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## **Measuring Social Transfers in Kind in the United Kingdom**

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### **Abstract**

The Canberra Group Handbook on Household Income Statistics (2011) highlights the value of including social transfers in kind (STIK) within household income microstatistics. Information on STIK is particularly useful when the aim of analysis is to make comparisons across countries, where there may be considerable variation in the provision and distribution of such services.

It has been over 50 years since the UK Central Statistical Office, the predecessor of the Office for National Statistics, first published analysis looking at the effects taxes and benefits have on household incomes. Since 1961, 'the Effects of Taxes & Benefits on Household Income' has included analysis of household final income, which includes a number of benefits in kind received by households from the state, such as education and health services. From a tax perspective, this analysis also includes both direct and indirect taxes.

The methodologies for estimating the value of STIK in the UK have evolved over time to reflect both changing policy and data availability. This paper describes the different types of transfers that are currently included in the UK statistics and discusses a variety of methodological issues, including the identification of beneficiaries, and the data and techniques used to value the benefits received. The distributional impact of STIK in the UK is also examined.

STIK are not included within the UK's official poverty statistics. However, this paper looks at what the impact of including STIK within these figures might be, based on the data produced for the 'Effects of Taxes & Benefits' publication. It also considers some of the practical implications of producing poverty statistics based on adjusted disposable income (including STIK), such as the selection of an appropriate equivalisation scale.

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# Measuring Social Transfers in Kind in the United Kingdom

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## 1. Introduction

The Canberra Group Handbook on Household Income Statistics (2011) defines social transfers in kind (STIK) as goods and services provided by government and non-profit institutions that benefit individuals but are provided free or at subsidised prices. The Handbook recommends that where possible, it is desirable to add the value of social transfers in kind to household disposable income to create a measure of adjusted disposable income.

Taking into account STIK is particularly important when the purpose of analysis is to make cross-country comparisons of the distribution of income and/or poverty. This is because in one country (A), certain services may be largely provided by the state, free at the point of use, whereas in Country B it may be necessary to pay for those services directly. This means that, all other factors being equal, someone with the same disposable income in Country A would have a higher standard of living than in Country B.

Social transfers in kind are also very important for measuring economic well-being within countries. Since one of the major policy aims in this area is often to make access to important services more equal, the distribution of STIK is generally progressive. Therefore, to obtain a complete picture of the redistribution of household income, STIK, ideally along with indirect taxes, should be taken into account.

Despite their value for such analysis, STIK are not included in the operational definition of household disposable income set out in the Canberra handbook. The primary reason for this is the practical challenges associated with measuring STIK.

There have been several cross-national studies which have provided estimates of STIK in recent years (e.g. Aaberge, Langorgen & Lindgren, 2013). However, such studies are necessarily constrained by data availability across all the countries. Analysis carried out at the national level, such as that presented in this paper for the UK, is typically able to present a more precise picture of the impact of STIK on the redistribution of income and poverty.

## 2. Measurement of STIK in the UK

Since 1961, the UK Office for National Statistics and its predecessor organisations have published analysis showing how taxes and benefits redistribute income between different types of households, in an annual publication called *Effects of Taxes & Benefits on Household Income*. In order to measure as completely as possible the impact of the tax and benefits systems on households, this analysis includes estimates for the value of various

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social transfers in kind from the state, in addition to the cash benefits received. From a tax perspective, both direct taxes (such as income tax and employees' National Insurance contributions) and indirect taxes ultimately borne by households (such as fuel and alcohol duties, and VAT/purchase taxes) are included.

The benefits in kind included in the ONS analysis currently fall into six categories – education, the NHS, subsidies for housing, rail and bus travel and free school meals. For all of these benefits, the value allocated to households is assumed to be equal to the cost of provision incurred by the state. Collective services such as policing and national defence are not currently included in this analysis. The nature of these collective benefits in kind makes it extremely difficult to quantify the benefit they yield to individual households and therefore to assess their redistributive effect.

This analysis is based on the UK's Household Budget Survey, which is known as the Living Costs and Foods survey (LCF)<sup>2</sup>. The LCF is an annual survey of approximately 5000 households, and collects data through a face-to-face (CAPI) interview and a two-week expenditure diary. The LCF is used for this analysis as it contains detailed data on both household income and expenditure, facilitating the production of microdata on both social transfers in kind and indirect taxes.

