

Compendium

Chapter 3: Equivalised income



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1 . Introduction

This chapter examines how expenditure varies with equivalised income, which refers to household income that has been recalculated to take into account differences in household size and composition. For example, households with many members are likely to need a higher income to achieve the same standard of living as households with fewer members.

Equivalisation is a standard methodology that adjusts household income to account for the different financial resource requirements of different household types. Household size is an important factor to consider because larger households usually need a higher income than smaller households to achieve a comparable standard of living. The composition of a household also affects resource needs, for example, living costs for adults are normally higher than for children. After equivalisation has been applied, households with the same equivalised income can be said to have a comparable standard of living.

We report on data for disposable income in this chapter. Gross income tables are available on request. Disposable income is defined as gross weekly cash income less the statutory deductions and payments of income tax and National Insurance contributions¹. Most analysis looking at income and expenditure together looks at disposable rather than gross income. This is because disposable income is the amount that households have available to spend or save.

The equivalisation method used is the OECD-modified method, which is a modified version of the method originally used by the Organisation for Economic Co-operation and Development. Full details are given in the “Equivalisation methodology” section. Information on how the equivalisation process affects the distribution of income data for different household types is in the “Equivalisation results” section.

Notes for introduction:

1. For other ONS and DWP publications, council tax and domestic rates (Northern Ireland) are also deducted from gross income to provide a measure of disposable income. For Family Spending estimates council tax and domestic rates (Northern Ireland) are counted as expenditure within the total expenditure definition.

2 . Main points

In 2014:

- lower income households spent a higher proportion of their total expenditure on food and drink than higher income households: on average, households with the lowest 10% of incomes spent 17% of their total expenditure on food and non-alcoholic drink, compared with 7% for households with the highest 10% of incomes
- the proportion of total expenditure spent on transport increased with income (9% to 15%), largely reflecting spending by higher income households on the purchase of new cars
- electricity, gas and other housing fuels accounted for 9% of the total expenditure of the lowest-earning households, compared with 3% for the highest income households
- spending patterns by income were generally similar for retired and non-retired 2-person households, but some differences were evident, for example, spending on transport increased steadily with income for non-retired households (£36.60 to £148.00); among retired households it changed little as income increased across most groups, but doubled for the highest earning households (from £46.40 to £96.70)

3 . Income, expenditure and well-being

For many households, income is their most important economic resource for meeting everyday living expenses. However, it is the consumption of goods and services (best reflected by expenditure) that is most important in meeting a household's requirements. Evidence suggests that income and expenditure together represent a better determinant of economic well-being than income alone.

Expenditures change less than incomes when short term changes in incomes are encountered, and can therefore be considered a better measure of living standards. Households can smooth expenditure by, for example, adjusting savings, drawing on wealth and borrowing, whereas incomes may be more volatile. This led to Friedman's "[permanent income hypothesis](#)", which suggests that decisions made by consumers are based on long-term income expectations rather than their current income.

Headey, Muffels and Wooden (2004) describe expenditure as "the most valid measure of current living standards" in their [analysis of household finances and well-being](#). In addition, our analysis [Income, expenditure and personal well-being](#) shows that household spending matters more to many aspects of personal well-being than household income. As spending rises, average life satisfaction (the sense that what one does in life is worthwhile) and happiness also rise.

The [Commission on the Measurement of Economic Performance and Social Progress](#) recommended that greater prominence should be given to the distributions of income and expenditure across households.

For given levels of expenditure, and everything else being equal, people with higher income can be seen as having a higher level of well-being, from a personal finance perspective, than people with lower income. With higher income, they have greater opportunity to increase expenditure if they want, or to save income to finance expenditure in the future.

In light of this context, we look at how expenditure varies with income.

