

# **Socio-economic status / position and health**

# The social determinants of health

- The principal idea is that social factors (what we call the social environment) determine human health.
- The social causation hypothesis
- The solid facts:  
[http://www.euro.who.int/data/assets/pdf\\_file/0005/98438/e81384.pdf](http://www.euro.who.int/data/assets/pdf_file/0005/98438/e81384.pdf)

# Socioeconomic causation vs. social selection

- The social causation: low SEP causes poor health
- The social selection (drift) hypothesis: poor health causes low SEP
  - *Illness inhibits individual's social class attainment or causes downward drift or never escape poverty*
- Longitudinal studies are crucial (temporality!).
- Strength and direction of the relationship can vary by the type of mental illness and socioeconomic indicator.
- Both social causation and selection/drift are important in advancing our understanding of the influence of social inequality on people's lives.
- On balance: better evidence on social causation but there is some evidence on social selection regarding mental health

# Socioeconomic inequalities in health – concepts and dimensions

- **Social hierarchy**
- **Poverty**: above or below the official poverty line (i.e. <60% of the median income)
- **Absolute poverty <-> Relative poverty/deprivation**
- **Social mobility – the dynamics of socioeconomic position**
- **Health inequalities vs. inequities**: normal (and therefore expected) natural differences vs. unfair and unjust socially constructed differences.

«The term **inequity** has a moral and ethical dimension. It refers to differences which are unnecessary and avoidable but, in addition, are also considered unfair and unjust. So, in order to describe a certain situation as inequitable, the cause has to be examined and judged to be unfair in the context of what is going on in the rest of society.»

*M. Whitehead WHO paper 1991*

# Socioeconomic inequalities in health – concepts, levels, and dimensions (1)

Socioeconomic position (SEP) or status (SES)

*Levels:*

- i) Individual
- ii) Family (often whole families classified by the man's SC)
- iii) Other higher/group (i.e. neighbourhood, community etc.)

*Temporal dimension:*

Current vs. past/previous

Life-stages (childhood, adult life, retirement/older age etc.)

# Individual-level measures of SEP

# Socioeconomic position (SEP)

- Socioeconomic position is one of the most important social determinants of health
- SEP is a multidimensional concept that denotes one's social standing as well as their access to and ownership of social and economic resources.

# Socioeconomic position, socioeconomic status, and social class

- Often used interchangeably
- **Socioeconomic position** – standing in social hierarchy, often relates to economic indicators.
- **Social class** refers to a classification scheme that is based on people's access to and command over economic resources.
- **Occupation** is often used to characterise one's class as it is a marker of one's position in the production process.
- **Social status** denotes a person's standing in the social hierarchy. It is not necessarily defined in economic terms and is related to one's prestige.
- According to class theorists, social status and social position are products of the economic system and the production process



# Socioeconomic position (SEP) – measurement

How do we measure SEP?

# Socioeconomic position (SEP) – measurement

How do we measure SEP?

- income
- education
- occupational class
- wealth
- other indicators – any ideas?

# UK social class classification until 2000

<b>Grade</b>	<b>Occupation</b>
A	Higher managerial, administrative
B	Intermediate managerial, administrative or professional
C1	Supervisory or clerical and junior managerial, administrative or professional
C2	Skilled manual workers
D	Semi and unskilled manual workers
E	Casual or lowest grade workers, pensioners and others who depend on the state for their income

# UK socio-economic classification since 2001

<b>Group</b>	<b>Description</b>	<b>NRS equivalent</b>
1	Higher professional and managerial occupations	A
2	Lower managerial and professional occupations	B
3	Intermediate occupations	C1 and C2
4	Small employers and own account workers	C1 and C2
5	Lower supervisory and technical occupations	C1 and C2
6	Semi-routine occupations	D
7	Routine occupations	D
8	Never worked and long-term unemployed	E

# EU social classification (ISER)

1	Large employers, higher grade professional, administrative and managerial occupations	Higher salariat	Service Relationship
2	Lower grade professional, administrative and managerial occupations and higher grade technician and supervisory occupations	Lower salariat	Service Relationship (modified)
3	Intermediate occupations	Higher grade white collar workers	Mixed
4	Small employer and self employed occupations (exc agriculture etc)	Petit bourgeoisie or independents	-
5	Self employed occupations (agriculture etc)	Petit bourgeoisie or independents	-
6	Lower supervisory and lower technician occupations	Higher grade blue collar workers	Mixed
7	Lower services, sales and clerical occupations	Lower grade white collar workers	Labour Contract (modified)
8	Lower technical occupations*	Skilled workers	Labour Contract (modified)
9	Routine occupations*	Semi- and non-skilled workers	Labour Contract
10	Never worked and long-term unemployed	Unemployed	-

# Alternative measures of SEP

- Car ownership
- House ownership
- Household amenities
- Holidays abroad
- Height of grave stones
- Social ladder

# Height of gravestone as marker of SEP

(Davey Smith et al, BMJ, 1992; 1554-7)



TABLE IV—Correlations between height of obelisk, age at death, and year of death (men above diagonal, women below diagonal)

	Age at death	Year of death	Height of obelisk
Age at death		0.25**	0.12**
Year of death	0.40**		-0.15**
Height of obelisk	0.14**	-0.11*	

\* $p < 0.01$ . \*\* $p < 0.005$ .

TABLE V—Age of death according to height of obelisks

	Mean height (m)	Age at death	
		Men	Women
Lowest third	2.99	61.6	58.3
Middle third	3.77	62.8	63.1
Highest third	5.10	64.8	65.1
Regression coefficient per metre height		1.42*	2.19*

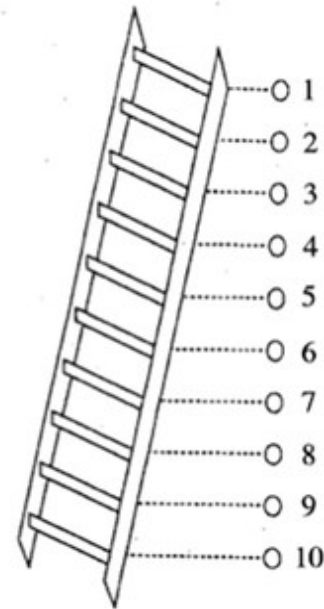
\* $p < 0.005$ .

## The MacArthur Ladder and the social comparison questions presented to participants.

Imagine that this ladder is a picture of how (YOUR COUNTRY) is set up.

- At the top of the ladder are people that have the most money, the highest amount of schooling, the best jobs, and the most respect.
- At the bottom are people who have the least money, little or no education, no jobs or jobs that no one wants, and the least respect.

Now think about your family. Tell us where you think your family would be on this ladder?



### Compared to most families, my family has:

Nicer house	Same house	Less nice house
More food	Same food	Less food
More money	Same money	Less money
More things	Same things	Less things



