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The ‘meaning and measurement of poverty’ rediscovered

Abstract

This article revisits Peter Townsend’s early essays from the 1950s and 60s discussing the meaning and measurement of poverty. Townsend’s views on this subject were, at least in part, a reaction to family budget standards in the tradition established by the Quaker industrialist, Seebohm Rowntree, which William Beveridge had used to rationalise the proposals for social security in Britain. With the current revival in budget standards research here in Britain we find that many of Townsend’s arguments are still very relevant today, particularly in relation to minimum income standards. Half a century on, and thanks to a redesign of the long-running family spending survey, we are able to follow Townsend’s ideas, what we discover is that it may be risky to try and establish a minimum income standard unless we can also show, empirically, that families with that level of income can in fact secure a healthy standard of living.

Key words: poverty, budget standards, minimum income standards, living standards

Introduction

Income poverty is only one aspect of ‘poverty’ in a cash economy like the United Kingdom (UK), but it is a crucial one. People require cash incomes to be able to purchase goods and services to sustain their health and well-being; the fewer goods and services are provided publicly, the more important individual and household income becomes (Expert Group on Household Income Statistics ‘Canberra Group’ 2001). From this perspective poverty may be seen as the inability to pursue well-being precisely because of the lack of economic means, as Sen (1992) argues. Academic research continues to report income poverty lines. Family budget standards research, in the Rowntree tradition, remains a popular method for determining minimum income standards, but this approach can be criticized for producing budgets that are little more than abstractions; they are ‘artificial’, to an extent, and this raises questions about their ‘real adequacy’. Another way to assess adequacy of family income, empirically, is to consider the level of household expenditure required to reach a specified, desirable standard of living. In this inquiry the poverty line calculations for an older UK population are anchored to normative standards of nutrition for health but, importantly, they are also grounded in the consumption habits and market prices faced by ordinary people in the population, captured by social survey. We may see this as a semi-normative approach to poverty assessment following the recent classification of poverty measures (Expert Group on Poverty Statistics ‘Rio Group’ 2006).

The inquiry uses a variety of statistical methods for handling binary data to determine the poverty lines, including logistic regression and discriminant function analysis. Household expenditure and food consumption data are taken from the UK

Expenditure & Food Survey (EFS); the sample has been restricted to an older population, aged 60 and above. In the UK, there is continuing concern about poverty in later life and so this seemed an ideal place to begin work (Evandrou and Falkingham 2005). Before describing the study methods and results, and discussing their implications, key issues in budget standards research are outlined and semi-normative approaches to poverty assessment are discussed in more detail.

Family budget standards

Family budget standards have long been used by social investigators to define poverty lines. The idea is to attempt to specify what a minimum budget should look like (Bradshaw et al. 1987). Rowntree's work in this field is widely known (Rowntree 1901, 1941; Rowntree and Lavers 1951); the critical reviews by Townsend (1952a; 1952b; 1954, 1962), discussing the 'meaning and measurement' of poverty perhaps less so. Importantly, William Beveridge and the Social Insurance Committee had used Rowntree's 'primary' poverty standard to help rationalise social security levels; today we understand more clearly that people living on the benefit scales derived from the Beveridge Report were in fact condemned to deprivation (Veit-Wilson 1994). During the 1950s, however, Rowntree's claim that the new welfare state had virtually abolished poverty in Britain generally held sway.

The popular perception, however, was challenged by Peter Townsend who took up the sociological critique of Rowntree's budget standards. For Townsend these standards represented little more than social constructs since they were largely based upon the judgements and opinions of Rowntree and his collaborators. In the process of drawing

up the budgets Rowntree and others were ignoring many complex issues, which made their standards seem rather arbitrary. Even defining some of the basic household necessities presented potential problems according to Townsend. Rowntree had singled out some items to be necessary – everyday items like a newspaper – but not others such as contraceptives or cosmetics, for example. Rowntree’s idea of a minimum way of life was also problematic. A family could go to bed early to save on electricity; it might obtain used clothing from charity shops rather than purchase new items. Townsend concluded that it was possible to debate such issues endlessly and, ultimately, one had to accept that many of the budget standards were likely to be rather arbitrary.

