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Recent global mortality trends and their business relevance for insurers

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May 2018



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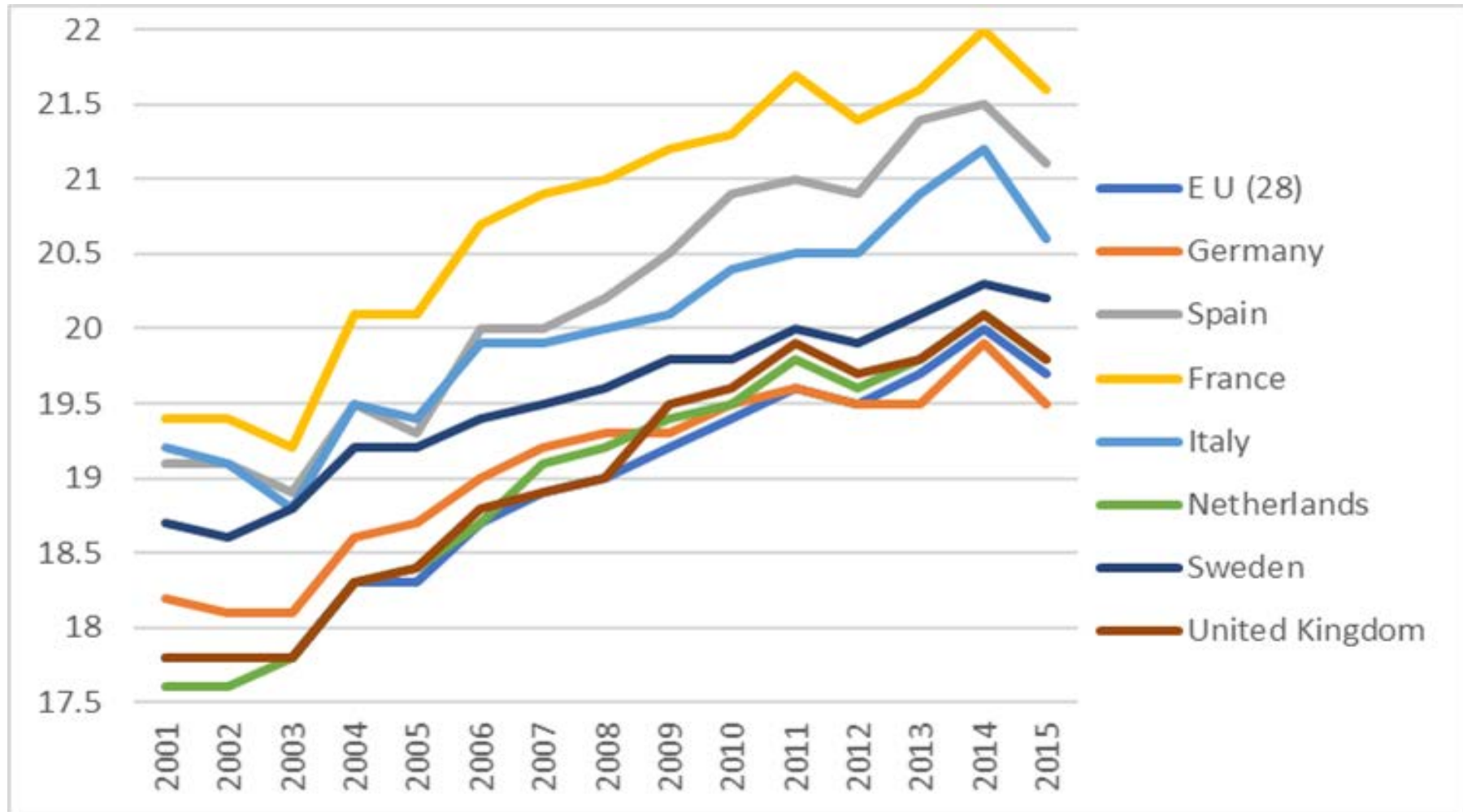
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Highlights

Trends	Relevance to insurance?
Rising life expectancy	
Slow down in rise in life expectancy	
Cause of death trends	
Rise in death rates for some ages and countries	
More volatile within the year than year-on-year	
Socio-economic divide	
The future?	



Europe: Combined Life Expectancy from age 65



Source: [Eurostat](http://ec.europa.eu/eurostat)



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Winter mortality in Europe 2013/17



Winter 2014/15

Age band

0 – 4

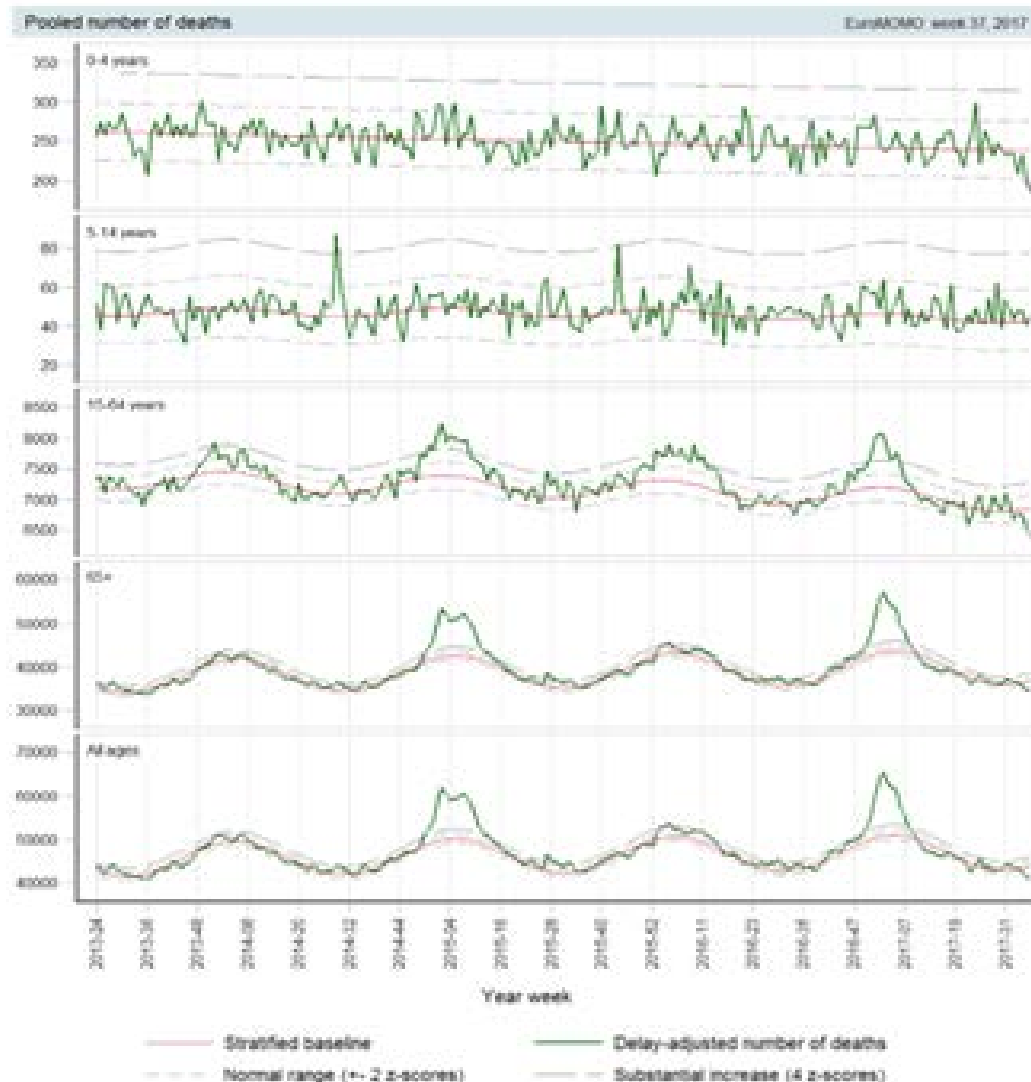
5 – 14

15 – 64

65 +

all ages

Normal excess
Winter mortality
2013/14



Source: [EuroMOMO](http://euro-momo.org)

Winter 2016/17

Europe EoL from 65



Past 5 years average improvement compared with prev 5 years (in months)

Country	Last year	Male		Female			Reduction in annual increase	
		Prev 5	Past 5	Prev 5	Past 5		M	F
France	2016	2.2	1.2	1.4	0.7		1.0	0.7
Germany	2013/14	2.1	0.9	1.5	0.8		1.2	0.7
Italy	2015	1.9	1.3	1.4	0.5		0.6	0.9
Spain	2015	3.1	0.9	3.1	0.6		2.1	2.6
Sweden	2016	1.8	1.5	1.1	0.7		0.3	0.4
UK	2015	2.7	1.0	2.2	0.4		1.7	1.9

Big improvements

smaller improvements

big drop in improvements

Source: Provisional figures Courtesy Adrian Gallop - own calculations E&OE !