Over time, the methodology used for measuring these social transfers in kind has changed considerably, reflecting changes both to the benefits themselves and the data which is available to allocate them to individual households within the analysis. In particular, the availability of new sources of data has allowed improved ways of allocating those benefits to households, increasing the quality of the estimates produced.

This first section of the paper examines the current methodologies used for allocating a value for several of these in kind transfers to individuals and households within the microdata.

## **2.1 Education services**

For education services, an 'actual consumption' approach is applied, in which an attempt is made to allocate the value of education services to households which directly benefit from those services. This approach relies upon information provided by various government departments and agencies on the cost per full-time equivalent pupil or student in maintained special schools, nursery and primary schools, secondary schools, further education institutions and universities.

There is just one overall estimate for secondary school children available although it is acknowledged that the cost climbs steeply with the age of the pupil. Therefore, in this analysis, there is a split in the allocation of per capita expenditure on children between those

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<sup>2</sup> The UK's official poverty statistics are produced from a separate survey, the Family Resources Survey (FRS), which is carried out by the Department for Work and Pensions (DWP). The FRS is preferred over the LCF for the main poverty statistics due to its larger sample size (approximately 20,000 households per year). However, it is not possible to produce estimates of STIK or indirect taxes using the FRS.

aged 11 and 15 at the beginning of the school year, and those 16 and over at secondary schools. Separate estimates for nursery, primary, secondary and higher education are used for England, Scotland, Wales and Northern Ireland, to reflect the devolved nature of education policy in the UK.

The value of the benefits attributed to a household depends on the number of people in the household recorded in the LCF as receiving each kind of state education (students living away from the household are excluded). No benefit is allocated for pupils attending private schools, those receiving home schooling or for nursery pupils under the age of three, who are not eligible for state funding.

## **2.2 Health services – National Health Service**

The publically funded healthcare systems in each of the countries of the UK make up what is known as the National Health Service or NHS.<sup>3</sup> The services provide a comprehensive range of health services, the vast majority of which are free at the point of use for residents of the United Kingdom. The systems are primarily funded through central taxation.

The ‘actual consumption’ approach used for allocating the value of education services is less appropriate for health care as it implies that people who are ill are better off than healthy people with the same disposable income. An ‘insurance value’ style approach is therefore applied.

This benefit is estimated using data that are available on the average cost to the Exchequer of providing the various types of health care - hospital inpatient/outpatient care; GP consultations; pharmaceutical, dental and ophthalmic services; and so on. Each individual in the LCF is allocated a benefit from the National Health Service according to the estimated average use made of these various types of health service by people of the same age and sex, and according to the total cost of providing those services. The benefit from maternity services is assigned separately to those households containing children under the age of 12 months. Separate values for the benefit-in-kind from healthcare services have been calculated for each devolved administration using regional spending figures from HM Treasury.

Ideally, an adjustment should be at least considered for the use of private health care services. However, this is not felt to be feasible from the data available. For example, whilst it is possible to identify individuals paying for private health insurance, it is not possible to ascertain the level of cover provided and therefore the likely impact on that individual/household’s use of the NHS. In addition, it is generally acknowledged that all individuals do benefit from the simple existence of public sector health services (including

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<sup>3</sup> Since 1999, responsibility for healthcare in Northern Ireland, Scotland and Wales has been devolved to the Northern Ireland Assembly, the Scottish Government and the Welsh Assembly Government respectively. The UK Government remains responsible for health services in England. The four individual systems are the National Health Service (England), NHS Scotland, NHS Wales, and Health and Social Care in Northern Ireland (HSCNI).

the infrastructure and Accident & Emergency services), so there is an argument for not taking private health care into account in estimating the value of STIK.

The assigned benefit is relatively high for young children, low in later childhood and through the adult years until it begins to rise from late middle age onwards. Other studies by Sefton (2002) have attempted to allow for variations in use of the health service according to socio-economic characteristics. However, due to data limitations, this analysis is not able to take account of these variations in the use of the health service.