Today, in the UK, a new approach to setting budget standards is attracting widespread attention (Bradshaw *et al.* 2008). The inquiry into Minimum Income Standards (MIS) grew out of three very different programmes of budget research within British universities, all attempting to establish minimum income standards. The new methodology drew heavily the pioneering work of Middleton (2000). Here budgetary requirements were determined by bringing ordinary men and women together in focus groups to determine ‘consensual’ budgets. Consensus was reached through discussion and negotiation over the essentials for social living, which the researchers then priced to calculate minimum budgets. There was very little attempt to include national guidelines and normative standards in the budget setting process, however, like researchers constructing ‘Low Cost but Acceptable’ (LCA) budgets had done, in combination with evidence on patterns of behaviour from social surveys (Parker 1998, 2000). Another approach developed by Morris *et al.* (2000) drew upon scientific consensus and research evidence to construct ‘Minimum Incomes for Health Living’ (MIHL). Personal requirements for healthy living were identified and then priced by

the public health experts, the methods, particularly on nutritional and heating standards, overlapped with the LCA; although there was little attempt to include the views of ordinary men and women here to validate the budgets like the LCA researchers had done. For a relatively short period of time these three programmes of research made the case for a robust MIS definition of poverty to be adopted by the British government. Indeed, the arguments were presented in a memorandum to Prime Minister Tony Blair (Zacchaeus 2000 Trust 2004). Government officials, however, dismissed the call, partly due to the apparent lack of agreement within the research community itself. The time was right for a new more ‘integrated’ approach to setting minimum income standards for the UK (Deeming 2005), and the ground-breaking study by Bradshaw et al. (2008) helps to demonstrate how the views of experts can be reconciled with those of ordinary people. This programme of research represents a major step forward in budget standards research, but nevertheless, it may be risky to try and establish a minimum income standard unless we can also show, empirically, that families with that level of income can in fact secure a healthy standard of living (Townsend 1962).

A fresh approach to setting minimum income standards

This article takes a fresh approach to setting minimum income standards. Standards should be based upon a common achievement conception of human requirements for health and well-being, but they should also be sufficiently anchored in real-life social context and the consumption habits and market prices faced by ordinary people in the population. So, the idea in this inquiry is to try and calculate poverty thresholds that observe recommendations for a healthy nutritious

diet while respecting the everyday behaviour of individuals captured by social surveys. This sort of thinking has a long history in the research literature. Perhaps one of the earliest statements on the matter is that made by Kittredge (1923) who was campaigning for a living wage in the United States (US). Kittredge saw the potential of correlating family income with healthy standards of living in order to determine wage rates, as did Townsend (1954), who suggested a methodology for setting minimum income standards anchored to national standards of nutrition. Unfortunately, however, he was unable to pursue this idea due to limitations with national survey data (refer to table 2). Today, we see his proposal as a semi-normative framework of poverty assessment following the classification by the Rio Group. A strictly normative approach, such as an expert budget standard, may not necessarily represent or reflect consumer behaviour as the Rio Group observes. ‘Normative’ is being used here in the sense of representing the cost of satisfying an externally imposed norm or expert recommendation; grounding the poverty line in empirical expenditure data makes the calculation semi-normative. This approach may be seen to represent the rather ‘absolute’ tradition of poverty measurement, the poverty line tends to be drawn using family budget data and usually covers an essential basket of household goods (Bradshaw 2001).

On the international stage it is common for food baskets to be constructed to meet the energy (caloric) requirements for defined populations and reference groups. However, there is no reason why food baskets cannot be constructed to meet other parameters of nutritional quality including vitamin and mineral requirements for good health (Svedberg 2000). What usually happens is that the Basal Metabolic Rate (BMR) is initially calculated to be the minimum calorific requirement needed to sustain life at rest. Daily kilocalorie (kcal) requirements are

next computed for different groups of the population, defined according to age, sex and level of physical activity. Food types and quantities can then be explicitly listed and priced to meet the standard requirements, as they were for the official US poverty line (Citro and Michael 1995) and more recently in Canada (Hatfield 2002). Another way to determine the food basket is to estimate the cost per calorie directly from the reference population, without listing the contents of the food basket. Standard calorie requirements are multiplied by the cost per calorie faced by the chosen reference population. Official poverty lines in Thailand, for example, were calculated this way (National Economic and Social Development Board 2004). The non-food basket is usually much harder to enumerate in the poverty line calculations and is often contested (Boltvinik 1998). When the cost of the food basket is known, the Engel-coefficient is often used to calculate the cost of the non-food component. In the US, for example, food basket costs were multiplied threefold to set official poverty lines for three-person families and by 3.7 for two-person families (Orshansky 1988).

The poverty line calculations in this inquiry include age- and sex-specific dietary standards for protein and energy, vitamin and mineral requirements, and so this represents something of an advance on other work. Also, the methodology outlined here does not require the non-food basket to be specified in any detail. The sums for social life and participation are included in the calculations. In theory, if a household's total expenditure – or total income if we are using that metric – is just enough to reach the food poverty line, then all other expenditure can be considered absolutely essential here, to cover basic non-food needs as Ravallion (1998) argues. All of this means that a multiplier – or Engel-coefficient – is not required to determine

the poverty line. This aspect of the work is quite novel, and it also raises a number of issues to which we return in the discussion.

