

# Measuring the Poverty Line

David Gordon and Peter Townsend

The Government's suppression and manipulation of the official 'Poverty' statistics is well known to Radical Statistics readers (Radical Statistics, 45, pp 10). The right wing of the Tory Party see the concept of 'Poverty' as an attack on their ideology.

John Moore (who was minister for Social Security) in his speech on 11/5/89 in St. Stephen's Club claimed that poverty as most people understood it had been abolished and that critics of the government's policies were:

*"not concerned with the actual living standards of real people but with pursuing the political goal of equality ... We reject their claims about poverty in the UK, and we do so knowing that their motive is not compassion for the less well-off, it is an attempt to discredit our real economic achievement in protecting and improving the living standards of our people. Their purpose in calling 'poverty' what is in reality simply inequality, is so they can call western material capitalism a failure. We must expose this for what it is . . . utterly false.*

- it is capitalism that has wiped out the stark want of Dickensian Britain.
- it is capitalism that has caused the steady improvements in living standards this century.
- and it is capitalism which is the only firm guarantee of still better living standards for our children and our grandchildren."

Mr. Hickey the Assistant Secretary for Policy on Family Benefits and Low incomes at the DHSS made the point less rabidly when he gave evidence to the Select Committee on Social Services on the 15/9/89 he stated:

*"The word poor is one the government actually disputes."*

The manipulation of the official statistics and this ideological assault on the concept of poverty makes it important to establish the existence of a poverty line/threshold and to identify the considerable number of people below this level.

## The Concept of Poverty.

The 'right' often try to confuse the concept of inequality (of which they are in favour) with the concept of poverty (which they claim to be against). Despite the fact that the two concepts are independent. Their claims of the abolition of poverty are based on the abuse of the 'subsistence' idea adopted by Beveridge in the 1940's as the basis for the setting of new benefit rates. Beveridge stated, *"In considering the minimum*

income needed by persons of working age for subsistence during interruptions of earnings, it is sufficient to take into account food, clothing, fuel, light and household sundries, and rent, though some margin must be allowed for inefficiency in spending (Beveridge Report, 1942, pp 84-85)." Only about 6 per cent of the total estimated requirements was allowed for in this 'margin'.

The subsistence approach to the definition of poverty is one which may be said to be dominated by the individual's requirements for physiological efficiency, but this is a very limited conception of human needs, especially when considering the roles men and women play in society. People are not just physical beings, they are social beings. They have obligations as workers, parents, neighbours, friends and citizens which they are expected to meet and which they themselves want to meet. Studies of people's behaviour after they have experienced a drastic cut in resources show that they sometimes act to fulfil their social obligations before they act to satisfy their physical wants. They require income to fulfil their various roles and participate in the social customs and associations to which they have become habituated, and not only to satisfy their physical wants (Townsend and Gordon 1989).

Poverty can be defined as where resources are so seriously below those commanded by the average individual or family that they are, in effect, excluded from ordinary living patterns, customs and activities. As resources for any individual or family are diminished, there is a point at which there occurs a sudden withdrawal from participation in the customs and activities sanctioned by the culture. The point at which withdrawal escalates disproportionately to falling resources can be defined as the poverty line or threshold (Townsend 1979).

## Measuring the Poverty Line

It is not easy to measure 'poverty' directly, but it is possible to obtain measures of 'deprivation'. These two concepts are tightly linked and there is general agreement that the concept of deprivation covers the various conditions independent of income experienced by people who are poor, while the concept of poverty refers to the lack of income and other resources which makes those conditions inescapable or at least highly likely.

Townsend (1979) devised 60 indicators of deprivation based on a detailed study of peoples style of living and resources conducted in 2000 households between 1968-1969. These 60 indicators could be summed to create a single composite deprivation index score for each household. By plotting deprivation score against the logarithm of income as a percentage of the Supplementary Benefit rates that existed then (Figure 1) Townsend determined by eye that a poverty threshold might exist at around 150% of the Supplementary Benefit standard. This result has since been confirmed by weighted regression analysis (Desai 1986) and by canonical correlation analysis (Desai and Shah 1988) which placed the threshold at 160% of the Supplementary Benefit standard.

