



Longevity in Australia: prospects and implications

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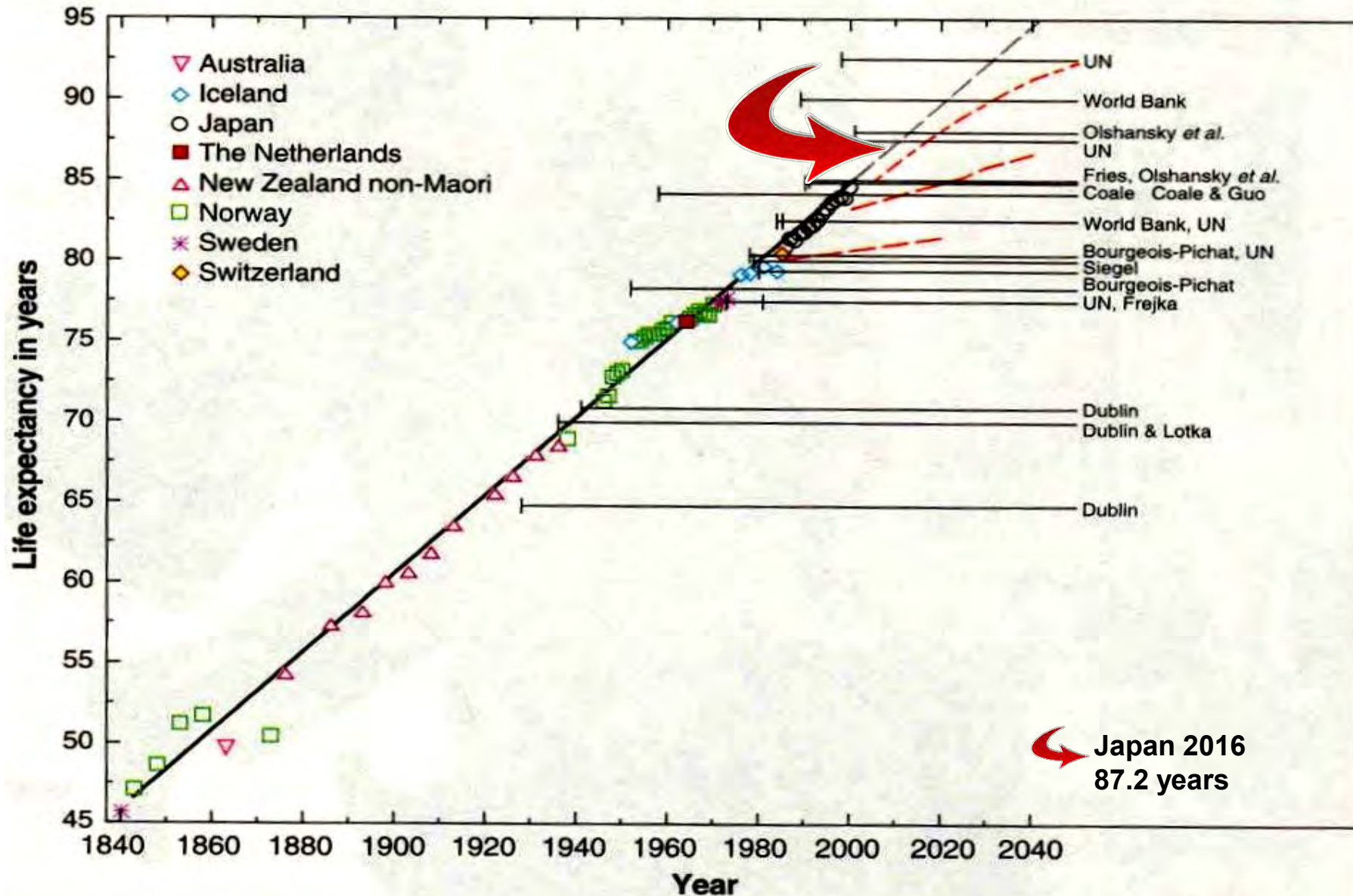
2nd International Living to 100 Conference
7-8 September 2018, Sydney



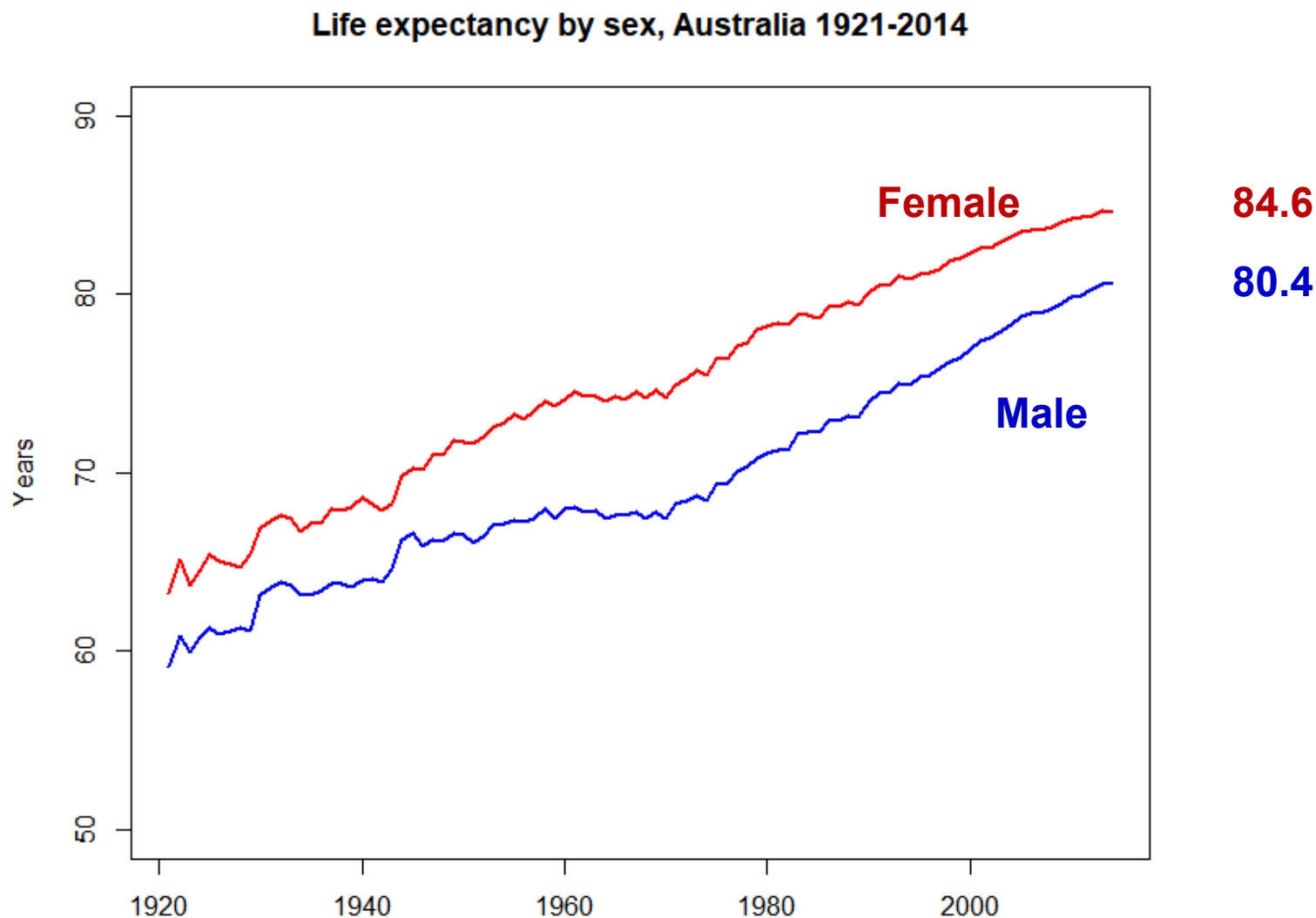
LONGEVITY IS INCREASING

...and there is no end in sight

Observed maximum female life expectancy



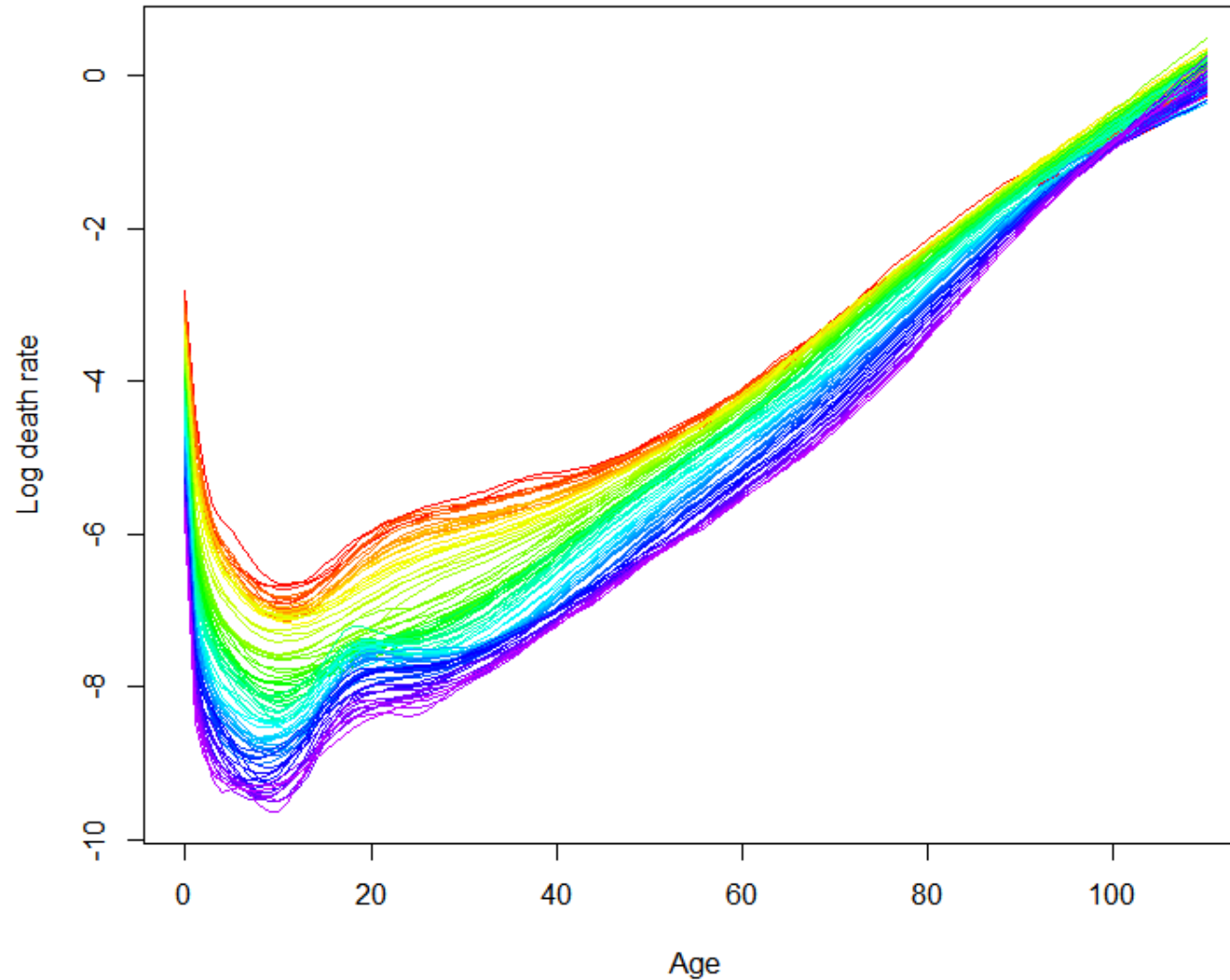
Australian life expectancy 1921-2014



How is the linear increase achieved?

