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Fairness and the changing fortunes of people in Britain

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[The Beveridge Memorial Lecture, 2012, presented to The Royal Statistical Society on Wednesday, June 27th,2012]

Summary

Different people have different definitions of fairness, some of which may be fairer than others. This talk considers what we know of how life chances have changed in Britain from the time when William Beveridge was a young man, to when his Research Assistant, Harold Wilson, was Prime Minister, and then to today. The emphasis is on inequalities in critical outcomes between different groups that have been defined geographically. How has income and wealth inequalities altered over the course of the last century and few decades how have rates of mortality varied? How do the geography of school exam passes, university entry, employment, or even changing rates of imprisonment influence our lives today?

To better understand changes in fairness and our fortunes these trends sometimes have to be put in a longer historical and a wider geographical context. For instance, the changing levels of income inequalities within Britain need to be compared to trends in otherwise very similar nation-states and sometimes back a century in time to provide context. Such comparison is essential if the argument that rising inequality is inevitable is to be countered. Precisely how fairness and fortune is measured alters whether we find them to be rising or falling. Thousands of statistics can also be dull and so graphics and some more unusual and novel visualizations are used to try to illustrate the trends being shown in the lecture.

Keywords

Fairness, fortunes, life chances, inequality, equality

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Introduction

The London Statistical Society first met in the years just before Victoria came to the thrown. During her golden jubilee year the original Charter of the Royal Statistical Society confirmed the formal establishment of a group, which by 1887 was permitted by the Empress "*…to collect, arrange, digest and publish facts illustrating the conditions and prospects of society in its material, social and moral relations*". The royal charter was granted at a time of deep economic distress, but also at a time when new ways of alleviating that distress were being devised. The first recording of the word '*unemployment*' dates to the following year. In recognising unemployment, rather than pauperism, those who counted the unemployed were making a statement.

Statisticians have always had a great influence on moral debates. One young researcher who concentrated on statistics and published letters in the Journal of the Royal Statistical Society in 1910 and 1911[1] later went on to introduce a new way of thinking for the world that his banker friend, Oswald Toynbee Falk declared was, for all its veneer of theory, simply the codification of "*the moral feeling of an age…*" (Mason 2010: 226). That statistician, often unfairly labelled as an economist, was John Maynard Keynes. During the year in which his *General Theory of Employment, Interest and Money* was published another statistician had this to say about the need to generalise (and the requirement not to be a prig):

"At present we are, I think, rather prone to over-emphasize any factor which happens to be a subject of general discussion. At one moment, perhaps, domestic housing, at another national nutrition, attracts almost universal attention. It is the duty of the young statistician not to be a prig and sneer at generous enthusiasms, but to keep a cool head, and always to seek measures of the importance of the several factors. Perhaps that will be easier if he can share the emotional belief I hope I shall never grow old enough to lose, that no honest attempts to make the lives of human beings more agreeable are made in vain, and that apparent failure often leads to ultimate triumph." (Major Greenwood, 1936)

Fifty years on, in 1986, I was taught some of those lessons at the University of Newcastle, where I studied Mathematics, Statistics and Geography. I laughed, in 2012, upon reading Major Greenwood's words, written those 76 years ago (quoted in Davey Smith and Kuh, 2001, page 702). At the time I was just starting work on a short book on the 'disaster' of how we finance domestic housing, a work still on-going. I had just finished hearing about some research concentrating on nutrition which found that it was within the more intensively competitive and insecure environments of the UK and USA that people, especially subordinates, were more often led to become much more obese (Offer, Pechey and Ulijasek, Eds., 2012).

I have begun this talk, jumping half centuries from 1834 to 1887, to 1936, to 1986 and now just a quarter century on, to 2012, to try to illustrate that these issues of fairness and fortune have always been at the heart of the work of the Royal Statistical Society and of people interested in data about people. Other than an obsession with drawing unusual maps (of people), most of what interests me happens to often be subjects of general discussion. I agree with Major Greenwood that we should not sneer at peoples' generous enthusiasm to try to understand why their children

[1] Critiquing Karl Pearson's views on paupers and the work of the Francis Galton's Laboratory for National Eugenics (Dostaler, 2007, page 67).

appear not to be able to afford housing, or why recent generations in more inequitable affluent countries are, on average, growing most in girth. I do believe that apparent failures, especially those failures that took place in 1936 do often lead to ultimate triumph, but I also think that 'the several factors' are more often more closely connected than we may fully understand and perhaps more closely connected today than they were in our past.

Inequality

The several factors that matter greatly to issues of fairness in Britain today tend to revolve around a single factor – inequality. Despite having more homes and more rooms in our homes per person than ever before we share them out so badly now, as compared to the past, that we have housing shortages. Rising numbers of people in Britain are going hungry again, as economic inequalities rise. It may be domestic housing one day, or nutrition the next, or education, or health, or jobs, but underlying so many stories of universal attention is a deeper problem.

The gaps between us have grown again to be the size of chasms. Economic Inequality dropped significantly between 1911 and 1978, by which year the 1% best-off took home only 5.72% of all income, had 5.72 times mean average incomes, and that before they paid tax! In 1912, a century ago, the richest 1% took almost a quarter of all income, and paid far less of that in tax than even today. Currently the richest 1% are taking around 14% of all the income that is declared for tax purposes and their huge share of the cake is growing, even as the overall size of the cake shrinks.

The most important gap is between the 1% and the 99% because it is when the share taken by the best-off 1% rises that the share of both the 9% below them and the 90% below that 9% tends to fall in Britain. Table 1 below shows, over a hundred year period, how much the rise in the income of one group affects the income of another group. As the share of income secured by the best-off 0.01% of richest people in Britain rose, so did the shares of the remaining best-off 1% in society, but not of the 9% beneath them.

The 1% richest gain mostly at the expensive of the 90%, those who receive the least. Over the course of the last 100 years the fortunes of the 9% who are in the best-off tenth of society, but not among the highest rewarded percentile, have tended to fall as the very rich get richer and rise as incomes are better spread out. For the last 33 of those 100 years inequalities have been rising.

Table 1: The fortunes of different income groups 1910-2009, correlation coefficients

	Top 0.01%	Next 0.09%	Next 0.9%	Next 9%	Next 90%
Top 0.01%	1.00	0.97	0.95	-0.25	-0.84
Next 0.09%	0.97	1.00	0.97	-0.10	-0.91
Next 0.9%	0.95	0.97	1.00	-0.10	-0.92
Next 9%	-0.25	-0.10	-0.10	1.00	-0.29
Next 90%	-0.84	-0.91	-0.92	-0.29	1.00

Note, the "Top 0.01%" group are those people with incomes higher than all but 1 in 10,000 people, the "Next 0.09%" are the next most affluent 9 in 10,000 people, the "Next 0.9%) are the remainder of the 1% best-rewarded people and the "Next 9%" are the remainder of the top-paid 10%, leaving the "Next 90%" as everyone else. Correlation coefficients are on changing income shares of each of these five groups of people as compared to the changing income shares of each other group.

Source, based on one hundred data points given in Appendix Table 1, but note: not independent.

Income shares are not independent observations. They sum to 100% so the trends must correlate negatively at some point, the interesting question being where that point lies. Income shares are also not independent because some shares at some points in time have to be estimated from others, so these correlations are, in general, a little higher than if we had all the raw data. Most intriguingly there are three shares which always correlate negatively with each other, the 90%, the 9% and the 0.9% fractions (correlation coefficients in table 1 being -0.29, -0.10 and -0.92).

Rising economic inequality has negative effects, and these effects are negative for everyone in our society, even those who appear to be becoming richer. This is because the extra money does the rich so little good. As Francis Bacon put it in 1625 "*Money is like muck, not good except it be spread.*" The *Economist Magazine* used this quote in May 2007, but in the wrong context. Their editorial suggested that it made sense to package up debt and spread it around many lenders, suggesting that "*It is encouraging that in the intervening two decades, when the capital markets have increased hugely in size, scope and sophistication, only two big shocks, one in 1987 … and one in 1998, have put the system to the test.*" (Economist Magazine 2007).

At a superficial level today we often appear to suffer from giants of excess (Le Grande, 2008) but as the crash of economic crash of 2008 played out it became more and more evident that all the giants of excess are each themselves a product of our failure in Britain to share out the surplus well (Wilkinson and Pickett, 2010). And the parallels with the past keep on mounting. 76 years ago the Spanish Civil War began in the July. George Orwell reported from Barcelona in the December of that year what life was like in a brief moment of greater equality:

"Waiters and shop-walkers looked you in the face and treated you as an equal. Servile and even ceremonial forms of speech had temporarily disappeared. Nobody said 'Senior' or 'Don' or even 'Usted'; everyone called everyone else 'Comrade' and 'Thou', and said 'Salud!' instead of 'Buenos dias'. Tipping was forbidden by law; almost my first experience was receiving a lecture from a hotel manager for trying to tip a lift-boy" (Orwell, 1938, Chapter 1)

For George to think it odd that a waiter or "shop-walker" should look you in the face, he had to have suddenly travelled from a place where averting your gaze was usual, to a time and a place where it was unusual. Today we still speak differently to "our equals", to the few who are richer than us and to the many that are poorer. George was travelling from Hertfordshire, from the village of Baldock; he was used to London, but he had just finished a tour of Northern England that famously took in Wigan. His anecdotal account of that journey (Orwell, 1937) is perhaps the seminal image we now hold of 1930s Britain, but even that view was reinforced by statistical work.

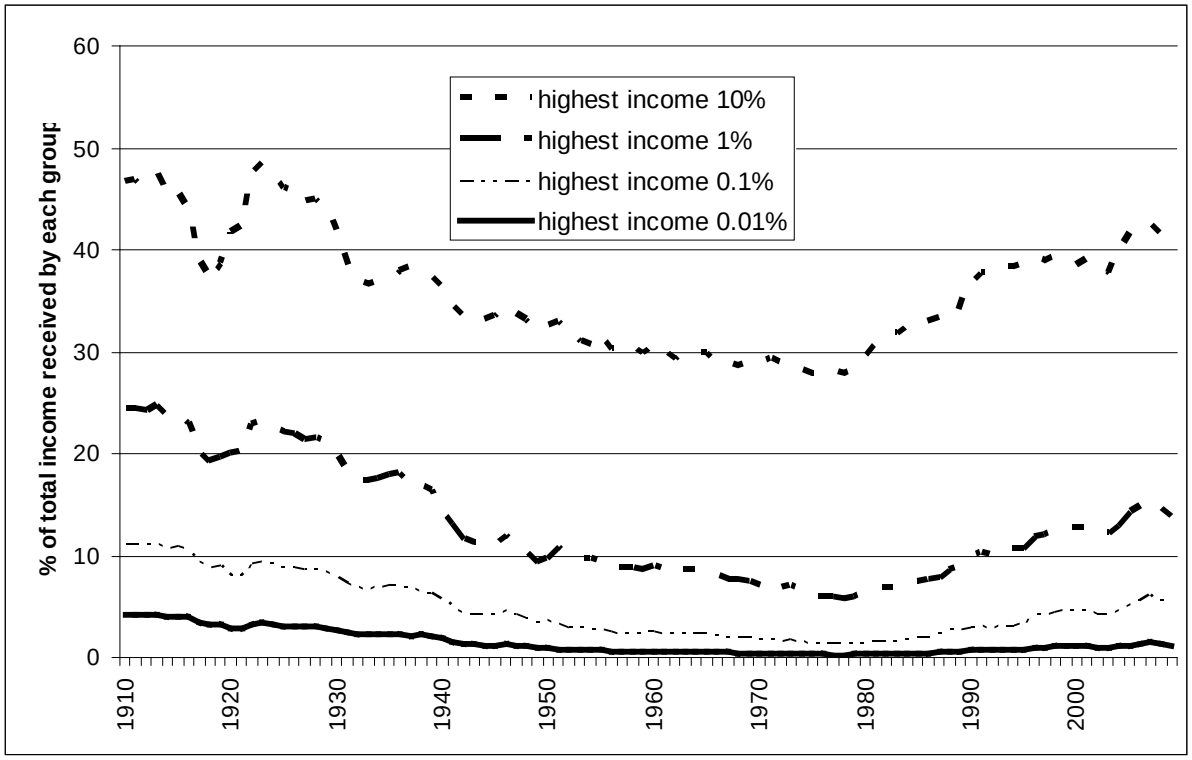
Benjamin Seebohm Rowntree's survey of York revealed just how bad poverty there was in 1936 and how little significant improvement there had been since his first survey published 35 years earlier (Rowntree, 1941, 1901). But why do I go on about the past and make comparisons with far away times and places? My answer is because historical and geographical comparisons are two of the three ways I know of assessing fairness and the changing fortunes of people in Britain today. The third way of assessing fairness is to compare out current state with our aspirations, how fair are we as compared to what we might like to be? I'll say no more on that given just how unfair so many aspects of life in the UK currently are compared to both other times and other places, let alone to comparisons of what we might dream of.

