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# Highlights of the Mortality and Longevity Seminar 2018

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# To be covered:

- CMI update
- International Mortality trends
- Investing in the Age of Longevity
- Longevity indices





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# CMI update

# CMI update – SAPS tables

- SAPS Committee published new “S3” series mortality tables on 5 June 2018 (CMI WP 107)
- Consultation closed 14 September and final tables due late 2018
- - greater range of tables (new “very light” tables)
  - review of amount bands
  - new method for high ages
  - consideration of differences between private and public sector



# CMI update – SAPS tables

Range of tables – S3 compared to S2

Type	Gender	Lives	Amounts				
			All	Heavy	Middle	Light	Very Light
Pensioners	Male						<b>NEW</b>
Pensioners	Female				<b>NEW</b>		<b>NEW</b>
Normal health	Male				<b>NEW</b>		<b>NEW</b>
Normal health	Female				<b>NEW</b>	<b>NEW</b>	<b>NEW</b>
Ill-health	Male						
Ill-health	Female						
Dependants	Male	<b>NEW</b>	<b>NEW</b>				
Dependants	Female					<b>NEW</b>	<b>NEW</b>

Source: CMI



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# CMI update – SAPS tables

## Amount bands

Gender	Band	S2 Series		S3 Series	
Male	Heavy	0 – 1,700	(19%)	300 – 5,000	(40%)
Male	Middle	1,700 – 14,750	(65%)	5,000 – 20,000	(45%)
Male	Light	14,750+	(16%)	20,000+	(15%)
Male	Very light	n/a	n/a	40,000+	(3%)
Female	Heavy	0 – 850	(22%)	0 – 1,000	(19%)
Female	Middle	850 – 5,500	(60%)	1,000 – 8,000	(58%)
Female	Light	5,500+	(18%)	8,000+	(23%)
Female	Very light	n/a	n/a	16,000+	(6%)

Source: CMI



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# CMI update – Mortality Projections

- CMI\_2017 published on 1 March 2018
  - “business as usual” update
- CMI\_2018 due by the end of March 2019
- Mortality improvements since 2011 have been volatile, and lower than in previous decades. Views differ on the causes of this and the prospects for future improvements.

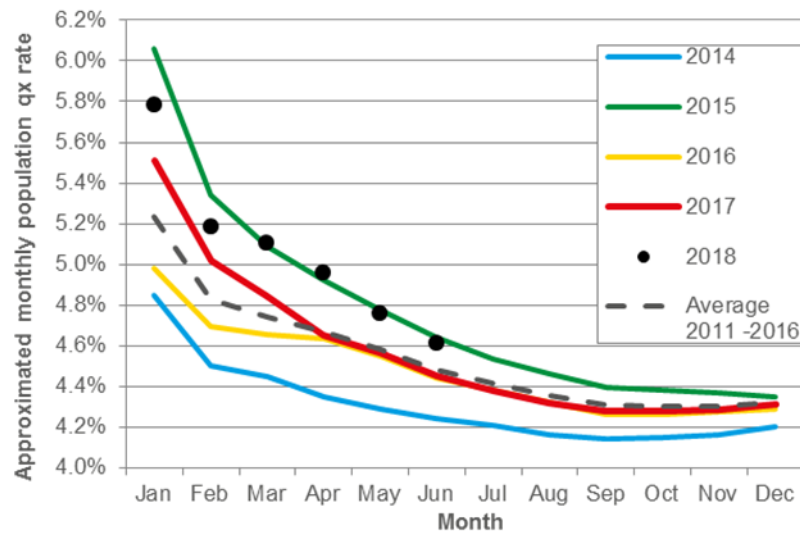




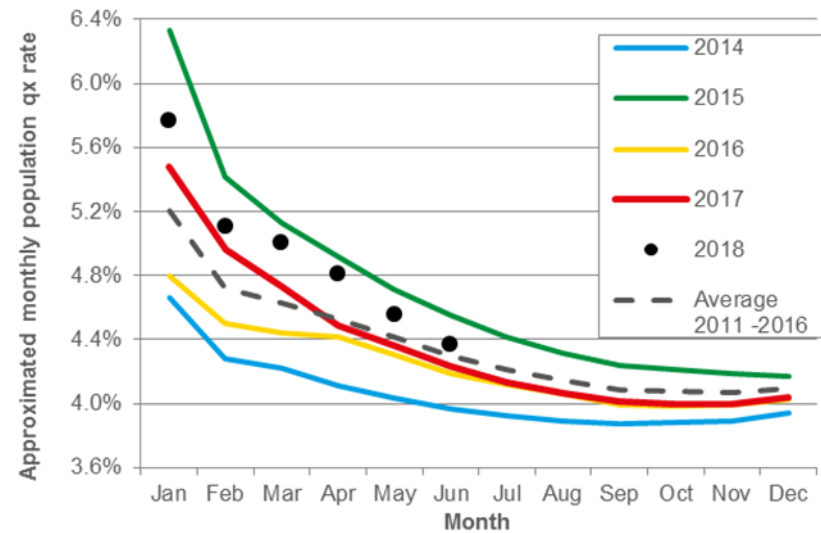
# CMI update – Mortality Projections

## England and Wales population mortality

- Approximate annualised cumulative mortality rate (qx) by calendar year (over 65s)



Males



Females

Source: L&G



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# International mortality trends

# International mortality trend

- Where are there signs of a fall off in longevity improvements?