How mortality declines

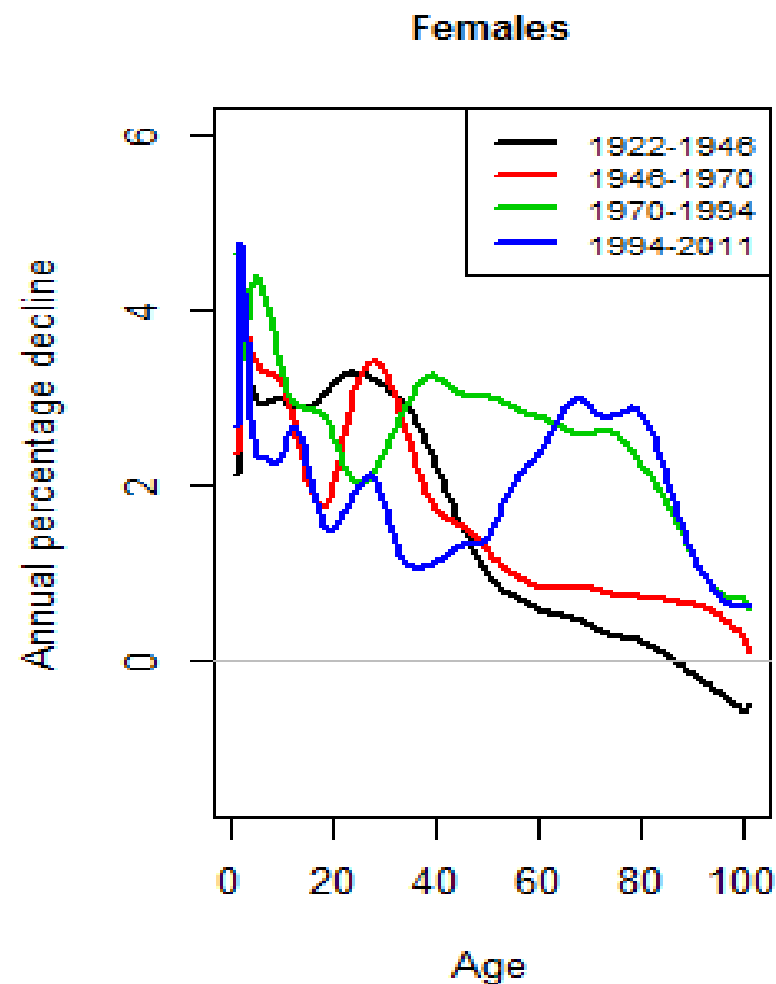
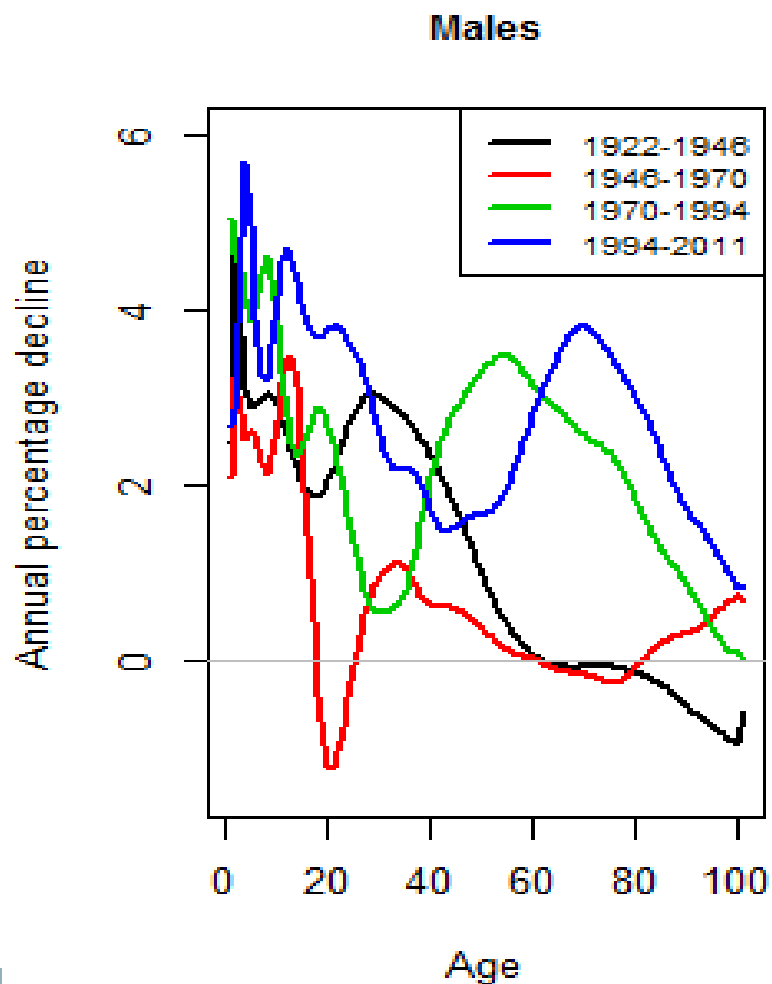
Australian female death rates 1921-2014



The largest
decline occurs
at different ages
at different times

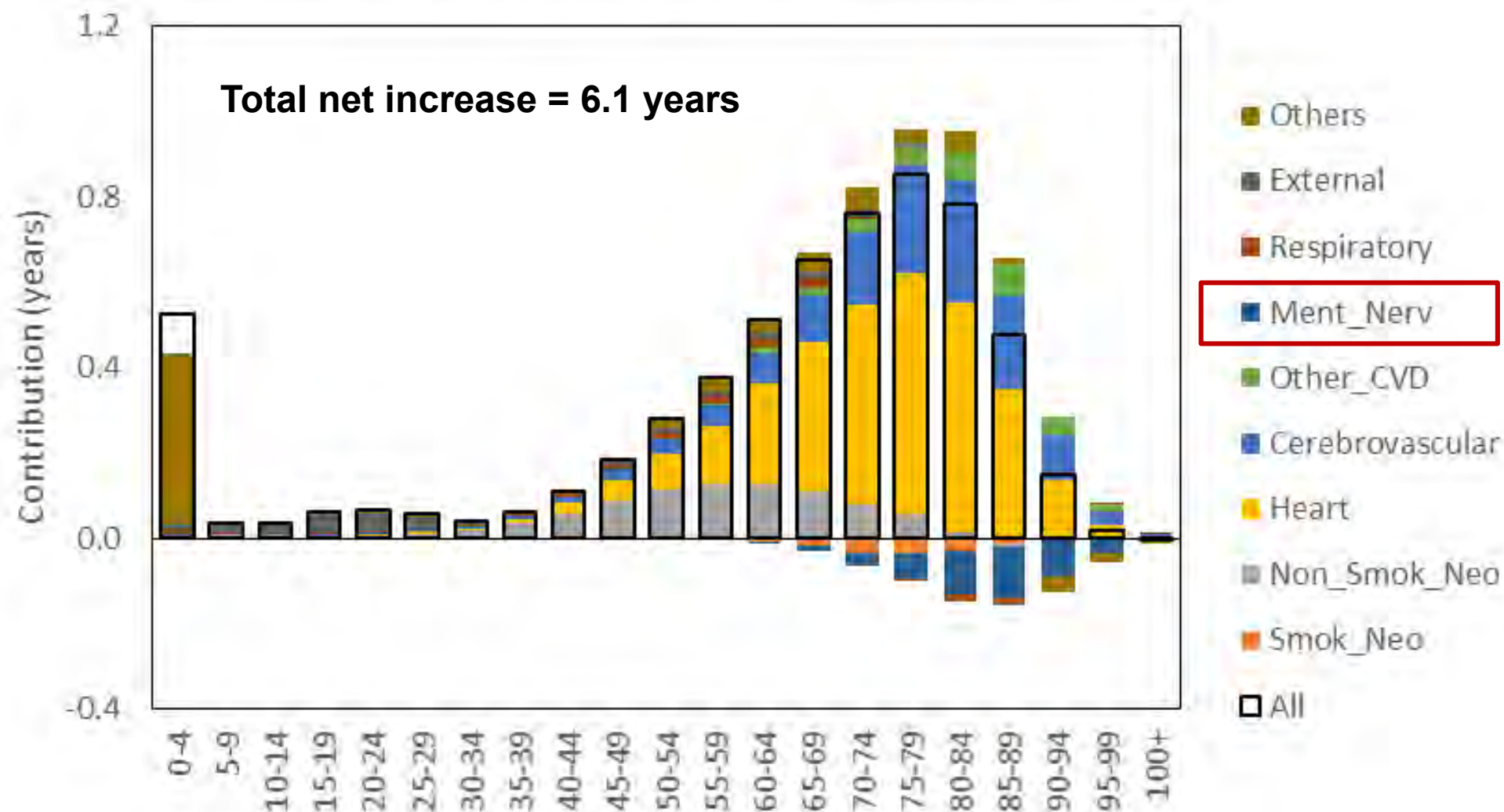
How is the linear increase in $e(0)$ achieved?

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.