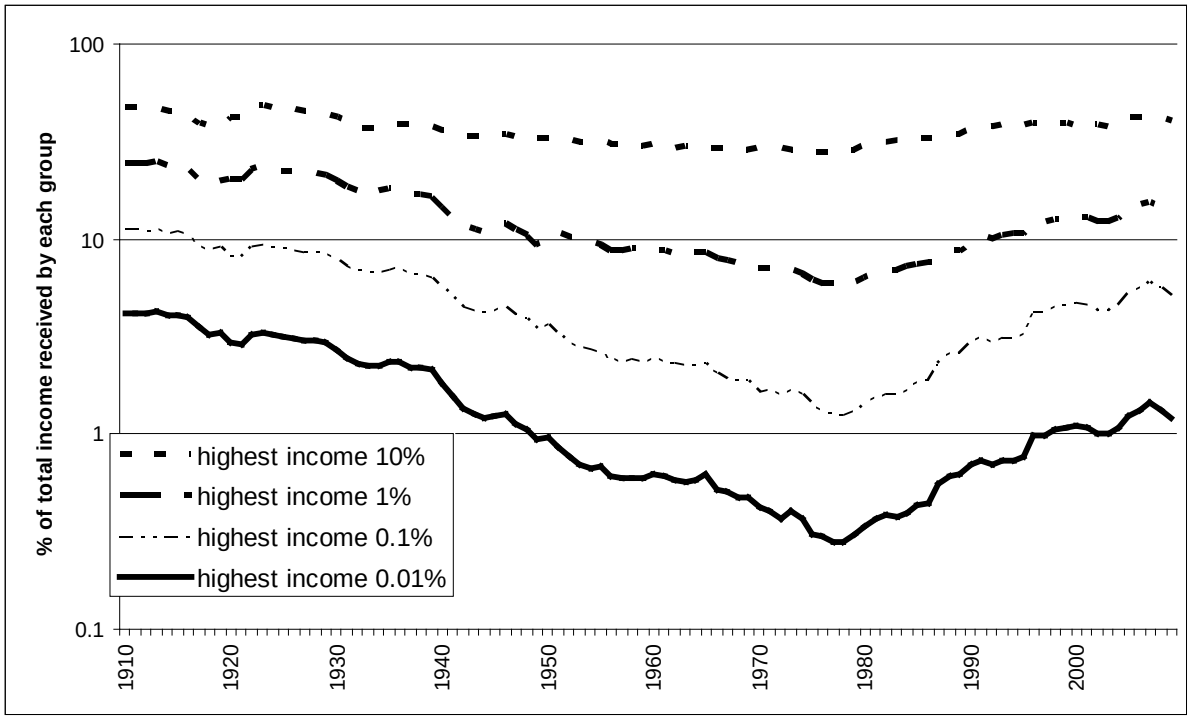
The first method of assessing fairness is to ask how fair is now compared to our past. Figure 1 shows this for the most basic of measures: income. It shows the data which was used to construct table 1 (and which is given in appendix 1). However, before commenting on Figure 1 a note is worth making on where it stops, in 2009, and on changes that have occurred in the most recent two years:

"Britain has become an increasingly unequal society since 1979, the recession did briefly flatten gains for the richest. Oxfam says the initial "progressive" response to the downturn saw incomes growing fastest for the poorest fifth – 3.4% – and slowest for the richest two-fifths – 0.3% – between 2008-09 and 2009-10.
But there has been a short, sharp entrenchment of inequality in the past two years. Last year, the earnings of FTSE 100 executives went up by 49%, while the annual pay of waiters and waitresses fell by 11% and those of cleaning staff by 3.4%. The average director at Britain's top 100 companies now earns 145 times more than their average worker.
"On current trends, by 2035 this inequality will reach levels last seen in the Victorian era," says the report, at a time when the authors say the UK has "weaker protection for those in work than Mexico"." (Ramesh, 2012)

Being a waiter or waitressing is one of the few jobs that employed more people aged under 25 in 2008-9 as compared to a year before (Dorling, 2011, page 184), perhaps partly because of the pay fall.

1: Incomes of the best-off in the UK 1910-2009 (% of all income, on linear & log scales)





The World Top Incomes Database, missing data interpolated, original source: Atkinson, 2007, http://g-mond.parisschoolofeconomics.eu/topincomes/ as accessed 11th June 2012

How fair is today compared to our past?

The moral feeling of our current age is changing rapidly. Completelky independently of it, but within a week of this lecture being given, Britain's best-known high paid banker, Bob Diamond, the chief executive officer of Barclays Bank, had resigned and flown back to the United States. A day or so later the leader of the French parliament was quoted as suggesting that "French people who moved to London for lower tax rates always returned to France for medical care and schools because public services 'no longer exist' in Britain." (Chrisafis, 2012b). So just how unequal has the UK become?

Figure 1 depicts several changing shares including the share of all income in Britain received each year by the best-off tenth of the population. Up until 1989 this is the best-off tenth of households (or more strictly 'tax-units'), after then it is adults. After 1975 it relates to all income declared for tax purposes (so much tax dodging is excluded) and after 1920 what became the Republic of Ireland is excluded. More important than all these caveats is the fact that missing data has been interpolated so that when one line in the graph appears to exactly follow another, that is because it is estimated from that other (which figures are interpolated and which are not is shown in Appendix Table 1). The bottom half of the graph is needed, using the log scale, to avoid the share of the best-off 0.01% appearing negligible.

Inequalities by the measures used here peaked in 1923, the year after the (1922) Great Gatsby summer (Fitzgerald, 1925). Then the best-off tenth of households in the UK took almost half the national annual income. Almost a quarter was taken by the richest one per cent, leaving 'just' a quarter of all income for the rest of the richest tenth. The richest 0.1% of households in that year took home almost 6% of all income, but that share had been sliding since it had hit its maxima of almost 7%, in 1913, just a year after the Titanic sank (1912) which also was the year in which the play '*The Inspector Calls*' was set. A decade later the richest 0.01% of households still took a staggering 3.34% in 1923, more than twice their share even today.

A key turning point, in hindsight, was 1936. It was then that the income of the best-off 0.1% peaked again at a lower local maxima of 4.68% before falling fairly continuously to a minima of just under 1.00% of all income from 1977 to 1979. The share of the richest thousandth then rose to reach a new peak of 4.61% in 2007, before appearing to fall again in the two most recent years for which there is data. I say 'appearing' as this is income declared for tax purposes and many of the richest people in Britain say they are no longer domiciled in Britain and do not pay tax here ("tax is for the little people"[2])

Figure 2 presents the same data in a different way. It shows how many multiples of mean average incomes are received by households and people in the best-off 0.01%, the rest of the best-off 0.1%, the rest of the best-off 1% and the rest of the best-off 10% of the income distribution in the UK each year from 1910 to 2009. The lower graph uses a log scale so that the figure is not completely dominated by the richest of the best-off 0.01%. It perhaps makes the point about the

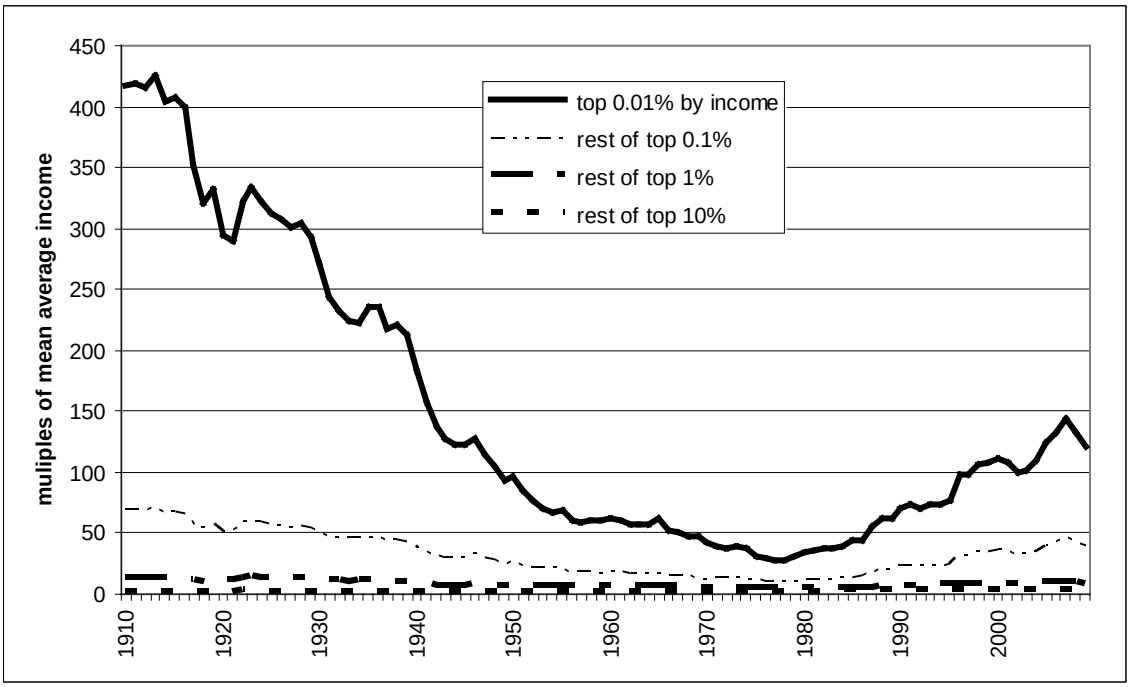
[2] As Leona Helmsley told her housekeeper and as her housekeeper testified at Leona's trail in 1989. You may not have heard to Leona. She dies in 2007. She is remembered mainly for saying those six words and for being widely despised for doing so: http://en.wikipedia.org/wiki/Leona_Helmsley