However there are a number of problems with using these methods to determine the poverty 'line/threshold'. First, the size of changes in the slope of a graph are dependant on the transformations used for the axis (Figure 2 Kolata 1984). Second, there is no universally agreed statistical definition of how large a change in slope is required to define the poverty 'threshold'; a number of different thresholds are possible. Third, the use of a single composite deprivation index results in information loss from the data.

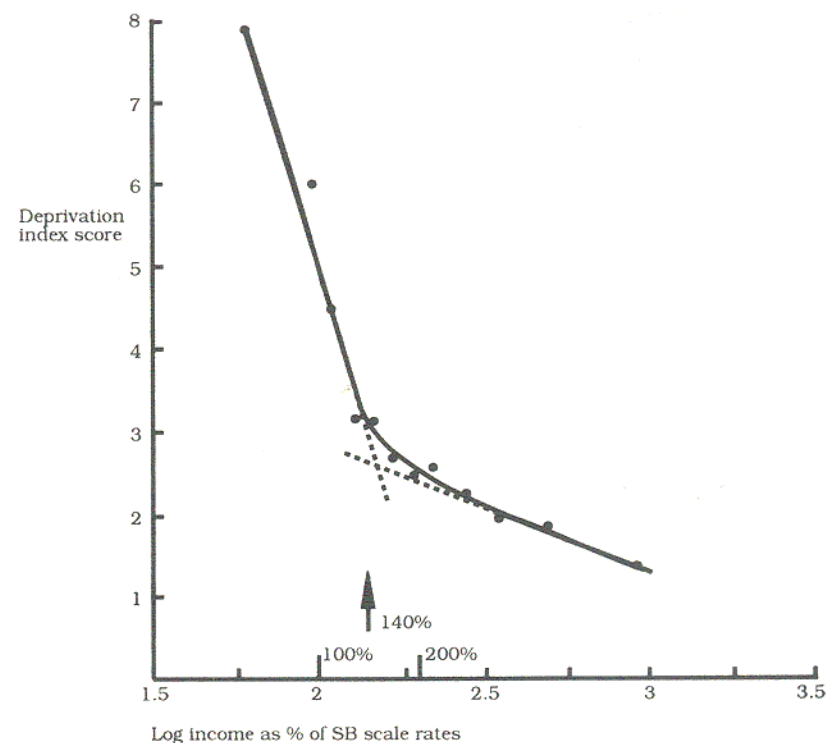


Figure 1: Modal deprivation by logarithm of income as a percentage of supplementary benefit scale rates.

Discriminant analysis is a multi-variate technique that can be used to surmount these problems since it does not require a pre-defined poverty 'threshold'. Discriminant analysis allows the differences between two or more pre-defined groups to be studied with respect to several variables (Klecka 1980). We assumed that two groups exist, a generally smaller "multiply deprived" group (poor) and a larger group which suffers from less deprivation (non-poor). This assumption has been tested using cluster analysis and found to be valid (Townsend and Gordon 1989). Since there is a direct relationship between income and deprivation, the income level (or narrow band of income levels) at which these two groups can best be separated can be considered

