



Longevity in Australia: prospects and implications

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Australian National University**

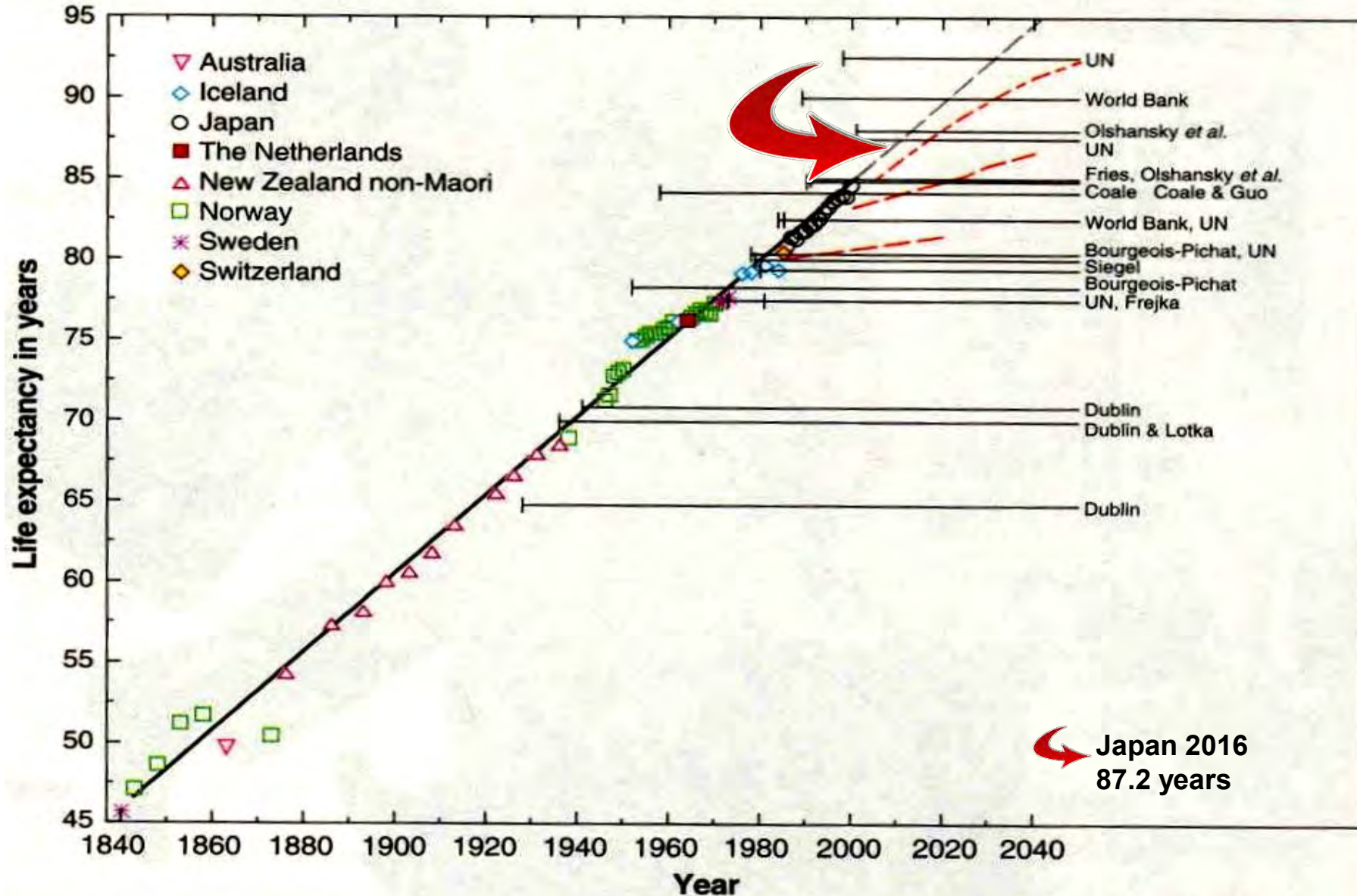
**2nd International Living to 100 Conference
7-8 September 2018, Sydney**



LONGEVITY IS INCREASING

...and there is no end in sight

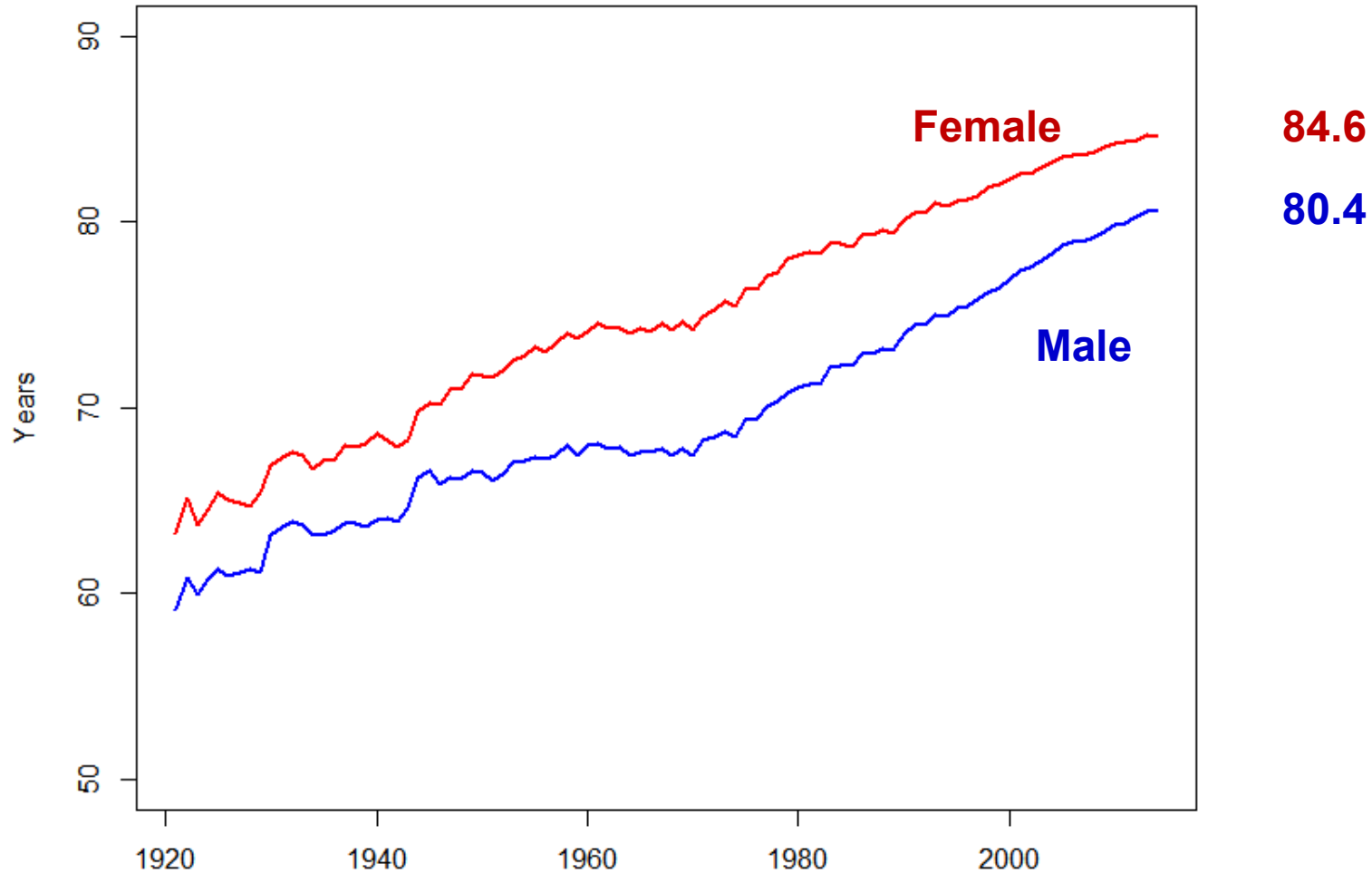
Observed maximum female life expectancy





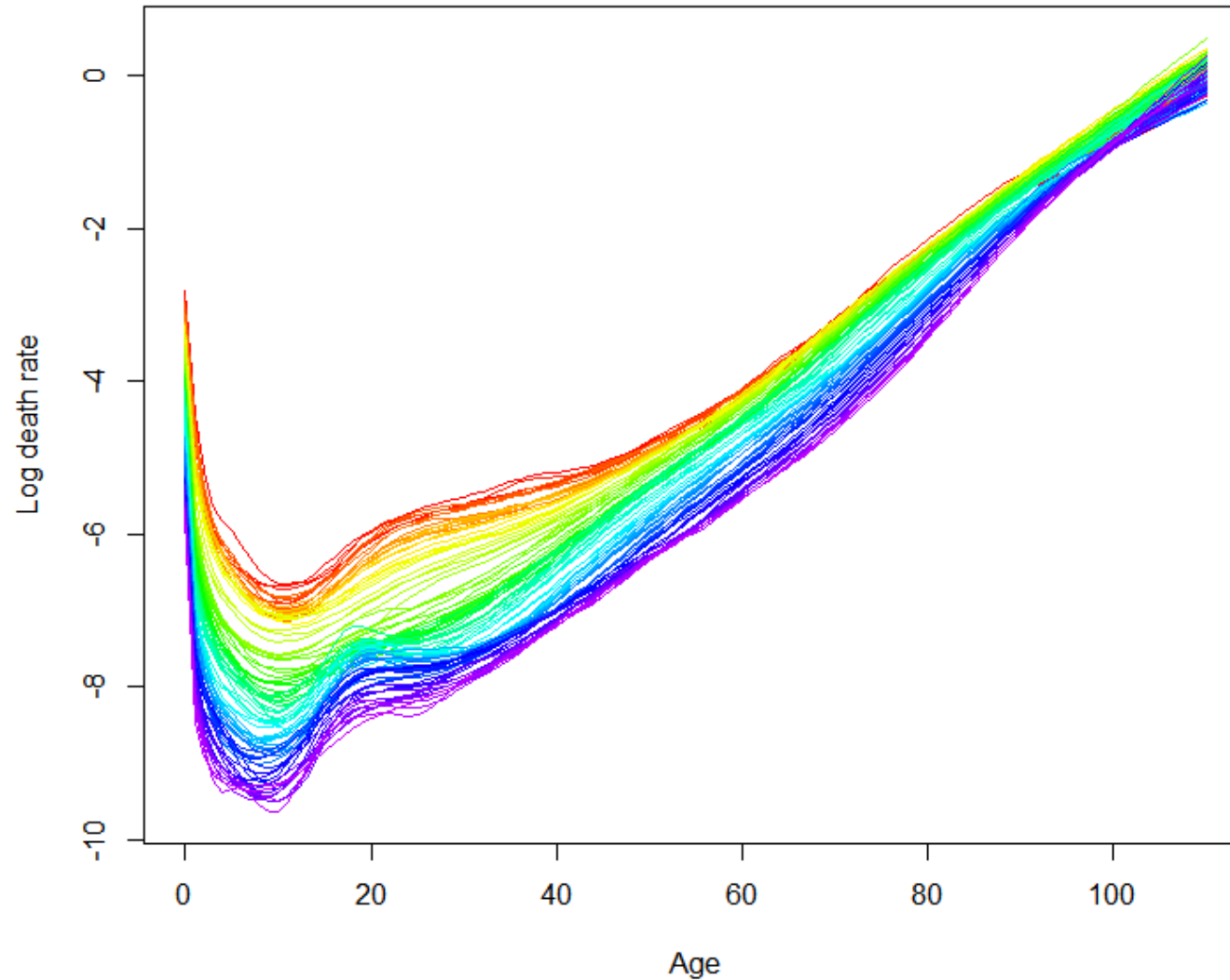
Australian life expectancy 1921-2014

Life expectancy by sex, Australia 1921-2014



How is the linear increase achieved?