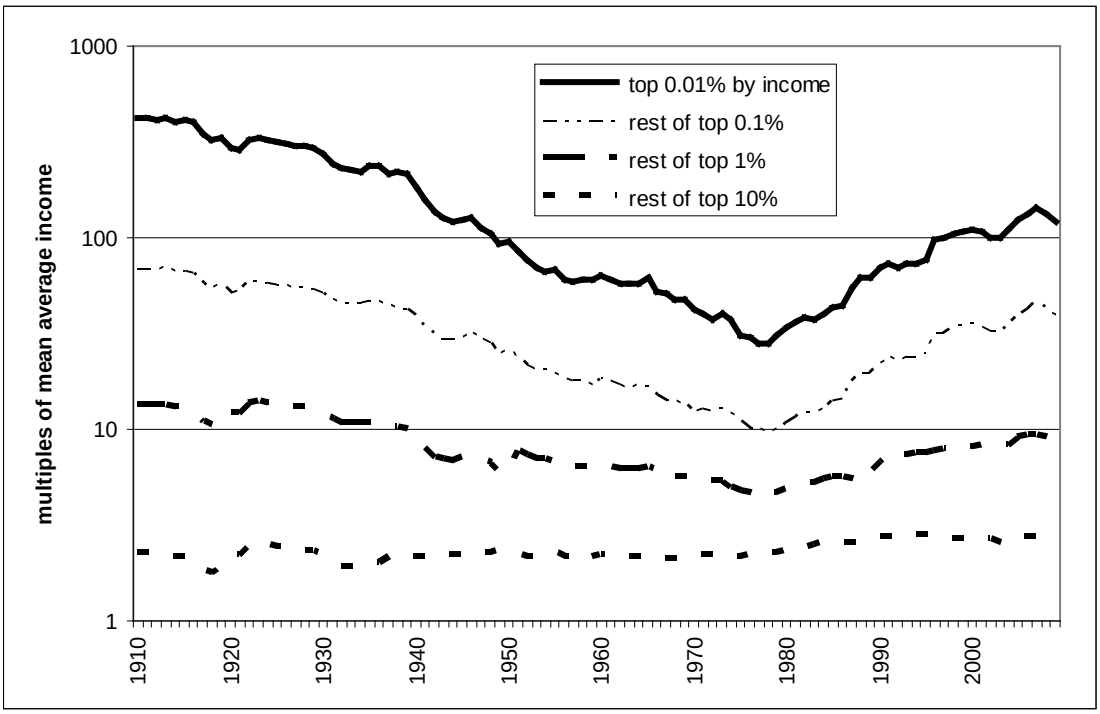
titanic inequality of 1912 a little more clearly. This was the year in which each of the best-off 0.01% of households in British society received, on average, 415 times mean incomes (rising to a peak of 425 the year after). Because income distribution is so skewed, that mean income is much higher than the median income. That huge excess plummeted to a minimum of 28 in 1977 the year when the Sex Pistols' *God Save the Queen* single reached number 1 in the charts despite being banned by the BBC.

The best-off had never had so little as they had in 1977, but by 2007 their income was back up to a multiple of 144 times mean incomes, a total last passed in 1942, as inequalities were falling, almost exactly when what came to be known as the Beveridge report was released. Intriguingly, in the last two years for which data has been gathered, 2008 and 2009, that share was reported to have fallen to 133 and then 122 times mean incomes, but the incomes of the best-off took a knock when share values fell immediately after the crash of 2008. In more recent years average incomes have reported to be falling in real times, while the wealth of those at the top has been rising. Bob Diamond leaving Britain will reduce the inequalities a little, but only in the year after his pay-off is pocketed.

A more mundane figure to consider is the lowest line in the graphs in figure 2. This is the income share of the best-off 10% less the best-off 1%. This group can be thought of as "the 9%" just below the best-of 1%. In 1973 "the 9%" recorded their lowest post-war share of national income, 2.13 times mean wages, by 2005 they were taking their highest ever share, 2.74 times the average. The 9% really have much more in common with the 99% they are a part of, than the 1% who tend to follow the curves of their 'betters' more closely. But unfortunately in the UK they have not had enough in common to act well in concert with the rest of the 99% (see Table 1). This has not been the case in most other Western European countries.

2: Incomes of the best-off in the UK 1910-2009 (compared to average, on linear & log scales)





The World Top Incomes Database, missing data interpolated, original source: Atkinson, 2007, http://g-mond.parisschoolofeconomics.eu/topincomes/ as accessed 11th June 2012

Whether you think it is fair that one person is paid, or receives through dint of their wealth, a dramatically higher income than someone else depends on how much you have thought about it, and perhaps a little on where you sit in the income distribution. Knowing just how much these ratios have changed should help your thinking. Tables 2 and 3 show more recent estimates for wealth inequalities. These are far greater again than income inequalities and tend to lag them. The wealth of the best-off 1% reached its minima of 17% of all wealth in 1988, twelve years after its income minima.

Table 2: Inequalities in Wealth in the UK 1976-2008: Shares of Wealth

%	1976	1981	1986	1988	2006-8	
					(a)	(b)
Top 1% of the population	21	18	18	17	28	53
Rest of the top 5%	17	18	18	21	13	10
Rest of the top 50%	54	56	54	56	51	31
Bottom 50%	8	8	10	6	8	6
Total	100	100	100	100	100	100

Source: Townsend 1991, page 33, marketable wealth at death from probate; and final columns calculated by author, a) excluding pension rights and, b) also excluding main residence housing equity from the wealth calculations.

Table 2 shows that when only "liquid assets" are included, assets you can sell, not your pension or main home, then some 53% of all wealth in the UK appeared to be held by the best-off 1% of the population. Table 3, below, shows that this amounts to each person in the wealthiest 1%, by assets, having access to some 421 times more wealth than is held by the mean average person. Since 2008 as the wealth of the richest people in the UK has risen that 53% proportion and 421 ratio will have risen too.

Table 3: Wealth in the UK 1976-1988: comparison with the poor half

Ratio of wealth held		1976	1981	1986	1988	2006-8	
						(a)	(b)
Top 1% of the population		131	113	90	142	165	421
Rest of the top 5%		27	28	23	44	19	20
Rest of the top 50%		8	8	6	10	7	6
Bottom 50%	1	1	1	1	1	1	

Source : Table 1 above. Wealth of each group is expressed in terms of multiples of the wealth of the average person in the poorer half of UK society. Note the 2028 series continues from 2006-8b. Data sources include NEP (Figure 2.20).

Table 2 was constructed by combining data from the "The Sunday Times Rich list of 2010 with the Office of National Statistics survey of wealth and assets as published in the appendices of the National Equality Panel, also in 2010. The data refers to 2006 to 2009 and shows the best-off 1000 people in Britain, headed by Lakshmi Mital, to have a wealth of £335.5bn around that time. The best-off 10 of those 1000 held £69.9bn or 20% of that wealth. If that inequality curve continued down within the richest 1% then the average wealth of someone in the top 100,000 but not in the top 1000 would be £13.5mn and the total wealth of the top 100,000 would be £1342bn, and the best-off 1% in total between them would have an average of £7.4mn each.

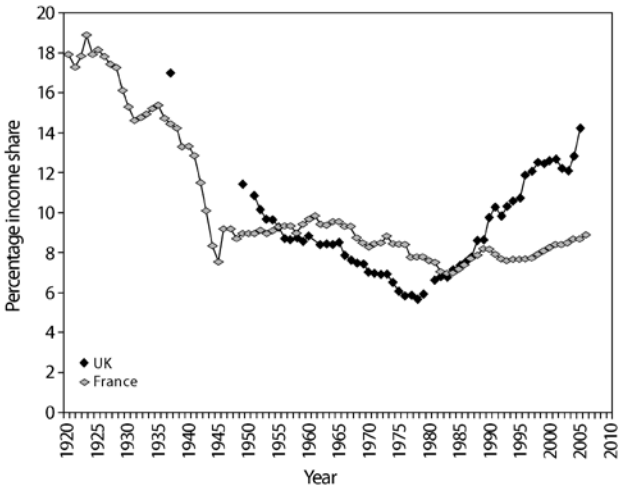
How fair is the UK compared to nearby countries?

By 2012 the Sunday Times Rich list reported the wealth of the best-off 1000 people in Britain to have climbed to £412.8bn. The newspaper suggested that this rise should be welcomed as it apparently signalled economic recovery (Beresford, 2012). This was shortly before the second dip of the great recession occurred. However, even if it had signalled recovery, I still find it hard to see why the mean average wealth of the 1000 richest people each climbing to £412.8mn should be welcomed. In June 2012 even the median pay increase of the Chief Executives of the 100 largest FTSE firms was still reported to be rising by ten percent a year, greatly reduced on eth rise a year before but still much higher than the rest of the top 1% or top 10% (Groom, Oakley and Pickard, 2012).

The blip at the end of Figures 1 and 2 above is intriguing but, as the quotation from the Oxfam report of June 2012 reproduced earlier reveals, it is currently only a blip. It will take a great deal more effort to ensure the blip becomes a slide. Such efforts are possible, and success need not all be measured through the resignation of the most highly paid bankers. In other countries inequalities in incomes have not been permitted to grow so large and even when slight inequality increases have occurred in recent years, abroad steps are then usually taken to reduce that excess – as is about to happen again in France where a Socialist President now has power and the Socialist Party won more than 300 seats, an absolute majority, in June 2012 (see Figure 3).

Figure 3

Income share of the best-off 1%, France and UK



Note: For the UK, until 1974, the estimates relate to income net of certain deductions; from 1975, estimates relate to total income. Until 1989 estimates relate to tax units but, from 1990, estimates relate to adults. Data for the UK is patchy prior to 1951.

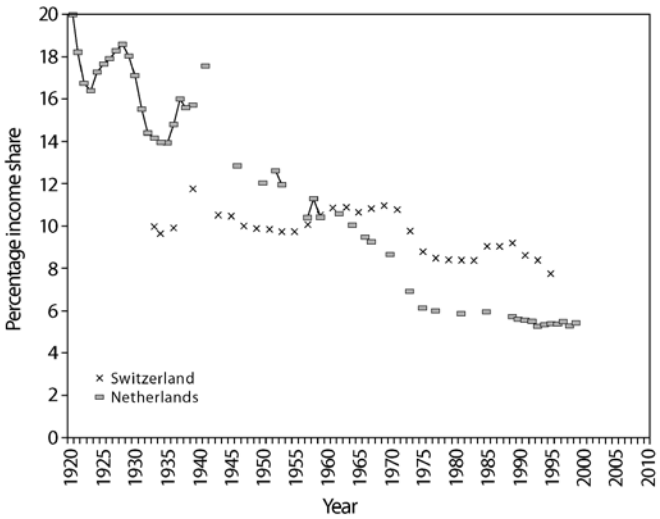
Source: The World Top Incomes Database.

In other countries located not much further from the UK, and with similar key industries (the Netherlands) or with financial service sectors of great significance (Switzerland) the excesses of the most grasping 1% have been controlled even more diligently than in France (Figure 4). It is clearly possible to live with far less inequality than we do in Britain. As a nation you can save 10% of your national income every year to be used for better things than just adding it to the wealth of the wealthiest. What those better things are is up for debate; aiding poorer peoples overseas, redistributing among the home population either through lower taxation or higher salaries and a plethora of other options are all possible. I have not seen anyone recently have the gall to try to explain in public why making the very rich even richer is now helpful, but we are letting it happen despite its defenders no longer being so shameless that they think they can propose “trickle-down” theory and not face ridicule.

Although those who might support trickle-down economics are now hiding the shadows of debate many others would argue that while inequalities have increased, the living standards of the non-rich has increased, and the same could be said of their health and education. There are several points to be made here. First those standards have not increased nearly as much as in more equitable countries such as the Netherlands and Switzerland (see Figure 4 below), where the richest have never taken home such a small share as they do today. Second, health overall tends to be worse in more unequal countries (Subramanian and Kawachi, 2007, Kondon, *et al.*, 2009), as do educational attainment levels, especially in mathematics (Wilkinson and Picket, 2010). Third, as the rich take a greater and greater share in countries that become more economically unequal a point of crisis is eventually reached where simply to maintain basic education and health services let alone jobs and homes for the majority of the population, a re-reckoning becomes inevitable; this point was last attained in Britain in the years following the 1929 economic crash, I suggest above by the year 1936, seven years later.

Figure 4

Income share of the best-off 1%, Netherlands and Switzerland



Note: In the Netherlands, up to 1946, the series is based on tabulated income tax data; between 1950 and 1975, estimates are based on tabulated data produced by the Central Bureau of Statistics; from 1977 they are estimated based on micro-data from the Income Panel Survey (IPO) and using tax and other administrative data. Swiss estimates do not include capital gains.

