A poverty indicator based on a minimum income standard

CRSP Working Paper 656

Authors:
Donald Hirsch
Matt Padley
Dr Laura Valadez

Loughborough University

ISBN 978 0946831 48 7

Published by the
Centre for Research in Social Policy
Loughborough University
Leicestershire
LE11 3TU

ISBN 978 0946831 48 7

CONTENTS

1 Introduction – minimum standards and poverty

The Joseph Rowntree Foundation defines poverty as when a person's resources (mainly their material resources) are not sufficient to meet their minimum needs (including social participation). A crucial influence in determining whether material resources are adequate is household income. While some material resources come from other sources – including from privately accumulated assets and from socially provided services – households require sufficient income to buy necessary goods and services on a recurrent basis. For most households, this is at the heart of maintaining a satisfactory living standard.

So income matters greatly in escaping poverty. However, this does not make it easy to identify a 'poverty line' expressed as an income threshold. The problem here is twofold. First, there is a difficulty of dichotomy. In reality, no household would recognise a precise income line that meets all their basic needs, such that if they were earning £1 less, they would feel they were going short. Second, there is the issue of diversity. Even among similarly constituted households, the income at which needs are being fully met will vary, based on their precise characteristics and opportunities.

In light of these factors, it is impossible to state an income threshold that *measures* precisely how many households are in poverty according to JRF's definition. Rather, it may be possible to identify a threshold that gives an *indicator* of poverty based on how many people live below it. An indicator in this sense does not try to quantify the exact size of a phenomenon, but rather gives a signal of its existence, and allows comparison of its magnitude across groups, places and time. Such an indicator is useful if we can be confident that differences or changes in the number of people unable to meet their needs will be signalled in the number falling below the specified line.

1.1 Relative income indicators

Thresholds of poverty based on relative income – a given proportion of mean or median income in the population – have been useful as indicators, but suffer from important imperfections. Most importantly, they have allowed broad comparisons both across countries and across time of how many households are being 'left behind' in economies where living standards grow, because their income falls a long way below the norm, with the risk that they will not be able to participate fully in society.

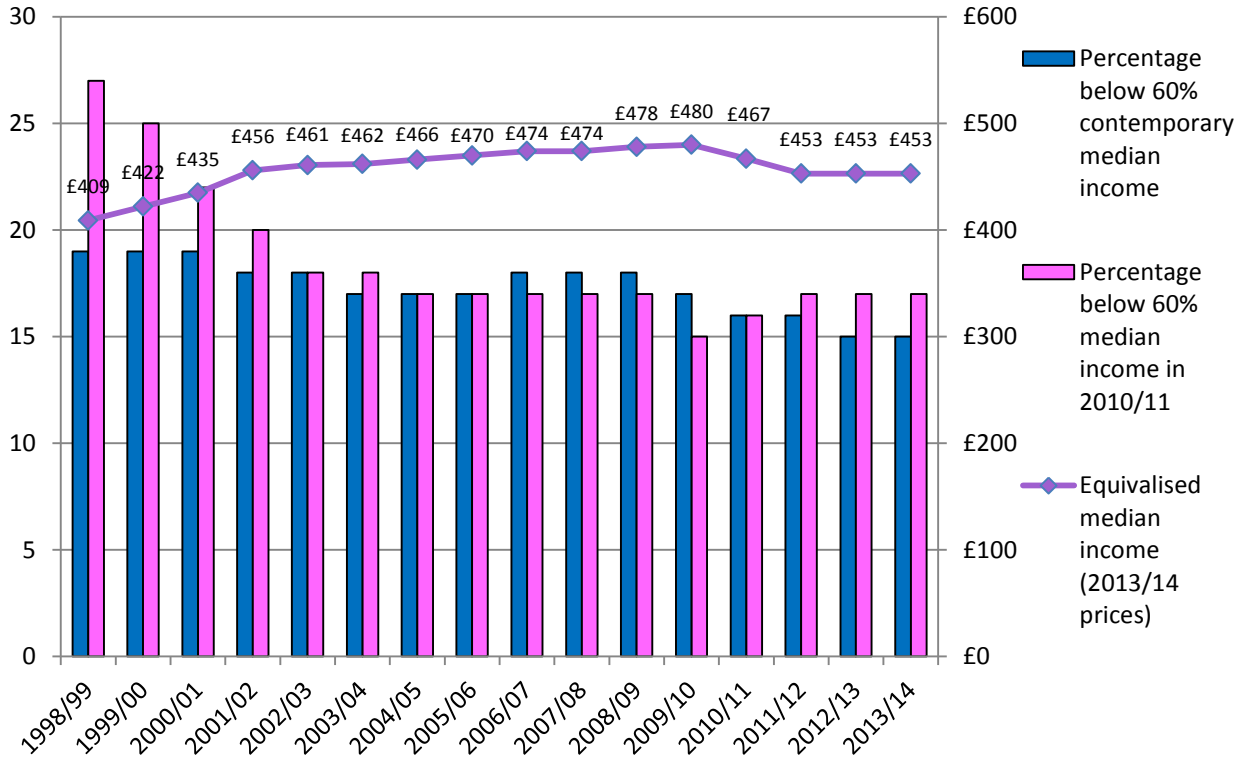
The biggest limitation of a relative income threshold as an indicator of poverty is that it does not reliably show that people with incomes below it are unable to meet their needs. It is reasonable to suppose that having an income a long way below the median affects a household's ability to participate fully in society, but this begs the question at what point below the median this starts to occur. There is also an issue of the extent to which changes in median income do affect social norms.

Most important when using such an indicator to monitor poverty levels is whether being below a fixed percentage of median income has a stable relationship, over time, with the risk of not being able to meet one's needs. This question arises both in the long and the short term. Over a generation in which a country becomes more affluent, does the minimum income needed to avoid poverty rise in proportion to the median? (It might not do so if as a result of having more money, people in general spend a growing share of it on items they see as 'discretionary'.) Conversely, in a period where the rate of median income growth undergoes considerable fluctuation, it can become problematic as a benchmark. Between 1998/99 and 2013/14, real median household income rose rapidly for three years (averaging nearly four per cent a year), stagnated for the next eight (averaging 0.6 per cent growth), fell sharply for two years (at nearly three per cent a year) and stayed the same for the next two. It seems unlikely that the income required for a household to

meet their needs will have fluctuated according to the same pattern, creating the risk that reported poverty trends are unduly influenced by the movement of the benchmark.

The trends in recent years are shown in Figure 1. Up to 2003/04, they were straightforward to interpret: relative poverty fell against a rising benchmark of median income, and therefore rose faster against a fixed threshold. In the following years, both average incomes and poverty rates flattened off, although at the end of the decade there was a further reduction in poverty. Since 2009/10, however, median income has fallen in real terms, relative poverty has also fallen and poverty against a fixed threshold risen. It is difficult to interpret and, importantly, to explain to the public what this means in terms of people's ability to meet their needs. The only way in which this could mean (as suggested by the relative poverty trend) that fewer people have income too low to meet their needs would be if the cost of meeting those needs were declining in real terms – of which there is no evidence. On the other hand, to say that you should use a fixed threshold as a benchmark when incomes are declining and a relative threshold when they are improving seems inconsistent.

Figure 1 Median income and poverty trends
Percentage of population below poverty lines that are fixed and relative to median income, and changes in this median income level



Source: Households Below Average Income 1994/5-2013/14, DWP 2015

A relative income measure thus suffers, even as an indicator of trends, from its tenuous relationship with trends in minimum needs. A further weakness is that it is unreliable as an indicator of the comparative poverty rates of different household types. Equivalence scales, used in producing existing poverty figures, give different weightings to income according to household composition, but these are not based on any clear evidence of the amount that different household types require to reach an adequate living standard. Differences in poverty rates between different household types therefore run the risk of being influenced by the ways in which income is equivalised rather than by differences in the income actually required to meet households' needs. For example, since the mid-2000s the Government has used an equivalence scale (the 'modified OECD' scale) that assumes a couple needs 72 per cent more than a single person after paying taxes and housing costs, whereas

before it had assumed it was 82 per cent (McClements Scale). This change was made purely to make international comparisons easier, but caused the poverty risk for lone parents, which had been shown as 2.4 times that of couples the year before the change, to be corrected to 2.7 times for that year (author calculations based on Households Below Average Income (HBAI) (DWP, 2015); figures for 2004/05). Actual research on what households need as a minimum suggests that the ratio should be considerably higher, since even the new figure under-estimates the scale economy of two people living as a couple: in fact, the second member of the couple requires not 72 per cent but under 60 per cent of the single adult's budget (Davis et al., 2016; Hirsch, 2012).

1.2 Budget standards

A budget standard describes the level of expenditure required by a household in order to buy a specified basket of goods and services that it requires in order to reach a given living standard. Typically budget standards aim to show what is the minimum needed to reach an acceptable living standard, allowing people to meet their material needs and participate in society. Since its inception in 2008 the Minimum Income Standard (MIS) has become the most prominent budget standard in the United Kingdom. Based primarily on public deliberation, but also incorporating expert inputs, it is updated regularly to keep track of changes in society (Davis et al., 2016). This standard represents a minimum defined in the following way:

> *'A minimum standard of living includes, but is more than just, food, clothes and shelter. It is about having what you need in order to have the opportunities and choices necessary to participate in society.'*

The objective of such a minimum standard is closely related to the JRF definition of poverty, since it relates to minimum needs and to social participation. A simplistic indicator of poverty would therefore be simply to make the Minimum Income

Standard the poverty line. However, the difficulties of dichotomy and diversity, referred to above, are relevant here. MIS describes a range of goods and services that members of the public think are sufficient for someone to have a minimum acceptable standard of living. A household with an income £1 below that line may or may not have insufficient resources to meet its needs. This is partly because the particular needs of each individual household differ. It is also because there is not a single point at which a small amount less income produces identifiable hardship, of a kind that the public would consider a concern.

The latter point raises an important principle that distinguishes a budget standard from a credible poverty line. A budget standard is based on all the items, from food to socks to teaspoons, in a 'basket' of goods and services bought by a household living at a minimum acceptable level. A poverty line is an income below which a household might expect to get into difficulties because it cannot afford to meet its needs. It is not sufficient to describe poverty purely in terms of falling short of the minimum budget, because lacking, say, a pair of socks or a teaspoon cannot be shown to create the kind of difficulty that the public would recognise as being in 'poverty'. Nor can the items in the MIS baskets be divided into those that are and are not 'necessities' – they collectively describe a budget that allows people to meet their needs and participate in society. We would expect someone living substantially below this level to be harmed by having an income too low to meet their needs. In this respect, it is easier to think of MIS as a benchmark against which poverty risk can be described than as the threshold of poverty.

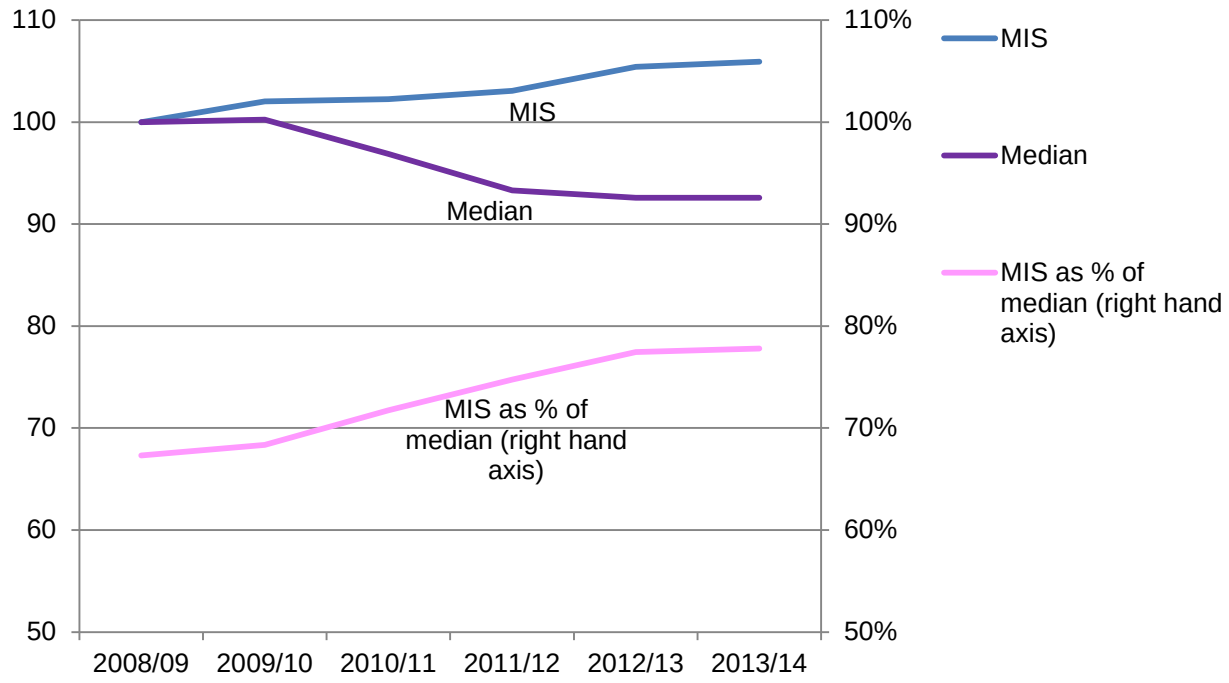
Thus, while MIS cannot therefore be described as a 'poverty line', it could act as a useful reference point in producing an indicator of poverty. An income at a certain percentage of MIS can be seen as having more intrinsic meaning, in terms of the ability of households to meet their needs, than an income at a given percentage of the median. This is because the former but not the latter is referenced on a living

standard with a defined meaning, the identification of a tangible set of goods and services required to meet it and the calculation of the cost of buying these items at current prices.

In practical terms, there are two important differences between the results derived from median income and MIS as reference points: comparisons over time and comparisons across groups.

Firstly, the relationship between such a reference point and acceptable living standards over time is likely to be more reliable for MIS than the median. As mentioned above, the percentage of median that a household requires to meet its needs may vary both in the short term (as median income fluctuates from year to year, but needs remain similar) and in the long term (as the cost of meeting one's needs may increase with prosperity, but not necessarily directly in proportion to median income growth). Since MIS addresses directly the income required to reach a living standard considered in general terms to meet minimum needs in the context of contemporary society, it should be a more useful indicator in this respect. It has already shown, for example, that in an extended economic downturn, minimum needs as defined by the public have not fallen in line with median incomes, with the consequence that the percentage of median income required to meet MIS has risen substantially. This is illustrated in Figure 2. Over the longer term, if incomes were to increase substantially from one decade to the next, as they have in the past, MIS will show whether the minimum required has risen in proportion to median incomes, or at some different rate, producing a change in the percentage of median below which people find it hard to meet their needs.

Figure 2 Average real values of MIS and median household income, (after housing costs) 2008=100



Note: MIS figures based on unweighted average of budgets for main MIS household types with up to two children, adjusted by RPI excluding housing; Median income figures from HBAI, 2015.

A second advantage of using MIS as a benchmark is that it allows comparison across groups in a more informed way than the current median income threshold. The latter is adjusted for household composition based on equivalence scales, which have at best a very tenuous relationship to the relative needs of different households (Banks and Johnson, 1993), and which can be out of line with more direct evidence (Bollinger et al., 2012). By considering the requirements of various households in detail, based on a common definition, MIS can claim to make a reasonable estimate of these relative income needs. The results suggest that current equivalence scales underestimate the relative cost of children under 14, underestimate the economies of scale living as a couple compared to a single and overestimate the needs of pensioners compared to people of working age (Bradshaw et al., 2008 and author analysis). A significant contributor to this last finding is the simple fact that the minimum amount that a pensioner needs to spend on transport, is far lower than for

a working age adult due to the entitlement to a free bus pass, with other in-kind pensioner benefits such as free prescriptions also having an influence.

1.3 Negative consequences of low income

While a calculation such as MIS can therefore represent a benchmark living standard, an indicator of poverty needs also to consider at what level households have relatively high risks of not meeting their needs in ways that have tangible consequences. One way to assess this is by looking at relationships between low income and negative results such as material deprivation, financial difficulties, poor health or other aspects of low levels of well-being. In doing so, income expressed as a percentage of MIS can be used to test the relationship with such negative outcomes, based on the hypothesis that being at a given income level relative to MIS might be expected to have a reasonably consistent relationship to the risk of hardship, across groups and across time. Put another way, if you have an income that causes you to be unable to afford a certain percentage of a minimum budget deemed sufficient for your household type and current conditions, this could be a useful indicator of the risk that your resources are significantly below what you require to meet your needs. An empirical question for investigation is at what percentage of a minimum income this risk becomes substantial.

1.4 Purpose of paper

This paper therefore considers evidence that having a low income is associated with negative outcomes, focusing in particular on thresholds of low income defined as a percentage of MIS, and goes on to propose a new pair of indicators. The following section sets the context by considering some previous studies linking low income to deprivation and other negative consequences. Section 3 considers the relationship between low income and negative outcomes, based on MIS thresholds, and for

context, with thresholds of income relative to the median. It concludes by suggesting how the results of this exercise can be used to set a threshold to indicate income poverty. Section 4 proposes a pair of indicators of MIS-based poverty indicators and describes how they can be operationalised, and Section 5 gives results for two recent years.

