The health and wealth of nations

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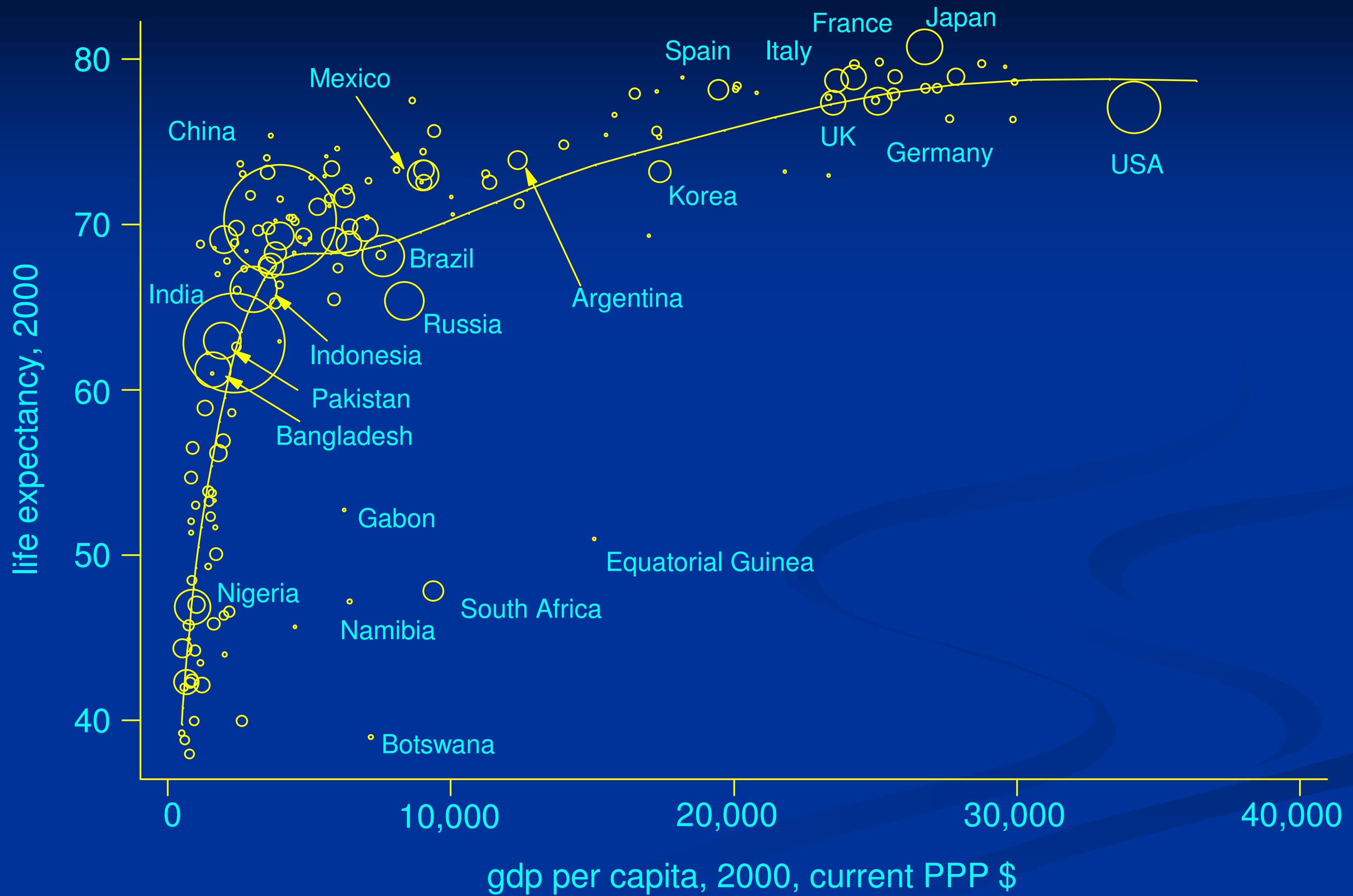
Health and wealth

- Populations of richer nations are healthier than populations of poorer nations
- Within countries, richer people are healthier than poorer people
- Historically, as people became richer they also became healthier
- Questions:
  - Why is there such a strong relationship in different settings?
  - Why should we care about it?


The Millennium Preston Curve
life expectancy, 2000
80
70
60
50
40
0
10,000
20,000
30,000
40,000
gdp per capita, 2000, current PPP $
China
Mexico
India
Brazil
Russia
Indonesia
Pakistan
Bangladesh
Argentina
Spain
Italy
France
Japan
UK
Germany
USA
Korea
Gabon
Equatorial Guinea
Nigeria
Namibia
South Africa
Botswana

Why do we care about this?

- Global inequality is larger in the space of income and health together than in the space of incomes alone
- Poor of the world are not only poorer than the rich, but they are also sicker, and lead shorter lives
- Reinforces the obligation to do something
- More questionably: income is a powerful determinant of health in poor countries, and much weaker determinant in rich countries
  - Income versus technology
  - Preston thought that about 85 percent of health improvement was movements *of* the curve (technique), not movements *along* the curve (income)

Why do poor people die so young?