4 . Household expenditure by income

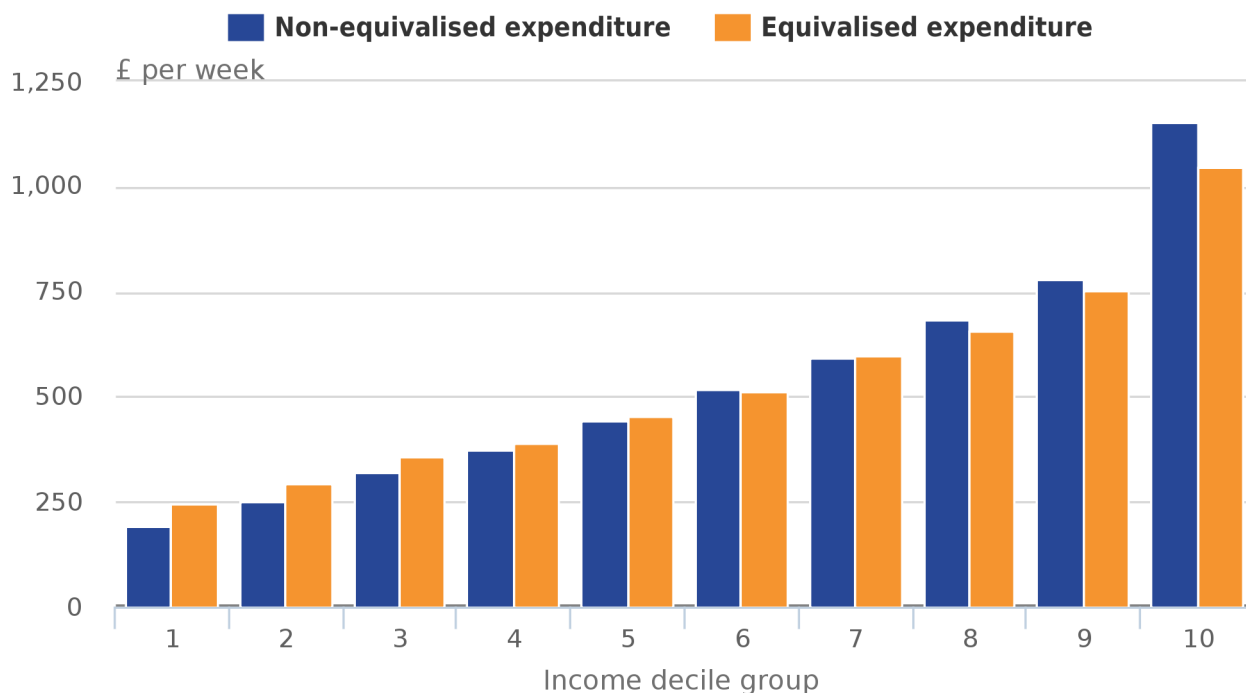
This section illustrates how separating the expenditure patterns for different types of goods and services provides a fuller picture of how households with different levels of income spend their money.

Tables [3.1 \(423 Kb Excel sheet\)](#) and [3.1E \(89 Kb Excel sheet\)](#) show total expenditure and expenditure for each of the classification of individual consumption by purpose (COICOP) categories, by non-equivalised and equivalised disposable income decile groups, respectively.

As shown in Figure 3.1, in 2014 there was an overall increase in total expenditure as equivalised income, and non-equivalised income, increased. There was a similar pattern in 2013.

Figure 3.1: Household expenditure by disposable and OECD-modified equivalised disposable income decile group

UK, 2014



Source: Living Costs and Food Survey - Office for National Statistics

Expenditure in the lower income decile groups increased after income was equivalised, and expenditure in the higher income decile groups decreased. This is due to the impact the equivalisation method has on the income positioning of households with children, and single adult households. Equivalisation increases the number of households with children in the lower income groups, whose spending is likely to be higher than households containing one adult. One-adult households tend to move to a higher income decile group after income is equivalised. There are more details in the “Equivalisation results” section.

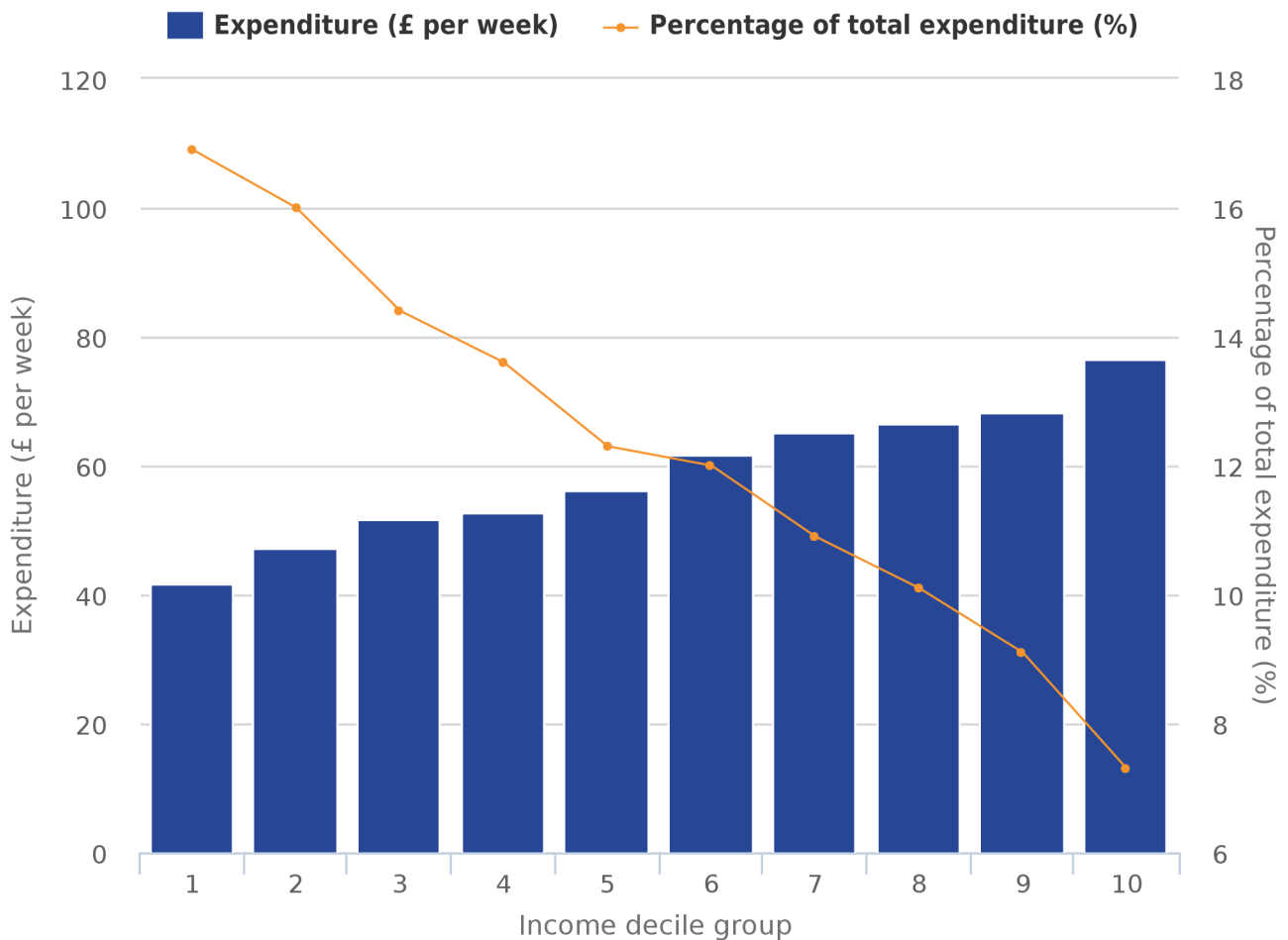
Tables [3.2 \(481.5 Kb Excel sheet\)](#) and [3.2E \(113.5 Kb Excel sheet\)](#) show the share of total expenditure on each COICOP category, by non-equivalised and equivalised income groups.

