Does income inequality cause health and social problems?

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This report provides an independent review of the evidence about the impact of inequality.

Inequality grew dramatically in the 1980s and has remained at a high level ever since. But should high levels of inequality concern us? This report provides an independent review of the research, paying particular attention to the evidence and arguments put forward in *The Spirit Level* by Richard Wilkinson and Kate Pickett, in which it was argued strongly that we should indeed be concerned about income inequality. This report reviews the points made in various critiques that have appeared since *The Spirit Level* was first published in 2009, alongside the evidence and debate in the broader peer-reviewed literature.

The report examines:

- whether or not there is a link between income inequality and health and social problems;
- who might be most affected by income inequality; and
- other possible impacts of income inequality, for example, on the economy.

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Executive summary

The UK witnessed a dramatic growth in income inequality in the 1980s and the level of inequality has, if anything, increased further since then, albeit at a slower rate (National Equality Panel, 2010). But should we be concerned about this? This report provides an independent review of the research in this field, paying particular attention to the evidence and arguments put forward in *The Spirit Level*, which placed income inequality firmly within public debate and argued strongly that we should indeed be concerned about it (Wilkinson and Pickett, 2009a). The scale of the ideas and data contained in *The Spirit Level* has attracted critique from a number of quarters, including Saunders (2010) and Snowdon (2010), among others. This report considers the points made in those critiques alongside the broader peer-reviewed literature in this field. It is not intended to be the final word on this debate, not least because new research findings are constantly being published. The report is intended, instead, to contribute to the ongoing debate on this important topic.

Key findings

The key findings from this review are that:

- The evidence from a range of studies suggests that there is indeed a correlation between income inequality and health and social problems. However, some further correlation analysis would be helpful in testing how sensitive the findings are to: different measures of social stratification; different measures of income inequality; variations in the countries selected; and the treatment of outliers.

- Within any particular society, those with higher incomes do better on a range of outcomes. There is therefore a 'social gradient' in health, which means that every step up the socio-economic ladder leads to an increase in health. It is less clear whether every step up the ladder improves health by the same degree.

- More recent studies have moved away from simple correlation analysis to investigate whether income inequality *causes* health and social problems, independent of other factors. There is less agreement about whether or not there is a causal relationship, but some rigorous studies provide evidence of such a relationship.

- In studies which show that income inequality causes health and social problems, the size of this effect looks small in statistical terms; however, since these studies involve whole populations, the numbers of lives involved are significant. One study, for example, suggested that the loss of life from income inequality in the US in 1990 was the equivalent of the combined loss of life due to lung cancer, diabetes, motor-vehicle accidents, HIV-related causes, suicide and homicide (Lynch, *et al*., 1998).

- Some research suggests that inequality is particularly harmful after it reaches a certain threshold. Britain was below this threshold in the 1960s, 1970s and early 1980s, but then rose past it in 1986–7 and has settled well above that threshold since 1998–9. If the threshold is indeed significant, it could provide a target for policy.

- The most plausible explanation for income inequality's apparent effect on health and social problems is 'status anxiety'. This suggests that income inequality is harmful because it places people in a hierarchy that increases status competition and causes stress, which leads to poor health and other negative outcomes. Further theorising around 'status anxiety' would be helpful to consider how 'status anxiety' works in practice, given people's different reference groups, their knowledge (or lack of knowledge) about social stratification and the complex nature of 'status' and self-esteem.

- Not all research studies have shown an independent effect of income inequality on health and social problems. Some studies highlight the role of other factors such as material circumstances (individual income), culture/history, ethnicity and welfare state institutions/social policies. Once again, the theorising behind these relationships could be further advanced and further empirical research carried out to test competing hypotheses.

- There has been some research comparing different groups in different countries, which suggests that those in lower socio-economic groups in more equal countries do better than those in lower socio-economic groups in more unequal countries. Indeed, they may sometimes do better than those in higher socio-economic groups in more unequal countries. Further studies would be very welcome.

- It is sometimes suggested that income inequality may have *positive* effects on economic growth by providing incentives to work, but the evidence to support this is weak.

- This is a highly complex area both theoretically and methodologically and there is still some disagreement among academics on many related issues, but the main conclusion here is that there is some evidence that income inequality has negative effects. There is hardly any evidence that it has positive effects.

Policy implications

The main aim of the report was to review the evidence concerning the impact of income inequality on health and social problems. However, the report concludes by considering a range of policy implications. Given that the main conclusion is that both individual income (material circumstances) and income inequality (relative income) make a difference to health and social problems, it seems clear that both need to be tackled. A range of policy levers can be used to do this: from redistribution through the tax/benefit system, to original income and wealth policies, to stronger public services to a greater focus on equal opportunities.

Introduction

Income inequality grew dramatically in the UK in the 1980s and has fluctuated, if not increased still further, since then. While the Labour governments of 1997–2010 placed a high priority on poverty reduction, income inequality was not on the political agenda until Gordon Brown's premiership when, in 2008, Harriet Harman commissioned the National Equality Panel report. The following year, *The Spirit Level* was published (Wilkinson and Pickett, 2009a) and soon became widely cited as evidence that inequality caused a large array of health and social problems which affected everyone in society, not just those at the bottom:

> *Research by Richard Wilkinson and Kate Pickett has shown that among the richest countries, it's the more unequal ones that do worse according to almost every quality of life indicator.*
>
> David Cameron, Hugo Young Lecture, 10 November 2009

> *The gap between rich and poor does matter. It doesn't just harm the poor, it harms us all.*
>
> Ed Miliband, speech to Labour Party conference on becoming Labour leader, 28 September 2010

Given the publicity surrounding *The Spirit Level*, it is not surprising that it attracted some strong and equally high-profile critiques (particularly Saunders, 2010 and Snowdon, 2010). Such criticisms are also unsurprising given that income inequality had not generally been seen as a problem previously and, indeed, had been considered by some as beneficial, in terms of providing incentives for people to work hard.

So what is the evidence about the impact of inequality on health and social problems? Should governments be tackling inequality alongside or even instead of poverty? How should they do this? These questions are particularly timely as the effects of major cuts in public spending are being increasingly felt across the country.

The original aim of this report was to provide an independent assessment of *The Spirit Level*. It soon became clear, however, that the issue of income inequality has been the subject of extensive research and debate in the social sciences over many years. *The Spirit Level* presented its argument in relatively simple, non-technical terms for a wide audience. Other research, by a vast array of academics including Richard Wilkinson and Kate Pickett themselves, has involved more complex analysis and argument. This review, therefore, draws on this broader body of research rather than just *The Spirit Level*, though it also deals directly with some of the criticisms of that specific book.

The report begins by assessing the evidence for a link between income inequality and negative outcomes in relation to health and social problems. It then considers whether any such link is a causal one, with income inequality causing negative outcomes. Chapter three investigates who might be most affected by income inequality, and chapter four explores other potential effects of inequality, for example, in relation to financial stability and economic efficiency. The report concludes with a summary of main findings and a discussion of both policy implications and future research priorities in this area.

1 Is there a link between income inequality and health and social problems?

The Spirit Level presented data and argument from a wide range of studies (Wilkinson and Pickett, 2009a) but the main focus of the high-profile critiques of the book has been the analysis of the correlation between income inequality and health and social problems (Saunders, 2010; Snowdon, 2010). Before dealing directly with some of these, and other, criticisms of the analysis in the book, this chapter outlines the findings from other sources on the links, both between individual income and health and social problems, and between income inequality and health and social problems.

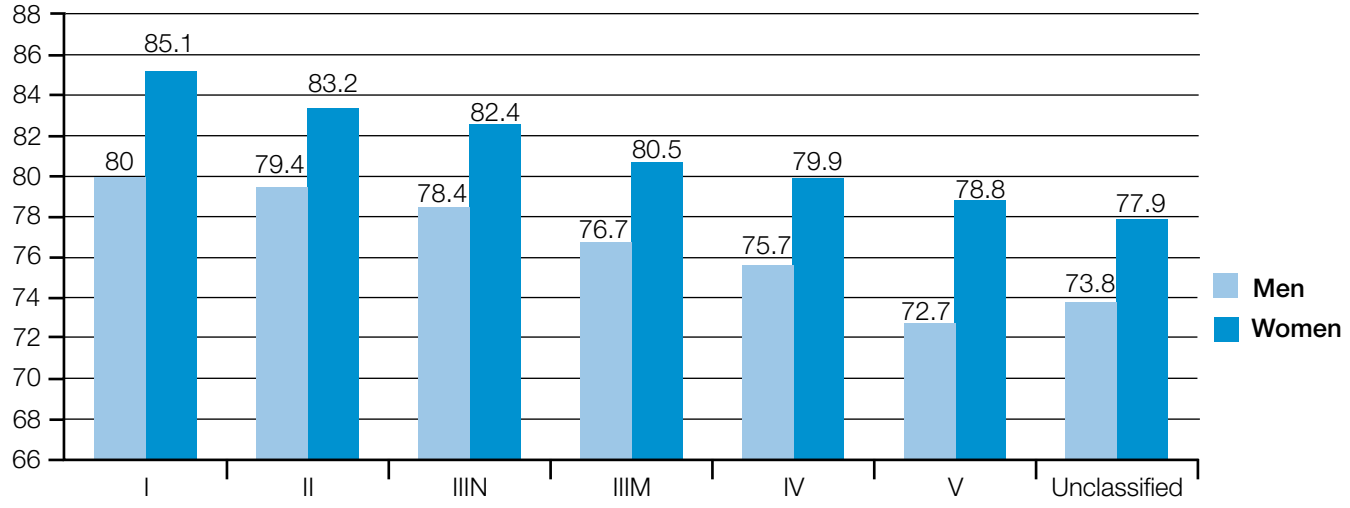
The link between individual income and health and social problems

There have been a number of major studies, including the Whitehall Studies (Marmot, *et al.*, 1978; Marmot, *et al*., 1984; Marmot and Shipley, 1996), alongside major reviews of the social determinants of health (Department of Health and Social Security, 1980; Townsend, *et al*., 1986; Acheson, 1998; Marmot, 2010), which have demonstrated a clear link between socio-economic background (such as income or occupation) and health. The most recent of these, the Marmot Review, found that in England, people living in the poorest neighbourhoods will, on average, die seven years earlier than people living in the richest neighbourhoods (Marmot, 2010). These health inequalities are not just limited to life expectancy but also infant mortality, mental health, physical health and so on.

Health inequalities are remarkably persistent. Life expectancy increased for everyone between 1971 and 2005 but the gap between social classes remained, with some widening of the gap in the 1980s and 1990s (Marmot, 2010).

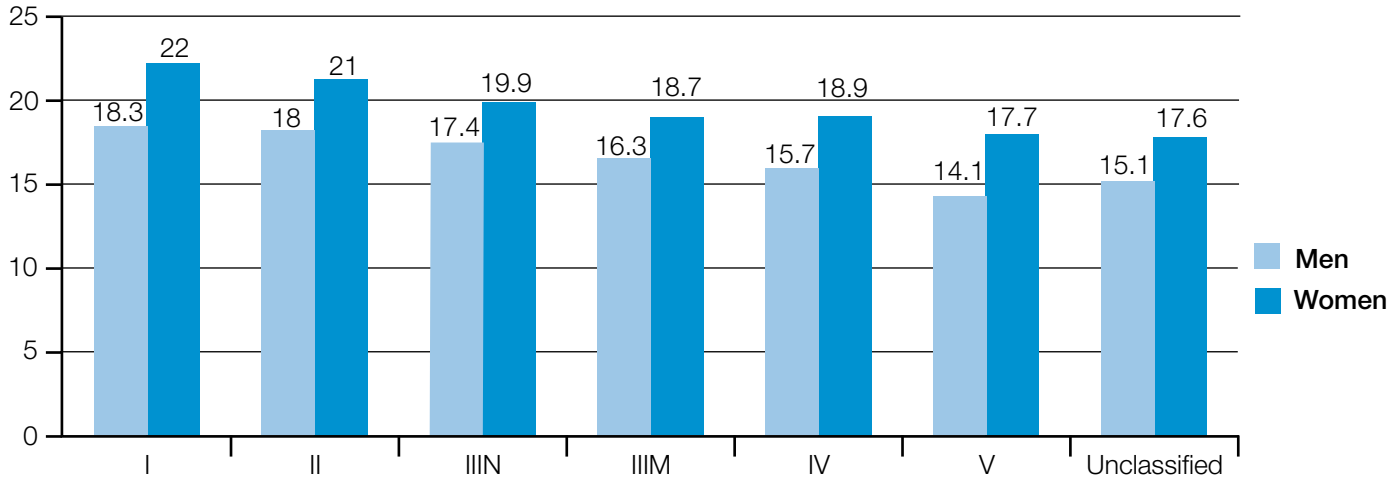
Data from the Office for National Statistics (2007) shows that for the period 2002–5, men in professional occupations had a life expectancy at birth[1] of 80.0 years, compared with 72.7 years for those in unskilled manual occupations[2] (see Figure 1). Women in professional occupations had a life expectancy at birth of 85.1 years, compared with 78.1 years for those in unskilled manual occupations. Life expectancy at age 65 also varied by occupation, with professional men aged 65 expecting to live to 83.3 years on average, and unskilled manual working men expecting to live to 79.1 years (see Figure 2 in this chapter).