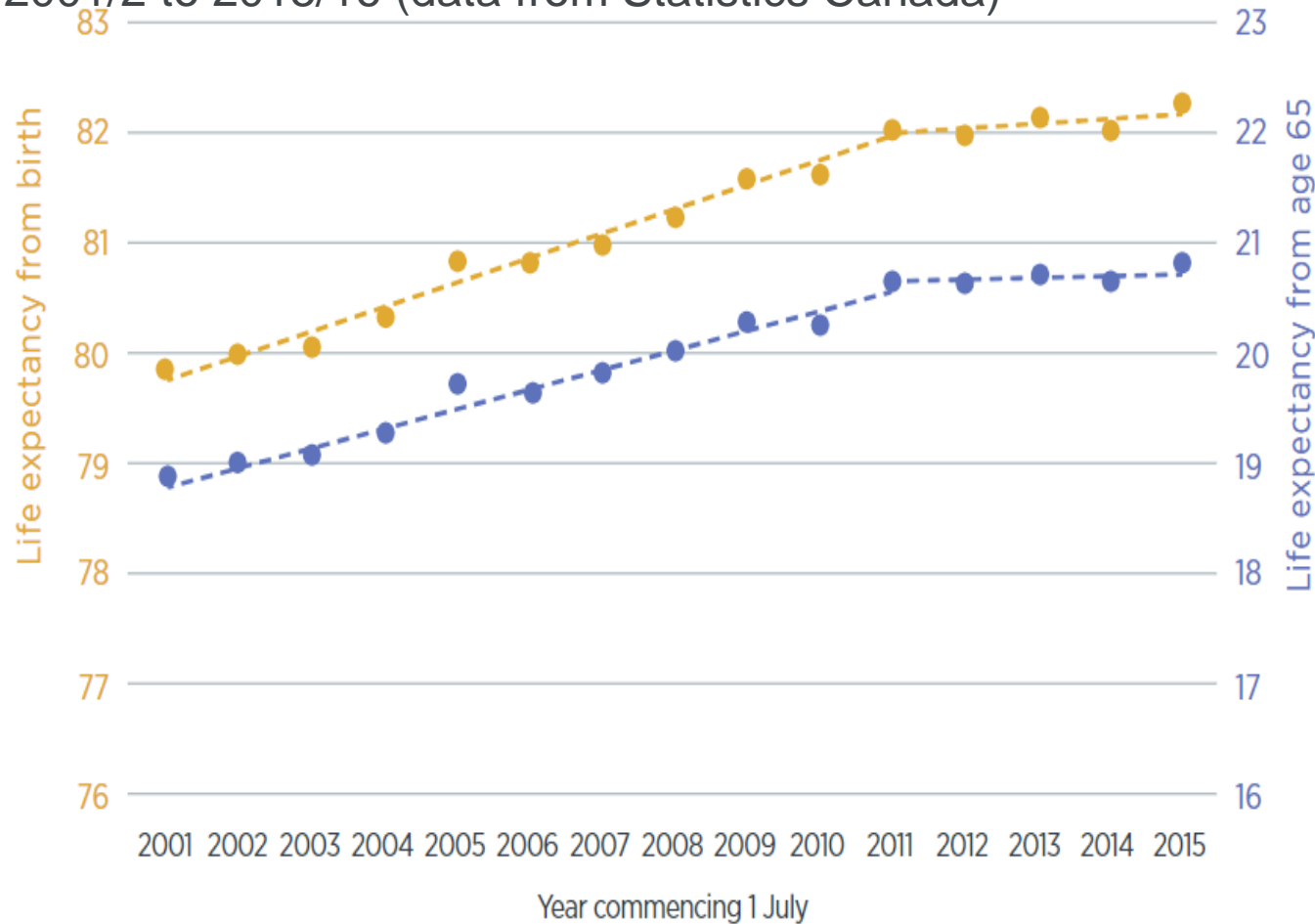


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Canada - *provisional*



Canada period life expectancy at birth and age 65, males and females combined, 2001/2 to 2015/16 (data from Statistics Canada)