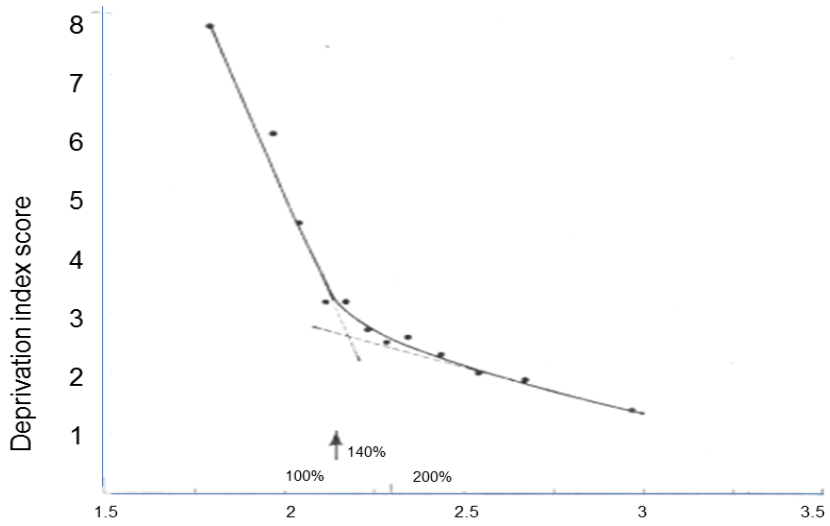
In understanding the nature of this exercise, it is important to note its limitations. The issue of the relationship between low income and various outcomes for households or individuals is immensely complex. While the evidence points clearly to greater risks of various hardships for people on low income, a scientific quantification of causal effects of low income, operating independently of other associated factors, is both elusive and well beyond the scope of this current research. The purpose of this exercise is much less involved. It starts from the assumption, confirmed both by research (see Section 2 below) and by common sense, that low income does cause hardship: households with too little to buy what they need are bound to suffer. It then investigates income levels associated with negative outcomes, for the purpose of description rather than to demonstrate causality. The final purpose of this investigation is to be able to identify an income-based indicator of poverty whose meaning can be readily described and understood by the general public. Saying that a particular proportion of households below this line have certain negative outcomes, and comparing that proportion with those above the line, can help convey to the public some tangible characteristics of the lives of people whom we describe as in 'poverty'. While this can give only a simplistic understanding of the meaning of such an indicator, it can at least make the meaning of poverty more tangible than an abstract statistic such as the numbers living below 60 per cent of median income.

2 What prior evidence tells us

A wide range of research shows that low income has important negative consequences. However, this has not clearly identified a particular level of income at which people are unable to meet their needs. This is partly because the consequences of low income are not the same for every type of outcome. For example, the level at which low income damages one's health may not be the same as the level at which it prevents full social participation. It also depends on the context in which people live – policies, public services, costs of living and how that context changes over time.

A related issue is that some outcomes become progressively better with rising income – creating a 'gradient' rather than a single cut-off point. If, for example, children do progressively better at school according to rising family income, it is hard to choose a single point at which having lower income ceases to 'harm' one's prospects. This may be possible at a point below which the gradient steepens, or else where predicted outcomes fall below a socially acceptable level. Townsend (1979) suggested that a point on the income distribution below which deprivation becomes much more likely can be used to help identify a poverty line. Figure 3 shows his illustration, where a poverty line of 140 per cent the benefits safety net was suggested based on the observation that below that level, 'deprivation increased disproportionately to the fall in income'.

Figure 3 Townsend's relationship between income and deprivation



Source: Townsend (1979) Fig 6.4 P 261

There is value in asking why in the 37 years since Townsend's formulation, it has not led to a consensus about where the poverty line lies. This may be partly because it can be harder than Townsend's graph suggests to identify a clear poverty line in this way, since deprivation and other negative consequences of low income do not always become clearly more prevalent below a fixed point. In addition, the relationship can look very different for different kinds of outcome, and there is no general agreement about which set of hardships entail poverty. Deprivation surveys that have followed up Townsend's work have looked at how many people are unable to afford goods and services deemed by a majority of the general public as essential (Gordon et al., 2013). Being unable to afford specific necessities is one but not the only potential consequence of having insufficient income to meet one's needs. Low income's relationship with outcomes such as poor health and reduced educational prospects suggests that it prevents people meeting their needs in ways that may not be identifiable through the absence of particular material necessities. Moreover, the

ways in which households allocate resources may influence which items they can afford, so that they may have enough income to afford all socially identified necessities, but choose to prioritise other goods and services instead (Piachaud, 1983; Mackay, 2004).

In this context, we can consider what the research tells about how much money in itself matters to various outcomes; about where on the income distribution it matters, and whether sensible cut-off points can be drawn; and about the extent to which longer-term measures of income, notably persistent low income, matter more than a simple static measure.

2.1 Evidence on how much money matters

A first issue when thinking about an income poverty line is how much low household income, in itself, damages people's lives, rather than simply being associated with other factors that do so. Two reviews commissioned by JRF (Cooper and Stewart, 2013 and 2015) show that there is clear evidence that income has a causal relationship with a range of negative outcomes. This can be established in particular by considering various cases in which two sets of households that are otherwise similar end up with different amounts of financial resources, for example where one set receives better recurring income because they are a member of a trade union or are subject to different welfare entitlements than another group; or receive a windfall gain such as a lottery win or an inheritance. Such studies, by contrasting a better-off with a worse-off group, where the chances of being so are not related to the characteristics of the two groups, are good at showing that having more money makes a difference, but not at identifying at what point on the income scale this gain occurs. Longitudinal studies looking at the effect of income controlling for other factors can also suggest the extent to which lack of money has a causal relationship

with undesirable outcomes. However, here the signal tends to be weaker, and this can make it hard to distinguish a 'cut-off' point above which money matters less.

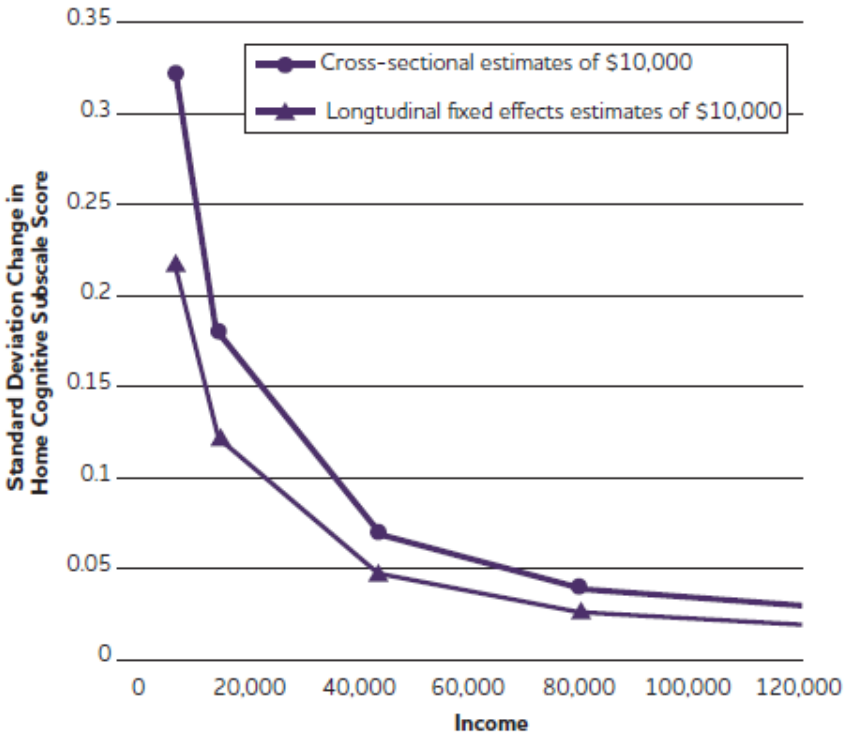
Among adults, the most distinct evidence both of money making a difference and of the effect being greater lower down the income distribution is produced by studies of mental health and subjective well-being. Such evidence is most clear-cut in cross-sectional surveys that do not demonstrate causality. For example a wide-ranging review of research on subjectively-reported well-being (Diener and Diswas-Biener, 2001) found that whereas general income growth had not created more happiness, there are clear associations between income and well-being in the lower part of the income distribution. Looking more strictly at studies that suggest causal links, Cooper and Stewart (2015) find more limited evidence, but in particular point to Layard et al's (2008) study of cross-sectional and panel datasets in Britain and Germany. These show a clear and cross-nationally consistent positive relationship between income and life satisfaction. The authors conclude that at very high incomes, the proportionate increase in income required to produce a given increase in satisfaction is about 25 per cent greater than on very low incomes. While this shows a stronger relationship near the bottom of the distribution, it is notable that the effect on satisfaction of progressively higher income does not disappear for the well-off. On a log scale for income (in which a straight line shows that, say, a doubling of income produces the same effect across the distribution) , the slope does not reduce dramatically for the non-poor. Specifically, someone earning £10,000 a year can expect a comparable increase in well-being from a 10 per cent rise in income (£1,000) as someone on £100,000 with a 12.5 per cent increase (£12,500).

Cooper and Stewart (2015) found it harder to discern a clear-cut influence of income in adult life in shaping various other outcomes, such as behaviours affecting physical health, but their earlier (2013) study of the influence of low household income on children's outcomes showed a wider range of effects. In particular, it found that

family income accounts for a significant proportion of inequalities in cognitive and behavioural outcomes, and that these differences are more marked at the lower end of the income distribution. Importantly, the evidence suggests that these effects can be attributed both to the stresses on parents and children that result from a lack of income and to more direct effects of lacking material resources, such as affording educational goods and experiences.

These studies of causal effects of low household income for children therefore suggest that there is both a material and a social penalty for low income. In terms of JRF's definition of poverty, a family whose children suffer these penalties can be said not to be 'meeting their needs', since both the material hardship and family stress experienced by children (including via the behaviours of their parents) as a result of low income are holding them back. However, as with the adult studies that demonstrate this result, the evidence that produces these conclusions does not offer a clear answer about where this threshold occurs. Many studies compare 'poor' and 'non-poor' groups, showing that being below a pre-specified poverty line makes a difference, but not whether the result would have been similar had a different threshold of poverty been chosen. Some studies chart a continuous relationship – for example findings illustrated in Figure 4 show that the lower a family's income, the more a given amount of additional income can improve cognitive stimulation via differences in home environment. However, Cooper and Stewart note that such curves look different according to which outcome one is considering, which make them of limited help in identifying a single poverty threshold.

Figure 4 The influence of a US$10,000 income change on the level of cognitive stimulation provided by children's home environments



Source: Votruba-Drzal, 2003 p351

2.2 Evidence on the association between low income and necessities deprivation

In recent years, household surveys in the UK have provided a considerable data resource allowing 'necessities deprivation' to be compared to income. Deprivation in this sense is understood to mean a household not having particular goods and services that it would like to have but cannot afford. 'Necessities' are items that a majority of the population have said in a survey that everyone should be able to afford. The PSE surveys have led the research into what comprises socially agreed necessities, and various government household surveys including the Family Resources Survey, Understanding Society, Family and Children Survey and The

European Union Statistics on Income and Living Conditions (SILC) have regularly looked at items that households lack even though they would like to have them.

Overall, these surveys show that while deprivation is clearly negatively correlated with income, there are also significant variations in the deprivation scores of people on the same income level. This is attributed to differences in tastes and spending patterns: if everybody had identical preferences and spent their money the same way, one would expect every household on a given level of income to be unable to afford the same things. In fact, a household's consumption priorities will influence not just which necessities are prioritised over others, but also whether some items not identified as social necessities are prioritised over others that are. This means that at the point at which the household's resources are exhausted, the items that it would still like but must forego will vary considerably from case to case.

Observation of the relationship between income and deprivation plays an important role in such surveys in identifying the level of deprivation used as an indicator of 'poverty'. Gordon et al., (2000) describe how the Poverty and Social Exclusion survey determines the number of socially defined necessities a household has to lack in order to be considered to be in poverty. This is based on determining the number of necessities that 'maximises the differences between 'poor' and 'not poor', and minimises the differences within these groups' (ibid 11). This is a similar concept to the turning point shown in Townsend's graph in Figure 3 above: a point showing a deprivation risk associated with a certain income, such that people with lower incomes have a steeply rising risk of greater deprivation.

While these observations have been used to identify the level of deprivation that should represent 'poverty', they have not been analysed in a way designed to set an income poverty line. One reason for this may be that the line that this would produce is highly sensitive to which necessities are included in the survey. For

example, the number of people reckoned to be 'in poverty' on the basis of deprivation using the PSE surveys rose from 24 per cent in 1999 to 33 per cent in 2012, with the inference that an income poverty line based on the surveys in these years (by using the association of income with deprivation risk) would have been around the 24th and 33rd percentiles of the income distribution, respectively: very different thresholds. These results were highly influenced by which necessities were included. As shown in Table 1, the three items most commonly lacked by adults in the past two surveys (which had a very great influence on the number considered to be in poverty because they lacked at least three items) changed greatly between the two surveys. While there is some overlap the sense that both include measures of financial exclusion, the 2012 survey is both dominated by such measures and defines them in more demanding ways than the 1999 survey.

Table 1 The three most common items lacked in the 1999 and 2012 PSE surveys

1999 survey			2012 survey		
Item	**How many lack**	**Status in 2012 survey**	**Item**	**How many lack**	**Status in 1999 survey**
1. Regular savings (of £10 per month) for rainy days or retirement	25%	Differently phrased, with different thresholds and split between items 2 and 3	1.Can pay unexpected costs of £500	33%	Not included in that form
2. Holiday away from home once year	18%	Minority say essential	2.Can afford to save at least £20 a month for a rainy day	31%	See item 1 for 1999
3. A small amount of money to spend on self weekly not on family	13%	Minority say essential	3.Can afford to make regular payments into a pension	30%	See item 1 for 1999

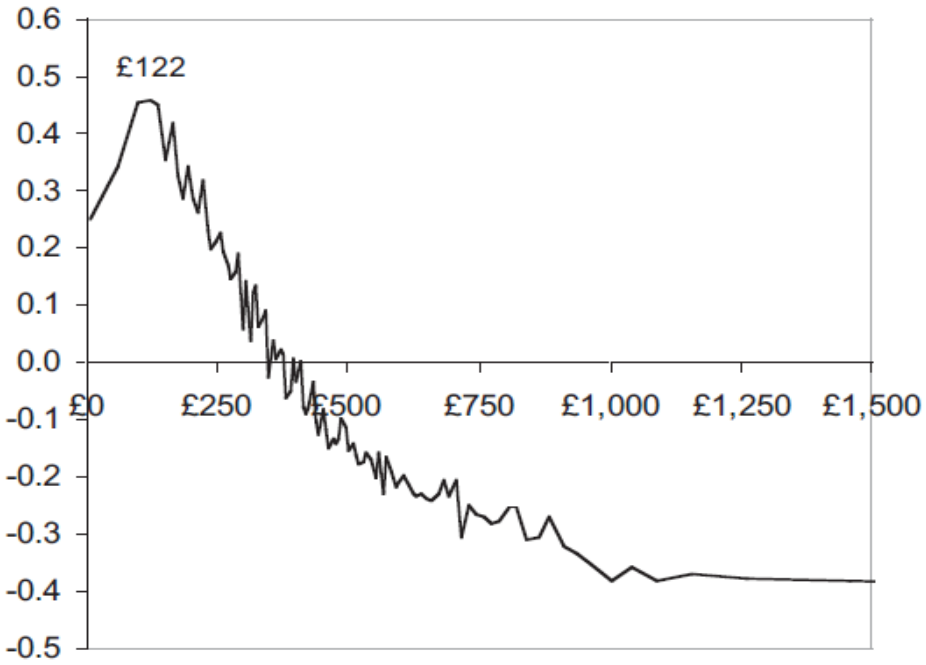
Source: Pantazis et al., 2006; Gordon et al., 2013

Yet using a constant set of necessities to provide greater consistency can create another set of problems. A combined income and deprivation measure adopted in Ireland has been problematic because it failed to update sufficiently with changing standards. This 'consistent poverty' measure, combining income below 60 per cent median with lacking at least two items, used the same item set between its inception in 1987 and its revision in 2007, during which time general living standards had improved substantially. There will always be some tension between year-to-year consistency and keeping up with social and economic change.

These difficulties help explain why it is hard to calibrate an income poverty line directly with evidence on what income is associated with deprivation, but nevertheless it is instructive to observe the shape of this association. Berthoud et al., (2004) and Berthoud and Bryan (2011) look carefully at the association at a point in time, as well as at two aspects of the association between income over time and current deprivation levels. These aspects they call 'underlying' relationships (referring to how well average income over a period predicts average deprivation levels) and 'dynamic' relationships (referring to the extent to which changes in income for individuals result in changes in deprivation).