# Socioeconomic inequalities and mortality

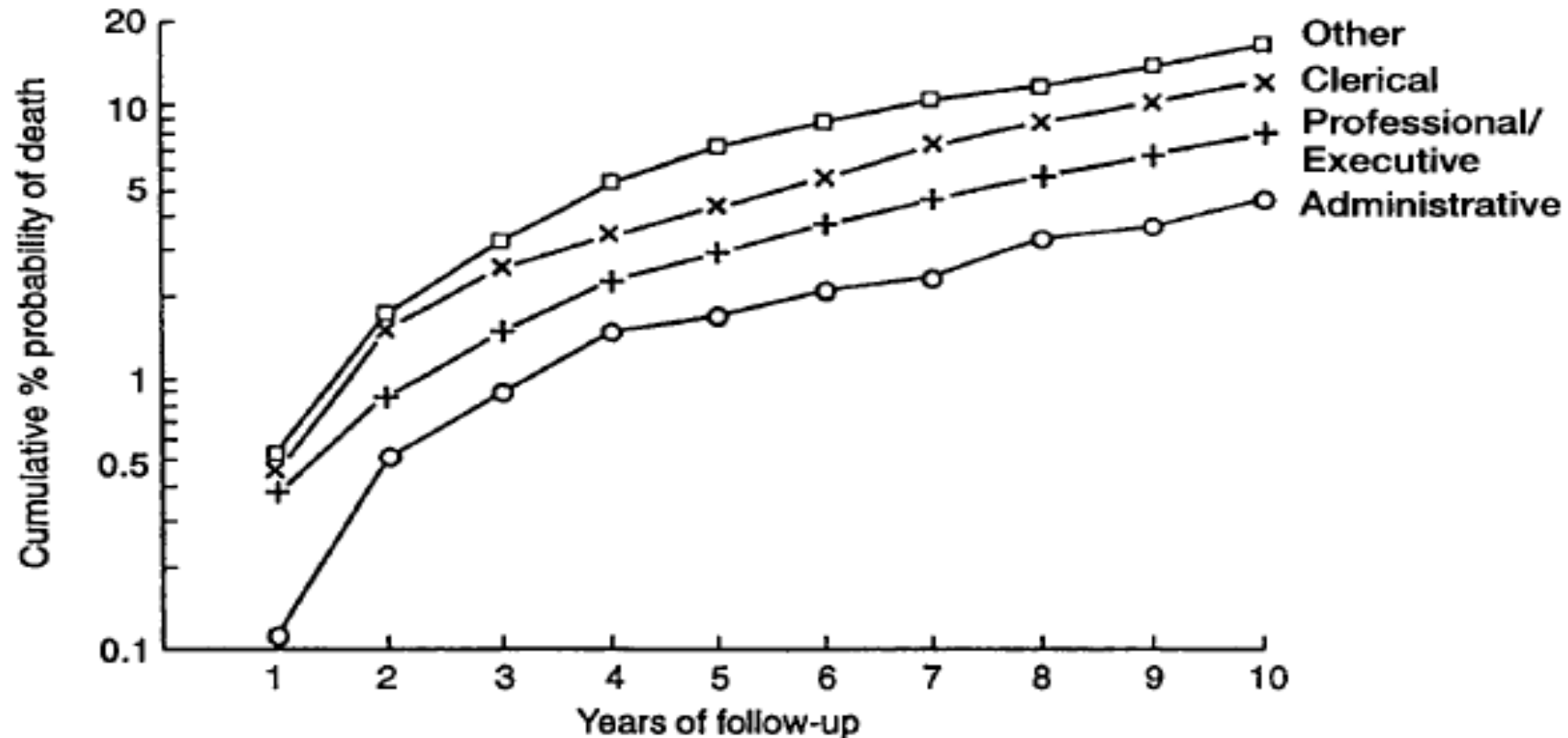
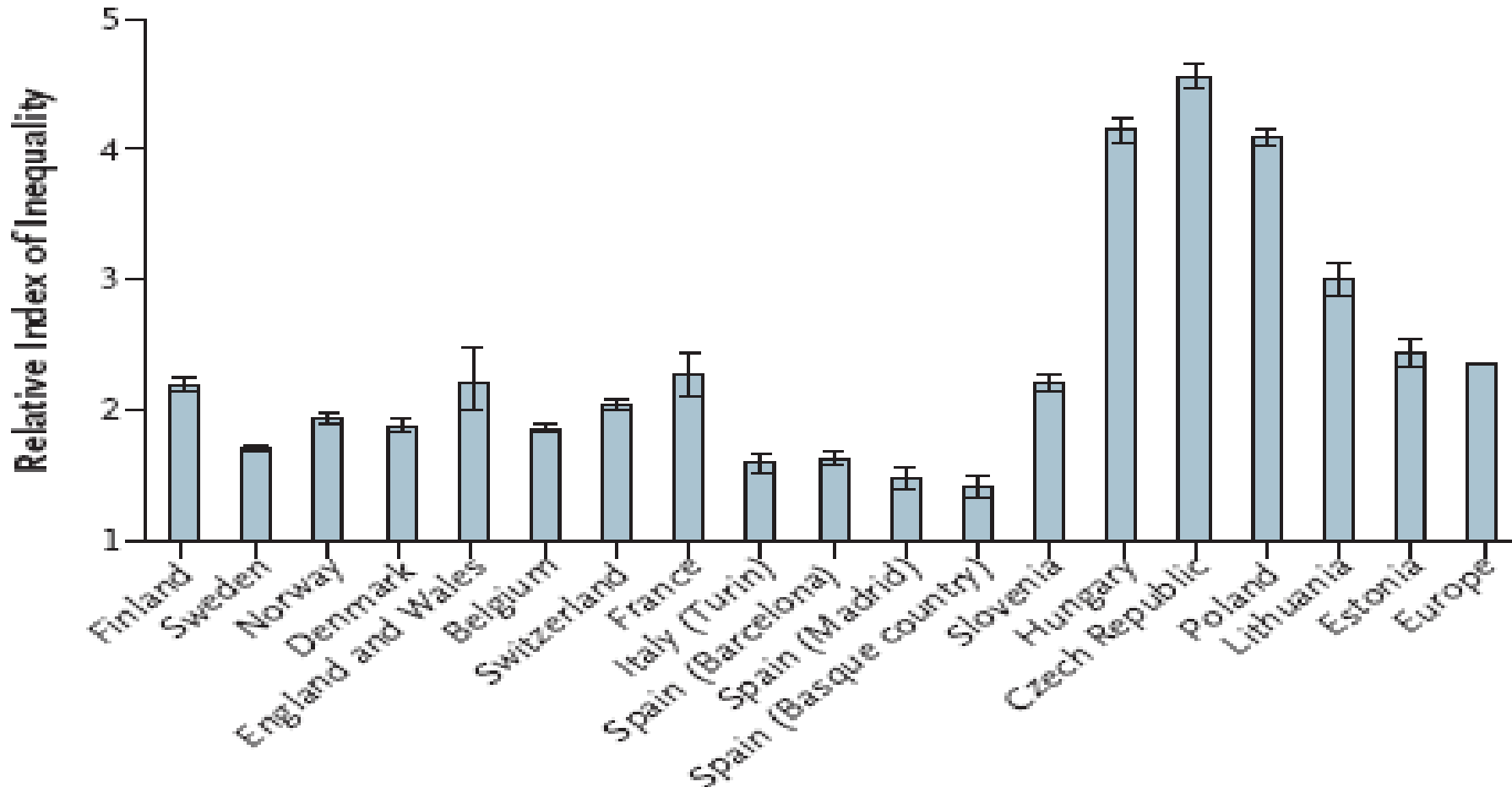


Figure 2. Ten-year mortality in Whitehall.

Marmot et al., 1984 *Lancet* 1:1003-1006  
in Marmot & Davey Smith, 1997 *JHPsych* 2(3)283-296

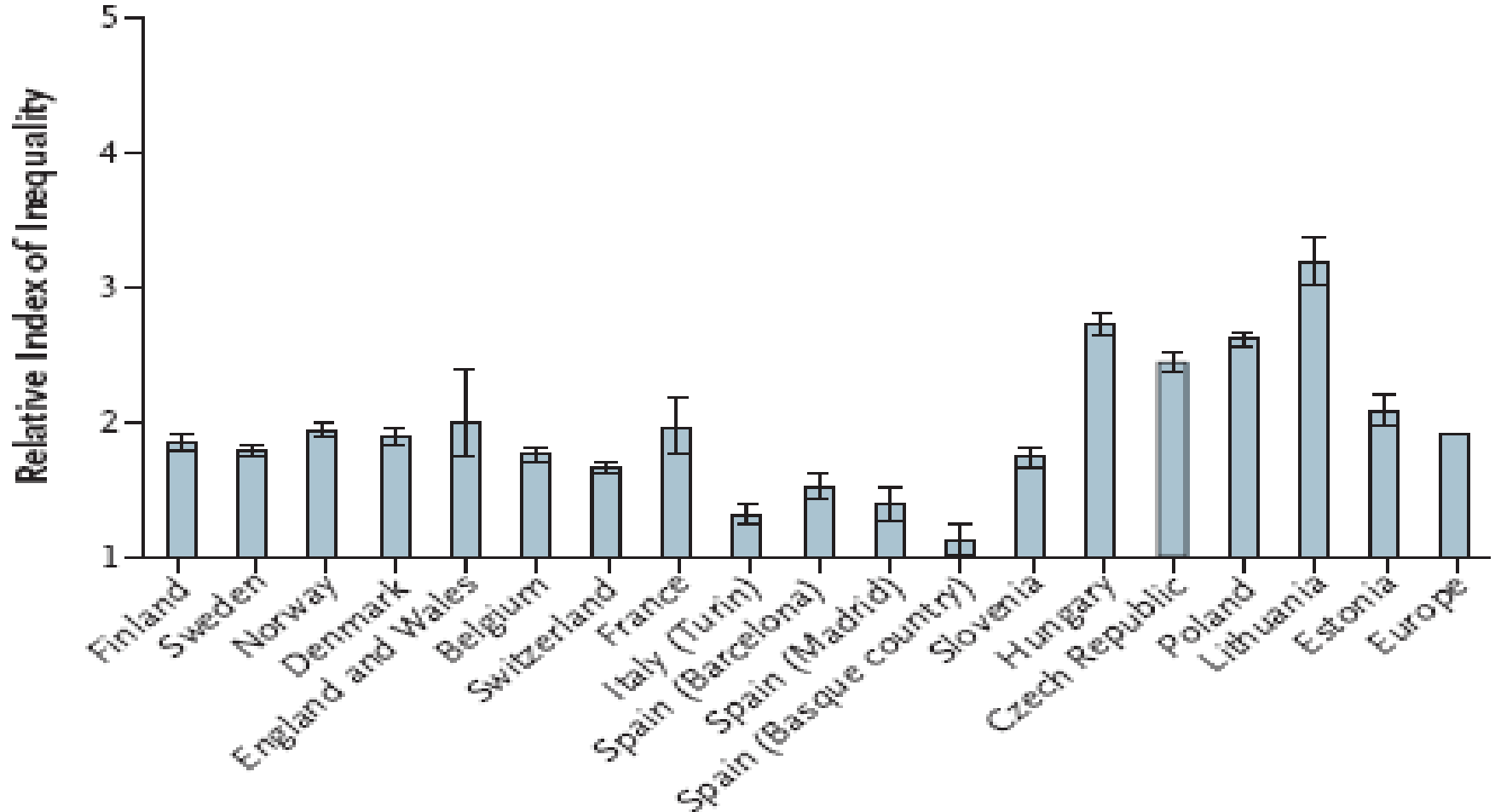
# Socioeconomic inequalities and mortality by country (men)