- UK



- Other European countries



- US



- Canada



- Australia



- Japan



# International mortality trends

Some possible causes:

- Seasonal factors?
  - flu epidemic
  - Beast from the East
  - heatwave
- Cause of death?
  - cardiovascular death rates fall
  - other death rates rise e.g. dementia
  - increase in diabetes



# International mortality trends

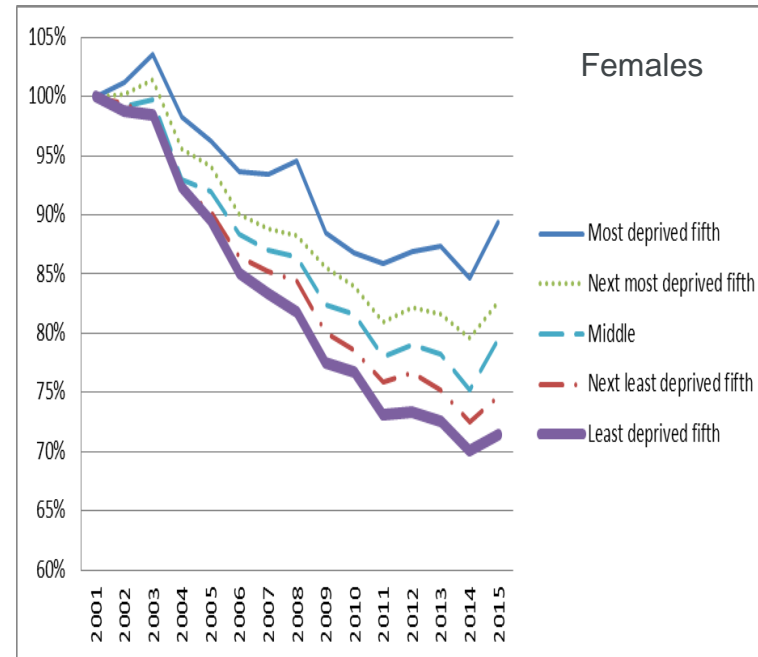
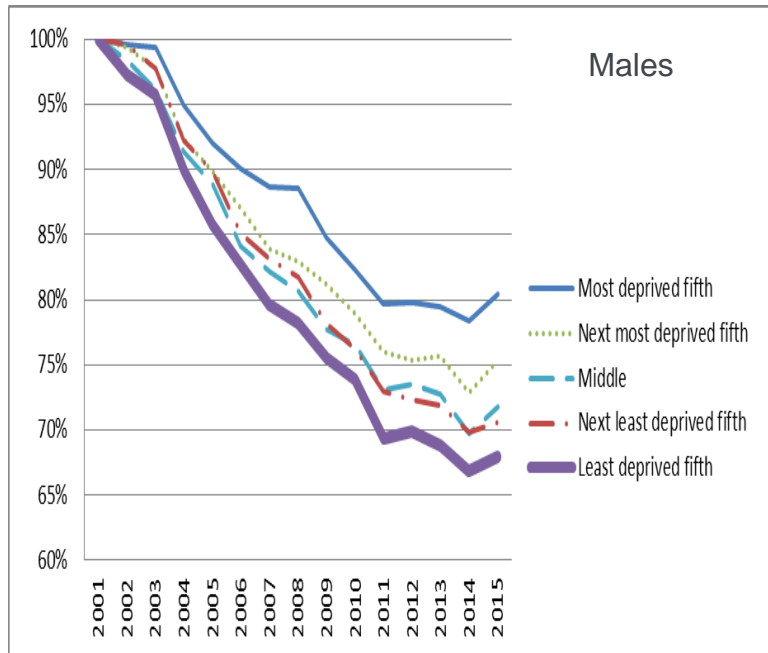
Some possible drivers:

- Decrease in smoking (but made the big gains)
- Increase in obesity (and an increase in diabetes)
- Behaviours
  - increase in drug poisoning, suicide, chronic liver disease (particularly in US)
- Socio- economic factors
- Austerity



# International mortality trends

Progression of death rates for those 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.