- Most of the deaths are from diseases that we know how to cure or prevent
  - Exception of HIV/AIDS, but less so all the time
- So it is not new science we need, but better methods of delivering existing knowledge
- What prevents this?
  - Low incomes, perhaps
  - Poor organization, governance more plausible

Death and poverty around the world

Number of deaths per year (millions)	Treatments/ prevention	World	Low income	High income
Respiratory infections	Antibiotics	3.96	2.90	0.34
HIV/AIDS	HAART	2.78	2.14	0.02
Perinatal deaths	Pre & post natal care	2.46	1.83	0.03
Diarrheal disease	Oral rehydration	1.80	1.50	0.00
TB	Public health: DOTS	1.57	1.09	0.01
Malaria	Partially treatable	1.27	1.24	0.00
DPT/Measles/Polio	Vaccinations	1.12	1.07	0.00
Percent of deaths				
Ages 0 to 4		18.4	30.2	0.9
Ages 60 plus		50.8	34.2	75.7

From health to wealth?

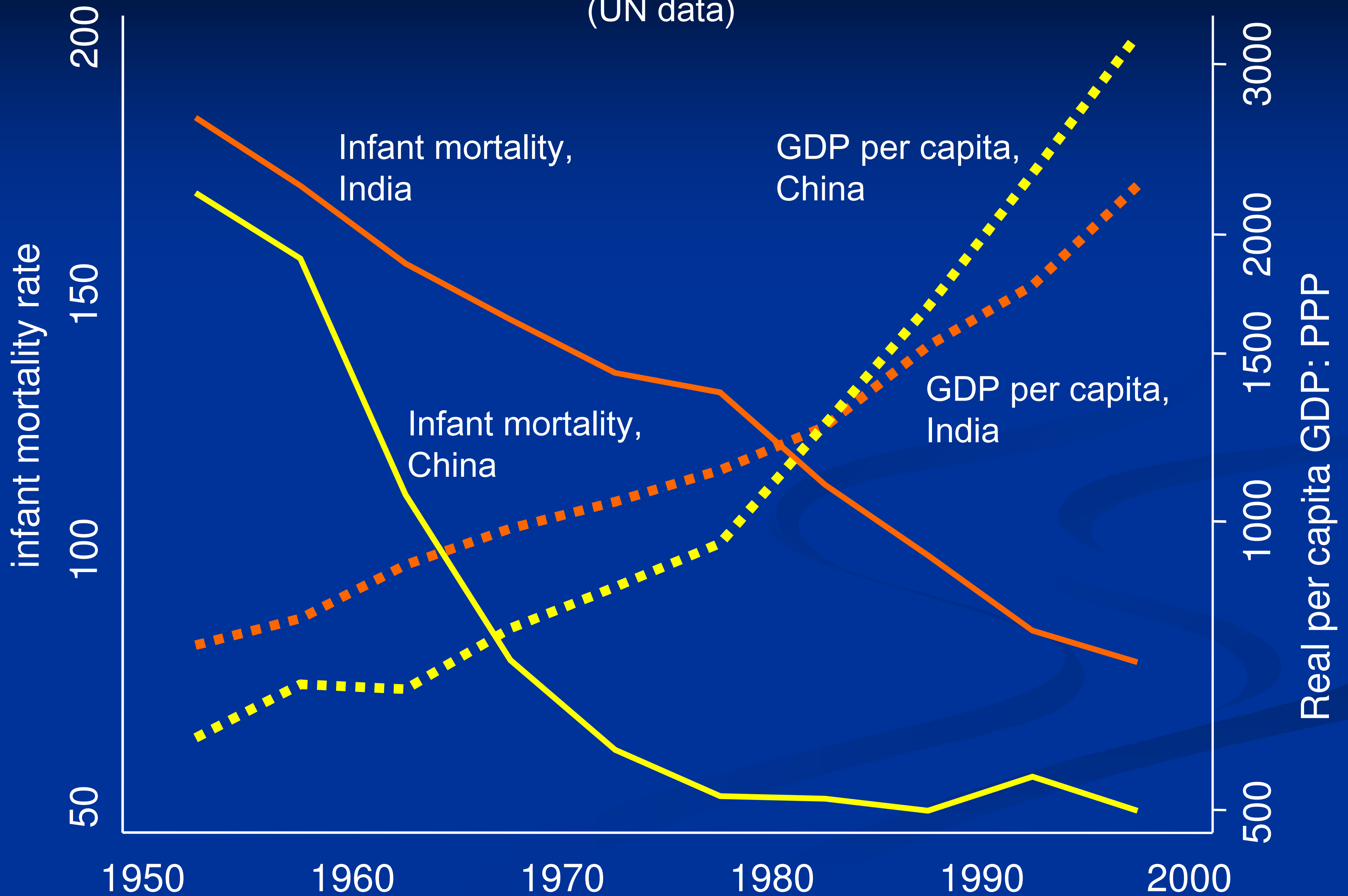
- Argument that poor health is a barrier to development, particularly in Africa
- Africa particularly subject to long-term morbidity
  - Is this why its growth performance is so poor?
- It is certainly true that healthier people are more productive
- Not true that healthier economies grow faster
  - Acemoglu and Johnston, rapid introduction of prophylaxis after WW2 *reduced* per capita growth: more children, no more GDP in the short run
  - In this sense, the population explosion was indeed bad for growth

From wealth to health?

- The "wealthier is healthier" hypothesis
  - If we get growth right, health will look after itself
- This is more likely to be correct
  - Correlations between growth in GDP per capita and declines in IMR, CMR, and increases in life expectancy
  - But does this imply that it is growth driving health improvements?

