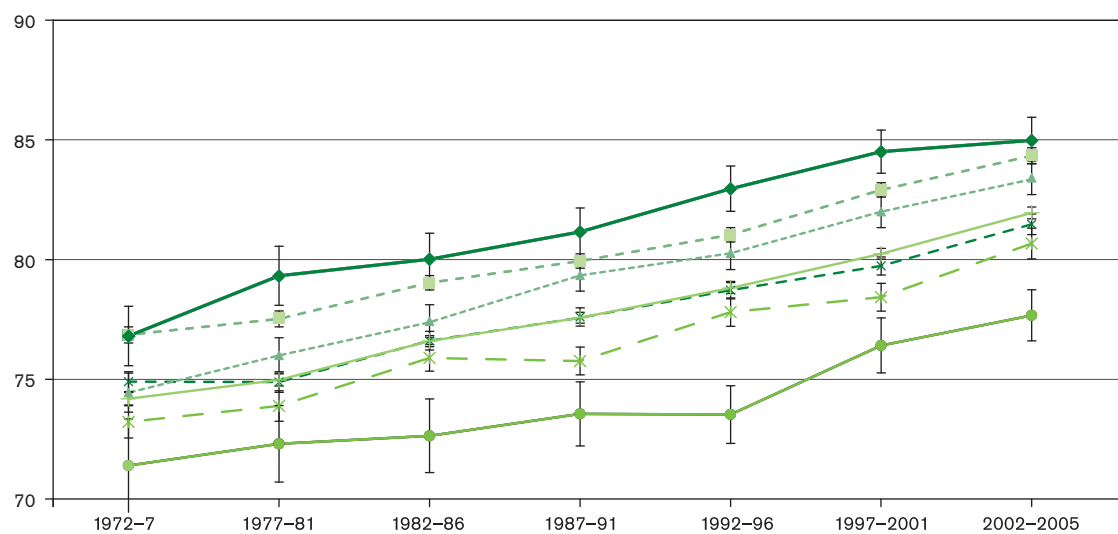


Figure 2.1 Life expectancy at birth by social class, a) males and b) females, England and Wales, 1972–2005

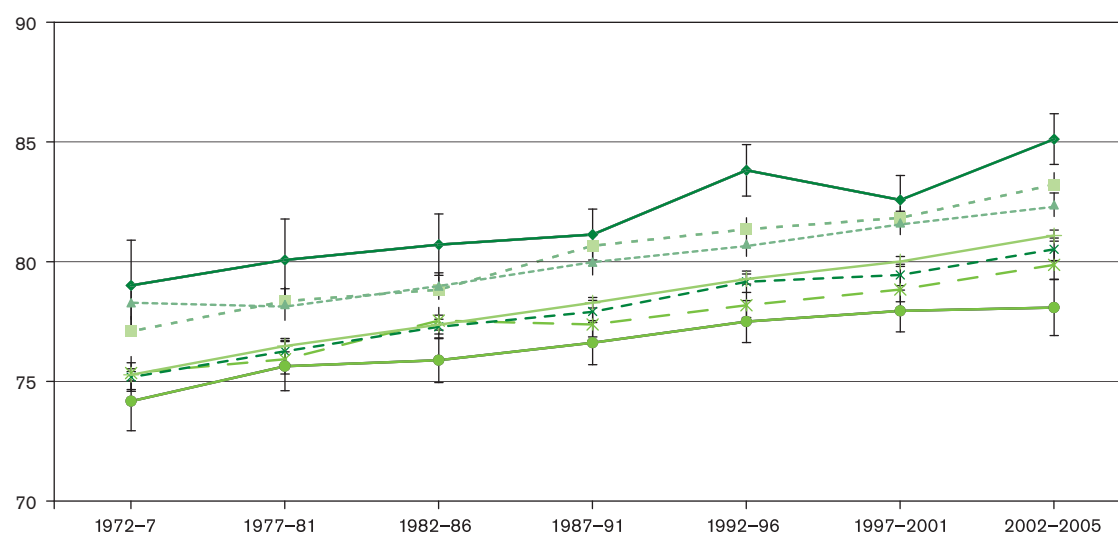
a) Males

Years



b) Females

Years



Social Class

- ◆— I
- II
- ▲— III
- *— IV
- V
- +— All

Source: Office for National Statistics
Longitudinal Study⁴⁵



Chapter 2

Health inequalities and the social determinants of health

2.1 Health inequalities in England – the figures

In England, inequalities in health exist across a range of social and demographic indicators, including income, social class, occupation and parental occupation, level of education, housing condition, neighbourhood quality, geographic region, gender and ethnicity. Inequalities are evident in many health outcomes, including mortality, morbidity, self-reported health, mental health, death and injury from accidents and violence.⁴⁴ In this chapter, inequalities in a variety of health outcomes are set out, followed by descriptions and analysis of inequalities in the social determinants of health. Finally, we provide estimates of the human and economic costs of inequalities.

Figure 2.1 illustrates the point made in Chapter 1 that, although life expectancy increased for everyone between 1971 and 2005, the gap in life expectancy by social class for both men and women has persisted, with some widening taking place in the 1980s and 1990s. These figures show clearly, for women as well as men, the graded nature of the relationship between social class and life expectancy – an observation similar to that shown with income in Figure 1.1. In 2002–5 the gap was about seven years for both sexes.

2.2 The current PSA target

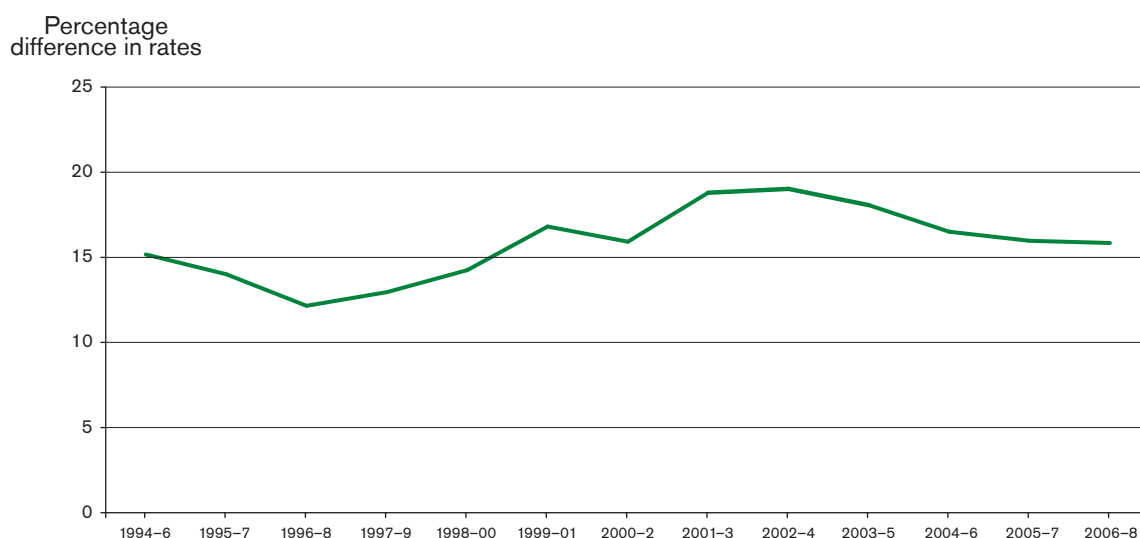
A national health inequalities Public Service Agreement (PSA) target was set in 2001. The aim of the target was to reduce inequalities in health outcomes in infant mortality and life expectancy by 2010. Updated in 2004, it was supported by two more detailed objectives around infant mortality and life expectancy. As well as this target, a range of PSA targets and national indicators support the broader health and social exclusion agendas.

The *infant mortality (IM) target* is, starting with children under one year, by 2010 to reduce by at least 10 per cent the gap in mortality between the routine and manual occupation group and the population as a whole.

The *life expectancy (LE) target* is, starting with local authorities, by 2010 to reduce by at least 10 per cent the gap between the fifth of areas with the worst health and deprivation indicators (the ‘spearhead’ group) and the population as a whole.

The data for the two targets show substantial improvements in life expectancy and infant mortality for all groups, including those in disadvantaged groups and areas, compared with the baseline periods.⁴⁷ However, the gaps in infant mortality and male

Figure 2.2 Relative difference in infant mortality rates between babies with fathers in routine and manual occupations and all with parents married or jointly registered, 1994/6–2005/7



Source: Department of Health⁴⁶

and female life expectancy remain. The infant mortality gap reached a peak of 19 per cent in 2002–4 and narrowed slightly in each of the subsequent periods to 16 per cent in 2006–8 (see Figure 2.2).

However, this latest figure is still wider than the 13 per cent baseline in 1997–9. Projecting the long-term trend since the baseline year suggests a 25 per cent widening in the gap by 2009–11. On the other hand, if the recent narrowing of the gap were to continue, the target would be exceeded.

The targets were set as relative differences. The headline of a widening gap does not convey the full picture, however. Figure 2.3 shows that infant mortality rates have been declining both in lower socioeconomic groups (routine and manual) and for the average. The absolute difference widened a little and then narrowed.

The spearhead group of areas used for the life expectancy target represents almost, but not quite, the most disadvantaged quintile of local authorities. Specifically, they are those in the bottom quintile nationally on three out of five factors: male and female life expectancy, cancer and cardiovascular mortality at ages under 75, and Index of Multiple Deprivation (IMD) score.

A similar observation – to that for infant mortality – can be made with regard to life expectancy. Figure 2.4 compares the spearhead areas with the average for England. Life expectancy has improved as much in the spearheads as in the average, but there has been no narrowing of the gap. The concentration

of spearhead areas at the lower end of the life expectancy spectrum makes it quite difficult to assess whether life expectancy improvements in spearhead areas differ markedly from progress in other areas.

The gap in male life expectancy between spearhead and non-spearhead areas in 2006–8 widened slightly, by 2 per cent since the 1995–7 target baseline; for females the gap grew by 11 per cent. As shown in Figure 2.4, the health inequality target for narrowing the gap between spearheads and the England average is unlikely to be met.

For males, there is some evidence – see Figure 2.5 – that between baseline measurement in 1995–7 and setting up of the spearhead areas in 2004, there was most improvement in life expectancy in areas that had lower life expectancy initially, more so than in areas where there was higher life expectancy (a form of ‘regression to the mean’). This was true for both spearhead and non-spearhead areas – but spearhead areas benefited most as they had lower initial life expectancy.

Since the establishment of the spearhead initiative, there has been no evidence for males of there being greater improvement in life expectancy in spearhead areas than in non-spearhead areas. The picture is slightly different for females – see Figure 2.5. Improvements for non-spearhead areas followed a similar pattern to those for males. However, for spearhead areas, improvements both before and after they were set up were on average less than for non-spearhead areas – with no evidence that this

Figure 2.3 Trends in the infant mortality PSA target indicator 1997/9 to 2006/8 and projections to 2009/11

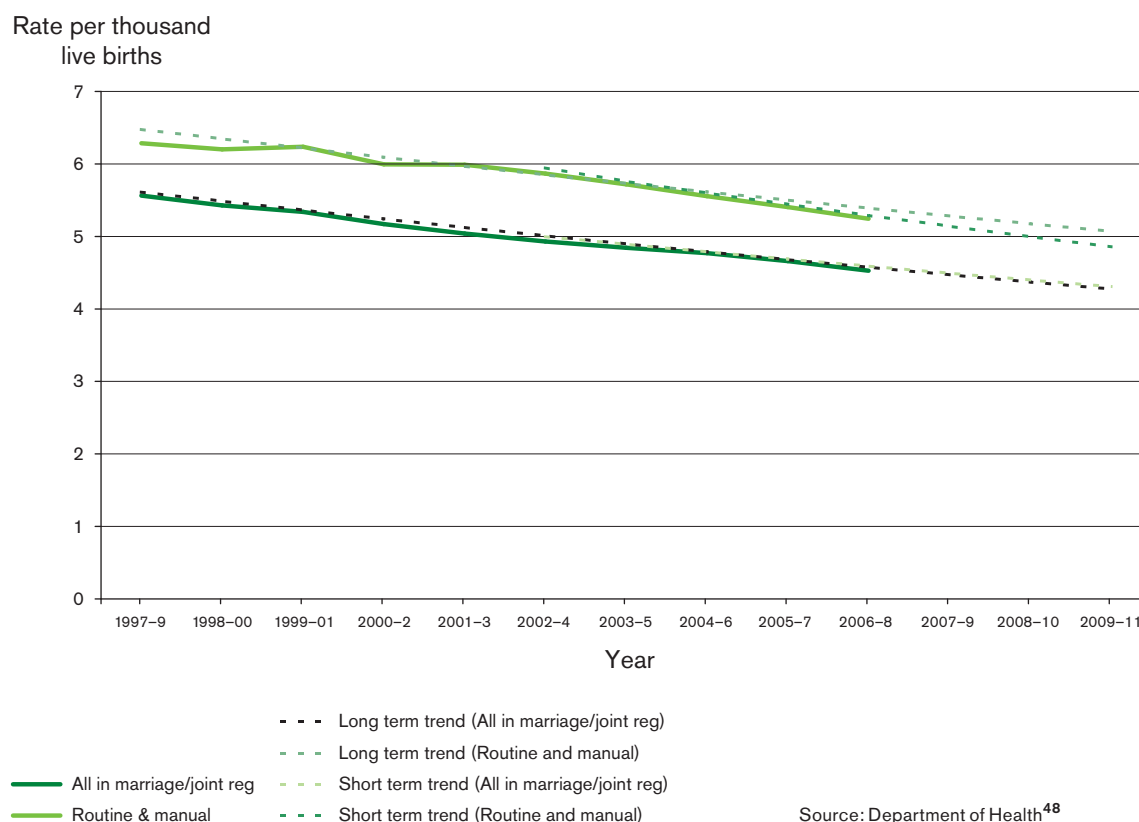
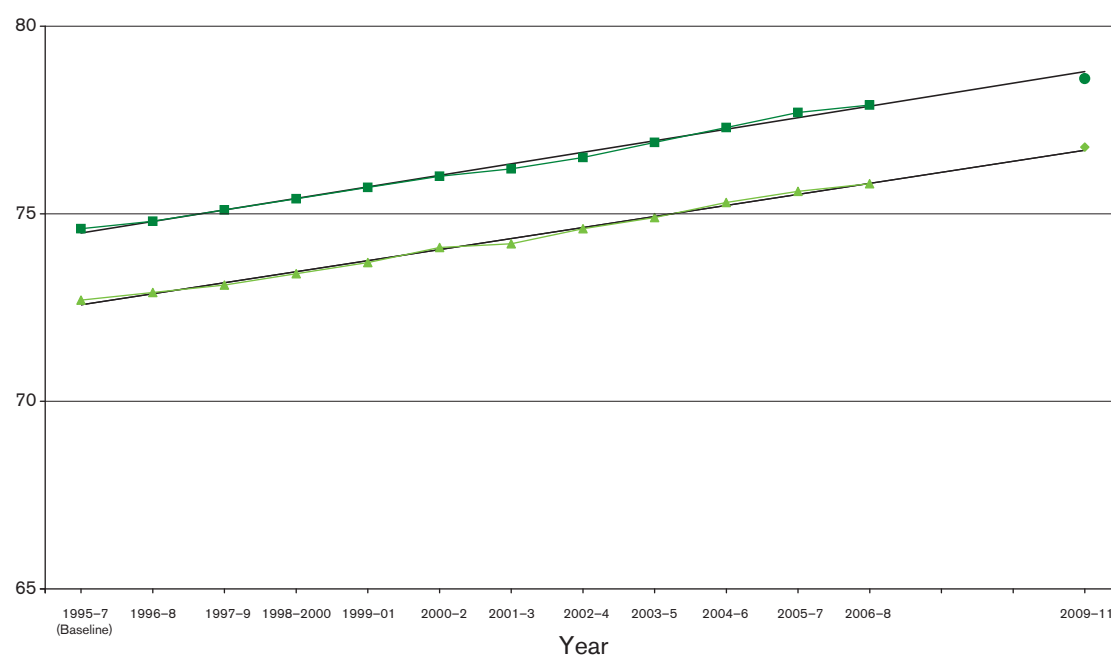


Figure 2.4 Life expectancy at birth in England and in spearhead areas, (a) males and (b) females, 1995–7 to 2006–8

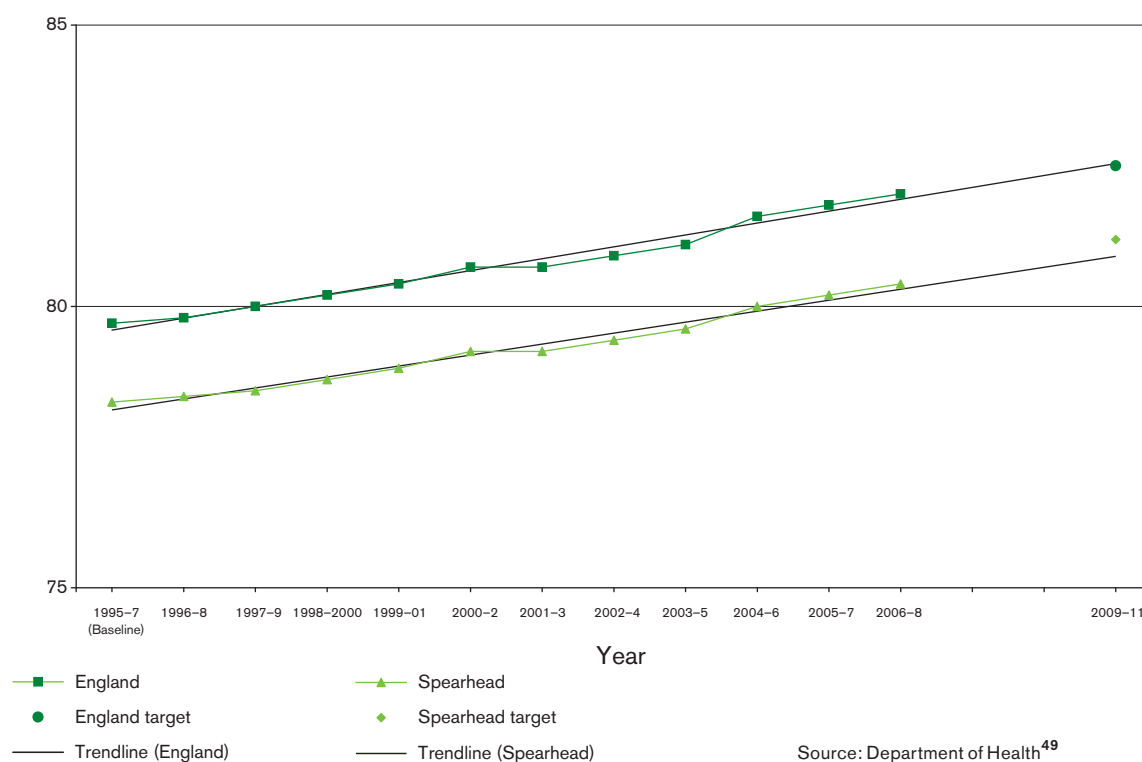
(a) Males

Life expectancy (years)



(b) Females

Life expectancy (years)



Source: Department of Health⁴⁹

was related to the lower initial life expectancy in spearhead areas. So, life expectancy for women in spearhead areas has shown either no improvement or worse outcomes compared with non-spearhead areas.

Taken together, the data show welcome improvements in everyone's health, including the worst-off, but no narrowing of the gap, and little evidence that establishment of spearhead areas and consequent action made any difference to health inequalities.

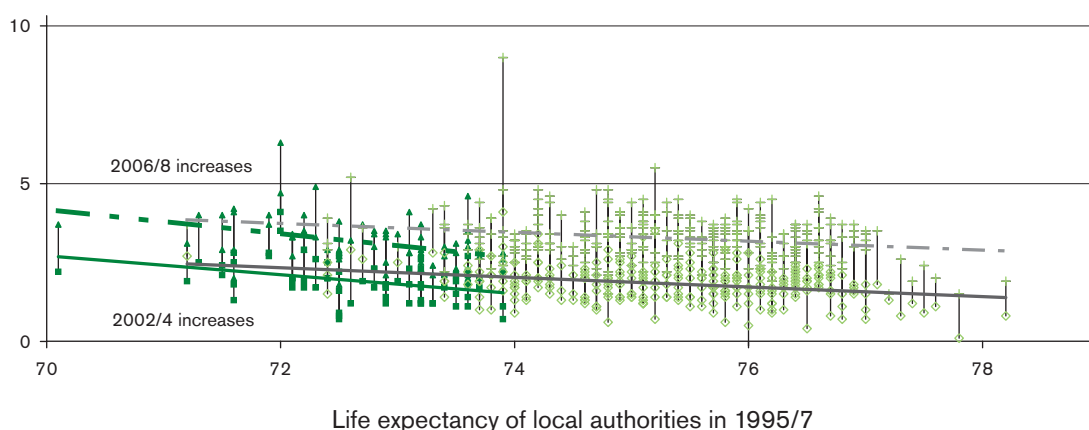
2.3 Regional variation in mortality

Figure 2.6 shows how the social gradient in mortality varied by region in 2001–3. Gradients in the South and East of England, excluding London, were less steep than the national average, and those in the North West and North East were considerably wider. Those in managerial and professional classes have similar, and lower, levels of mortality wherever they live. However, there are significant regional variations among those in other socioeconomic classes, which widen the further down the social gradient one moves.