Looking at the relationship at a point in time, Berthoud and Bryan show that there is a clear-cut correlation between income and deprivation, which is largely linear across the low income range. This is shown in Figure 5, which shows that although the relationship is stronger for low incomes than high incomes, the 'flattening off' occurs above the median (which in 2004 was about £350 a week equivalised).

Figure 5 Deprivation score plotted by income: pooled BHPS wave-specific centile groups of the income distribution



Source: Berthoud and Bryan (2011), p9
Note: Income on x-axis £ per week based on wave 14 (2004)

Turning from this 'cross-sectional' analysis to longitudinal observations, Berthoud and Bryant have two important overall findings. The first is that average income over a period (they find that a relatively lengthy period of nine years produces stronger results than shorter periods) shows a substantially stronger relationship with average deprivation over that period than does a simple comparison in a single year. In a multivariate model including income and other factors, income alone explains 22 per cent of variation in deprivation on the 'underlying' analysis (averages over a period), and all factors in the model explain 53 per cent. For both income alone and all factors combined, this is about half as much again as explained in the single-year results - 14 and 37 per cent respectively. The second important finding is that, however, dynamic effects are much weaker. Fluctuations in people's income were found to explain only four per cent of variations in deprivation levels, and only eight per cent in combination with other factors. The authors conclude that what matters

most are long-term attributes associated with having low income when measured over a period, not the direct impact of income gains and losses.

These findings about the importance of persistent low income are consistent with other evidence and have been the repeated findings of US studies. For example, Mayer (1997) showed that families with low average income over a five-year period score about a third of a standard deviation lower on an index of living conditions than families with low current income (A third of a standard deviation is a modest but not insignificant difference. It represents about a quarter of the range of 'typical' living conditions, where these are defined as the conditions within which the middle half of the population live). Sullivan et al., (2008) confirm Berthoud and Bryan's conclusion that short-term changes in income have very weak effects compared to average income over a longer period. Iceland and Bauman (2007) find, moreover, that moves in and out of poverty can have limited effect because they may be short-lived and relatively shallow, concluding: 'poor people are more likely to report various types of hardship in part because they have low incomes even in times when they are not poor.'

2.3 Estimate of income and 'participation'

A final piece of evidence worth noting is an attempt to estimate the relationship between income and a broad measure of 'participation' based on Townsend's concepts. Ferragina et al., (2013) constructed a participation measure comprising lack of deprivation, social participation and trust, and used the Understanding Society survey to plot a participation score against income. They found that for the bottom 30 per cent of incomes, scores were fairly similar, but that they were progressively higher as income increased across the rest of the distribution. They suggested that this could be because people on low incomes have to make difficult choices between fulfilling material needs and participating socially, and that they do

so in such a diverse range of ways that the relationship between income and participation within this group is not clear-cut. It is possible that they prioritise the fulfilment of certain basic forms of social participation and consumption, and make sacrifices either on items not being measured by the survey or on unmeasured aspects of quality (e.g. a prioritise having a fridge, but buy a cheap one second hand).

2.4 What can we conclude from evidence on the effects of low income

The overview of prior evidence presented here demonstrates first and foremost that no single income poverty line could ever remotely claim to be the threshold below which all households are unable to meet their needs in all respects. Not only do households differ in their needs and in the decisions that influence the point at which unmet needs arise, but different forms of harm have different associations with income. Moreover, while there are many cases where the association between income and another variable strengthens as income reduces, this change in slope can be gradual rather than sudden, and hence suggest no clear point below which the effect of income is strong and above which it is weak.

Nevertheless, three observations can be made on the basis of this evidence that can help us explore the scope for describing an indicator of poverty in relation to MIS.

First, the evidence shows unequivocally that poor outcomes of people on low incomes are not just coincidental - there are proven causal links. So it makes sense to consider the relationship between income and harmful outcomes such as deprivation and well-being, even though looking at effects above and below a 'poverty line' inevitably simplifies what is often a linear relationship.

Second, while the evidence does not pinpoint a precise poverty line, it does show strong differences that affect a substantial range of the population significantly

below median income. That is to say, studies that show 'dichotomous' differences between a poor and not-poor group demonstrate that in a well-off country like the UK, it is not just a tiny minority with very low income who are harmed by insufficient resources. On various recent definitions, between one in six and one in three households have been said to be in poverty. Low income defined against a threshold in this broad range has been shown in the studies cited above to be a risk factor, and to a much greater degree than would be the case for a threshold at or above the median (for which the slope of association with other variables is less severe).

Thirdly, the effect of average income over a period has been shown to have a more important impact than either income at one point in time or change in income over a short period. In this context, it is desirable that the consequences of persistent low income should be used as part of the evidence that helps describe a poverty line.

3 Risk of negative outcomes for households below a minimum income standard

Section 1 above argued that income referenced to the Minimum Income Standard could be a useful basis for an indicator of when financial resources become too low to meet a household's needs. The research reviewed in Section 2 suggests that there is no single point at which this becomes the case. However, the clear association between low income and the risk of negative consequences makes it valid to consider the characteristics of households below various income thresholds relative to MIS. This section uses Understanding Society, a longitudinal survey reporting household income and a wide range of household characteristics, to explore such relationships.

3.1 Correlation between low income and negative outcomes

The first step in this analysis looked for evidence of simple correlations between income and a range of difficulties experienced by households: material deprivation, reporting of financial problems, reported well-being and reporting of mental and psychological health. It considered household incomes mainly relative to the MIS thresholds as well as relative to median income for comparison. In both cases, it looked at income after housing costs, on the basis that the highly variable amounts that people pay for housing, even of similar quality, is likely quite seriously to affect their residual income available to meet their non-housing needs (and also because housing costs are readily measurable). In the case of the MIS variable, the benchmark budgets also excluded childcare, since most families do not incur such costs, although unlike with housing, the survey data did not allow actual childcare costs to be subtracted.

In order to analyse the relationship between income and various factors, a variable was constructed expressing income after housing costs as a percentage of the MIS requirement. The analysis produced simple descriptive correlations with a range of outcome variables, in order to observe which negative characteristics have distinct associations with being on a low income, if any.

Table 2 shows the results of these correlations. It confirms that, as one would expect in light of the complex influences on people's lives, there are only very weak correlations between most specific outcomes and household income. A simplified way of interpreting correlation coefficients is the rule that the square of the coefficient represents the percentage of variations in outcomes that it explains. For example, a correlation of .06 between income and happiness shows that only 0.36 per cent of overall variation in who says that they are happy can be accounted for by income differences.

Table 2 Correlation with income relative to MIS

Outcome variable	Pearson's correlation, 2012/13	N
a) Deprivation categories: unable to afford given items (working age adults)		
Holiday	-.296**	17097
Money for self	-.271**	17097
Keep up with bills	-.157**	17097
Money for house	-.155**	17097
Contents insurance	-.231**	17097
Money for savings	-.289**	17097
Money to replace furniture	-.295**	17097
Money to replace electrical goods	-.285**	17097
Adequate heating	-.122**	17097
Material deprivation: combined score	**-.371****	17097
b) Financial problems		
Problem paying for housing	-.133**	17097
Problem paying for council tax	-.119**	17097
Problem paying bills	-.159**	17097
Financial problems: combined score	**-.180****	17097
Material deprivation and financial problems combined score	**-.370****	17097
c) Life satisfaction		
Satisfied with health	.083**	15193
Satisfied with income	.276**	15197
Satisfied with amount of leisure time	.072**	15194
d) Mental/psychological well-being*		
Concentration	.052**	15199
Loss of sleep	.074**	15200
Playing useful role	.089**	15195
Capable of making decisions	.033**	15198
Constantly under strain	.051**	15198
Problem overcoming difficulties	.101**	15196
Enjoy day-to-day activities	.053**	15199
Ability to face problems	.053**	15198
Unhappy or depressed	.097**	15199
Losing confidence	.092**	15198
Believe worthless	.116**	15196
General happiness	.060**	15198

* Positive correlations between these factors and income can be taken to represent a relationship between more positive outcomes and increasing income, even though some of the categories are labelled in negative terms.

*** Correlation is significant at the 0.01 level (2-tailed).*

In general, coefficients below 0.2 (=4% of variance explained) can be taken to indicate very weak correlation. Among those that are above this level in the table:

- The greatest correlation – a low to medium level of .37, explaining about 14 per cent of variance – comes from a combination of deprivation questions posed to working age adults.
- Having financial problems shows a weak relationship with income, although not as weak as most of those for life satisfaction and all of those for mental/psychological well-being.
- The one life satisfaction indicator with a correlation above 0.2 is, not surprisingly, satisfaction with income, with a correlation of .28. This however is still a weak relationship, particularly given that if people have in any way similar views about what comprises an adequate income, one would expect those with lower incomes to be less satisfied with their incomes.

The most important relationship to be identified in the above results is the modest but distinct correlation between income and deprivation scores. This correlation proved to be almost identical when measured against MIS and against equivalised median income: -.37 and -.38 respectively. While this result shows that income is just one of many factors associated with deprivation, the probability of being materially deprived rises distinctly as income falls. The following analysis therefore makes reference mainly to deprivation scores, although also exploring further the relationship with financial problems and with satisfaction with income.

3.2 Patterns of risk associated with low income

While the correlation between income and material deprivation is measured using a single deprivation score, it is helpful to break this down by considering the successive risk of reporting deprivation in a given number of categories. Figure 6 shows what proportion of individuals report deprivation in a given number of categories,

according to their income relative to MIS (note that this and most other data below are based on questions put to all working age adults about themselves and their households; pensioner results are shown separately). This shows a clear increase in risk of deprivation as income falls to about 80 per cent of MIS, but no clear-cut trend below that level. Note in this and in subsequent charts that on very low incomes, the relationship appears to reverse – i.e. risks reduce with lower income. Previous analysis has identified a high degree of under-reporting of income among those who report that their income is very low (Brewer et al., 2013), and this in combination with small sample sizes at lower income levels make it invalid to conclude that people actually become less deprived on very low income levels. The graph shows a 'plateau' of deprivation risk between about 50-60 and 80-90 per cent of MIS, with relatively little change in risk across this range, and a brief 'spike' of increased risk between 40 and 50 per cent.

Figure 6 Risk of deprivation and income relative to MIS, 2012/13

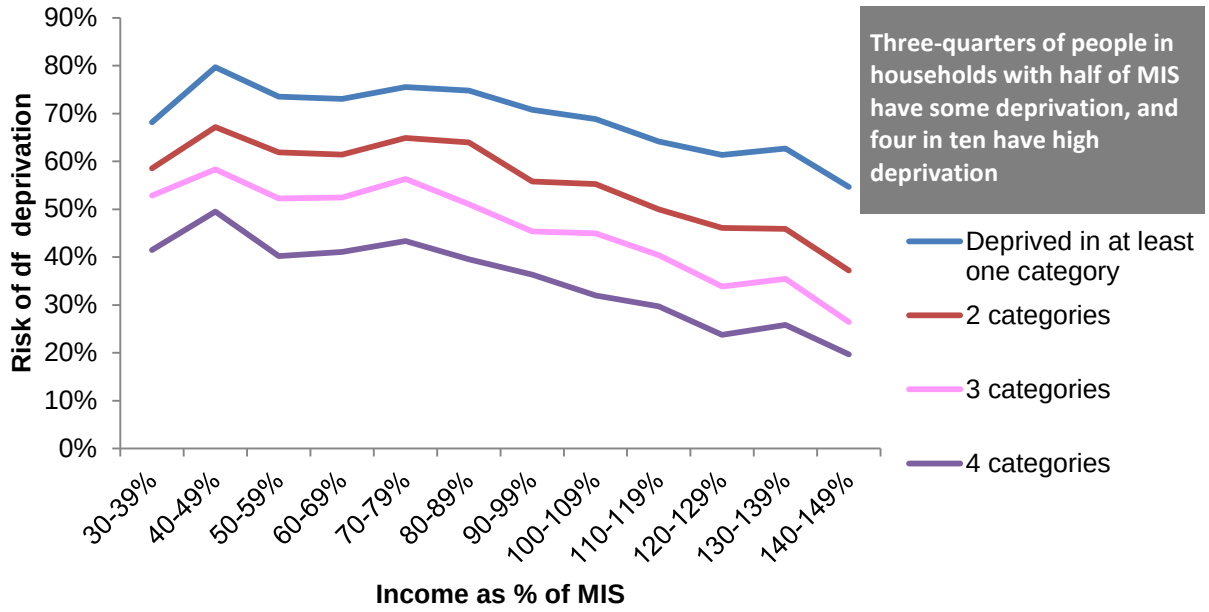


Figure 7 shows that, despite a weaker correlation, there is a broadly similar pattern in the case of the risk of financial problems. Indeed, in the case of having at least

one financial problem, the risk follows exactly the pattern described for deprivation above: a rising risk as income falls to 80-90 per cent of MIS, a plateau associated with lower incomes down to 50-60 per cent, a brief spike at 40-50 per cent and then a reduced reported risk at the lowest incomes, likely to relate to misreporting.

Figure 7 Risk of financial problems and income relative to MIS, 2012/13

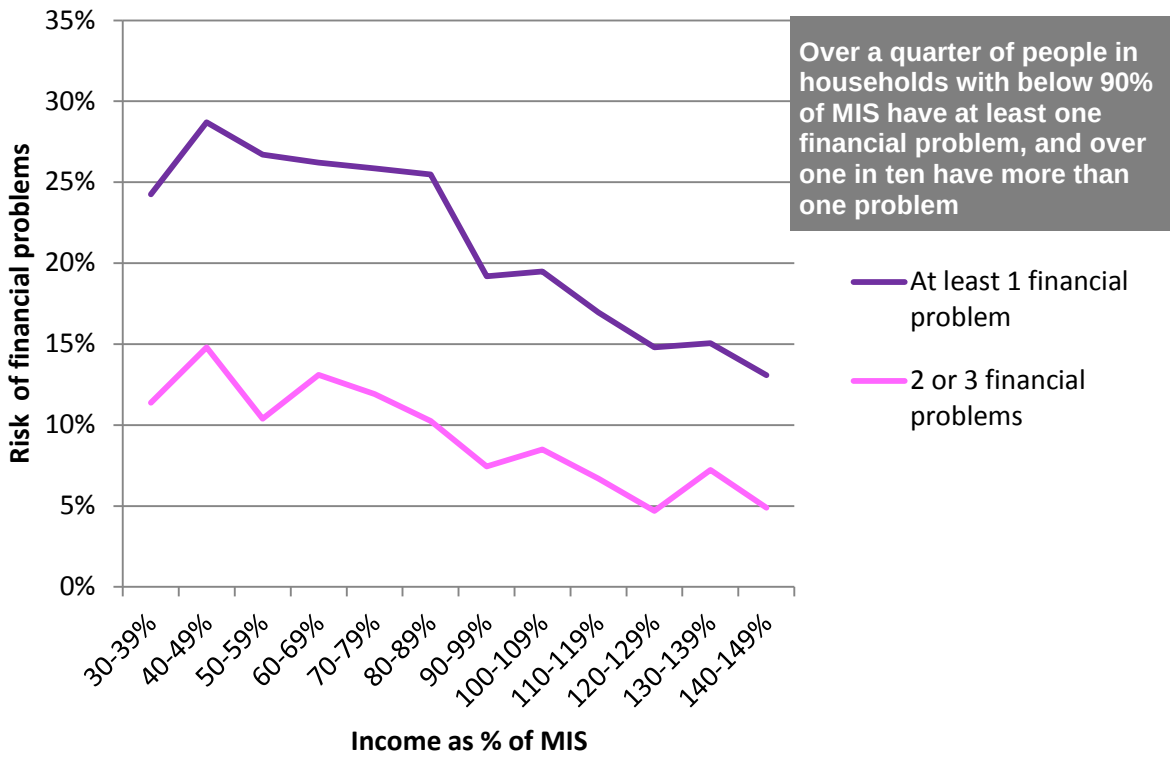
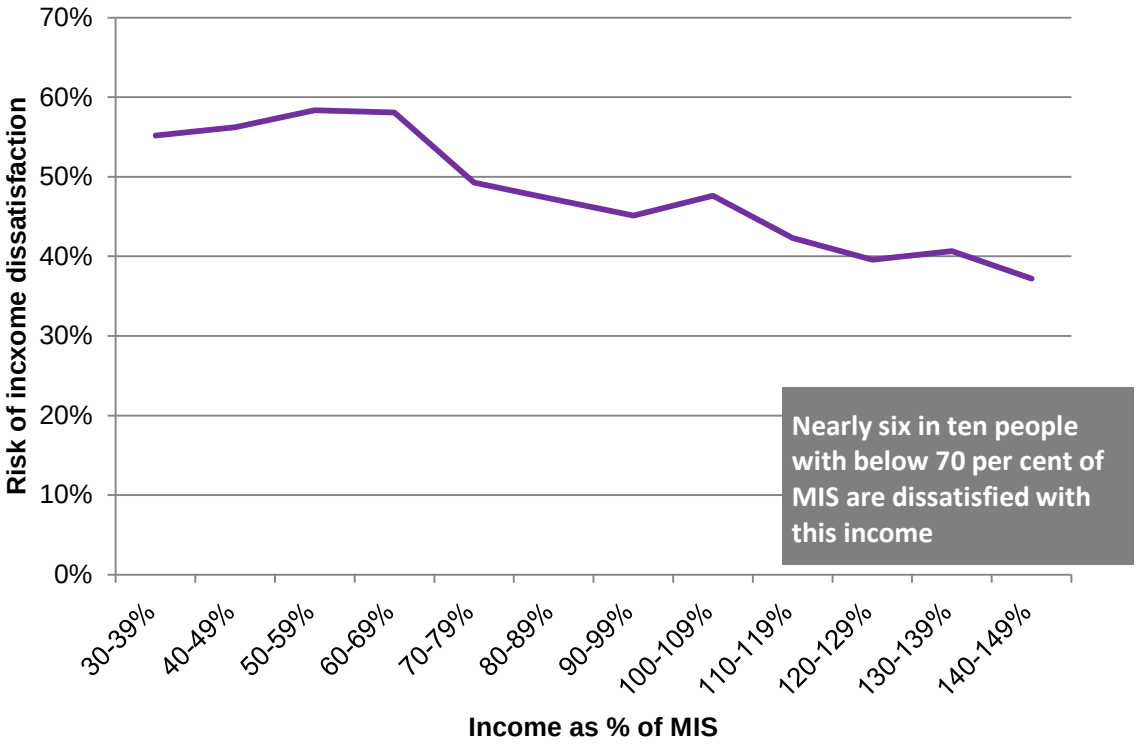


Figure 8 repeats this process for (dis)satisfaction with income. This shows that about 40 per cent of people with incomes 50 per cent above MIS are still dissatisfied with their incomes, but below about 70 per cent MIS, about 60 per cent are dissatisfied. Again, the risk stops rising below a certain income level.