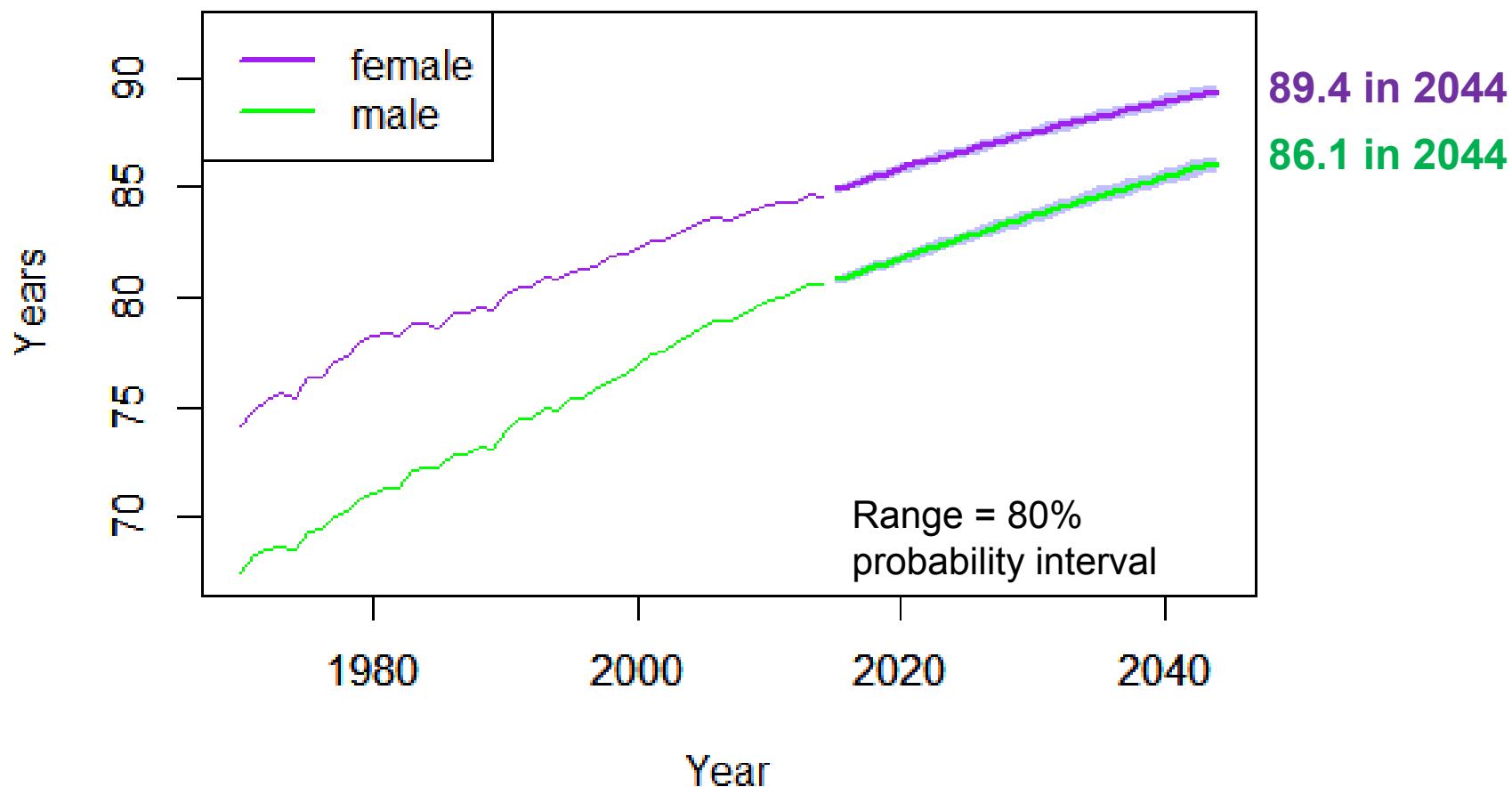
Nevertheless the graph shows the current contribution of dementia deaths and hence the amount by which life expectancy might be increased if dementia were reduced to zero (about 0.5 year).



PROSPECTS FOR LONGEVITY IN AUSTRALIA

Coherent* mortality forecast, Australia 2015-2044

Life expectancy forecasts



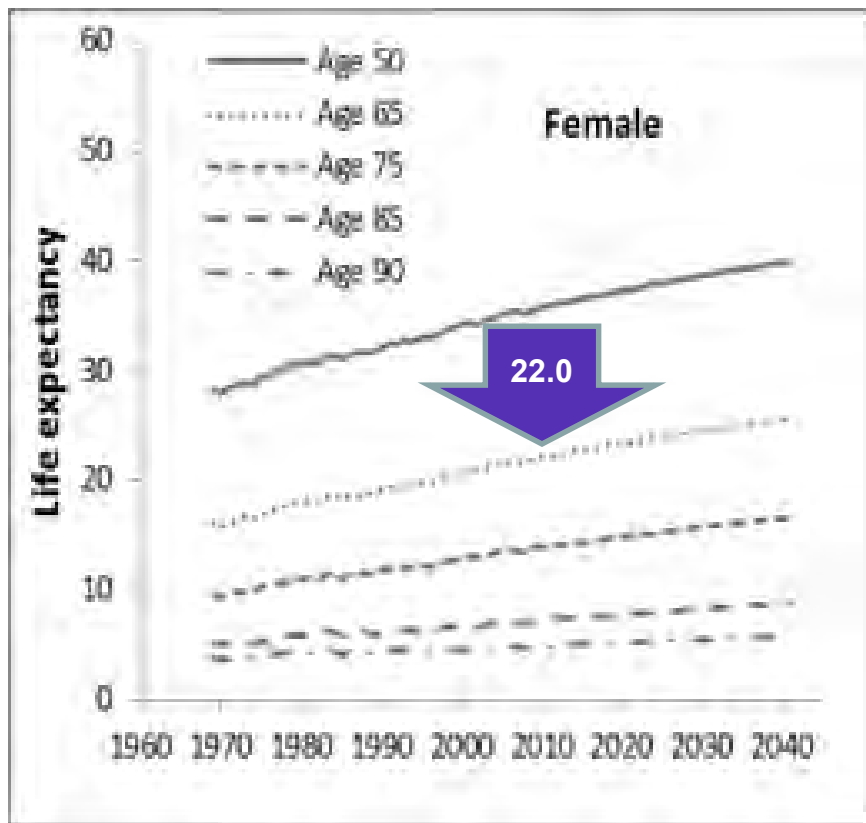
*Product-ratio coherent method using data for 1970-2014. Male and female forecasts never converge or diverge.