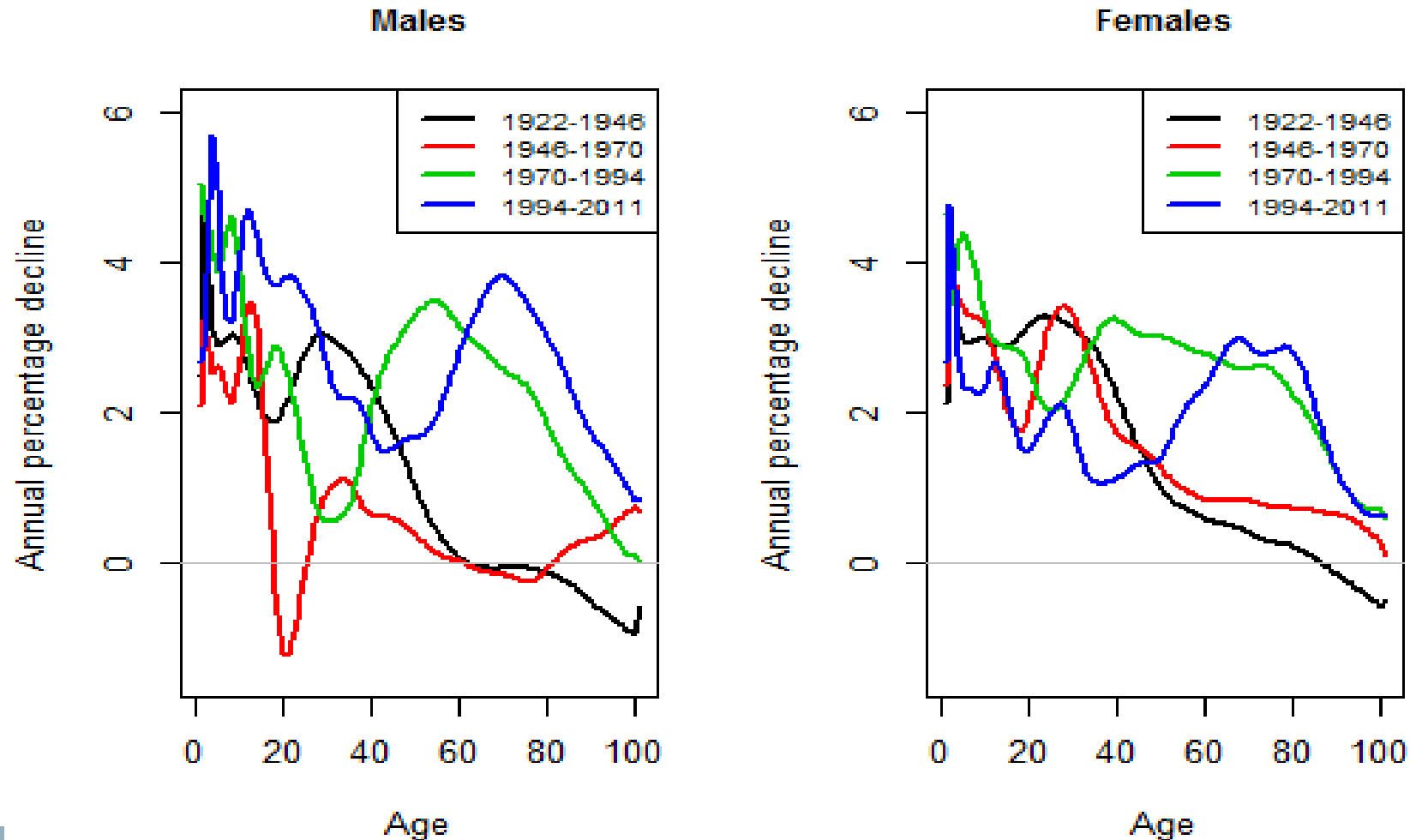
Australian female death rates 1921-2014



The largest
decline occurs
at different ages
at different times

How is the linear increase in $e(0)$ achieved?

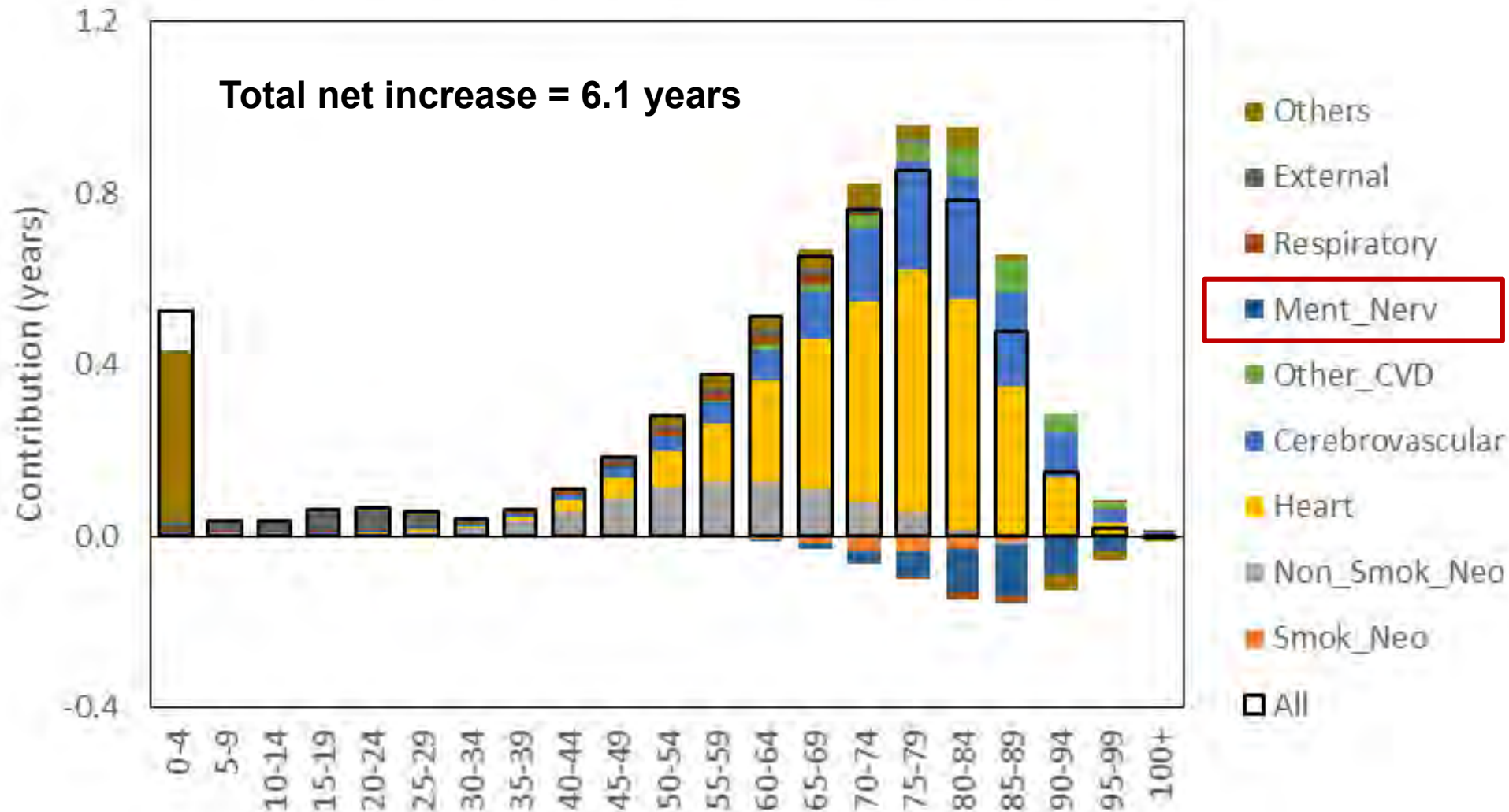
Changing age pattern of mortality decline maintains increasing life expectancy





Changing age pattern due to disease patterns

Females 1980-1984 v.s. 2010-2014



Warning:

The negative contribution of “mental/nervous system diseases” or dementia is an artefact of data collection.