Figure 2.5 Difference between (a) male and (b) female life expectancy in 1995/7 and that in (i) 2002/4 and (ii) 2006/8 for spearhead and non-spearhead local authorities, by level of life expectancy in 1995/7

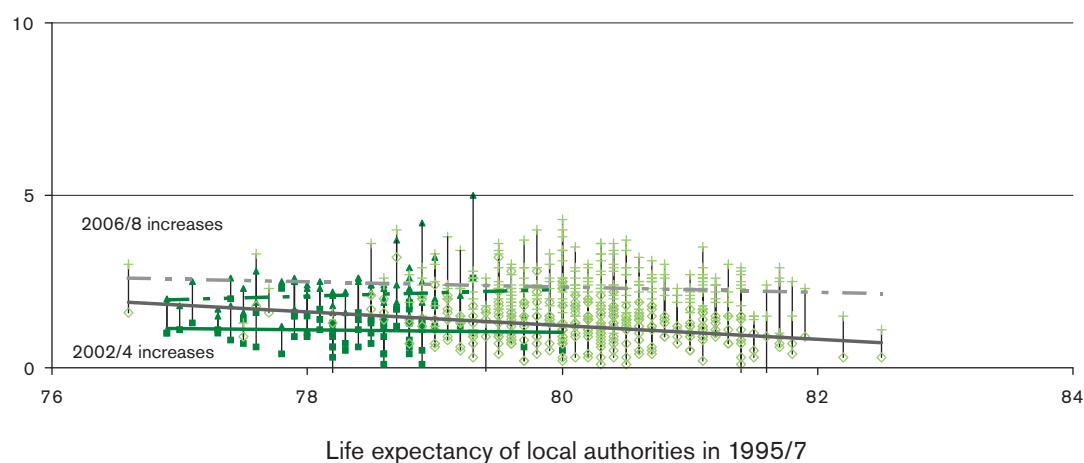
(a) Males

Increase in life
years since 1995/7



(b) Females

Increase in life
years since 1995/7



- ▲ 2006–8 spearhead increase
- 2002/4 spearhead increase
- + 2006–8 non-spearhead increase
- ◇ 2002/4 non-spearhead increase
- Non-spearhead 2002/4 regression line
- Spearhead 2002/4 regression line
- Spearhead 2006/8 regression line
- Non-spearhead 2006–8 regression line

Source: Office for
National Statistics⁵⁰





Figure 2.6 Age standardised mortality rates by socioeconomic classification (NS-SEC) and region, men aged 25–64, 2001–2003

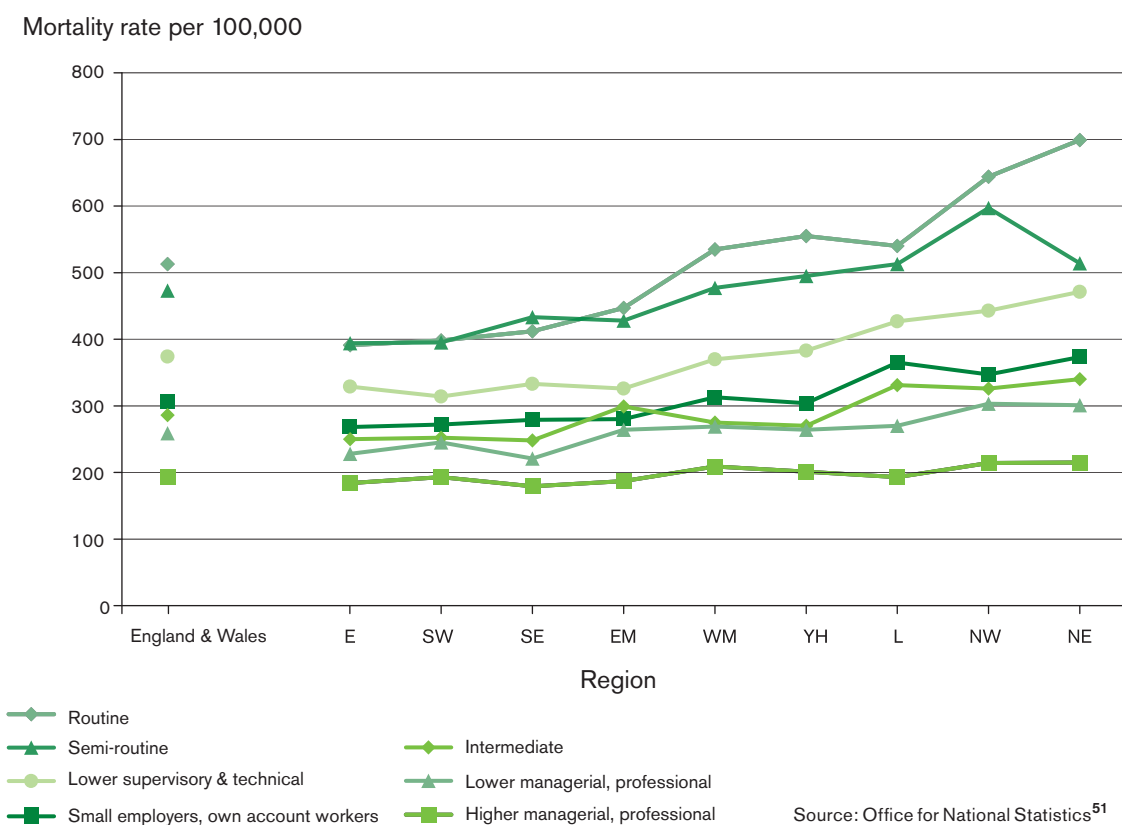
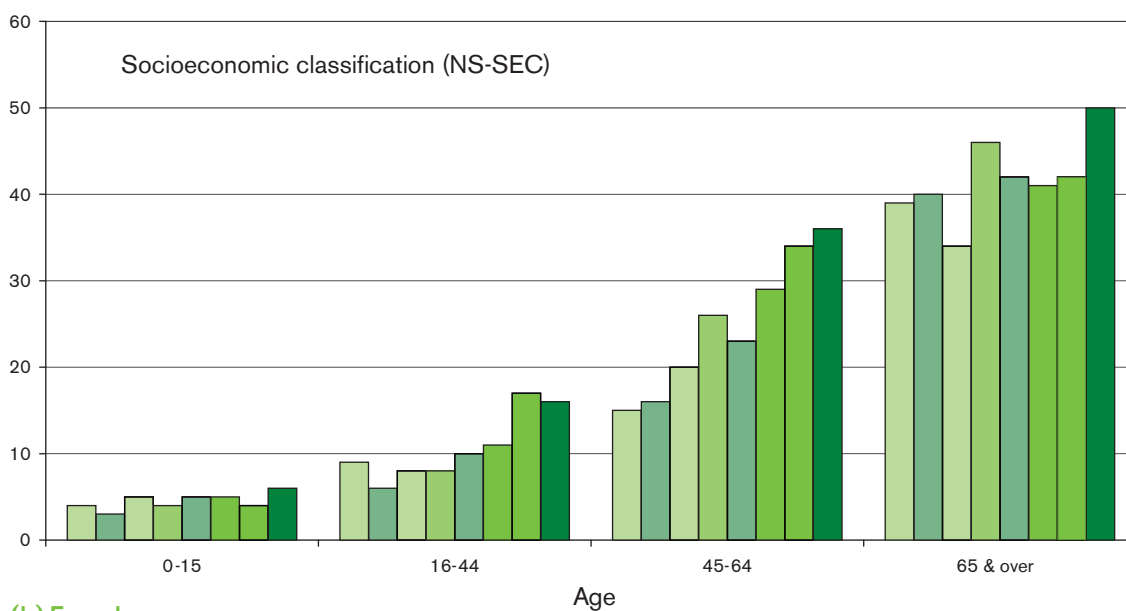


Figure 2.7 Percentage of (a) males and (b) females with limiting long-term illness, by age and socioeconomic classification (NS-SEC), 2007

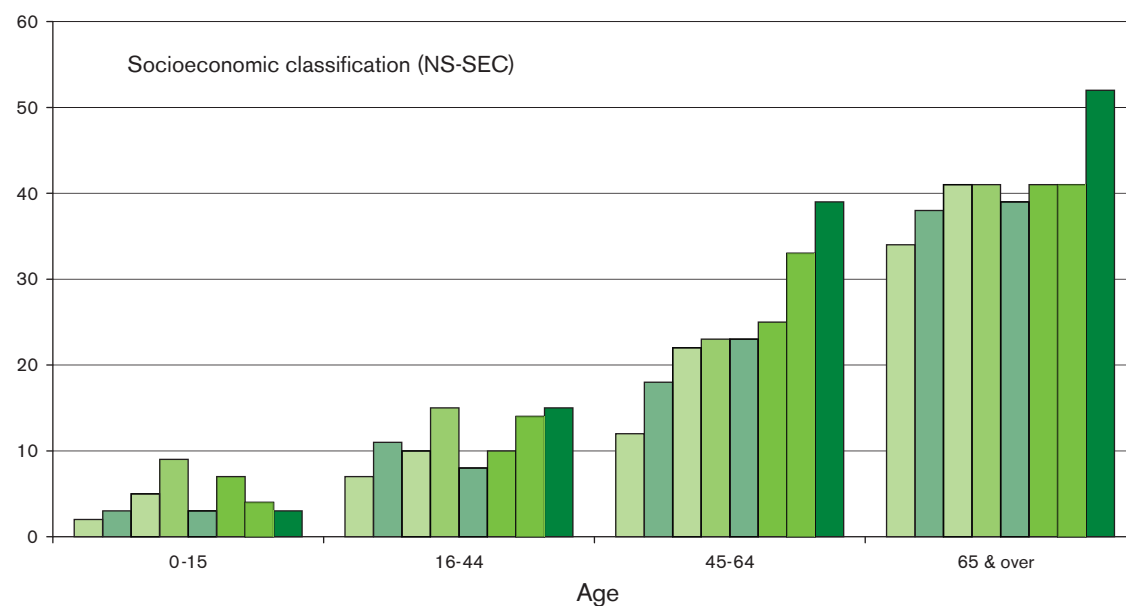
(a) Males

Percent



(b) Females

Percent



- | | |
|---------------------------------------|---------------------------------|
| Large employers and higher managerial | Small employers and own account |
| Higher professional | Lower supervisory and technical |
| Lower managerial and professional | Semi-routine |
| Intermediate | Routine |

Note: NS-SEC=National Statistics Socio-economic Classification
Source: Office for National Statistics General Household Survey⁵²



2.4 Other indicators of health

As indicated in Chapter 1, there are significant social gradients in morbidity. This is illustrated by Figure 2.7, which shows limiting long-term illness rates by age and socioeconomic classification. The social gradient is steepest at ages 45 to 64, with those in routine and semi-routine jobs at this age having illness rates comparable to those aged 65 and over in some of the managerial and professional classes. So steep is the social gradient, in fact, that the lowest groups at age 45–64 have illness rates comparable to higher socioeconomic groups aged 65 and over. The Whitehall II study, similarly, suggested that decline in physical functioning occurs about 12 years earlier in men and women in lower employment grades compared with those in higher grades.⁵³

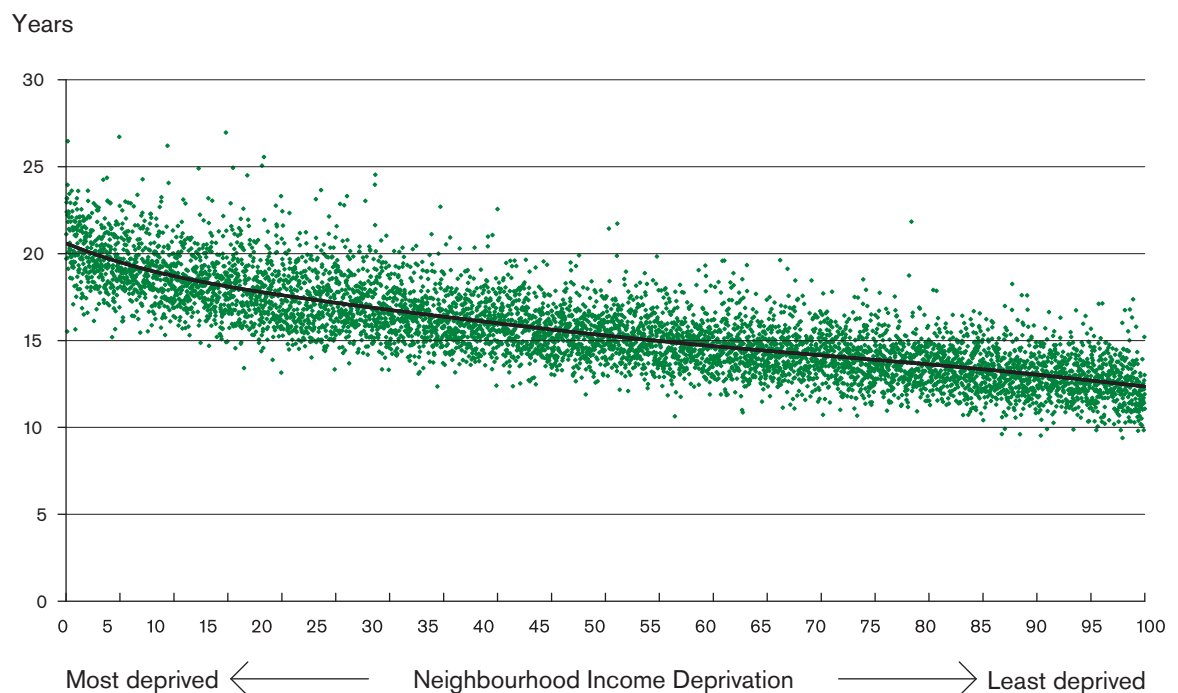
Disability-free life expectancy (DFLE) is derived using information on limiting long-term illness and mortality. As can be seen from the above (and as illustrated in Chapter 1, Figure 1.1), DFLE is clearly closely related to socioeconomic status, with a steeper socioeconomic gradient (based on neighbourhood income deprivation) than for life expectancy.

Figure 2.8 indicates that inequalities in the number of years spent free of disability are greater than those based simply on total years of life. In other words, people in lower socioeconomic groups not only have shorter lives but they also spend more of their later years with a disability. In Chapter 5 we consider the implications of the steep gradient in

DFLE for measuring and monitoring inequalities in health and well-being.

Despite the steep gradient in DFLE based on neighbourhood income deprivation, there is considerable variation in DFLE (and in the number of years spent with a disability) between neighbourhoods with the same level of income deprivation. Much of this variation is associated with regional variation in both mortality and disability. Trend lines for DFLE by region are shown in Figure 2.9. At each level of neighbourhood income deprivation, DFLE is (on average) highest in London, where it is around five years more than in the North East and North West, which have the lowest average levels.

Figure 2.8 Number of years from birth spent with disability, persons by neighbourhood income level, England, 2001



Source: Office for National Statistics⁵⁴

2.5 Health risks

There are steep social gradients in the incidence of both cancer and circulatory disease. For example, education status is related to lung cancer incidence, with people with low levels of education having a higher incidence of this cancer.⁵⁵ In terms of disease burden, vascular disease affects 4.1 million people, kills 170,000 every year and is responsible for a fifth of all hospital admissions. It is the largest single cause of long-term ill health and disability and accounts for more than half the mortality gap between rich and poor. Mortality and morbidity from cardiovascular disease (CVD) and cancer are also higher among people with poor mental health, after controlling for socioeconomic variables.⁵⁶

In 2001–3 there were 2.7 times more deaths from CVD among men in the most deprived twentieth compared with the least deprived twentieth of the population⁵⁷ – see Figure 2.10. However, by 2006–8 the death rate from circulatory disease between the spearhead areas and non-spearhead areas had narrowed by 38 per cent, with a 2010 target of 40 per cent.

Risk factors for cancer and circulatory diseases, such as smoking, physical inactivity and obesity, are elevated along the social gradient.⁵⁸ The burden of disease falls disproportionately on people living in deprived conditions, and for some health conditions falls particularly heavily on certain ethnic groups.

Figure 2.9 Disability-free life expectancy at birth, persons: regional averages at each neighbourhood income level, England, 1999–2003

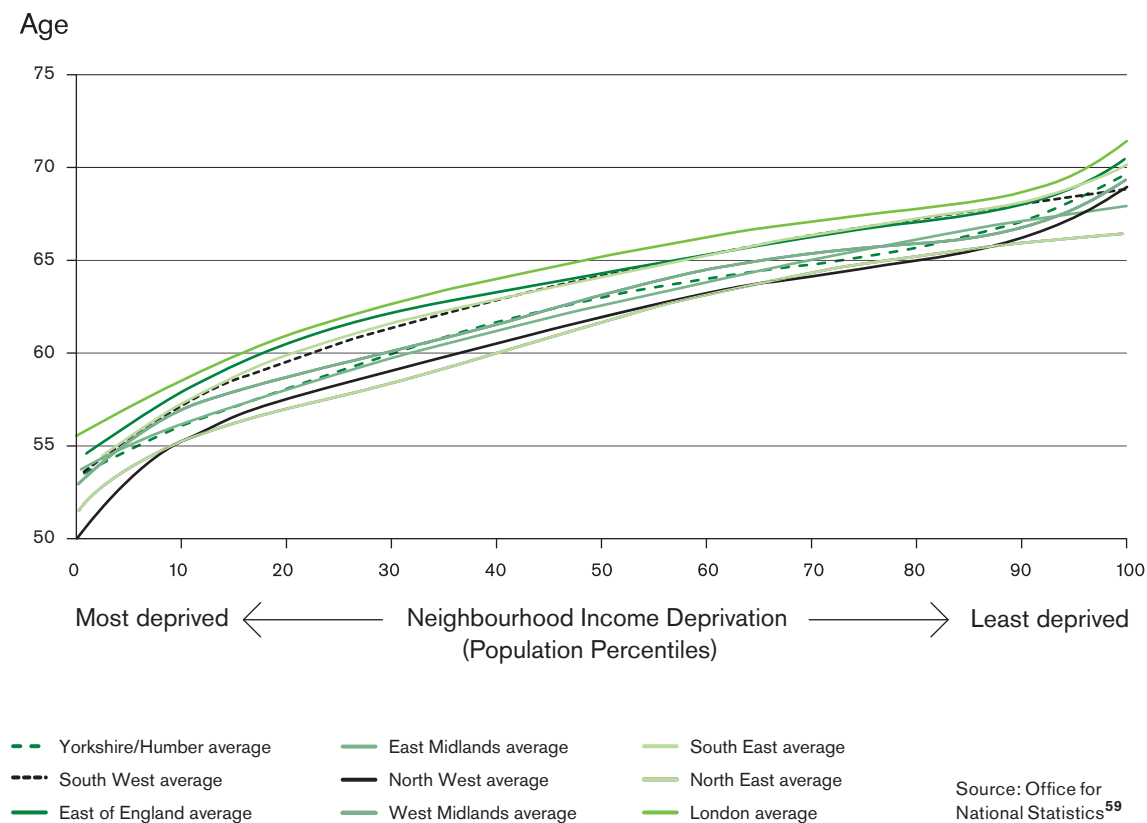
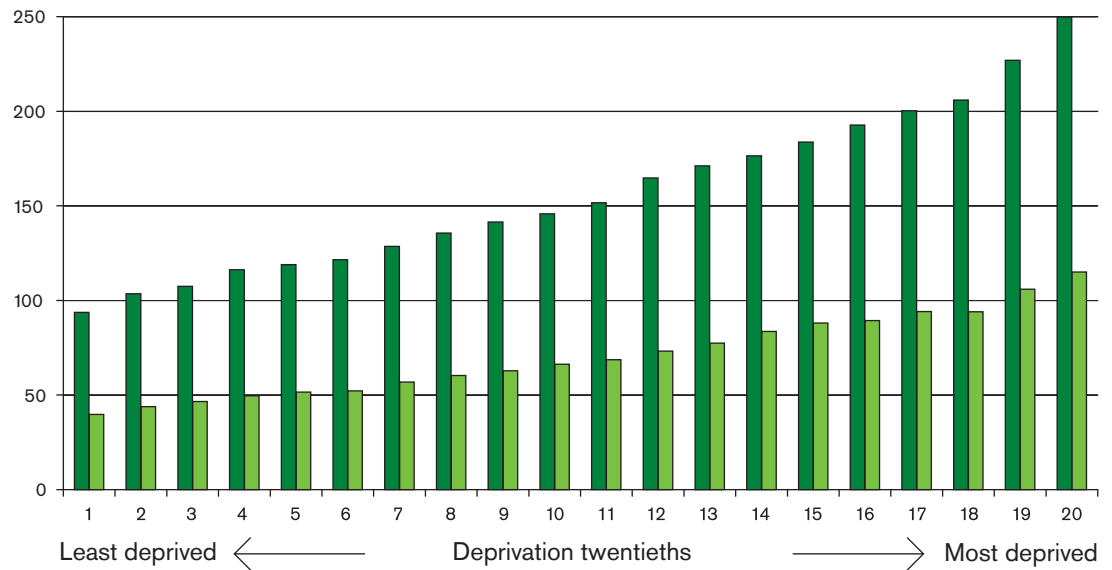


Figure 2.10 Age standardised (a) circulatory disease and (b) cancer death rates at ages under 75, by local ward deprivation level, 1999 and 2001–2003

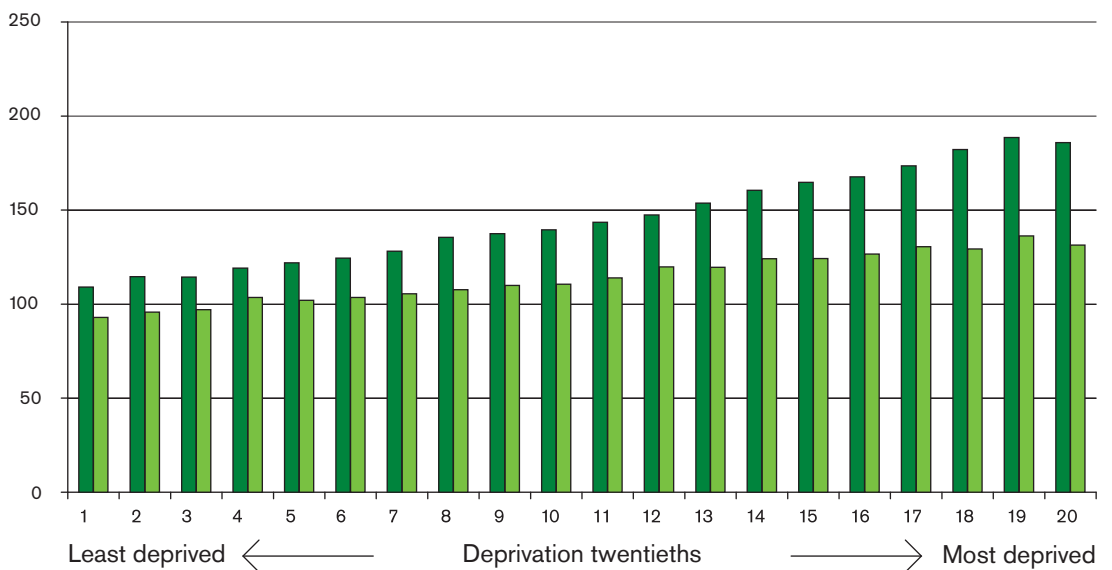
(a) Circulatory disease

Rate per 100,000 population



(b) Cancer

Rate per 100,000 population



■ Males
■ Females

Source: Office for National Statistics Health Statistics Quarterly⁶⁰

A number of surveys include questions on wider health and well-being. Figure 2.11 shows how answers to one of these, the General Health Questionnaire (GHQ), is related to deprivation for women in England in 2001 and 2006. A high GHQ score is indicative of poor psychological well-being.

Mental health is very closely related to many forms of inequality. The social gradient is particularly pronounced for severe mental illness.⁶¹ For example, in the case of psychotic disorders the prevalence among the lowest quintile of household income is nine times higher than in the highest. While the particularly high rate of psychotic disorder in the lowest quintile may, to some extent, result from downward social drift, this is unlikely to account for the social gradient. In particular, the social gradient is also evident for common mental health problems, with a two-fold variation between the highest and lowest quintiles.⁶² Figure 2.12 shows the strength of the social class gradient in rates of poor social/emotional adjustment at ages 7, 11 and 16.

In the following sections we describe inequalities in some of the main behavioural risk factors for ill health. In Chapter 4, Policy Objective F, we advocate particular approaches and interventions to reduce these risk factors proportionately across the social gradient.