### **2.3 Travel subsidies**

Travel subsidies cover the support payments made to bus and train operating companies. Rail subsidy is allocated to households based on their spending on rail travel taken from the LCF. The level of subsidy to those living in London and the South East is calculated separately from the rest of the UK, reflecting higher levels of subsidy for London transport and the assumption that a higher number of households in the South East will commute into London and thus benefit from this subsidy. In making these allocations, allowances are also made for the use of rail travel by the business sector, tourists and the institutional part of the personal (household) sector (for example, people who do not live in private households; i.e. prisoners, or people in care homes). Bus travel is calculated in a similar way but additional levels of benefit are allocated to those household containing individuals who indicate in the LCF that they hold a concessionary bus pass.

The figures for rail travel subsidy also take into account the Government grant to the infrastructure operator (Network Rail), which enables Network Rail to lower the charges levied on each train operating company, using data supplied and published by the Department for Transport (DfT). This grant is apportioned regionally according to the benefit the train operating company's gained from reduced fees, which, it is assumed, are passed on to consumers through lower fares.

### **3. Impact of STIK on income distribution**

Figure 1, below shows the latest figures available for the value of social transfers in kind by income quintile<sup>4</sup>. In 2011/12, the poorest fifth of households received the equivalent of around £7,700 per year from all social transfers in kind, compared with £5,200 received by the top fifth.

Overall, NHS services make up 59 per cent, by value, of the total STIK measured. This benefit is lower in the top two quintiles, which is a reflection of the demographic composition of households in each of these groups. Those over the age of 65, who on average make greater use of health services, are largely located in the bottom three income quintiles.

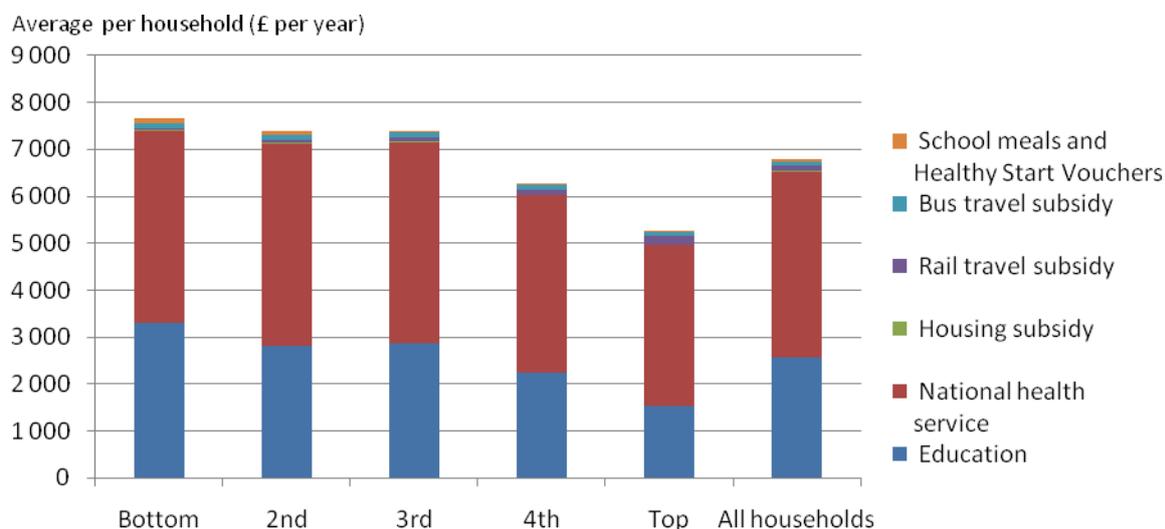
Education services are the other major component of STIK covered by this analysis, making up 38 per cent of the total value on average. The analysis shows that households in the

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<sup>4</sup> Households are ranked by their equivalised disposable incomes, using the modified-OECD scale.

lower quintile groups received the highest benefit from education. This is due to the relatively high number of children in this part of the distribution, along with the presence of university/college students living in shared houses. In addition, children in households in the higher quintiles are more likely to be attending private schools and an allocation is not made in these cases.

