

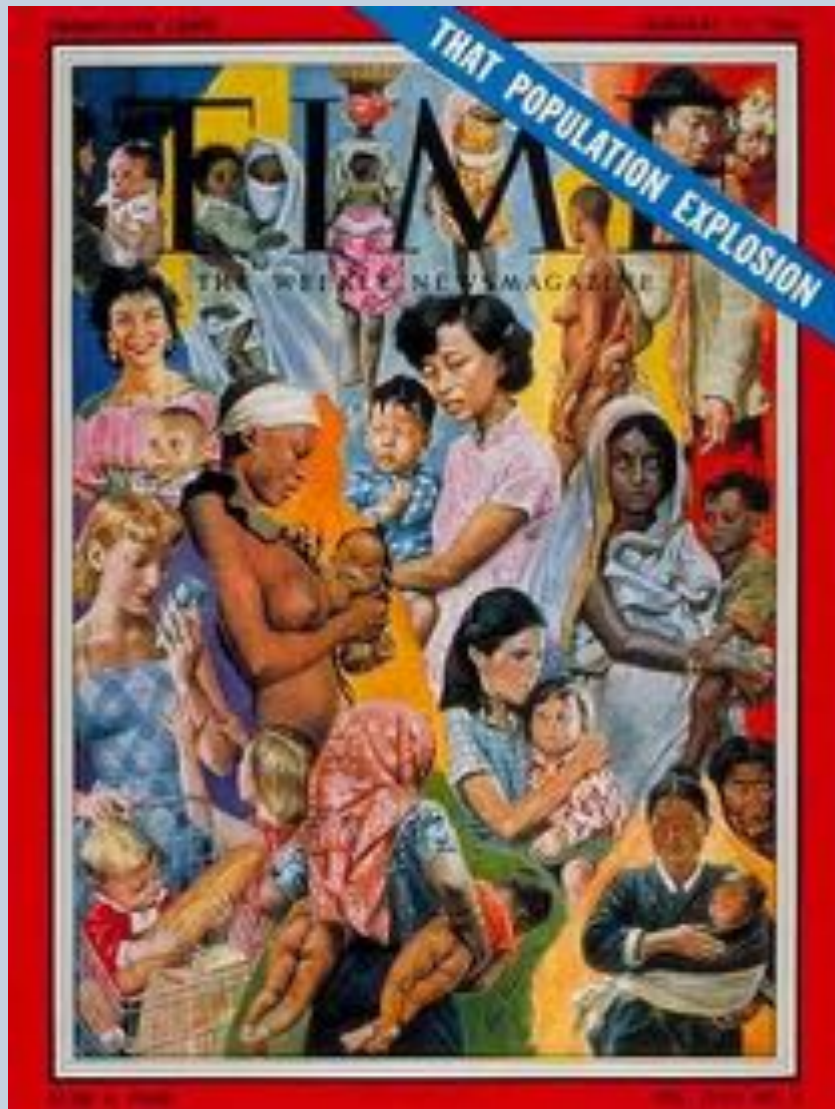
Population Ageing



Professor Sarah Harper
University of Oxford

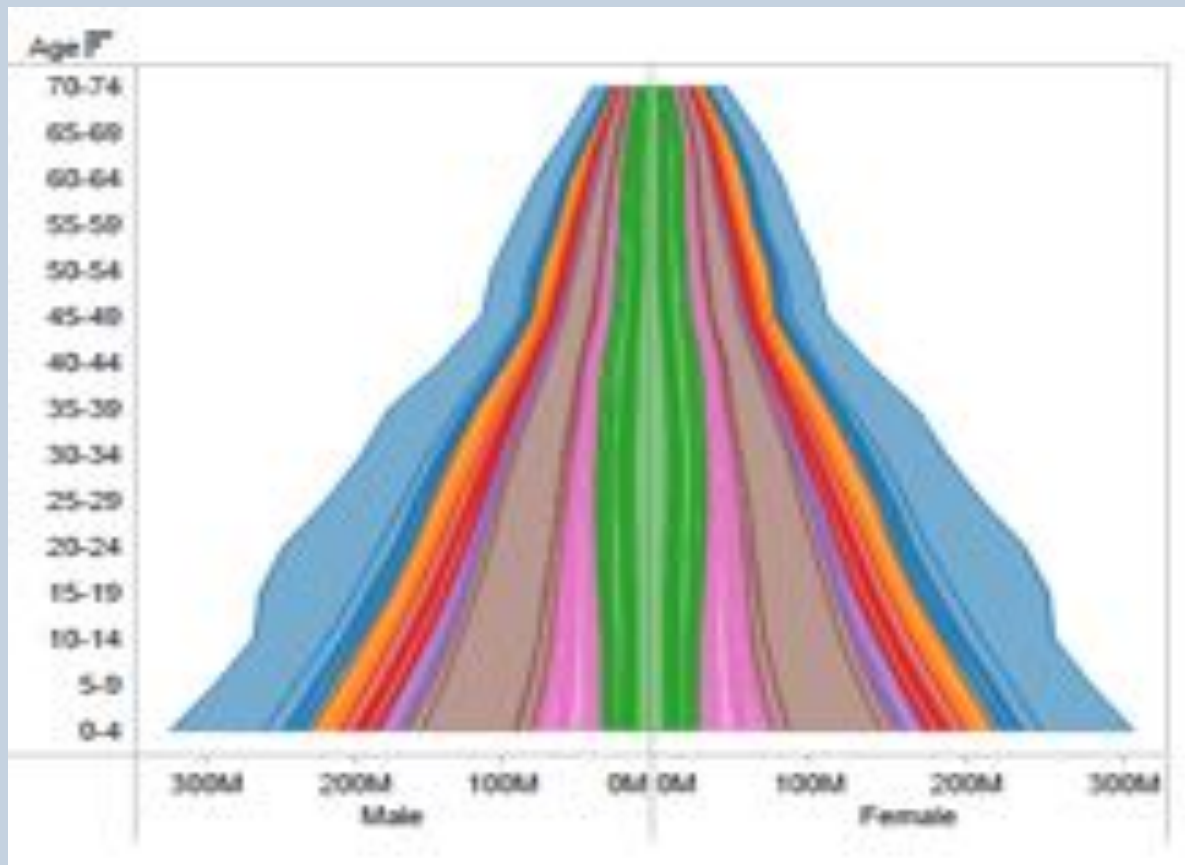
European Health Care Design Conference

June 20, 2018

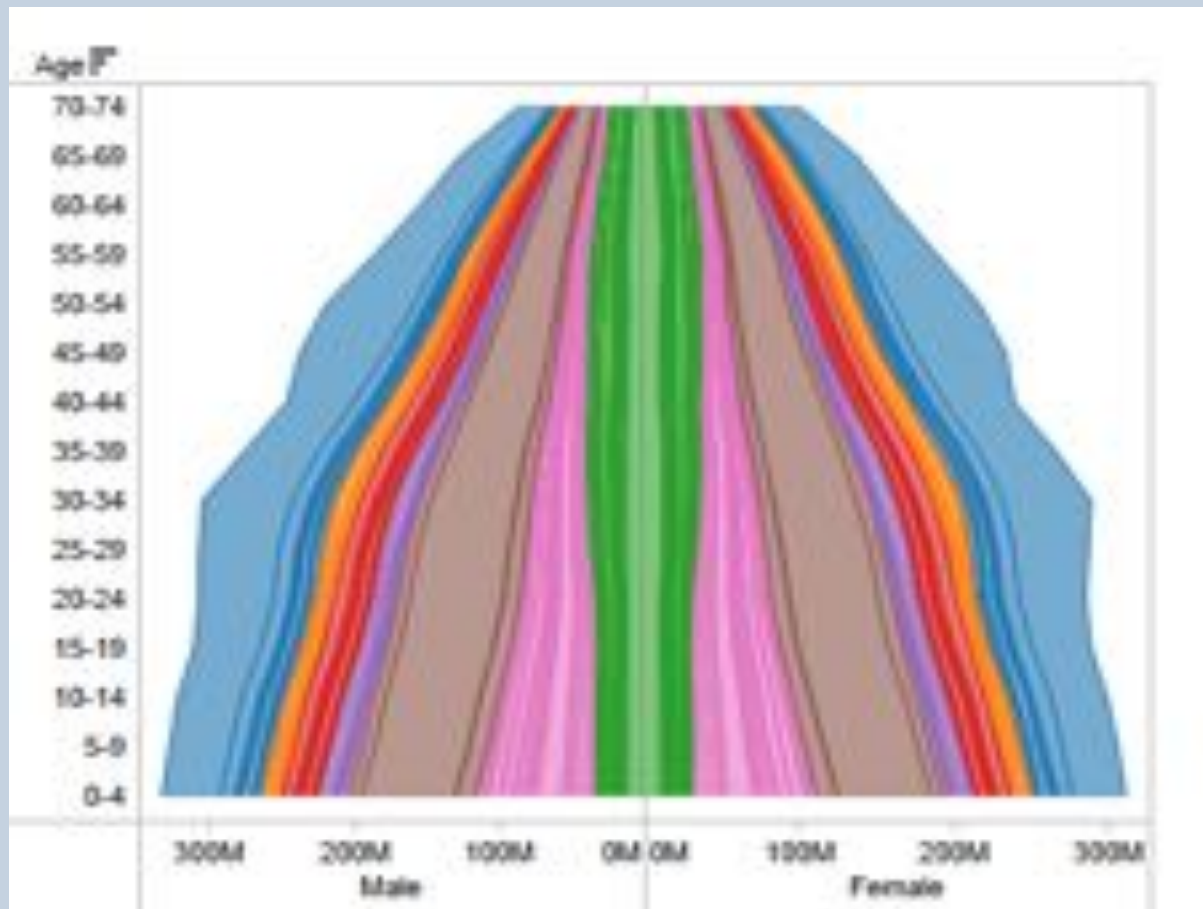


Picture: *Time*

Population Pyramids 1990

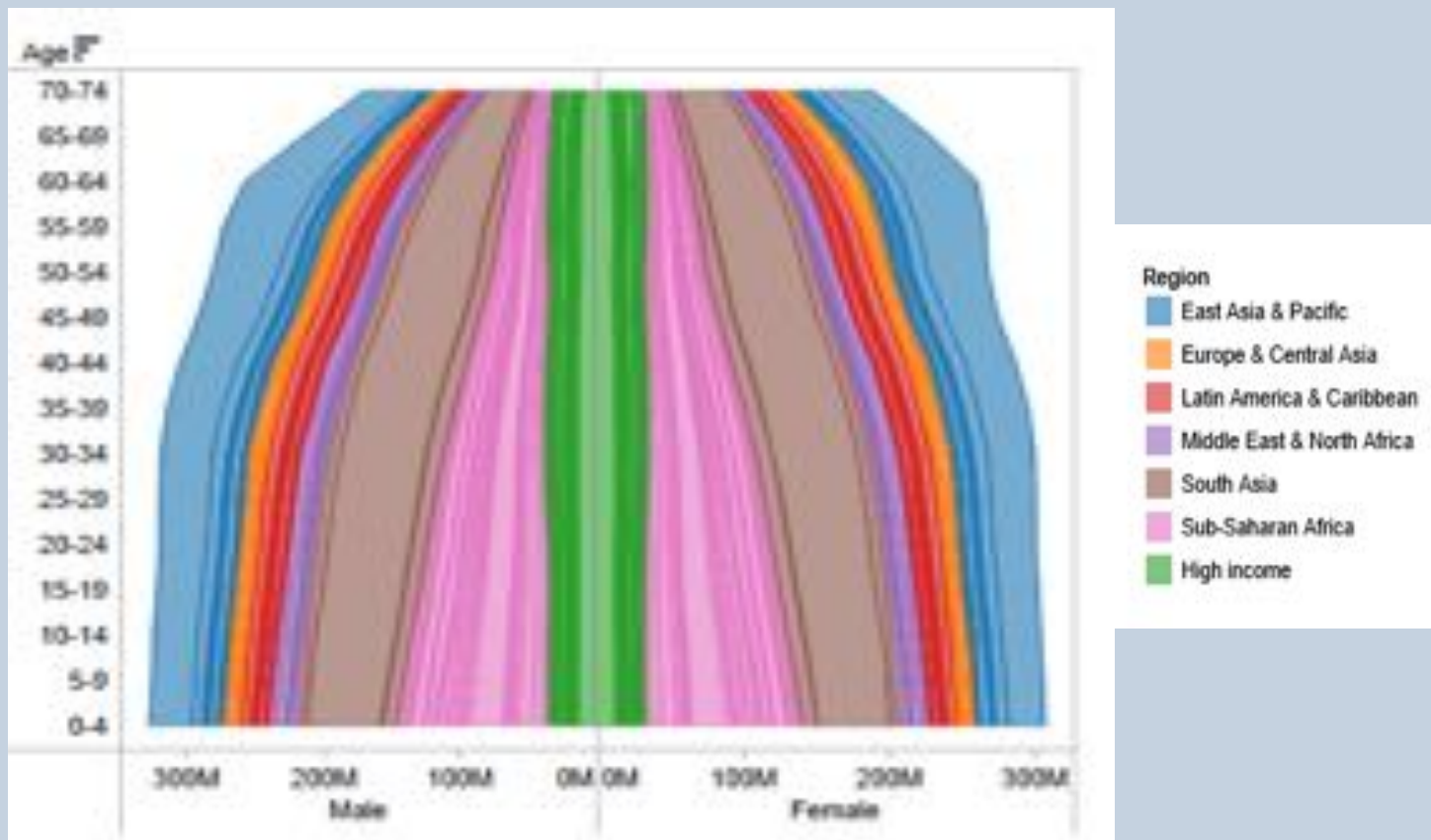


Population Pyramids 2020



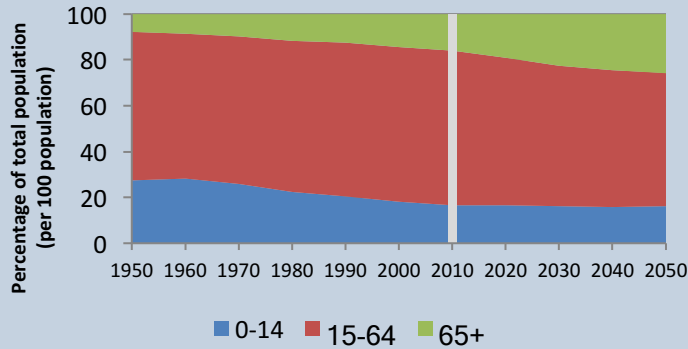
- Region
- East Asia & Pacific
 - Europe & Central Asia
 - Latin America & Caribbean
 - Middle East & North Africa