Figure 2.11 Age standardised percentage of women with a General Health Questionnaire (GHQ) score of 4 or more by deprivation quintile, 2001 and 2006

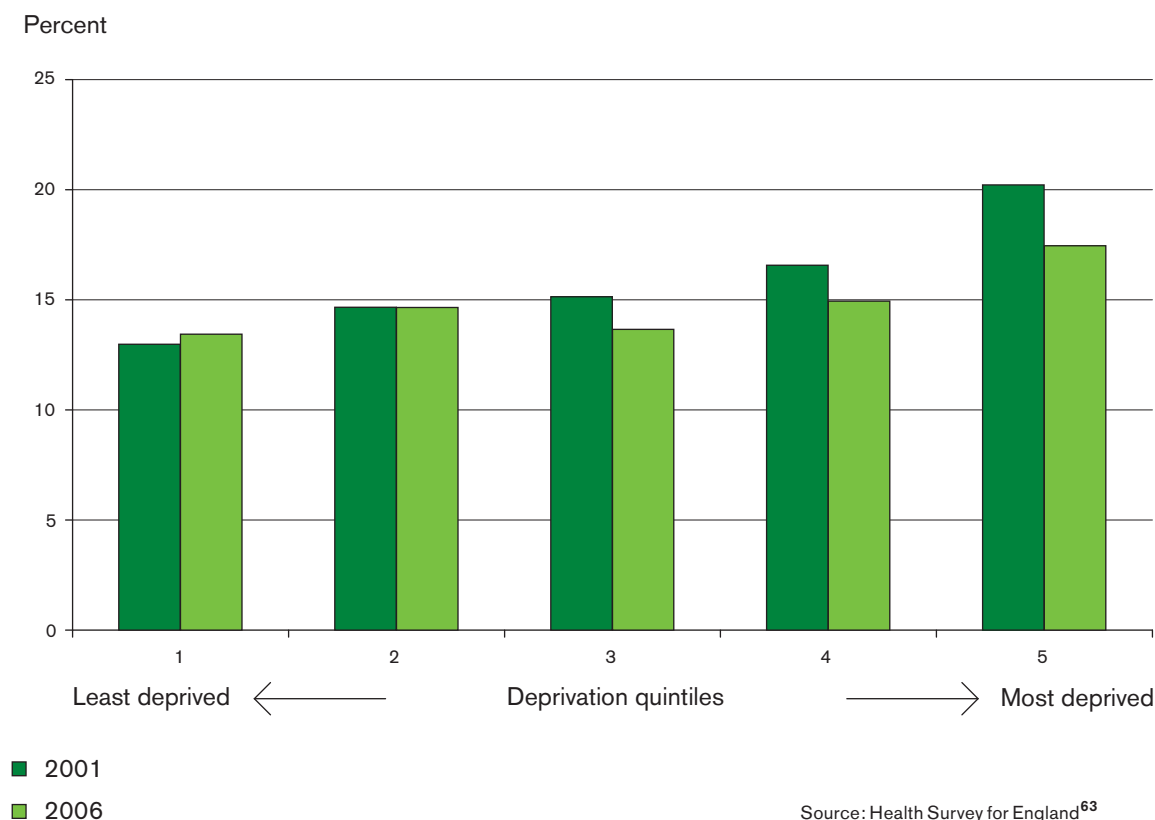




Figure 2.12 Rates of poor social/emotional adjustment at ages 7, 11 and 16, by father's social class at birth, 1958 National Child Development Study

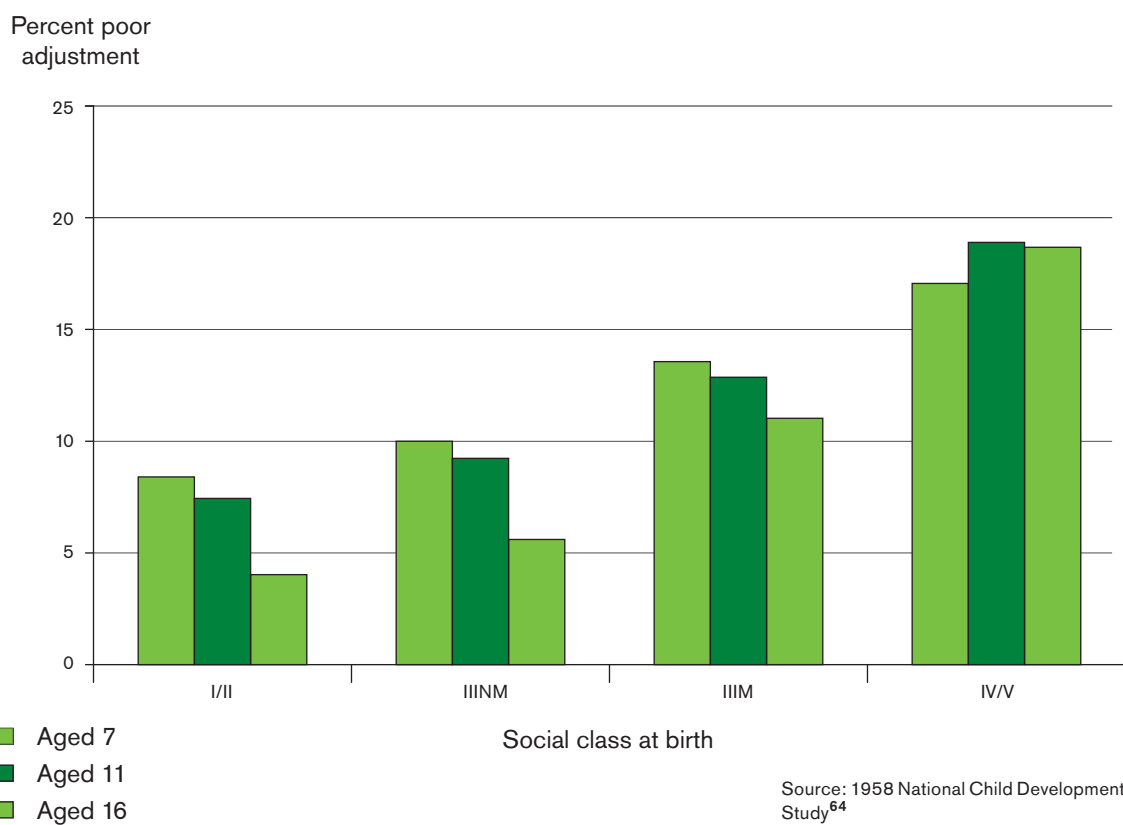
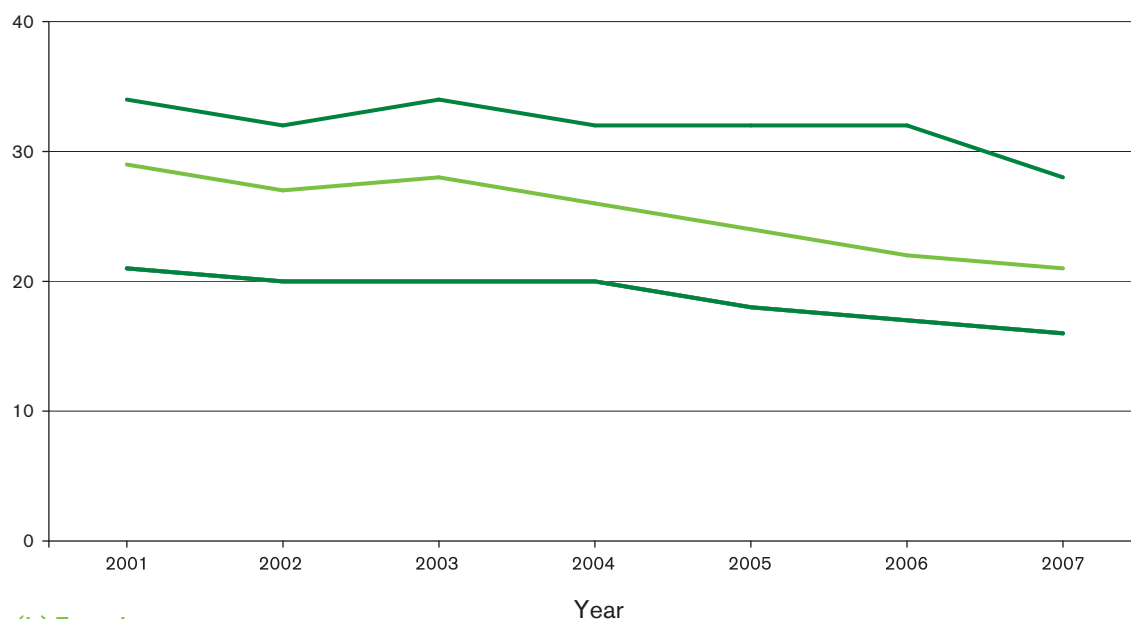


Figure 2.13 Percentage of (a) males and (b) females smoking, by socioeconomic class (NS-SEC), 2001–7

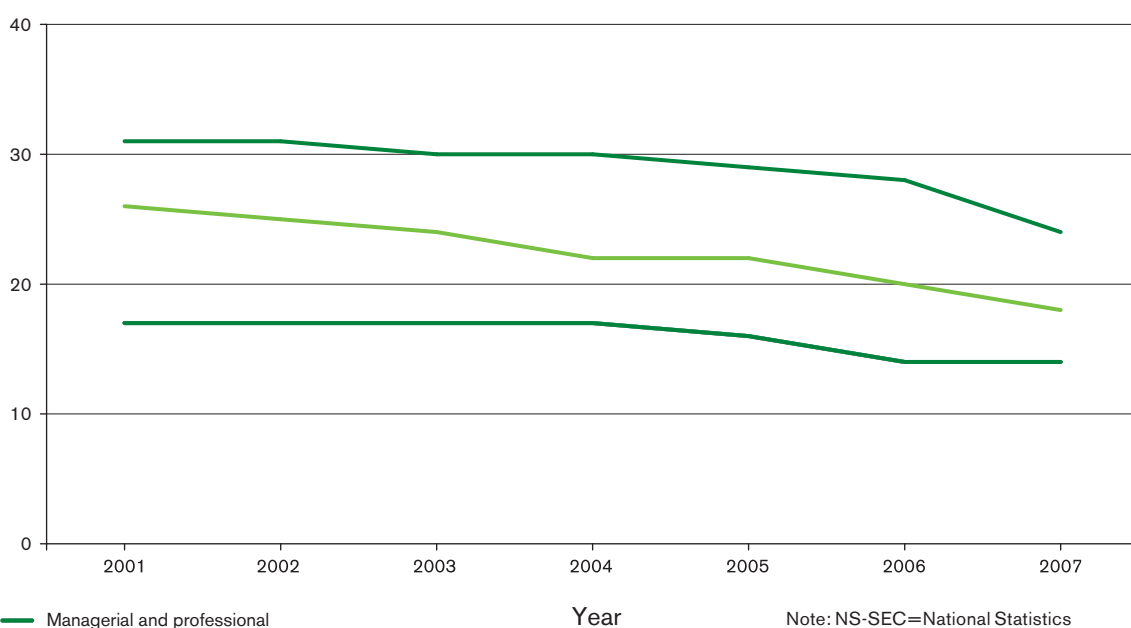
(a) Males

Percent



(b) Females

Percent



— Managerial and professional
— Intermediate
— Routine and manual

Note: NS-SEC=National Statistics
 Socioeconomic Classification
 Source: Office for National Statistics
 General Household Survey⁶⁵

2.5.1 Smoking

The PSA target for inequality specifically includes an indicator on smoking, with a target to reduce the prevalence of smoking among those in households classified as routine or manual to 26 per cent or lower by 2010. Over the period 2001 to 2007, the prevalence of cigarette smoking fell by seven percentage points among those in routine and manual households from 33 to 26 per cent. As Figure 2.13 shows, the figure for men fell from 34 to 28 per cent and for women from 31 to 24 per cent. Prevalence in managerial and professional households fell from 21 to 16 per cent for men and from 17 to 14 per cent for women.

Based on the eight category version of NS-SEC, prevalence in 2007 was lowest among those in higher professional households (12 and 10 per cent for men and women, respectively) and highest among those whose household reference person was in a routine occupation (31 and 27 per cent, respectively).

2.5.2 Alcohol

Alcohol consumption, on the other hand, has an inverse social gradient.⁶⁶ In particular, as the level of gross weekly household income rises, so does consumption. In 2007, in households with a gross weekly income of over £1,000, 78 per cent drank in the previous week and 21 per cent drank on five or more days, compared with 47 per cent and 13 per cent in households with a gross weekly income of under £200. The proportions of people exceeding the daily benchmark (four units a day for men and three for women) and the proportions of people drinking heavily (more than eight units and six units, respectively) also rises as gross weekly household income rises. However, while people with lower socioeconomic status are more likely to abstain altogether, if they do consume alcohol, they are more likely to have problematic drinking patterns and dependence than people higher up the scale.⁶⁷

In England across all regions, hospital admission for alcohol-specific conditions for both males and females is associated with increased levels of deprivation. Rates of admission for the most deprived quintiles are particularly high, as shown in Figure 2.14. Links between alcohol consumption patterns and socioeconomic status have also been identified. For instance, a survey of 15–16 year olds in the North West reported that although binge drinking was found across all socioeconomic groups it was more common among those living in deprived areas.⁶⁸

Figure 2.14 Alcohol-attributable hospital admissions by small area deprivation quintile in England, 2006–2007

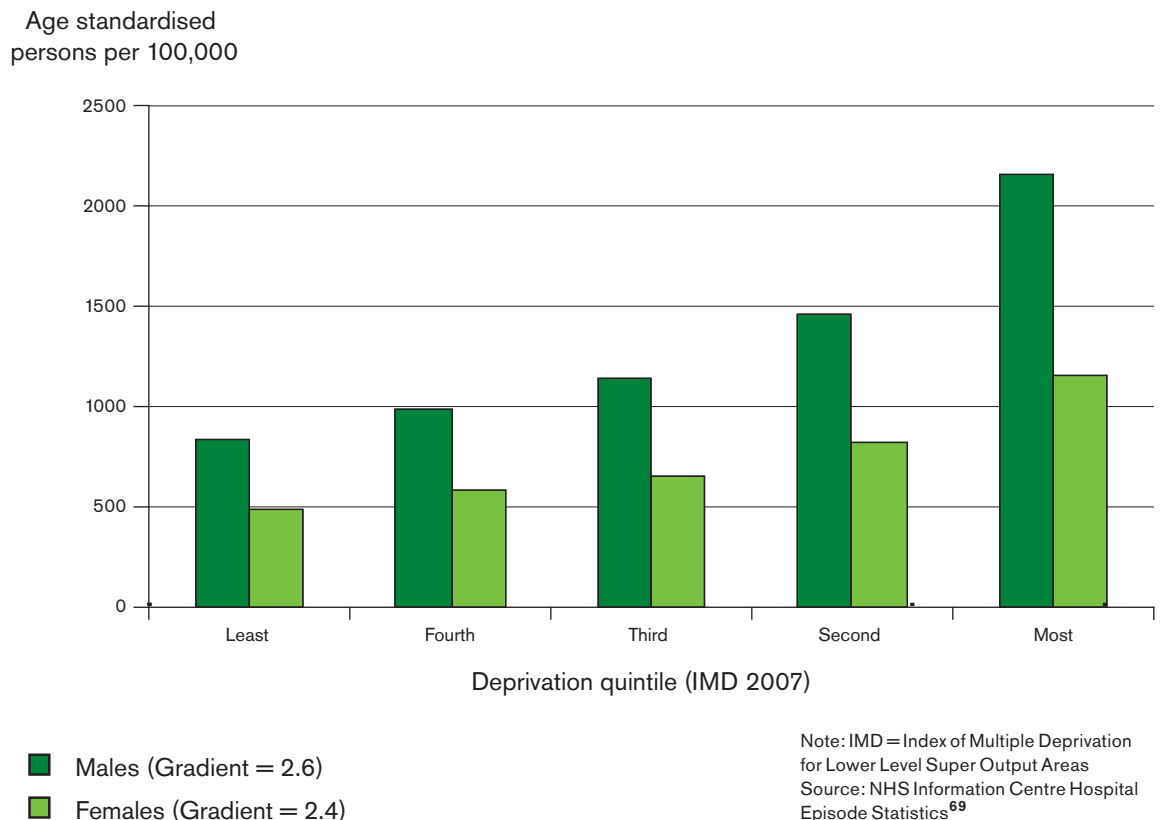
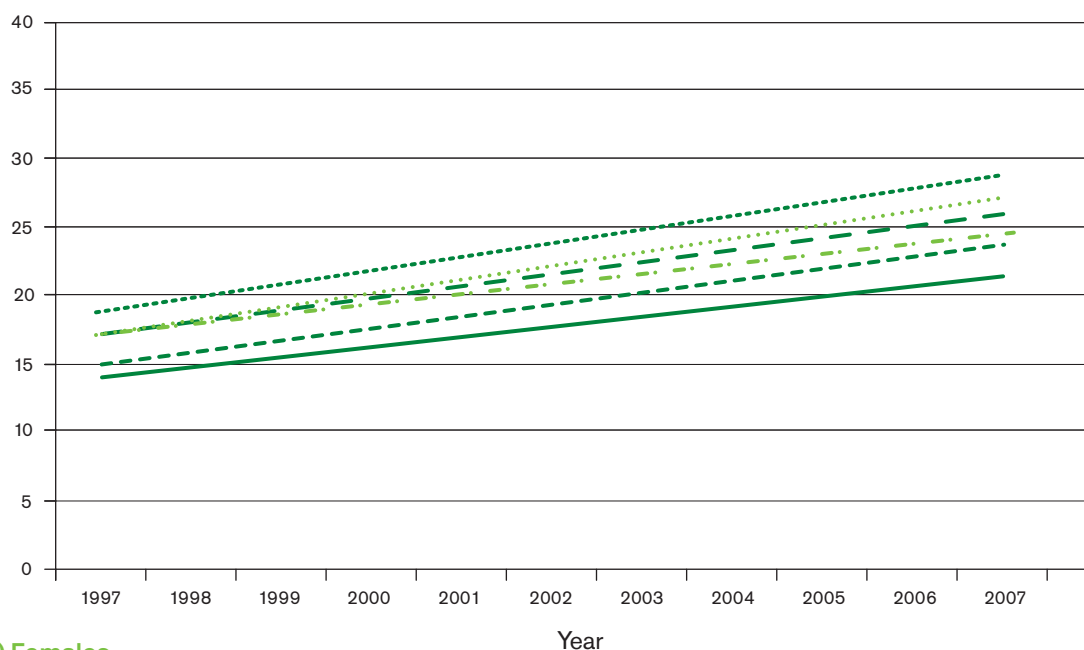


Figure 2.15 Obesity prevalence at ages 16 and over by social class, (a) males and (b) females, 1997–2007

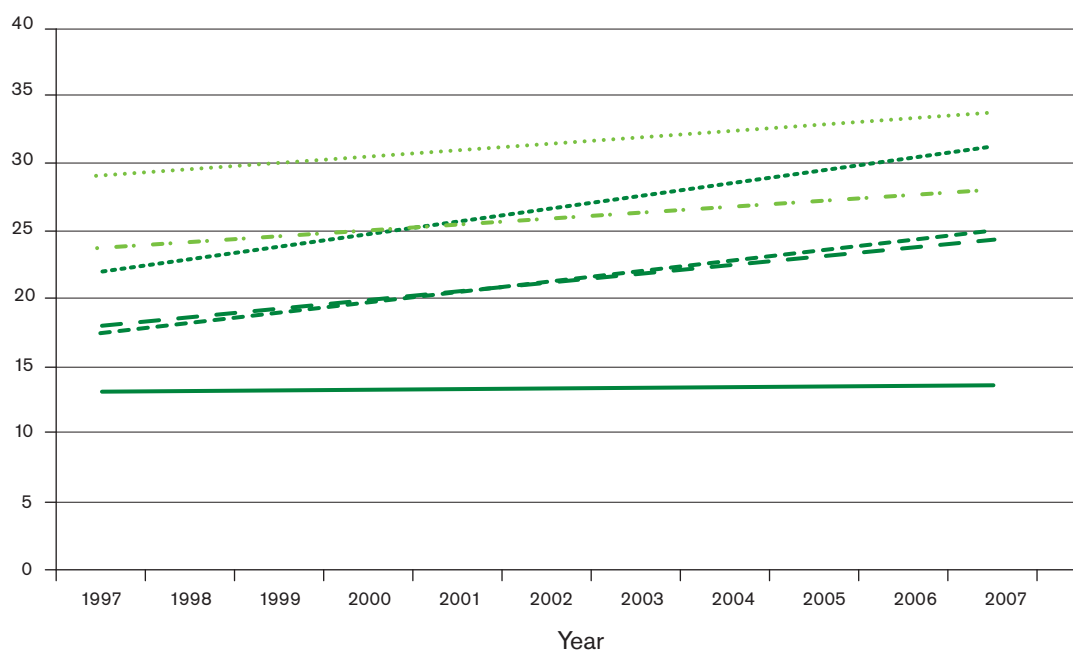
(a) Males

Percentage obese
(BMI > 30)



(b) Females

Percentage obese
(BMI > 30)



I - Professional
 II - Managerial, technical
 III - Skilled non-manual
 IIIM - Skilled manual
 IV - Semi-skilled manual
 V - Unskilled manual

Source: National Obesity Observatory, based on the Health Survey for England⁷⁰



2.5.3 Obesity

As in other high-income countries, in England, obesity is associated with social and economic deprivation across all age ranges and is becoming increasingly common. Figure 2.15 shows the steady increase in levels of obesity that has occurred among adults in each social class since 1997, with the exception of women in professional classes.

London still has the largest inequalities in levels of obesity, even when the analysis is confined to the white British population – see Figure 2.16.