Figure 1: Life expectancy at birth for men and women by social class, 2002–5 in England and Wales



Source: http://www.statistics.gov.uk/pdfdir/le1007.pdf

Figure 2: Life expectancy at age 65 for men and women by social class, 2002–5 in England and Wales



Source: http://www.statistics.gov.uk/pdfdir/le1007.pdf

Note: social class here is based on The Registrar General's Social Class. Some examples of occupations within each group are as follows:

I – Professionals: doctors, chartered accountants, professionally qualified engineers

II – Managerial & managers: journalists, school teachers

IIIN – Skilled non-manual: clerks, cashiers, retail staff

IIIM – Skilled manual: supervisors of manual workers, plumbers, electricians, goods-vehicle drivers

IV – Partly skilled: warehousemen/women, security guards, machine-tool operators, care assistants, waiters and waitresses

V – Unskilled labourers: cleaners and messengers

Unclassified – head of household with no occupation.

The research also shows, very clearly, that there is not a simple threshold below which people have shorter lives. There is, instead, a life expectancy *gradient*, with people in higher socio-economic positions living longer than those in positions slightly lower than themselves. In other words, those in the most senior management jobs live longer, on average, than those in slightly less senior management jobs. This latter group, in turn, will live longer, on average, than people in junior management jobs, and so on (Marmot, *et al*., 1978; Marmot, *et al*., 1984; Marmot and Shipley, 1996). Health inequality is not, therefore, an issue just of poverty, but is related to economic inequality more widely.

The statistics so far focus on occupation, but much of the research on this topic has concerned income, and other studies consider poverty or social class. While these variables are clearly related, the links are by no means absolute or simple. It is important, therefore, not to slide too simply from one to another when discussing their relationship to health and social problems. In a major review of 98 studies in this field, Lynch, *et al*. concluded that 'it is widely accepted that at the individual level, higher incomes – and other markers of socioeconomic circumstances – are associated with better health'. The review went on to confirm that this relationship was not just related to poverty, as 'every step up the socioeconomic ladder is generally associated with an increment ... in better health' (Lynch, *et al*., 2004: 9).

One explanation for this link, however, might be that people with health and social problems end up lower down the income distribution (and so health and social problems could lead to lower income rather than vice versa), but Lynch *et al.* highlighted the fact that:

> *Evidence has converged around the general conclusion that socioeconomic disadvantage precedes poorer health ... This does not exclude reverse causation – poor health does affect earnings – but it is not the primary mechanism behind the association between income and health.*
>
> Lynch, *et al.*, 2004: 9–10

It is worth pointing out here that there is considerable discussion (as we shall also see later) about whether the relationship between income and health and social problems is linear or not. For example, if it is linear, then the value of one variable would increase directly as the value of the other variable increases. If the relationship were

curvilinear/concave, however, then for every increase in income there might be an increase in life expectancy up to a particular point, but the degree of increase in life expectancy would then reduce. There would therefore be 'diminishing returns' to the benefit that increased income would give in relation to health.

There is no doubt that health inequalities exist and that there is a link between socio-economic factors such as income and occupation/social class and health outcomes at the individual level. But while it has long been accepted that those lower down the socio-economic distribution *in any one society* fare worse than those higher up in the same society on a range of measures (such as life expectancy, mental health and so on), there is considerable debate about whether, and how, income inequality (at the societal level) is related to health and other outcomes. This is the area of research which has led to considerable discussion and debate, culminating most recently in *The Spirit Level*.

The link between income inequality and health and social problems

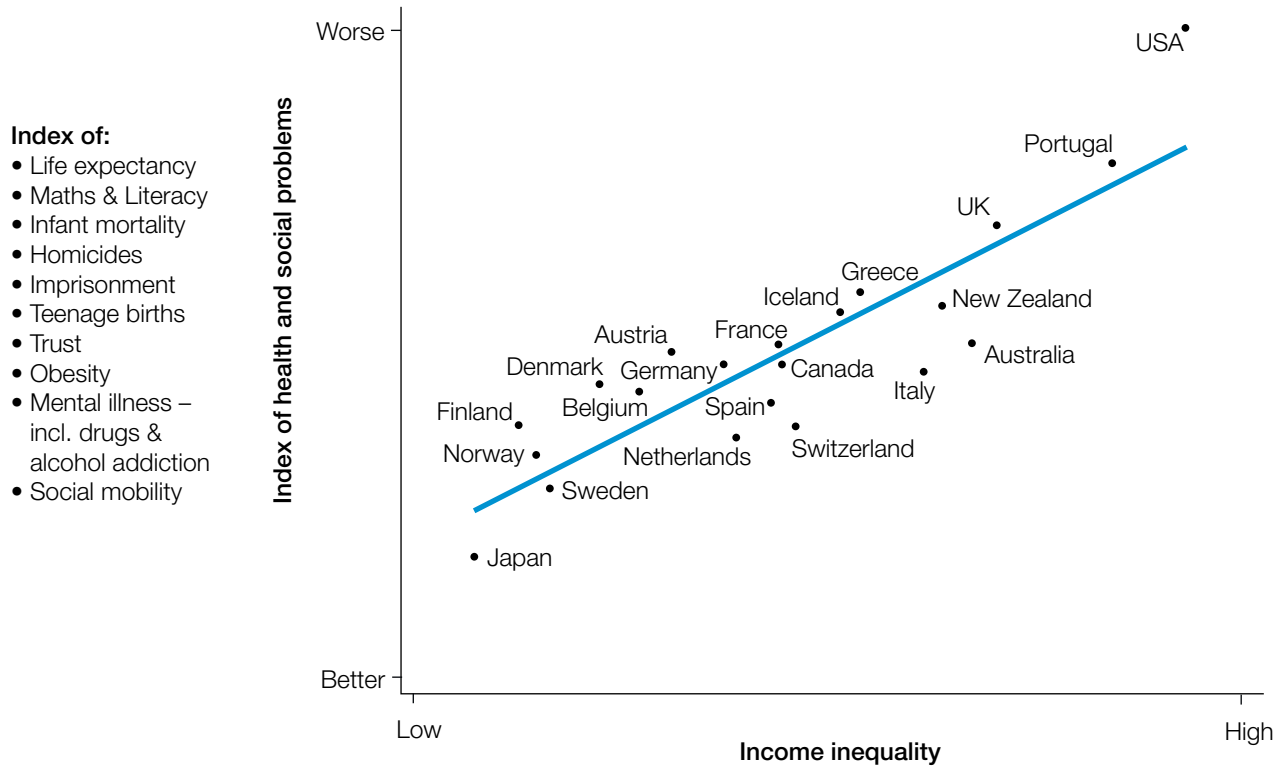
Given the link between income and health at the individual level (that is, *within* societies), we might expect there to be a link between average income and average health at the societal level (that is, when comparing data *between* societies). However, if we compare developed countries (that is, those above a certain average income level or Gross National Product), there is no such link. The debate about why this is the case goes back to Preston (1975), who first suggested that there might, instead, be a link between income inequality (the distribution of income) in a society and life expectancy. This suggestion was explored further by Rodgers (1979) with a study of 50 countries, in which he analysed the link between infant mortality and life expectancy in relation to both average income and income inequality. He concluded that there was indeed a link between income inequality and life expectancy across countries, with a five- to ten-year difference in life expectancy between relatively equal and unequal countries.

Wilkinson (1992) then contributed to this debate, showing relationships between income inequality and health in three small international datasets, including one looking at changes over time. This analysis also showed a relationship between income inequality and health, independent of average income. Judge (1995) and Judge, *et al*. (1998), however, used a more up-to-date dataset and found no association between income inequality and life expectancy, although they did find that it was associated with infant mortality. A review of regional-level[3] studies by Wagstaff and Doorslaer (2000: 554), however, found that 'all confirm that income inequality is strongly associated with mortality, even after controlling for average level of community income'.

Lynch, *et al*. (2001) then carried out an extensive review of research in the field and found links between income inequality and child health outcomes (infant mortality, low birth weight, and so on), but less support for a link with broader health outcomes such as life expectancy. This review also found, however, strong evidence for links between income inequality and homicide and violent crime. More recently, Blanden (2009) has shown that social mobility is lower in societies which are more unequal. For example, if we compare Britain with other countries, rates of intergenerational mobility in terms of incomes are low, and in terms of occupation, are below the international average for men and at the bottom of the range for women.

But first, here, we focus on Wilkinson and Pickett's (2009a) book *The Spirit Level*. They brought together a range of research in the field over the past 30 or so years to argue that there is a relationship between income inequality and social problems among countries over a certain income threshold (see below). The argument was, therefore, that even among relatively wealthy societies (i.e. those above this threshold), those with greater levels of income inequality fare worse on a range of social indicators. As well as looking at the impact on different health and social problems individually, Wilkinson and Pickett also formed an index of health and social problems, with each item carrying the same weight. This index showed no correlation with average income in wealthy countries, but a strong correlation with income inequality (see Figure 3 in this chapter). The same was also true of US states. They also carried out similar analysis, with similar findings, for UNICEF's index of child well-being.

Figure 3: Correlation between inequality and an index of health and social problems



Source: Wilkinson and Pickett, 2009a

The Spirit Level was an attempt to provide an accessible summary of the link between income inequality and health and social problems, and so it did not report technical details in the same way as a more academic publication. A paper published by Wilkinson and Pickett in the same year (2009b), however, gave the correlation coefficients between income inequality and different components of the index (see Table 1). Correlation coefficients range from –1 to 1. A value of 1 implies that there is a direct linear relationship between two variables, with all data points lying on a line for which the value of one variable increases directly as the other variable increases. A value of –1 implies that all data points lie on a line for which the value of one variable decreases directly as the other increases. A value of 0 implies that there is no linear correlation between the variables. Levels of correlation above 0.5 suggest a strong relationship in social science analysis. The correlation coefficients shown in Table 1 therefore show very high levels of correlation between income inequality and social mobility, teenage births, imprisonment, trust, mental illness and obesity. Other health and social problems fall below the 0.5 threshold, but only just. These are: homicides, educational performance, life expectancy and infant mortality.

Table 1: The strength of relationships between income inequality in rich countries and various health and social problems

	Correlation coefficient
Social immobility	0.93
Teenage births	0.73
Imprisonment	0.67
Trust	–0.66
Mental illness	0.59
Obesity	0.57
Homicides	0.47
Educational performance	–0.45
Life expectancy	–0.44
Infant mortality	0.42
Overall index	**0.87**

Source: Wilkinson and Pickett, 2009b

Note: A negative sign means that when one variable increases the other decreases.

Wilkinson and Pickett (2009b) also gave the levels of statistical significance for these relationships and confirmed that all the relationships were statistically significant at the 0.05 level. This means that we can be confident that the relationships shown in the data are not the result of sampling error. In other words, we can accept that the relationships found in the samples of data analysed can be generalised to the wider populations.

The Spirit Level has been hugely influential. However, there have been a number of issues raised in relation to the correlation analysis at the heart of the book. This chapter considers a number of areas which commentators and academics (including Judge, 1995; Wagstaff and Doorslaer, 2000; Lynch, *et al*., 2000; 2004; Jen, *et al*., 2009a; 2009b; Goldthorpe, 2009; Saunders, 2010; Snowdon, 2010) have discussed in relation to this research. They are as follows:

- the independent variable: income inequality;
- the dependent variables: health and social problems;
- the sample of countries; and
- outliers, non-linearity and non-normality.

Each of these will be discussed in turn.

The independent variable: income inequality

Income inequality is the independent variable in *The Spirit Level.* In other words, it is the variable which may have an effect on health and social problems. According to Wilkinson and Pickett (2009a: 27), it was used as a proxy for social distances and social stratification: 'where income differences are bigger, social distances are bigger and social stratification more important'. Income inequality was chosen as the proxy by Wilkinson and Pickett because it was the most widely available internationally comparable and reliable measure of the scale of social differentiation in different countries.

This area of the work has been questioned by Goldthorpe (2009), who argued that Wilkinson and Pickett treat social stratification as one-dimensional, with no distinction made between class and status. He pointed out that they refer to 'the' social hierarchy as if there is only one. Goldthorpe also argued that there is a strong association between class and income but not status and income, and suggested that Wilkinson and Pickett could be more sophisticated in thinking about income, class, status and so on.

