

Social determinants of health

Helen Ward

October 2012

Learning outcomes

Students will be able to

- List the major social factors determining health outcomes and health inequalities
- Distinguish absolute and relative measures of disadvantage and understand their impact on health
- Describe the relative contribution of medicine to health
- Explain different mechanisms through which social factors affect health, with reference to specific examples

Social conditions in 19th century England

“Their houses are so built that the clammy air cannot escape. They are supplied bad, tattered or rotten clothing, adulterated and indigestible food. ...They are deprived of all enjoyments except that of sexual indulgence and drunkenness...”

Engels F, The condition of the working class in England, 1845

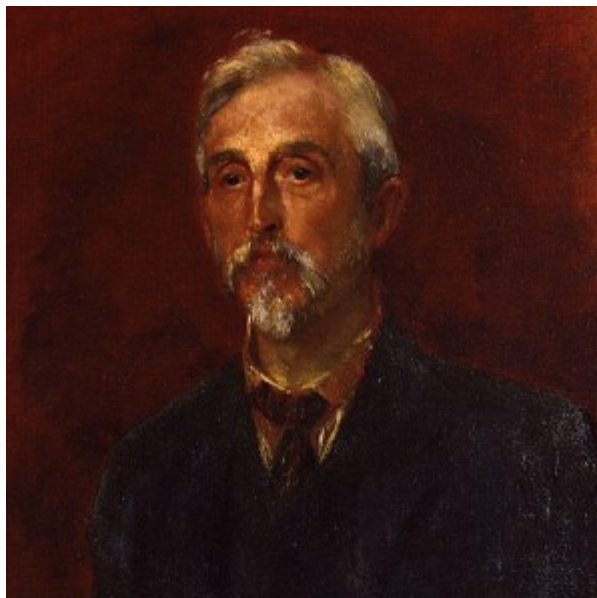


TWO CANS OF SOUP AND ONE LOAF OF BREAD FOR A FAMILY OF TEN.



© Hulton-Deutsch Collection/CORBIS

Charles Booth: poverty maps



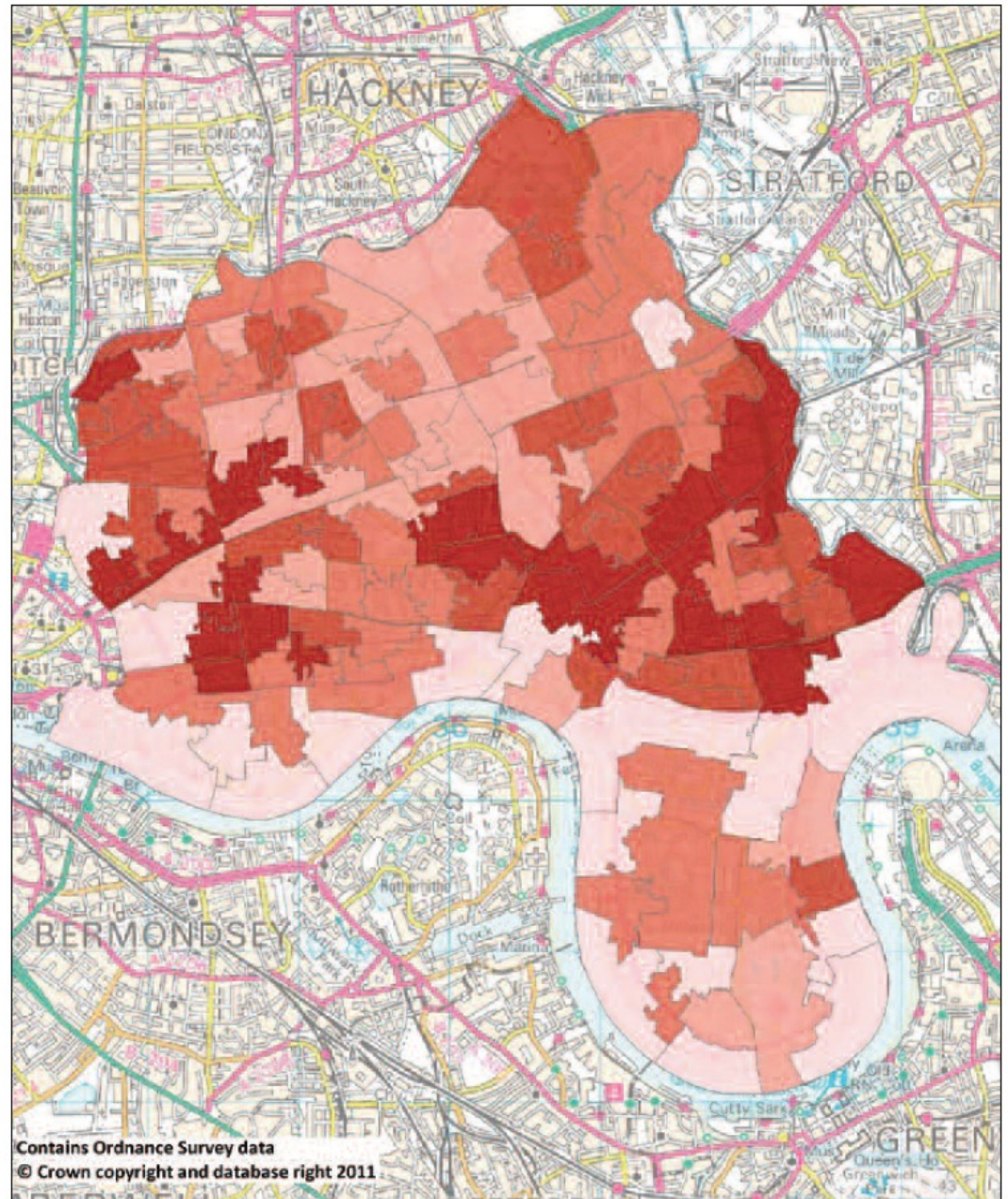
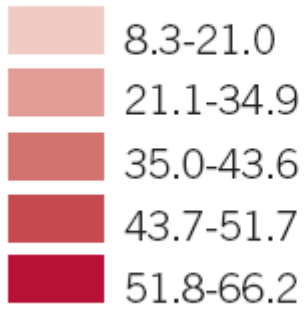
Classification of poverty

■	BLACK: Lowest class. Vicious, semi-criminal.
■	DARK BLUE: Very poor, casual. Chronic want.
■	LIGHT BLUE: Poor. 18s. to 21s. a week for a moderate
■	PURPLE: Mixed. Some comfortable others poor
■	PINK: Fairly comfortable. Good ordinary earnings.
■	PURPLE: Mixed. Some comfortable others poor
■	PINK: Fairly comfortable. Good ordinary earnings.



Modern day

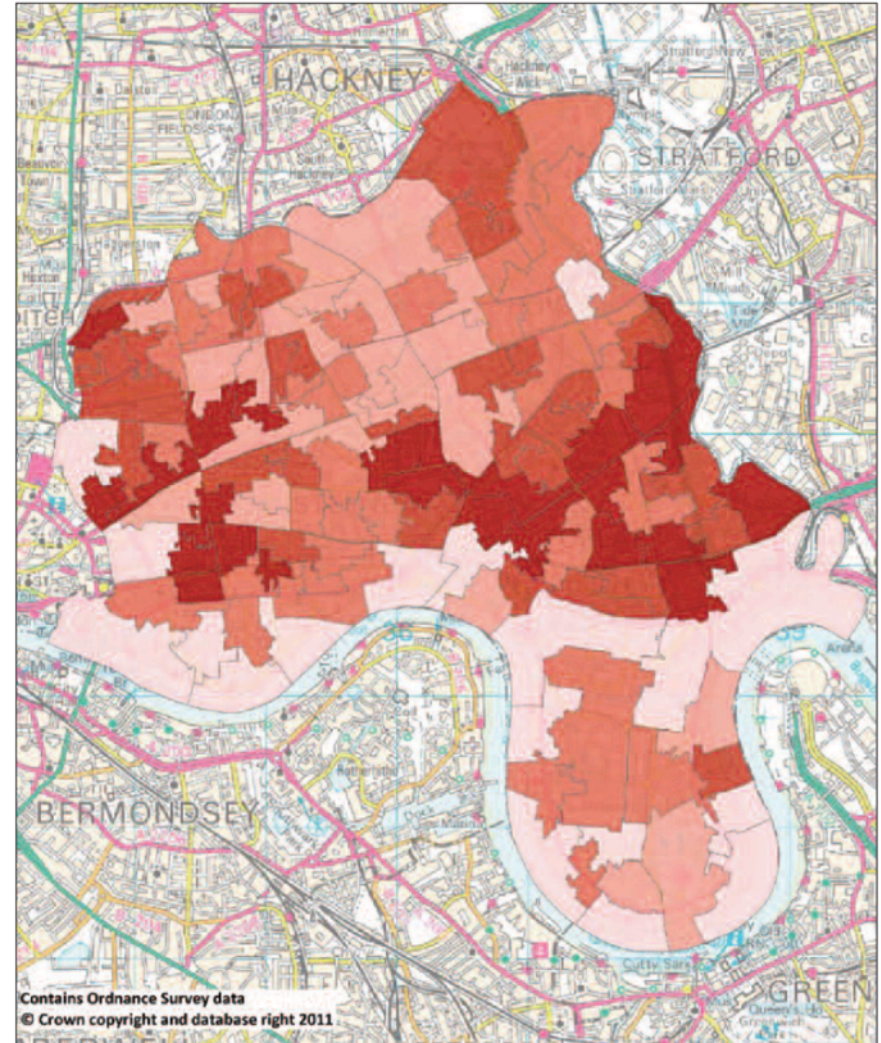
Index of Multiple Deprivation 2010



Comparing poverty in 1898 and 2010 in Tower Hamlets



Reproduced by permission of the Library of the London School of Economics and Political Science