Figure 8 Risk of being dissatisfied with income, and income relative to MIS, 2012/13



The last three graphs suggest that there is some threshold below MIS where the risk of deprivation, financial difficulties or dissatisfaction with income stabilises, at a level much greater than for people on a low income. How can we describe this increased level of risk? We can observe, for example, that between 150 and 80 per cent of MIS the chance of being deprived in at least one category rises from 55 to 75 per cent (Figure 6), while the chance of being deprived in at least four categories rises from about 20 to 43 per cent. Changes in this form are not easy to sum up – is a doubling of the percentage risk from about 20 to 40 per cent more or less serious than an increase from 55 to 75 per cent?

A more meaningful way of presenting these risks, and one that in fact helps us standardise the results, is to consider odds ratios. This involves, first, translating every percentage risk into odds – so 20 per cent becomes one to four (or ¼ to one)

and 80 per cent becomes four to one. This means that for example an 80 per cent risk represents four times the odds of a 50 per cent risk (4:1 rather than 1:1) and a 50 per cent risk in turn represents four times the odds of a 20 per cent risk (1:1 compared to 0.25:1).

After calculating the odds ratio of being deprived in each income band, we can compare these with the odds of being deprived for someone on an income above MIS. This compares the chance of deprivation at a low level of income to the average chance of all people with enough income to afford the whole MIS budget. These odds ratios, for deprivation and also for financial problems and income dissatisfaction, are shown in Figures 7, 8 and 11 (note that the odds for each band of income are being compared to the odds for everybody above MIS, and that therefore the bands just above the MIS level are actually a subset of the comparison group. These are shown for context, rather than because there is any particular significance of the odds, say, of being deprived if your income is 100-110 per cent of MIS compared to if it is 100 per cent MIS or more).

Figure 9 **Odds of deprivation, by income band, as ratio of odds with income above MIS, 2012/13**

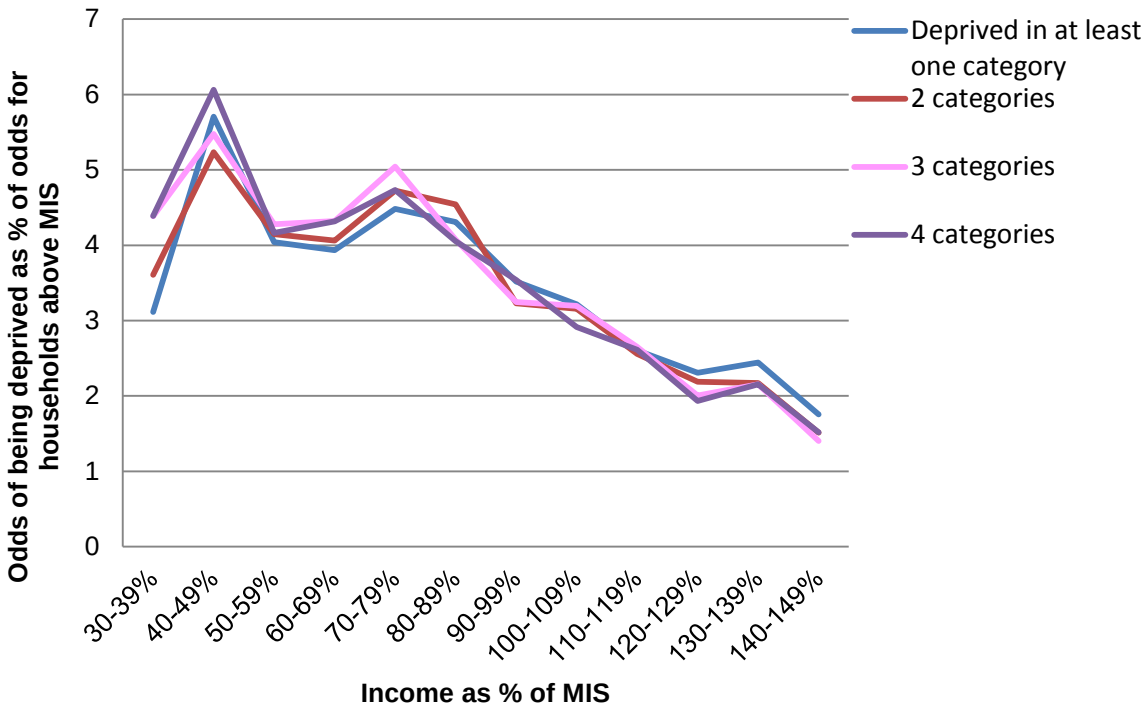


Figure 10 **Odds of financial problems, by income band, as ratio of odds with income above MIS, 2012/13**

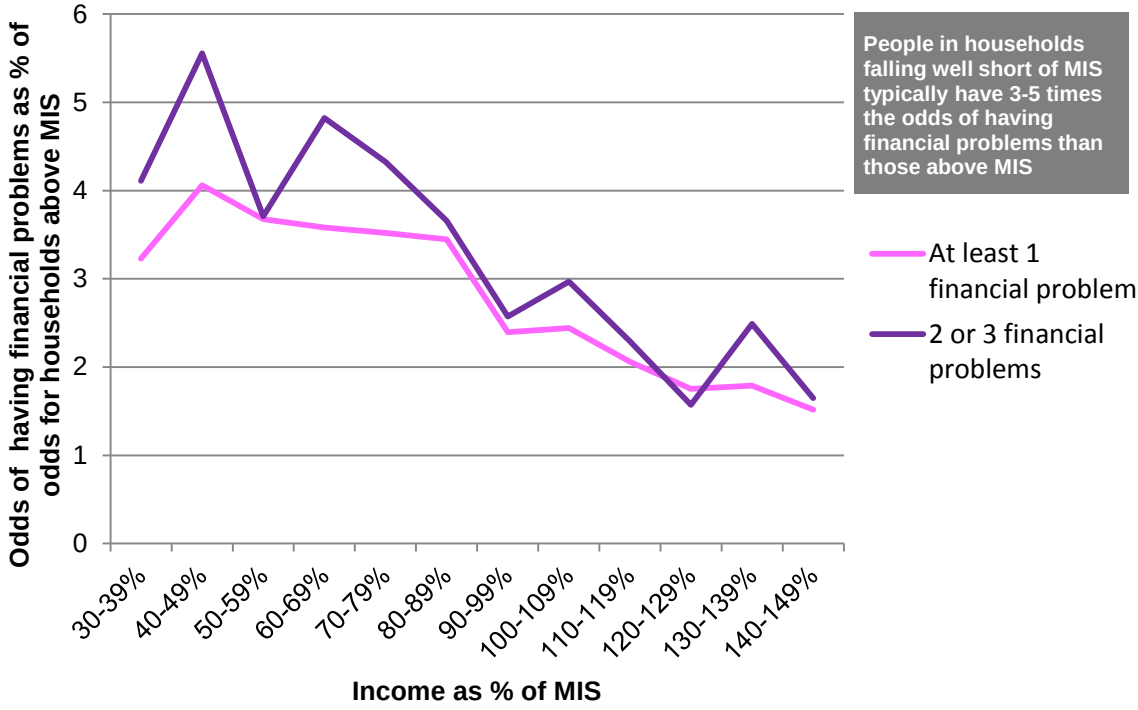


Figure 11 Odds of income dissatisfaction, by income band, as ratio of odds with income above MIS 2012-13

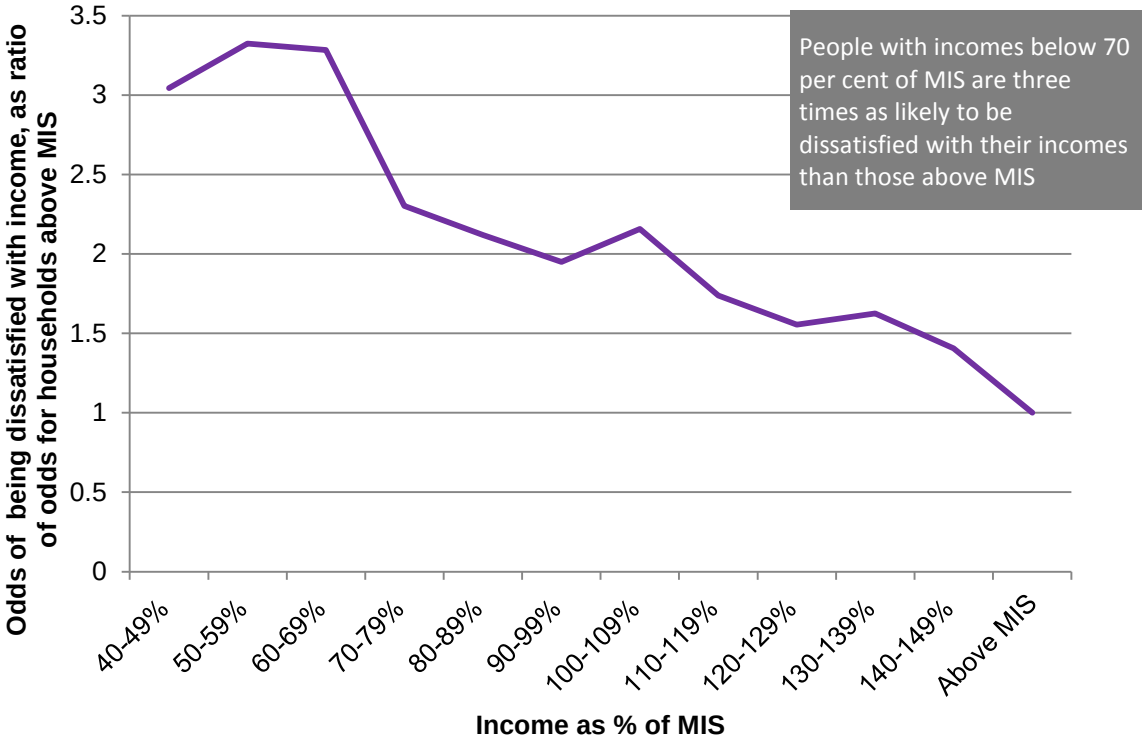


Figure 9 shows a high degree of consistency in odds ratios for different levels of deprivation. For example, the risk of being deprived for people above MIS is 0.69 to 1 for one or more categories and 0.26 to one for three or more categories; for someone at 80-90 per cent MIS these risks rises to 2.96 to one and 1.04 to one respectively. Figure 9 does not show these odds, but the ratios between them – in each case close to four times the odds (for three or more categories, 2.96/0.69=4.3; for three or more categories, 1.04/0.26=4). The 'plateau' level on income bands of 80-90 per cent or below can mainly be described as having odds of deprivation between four and five times that of people with income above MIS. This result emphasises how much more at risk people with incomes well below MIS are than the average for those who can afford the MIS budget.

Figures 10 and 11 show a similar pattern for the risk of financial problems and satisfaction with income. Perhaps not surprisingly, given the many reasons why

people without low income get can get into financial difficulties, the odds ratios for low compared to not-low income are smaller in the case of having at least one financial problem (with a plateau of around 3-4 to one), but for multiple financial problems, the ratio rises to a similar level, 4-5 to one, as the relative odds of being deprived. In the case of satisfaction, the odds ratios are also lower than for deprivation, but nevertheless very substantial, rising above three to one for households with below 70 per cent MIS compared to all households above MIS.

The relationship between income and deprivation can be considered further, in terms of:

- Whether there is any different effect for income over time
- How consistent results have been in a previous survey
- How results compare across groups

Figure 12 considers the risk of deprivation in 2012/13 according to average income relative to MIS over the previous four years. As reported in Section 2 above, average income over several years has proved to have a closer relationship with deprivation than income in a single year. However, this evidence suggests that four years may not be a long enough period to show the full effect. Moreover, since the sample of people whose household income can be tracked over four years is only about half as large as for a single year, it is harder to measure an association accurately, especially at lower levels of income and higher levels of deprivation, where sample sizes are small. It appears overall that the additional advantage of measuring income over time may be balanced out by the disadvantage of the smaller sample, since the correlation coefficients are almost identical in both cases: r= -0.37. As shown in Figure 12, there is also a similar pattern, in terms of a 'plateau' of additional risk between about 50-60 and 80-90 per cent median income, and an additional 'spike' at income below these levels. However, one notable difference is that the odds ratios are somewhat higher at the plateau when income over time is considered: typically

five to six times the odds of households above MIS, compared to four to five when considering only a single year's income. People with income above MIS on average over a period had a similar deprivation risk to those with above MIS in a single year, but those with low incomes averaged over the previous four years were at greater risk than those on low income in the year that deprivation was being measured. Thus, while the longitudinal measure does not produce a closer fit between income and deprivation, it produces a somewhat steeper slope.

Figure 12 Odds of deprivation, 2012/13 by average income 2008/09-2012/13: in income band, as ratio of odds with income above MIS