Source: The World Top Incomes Database.

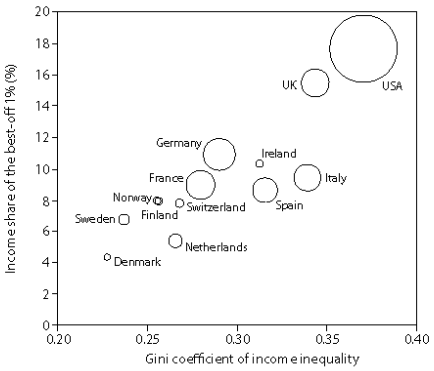
We have to travel all the way to the United States of America, to find an affluent state that today still allows its best-rewarded 1% to take more than they take in the UK. Whether US society is fair depends again on your view of fairness. Figure 5 shows for all those countries that are included in both the *Paris Top Income Dataset* and the *Luxembourg Income Study* and how closely related the share in incomes take by the best-off 1% in each are related to the overall Gini coefficient in each, the measure that is so often, but so confusingly used to summarise income inequalities. The Gini is confusing because it has no parallel in real life and is very hard to check. The ratio of the area under the Lorenz curve to the area of a triangle is hardly an intuitive concept.

Even simple ratios of incomes comparing the best-off fifth to the worse-off fifth can be similarly confusing for many people; especially in more unequal affluent countries where levels of numeracy tend to be worse (Wilkinson and Pickett, 2010), Even more confusing is to talk of the ratio of the poorest person among the best-off tenth and the best-off person among the poorest tenth (NEP, 2010). I would suggest that for a time we concentrate mainly on the share taken by the best-off single percentile in society[3]. Concentrate on the 1%. Unlike the rest of the population, they all tend to get more when the top 0.1% takes much more (see Table 1)

[3] And I suggest we also given in to common usage and call it a percentile rather than try to persuade the population that there are 99 such things. However, there are more important things to worry about so this point is relegated to a footnote as if we do that the "inter-quartile range" is also a doomed term!

Figure 5

Figure 34.2: How well-off the best-off 1% are and overall income inequality (Gini coefficient) all countries included in both source datasets.



Gini	1%	Country (survey date)
0.37	18	United States (2008)
0.34	15	United Kingdom (2007)
0.29	11	Germany (1998)
0.31	10	Ireland (2000)
0.34	9	Italy (2009)
0.28	9	France (2006)
0.32	9	Spain (2008)
0.26	8	Norway (2008)
0.26	8	Finland (2002)
0.27	8	Switzerland (1995)
0.24	7	Sweden (2009)
0.27	5	Netherlands (1999)
0.23	4	Denmark (2005)

Source: World top income database (Paris) and Luxembourg income data study statistics as of June 2012.

Note: Area of Circles is draw in proportion to population.

Inequalities in health

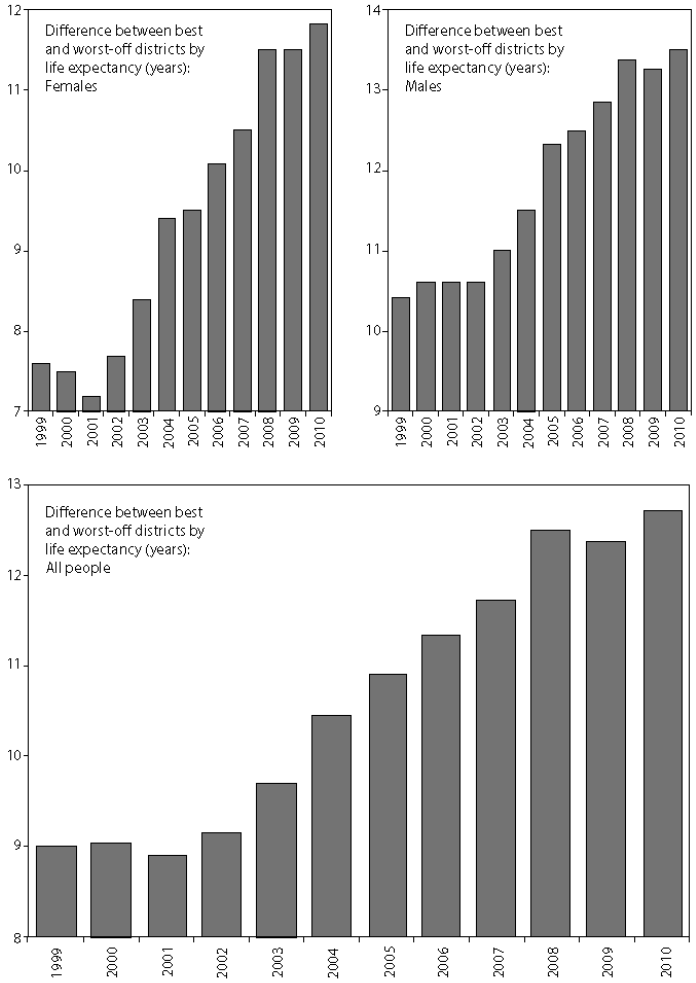
Inequalities in health tend to rise as inequalities in income and wealth rise. Why this occurs is far harder to determine than the fact that it does occur. Of course, the fact that it occurs is what is most important and if you think it necessary to live with high inequalities in income and wealth you will be constrained to live with high inequalities in health.

Lower inequalities in wealth do not always lead to lower inequalities in health. In Britain in the 1930s as unemployment rose health inequalities between areas also rose even as income inequalities fell. All else being equal the mortality rates of the unemployed roughly double when they are out of work. Similarly, but in more recent years, Danish people have not enjoyed quite the rises in aggregate life expectancy that might have been expected given their very low rates of income inequality. The fact that so many older Danes still smoke as compared to the numbers in similar countries was most probably the reason. Becoming more economically equal does not make cigarettes any less deadly. But these are some of the exception to the rule that nowadays in affluent nations high inequality in wealth leads to high inequality in health.

It is not hard to show that as income inequalities fell between the 1920s and 1970s inequalities in health as measured between areas of Britain also fell (Appendix table 2). In the 1920s in the worst-off tenth of areas of Britain you were 91% more likely to die in any year under the age of 65 as compared to the best-off tenth of areas. By 1973 that figure had been reduced to 58% and cities like Sheffield enjoyed standardized mortality ratios a fraction under the average for England and Wales (Dorling, 1997). However, during the 1980s geographical inequalities in mortality rose rapidly so that by the 1990s they exceeded the gaps measured in the 1920s and 1930s (Appendix table 2) and during the first decade of this century new heights of inequality were reached. This is confirmed whether decile ratios are compared, the relative index of inequality is measured (which includes all areas) or simply the extreme two areas are compared, as shown in Figure 6.

Figure 6

Figure 41.3: A measure of social integration between geographical areas: Life expectancy estimates diverging in the United Kingdom 1999-2006.



Source: Local Authority life expectancy estimates as published annually by ONS (three year moving average to the year shown), and GRO (Scotland), 19th October 2011 release.

Note: The top two graphs show the trends of men and women separately. The bottom graph combines those trends. All show a similar picture, although the gap for men is greatest. The gap shown is simply the greatest range in officially reported life experiences between Local Authorities across the whole of the United Kingdom.

Why should there have been a sudden surge in rising geographical inequalities in health since the year 2001? The possible mechanisms that relate growing inequalities in wealth to health are many and hard to determine other than through 'natural experiments' such as the smoking of the Danes.

Many possible mechanisms can be envisaged whereby inequalities in health rise while inequalities in wealth rise. In more unequal countries well paid medical staff more often avoid living in or near poor areas. This cannot reduce inequalities in health. Just a money, like much, works best when spread around, so the incremental benefit of an extra dollar in a poor area is far greater than the benefit of that extra dollar in a rich area. In more unequal countries, like the USA where the richest 1% take a fifth of all income, the income levels of 99% of the population are reduced to those normally enjoyed by a country with 80% of the per capita GDP of the USA.

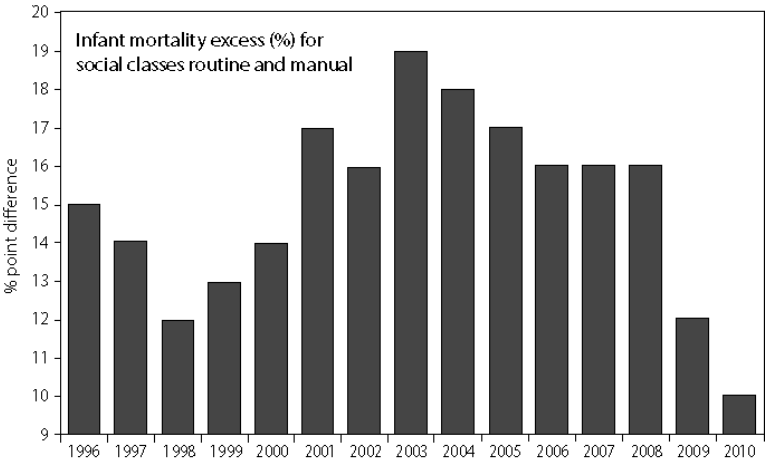
However, people are not like fields of wheat that benefit most when the fertilizer is spread evenly but where the wheat has no conception of what the other wheat is receiving. Humans also feel inequality – psychosocial stress (Marmot, 2010). Material conditions are worse for a majority of people, very much worse for the poor minority, and psychosocial stress is higher in more unequal countries, more people are imprisoned, more are homeless and more move house more often to try to live away from those poorer than them. In Britain, especially during the last decade, this has often been to where the schools are considered good and all those other qualities ascribed to "a nicer area". This ever more selective migration increases health inequalities as measured between areas. The healthy move to healthier areas, but it also increases commuting times and frustration, especially for the most affluent.

There is some speculation that we might soon see geographical inequalities in health fall as the number of deaths in some of the poorest parts of Britain has been falling in very recent years. Whether the inequalities are seen to fall will depend on what the 2011 census reveals about the numbers of people remaining in each area. What we can say for now is that the life expectancy gap remains huge. Even before the very start of life the gap is enormous. In the poorest tenth of areas of Britain twice as many babies are stillborn as in the richest tenth of areas. As a result overall rates of stillbirth in the UK are higher than in a dozen comparable countries. None of a dozen comparable countries to Britain had a high rate of stillbirths in the most recent study reported (Seaton et al. 2012).

The relationship between rising income and wealth inequalities and rising geographical health inequalities is mediated by many factors; these are the more direct mechanisms that drive the polarisation. As income and wealth inequalities in a society rise it becomes more important where you live for many reasons. Social classes become more segregated in many ways (Frank, 2007). With more financial inequality, more people 'who can' more often get out of areas of poorer health and more people 'who can't' remain there. We have measured the pace of such selection speeding up in countries like New Zealand between 1976 and 2006 (Pearce and Dorling, 2010). But inequalities can also fall suddenly, as Figure 7 shows.

Figure 7

Figure 44.1: Infant mortality rates in England and Wales, 1996-2010.



Source: Department of Health (2005) Tackling Health Inequalities: Status Report on the Programme for Action, London: HMSO. Department of Health (2006) Tackling Health Inequalities: 2003-05 data update for the National 2010 PSA Target, London: HMSO. Department of Health (2008) Tackling Health Inequalities: 2007 Status Report on the Programme for Action, London: HMSO. Department of Health (2011) Mortality Monitoring Bulletin: Infant Mortality, inequalities, updated to include data for 2010, published 8 December 2011, table 16, page 6.