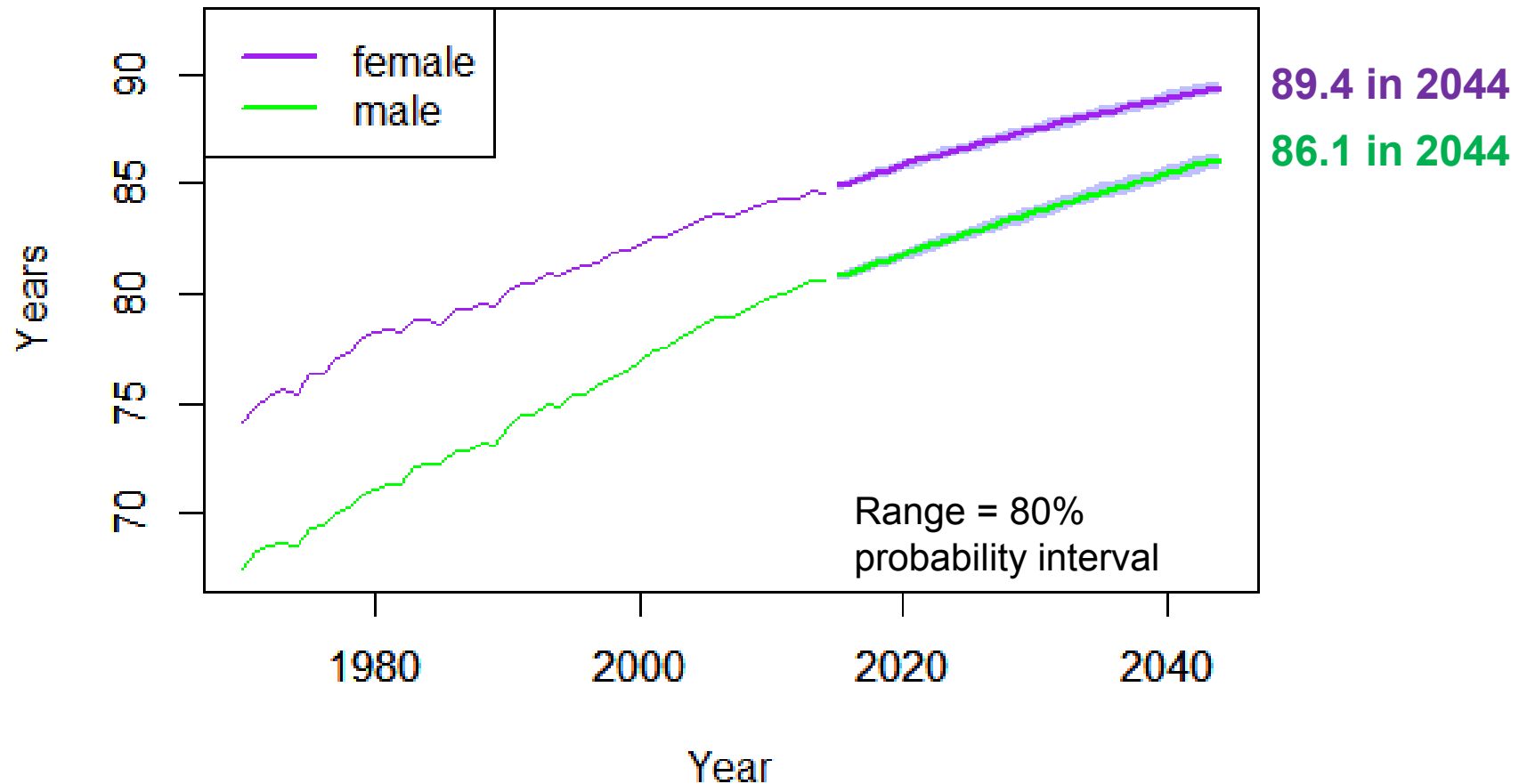
Nevertheless the graph shows the current contribution of dementia deaths and hence the amount by which life expectancy might be increased if dementia were reduced to zero (about 0.5 year).



PROSPECTS FOR LONGEVITY IN AUSTRALIA

Coherent* mortality forecast, Australia 2015-2044

Life expectancy forecasts



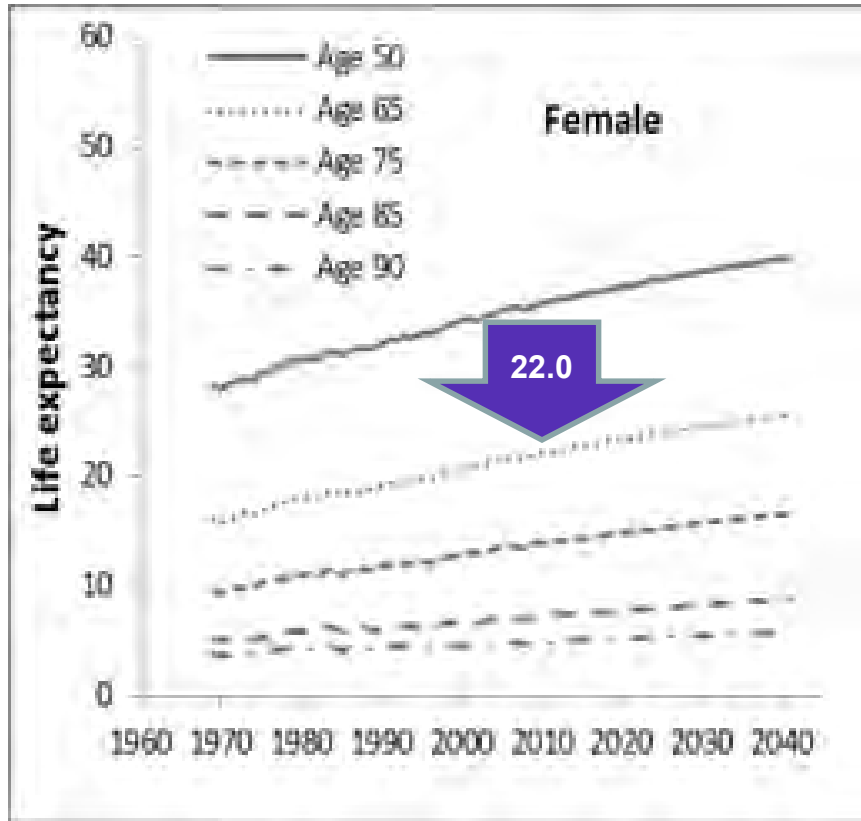
*Product-ratio coherent method using data for 1970-2014. Male and female forecasts never converge or diverge.

See Hyndman, Booth & Yasmeen (2013). *Demography*, 50(1), pp.261-283

Female born 1945 = aged 65 in 2010

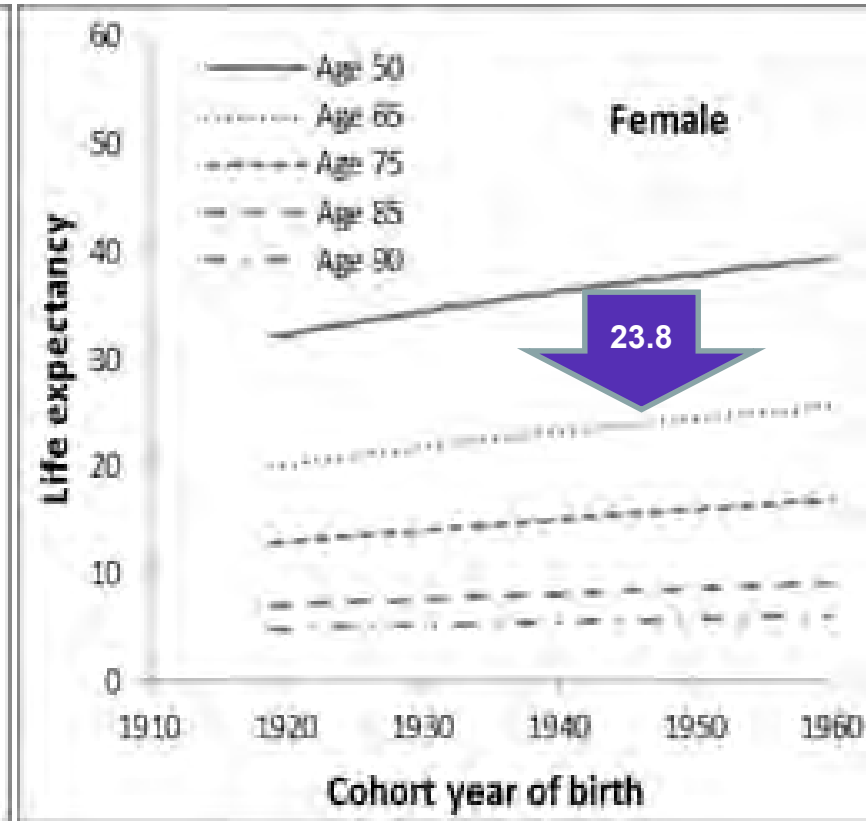
Improving survival: cohort exceeds period

Period life expectancy



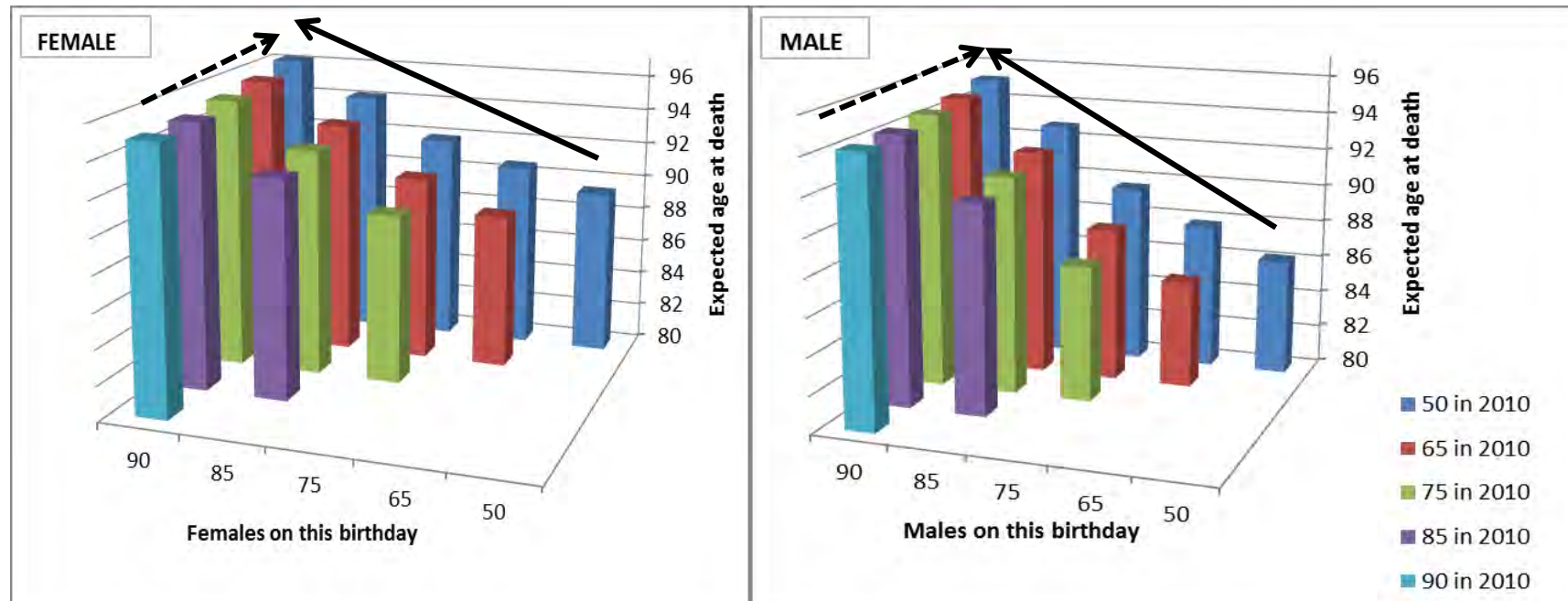
Expected age at death at age 65
 $65 + 22.0 = 87.0$