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

Female born 1945 = aged 65 in 2010

Improving survival: cohort exceeds period

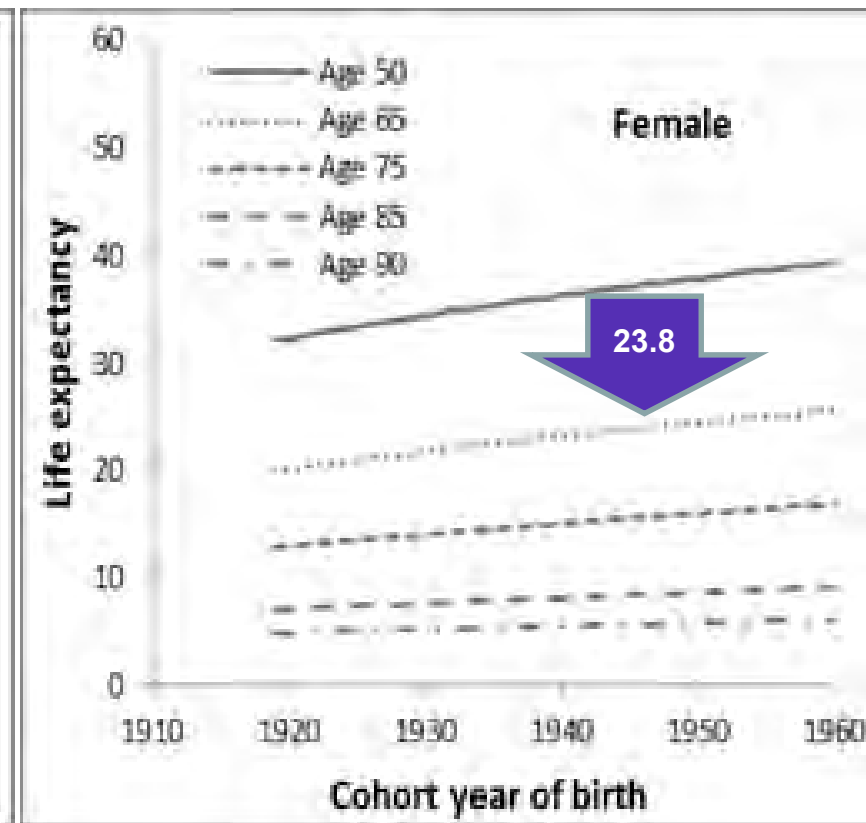
Period life expectancy



Expected age at death at age 65

$$65 + 22.0 = 87.0$$

Cohort life expectancy

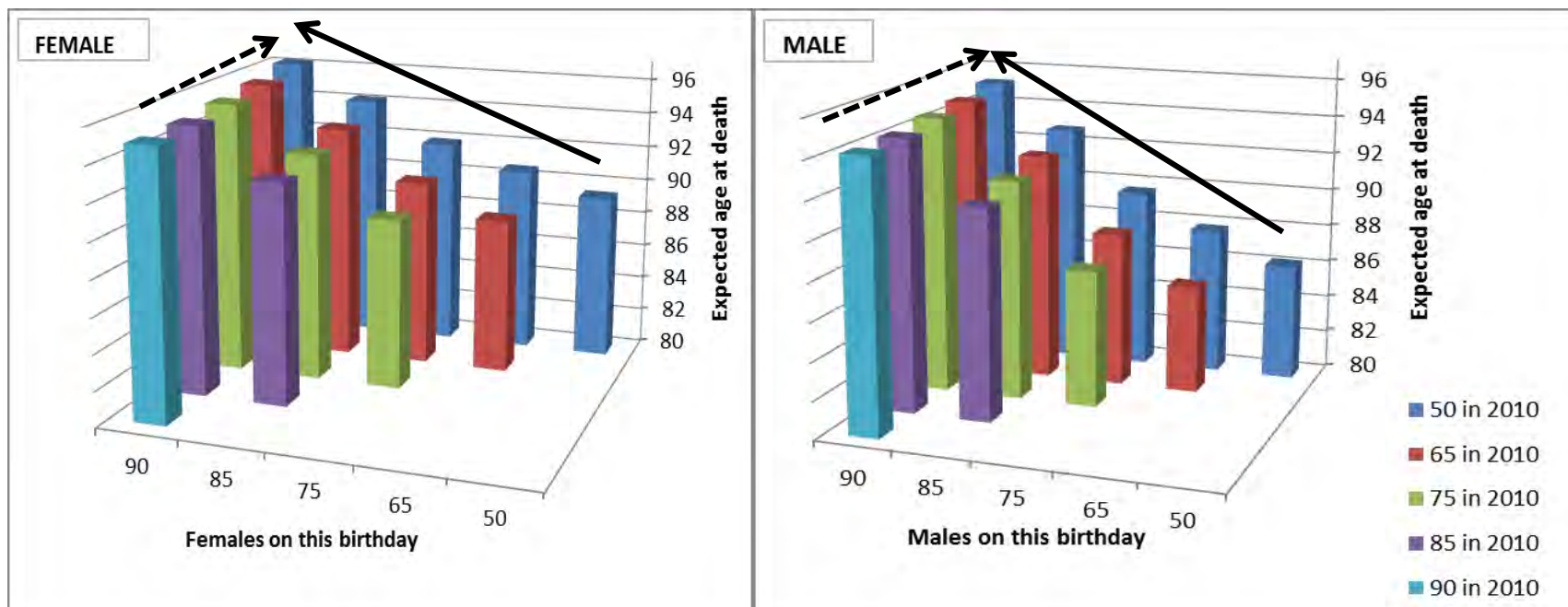


Expected age at death at age 65

$$65 + 23.8 = 88.8$$

..... the longer you live

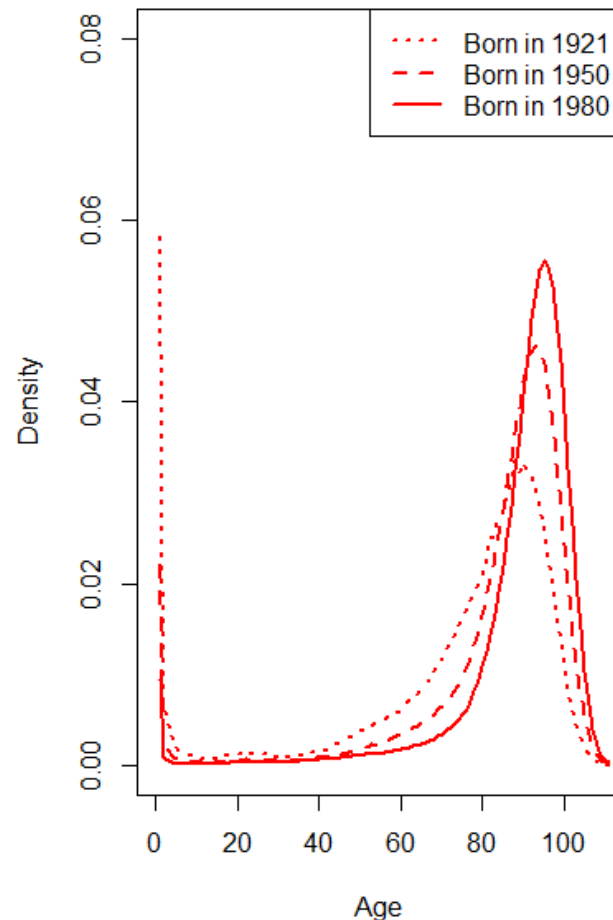
Expected age at death for cohorts by age in 2010



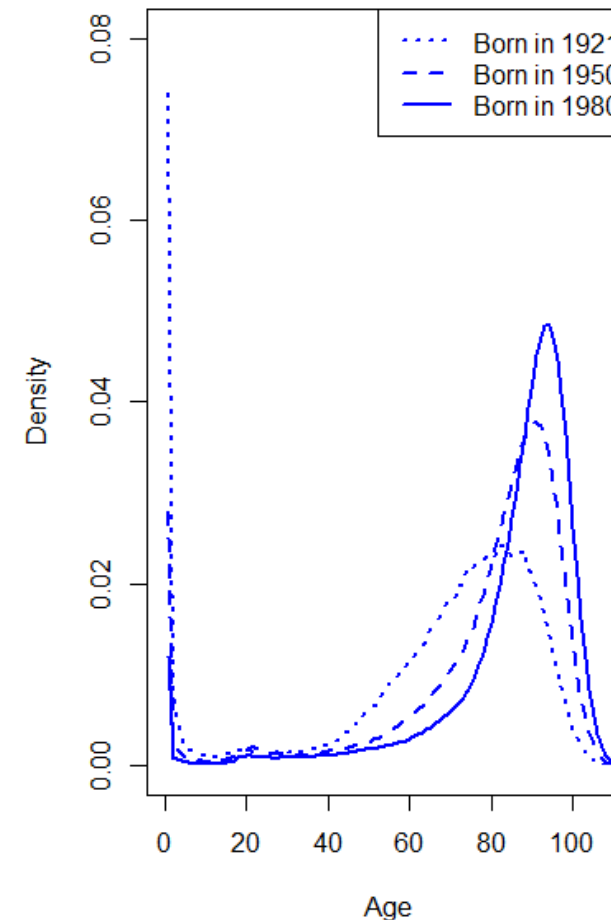
- > Younger cohorts have higher expected age at death
- > Expected age at death increases with own age