## A Education, Men



# Socioeconomic inequalities and mortality by country (women)

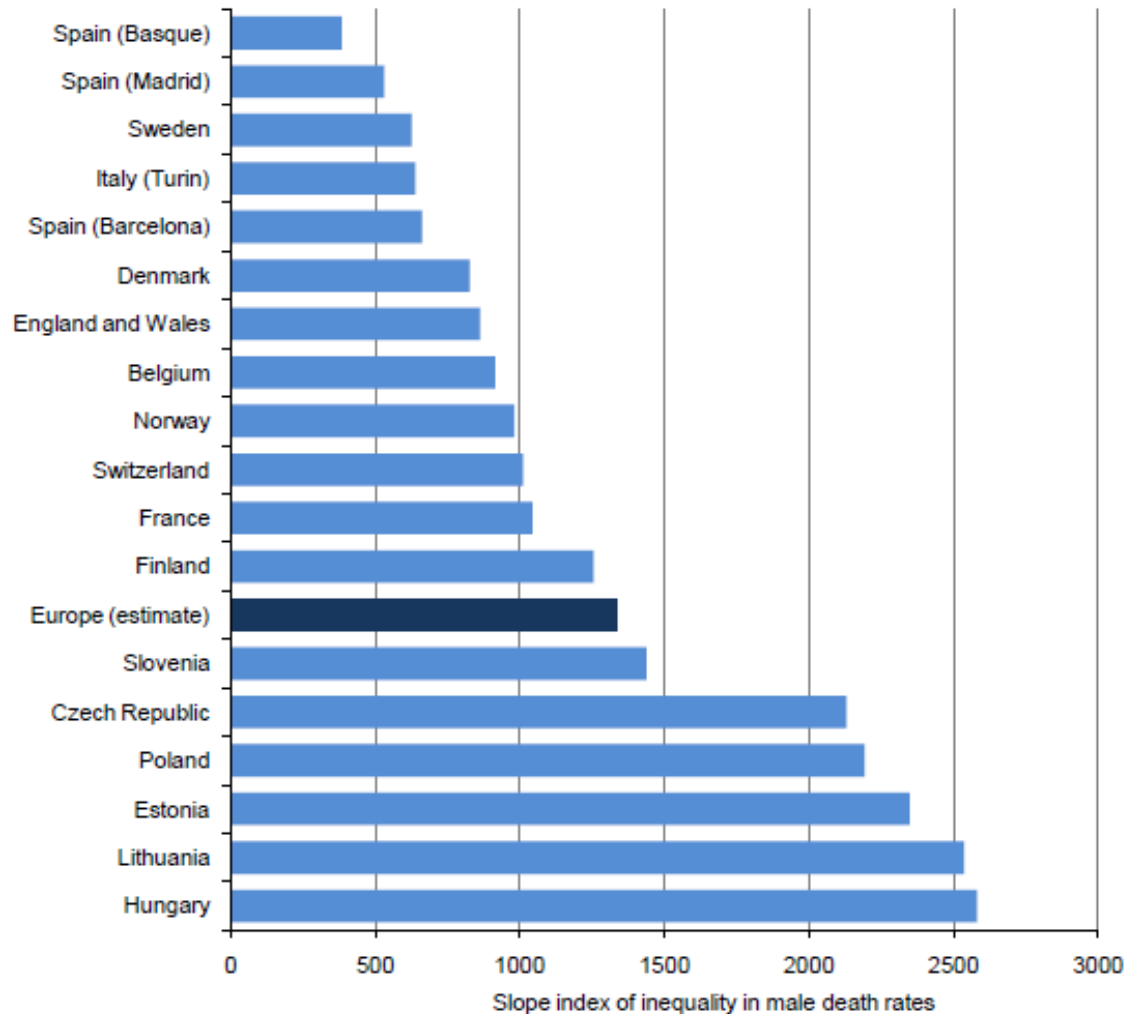
## B Education, Women



# Absolute vs. relative inequality

- Most etiological studies use relative measures of inequalities (e.g. RR)
- Some studies use absolute measures (e.g. risk difference)
  - What is the difference?

# Absolute inequality in males death rates by level of education

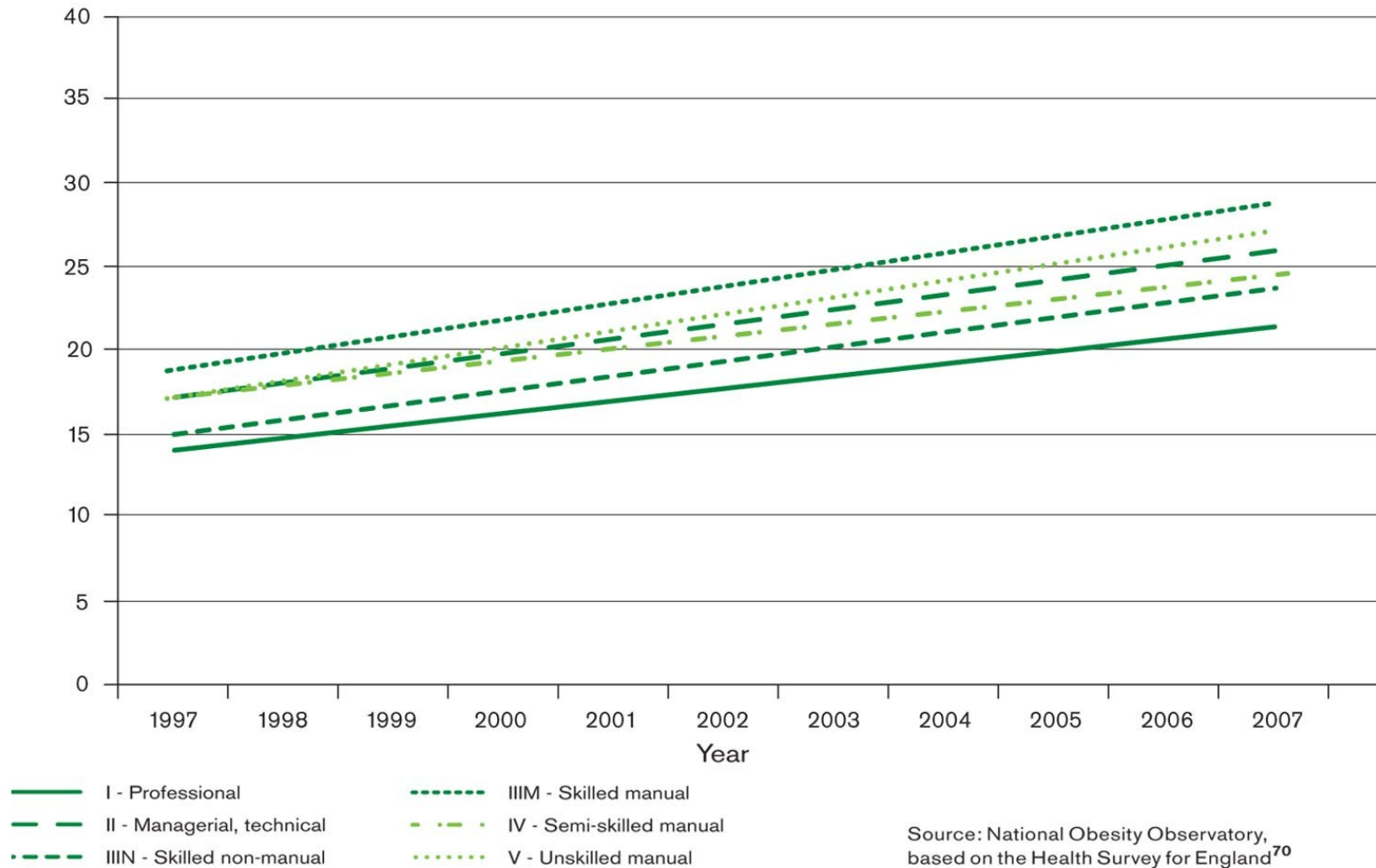


**Figure 2.15** Obesity prevalence at ages 16 and over by social class, (a) males and (b) females, 1997–2007

**(a) Males**

Percentage obese  
(BMI > 30)