 - South Asia
 - Sub-Saharan Africa
 - High income

Population Pyramids 2050

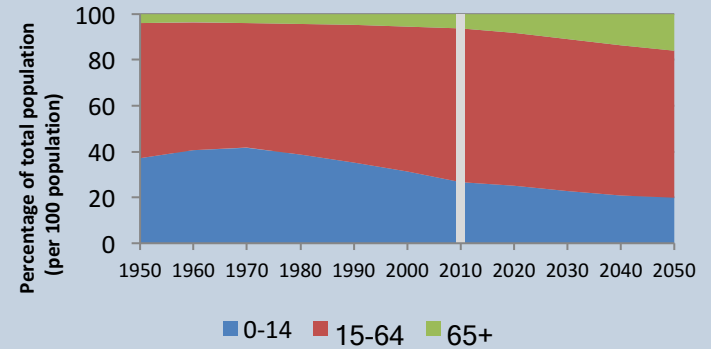


Age Structural Change

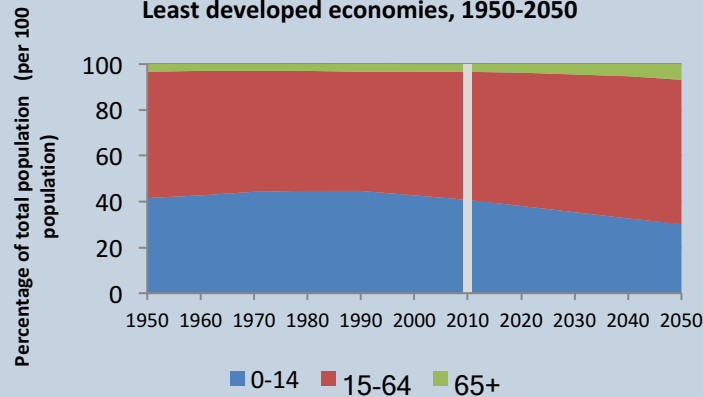
Percentage total population
Advanced economies, 1950-2050



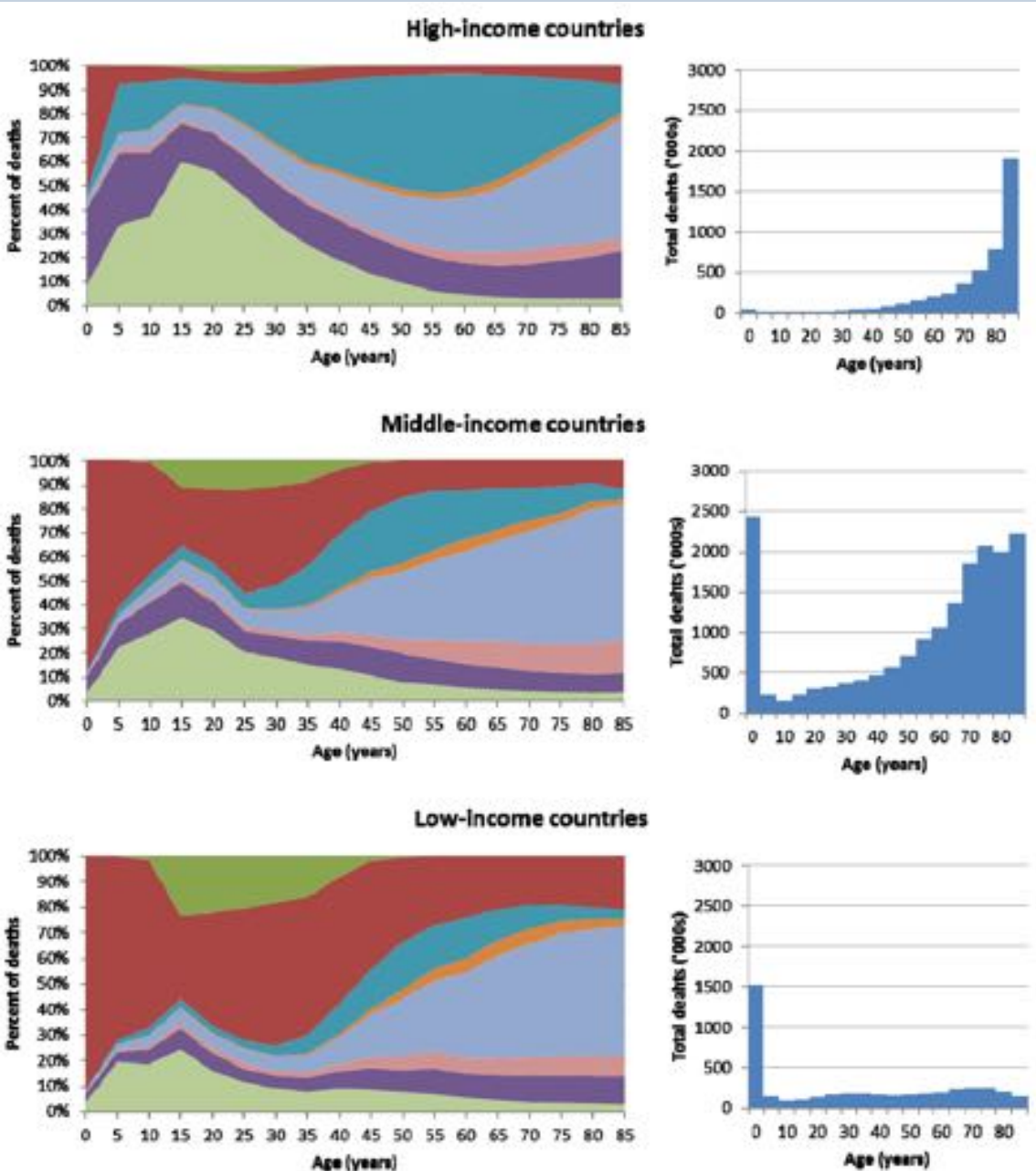
Percentage total population
Emerging economies, 1950-2050



Percentage total population
Least developed economies, 1950-2050



Female Deaths Across the Life Course (Mathers et al 2013; Beard 2013)