2.5.4 Drug use

There is a significant positive correlation between the prevalence of problematic drug users aged 15–64 years and the deprivation indices of a local authority – see Figure 2.17. Similarly, admission rates for drug-specific conditions for both males and females show a strong positive association with deprivation.⁷¹

At local authority level in England, there was a significant positive association between the number of individuals in contact with structured drug treatment services per 1,000 population and the level of deprivation of each local authority.⁷²

Figure 2.16 Prevalence of obesity (>95th centile) by region and deprivation quintile for children aged 10–11 years, 2007/8

Prevalence of obesity

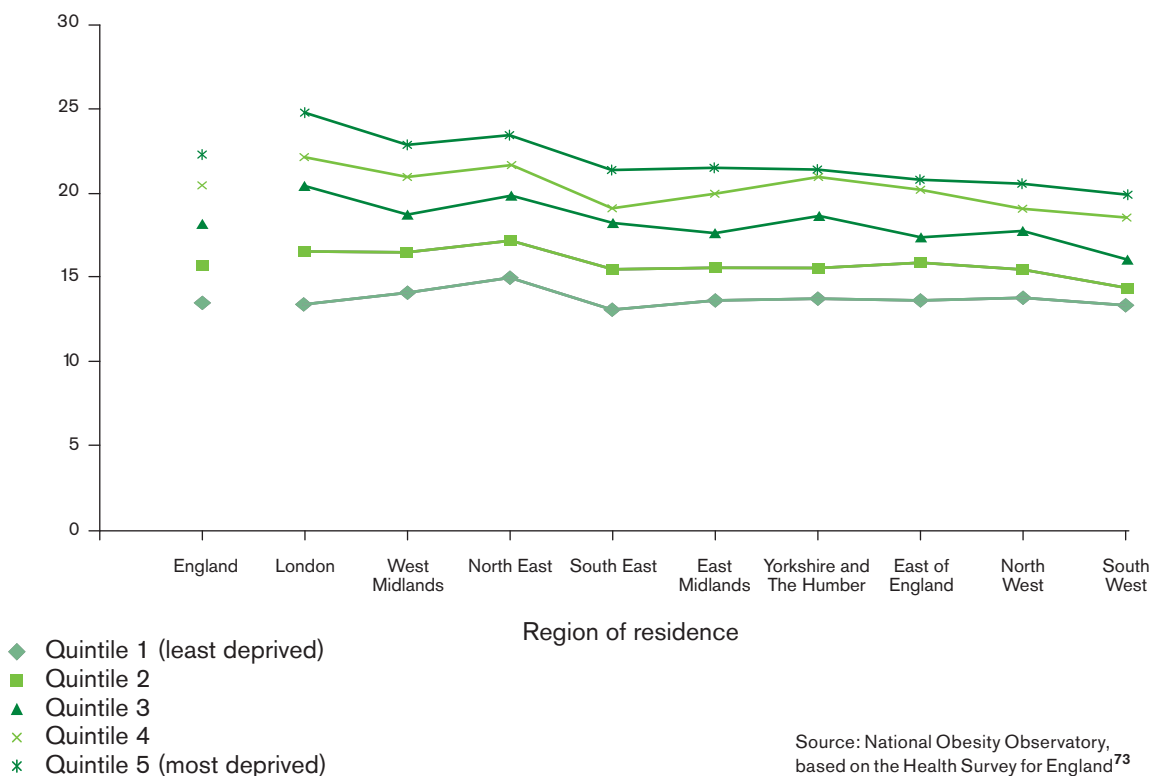
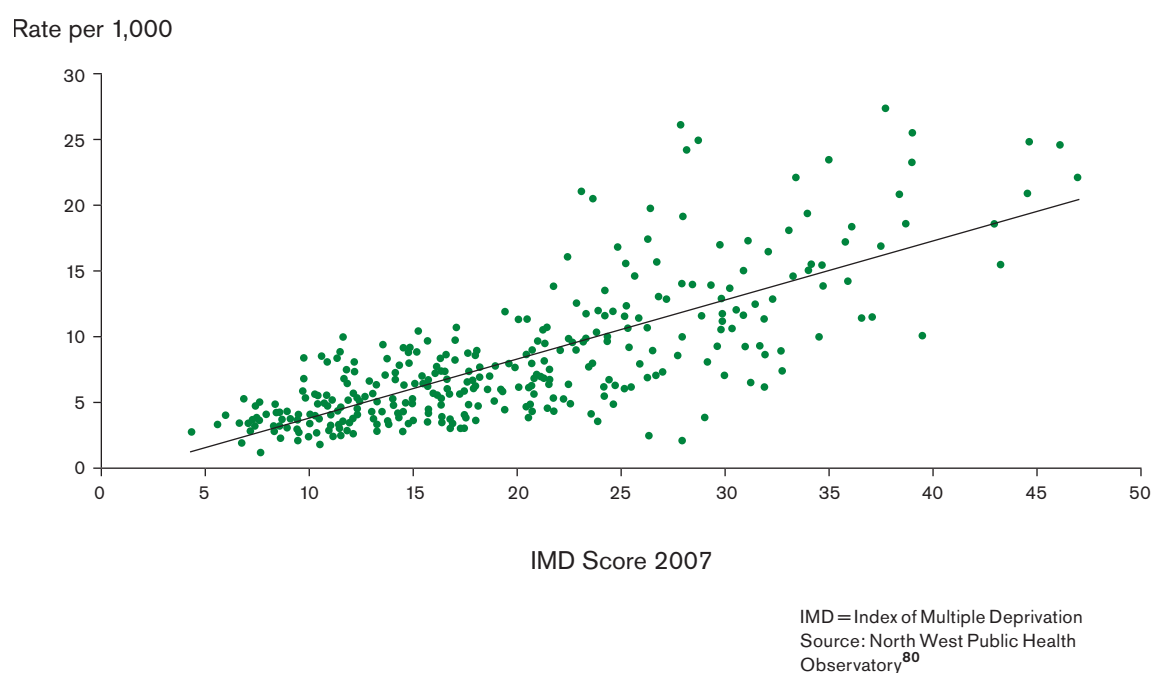


Figure 2.17 Prevalence of problematic drug users aged 15–64 years by local authority of residence and Index of Multiple Deprivation, 2006/7



2.6 The social determinants of health

As indicated in Chapter 1, understanding about the ‘causes of the causes’ of ill health has deepened in recent years. The Review takes six areas as particularly powerful in shaping health and health inequalities. In this section, examples are presented to illustrate the evidence for inequalities in health and the determinants of health.

2.6.1 Early years and health status

What a child experiences during the early years lays down a foundation for the whole of their life. A child’s physical, social, and cognitive development during the early years strongly influences their school-readiness and educational attainment, economic participation and health.⁷⁴ Development begins before birth when the health of a baby is crucially affected by the health and well-being of their mother. Low birth weight in particular is associated with poorer long-term health and educational outcomes.⁷⁵

The literature on ‘foetal programming’ demonstrates that in-utero environments affect adult health.⁷⁶ Barker, for example, has shown that when human foetuses have to adapt to a limited supply of nutrients, they permanently change their structure and metabolism. These ‘programmed’ changes may be the origins of a number of diseases in later life, including coronary heart disease and the related disorders of stroke, diabetes and hypertension.⁷⁷ Low birth weight in particular is associated with poorer long-term health outcomes and the evidence also suggests that maternal health is related to socioeconomic status.⁷⁸ In particular, disadvantaged mothers are more likely to have babies of low birth weight.⁷⁹

Socially graded inequalities are present prenatally and increase through early childhood. Maternal health, including stress, diet, drug, alcohol and tobacco use during pregnancy, has significant influence on foetal and early brain development. The biological effects of birth weight on brain development interact with other influences associated with social position to influence cognitive development, as illustrated in Figure 2.18.

Lower birth weight, earlier gestation and being small for gestational age are associated with infant mortality. In a study of all infant deaths in England and Wales (excluding multiple births), deprivation, births outside marriage, non-white ethnicity of the infant, maternal age under the age of 20 and male gender of the infant were all independently associated with an increased risk of infant mortality. A trend of increasing risk of death with increasing deprivation persisted after adjustment for these other factors.

Based on this analysis, one quarter of all deaths under the age of one would potentially be avoided if all births had the same level of risk as those to women with the lowest level of deprivation – Figure 2.19.

Figure 2.18 Maths scores from ages 7–16 years by birth weight and social class at birth, 1958 National Child Development Study

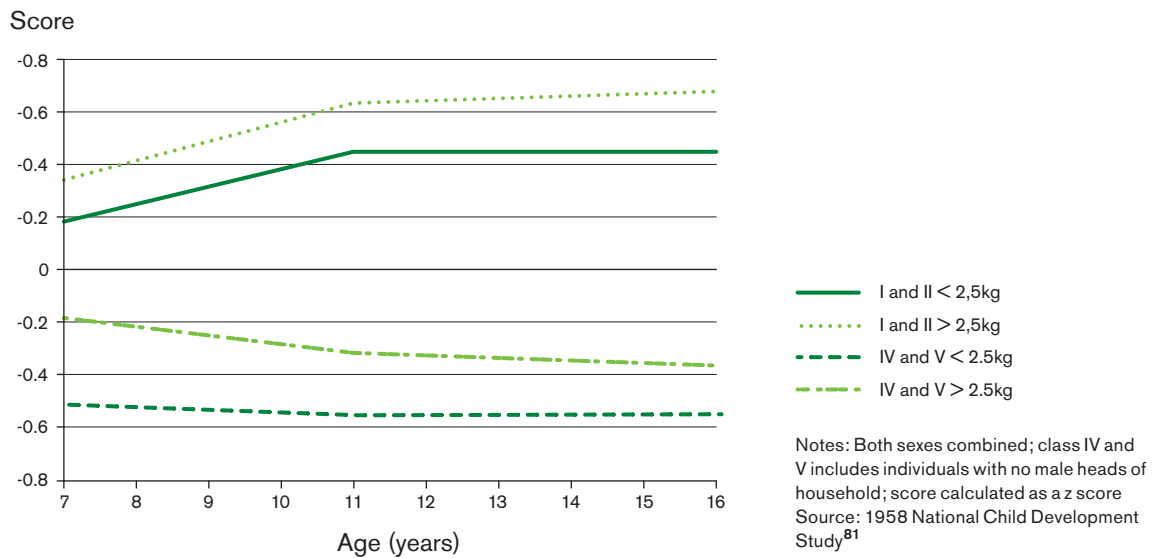
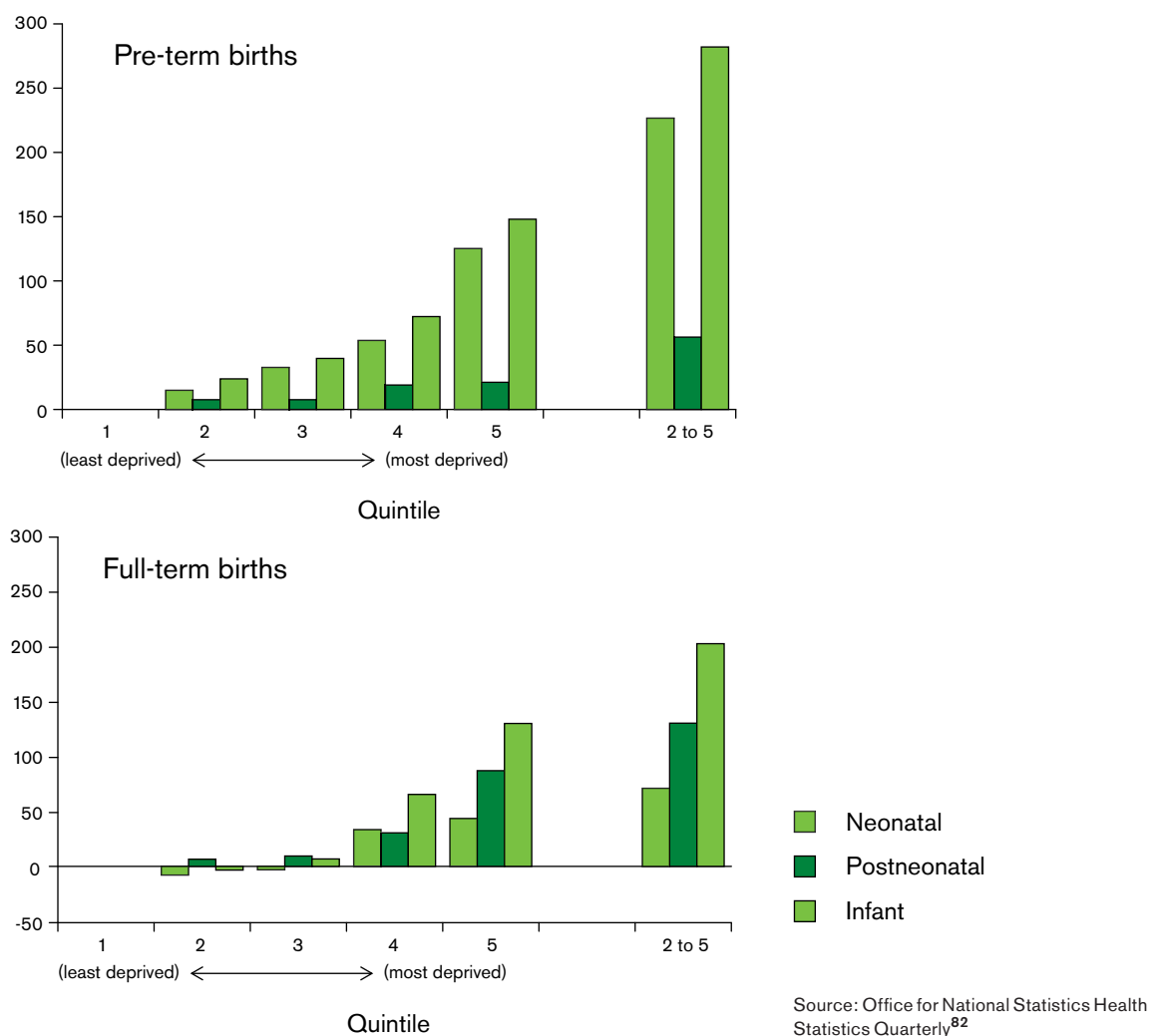


Figure 2.19 Estimated number of infant deaths that would be avoided if all quintiles had the same level of mortality as the least deprived, 2005–6



The first year of life is crucial for neuro-development to provide the foundations for children's cognitive capacities.⁸³ There is good evidence to show that if children fall behind in early cognitive development, they are more likely to fall further behind at subsequent educational stages.⁸⁴ The evidence also shows that the development of early cognitive ability is strongly associated with later educational success, income and better health.⁸⁵ The early years are also important for the development of non-cognitive skills such as application, self-regulation and empathy. These are the emotional and social capabilities that enable children to make and sustain positive relationships and succeed both at school and in later life.⁸⁶

There is an unequal distribution of resources across families in terms of wealth, living conditions, levels of education, supportive family and community networks, social capital and parenting skills. Abundant evidence suggests that socioeconomic status is associated with a multitude of developmental outcomes for children⁸⁷ – see Figure 2.20. Furthermore, the literature suggests strongly that socioeconomic gradients in early childhood replicate themselves throughout the life course.⁸⁸

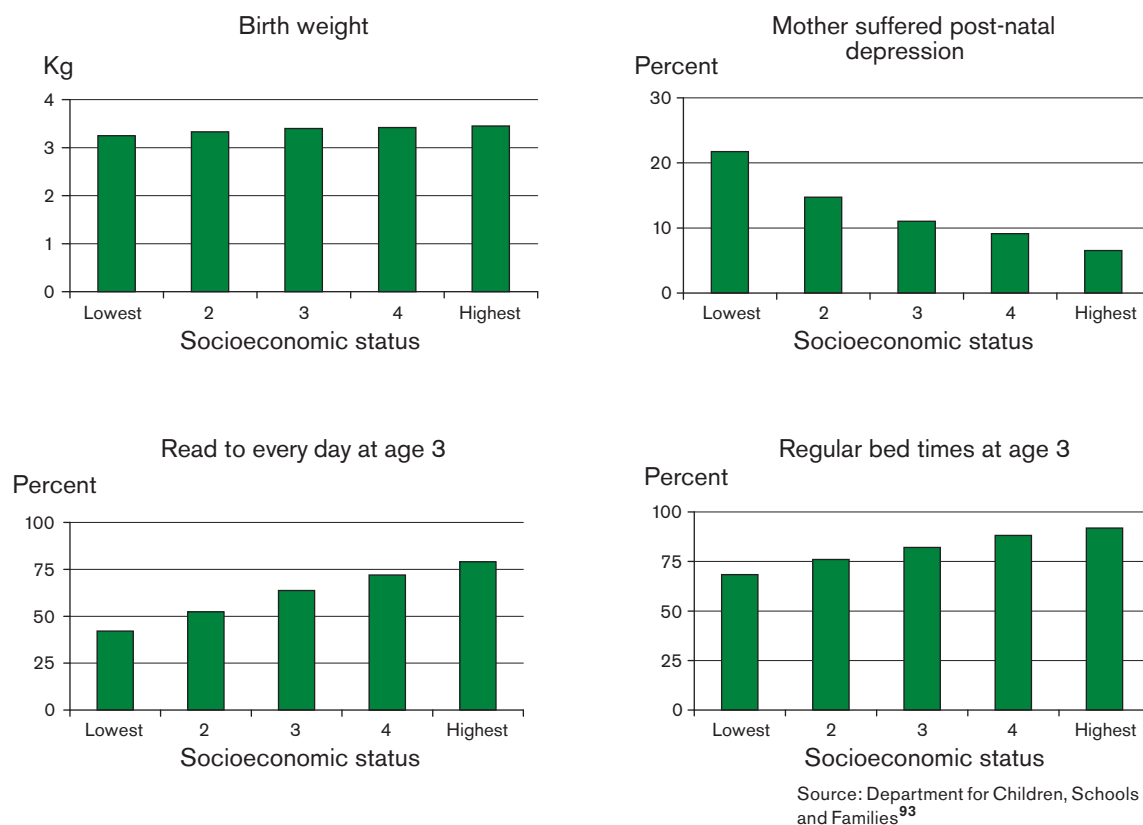
Pre-school influences remain evident even after five years spent full time in primary school, as Figure 2.21 shows. A child's physical, social, emotional and cognitive development during the early years strongly influences her or his school-readiness and educational attainment, economic participation and

health.⁸⁹ Children with a high cognitive score at 22 months but with parents of low socioeconomic status do less well (in terms of subsequent cognitive development) than children with low initial scores but with parents of high socioeconomic status. Children of educated or wealthy parents can score poorly in early tests but still catch up, whereas children of worse-off parents are extremely unlikely to do so. There is no evidence that entry into schooling reverses this pattern.⁹⁰

In view of the differences described above, it is unsurprising that educational outcomes at school are strongly related to relative deprivation.

The acquisition of cognitive skills is strongly associated with better outcomes across the life course over a range of domains including employment, income and health. A range of empirical studies provide evidence that cognitive ability is a powerful determinant of earnings, propensity to get involved in crime and success in many aspects of social and economic life⁹¹ as well as health⁹² across the social gradient.

Figure 2.20 Links between socioeconomic status and factors affecting child development, 2003–4



2.6.2 Education and health

A range of interacting factors impact on educational outcomes:

- Distal factors: background socio-demographic features, such as income, parental education, and so on
- Proximal factors: parental support and parent/child relationships
- School-peer factors: the nature of the school and its population
- Individual child factors: individual children's ability, measured primarily in terms of prior attainment.⁹⁴

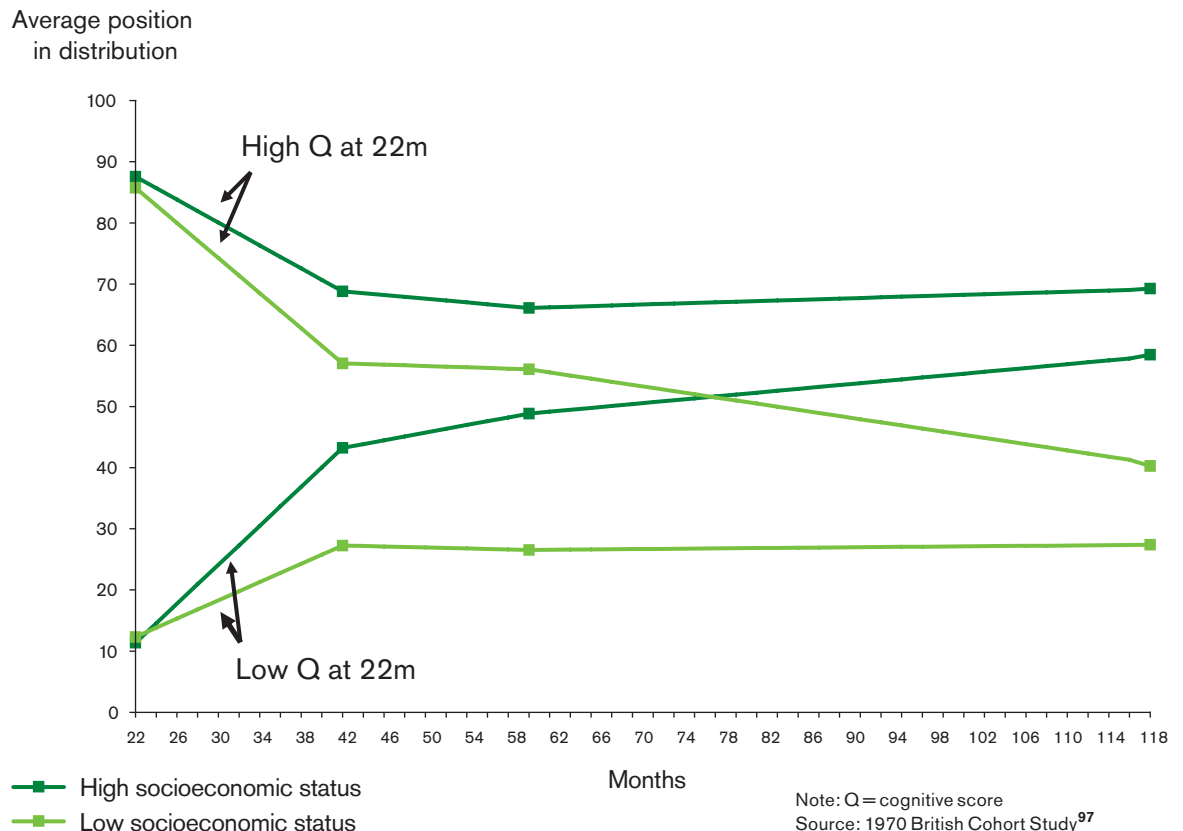
As the Review's task group on early years points out, the interaction between these factors is complex and there is no linear causal relationship between any set of factors and educational outcomes.⁹⁵ That said, the factors shown in Figure 2.20 – birth weight, postnatal depression, being read to every day, and having a regular bed time at age 3 – are all likely to relate to a child's chance of doing well in school. These predictors and subsequent attainment of children and young people are strongly influenced by parental income, education and socioeconomic status. The social position of parents accounts for a large proportion of the difference in educational attainment between higher and lower achievers. These differences emerge in early childhood and tend to increase as children get older.⁹⁶

National Equality Panel (NEP)

The independent NEP was set up by the Minister for Women and Equality, to assess the best evidence on the relationship between inequalities in economic outcomes and differences related to people's characteristics, such as gender, ethnicity, age, disability status, sexual orientation, religion or belief, and housing tenure, occupational social class and area deprivation. Their report, in January 2010, provides evidence on inequalities in education, employment, earnings, income and wealth, and the relative position of different groups. It concluded that:

- Inequalities in earnings and income are still high in Britain, compared with industrialised countries and with a generation ago, although, over recent decades, earnings inequality has narrowed and income inequality has stabilised;
- Some of the widest gaps between social groups have narrowed in the last decade, but deep-seated and systematic differences in economic outcomes between social groups remain;
- Inequalities between the more and less advantaged within each social group are much greater than inequalities between groups;
- Economic inequalities accumulate across the life cycle, from cradle to grave, especially those related to socio-economic background.

Figure 2.21: Inequality in early cognitive development of children in the 1970 British Cohort Study, at ages 22 months to 10 years



Children from disadvantaged backgrounds are more likely to begin primary school with lower personal, social and emotional development and communication, language and literacy skills than their peers⁹⁸ – Figure 2.22. These children are also at significantly increased risk of developing conduct disorders that could lead to difficulties in all areas of their lives, including educational attainment, relationships and longer-term mental health.⁹⁹ There are clear socioeconomic gradients in all these factors.

As Figure 2.23 shows, receipt of free school meals is a powerful indicator of how socioeconomic deprivation has an adverse impact at each stage of educational development.

There are significant differences in attainment according to gender and ethnicity. The extent of the differences varies by eligibility for free school meals.¹⁰⁰ Girls do better than boys at both foundation stage and at GCSE within each ethnic group. At foundation stage, Chinese, white and children with mixed ethnicity do best. However, as Figure 2.24 shows, by the time they take their GCSEs Chinese girls out-perform other groups whether they are eligible for free school meals or not.

There are significant differences in attainment within the Asian community, with boys and girls not eligible for free school meals and from an Indian background doing as well as those from a Chinese background. Meanwhile, children from Gypsy, Roma and Traveller backgrounds do worse than anyone else. Boys eligible for free school meals who

are from white British, Irish and some, but not all, black communities also fare worse than other groups. Girls eligible for free school meals from white British and Irish backgrounds do only marginally better than their male counterparts.

There is a strong relationship between the level of deprivation in a geographical area and educational attainment, as Figure 2.25 illustrates.