**Taken from:  
the Marmot Review 2010**

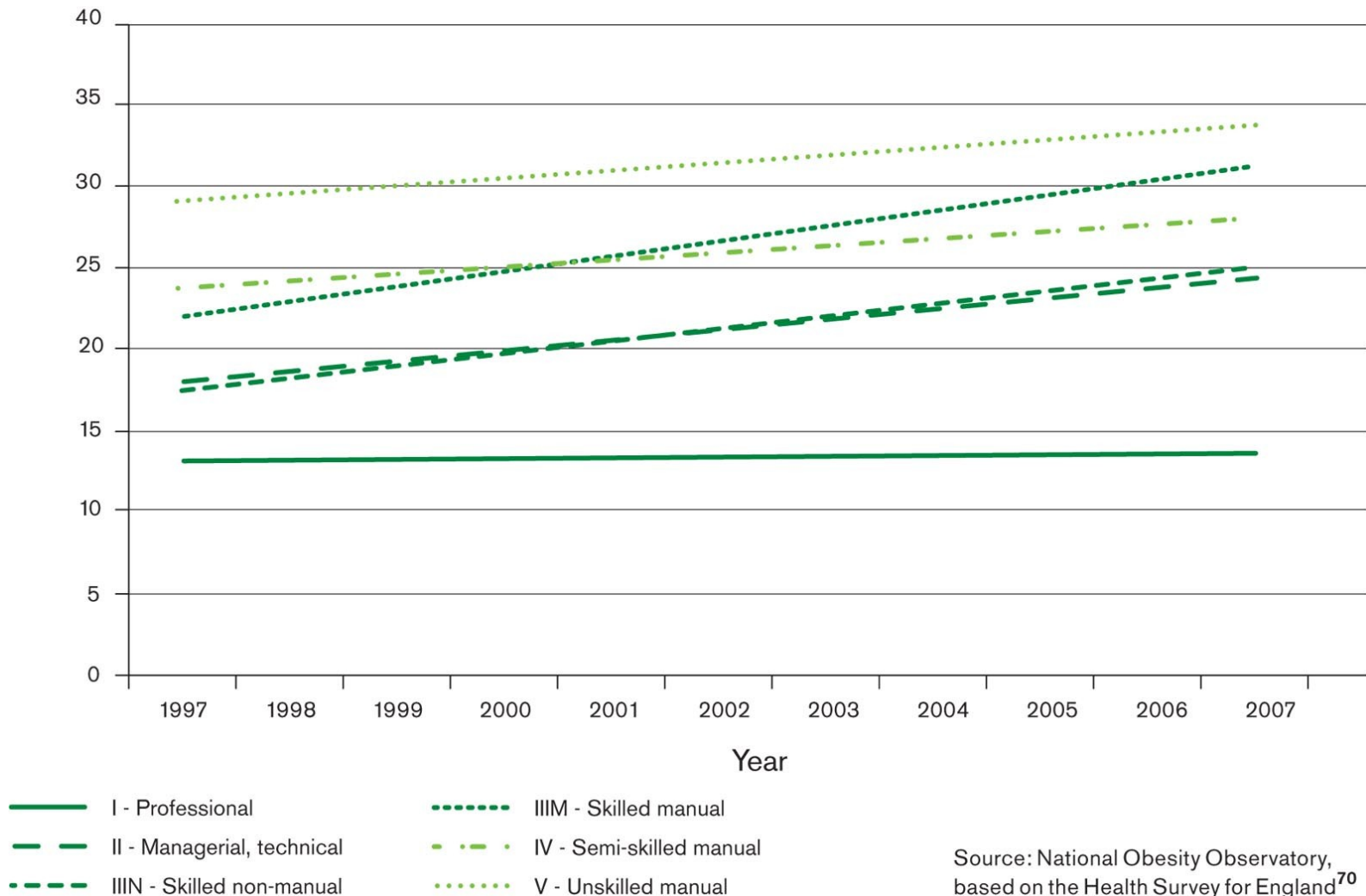


**Figure 2.15** Obesity prevalence at ages 16 and over by social class, (a) males and (b) females, 1997–2007

**(b) Females**

Percentage obese  
(BMI > 30)

**Taken from:  
the Marmot Review 2010**

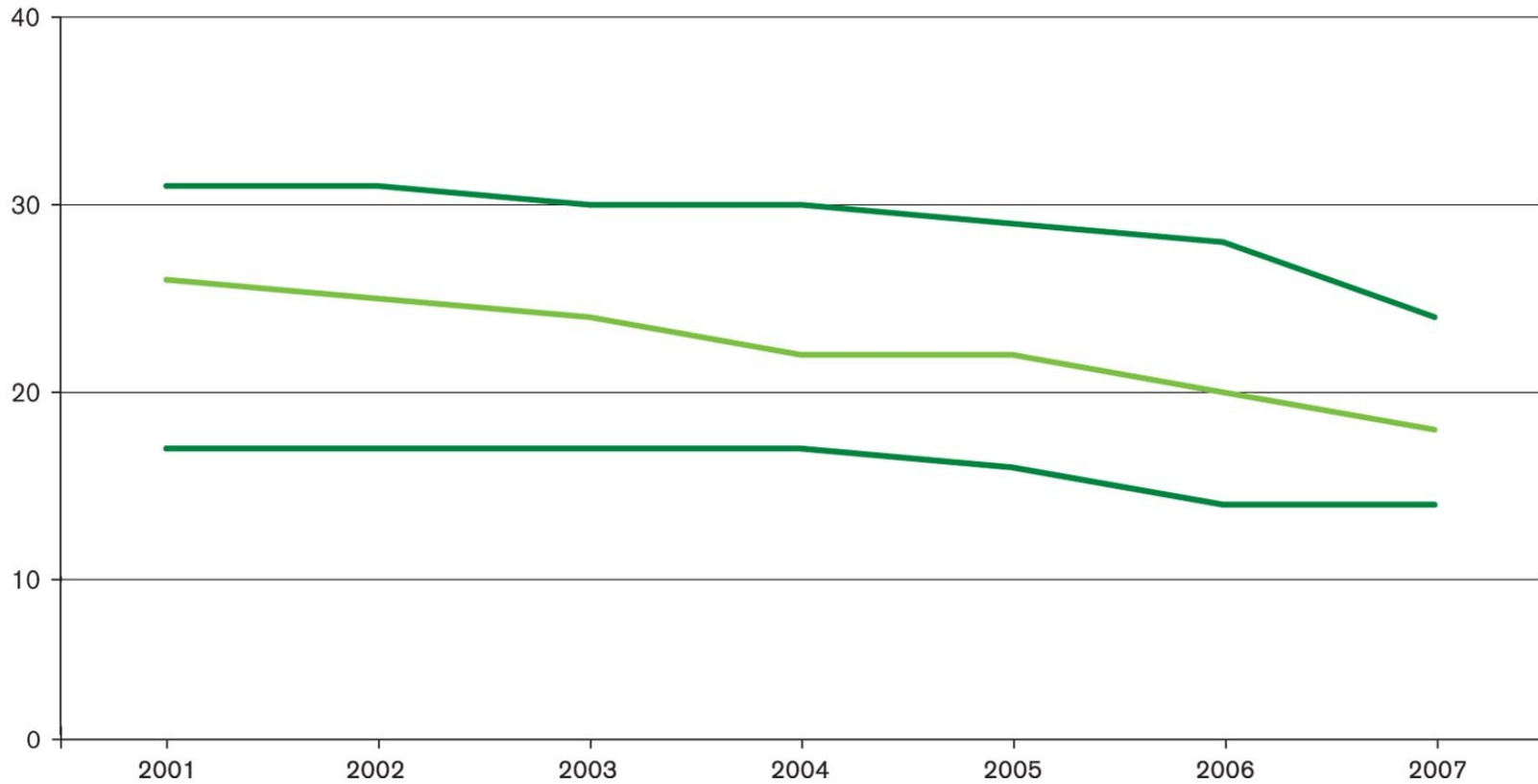


**Figure 2.13** Percentage of (a) males and (b) females smoking, by socioeconomic class (NS-SEC), 2001–7

**(b) Females**

**Taken from:  
the Marmot Review 2010**

Percent



- Managerial and professional
- Intermediate
- Routine and manual

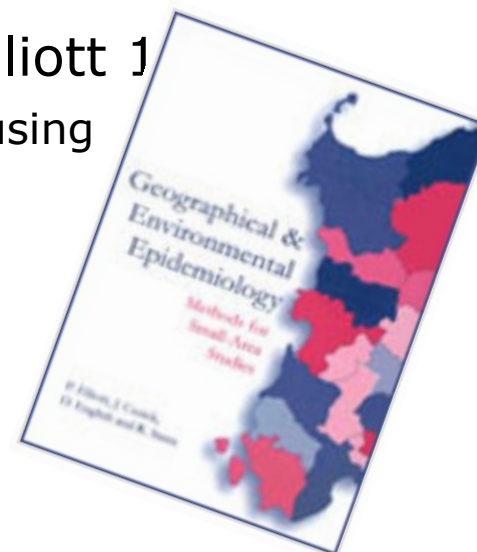
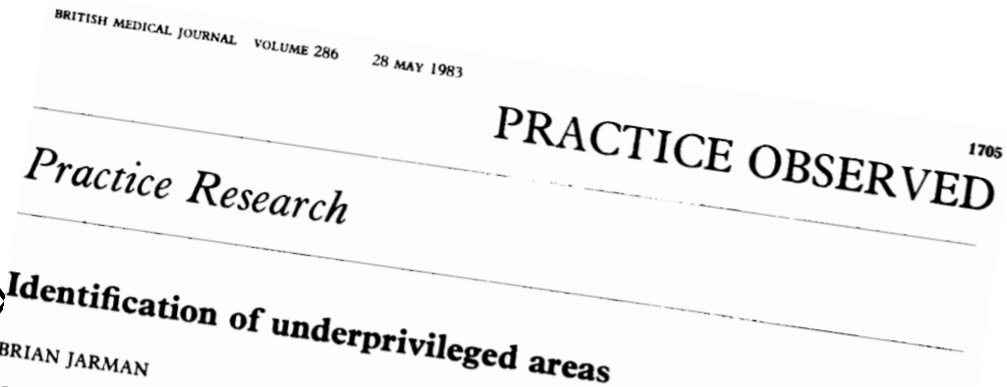
Note: NS-SEC=National Statistics Socioeconomic Classification  
Source: Office for National Statistics General Household Survey<sup>65</sup>



# Area-based level measures of SEP

# Deprivation indexes

- Townsend index (next)
- Carstairs index (next)
- Underprivileged area score – see Jarman 1983
- Department of Environment Index (index of urban poverty) – see Elliott 1983
  - three dimensions: social, economic, housing