The rest of this section compares the absolute spending and the share of total expenditure by equivalised disposable income for different categories of spending.

Expenditure on food and non-alcoholic drink increased with equivalised income, whilst the proportion of total expenditure on food and non-alcoholic drink decreased (as shown in Figure 3.2). Clearly all households have to spend a certain amount on food and non-alcoholic drink. As income rises households spend more in absolute terms on this category, but there is a limit to how much food households consume and the amount they are willing to spend overall. As a result of this, households in the higher equivalised disposable income decile groups spend a lower proportion of their expenditure on food and non-alcoholic drink than households in the lower income decile groups. As income rises from the lowest to the highest equivalised disposable income decile group, spending almost doubles from £41.60 to £76.40. However, for households in the bottom equivalised disposable income decile group food and non-alcoholic drinks accounted for 17% of total expenditure, compared with 7% for the top equivalised disposable income decile group.

Figure 3.2: Expenditure on food and non-alcoholic drinks (absolute expenditure and as a percentage of total expenditure) by OECD-modified equivalised disposable income decile group

UK, 2014



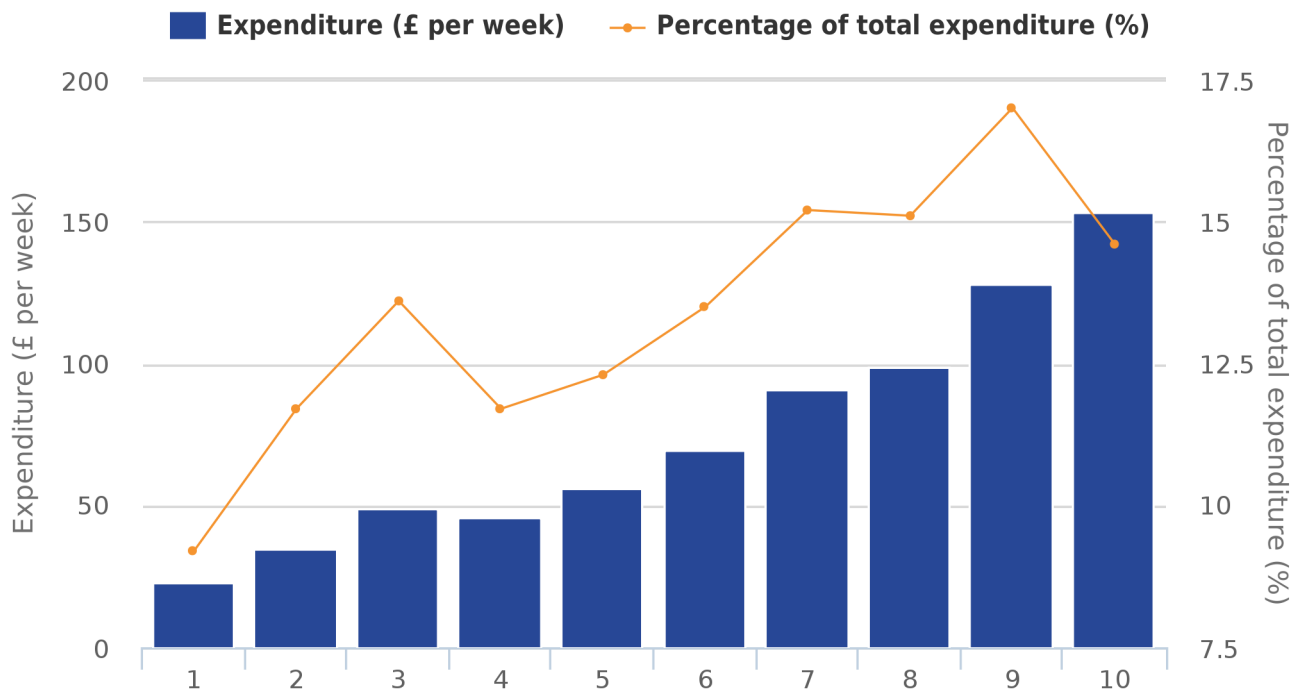
Source: Living Costs and Food Survey - Office for National Statistics

