Longevity Science in Business

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Chair of Mortality Research Steering Committee
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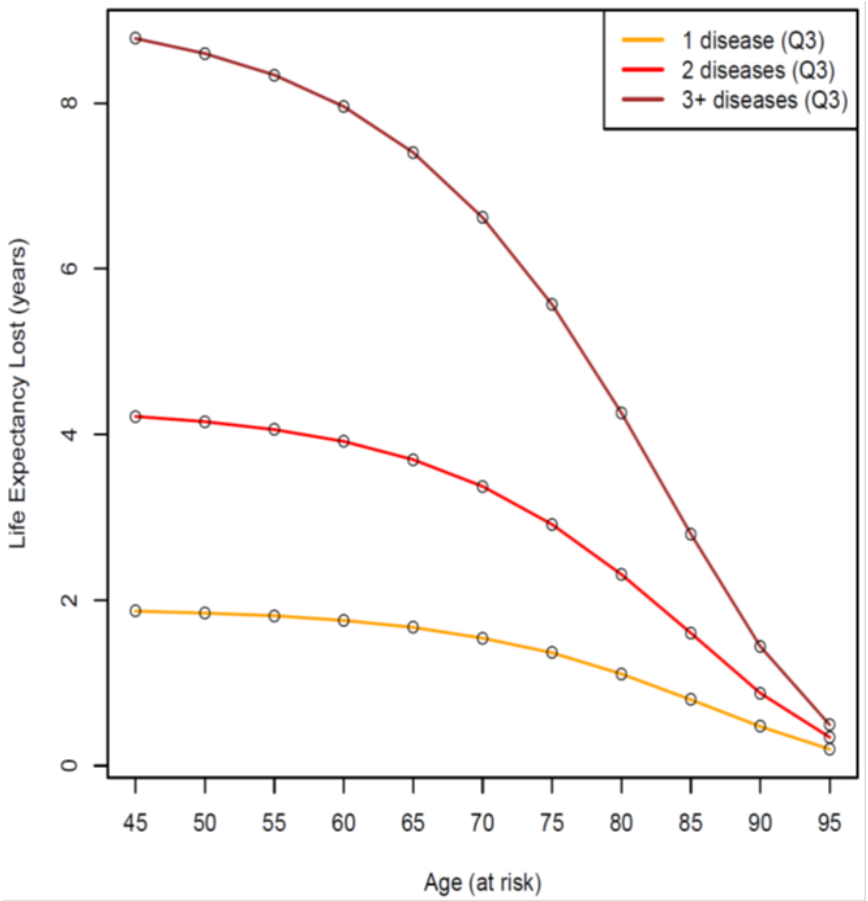
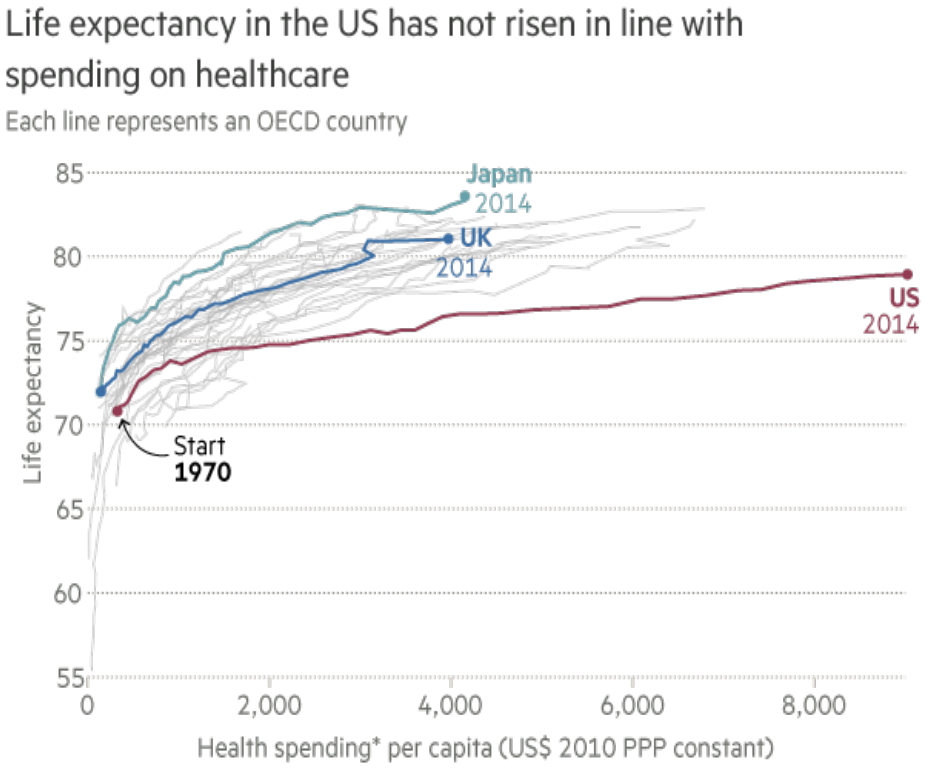
Longevity business challenges