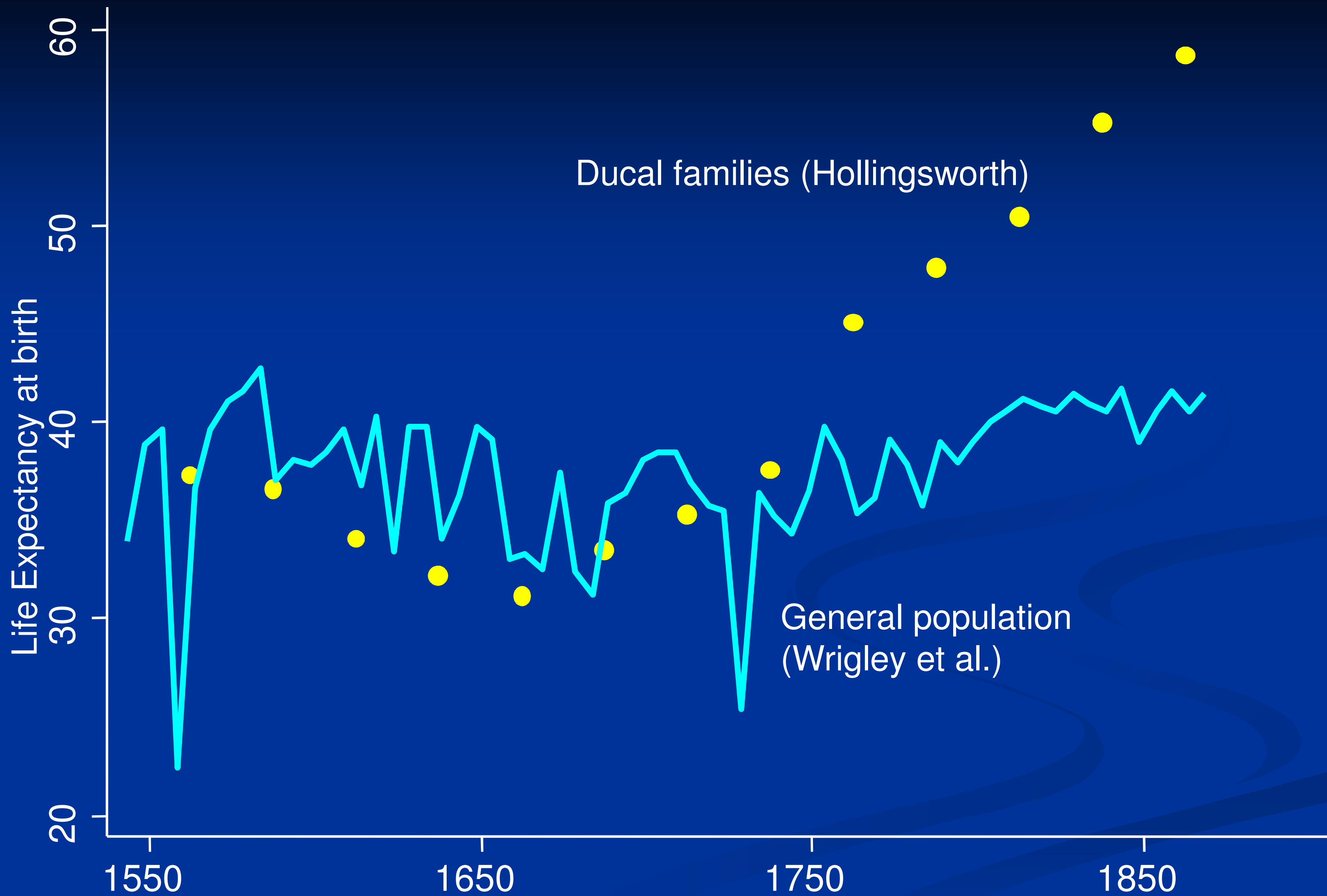
What do the data show?

- Countries that grow more rapidly have higher *proportionate* rates of decline in infant mortality
- But they do not have higher rates of decline in infant mortality
- This happens because the *level* of infant mortality is negatively correlated with the *rate of growth* of GDP
- Countries that grow faster are those who are good at delivering good health (not *improving* health)
- The most plausible account here is that it is common institutional factors (governance) that determine both health and economic growth
- Supported by experience of both India and China


Income and infant mortality, India and China
(UN data)
infant mortality rate
200
150
100
50
Real per capita GDP: PPP
3000
2000
1500
1000
500
1950
1960
1970
1980
1990
2000
Infant mortality, India
GDP per capita, China
Infant mortality, China
GDP per capita, India

What about the now rich countries?

- Fogel and others have argued that growth in England came through a symbiotic process of better health and higher incomes driven by an increase in per capita calorie consumption
- Better nutrition a key factor in enabling growth
- But note that *net* nutrition is not just calories, but is net of the costs of disease
  - And disease may have been more important than more food
- Useful to look at aristocrats versus population
  - Aristocrats were well-fed but less differentially protected against disease



(After Harris, *Soc Hist Med*, 2004.)

What happened?