Cohort life expectancy



Expected age at death at age 65
 $65 + 23.8 = 88.8$

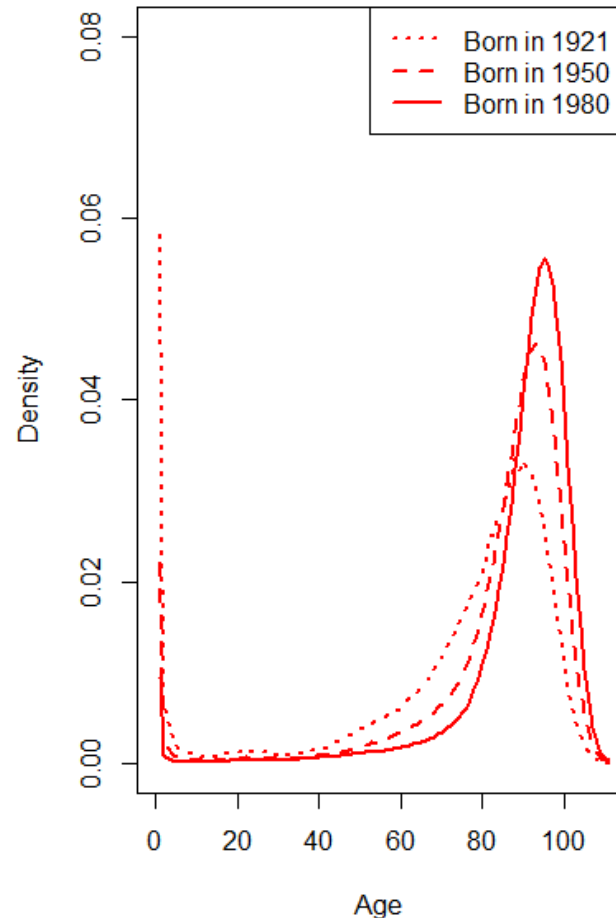
Expected age at death for cohorts by age in 2010



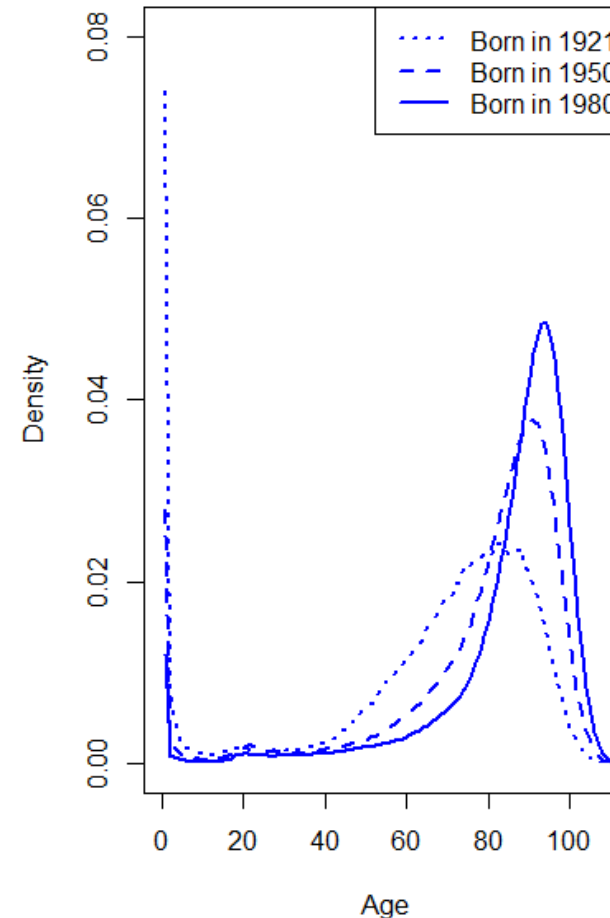
- > Younger cohorts have higher expected age at death
- > Expected age at death increases with own age

Modal age at death is increasing: relatively more deaths occur at very old ages

Female age at death distribution



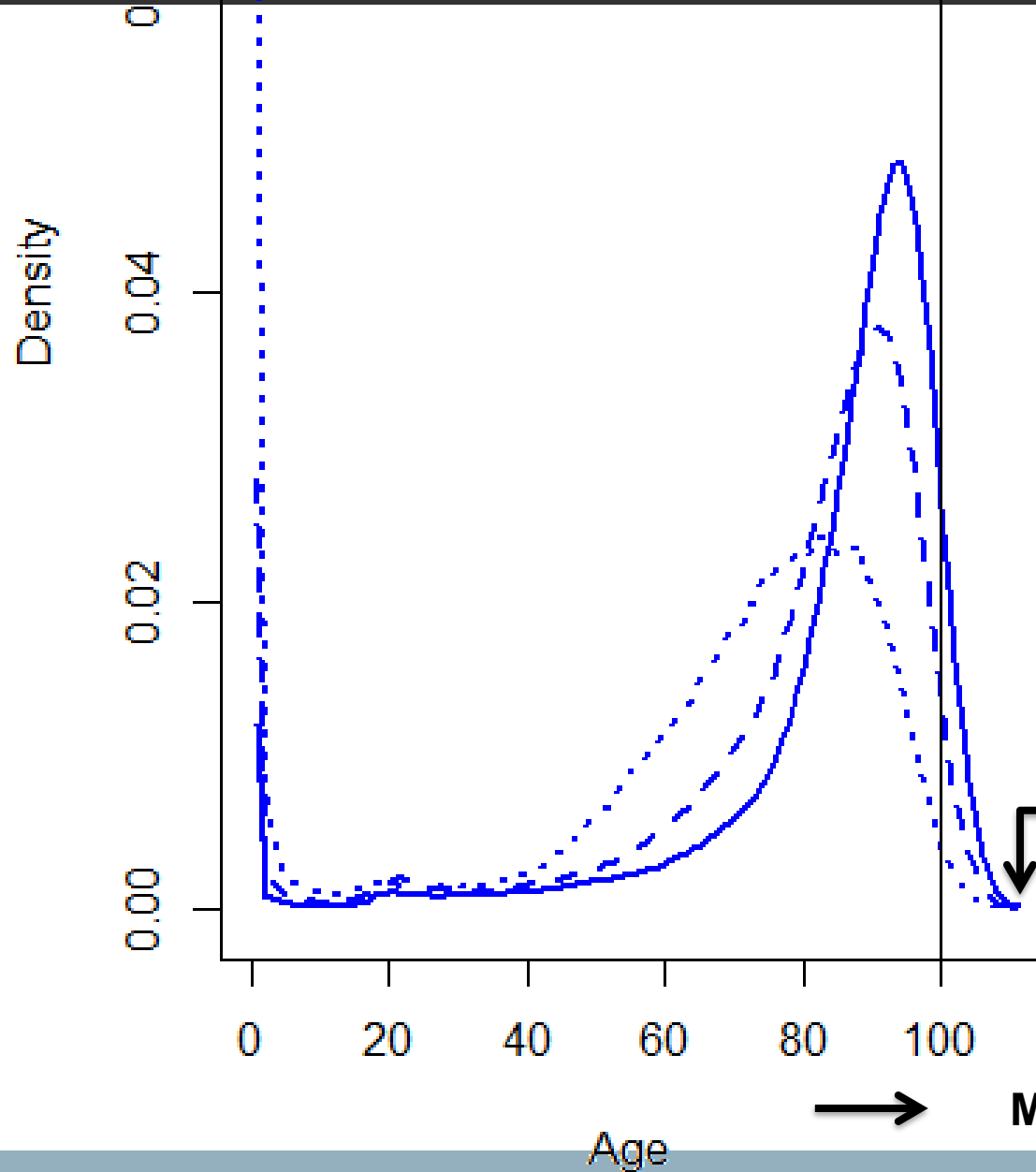
Male age at death distribution



Dying as a nonagenarian becomes more and more 'certain'



The extension of the lifespan



Greater concentration
(compression)

Extension of the lifespan...