Methods

In this inquiry national UK dietary recommendations are used in the poverty line calculations to indicate a healthy standard of living, shown in table 1. They are designed to meet the nutritional needs of practically all healthy persons in the population. For couples, the nutritional needs of the household unit were calculated by summing the nutritional requirements for each person within the household, observing age- and sex-specific recommendations. All dietary standards are treated equally (unweighted) in the study calculations since the national guidance gave no explicit priority to its recommendations. Care has been taken not to use recommendations and standards where nutrient levels in the population are known to be low and dietary supplementation should be considered (DoH 1998; WHO/TUFTS 2002; EVM 2003; BNF 2007); this effectively ruled out recommendations for vitamins B12 and D, and there are no reference values for vitamin E in the UK national guidance (DoH 1991, 1992). Recommendations on levels of fat and sodium (salt) in the diet are also excluded, as are recommendations on the consumption of alcohol. These recommendations are rather different, in that they are really about keeping consumption below a set level, while this inquiry is concerned to guard against undernutrition due to inadequate income not overconsumption and overnutrition.

Table 1: UK dietary recommendations

Nutrient	Unit	Daily requirements*
Calcium	mg	700
Copper	mg	1.2
Energy at age:		
60-64	kcal	2380[1900]
65-74		2330[1900]
75+		2100[1810]
Folate	ug	200
Iron	mg	8.7
Magnesium	mg	300[270]
Protein	g	53.3[46.5]
Riboflavin	mg	1.3[1.1]
Vitamin A (retinol equivalents)	ug	700[600]
Vitamin C	mg	40
Zinc	mg	9.5[7.0]

Source: DoH (1991, 1992).

male[female]

mg milligram or 10^{-3} g or one-thousandth of 1g

ug microgram or 10^{-6} g or one-millionth of 1g

kcal kilocalorie = 10^3 or 1000 calories. A unit used to measure the energy value of food. Energy can be measured in either joules or calories with 1 kcal = 4.18kJ (kilojoule) and 1 MJ (megajoule) is equal to 239 kcals.

* Where there is a recommended range, the lowest values have been used to represent the minimum standards for health.

UK data on household expenditure and food consumption come from the EFS, described in table 2. The inquiry was restricted to an older population. Three years of survey data (2002-5) provided about 5,500 households, comprising 3,000 single persons and 2,500 couples (male and female) aged 60 years and over (ONS/DEFRA 2006a, 2006b, 2006c). Combining the data sets increased the sample size threefold – a large sample will allow small but statistically significant differences to be detected in the data compared with using data for a single year. Households consuming large amounts of home-grown food produce were excluded (we are interested in the

minimum cash requirements for healthy living here), as were households consuming large amounts of food at cafes and restaurants (anything contributing more than 10 per cent of total consumption). About 200 households were excluded for these reasons. As there was no easy way to equalize for the extra costs of disability in the data, a thousand households in receipt of disability benefits were also excluded from the analysis. Disability raises further issues for determining minimum income standards and should be the focus for further study (Smith *et al.* 2004; Zaidi and Burchardt 2005). The total study sample, therefore, was 4,300 households.

Table 2: Expenditure and Food Survey (EFS)

The UK's *Expenditure and Food Survey* (EFS) started in April 2001, when *Family Expenditure Survey* (FES, est. 1957) was combined with the *National Food Survey* (NFS, est. 1940). This merger opens up the potential for new research in areas of social policy by offering detailed data on household expenditure, food consumption and income. The EFS is a continuous survey of private households that uses a multi-stage stratified random sampling design with clustering. In Britain the sample is drawn from the Post Offices Postal Address File (PAF). The Northern Ireland survey sample is drawn as a random sample of addresses from the Valuation and Lands Agency List. A random sample of postcode sectors are selected from the PAF, from which households are selected. The EFS attempts to get a reliable and accurate representation of the national population using stratification, essentially this means dividing the sampling frame into groups (strata) before sampling to reduce the risk of drawing an extreme sample that is unrepresentative of the population. A clustered sample is defined as a sample which is selected in two or more hierarchical stages with different units selected at each stage, *e.g.* households, two pensioners within each household. Clustering can also help to divide the sample into manageable workloads for interviewers (see discussions on the sampling methods by Elliot 1991; Barton 1996; Elliot 2001; National Statistics 2006a). Samples of 12,095 households are usually drawn each year in Britain with an actual or achieved response rate averaging around 60 per cent, in EFS 2004/5 6,141 households actually participated, a response rate of 57 per cent (Gibbins and Georgina 2006); in 2003/4 it was 58 per cent (Gibbins 2005) and the same again in 2002/3 (Craggs 2003).