Differences in life expectancy by health



L&G/CLAHRC-North Thames (UCL) Multimorbidity Team: Socioeconomic inequalities in health expectancy with and without multimorbidities

Rising life expectancy



FT graphic Sources: United Nations Population Division, OECD
*Final consumption of health care goods and services (i.e. current health expenditure) including personal health care and collective services but excluding spending on investments

Mortality Research Steering Committee (MRSC)

MRSC reports into RTLC with the following purposes (TOR):

- To contribute towards the Institute and Faculty of Actuaries (IFoA) becoming recognised as a leader in the research of mortality, morbidity and longevity issues.
- To support RTLC in ensuring that the IFoA Learned Society and Thought Leadership objectives as they relate to mortality, morbidity and longevity research are being delivered and remain appropriate.
- To provide a forum for raising mutually-applicable issues relating to mortality, morbidity and longevity research and champion their resolution within the IFoA or escalate them to the RTLC as appropriate

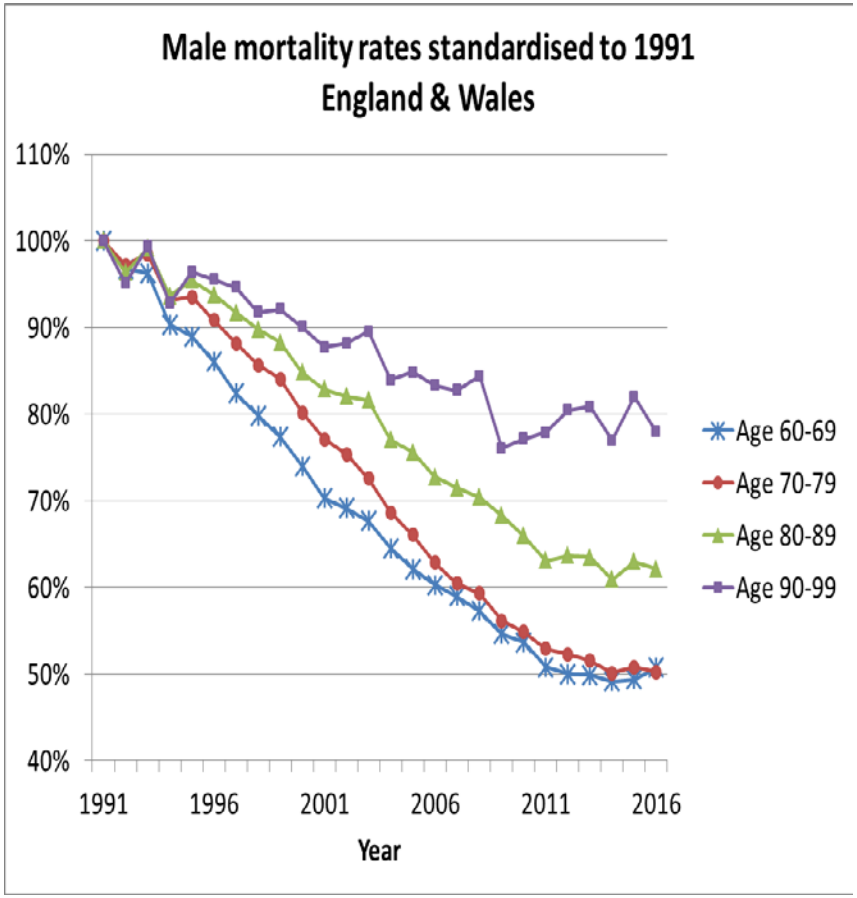
Hot topics for research focus

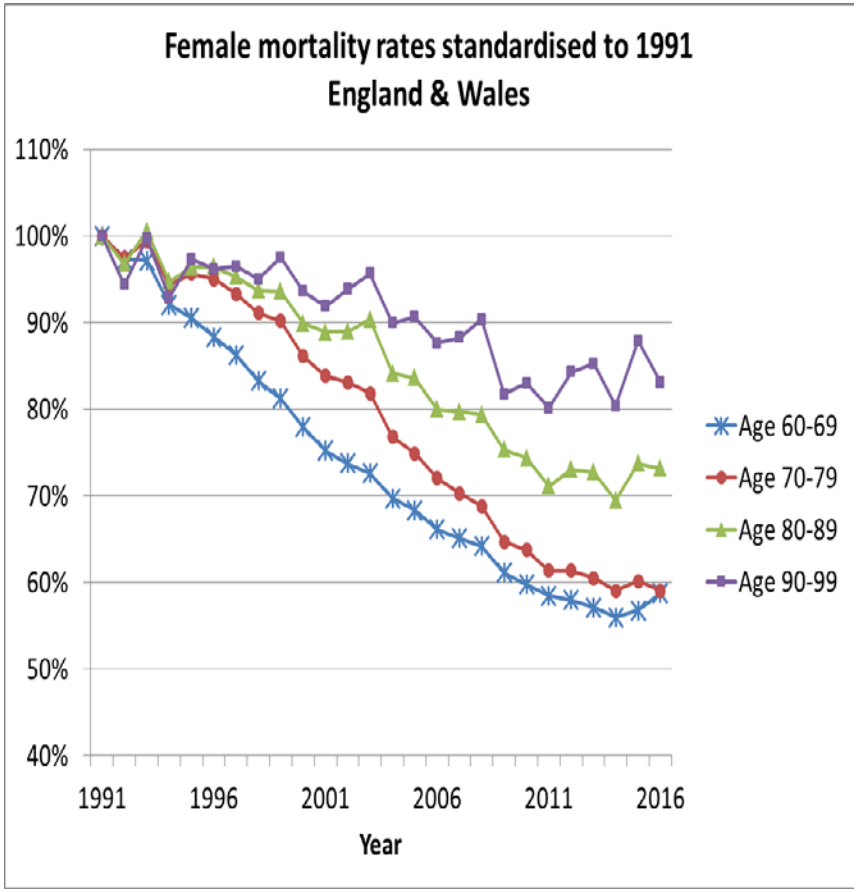
1. How will population longevity develop in the future in your defined countries or internationally?
2. New evidence or analyses of historical morbidity and mortality patterns.
3. What would disrupt current mortality trends?
4. How will Big Data contribute to understanding population health behaviours, trajectory and patterns; improving mortality analyses and forecasting?
5. New techniques for mortality and longevity analyses and forecasting.
6. Implication of mortality and morbidity trends for commercial, retirement and policy decisions.

How will population longevity develop in the future?

- Consider projection of future trends, learning from wider fields including statistics, medical sciences, epidemiology and demography.
- Consider differences in mortality rate and mortality improvement rates in sub-populations such as gender, socio-economic status and health.
- Consider causal processes of morbidity or mortality trends. Examples would include changes in health drivers, resources and environment.