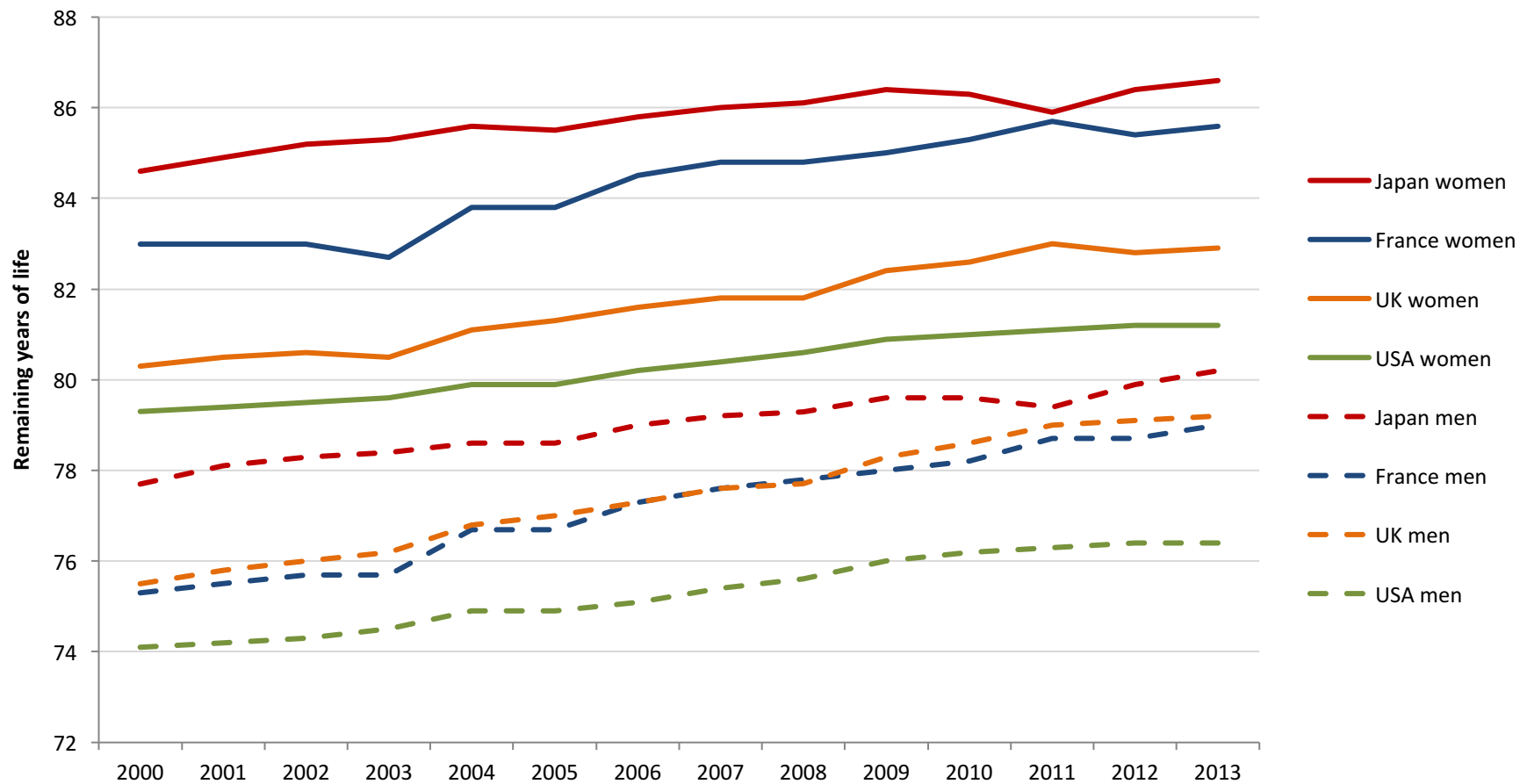
- Other noncommunicable diseases
- Cardiovascular diseases
- Cancers
- Maternal causes
- Injuries
- Chronic respiratory diseases
- Diabetes
- Communicable diseases

- Will increases in life expectancy continue?
 - will there be an increase in average years lived by humans?

Will life expectancy increase for all socio-economic groups?
will we all enjoy the benefits of longer lives or will it be for a few?

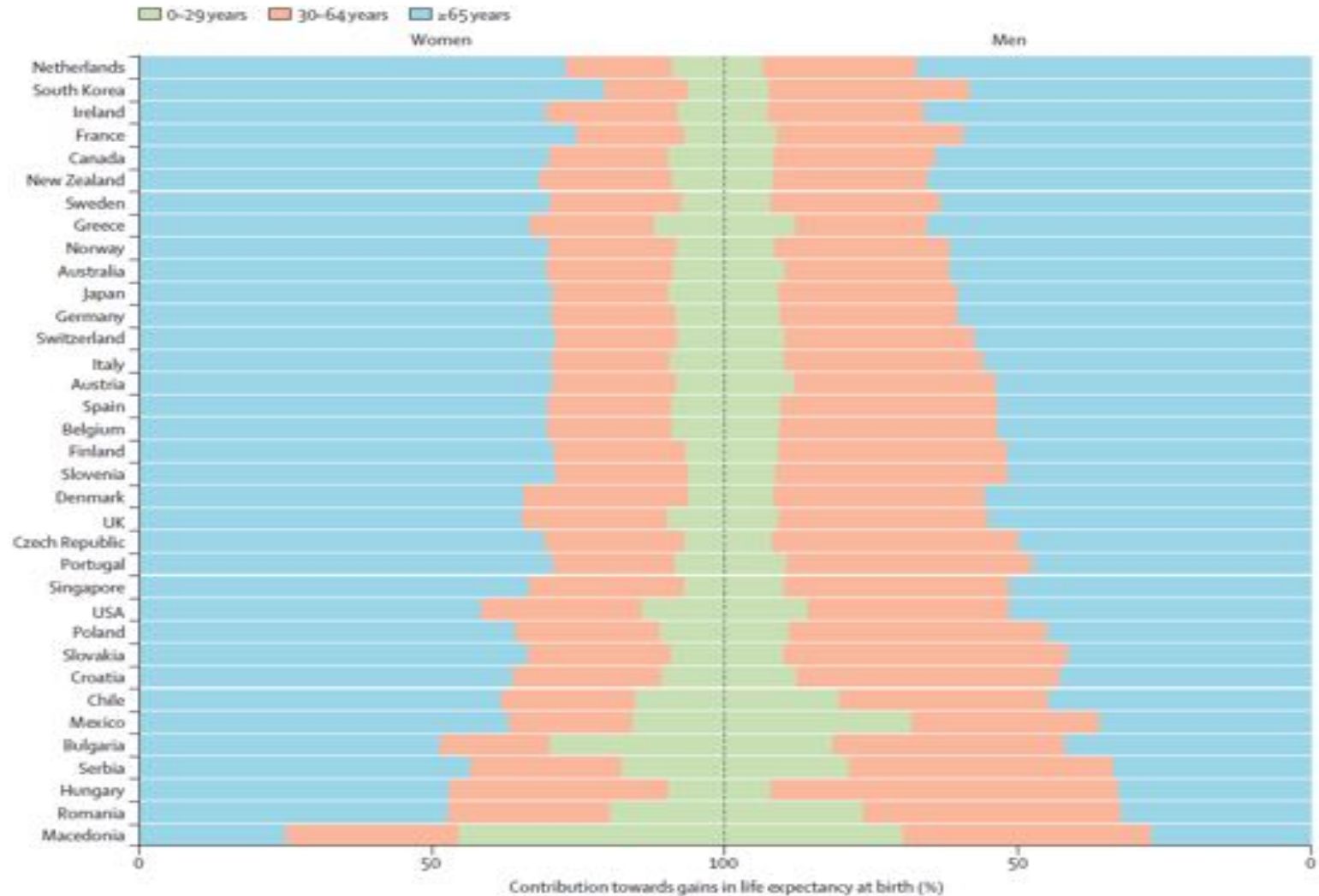
Will advances in life expectancy be matched by advances in healthy life expectancy?