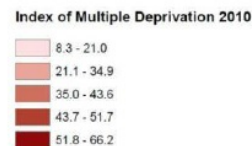
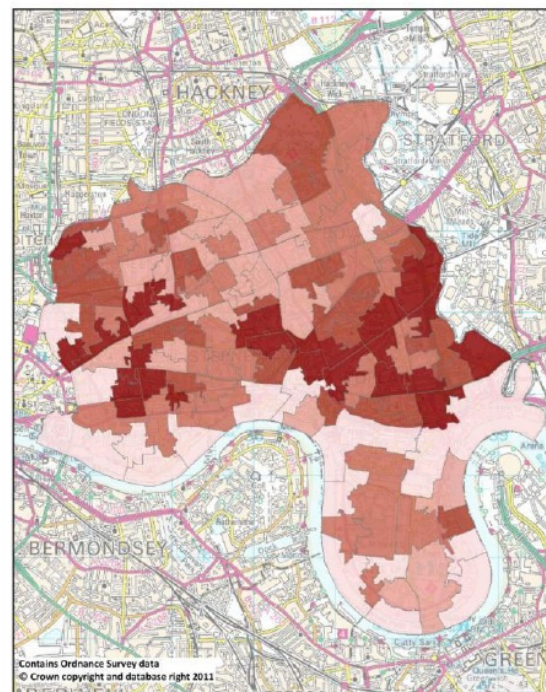
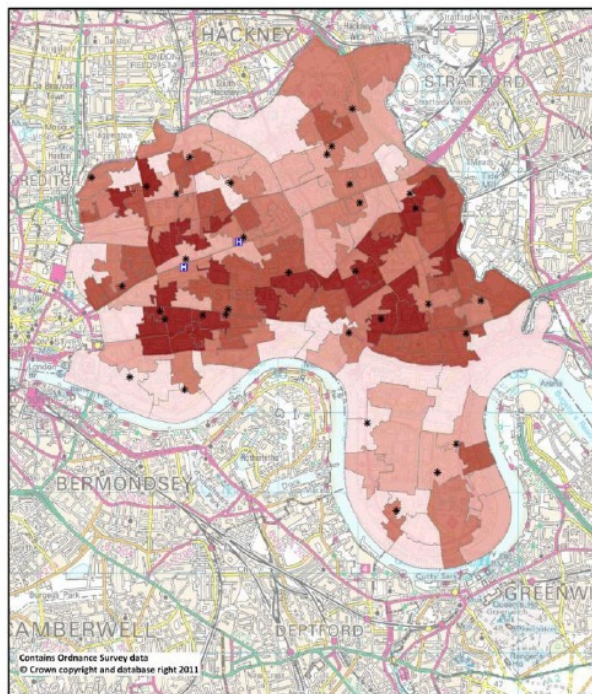


Contains Ordnance Survey data
© Crown copyright and database right 2011

Risk of type-2 diabetes and deprivation*

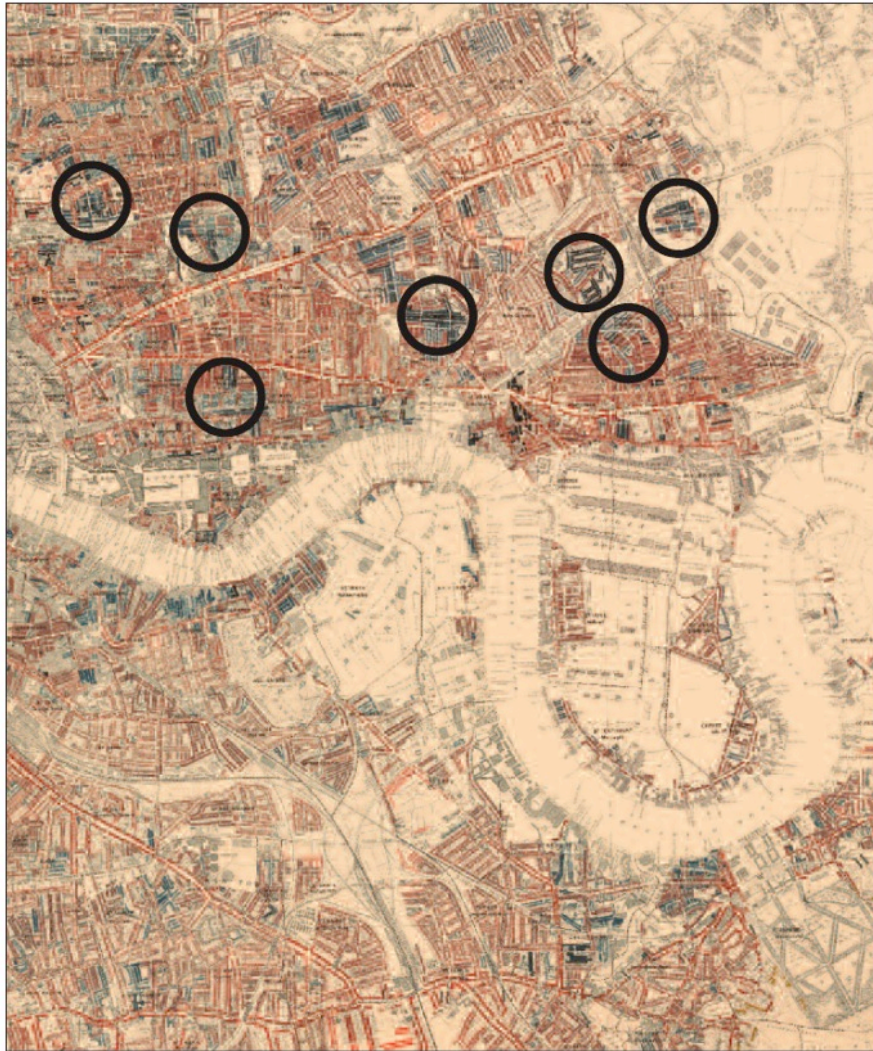
* CEG, Barts and London 2011

Percentage at high risk and Index of Multiple Deprivation

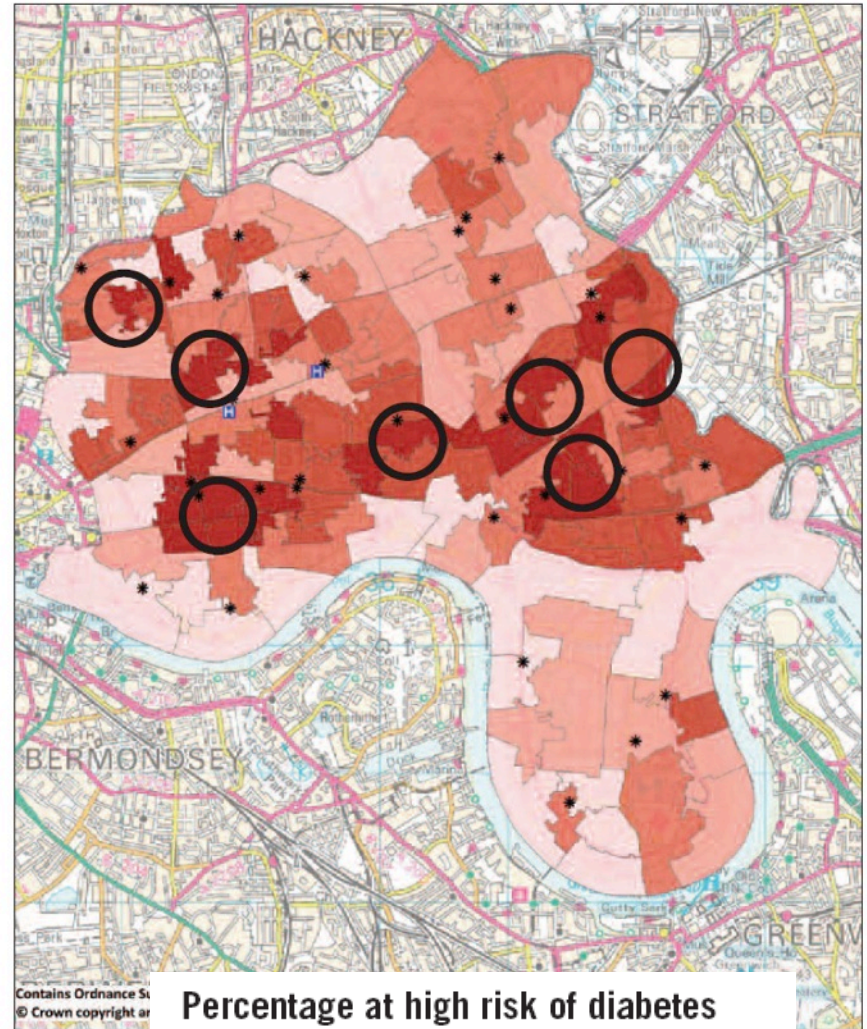


Map 2: Percentage at high risk and Index of Multiple Deprivation

Map 2 illustrates the variation in prevalence of high type 2 diabetes risk across lower super output areas in Tower Hamlets from 0.0-17.3% of the non-diabetic population. General practices and hospitals are also shown. The areas of highest prevalence for type 2 diabetes risk were distributed on either side of the A11 which transects the borough and corresponds with well-known deprived housing estates and high-rise blocks of flats on either side of this road. The map of Index of Multiple Deprivation scores by lower super output area showed a near-identical geographical distribution with high type 2 diabetes risk.



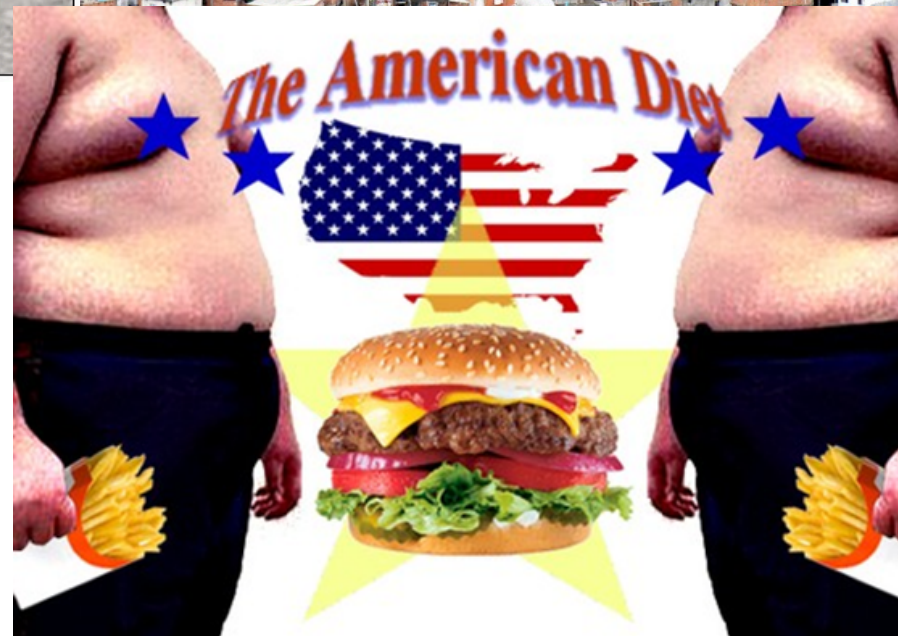
Reproduced by permission of the Library of the London School of Economics and Political Science