Source: Life expectancy: is the socioeconomic gap narrowing? Longevity Science Panel Feb 2018



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# International mortality trends

*“Of the many factors including income, education, crime, health, housing, environment and unemployment, income deprivation is the strongest independent predictor of mortality rates”*

Source: Life expectancy: is the socioeconomic gap narrowing? Longevity Science Panel Feb 2018



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# International mortality trends

## Austerity – mixed messages

- Is the slowing down of life expectancy potentially correlated to the level of austerity?
- Are we entering a new era characterised by an instability in population health largely dictated by the social and political determinants of health?
- But... income inequality has increased in both the United States and France yet inequality in mortality in France remained remarkably low and stable.





# International mortality trends

- Life expectancy projections have been reducing across different territories  
E.g. UK, US, Sweden
- Underlying causes unlikely to disappear
  - excess winter deaths, obesity, opioid dependency, dementia etc.
- Impact on protection and annuitant populations will differ – different subsets of the population



# International mortality trend

- Japan bucking the recent trend
  - diet (what they eat and how much)
  - exercise (daily exercise, more active)





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# Investing in the Age of Longevity



# Investing in the Age of Longevity

The following article was published in one of Britain's largest newspapers called *The Telegraph* on November 29, 2015:

November 29, 2015

## The Telegraph

### World's First Anti-Ageing Drug Could See Humans Live to 120

Source: Jim Mellon, Juvenescence

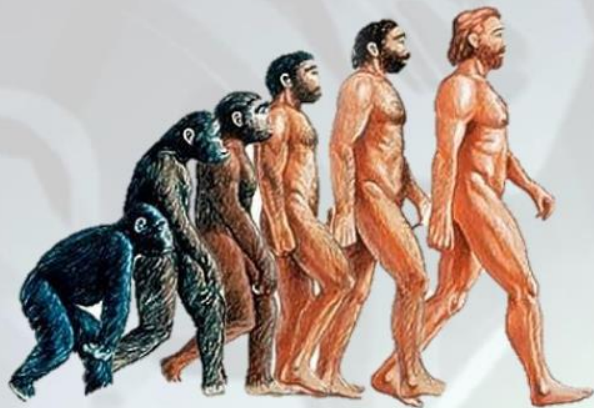


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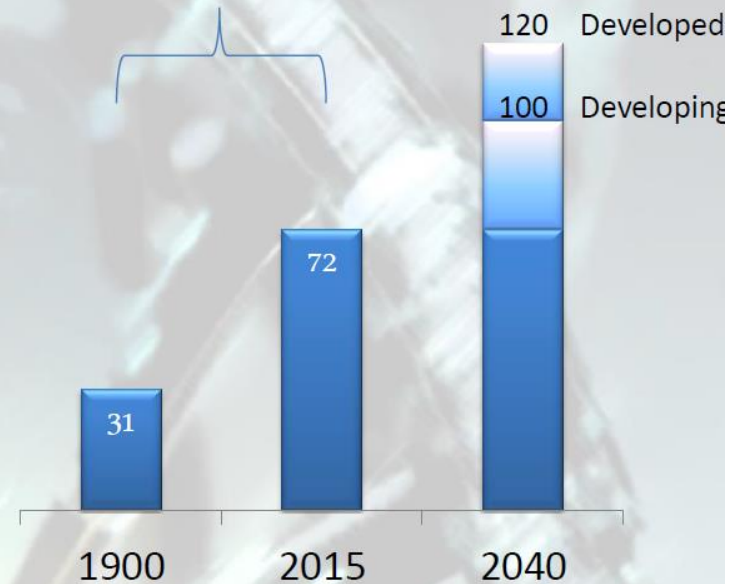
# Investing in the Age of Longevity