**Figure 1: Social transfers in kind by income quintile group, UK, 2011/12**

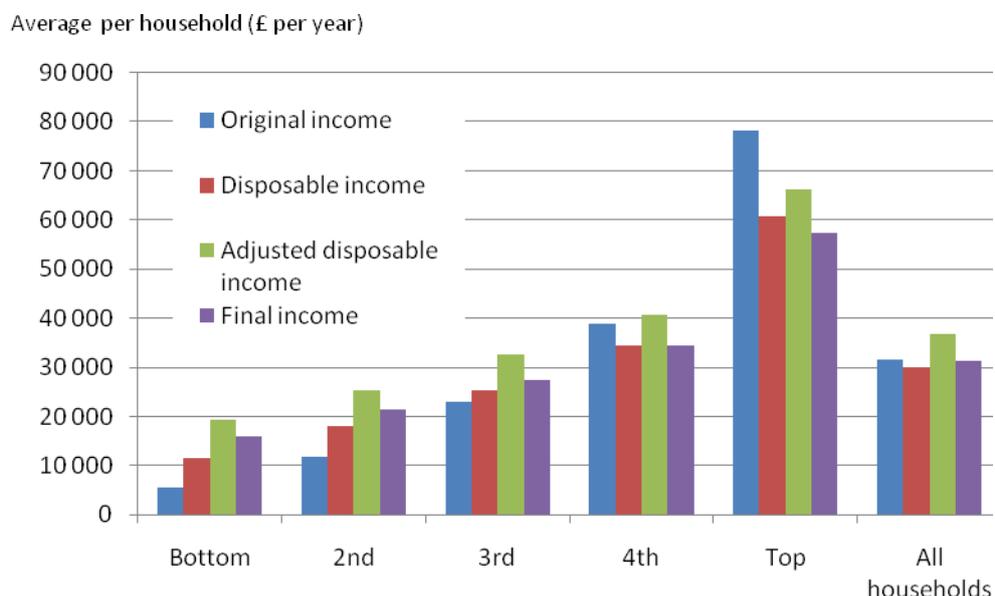


The remaining in-kind benefits covered by this analysis make up, on average, just 4 per cent of the total value of STIK. Of these, rail travel subsidies are interesting as they are the one benefit where households in the upper quintiles derive greater value than those in the lower groups. One reason for this is that the use of public transport by non-retired households is partly related to the need to travel to work and therefore to the number of economically active people in a household. This pattern is also due to London and the South East having higher levels of commuting by public transport together with higher than average household incomes.

Figure 2 summarises the effect that these social transfers in kind has on the UK income distribution. In this chart, original income is defined as income from employment, private pensions, investments and other non-government sources. In 2011/12, the richest fifth of households had an average original income (i.e. before all taxes and benefits) of £78,300 per year, compared with £5,400 for the poorest fifth – a ratio of 14 to 1.

Direct taxes and cash benefits lead to income being shared more equally between households, with the richest fifth of households having average disposable incomes that were five times those of the poorest fifth (£60,800 per year and £11,500, respectively).

**Figure 2: Original, disposable, adjusted disposable and final income by quintile group, UK, 2011/12**



Adjusted disposable income, which includes STIK, was £19,200 per year for the bottom quintile and £66,100 for the top quintile, meaning that the S80/20 ratio was reduced to less than 3.5 to 1. However, in order to get a complete picture of the effects of the tax and benefits system, it is necessary to also taken into account indirect taxes, which are included in the final income measure shown above. Although richer households pay more in indirect taxes than poorer ones, they pay less as a proportion of their income. This means that indirect taxes act to increase inequality of income, with the S80/20 ratio increasing slightly, though remaining below 4 to 1.

#### 4. Impact of STIK on poverty estimates

The UK's main poverty statistics are produced and published by the Department for Work and Pensions (DWP) in a publication called *Households Below Average Income (HBAI)*<sup>5</sup>. The HBAI publication includes several measures of low income, including a relative poverty measure in which someone is considered to be in poverty if they receive less than 60 per cent of the median equivalised disposable household income. Social transfers in kind are not included within the HBAI statistics. However, the next section of this paper looks at what the impact of including STIK within UK poverty estimates might be, based on the *Effects of Taxes & Benefits* data described above.