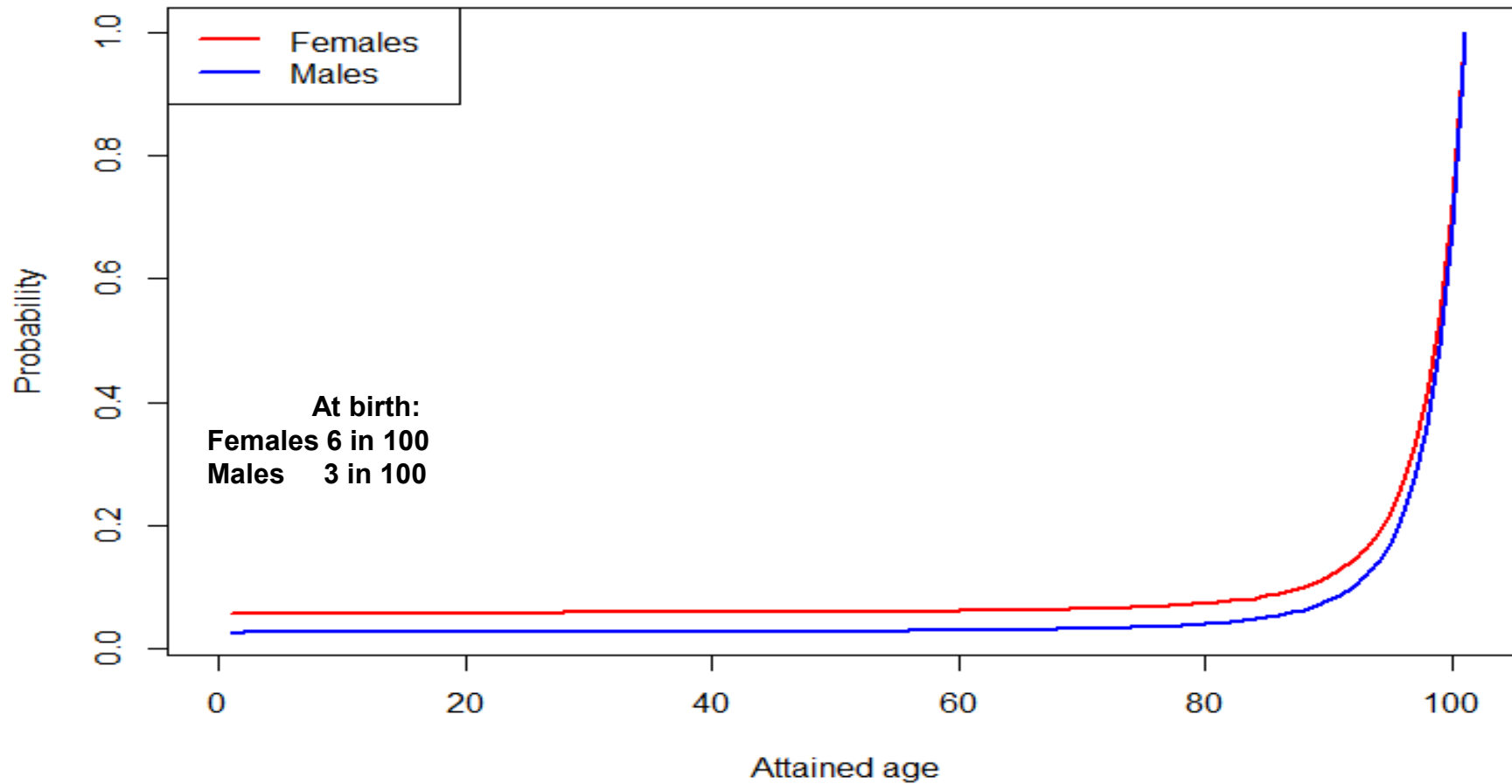
Mode moves to older ages



THE PROSPECT OF A CENTURY

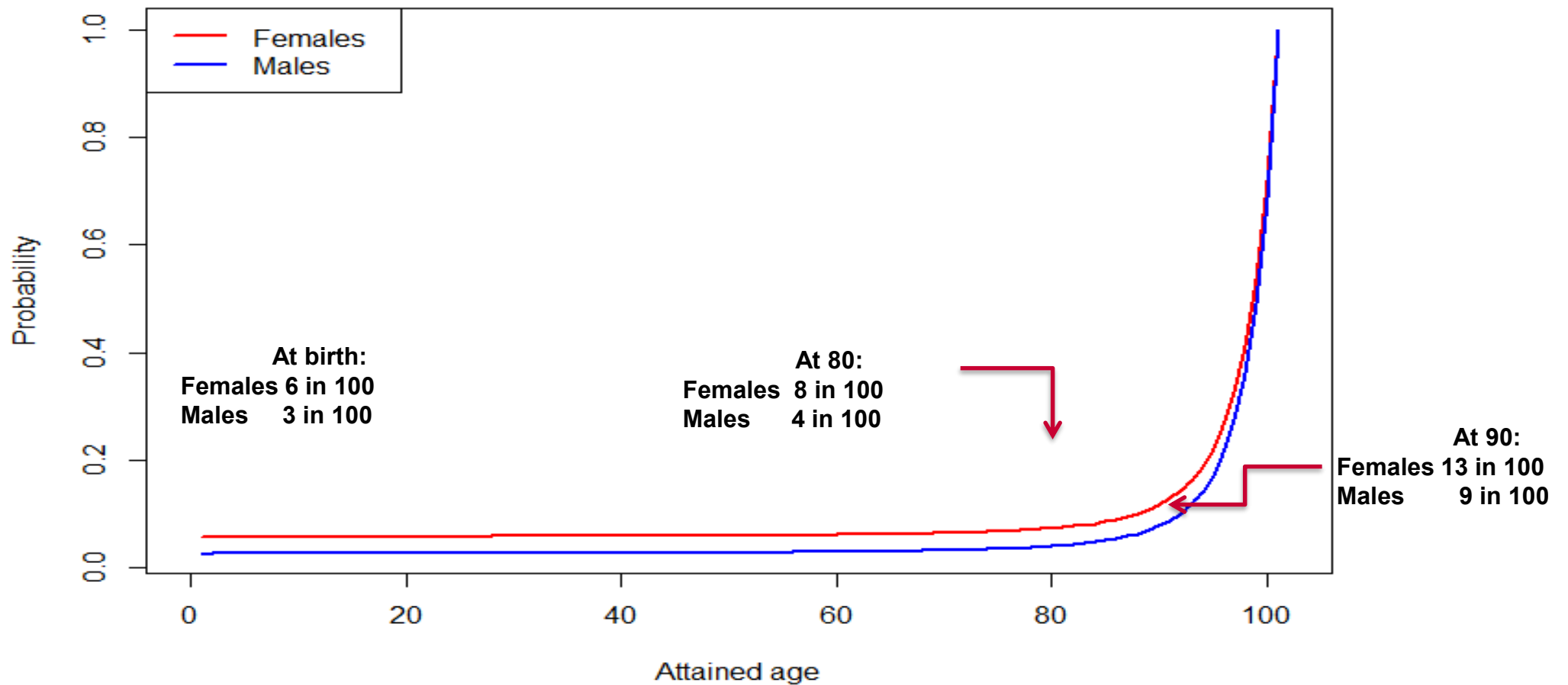
What are our chances?

Probability of living to 100 from attained age: cohort born in 1950



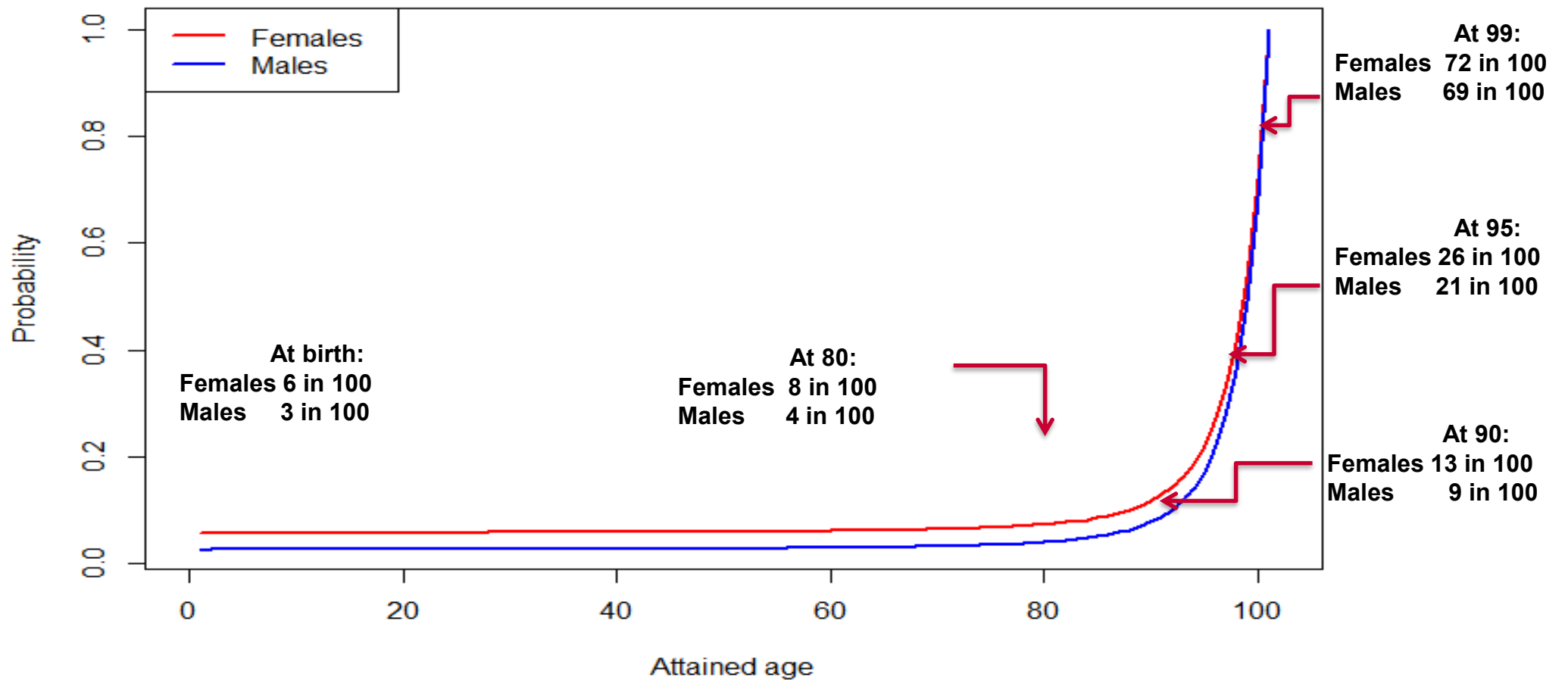
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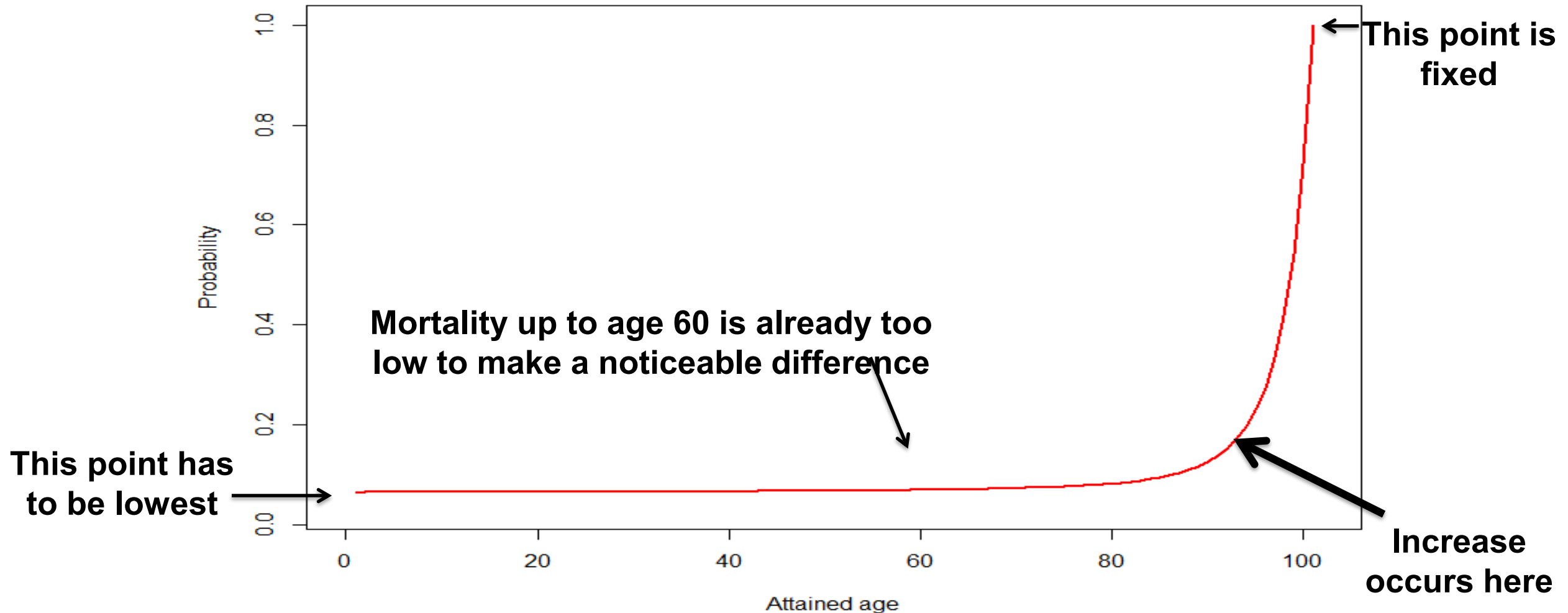
What are our chances?