Source: [Longevity Bulletin 10](#), Damien Lapointe Nguyen

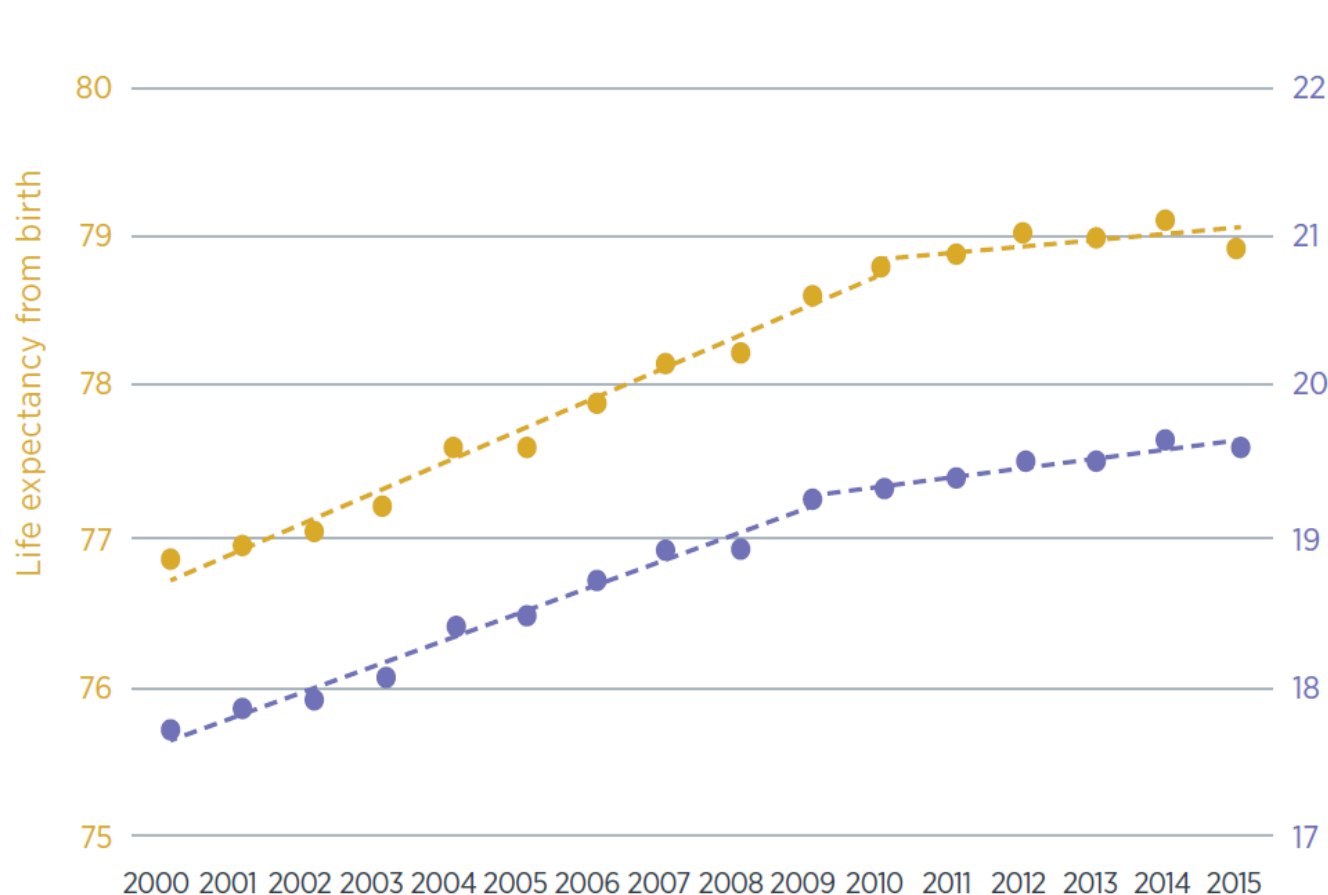


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US – surprisingly similar?



US period life expectancy at birth and age 65, males and females combined, 2000 to 2015 (data from HMD)

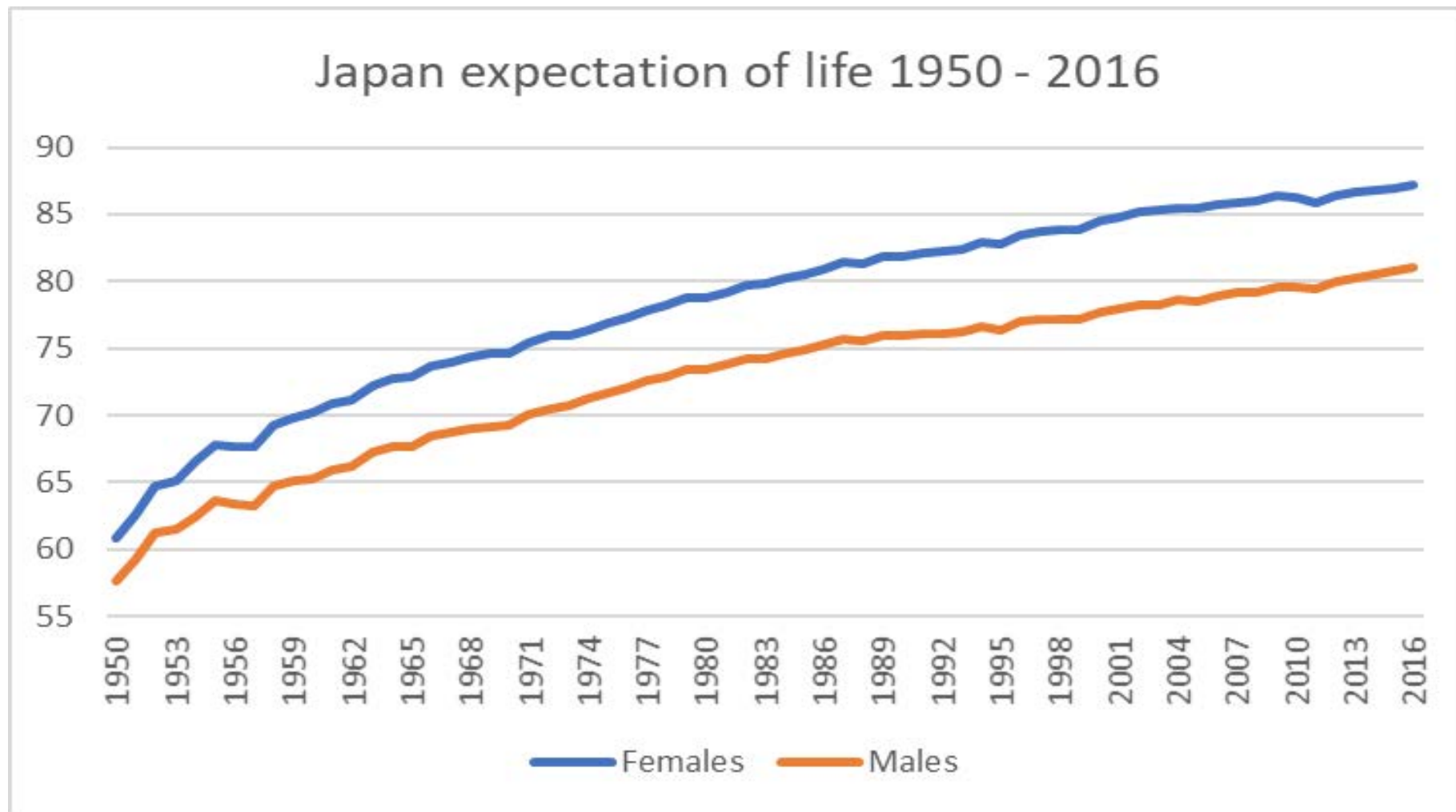


Source: [Longevity Bulletin 10](#), Hezhong Ma



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Japan



Source: HMD + [Abridged Life Tables for Japan 2016](#) courtesy Assia Billig



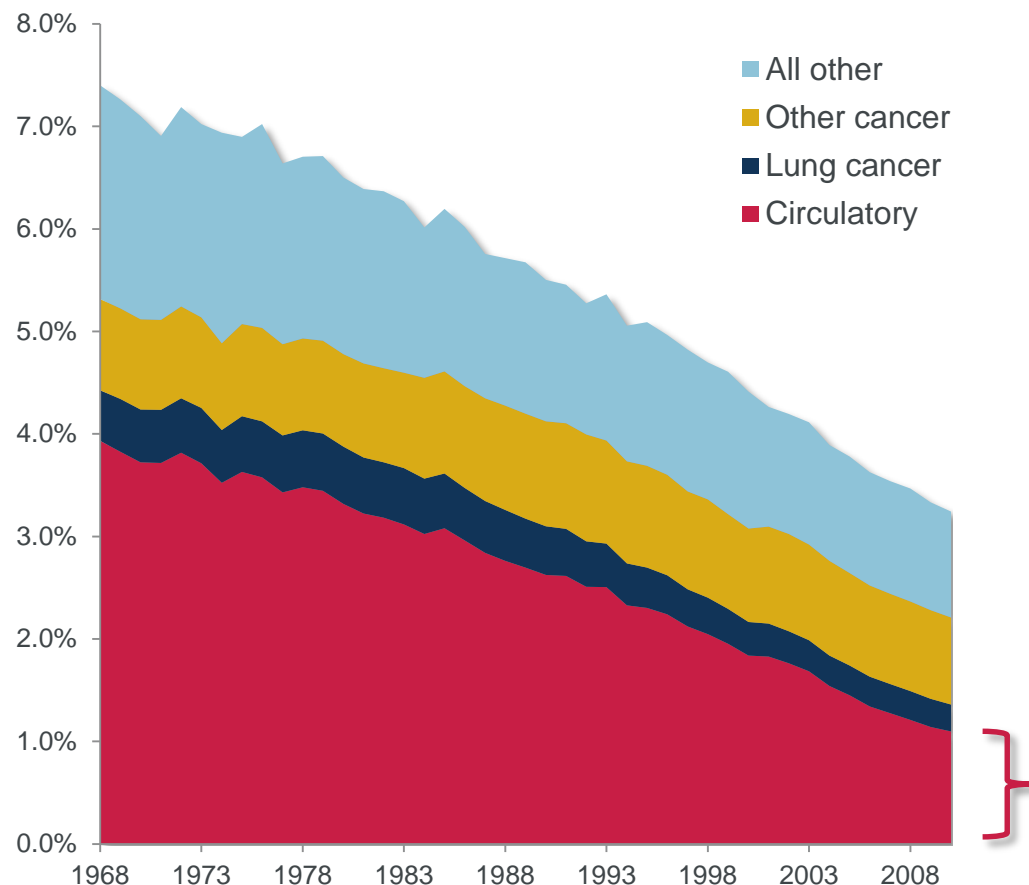
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Improvements by cause of death