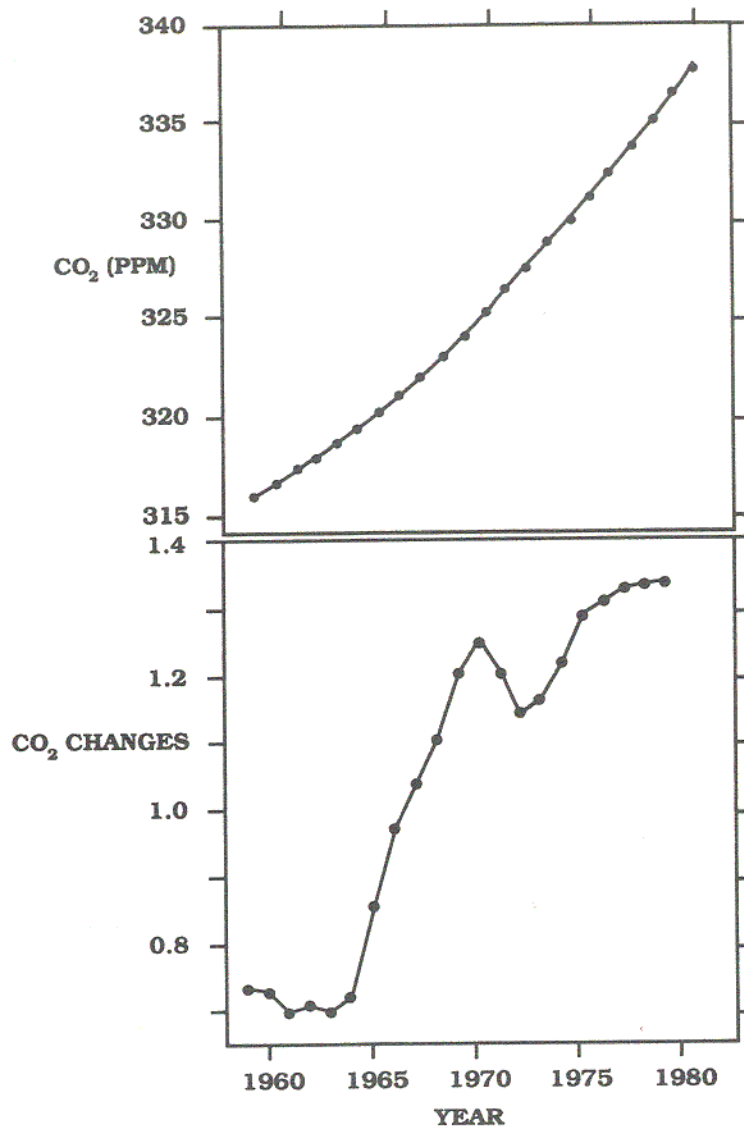


Figure 2: **Slope is hard to judge**

The visual impression from the top panel is that the rate of change of atmospheric CO<sub>2</sub> is constant from 1967 to 1980. But in the bottom panel, where the yearly changes are graphed, it can be seen that there is a dip in the rate of change around 1970.

to be the 'poverty line/threshold'. Obviously, there will never be a perfect separation between these two groups (multiply deprived and less deprived), since even when a marked threshold exists there will always be some overlap. For example, people with reasonable incomes who suffer from multiple deprivation due to historic circumstance (e.g. they have only recently got a job, or just paid off large debts), or people currently on low incomes who suffer little deprivation due to previously accumulated wealth. However, we would expect a 'good' analysis to correctly classify the majority of cases.

## The Greater London Survey

In 1985-86 the GLC funded a major survey on the living conditions, life style and opinions of Londoners (Townsend *et al* 1987). In this representative sample of 2,700 adults family income was compared with the extent of material and social deprivation experienced by each individual. We defined 77 indicators to examine 13 forms of deprivation - dietary, clothing, housing, home facilities, environment, location, work, rights in employment, family activity, community integration, participation in social institutions, recreation and education (Townsend and Gordon 1990).

Repeat discriminant analyses were run at steps of £5 for a number of household types. For example for single individuals under 60 years old, people were assigned to one group or the other if their income was less than £30, £35, £40, £45, £50 ... £100. Discriminant analyses were run for all these income levels. A single income level (or narrow band of income) was determined at which the two groups (multiply deprived and less deprived) could best be separated (i.e.. where the between groups sum of squares was maximised). By our previous definition these levels of income should equate with the poverty 'threshold/line'.

The results are shown in Table 1, the weekly levels of income required to surmount multiple deprivation are shown in the first and fourth columns. The results after housing costs have been deducted are easier to interpret as a number of low income households have housing costs of £0 because these costs are met in full by Housing Benefit.

Table 2 shows the weekly disposable income required to surmount multiple deprivation as a percentage of the Supplementary Benefit Rates that existed between November 1985 and July 1986. The results range between 50 to 103 per cent above the Supplementary Benefit Standard with an average of 66 per cent above.

A simple but more 'subjective' way of measuring the 'poverty line/threshold' is to ask people how much money they would need to avoid poverty. During the London Survey respondents were asked "How many pounds a week do you think are necessary to keep a household such as yours out of poverty?". Interviewers were instructed to stress that income to be estimated must be total disposable income. From each individual estimate actual expenditure on housing per week was deducted. A similar question was also asked in a related study carried out by MORI



in Islington on behalf of the council (MORI 1987).

