Measuring Inequalities In Health

ARE INEQUALITIES IN HEALTH INCREASING?

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When the Black Report on Inequalities in Health was submitted to the Tory Secretary of State for Health in 1980, a primary reason for its attempted suppression was undoubtedly the conclusions that it reached concerning trends in inequality. Looking at the period 1930-32 to 1970-72, the general pattern that emerged was that inequalities had been at their narrowest during the Second World War and had opened up considerably since. The damning implication of this for Tory philosophy is considerable. The notion that unplanned capitalist economic development is the motor for the social improvement of all classes within capitalist society seems a rather partial view when you consider that it was at precisely the time that we were being told that "we'd never had it so good" that just how good you were having it depended most materially on your class membership.

Understandably then, it has been this finding with respect to trends that has provoked the severest examination and debate since the Report's publication. But before getting into the technicalities it's probably worth just underlining the points on which everybody is agreed. Nobody denies that in absolute terms standards of health, measured in almost every way, have continued to improve over the period of study. (Why this has happened is not agreed). Equally, nobody denies that social inequalities in health persist. (Again, why is not agreed). The critical point of argument is whether inequalities are widening or decreasing.

The most recent protagonist of the narrowing inequalities thesis has been Julian Le Grand, health economist from the London School of Economics. At a joint meeting of the Royal Statistical Society (Medical Section) and the Society for Social Medicine held in June of last year, he presented a paper: Inequalities in Health: The Human Capital Approach,

in which, amongst other things, he attempted to refute the notion that there had in fact been the increases reported in the Black Report. At the risk of oversimplifying Le Grand's thesis, it ran as follows. Le Grand rejected the notion of measuring inequalities between classes. He argued that the changing nature of class definitions, their agreed inadequacy for capturing the true extent of social stratification, and their tenddency to prejudge the outcome of the debate (essentially, he asserted, they were fixed to give the right result) rendered them worthless. Instead, Le Grand proposed to concentrate on measures of individual differences. To do this, he employed a series of Gini Coefficients and Gini-based Coefficinets to measure the extent to which there had been changes in absolute individual differences in mortality rates. He claimed to show that, rather than increasing, Gini Coefficients between 1931 and 1971 exhibited substantial decreases.

The papers for the meeting were pre-circulated. Potential contributors to the debate were invited to indicate their intention. Together with Alex Scott-Samuel, I notified the organisers that we had a response we wished to make. Before the general contributors, though, two invited discussants were asked to respond. These were Klim McPherson and Rudolf Klein. Klein concentrated on the other paper being presented - by Nicky Hart entitled Inequalities in Health: The Sociological APproach -but Klim had a few interesting things to say about Le Grand's analysis and particularly his use of the Gini Coefficient.

Essentially, Klim argued that the Gini coefficient, central to Le Grand's thesis, behaved statistically in a similar fashion to the coefficient of variation, which is computed by dividing the standard deviation by the mean. A moment's thought reveals that in a situation

where the mean is increasing, viz. life expectancy over the period studied by Le Grand, the coefficient will decrease even if absolute variation, as measured by the standard deviation, remains constant. Thus, Le Grand's analysis could be demonstrating no more than that there had been an increase in longevity - not an altogether startling revelation.

Our own contribution was aimed not so much at the technical procedures employed by Le Grand, as at his underlying methodology. It ran as follows:

Contribution to the Discussion at the Joint Meeting of the Royal Statistical Society (Medical Section) and the Society for Social Medicine on Public Controversies and Scientific Evidence, Tuesday June 25th, 1985

SOCIAL INEQUALITIES IN HEALTH AND HEALTH CARE

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We would like, for the brief five minutes allotted to us, to concentrate on the paper of Julian Le Grand. Le Grand endeavours to demonstrate the contribution of the economists individualist approach to the controversial subject of Social Inequalities in Health and Health Care. It seems to us that, in fact, he merely exposes how little that particular discipline has to offer on this extremely important area of study.

Le Grand opens with a detailed consideration of the inadequacy of the Registrar General's occupational classifications as a basis for a description of social stratification. His comments are fairly unexceptionable and cover well trodden terrain. Indeed, it is interesting to reflect that prior to the publication of the Black Report it was Marxist sociologists who were most critical of this particular operational tool. Since the publication of the Report a whole new school of academics, arguing from a somewhat different political stance, have suddenly discovered its deficiencies.

Not unreasonably then, Le Grand adopts not to employ this particular categorisation. Rather, he adopts no categorisation at all. Instead, and explicitly in keeping with his ecomists tradition, he concentrates on "inequalities between individuals rather than between groups".