E&W ages 60 - 89



Age-standardized mortality rate for ages 60-89, males in England & Wales, by cause of death group, 1968 to 2010



- In the period up to 2010 death rates from circulatory causes fell by up to 75%
- Around 70% of the total improvement was due to this
- The improvement was driven by a range of different factors, the most significant of which was reduced smoking
- The potential for future improvement in circulatory causes is more limited

Source: CMI, Richard Willets, Jon Palin

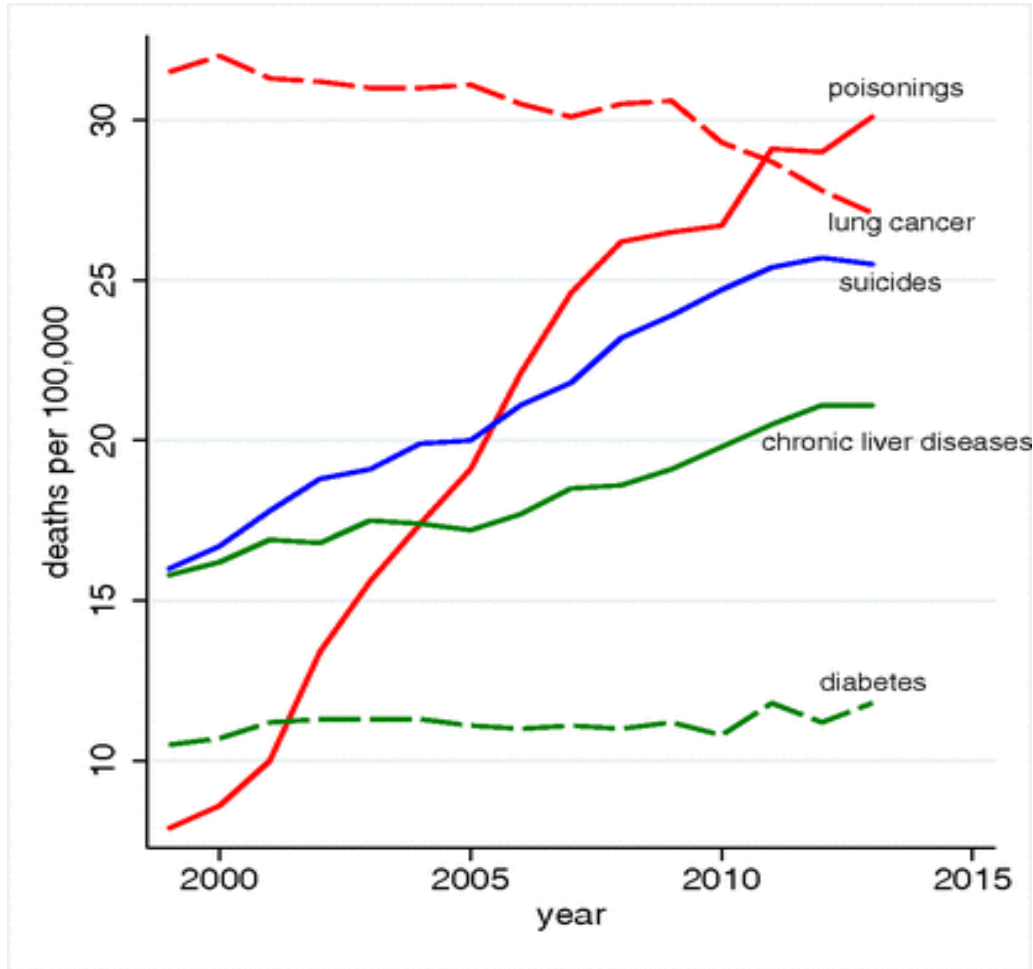


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US

Behaviours: white non-Hispanics



The change in all-cause mortality for white non-Hispanics 45–54 is largely accounted for by an increasing death rate from external causes.

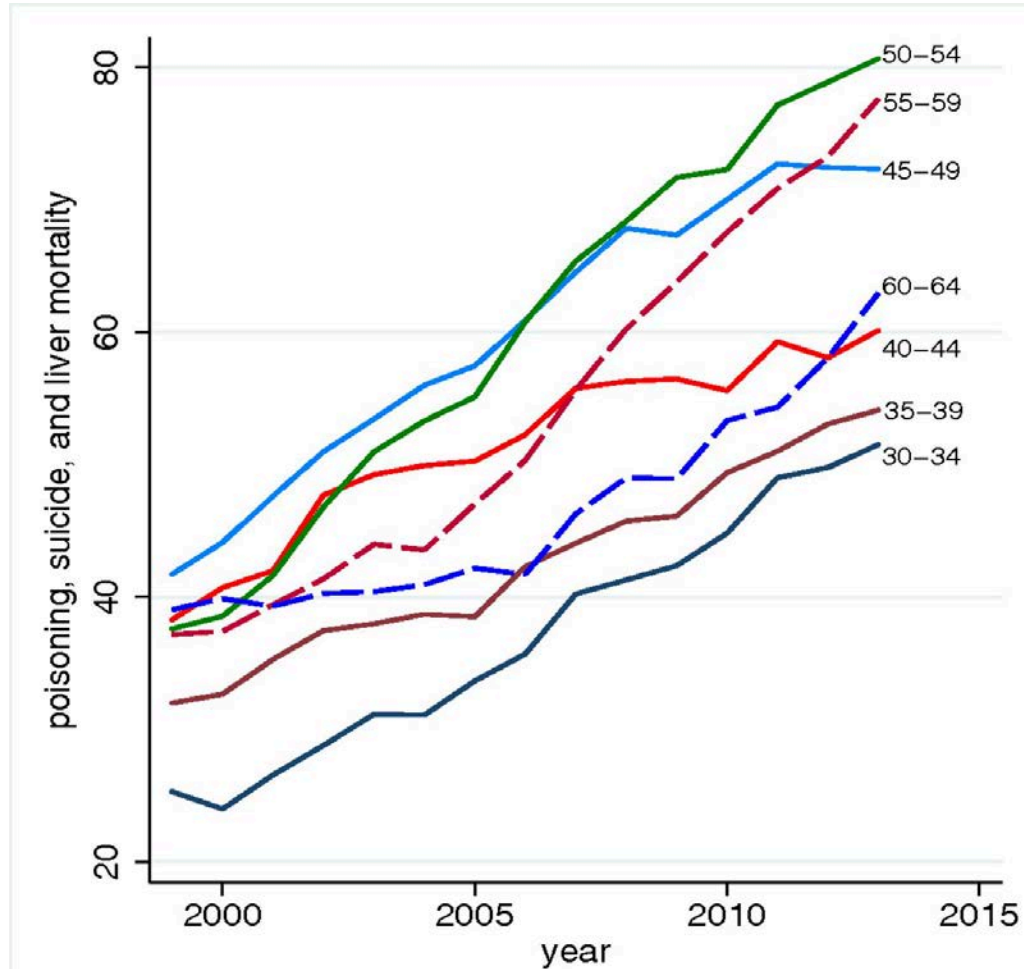


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Source: Case, A.; Deaton, A. (2015). [Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century](#). Proceedings of the National Academy of Sciences (2015) 112