Electricity, gas and other fuels is another example of expenditure that makes up a lower proportion of total spending for higher-income households. It is a subgroup of the main housing (net), fuel and power COICOP category. As income rises from the lowest to the highest equivalised disposable income decile group, spending increases by almost 50% from £22.50 to £32.00, while the proportion of total expenditure falls from 9% to 3%. Wealthier households are likely to live in larger properties that require more energy to heat and light, but there is a limit to the amount that households can expect to spend on these fuels.

Spending in some categories increased as a proportion of total expenditure, as well as the amount. An example of this is transport, where some spending is discretionary and there is often a range of price options available. Higher income households may be expected to have more disposable income available to buy a new car or pay for more comfortable modes of transport. Figure 3.3 shows the highest equivalised income households spent £153.30 per week on transport. This is nearly 7 times more than households in the lowest equivalised income decile, which spent only £22.80 per week. The proportion of spending increased from 9% to 15%.

Figure 3.3: Expenditure on transport (absolute expenditure and as a percentage of total expenditure) by OECD-modified equivalised disposable income decile group

UK, 2014

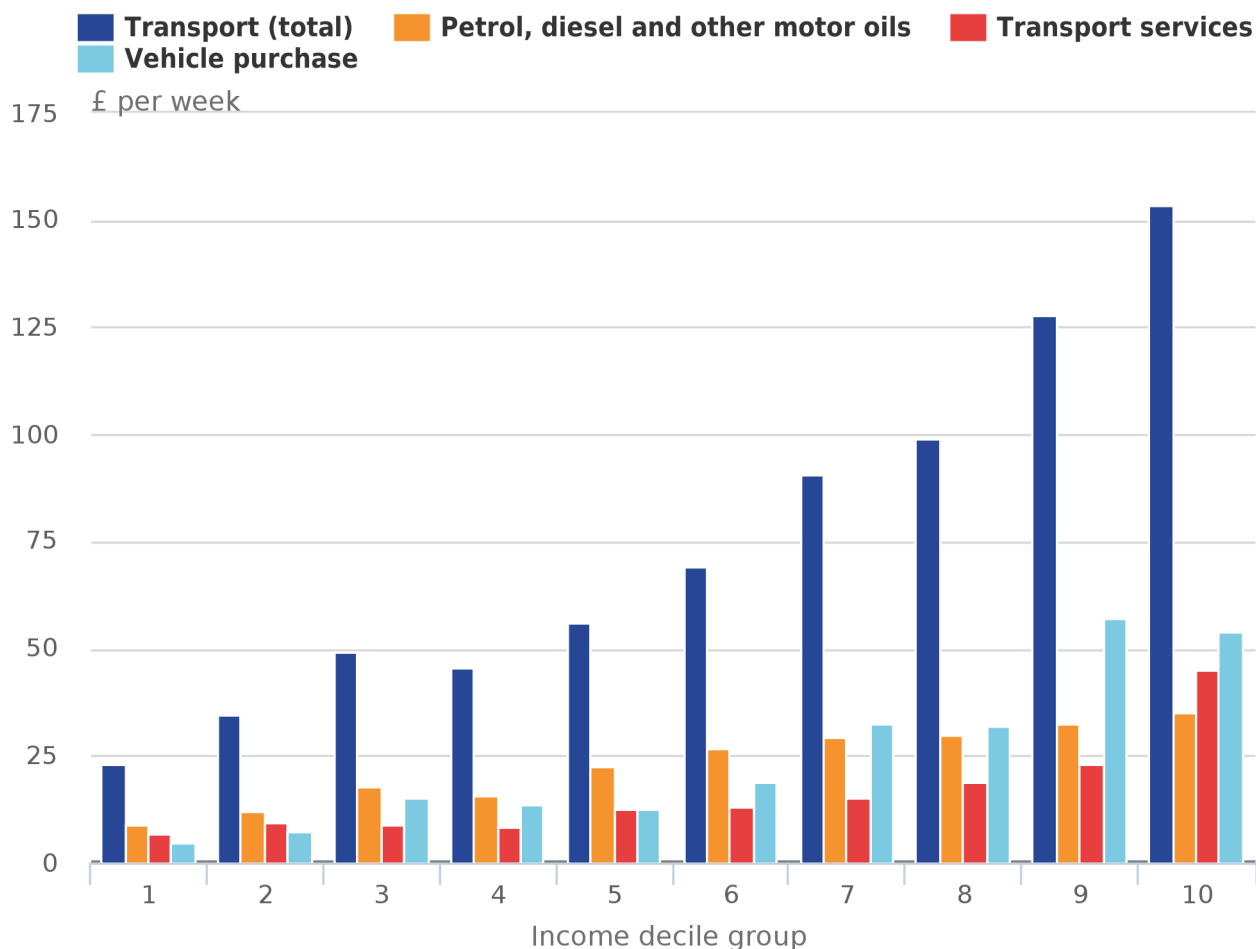


Source: Living Costs and Food Survey - Office for National Statistics

The proportion of total transport expenditure spent on different transport items varies by income decile groups. The lowest income households spend nearly 40% of transport expenditure on petrol, diesel and other motor oils, falling to 23% in the highest income decile. As a proportion of total expenditure it's very similar, at 3.6% and 3.4% respectively. This reflects that vehicles require a limited amount of fuel sold at a standard rate in order to operate. In contrast, new vehicle purchases comprise 21% of transport expenditure in the lowest income decile, rising to 35% in the highest income decile (0.4% and 2.3% of