Life expectancy, selected OECD countries, men and women, birth

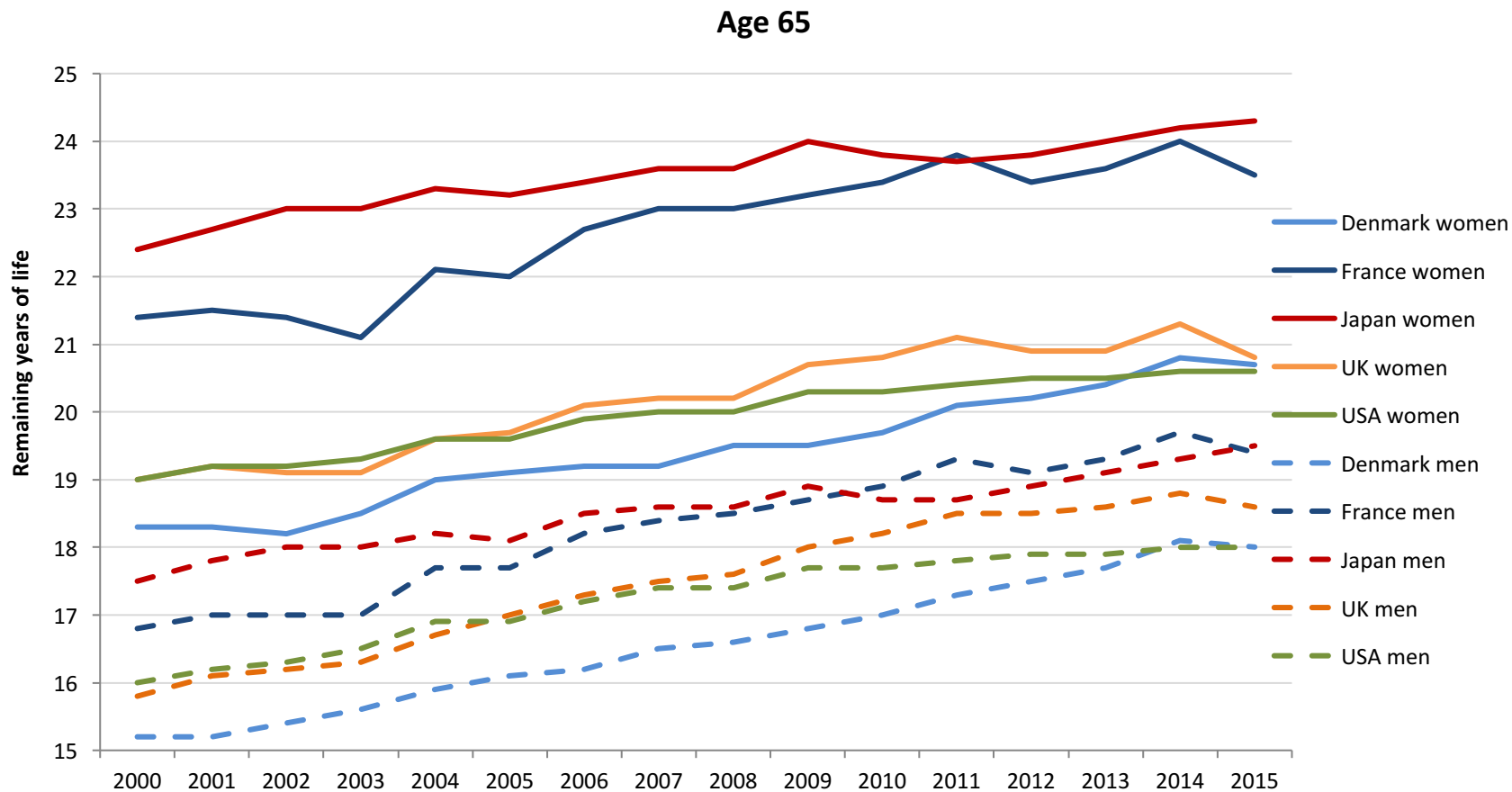


Source: OECD

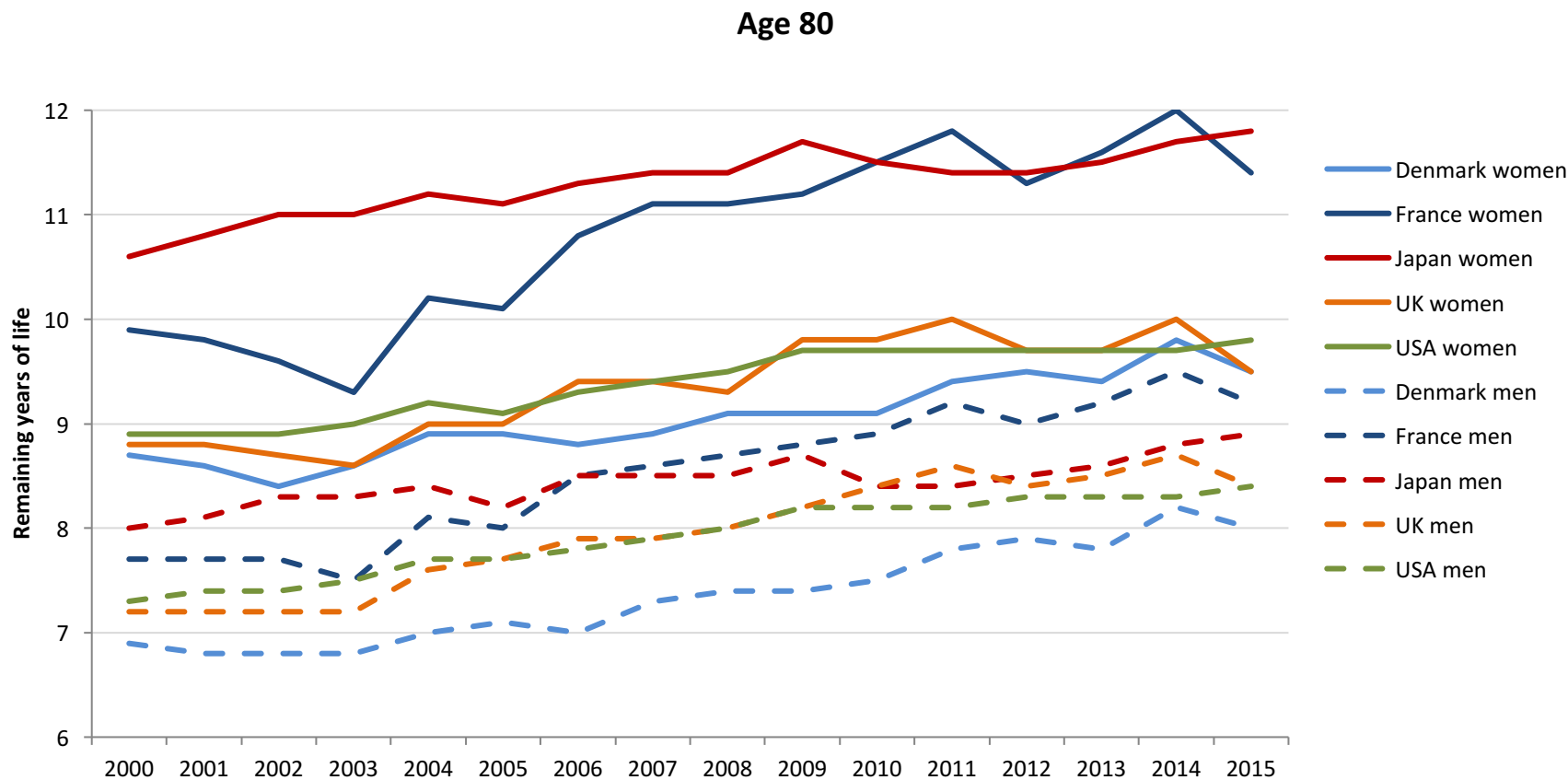
Contributions of mortality decline in three age groups (0–29 years, 30–64 years, and 65 years and older) towards the projected increase in life expectancy at birth



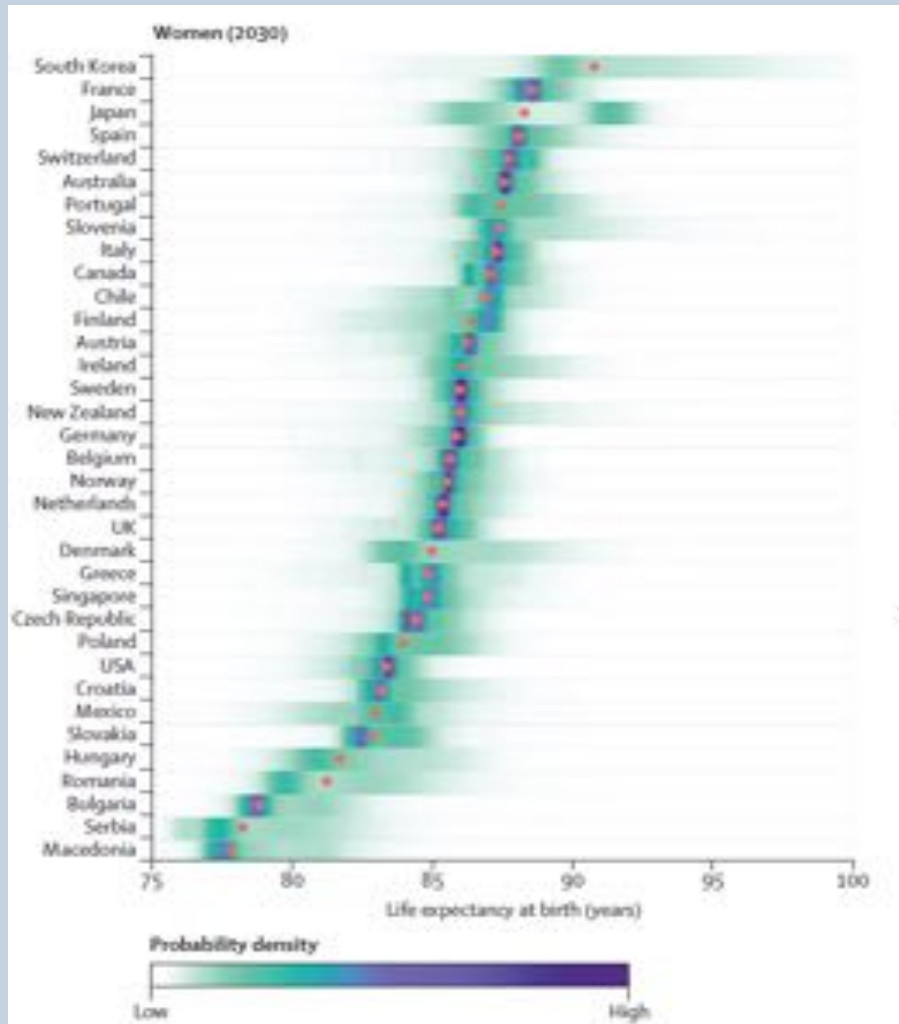
Life expectancy, selected OECD countries for men and women aged 65