Source: Barts and London, 2011



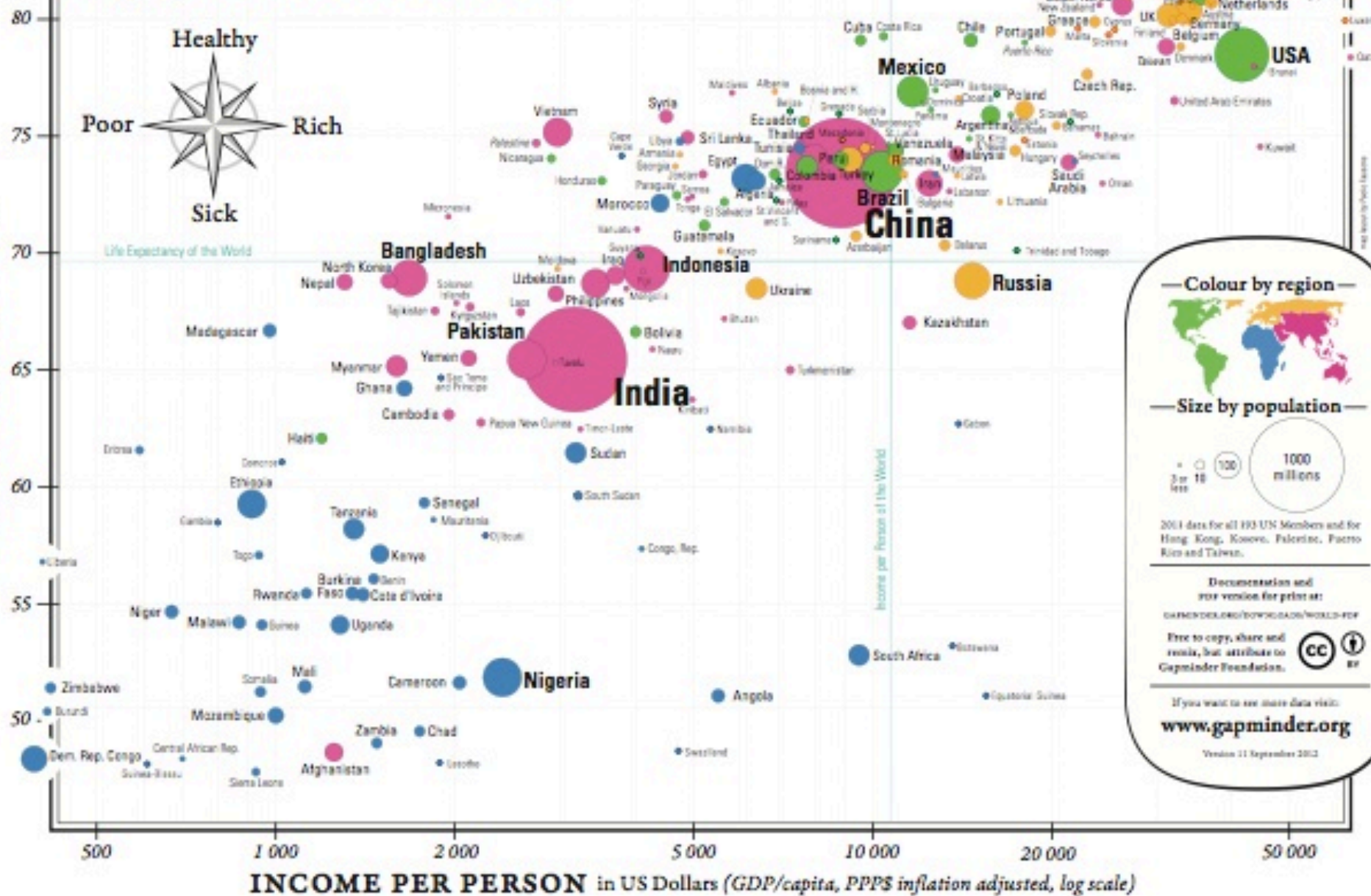
People's lifestyles and the conditions in which they live and work strongly influence their health



GAPMINDER WORLD 2012

Mapping the Wealth and Health of Nations

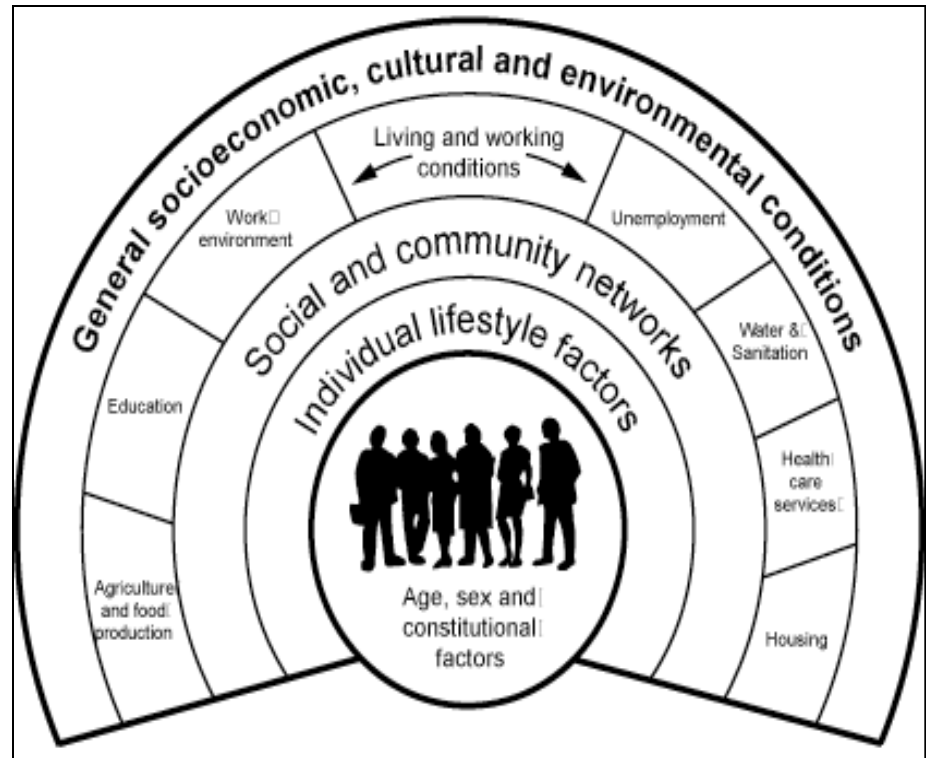
LIFE EXPECTANCY in years



What are the major determinants of health?

- age, sex, inherited factors
- individual lifestyle
- social and community influences
- living and working conditions
- general socio-economic, cultural and environmental conditions

see Benzeval, Judge and Whitehead 1995



Social determinants – WHO Solid Facts

1. The social gradient
2. Stress
3. Early life
4. Social exclusion
5. Work
6. Unemployment
7. Social support
8. Addiction
9. Food
10. Transport

Social determinants – WHO Solid Facts

1. The social gradient
2. Stress
3. Early life
4. Social exclusion
5. Work
6. Unemployment
7. Social support
8. Addiction
9. Food
10. Transport

Life expectancy varies by social position: 1842

- “Gentlemen & persons engaged in professions & their families: 45 years
- “Tradesmen & their families: 26 years
- “Mechanics, servants & labourers & their families: 16 years”

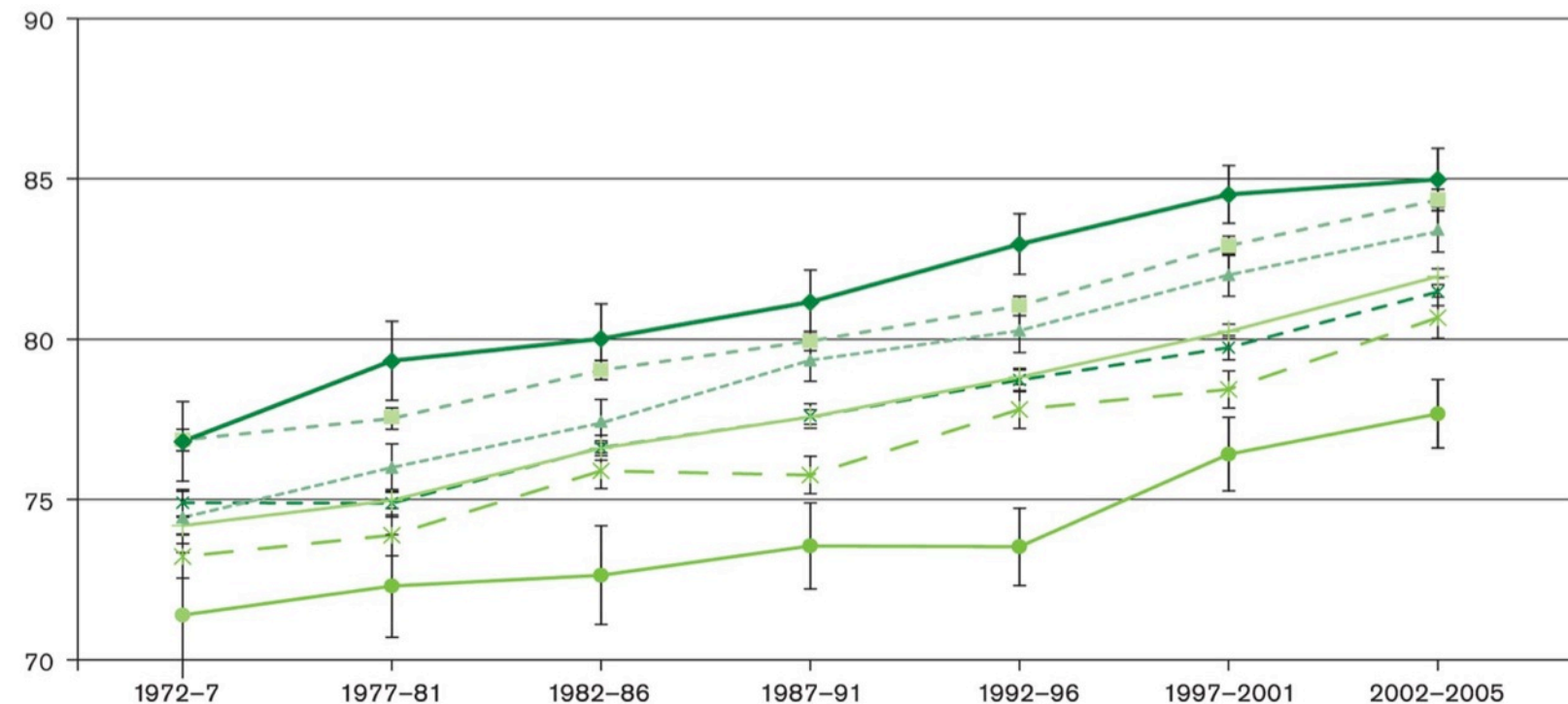
(Chadwick 1842)

Life expectancy varies by social position: 21st century

Life expectancy at birth by social class, males, 1972-2005.

a) Males

Years



Source: Office for National Statistics Longitudinal Study⁴⁵

Social classification systems: National Statistics Socio-economic Classification (2001)

1. Higher managerial and professional occupations
2. Lower managerial and professional occupations
3. Intermediate occupations (clerical, sales, service)
4. Small employers and own account workers
5. Lower supervisory and technical occupations
6. Semi-routine occupations
7. Routine occupations
8. Never worked and long-term unemployed

NSSEC can then be collapsed

8 classes	5 classes	3 classes
1. Higher managerial and professional occupations	1. Managerial and professional occupations	1. Managerial and professional
2. Lower managerial and professional occupations		
3. Intermediate occupations (clerical, sales, service)	2. Intermediate occupations	2. Intermediate occupations
4. Small employers and own account workers	3. Small employers and own account	
5. Lower supervisory and technical occupations	4. Lower supervisory and technical	3. Routine and manual
6. Semi-routine occupations	5. Semi-routine and routine	
7. Routine occupations		
8. Never worked and long-term unemployed	Never worked and long-term unemployed	Never worked and long-term unemployed