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

Female age at death distribution



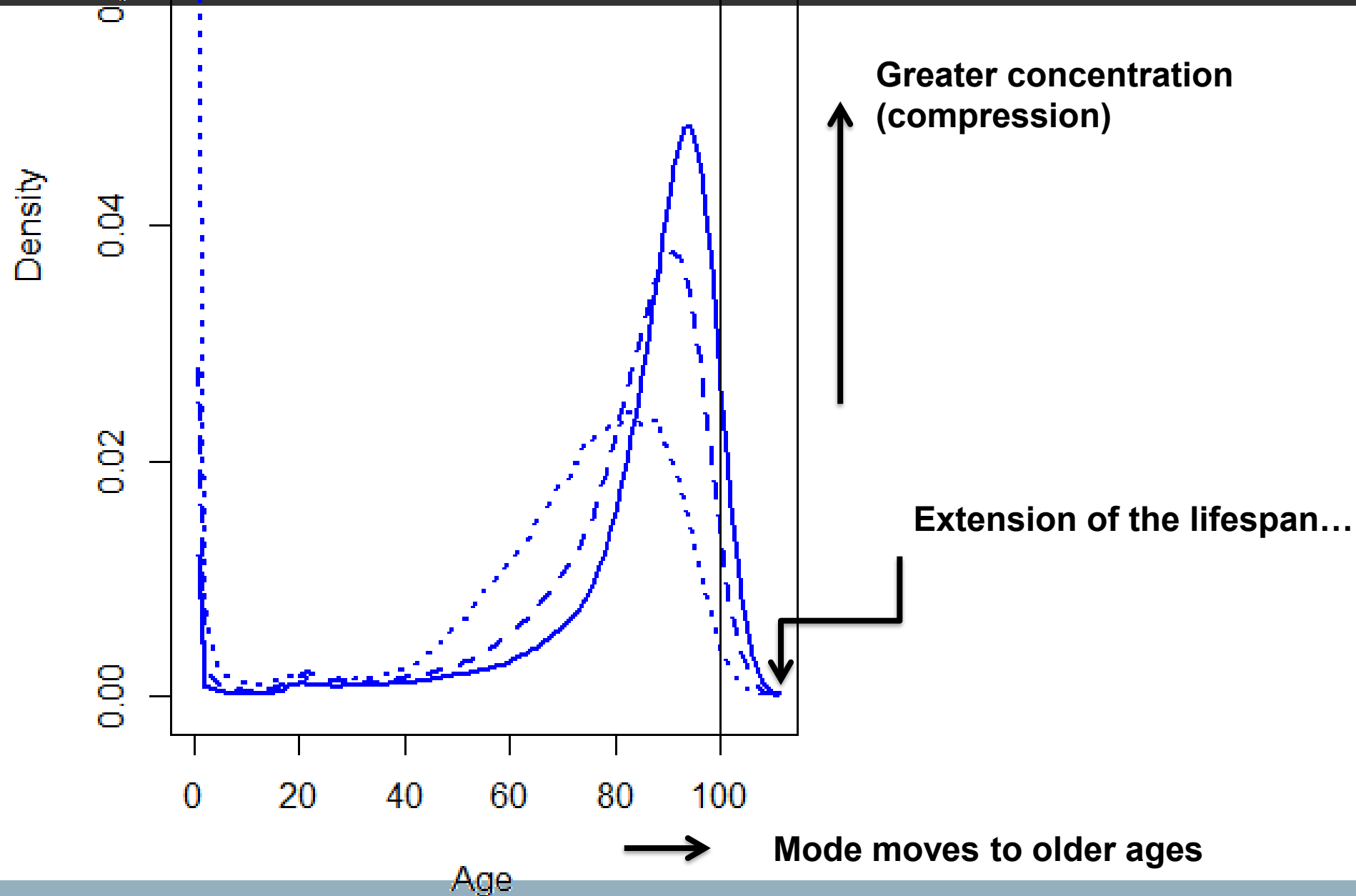
Male age at death distribution



**Dying as a
nonagenarian
becomes
more and
more 'certain'**



The extension of the lifespan

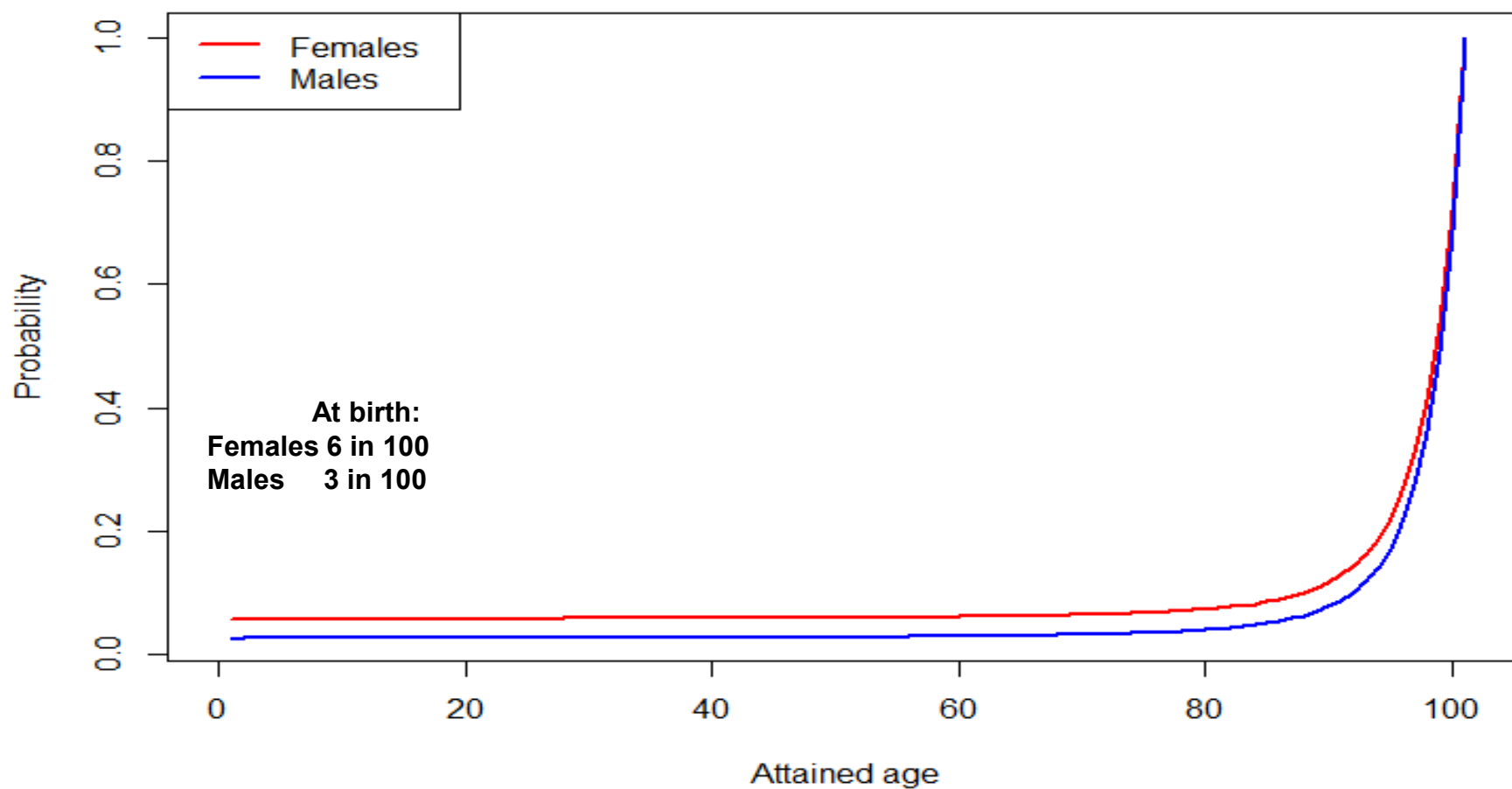




THE PROSPECT OF A CENTURY

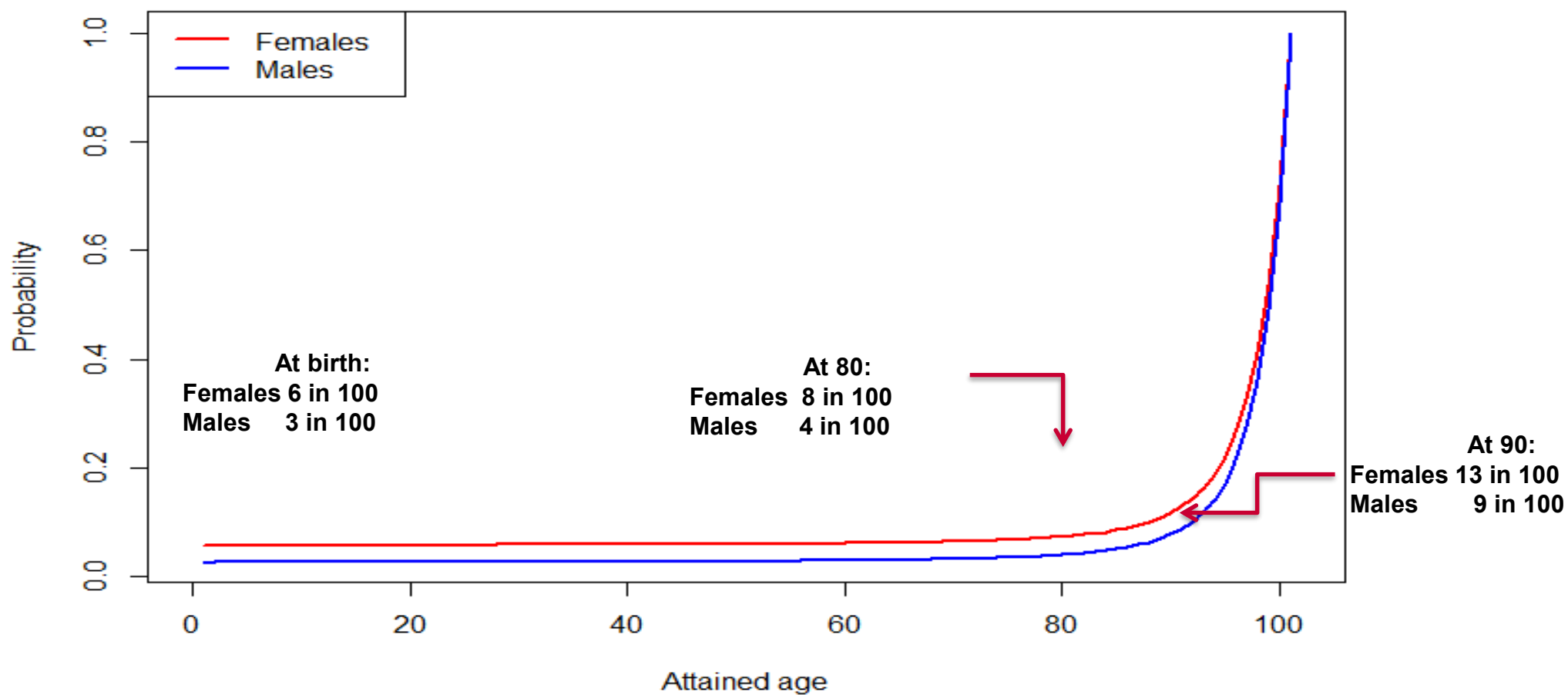
What are our chances?

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



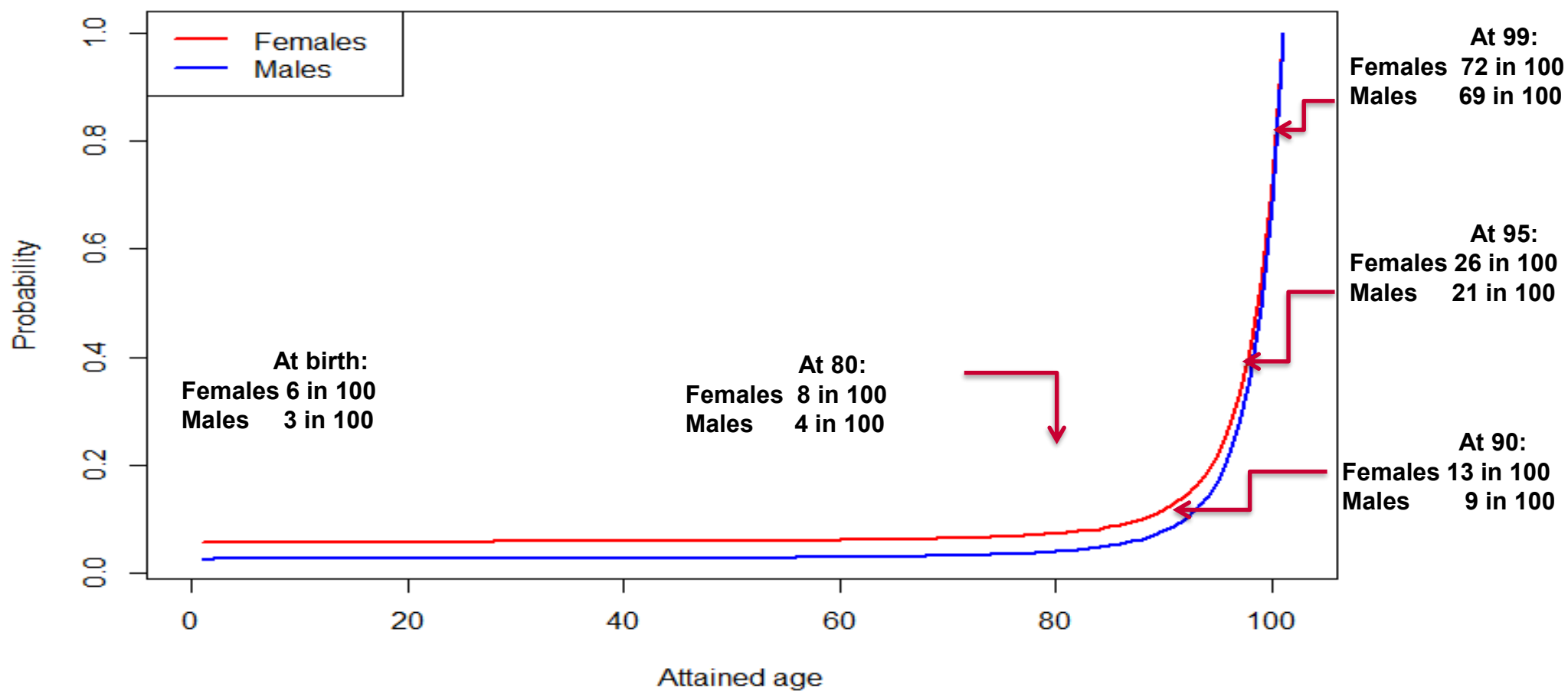
What are our chances?

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



What are our chances?