Evidence, disruption, future trend

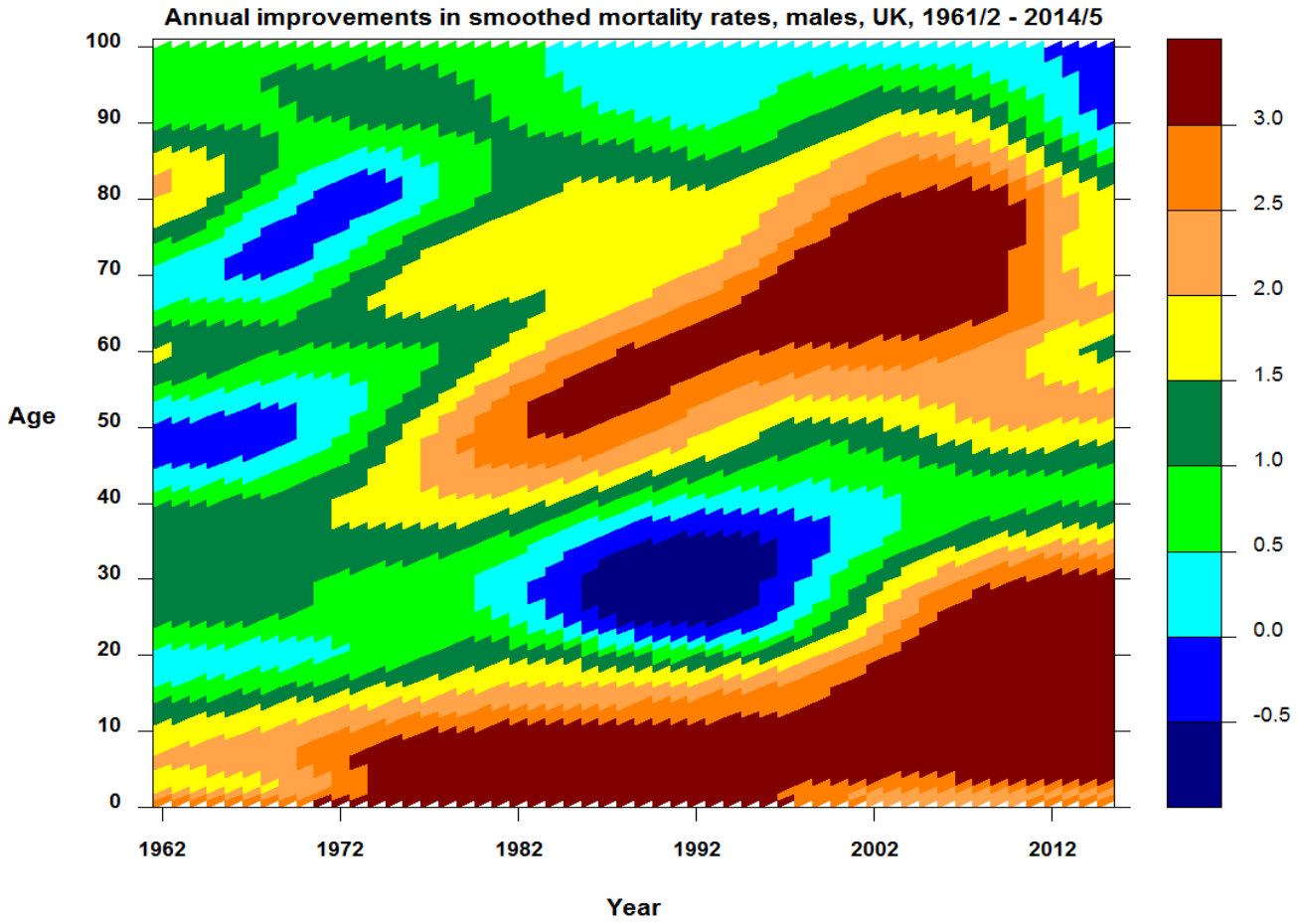




Sub-populations, drivers and new techniques