total expenditure respectively). Wealthy households with a higher level of disposable income are in a much better position to purchase vehicles more frequently and to purchase vehicles at the higher end of the price spectrum. Spending on transport services shows a gradual increase between income deciles 1 to 9, before almost doubling for the 10th income decile. This might suggest that only the wealthiest households tend to opt for the most expensive modes of communal transport, such as first class air and rail tickets.

Figure 3.4: Expenditure on transport and selected lower-level items by OECD-modified equivalised disposable income decile group

UK, 2014



Source: Living Costs and Food Survey - Office for National Statistics

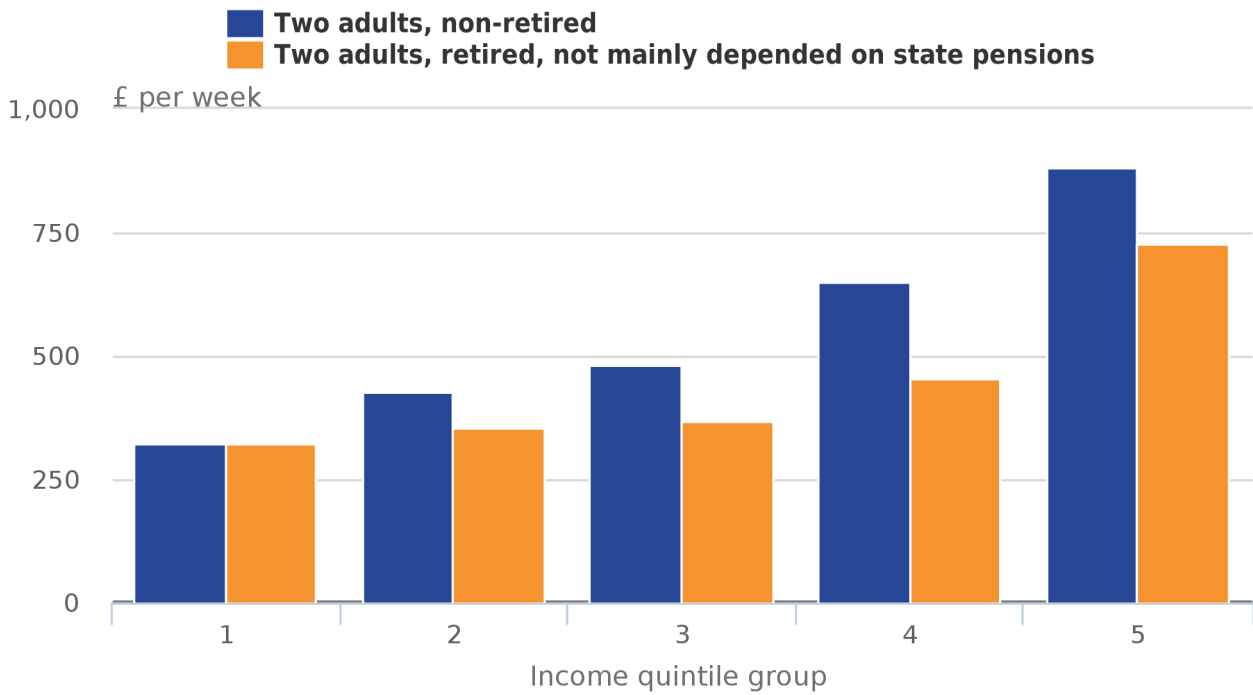
5 . Household expenditure by household composition and income

This section looks at how expenditure varies with income for retired and non-retired households containing 2 adults (as shown in Tables 3.5 (73.5 Kb Excel sheet) to 3.10 (74 Kb Excel sheet) and Tables 3.5E (109.5 Kb Excel sheet) to 3.10E (94.5 Kb Excel sheet)). We have used the example of 2-adult retired and non-retired households for how expenditure varies with income for different household types. Retired households are those where the household reference person (HRP) has reached state pension age, is not working or seeking work, and is mainly dependent on income sources other than the state pension (for example, occupational pension, income from investments, or annuities). Retired households mainly dependent on state pensions have been excluded from this analysis as they have low sample sizes.

As seen in Figure 3.5, total expenditure for both non-retired and retired households containing 2 adults increased with equivalised disposable income quintile (these increased by £557.10 per week for non-retired households, and £404.00 per week for retired households). For each quintile group, absolute spending was higher for households containing 2 non-retired adults. Most individual expenditure categories showed a similar pattern, but for some categories the variation in spending with income was more or less marked.