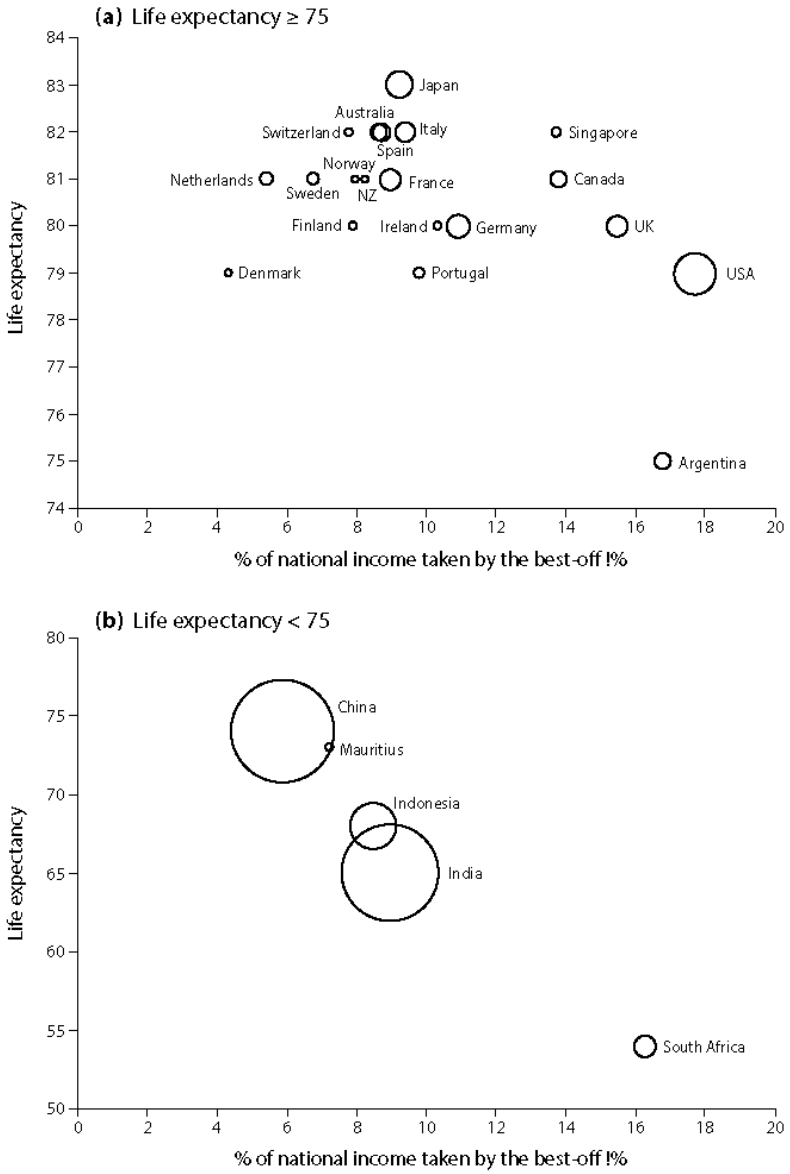
Note: Social class was NS-SE 90 classification prior to 2000, NS SEC 2001 after and rates are three year averages ending on the year shown. Only infants with a registered father were included.

Inequalities in infant mortality (between the proportions of babies of different social groups dying under age one year) had risen to the year 2003 despite the absolute rate of infant mortality dropping in Britain over this period. The new 1997 government set two health inequalities targets as a result of these trends. One was to reduce geographical inequalities in health; the other was to reduce social inequalities in infant mortality. Figure 7 shows that the latter may have been partly achieved by 2010, although precisely how this has occurred requires more investigation. The coincidence of the most recent drop with the change in child protection practises following the death of baby P (Peter) is worth bearing in mind.

Finally on health, Figures 8 and 9 illustrate how inequalities in overall levels of life expectancy and poor mental health appear to be related with income inequalities. There is a relationship between life expectancy in affluent countries and inequality, but life expectancy can be lower than equality alone would predict (where, for example, smoking rates are higher despite economic equality being high, see Denmark in Figure 8). Similarly, poor mental health tends to be more common in more unequal affluent countries, but the incomes of just the best-off 1% can sometimes more closely correlated to rates of poor mental health than a ratio measure that includes forty percent of the population in its calculation (see Figure 9).

Figure 8

Figure 1.1: LIfe expectancy (2009) verses income share of the best-off 1% (latest year). All countries with recent 'top income' data.

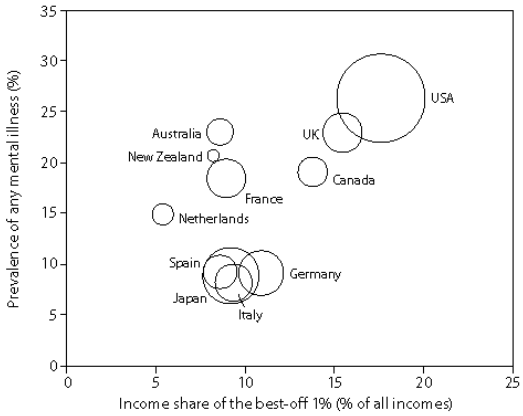


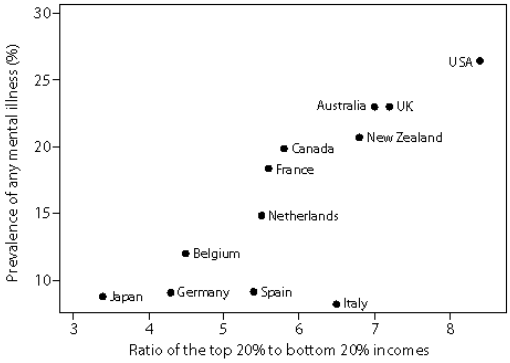
Source: Life expectancy and population figures from WHO data: http://apps.who.int/ghodata ?vid = 710# income (note Australian Statisticians dispute the WHO figure for life expectancy shown here). Accessed 20th April 2012. Note: Circle area is proportional to population in 2010.
The inequality data used is from the Paris School's World Top Income database: http://g-mond.parisschoolofeconomics.eu/topincomes/ (excluding Tanzania where only data to 1970 was included).

Note that for completeness all the countries where this data is available from the data sources used are included above and below. The graph above is split at life expectancy of 75. The graphs below use two different measures of income inequality.

Figure 9

Figure 34.1: How well-off the best-off 1% are and overall population mental health.





Source: Wilkinson, R.G and Pickett, K. ER. (2007) The problems of relative deprivation: Why some societies do better than others, Social Science and Medicine, 65, 9, 1965-1978. Inequality data from the Paris School's World Top Incomes Database: http://g-mond.parisschoolofeconomics.eu/topincomes/ (excluding Tanzinia where only data to 1970 was included). Note all 11 countries for which there are data are included (12 countries for the lower diagram).

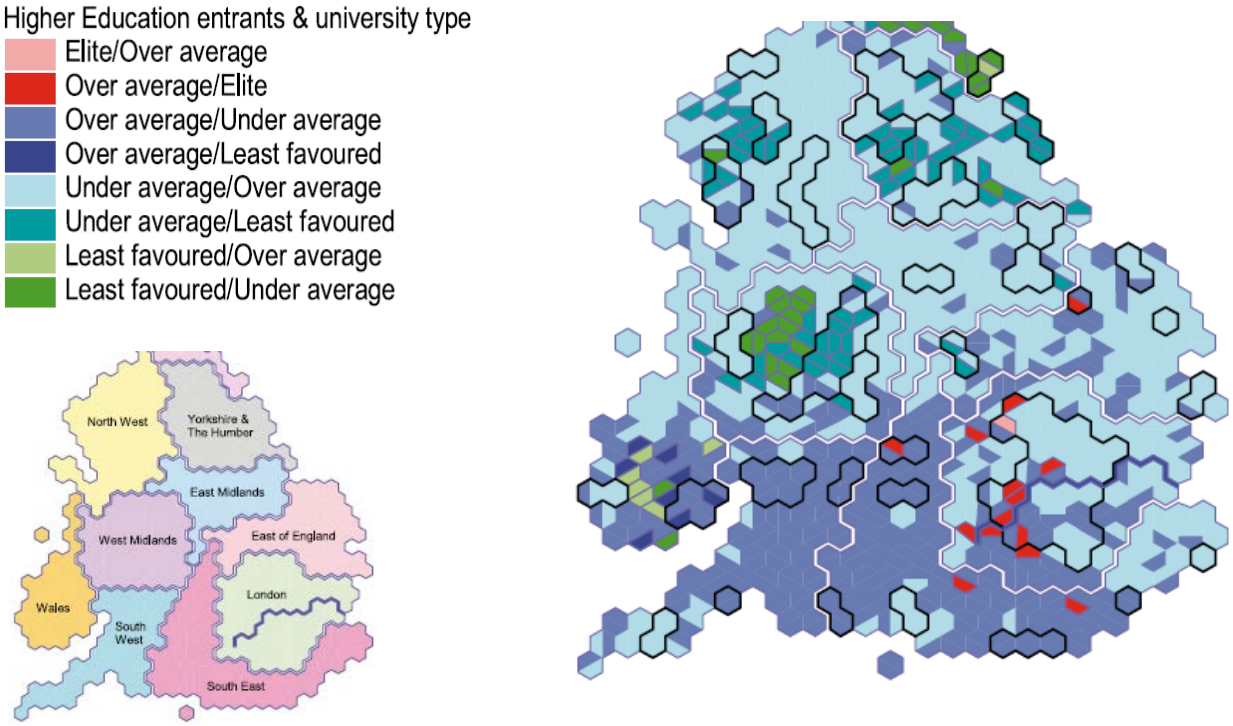
Note: Areas shown in proportion to population. The mental health data are from The World Health Organisation (WHO) except for Australia, the UK and Canada for which national surveys have been used. The figures are for prevalence of any mental illness in the previous 12 months, adults, 2001-3, Demyttenaere, K., et al., Prevalence, severity, and unmet need for treatment of mental disorders in the World Health Organization World Mental Health Surveys. Jama, 2004. 291(21): p. 2581-90. Wells, J.E., et al., Te Rau Hinengaro: the New Zealand Mental Health Survey: overview of methods and findings. Aust N Z J Psychiatry, 2006. 40(10): p. 835-44. 1. Office for National Statistics, Psychiatric morbidity among adults living in private households, 2000. 2001, HMSO: London. Australian Bureau of Statistics, National Health Survey, Mental Health, 2001. 2003, Australian Bureau of Statistics: Canberra. WHO International Consortium in Psychiatric Epidemiology, Cross-national comparisons of the prevalences and correlates of mental disorders. Bulletin World Health Organisation, 2000. 78(4): p. 413-26.

One reason for including both these figures is to note how outliers like Australia and New Zealand do not appear as outliers in the lower part of Figure 9, and similarly Italy and Spain do not appear as outliers in the upper part. Assuming this is not due to data errors, the precise structure of the inequality may be important. Wilkinson and Pickett's work is the source for the bottom graph and for the values on the Y axis of the upper graph of Figure 9.

Inequalities in Education, Work, Commuting and Migration

Countries that have high income, wealth and health inequalities tend to also have high inequalities in terms of educational outcome and inputs. In Britain roughly 25% of all spending on every child's secondary education is spent on the 7% who attend private schools. It is these who receive over 50% of all grade A's awarded at A level. There is also great segregation within the state and voluntary-aided education sectors. The overall degree of segregation is highly unusual when compared to other affluent countries. By spending the UK has a level of educational inequality possibly higher than that in the United States of America. However, UK educational segregation was reduced slightly in the immediate years up to 2010 (Dorling, 2011, chapters 17, 18, 20 and 23).

Figure 10: Which types of university people aged 18-19 are most likely to attend by area of residence at age 15.



Source – Dorling (2011) Figure 3, Chapter 23.