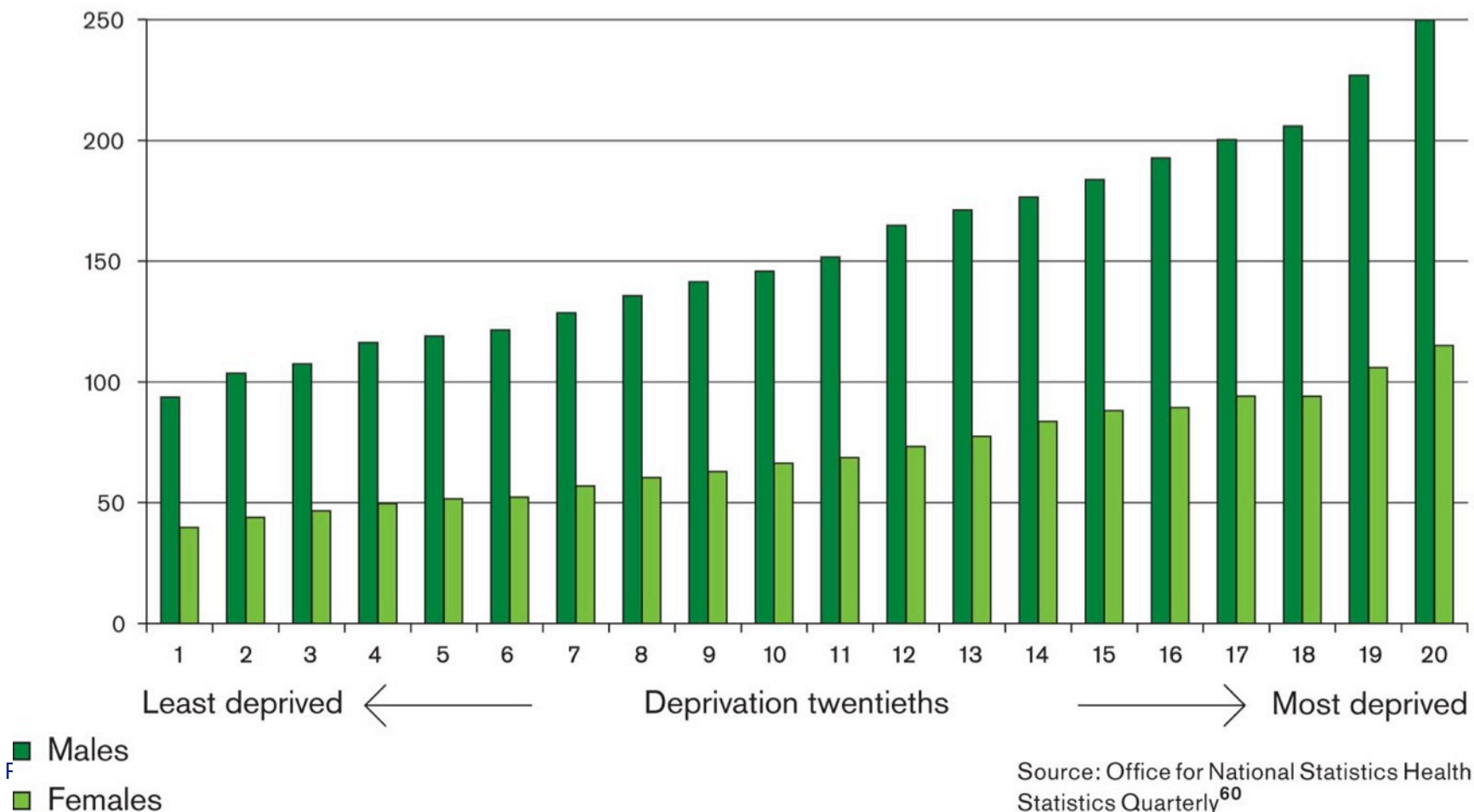
Previous standard was the Registrar General Classification

I	Professional
II	Managerial
III (non-man)	Skilled non manual
III (manual)	Skilled manual
IV	Semi-skilled manual
V	Unskilled manual

Social gradient: age-standardised death rates < 75 years, 1999-2003

(a) Circulatory disease

Rate per 100,000 population



Social gradient: Standardised mortality ratios for lung cancer, 1979-83

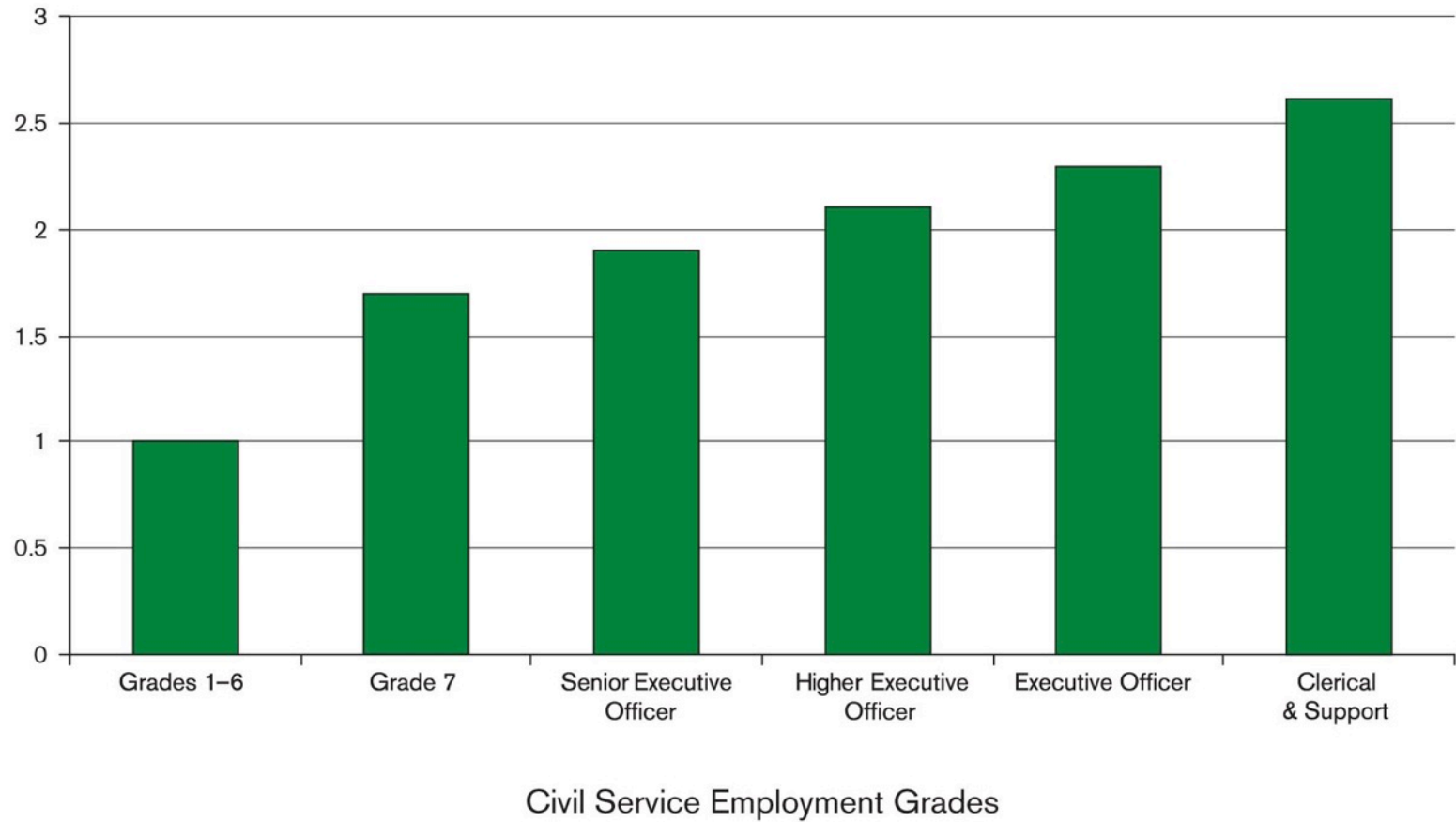
	Men	Women
Professional	43	48
Skilled manual	120	115
Unskilled	178	149

Employment grade, Whitehall study

- Men in the lowest grades have a four times higher mortality rate than men in the highest grade.
- The gradient occurs across all grades.

Figure 2.34 The social gradient in the metabolic syndrome, Whitehall II study, 1991–1993

Odds Ratios



Social circumstances

- “Measures of social and economic status, including occupation, are extremely powerful predictors of premature heart disease. Employment grade proved, on its own, to be more powerful than the combination of classic risk factors including smoking, serum cholesterol and blood pressure.”

Brunner and Marmot, 1999

Mechanisms for associations: discuss

1. Poverty: how does poverty lead to lower life expectancy?
2. Social gradient: why do people in middle ranking jobs live shorter lives than top ranking jobs?
3. Social disruption: why did mortality increase rapidly in the 1980s in Russia?

Mechanisms for associations: discuss

1. Poverty: how does poverty lead to lower life expectancy?
2. Social gradient: why do people in middle ranking jobs live shorter lives than top ranking jobs?
3. Social disruption: why did mortality increase rapidly in the 1980s in Russia?

Absolute and relative poverty

- ***Absolute poverty***

- people lack the basic necessities for survival (food, sanitation, proper housing, clothing or medicines)

- ***Relative poverty***

- people's way of life and income is much worse than the general standard of living in their country
- they struggle to live a normal life and to participate in ordinary economic, social and cultural activities