Figure 3.5: Expenditure for 2 adult households by OECD-modified equivalised disposable income quintile group

UK, 2014

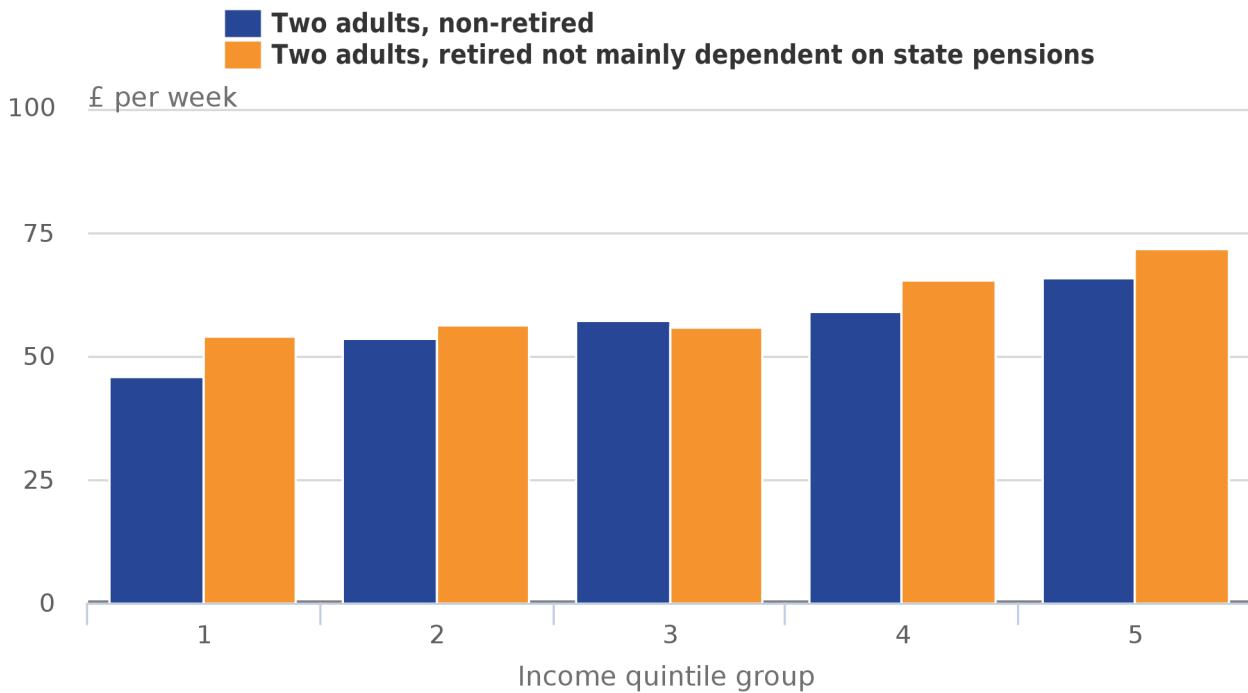


Source: Living Costs and Food Survey - Office for National Statistics

Spending on food and non-alcoholic drink was broadly similar for retired and non-retired 2-adult households across income quintiles, as shown in Figure 3.6. In both cases there were modest increases in spending as income increased.

Figure 3.6: Expenditure on food and non-alcoholic drinks for 2 adult households by OECD-modified equivalised disposable income quintile group

UK, 2014



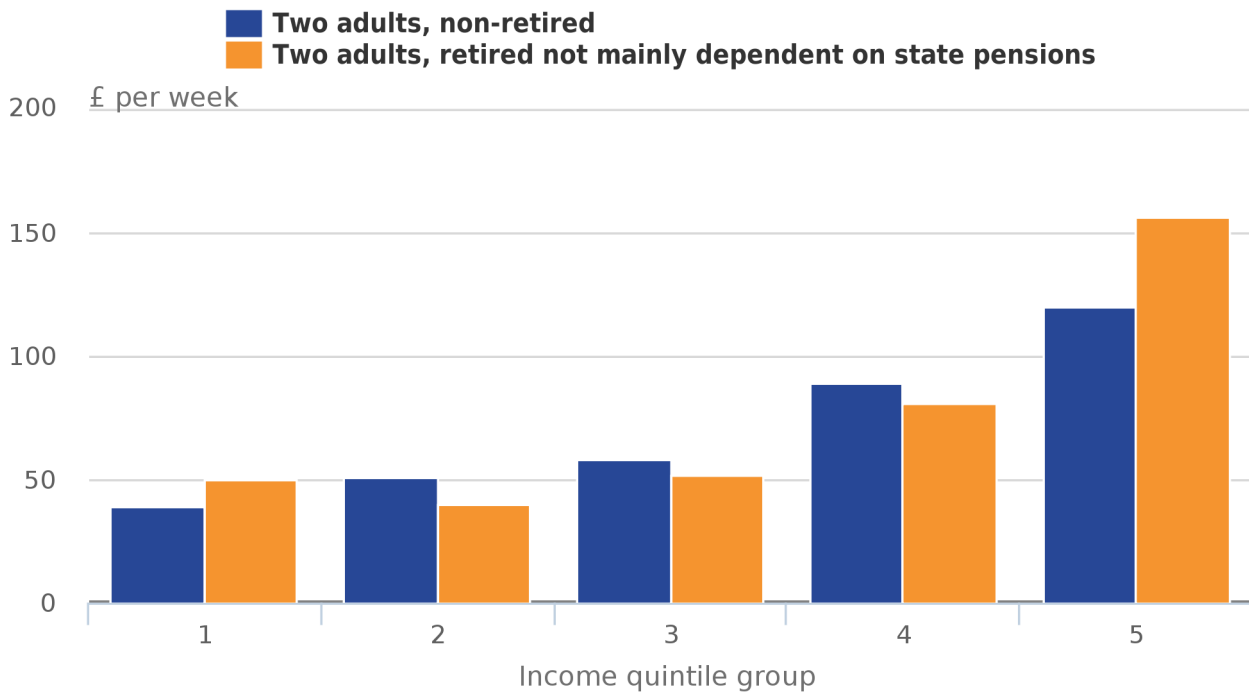
Source: Living Costs and Food Survey - Office for National Statistics