Figure 10 shows, for those children who get to university, to which university they most often, and next most often, get to. It shows the rise in a new type of inequality. Apparently a majority of employees offering the best paid graduate jobs in the country target an average of only 19 universities for those jobs (Milburn, 2012). The students who attend those 19 universities disproportionately spent their childhoods in the South of England (Figure 10). These are mostly a subset of the larger Russell group universities[4].

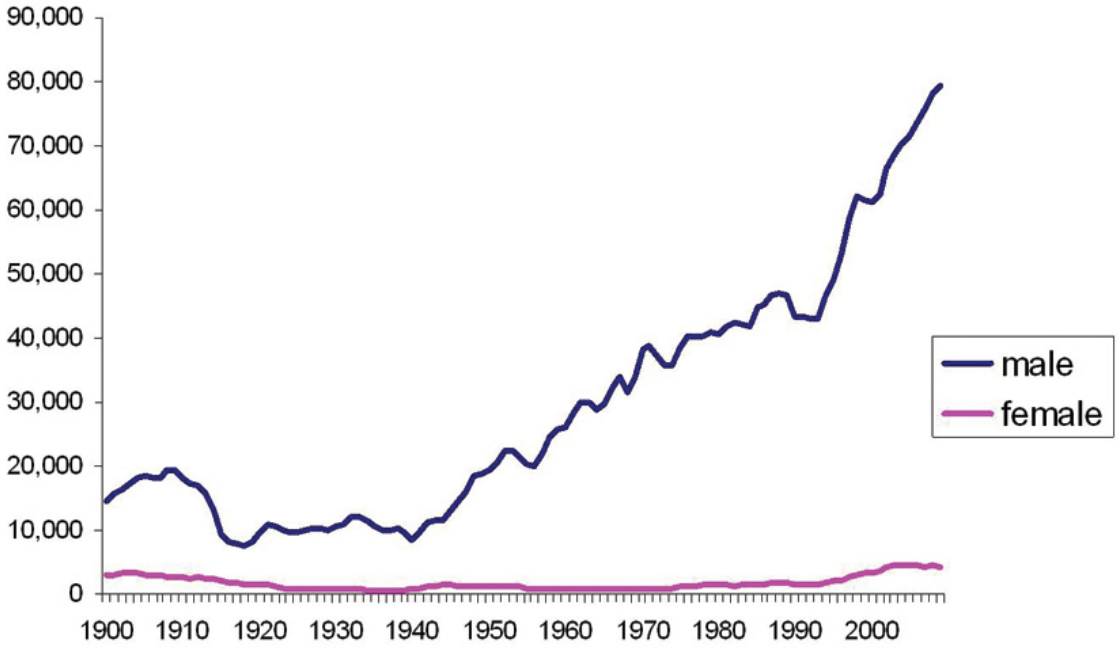
Just as 7% of children attend private school another 7% are thought to have spent part of their childhood living without a father because their father is in prison[5]. The overlap between these two groups is small. Turnover in prison is so high, the average age of inmates so young, and the numbers being imprisoned so great, that it is possible that more men get to spend time in prison as young adults than get to attend one of those 19 elite universities among which the best-paid starting job offers in the UK are concentrated.

At the other extreme from those 19 universities among which the firms offering the highest paid jobs circulate are those institutions to which many very similarly aged young people are being incarcerated in higher and higher numbers – prisons. When looking at youth opportunities prison is an increasingly likely destination for many young people. The total numbers in prison at any one time are at an all time high. The numbers who have been in prison at any point in the last few years are far greater again. Figure 11 shows the rise in the prison population. It is worth noting that its initial rise is not related to income inequality.

[4] In rank order of the largest number of "top employers" apparently targeting students by university, the 19 referred to in Alan Millburn's report are:: Manchester, London's universities, Cambridge, Nottingham, Oxford, Bristol, Warwick, Durham, Birmingham, Bath, Leeds, Sheffield, Edinburgh, Loughborough, Southampton, Newcastle, Aston, Liverpool, Cardiff, and Exeter. High Flyers Research (2012) page 27.

[5] This figure is for children during their school years "Seven percent of children during their time at school experience the imprisonment of a father" From the Government's Every Child Matters Green Paper published in 2003. The new government will not release any updated figures: See FOI replies (as accede in June 2012) http://www.whatdotheyknow.com/request/children_with_parents_in_prison

Figure 11. Boys and Men, Girls and Women, In Prison in England and Wales 1900-2009

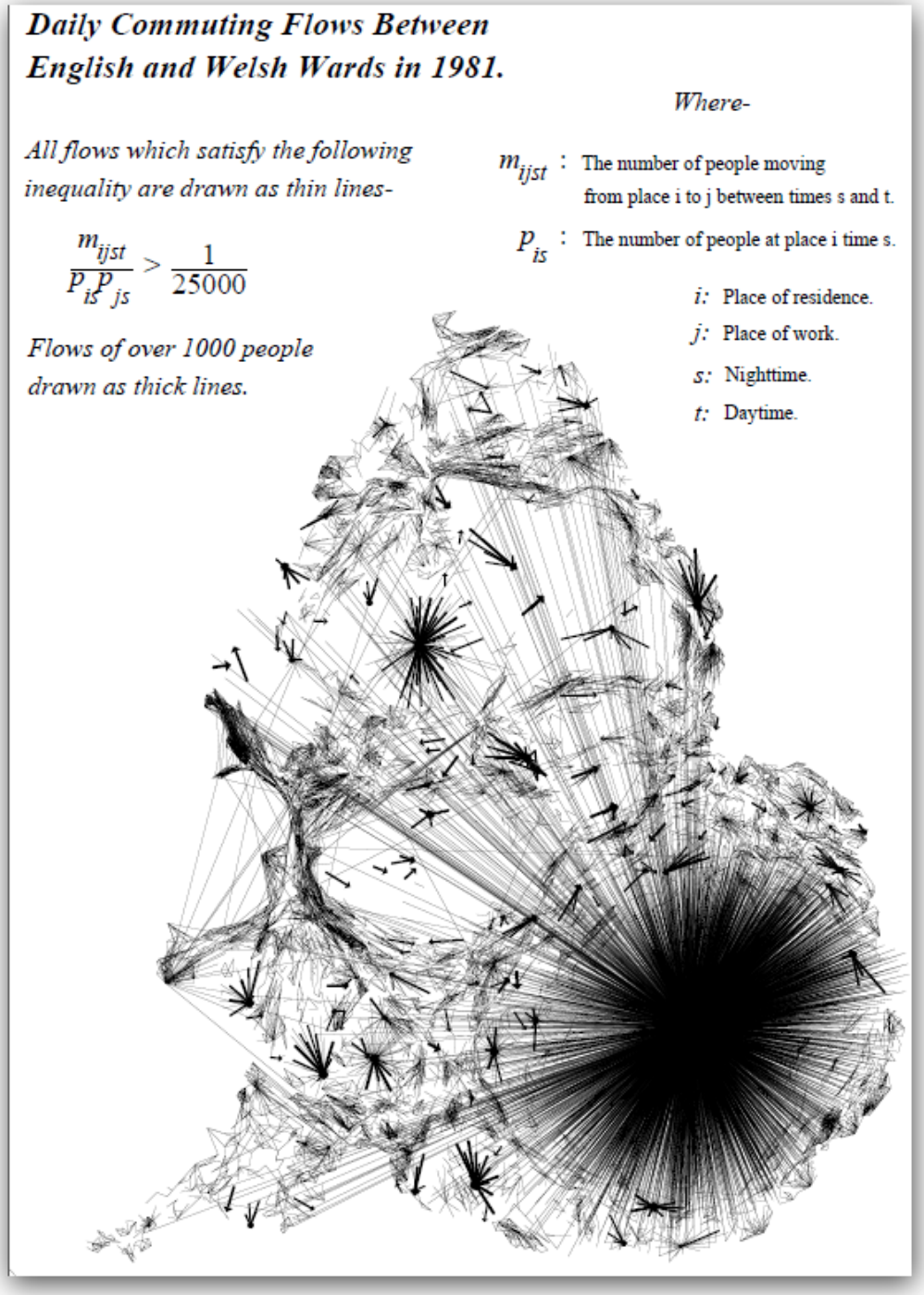


Source: Source: Population in prison establishments under sentence the number in prison on the 30th June 2009, www.justice.gov.uk and Office for National Statistics mid-year estimates for England and Wales.

The United Kingdom's incredibly uneven social outcomes, from spending a great deal on the highest prison population of Western Europe, to spending the most on the smallest group of pupils who get to the top, results in a population often polarised between people with degrees and those with very few qualification. In recent years some of the gaps in the middle were improved (GCSE divisions narrowed around the median child), but step back and we are a very divided set of nations. We also have a very odd geography, which is become odder, partly because of these growing social divides as the penultimate two figures show.

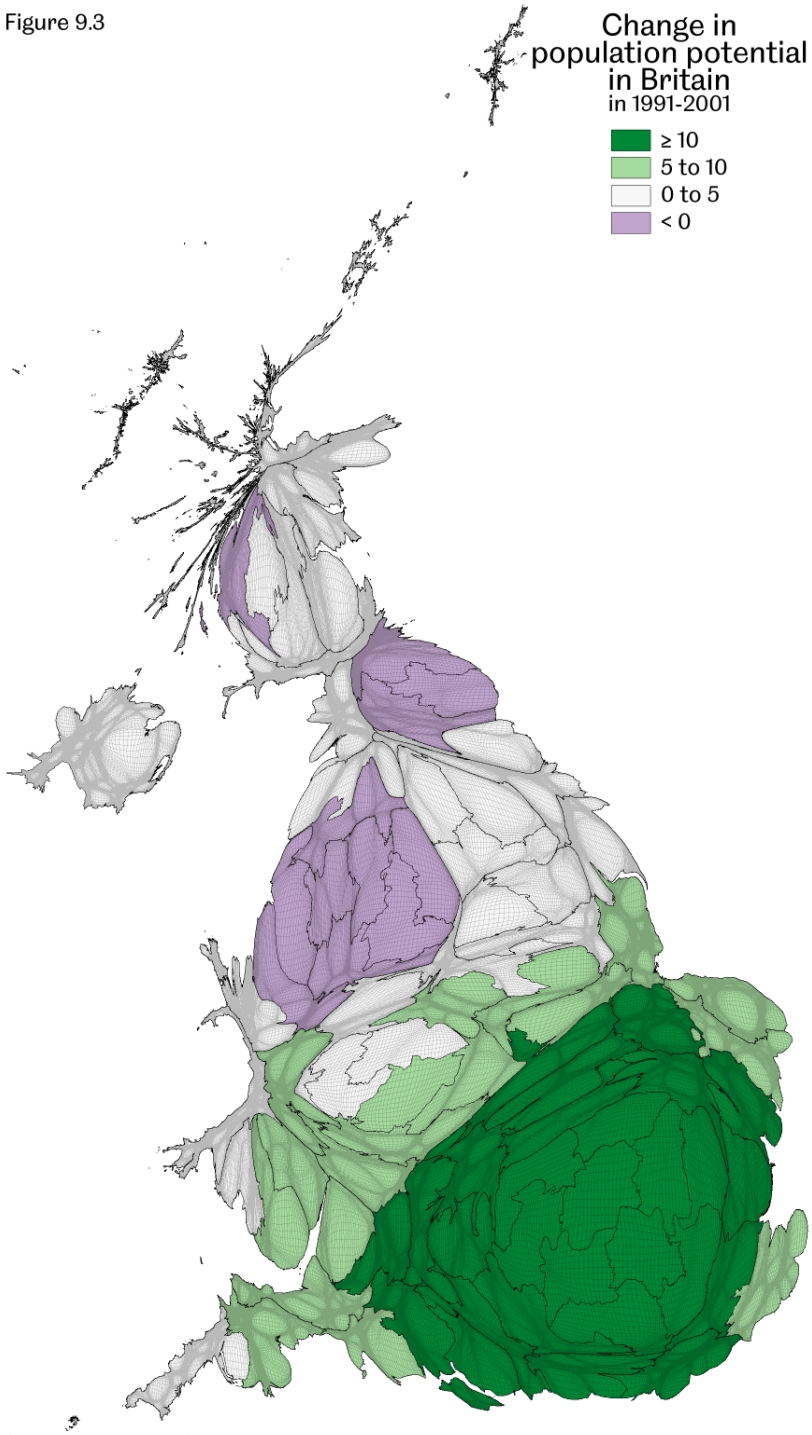
London has dominated national commuting patterns since at least the early 1980s and throughout the 1990s its population swelled as elsewhere population numbers fell (see Figures 12 and 13). Population potential is a measure of how near a group of people lives to all the other groups of people in the country. In figure 13 the groups being mapped are the old European constituencies that were created in the year 1999 but never used for voting purposes. They have the statistical advantage of being designed to hold populations of similar sizes

Figure 12: This image, partly by fluke, shows just how important London is to the UK



Source Dorling, D. (2012) The Visualization of Social Spatial Structure, Chichester: Wiley. Figure 6.14, page 189. Note Scotland and Northern Ireland are not shown at all, the data was not available at the time of drawing, but if they were it would not alter the image very much.