US Rising mortality for US White non-Hispanics



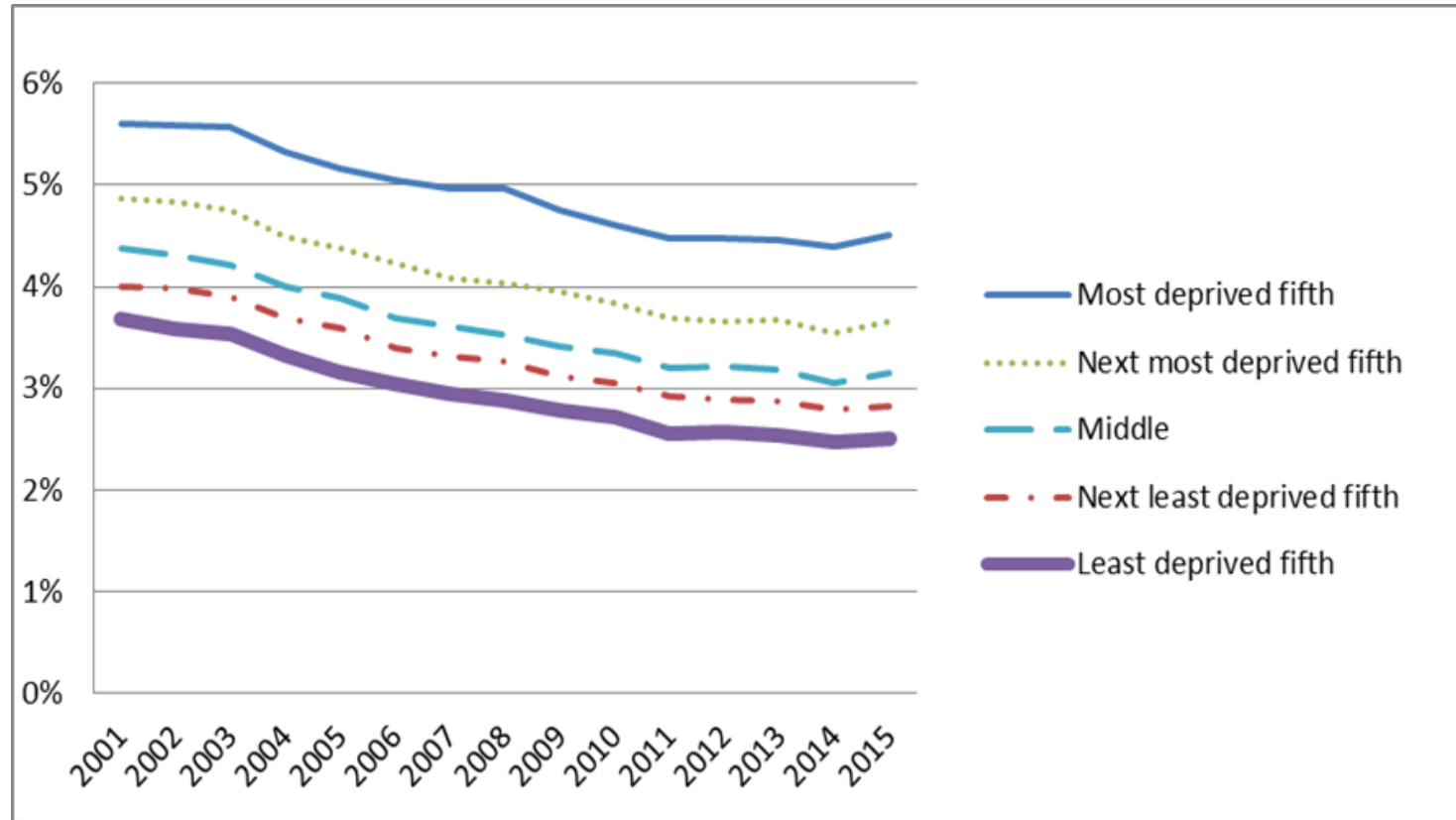
All 5-y age groups between 30–34 and 60–64 have witnessed marked and similar increases in mortality from the sum of drug and alcohol poisoning, suicide, and chronic liver disease and cirrhosis over the period 1999–2013

Case, A.; Deaton, A. (2015). [Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century](#). Proceedings of the National Academy of Sciences (2015) 112