For households made up of 2 adults, spending on recreation and culture increased notably with income, particularly in the fourth and fifth income quintiles. Similar patterns were evident for both retired and non-retired groups; wealthier households from both groups chose to spend their disposable income on items such as package holidays, sports admissions and audio-visual equipment. For the highest and lowest income quintiles, retired households spent more than non-retired households.

There is also a consistent increase in spending on restaurants and hotels across all income groups. In this case, however, expenditure among non-retired households was higher for all but the lowest income quintile.

Figure 3.7: Expenditure on recreation and culture for 2 adult households by OECD-modified equivalised disposable income quintile group

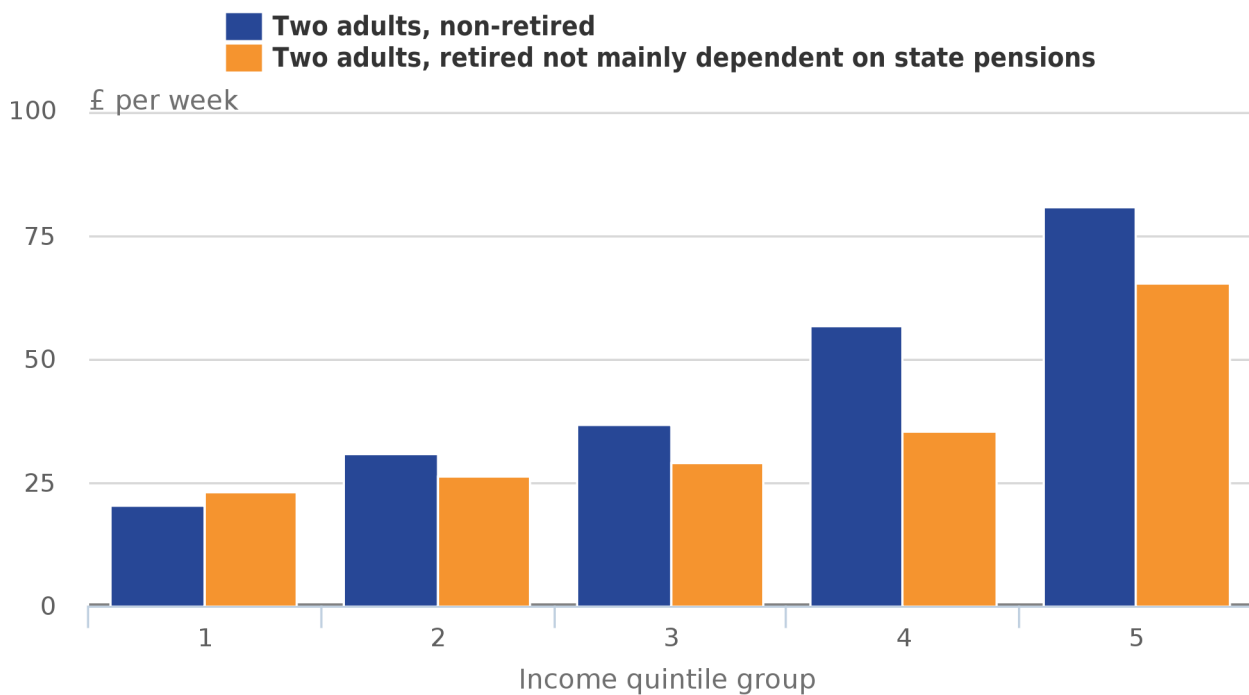
UK, 2014



Source: Living Costs and Food Survey - Office for National Statistics

Figure 3.8: Expenditure on restaurants and hotels for 2 adult households by OECD-modified equivalised disposable income quintile group

