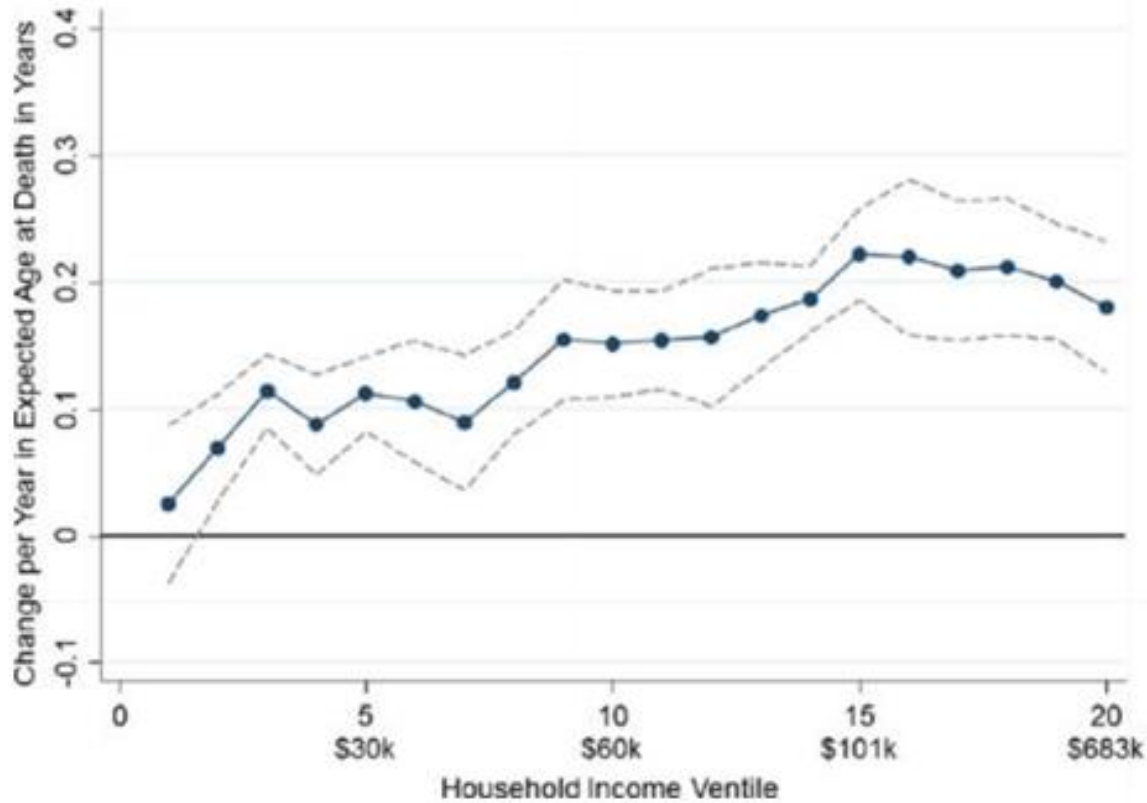
# UK vs. US in Mortality Improvement in the 21<sup>st</sup> Century