##### 4.1 Equivalisation scales

The analysis presented above on the redistribution of income uses quintiles based on equivalised disposable income, using the so-called OECD-modified scale. The OECD-

<sup>5</sup> <https://www.gov.uk/government/collections/households-below-average-income-hbai--2>

modified scale and other commonly used alternatives (e.g. square root) aim to reflect the economies of scale in consumption achieved in multiple person households.

However, these scales are designed for equivalising cash income and may not be appropriate once STIK are included in the income definition. Indeed, it is widely recognised that it is highly desirable to use an equivalisation scale that takes into account the extra non-cash needs when carrying out poverty analysis based on adjusted disposable income. This point is illustrated particularly clearly when considering young children. The OECD-modified scale assigns a smaller value for children than for additional adults in the household, based on assumed needs. However, young children have a high need for education services and also comparably higher needs for healthcare (though less than for older people). Therefore applying a standard equivalisation scale to adjusted disposable income would risk overstating the standard of living of those households with young children.

Recent work by Aaberge et al. (2013) has resulted in the development of the simplified needs adjusted (or SNA) scale designed for researchers interested in the distribution of adjusted disposable income. The SNA scale was produced by first estimating a non-cash equivalence scale and then combining it with a cash income scale. The parameters that were developed are presented in the table below.

**Table 1: Simplified Needs Adjusted (SNA) equivalisation scale**

Constant	0.46
0-3	0.41
3 years to education age	0.57
Education age below 14	0.69
Education age above 13	0.95
Above education age – 54	0.54
55-64	0.60
65-74	0.67
75 and above	0.75

Some caution is necessary in applying the SNA scale to the UK data. In particular, the social transfers in kind included in the Aaberge et al. analysis do not directly correspond directly with those in the UK adjusted disposable income figures. Nonetheless, given that education and healthcare make up 96 per cent of the UK STIK data by value, it was felt that the SNA scale would be the most suitable pre-existing scale available for this exploratory analysis.

In the analysis presented below, relative poverty rates are presented using three different measures of income: equivalised disposable income (OECD-modified), equivalised adjusted disposable income (OECD-modified), and equivalised adjusted disposable income (SNA). The aim of using the two alternative adjusted disposable measures is to provide an indication of the impact of choosing an appropriate equivalisation scale.

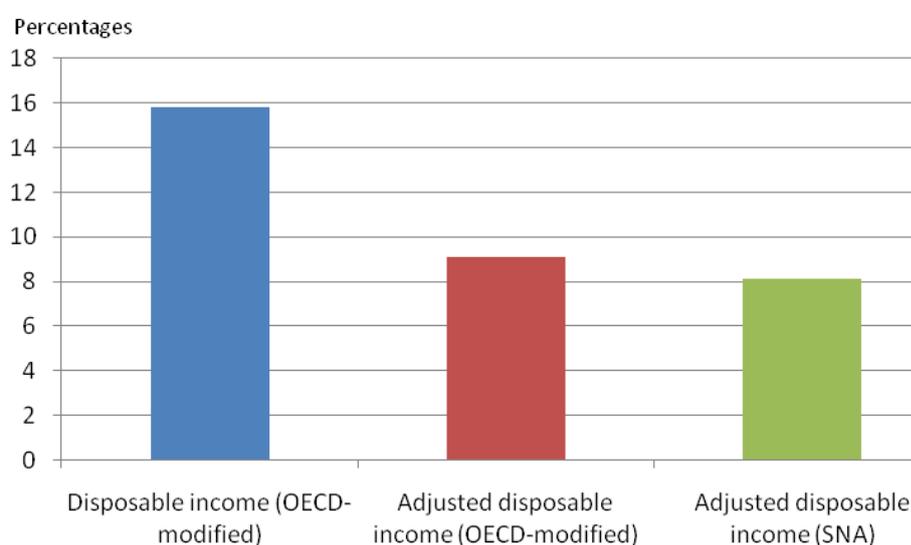
For each poverty measure presented in this paper, the poverty threshold is based on 60 per cent of the median of the relevant equivalised income measure. This is felt to be the most desirable approach for the vast majority of analysis, as retaining the poverty threshold for

(cash-based) disposable income could lead to counterintuitive scenarios such as households being classified as not in poverty even if they have no cash income. However, for some specific analysis aims, retaining the disposable income based threshold may be appropriate.