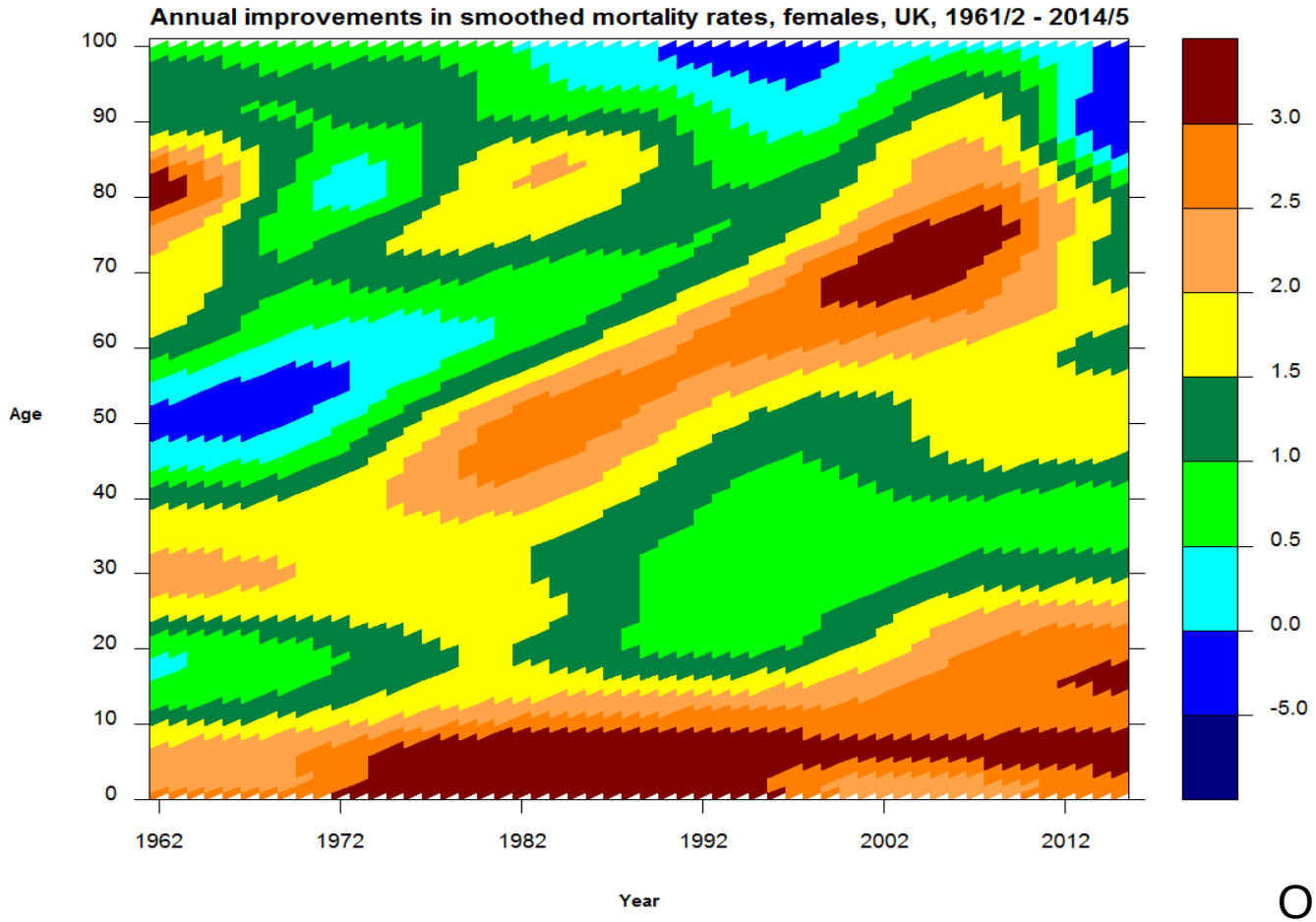
Only 85+ were worse-off

Annual improvement in smoothed mortality rates, Males, UK, 1961/2 – 2014/5