Non-cognitive capabilities are also important predictors of outcomes across the life course. Characteristics such as perseverance, motivation, use of time, risk aversion, self-esteem, self-control and preferences for leisure have direct effects on school achievement, wages, involvement in crime and many other aspects of social and economic life, including health outcomes and behaviours such as teenage pregnancy and smoking.¹⁰¹ These capabilities are all influenced by parents' socioeconomic position.¹⁰²

Several international studies have shown that higher cognitive scores are associated with both healthier lifestyles and better health outcomes.¹⁰³ Recent UK studies found that higher cognitive function implied a reduced risk of cardio-vascular disease.¹⁰⁴ There are similar findings for mental health with longitudinal studies showing that higher cognitive test scores are associated with lower rates of depression and higher intelligence in childhood linked with a decreased risk of psychological distress in adulthood.¹⁰⁵ It might be that cognitive function itself is causal, or that the determinants of cognitive function are causal. Either way, it is likely that a

Figure 2.22 Indicators of school readiness by parental income group, 2008

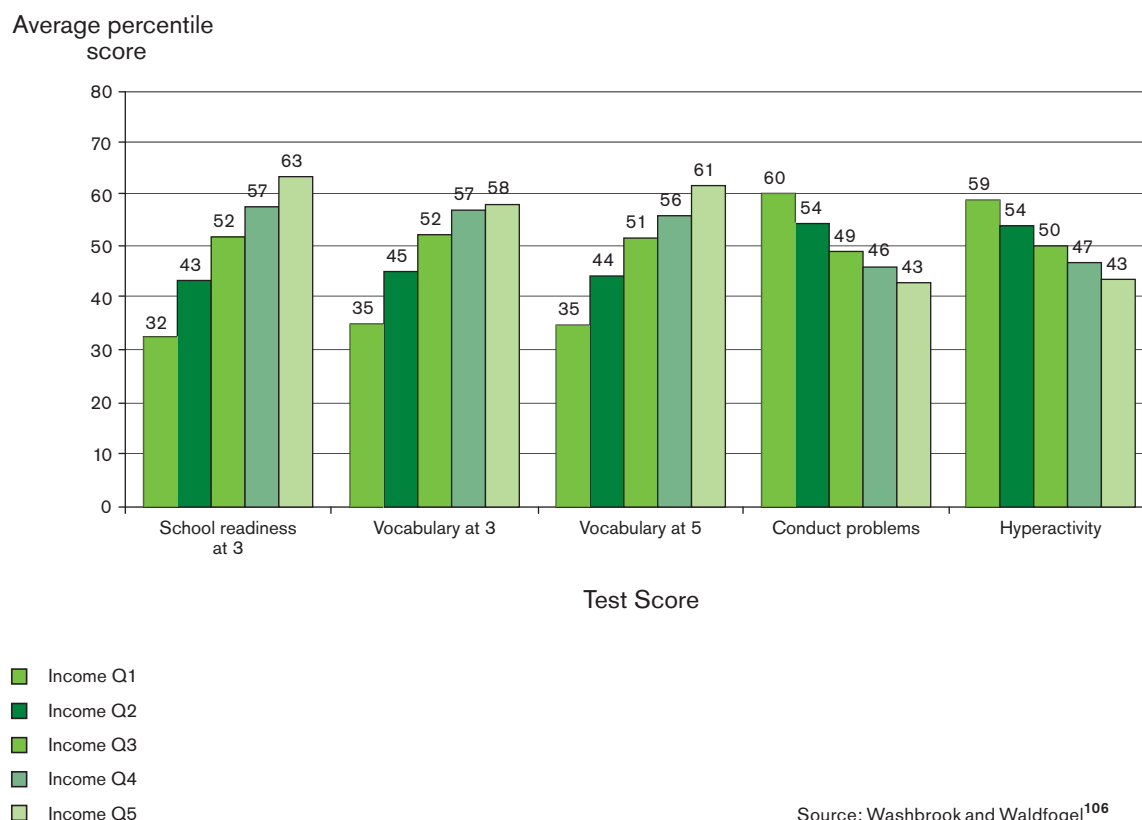
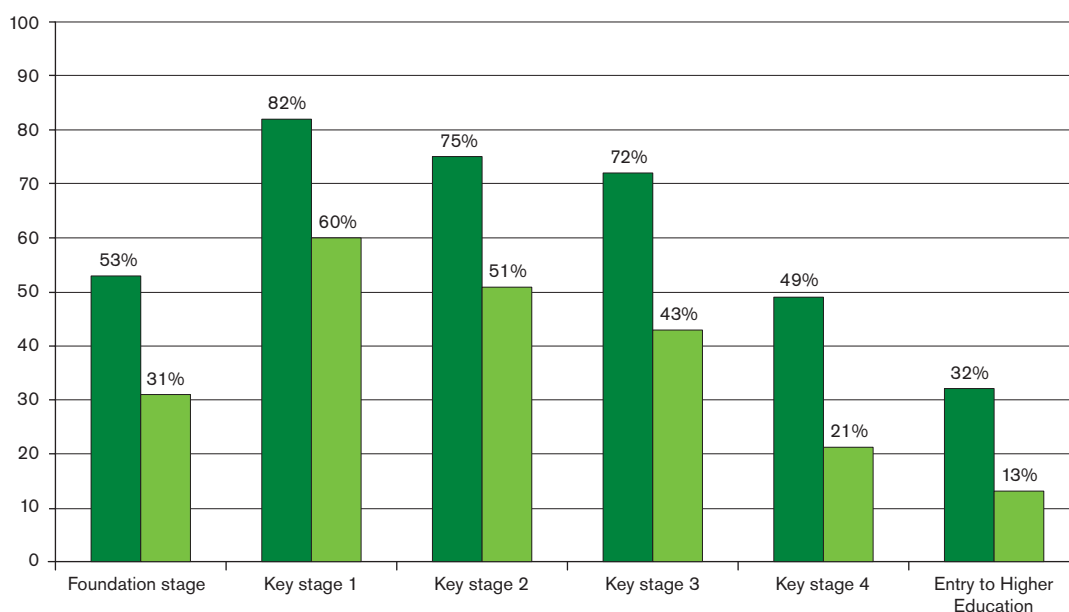


Figure 2.23 Attainment gap from early years to higher education by eligibility for free school meals, 2009

Percentage reaching expected level

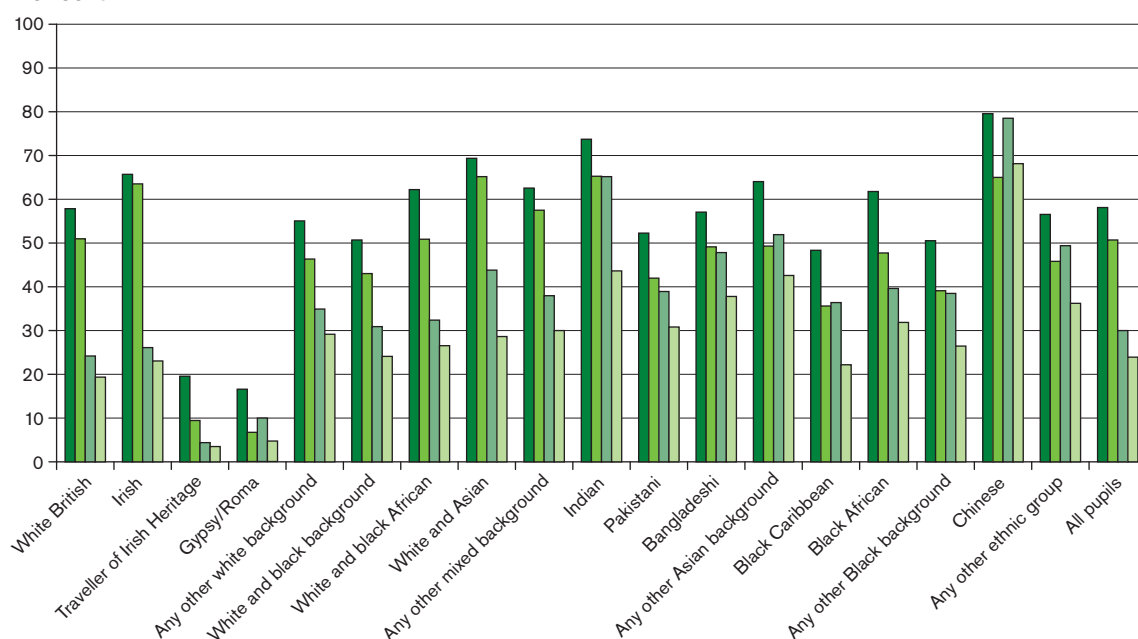


■ Not eligible for free school meals
■ Eligible for free school meals

Source: Department for Children, Schools and Families and Higher Education Statistics Agency¹⁰⁷

Figure 2.24 Percentage of pupils achieving 5 or more A*–C grades at GCSE or equivalent by gender, free school meal eligibility and ethnic group, 2008/9

Per cent



■ Girls not eligible for free school meals
■ Boys not eligible for free school meals
■ Girls known to be eligible for free school meals
■ Boys known to be eligible for free school meals

Source: Department for Children, Schools and Families¹⁰⁸

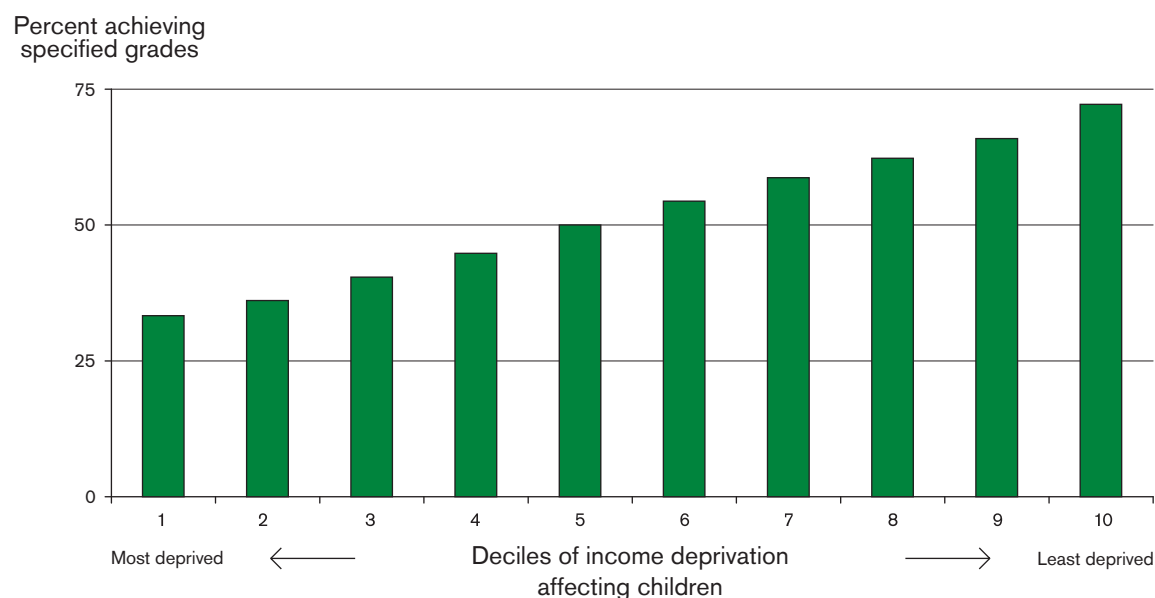
levelling up of cognitive function across the social gradient will be linked to narrower social inequalities in health.

Analysis of data from the 1970 British Birth Cohort Study shows that higher educational attainment is associated with healthier behaviour. Those educated to degree level were shown not only to be more likely to be in full-time employment than those with lower educational attainment, but also less likely to smoke and be over-weight and more likely to exercise regularly and eat healthily.¹⁰⁹

Figures 2.26 and 2.27 show gradients in limiting illness recorded in the 2001 Census by recorded level of educational attainment.

Comparable gradients are seen for mortality, in common with other European countries.¹¹⁰

Figure 2.25 Percentage of pupils achieving 5+ A*–C grades including English and Maths at GCSE by income deprivation of area of residence, England, 2008/9



Note: Based on lower super output area of residence
Source: Department for Children, Schools and Families¹¹¹

Figure 2.26 Standardised limiting illness rates in 2001 at ages 16–74, by education level recorded in 2001

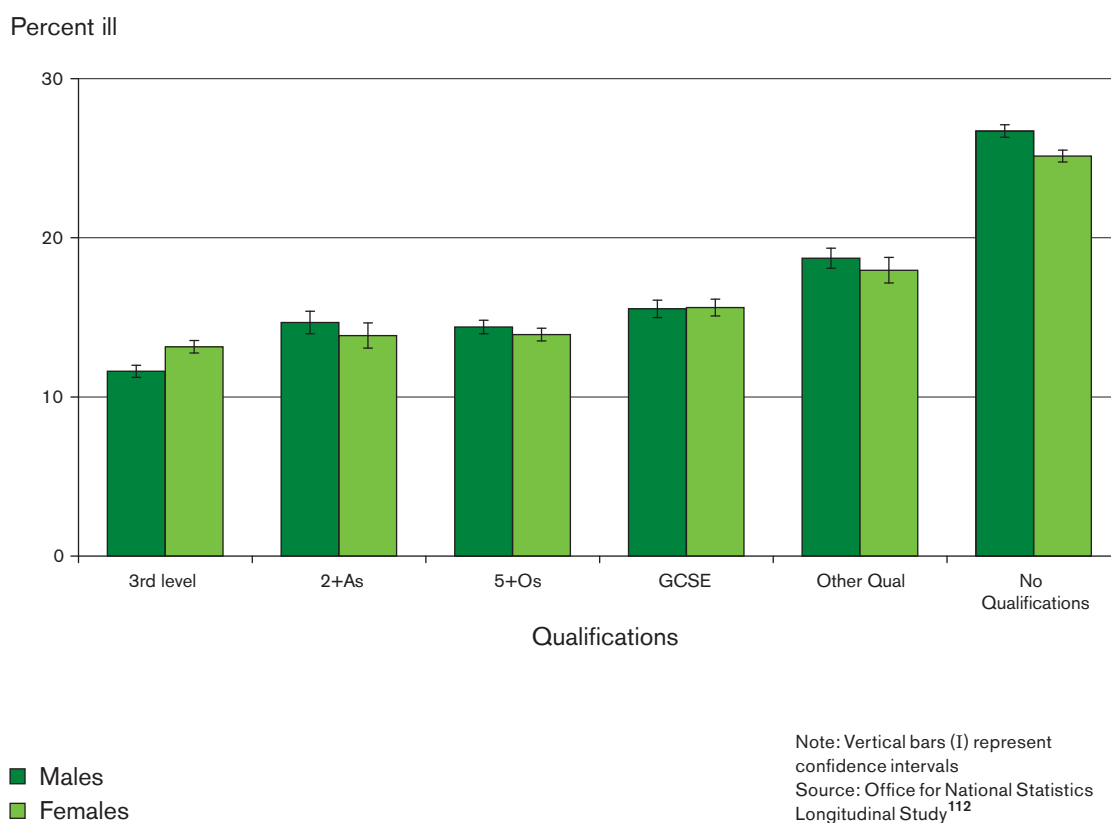
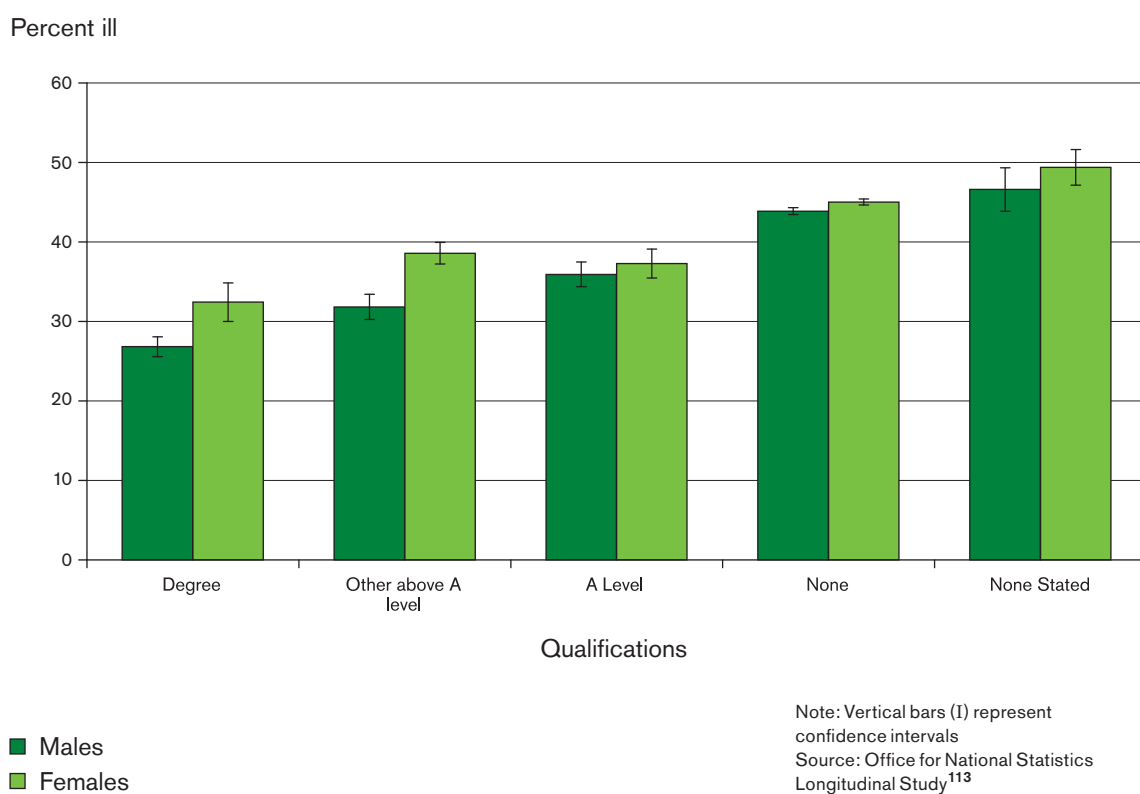


Figure 2.27 Standardised limiting illness rates at ages 55 and over in 2001 by the educational level they had in 1971



2.6.3 Work, health and well-being

Patterns of employment both reflect and reinforce the social gradient and there is inequality of access to labour market opportunities. Rates of unemployment are highest among those with no or few qualifications and skills, people with disabilities and mental ill health, those with caring responsibilities, lone parents, those from some ethnic minority groups, older workers and, in particular, young people. When in work, these same groups are more likely to be in low-paid, poor quality jobs with few opportunities for advancement, often working in conditions that are harmful to health. Many are trapped in a cycle of low-paid, poor quality work and unemployment.

Insecure and poor quality employment is associated with an increased risk of one's physical and/or mental health worsening, from conditions caused by work that in turn lead to absence due to illness, and worklessness. Principal among work-related ill health are common mental health problems and musculoskeletal disorders.

The relationship between employment and health is close, enduring and multi-dimensional. Being without work is rarely good for one's health, but while 'good work' is linked to positive health outcomes, jobs that are insecure, low-paid and that fail to protect employees from stress and danger make people ill.

Unemployment and health

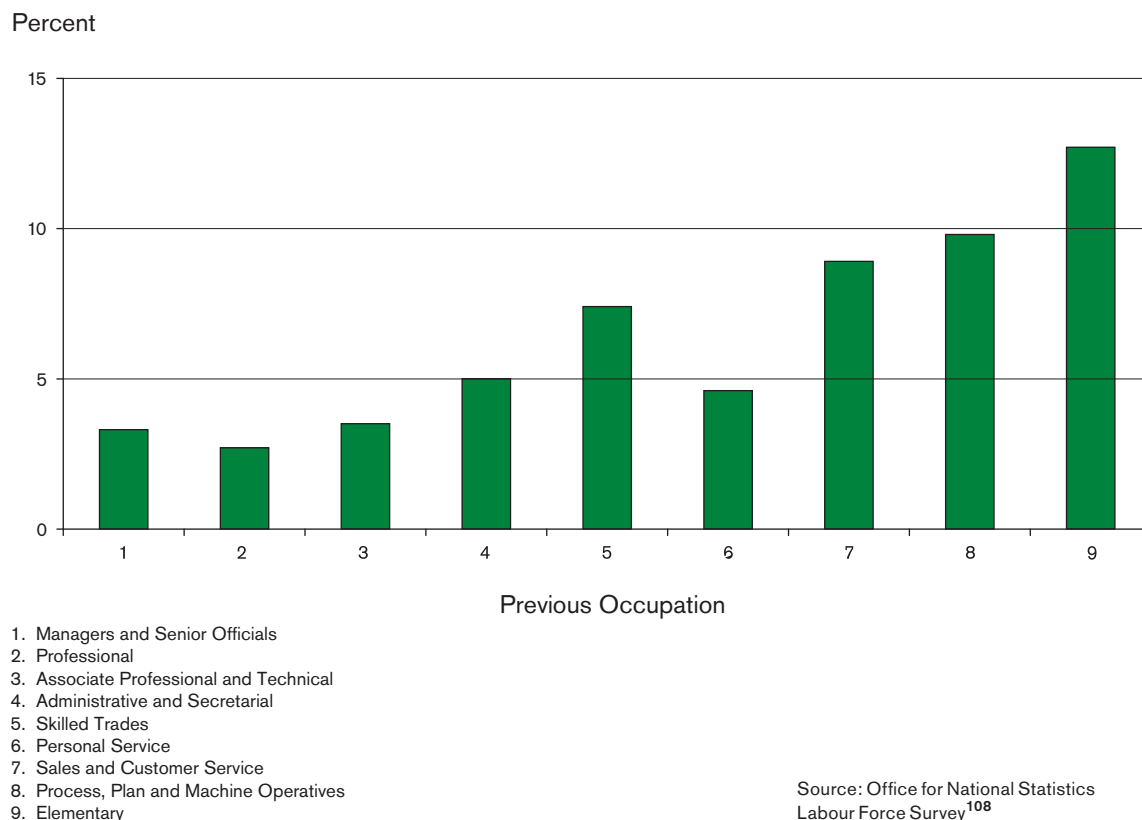
Patterns of employment both reflect and reinforce the social gradient. As Figure 2.28 shows, unemployment is unequally distributed across society, with those in lower socioeconomic positions at higher risk, thus contributing to the social gradient in health.¹¹⁴

The number and type of jobs available to those with low-level skills is becoming increasingly restricted. The steady growth of jobs over the past decade has been predominantly in higher skilled employment while the number of manufacturing and low-skilled jobs has been in decline over a longer period.

Unemployed people incur a multiplicity of elevated health risks. They have increased rates of limiting long-term illness¹¹⁵, mental illness¹¹⁶ and cardiovascular disease.¹¹⁷ The experience of unemployment has also been consistently associated with an increase in overall mortality, and in particular with suicide.¹¹⁸ The unemployed have much higher use of medication¹¹⁹ and much worse prognosis and recovery rates.¹²⁰

Unemployment has both short- and long-term effects on health. The immediate negative impact of being made redundant on a person's health outcomes has been frequently reported¹²¹ while other studies emphasise the steady negative effects, proportional to the duration of unemployment, which progressively

Figure 2.28 Unemployment rate by previous occupation, July–September 2009



damage health.¹²³ Therefore adverse effects on health are greatest among those who experience long-term unemployment.¹²⁴

There are three core ways in which unemployment affects levels of morbidity and mortality.