Logistic regression and discriminant function analysis are statistical techniques which belong to the theoretical framework of the General Linear Models (GLM) set out by Nelder and Wedderburn (1972). Logistic regression allows a discrete outcome to be predicted from a continuous variable such as household expenditure. While discriminant function analysis is a statistical technique used to determine which variables discriminate between two or more groups. These methods are ideal for situations where a continuous response variable has been categorised as a dichotomy like in this inquiry. Binary coding was used; a household was coded one (1) if it met a dietary standard and zero (0) if it did not. This was done for each of the dietary standards. Those households meeting all of the standards were then coded one (1) to show they have a healthy standard of living and the rest were coded zero (0). Statistical models calculate the odds of having a healthy standard of living by a range of socio-demographic variables available in the EFS. They also predict whether a household achieves a healthy standard of living according to its level of expenditure. Other socio-demographic variables that make a significant contribution are held constant in the model. It is not possible to get into the detail of these statistical techniques here, Lachenbruch (1975) provides a detailed account of the theory and methods of discriminant function analysis and Hosmer and Lemeshow (2000) consider logistic regression. Interested readers may also refer to Townsend and Gordon's work on poverty measurement using these statistical techniques, the analysis presented here develops some of their ideas (Townsend and Gordon 1991; Townsend 1993; Gordon *et al.* 2000).

In this inquiry we use household expenditure data to determine the poverty line. Many argue that household expenditure provides the more reliable measure of poverty as it is much closer to consumption compared with household income

(Brewer *et al.* 2006). Certain housing costs are excluded, rent, mortgage and local government council tax payments, to provide an after-housing-costs (AHC) measure of poverty, chosen to suite the British social policy context. Here many older people are homeowners, while pensioners managing on low incomes can get help towards their housing costs after means-testing. In other circumstances, however, a before-housing-costs (BHC) measure may be preferable. Expenditure data for 2002/3 and 2003/4 was adjusted to be in-line with the 2004/5 data using the UK's Retail Price Index (RPI), the index for pensioner households called CZIF includes all items except housing costs (National Statistics 2006c). Household expenditure was also adjusted for known differences in the cost of living within the UK regions using the ONS regional price index (Wingfield *et al.* 2005). The regional weights relate to price differentials in 2004 and also exclude housing costs.

It should also be noted that the EFS, like other family budget surveys, records all household expenditure, including food expenditure. Two-week diaries are used by each member of the household to record all of their spending. The EFS tries to address the 'lumpiness' of major outlays, like cars, holidays, furniture, utility bills and other irregular purchases, by asking people to recall spending on such items over the last three or 12 months which is then converted into weekly amounts. The EFS also records all food and drink purchases, both inside and outside the home, but it will also include other acquisitions such as home-grown food entering the family store cupboard for instance. The weight of food is recorded in grams or, for things like eggs, the number is recorded. For drinks and other liquids, including oils and ice-cream, volume is recorded in millilitres. In order to assess the nutritional value of household food purchases it was necessary to apply nutrient conversion factors covering the period 2002–5. The conversion factors were developed by the UK's

Food Standards Agency (FSA) and are reviewed regularly as the nutrient density of foods is subject to change, reflecting, for example, new methods of food production, handling and fortification. All of this information may be accessed online at the UK Data Archive, along with EFS data, but interested readers should refer to FSA (2002) for the last major revision in the series on the composition of UK foods. In the study calculations, average daily household nutrient intake was obtained by taking the mean of the 14-day recording period in order to compare against the recommended daily requirements. The procedures for evaluating household food consumption reported here are fairly standard and are used by the UK government to monitor family diets using the EFS data (e.g. National Statistics 2006b). Other countries have their own food composition tables and there has been a considerable amount of coordination by international agencies such as INFOODS to ensure the production of good-quality data (Southgate 2000; Gibson 2005). FSA nutrient conversion factors did not cover all aspects of nutrition when applied to the EFS data; for example, standards for vitamin K, chromium and selenium could not be included here. Allowances are made in the study calculations for waste and for the loss of nutrients during the cooking process; there are also allowances for seasonal variations in the nutrient content of fruit and vegetables (MAFF 1991).

Results

A first step in the analysis was to examine the data relating to food consumption. The nutrients appear normally distributed in the population – 95 per cent of all the observations, for each of the nutrients, were within two standard deviations of the mean (confirmed by Z-score analysis). Average nutrient intakes per person per day

were also found to be comparable with the figures reported by UK government officials for the same period (National Statistics 2006b). With this observation we can be fairly confident that the nutrient conversion factors were applied correctly.

Next, the data on food consumption was evaluated against the standards of nutrition for good health, a necessary step in determining the poverty lines. Note that the calculations reported here observe age- and sex-specific recommendations. In total, 45 per cent of all households in the study sample met all of the standards (see table 3). Clearly the findings shown in the table suggest some cause for concern from a public health perspective. A large number of older people in the UK, it seems, are not purchasing the food they need for healthy living. The diets appear to be below the standards for health recommended by national experts. A key question here is the extent to which this is related to inadequate income, which we can judge by the number of people living below the expenditure poverty line.