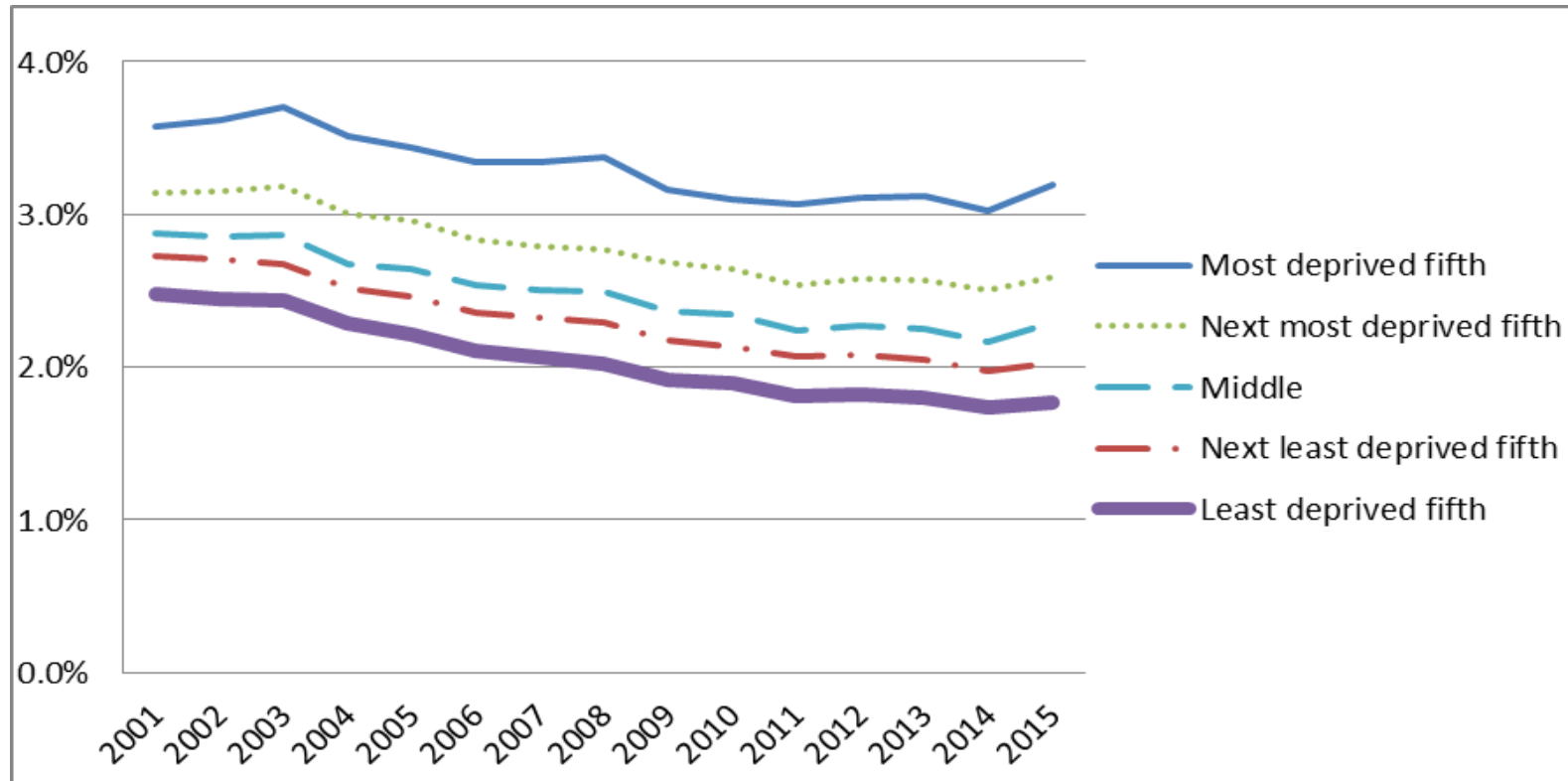


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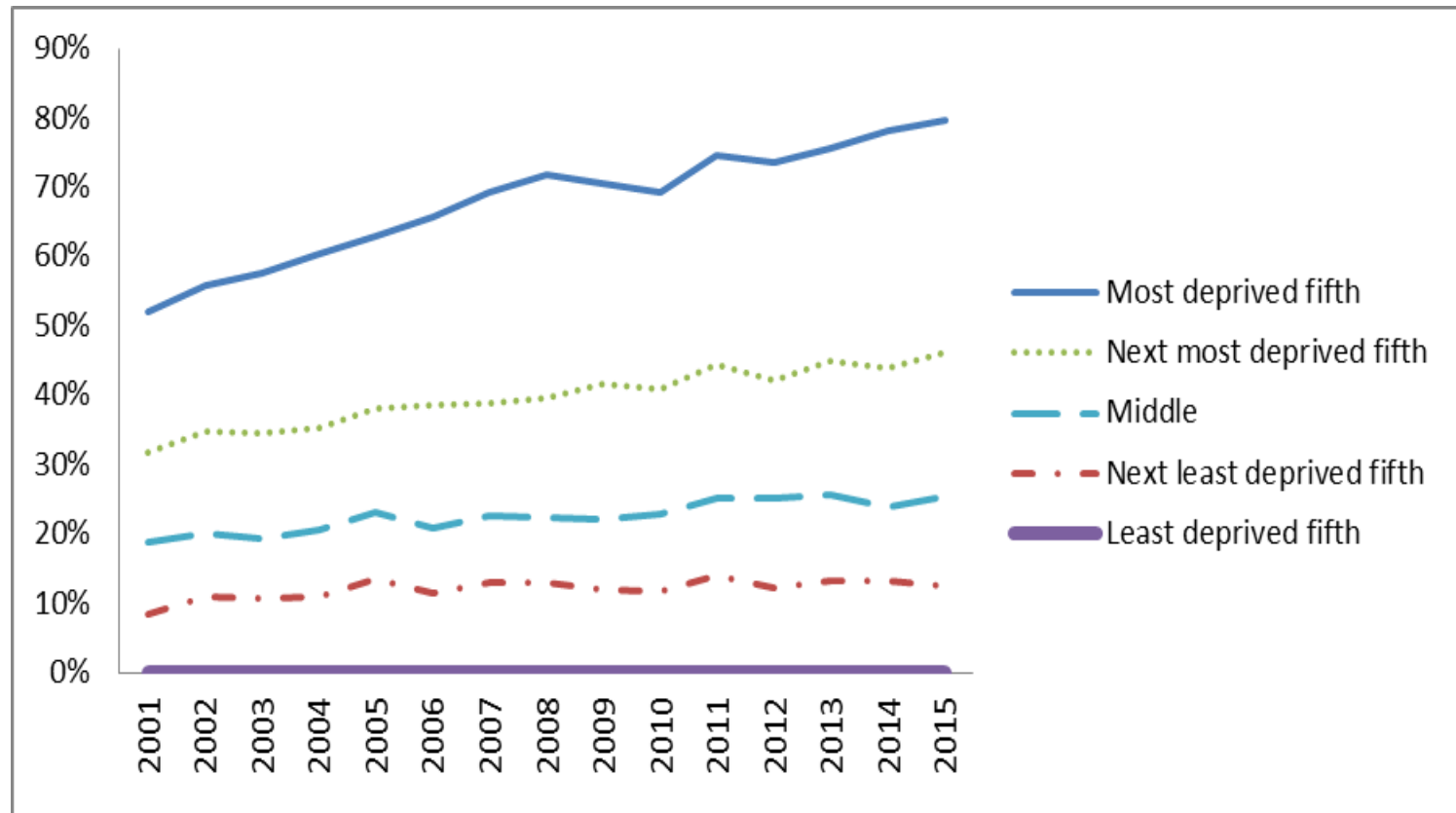
Mortality rates of males aged 60-89 in England, standardised to population distribution of European Standard Population 2013.



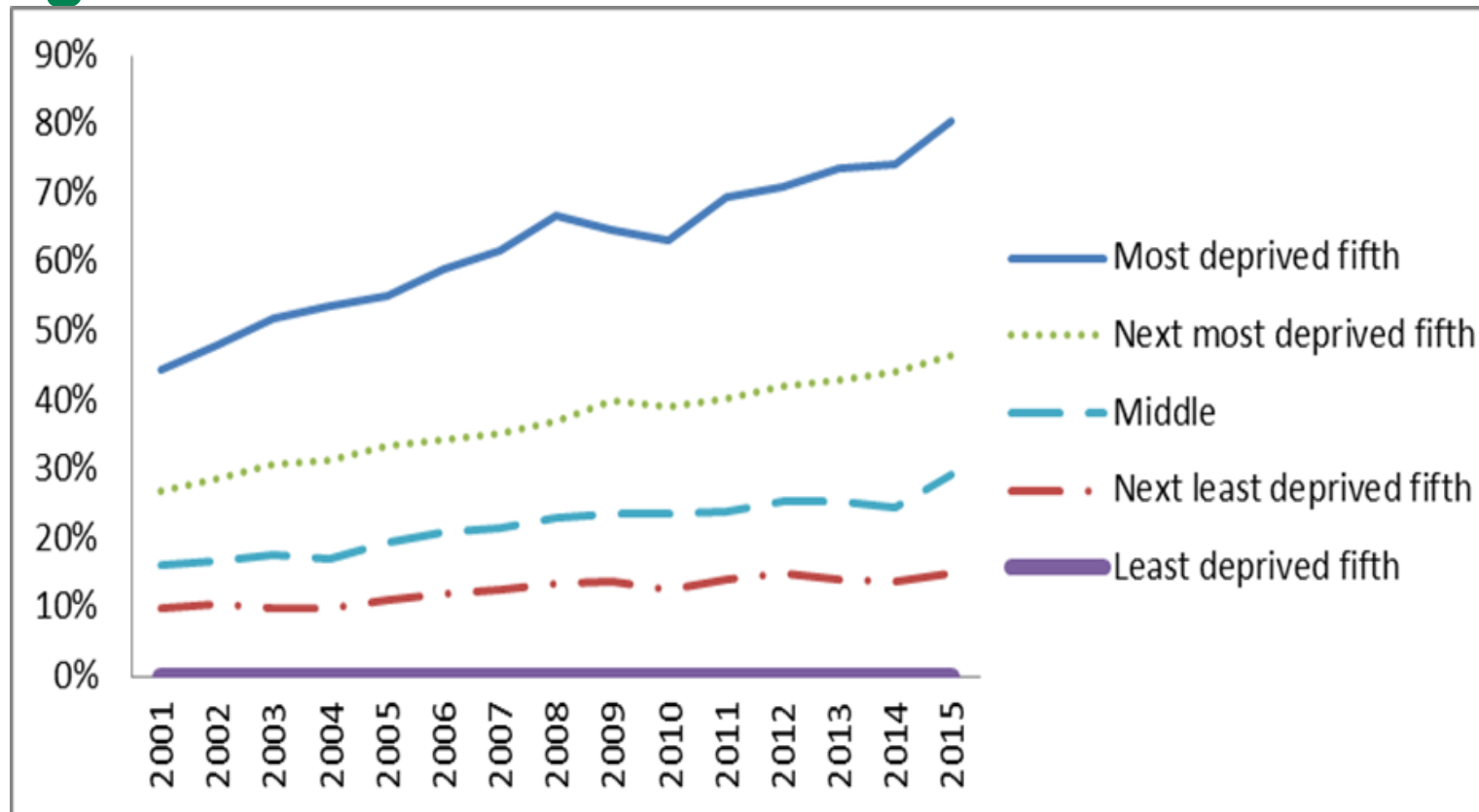
Mortality rates of females aged 60-89 in England, standardised to population distribution of European Standard Population 2013.