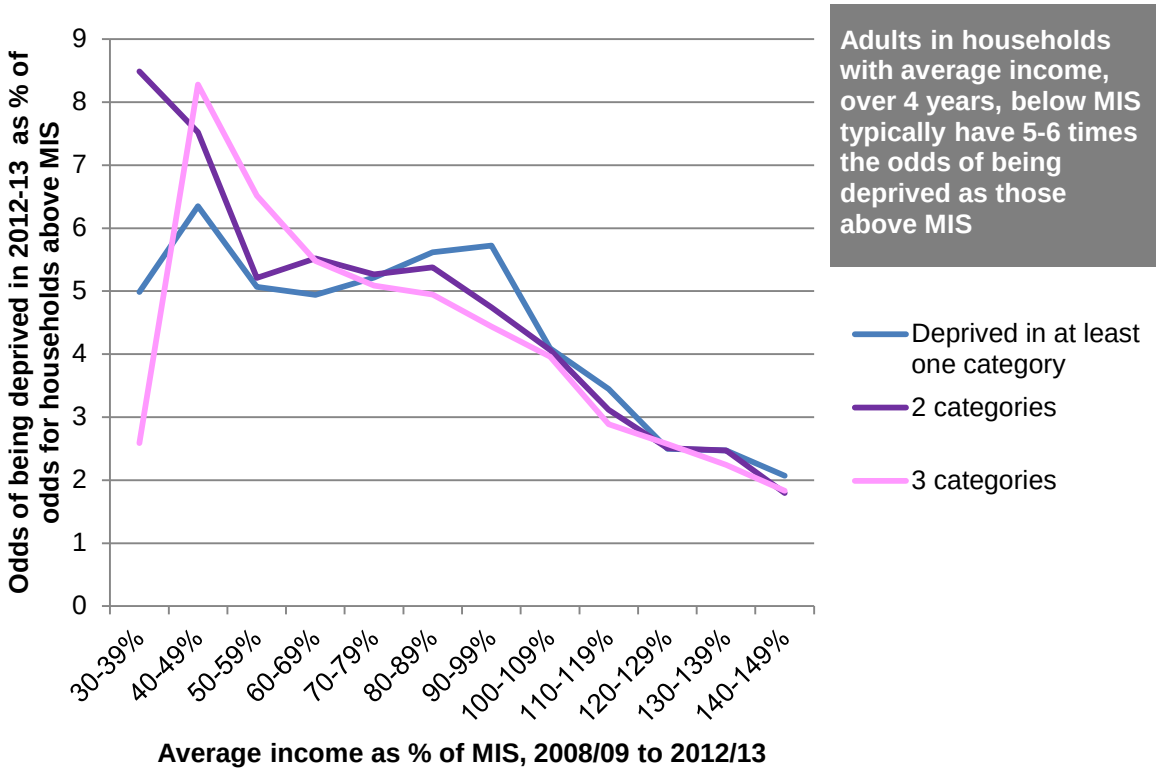
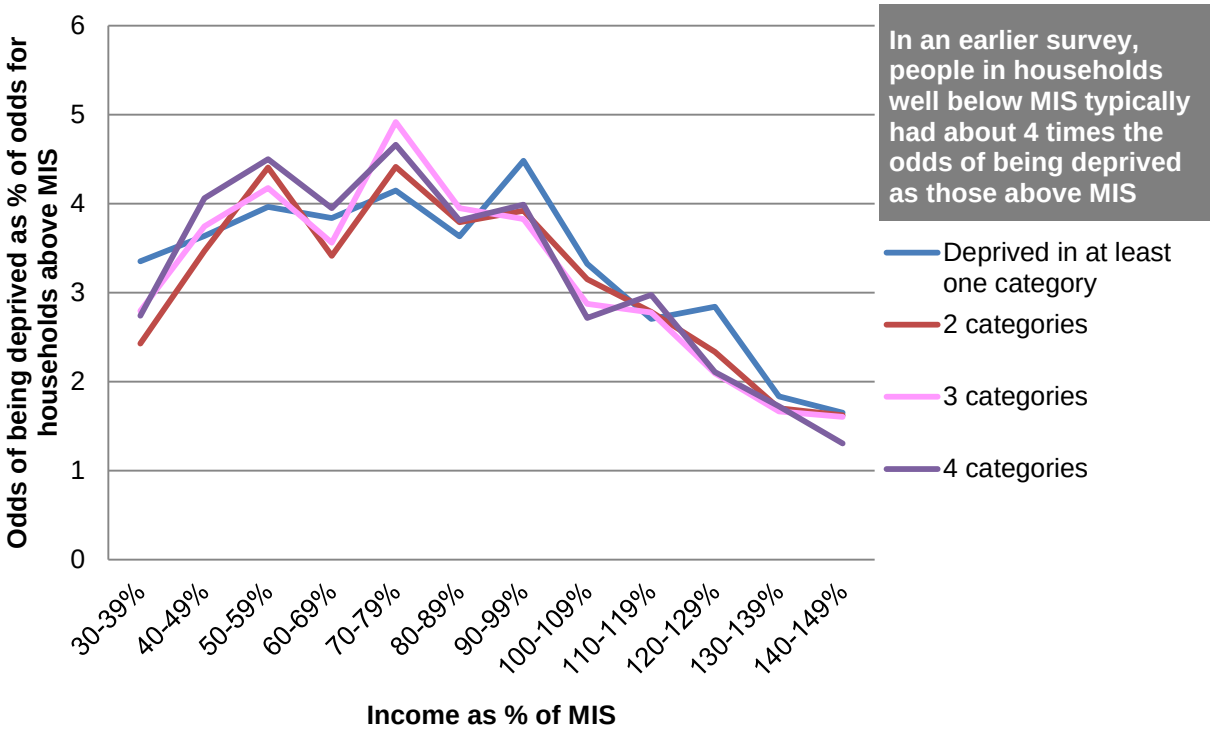


Figure 13 goes on to compare the single-year results in an earlier survey to 2012/13 to see if they are reasonably consistent. Since Understanding Society only measures deprivation every other year, and 2012/13 was only its fourth year, there is so far only one comparable wave in which this check can be made, Wave 2 in 2010/11. The results show a similar pattern to Wave 4, although the details are not identical. In

particular, the exact shape of the 'plateau' is different in the two surveys. In Wave 2, as income falls, the increase in deprivation risk initially starts levelling off below 90 per cent of MIS, but then briefly resumes below 80 per cent, before ceasing below 70. In Wave 4 on the other hand (Figure 7 above), the levelling off comes more smoothly, below 80 per cent of MIS. The rougher pattern in Wave 2 may potentially arise from one or more of several factors: imprecision in the measurement of this relationship, some variability in its precise nature over time or the reduction over time of measurement imperfections in the early waves of Understanding Society survey. Whether one of these causes or other factors contribute to the differences observed between the two surveys, they suggest some caution in expressing the overall conclusions of this analysis.

Figure 13 Odds of deprivation, by income band, as ratio of odds with income above MIS 2010/11

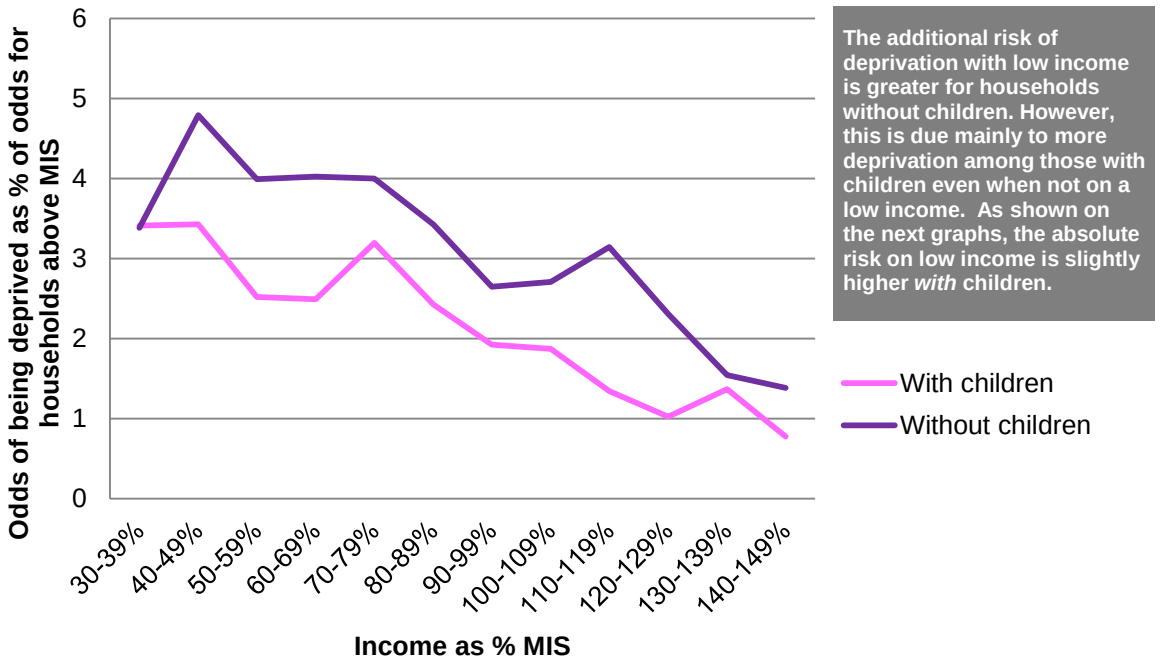


A third comparison is of how the relationship between income and deprivation compares across households with different demographic composition. This is a

particularly relevant comparison to make in the context of MIS, because it attempts to identify what incomes are needed for different households to reach a common standard, using more direct evidence of what households require to meet their needs than the equivalence scales used to compare household income to the median. We might therefore expect two households of different types on a given income relative to MIS to have similar risks of being deprived. This comparison is easiest to make in the case of households of working age with and without children, since adults in those households are asked the same set of questions about features of deprivation affecting the household as a whole (a comparison with pensioners of this type is far less precise, because of differences in questions asked – see below). We cannot expect the results to be identical with and without children, since the contexts are different. For example, the consequence of not having enough to meet MIS on a household's ability to afford an item, in a list common to households with and without children, may be affected by the presence of children if scarce resources are focused on meeting children's needs.

Figure 14 starts by comparing odds ratios for working age households with and without children. It shows that while the broad shape of the relationship between income and deprivation risk is similar for both groups, the relative odds on low compared to above-MIS income are lower where children are present, rising to a factor of about three rather than about four for households without children. However, a closer look at the data reveals that the risk of deprivation on low incomes is actually slightly *greater* for households with children, but for those above MIS, the risk is significantly higher, hence reducing the ratio when odds for low and above-MIS income are being compared. This suggests that even where families have above-minimum income, they may prioritise spending on their children in a way that requires sacrifices.

Figure 14 Odds of deprivation in at least three categories, by income band, as ratio of odds with income above MIS: with and without children, 2012/13



Figures 15a and 15b compare the risk of deprivation for those with and without children at different income levels. This shows that typically for low income families, the risk with children is slightly above, and without children slightly below, the average for all working age adults. The difference between the two graphs is that the first uses MIS as an income benchmark, while the second uses median equivalised income. One way of interpreting such a comparison is to consider that if an income threshold succeeded in representing an identical 'standard of living' for different household types, one would expect deprivation risks below this threshold to be similar across these groups. While they will never be identical, a smaller difference in risk is a sign of a more accurate representation of relative income requirements across household types. Therefore, the fact that the average gap in deprivation risk between those with and without children is only two thirds as great using MIS than equivalised income is an encouraging sign that the former reflects relative needs more accurately.

Figure 15a Deprivation risk for working age adults, with and without children, according to income relative to MIS

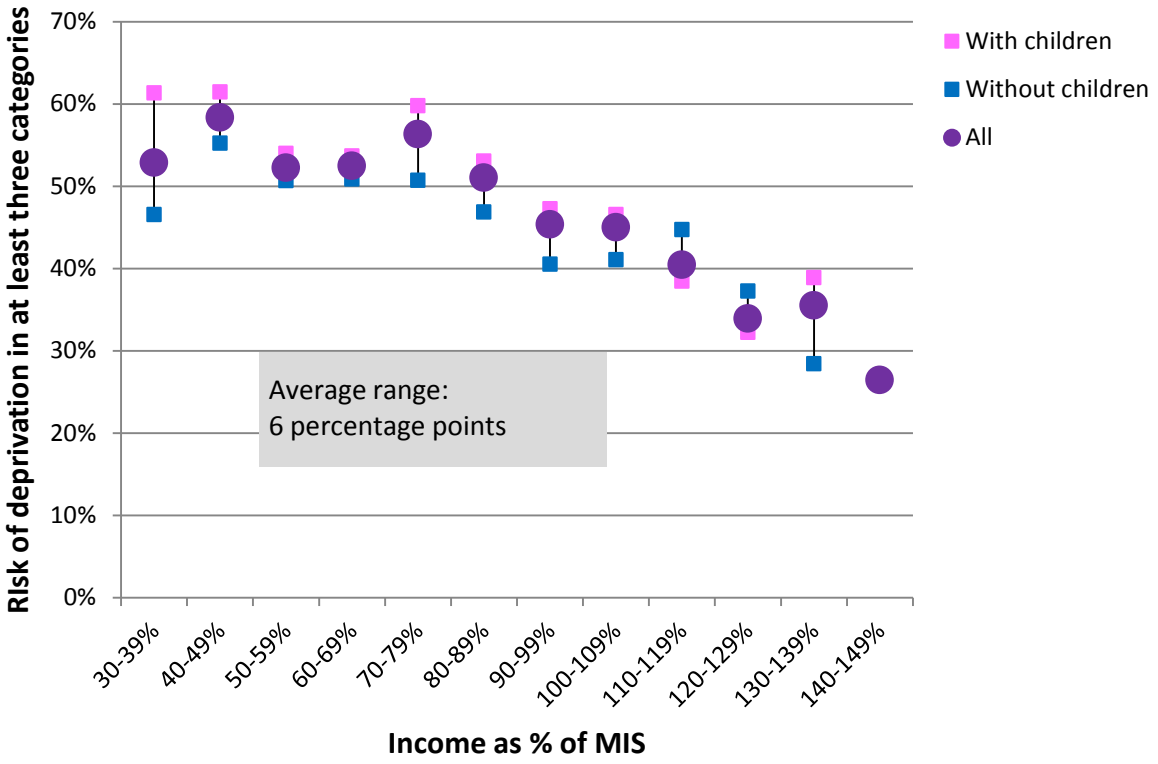
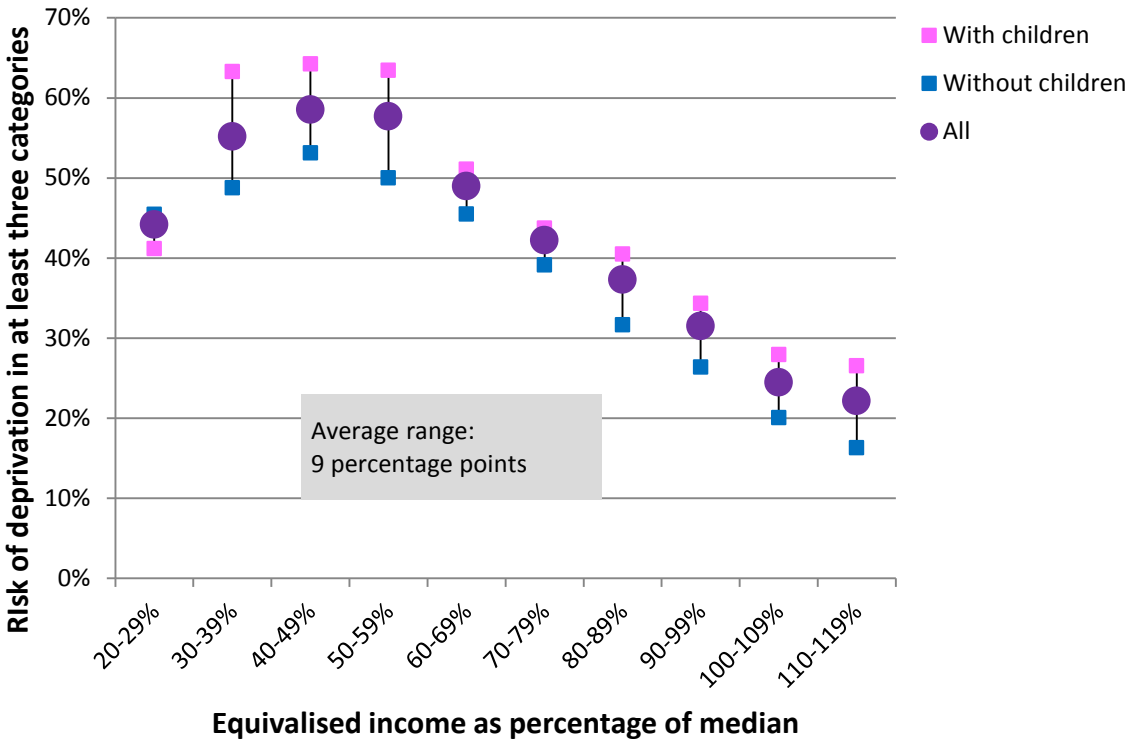


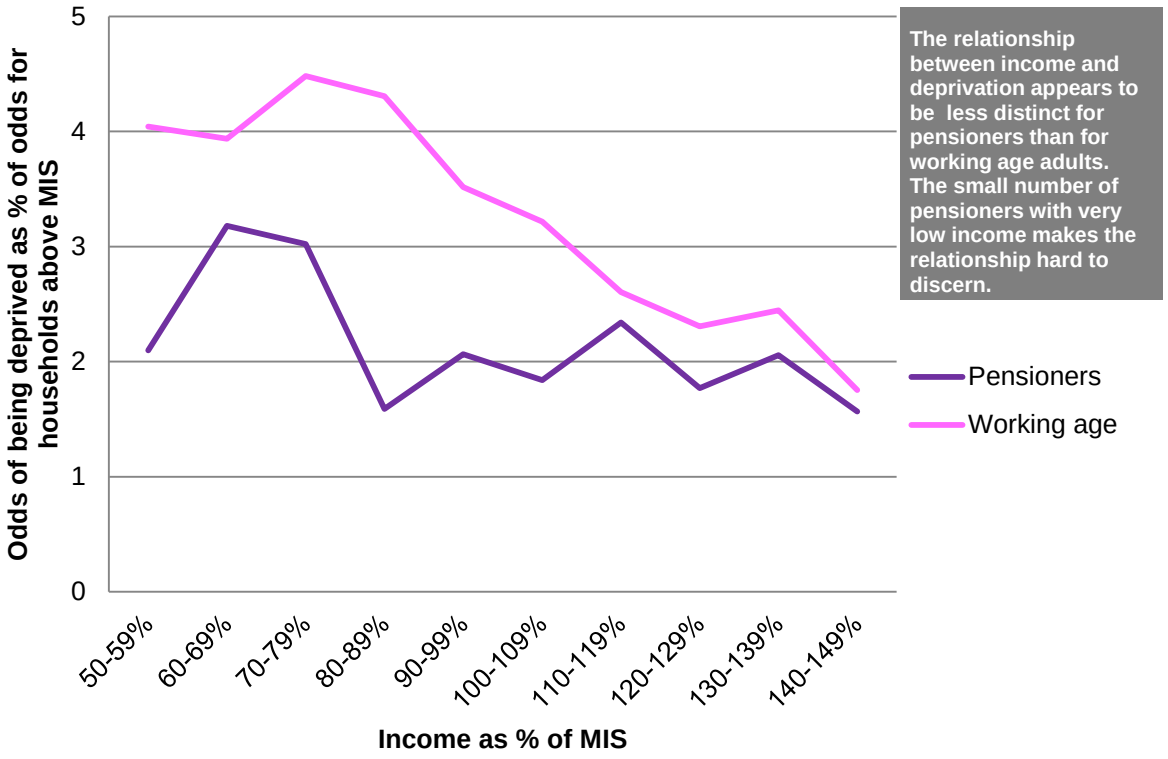
Figure 15b Deprivation risk for working age adults, with and without children, according to equivalised income relative to median



A comparison with pensioners is more difficult – for the simple reason that only a small proportion of pensioners are below MIS and this does not provide an adequate sample to explore the relationship with deprivation. In addition, the overall correlation of income and deprivation is weak for pensioners, with a coefficient of 0.14 (this may be because pensioner deprivation is more likely to be caused by high costs, such as a hard to heat home or health-related expenses, rather than with low income). Figure 13 shows for a limited range of income the risk of lacking at least one necessity, for a pensioner compared to a working age adult. This shows that, consistent with findings for other groups, there is a significantly higher risk for those on 60-80 per cent MIS than for other income groups. Above this level and up to about median income the relationship is flat, although still with about twice the average risk of all those above MIS. This reflects the fact that above 150 per cent MIS (close to median equivalised income for pensioners), only about one in ten

pensioners lacks even one necessity, whereas for those around the MIS level it is about one in five.