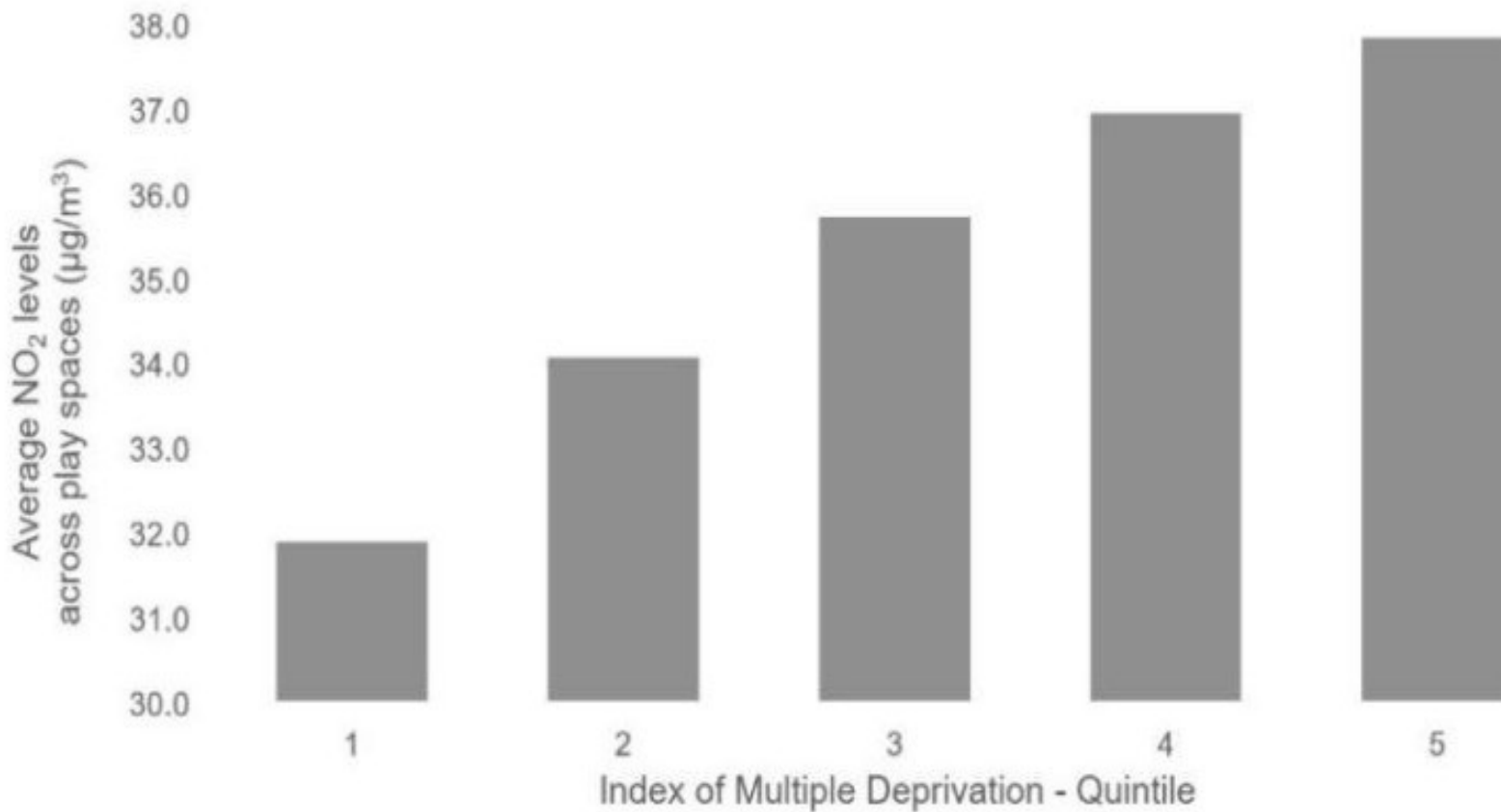
# English Index of Multiple Deprivation (IMD)

- The English Indices of Deprivation are relative measures of multiple deprivation at the small area level.
- IMD can be used to rank every small area in England according to the deprivation experienced by the people living there.

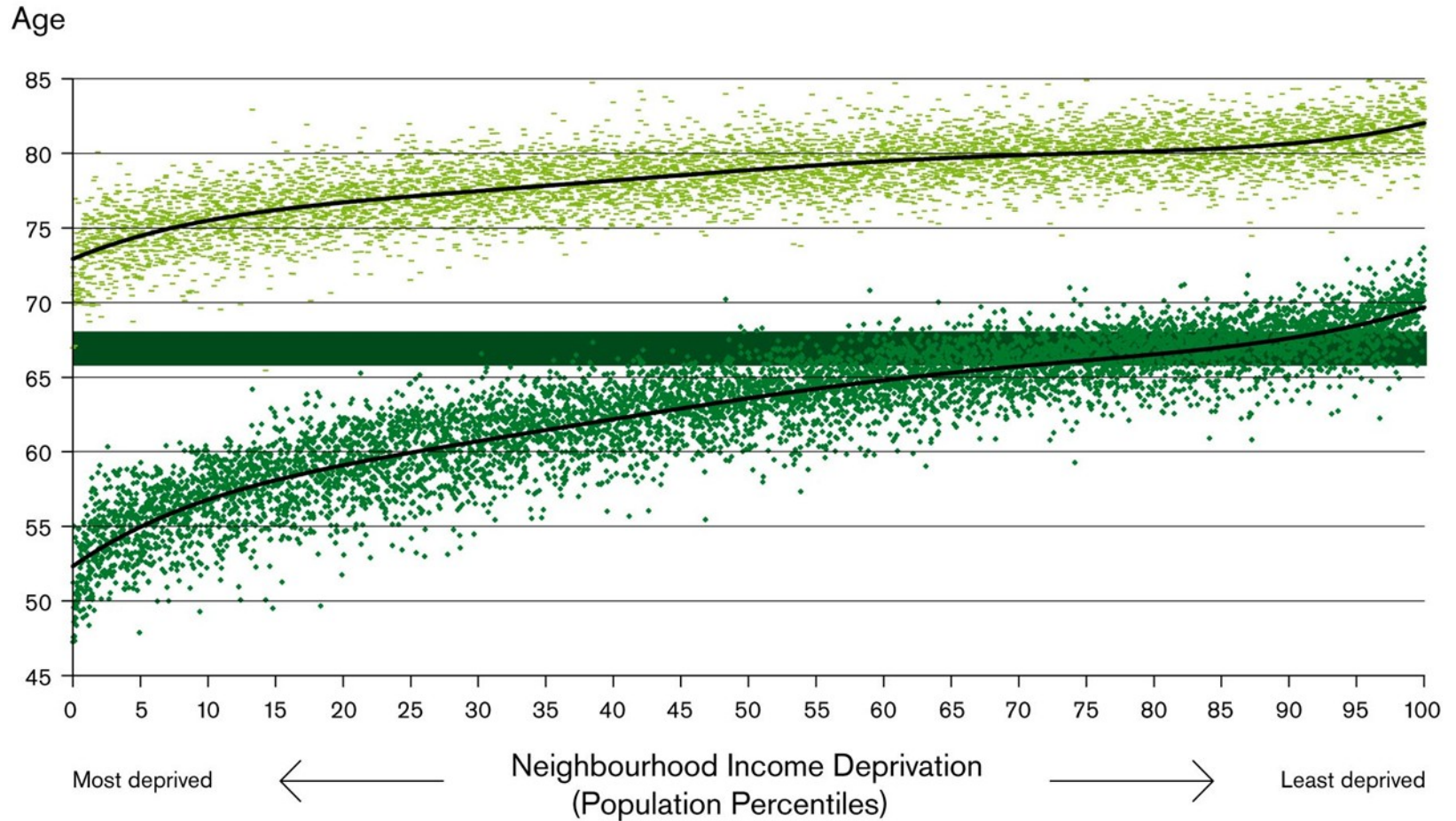
# Domains of IMD

- Seven distinct domains of deprivation – they are combined and weighted:
  - Income (22.5%)
  - Employment (22.5%)
  - Health Deprivation and Disability (13.5%)
  - Education, Skills Training (13.5%)
  - Crime (9.3%)
  - Barriers to Housing and Services (9.3%)
  - Living Environment (9.3%)

Average NO<sub>2</sub> concentrations across play spaces in London by deprivation quintiles (i.e., 5ths), where 1 is least deprived and 5 is most deprived.



**Figure 1** Life expectancy and disability-free life expectancy (DFLE) at birth, persons by neighbourhood income level, England, 1999–2003