First, financial problems as a consequence of unemployment result in lower living standards, which may in turn reduce social integration and lower self-esteem.¹²⁵

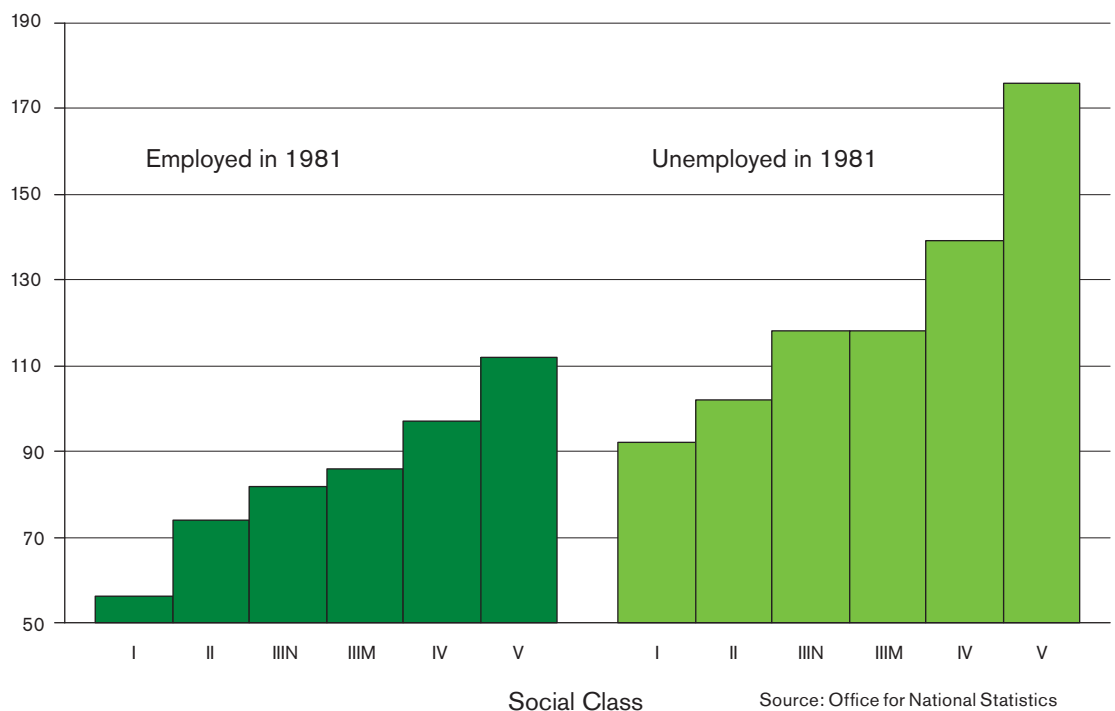
Second, unemployment can trigger distress, anxiety and depression.¹²⁶ Many psychosocial stressors contribute to poor health not only among the unemployed themselves, but also among their partners and children.¹²⁷ Loss of work results in the loss of a core role which is linked with one's sense of identity, as well as the loss of rewards, social participation and support.

Third, unemployment impacts on health behaviours, being associated with increased smoking and alcohol consumption and decreased physical exercise.¹²⁸

Figure 2.29 shows the familiar social gradient in mortality, but within each social class the unemployed have higher mortality rates than those who were employed.

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



Source: Office for National Statistics
Longitudinal Study¹²⁹

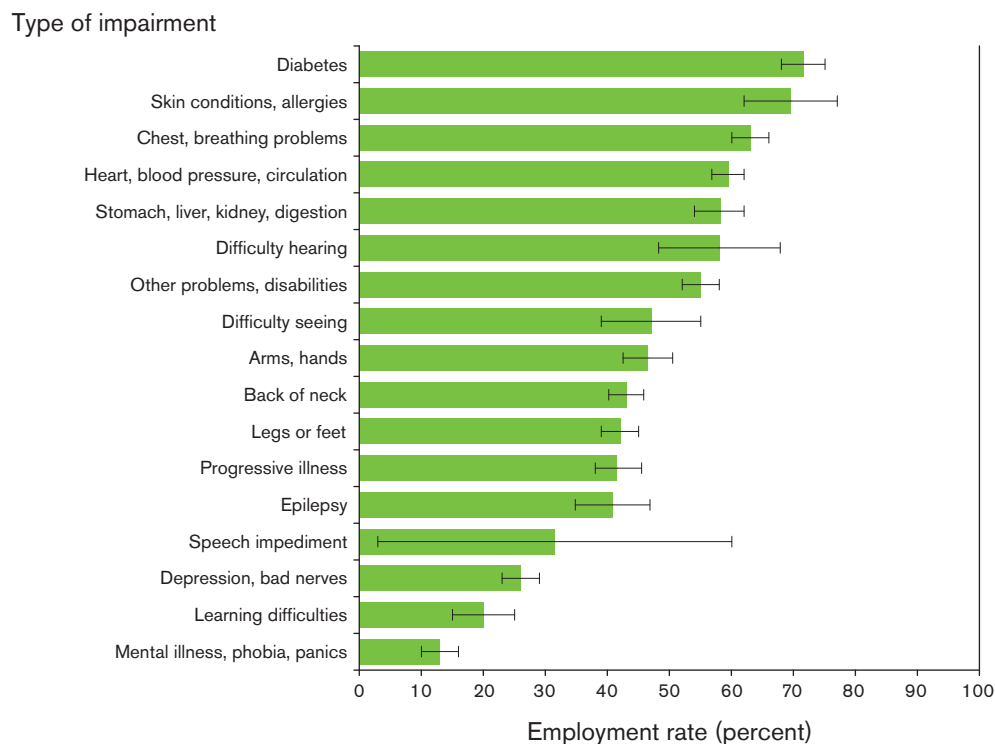
The relationship between unemployment and poor health runs in both directions. Unemployment contributes to ill health and poor health increases the likelihood of unemployment, and the two can become mutually reinforcing.¹³⁰ The longer a person is unemployed, the risk of subsequent illness increases greatly, and thereby further reduces the likelihood of returning to employment.¹³¹ As Figure 2.30 indicates, the type of disability affecting an individual also has a very powerful influence on the likelihood of them being in employment.

The extent to which limiting illness and disability act as a barrier to work is highly dependent on educational qualifications. As overall employment rates have reduced, this problem has become considerably greater – see Figure 2.31. In the 1970s, 77 per cent of men with no qualifications and a limiting longstanding illness were in employment. By 2001–3 this had fallen to 38 per cent. The comparable figures for those with a higher qualification were 93 and 75 per cent respectively.

Recent rises in unemployment and particularly in youth unemployment are likely to significantly worsen health inequalities. Figure 2.32 shows the strikingly high unemployment rate of 16–17 year olds in the recent economic downturn.

It is clear that getting people into employment is an important strategy for improving health; the Review makes its recommendations in this area in Chapter 4 (see Policy Objective C). However, not all work is protective of health.

Figure 2.30 Employment rates among working age adults by type of disability, 2008



Note: For each disability, the percentage employed are indicated by the solid horizontal bar. Horizontal lines (—) indicate the width of the 95 per cent confidence interval.

Source: Office of Disability Issues, based on Labour Force Survey¹³²

Figure 2.31 Proportion of men with limiting long-standing illness in work, by educational qualifications, 1974–6, 1988–90, 2001–3

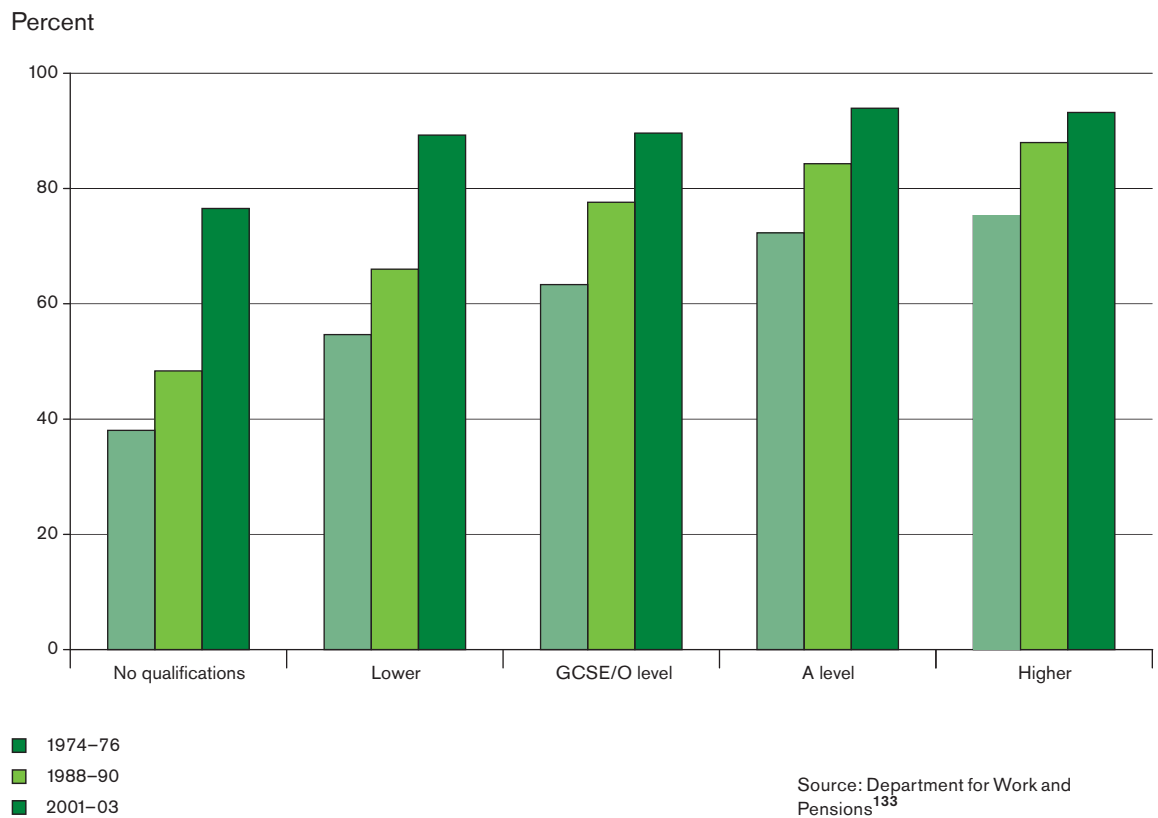
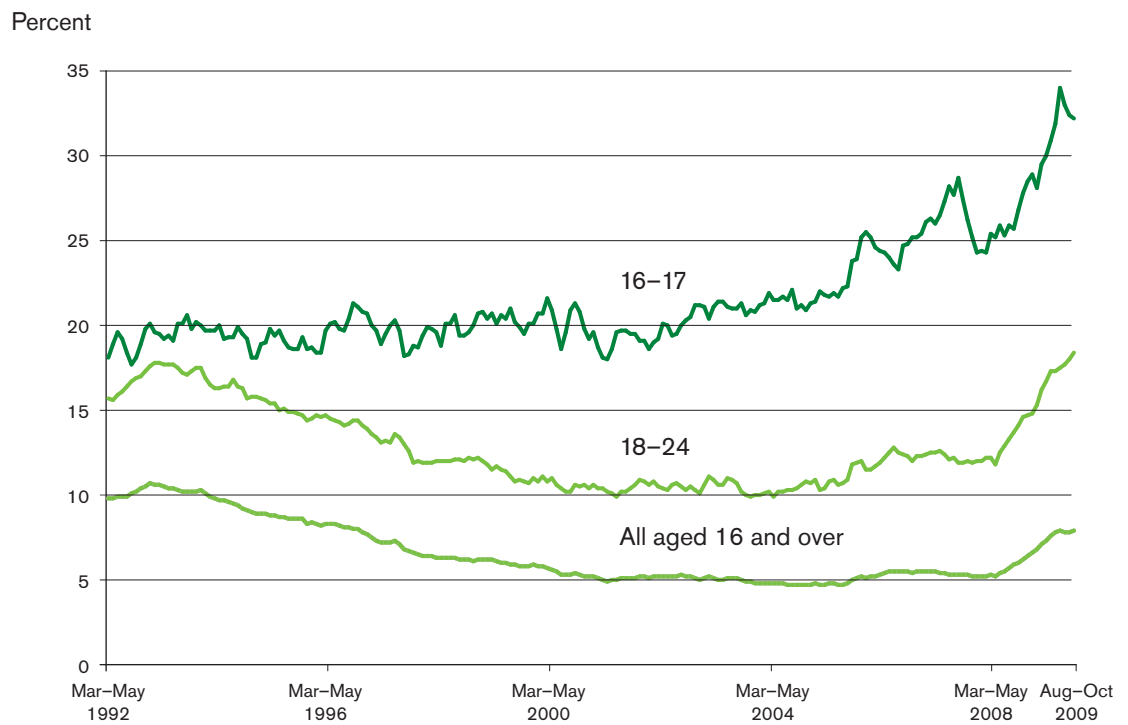


Figure 2.32 Seasonally adjusted trends in unemployment rates for young people in the UK, 1992–2009



Adverse working conditions damage health

People's health can be damaged at work by factors including exposure to physical hazards, physically demanding or dangerous work, long or irregular working hours, shift work, health-adverse posture, repetitive injury and extended sedentary work.¹³⁵

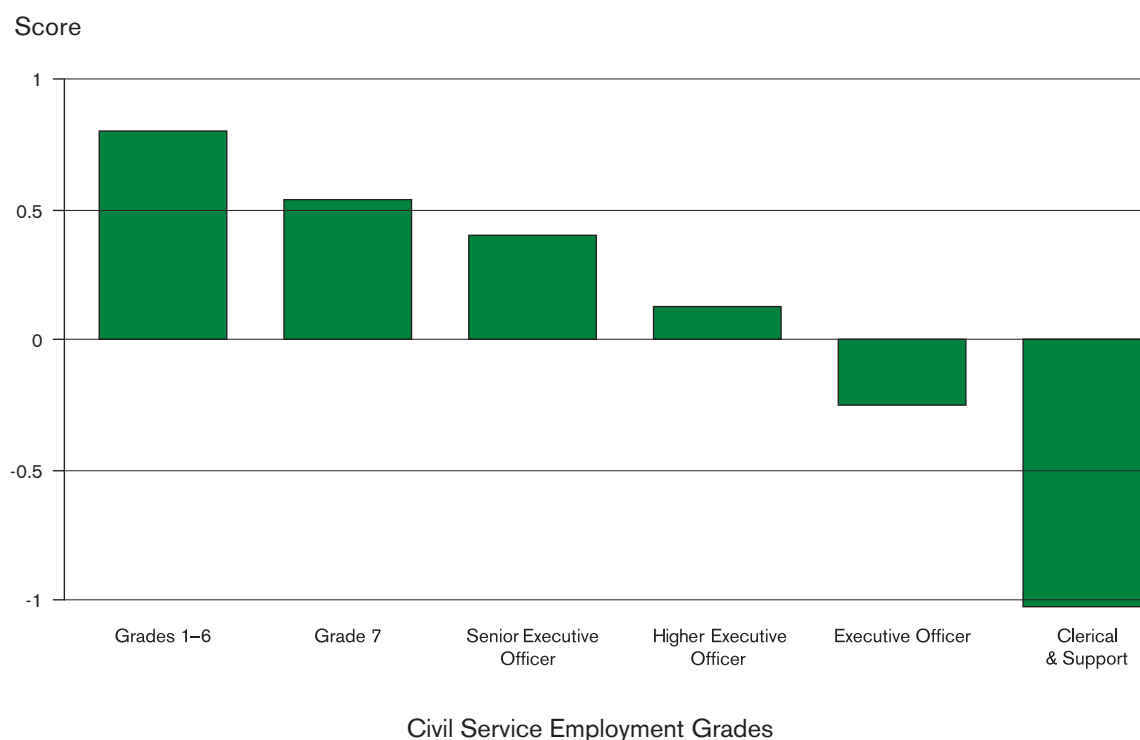
Technological advances and economic growth in the context of globalised markets have resulted in new types of tasks (for example, information processing, personal services and service centres) leading to a demand for greater flexibility of employment arrangements and contracts, often combined with less job stability and security, more intensive work and longer hours.¹³⁶ Related adversities include conflicts within workplace hierarchies, restricted participation of employees in decision-making, and covert or overt discriminatory practices. These types of psychosocial stress in the work place can also cause ill health and have become more widespread as the nature of employment and work has changed. 'Toxic' combinations of these factors are frequent in the current labour market, yet unequally distributed between occupations.

These factors are most prevalent among the most deprived workers, specifically those in 'precarious

jobs' that are defined by a lack of safety at work, by exposure to multiple stressors including strenuous tasks which the worker has little control over, low wages and high job instability.¹³⁷ There is ample evidence on the adverse effects on health and well-being produced by these conditions. A range of research relates issues such as job security¹³⁸, job satisfaction¹³⁹ and supervisor and peer support¹⁴⁰ to various psychological and physical health impacts, such as general ill health, depression, cardiovascular disease, coronary heart disease and musculoskeletal disorders.¹⁴¹

When the particular psychosocial hazards of low worker control, having a large number of demands and little support at work combine, these factors cause so-called 'isostrain'. Having little control shows a clear social gradient (Figure 2.33) and is linked to increased rates of absence due to illness, mental illness and cardiovascular disease. This social gradient is also reflected in the metabolic syndrome, which is a combination of risk factors for diabetes and heart disease – Figure 2.34. Work stress, as measured by isostrain, has also been shown to increase the risk of this syndrome.¹⁴²

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

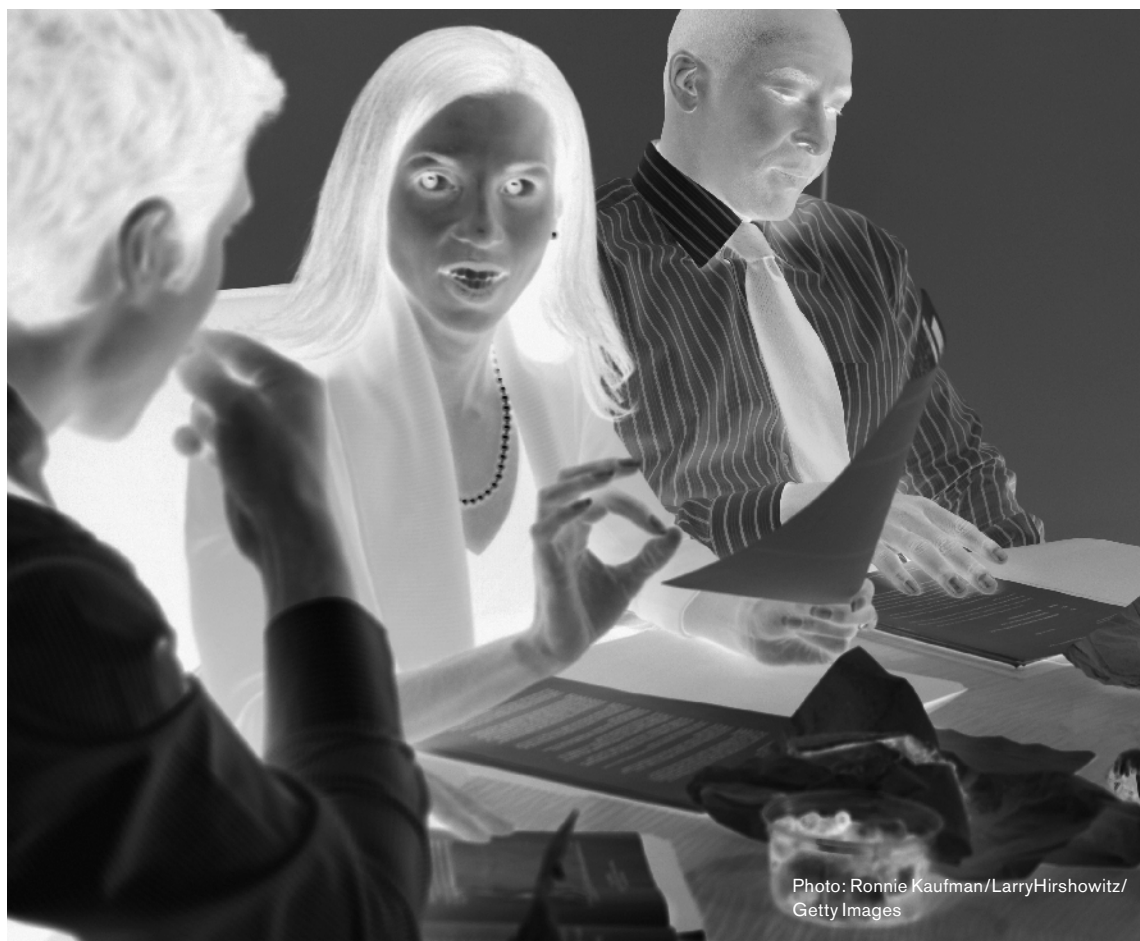
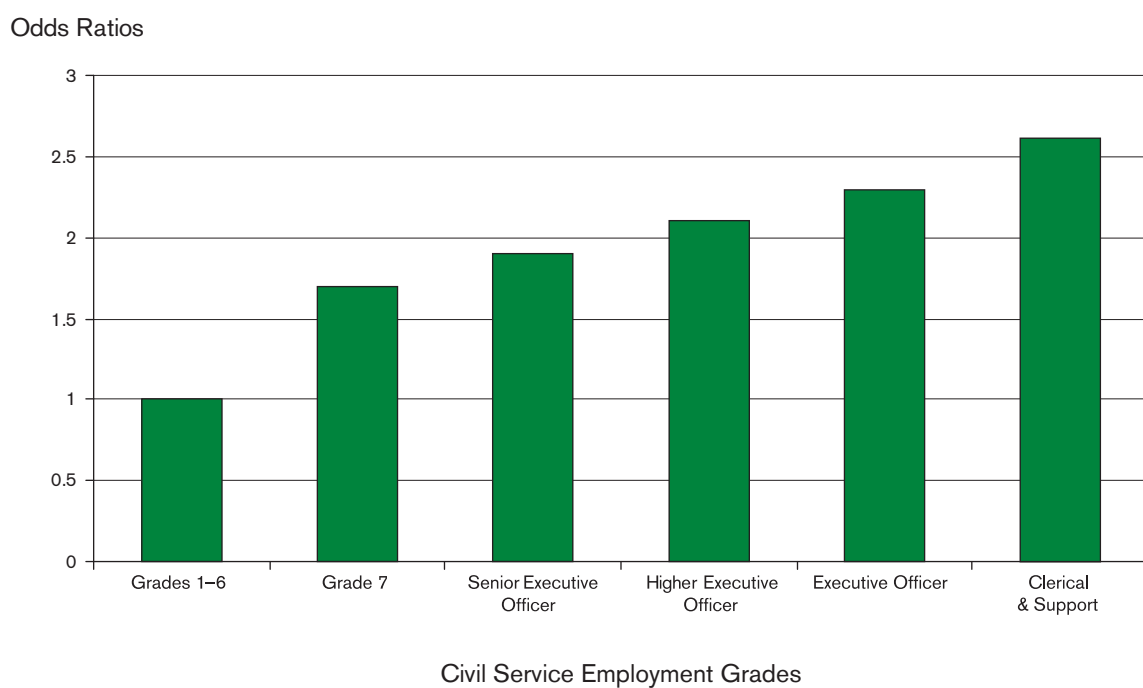


Figure 2.34 The social gradient in the metabolic syndrome, Whitehall II study, 1991–1993



Source: Whitehall II Study¹⁴⁴

2.6.4 Income and health

The relationship between low income and poor health is well established. It operates in several ways. People on low incomes refrain from purchasing goods and services that maintain or improve health or are forced to purchase cheaper goods and services that may increase health risks. Being on a low income also prevents people from participating in a social life and can leave them feeling they are less worthy or have a lower status in society than the better-off.¹⁴⁵ The relationship can operate in both directions: low income can lead to poor health and ill health can result in a lower earning capacity.