Probability of living to 100 from attained age: cohort born in 1950



Survival to 100 now depends on oldest ages

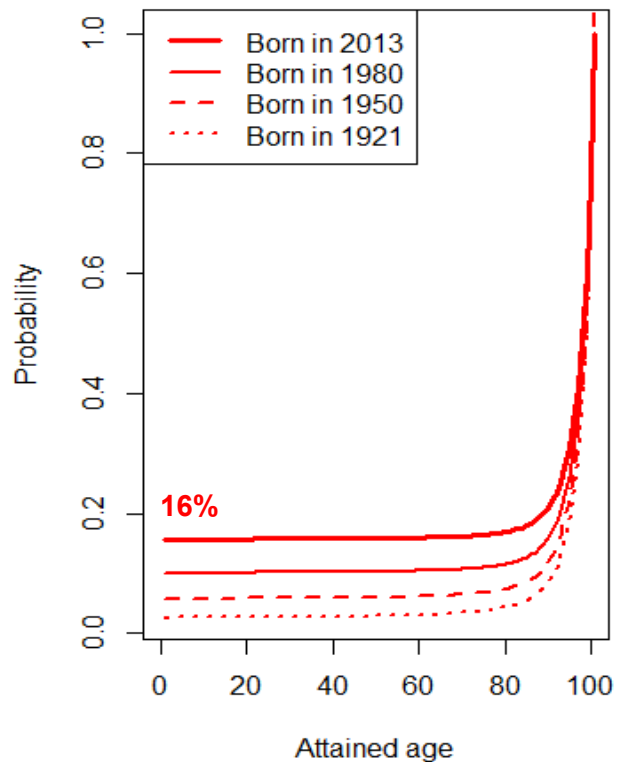
Probability of living to 100 from attained age: cohort born in 1950



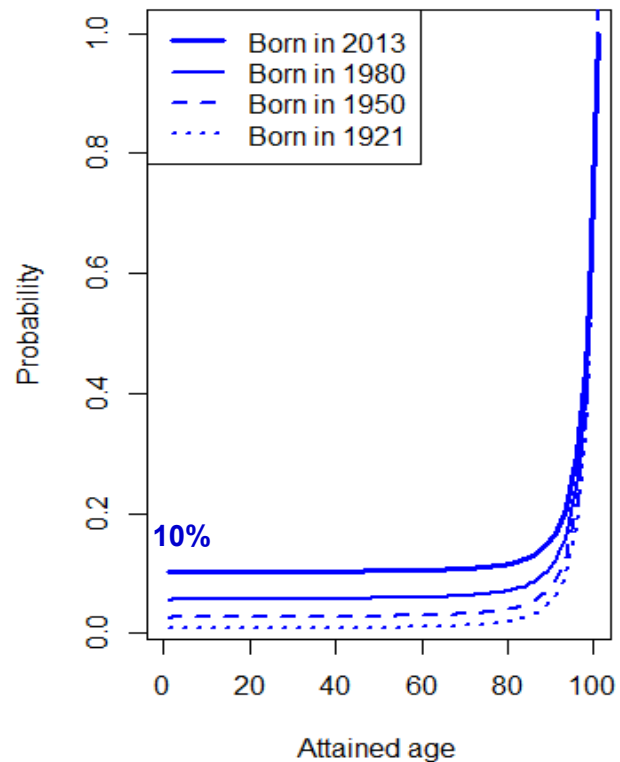
The prospect of the century advances

Cohort survival to 100
Females born in 2013 have 16% probability
Males born in 2013 have 10% probability