Table 3: Percentage of households achieving a healthy standard of living

	Single persons	Couples
Calcium	82	87
Copper	59	67
Energy	68	65
Folate	78	88
Iron	76	84
Magnesium	58	63
Protein	85	91
Riboflavin	86	91
Vitamin A	95	98
Vitamin C	74	84
Zinc	69	73
'Health standard'	44	47

There was a positive relationship between household expenditure and nutrition – see, for example, the results for single-person households shown by expenditure quintile group in figure 1 (each group will include approximately 20 per cent of households), while figure 2 provides the results for couples. Error bars represent 95 per cent confidence intervals from the mean. Virtually all of the nutrients, including energy intake, show a low but significant relationship with expenditure and are retained for the poverty line calculations (see table 4).

Table 4: Relationship between household nutrient intake and expenditure (£ per week)

	Singles		Couples	
	Pearson correlations	significance	Pearson correlations	significance
Calcium	.162	***	.041	*
Copper	.191	***	.077	***
Energy	.203	***	.071	***
Folate	.199	***	.103	***
Iron	.206	***	.097	***
Magnesium	.273	***	.118	***
Protein	.224	***	.108	***
Riboflavin	.168	***	.069	***
Vitamin A	.148	***	.082	***
Vitamin C	.246	***	.137	***
Zinc	.220	***	.090	***

Key to significance levels (1-tailed): * <0.05 ; ** <0.01 ; *** <0.001

Figure 1: Relationship between household nutrition and expenditure (£ per week, singles)