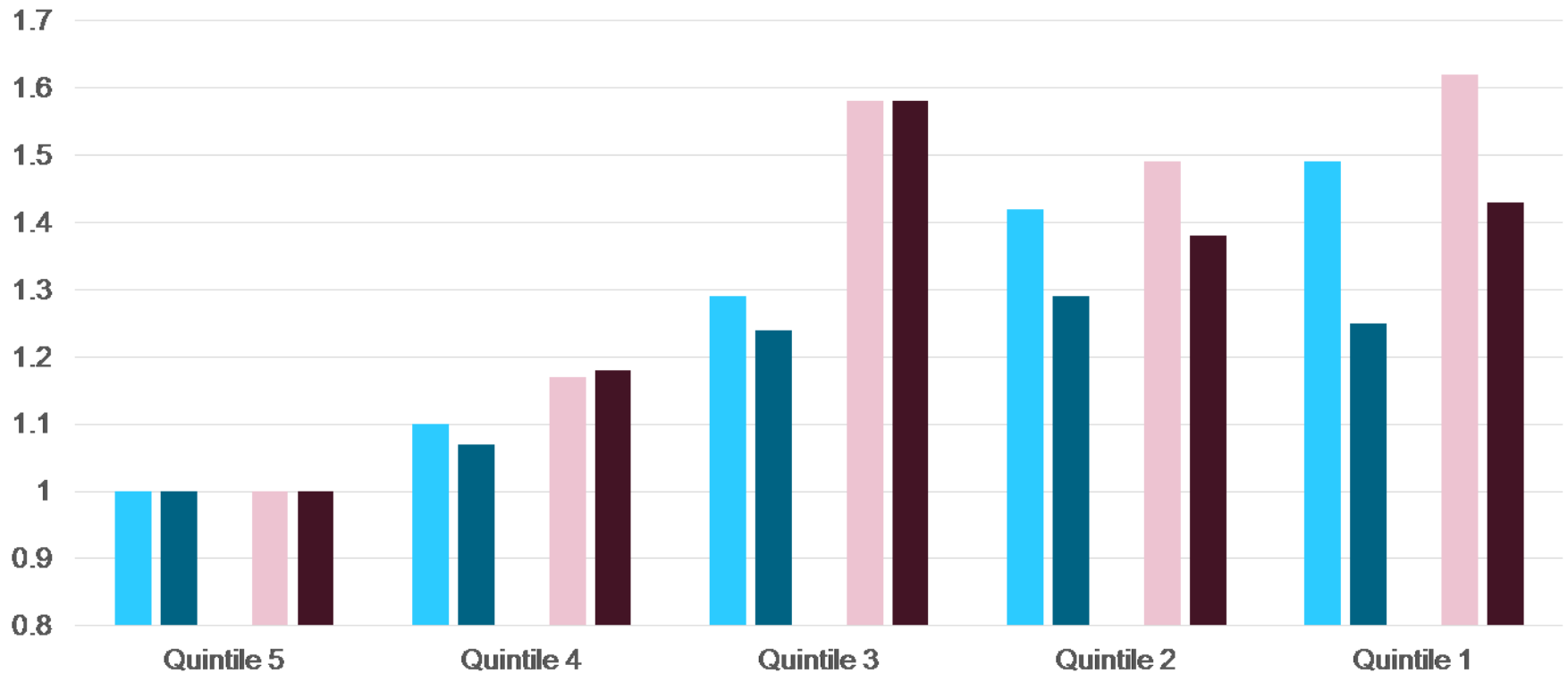


- Life expectancy
- DFLE
- Pension age increase 2026–2046

**Taken from:  
the Marmot Review 2010**

Source: Office for National Statistics<sup>5</sup>

# OR for all-cause and cardiovascular disease mortality by IMD at neighbourhood (LSOA) level

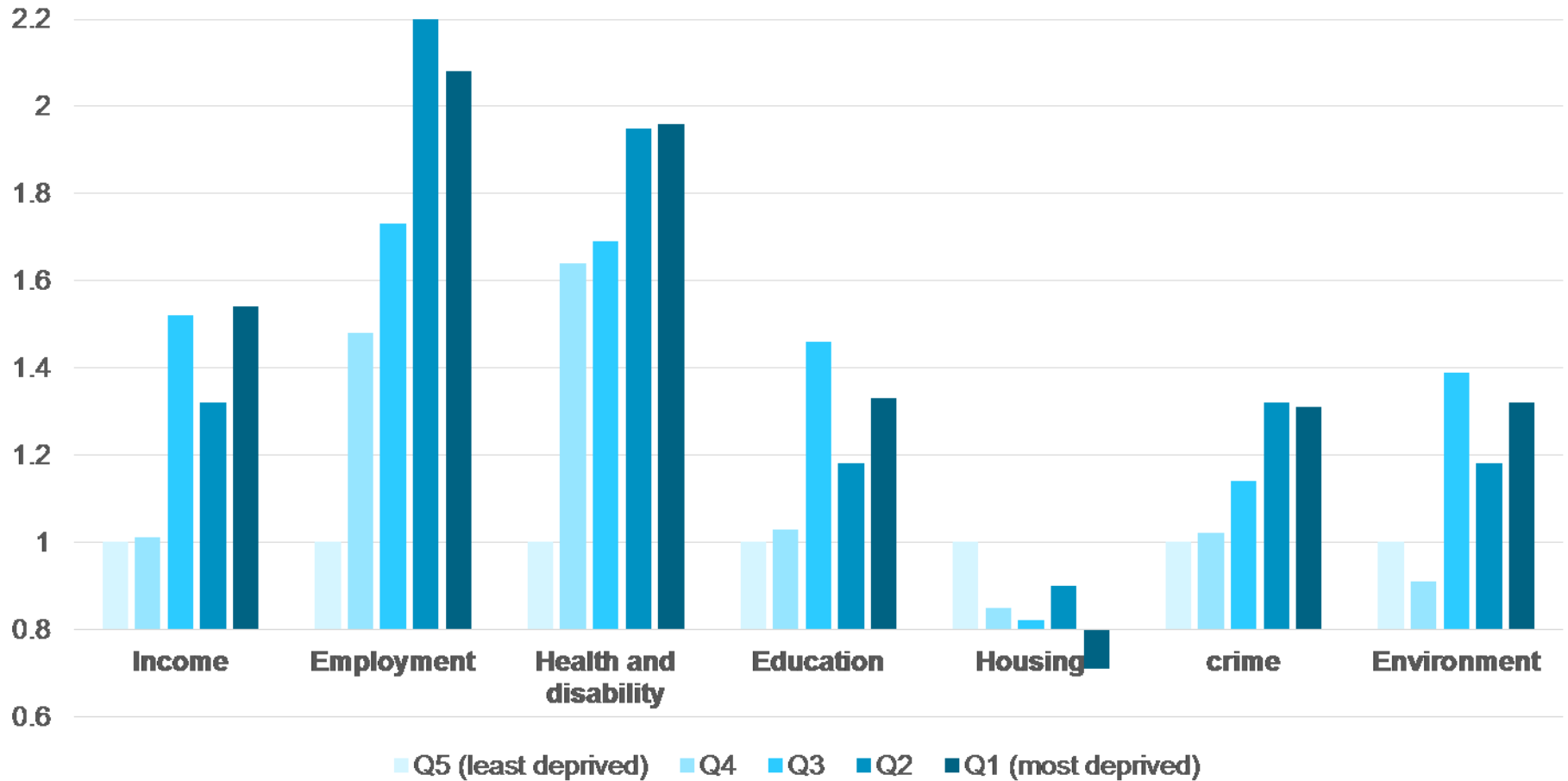


■ All cause, indiv SES adjusted ■ All cause, fully adjusted

■ CVD, indiv SES adjusted ■ CVD, fully adjusted

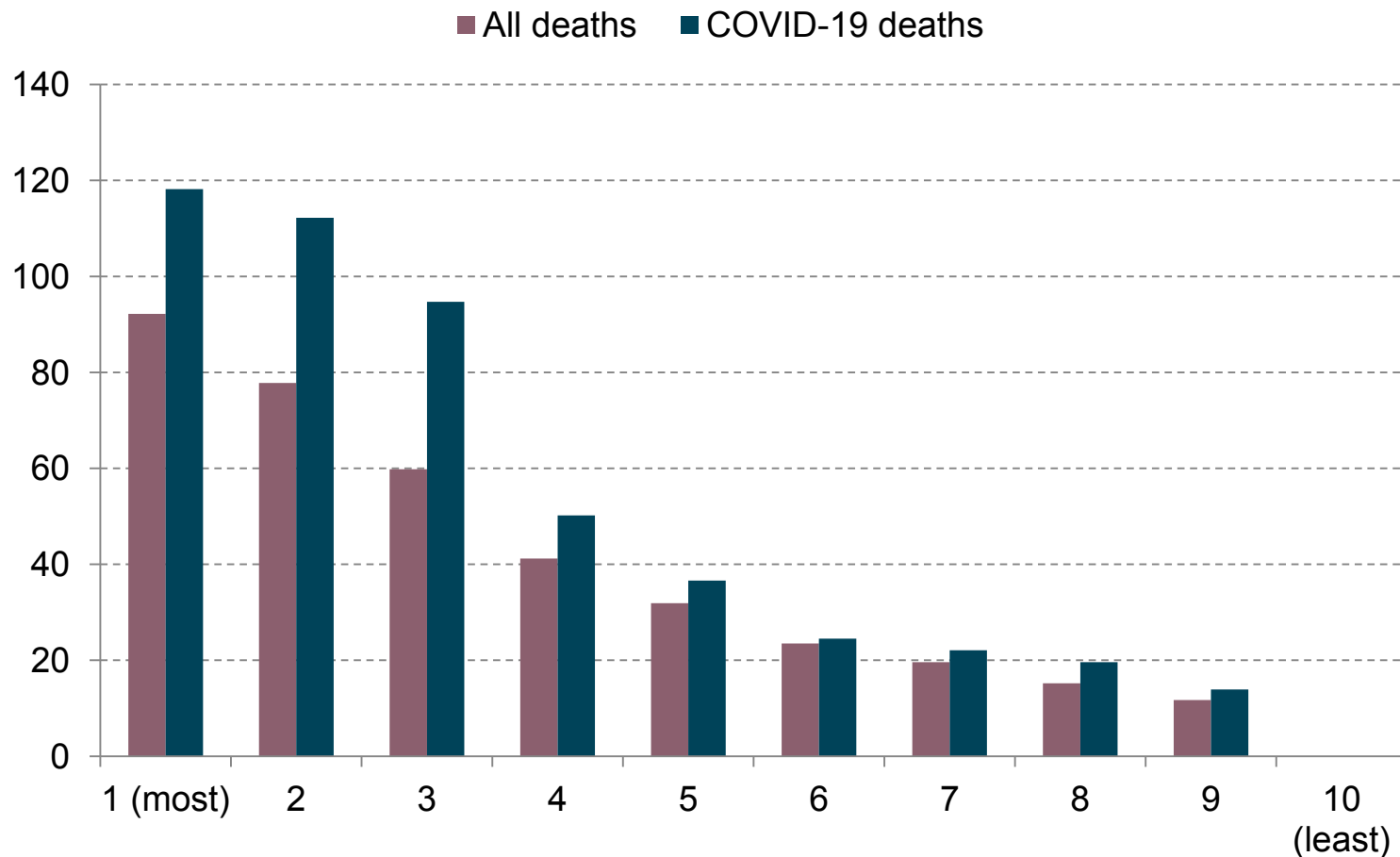
Ramsay et al, JECH, 2015,  
69:1224-1231