Life expectancy, selected OECD countries for men and women aged 80



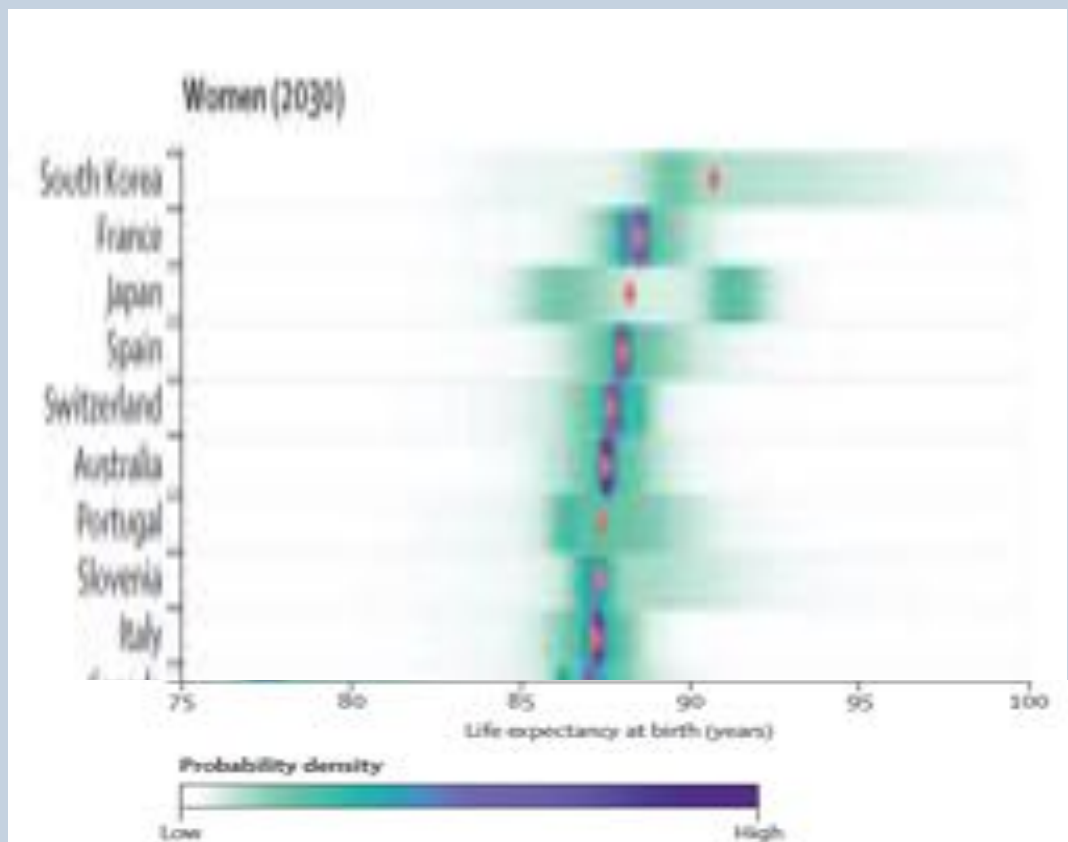
Female life expectancy at birth in 2030



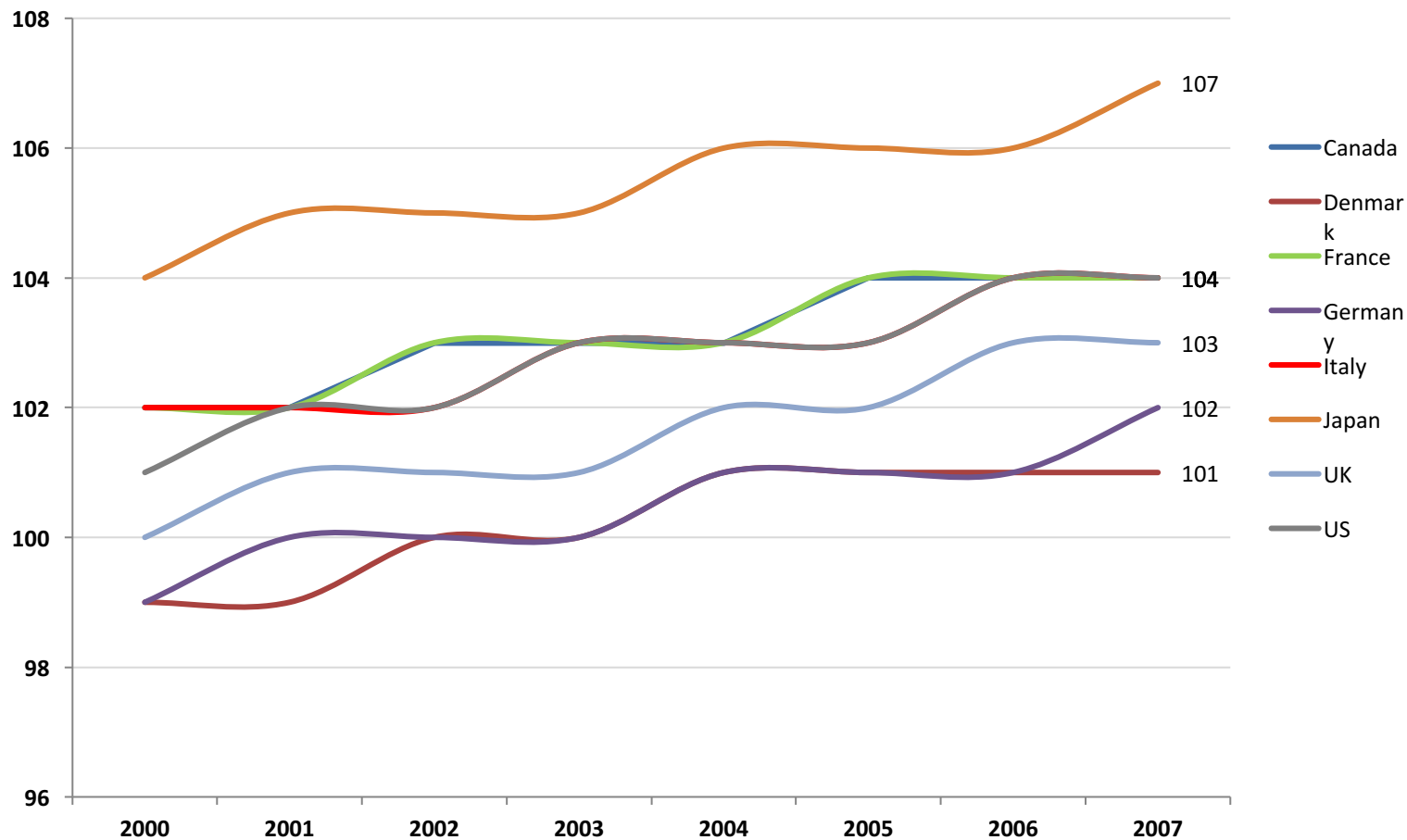
Kontis et al 2017 THE LANCET
6736(16)32381-9

Posterior distribution of life expectancy and its median value. Red dots show the posterior medians.

Female life expectancy at birth in 2030: Top 10

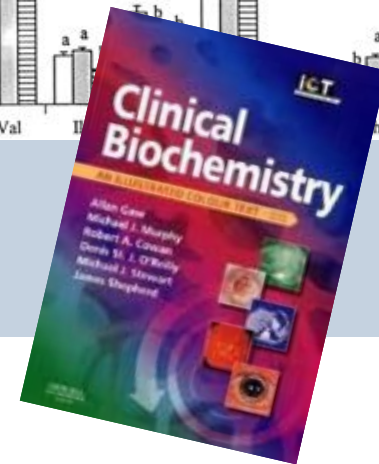
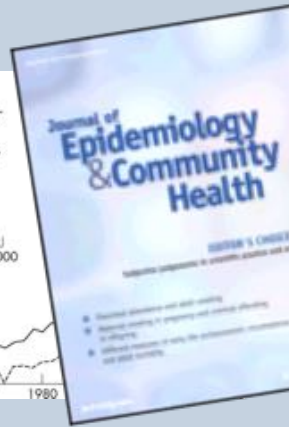
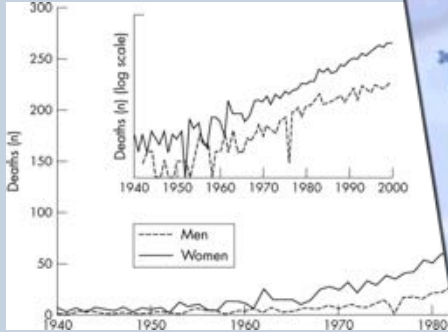


Oldest age at which at least 50% of a birth cohort is still alive (Birth Cohorts 2000-2007)



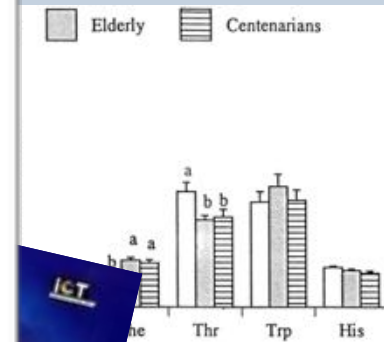
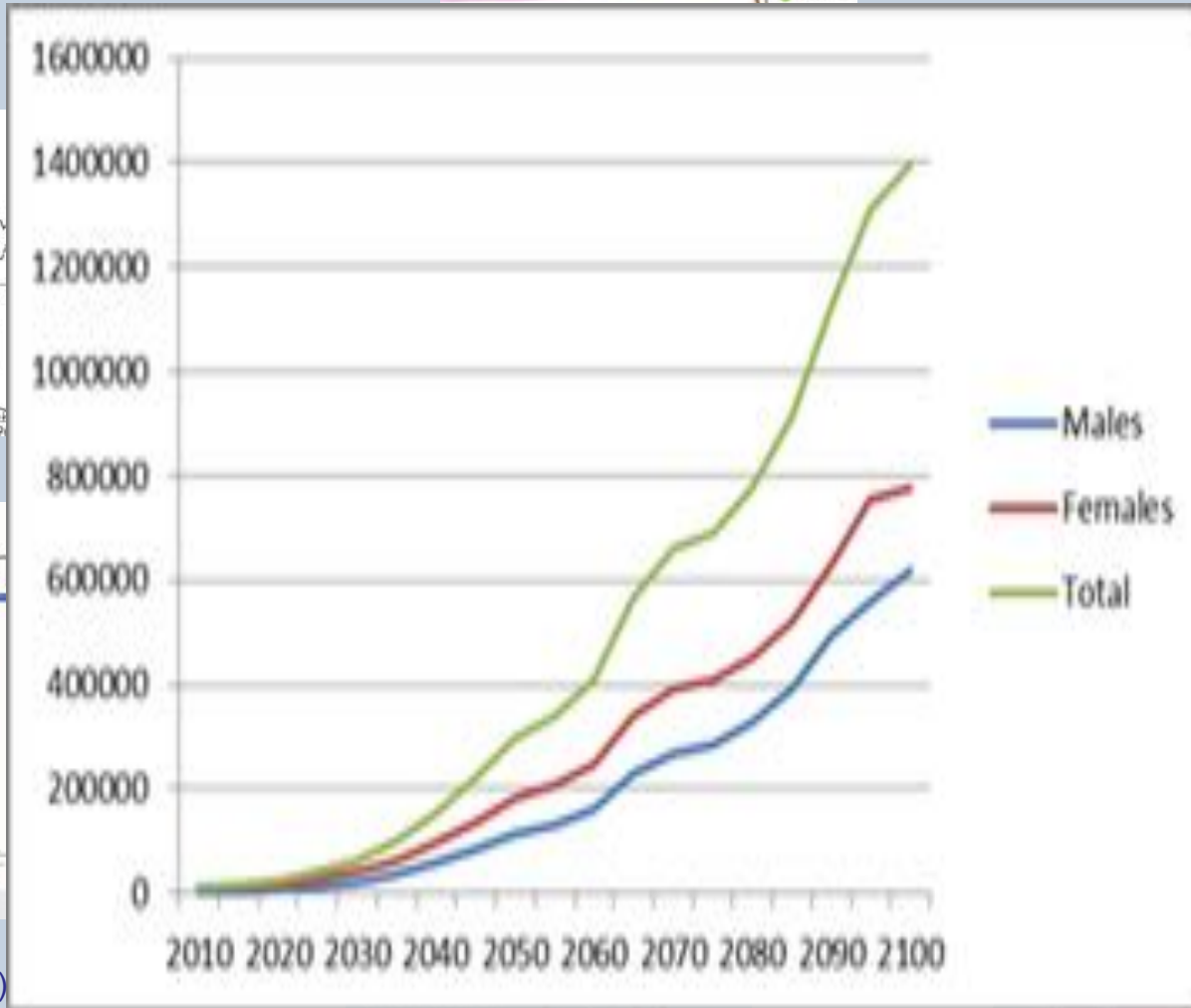
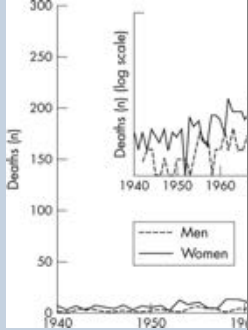
Source: Human Mortality Data Base, Christiansen et al Lancet 2009

Centenarians



Oxford Institute of Population Ageing

Centenarians



Leeson, G. (2014) Future prospects for longevity. *Post Reproductive Health*, 20 (1), 17-21

disease definition

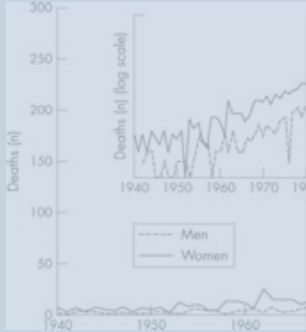
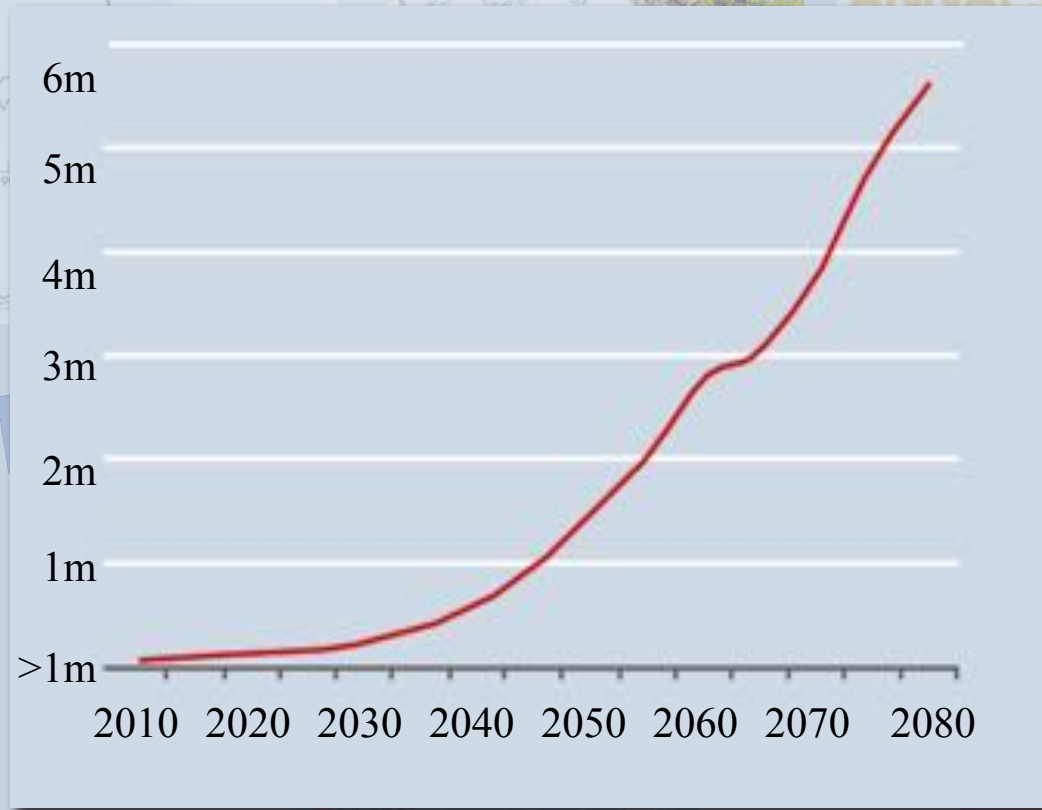