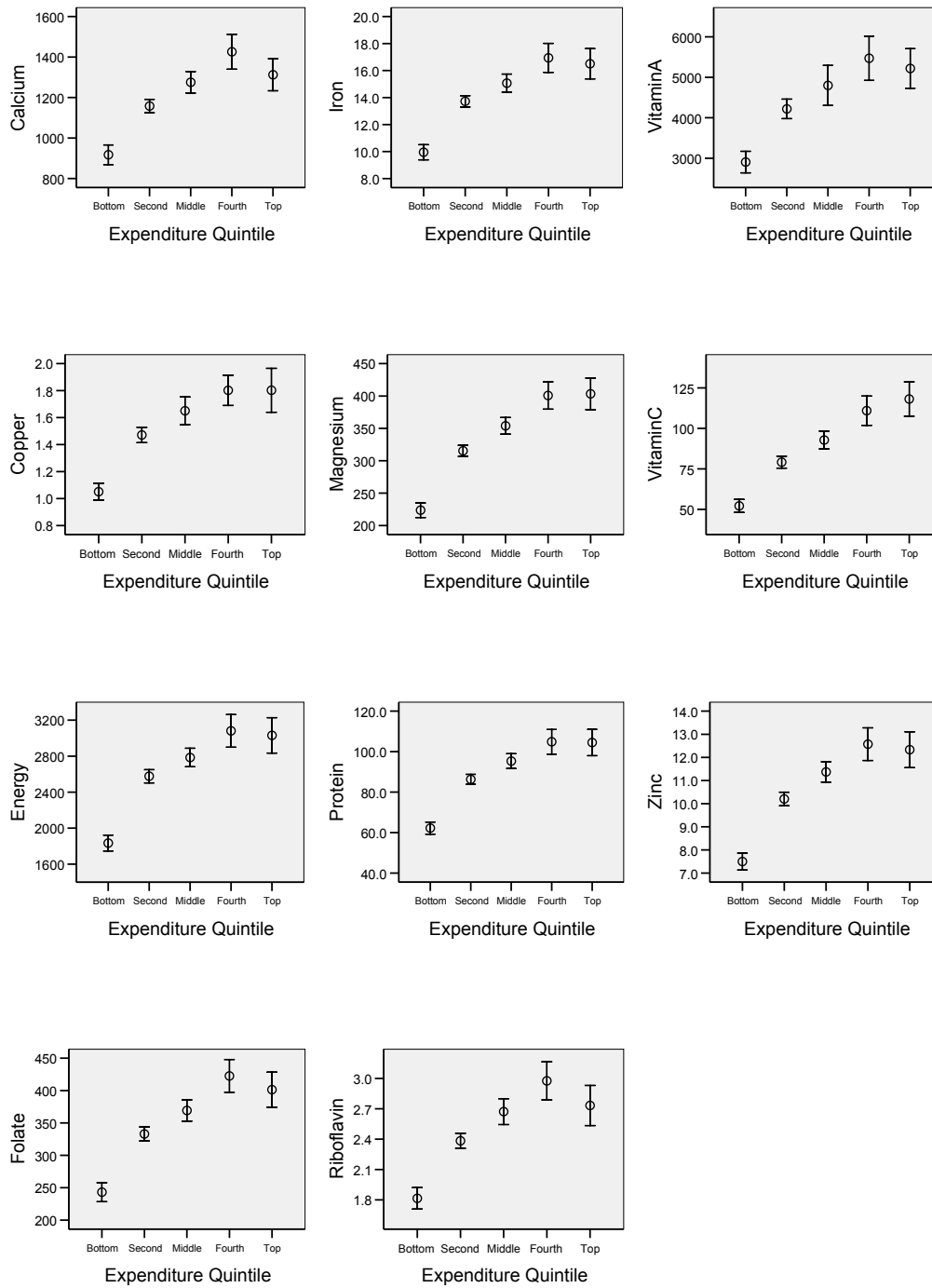
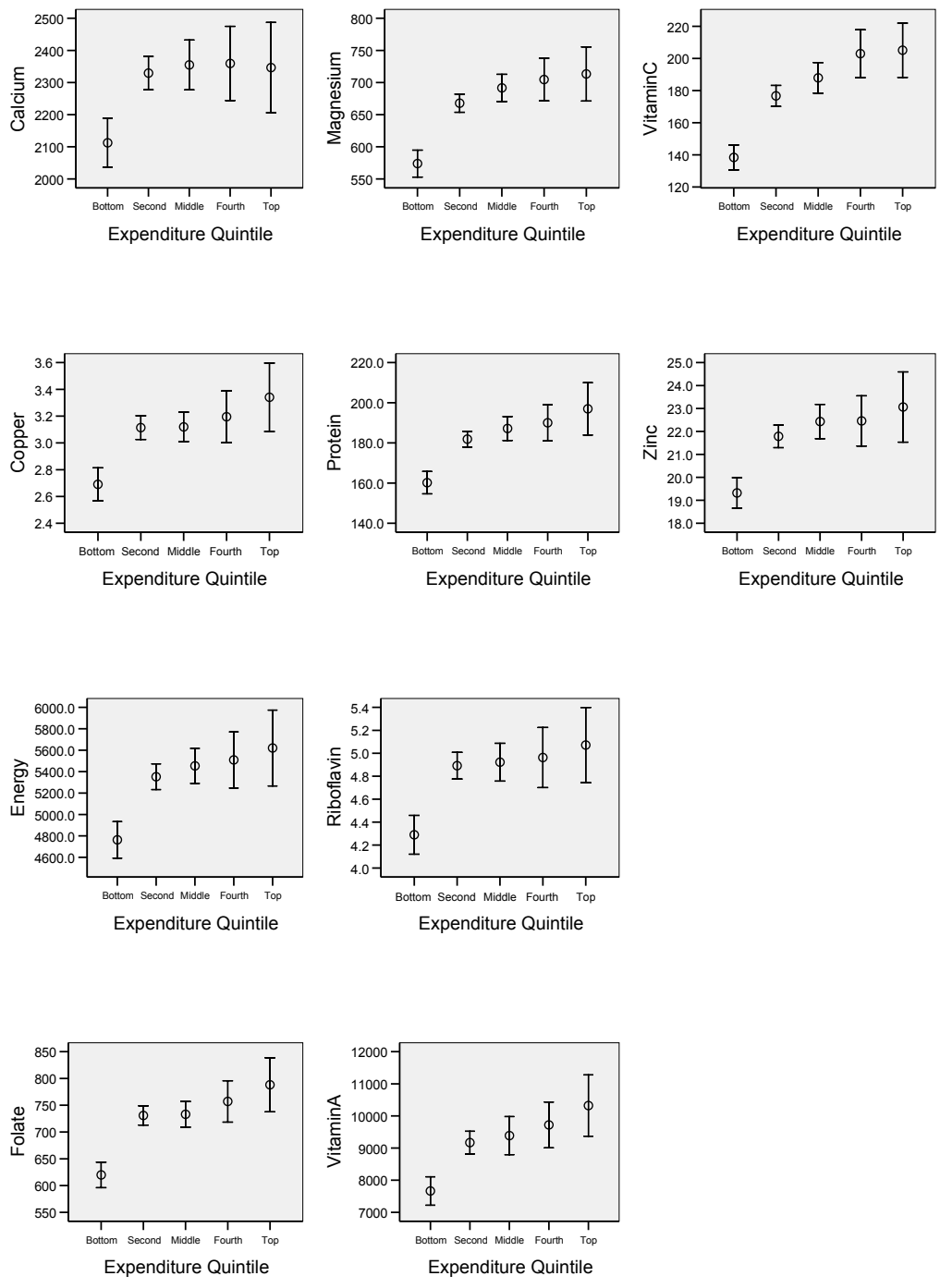


Figure 2: Relationship between household nutrition and expenditure (£ per week, couples)



A multivariate logistic regression model established the independent effect of a number of socio-economic and demographic factors relating to a healthy standard of living. This is important with surveys of food and diet in Britain reporting variations in nutrient intake by certain sections of the population (Finch *et al.* 1998). The relative odds of the health standard are shown for each factor; the 'base case' is always one (1.00). Table 5 shows strong negative expenditure gradients; older people in the lowest expenditure groups have less chance of having a healthy standard of living. The effects are stronger in the singles data; those in the highest expenditure groups are at least five times as likely to reach the health standard compared to those in the lowest group.