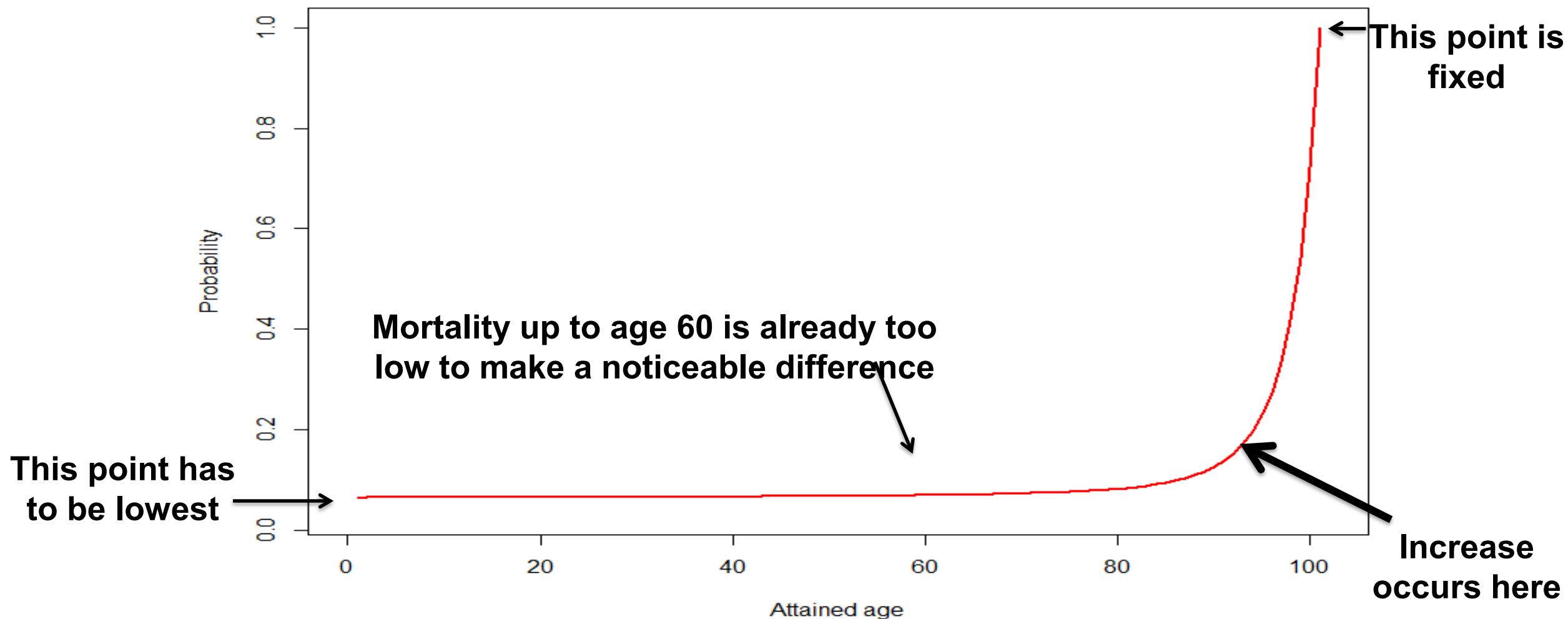
Probability of living to 100 from attained age: cohort born in 1950



What are our chances?

Survival to 100 now depends on oldest ages

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





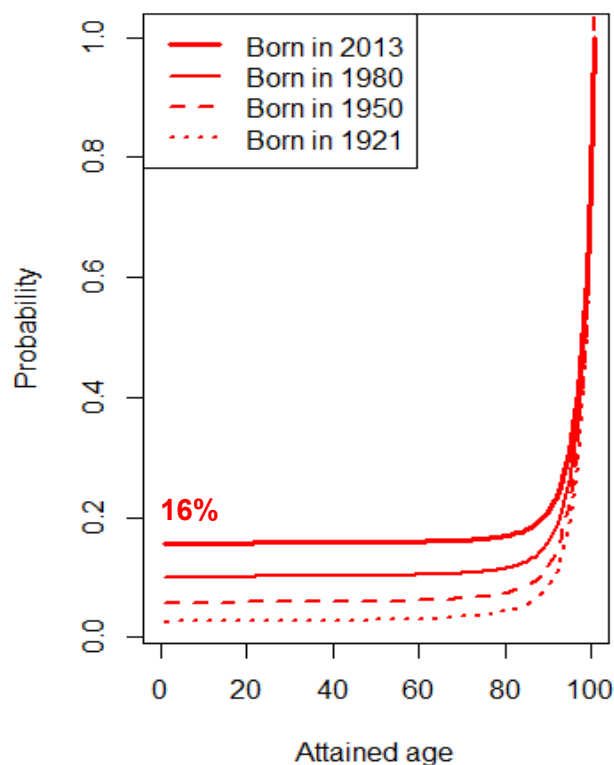
The prospect of the century advances

Cohort survival to 100

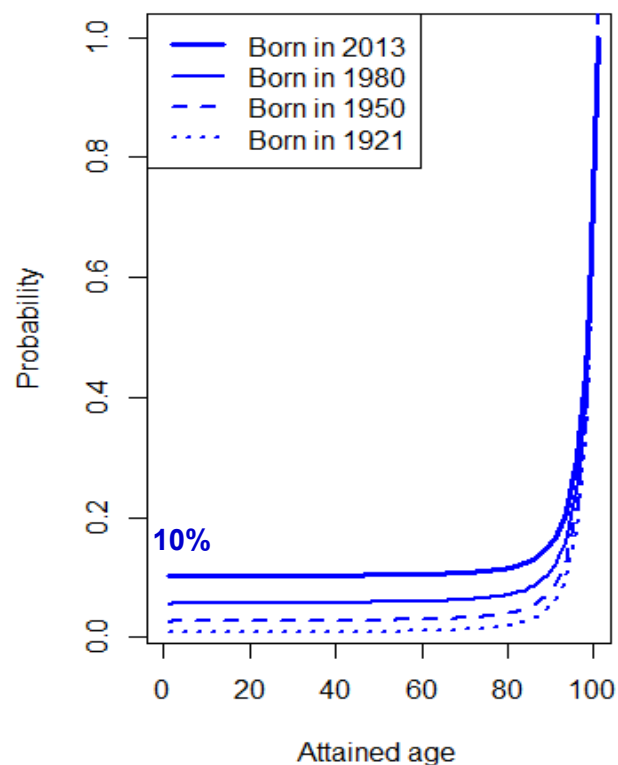
Females born in 2013 have 16% probability