**TABLE 1**

A measure of weekly income required to surmount multiple deprivation.

| Household type             | Disposable weekly income    |                               |                  |                            |                               |                  |
|----------------------------|-----------------------------|-------------------------------|------------------|----------------------------|-------------------------------|------------------|
|                            | before paying housing costs |                               |                  | after paying housing costs |                               |                  |
|                            |                             | Per cent correctly classified | Number in sample |                            | Per cent correctly classified | Number in sample |
| Single person < 60         | £65                         | 76                            | 198              | £60                        | 73                            | 189              |
| Couple < 60                | £85                         | 82                            | 176              | £75                        | 81                            | 162              |
| Couple plus 2 children     | £150                        | 65                            | 143              | £110                       | 75                            | 102              |
| Couple plus 3 children     | £165-£175                   | 77                            | 34               | £125                       | 79                            | 28               |
| Single parent plus 1 child | £85                         | 82                            | 54               | £80                        | 80                            | 49               |

**TABLE 2**

Weekly, income required to surmount deprivation as a percentage of basic means-tested assistance scales

| Household type               | Weekly income required, after deduction of housing costs, as a percentage of basic means-tested assistance |
|------------------------------|--|
| Single person >60            | £203   |
| Couple > 60                  | £157   |
| Couple with two children     | £151   |
| Couple with three children   | £150   |
| Single parent with one child | £168   |

Table 3 shows the comparison between the discriminant analysis poverty line and the self assessed weekly levels of income required to avoid poverty. With the exception of the results for couples under 60, there is remarkably close agreement between these two methods. This demonstrates the possibility that by using discriminant analysis it may be possible to 'objectively' calculate a 'poverty line' for most household types that would correspond with the judgement of the majority of the population.

Both the discriminant and self assessment methods of calculating a 'poverty line' show that government weekly rates of means-tested assistance fall substantially

short of meeting the minimum income needs of small households and couples with children.

**TABLE 3**

Weekly income required to surmount multiple deprivation. Self-assessment and discriminant analysis methods compared

| Household type             | (1)                    | (2)            | (3)                    |
|----------------------------|------------------------|----------------|------------------------|
|                            | Self-assessment        |                | Discriminant analysis  |
|                            | Greater London 1985-86 | Islington 1987 | Greater London 1985-86 |
| Single person > 60         | £64                    | £75            | £60                    |
| Couple under 60            | £104                   | £107           | £75                    |
| Couple plus 2 children     | £109                   | £132           | £110                   |
| Couple plus 3 children     | £118                   | £121           | £125                   |
| Single parent plus 1 child | £81                    | £93            | £80                    |

### References

- Desai, M., (1986), "Drawing the Line: On Defining the Poverty Threshold", in Golding, P., (1986), *Excluding the Poor*, London, Child Poverty Action Group.
- Desai, M., and Shah, A., (1988), "An Econometric Approach to the Measurement of Poverty", *Oxford Economic Papers*, 40, 505-522.
- Klecka, W.R., (1980), *Discriminant Analysis*, Sage Publications, Beverly Hills and London.
- Kolata, G., (1984), "The Proper Display of Data", *Science*, 226, 156-158.
- Moore, J., (1989), *The End of the Line for Poverty*, London, Conservative Political Centre.
- MORI, (1988), Gosschalk, B., Lancaster, H., and Townsend, P., *Service Provision and Living Standards in Islington*, Research Study conducted for the London Borough of Islington, London, MORI, 32 Old Queen Street, London, SW1H 9HP.
- Townsend, P., (1979), *Poverty in the United Kingdom*, Harmondsworth, Middlesex, Allen Lane and Penguin Books.
- Townsend, P., Corrigan, P., and Kowarzik, U., (1987), *Poverty and Labour in London*,

Living Standards, Report No. 1, London, The Low Pay Unit, pp134.

Townsend, P., and Gordon, D., (1989), "What is Enough? New Evidence on Poverty in Greater London Allowing the Definition of a Minimum Benefit", *Memorandum of Evidence to the House of Commons Social Services Committee on Minimum Income*, 579, 45-73, HMSO.

Townsend, P., and Gordon, D., (1990), "Let Them Eat Cake! The Idea of Meeting Minimum Needs is Abandoned", *The New Review*, 4, 6-9.

"A US company personnel chief asked its newly acquired Latin American subsidiary for a list of all staff employed, broken down by sex.

Came the reply: "No staff broken down by sex. Our problem is alcohol."

Quoted from the *Morning Star*, October, 1990.