Table 5: Logistic regression model predicting the odds of a healthy standard of living

	Singles	Couples ^a
Expenditure quintile		
4 and 5 (highest)	1.00	1.00
3	0.77*	1.14
2	0.52***	0.93
1 (lowest)	0.16***	0.49***
Age		
60-69	1.00	1.00
70-79	0.85	0.92
80+	0.63***	0.60***
Sex		
Male	1.00	—
Female	1.33**	—
Season		
Jan.-Mar.	1.00	1.00
Apr.-Jun.	1.17	1.01
Jun.-Sep.	0.98	1.26
Oct.-Dec.	1.10	1.45**
Region		
North East	1.00	1.00
North West & Merseyside	1.48	1.01
Yorkshire and the Humber	1.16	0.79
East Midlands	1.51	0.94
West Midlands	1.40	0.94
Eastern	1.30	0.75
London	1.30	0.97
South East	1.41	1.18
South West	1.78*	0.85
Wales	1.34	1.08
Scotland	1.39	0.81
Northern Ireland	1.20	0.98

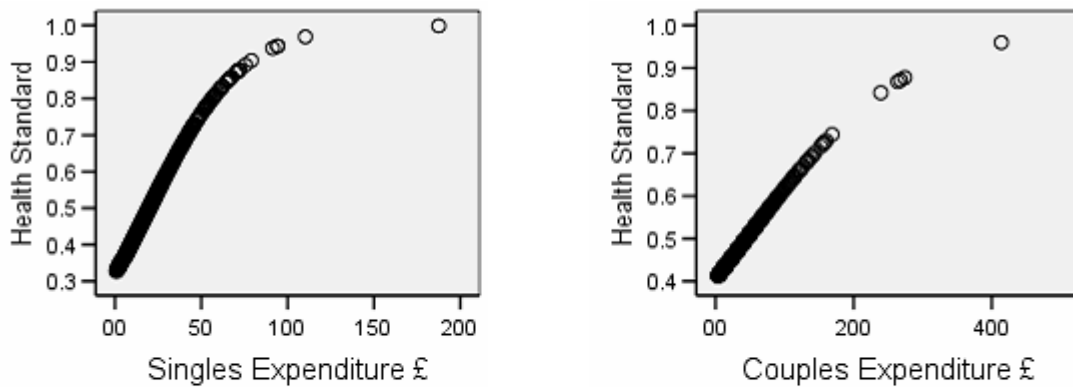
Key to significance levels: * <0.05 ; ** <0.01 ; *** <0.001 .

^aFor couples personal data relate to the household reference person.

Single women have more chance of a healthy standard of living compared to single men and there is also a strong negative age gradient. Age is important, nutritional needs change as we grow older. The results suggest that the chances of a healthy standard of living decline with age. There was some evidence to suggest a wealthy region effect in the data for singles, perhaps more evidence pointing to the growing north– south divide in Britain (Dorling *et al.* 2007), while a seasonal effect

was observed in the data for couples. The food consumed is most nutritious during the autumn months as might be expected; this is the time of the harvest and plenty of fresh local produce, fruits and vegetables, are sold in supermarkets across the UK. The results from the logistic regression, when plotted, show expenditure to be a strong but by no means perfect predictor of a healthy standard of living (see figure 3).

Figure 3: Predicted probabilities of a healthy standard of living



In the next stage of the analysis discriminant models are used to predict whether a household has a healthy standard of living according to their level of expenditure. Household expenditure was entered into the model using a banding scheme, with bands showing £5.00 differences in expenditure. Other significant predictor variables are held constant (age, sex, season and geographical region). So, for example, single-person households were assigned to one of the two dietary groups if their household expenditure was greater or less than £50.00, for example, greater or

less than £55.00, and so on. The model predicts whether a household has a healthy standard of living according to their level of expenditure. In the results we are interested in the best-fitting model which determines the poverty line in this inquiry (shown in table 6). The optimum classification in the sample of single-person households was 62.9 per cent, indicating a poverty threshold of £125.00 per week, and 58.0 per cent for couples, indicating a poverty threshold of £185.00 per week (2004/5 prices).