Males born in 2013 have 10% probability

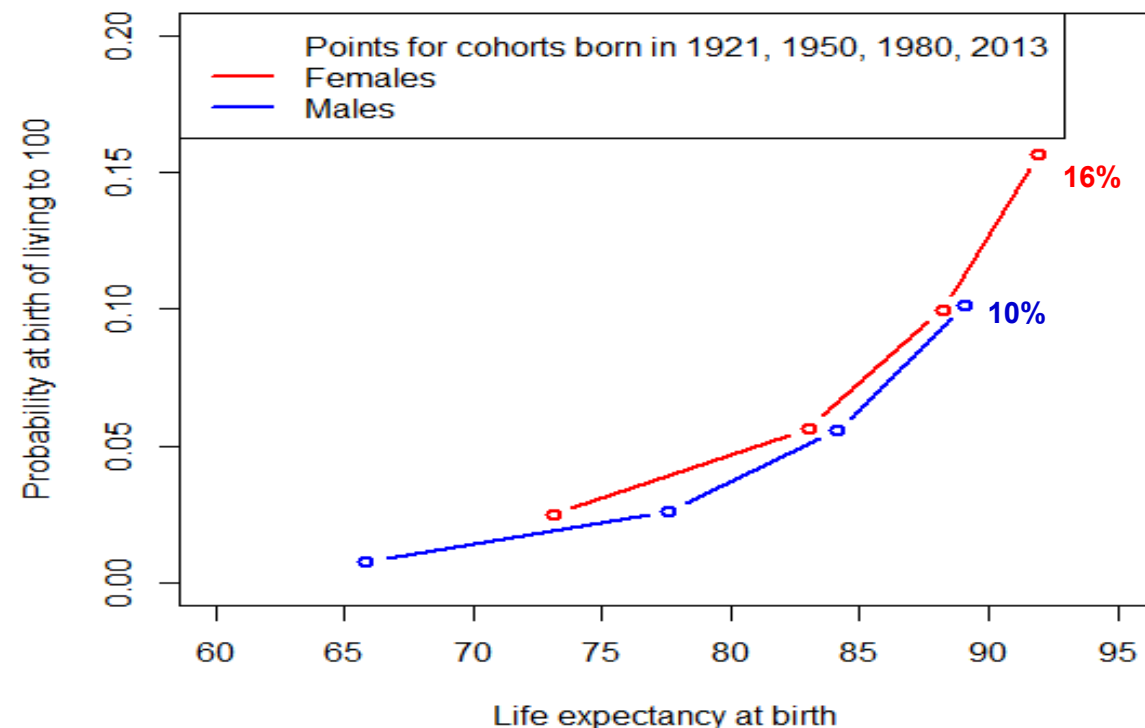
Female cohorts



Male cohorts



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





IMPLICATIONS OF INCREASING LONGEVITY

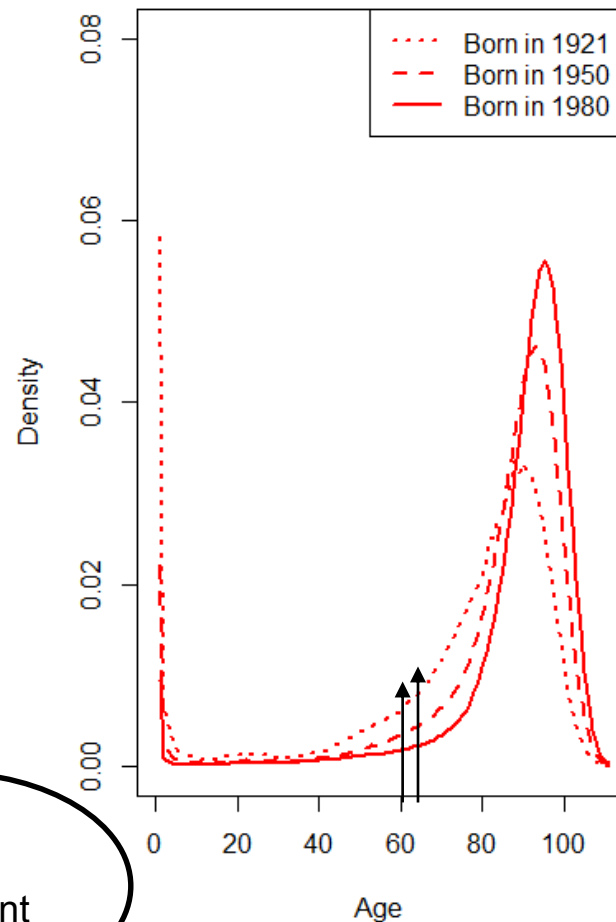


IMPLICATIONS

A LONG RETIREMENT

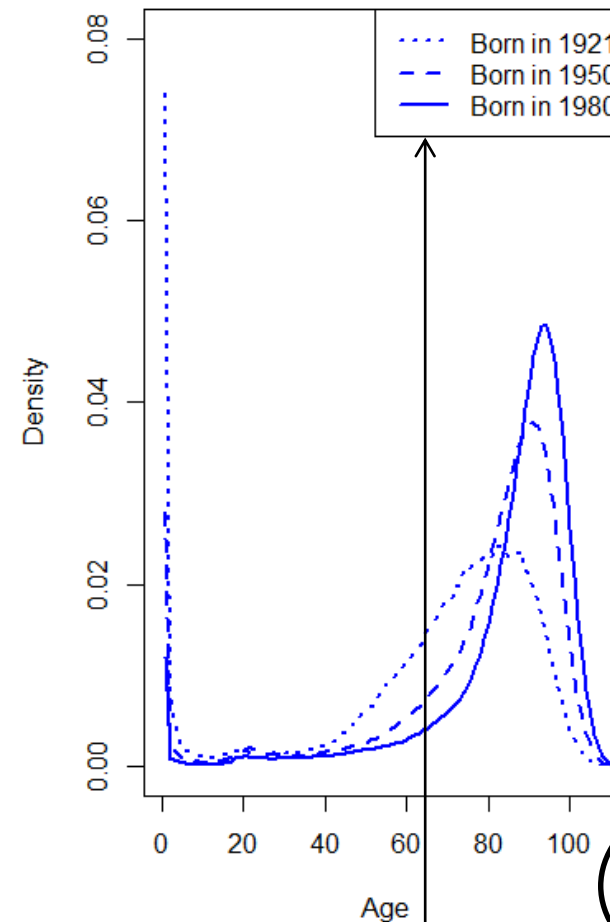
More people spend longer in retirement

Female age at death distribution



Age at
retirement

Male age at death distribution

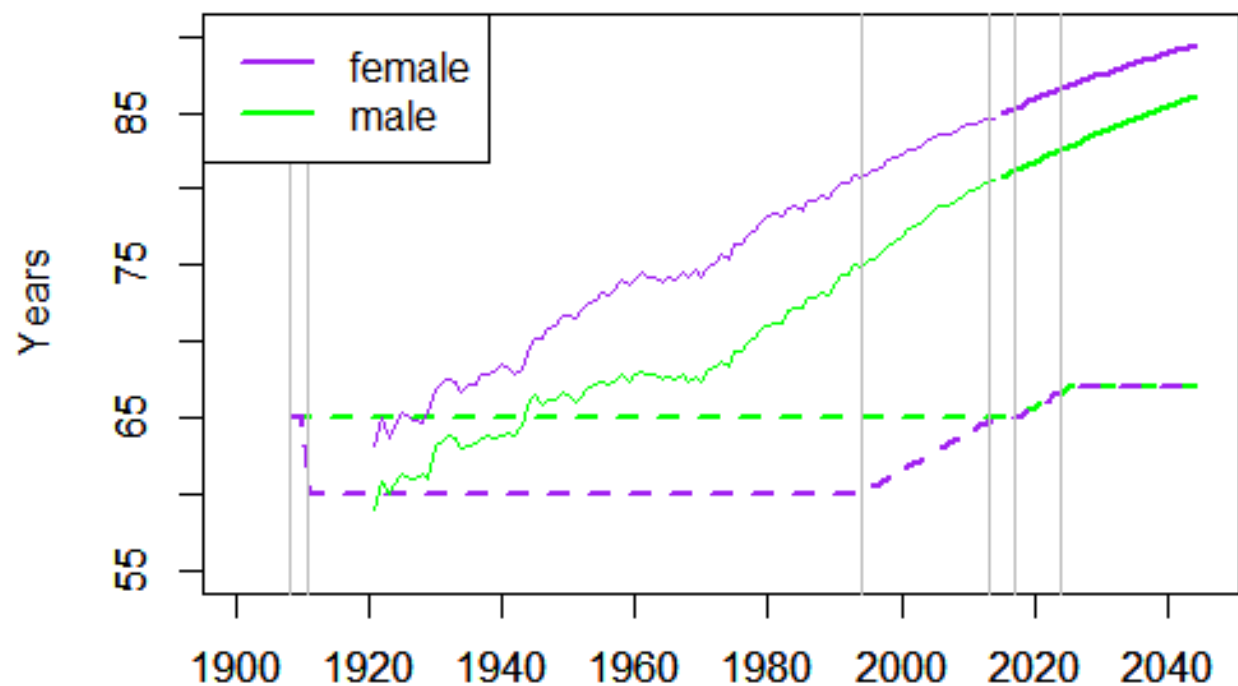


Most
people live
20+ years in
retirement

Age at
retirement

Pension age in Australia

Life expectancy and pension age

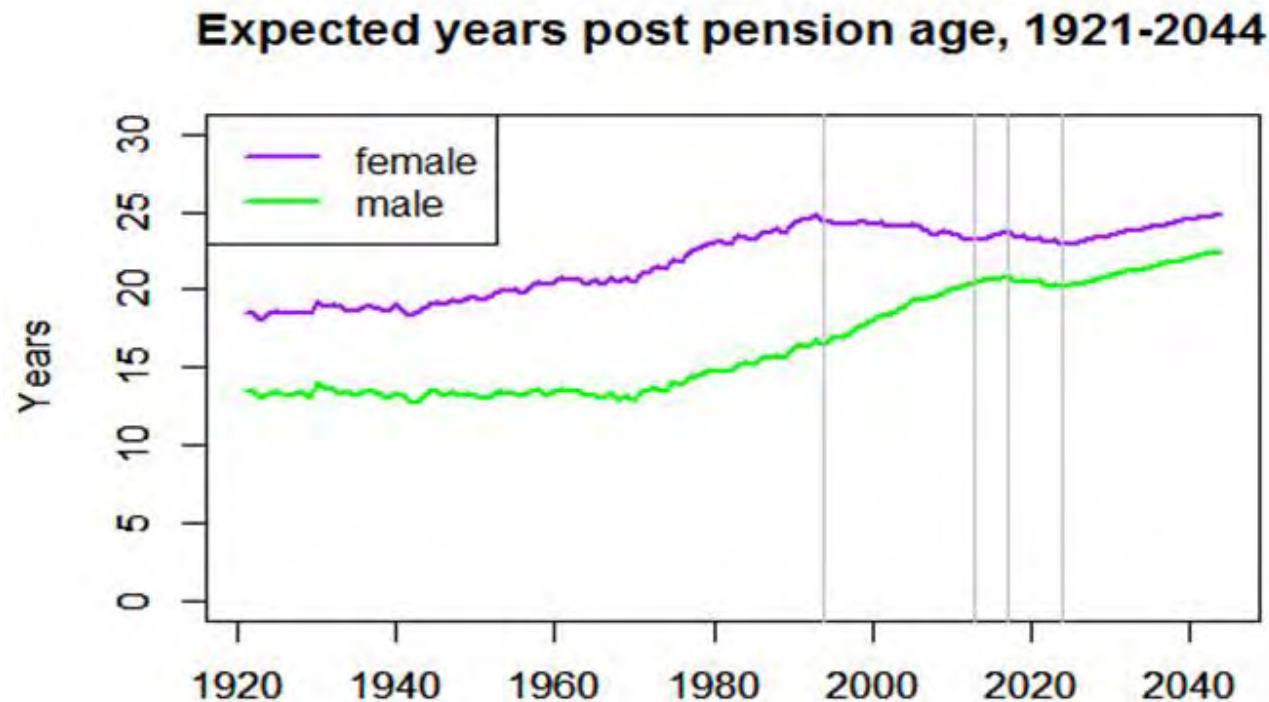


1908 1911
65 60

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

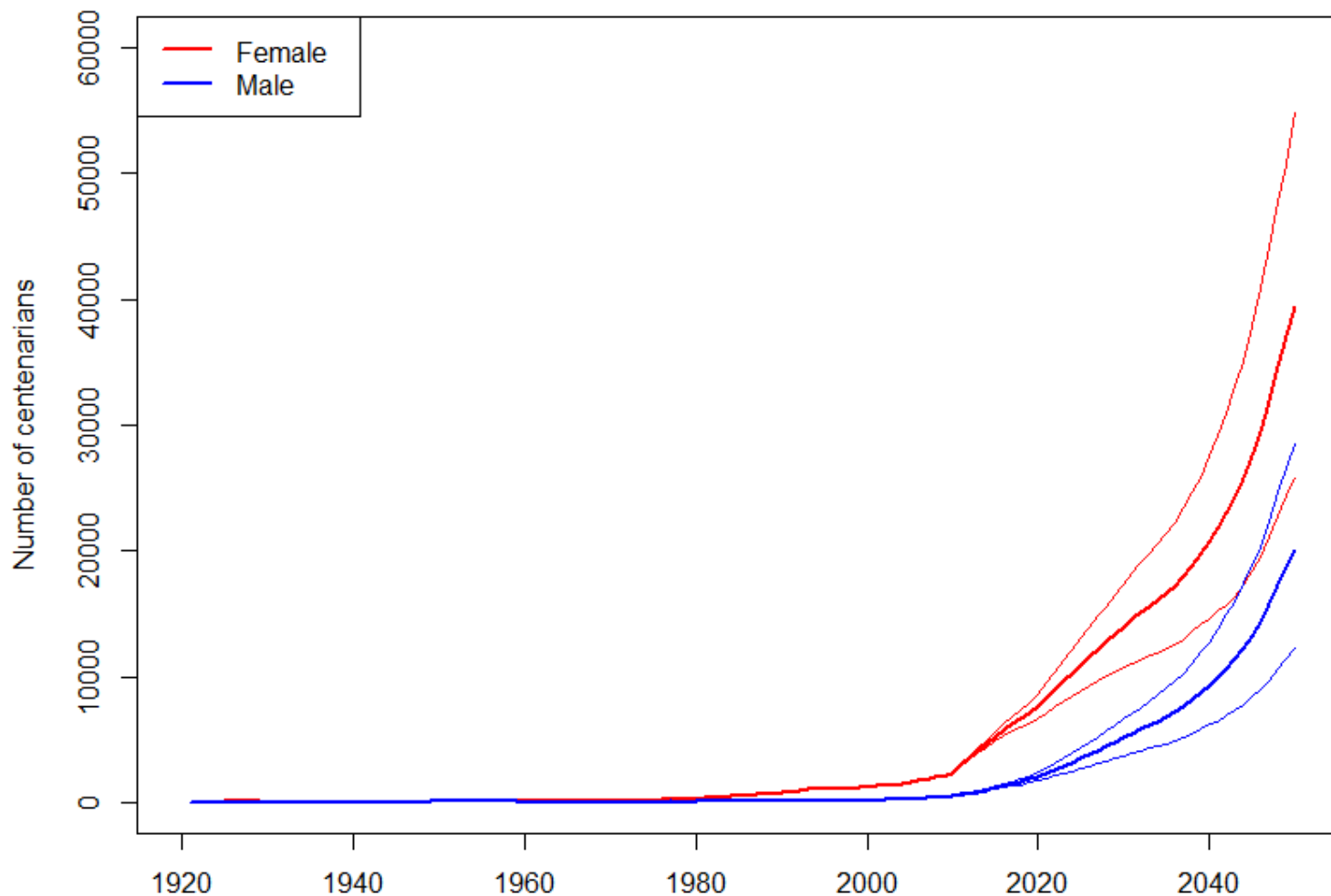
Forecast number of centenarians (with 80% probability limits)