## 4.2 Results of analysis

Figure 3 shows the overall at-risk-of-poverty rates for each of the three poverty measures. In 2011/12, 16 per cent of people were below the at-risk-of-poverty threshold, based on the equivalised disposable income measure<sup>6</sup>. The impact of including social transfers in kind on this whole population measure is very noticeable. Including STIK within income, but retaining the OECD-modified equivalisation scale had the effect of reducing the headline rate to 9 per cent. For the overall population, the effect of applying the SNA equivalisation scale was relatively small, reducing the relative at-risk-of-poverty rate for adjusted disposable income to 8 per cent.

**Figure 3: Relative at-risk-of-poverty rates, UK, 2011/12**

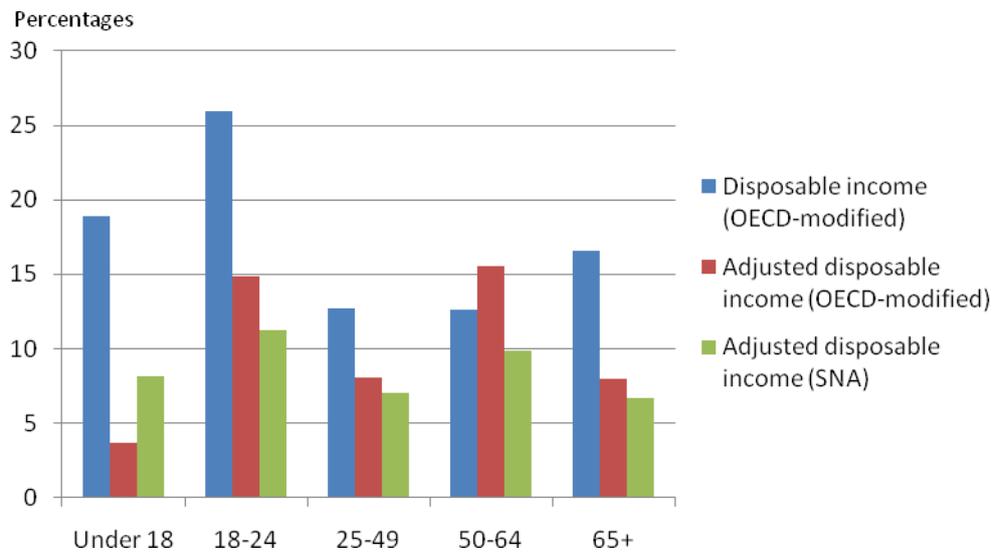


The impact of the choice of equivalisation scale becomes more apparent when examining at-risk-of-poverty rates for subgroups of the population. Figure 4 presents rates for the different measures for five age categories. This chart shows that the effect of including STIK within the income measure used to calculate relative income poverty is largest for young people and those over the age of 65. This is perhaps unsurprising given the age-orientated methods for valuing NHS and education services.

In 2011/12, based on disposable income, 19 per cent of people under 18 were considered to live in households at risk of poverty. For the adjusted disposable income (OECD-modified) measure, this falls to under 4 per cent. However, the OECD-modified scale almost certainly understates the needs of this group, particularly with regard to education services. Taking this into account through applying the SNA scale increases the rate to 8 per cent.

<sup>6</sup> This is comparable to the relative low income (before housing costs) figure for the whole population published in the 2011/12 HBAI release (DWP, 2013).