Table 6: Poverty lines, April 2005 prices

	Expenditure (£)	Chi ²	Wilks' lambda	Eigenvalue	Canonical correlation	Correctly classified (%)
Singles	125.00	150.6***	.94	.082	.276	62.9
Couples	185.00	65.2***	.97	.037	.189	58.0

Key to significance levels: * <0.05 ; ** <0.01 ; *** <0.001

The models classified 60 per cent of households correctly. Correct predictions of 60 per cent are certainly better than what could be expected by chance, which can be viewed as 50:50. We might therefore conclude that the overall hit rate was around 10 per cent better than chance. Another way of looking at chance is in relation to the relative frequencies involved, i.e. in relation to the proportions achieving the healthy standard of living. We know that 45 per cent of households in the study sample meet the healthy standard; assessed on this basis a slightly bigger hit rate gain was achieved, at 15 per cent. These findings suggest that the expenditure variable in the calculations discriminates, to a degree, between those who achieve a healthy standard of living and those who do not, and this is unlikely to be due to chance. We know this

because the chi-square results are all significant. It fails to account for much of the variance in dietary status, however: the Wilks' lambda scores are around 0.95, which means that the expenditure variable fails to account for about 95 per cent of the variance, but this should not concern us too much as we are not really trying to explain people's behaviour here. Conversely, the variable accounts for about 5 per cent of variance, also indicated by the canonical correlation (which is the square root of the variance).

Population weights for the EFS are available at the Data Archive and can be applied to the sample data in order to estimate the number of older people living in poverty. Note, the calculations do not represent all older persons living in the UK; they reflect how the study sample has been defined using the EFS. The numbers are for single persons and couples (man and woman) aged 60 and over, living alone in private households. The results suggest about 1.7 million single persons and 800,000 couples had disposable income below the poverty line, or about 2.5 million households in total, taking the 3-year annual average. Over half the older population fail to meet the standards of a healthy diet (55 per cent), for a quarter of the population this is likely to be due to inadequate household income.

Discussion

The situation described above relates to the older population of the UK, a high-income country. The idea was to explore the potential of a semi-normative approach to drawing poverty lines using statistical techniques for binary data. Normative standards relating to diet and nutrition are used in the study calculations, which can be

used to indicate a healthy, desirable standard of living. A nutritious diet is a basic human need and nutritional requirements have been more susceptible to measurement compared to many non-food goods and services. Indeed, the field of nutrition has long been used as a basis for research into poverty (Barnett 1886), but this should not suggest dietary guidelines and standards are themselves free of controversy. Sen (1981), for example, observes that minimum nutrition standards have an inherent arbitrariness that goes well beyond variations between population groups and geographic regions.

Household expenditure was found to be a reliable predictor of a healthy standard of living in the older population, and spending thresholds of £125.00 per week for single persons, AHC at April 2005 prices, and £185.00 per week for couples helped to explain the difference between having a healthy standard of living or not. A basic question in any research, of course, concerns the reliability of the findings. The discriminant model classified 60 per cent of households in the sample correctly, one might argue that the model was not too efficient at predicting, and this is certainly a reasonable line to take, but it is also true that the results are better than one might expect by chance and better still if one considers the relative frequencies involved. So, we return to Townsend's argument from 1962, that to establish a minimum income standard is meaningless unless we can also show, empirically, that families with that level of income can in fact secure a healthy standard of living. Table 7, therefore, compares the semi-normative standard for older people with the results reported by the various budget studies, as well as the official welfare safety-net for pensioners in the UK, the Pension Credit guarantee.

Table 7: Comparable minimum income standards for older people in the UK^a

	Single (£)	Couple (£)
Semi-normative standard, April 2005 prices	125.00	185.00
Minimum Income for Healthy Living (MIHL), April 2005 prices ^b	122.70	192.10
Semi-normative standard, April 2006 prices ^c	128.00	189.00
Low Cost but Acceptable (LCA), April 2006 prices ^d	127.35	182.00
Semi-normative standard, April 2008 prices ^e	136.00	202.00
Minimum Income Standard (MIS), April 2008 prices ^e	123.27	183.72
Semi-normative standard, April 2009 prices ^e	135.00	208.00
Pension Credit guarantee, April 2009 prices	130.00	198.45

^aDisposable household incomes, AHC, i.e. excluding housing costs of rent, mortgage payments and local government council tax.

^bMorris et al. (2005), English households, persons aged 60 plus, budgets exclude housing costs.

^cInflation adjusted using the UK RPI, all items excluding housing (National Statistics 2009).

^dFBU (2006), UK households, persons aged 65-74 years, budgets exclude housing costs.

^eBradshaw et al. (2008), British households, pensioners, budgets exclude housing costs.

The minimum income standards for older people set by all of the budget studies fall short of the semi-normative standard, except one, the MIHL standard for couples. Importantly, the semi-normative standard indicates cash short-falls in New Labour's safety-net for pensioners, the Pension Credit guarantee. For many older people in the UK, the minimum income standards set by government, and the research community, may be rather inadequate for maintaining a healthy standard of living. What we discover, following Townsend's ideas from the 1950s, therefore, is that it may be risky to try and establish a minimum income standard unless we can also show, empirically, that families with that level of income can in fact secure a healthy standard of living. Indeed, the study findings suggest that we could be in danger of condemning some of the most vulnerable groups in our society, pensioners, disabled people, and working families with and without children, to a life of deprivation if we do not learn the lessons of the past.

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