Figure 16 Odds of deprivation in at least one category, by income band, as ratio of odds with income above MIS: pensioners and working age adults, 2012/13



3.3 Identifying a poverty indicator

Several general patterns emerge from the above results.

There is no evidence here to support the Townsend hypothesis of a convex curve when deprivation is plotted against income, showing that below a certain low level of income, the risk increases more rapidly (see Figure 3 above). As illustrated in Figure 4, Berthoud and Bryan (2011) show that the relationship across the low income range is largely linear. This section has shown that the crude relationship (not

controlling for other factors) produces if anything a concave curve, with the risk not going up much further as income falls below a certain level. This is consistent with another study referred to above plotting income against a broad measure of 'participation' (Farragina et al., 2013), which like the present analysis was based on the Understanding Society survey.

This plateau effect allows a descriptive account to quantify the additional risk of deprivation or financial problems typically experienced by households on income below a given threshold. Using odds ratios, this added risk can be described as someone on a low income being at least four times as likely to be deprived or have financial problems as households with income above the minimum required.

What ratio of MIS might be said to represent such a low income threshold and hence an indicator of poverty? Figures 9 and 12 above show a 'peak' of risk at 40-49 per cent of MIS, but describing poverty as being at this level or below would be highly problematic. Well under ten per cent of households have incomes below half of MIS, and only a minority of these are in the 40-49 per cent range. Such a measure would therefore be heavily affected both by sample error and by apparent under-reporting among those who report the very lowest incomes. It would in principle be possible to look only at those with 40-49 per cent of MIS, about whom under-reporting may be less of a problem, but this would be a small group of not more than two per cent of the population, and it would be impossible to break down such a poverty measure into any subgroups because of small sample sizes. Moreover, even if measurement were not a problem, the evidence presented earlier in this report suggests that looking at such a narrow range of incomes to represent poverty would fail to pick up income-related problems affecting a much greater section of the population.

A more meaningful basis would therefore be a point at which the risk associated with progressively lower income 'plateaus'. For example, the odds ratios for deprivation in at least two categories in 2012/13, relative to the odds for people above MIS were:

90-99% MIS	3.2
80-89% MIS	4.5
70-79% MIS	4.7
60-69% MIS	4.1
50-59% MIS	4.1

In this case the increase in risk starts to diminish at 80-89 per cent of MIS, and ceases after it reaches 70-79 per cent of MIS.

Figure 9 above shows a very similar pattern for other thresholds of deprivation, with the increase in the odds of being deprived increasing up to the point where incomes fall to 70-79 per cent of MIS. In some of the other graphs in the previous section, the peak appears at a somewhat higher income level, and in some cases it is not as distinct as in Figure 9.

The variability of evidence on different measures makes it hard to justify any one threshold as an indicator of 'poverty' on this evidence alone. One could make a case for example for setting it in the 80-89 per cent range (below which increase in risk diminishes) or in the 70-79 per cent range (below which risk does not consistently increase at all). The evidence suggests very broadly that people who are substantially below MIS have an increased risk of deprivation, but that below roughly three quarters of MIS this increase in risk becomes less evident based on household income alone.

On this basis, we suggest as a poverty indicator the number of people living in households **below 75 per cent of MIS.** This corresponds with the middle of the

range at which risk first 'peaks' in Figure 9. We should reiterate however that there could also be a case for setting the figure at 85 per cent, the middle of the range at which it starts to slow down in some cases, and peaks in some others in the graphs above. None of these thresholds give us a measure of who is in 'poverty', but any of them allow us to monitor change in how many people have incomes low enough to increase greatly the risk of deprivation. The choice of 75 per cent is made simply on the basis that choosing as round a number as possible makes it clear that this threshold does not represent precise evidence on where the true poverty line lies. It shows how many people lack a quarter of the budget they need to reach a benchmark minimum living standard.

In describing the increased risk of deprivation of people with below 75 per cent of MIS, we can say that those with incomes below this level have about four times the odds of lacking necessities as people with incomes of MIS or above. Another way of expressing this is that below 75 per cent of MIS, people have three times the odds of lacking necessities as those above 75 per cent of MIS.

3.4 A further indicator: the depth of low income

While the discussions in this paper have considered what might be the best threshold to use as a poverty indicator based on MIS, they have also shown that there is no single point at which a high risk of deprivation appears, but rather that it grows continuously as income falls below the MIS level, down to about one-quarter below this level. Even someone just below MIS (90-99 per cent) has about three times the odds of deprivation than someone above it. Hill et al's (2016) qualitative study of the experiences of families with income below MIS shows that even being 10 per cent short of the minimum can create difficulties. We can also surmise (and the qualitative evidence confirms this) that as income falls below 75 per cent MIS, this makes life ever less comfortable, even if statistical links with growing deprivation

risk are confounded by other factors. In other words, the depth of low income matters.

As a twin indicator, therefore, we can look at low income in terms of *the overall shortfall* in the population's incomes relative to MIS. This can be considered as the proportion of the population who fall below MIS times the percentage amount that they fall below it. Such a 'depth measure' addresses the fact that there is no single threshold at which people enter into poverty. It takes some account of people falling short of MIS even by a small amount, but gives greater weight to those whose income is a long way below it.

These twin indicators are explained further in Section 4, with some initial results presented in Section 5.

4 Operationalising a poverty indicator based on MIS

The previous sections have suggested that an income threshold relative to MIS could produce a useful indicator of poverty, especially in monitoring change over time. At the end of Section 3, it was concluded that 75 per cent of MIS could be used to express a low income below which the odds of being deprived can be expected to be around three times as high as for those with incomes above it, and that a companion indicator showing depth of low income should be based on a combination of how many households fall below MIS and by how much.

We will refer to these twin indicators as *MIS-based poverty indicators* – the first as a *threshold indicator* and the second as a *depth indicator.*

These indicators can be operationalised using the Family Resources Survey, as the annual Households Below a Minimum Income Standard reports (Padley and Hirsch, 2016) already do for a subsection of the population. The principle of these comparisons is to express every household's disposable income as a percentage of MIS. Disposable income is income after taxes, including benefits and net of rent/mortgage and childcare. This is taken as a percentage of the budget required by the household type in question, again net of rent and childcare. (Note that this is the same type of income measure, relative to MIS, as used in Section 3 above, but because a different survey is now being used - the Family Resources Survey rather than Understanding Society - it has in this case been possible to deduct actual childcare costs from income.)

In order to create a more complete and stable measure on the above basis, two further steps have to be taken.

4.1 Missing households

The first step is to derive income thresholds for the minority of households not covered by MIS. The research underpinning MIS does not cover the needs of very large families or of families in which people live with adults who are not their partner (including related people over the age of 18 living in the same household). However to enable the creation of a poverty indicator covering all the population, some simplified assumptions about those households can be made. This produces a more informed basis for comparing multi-adult households than equivalence scales, which simply use the same weighting for each household member over the age of 14 as for the second person in a couple. Annex A below gives the basis we have used for such calculations, with rationales based on evidence gathered in MIS.

4.2 Smoothing

The second step is to adjust annual MIS thresholds in a way that avoids the 'lumpiness' of matching income to budgets that are only fully updated with new research every four years. If a MIS-based threshold is to be used to create a high profile poverty indicator, the effect of these periodic changes in the content of minimum 'baskets' risk unduly affecting annual changes in reported poverty rates. For example, if a large item is newly added to a budget, this could push apparent poverty rates up in the year it is first introduced, when actually needs change only gradually over time.

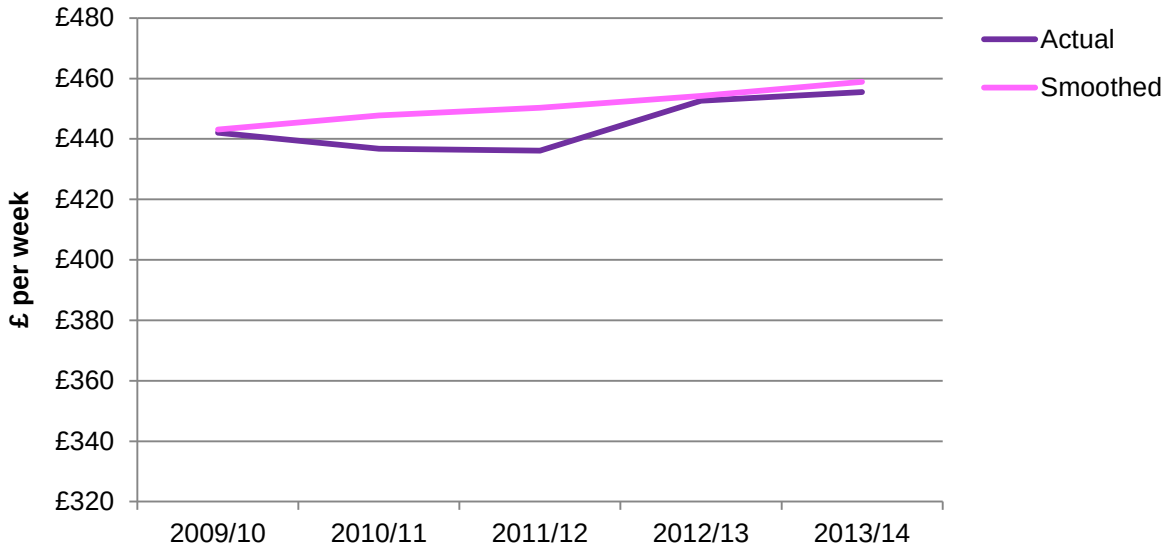
We have avoided this lumpiness by using a smoothed series of income benchmarks that introduce changes over a four year period rather than all at one time. This has been done without creating any additional lag in the figures, since MIS budgets are available well before survey data for the same year, and because the survey in any case spans two MIS years. For example, for financial year 2013/14 (covering April

2013 to March 2014), the MIS thresholds can be calculated as an average of MIS budgets for April 2012, April 2013, April 2014 and April 2015, in each case adjusted by inflation to average prices in the 2013/14 survey period. In other words it is based on MIS spanning the period from one year before the survey started to one year after it ended. Since the Family Resources Survey for 2013/14 was published in mid-2015, all the required MIS results were available by the time the income distribution figures came out.

Two results of this smoothing are illustrated in Figure 14. For a couple with two children, a modest 'kink' in 2012, when a rebase of budgets introduced car ownership as an essential for families with children for the first time, is smoothed out by this method, replacing a sudden with gradual increase. In the case of a single person, the first rebase in 2014 created a very minor fall in the real value of the budget, which again is smoothed out by the adjusted figures. In this case the fall had been preceded by an increase in the value of the budgets when adjusted for general inflation, since the actual inflation rates of MIS budgets had been steeper than the general index due to certain items like food and energy that comprise a greater share of a minimum than a general basket, rising relatively quickly. The smoothing reduces fluctuations in both directions.

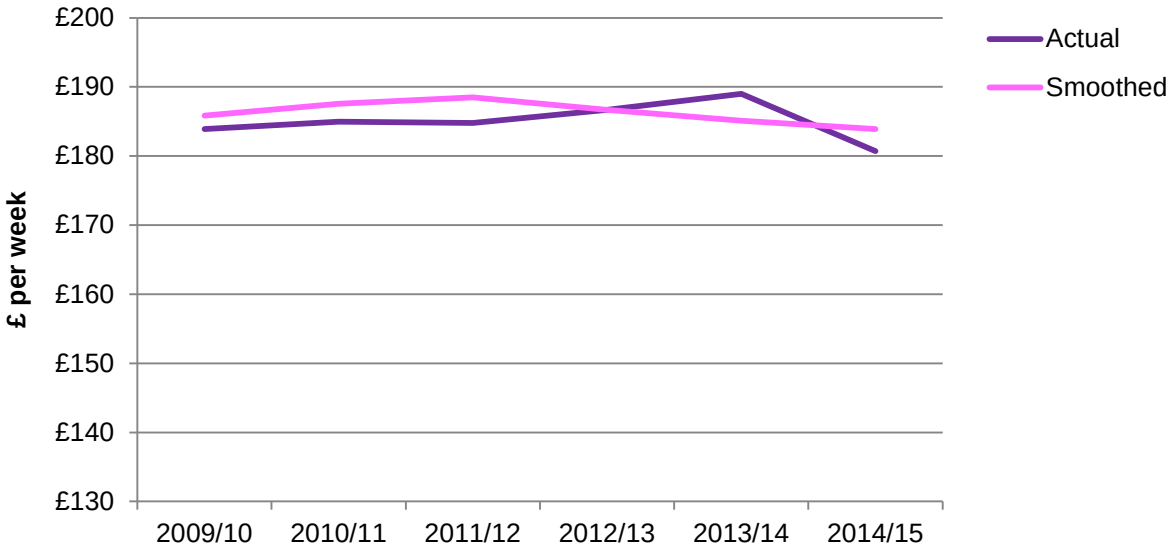
Figure 17 Effect of smoothing MIS requirement (weekly budgets at 2014/15 prices)

a) Couple two children



b) Single working age

(weekly budgets at 2014/15 prices)



4.3 Effect on estimate of pensioner poverty

One thing to note about an indicator of poverty using this method is that its estimates of pensioner poverty end up particularly small. Unlike with HBAI, pensioner thresholds are calculated separately and are somewhat lower than equivalent working age households. For pensioners, 75 per cent of MIS is less than 50 per cent equivalised median income. HBAI figures (DWP, 2015) show about seven per cent of pensioners below this level, compared to about 14 per cent below the 60 per cent median poverty line (after housing costs). In considering the credibility of such a low estimate of pensioner poverty, it is worth considering three factors influencing the relatively low threshold. One is that, unlike HBAI, the MIS measure takes account of free bus travel and free prescriptions, which significantly reduces the threshold, reflecting a genuine difference in the cost of living for pensioners and non-pensioners. Another, potentially more controversial, is that there are some areas where pensioners make more 'modest' assessments of their minimum needs than working age households. These differences however are fairly minor, and were reduced in the 2014 rebase (which has not yet fully fed into the current comparisons with HBAI, contributing to a slight rise in pensioner poverty on the new measure). A third, and more problematic factor is that most pensioners are likely to have at least some additional costs not taken account of in the 'minimum' model of a pensioner household. This specifies pensioners living in flats, but the large proportion of pensioners living in houses will have higher heating and furnishing costs than assumed. This difference is again relatively minor, but a bigger difference comes for those with additional costs related to disability or poor health, not accounted for by MIS. This is also an issue for HBAI, and one contributing factor to low reported pensioner poverty is the relatively high proportion of pensioners receiving Disability Living Allowance or Attendance Allowance, which is counted as income despite no account being taken of the extra costs it is covering. MacInnes et al., (2014) make calculations that suggest that by removing these benefits from income, pensioner

poverty rates would presently be about three to four percentage points higher. We have also made this adjustment, removing income from DLA, AA and the new PIP from our income measure, to reflect the fact that these will reflect additional costs.

4.4 Inaccuracies reporting very low income

As discussed in Section 3, there is strong evidence to suggest that households with the very lowest incomes reported in the Family Resources Survey are misreporting their incomes, in some cases to a great degree. Brewer et al., (2013) suggest that at least the bottom one per cent of incomes in the survey, and potentially a greater proportion at the bottom, should be seen as unreliable.

This inaccuracy is likely to have only a minor effect on the threshold indicator considering the numbers below 75 per cent of MIS, which comprises nearly 20 per cent of the population. Official indicators of poverty, measuring how many are below 60 per cent of median income, include those on the lowest incomes, and our threshold indicator does too, aiding comparability with the 60 per cent median income measure. On the other hand, when it comes to the depth indicator, the potential for distortion is much greater: the impact of people reporting income of, say, 20 per cent of MIS could substantially increase the average level of the reported shortfall. As a consequence, we ignore when calculating the depth indicator all households reporting income below 30 per cent of MIS. This represents about three per cent of the population. The 30 per cent threshold has been chosen because, in the analysis set out in Section 3 above, we found that below 30 per cent of MIS, the incidence of deprivation falls to levels slightly lower than for households with incomes just above MIS. This is a logical point below which to consider data invalid.