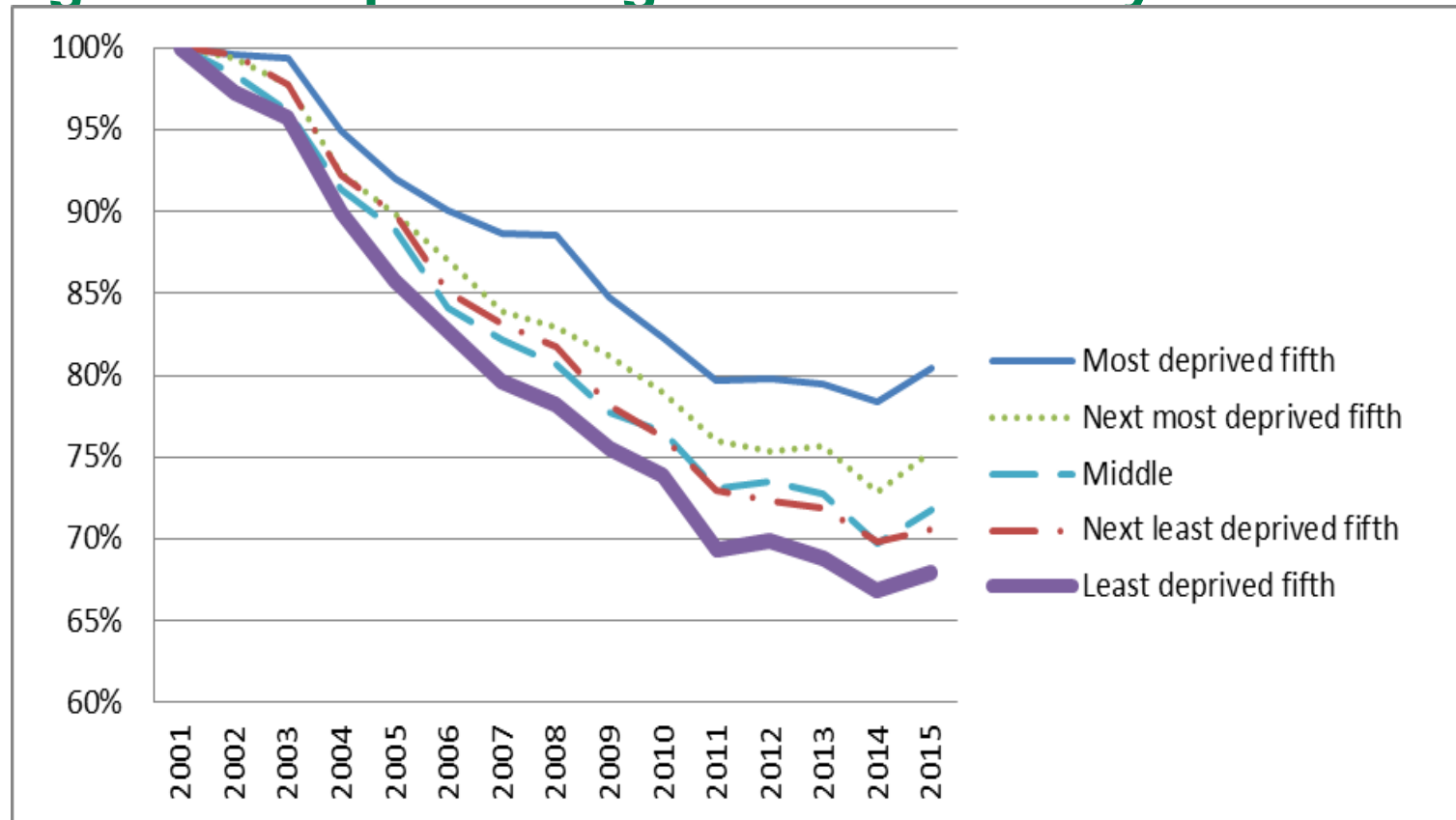
Percentage difference in death rates relative to the most advantaged fifth males age 60-89 in England.



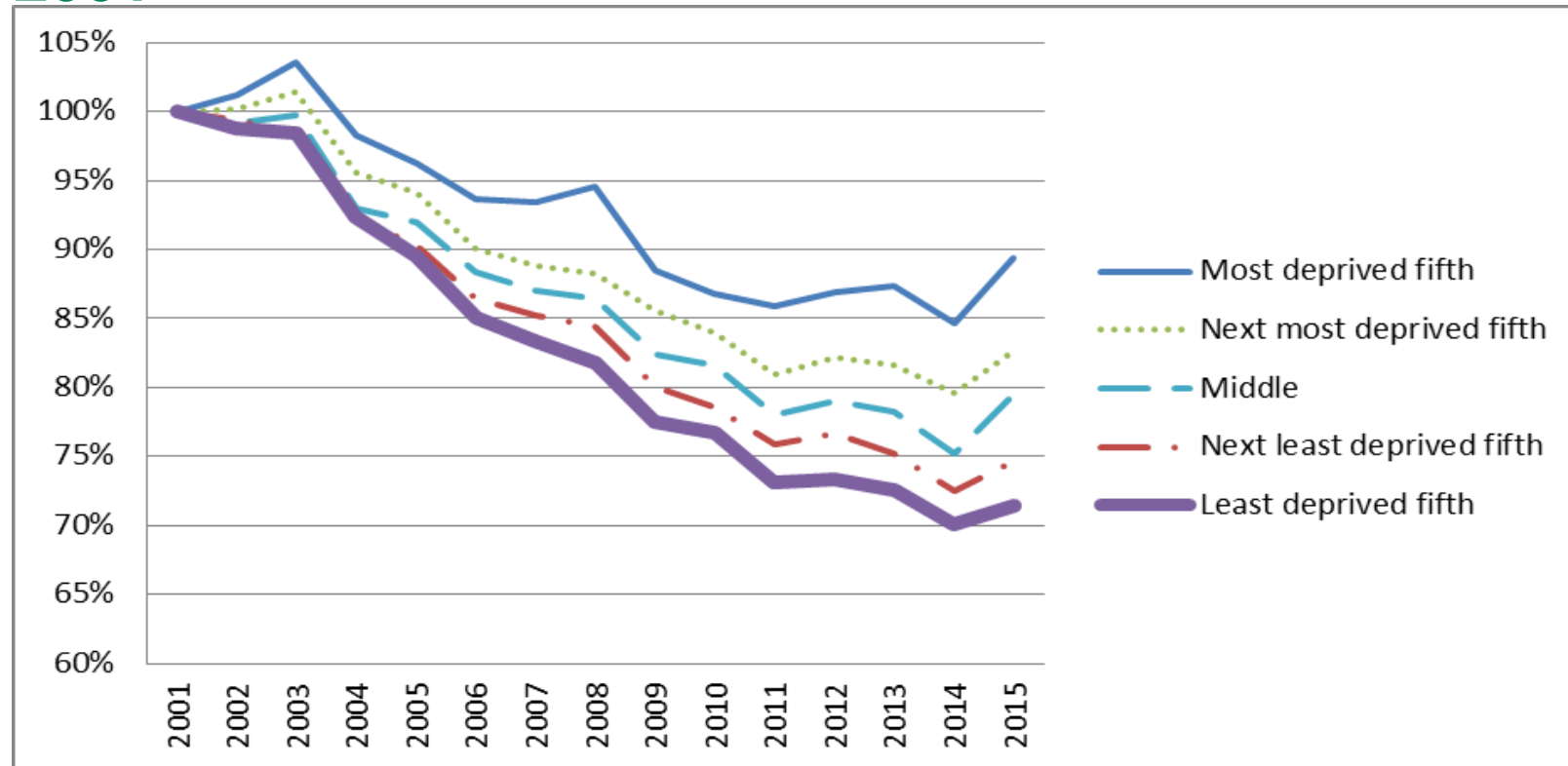
Percentage difference in death rates relative to the most advantaged fifth females age 60-89 in England.