ONS analysis

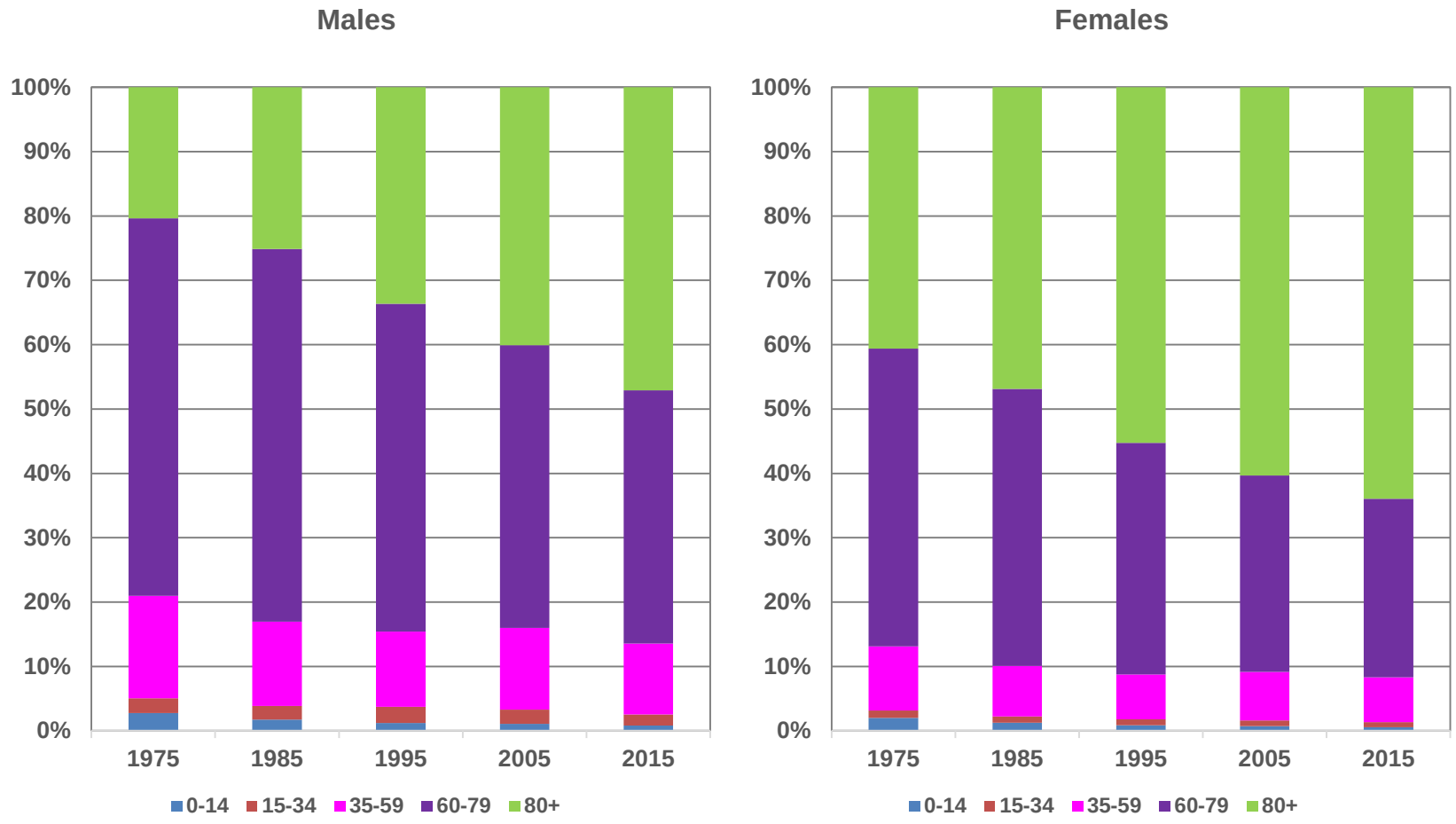
Annual improvement in smoothed mortality rates, Females, UK, 1961/2 – 2014/5