By 2014:

2890

610

3500

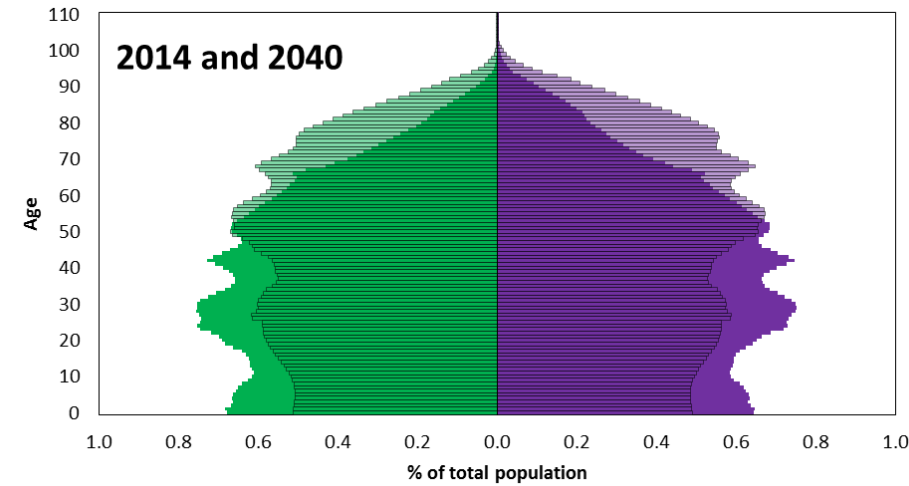


By 2050:

39400 66%

20000 34%

59400



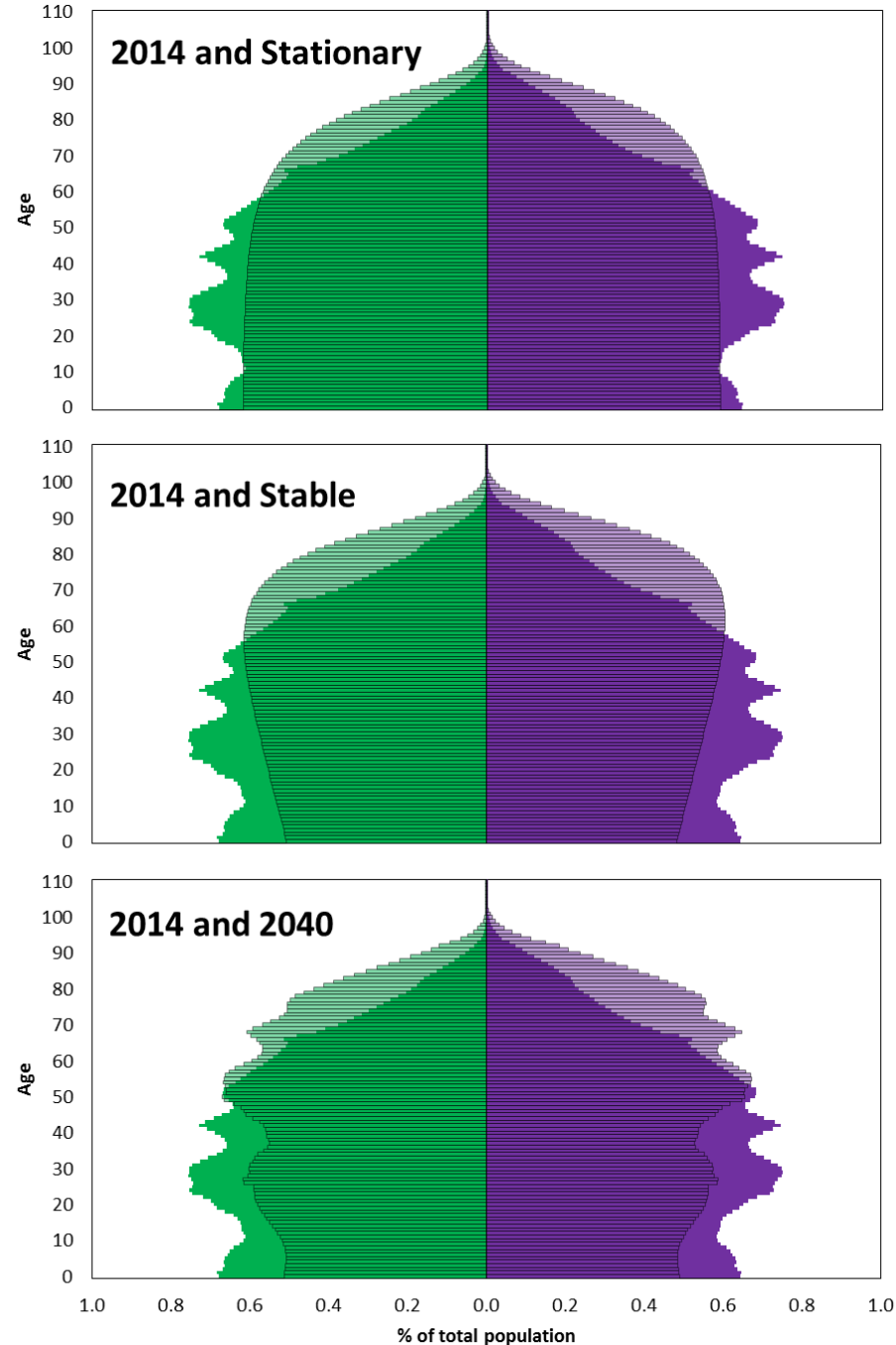
IMPLICATIONS

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**

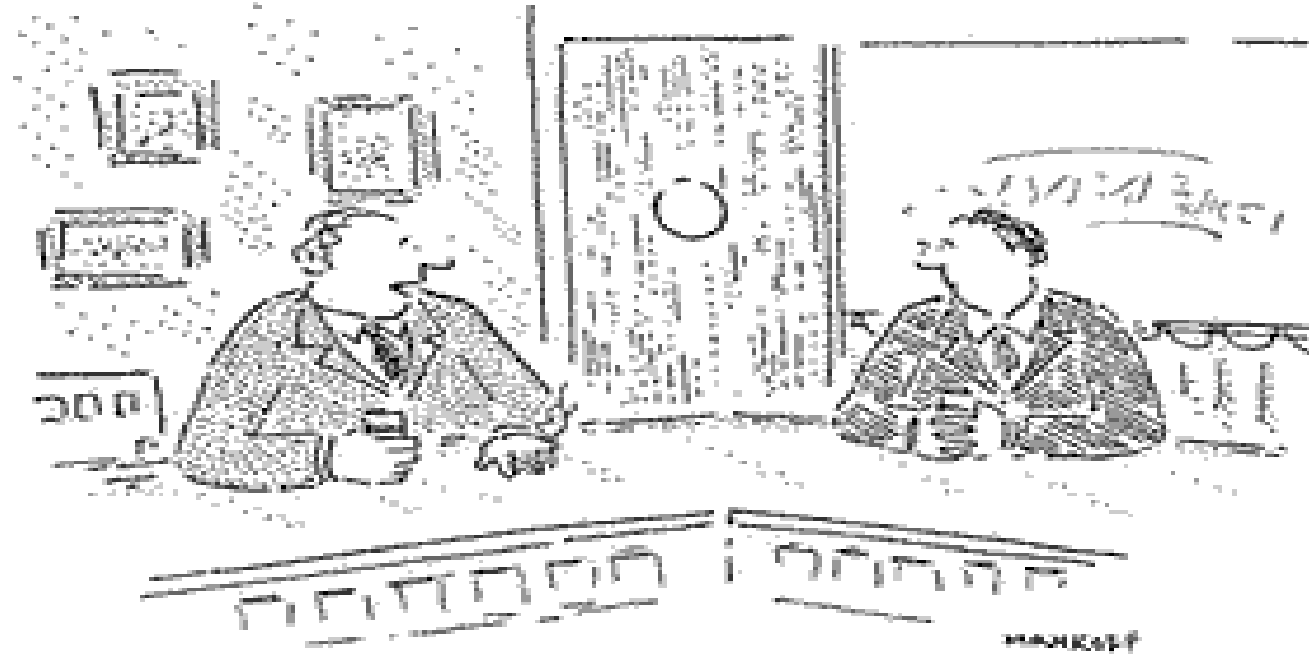


IMPLICATIONS

A NEED TO CHANGE ATTITUDES

Negative attitudes to living longer

“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....

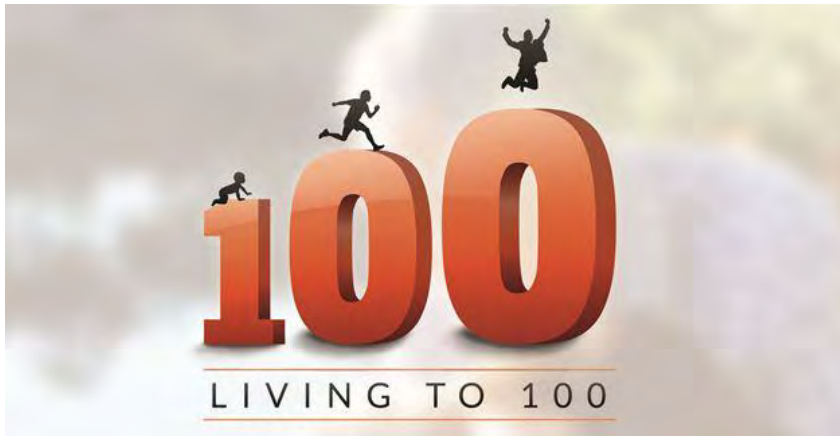


Our ideas of old age are out-dated

- 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!