In post-war England there has been a sustained increase in the standard of living but income inequalities have endured. Figure 2.35 indicates the effect that systematic variation in sources of income has on the income gradient in the UK today.

Initial income (from employment, savings and occupational pensions) is strongly differentiated, with a ratio of 16 to 1 between the top and bottom fifths of the distribution. However, direct cash benefits from contributory sources such as retirement pensions and incapacity benefits, income support, child benefit and housing benefit, play a substantial role in reducing the differential in the gross income households receive down to 7 to 1.

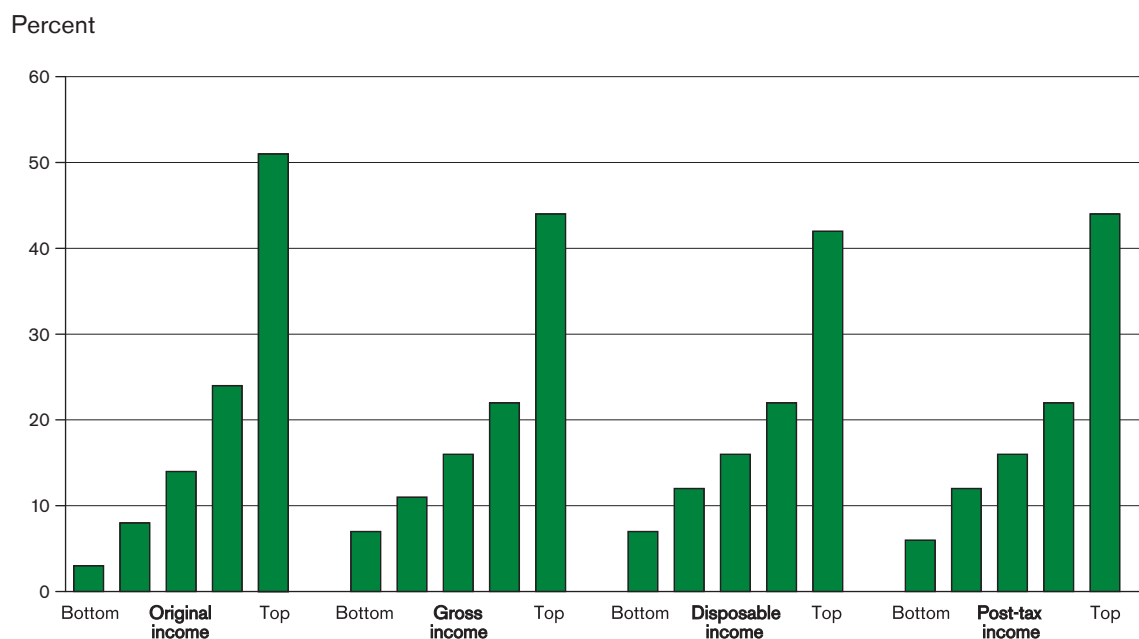
The income received by households is affected by taxation – both direct taxes, for example, income tax, National Insurance and council tax, and indirect taxes – for example, VAT and duty on petrol, alcohol,

tobacco and so on. However, taking these two types of tax together, there is no further redistributive effect – the ratio remains 7 to 1. Only if benefits in kind are considered, for example the education and health systems, does the ratio for ‘final income’ come down to 4 to 1.

The contrasting ways in which the different sources of income, benefits and taxes combine at each point in the gradient are summarised in Figure 2.36. Income tax is, of course, progressive. But indirect taxation is not. Figure 2.36 shows the effect of combining them. People in the lowest quintile pay about 38 per cent of their income in tax. People in the top quintile pay about 35 per cent. The combination of direct and indirect taxation means that the tax system is not progressive. Benefits have been used, as shown above, to offset the regressive nature of the tax system.

The lack of any progressive element to the overall tax system is not a new phenomenon. Figure 2.37 shows that tax has seldom had a redistributive effect in the last 30 years, despite a shift in the share of income that saw the top 20 per cent gaining at the expense of the bottom 60 per cent. In 1978, the bottom 60 per cent received 40 per cent of the share of gross income and the top 20 per cent received 37 per cent. Ten years later this balance had reversed, to 34 and 43 per cent respectively. These shares have remained largely unchanged in the subsequent 20 years.

Figure 2.35 Percentage shares of equivalised income, by quintile groups for all households, 2007/8



Source: Office for National Statistics¹⁴⁶

Figure 2.36 Contribution of original income, taxes and benefits to final income, by quintile, 2007/8

£ (Thousands)

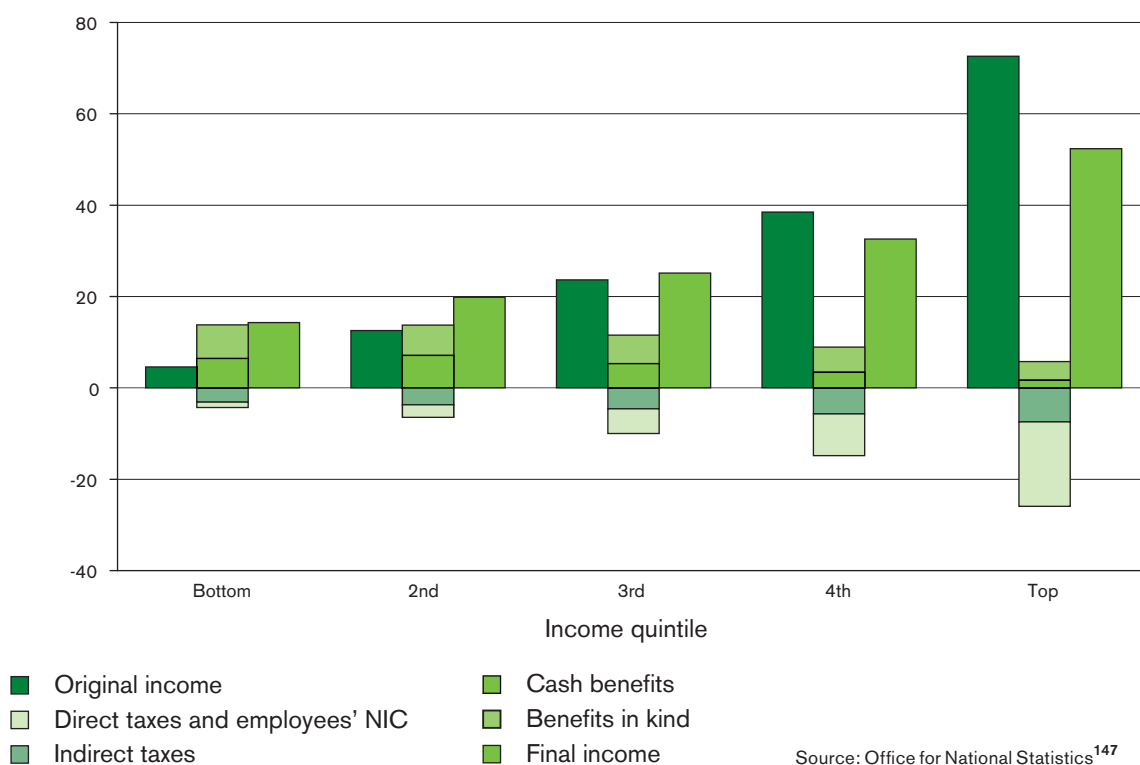
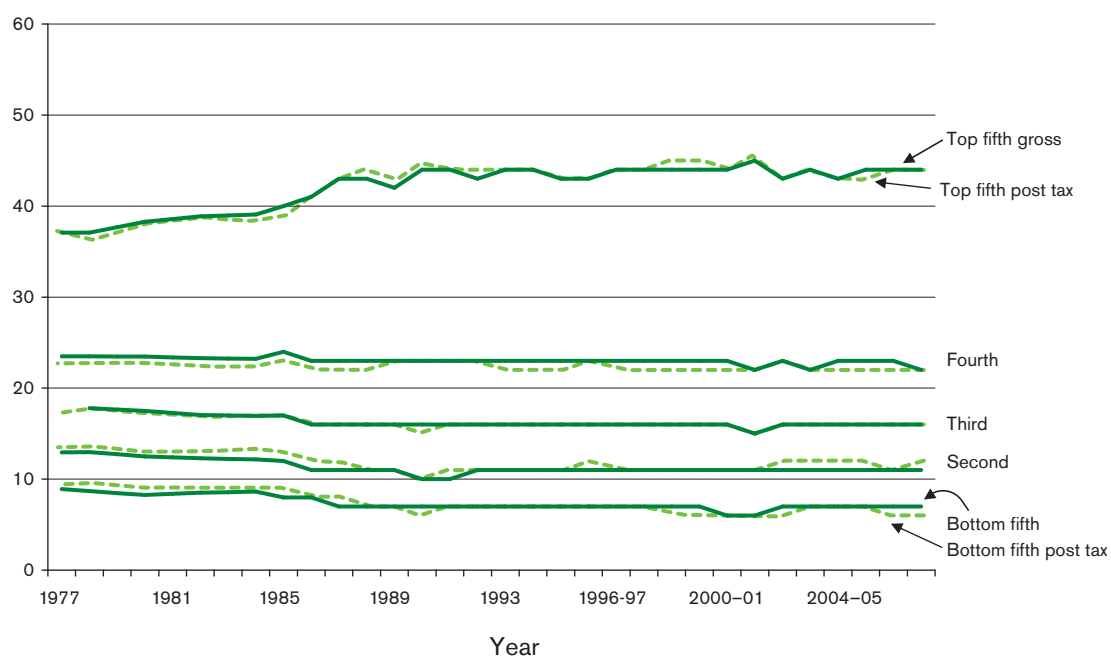


Figure 2.37 Percentage shares of equivalised total gross and post-tax income, by quintile groups for all households, 1978–2007/8

Percent share



Note: Gross income comprises original income and direct cash benefits (e.g. pensions, child benefit, housing benefit and income support). Post-tax income comprises gross income after direct and indirect taxes (e.g. VAT).

Source: Office for National Statistics¹⁴⁸

The relationship between income inequality and health outcomes is described in a book by Richard Wilkinson and Kate Pickett, called *The Spirit Level*.¹⁴⁹ The adverse effects on health caused by having a low income have been shown in several studies.¹⁵⁰ The gradient is important to address as it is not always those on the lowest incomes who find it most difficult to make ends meet. Living standards initially fall as income first begins to rise, due to a loss of state benefits, creating a U-shaped profile between income and other measures of living standards; this is what is called the 'cliff edge' in Chapter 4 (see Policy Objective D).

There is wide variation in the living standards of households with incomes of less than £300 per week; among the poorest there are high proportions of households with living standards either far above or far below the average for their income level.¹⁵¹ Maximum benefit entitlements fall well short of average earnings and this contributes to social exclusion and the health risks associated with that.

Low income

There is substantial evidence that particular social groups are at higher risk of having a low income. Some groups have significantly reduced employment opportunities; they include disabled adults,¹⁵² people with mental health problems,¹⁵³ those with caring responsibilities, lone parents¹⁵⁴ and young people. Many of the social and economic problems that lone mothers are exposed to are made worse by exclusion from paid work and lack of income.¹⁵⁵ An increase in income leads to an increase in psychological well-being and a decrease in anxiety and depression.¹⁵⁶ The more debts people have, the more likely they will have a mental disorder.¹⁵⁷

Helped by the introduction of the National Minimum Wage, full-time hourly wages grew faster at the bottom than in the middle of the social distribution between 1997 and 2002, though wages at the top grew faster still; a period of stagnation across the distribution then followed from 2002.¹⁵⁸ Earnings inequality remains considerably higher in England than in many other EU nations: in 2006, 29 per cent of women and 16 per cent of men were low-paid (earning less than two-thirds of the male median), compared with 10 per cent and five per cent in Finland, for example.¹⁵⁹ The rate of child poverty measured before taxes and transfers actually increased slightly between 1997 and 2006, despite the increases in parental employment.¹⁶⁰ In the absence of progressive taxation, transfers, rather than taxes, account for most redistribution.

Since 1997, therefore, there has been a reduction in the numbers in poverty and poor children are better off in absolute and relative terms.¹⁶¹ However, more recently these improvements have slowed down: since 2005 there has been no improvement in poor families' relative income and even some decline.¹⁶² Since 2004/5 relative poverty has increased, with pensioner poverty, working-age poverty among childless adults and child poverty also increasing.¹⁶³ Additional factors increase costs to low-income households, who pay a premium of about £1,000

a year because they are unable to get advantageous rates for gas, electricity, phones, insurance, access to cash and credit.¹⁶⁴ Thirty-five per cent of people in very low-income households (earning less than £10,000 p.a.) have no insurance of any kind and residents of social housing were more than twice as likely to experience burglary than owner occupiers.¹⁶⁵

In comparison with 11 EU countries, the UK has higher rates of poverty among lone parents, families with three or more children, and those aged 65 and over. In comparison, Nordic countries have low poverty rates in all three sub-categories.¹⁶⁶

Particular groups are more likely to rely on state benefits, for example disabled people, those with caring responsibilities and the long-term unemployed. However, the system proves difficult to access for several disadvantaged groups and take-up can be low, for reasons including lack of information and awareness of the system. This varies according to ethnic group. Bangladeshis have particularly low levels of benefit receipt alongside the highest levels of poverty. There is also low take-up among Gypsies and Irish Travellers. Many minority ethnic groups tend only to be eligible for means-tested benefits because their shorter working histories in this country mean they have made fewer National Insurance contributions. Two-fifths of Pakistani and Bangladeshi working couples with children are on means-tested benefits, compared with just 8 per cent of white families.¹⁶⁷

Health-adverse effects of being on a low income have been shown in several studies.¹⁶⁸ But the relation is a graded one, not confined to those on the lowest incomes. There is evidence that income has a direct impact on parenting and on children's health and well-being. For example, according to Gregg *et al*, 'Holding constant other types of parental capital, income is strongly associated with types of maternal psychological functioning that promote self esteem, positive behaviour and better physical health in children.'¹⁶⁹

The graded nature of the relationship between income and health is consistent with the fact that a person's relative position on the social hierarchy is important for health. Given that the majority of people in England live above the level of absolute deprivation, it is likely that relative position on the income scale is having a determining effect on the kinds of influences this Review covers.

Income inequality is not just about material deprivation however. There is evidence that the degree of inequality in society, is having a harmful effect on health, not only of the poor, but of society as a whole.¹⁷⁰ Countries, and areas within countries, marked by greater inequality have not only worse health but a higher rate of crime and other adverse social outcomes. Both poverty and inequality may be important for social cohesion, life opportunities and health.

Wealth

The material resources available to individuals and households depends as much on the wealth they have accumulated as it does on their current income. There has been a change in the composition and

distribution of wealth in modern Britain, related to home ownership, new working patterns, growth in personal investment and the accumulation of wealth over the life course.¹⁷¹ To understand the economic well-being of households and individuals requires more than simply the measurement of income.

In 2006–8 a fifth of households, the top two deciles in Figure 2.38, owned 62 per cent of wealth and the bottom 50 per cent owned 9 per cent. The largest component of household wealth was the accrual of private pension rights, followed by the value of property owned. The least wealthy had negative property and financial wealth, that is they were in debt, but had some possessions and for some private pension rights.

The social gradient in wealth is also substantial – Figure 2.39. Where the head of household was classified as ‘large employer or higher managerial’, median household wealth was £530,000, compared with £74,000 for routine occupations and £15,000 where the head of the household had never worked or was long-term unemployed.

Income and wealth may be important for health because they are markers of socioeconomic position, and social status is important for health.¹⁷² The evidence suggests, however, that both income and wealth may have a more direct effect on health inequalities and hence are important topics for this Review.

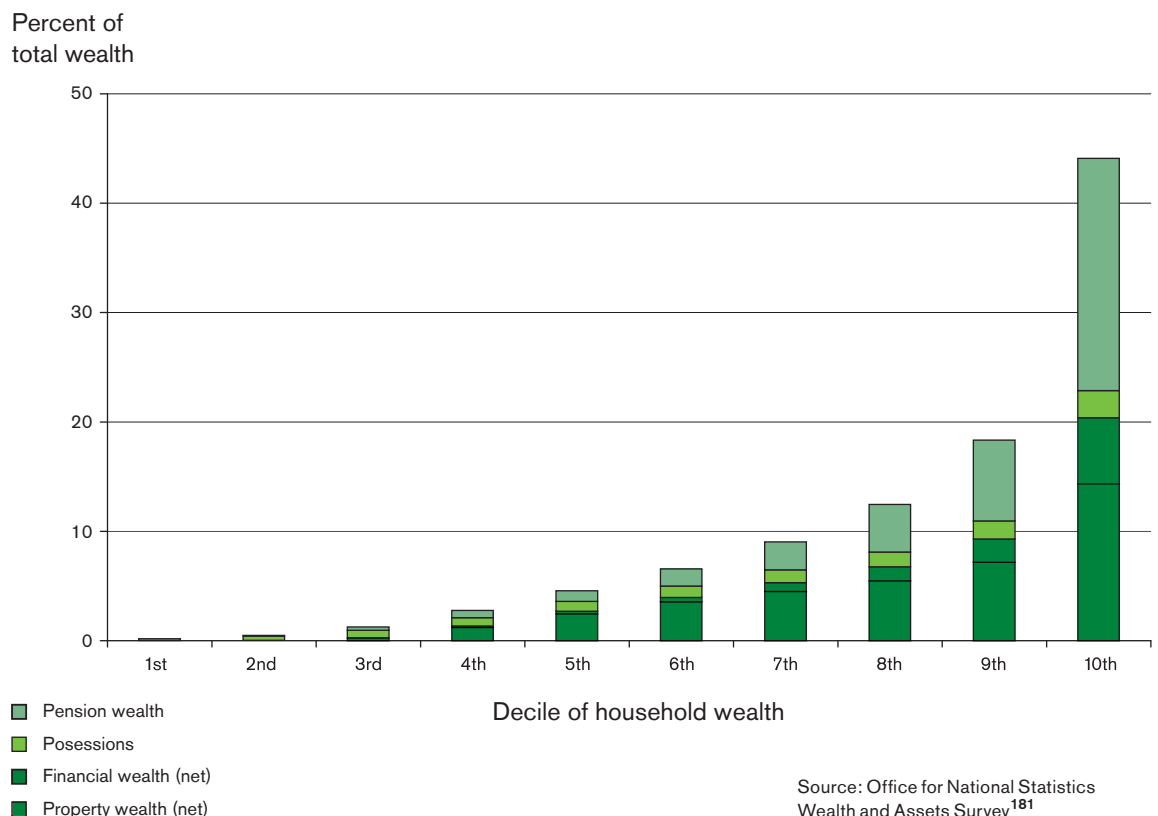
2.6.5 Communities and health

Sustainable communities

Climate change presents unprecedented and potentially catastrophic risks to health and well-being.¹⁷³ The global impacts of climate change will directly and indirectly affect England and the health of its population. Climate change is predicted to result in an increase in deaths, disability and injury from extreme temperature and weather conditions, heat-waves, floods and storms including health hazards from chemical and sewage pollution.¹⁷⁴ The heat wave in Britain during the summer of 2003 for example resulted in an estimated 2,000 excess deaths, 17 per cent above the expected number.¹⁷⁵ It is estimated there will be an increase in respiratory problems from the damaging effects of surface ozone during the summer as well as an increase in skin cancers and cataracts.¹⁷⁶ While air pollution is expected to decrease, the increases in ozone concentrations is expected to result in an additional 1,500 deaths per year.¹⁷⁷

Climate change will also have long-term, less direct impacts such as the effects on mental health of flooding and other climate-related events, which could cause anxiety and depression.¹⁷⁸ Worldwide, food yields, food security and affordability will be increasingly affected.¹⁷⁹ Those likely to be most vulnerable to the impacts of climate change are those already deprived by their level of income, quality of homes, and their health.¹⁸⁰ Although low-income countries will suffer most acutely, in all countries

Figure 2.38 Percentage distribution of total household wealth by component, 2006–8



the risks associated with climate change will fall disproportionately on ‘the urban poor, the elderly and children, traditional societies, subsistence farmers, and coastal populations.’¹⁸²

People on low incomes in the UK are more likely than the better-off to live in urban areas which will be warmer, and therefore to be at risk of heat stroke.¹⁸³ They are more likely to live in homes that are less well protected¹⁸⁴ and in areas that are more exposed to weather extremes and flooding.¹⁸⁵ They are also less likely to have access to insurance against risks associated with climate change such as storm and flood damage.¹⁸⁶

Policies to tackle climate change therefore have a direct relevance to health and health inequalities. Measures to improve health also have a direct relevance for sustainability. Less sustainable communities also tend to be less healthy. Similarly, measures to address climate change and health inequalities are sometimes compatible and therefore particularly important. These links are discussed in greater detail in Chapter 4, Policy Objective E.

Unhealthy lifestyles, environments that are ‘obesogenic’ (a term for factors describing conditions which tend to make people obese), and chronic ill health all tend to increase individual carbon footprints. The increasing prevalence of obesity has serious implications not only for health but also for greenhouse gas emissions; people who are overweight and obese eat more food and food production accounts for 20 per cent of global greenhouse gas

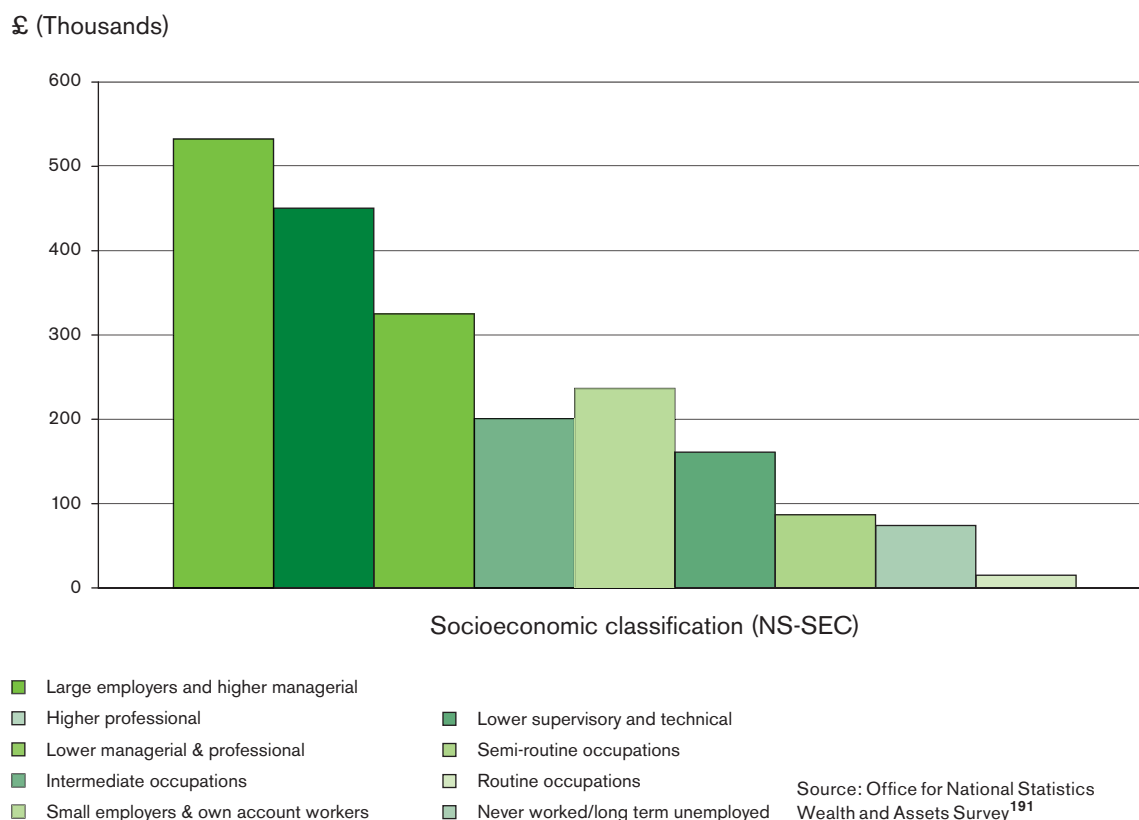
emissions.¹⁸⁷ Many actions recommended to control obesity are also expected to decrease carbon emissions. People living in neighbourhoods identified as ‘walkable’ are estimated to generate about 30 per cent less carbon than the average for suburban residents, largely because they drive less (see Chapter 4, Policy Objective E).¹⁸⁸ Investing public funds in measures such as active travel, promoting green spaces and healthy eating will impact positively on health as well as on carbon emissions.¹⁸⁹ England, in common with other countries, must introduce measures to combat climate change, and it is imperative that the likely impact on health inequalities is included in planning and implementation.