- We don't know for sure
  - inoculation (variolation) for smallpox (originally very expensive)
  - improved obstetrics
  - nascent public health, scientific and intellectual experimentation in the wake of the Enlightenment
- General improvement in public health, housing, water, sanitation for the rich and deterioration for most of the population
  - Ducal families moved to the countryside after 1650
  - Poor families moved to the cities in the early industrial revolution
  - General improvement from 1750, swamped by urbanization
- The beginnings of modern economic growth
  - Mutually reinforcing economic growth and better nutrition?
  - Advances in knowledge that drove both growth and health

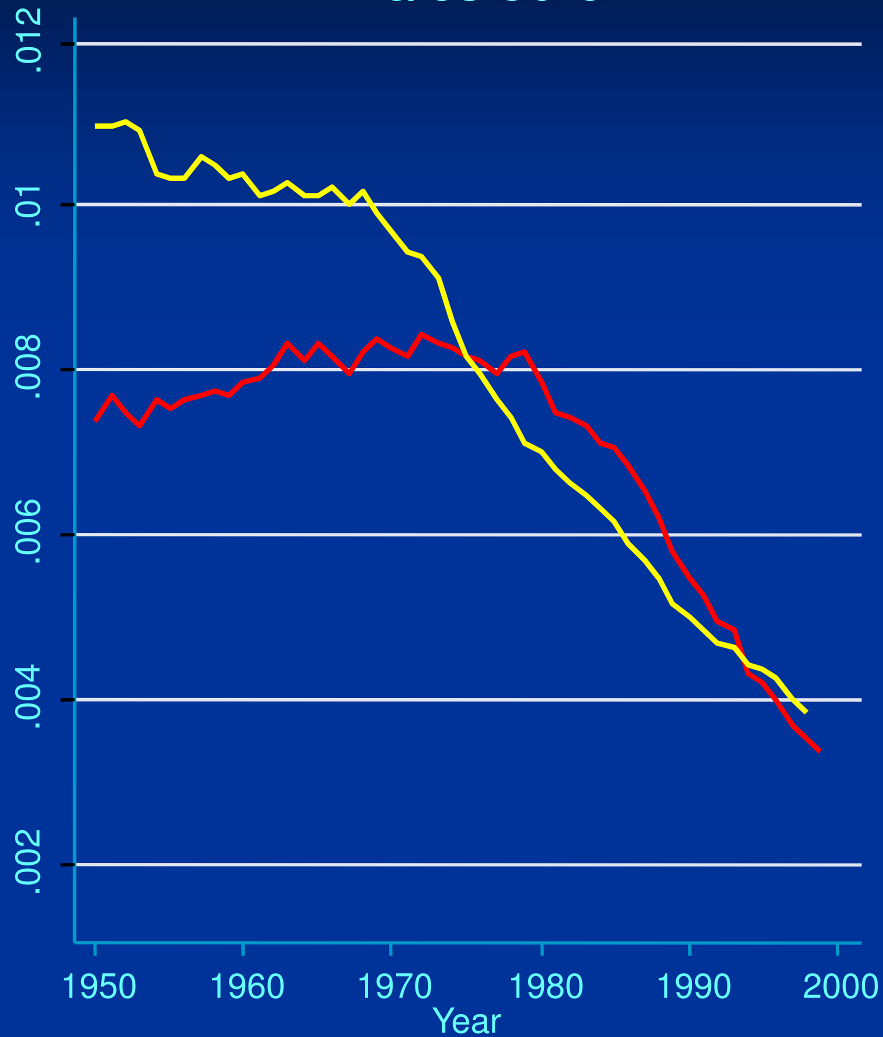
Unequal progress

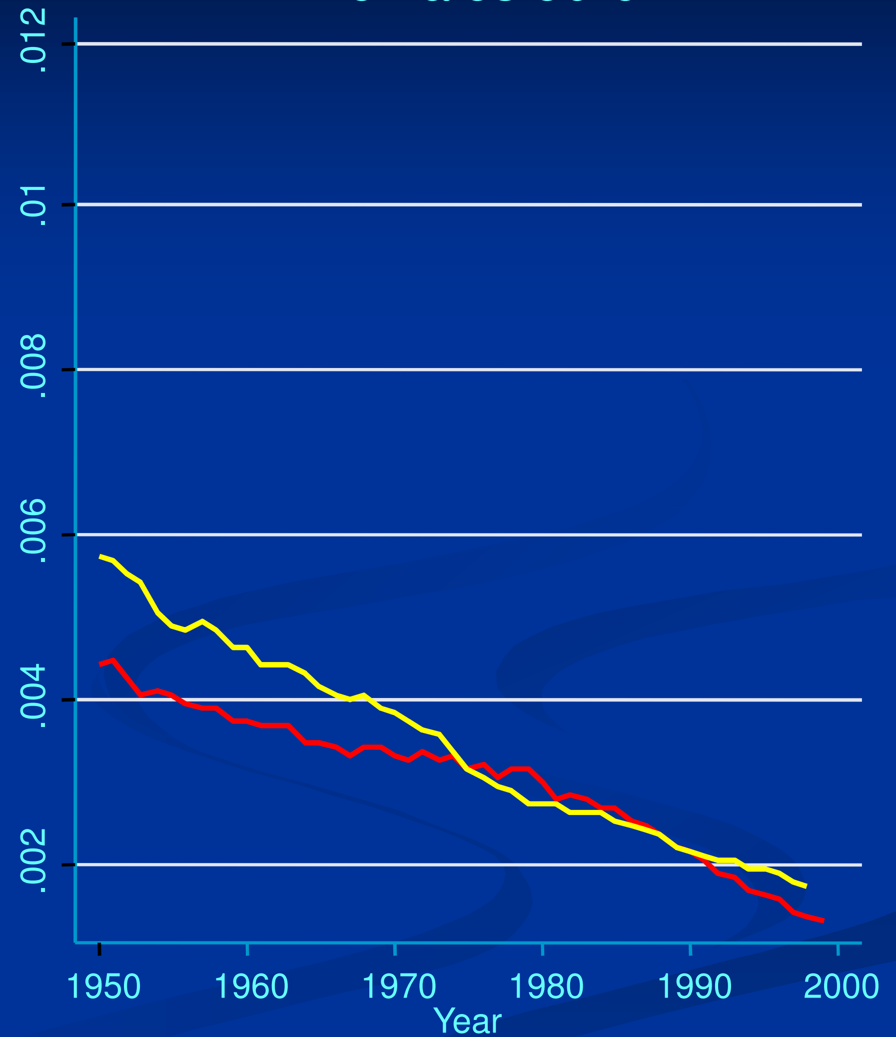
- 18th century health inequalities began as mortality began to fall
  - Nutrition doesn't seem very plausible given earlier patterns
- Infant and child mortality gaps grew in response to the "gospel of germs" after 1900, Preston and Haines, 1991
  - In 1900 US, even the children of physicians had little survival advantage
- Smoking in the second half of the 20th century
  - Differentials by education
- The growth of health inequality as a symptom of improvements in knowledge and technology
  - Importance of treatment for heart disease today
  - Which is generally a good thing, even if we would prefer a more equal distribution of the benefits
- Most children in poor countries die from things whose treatment is long known
  - The world's largest health inequalities are a legacy of the germ theory of disease