Oxford Institute of Population Ageing



Centenarians

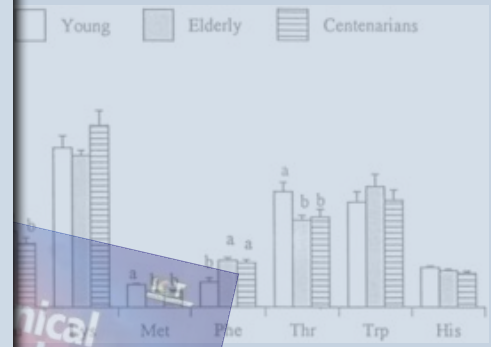
Projected number of centenarians in the USA



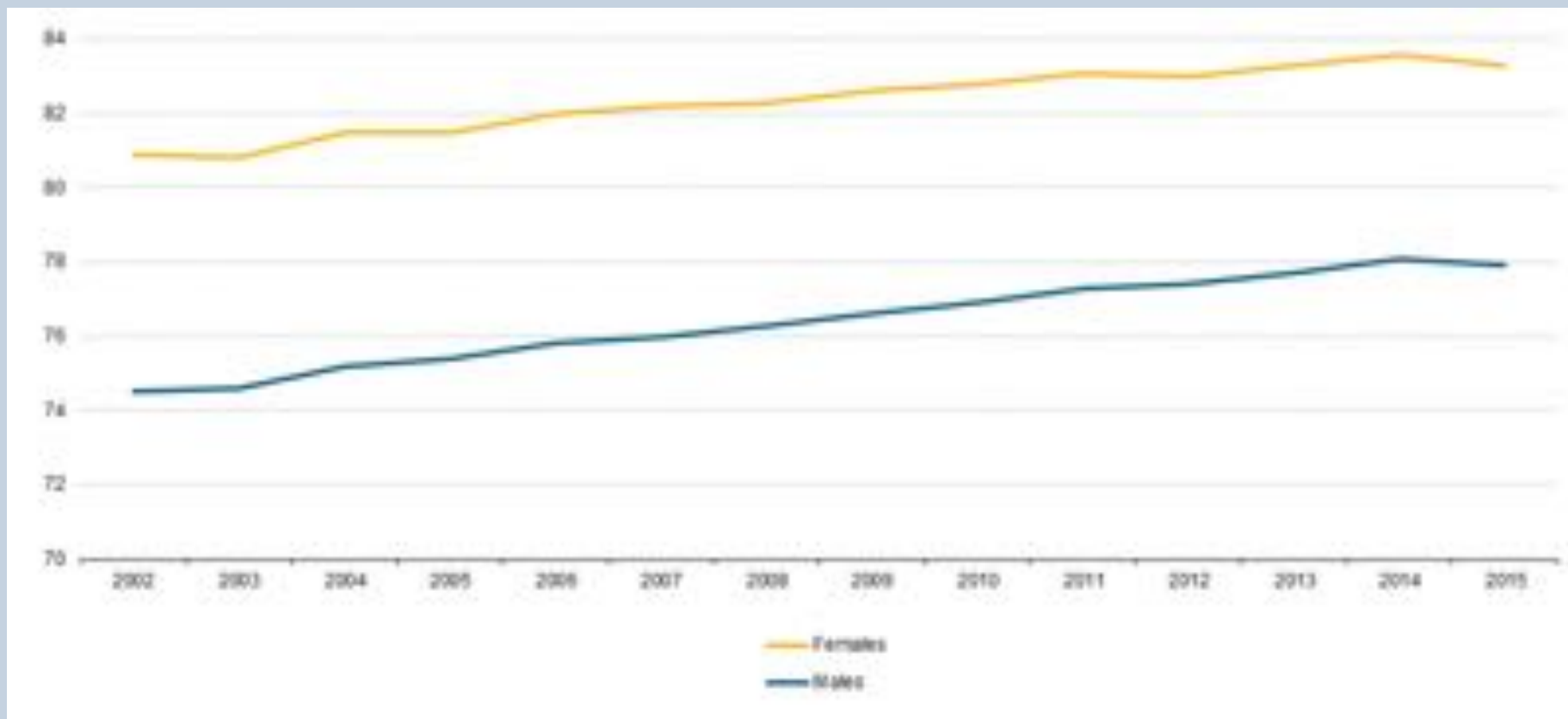
Source: Oxford Institute of Population Ageing Human Mortality Data Base



Oxford Institute of Population Ageing



Life expectancy at birth in EU-28 slightly declined in 2015





Have mortality improvements stalled
in England?

Editorial BMJ May 2017:357

Declining US Life Expectancy: Harper, S. Kaufman, J.

Cooper, Richard S

Epidemiology: November 2017 - Volume 28 - Issue 6 -

p e54–e56



Will increases in life expectancy continue?

will there be an increase in average years lived by humans?

Will life expectancy increase for all socio-economic groups?

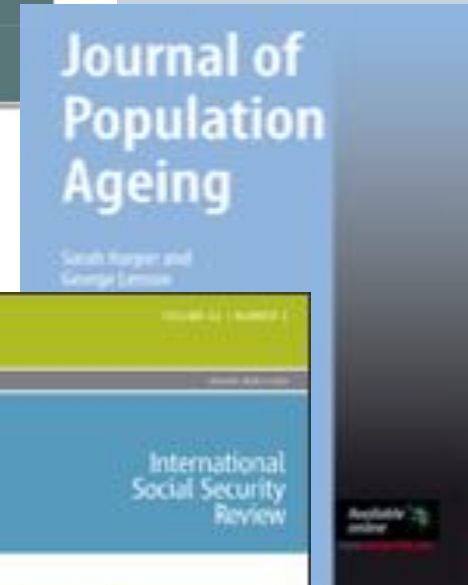
will we all enjoy the benefits of longer lives or will it be for a few?

Will advances in life expectancy be matched by advances in healthy life expectancy?

Inequality in Mortality



Harper, S. Howse, K. Baxter, S.
UK data set: 2.5 million
Occupational Pension Records



Differential longevity

Comparison of UK life expectancies from age 65

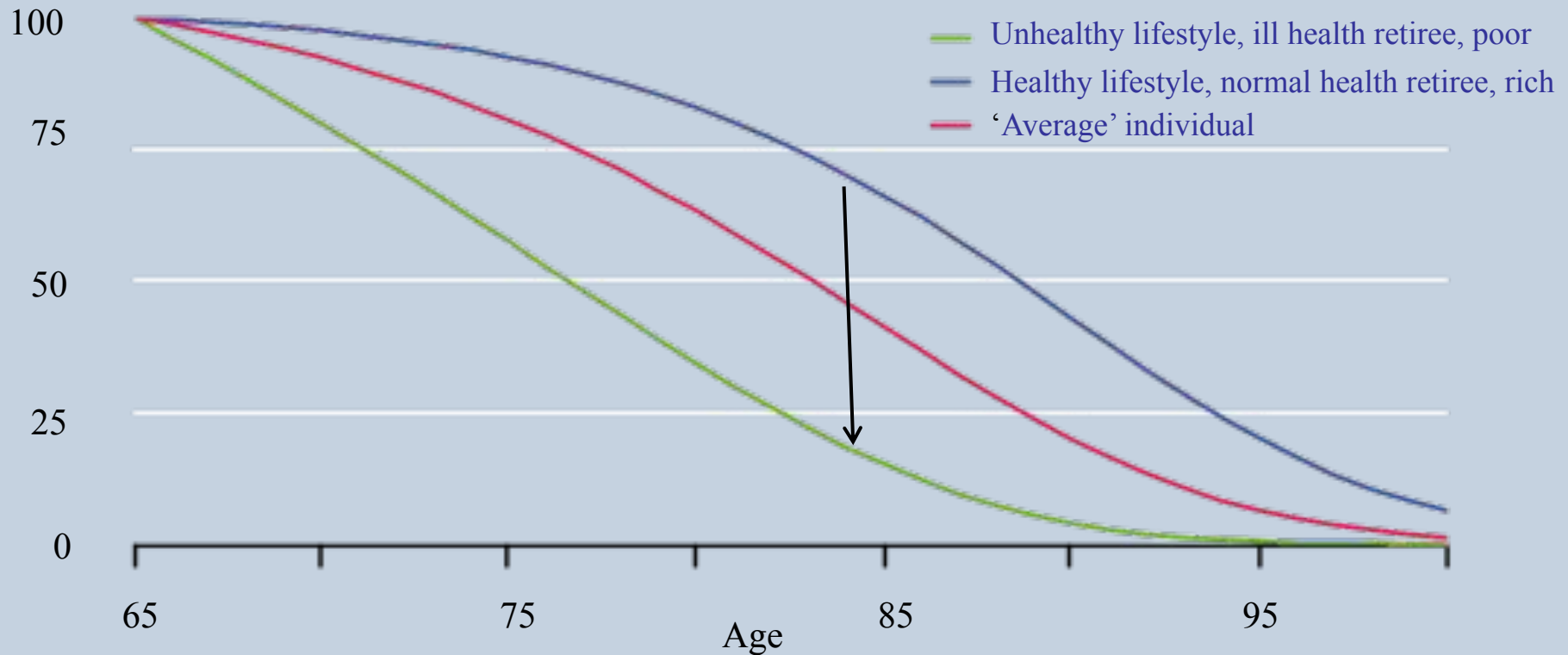
	Low	High	Difference
Men	12.3	22.6	10.3

Low income High income
Ill health retiree Normal health retiree
Unhealthy lifestyle Healthy lifestyle