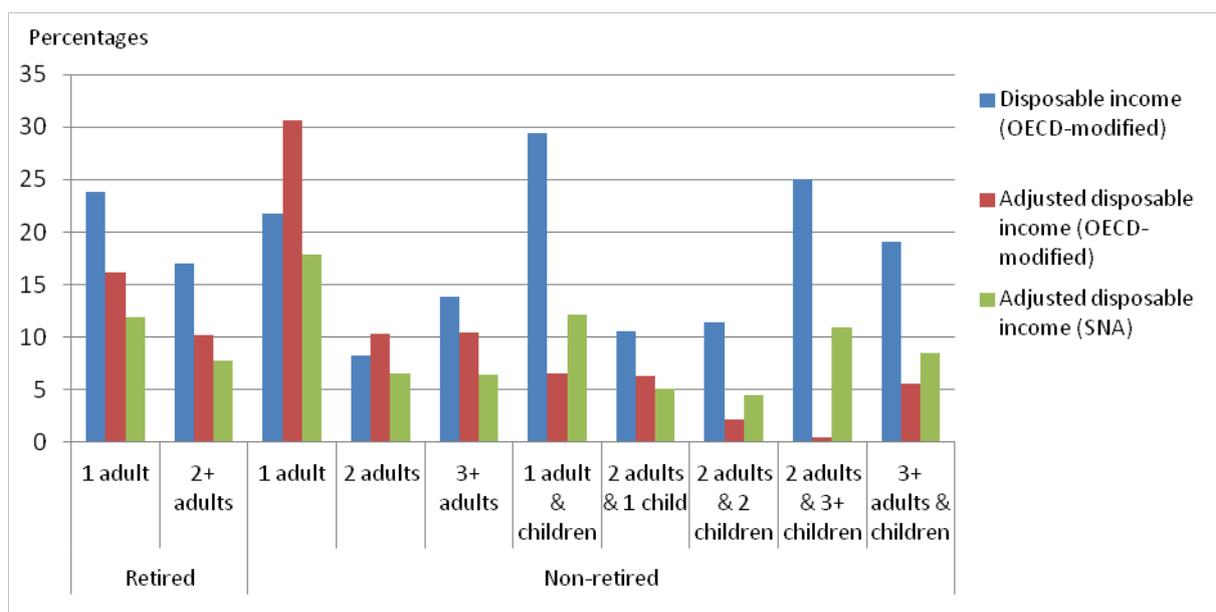
**Figure 4: Relative at-risk-of-poverty rates by age group, UK, 2011/12**



Similarly, the adjusted disposable income (OECD-modified) measure leads to an apparent increase in at-risk-of-poverty rates for those aged 50-64. However, when using the SNA scale, which better reflects their needs for healthcare and other STIK, the rate for this age group is reduced.

Looking at at-risk-of-poverty rates by household type presents a complementary picture. Figure 5 shows that the at-risk-of-poverty rate for people living in one adult non-retired households increases noticeably for the adjusted disposable income (OECD-modified) measure. However, using the SNA scale, which reflects that these households have relatively low needs for education and health services, brings the at-risk-of-poverty rate for this group back down.

**Figure 5: Relative at-risk-of-poverty rates by household type, UK, 2011/12**



Not using an appropriate equivalisation scale also leads to apparent considerable drops in the at-risk-of-poverty rate for households with children, particularly those with two adults and three or more children, where the inclusion of STIK in the income measure causes the rate to fall from 25 per cent to less than 1 per cent. Using the SNA scale brings the at-risk-of-poverty rate for this group back up to 11 per cent.

## **5. Conclusions**

Statistics including a valuation of social transfers in kind are clearly of use to those interested in measuring and understanding poverty, particularly when making cross-country comparisons where level of in-kind services provided by the state may vary considerably. It is therefore useful for poverty analysts in national and international organisations to be able to consider such measures alongside the official poverty statistics, whether these are based on relative/absolute low (cash) income as in the UK, or another measure.

For within-country comparisons, measuring the impact of STIK, along with that of indirect taxes, is also highly desirable for work aimed at examining, in full, the redistributive effect of the tax and benefits systems. However, for analysis looking specifically at income poverty, it's arguably less apparent that using adjusted disposable income is appropriate. In particular, it may not necessarily be sensible to treat in-kind income as comparable with cash income in determining poverty rates.

Both the present analysis and previous research in this area, demonstrate that the choices and assumptions made in carrying out analysis of STIK are crucial. The outcomes of any analysis are likely to vary considerably depending on decisions made on factors such as:

- The social transfers in kind included/excluded from the analysis;
- Whether an actual consumption, insurance value, or flat rate approach is taken for valuation;
- Whether values are allocated at the household or individual level;
- Which equivalisation scale is used; and
- What at-risk-of-poverty threshold is used.

The measurement of in-kind benefits forms an important part of ONS's analysis of the redistribution of income. For that reason, ONS are continuing to work to both improve the methodologies used for the in-kind benefits examined at present, and to extend the scope of the work to cover those not currently included in the analysis, such as adult social care.

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