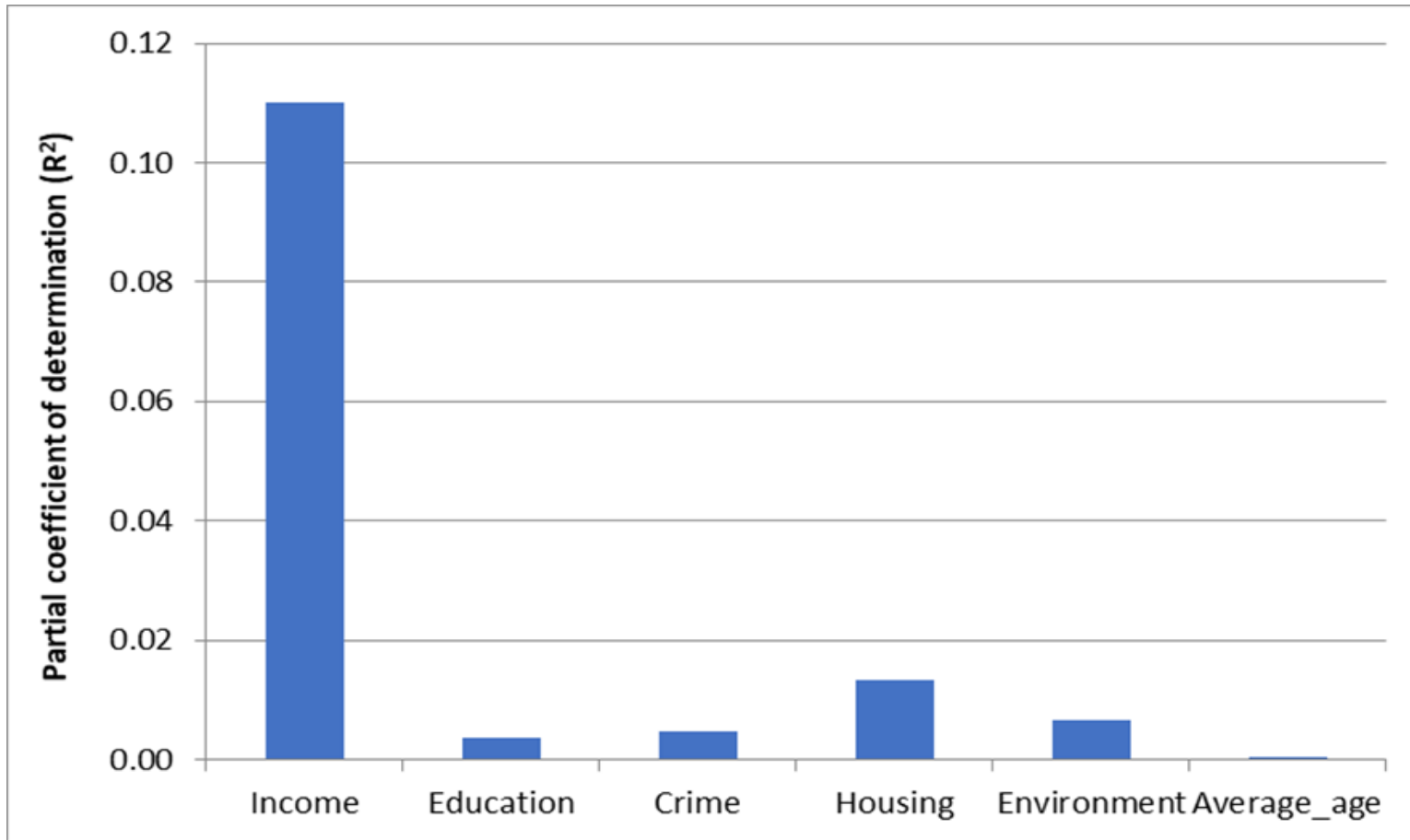
Progression of male death rates, aged 60-89 of each socio-economic circumstances quintile in England, relative to their levels in 2001. For each quintile, the value of mortality is given as a percentage of the mortality rate in 2001



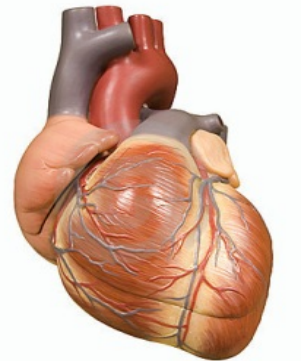
Progression of female death rates, aged 60-89 of each socio-economic circumstances quintile in England, relative to their levels in 2001. For each quintile, the value of mortality is given as a percentage of the mortality rate in 2001



It's mainly about money



Drivers are important. Link risk factors to death & life



7 steps to superb health

	Average	1	2	3	4	5	6	7
Smokers percentage	18%	0%	0%	0%	0%	0%	0%	0%
Obesity (BMI)	28.56	28.56	22	22	22	22	22	22
Heavy drinking	7%	7%	7%	0%	0%	0%	0%	0%
High blood pressure (Systolic Hg)	134.28	134.28	134.28	134.28	115	115	115	115
Cholesterol (Total/HDL)	4	4	4	4	4	2	2	2
Cardiovascular	19%	19%	19%	19%	19%	19%	0%	0%
Chronic obstructive pulmonary disease	5%	5%	5%	5%	5%	5%	5%	0%
Male Life Expectancy age 65 (attained age)								
Life expectancy rise		1.2	0.2	0.1	0.7	0.4	0.2	0.2

Provisional illustration.

‘Superb’ health means a rise in life expectancy of 3 ± 0.5 years.

Helps management decisions

Can be used to forecast future longevity. Model to be fine-tuned.



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The Future

	Improve longevity	Worsen longevity
Life Style/behaviour	Diet	
Environment		Volatile weather
Socio-Economic		Worse welfare due to ageing population
Health Care	IT to improve	Austerity
Medical Advancement	AI. Flu vaccine.	
Extreme Technology	Anti-ageing	



Summary

Trends	Relevance to insurance
Rising life expectancy	Pension promises, pension funds, insurance firms.
Slow down in rise in life expectancy	
Cause of death trends	Forecasts to include and understand causes of trend
Rise in death rates for some ages and countries	Life insurance – take note.
More volatile within the year than year-on-year	Winter and flu deaths can add to volatility. Improvement in coping with winter and vaccination could reduce uncertainty.
Socio-economic divide	Rich-poor mortality gap is pronounced in some countries.
The future?	

References

Mortality trends from an international perspective

Brian Ridsdale & Adrian Gallop

Life Expectancy: Is the socio-economic gap narrowing?

Longevity Science Panel



Mortality trends from an international perspective

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Chairman, IAA Mortality Working Group

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With thanks to:

Jon Palin, Richard Willets, Magali Barbieri, Assia Billig, Al Klein, Sam Gutterman, Michael Sherris, Rikard Bergstrom, David Raymont, Jari Niittuinperä, Madhavi Bajekal, Luis Alfonso Jiménez Muñoz, Hans de Mik and many others



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Questions

Comments

Expressions of individual views by members of the Institute and Faculty of Actuaries and its staff are encouraged.

The views expressed in this presentation are those of the presenter.



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