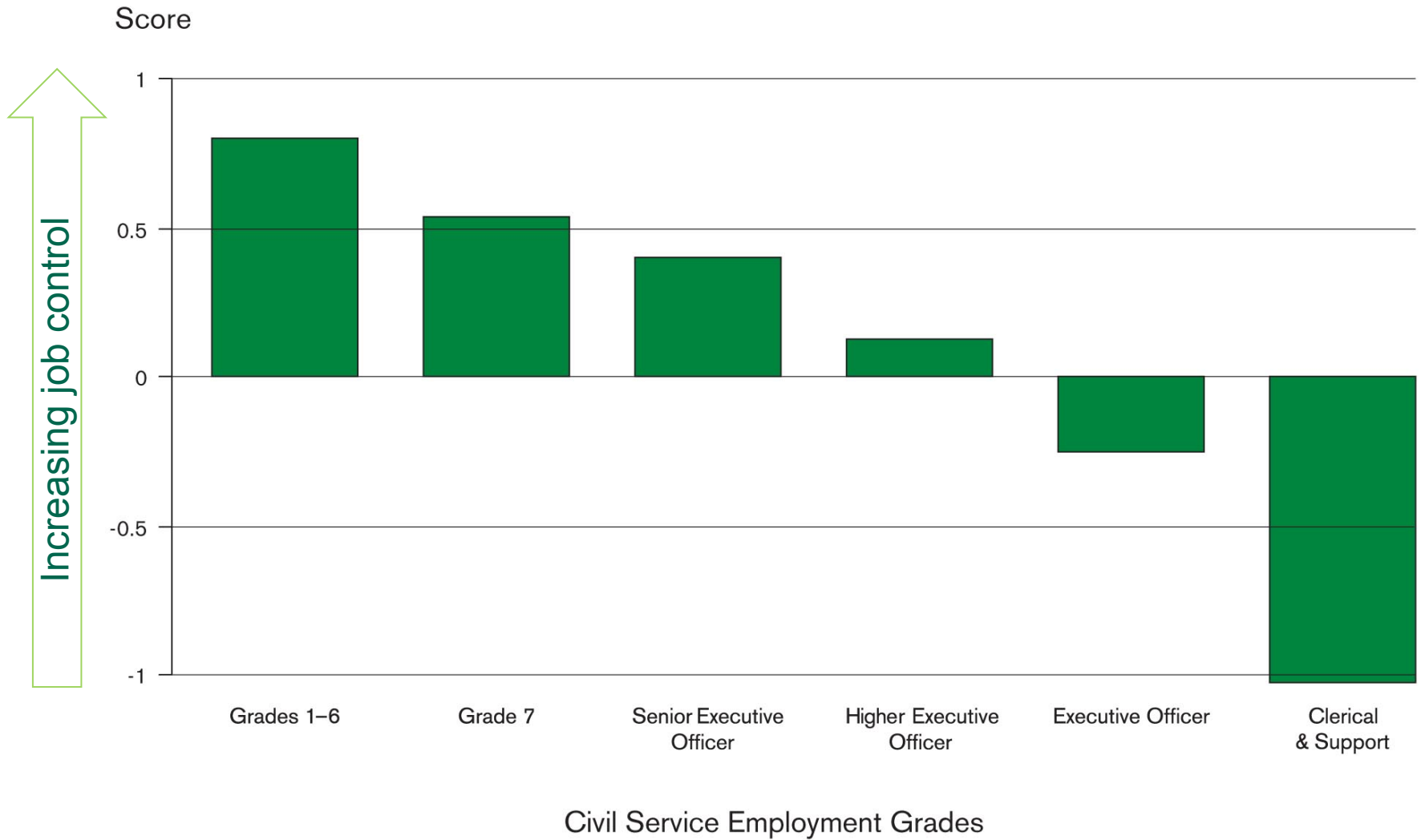
Absolute and relative poverty and health

- ***Absolute poverty***
 - Nutritional problems, developmental, infections, respiratory illness, environmental exposures, extremes of temperature
- ***Relative poverty***
 - Stress and anxiety, depression, isolation
 - poor diet, addiction
 - Lack of education
 - Poor access to health care

Mechanisms for associations: discuss

1. Poverty: how does poverty lead to lower life expectancy?
- 2. Social gradient: why do people in middle ranking jobs live shorter lives than top ranking jobs?**
3. Social disruption: why did mortality increase rapidly in the 1980s in Russia?

Figure 2.33 The association of civil service grade with job control, Whitehall II study, 1985–88



Notes: Score calculated as a z score
Source: Whitehall II Study¹⁴³

Position in hierarchy

- Lack of control
- Long term, chronic stress
- Alters physiological responses
 - Sympatho-adrenal pathway (fight or flight)
 - Hypothalamic-pituitary-adrenal axis (cortisol)
 - Blood clotting systems
 - Inflammation and immunity

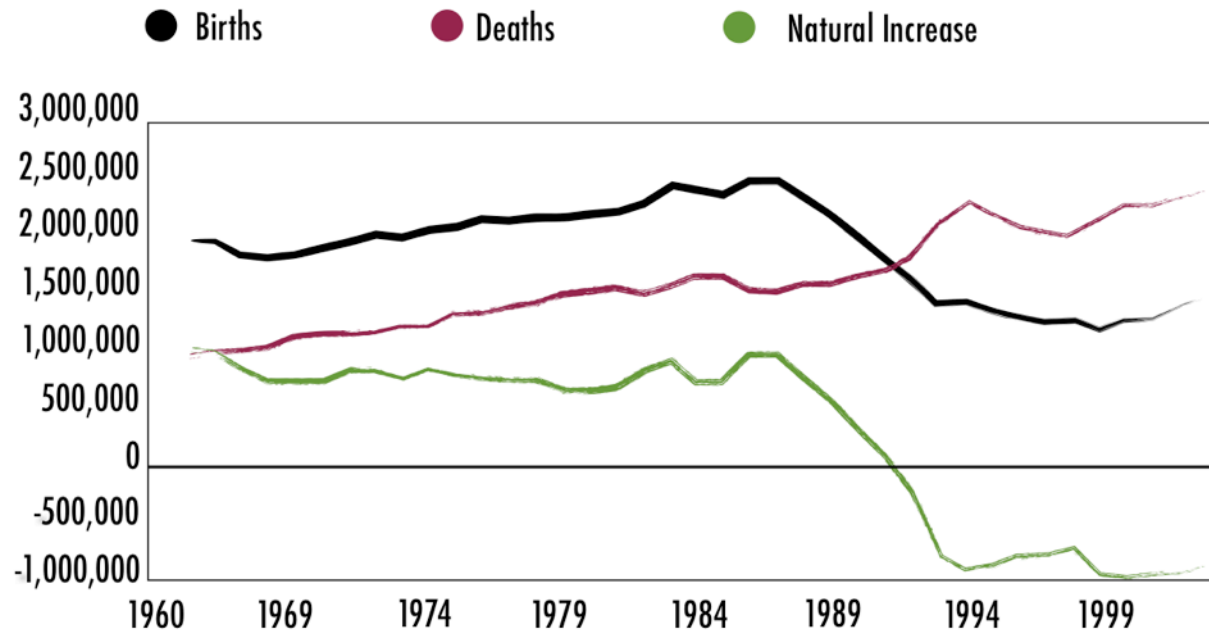
See Brunner and Marmott, 2006

Mechanisms for associations: discuss

1. Poverty: how does poverty lead to lower life expectancy?
2. Social gradient: why do people in middle ranking jobs live shorter lives than top ranking jobs?
3. **Social disruption: why did mortality increase rapidly in the 1980s in Russia?**

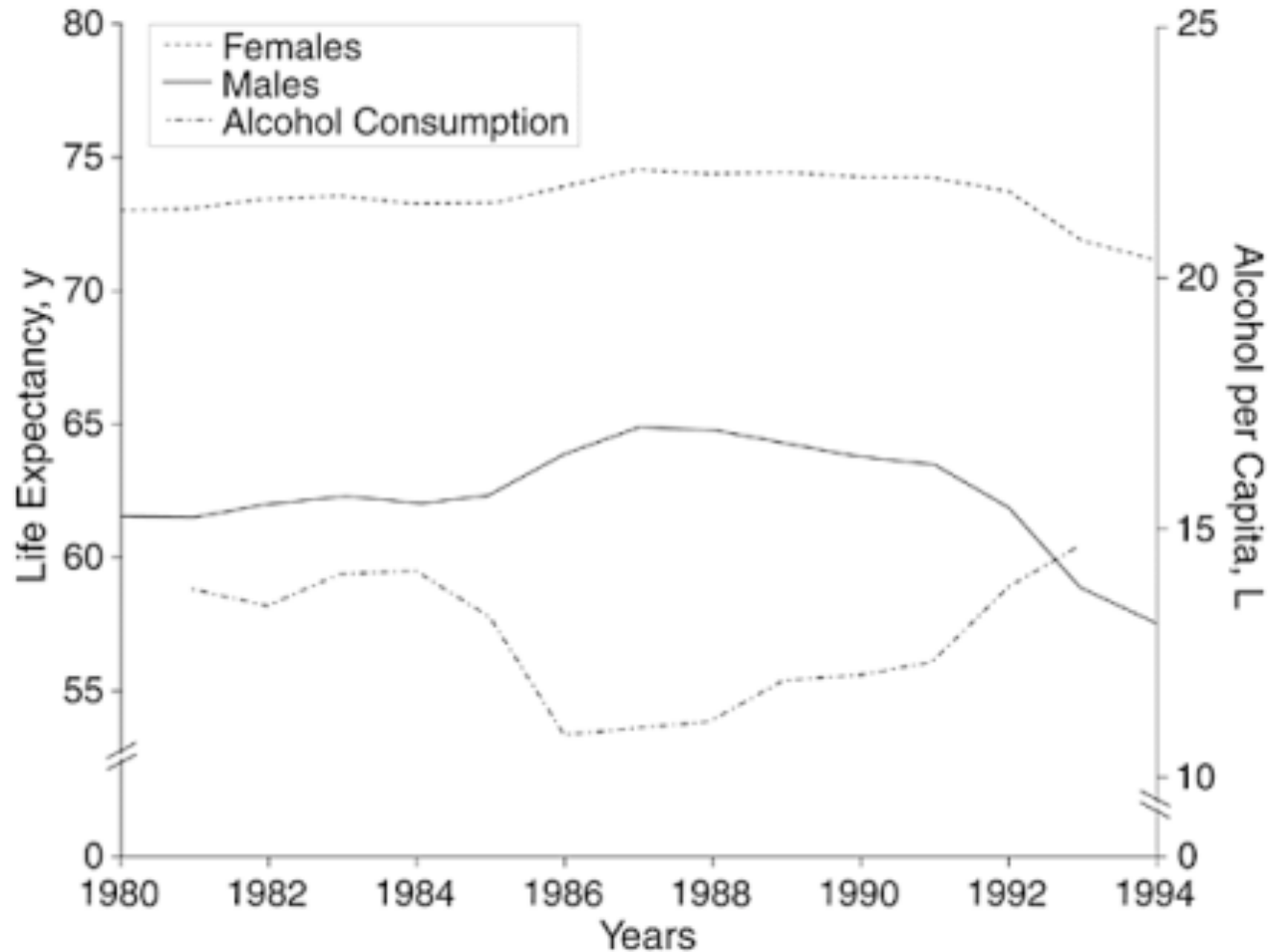
Change in life expectancy and birth rate

Births, Deaths and Natural Increase in Russian Population: 1960 - 2003



Source: Demographic Year Book of Russia: 2002 'State Committee of the Russian Federation on Statistics'

Change in life expectancy and alcohol consumption, Russian Federation 1980 - 1994