This issue can be illustrated in relation to the position of Japan, which often appears as an important country in the correlation analysis in *The Spirit Level* as an example of a country with low levels of income inequality and social problems. But Kerbo's study of Japan (2003: 479–80) argued that the country is, in fact, a society riven with status hierarchy: 'the Japanese seem obsessed with ranking and hierarchy'. Kerbo also argued that, in Japan, low-income inequality and high-status hierarchy are directly related; people see high status as a reward in itself, and this compensates them for relatively low incomes. Dore (1973) also contributed to the debate about Japan by arguing that the country's social hierarchy was more paternalistic and overlaid with social obligations, compared with more competitive, individualistic social hierarchies. Examples of senior Japanese managers using the same factory canteens and wearing the same clothing as manual workers also suggests a rather different type of status hierarchy than in the UK, for example. But this therefore suggests that the notion of 'status hierarchy' is quite complex and perhaps needs further unpacking to reveal different varieties of social hierarchy with different consequences. It also suggests, perhaps, that material inequality may be more important than social status inequality, as Japan appears more equal in terms of material factors (though see below for a discussion about data on actual levels of income inequality in Japan).

As well as looking at income and status, we might also consider Sen's arguments on capabilities (Sen, 1985). Marmot argued:

> *Central to these capabilities are autonomy and social participation. As I have shown, the lower in the hierarchy you are, the less likely it is that you will have full control over your life and opportunities for full social participation. Autonomy and social participation are so important for health that their lack leads to deterioration in health.*
>
> Marmot, 2004: 248

If we accept Sen's framework, then income is a means to an end, rather than the end itself:

> *capabilities will not only be affected by individual income, but by the general prosperity of the society and, crucially, by the set of social arrangements that determine how this prosperity is used to impact on the life of members of society.*
>
> Marmot, 2004: 82

Consideration of the relationships between income, wealth, class, status, capabilities and so on would certainly be interesting in terms of theorising, and Wilkinson and Pickett (2009a) themselves argued that data on other forms of social hierarchy would be useful, but currently, the best and most widely available data focuses on income inequality, and this largely explains why they, among many others, have used it. However, some comparable data on alternative variables is becoming available, and data from the English Longitudinal Survey of Ageing, for example, suggests that associations with wealth are actually stronger than those with social class or education (National Equality Panel, 2010). Banks, *et al*. (2007: 27) also compared the health gradients in the US and UK using a variety of indicators and found that 'the social health gradient exists whether education, income or financial wealth is used as the marker of one's SES [socio-economic status]'.

Having chosen to use income inequality (because it is the best and most widely available data in the field) as the independent variable, the next choice is how to put into practice, since income inequality can be defined and measured in different ways. Wilkinson and Pickett (2009a: 18) decided to use the 80/20 ratio when comparing countries. This is the ratio of incomes at the 80th percentile of the income distribution to those at the 20th percentile. They used this because they said it was both easy to understand and a measure provided ready-made by the UN.

When comparing US states, however, they use the Gini coefficient, which takes into account the income (in this case) of all households or individuals. A Gini coefficient of zero represents complete equality, where income is shared equally among all households. A Gini coefficient of 100 represents complete inequality, where one household has all the income and the rest have none. They used this because it was not only the most common measure, it was also favoured by economists, and available from the US Census Bureau (whereas the 80/20 ratio was not).

Wilkinson and Pickett argued that the choice of measures would actually make little difference to the outcome of the analysis and it does indeed seem unlikely that the choice of measure would change the ranking of countries dramatically, even though fluctuations in inequality over time within individual countries can look different if different measures are used (National Equality Panel, 2010). However, it would be instructive to look at the effect of different measures of income inequality (see below also), particularly because the main increase in inequality since the 1980s, in the UK at least, was related to increasing income at the very top: the top 1 per cent (Atkinson and Picketty, 2007). This would not necessarily have affected the 80/20 ratio, but it would have affected the Gini coefficient. The choice of measure should, ideally, be made in response to theorising about the precise nature of the relationship between income inequality and health and social problems. This discussion highlights the need for further theorising here.

It is also important to be clear about whether gross (pre-tax) income inequality or net (after-tax) income inequality is the key independent variable. These can vary substantially from country to country as some countries redistribute much more through taxation than others. *The Spirit Level* used net income inequality. But perhaps gross income is linked more closely to status, as people feel valued by the level of their gross income, while net/disposable income may be more closely linked to material differences in how much people have available to spend on material goods. One study of US states appeared to find that the outcomes varied little depending on whether the data concerned related to pre- or post-tax incomes (Kawachi and Kennedy, 1997).

But this does not necessarily mean that taxes make little difference as the ranking of US states by income inequality is roughly the same whether or not taxation is taken into account. Further research comparing pre- and post-tax income inequality would be worthwhile.

Another decision to make when carrying out research in this field is which dataset to use, as there are a number of different international datasets with data on income. Wilkinson and Pickett (2009a) used data from the UN, and this may give a different picture from OECD data, for example, on the level of income inequality in Japan (see also Bauer and Mason, 1992; OECD, 2008). The choice of dataset may, therefore, make a difference to the outcome of the analysis. Kenworthy (2010), for example, used the Luxembourg Income study and found no correlation between income inequality and life expectancy, though he pointed out that this may be due to the different countries included in the dataset (Japan, for example, is not included) rather than the data itself.

Wilkinson and Pickett responded to this issue on The Equality Trust website,[4] where they re-ran their analysis using OECD rather than UN data. This analysis produces an overall correlation of 0.7 between income inequality and their index of health and social problems. Table 2 shows a comparison between the original analysis in *The Spirit Level* using UN data and the new analysis using OECD data. As the table shows, some health and social problems are more strongly correlated with income inequality when using OECD data (including educational performance and infant mortality), some are less strongly correlated but still have a coefficient of 0.5 or above (including social mobility, teenage births, imprisonment, trust) and some are not significantly correlated with income inequality (mental illness, obesity and life expectancy). The Equality Trust website also states that the three health and social outcomes that were not significantly related to the OECD (80/20) inequality measure were all significant when using the 90/10 ratio, and all but one were significant when using the UN Gini coefficient, so the choice of income inequality measure does appear to make some difference in this case.

Table 2: The strength of relationships between income inequality in rich countries and various health and social problems comparing UN data from *The Spirit Level* and OECD data

	Correlation coefficients	
	UN data quoted in *The Spirit Level*	**OECD data quoted on The Equality Trust website**
Social immobility	0.93	0.83
Teenage births	0.73	0.64
Imprisonment	0.67	0.51
Trust	–0.66	–0.66
Mental illness	0.59	*
Obesity	0.57	*
Homicides	0.47	0.44
Educational performance	–0.45	–0.46
Life expectancy	–0.44	*
Infant mortality	0.42	0.54
Overall index	**0.87**	**0.7**

Source: Wilkinson and Pickett, 2009b; http://www.equalitytrust.org.uk/why/evidence/frequently-asked-questions#oecd

Notes:

* Mental illness, obesity and life expectancy were not statistically significantly associated with income inequality when using OECD data and so the correlation coefficients are not given in the table. They were 0.32, 0.41 and -0.27 respectively.

A negative sign means that when one variable increases the other decreases.

One of the reasons for the differences between the UN and OECD data appears to be that the income distribution of Japan is very different in these two datasets and Japan becomes an outlier on the OECD analysis. The Equality Trust website states that if Japan is excluded from the OECD analysis, the association

between income inequality and health and social problems becomes stronger. However, the Equality Trust website does not advocate the exclusion of outliers (see below) and the data provided includes Japan.

The dependent variables: health and social problems

Health and social problems are the 'dependent variables' in *The Spirit Level*. In other words, these are the variables which may be affected by income inequality. Wilkinson and Pickett's approach here was quite empiricist, as they did not start with a list of social problems which they theorised might be related to inequality but, following earlier research (Wilkinson, 1992; Wilkinson, 1996; Wilkinson, 2005; Wilkinson and Pickett, 2006; Wilkinson and Pickett, 2008), had noticed that variables with social gradient (that is, those related to individual income) were also variables which appeared related to income inequality. In *The Spirit Level*, therefore, they argued that only those which have a social gradient *within* a country were related to overall levels of inequality (see also Wilkinson and Pickett, 2008). So, for example, breast cancer does not have a social gradient within any country/state, and so is unrelated to inequality at a societal level: 'almost all problems which are more common at the bottom of the social ladder are more common in more unequal societies' (Wilkinson and Pickett, 2009a: 18).

Based on this social gradient principle, Wilkinson and Pickett (2009a: 18) produced a list of variables for which reliable data could be found. These were:

- level of trust;
- mental illness (including drug and alcohol addiction);
- life expectancy and infant mortality;
- obesity;
- children's educational performance;
- teenage births;
- homicides;
- imprisonment rates; and
- social mobility (not available for US states).

There are a number of points to be made about this choice of dependent variables. First of all, the list has been derived from observations from data, which then led to theory-building. This is a perfectly sound approach to take, but some more theorising on this would be useful. Further theorising might also lead to the identification of different 'domains' upon which income inequality may have an effect. These could then be tested with empirical analysis. For example, there are some variables which we might expect to see in the list but which are absent, such as property crime and violent crime (with the exception of murder, which is included). The absence of most crimes appears to be because of difficulties interpreting cross-national crime-rate figures. For example, figures on rape may differ greatly by country due to differences in reporting and recording practices rather than actual differences in incidence. It would, again, be interesting to start with the theory and then discuss which parts cannot be tested due to lack of data, or which do not fit the theory because they have no social gradient.

Second, it is interesting to consider whether or not some of the variables listed are actually social 'problems'. For example, a high prison population rate is certainly undesirable, but if the crime rate in a society is high then we might expect a higher prison population rate (though we might see the high crime rate as the

real problem). A similar point could be made about teenage births. There are actually some advantages, in terms of health, of women having children when they are younger rather than much older and so there is no inherent 'problem' in women having children in their late teens. However, teenage births are a social problem in some countries because young mothers come from low-income backgrounds and levels of support are low.

Third, Saunders (2010) argued that some social problems are greater in more equal societies (such as suicide, HIV infection rates, alcohol consumption, intolerance for ethnic diversity and divorce) although, once again, whether or not alcohol consumption or even divorce is a social problem is arguable. Wilkinson and Pickett (2009a) did discuss the fact that suicide rates are higher in more equal societies, pointing out that suicide rates do not have a social gradient in all countries and so do not qualify for inclusion in their model. Saunders (2010) also argued that some social indicators seemed to be more positive in unequal societies (such as private charitable giving, membership of voluntary associations).

There is also a question over whether there are social gradients in all countries for all of the variables listed. For example, research in England and Wales shows that there is no clear relationship between obesity and income. In fact, the groups with the lowest levels of obesity are men in the bottom fifth of the income distribution and women in the top fifth.[5] This difference between men and women also highlights the issue of gender, which has not received as much discussion as many other issues (such as ethnicity – see section on 'other potential causes of health and social problems' in chapter 2).

The lack of a social gradient for obesity (in some countries) may explain why the correlation between obesity and income inequality is weaker than for some of the other health and social problems. Wilkinson and Pickett (2009a) also pointed out that there was no social gradient for mental illness in the US (for men), and this again might explain the lack of a relationship between this problem and income inequality across the 50 US states. Wilkinson and Pickett stated in a personal communication (2011) that it has not been possible to establish for every outcome and for every country that there is a social gradient, but they have a PhD student working on this at the moment. They also state that their theory would predict that where there is no (or a weak) social gradient, then this would affect the strength of the relationship between income inequality and negative outcomes.

As mentioned above, data validity is always a difficult issue in research, particularly with cross-national comparative research, but also with any research within countries. Data is never perfect, even when highly reputable data sources are used, for example, agencies such as the UN, OECD and so on. But analysis should take this into account and some of the variables in the Wilkinson and Pickett research are perhaps not as robust as we might ideally like. For example, the question on trust in the World Values Survey asks people to choose between two options: 'most people can be trusted' or 'you can never be too careful when dealing with others'[6]. These are not mutually exclusive and do not, perhaps, grapple very well with the concept of trust in all its complexity. Having said that, researchers can only analyse the data available to them, even if it has limitations. The key thing is to reflect on the implications of drawing conclusions from this data.

The sample of countries

As mentioned above, Wilkinson and Pickett (2009a) focused their analysis on relatively wealthy societies. They argued that the income threshold for relatively wealthy societies is the point at which additional per capita income (Gross National Income per capita) appears to have little effect on outcomes such as happiness and life expectancy. Wilkinson and Pickett's analysis puts this threshold at $25,000 per capita, pointing to the slope of the curves on two diagrams (national income per person by life expectancy and national income per person by happiness for a range of countries). But the slope of the curve in one of the diagrams (life expectancy) seems to tail off at a much lower level of national income, and it would be helpful to see some analysis of where the curve hits its turning point.