Source: Oxford Institute of Population Ageing

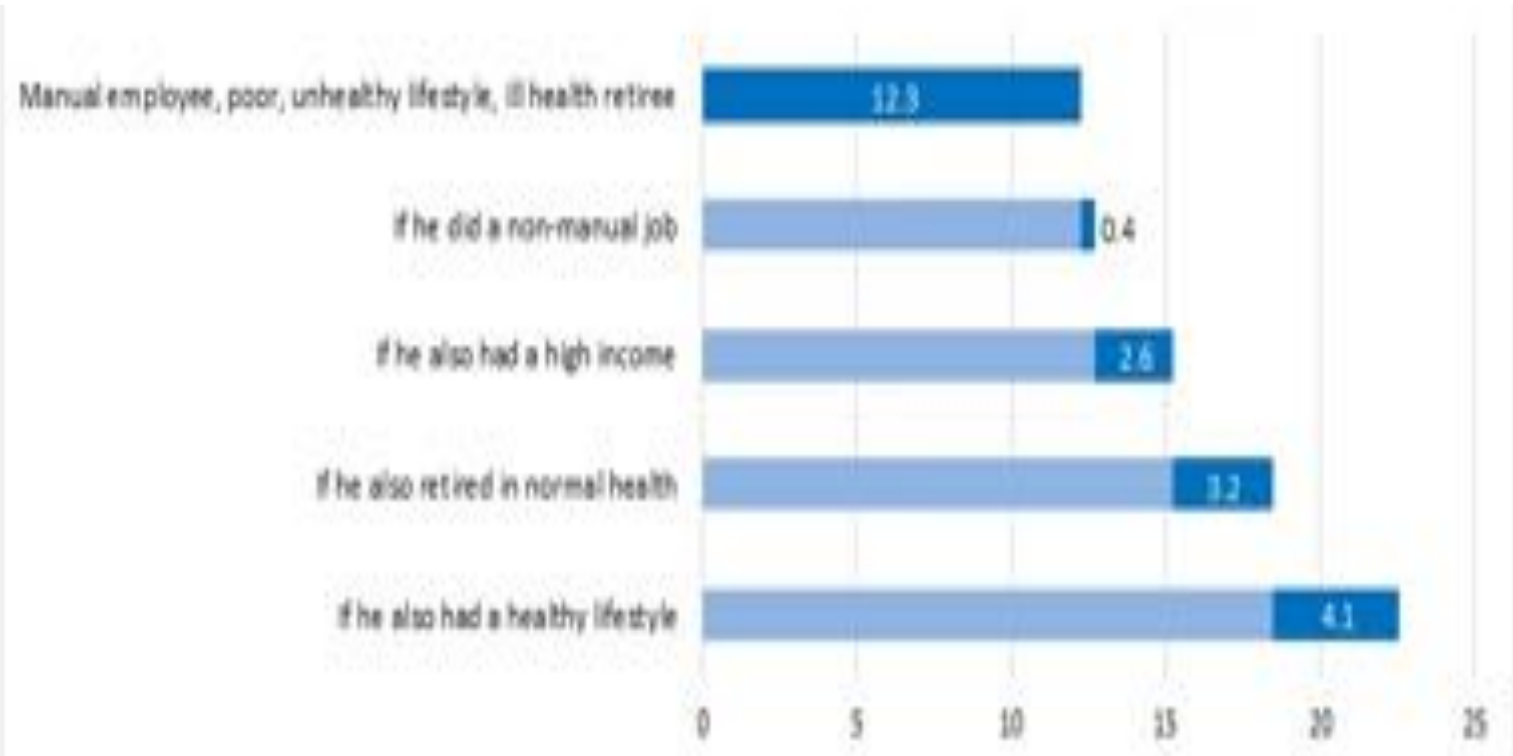
Proportion of 65 year old men expected to survive to each older age

% probability of reaching age x



Source: Oxford Institute of Population Ageing

Impact of different factors on longevity

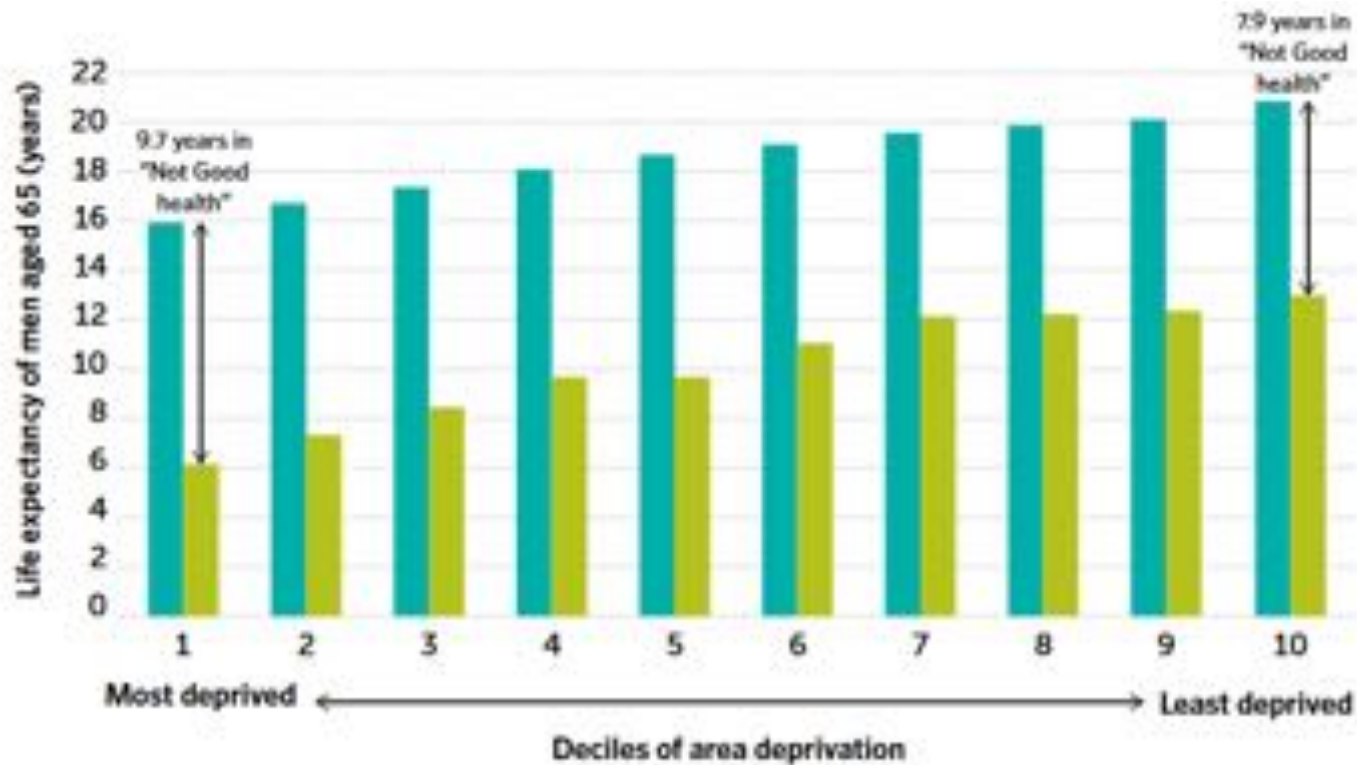


Remaining LE from 65



Life Expectancy and Healthy Life Expectancy

Government
Office for Science



Type of life expectancy: ● Life expectancy (LE) ● Healthy life expectancy (HLE)

Survey of 255,524

Figure 6.1 Healthy life expectancy (HLE) and life expectancy (LE) for men at age 65 by national deciles of area deprivation in England, 2012-2014³⁶¹.

Will increases in both life expectancy and in life extension or longevity continue?

will there be an increase in average years lived by humans and also maximum years attained by a human being?

Will life expectancy increase in line with life extension?

will we all enjoy the benefits of longevity or will it be for a few?

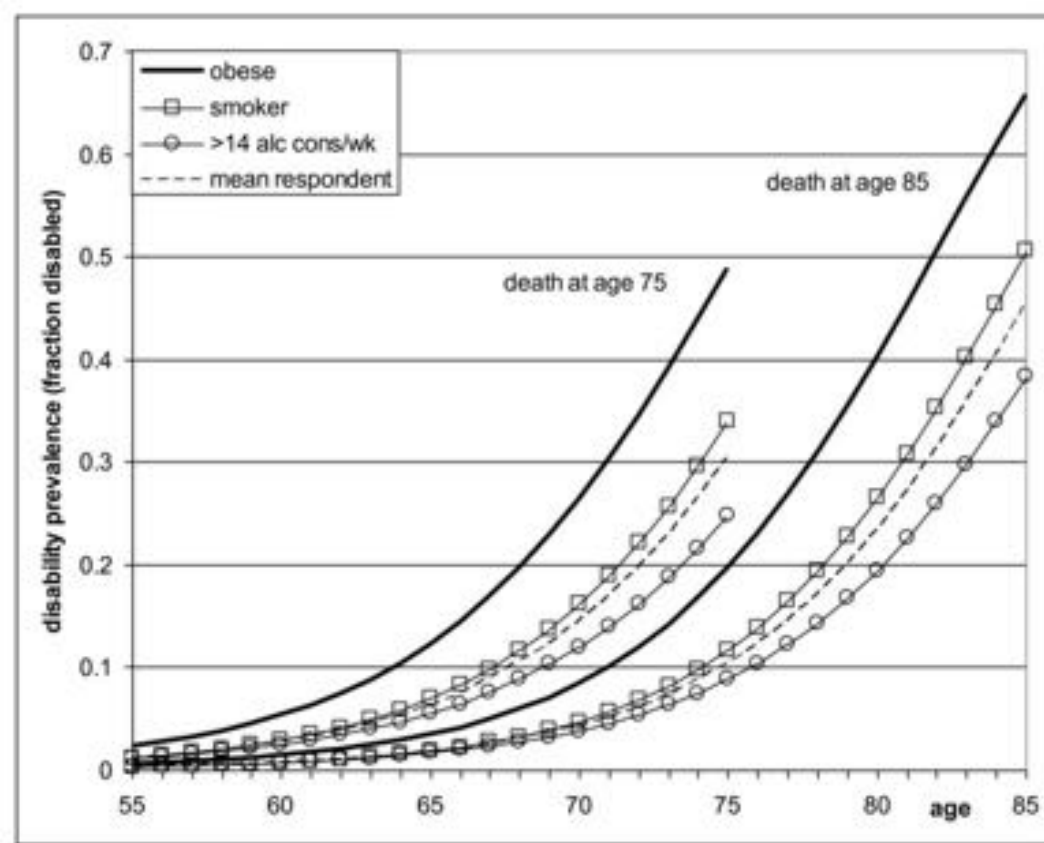
The Inequality question

Will advances in life expectancy be matched by advances in healthy life expectancy?