Russia

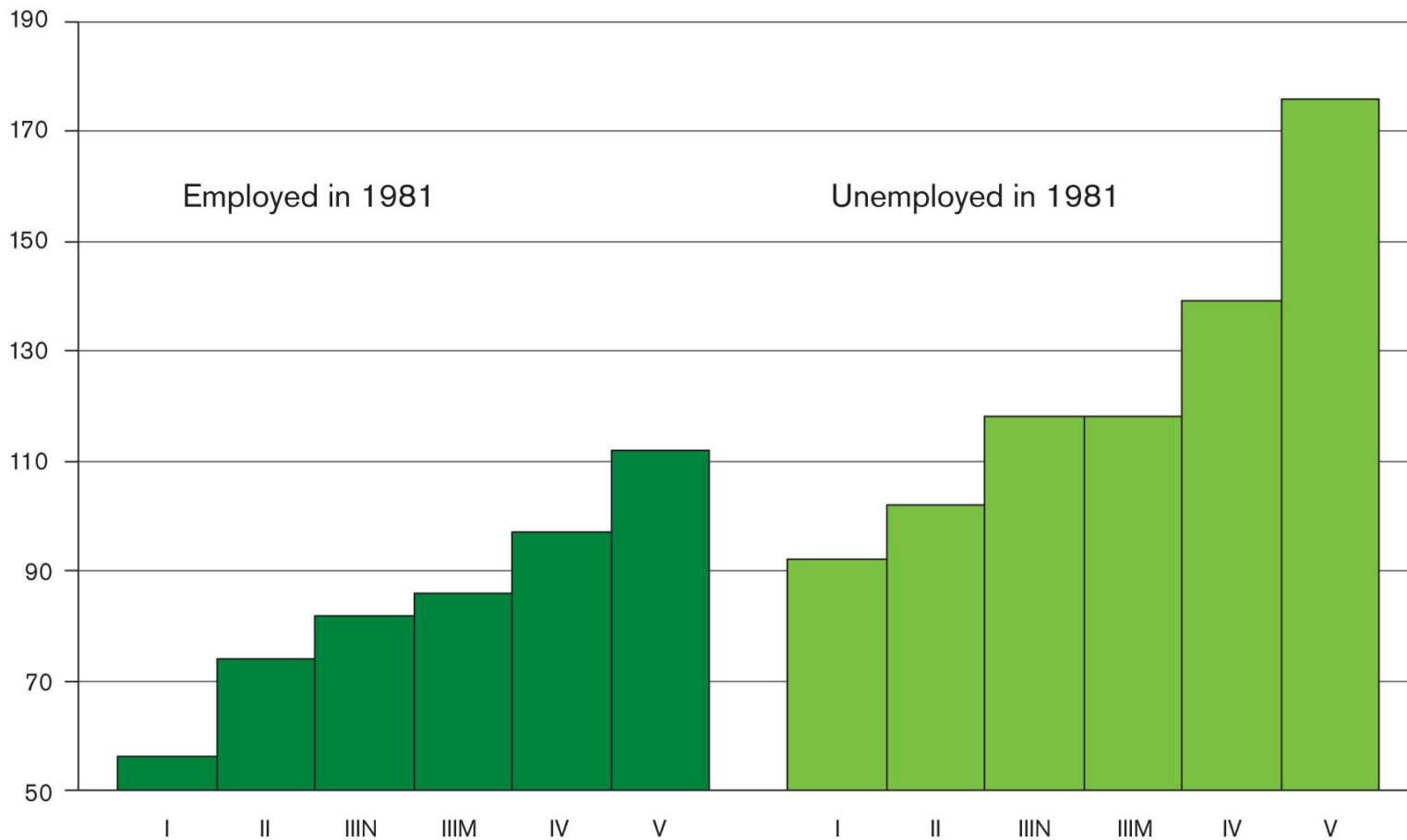
- Economic collapse and unemployment
- Social collapse
- Health care collapse
- Big rise in mortality from
 - Accidents and violence
 - Alcohol-related
 - Suicide
 - Cardiovascular disease

Social determinants – WHO Solid Facts

1. The social gradient
2. Stress
3. Early life
4. Social exclusion
5. Work
6. Unemployment
7. Social support
8. Addiction
9. Food
10. Transport

Figure 2.29 Mortality of men in England and Wales in 1981–92, by social class and employment status at the 1981 Census

Standardised
Mortality Rate

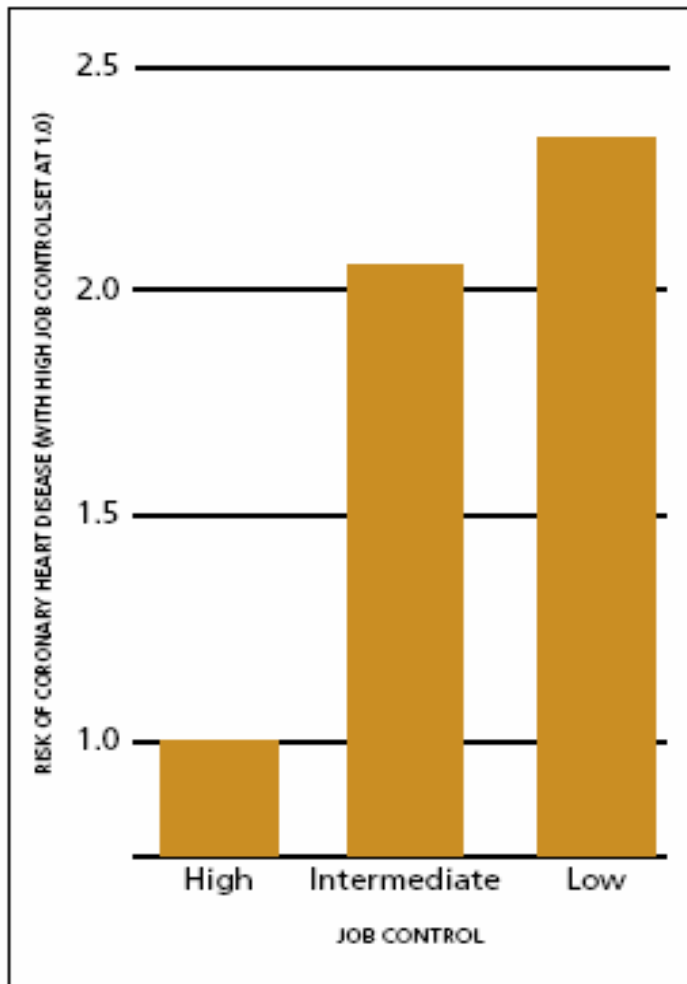


Social Class

Source: Office for National Statistics
Longitudinal Study¹²⁹

Control at work

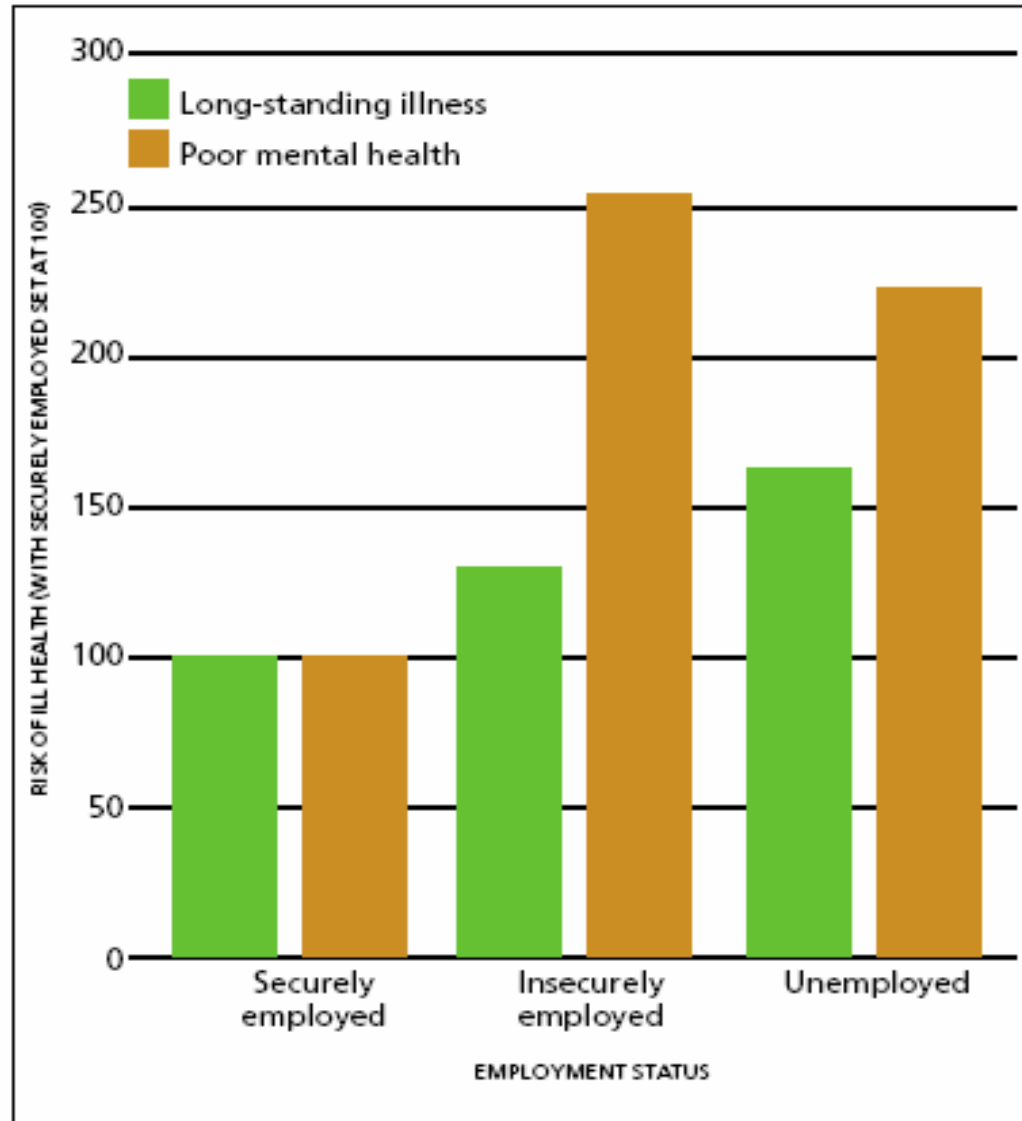
Fig. 4. Self-reported level of job control and incidence of coronary heart disease in men and women



Adjusted for age, sex, length of follow-up, effort/reward imbalance, employment grade, coronary risk factors and negative psychological disposition

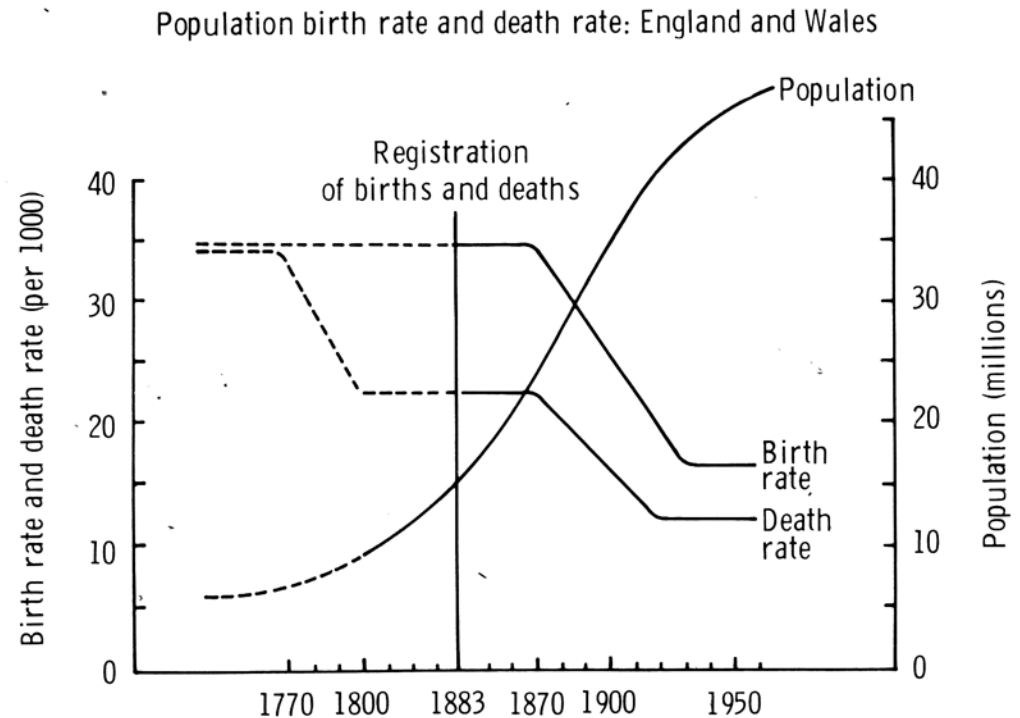
Job insecurity

Fig. 5. Effect of job insecurity and unemployment on health



Social factors and medical factors: relative contribution?