# OR for CVD mortality by IMD domains



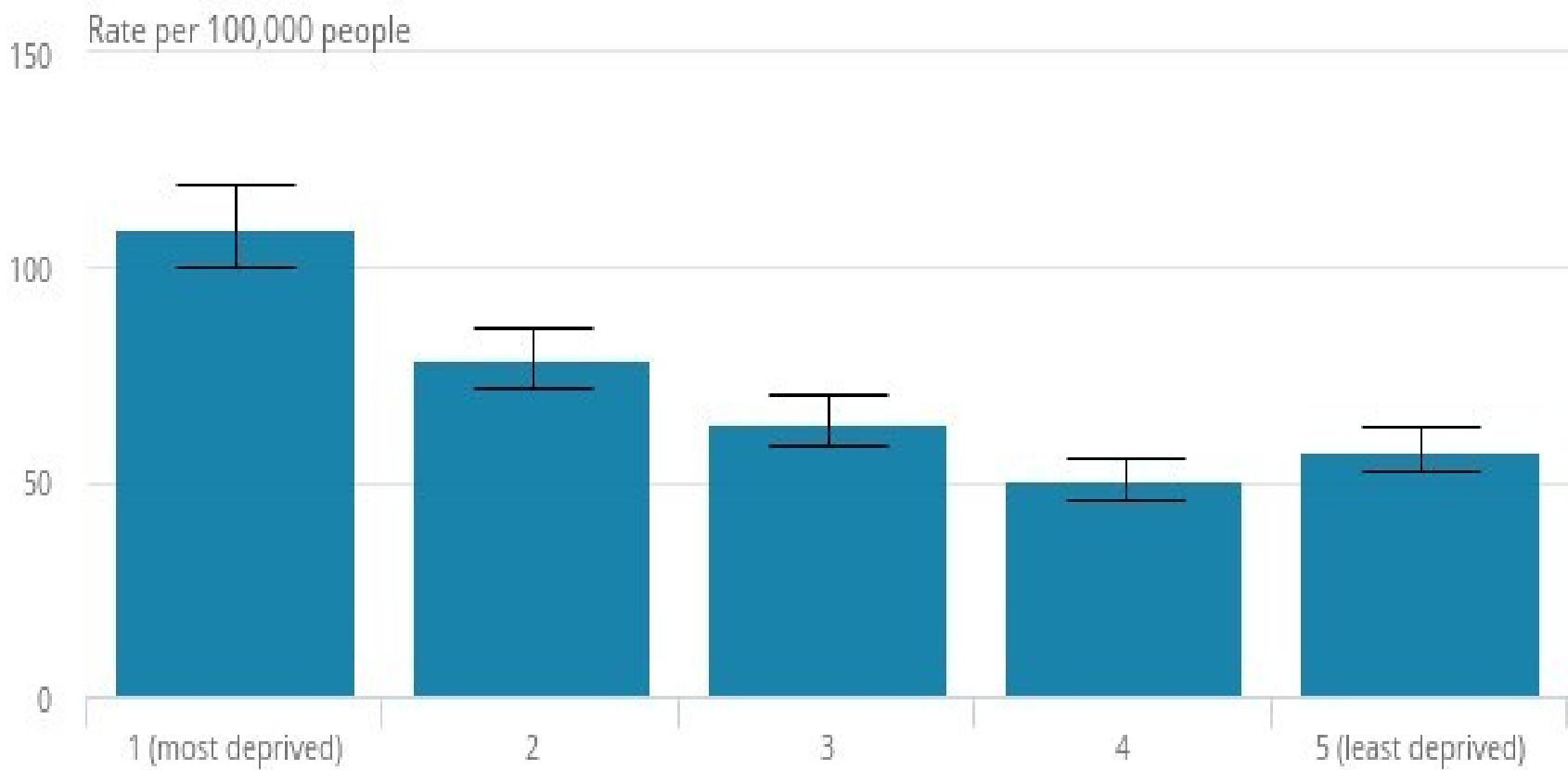


# Age-standardised rates of all deaths and deaths involving the coronavirus (COVID-19), by IMD decile, England (deaths between 1 March and 31 May 2020, per 100,000)



**Source: Office for National Statistics – Deaths involving COVID-19**

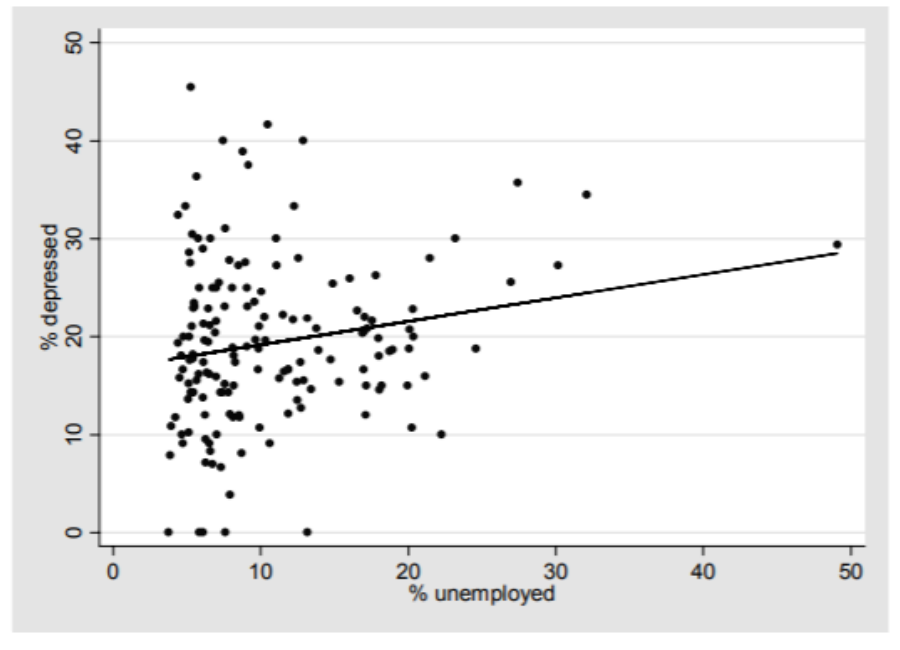
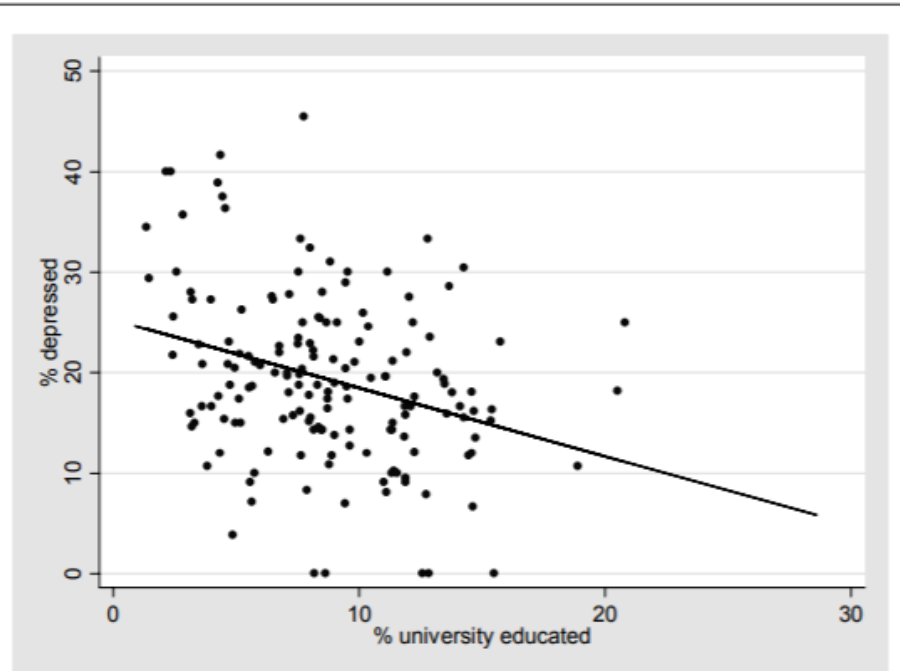
# Age-standardised deaths rates involving the coronavirus (COVID-19) by IMD, Wales, 1 March-31 May 2020, per 100,000. Rates nearly twice as high in the most deprived areas.