Wilkinson and Pickett started with the world's 50 richest countries but then excluded countries with populations of less than three million (to exclude tax havens), and then excluded countries with a lack of data on income distribution (21 countries such as South Korea and the Czech Republic), leaving only 25 countries in their dataset. Saunders (2010) argued that this data does exist in the UN Human Development Report on Gini coefficients and percentile ratios, but this was not available when Wilkinson and Pickett carried out their

analysis. The exclusion of countries with populations of less than three million has also excluded some countries which are certainly not tax havens (such as Slovenia and Trinidad & Tobago) and a threshold of one million would have been sufficient to exclude tax havens without excluding other countries. However, small countries are likely to be different from very large nations and the selection criteria did produce a relatively similar set of older developed market democracies, enabling a comparison of like with like rather than having other kinds of countries (ex-Communist countries or former Asian 'Tiger' economies), which might have introduced further variables into the mix. While it would be interesting to extend the analysis to such countries, there is value in constraining the sample, initially at least.

Further research could be carried out on a wider range of countries, not only in terms of population size, but also, if data were available, in terms of levels of income inequality; the range of income inequality in the sample is relatively limited compared, for example, to Cuba, which has a particularly equal level of distribution, and Zaire under President Mobutu, which was particularly unequal, with virtually all economic resources in the hands of a small elite.

Returning to the issue of population size, some studies have weighted the data by population size (either across countries or across US states) and they tend to show that weighting makes correlations stronger (Elgar, 2010; Ross, *et al*., 2000), suggesting that the effects of income inequality are greater in larger countries/states. However, if the unit of analysis is the individual country or state then the analysis should not weight by population size; *The Spirit Level* analysis does not do this (Wilkinson and Pickett, 2009a).

Outliers, non-linearity and non-normality

In any correlation analysis, there is a risk that one case may skew the correlation in a particular direction and if this is excluded from the analysis, no correlation is seen. Saunders (2010) made much of this issue in relation to his critique of Wilkinson and Pickett. For example, he argued that Japan was an outlier in relation to life expectancy and should be excluded from the analysis. In relation to obesity, he argued that Japan is an outlier at one end (low levels of obesity, equality) and the US is an outlier at the other end (high levels of obesity, inequality).

Saunders (2010) used boxplots to identify outliers, though he did not specifically show boxplots for all the analysis he carried out and he argued at times not just for one or two outliers but for whole groups of countries (such as Scandinavian countries and/or Anglo-Saxon countries) to be excluded from the analysis. In relation to teenage births, for example, Saunders (2010) argued that if Anglo-Saxon and Nordic countries were excluded from the analysis then there would be no relationship. But this would be a sizeable group in the sample, not all of which could be considered outliers, and, rather than exclude them, it might be more appropriate to consider why they are so important. The existence of possible clusters of countries might suggest, for example, that another variable – possibly some aspect of culture (or models of welfare) – might also be at work in driving outcomes (see the section on 'The dependent variables' earlier in this chapter).

In their postscript to the second/paperback edition of *The Spirit Level*, Wilkinson and Pickett (2010) argued that there is no standard method for determining and excluding outliers. They therefore decided to leave all countries and states in the analysis to avoid being accused of being selective. Saunders' (2010) approach certainly appears far more selective than Wilkinson and Pickett. Noble (2010) provided a detailed discussion of outliers and other technical issues relating to *The Spirit Level*, which supports Wilkinson and Pickett's approach. But he did suggest that there might be greater discussion of outliers and there may also be some merit in carrying out some analysis of sensitivity to outliers.

Saunders (2010) also questioned the 'linearity' assumption to check whether it is appropriate to fit a straight-trend line to Wilkinson and Pickett's correlation scatterplots. Noble (2010) pointed out that Saunders (2010) is using a rather narrow and ambiguous interpretation of the expression 'regression line', which severely weakens his critique (see Noble, 2010 for a detailed discussion of many of the technical issues around the correlation analysis in *The Spirit Level*).

Wilkinson and Pickett (2010: 279) also argued in their postscript to the second/paperback edition of *The Spirit Level*, in relation to the points made by Saunders (2010), that these 'criticisms are largely piecemeal, ad hoc, and irrelevant to the many other demonstrations of similar relationships in different settings, published

in academic journals by other researchers'. Noble's (2010: 40) detailed review of the critique by Saunders (2010) also concluded that Wilkinson and Pickett's thesis 'remains standing in the face of this criticism and stands largely unscathed'. But he also highlighted the fact that the relationships between variables may involve complex (sometimes circular) causal chains, if not causal webs, and this makes it very difficult to specify and test a particular model.

Summary

The Spirit Level (Wilkinson and Pickett, 2009a) was written as an accessible overview of the evidence on the link between income inequality and health and social problems. In their postscript to the second/paperback edition of *The Spirit Level*, Wilkinson and Pickett (2010: 285) defended this approach, pointing out that they deliberately chose to keep their analysis simple: 'we wished to present the simplest and most understandable picture of the correlation between income inequality and health and social problems, so that readers can see the problem for themselves'.

As such, it has proved remarkably successful in giving this issue a high public profile and in presenting a 'Big Idea' in social science, using data on a wide range of countries and a wide range of variables. The scale of the ideas and data contained in *The Spirit Level* has attracted critique from a number of quarters, including Saunders (2010) and Snowdon (2010), among others. These critiques have focused particularly on the correlation analysis in the book and some further 'sensitivity' analysis would be helpful in testing how sensitive the findings are to different measures of social stratification; different measures of income inequality; variations in the countries selected; and the treatment of outliers.

However, the basic methods in *The Spirit Level* are robust and the main finding on the correlation between income inequality and health and social problems stands up to these criticisms. Indeed, while there is still some argument about the existence and strength of correlations between income inequality and health and social problems in the academic debate, more recent studies have moved away from simple correlation analysis to investigate the nature of this relationship and, in particular, whether income inequality *causes* such problems, independent of other factors (Lochner, *et al*., 2001; Subramanian and Kawachi, 2004; Subramanian and Kawachi, 2006; Lynch, *et al*., 2004; Babones, 2008). This is where the main academic debate now lies and is the subject of the next chapter of this report.

2 Does income inequality cause health and social problems?

The previous chapter reviewed the evidence of a correlation between income inequality and health and social problems. Most of the academic literature now accepts that there is some correlation between income inequality and some health and social problems. However, just because two (or more) variables are related to each other, this does not mean that one variable has a causal effect on the other. The main area of academic debate in this field now is whether or not there is a causal relationship between income inequality and health and social problems. This chapter begins with a review of research which has used sophisticated methods to try to isolate any causal effect. It then considers in more detail the evidence for the arguments made by Wilkinson and Pickett (2009a), among others, that psycho-social factors provide the mechanism by which income inequality, or relative income, causes health and social problems through 'status anxiety'. It then considers the evidence for the arguments from other academics who are more sceptical about the existence or strength of a causal relationship, and who stress instead the role of other factors, such as material circumstances (or individual income), cultural and historical differences, ethnic diversity and welfare institutions, in causing health and social problems.

Isolating causal effects of income inequality on health and social problems

The main analysis in *The Spirit Level* was the bi-variate correlation of aggregate, cross-sectional data on income inequality and social problems across countries and US states. This analysis found correlations but a correlation does not necessarily 'prove' that there is a causal relationship in a particular direction between the two variables in the correlation. Indeed, it is notoriously difficult (arguably impossible) to 'prove' a causal link empirically, and this has been the subject of heated philosophical debate since at least Hume (1739). McKay (2011) illustrated this problem with the example of the debate over whether 'smoking causes lung cancer'. This is widely accepted now as 'true', but not all smokers contract lung cancer and not all of those with lung cancer have been smokers. Smoking is therefore neither a sufficient nor a necessary condition for lung cancer and so there is no *absolute* causal link between the two. This philosophical problem is overcome with the use of the Bradford Hill (1965) criteria for determining a causal association, popular in epidemiology. These criteria include consistency, plausibility and a dose–response relationship. Their application requires a degree of expert judgement. Such criteria have been used to demonstrate, beyond reasonable doubt, that smoking causes lung cancer.

Most social scientists acknowledge the difficulty of establishing independent effects and causal relationships but also see the importance of doing so. One standard approach to doing this is to combine theory and expert judgement with multi-level and multi-variate analysis, which aims to identify the effect of a particular variable after controlling for other variables. Such analysis faces various challenges. For example, when analysing the link between income inequality and health/social problems, any models to be tested using such methods should not include variables which are unrelated to income inequality or any health/social problems, as this would introduce methodological 'noise' into the analysis. Furthermore, models should not control for variables which may lie somewhere on the causal pathway between income inequality and health and social problems. Thus, it is important to have a clear theoretical model of the nature of the relationships between different variables and to control only for variables which may have an independent effect on health and social problems. Otherwise the model will 'over-control' and underestimate the effect of relative income. For example, when trying to measure the effects of income inequality, the decision about whether or not to include individual income or education in the model will depend on the theoretical model being tested.

As mentioned above, many of the early studies in this field used only correlation analysis of aggregate-level cross-sectional data. But Gravelle (1998) pointed out that even if these showed a correlation between average mortality rates and levels of income inequality, this could be due to individual incomes rather than the

role of income inequality at a societal level. For example, if the relationship between individual income and mortality is curvilinear (as mentioned in the section on 'The link between individual income and health and social problems' in chapter 1), with every increase in income leading to a smaller and smaller increase in life expectancy, then this would, de facto, produce a correlation between income inequality and mortality. In this case, it would not be the 'ecological context' of income inequality which was having a causal effect on mortality, but the 'composition' of individual incomes within that society. The correlation between income inequality and mortality would therefore be a 'statistical artefact' of the composition of individual incomes, rather than an independent cause of mortality (Gravelle, 1998; Jen, *et al*., 2009a).

There is, however, still some debate about whether or not the relationship between income and health is linear or curvilinear. In a study in Finland, Martikainen, *et al*. (2001) found the association between income and mortality to be mainly linear. In other words, for every increase in income there was a corresponding increase in life expectancy. But this could be a particular feature of countries (like Finland) with low levels of inequality and strong welfare states. In contrast, Mackenbach, *et al*. (2004) carried out a study of seven European countries, finding that higher incomes were associated with better health, particularly in the middle-income range; but in the higher income ranges, the relationship was generally curvilinear. In other words, increases in income above a certain threshold did not result in an increase in health.

A number of academics have concluded that aggregate-level studies of the effect of income inequality on health are insufficient to test the competing hypotheses about the 'composition' of individual income versus the 'ecological context' income inequality (e.g. Wagstaff and Doorslaer, 2000). Kondo, *et al*. (2009: 1) also pointed out that 'use of multilevel data (that is, simultaneous consideration of individual income as well as the distribution of income across area units within which individuals reside) is essential for testing the contextual effect of income inequality'.

Multi-level analysis can therefore help us to disentangle the role of individual ('absolute') income from the role of relative income. Having said that, it could be argued that individual income is also a marker of status, and so the impact of individual income on health and social problems might also be partly related to context and psycho-social factors as well as individual material factors. Nevertheless, it is instructive to separate out the effects of 'absolute' individual income and 'relative income' or income inequality.

As a result of using these more sophisticated methods, a number of studies started to suggest that the link between income inequality and mortality is sensitive to the time periods examined, the specific causes of mortality examined, and the inclusion of controls for other population characteristics (Judge, 1995; Judge, *et al*., 1998; Mellor and Milyo, 2001).

Lynch *et al.* (2000) and Deaton and Lubotsky (2009) came to similar conclusions, with the latter arguing that, rather than focus on the 'relative income' (income inequality) hypothesis, research should focus on why income matters at the individual level, to ask questions such as: is the effect non-linear, and by how much? In other words, do social/health problems get gradually worse as we move down each point of the income/class structure, or is there a more complex relationship, perhaps with problems getting much worse at a particular point? And is income important, independent of education, wealth, control or rank? Clarkwest (2008: 1871) argued that, as a result of these more sophisticated studies, 'after an initial flurry of supportive cross-sectional findings, the empirical tide [has] turned against the inequality hypothesis in more recent years'.

Lynch *et al*. (2004) reviewed 98 aggregate and multi-level studies, examining the links between income inequality and health. They found that the strongest evidence for a link between relative income and health problems came from the US, but that even this was not particularly strong. Evidence of a correlation between income inequality and health differences was found at an aggregate level but the evidence from multi-level studies was more mixed. They concluded that:

> *Overall there seems to be little support for the idea that income inequality is a major, generalizable determinant of population health differences within or between rich countries. Income inequality may, however, directly influence some health outcomes, such as homicide in some contexts. The strongest evidence ... is among states in the United States, but even that is somewhat mixed.*
>
> Lynch *et al*. (2004: 5)

Leigh, *et al*. also carried out a review of the evidence here and concluded:

> *While the currently available evidence suggests to us that the relationship between inequality and health is either small or inconsistent, readers should bear in mind that not everyone agrees, especially social epidemiologists. Achieving more consensus will require more work with better data and better methods than have been usual in the past.*
>
> Leigh, *et al*., 2009: 399–400

Some reviews suggest stronger evidence for the role of income inequality in relation to health problems. For example, Wilkinson and Pickett (2006) reviewed 168 analyses and found that 52 per cent were wholly supportive, 26 per cent were partially supportive and 22 per cent provided no support. In another major review of published multi-level studies Subramanian and Kawachi confirmed that individual income was a powerful determinant of individual health. However, they also found some emerging patterns on the link between income inequality and health. They concluded that there was still a need for 'better data, more sophisticated analytical methods, and more rigorous application of theory and mechanisms connecting income inequality to *public health*' (Subramanian and Kawachi 2004: 89).