A general argument

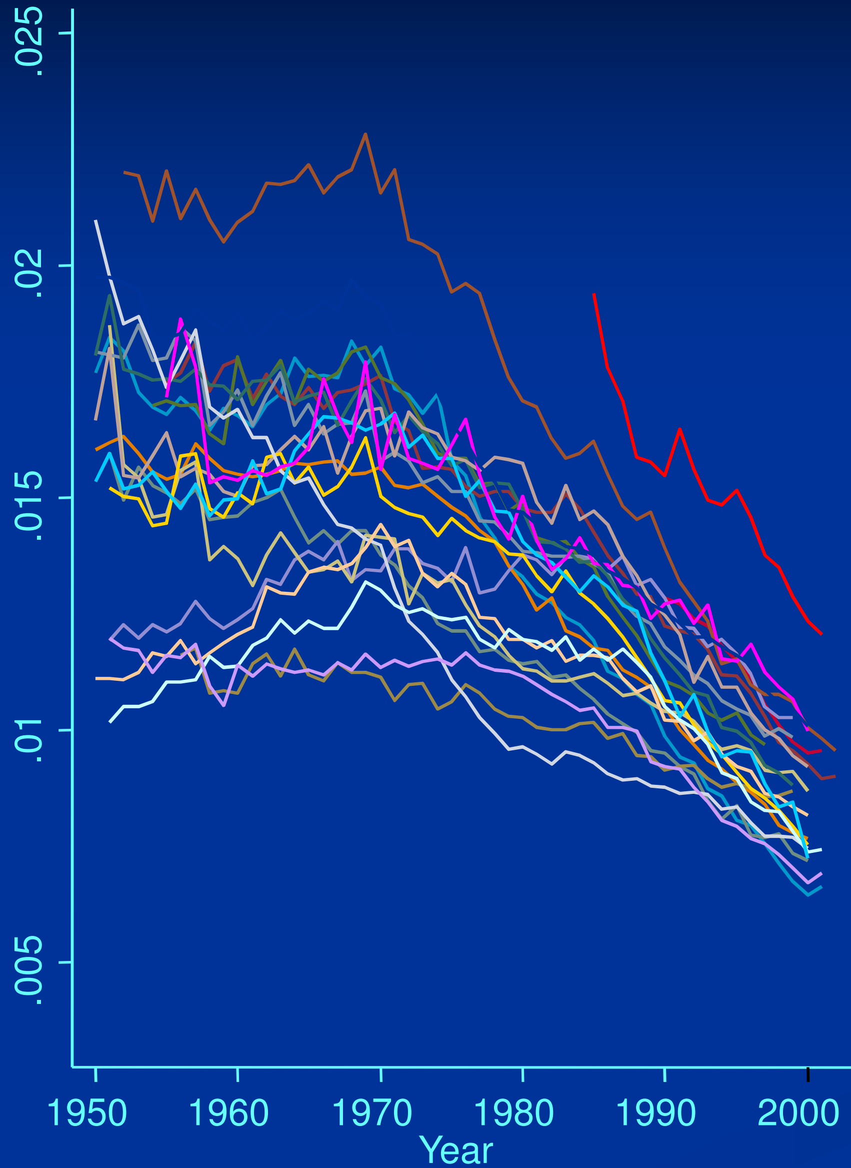
- Ideas and new knowledge are the ultimate drivers of improvement in health and wealth
- Healthcare and the organization of health delivery is perhaps the most important “social” determinant of health
  - Which interacts with education and income
- Social processes of knowledge diffusion and of behavior are also very important
  - Education and income also important here
- Income, or material deprivation, in itself, only sometimes important in explaining health inequalities within countries, historically, or between countries
- What about mortality in rich countries today?