**Source: Office for National Statistics – Deaths involving COVID-19**

# Czech Republic

- Area level data: CENSUS districts (median size 1536 ind.)
- HAPIEE study – >8000 ind. 45-69 years old
- Neighbourhood SE indicators and depressive symptoms (Pikhartova et al, IJPH 2009)



# **Socioeconomic inequalities in health – multilevel approach**

- Many different spatial levels
- Many different time-points within the same individual

## Socioeconomic inequalities in health – multilevel approach

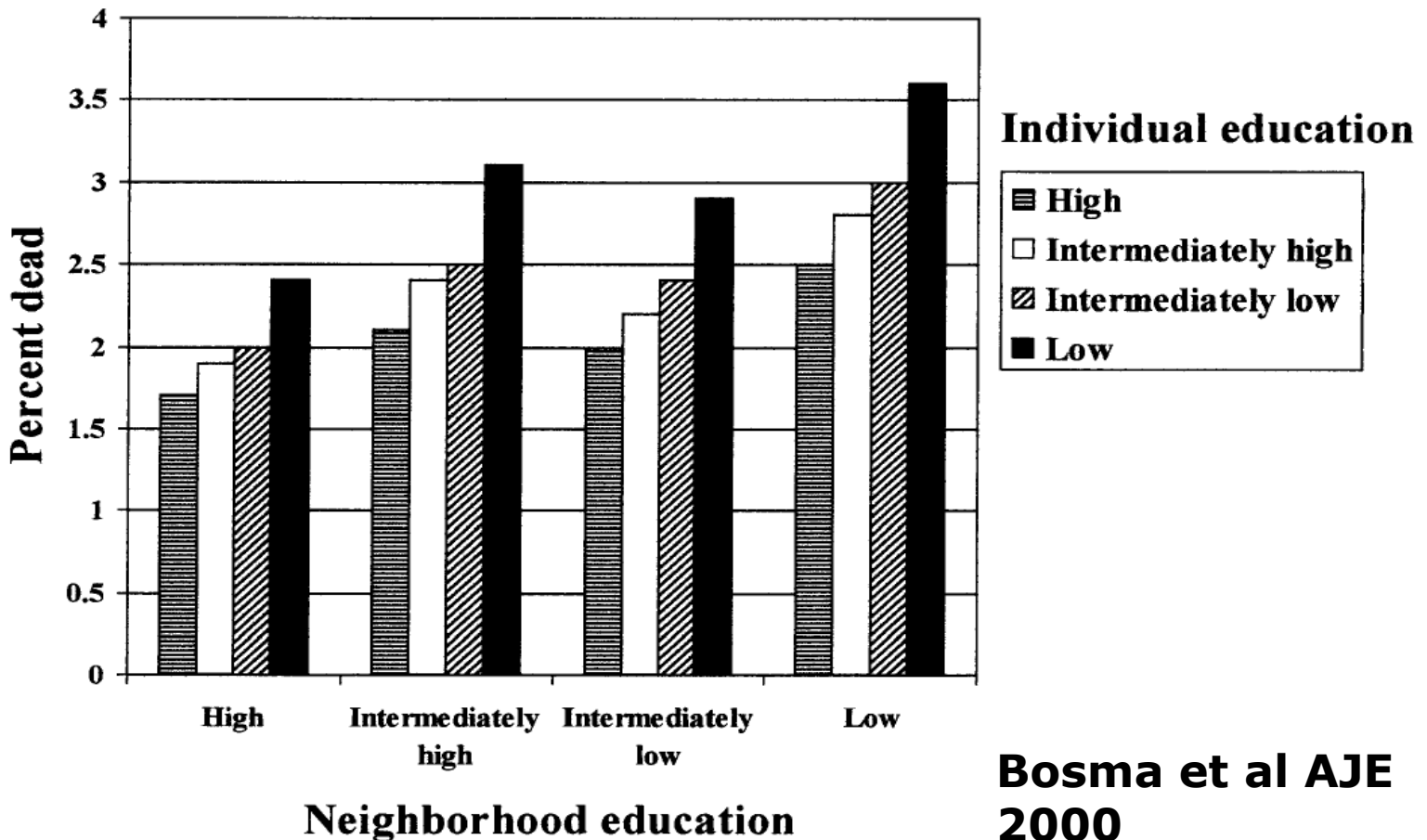
...Paradoxically, epidemiology, the study of disease in populations, has largely been reduced to the study of individual-level risk factors for disease.

Multilevel analysis is one way to begin to restore a population or societal dimension to epidemiologic research (i.e., the idea that factors operating at the levels of groups or societies affect the health of individuals within them).

It challenges epidemiologists to develop models of disease causation that integrate macro- and micro-level determinants...”

(Diez-Roux 1998 AJPH)

# Neighbourhood education and mortality (Dutch men)



**Bosma et al AJE  
2000**

FIGURE 1. Percent deceased during follow-up by individual and neighborhood educational level. Estimated for men aged 49 years without baseline diseases ( $n = 6,506$  deaths), longitudinal Globe study, Eindhoven, the Netherlands, 1991–1997.

# Neighbourhood characteristics and chronic inflammation (fibrinogen levels)

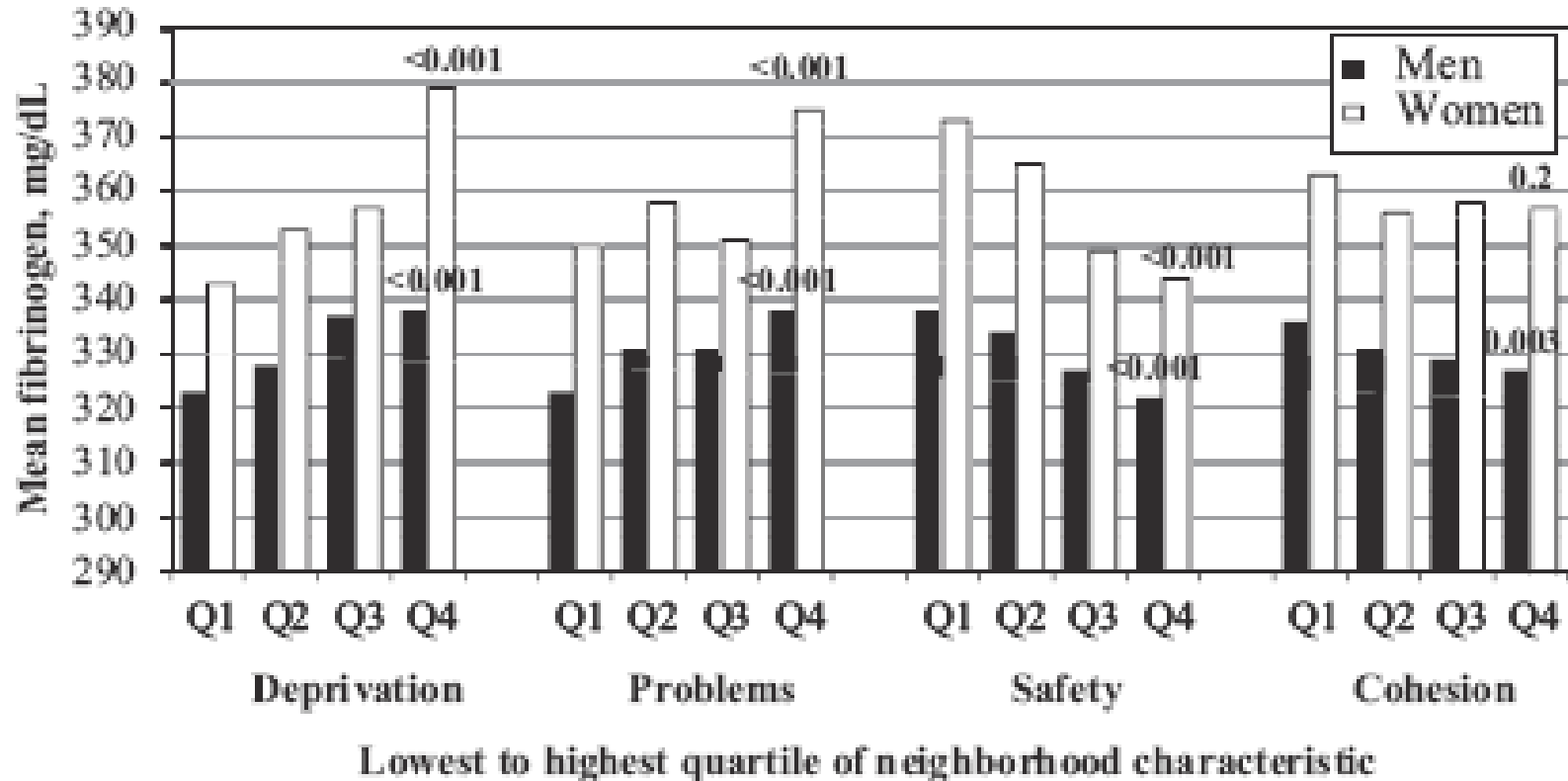


Fig. 1. Mean fibrinogen levels (mg/dL) per quartile of neighborhood characteristic according to sex among MESA participants ( $N=5370$ ). Age-adjusted  $P$  values for trend across quartiles are shown at the highest quartile.

# Socioeconomic inequalities in health and disease

- Beyond a mere description
- How and why?
- How → mechanisms
- Why → causes



# Socioeconomic inequalities in health – WHO 2000

## Target 1

### Equity in health

By the year 2000, the actual differences in health status between countries and between groups within countries should be reduced by at least 25%, by improving the level of health of disadvantaged nations and groups.

*Targets for health for all.* Copenhagen, WHO Regional Office for Europe, 1985  
(European Health for All Series No. 1)

# WHO Euro Health 2020

## Strategic objectives of Health 2020

The philosophy behind the Health 2020 policy framework is that structural advances in health can be effectuated when governments actively aim to fulfil two linked strategic objectives.

The two strategic objectives are:

- improving health for all and **reducing health inequalities**
- improving leadership and participatory governance for health.