- Thomas McKeown, 1976
- Demographic transition
- Limited role of medicine



McKeown's observation

- UK demographic transition = fall in deaths from infectious diseases.
- Tuberculosis, enteric fevers, respiratory infections, childhood infections.

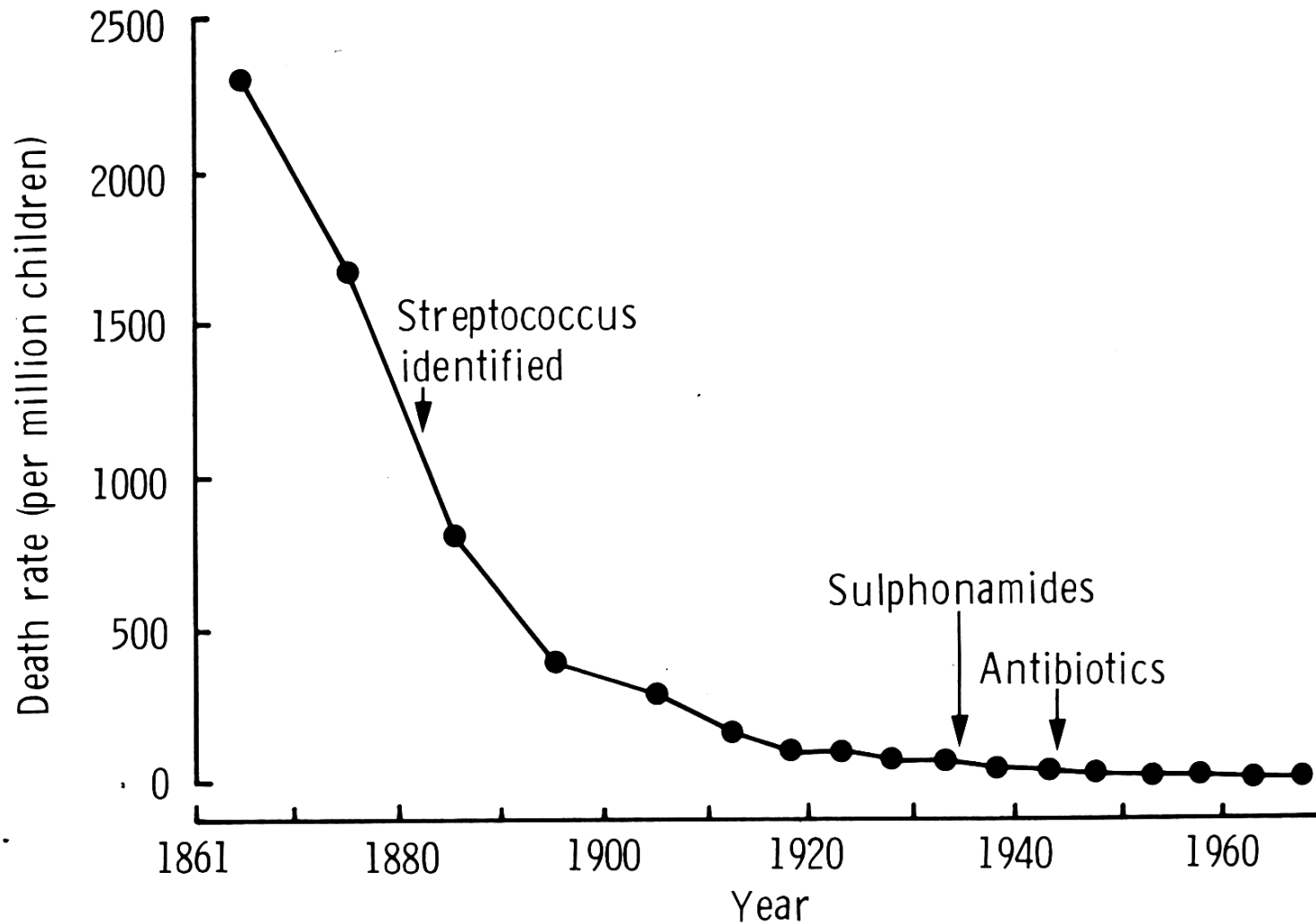
Diseases involved in demographic transition

- TB
- Diarrhoea, dysentery and cholera
- Bronchitis, pneumonia and influenza
- Typhus/typhoid
- Scarlet fever
- Measles, whooping cough and diphtheria
- Smallpox

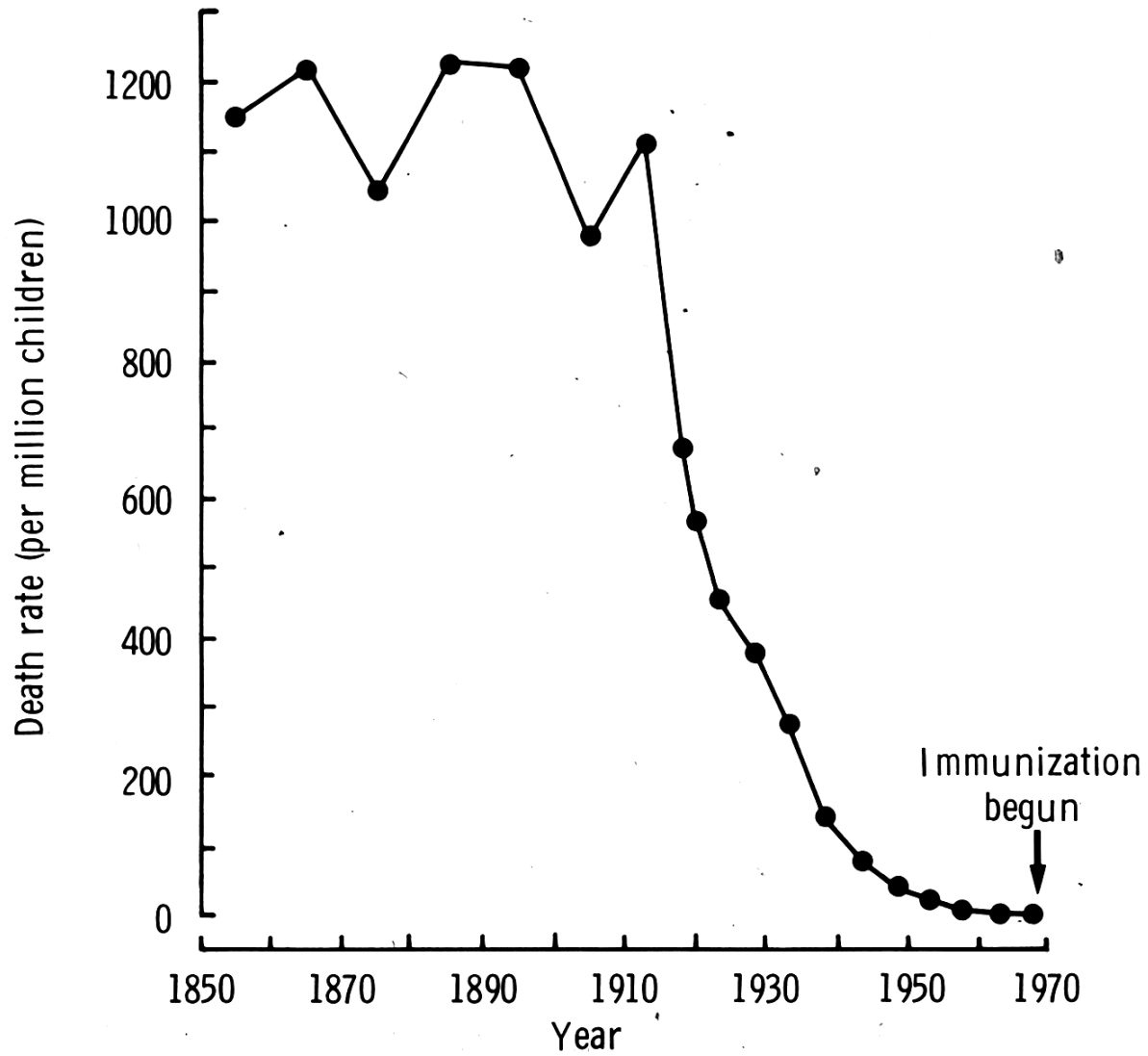
McKeown's analysis

- Medical measures
 - Prevention
 - cure
- Decreased virulence of the micro-organisms
- Decreased exposure to infectious agents
- Increased host resistance to infection