Figure 13: Population growth and decline across Britain during the 1990s



Source: UK population Censuses 1991 and 2001, population potential calculated for this book by local authority (see Figure 9.3), 1991 statistics substracted from 2001 and a population-weighted mean shown

Dorling, D. (2013) The Population of the UK, London: Sage, Figure 9.3, Page 152, Cartography by Benjamin Hennig.

What is to be done?

I have run out of space and time to say more about how personal and national debt rises as inequalities increase, how violence in general becomes both more common and more acceptable, and how what might be called collective stupidity is more usual under more inequitable circumstances (Dorling, 2010). But in conclusion most people don't want an even longer list of problems; they want to know what is to be done. However, it is far easier to make mistakes when planning for the future, even when armed with numerous facts, than in almost any other endeavour with statistics. For example, there are better reasons to safeguard children and maternity than attempting to increase the population:

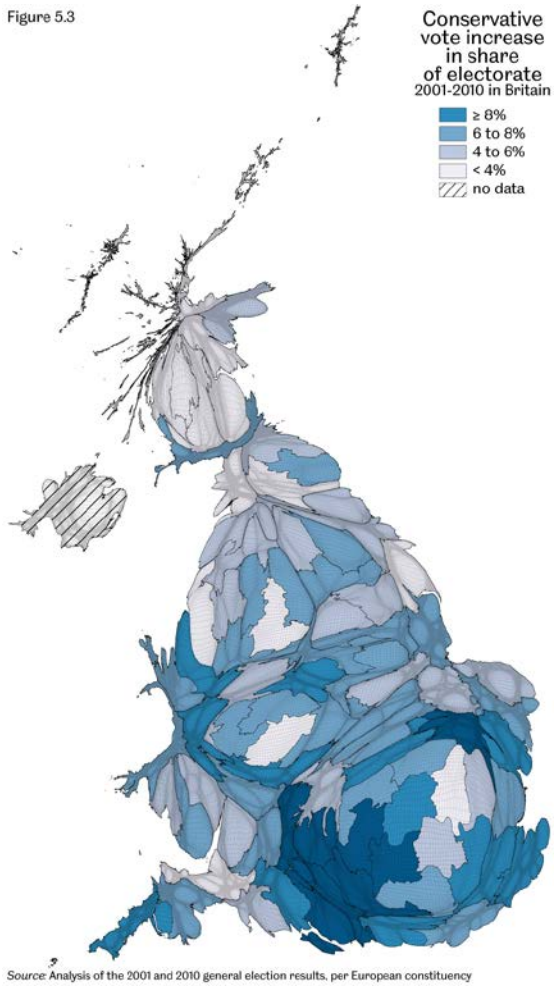
"… facts … should dominate planning for [the] future … the low reproduction rate of the British community today: unless this rate is raised very materially in the near future, a rapid and continuous decline of the population cannot be prevented ... [which] makes it imperative to give first place in social expenditure to the care of childhood and to the safeguarding of maternity" (Beveridge, 1942: point 15 of introduction)

On what is to be done, it is again worth looking to our past and understanding that progress has always been about shifting the balance of power, moving at least some of the wealth and power from the rich to the poor, reducing inequalities, from the extension of the voting franchise (to falling turnout), to the growing (and then shrinking) protection of Trade Union rights, to increased (and then decreased) protection from eviction, spreading (and then narrowing) educational privilege (as numbers entering university now start to drop). The development of Beveridge's welfare state was a high point in this story. Where we are now is hopefully a low point, and not part of the slope of a worsening trend to come.

On what is to be done, it is always worth looking abroad. For the English this increasingly also means to Scotland, Wales and Northern Ireland. The New President of France has declared that no one in the public sector, including part-state-owned companies, should be paid more than twenty times more than anyone else (Chrisafis, 2012a). If the same measure were enacted in the UK, including legislation forbidding tax-payers' money to be wasted on sub-contracting firms paying in excess of that ratio, the amount of money saved could be

staggering. Bringing the very highest paid single employee's salary down to twenty times that of the lowliest paid person in the company (including any sub contracted staff) curtails salary rises immediately below that person. It simultaneously encourages those at the top to improve pay at the very bottom. The waste of money that is currently made in funding extravagant senior salaries is shocking. It is no wonder there is not enough left to employ a million youngsters under the age of 25 any more. However, as the country polarises socially in almost every way it can it also polarises politically. The largest rises in voting for the Conservative party between 2001 and 2010 were in those areas where such voting was highest to begin with (Figure 14). Politically we are polarising too. Voter segregation by area is now great than it was in even in the 1922 General Election (Dorling, 2010).

Figure 14: Voting 2010



Dorling, D. (forthcoming) The Population of the UK, London: Sage Figure 5.3, Cartography by Benjamin Hennig.

On what is to be done it is worth using your imagination. A 20:1 ratio could rapidly bring that 40% share of the top 10% down (unless the top 10% adopted a far flatter pay structure). Much of the public sector, the police, army, local authorities, many health authorities, many schools and most universities are already within that 20:1 ratio; when a head teacher's (or any other top official's) salary inches upwards faster than the rest of the staff, it encourages inequalities to rise elsewhere. The public sector can ape the far higher inequalities of the private sector, some of which is funded by the tax payer who, for example, pays for accountancy firms to audit parts of the state.

The majority of inequality in the private sector is not tax-payers sponsored but is paid for either by consumers with higher prices or by taking money away from the wages of other employees. Imagine how much someone who thinks they are worth a high salary must respect someone who is worth less than a twentieth of that. The Royal Statistical Society was awarded a royal charter during Victoria's jubilee, during Elizabeth's jubliee we learnt this on those people forced to 'volunteer' and to camp under London Bridge:

"…some volunteers chose not to be paid because it would have affected their jobseeker's benefit claims. But no sentence is as telling as this: "On investigation this morning the majority of the team who worked the event were fed and looked after as best possible under the circumstances." She talks about these people as if they're livestock. They might bellow a bit when they get wet, but they were definitely fed." (Williams, 2012)

It is when inequalities rise that we begin to treat each other most badly. In the United States it is then that the murder rates rise fastest (Gilligan, J, 2011). The suicide rate rises too with growing callousness (Shaw et al. 2002). Inequality has been with us for as long as we have had cities, but its level has risen and fallen according to our actions. During the Roman occupation of Britain variations in diet between the Romans and those they ruled resulted in the stunting of the skeletons of poorer groups. It was not just that the poor ate less well, the amount of labour demanded of different social groups will have varied also. This will have contributed to the stunting measured from their skeletal remains.

Living under tyranny not only reduces the number of necessities and luxuries you have in life, it also damages self-resolve and self-respect, but resolve and respect are harder to measure, especially from the archaeological record. Poorer groups can be identified as being people with fewer grave furnishings. Examination of dental remains from a cemetery near Baldock (mentioned at the very start of this as where George Orwell put pen to paper when in England in eth late 1930s) recently revealed that those with fewer possessions at the time of death suffered more from disease during life (Griffin et al. 2011). But Roman occupation eventually ended. All regimes come to an end. In some ways we in Britain have been living under different way of thinking, a new regime, since 1979 (see Figure 1).

In 1999 the Prime Minister, Tony Blair, set out the commitment to end child poverty in the UK, forever, within a generation (Walker, 1999). He argued that this was the first time in history that it could be done and that it should be done. In the ten years that followed the share of income of the richest 1% rose from 12.5% to 13.88% of all income, the share of income of the bottom 90% fell from 61.03% to 59.57%. Within the bottom 90% monies were redistributed to reduce child poverty as inequality overall rose, but by 2012 attempts were being made to change the statistical definitions of a poor child rather than end child poverty. That is an example of what will happen if we become more unequal.

I hope that as the 9% begin to realise they have more in common with the 90% that the tide of increasing inequality will turn. Remember it has not always been the case that inequality always rises, and is not so every everywhere. Greater equality is not an unobtainable goal, it is a direction to which it is possible to turn and towards which we may be turning now, but which we have to carry on turning towards for many years to come if we are to become at all like a normally unequal affluent nation again.

If you need one last reason to argue to reduce inequality then start to worry about running low on boys. During times of stress, which includes high economic inequality, fewer boys are born. As fewer boys tend to survive through to adulthood you find a surplus of women increases during unequal times. Recently Obel et al. (2007) found that in Denmark even a slight increase in stress was likely to decrease the proportion of male babies that were born to Danish speaking women. Subbaraman, *et al.* found the same for African American women in the USA in 2010. It has also just been confirmed for China (Song, 2012). Recent data from Cuba was thought to counteract this relationship (Fernández et al 2011), but a vigilant

statistician found that this was in fact due literally to a lack of glue needed to hold together the birth registration forms (Simpson, 2012). Finally, parents of daughters are known, for almost completely unknown reasons, to be more likely to vote left wing (Oswald and Powdthavee, 2006, 2010) and so there is a homeostatic mechanism in place, but surely we don't have to rely on nature so pitifully, we must be able to do better than that!

Conclusion and lessons from the Past

There is a town called Rangpur by the Ghāghāt River in a land that is now called Bangladesh. In 1879, a boy was born in Rangpur. And a few years later he gained a sister, Jeanette. In the years after the boy we are considering was born there was a terrible economic depression in Britain, so bad that a new word was created in 1888, when the boy was aged 9, that word was 'unemployment'.

This was progress, because 'unemployment' implied intervention, but poverty was still disputed – Charles Booth disputed it and undertook a survey of London. He engaged a young lady called Beatrice Potter to help him (and many school board inspectors – people normally employed now to check children were in school).

In 1892 (when the boy was aged 13) at the AGM of the Royal Statistical Society exactly 120 years before this talk was given Charles became president of the RSS. The Royal Statistical Society had awarded the 'Guy Medal in Gold' to Charles Booth, that wealthy shipowner who sponsored surveys which found, for instance some, 25,000 children in Liverpool neither in school nor work. Surveys that had resulted in those jobs for school board inspectors being created.

At around that time our child and his younger sister came, as immigrants, to the damp cold island of Britain. Our boy had a very different start in life than most children from Rangpur do who emigrate to Britain. Rather than Tower Hamlets he ended up in Charterhouse and Balliol. Meanwhile Charles' assistant, Beatrice potter married a man could Sydney Webb and they began the Labour party.

In 1899, while that boy, William Beveridge, was studying in Oxford aged 20, Booth, at age 52 was elected a Fellow of the Royal Society "*as having applied Scientific Methods to Social Investigation*". Ten years later Booth protégée, Beatrice would issue the minority report in 1909 against the poor law, helped by William who she had recruited as a young researcher.