One of the most recent, and major, studies in this field is by Kondo, *et al*. (2009), who carried out a meta-analysis of 9 cohort studies and 19 cross-sectional studies involving over sixty million subjects worldwide. They pointed out that recent systematic reviews had produced mixed findings about whether or not income inequality has an independent impact on health. But the overall conclusion from their meta-analysis was that income inequality did indeed have an independent effect on health.

The next question is about the size of any effect. Relatively few studies provide figures on this. Kondo, *et al*. concluded that 'the results suggest a modest adverse effect of income inequality on health' (2009:1).

But while Kondo, *et al*. (2009) described the impact as 'modest', they nevertheless pointed out that this had important implications, given that income inequality involves all members of society. In fact, they estimated that about 1.5 million deaths (9.6 per cent of total adult mortality in the 15–60 age group) could be averted in 30 OECD countries by reducing the Gini coefficient to below 0.3. This does not take into account deaths below age 15, and we know that infant mortality is reliably related to inequality, so the impact of inequality may be even greater. Furthermore, if individual income is related to health because it is a marker of social status, then its role in relation to health outcomes could be seen as further evidence in support of the relative income hypothesis.

Lynch, *et al.* (1998) claimed that the loss of life from income inequality in the US in 1990 was the equivalent of the combined loss of life due to lung cancer, diabetes, motor-vehicle accidents, HIV-related causes, suicide and homicide. They also concluded from their review that:

> *relative health effects according to individual income are larger than the relative health effects of income inequality ... but a relatively modest contextual effect of income inequality may result in a high population burden of poor self-rated health (i.e. a large attributable fraction) if high income inequality applies to a large segment of the population.*
>
> Lynch, *et al*., 2004: 52

These are important and striking findings. While there is still considerable debate in the academic literature about whether or not income inequality has an independent effect on health and social problems, there is certainly some evidence that it does have such an effect. And while this effect may look small in statistical terms, it is highly significant in terms of the number of lives involved.

Having said all this, Kondo, *et al.* (2009: 1) pointed out several limitations to their research and suggested that 'the findings need to be interpreted with caution given the heterogeneity between studies'. They called for further research to investigate the sources of heterogeneity, including the time period in which the analysis is carried out, the length of follow-up in the cohort studies and whether or not there is a threshold effect of income inequality on health. In other words, does income inequality cause particular problems after it reaches a certain point?

This last point is particularly noteworthy and Kondo, *et al*. (2009) also suggested that there might be a threshold effect (with Gini coefficient values of 0.3 or more). This, they suggested, might prove a tipping point at which income inequality has adverse effects. Kennedy, *et al*. (1998) also found that among middle-income sub-samples of US states, income inequality had an effect only once the Gini coefficient rose above 0.332.

As well as looking at multi-level and multi-variate analysis, another method often used to try to isolate cause and effect is to look, over time, through longitudinal analysis, at the relationship between two variables to see if changes in one occur before changes in the other (though, again, this is no absolute 'proof' of a causal link). These methods also face challenges, however, particularly in relation to 'time lags'. At what point after an increase in income inequality would we expect to see changes in health and social problems?

Clarkwest (2008) pointed to a number of previous studies which found no harmful effect of income inequality on population health over time (e.g. Mellor and Milyo, 2001). Indeed, Lynch, *et al*. (2004) found that in the twentieth century the greatest declines in mortality occurred in US regions where inequality increased most. But Clarkwest's own analysis of state-level US data from 1970 to 2000 found that states with higher levels of inequality experienced less subsequent improvement in life expectancy. And Babones' (2008) longitudinal study also suggested a link between income inequality and health over time.

Leigh, *et al*. (2009: 389) reviewed the evidence on the link between income inequality and crime, and argued that 'cross-sectional studies tend to report a positive association across countries but panel studies produce mixed results'. However, some longitudinal studies have found that inequality has an impact on other factors over time. For example, Rothstein and Uslaner (2005) showed how trust declined as inequality increased.

Time series research on the link between income inequality and health and social problems is very challenging methodologically. For example, life expectancy will be affected by a number of different factors, each of which may have played a role at different points in someone's life. Early childhood is likely to have an impact, but so too are factors during adulthood. It is therefore difficult to know at what point income inequality will have most impact on someone's life, and therefore to test this in the analysis. Further theorising would be helpful here.

A final approach to try to isolate cause and effect is to carry out an experimental design through, ideally, a random control trial. For example, it is possible to imagine an experiment in which the conditions in two societies are controlled to be exactly the same except for a difference in income inequality. Any differences between the two societies over time will therefore be due to income inequality. Such experimental designs are not very feasible in practice. However, some experiments have been carried out on non-human primates to test the effect of different status hierarchies on their health (Sapolsky, 2001). These also face challenges and the validity of generalising from these to human societies is also open to debate. Other forms of 'natural experiment' may also be possible, for example in comparing societies before and after a major change in levels of inequality. Further research using such methods would be helpful.

There is considerable debate about the nature and size of any causal link between income inequality and health and social problems. There is certainly some evidence from some rigorous research studies that there is a causal link, but not all studies reach the same conclusion. Research in this complex field requires clear theoretical models, valid data and rigorous empirical methods. The next section of this report explores how income inequality may have an impact on health and social problems through psycho-social mechanisms, particularly status anxiety.

The role of psycho-social mechanisms

Wilkinson and Pickett (2009a) argued that income inequality causes health and social problems due to 'status anxiety'. The argument is that income inequality is harmful because it places people in a hierarchy which increases status competition and therefore poor health and other negative outcomes. According to this line of argument, the *context* (or 'ecology') within which people live (the country or locality, even) will have a *psycho-social* impact on them, over and above their own individual circumstances. This line of argument therefore often refers to 'contextual' or 'ecological' effects (see also Wilkinson, 2005: 23 for a diagram illustrating the relationship between different variables in his explanatory model):

> *the extent of material inequality is a major determinant of psychosocial welfare in modern societies and its impact on health is but one of the social costs it carries with it.*
>
> Wilkinson, 1996: 9

> *Social problems – such as violence, drug use, depression, teenage pregnancy and poor educational performance of schoolchildren – are rooted in the same insecurities, anxieties and other sources of chronic stress as those that affect our ability to withstand disease, the functioning of our cardiovascular and immune systems, and how rapidly we age.*
>
> Wilkinson, 2005: 20

This approach is underpinned by concepts from evolutionary psychology and draws on evidence from epidemiological research among humans, as well as experimental and observational work from primatology. Wilkinson and Pickett (2009a) argued that low social status, poor social affiliations and stress in early life are powerful risk factors for chronic stress and insecurity in rich societies. For example, meta-analysis of 208 studies by Dickerson and Kemeny (2004) found that stress-hormone (cortisol) levels were raised particularly by 'social evaluative threats' (that is, when people felt that others were making negative judgements about them). Cortisol levels are related to health problems such as heart disease.

Wilkinson and Pickett (2009a) drew on Marmot's work (2004) to argue that anxiety about social status is the mechanism by which income inequality causes social problems (see also deBotton, 2005; James, 2007). They also drew on a range of psychological and biological research to argue that sources of stress include low social status, lack of friends, and stress in early life. Thus they argued that income inequality leads to low self-esteem, chronic stress and depression because of status anxiety. This then leads to low life expectancy, a high teenage birth rate, a high murder rate, and so on. Violence in society, they argued, is most commonly triggered by disrespect, loss of face and humiliation, which are more prevalent in highly unequal societies.

The 'status anxiety' theory suggests that people compare themselves with others in society very broadly, and so feel anxious about their own position. This theory has been questioned in a number of ways. For example, do people tend to compare themselves with everyone around them? Runciman's (1966) classic study of relative deprivation suggested that people only compared themselves with their peers, rather than with people in society as a whole, and so the broader income distribution may not be particularly relevant to them. Also, people seem to compare themselves with their situation at previous points in time as well as with other people around them. Frank (2007) admitted that deciding which is the relevant reference group is complex, as there are many different ones: colleagues working in adjacent offices; neighbours; old college friends or old school friends; our siblings and their partners. But he (Frank, 2007: xiii) defended the theory by arguing that there is a 'chain of local comparisons' which, starting from the very top, affects the thoughts, attitudes and behaviours of people at all levels. If the super-rich build increasingly large and lavish mansions, the rich will then wish to try to keep up with them as far as they can; similarly those 'in the middle' and then those below: 'through a chain of indirect effects the larger houses at the top have led families in the middle to spend sharply higher fractions of their incomes on housing' (Frank, 2007: 5).

This reflects the work of Sapolsky (2001), who observed non-human primates (baboons) and found that they may only have compared themselves with other primates close to them in their hierarchy, but this meant that they all knew exactly what their place was in that overall hierarchy.

Frank also argued that:

> *Increased spending at the top of the income distribution has imposed not only psychological costs on families in the middle, but also more tangible costs. In particular, it has raised the cost of achieving goals that most middle-class families regard as basic.*
>
> Frank, 2007: 43

This 'expenditure cascade' (Frank, 2007: 43) has raised house prices even for those whose incomes have not risen. Frank argued that middle-class families have only managed to keep up with these increased prices by working longer hours, borrowing more, spending their savings and commuting for longer. This all leads to increased stress for many people (the 'squeezed middle' perhaps), not just the poorest. Frank argued that it is

necessary for people to come to common agreements to avoid this income/consumption 'arms race'.

Goldthorpe (2009) was more critical of the 'status anxiety' hypothesis. He pointed out that in some countries, people may accept a particular status order, and so it would not necessarily lead to psycho-social stress. This may explain why Japan, which seems to have a strong status hierarchy, nevertheless performs well in terms of social problems. If people accept the hierarchy in Japan as fair then it may not lead to social problems. Goldthorpe argued, further, that redistribution may, in fact, heighten stress if people think it is unfair. As mentioned above, Japan is an interesting case study for the status anxiety hypothesis.

Another challenge to the psycho-social model comes from qualitative research by Flint (2010), who argued that there is no direct link between low income and low self-esteem. Flint argued that people on low incomes use personal and family life histories as their main frame of reference and basis for making judgements on their own behaviour, not the perceptions and values of other groups in society. They see their circumstances as an ordinary fact of life, and this enables them to retain their self-esteem. However, Horgan (2007) shows that people pick up messages about themselves from others, which can indeed lower their self-esteem; various studies of children and young people in education have come to a similar conclusion.

However, there is strong evidence of a relationship between good social relationships and health. Holt-Lunstad, *et al*. (2010) reviewed the literature, including 148 studies, on the impact of social relationships on mortality and found that it is a well-established risk factor. The research found that people with fewer social relationships died earlier, on average, than those with more social relationships. The influence of social relationships on the risk of death is comparable to other well-established risk factors such as smoking and alcohol consumption, and it exceeds the influence of some other risk factors such as obesity. Holt-Lunstad, *et al.* concluded that:

> *Physicians, health professionals, educators, and the public media take risk factors such as smoking, diet, and exercise seriously; the data presented here make a compelling case for social relationship factors to be added to that list.*
>
> Holt-Lunstad, *et al*., 2010: 14

The lack of social relationships are not the same as status anxiety. They may be related to stress and depression but, again, not necessarily due to status anxiety. Holt-Lunstad, *et al.* (2010) called for further research to understand the causal pathways at work here, to refine conceptual models, and to develop effective interventions; such research would be useful in exploring the psycho-social model more broadly.

The theory of 'status anxiety' has some logical plausibility and is also supported by some evidence on levels of stress related to status and 'social evaluative threats', but it is not universally accepted as a mechanism for causing health and social problems, and further theorising about the mechanism would be helpful. The next section considers other competing explanations for such problems.

Other potential causes of health and social problems

While there is certainly some evidence that income inequality has negative effects on health and social problems, such effects have not been found in all studies, and other causes of health and social problems have been found. For example, there is also evidence that individual material circumstances have an impact on people's lives, and this is sometimes referred to as the 'absolute income' hypothesis. According to this point of view, it is not someone's income relative to someone else's which causes any problems, but their actual level of income, which will affect their material circumstances and so their health and other outcomes. Lynch, *et al.* (2000), for example, presented a neo-materialist/absolute income framework. They used a metaphor of people flying long-haul, with a few in first class and most in economy. Contextual explanations would suggest that those in economy fare worst because they feel relatively deprived by those in first class. They might also suggest that those in first class are anxious that they might lose their advantages, and so do not benefit as much as if everyone had the same conditions. Neo-materialist explanations, on the other hand, would say that those in first class benefit from more space, better food and so on. The contextual approach suggests that if everyone flew economy class, the outcomes would be the same as everyone flying first class because there

would be no difference in status between different passengers. The neo-materialist approach would suggest that outcomes would be better if everyone flew first-class rather than everyone flying economy class because all would benefit from the better material conditions.