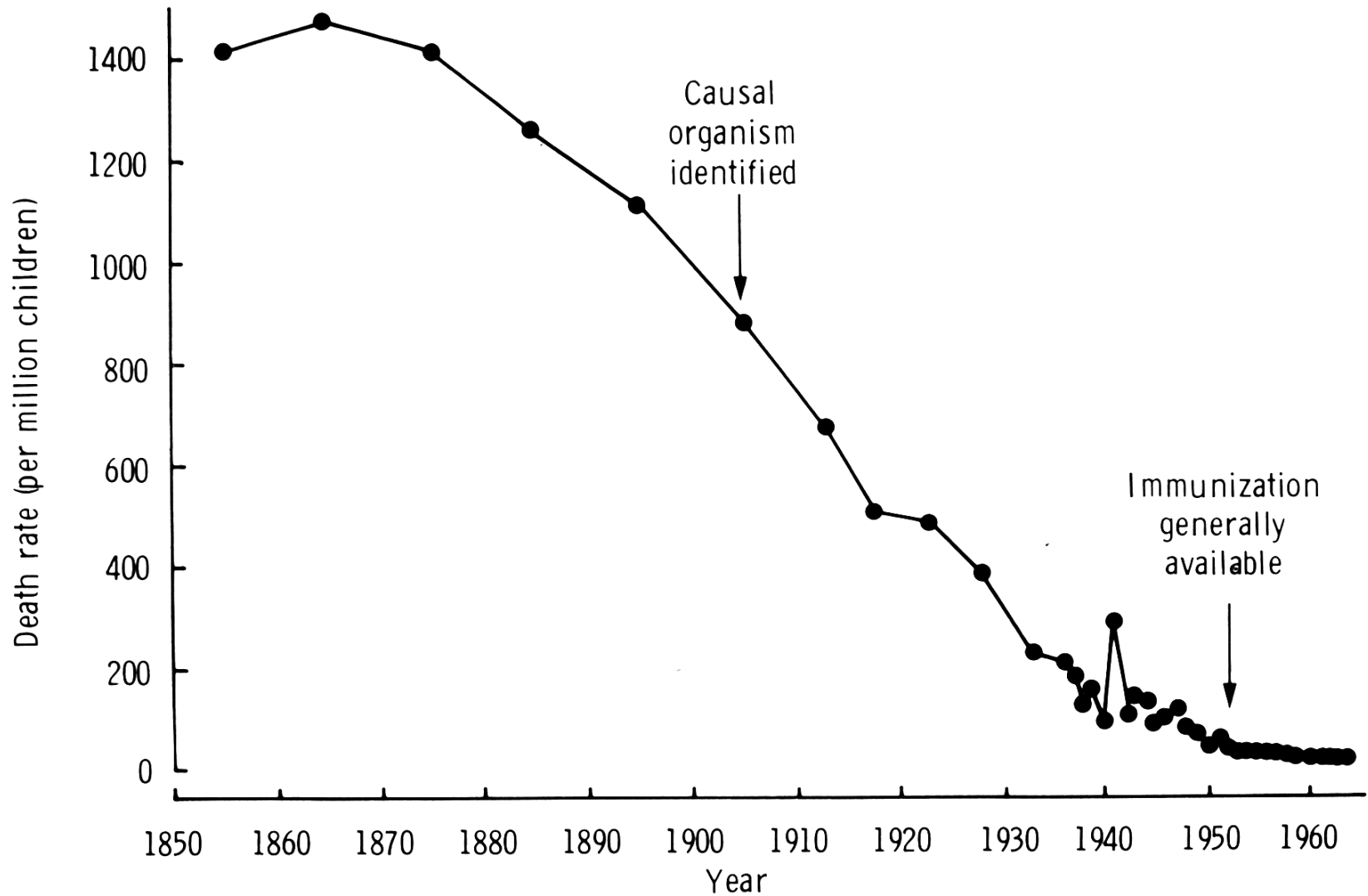
Scarlet fever: death rates of children under 15, England and Wales



Measles: death rates of children under 15, England and Wales



Whooping cough: death rates of children under 15, England and Wales



Medical contribution to health (ii)- very important for smallpox

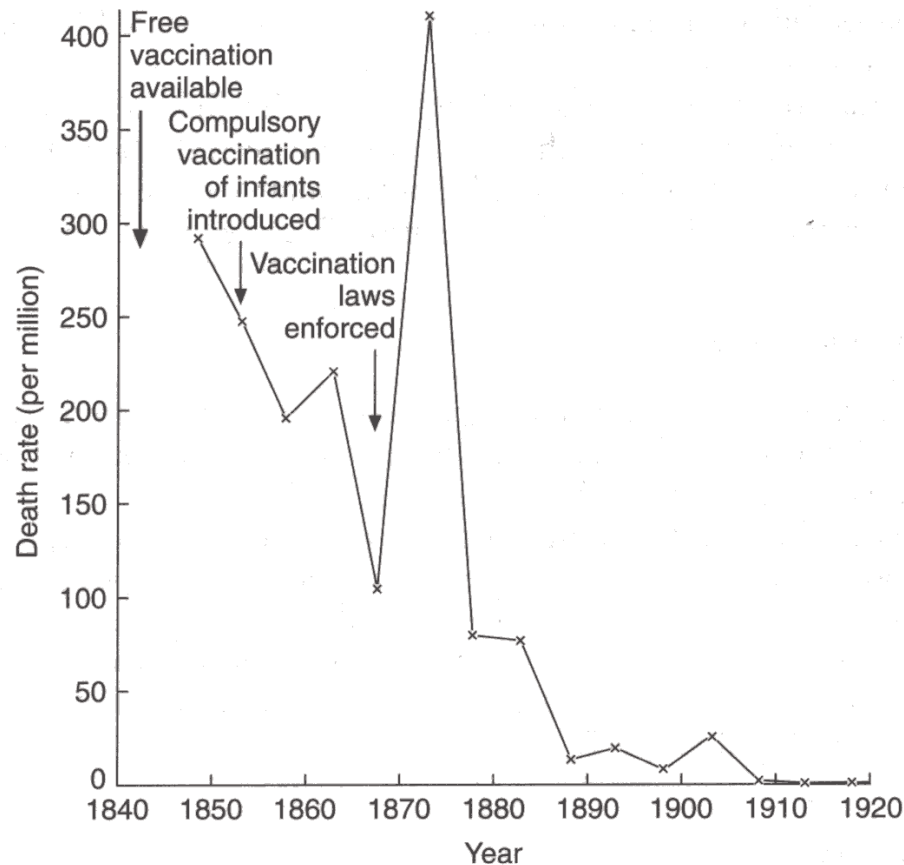


Figure 39.6 Smallpox: death rates, England and Wales

McKeown's conclusion

- Major factors in the reduction in mortality were
 - Decreased virulence of the micro-organisms
 - Decreased exposure to infectious agents
 - Increased host resistance to infection

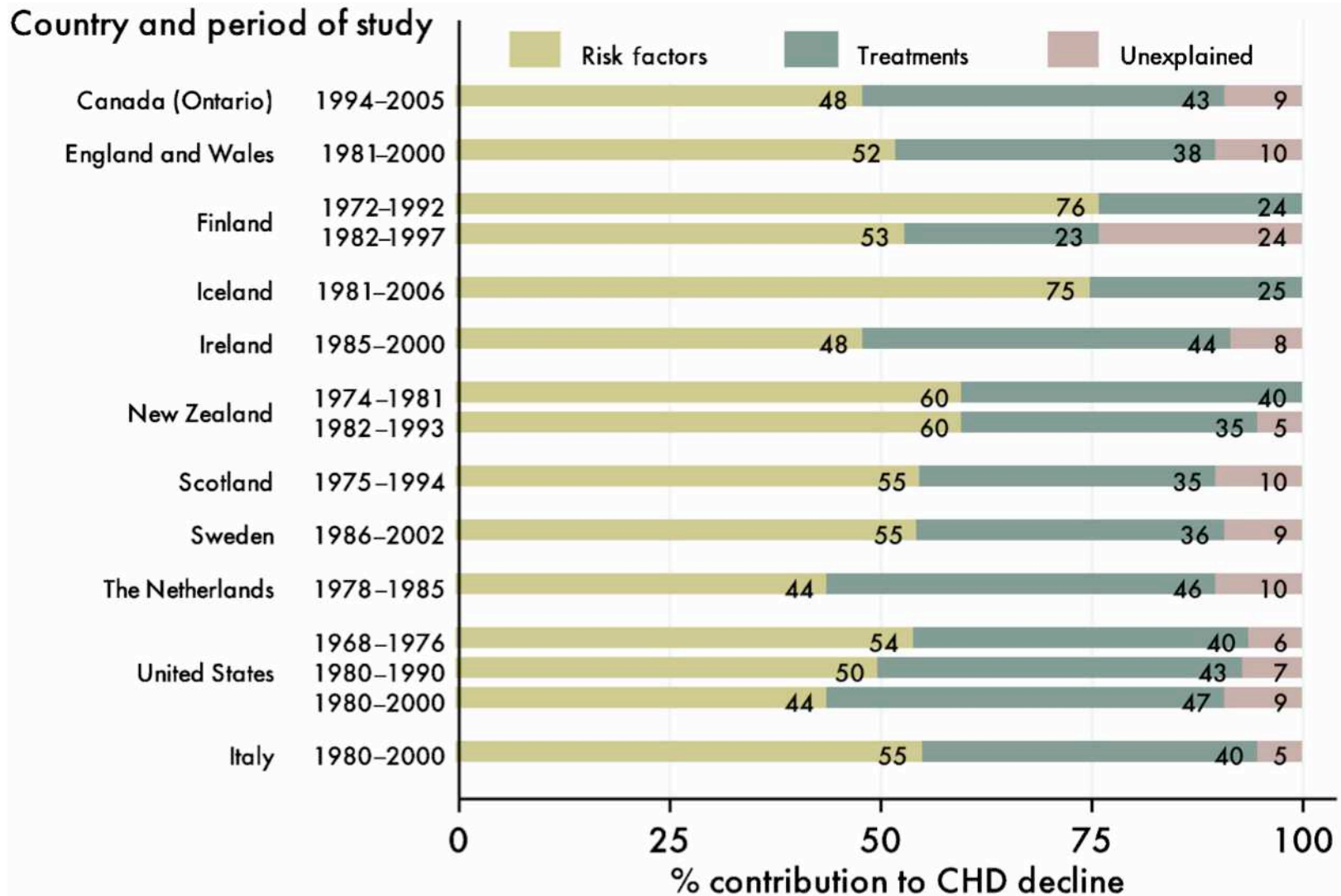
More recent debates on social and medical contribution to improved life expectancy

- IHD mortality declined 1950s-90s in developed countries by approx 50%.
- Was this due to
 - reduced smoking and changes in diet?
 - treatment of hypertension?
 - direct treatment of IHD?
- Estimated 60% decline due to lifestyle and 40% to medical care (Goldman & Cook 1986, Beaglehole 1986)

Decreased CHD mortality England and Wales 1981 – 2000*

- CHD mortality rates fell
 - 62% in men
 - 45% in women (25 to 84 years old).
- 68,230 fewer deaths in 2000 of which
 - 42% attributed to treatments in individuals
 - 11% secondary prevention
 - 13% heart failure treatments
 - 8% treatments of acute myocardial infarction
 - 3% hypertension treatments
 - 58% to population risk factor reductions
 - smoking, 48%
 - blood pressure, 9.5%
 - cholesterol, 9.5%)

Contribution of treatment to decline in CHD



Conclusion on McKeown?

- Economic growth has been a major factor improving health and life expectancy
- Occurs through improved
 - Housing
 - Employment
 - Environment
 - Rights
 - Healthcare
- But inequalities in health persist as resources are unequally distributed

Learning outcomes

At the end of this session students will be able to

- List the major social factors determining health outcomes and health inequalities
- Distinguish absolute and relative measures of disadvantage and understand their impact on health
- Assess the relative contribution of medicine to health
- Explain the different mechanisms through which social factors affect health with reference to specific examples

Resources and further reading

- Film clips
 - short film on social factors and health in Glasgow
<http://www.youtube.com/watch?v=aS3-MZZyVNI>
 - Global economy and health
- Podcast
 - Interview with Sir Michael Marmot, “The Life Scientific, episode 4. Sir Michael Marmot, 21:30 Tuesday, 1st November 2011.
- Websites
 - Marmot website www.marmotreview.org
 - International perspectives www.who.int/social_determinants
 - Spirit Level website www.equalitytrust.org.uk/resource/the-spirit-level
- Articles
 - Harper S et al. Ann Revs Public Health 2011;32:39-69
 - Unal et al. Circulation. 2004; 109: 1101-1107
- Books
 - Marmot M & Wilkinson RG. Social Determinants of Health (2nd ed), Oxford 2006
 - Wilkinson R and Pickett K. The Spirit Level. Penguin 2010.
 - Davey B, Gray A and Seale C. Health and Disease: a reader (3rd ed). OU 2001.

Thank you!