Williams' sister –Jeannette meanwhile would marry a boy, Richard, a year older than her brother who was also an immigrant, from Calcutta. Richard travelled via, Rugby to Balliol, like William he was another member of the 0.1%. Together with William, Richard Tawney had lived in Toynbee Hall for a few years after leaving Oxford. Richard was injured in the first day of the battle of the Somme, he spent 30 hours in no man's land. He is best know now for his book on Equality (1931). I can't help think that Jeannette and Richard had a great influence on William. William became president of the Royal Statistical Society in 1941 (a few years after Major Greenwood's presidency of 1834, whose words on not being a prig are quoted at the very start of this paper).

Before William was asked to chair the 1942 committee that would write the report that he is best known for, the report issued 70 years ago this year, the report that finally killed off the poor law in 1948, he was on the look-out for a research assistant. He recruited a young Oxford graduate called Harold. Harold would later become Prime Minister, and, in 1966 he gave this lecture. Harold Wilson became president of the society in 1972. In turn Harold appointed Claus Moser to the Central Statistical Office in 1967. Claus became President of the Royal Statistical Society in 1978. For that entire period inequalities fell, but the legacy ends there: Booth – Potter/Webb – Beveridge – Wilson – Moser.

I would challenge the Royal Statistical Society to go back to its roots, and over a century of its history, to engage more again on today's key social issues - such as inequality and poverty. Many people I am sure would help. One the largest surveys of poverty in Britain is again being carried out, but involvement by the RSS is minimal, it is being lead by Professor David Gordon and many of his colleagues at the University of Bristol.

There is a census about to be released. But it could be the last. There are many moves a foot to stop counting and measure, challenging and confronting. There are moves to bring back the poor law, even. And you have a society which has had the historic remit apply scientific methods to social investigation including issue of mortality, fairness and justice. I think you are needed.

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Appendix Table 1: Source for Figure 1 and 2, interpolated values are shaded.

	Ratio of income to average income				%share of total national income			
	1 in 10,000	1 in 1,000 less 0.01%	1 in 100 less 0.1%	1 in 10 less 1%	0.01%	0.10%	1%	10%
1910	418	68.7	13.27	2.236	4.18	11.05	24.33	46.69
1911	419	68.9	13.30	2.241	4.19	11.08	24.39	46.80
1912	415	68.3	13.18	2.220	4.15	10.98	24.15	46.35
1913	425	69.9	13.49	2.273	4.25	11.24	24.73	47.47
1914	404	66.7	12.88	2.169	4.04	10.71	23.59	45.28
1915	407	67.0	12.93	2.179	4.07	10.77	23.70	45.49
1916	400	64.7	12.49	2.104	4.00	10.47	22.96	44.00
1917	352	57.4	11.08	1.867	3.52	9.26	20.34	39.01
1918	321	54.7	10.56	1.779	3.21	8.68	19.24	37.03
1919	332	56.6	10.61	1.914	3.32	8.98	19.59	38.73
1920	294	50.9	11.99	2.163	2.94	8.03	20.02	41.66
1921	290	51.8	12.20	2.202	2.90	8.08	20.28	42.30
1922	323	58.4	13.76	2.482	3.23	9.07	22.83	47.65
1923	334	59.5	14.02	2.529	3.34	9.29	23.31	48.60
1924	323	58.2	13.71	2.474	3.23	9.05	22.76	47.50
1925	313	56.6	13.34	2.406	3.13	8.79	22.13	46.18
1926	307	56.0	13.19	2.380	3.07	8.67	21.86	45.66
1927	301	54.8	12.91	2.329	3.01	8.49	21.40	44.69
1928	304	55.0	12.96	2.338	3.04	8.54	21.50	44.87
1929	293	54.0	12.72	2.295	2.93	8.33	21.05	44.00
1930	271	51.0	12.02	2.168	2.71	7.81	19.83	41.50
1931	244	47.3	11.14	2.010	2.44	7.17	18.31	38.42
1932	232	45.5	10.72	1.934	2.32	6.87	17.59	36.93
1933	224	45.1	10.63	1.917	2.24	6.75	17.38	36.54
1934	223	45.5	10.72	1.934	2.23	6.78	17.50	36.84
1935	235	46.1	10.86	1.959	2.35	6.96	17.82	37.41
1936	235	46.8	11.03	1.989	2.35	7.03	18.06	37.95
1937	218	44.1	10.39	2.139	2.18	6.59	16.98	38.37
1938	221	43.6	10.27	2.112	2.21	6.57	16.84	37.96
1939	213	42.2	9.94	2.128	2.13	6.35	16.29	37.57
1940	184	38.3	9.02	2.144	1.84	5.67	14.69	36.14
1941	157	34.3	8.08	2.160	1.57	5.00	13.08	34.68
1942	137	30.7	7.23	2.176	1.37	4.44	11.67	33.44
1943	128	29.5	6.95	2.192	1.28	4.23	11.18	33.10
1944	122	29.1	6.86	2.208	1.22	4.13	10.99	33.07
1945	123	30.0	7.07	2.224	1.23	4.23	11.30	33.54
1946	127	32.1	7.56	2.240	1.27	4.48	12.04	34.45
1947	114	29.6	6.97	2.257	1.14	4.10	11.07	33.64
1948	105	28.1	6.62	2.273	1.05	3.86	10.48	33.21
1949	94	25.1	5.91	2.289	0.94	3.45	9.36	32.25
1950	96	26.3	6.20	2.250	0.96	3.59	9.79	32.29
1951	85	23.6	7.68	2.212	0.85	3.21	10.89	33.01
1952	77	21.8	7.25	2.173	0.77	2.95	10.20	31.93
1953	70	20.7	6.95	2.135	0.70	2.77	9.72	31.07
1954	67	20.5	6.95	2.096	0.67	2.72	9.67	30.63
1955	68	19.7	6.65	2.255	0.68	2.65	9.30	31.85
1956	61	18.1	6.33	2.146	0.61	2.42	8.75	30.21
1957	59	17.8	6.33	2.146	0.59	2.37	8.70	30.16
1958	60	17.8	6.38	2.163	0.60	2.38	8.76	30.39

1959	60	17.0	6.30	2.136	0.60	2.30	8.60	29.96
1960	63	18.2	6.42	2.189	0.63	2.45	8.87	30.76
1961	60	17.6	6.28	2.141	0.60	2.37	8.65	30.06
1962	58	17.1	6.14	2.094	0.58	2.29	8.43	29.37
1963	57	16.6	6.26	2.145	0.57	2.23	8.49	29.94
1964	58	16.8	6.22	2.143	0.58	2.26	8.48	29.91
1965	62	16.6	6.27	2.133	0.62	2.28	8.55	29.88
1966	52	15.2	5.88	2.102	0.52	2.04	7.92	28.94
1967	51	14.0	5.78	2.109	0.51	1.91	7.69	28.78
1968	47	14.0	5.67	2.101	0.47	1.87	7.54	28.55
1969	47	13.8	5.61	2.126	0.47	1.85	7.46	28.72
1970	42	12.2	5.41	2.177	0.42	1.64	7.05	28.82
1971	40	12.7	5.35	2.227	0.40	1.67	7.02	29.29
1972	37	12.4	5.33	2.196	0.37	1.61	6.94	28.90
1973	40	12.8	5.31	2.132	0.40	1.68	6.99	28.31
1974	37	12.1	4.96	2.156	0.37	1.58	6.54	28.10
1975	31	10.9	4.70	2.172	0.31	1.40	6.10	27.82
1976	30	10.0	4.59	2.200	0.30	1.30	5.89	27.89
1977	28	9.9	4.66	2.203	0.28	1.27	5.93	27.96
1978	28	9.6	4.48	2.206	0.28	1.24	5.72	27.78
1979	31	9.9	4.63	2.244	0.31	1.30	5.93	28.37
1980	34	10.7	4.88	2.338	0.34	1.41	6.29	29.67
1981	36	11.7	5.14	2.436	0.36	1.53	6.67	31.03
1982	38	12.3	5.24	2.438	0.38	1.61	6.85	31.23
1983	38	12.0	5.25	2.493	0.38	1.58	6.83	31.76
1984	40	12.7	5.49	2.536	0.40	1.67	7.16	32.52
1985	43	13.9	5.58	2.525	0.43	1.82	7.40	32.65
1986	44	14.2	5.69	2.539	0.44	1.86	7.55	32.94
1987	55	17.7	5.46	2.549	0.55	2.32	7.78	33.27
1988	61	19.6	6.06	2.558	0.61	2.57	8.63	34.21
1989	62	19.7	6.08	2.548	0.62	2.59	8.67	34.15
1990	70	22.3	6.88	2.710	0.70	2.92	9.80	36.90
1991	73	23.4	7.24	2.733	0.73	3.08	10.32	37.65
1992	70	22.4	6.92	2.778	0.70	2.94	9.86	37.64
1993	74	23.5	7.27	2.798	0.74	3.09	10.36	38.34
1994	74	23.6	7.50	2.773	0.74	3.10	10.60	38.33
1995	77	24.7	7.51	2.776	0.77	3.24	10.75	38.51
1996	98	31.5	7.77	2.740	0.98	4.13	11.90	39.30
1997	99	31.6	7.92	2.687	0.99	4.15	12.07	38.94
1998	106	33.8	8.09	2.694	1.06	4.44	12.53	39.47
1999	108	34.6	7.97	2.646	1.08	4.54	12.51	38.97
2000	111	35.3	8.03	2.576	1.11	4.64	12.67	38.43
2001	108	34.3	8.20	2.662	1.08	4.51	12.71	39.33
2002	101	32.1	8.05	2.642	1.01	4.22	12.27	38.69
2003	101	32.2	7.89	2.563	1.01	4.23	12.12	37.75
2004	109	34.8	8.32	2.665	1.09	4.57	12.89	39.54
2005	124	39.5	9.06	2.737	1.24	5.19	14.25	41.62
2006	132	42.3	9.27	2.717	1.32	5.55	14.82	41.99
2007	144	46.1	9.39	2.717	1.44	6.05	15.44	42.61
2008	133	42.3	9.07	2.686	1.33	5.56	14.63	41.49
2009	122	38.9	8.77	2.655	1.22	5.11	13.88	40.43
	Ratio of income to average income				%share of total national income			

Source: World Top Income dataset as of June 2012, Atkinson, A.B. (2007). The Distribution of Top Incomes in the United Kingdom 1908-2000; in Atkinson, A. B. and Piketty, T. (editors)

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Appendix Table 2:

Table 10.2: Standarised mortality ratios (SMRs) of decline and relative index of inequality (RII), Britain by area, 1921-2007*.

SMR 0-64	1921-30	1931-39	1950-53	1959-63	1969-73	1981-89	1990-98	1999-2007
Tenth of standardised mortality ratio:								
1 (worst)	138	136	131	136	131	137	149	149
2	122	120	118	123	116	120	123	123
3	113	112	112	117	112	114	114	115
4	108	106	107	111	108	108	108	109
5	104	103	103	105	103	102	99	101
6	97	97	99	97	97	96	94	95
7	90	89	93	91	92	92	91	90
8	83	85	89	88	89	89	86	83
9	78	81	86	83	87	84	78	77
10	72	73	82	77	83	79	73	70
Ratio of worst to best	1.91	1.85	1.60	1.76	1.58	1.74	2.04	2.12
RII	2.50	2.35	1.96	2.25	1.92	2.17	2.64	2.79

* Data series is not continuous, with no data for the 1940s and gaps in mid-'50s, mid-'60s, and from early '70s to early '80s; nor are time periods always of equal duration. For 1980, we used the harmonic mean of decile SMRs for the two periods of which it was composed (1981-5 and 1986-9).

Note: Confidence interval in original paper.

Source: Thomas et al. 2010