Male 45-54 Percent Morality Change Respect to Year 2001

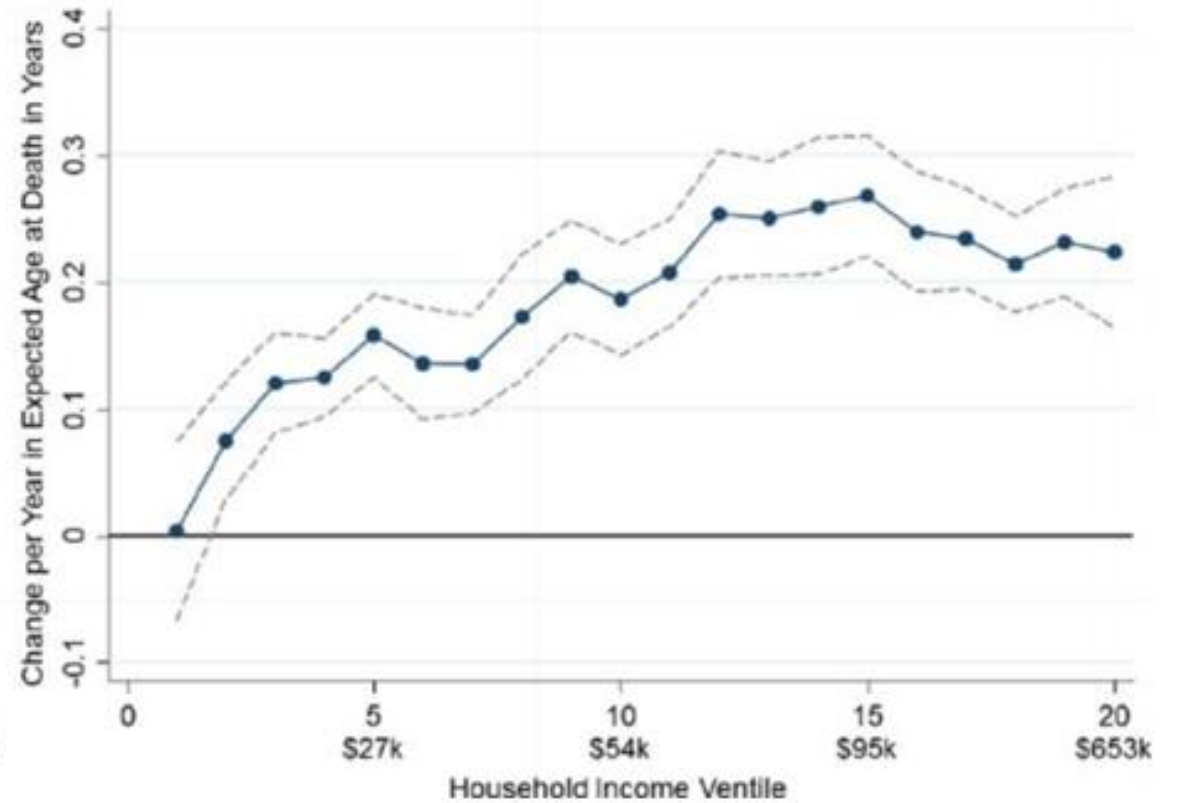


# Life Expectancy Change by Income

C. Average Annual Change in Life Expectancy from 2001-14 by Income Ventile, Men



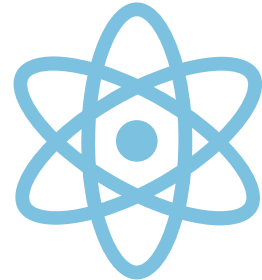
D. Average Annual Change in Life Expectancy from 2001-14 by Income Ventile, Women



Source: The Association Between Income and Life Expectancy in the United States, 2001–2014

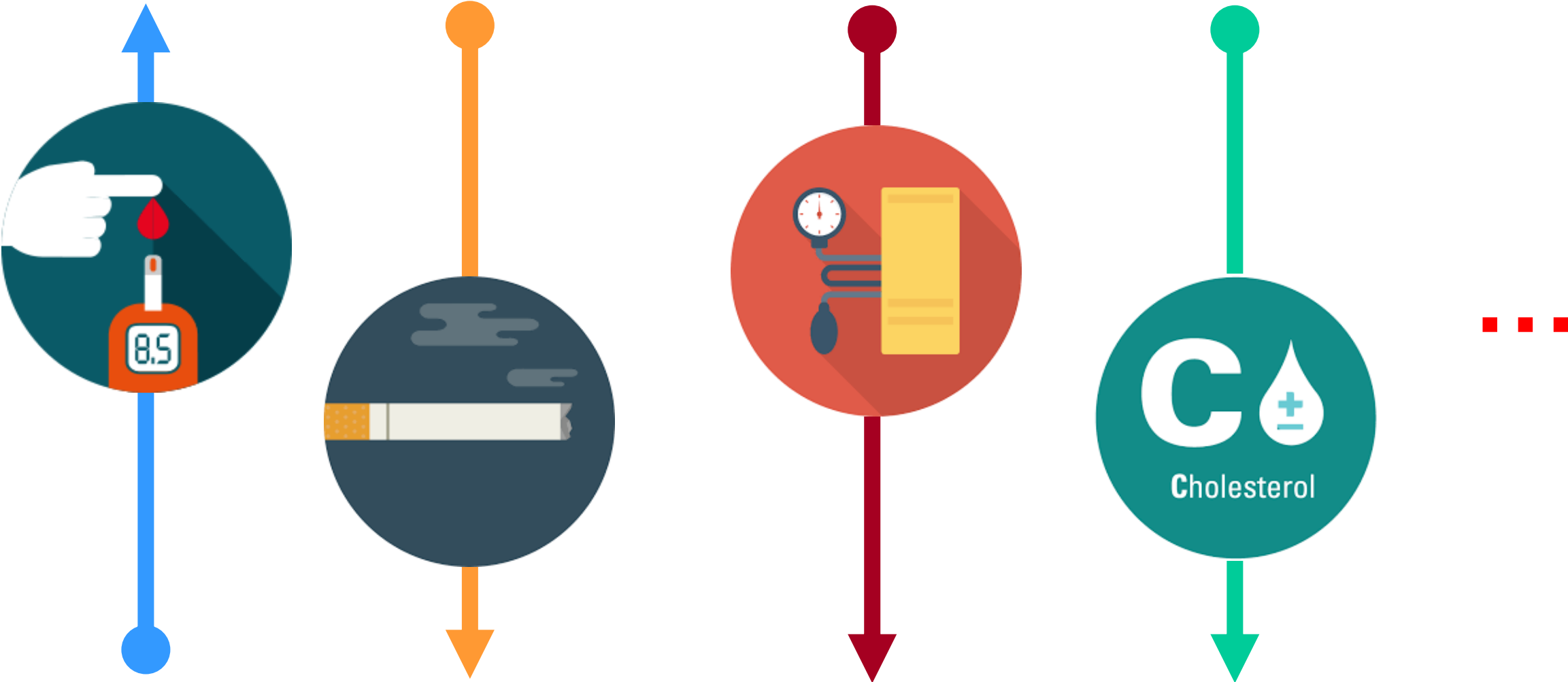
# Mortality Improvements Are Not Simply a Function of Income

- Income is related to mortality, but income is also correlated with other factors:



- Breaking down biomedical information and using a multi-variable dynamic model provides a better view of risk

# The Role of Lifestyle in Mortality Trends



# Conclusion

- We often like to think top line numbers of life expectancy can be applied ubiquitously or with conditional statements of “in general”. These metrics can obscure and often mislead the impact to specific population sets
- We need to rethink how mortality is changing for each group, what are they are risk for, and what technology has come online or may come online which will affect their risk
- When comparing life expectancy across countries, there are societal, cultural, and medical variables that may not be immediately apparent in data (e.g. definition of life, health regulations)

# Questions?



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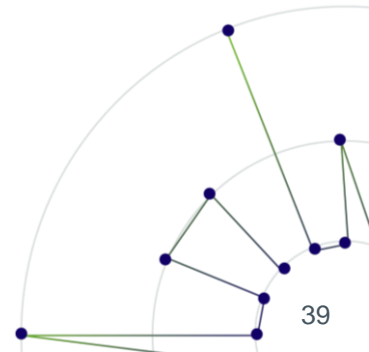
**Erik Pickett**  
Head of Content  
Club Vita



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