It is at this stage, we would suggest, that Le Grand would appear to have completely missed the point of the whole exercise - and particularly the reason why it is an area of great controversy. He has, in short, thrown out the baby with the bath water. There is surely a whole world of difference between generalised variability within a society (the object of Le Grand's analysis) and a systematic variability based on social stratification within a society.

To make the point more clearly, consider the following illustration. Here (Diag 1.) we have a fairly characteristic hypothetical distribution of mortality by age. In case a.(Diag 2.) we have a society where membership of social class plays no part in determining life expectancy. In case b. (Diag 3.) life expectancy is totally determined by membership of social class. Le Grand's individualistic indicator of variability permits no distinction between the two situations. It would therefore appear a little irrelevant when the precise object of the exercise is to determine the extent of systematic variation between societal groups and the implication that this has for the distribution of health.

Le Grand appears to place great stress on the existence of variation in health experience within social groups, and the overlap in this variation between social groups. This would seem to be saying little more than that we are not in case b. - not a particularly remarkable discovery.

The agreed inadequacy of the Registrar General's classification of social class - and the extent to which inequalities in health are discernible using this inadequate tool - might more logically lead one down a different pathway, to attempt to develop more adequate indicators of social stratification. There is much a priori evidence that the search would not be in vain. Let us draw upon the current

work of one of us (C.T.) engaged, on a period of secondment to the Environmental Health Department of the Sheffield City Council, in an analysis of social inequalities in health in the City of Sheffield.

Sheffield is a City with a distinct social geography. It is possibly the most territorially divided City in Britain. Geography alone provides a good a priori indicator of social stratification. A ward by ward analysis of mortality shows, for men, a difference in standardised life exoectancy of over eight years between the most affluent and the most deprived. From this it is possible to tentatively conclude that the crude social geography of Sheffield provides a more clearly attentuated delineator of social stratification than the Registrar General's occupational categorisation. in other words, the full social variations may be far greater than implied by the Decennial Supplement

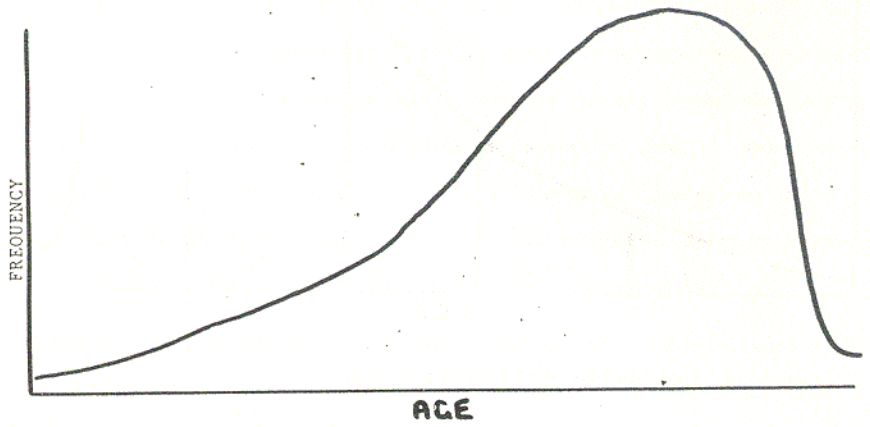
We would like to now address the technical procedure employed by Le Grand to capture mortality experience at any particular point in time. We would agree that age specific death ratios (ASDRs) for a given year tell us very little about changing mortality experiences. However, his method for calculating rates for birth cohorts where some members are still alive is unacceptable. While it may not introduce much error to assume that the ASDR of 1 year olds born in 1985 (i.e. the 1986-7 ASDR for 1 year olds) (Diag.4.) will be that which applied to children who were 1 year old in 1985, it is clearly much more open to error to assume that the ASDR of 50 year olds born in 1985 (i.e. the 2035-6 ASDR for 50 year olds) will be that which applied to 50 year olds in 1985 - who, amongst other things, experienced World War II and the introduction of antibiotics, etc. It is conjecture what 50 year olds still alive in 2035-6 may have experienced - Embryo transfer, sex determination, cloning, World War III? The error introduced by making this assumption clearly increases with age; and the assumption itself totally disregards the unique life experiences of different birth

cohorts, which are the whole purpose of using them.

This could, of course, be confirmed using historical data for completed birth cohorts (e.g. comparing ASDRs between the 1860 and 1880 cohorts) or for specific age bands within more recent birth cohorts (e.g. comparing ASDRs for 6-10 year olds born in 1941 and 1971).