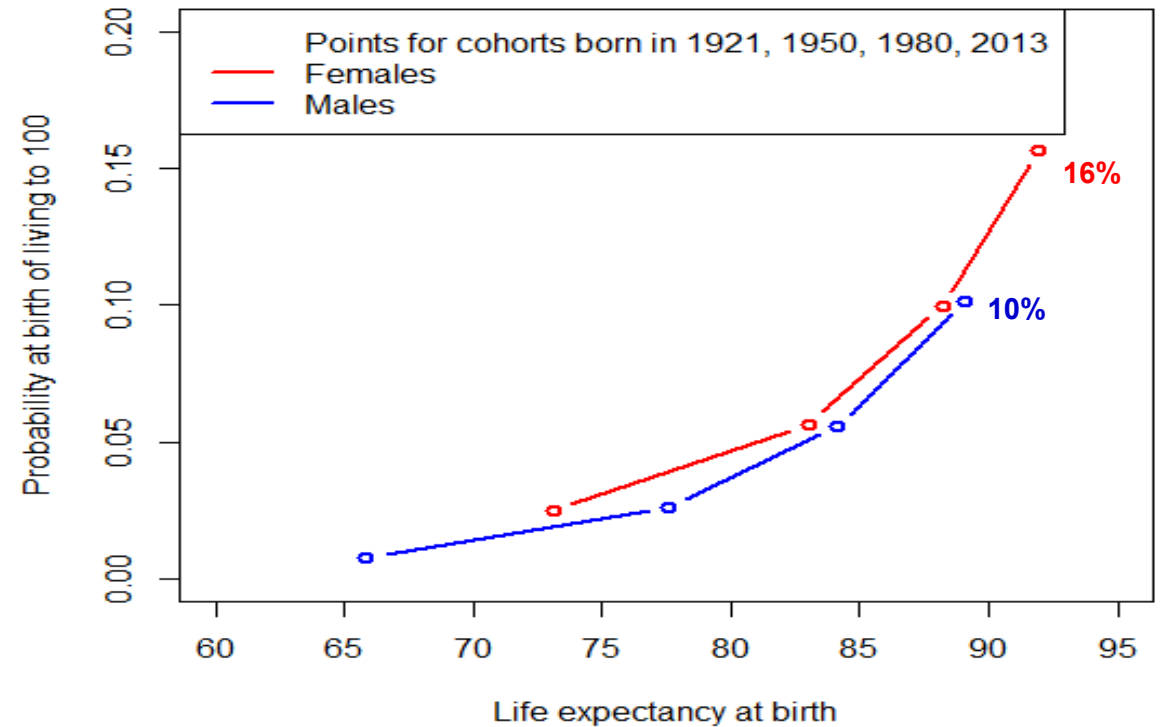
Female cohorts



Male cohorts



At birth: life expectancy and the probability of living to 100





IMPLICATIONS OF INCREASING LONGEVITY



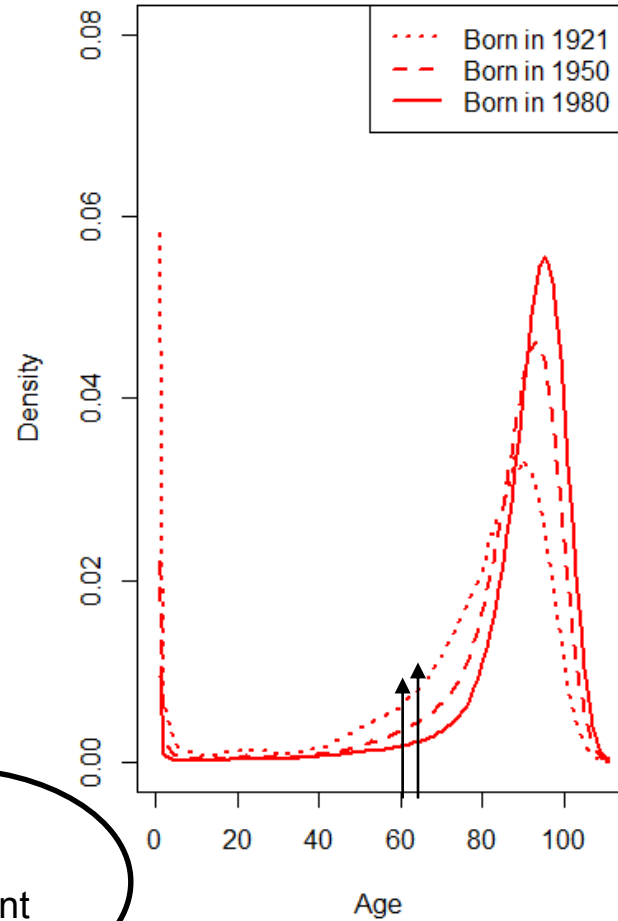
IMPLICATIONS

A LONG RETIREMENT



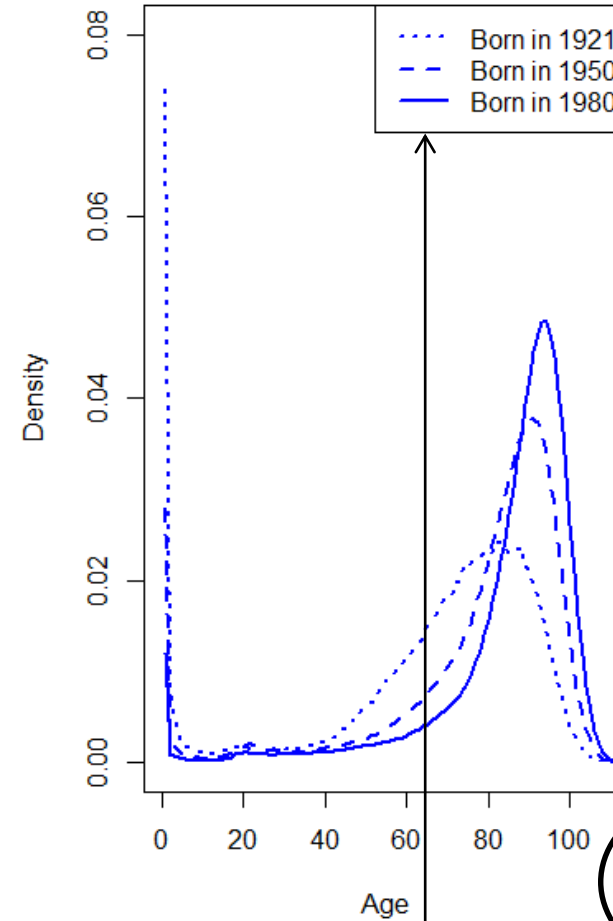
More people spend longer in retirement

Female age at death distribution



Age at retirement

Male age at death distribution

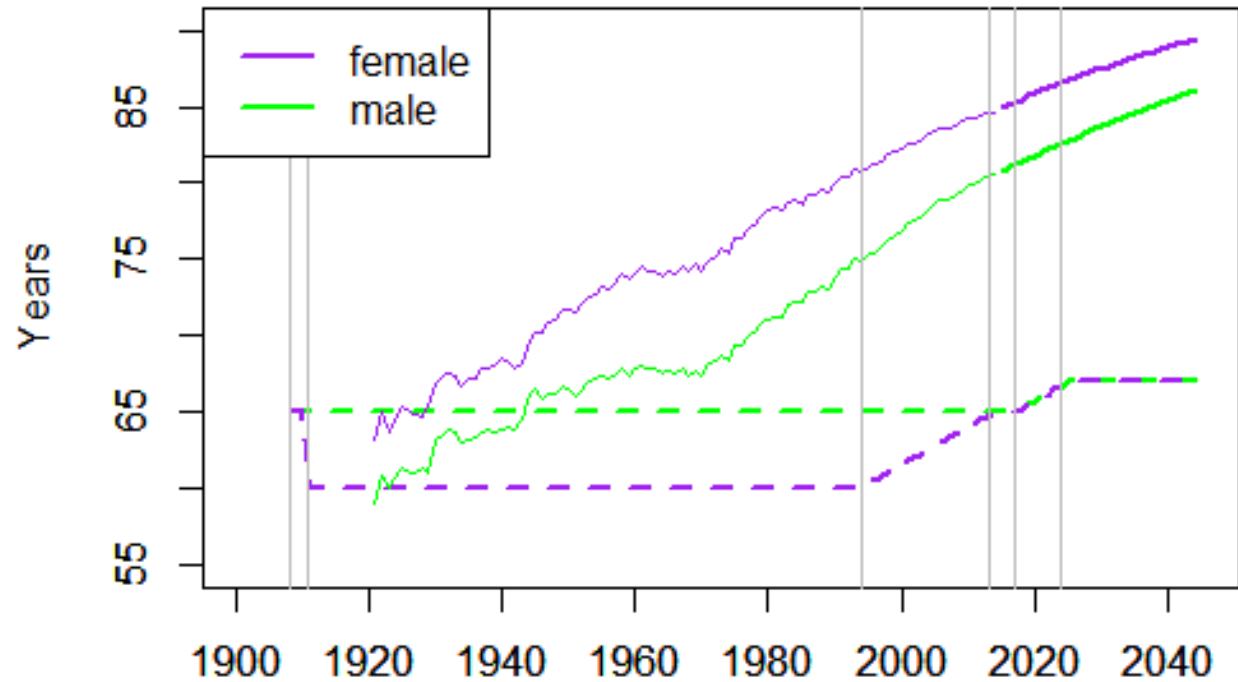


Age at retirement

Most people live 20+ years in retirement

Pension age in Australia

Life expectancy and pension age

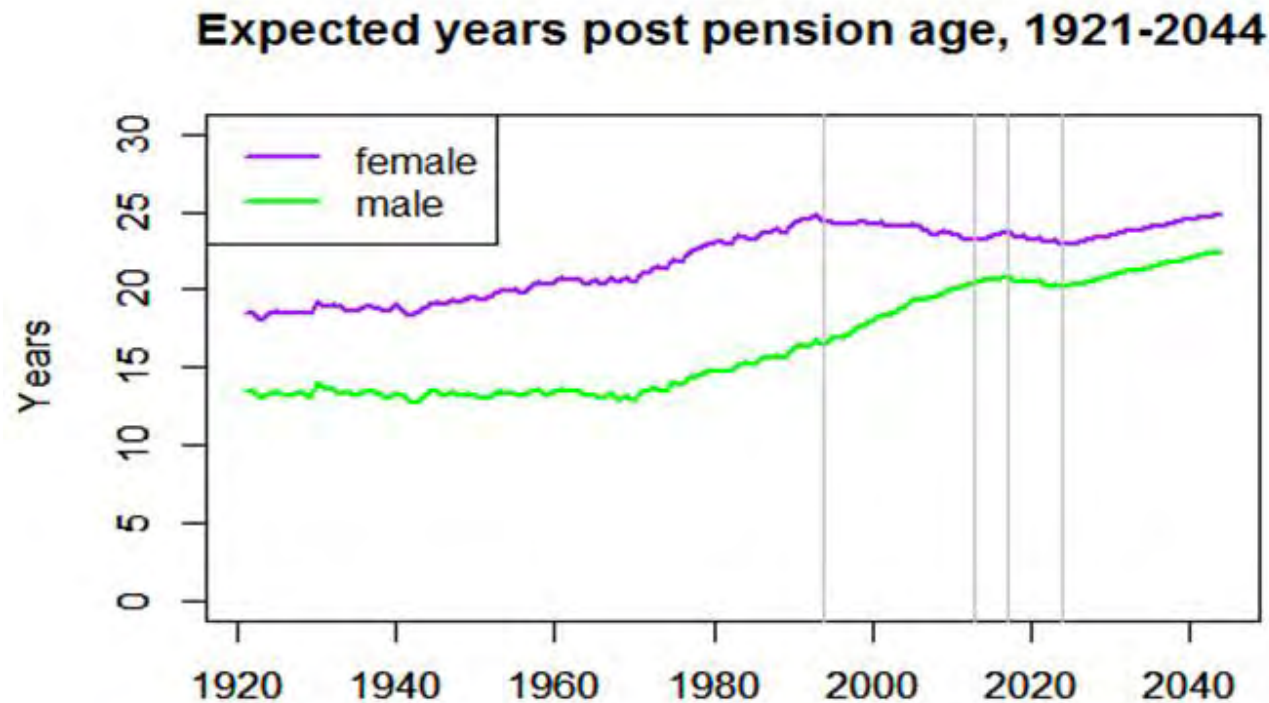


1908 1911
65 60

1994....2013 2017....2024
60....65 65....67



On average, 'we' can expect more than 20 years in 'retirement'



After 'retirement', females can expect to live 24 years and males 21 years in 2017

On average, half of us will live longer

These estimates are conservative: cohort life expectancy is higher



IMPLICATIONS

GROWING NUMBERS OF CENTENARIANS

Future numbers of centenarians

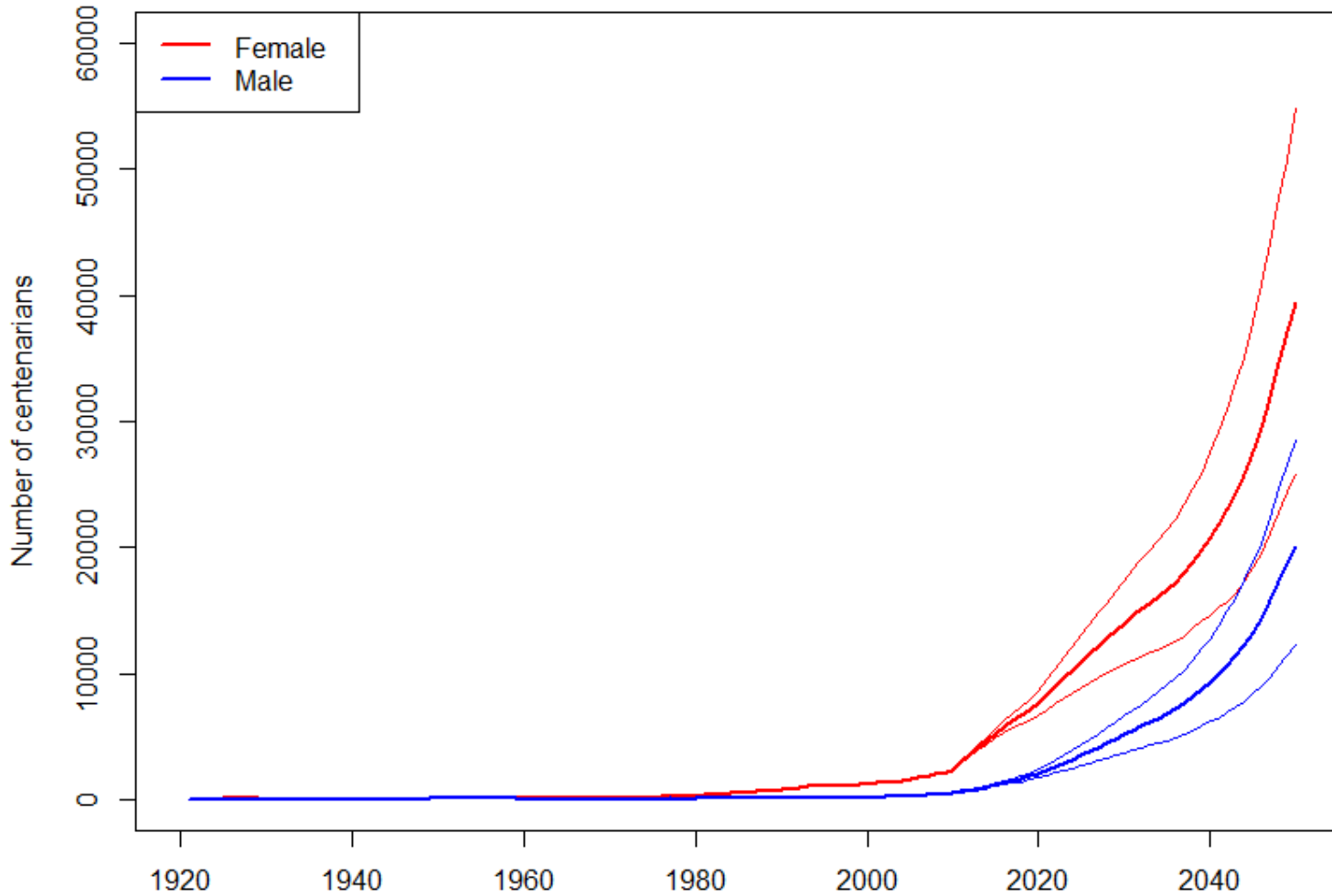
Forecast number of centenarians (with 80% probability limits)