ONS

Age 80+ death count is increasingly influential

Age distribution of deaths, UK



ONS

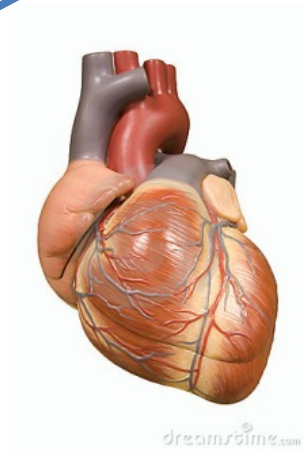
But data is problematic.

- 93.5% of sample cases had no year of birth discrepancies across all their available records
- 1,781 cases had at least 1 discrepancy

2011 Census age	Number of cases with at least one discrepant record	Number in sample	Percent (of cases with at least one discrepant record)
80-84	827	14,239	5.8
85-89	586	8,646	6.8
90-94	241	3,466	6.9
95-99	106	842	12.6
100+	21	114	18.4
Total	1,781	27,307	6.5

Source: ONS Longitudinal Study

Drivers are important.
Link risk factors to death & life

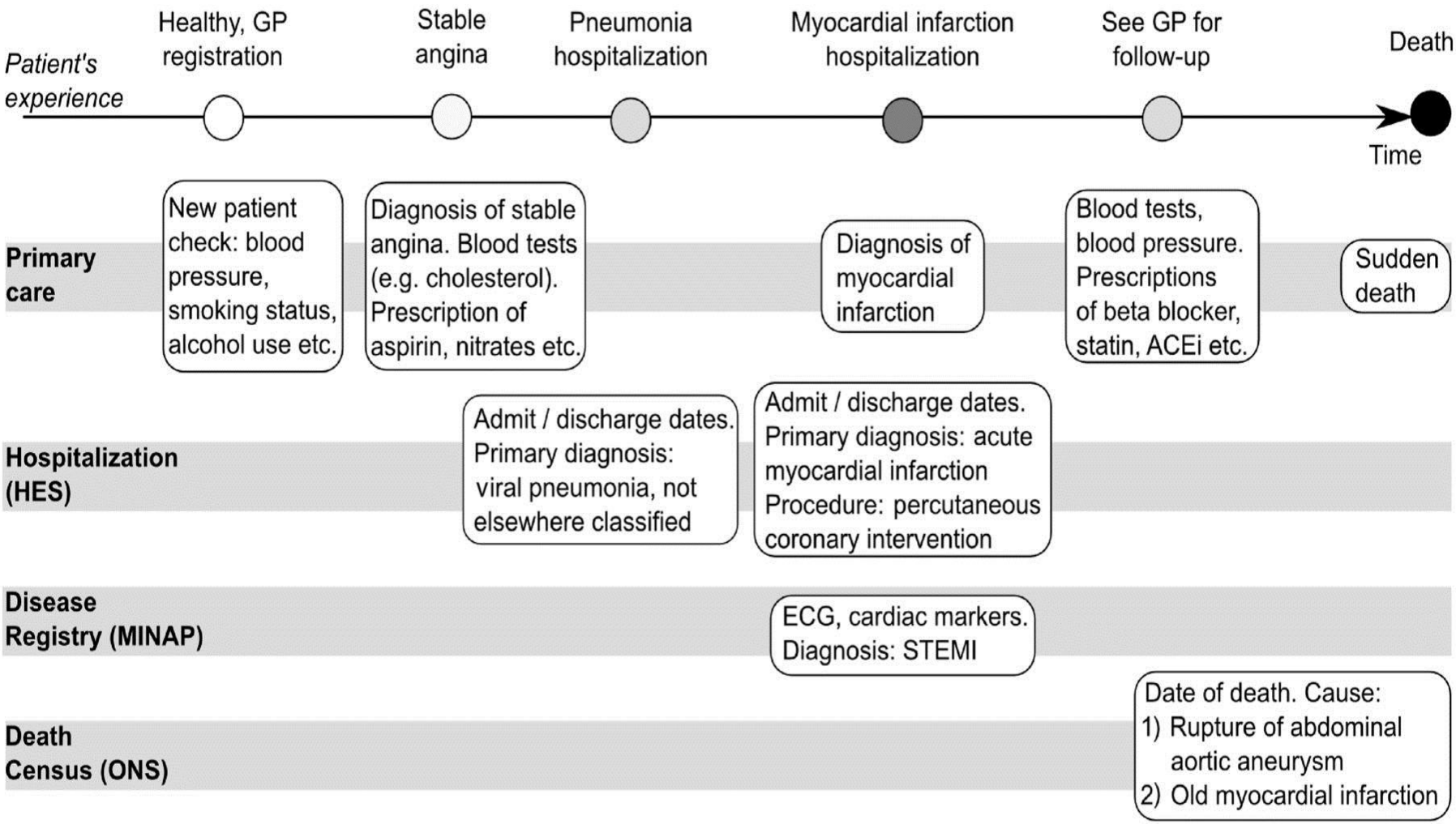


7 steps to superb health

	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.