Snowdon (2010) drew a similar analogy to Lynch, this time in relation to travelling first class by train. He argued that this gave people tangible benefits which improved their physical well-being afterwards. He argued that people did not feel better just because they had more benefits than those in economy class, but also because they received direct material benefits. He did admit that this might add to people's positive feelings, though it is also possible that some people might feel guilty about having more benefits than others. This analogy leads to a number of questions: if we abolished first class, would those in economy feel better off? Would those who had previously been in first class feel better off? Would it be better to upgrade economy class than abolish first class?

These are interesting questions and useful analogies as they illustrate some of the differences between the different approaches, but they can only help up to a point, because they ignore the wider context (for example, how much of someone's life is spent on the train, and so on). It is also difficult to generalise from such de-contextualised examples.

The argument that material circumstances (individual or absolute income) cause health and social problems is sometimes challenged by pointing out that the UK is an extremely wealthy country; it is not, therefore, perhaps too surprising that there is considerable scepticism among the public that anyone in the UK might live in 'real poverty' or be materially disadvantaged. Compared with images of poverty in Africa or poverty in Victorian times, the public seem to think that those on low incomes in the UK today have enough income to survive (Castell and Thompson 2007). There is some debate about the distinction between absolute and relative poverty, but the concept of 'deep' or 'extreme' poverty has been used in recent years to denote a level of poverty which can seriously affect health and other outcomes (Parekh, *et al*., 2010; Bradshaw and Mayhew, 2011). In 2008–9, 13 million people were in poverty, according to the New Policy Institute (Parekh, *et al*., 2010). Of these, 5.8 million (44 per cent of the total) were in 'deep poverty' (household income at least one-third below the poverty line): the highest proportion on record (Parekh, *et al.*, 2010).

Even in a rich country like the UK, some people's health is directly and severely affected by their lack of income. For example, there are around 20,000 'excess winter deaths' each year, due largely to older people being unable to afford to keep their homes warm.[7] Reductions in pensioner poverty in the late 1990s and early 2000s, and the introduction of winter fuel payments in 1997–8, appear to have reduced such deaths by half, as the level was closer to 40,000 between 1986 and 1996 (Wilkinson, *et al*., 2001). But poverty has not reduced for all and some groups, particularly working-age people without children, have seen poverty levels increase in the last decade or so. In 2008–9, for the first time in the series compiled by the New Policy Institute (i.e. since 1998–9), the proportion of working-age adults in poverty without dependent children was higher than that of pensioners (Parekh, *et al.*, 2010). With fuel prices increasing, the ability to heat one's home to a reasonable level is likely to be increasingly difficult for some groups to afford.

Housing conditions in the UK are another cause of poor health, due to the existence of damp, infested and even 'dangerous' homes for people on low incomes. A report from Communities and Local Government (2010), based on the Survey of English Housing 2008, found that around 1.7 million dwellings (8 per cent of the total) had some form of damp problem. Nearly two million suffered from problems of 'excess cold', nearly three million from hazards which might lead to people suffering falls (for example, down stairs), and another million suffered from other hazards such as faulty wiring. Overall, the survey found that over five million dwellings suffered from one or more hazard.

Research also shows that incomes below the UK (relative) poverty line are not sufficient to meet the cost of most basic necessities (Strelitz and Lister, 2008; Davis, *et al*., 2010; Bennett, 2008). This is likely to get far worse, as retail price inflation has increased and neither benefit nor wage incomes will keep pace. This is important because there is a direct relationship between family income and the ability to provide a nutritious diet (Dowler, 2008). Persistent low income also often leads to debt as people cannot afford to pay their basic bills, and debt leads to stress and anxiety in trying to reduce debt and manage the family budget (Kempson, 1996; Rowlingson and McKay, 2008). Poverty has a major psychological impact, leading in many cases to stress, shame and a lack of a sense of self-worth (Wrapson, *et al*., 2008; Davies, 2008). Strelitz and Lister concluded that:

> *…money matters. It underpins so much of the experience of families struggling to get by on a low income. As low-income families' incomes increase, so outcomes improve; children's lives in particular are enhanced.*
>
> Strelitz and Lister, 2008: 6

To explore this further, studies have defined a Minimum Income Standard, in relation to what most people consider is necessary to be able to afford basic physical necessities and to be able to participate in society at a minimum level (Davis, *et al*., 2010). Such studies have also found that basic out-of-work benefits provided less than half of a minimum income for an adult with no children, and about two-thirds for families with children. Someone living on a full-time minimum wage would also lack the necessary income to meet the Minimum Income Standard (Davis, *et al*., 2010).

Poverty and individual income affect outcomes from an early age and in a variety of ways. A review by the Institute for Fiscal Studies found that parental income is an important determinant of whether a child leaves school at age 16 (Blow, *et al*., 2005). Parental education makes some difference but it is parental income which has a stronger effect. Goodman and Gregg (2010) argued that this is due to children from poorer backgrounds being much less likely to experience a rich home-learning environment (for example, where adults read regularly to children) than children from better-off backgrounds. Space to do homework is also more limited in poorer homes. While Goodman and Gregg (2010) focused on family resources and parental attitudes in relation to children's outcomes, Reay (2006: 301) argued that teachers fail to consider and respond to 'classed, racialised and gendered processes' in the classroom, and so fail to support children from disadvantaged backgrounds to develop a successful learner identity. This is partly due to inadequacies in teacher training, which has moved away from sociological classics such as Willis's *Learning to Labour* and Bernstein's *Class*, *Codes and Culture* towards more psychological texts like Cowley's *Getting the Buggers to Behave* (Reay, 2006).

Another possible cause of health and social problems, independent of income inequality or indeed individual income, might be culture. Wilkinson and Pickett (2009a) discussed the possible importance of culture and also the possibility that history may play a part in the United States, with the different histories of the southern and northern states potentially playing a role in causing their different levels of income inequality. But people's responses to income inequality are likely to be affected by how such inequalities arose. The cultural meaning of economic inequality is also likely to vary and make a difference to outcomes (for example, some societies may be more likely to see income inequality as fair compared with others).

The role of culture is also discussed in the literature on the subject of income inequality. Sweden and Japan are often outliers in terms of equality and low levels of social problems. Both have, it is argued, collectivist cultures and are relatively ethnically homogenous. It is therefore possible that income equality is a consequence of collectivism, rather than a cause. Saunders (2010) argued that the role of 'individualism' was ignored by Wilkinson and Pickett but could have been included, for example, with Hofstede's Individualism Index. Similarly, 'harsh' societies may tolerate both wider inequalities and punitive imprisonment policies.

Wilkinson and Pickett (2009a) also argued that while culture and history might be linked (even causally) to income inequality, the important issue is not how inequality occurred but what its effects are now.

There has been much discussion in the literature reviewed about the role of ethnicity in relation to income inequality and health/social problems, though it has been discussed in different ways (such as in relation to the individual characteristics of different groups, levels of discrimination, the degree of ethnic diversity causing tension and lowering support for public services or leading to lower levels of voting for redistribution, and so on). For example, Saunders (2010) claimed that the size of the black population in different US states predicts half the variance in the murder rate. Saunders (2010) also found that when he produced a multi-variate model to explain the murder rate and included income inequality, North/South location and ethnic density, ethnicity was the only statistically significant factor. Saunders (2010) also claimed a similar outcome with analysis of the infant mortality rate and the imprisonment rate. In his analysis of life expectancy using a multi-variate model including GDP per head, income inequality and ethnic density, he found that ethnic density was most important, followed by GDP, which was half as powerful as ethnicity, and then income inequality which was only just statistically significant.

The role of ethnicity has received considerable academic attention, with mixed results. Deaton and Lubotsky 2003) argued that racial composition, rather than income inequality, was linked to poor health outcomes, though they accepted that racial composition was a form of inequality.They found that any positive relationship between income inequality and mortality was removed once they controlled for the proportion of each city's population that was black. Ash and Robinson (2009) queried this result, suggesting that Deaton and Lubotsky (2003) had made an error with their weighting scheme, but Deaton and Lubotsky (2009) replied to this query, arguing that it only applied to one of their specifications in one data period and to one of their alternative weighting schemes. Ram (2005), however, also produced results in contrast to Deaton and Lubotsky's (2003). Ram (2005: 2568) found that 'the income inequality parameter shows significance when a race variable is added' and other studies produced similar findings (McLaughlin and Stokes, 2002; Subramanian and Kawachi, 2003).

So there is considerable debate about the role of ethnicity, but if ethnicity is linked to poor health outcomes to some extent, then the next question is: why? Deaton and Lubotsky (2009), for example, argued that this is due to America's virtual apartheid health-care system, where black people receive worse care. They pointed to a study by Skinner, *et al.* (2005), which showed that mortality rates after a heart attack are higher for all patients in hospitals that mostly treat black people. The impact on health, therefore, appears to 'spill over' to low-income white people living in deprived, mostly black areas. There is therefore a strong link to income inequality but the main driver, they argued, is ethnicity, through racial discrimination in health care. However, given that low-income white patients also receive poorer treatment in these areas, it is difficult to see how ethnicity can be isolated as the issue rather than low income/social class more generally.

Racism and voting for racist or non-egalitarian policies is also likely to be a key factor here, but Kaun (2008) argued that any link between race, inequality and social problems is due not so much to the racism of white Americans leading them to vote against more egalitarian or pro-welfare policies, but to differential voting rates: poorer groups and ethnic minorities are less likely to vote, and therefore not likely to see policies implemented that might support them more.

The issue of ethnicity has appeared in previous debates, not least with Alesina and Glaeser (2004), who argued that greater ethnic diversity explained why the US had not developed a stronger welfare state and more redistributive policies. They argued that this public concern about growing immigration might challenge the European welfare states in future. In response, Taylor-Gooby (2005) argued that once 'left-wing politics' are introduced into the analysis, this makes a difference to the outcome. In countries with more successful left-wing parties, ethnic diversity is not so strongly related to weak welfare states. Taylor-Gooby concluded that politics matter, and that the decline of European welfare states was not inevitable. This exchange suggests that there are a number of possible contributory factors behind any relationship between ethnicity, income inequality and social problems. Snowdon (2010), for example, also argued that ideology/politics played a key role. He argued that countries with a left-wing government in power would pursue equality as well as high levels of foreign aid and low levels of imprisonment, for example.

Comparisons between countries are extremely complex to interpret as they vary in terms of history and culture. In some countries, for example, ethnicity may be a clear marker of inequality, whereas in others it is not. Trying to isolate the independent effect of income from ethnicity is therefore likely to be difficult. There are also issues of data availability, validity and reliability. The role of theory in relation to all this is also complex, as many variables may be involved, and their relationship to each other is difficult to disentangle.

Another possible explanation for health and social problems (which has already been touched on) might be the role of welfare institutions and social policies. For example, Ross, *et al.*, (2000) found variations in outcome by income inequality when looking at US states but not when looking at Canadian provinces. They suggested that this was because Canada had better public health provision. But apart from this, there have been relatively few studies which have tested the impact of welfare provision. Indeed, this might be difficult to do, as it is not clear which measure to use. Spending on welfare may not be a sign of a strong welfare state but a sign of economic problems necessitating high levels of public expenditure on benefits, and so on.

Wilkinson and Pickett (2010: 291-2) pointed to other research which, they noted, shows that government spending on health services does not explain the link between income inequality and health problems, though, as stated above, spending on services may not be a very useful measure (Elgar, 2010).

Elgar and Aitken (2010) also argued that the link between inequality and homicide rates could not be explained in terms of spending on health and education.

There may, however, be a link between income inequality and the willingness of people to contribute taxes to welfare spending, though the empirical findings on this are also mixed (Anderson, *et al*., 2008). Putnam (2000) argued that inequality would reduce citizens' willingness to co-operate with and support each other, resulting in various social problems. Following on from this, Anderson *et al*. (2008) carried out an experimental public goods game with 48 students. They found that in scenarios where only a few of the participants were given a high fixed payment, those who had been given less were not so keen to contribute much to a common pot. The highly paid then followed suit, leading to a lower overall level of public goods provision. Anderson, *et al*. (2008) pointed out, however, that this effect is only likely to occur where people know how payments are distributed, which isn't necessarily the case in many societies (Heath *et al.*, 2010; Rowlingson, *et al.*, 2010).