By 2014:

2890

610

3500

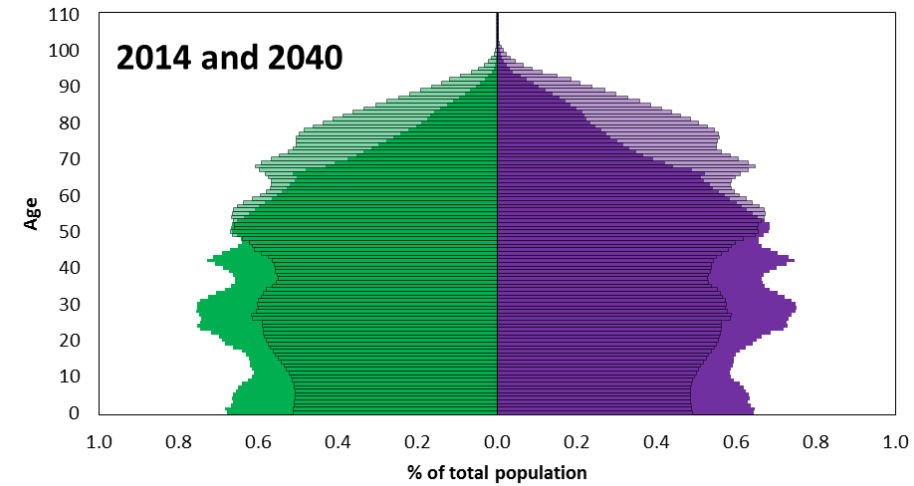


By 2050:

39400 66%

20000 34%

59400



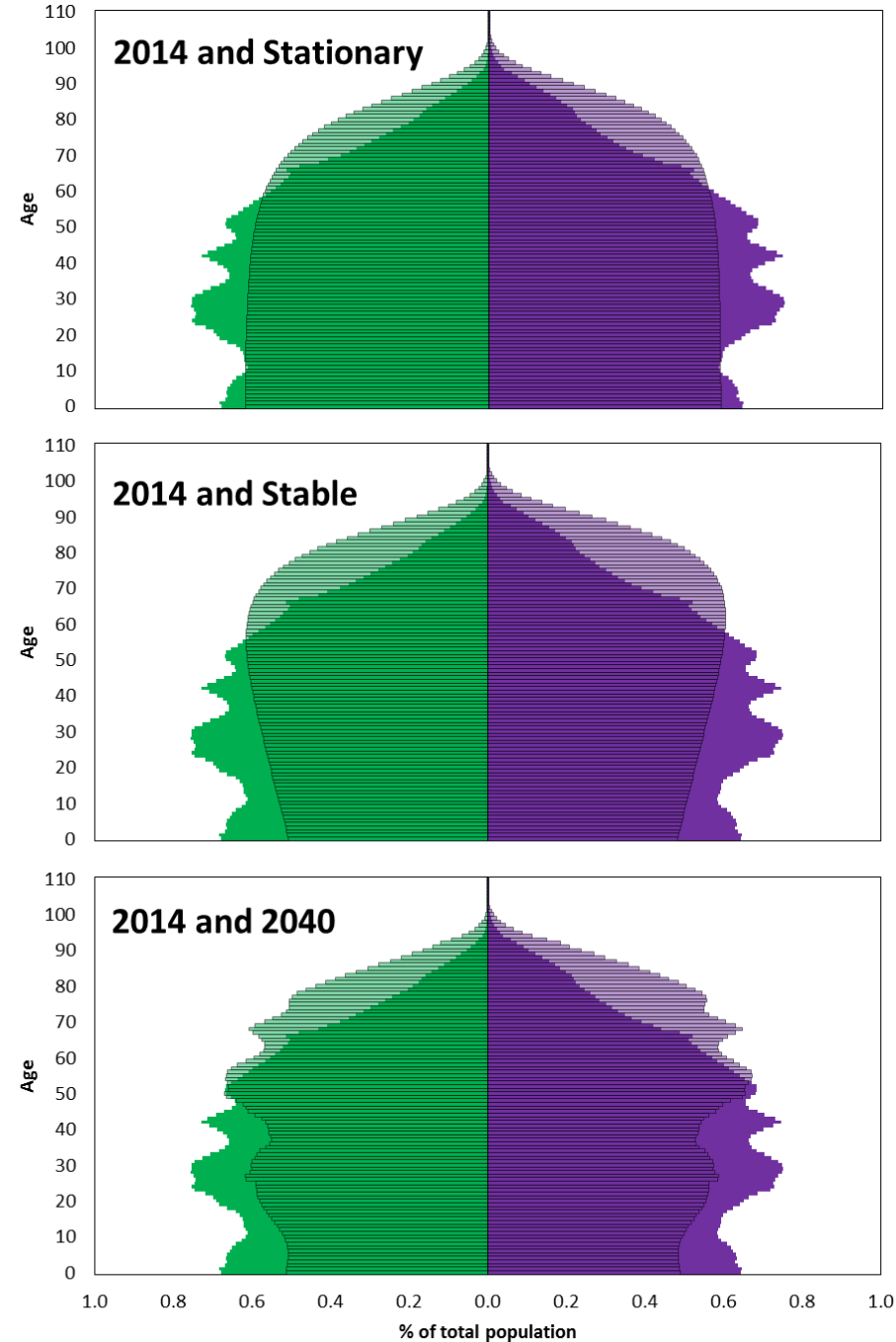
IMPLICATIONS

AN OLDER POPULATION STRUCTURE

An older population structure is embodied in current mortality

An even older population is embodied in declining mortality

This is independent of the effect of age structure – which is ‘temporary’





IMPLICATIONS

LONGEVITY AND SOCIETY

Health and well-being

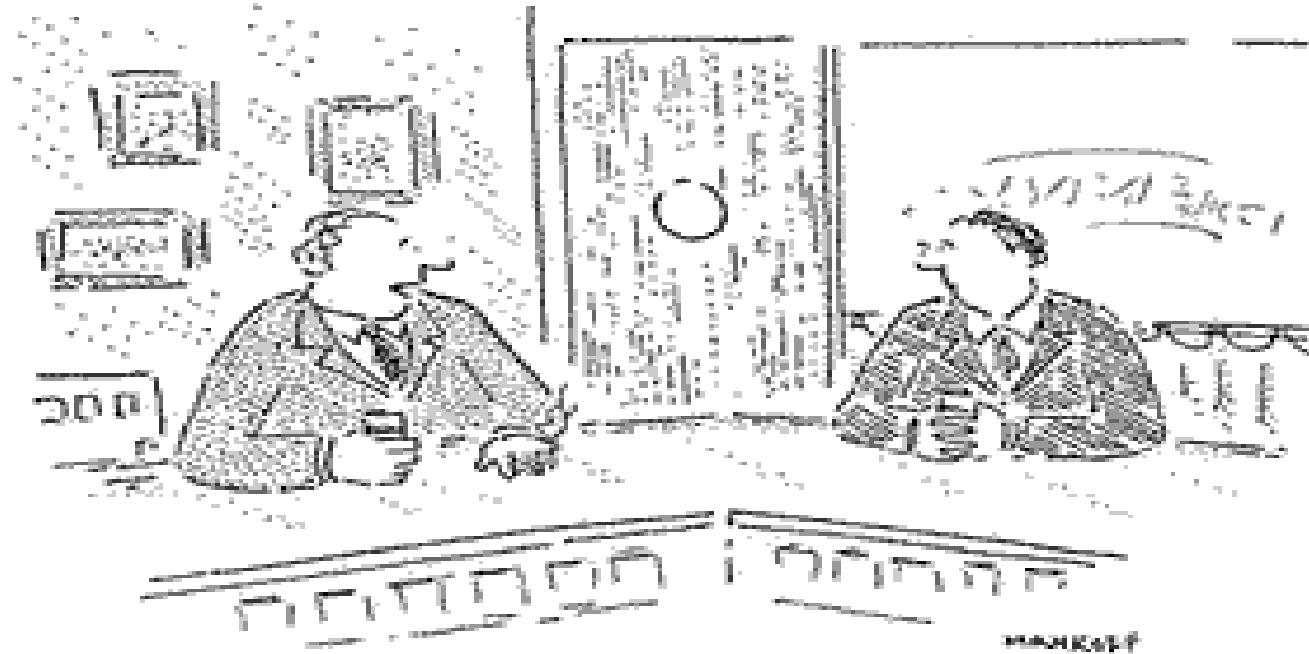
- Health needs of very old people
 - Different mix of diseases (dementia)
- Needs of the ‘healthy frail’ and disabled
 - Age-Friendly Cities and Communities:
Infrastructure/Health/Social
 - Universal design
- Ageing in the community
 - Independence and social connectedness
- Challenges for society **as a whole**



IMPLICATIONS

A NEED TO CHANGE ATTITUDES

“See, the problem with doing things to prolong your life



**....is that all the extra years come at the end,
when you're **old**”**

The prospect of a century?

Most people do not want to live to 100



They think of ill-health and disability....

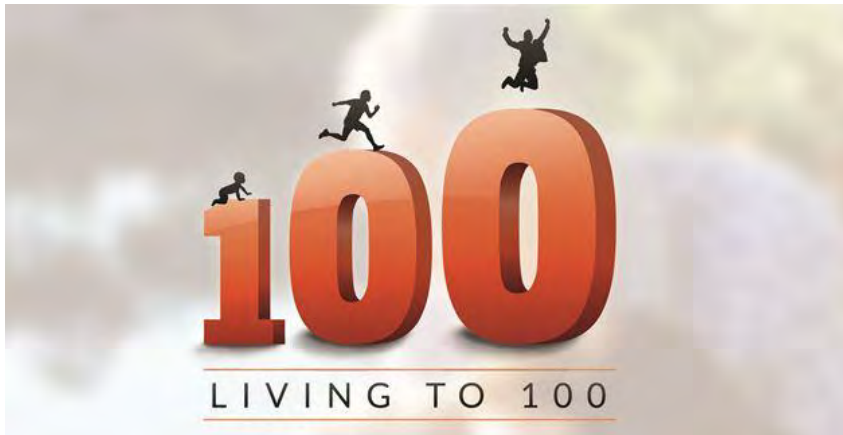


Our ideas of old age are out-dated

- formed in childhood
- not keeping up with ongoing changes.....
- not changing behaviour re longevity



An expanded future time perspective



Plan for the century!



...back to the past!