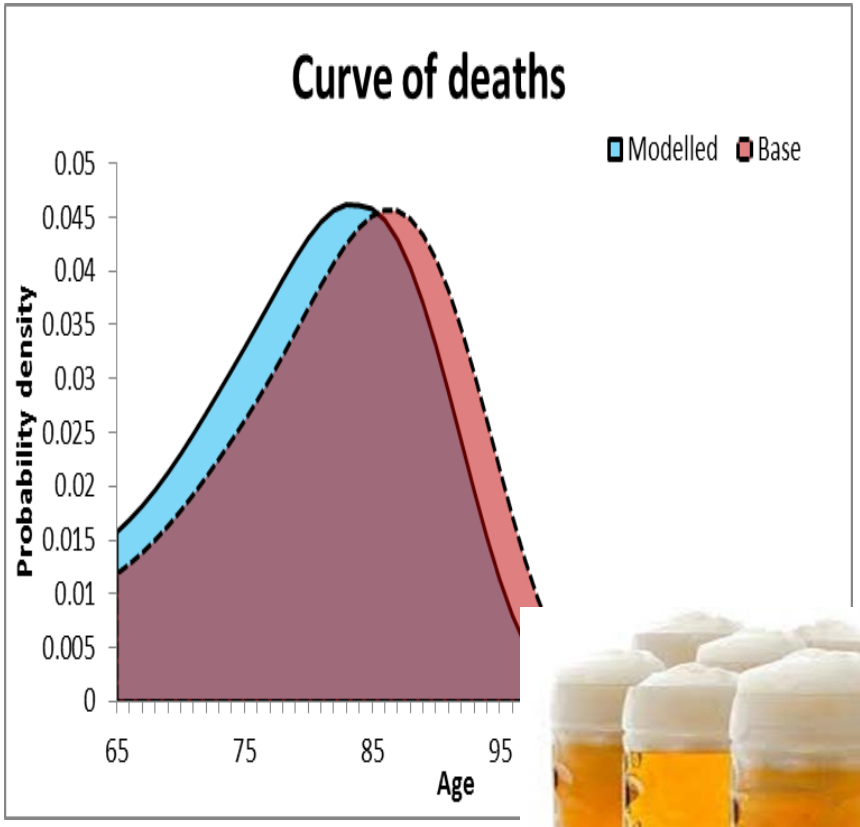
Bigger data: UCL collaboration



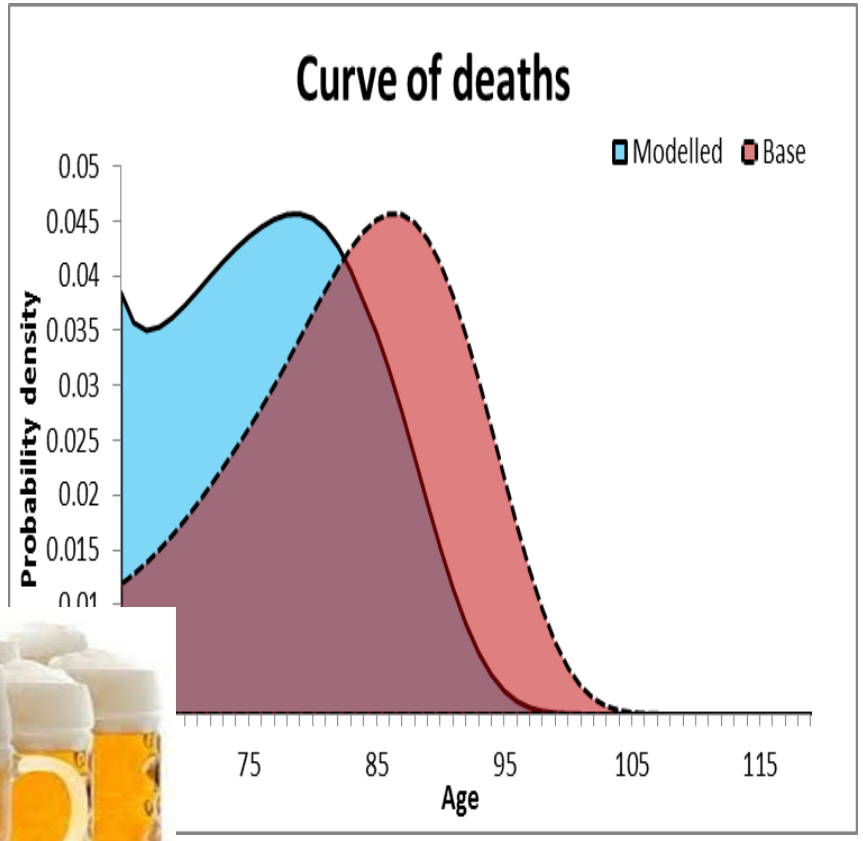
Spiros C Denaxas et al. Int. J. Epidemiol. 2012;ije.dys188

Mortality risks for business

Modelled heavy drinker



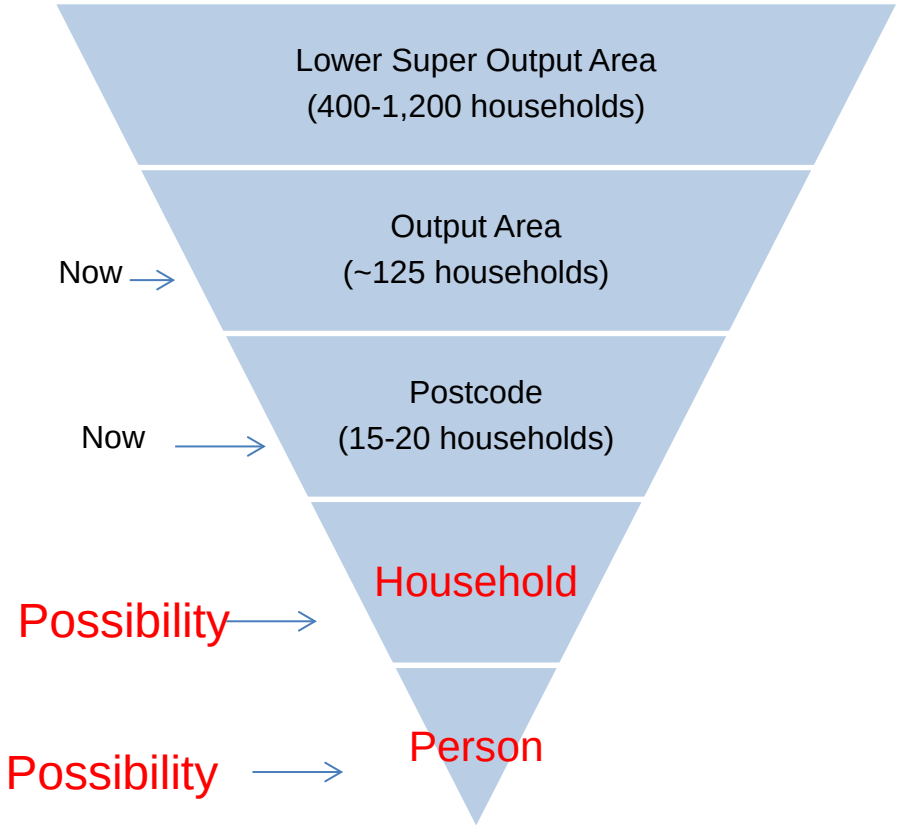
Modelled heavy drinker and had heart attack last year



Next Generation UK Mortality Model:

From Postcode to Full Address?

Aim for more granular



Opportunity

At household levels based on our latest research
Wealth House type (bungalow, social renting) Home value Income
Lifestyle
Financial sophistication

Conclusion

- Pension funds and insurance firms need assumptions to reflect current and future mortality rates of sub-populations.
- MRSC has horizon-scanned and articulated some key R&D ‘hot topics’ that can advance business decisions.
- Please comment on these hot topics and how the MRSC and others can push them forward.