Clarkwest drew on his time-series analysis of state-level US data from 1970 to 2000 to argue that improvements in medical care made much greater differences to health outcomes than income inequality. He argued that where income inequality played a role, it was in weakening:

> *societies' willingness to make investments that promote the common good. If true, inequality could play an important role in affecting the rate of health change by influencing adoption of the innovations that are proximal determinants of health improvements.*
>
> Clarkwest, 2008: 1872

Summary

Causal effects are very difficult, if not impossible, to prove. Strong theory and robust methods are needed to make claims about causal relationships. There is considerable debate in the academic literature about whether there is, and the possible extent of, any causal relationship between income inequality and health and social problems. There is certainly some evidence that there is a causal relationship, and while the size of this effect looks small statistically, the number of people involved is substantial because income inequality affects the majority of the population. There is also some suggestion that income inequality has negative effects after a certain point (0.3 Gini coefficient). This is the level of income inequality that the UK had in the 1960s, 1970s and early 1980s. It is the level of many European countries today.

If income inequality has an effect on health and social problems, what is the mechanism behind this? One theory, supported by Wilkinson and Pickett (2009a) among others, is that income inequality causes 'status anxiety' and it is through this psycho-social mechanism that health and social problems are caused. This theory has some logical plausibility and is also supported by some evidence on levels of stress related to status and 'social evaluative threats', but some further theorising about the mechanism would be helpful to consider how it works in practice, given people's different reference groups, their knowledge (or lack of knowledge) about social stratification, the complex nature of 'status' and self-esteem.

Status anxiety as a result of income inequality is not universally accepted as a mechanism to explain health and social problems. Other factors have also been suggested as causing such problems, including poverty/material circumstances/individual income. There is also debate about the role of culture, ethnicity and welfare institutions, which are also likely to play a role. Once again, there is more debate than consensus on which of these may have an effect on health and social problems. The mechanism by which these may have an effect is also debated, and further thinking and empirical testing of theory would be helpful.

3 Who is affected most by inequality?

One of the boldest claims made by Wilkinson and Pickett (2009a), and the one quoted by a number of people (including Ed Miliband, as cited in the introduction), is that inequality does not just harm those at the bottom of the economic distribution but that it harms almost everyone. This chapter considers what exactly is meant by the suggestion that income inequality harms almost everyone before setting out the evidence in relation to this suggestion.

Does income inequality 'harm everyone'?

It is not entirely clear what it might mean to say that 'income inequality harms everyone'. For example, it could mean that people in an unequal society fare worse than their counterparts (i.e. people on the same income level) in a more equal society. But there would not be the exact same counterparts in societies with different income structures. It could, therefore, mean 'counterparts' in terms of position in the income distribution (such as the top ten per cent, second ten per cent, etc.) or class structure (for example, a skilled worker in an equal society would fare better than a skilled worker in an unequal society, and a professional worker in an equal society would fare better than a professional worker in an unequal society). Or, taking this idea further, it could mean that a skilled worker in an equal society would fare better than a professional worker in an unequal society. The argument about inequality harming everyone was not entirely clear in *The Spirit Level*. Saunders quoted Goldthorpe:

> *is the basic claim here that in more equal societies almost everyone does better, or is it simply that everyone does better on average? Most of the time, Wilkinson and Pickett want to insist that it's the first ... However, most of the data they rely on doesn't exactly say this.*
>
> Saunders, 2010: 115

In their postscript to the second/paperback edition of *The Spirit Level*, Wilkinson and Pickett clarified their position on this important point:

> *we do not argue that everyone in a more equal society does better than everyone in a less equal one. We are not saying that even the lowest social class or the least well paid or educated category in a more equal society does better than the highest category in a less equal society. Rather, we show that when people in the same social class, at the same level of income or education, are compared across countries, those in more equal societies do better.*
>
> Wilkinson and Pickett, 2010: 275–6

Marmot (2004) also posed the question of why people with good stable jobs have a higher risk of dying than people with slightly higher-status jobs. He argued that both groups are non-poor, and so if poverty is the driving force for mortality then they should have similar levels of mortality, but they do not. He therefore argued that, once basic material needs are met, differences in mortality are due to 'status syndrome'. As argued above, Marmot (2004) pointed out that the health gradient remains even after controlling for smoking, blood pressure, plasma cholesterol, short height and blood sugar. These risk factors account for less than a third of the social gradient in mortality from heart disease.

In the previous chapter, various arguments were put forward to suggest that inequality might be harmful to those on higher incomes. Frank (2007: 103) sums this up by arguing that 'we work too many hours, save too little and spend too much of our incomes on goods that confer little additional satisfaction when all have more of them'. This affects most people in society, and the growing discussion about the 'squeezed middle' also points to the stresses of trying to keep up with a standard of living considered appropriate at different levels. One example of this might be 'middle-class anxiety' about the education of children in some state schools.

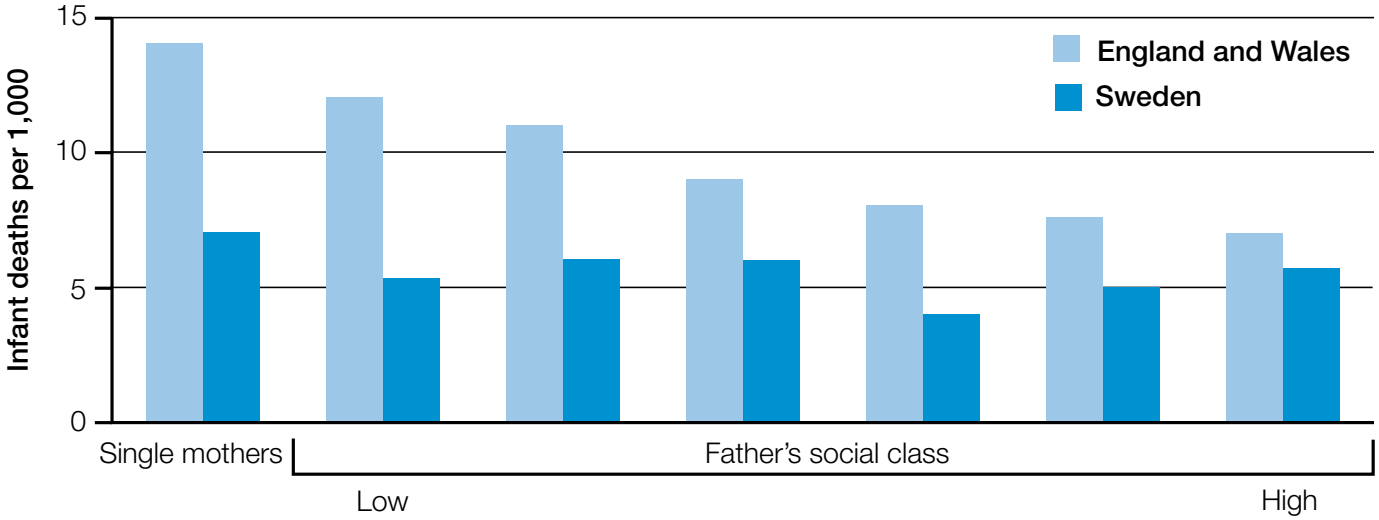
Over half a century ago, Galbraith (1961) argued that inequality was detrimental to the rich because it made society less secure and because personal income is only one determinant of well-being. He argued that after the Second World War some Americans were becoming increasingly wealthy, but that this increase in wealth was at the cost of public services, such as education, health care, public transport and so on. Thus, he argued, 'private wealth' coexisted with 'public squalor', which even rich people could not always insulate themselves from.

Whatever the precise meaning or formulation of the argument, the correlation analysis in much of *The Spirit Level* is not the ideal method to provide evidence here, as it only uses the average/aggregate data for each country rather than data looking at different groups within different countries. However, Wilkinson and Pickett (2010a) provided some further discussion to deal with this question more directly. For example, they pointed out that life expectancy is 4.5 years shorter for an average American than for an average Japanese, and they argued that this is not because the poorest 10 per cent in America have a life expectancy 45 years shorter than the poorest 10 per cent in Japan. They argued that they could take out all those in poverty from their analysis and still find differences between the average life expectancy in America and Japan.

Marmot (2010) also made the point that health inequalities cannot be explained simply by the gap between those at the very bottom and those at the very top. He pointed out that if we exclude the top and bottom five per cent of neighbourhoods, the difference in life expectancy is still six years. It would be interesting to continue with this to see at what point the difference becomes negligible.

Even stronger evidence, perhaps, was that men in low-skilled occupations in Sweden have lower mortality rates than those in professional classes in England and Wales (Wilkinson and Pickett, 2009a: 183) and that infant mortality in Sweden was lower among 'lower-class' parents than it was among higher-class parents in the UK (see Figure 4). The data that this was based on, however, was relatively old and only related to two countries.

Figure 4: Infant mortality by occupational class of father in Sweden compared with England and Wales



Source: Leon, *et al*., 1992, cited by Wilkinson and Pickett, 2009a: 189

Some of the more sophisticated studies mentioned earlier have tried to isolate the impact of inequality on different groups. Subramanian and Kawachi (2006: 141) suggested that the negative impact of inequality was actually 'somewhat stronger for the relatively advantaged socioeconomic groups'.

But they also pointed out that findings on the issue of which groups might suffer most from inequality are not consistent, with too few studies to make strong conclusions.

More recent research by Banks, *et al*. (2006; 2007) has provided further evidence. For example, they analysed data on 55–64 year olds from the US Health and Retirement Survey and the English Longitudinal Study of Ageing. They found that people in the US sample were much less healthy than their English counterparts at all points in the socio-economic distribution. Furthermore, they found that the US–England difference was more pronounced for those in the lowest social groups, but the higher-status Americans were

still at a disadvantage compared with their English counterparts. Table 3 shows that 8.1 per cent of 55–64 year olds in the bottom third of the income distribution in England had diabetes, compared with 16.8 per cent of their counterparts in the US. Those in the top third of the income distribution in England were also less likely than their American counterparts to have diabetes but the difference was not so great (6.0 per cent compared with 9.2 per cent). And we can see a similar pattern for many of the conditions reported in the table.

Table 3: Self-reported health by income among 55–64 year olds in England and the US

	Cell per cents					
	Income terciles in England			Income terciles in the US		
	Bottom third	Middle third	Top third	Bottom third	Middle third	Top third
Diabetes	8.1	7.7	6.0	16.8	11.4	9.2
Hypertension	37.9	35.8	31.6	46.1	42.8	38.2
All heart disease	14.3	9.1	6.9	20.2	13.1	12.1
Myocardial infarction	6.7	3.3	2.5	8.6	4.3	3.3
Stroke	3.5	1.9	1.6	5.8	3.7	1.8
Lung disease	7.6	6.3	4.8	12.3	7.0	5.1
Cancer	5.7	5.1	5.5	9.3	9.8	9.5

Source: Banks, *et al*, 2006

Note: Terciles divide the population into three equally sized groups

These findings were confirmed by Banks, *et al.* (2007) when focusing solely on men in the US and England and when using different measures of socio-economic status. These effects also remained after controlling for various risk factors such as smoking, drinking and obesity.

This analysis cannot be used to 'prove' that inequality is the cause of these differences but it does show that even those in the top-income groups in the US fare worse on a range of health indicators than those in the top-income groups in England. More analysis of this kind, perhaps comparing different income groups (including quintiles or deciles) in a wider range of countries and on a wider range of health and social problems, would be useful to provide further evidence for this part of the argument.

Summary

There is some evidence that people in countries with higher levels of income inequality fare worse than their counterparts in countries with lower levels of income inequality. Even those on higher incomes in more unequal countries appear to fare worse on a range of indicators than those on higher incomes in less unequal countries. But there has been relatively little research into this and more would be very useful before making strong claims on this issue. If such findings are replicated, the next step is to explain the observed differences.

4 Does income inequality have other effects?

This report has raised a number of issues in relation to the question of whether income inequality causes health and social problems. But income inequality may have positive effects, for example, in motivating people to work hard. This may lead to a more efficient, and faster-growing, economy, which may benefit all, if some more than others. This chapter considers these arguments. It also considers the relationship between income inequality and financial stability.

Does income inequality promote economic growth?

While there is increasing debate about the negative impact of income inequality on the economy, there is also an argument that it can have a positive effect. For example, Conley (2009: 37) pointed out that 'since the Scottish Enlightenment conservatives have argued that inequality is the engine of progress; differential rewards lead to ingenuity, industriousness and innovation'. Similarly, Turok (2010) suggested that income inequality might provide incentives for individuals and firms to take risks which benefit the economy and society as a whole. This raises the issue of the possible trade-off between 'equity' and 'efficiency' or growth/productivity.

The evidence here is mixed. For example, Corry and Glyn (1994) and Glyn and Miliband (1994) used historical and cross-national data to show that more egalitarian countries had higher levels of growth. Alesina and Rodrick (1992) studied 65 countries, also concluding that more equal countries had higher rates of growth. Atkinson (1997) reviewed the literature here and found as many studies negatively as positively linking inequality and growth. Irvin (2008) pointed out that there have been periods when the British economy has grown and there has been no increase in inequality (quite the reverse). But there have also been periods of growth at the same time as increasing inequality so the evidence is mixed. Cross-national studies also show mixed evidence. For example, the World Economic Forum's Global Competitiveness Report 2010–11[8] shows that Sweden, a relatively equal country, comes second in its competitiveness league table, two places ahead of the much less equal US. Wilkinson and Pickett (2009a) also found a relationship between patents per head of population and equality, so entrepreneurship may be higher in more equal, rather than unequal, countries (though the number of patents is not a perfect indicator of entrepreneurship).