## WORLDWIDE LIFE EXPECTANCY

Four million years produced an 11-year increase from 20 to 31



115 years produced a 41 year increase



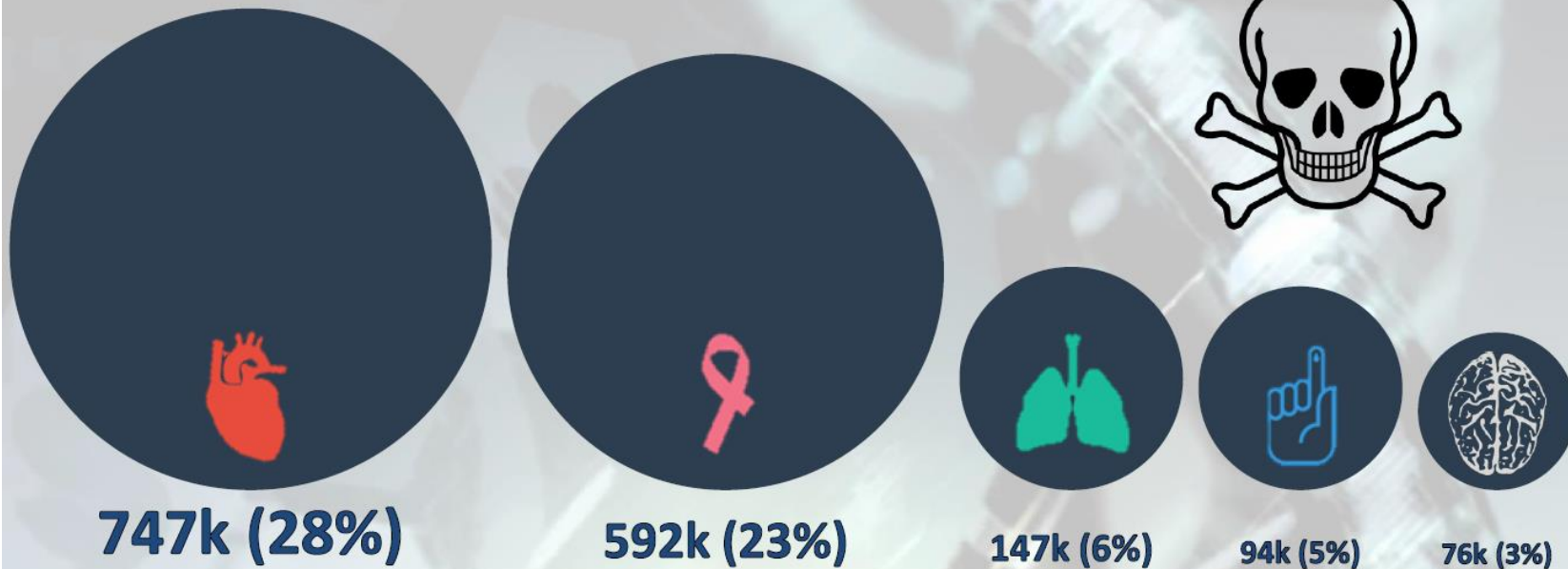
Source: Jim Mellon, Juvenescence



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# Investing in the Age of Longevity

Age is the single biggest risk factor in the deadly quintet of diseases accounting for 70% of all deaths



Source: Figures for United States - 2014

Source: Jim Mellon, Juvenescence



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# Investing in the Age of Longevity

## THERAPIES IN DEVELOPMENT

afar

AGEX  
THERAPEUTICS

ELYSIUM

Elevian

resTORbio™

LYGENESIS

UNITY  
BIOTECHNOLOGY

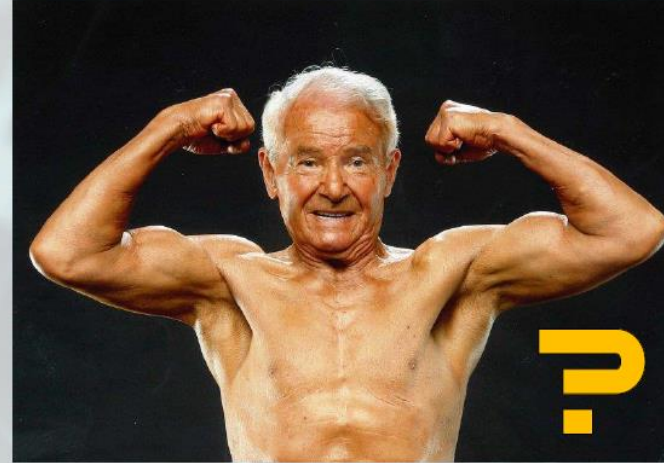
Source: Jim Mellon, Juvenescence



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# Investing in the Age of Longevity



Gone are the days when you're born, learn, earn, burn out, retire and expire!

Source: Jim Mellon, Juvenescence



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# Investing in the Age of Longevity



Source: Jim Mellon, Juvenescence



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# Investing in the Age of Longevity

## LONG ROAD TO APPROVAL



Source: Jim Mellon, Juvenescence



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# Investing in the Age of Longevity



Source: Jim Mellon, Juvenescence



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# Mortality Improvements – what's the answer?

- Unknown and uncertain (and will remain so)
- Differing views (direction and speed of development)
- Key drivers for population mortality remain behavioural:

Diet & Nutrition

Exercise

Smoking

Alcohol

Obesity





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# Longevity indices



# Longevity indices

- Will we see a UK longevity index market?  
i.e. benefit payments based on the experience of a reference population (possibly for fixed term)
- Finite (mortality) capital to support indemnity insurance
  - optimised diversification of negatively correlated risk
  - look to capital markets?
- Potential risks (relative to indemnity insurance):
  - data risk
  - event risk
  - basis risk





# Longevity indices

- Price of index swap relative to price of indemnity swap important.
- Index swap should be cheaper
  - simpler administration
  - standardisationbut....
  - lack of supply?
  - higher capital requirements?
  - risk v reward?



# Questions

# Comments

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