The social gradient in places and communities

There is substantial evidence of a social gradient in the quality of neighbourhoods – Figure 2.40. Poorer people are more likely to live in more deprived neighbourhoods. The more deprived the neighbourhood, the more likely it is to have social and environmental characteristics presenting risks to health. These include poor housing, higher rates of crime, poorer air quality, a lack of green spaces and places for children to play and more risks to safety from traffic.

In the 30 years between 1970 and 2000 Britain saw a substantial increase in the geographical concentration and segregation of poverty and wealth. Since 2000 there seems to have been little progress in reducing this.¹⁹⁰ Urban clustering of poverty has increased. In parts of some cities in England, over

Figure 2.39 Median total wealth by socioeconomic classification (NS-SEC), 2006–8



half of households have incomes of less than 60 per cent of the median while wealthy households have become concentrated on the outskirts and areas surrounding major cities. During the same period, major restructuring of the British economy has led to the loss of manufacturing and traditional industries, with high levels of economic inactivity becoming concentrated in particular localities and neighbourhoods.¹⁹²

Housing and health inequalities

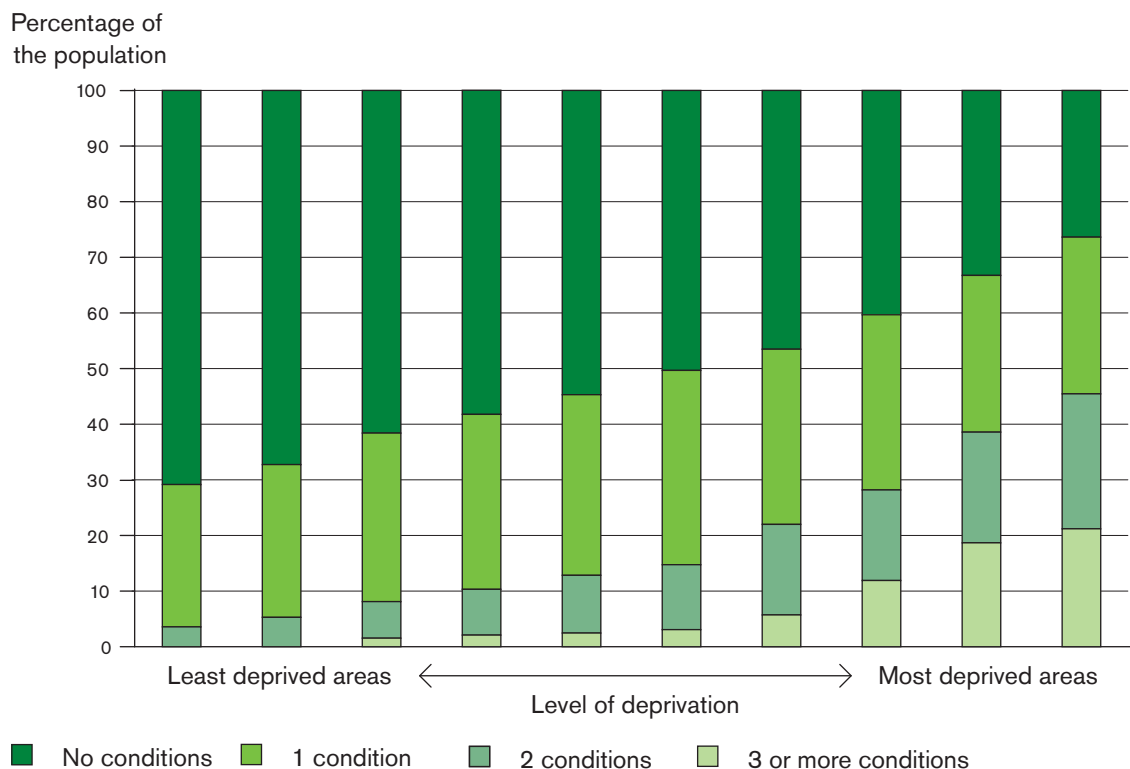
Poorer neighbourhoods are often composed of estates of largely socially rented housing. Nearly half of all social housing is now located in the most deprived fifth of neighbourhoods. Over the last 20 years, the poorest groups have become concentrated in social housing.¹⁹³ Although the supply of social housing has decreased over the past 25 years, it still accommodates around 4 million households, protecting affordability and providing security of tenure. While the quality of housing is important for health, part of the health disadvantage relates to the make-up of the population of social housing. Because of the reduced supply, there has been what is termed a 'residualisation' effect in the make-up of social housing tenants, so that as a group they have higher rates of unemployment, ill health and disability than the average for the rest of the population.¹⁹⁴ This is also due to the make-up of the social housing population being dictated by the explicit role of social housing in supporting disadvantaged

groups and allocating according to need.¹⁹⁵ Poverty rates for people living in social housing are double that of the population as a whole with only a third of tenants in full-time employment and fewer than half with any paid work.

Longitudinal analysis of three British Birth Cohort Studies shows that being in social housing as a child increases the risk of multiple disadvantages in adulthood. These risks have increased since the Second World War. In the 1946 cohort social housing in childhood was not a significant risk factor for adult deprivation or worklessness. For the 1958 cohort the risks of social housing in childhood appeared for women, though not for men. For the 1970 cohort, however, there were clear negative outcomes associated with living in social housing for both men and women.¹⁹⁶ This association applies across several domains including health, education, self-efficacy and income.¹⁹⁷ The fact that these disadvantages have increased with the growth of owner occupation suggests that it may not be social housing itself that is harmful, but its relative status in the housing market and the residualisation effect.

Bad housing conditions – including homelessness, temporary accommodation, overcrowding, insecurity, and housing in poor physical condition – constitute a risk to health. A study carried out by Shelter in 2006 suggested that children in bad housing conditions are more likely to have mental health problems, such as anxiety and depression, to contract meningitis, have respiratory problems,

Figure 2.40 Populations living in areas with, in relative terms, the least favourable environmental conditions, 2001–6



Environmental conditions: river water quality, air quality, green space, habitat favourable to bio-diversity, flood risk, litter, detritus, housing conditions, road accidents, regulated sites (e.g. landfill)

Source: Department for Environment, Food and Rural Affairs¹⁹⁸

experience long-term ill health and disability, experience slow physical growth and have delayed cognitive development.¹⁹⁹ These adverse outcomes reflect both the direct impact of the housing and the associated material deprivation.

Investment in new and existing housing is needed across the social gradient. More than 500,000 people are living in overcrowded conditions and 70,000 people in temporary accommodation.²⁰⁰ Almost 2 million people are on council waiting lists for social housing.

Fuel poverty and health inequalities

Cold housing is a health risk. Cold is believed to be the main explanation for the extra ‘winter deaths’ occurring each year between December and March. In 2008/9 there were 36,700 additional deaths in the December to March period in England and Wales. These winter deaths continue despite government policies to reduce the number of cold homes and prevent the risk of ill health due to cold among families with children, older people and those with a disability or long-term illness.

Being able to afford to keep a warm home is clearly a key factor. A household is said to be in fuel poverty if it needs to spend more than 10 per cent of its income on fuel to sustain satisfactory heating. In 2005/6, 7 per cent of households were spending more than this, over half of which were single-person households. Fuel poverty rates fluctuate with the price of fuel. In November 2008 the rising price of

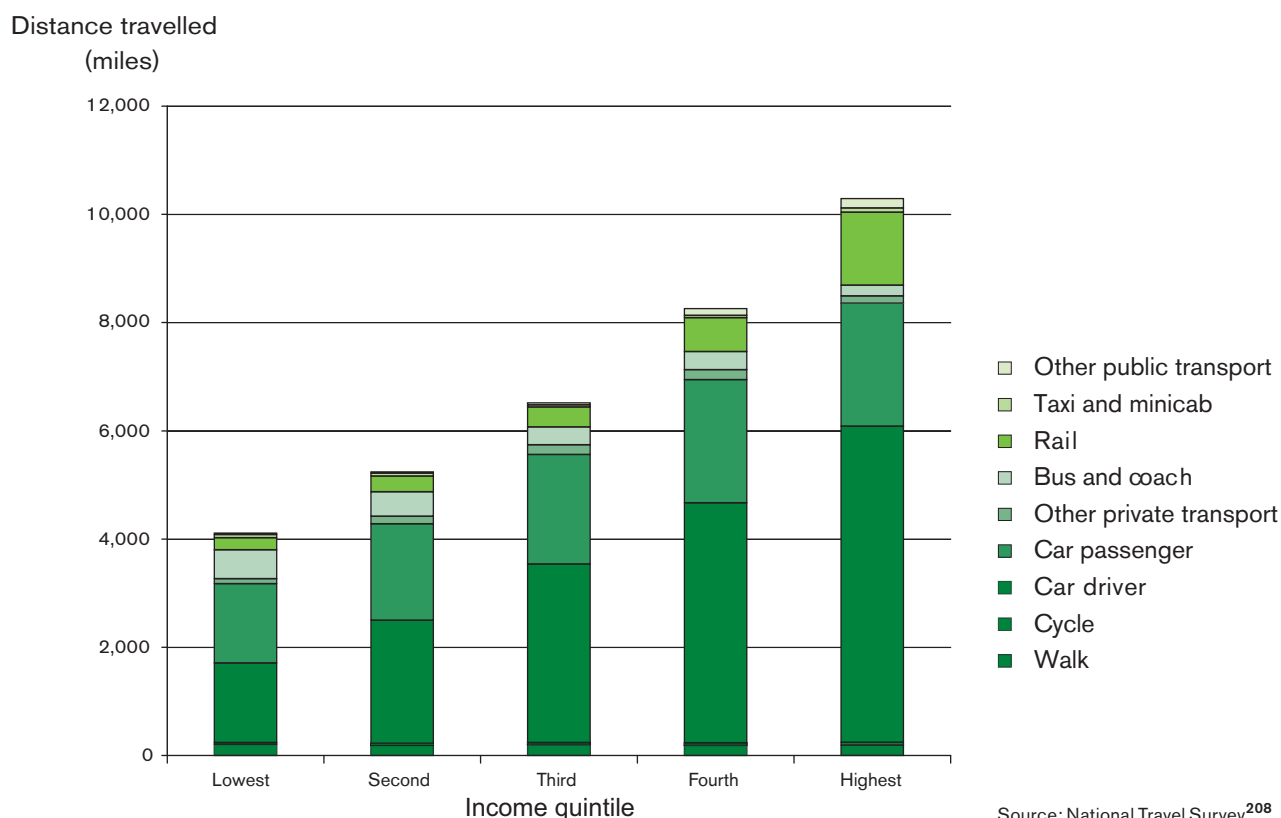
domestic fuel resulted in over half of single pensioners and two-thirds of workless households being in fuel poverty.²⁰¹

Air quality, green spaces and health inequalities

There is clear evidence of the adverse effects of outdoor air pollution, especially for cardio-respiratory mortality and morbidity.²⁰² It is estimated that each year in the UK, short-term air pollution is associated with 12,000 to 24,000 premature deaths.²⁰³ Poorer communities tend to experience higher concentrations of pollution and have a higher prevalence of cardio-respiratory and other diseases. Sixty-six per cent of carcinogenic chemicals emitted into the air are released in the 10 per cent most deprived wards.²⁰⁴

Creating a physical environment in which people can live healthier lives with a greater sense of well-being is a hugely significant factor in reducing health inequalities. Living close to areas of green space – parks, woodland and other open spaces – can improve health, regardless of social class.²⁰⁵ Numerous studies point to the direct benefits of green space to both physical and mental health and well-being.²⁰⁶ Green spaces have been associated with a decrease in health complaints²⁰⁷ blood pressure and cholesterol, improved mental health and reduced stress levels,²⁰⁹ perceived better general health,²¹⁰ and the ability to face problems.²¹¹ The presence of green space also has indirect benefits: it encourages social contact and integration, provides space for

Figure 2.41 Distance travelled per person per year in Great Britain, by household income quintile and mode, 2008



physical activity and play, improves air quality and reduces urban heat island effects.²¹² (See Chapter 4, Policy Objective E for further discussion.)

Transport and health inequalities

Transport accounts for approximately 29 per cent of the UK's carbon dioxide emissions²¹³ and contributes significantly to some of today's greatest challenges to public health in England, including road traffic injuries, physical inactivity, the adverse effect of traffic on social cohesiveness and the impact of outdoor air and noise pollution. However, the relationships between transport and health are multiple, complex, and socioeconomically patterned.

Transport also enables access to work, education, social networks and services that can improve people's opportunities.²¹⁴ Figure 2.41 shows the gradient in access to work and services. It also provides clear indication of a gradient in car driving by income. This shows greater freedom to travel, but also greater fuel consumption, among higher earners.

The impact of transport on health inequalities is most significant when looking at deaths from road traffic injuries. The single major avoidable cause of death in childhood in England is unintentional injury – death in the home for under-fives and on the roads for over-fives. There are more deaths from unintentional injury than, for example, from leukaemia or meningitis and the social class gradient in child injury is steeper than for any other cause of childhood death or long-term disability.

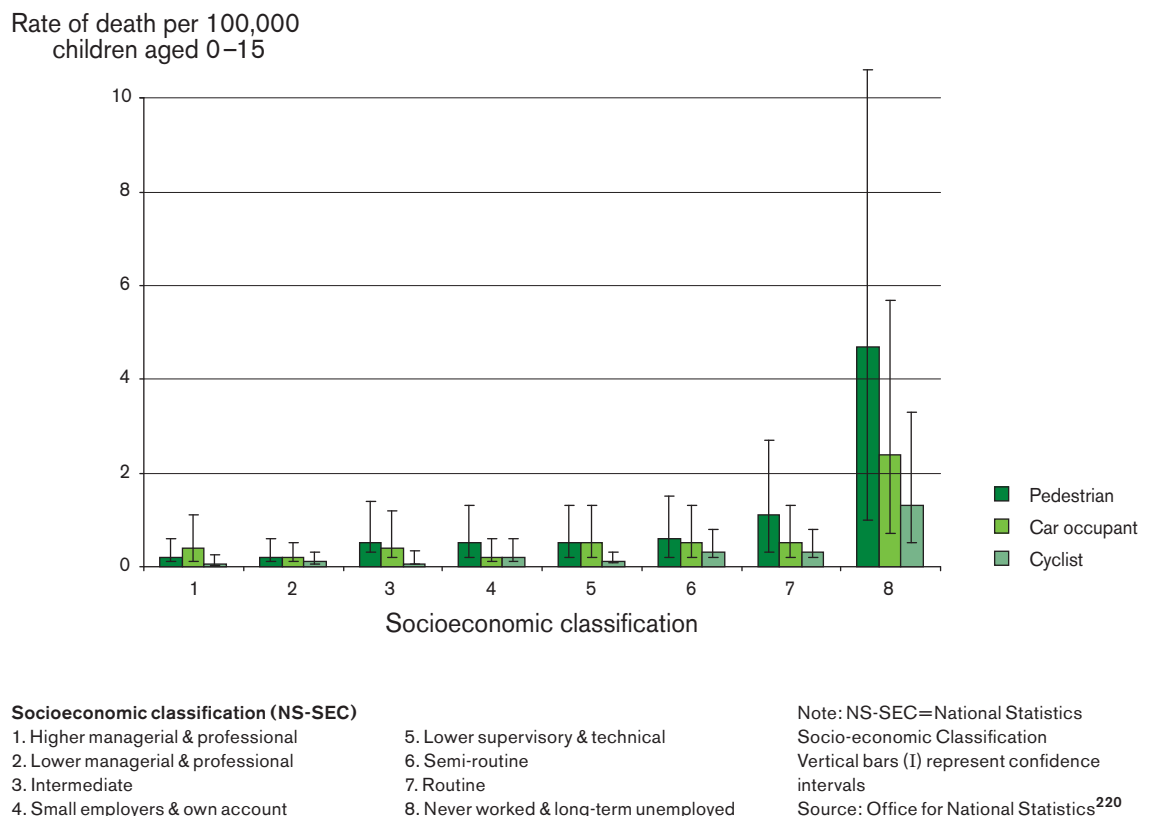
While overall rates of death from injury in children have fallen in England and Wales over the past 20 years, this has not been the case for rates in children in families in which no adult is in paid employment. Children in the 10 per cent most deprived wards in England are four times more likely to be hit by a car than children in the 10 per cent least deprived wards.²¹⁵ Road deaths, especially among pedestrians and cyclists, are particularly high among children of parents classified as never having worked or as long-term unemployed²¹⁶ – Figure 2.42.

Particular groups face further inequalities. Black ethnic minority groups in London were 1.3 times more likely to be injured as pedestrians and car occupants on the city's roads than those in white ethnic groups.²¹⁷

Food and health inequalities

Five per cent of people on low incomes report skipping meals for a whole day. Low income and area deprivations are also barriers to purchasing fresh or unfamiliar foods.²¹⁸ Lower income households are the hardest hit by food price fluctuations.²¹⁹ Policy Objectives C and E explore this in more detail.

Figure 2.42 Child deaths by socioeconomic class (NS-SEC), 2001–2003



Summing up

All the inequalities described in this chapter have persistent and complex causes and relationships are multi-faceted, between, for instance, early years, education, employment, living environment, income and health. A person's physical and mental health is profoundly shaped by their experiences in all these areas and multiple disadvantages compound to produce significantly worse physical and mental health and well-being. In the next chapter we describe lessons learnt from recent policies and interventions to reduce health inequalities, then in Chapter 4 we outline policies for which there is good evidence of success in reducing or ameliorating inequalities in health. But first, in section 2.7, we consider estimates of the human and economic costs of inequalities.

2.7 Human and economic costs of inequalities

The benefits of reducing health inequalities are economic as well as social. The cost of health inequalities can be measured in both human terms – lost years of life and active life, and in economic terms – the cost to the economy of additional illness.²²¹

2.7.1 Loss of years of life

Inequalities in mortality are only part of the overall health inequalities that exist between socioeconomic groups. However, they provide a sound starting point for building up an estimate of the full benefits of reducing health inequalities. The size of socioeconomic inequalities in health depends on the socioeconomic indicator chosen (among other factors). We have examined three approaches. Two are based on different measures of socioeconomic status, occupational class (NS-SEC) and education (see Figures 2.6 and 2.7). The third is based on systematic neighbourhood differences in life expectancy according to income deprivation (Figure 1.1).

In each case potential reductions in the social gradient in health were identified and the value quantified of the improvement this would represent in deaths avoided and extra population longevity.

Occupational class

Based on occupational class data available around the time of the 2001 Census, this analysis²²² focused on deaths in a core working age group, 30–59, in order to avoid problems of misclassification at younger and older ages. No estimate was made of lives saved at younger or older ages.

If the mortality rates of all classes in this core working age group had been the same as the 'higher managerial and professional' class in England and Wales in 2003, around 67,000 fewer deaths in this age group would have taken place and a total of 2.3 million years of life potentially saved.

Education

A similar analysis of mortality based on educational qualification recorded in the Census – using the Office for National Statistics Longitudinal Study of England and Wales – showed that if the mortality level of all people was the same as for those with degree-level qualifications, 202,000 premature deaths would be avoided at ages 30 and over each year and 2.6 million years of life potentially saved.²²³ On a proportionate basis, this equates to around 2.5 million years of life for England.

Neighbourhood

Finally, a hypothetical improvement in mortality rates of neighbourhoods in England was considered²²⁴ – specifically, potential reductions in life expectancy differences among middle-level Super Output Areas (MSOAs). While there is a strong relationship between deprivation in these areas and the life expectancy levels of their residents, there is also considerable variability between areas with the same level of deprivation (principally due to the region in which the area is located).

For this reason, we focused on a scenario that did not remove the variability between areas with the same level of deprivation (due to region and other factors). Instead we considered the effect of improving life expectancy of areas in the bottom 90 per cent of the deprivation distribution to the levels and distribution seen in areas within the top 10 per cent. Were this the case, there would be around 600,000 extra years of life lived among those who will die in 2010. This method also allows us to estimate the extra years that would be lived if all those born in 2010 experienced the current death rates in the 10 per cent of least deprived areas (1.3 million years) or if everyone currently alive experienced these more favourable death rates (98 million extra years).

2.7.2 Loss of years of healthy life

By applying the technique used in the previous example (life expectancy of neighbourhoods) to disability-free life expectancy, we were able to estimate²²⁵ the extra years spent with a limiting long-term illness or disability by those in neighbourhoods in England with higher levels of deprivation. This analysis suggested that if all those born in 2010 experienced the current rates of illness, disability and death seen in the 10 per cent of least deprived areas they would enjoy some 4.1 million extra years of healthy life. The comparable gain for everyone currently alive is 285 million years of healthy life.

Further details of the methods used and of examples of the effect of more modest improvements are given on the Marmot Review website at www.ucl.ac.uk/ghg/marmotreview

2.7.3 Economic costs

There are a number of ways in which we can convert the figures of lives saved into economic costs, by making suitable assumptions. Examples are available on the Marmot Review website (see above). It is, however, not directly obvious as to where these costs would fall.

On the other hand, it is possible to bring together several quantifiable dimensions of lost activity due to illness or disability. These examples draw on the work of Dame Carol Black's report, analyses of the extra treatment costs borne by the NHS in England as a result of health inequalities and work prepared for Foresight on the future costs of obesity.²²⁶

By comparing the current situation, with its considerable levels of inequality, with one in which everyone had the same health outcomes as the richest 10 per cent of the population in England, it is estimated that there are currently:

- Productivity losses of £31–33 billion per year
- Lost taxes and higher welfare payments in the range of £20–32 billion per year.²²⁷

Direct NHS healthcare costs in England associated with treating the consequences of inequality amount to £5.5 billion per year for treating acute illness and mental illness and prescriptions.²²⁸ These activities represent approximately one third of the NHS budget. In consequence, it is likely that the full impact of health inequalities on direct healthcare costs is considerably greater than this.

Taking an alternative approach, by modelling the costs of treating the various illnesses that result from inequalities in obesity this time in England and Wales, it is estimated that inequalities in obesity currently cost £2 billion per year, predicted to rise to nearly £5 billion per year in 2025.²²⁹ Separate estimates could be made for other risk factors for illness (such as lifestyle behaviours). However, there would be an element of double counting involved in trying to estimate too many separate risk factors for different illnesses.