The argument that inequality is helpful in terms of growth appears to rest on the idea that top earners and wealth-creators/entrepreneurs might work less hard if they were paid less. A series of academic journal articles in the 1990s called for more performance-related pay as a mechanism for improving company performance. Jensen and Murphy (1990), for example, argued that executive pay should be increased for those executives able to increase share prices. Since then there has been a dramatic increase in both executive base pay and incentive schemes (Gabaix and Landier, 2008). From 2001–11, chief executive remuneration has quadrupled, while share prices have actually fallen (High Pay Commission, 2011). However, there is no agreement about whether these attempts to use pay to improve company performance have worked or not (Gregg, *et al.*, 2005; 2010).

There is also very little evidence from international data that higher earnings provide incentives to work harder. Ramsay (2005) pointed out that Japanese CEOs earn less than one-fifth of the salaries of their US peers and have higher marginal tax rates, but there is no evidence that Japanese CEOs work less hard or less profitably than American ones. In 2001, a US CEO was paid 31 times more than an average worker. It was 25 times more in the UK, 15 in France, 13 in Sweden, 11 in Germany and 10 in Japan (Ramsay, 2005). Once again, these significantly different ratios do not seem related to the levels of hard work or productivity across different countries.

Does economic inequality cause financial instability?

This report has focused on the relationship between income inequality and health and social problems, but there has been a growing debate in recent years about the relationship between economic inequality more

generally and financial instability (Milanovic, 2009; Moss, 2009; Iacoviello, 2008). Well before the recent economic crash, Batra (1987, quoted in Lansley 2009: 4) made the general point that 'wealth inequality is a prerequisite for manias and bubbles. The greater the inequality, the bigger the bubble and the more painful its eventual bursting'.

There are various arguments put forward in this area of debate. Milanovic, for example, argued that the super-rich had too much wealth to use for consumption and so a vast amount of financial capital went in search of profitable investments. The financial sector became increasingly reckless, he argued, and increasingly lent to people 'in the middle' whose incomes were stagnating but who still aspired to participate fully in the consumerism displayed all around them. He concluded that:

> *The root cause of the crisis is not to be found in hedge funds and bankers ... The real cause of the crisis lies in huge inequalities in income distribution which generated much larger investable funds than could be profitably employed.*
>
> Milanovic (2009: 3)

Summary

It is outside the scope of this report to review in more detail the arguments about the relationship between economic inequality, productivity, growth and financial stability, but it seems that there is remarkably little evidence that income inequality promotes economic growth, and so it is difficult to find any positive effects of income inequality. Debate about the financial crash is contentious and continues, but a number of commentators suggest that high levels of economic inequality played a role in some way.

5 Conclusions

The UK witnessed a dramatic growth in income inequality in the 1980s and the level of inequality has, if anything, increased further since then, albeit at a slower rate (National Equality Panel, 2010). But should we be concerned about this? *The Spirit Level* argued strongly that we should, and has placed income inequality firmly within public debate (Wilkinson and Pickett, 2009a). Not everyone agrees, however, and there have been some high-profile critiques (Saunders, 2010; Snowdon, 2010). This report doesn't attempt to provide a definitive answer to the question of whether or not income inequality has negative impacts on health and social problems but it hopes to contribute to an ongoing debate in this important field.

Discussion of key findings

The key findings from this independent review are that the evidence does indeed suggest that there is a correlation between income inequality and a range of health and social problems. Some further correlation analysis would be useful to explore sensitivity to different factors, but most researchers have, in fact, gone beyond simple correlation analysis to investigate whether income inequality *causes* such problems, independent of other factors. There is less agreement, however, about whether or not this is the case.

One of the problems here is that the methodology to demonstrate a causal effect is not straightforward and studies have produced different findings. There is, however, some evidence to suggest that income inequality has an independent effect on health and social problems. The size of this effect looks small in statistical terms, but since the studies involve whole populations, the numbers of lives involved are significant. One study, for example, suggested that the loss of life from income inequality in the US in 1990 was the equivalent of the combined loss of life due to lung cancer, diabetes, motor-vehicle accidents, HIV-related causes, suicide and homicide (Lynch, *et al.*, 1998).

Some research suggests that inequality is particularly harmful after it reaches a certain threshold. Britain was below this threshold in the 1960s, 1970s and early 1980s but then rose past it in 1986–7 and has settled well above that threshold since 1998–9. If the threshold is indeed significant, it could provide a target for policy.

The explanation put forward by Wilkinson and Pickett (2009a) for the negative impact of income inequality on health and social problems is 'status anxiety'. This suggests that income inequality is harmful because it places people in a hierarchy that increases status competition and causes stress, which leads to poor health and other negative outcomes. However, this theory has been challenged in terms of the precise mechanisms involved and the conceptualisation and definition of 'status'.

As mentioned above, however, not all research studies have shown an independent effect of income inequality on health and social problems. Some studies show that other factors have an independent effect including material circumstances (individual income), culture/history, ethnicity and welfare state institutions/ social policies.

Alongside the research on the impact of income inequality on health and social problems, there is also some debate about whether or not income inequality may have *positive* effects on economic growth by providing incentives to work. But the evidence to support this is weak. There has also been a debate on the relationship between economic inequality and financial stability, with some claims made that economic inequality led directly to the recent economic crash.

It is important to stress that this is a highly complex area both theoretically and methodologically, and there is still some disagreement among academics on many related issues. But this report very much echoes Jencks' conclusion that 'the social consequences of economic inequality are sometimes negative, sometimes neutral but seldom – as far as I can discover – positive' (Jencks, 2002: 64).

Policy implications

Under the Labour Government of 1997–2010, poverty reduction was high on the political agenda, and the Coalition Government has also shown concern for the most 'vulnerable' in society, but there has been much

less attention paid to inequality. Does the evidence in this report suggest that politicians, policy-makers and the public should be more concerned about inequality than poverty? This is a false choice for a number of reasons. First, poverty in the UK is defined in relative income terms (as 60 per cent of median income), and so tackling poverty involves also tackling inequality. Second, it is quite possible to tackle poverty and inequality at the same time without any conflict in policy priorities. In fact, higher taxes on the wealthy can provide the very funds needed to tackle poverty. Third, the research suggests that both individual income (absolute income/ material circumstances) and income inequality (relative income) make a difference to health and social problems and so both need to be tackled.

However, poverty and income inequality are not exactly the same. For example, recessions typically reduce income inequality, as the incomes at the very top tend to decrease more than the incomes at the very bottom (as incomes at the bottom are normally given some degree of protection through the basic safety net of means-tested benefits). If we think that income inequality is the only or main problem then we might welcome the reduction in inequality during a recession, even if those at the bottom become slightly worse off in absolute terms. But if we see poverty as more of a problem then we should try to protect those at the bottom. This is a highly pertinent question, given that government policy looks set to reduce the safety net for those on the lowest incomes through a variety of policies, including cuts to housing benefits and to the mechanisms for up-rating means-tested benefits (Browne and Levell, 2010). Given that the research reviewed here suggests that both absolute and relative incomes are sources of social problems, it makes sense to protect the poorest and to reduce the incomes of those at the top to pay for this.

One way to reduce incomes at the top is to raise taxes, but such policy approaches raise concerns in some quarters that this will reduce incentives to work and so be detrimental to the economy, which could be a particular problem at a time when the country needs economic growth. However, the studies reviewed here suggest that there is very little evidence that income inequality promotes growth or that individual incomes at the top provide incentives to work. While further research on these issues would be welcome, there is relatively little evidence so far on which to oppose higher taxes. And if indeed there is concern that higher income tax might reduce incentives to work, then higher wealth taxes (or wealth transfer taxes) may be even less likely to affect incentives to work, and so could be given greater consideration (Mirrlees, *et al*., 2010).

While there may be good reasons, in theory, to redistribute income and wealth to tackle both poverty and inequality, public support for 'redistribution' is not particularly strong (Rowlingson, *et al.*, 2010), and more needs to be done to understand why this is, and to inform people better about the level of inequality in the UK and the potential impact this has. However, people do support a progressive tax and benefit system, and there is strong support for policies to improve equal opportunities in the UK. Titmuss (1965: 131) argued that while politicians and the public were generally willing to accept that poverty was a problem, there was a reluctance to see inequality as a problem because it would involve 'recognizing the need for structural change, for sacrifices by the majority'. And the greatest sacrifices would need to be made by the most powerful groups in society, who might resist such policies.

Alongside tax and benefit changes which redistribute income, there are also policy levers in relation to 'original' income and wealth policies. The minimum wage is an existing original-income policy, but it is not currently at a sufficient level to give people enough money to reach a 'minimum income standard'. One policy change could therefore be to increase it to the level of a 'living wage' (Greater London Authority, 2011). But what about wages and incomes at the top? The Hutton Review (2011) considered the arguments for compressed wage ratios, and while the final report did not support such a policy, it did make recommendations for much greater transparency to highlight considerable wage inequalities.

Debates about inequality sometimes appear to suggest that the choice is between the 'unrestrained' free market leading to any level of inequality resulting from it and a much more managed economy aimed at providing absolute equality. But emerging evidence presented here suggests that there might be a threshold above which income inequality causes health and social problems. If this is the case, consideration should be given to having a target to reduce income inequality to this threshold.

The evidence in this report has also suggested that ethnicity is linked to health and social problems, and while there is no consensus on this, it would merit further research and further consideration of how policies might respond to inequalities on the grounds of ethnicity as well as gender, faith, sexuality and so on. Such inequalities have been beyond the scope of this report but are nevertheless important to consider.

The studies reviewed in this report have also made claims that stronger welfare institutions (for example, in the fields of health, education and social security) can make a difference in terms of health and social problems, perhaps mitigating the effects of income inequality. Once again, further research would be helpful here, but the evidence suggests that stronger welfare states fare better than weaker ones.

The main policy implication here is that governments need to tackle both poverty and inequality. Fortunately, these can go hand in hand. This echoes Lynch, *et al*. (2004: 83), who concluded their major review thus: 'Reducing income inequality by raising the incomes of more disadvantaged people will improve the health of poor individuals, help reduce wealth inequalities, and increase average population health'.

Further research

There is already considerable research in this field, but this is a complex terrain and further research might also be helpful. This might include more studies using the following methods:

- sensitivity analysis to measure the effect of different measures of income inequality, different data sources, different samples of countries, different approaches to outliers and different social problems on the correlation analysis;
- multi-level and multi-variate modelling;
- studies of change over time; and
- natural experiments – for example, comparing societies before and after a major change in inequality levels.

In particular, further research might also include studies which:

- investigate the role and inter-relationships between different types of social stratification including wealth, income, power and status;
- compare the role of relative income and relative rank;
- explore the nature of different socio-economic hierarchies and how these have an impact on people's lives;
- develop theoretical approaches and models further;
- carry out similar analysis to that in *The Spirit Level* (2009a) but for the 1960s and/or 1970s, when countries had very different levels of income inequality (for example, the UK was relatively equal and below the 0.3 threshold);
- analyse individual health outcomes rather than overall health;
- compare the impact of inequality on different groups within different societies;
- analyse the size of any effect of income inequality and translate this into meaningful statistics;
- analyse whether or not there is a threshold above which income inequality is particularly harmful;
- analyse the role of ethnicity and welfare institutions in relation to income inequality;
- analyse macro-level measures of inequality and economic growth/competitiveness/crisis;

- analyse the role of income at different levels in providing incentives to work harder; and
- compare company performance and employee health and social well-being among employee-owned companies and others.

Notes

1 Life expectancy at birth here is calculated by using the current year's mortality rates for different ages. It therefore includes the sum of the death rates from age 1–2 years; 2–3 years, … 65–6 years; 66–7 years, etc. at the current time. This is also called 'period' life expectancy.

2 Social class attribution was based on data relating to the individual, their spouse or parents, according to 'priority rules', which meant that class was assigned as early as possible – thus not taking account of changes of occupational status over time.

3 'Regional-level studies' here refers to 'within-country association at various levels of regional aggregation', including (though not limited to) state-level variation in the US (Wagstaff and Doorslaer, 2000: 554).

4 The Equality Trust was founded in 2009 by Bill Kerry, Richard Wilkinson and Kate Pickett to develop an evidence-based campaign for equality. In 2008 the Trust was awarded two-year funding by the Joseph Rowntree Charitable Trust (JRCT). The JRCT is a charitable trust independent of the Joseph Rowntree Foundation.

5 http://www.poverty.org.uk/63/index.shtml

6 http://www.jdsurvey.net/jds/jdsurveyMaps.jsp?Idioma=I&SeccionTexto=0404&NOID=104

7 http://www.poverty.org.uk/67/index.shtml?2

8 http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2010-11.pdf

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