Box 1 sums up the MIS-based poverty indicator.

Box 1 – A MIS-based poverty indicator: the essentials

How income is expressed: disposable income as a percentage of smoothed minimum income requirement, where:

- *Disposable income* = Income in a survey year, net of rent, taxes (including council tax) and childcare, from all sources except disability benefits aimed at covering extra costs (DLA/AA/PIP)
- *Smoothed minimum income requirement* = MIS budget, net of rent, childcare and council tax, averaged over the MIS budgets at the four points (measured in April) starting a year before and ending a years after the survey years, adjusted for inflation to survey year prices.
- *MIS budget* = budget calculated directly through MIS research for 80 per cent of households, and for the remainder based on estimates set out in Annex A. The essentials of these supplementary estimates are: (a) to estimate the cost of additional children in large families with reference to the marginal cost of children already observed; (b) to assume that a couple with a pensioner and a non-pensioner requires the average of pensioner and non-pensioner couples; (c) to assume that where unrelated adults sharing accommodation save a small amount by living together, based on MIS research into sharing and (d) to assume that parents and adult children living together save an amount from living together that is the average of that saved by unrelated adults sharers and partners in a couple.

The threshold indicator: The number and percentage of individuals in households with disposable income below 75 per cent of MIS. As with the 60 per cent median income shown in the Government's Household Below Average Income (HBAI) series, this counts individuals in three age-based categories – children, working age and pensioners – who live in households below the threshold.

The depth indicator: Ignoring households reporting incomes below 30 per cent of MIS, the percentage of people living in households below MIS times the average percentage that they fall below it. For example, if 20 per cent of people are living an average of 30 per cent below MIS (i.e. one in five have incomes below MIS and the average of their income is 70 per cent of MIS), this produces an indicator of six per cent. This can be interpreted as representing the total income shortfall, expressed as an average amount for everyone in the population.

5 Preliminary results

This section calculates results for the two indicators proposed above for two recent years, 2010/11 and 2013/14. More detailed results will be presented annually, initially in early 2017, based on 2014/15 data that becomes available in mid-2016. The present figures and their comparison with income below 60 per cent median give a first indication of how such data can be used to monitor trends in poverty.

5.1 Threshold indicator: numbers below 75 per cent MIS

Risk of low income

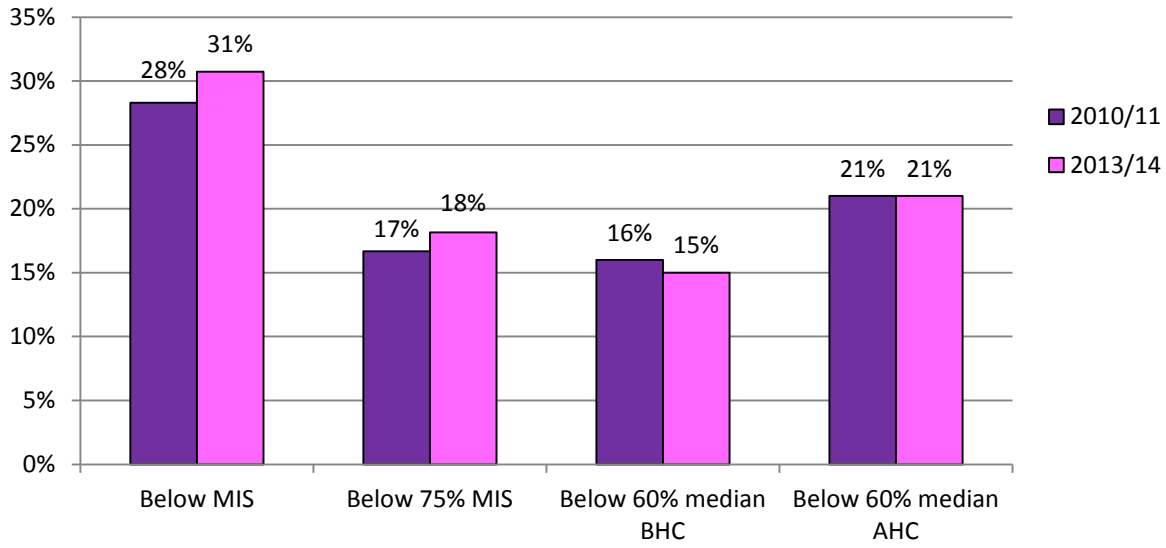
Figure 18 shows the percentage of people below 75 per cent MIS, comparing this new poverty indicator with the percentages below 100 per cent MIS and below 60 per cent median income.

This shows:

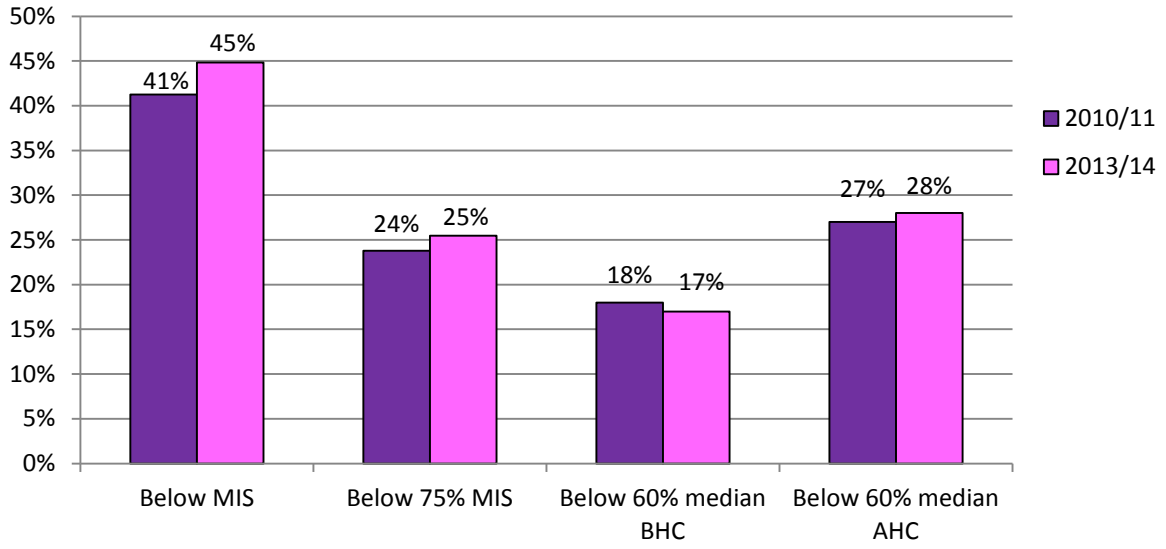
- That the overall risk of being below 75 per cent MIS is in between the risk of being below 60 per cent median income before and after housing costs, while the risk of being below MIS is much higher.
- That the risk of being below 75 or 100 per cent MIS, relative to being below 60 per cent median, is lower for pensioners and higher for children and people of working age. As discussed above, the minimum for a pensioner is lower than for an adult of working age, whereas the calculation of equivalent median incomes makes no distinction between adults of different ages.
- That in general the numbers below MIS and 75 per cent MIS have risen while the numbers below 60 per cent median income have stayed largely the same. As pointed out earlier in this paper, this is the product of a period when real incomes fell but needs as measured by MIS did not.

Figure 18 Percentage below thresholds of MIS and median income, 2010/11 and 2013/14

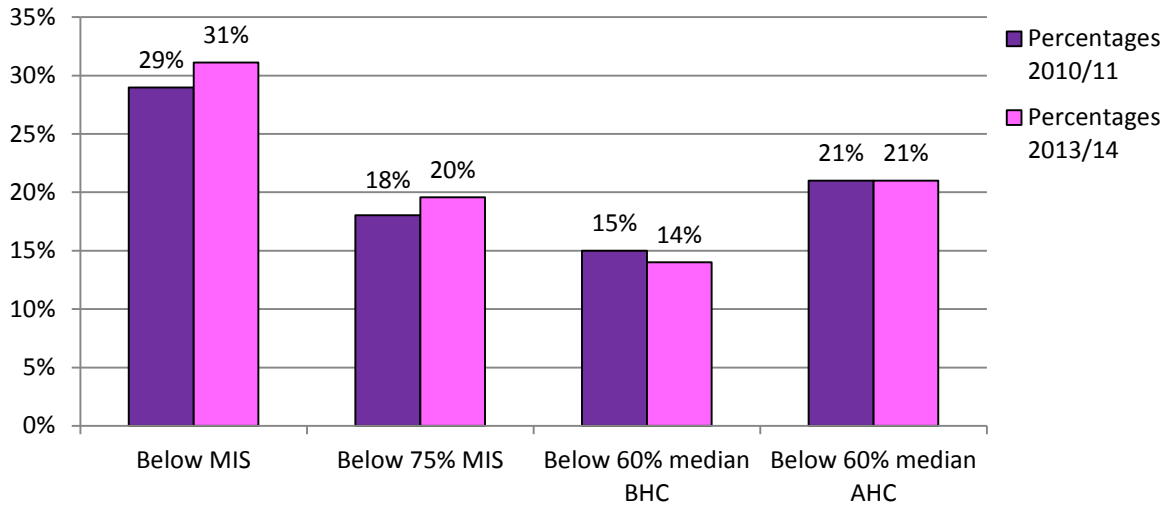
All individuals



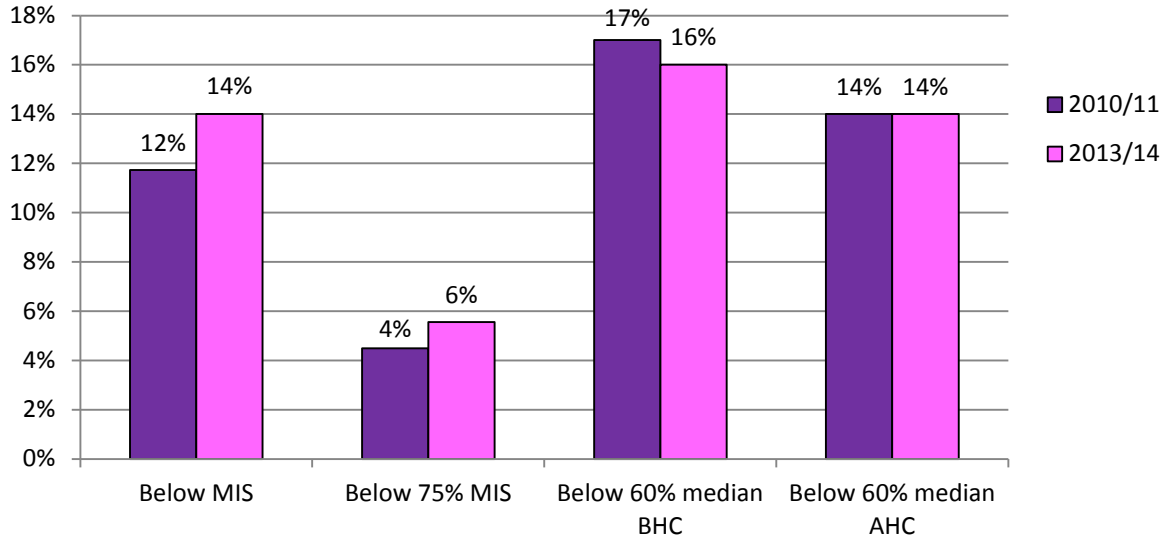
Children



Working Age



Pensioners



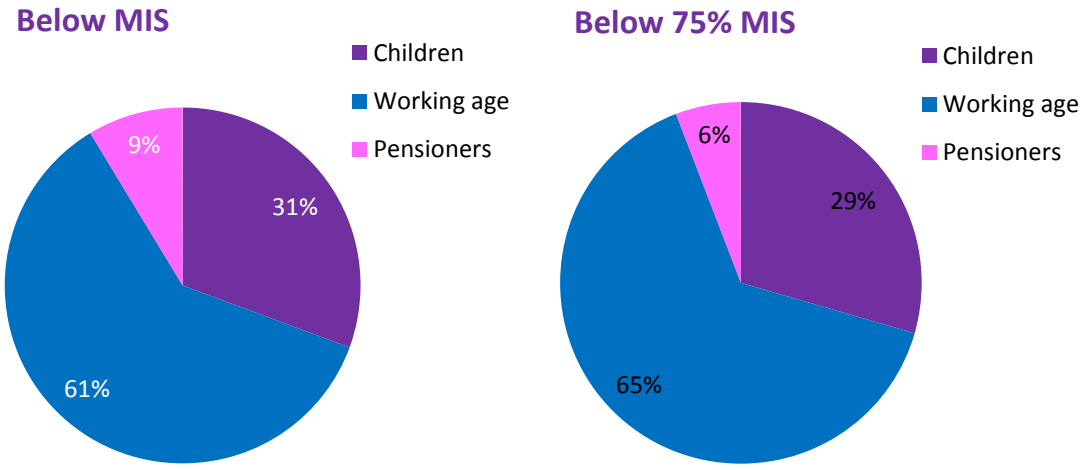
- That this contrast between a MIS-based and median income-based trend is greater overall when looking at those living below MIS, especially families with children, whose risk of falling short of MIS rose four percentage points in three years, while child poverty rates on the 60 per cent median basis were reported as stable. For working age adults and pensioners, on the other hand, there were two percentage point increases both below 75 and 100 per cent MIS, compared with no increase in the percentages below 60 per cent median. This

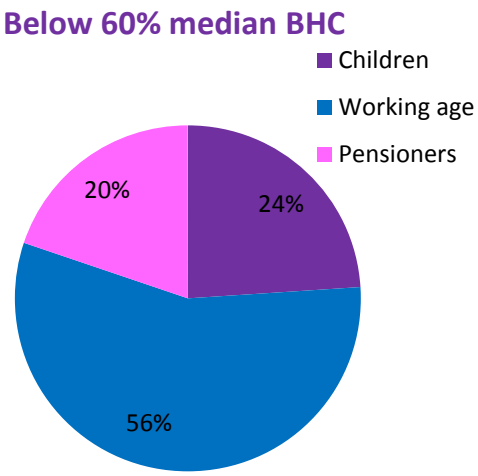
indicates that the effects are not always identical at all thresholds relative to MIS, underlining the value of looking at more than one threshold and also of using an overall depth measure.

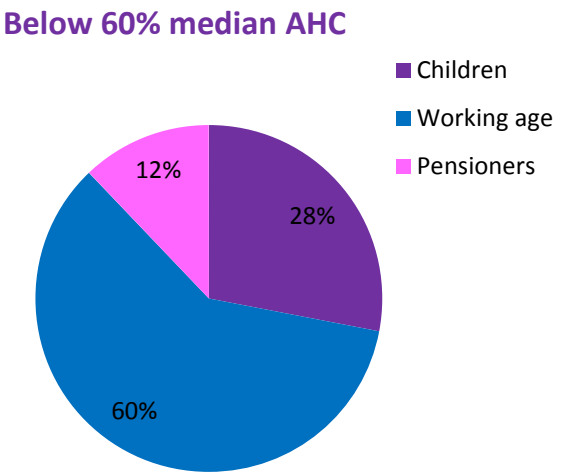
Distribution of people with low incomes

As well as allowing a different perspective of changes over time in the numbers on low incomes, a MIS-based indicator gives a means of comparing low income rates among different groups, based on research on how much different household types need rather than on largely arbitrary 'equivalence scales'. One way of looking at this is shown in Figure 19, which considers the distribution of all individuals in low income households across different demographic categories, according to different thresholds of low income.

Figure 19 Distribution of individuals on low income by demographic type, according to various thresholds







These charts show that:

- Relatively fewer pensioners are on low incomes using MIS based thresholds than median income based thresholds, for reasons discussed earlier.
- Whereas the most commonly used poverty indicator, the numbers below 60 per cent income before housing costs, suggest a quarter of people in poverty are children, nearly a third of those below MIS are children.
- Comparing 60 per cent median with 75 per cent MIS (a more similar income level overall), the biggest difference is for working age adults, who comprise nearly two thirds (65 per cent) of those below 75 per cent of MIS, rather than 56 per cent of those officially in poverty.

Depth indicator – total shortfall compared to MIS

Table 3 shows how many people in different demographic categories are in households below MIS and how far below the standard they are on average. Taking these two figures together gives a 'depth' indicator of the total shortfall, which can be monitored over time. For example, in 2010/11, just under four in ten children were in households who were below MIS by an average of just over a quarter, so the depth indicator was around one tenth: total MIS shortfalls were equivalent to an average of 10.8 per cent for each member of the population. In the next three years,

both the incidence and the average depth rose, which compounded to increase the depth measure to 12.2 per cent - a proportionate increase greater than either the incidence or the average shortfall alone. The same has happened with working age adults. This measure is a useful way of monitoring the extent that people have insufficient income to meet their needs without having to select a particular threshold, but giving more weight to low income the further below MIS that it falls. These initial results show that it can capture change beyond what would be captured by any one threshold measure.