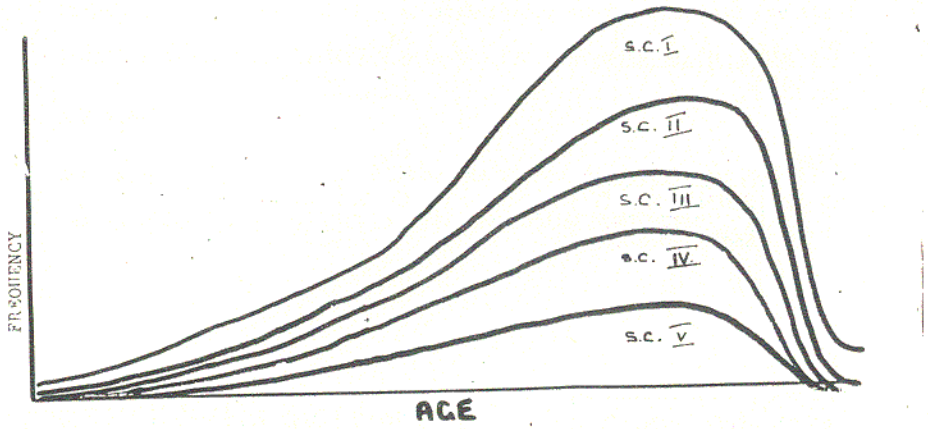
Lastly, we would like to make a brief passing comment on a passing comment of Le Grand's. On p.16 of his paper, he argues, comparing gini coefficients for health inequalities and coefficients for the distribution of personal income and wealth, that "the health stock component of human capital is much more equally distributed than non-human capital". Why is this "an interesting possibility"? It would be an extremely perverse society which demonstrated a linear 'return to scale' between inequality in material wealth and inequality in health. That we don't live in a society which is quite that perverse shouldn't lead us to lessen our concern at existing inequalities and their implications for health.

Diagram 1.



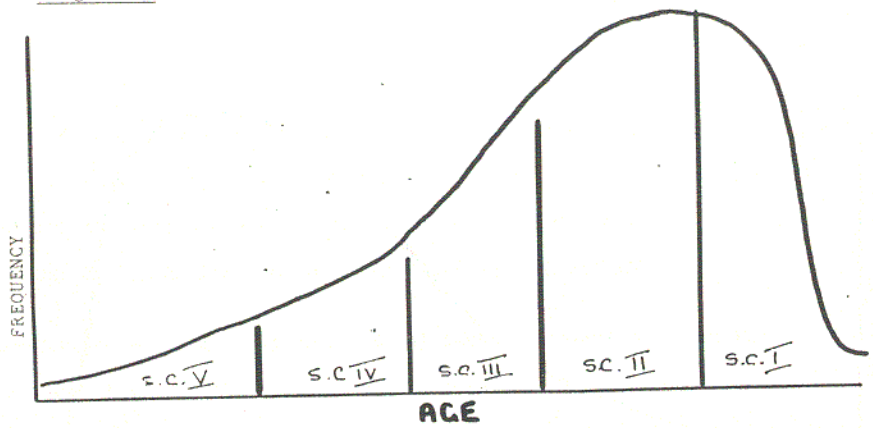
Hypothetical Distribution of Mortality by Age

Diagram 2.



Hypothetical Distribution of Mortality by Age
Case a: Stratified horizontally by social class

Diagram 3.



Hypothetical Distribution of Mortality by Age

Case b: Stratified vertically by social class

Diagram 4.

Mortality of U.K. Pop. in 1985.

Age	
0 - 1	BORN 1984 - 5
1 - 2	BORN 1983 - 4
50 - 51	BORN 1934 - 5

Mortality of 1985 U.K. birth cohort.

Age	
0 - 1	DIED 1985-6
1 - 2	DIED 1986-7
50 - 51	DIED 2035 - 6

POSTSCRIPT

Ironically, since the meeting in June, Alex Scott-Samuel, a prodigous accumulator and disseminator of deeply buried treasures, has unearthed a parallel set of discussion papers, centred loosely around the International Union for the Scientific Study of Population (IUSSP), which use Gini-based measures of class inequality to come to conclusions quite contrary to those of Le Grand, that is, supporting the original contentions of the Black Report. The interested reader is referred to:

Preston S.H., Haines M.R. and Pamuk E. Effects of Industrialization and Urbanization on Mortality in Developed Countries. International Union for the Scientific Study of Population, Conference in Manila, 1981, part 2: 233-254. Imprimerie Derouaux, Leige 1981.

Pamuk E. Social Class Inequality in Mortality from 1921 to 1972 in England and Wales, Population Studies, 39(1985), 17-31.

Koskinen S. Time Trends in Cause - Specific Mortality by Occupational Class in Englend and Wales - An exploratory study. Prepared for the IUSSP XX General Conference, June 5 - 12, Florence, Italy, 1985

and also:

Roy Carr-Hill's piece on Distribution of, or Inequality in Health in the last but one issues of Radical Statistics Newsletter.