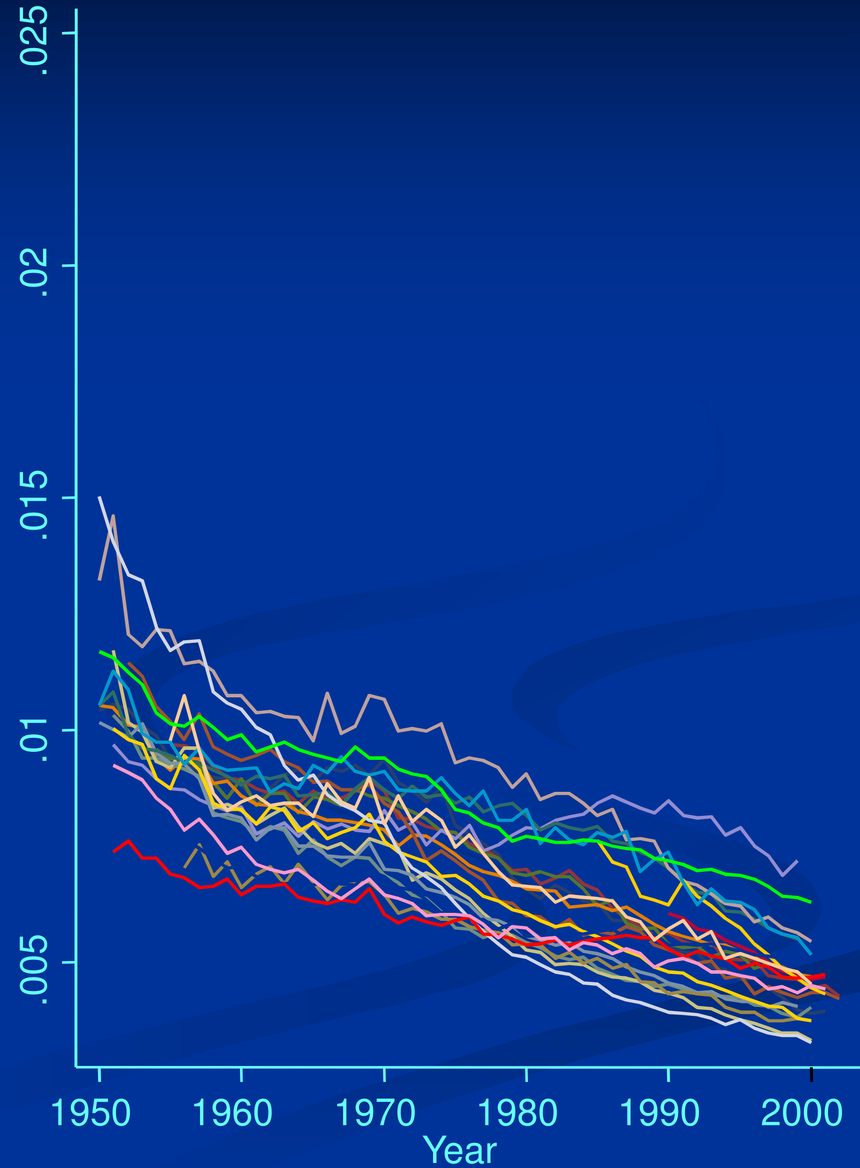
US and UK CVD mortality rates



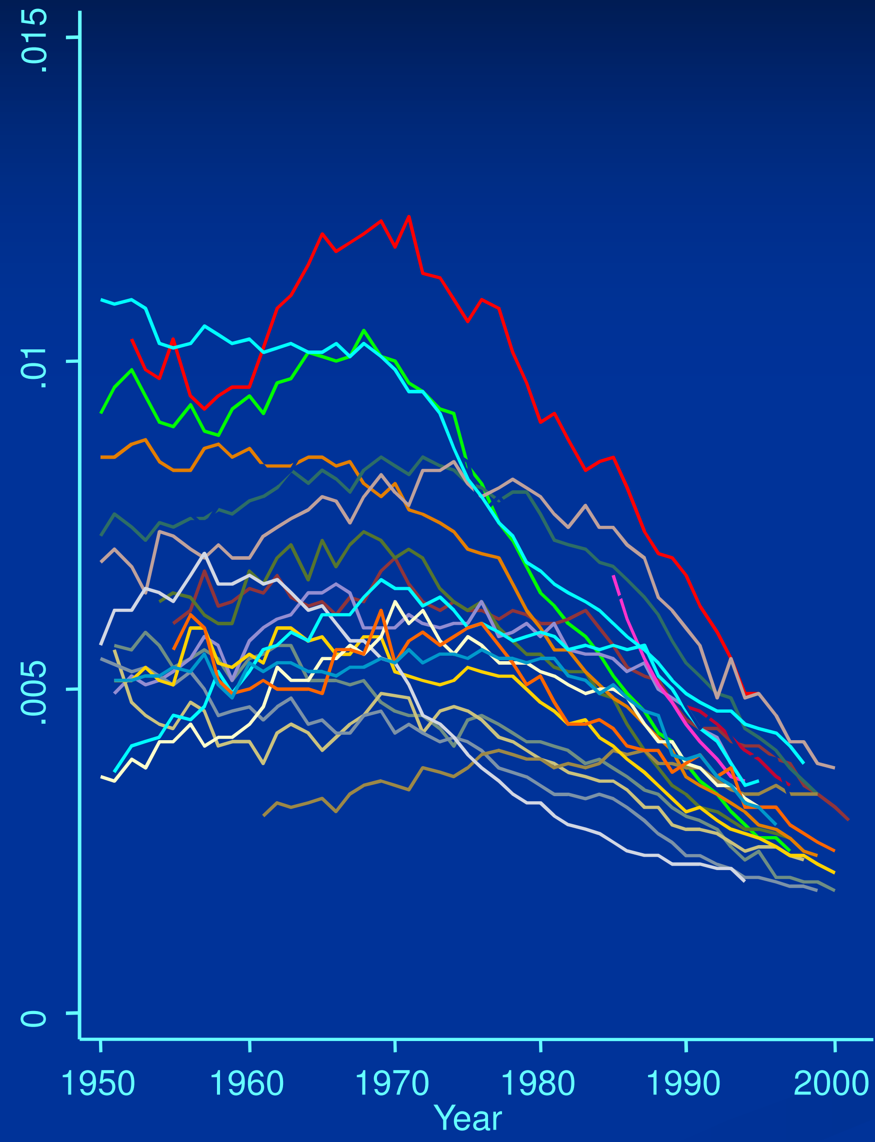


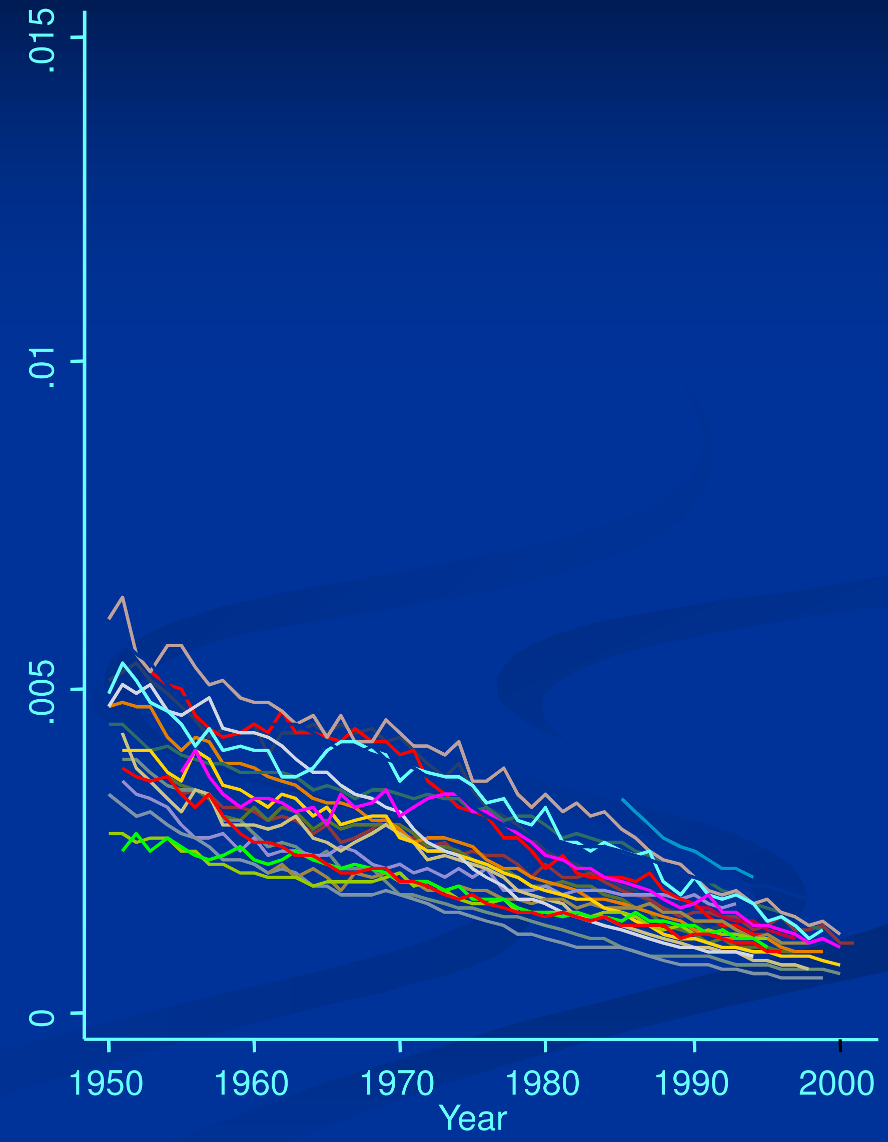
OECD all-cause mortality rates



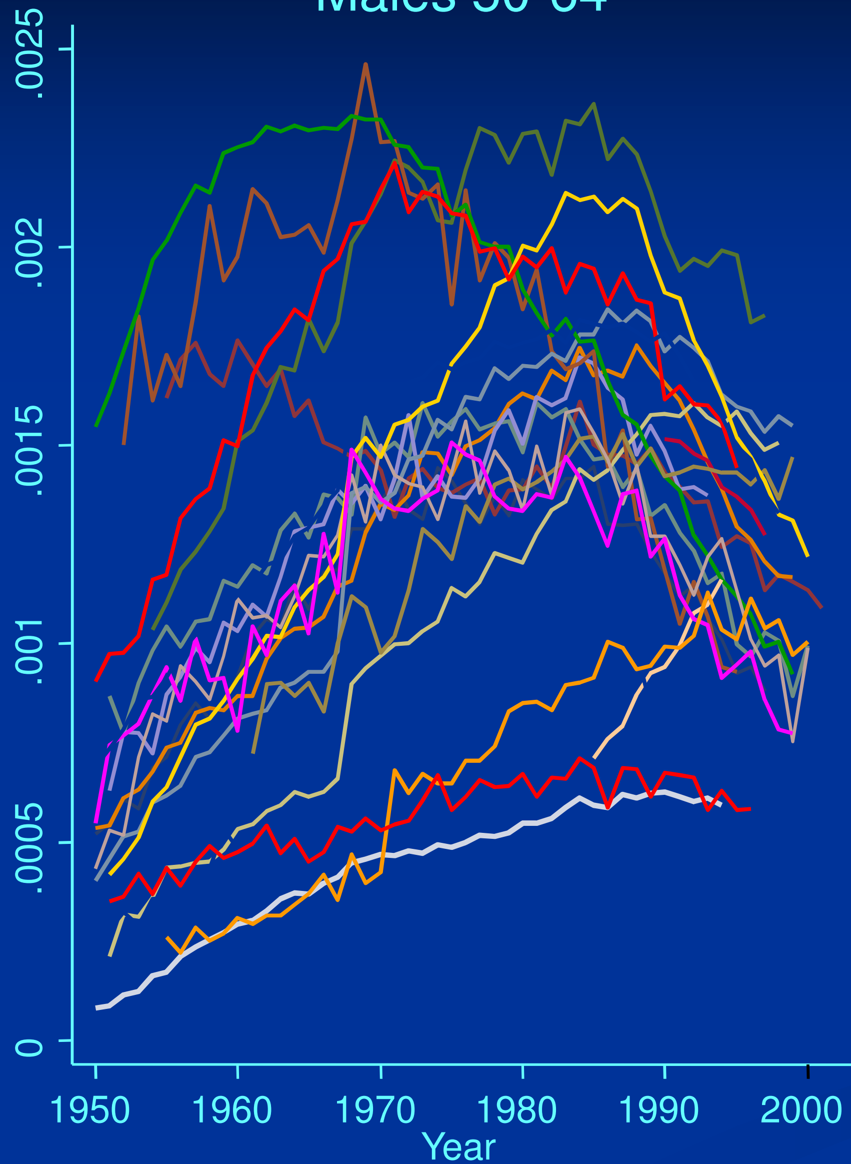


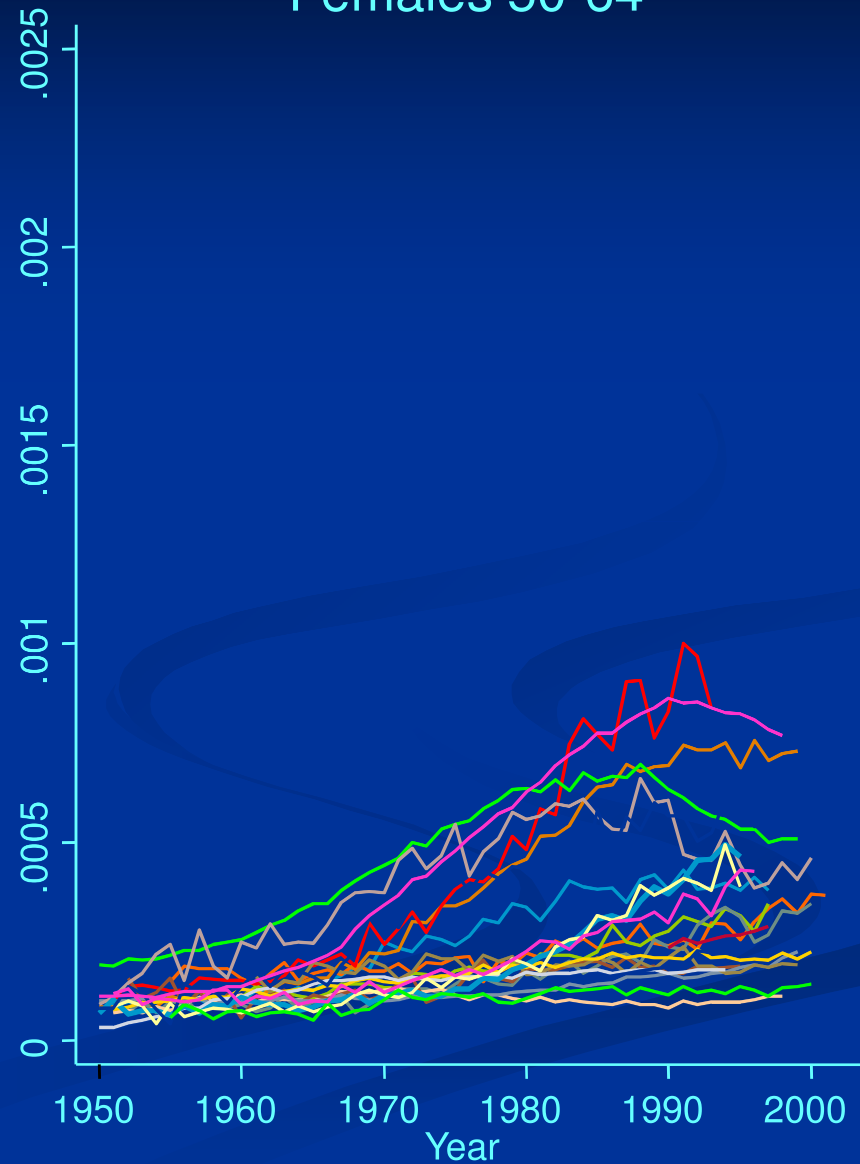
OECD CVD mortality rates





OECD lung-cancer mortality rates





Mortality declines in rich countries now

- Technical improvements in medical knowledge, particularly treatment for heart disease
- Reductions in smoking
  - Heart disease (immediately)
  - Lung cancer (with long lags)
  - Differentially by men and women
- Perhaps background improvements in nutrition
  - Hard to be sure
  - Reductions in infectious diseases in the 1950s
- Not directly related to economic growth

Mortality declines again

- Ideas and new knowledge are the ultimate drivers of improvement in health and wealth
- Healthcare and the organization of health delivery is perhaps the most important “social” determinant of health
  - Which interacts with education and income
- Social processes of knowledge diffusion and of behavior are also very important
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Health and wealth within nations

- Relationship between health and wealth within countries depends on these factors too
- But also some direct effects of income, particularly in childood
- And effects of health on education and earnings over life course
  - In childhood: health to education
  - As working adults: disability
  - In retirement