Table 3 Depth of income below MIS*

	a) Children		b) Working age adults		c) Pensioners	
	2010/11	2013/14	2010/11	2013/14	2010/11	2013/14
Percent of population below MIS (incidence)	39.0%	42.7%	26.1%	28.3%	10.7%	13.0%
Average per cent that they are below MIS (shortfall)	27.8%	28.6%	29.8%	31.0%	21.7%	21.7%
Depth indicator (incidence times shortfall)	10.8%	12.2%	7.8%	8.8%	2.3%	2.8%

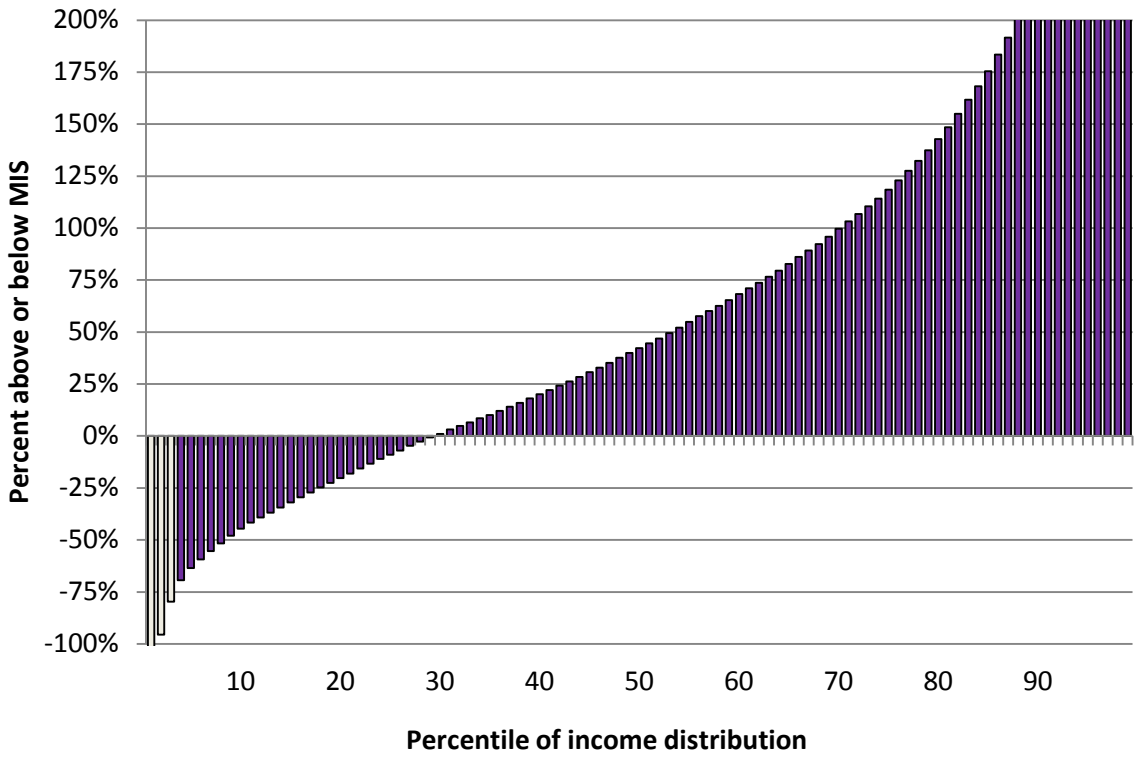
*Excluding households reporting income below 30% MIS from analysis, for whom data unreliable

A further observation from Table 3 is that the average shortfall of those with incomes below MIS is very different for different groups. Working age adults with incomes below MIS are on average nearly a third below the standard, whereas pensioners are only just over a fifth below. This shows that the gap in the extent of low income between these groups is greater than only looking at the numbers below MIS.

Figure 20 illustrates this “depth of low income” measure graphically. It shows for each percentile of the population, ordered by income as a percentage of MIS, how far they are above or below the standard. The aggregate shortfall in these terms is

illustrated by the area of the bars below the line (the rest of the income distribution is shown only for context). Note that when comparing across groups or over time, this aggregate area can be influenced both by how many of the bars are below the line (the percentage of the population below MIS) and the average depth of these bars.

Figure 20 Household income relative to MIS requirement



Future, more detailed analysis will allow more comparisons of this kind to be made, considering the trend over more years and the inter-group comparisons broken down by more household types.

6 Conclusion: what a MIS-based indicator will add to the picture

This paper has argued that an indicator based on MIS can provide a more meaningful way of monitoring poverty than one referenced on equivalised median income. But what will the movement of this indicator over time tell us about poverty trends that differ from a 60 per cent median income figure? In some respects it will give similar information – for example, general cuts in the real value of benefits in the next few years, while the economy is growing, are likely to cause poverty to grow on both measures. However, important differences, some of them already evident in the initial results presented in the previous section, include the following:

- If incomes fall across the board, poverty relative to MIS may rise while relative income poverty does not. This was the experience of the post-2008 downturn. What a MIS-based indicator adds in this case is to show that if households have less income, but require a similar amount in order to meet their needs, the fact that the median income is falling does not help in the way implied by a relative income measure.
- In a period of generally rising incomes, 60 per cent median income becomes a 'moving target', but MIS does not automatically become so. While over the long term, it can become more expensive to live at a minimum level in societies that have become more prosperous, MIS tracks only the actual changes that change what a minimum entails, not mere increases in average income. This could affect both the timing and the extent of the effect of economic growth on the MIS threshold. For example, if a few years of rapid growth had limited effects on the minimum, a MIS-based poverty indicator could move in a more favourable way than suggested by a relative-income indicator.
- Specific changes in what is included in household costs could cause MIS to reflect changes in people's ability to meet their needs more accurately than

relative income. For example, the number of pensioners below thresholds of MIS is affected by the fact that they get free bus travel, and were this to be withdrawn, it would affect the MIS indicator but not relative income. The extent to which various health charges are covered by the NHS or imposed on users is another example of where relative income alone does not paint the whole picture. In a period where there is pressure on what the state provides, it is possible that even people whose incomes do not fall find that their income becomes less adequate for meeting their needs. Regular updating of MIS budgets picks up such additional costs.

- General changes in the cost of necessities may affect the actual cost of meeting one's needs. For example, faster or slower increases in the cost of food can affect the adequacy of incomes to meet people's needs in a way that is picked up neither by relative income measures nor by 'absolute' (constant) thresholds linked to a general prices index. This is because the general index is weighted by average spending, which has a smaller component of items such as food than a minimum budget as measured by MIS. So for example rapidly rising food prices at the end of last decade contributed to poverty relative to MIS rising faster than 'absolute' income poverty based on an inflation-adjusted threshold, and the reverse could be true at present, as falling commodity prices cause food to become cheaper (in mid-2016, it was six per cent below its 2014 peak).
- A MIS indicator can take account not just of individual housing costs but also of childcare costs. Measurement of income relative to MIS subtracts rent, mortgage and childcare, and compares net income to a budget not including these items. This extends the principle of the after housing cost measure of relative poverty, on the basis that different households have very different, often large, housing and childcare costs that can pre-empt a significant part of household income and therefore severely affect the ability to meet other needs. In a period in which childcare costs rise significantly, or conversely are covered

more adequately by government, the MIS measure will take account of the effect on families' ability to meet their other needs.

Annex A A set of income benchmarks for households whose minimum budgets are not directly calculated by MIS

The MIS research calculates budgets for 'single-unit' households comprising a single adult living alone or with up to three children or a couple living alone or with up to four children, and for singles and couples without children, distinguishing pensioners from non-pensioners.

In order to estimate how many of the entire population have incomes below a standard represented by MIS, we have made approximations of benchmarks for other household types, drawing on evidence from the MIS research. While evidence supporting these benchmarks is more indirect than for the household types to which MIS applies directly, it is nevertheless more evidence-based than the assumptions made in equivalence scales. Importantly, these approximations do not need to take account of the most important shared cost of multi-unit households, that of housing, since actual housing costs are deducted from income when comparing household incomes to the standard.

The approximations take three steps in order to assign a MIS budget to every household:

- Assign costs to family *units* (single or couple plus any dependent children) not covered by MIS
- Add in costs of adults related to people in the household in other family units, to create 'extended family units'
- Add together the MIS costs of all the resulting family units and extended family units, and subtract an amount to reflect the benefits of sharing some household items.

1) Missing family units

A simple set of assumptions can ensure that every family unit is assigned a MIS budget. MIS gives budgets for single-unit households, covering units that comprise:

- A single working age adult without children
- A working age couple without children
- A lone parent with one, two or three children
- A couple with one, two, three or four children
- A single pensioner
- A pensioner couple

This excludes cases where:

- A couple comprises a pensioner and a non-pensioner
- One or more parents of dependent children are pensioners
- A lone parent has more than three dependent children
- A couple has more than four dependent children

To make estimates of budgets for each of these excluded categories in turn:

For *couples without children comprising a pensioner and a non-pensioner,* we simply make an estimate by averaging the pensioner couple and working-age couple budgets. Many of the differences are related to individual characteristics (e.g. a pensioner does not pay for bus travel), and an average will accurately reflect these (e.g. the cost of public transport for a working age couple includes two paid-for bus passes and that of a pensioner none; an average will therefore cover one bus pass).

For *people over pension age with dependent children*, we assume the same costs as parents in existing MIS families with children. The living patterns of a family with one or more parents just over pension age is likely to resemble that of the family with children described in MIS (including for example requiring a car) than that of

pensioners. Moreover, the research producing budgets for parents with children does not specify the age of the parents. Therefore, the best approximation for pensioner families with dependent children is to assign them existing costs for families with children.

For *large families not covered by* MIS, we estimate the cost of each additional child, by considering the effect of adding a child of a given age to a family budget in the largest family for which this is possible. For example, the cost of a fifth child of a couple can be assumed to be the same as the additional cost of a fourth child, which Hirsch (2015b) calculates by subtracting the cost of a child with three children from that of four, using the relevant age of the additional child and assuming that older siblings are separated by average age intervals.

2) Extended family units

If a single person or couple live with an adult son or daughter or with a parent, they are considered a separate family unit, and the 'multi-unit' household does not have a MIS budget. There is likely to be a range of variability in the extent to which such families pool costs. At one extreme, they may operate like a family unit, eating together and operating a shared budget. At the other, they may act like unrelated sharers, living separate lives under the same roof. Given that people being related to each other does not tell us where they sit on this spectrum, a simplified solution is to calculate an average of these two models for an 'extended family'. This will applies only to the cost of a single adult related as parent or son/daughter to others in the family: where more than one related multi-person unit lives together, such as two couples or two families with children, they are treated as separate units. In the case of an 'extended family' comprising one or more single people being added to an existing MIS unit to which each is related as parent/son/daughter, the additional cost is calculated as the average of the full cost of a single sharer (see below) and the cost of an additional adult in a family. MIS allows us to estimate the latter by considering

the cost of a second person in a couple (working age or pensioner), by subtracting a single person's budget from a couple's budget. This typically comes to not much more than half the budget of a single person living separately.

3) Sharers

Having identified each household type as a number of units with MIS budgets – including extended families - the budgets of all units can be added together. However as a final step, some household economies associated with unrelated sharers need to be subtracted. Hill et al., (2014) carried out research on minimum household costs for unrelated adults sharing a residence, identifying some minor savings in heating, common furniture and some other common items, but concluding that most living costs are incurred separately. Using the example of three singles living together, this research estimated that (leaving aside the big saving on housing costs), about seven per cent could be saved on a single person's household budget as a result of this kind of sharing. Much of this saving related to economies that would be incurred once per sharing unit in the household (e.g. a MIS budget for a single, couple or family with children includes a cooker, but several of these units living together need only one cooker). This leads to the following rule: for each unit, subtract seven per cent of a single person's budget to represent the economy of sharing some household costs. This is a highly imperfect estimate of what are bound to be diverse realities, but enables some account to be taken of a modest level of sharing.

References

Banks, J., and Johnson, P. (1993) *Children and Household Living Standards*, London: Institute for Fiscal Studies.

Berthoud, R,. Bryan, M. and Bardasi, E. (2004) *The dynamics of deprivation: the relationship between income and material deprivation over time*, London: DWP.

Berthoud, Richard and Mark Bryan (2011) 'Income, deprivation and poverty – a longitudinal analysis', *Journal of Social Policy,* Volume 40, Issue 01, pp 135 – 156.

Bollinger, C., Nicolletti, C. and Pudney, S. (2012) *Two can live as cheaply as one, but three's a crowd,* ISER Working Paper, Colchester: Institute for Social and Economic Research.

Bradshaw, J., Middleton. S., Davis, A., Oldfield, N., Smith, N., Cusworth, L. and Williams, J. (2008) *A Minimum Income Standard for Britain – What People Think,* York: Joseph Rowntree Foundation.

Brewer, M., Etheridge, B. and O'Dea, C. (2013) *'Why are households that report the lowest incomes so well-off?*', Discussion Paper No 736, Economics Department, University of Essex.

Cooper, K. & Stewart, K. (2013) *Does money affect children's outcomes?* York: Joseph Rowntree Foundation.

Cooper, K. & Stewart, K. (2015) *Does money in adulthood affect adult outcomes?* York: Joseph Rowntree Foundation.

Davis, A., Hill, K., Hirsch, D. and Padley, M. (2016) *A Minimum Income Standard for the UK in 2016* York: Joseph Rowntree Foundation.

Davis, A., Hirsch, D., Smith, N., Beckhelling, J. and Padley, M. (2012) *A Minimum Income Standard for the UK in 2012. Keeping up in hard times*. York: Joseph Rowntree Foundation.

Diener, E. & Biswas-Diener, R. (2002) 'Will money increase subjective well-being?' *Social Indicators Research* February, 119–169.

Department for Work and Pensions. (2015) Households Below Average Income 1994/5-2013/14. London: DWP.

Ferragina, E. Tomlinson, M. and Walker, R. (2013) *Poverty, Participation and Choice: The Legacy of Peter Townsend*, York: Joseph Rowntree Foundation.

Gordon D., Adelman, L., Ashworth, K., Bradshaw, J., Levitas, R., Middleton, S., Pantazis, C., Patsios, D., Payne, S., Townsend, P, and Williams, J., (2000) *Poverty and social exclusion in Britain.*

Gordon, D, Mack, J., Lansley, S., Main, S., Nandy, S., Patsios, D. and Pomati, M, (2013) 'The Impoverishment of the UK' PSE UK first results: Living Standards', University of Bristol.

Hill, K., Hirsch, D. and Padley, M. (2015) *Minimum budgets for single people sharing accommodation*. CRSP Working Paper 642. Loughborough: Centre for Research in Social Policy.

Hill, K., Davis, A., Hirsch, D. and Marshall, L. (2016*) Falling Short: the experiences of families living below the minimum income standard,* York: Joseph Rowntree Foundation.

Hirsch, D. (2012) *Does the tax and benefit system create a couple penalty*? York: Joseph Rowntree Foundation.

Hirsch, D. (2015a) *A Minimum Income Standard for the UK in 2015* York: Joseph Rowntree Foundation.

Hirsch, D. (2015b) *The cost of a child in 2015,* London: Child Poverty Action Group.
Iceland, J. and Bauman, K. (2007). 'Income Poverty and Material Hardship: How Strong is the Association?' *The Journal of Socio-Economics*. Vol. 36. pp. 376–396.

Layard, R., Mayraz, G. & Nickell, S. (2008) 'The marginal utility of income', *Journal of Public Economics* 92, 1846–1857.

Macinnes, T., Tinson, A., Gaffney, D., Horgan G., and Baumberg, B. (2014) *Disability, long-term conditions and poverty,* London: New Policy Institute.

Mackay, S. (2004) 'Poverty or Preference: What Do 'Consensual Deprivation Indicators' Really Measure?' *Fiscal Studies* vol. 25, no. 2, pp. 201–223.

Mayer, S. E. (1997) *What money can't buy: Family income and children's life chances*. Cambridge, MA: Harvard University Press.

Padley, M and Hirsch, D (2016) Households below a minimum income standard: 2008/09 to 2013/14. York: Joseph Rowntree Foundation.

Pantazis, D., Gordon, and R. Levitas (eds) (2006) *Poverty and Social Exclusion in Britain* (Bristol: Policy Press).

Piachaud, D. (1981) 'Peter Townsend and the Holy Grail', *New Society*, 10 September.

Sullivan, J., Turner, L. and Danziger, S. (2008) 'The relationship between income and material hardship'. *Journal of Policy Analysis and Management*. Vol. 27. No. 1. pp. 63-81.

Townsend, P. (1979) *Poverty in the United Kingdom, a survey of household resources and standards of living*, London: Penguin.

Votruba-Drzal, E. (2003) 'Income Changes and Cognitive Stimulation in Young Children's Home Learning Environments', *Journal of Marriage & Family*, 65, pp. 341–55.

Centre for Research in Social Policy
Department of Social Sciences
Loughborough University
Leicestershire
LE11 3TU

Tel: +44 (0)1509 223372
www.crsp.ac.uk

ISBN 978 0946831 48 7