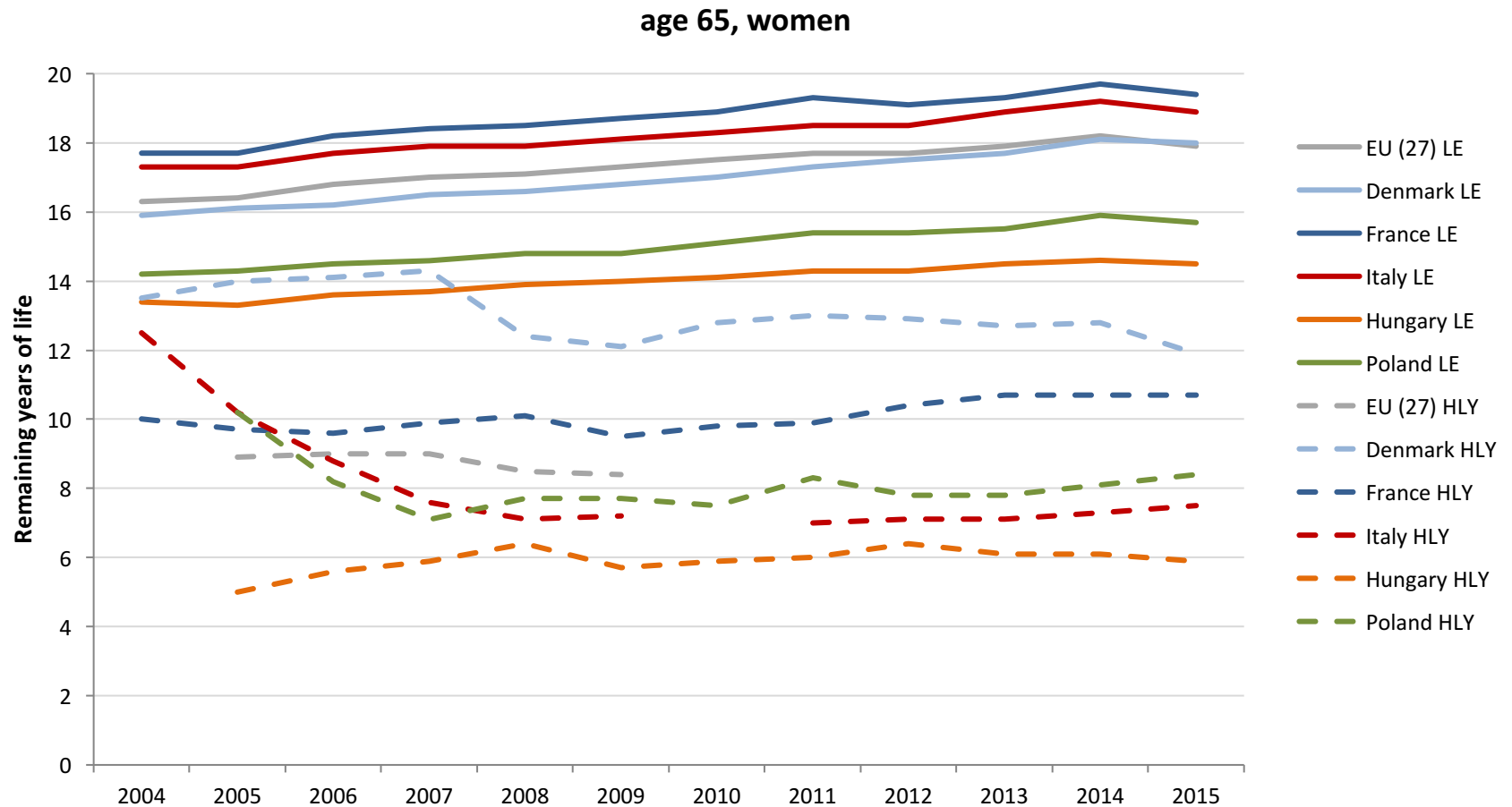
Increase in Disabled Years

Age 55	Reduced LE	Increased DY
Obesity	1.4	5.9
Smoking	4	3.8
Alcohol	3	3.1

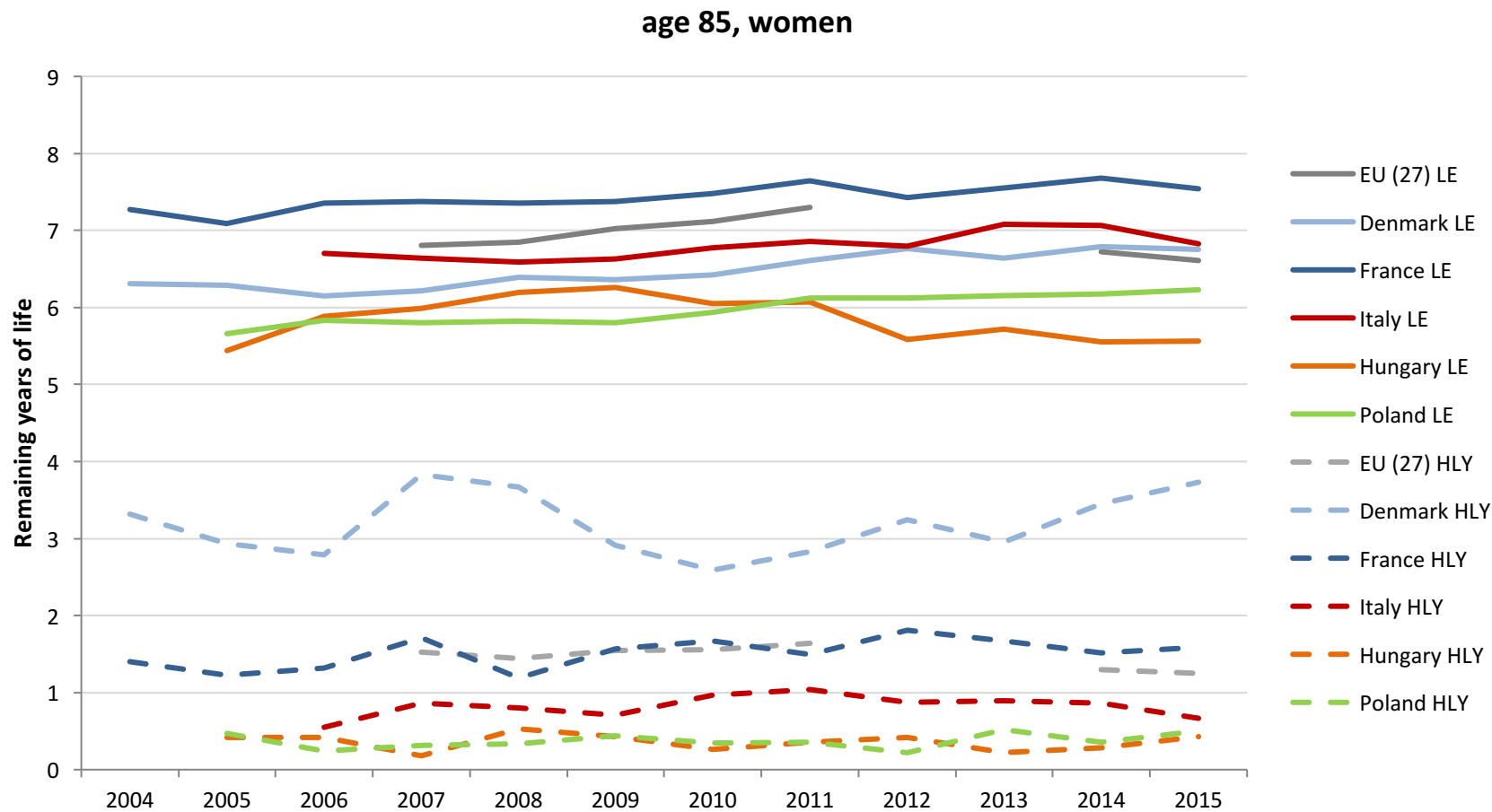


Klijs et al., 2011 Obesity, smoking, alcohol consumption and years lived with disability, BMC Public Health 11:378

Life expectancy (LE) and healthy life years (HLY), selected EU countries at age 65, women



Life expectancy (LE) and healthy life years (HLY), selected EU countries at age 85, women



Determinants of the shape of mortality and morbidity in 21st Century

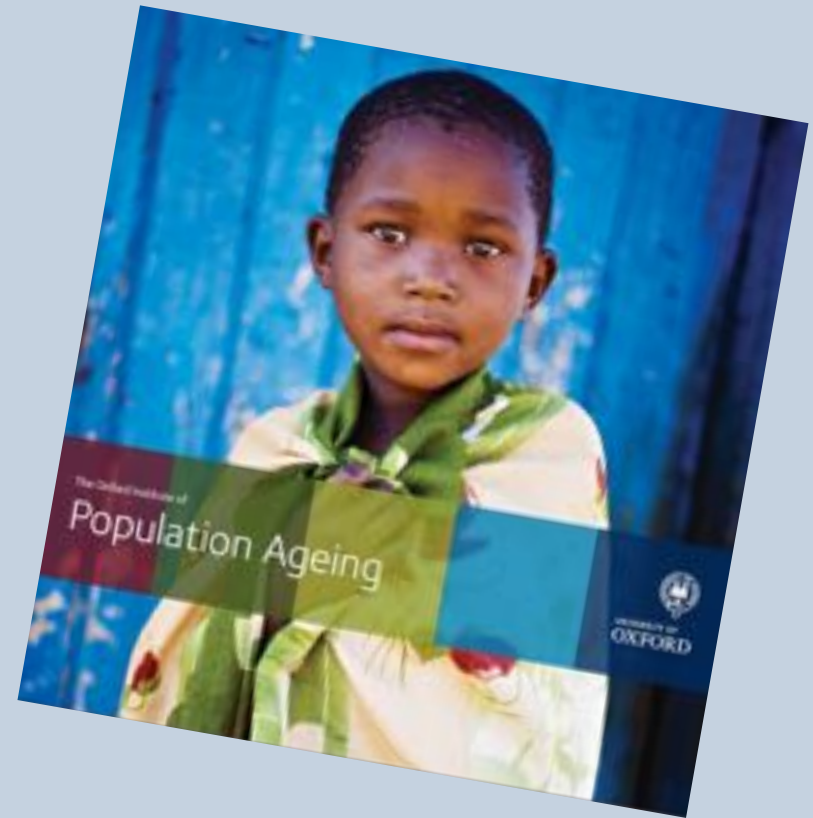
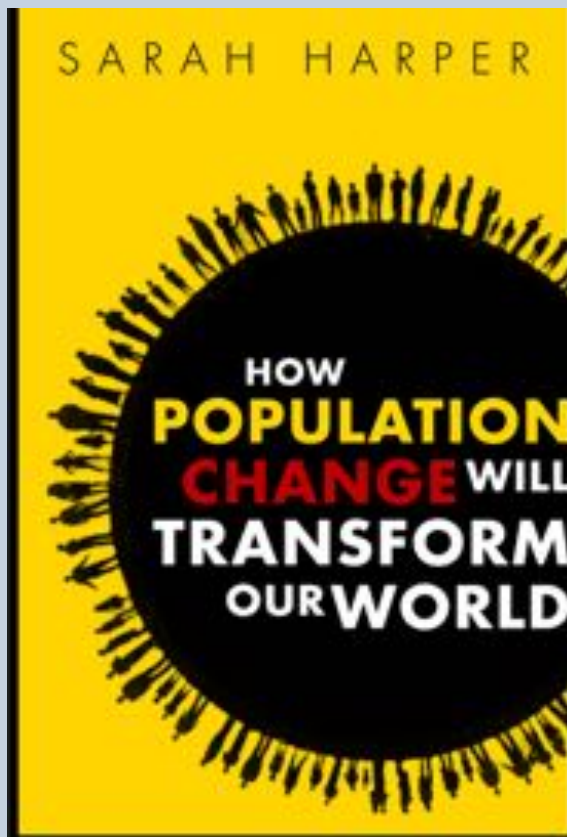
- Healthy Living
- Disease Prevention and Cure
- **Regenerative medicine**
- **Age-Retardation.**

Key Question

How much life expectancy can we expect to gain **with** the intensive application of scientific medicine?

Radical longevity





www.ageing.ox.ac.uk



Picture: Nasir Hamid/Oxford University



Oxford Institute of Population Ageing