UK, 2014

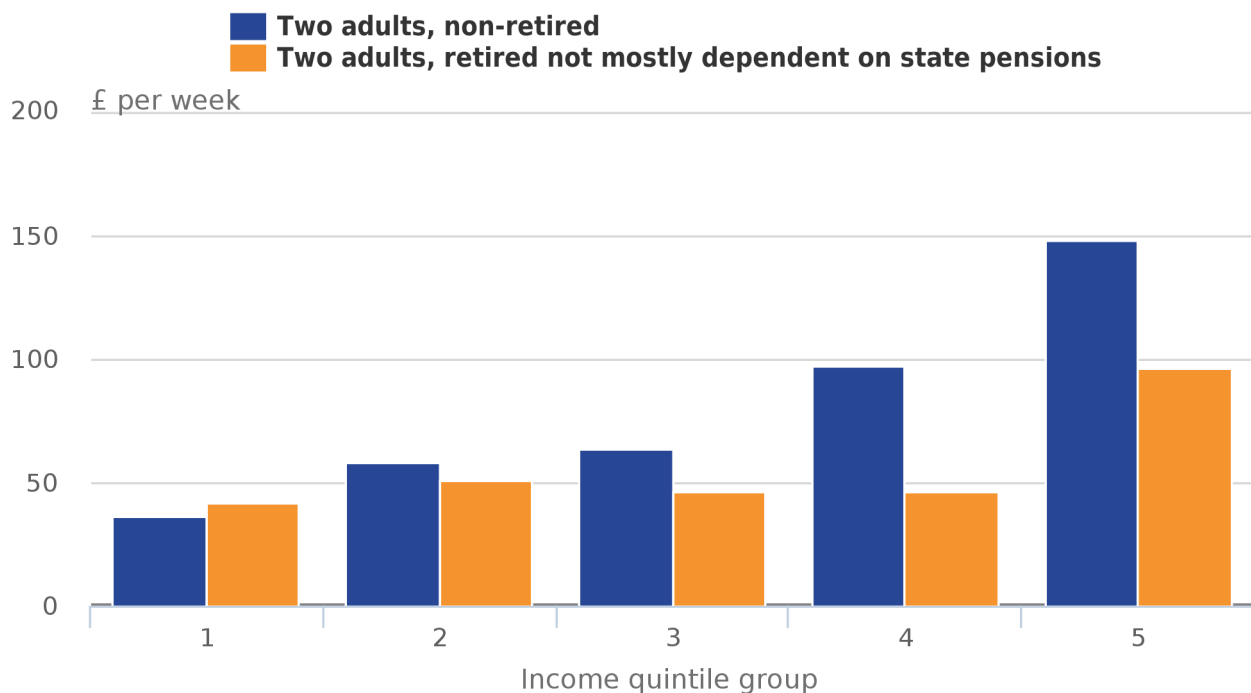


Source: Living Costs and Food Survey - Office for National Statistics

As Figure 3.9 shows, there is a different pattern of expenditure on transport across income groups for retired and non-retired 2-adult households. There is a consistent increase in expenditure on transport for non-retired 2-adult households with an overall rise from £36.60 in the lowest income quintile to £148.00 in the highest income quintile. Some spending on transport is essential, and for many non-retired households this includes travel to and from work. However, there are many opportunities to increase or decrease expenditure, such as the frequency with which cars are purchased and the choice of first or standard class travel. There is also choice (for the majority of households) regarding acceptable commuting distance. Spending among retired households changes little with income between quintiles 1 to 4 (£41.40 to £46.40) before a sharp rise in the highest quintile (£96.70). This might be explained by the wealthiest retired households choosing to purchase new cars, take more discretionary journeys and opt for more expensive options when travelling by air or rail.

Figure 3.9: Expenditure on transport for 2 adult households by OECD-modified equivalised disposable income quintile group

UK, 2014



Source: Living Costs and Food Survey - Office for National Statistics

These points illustrate how expenditure requirements differ between retired and non-retired households; note that non-retired households tend to have higher incomes. Income quintiles have been calculated separately for retired and non-retired households for this analysis, so patterns of expenditure within these groups can be explored meaningfully.

Examining spending patterns by income allows us to see how households prioritise spending on essentials, and how they balance this with enjoying some non-essential goods and services. The analysis above suggests that retired and non-retired households prioritise spending additional income differently for some spending categories. Equivalisation is a powerful tool to understand how income relates to the needs and choices of households of different sizes and compositions.

6 . Equivalisation methodology

Equivalisation scales are used to adjust household income, taking into account household size and composition. There are various scales available, which differ in their complexity and methodology. The OECD (Organisation for Economic Co-operation and Development)-modified equivalence scale is used widely across Europe. It adjusts household income to reflect the different resource needs of single adults, any additional adults in the household, and children in various age groups.

The modified OECD equivalence scale is the standard scale for the Statistical Office of the European Union (Eurostat). It is also used by several government departments in the UK for key household income statistics. For example, the Department for Work and Pensions (DWP) use the modified OECD equivalence scale for their Households Below Average Income (HBAI) publication. We also use it for the Effects of Taxes and Benefits on Household Income (ETB) analysis.

To calculate equivalised income using the modified OECD equivalence scale, each member of the household is first given an equivalence value. The modified OECD equivalence values are shown in Table 3A. Single adult households are taken as the reference group and are given a value of 1.

For larger households, each additional adult is given a smaller value of 0.5 to reflect the economies of scale achieved when people live together. Economies of scale arise when households share resources such as water and electricity, which reduces the living costs per person. Children under the age of 14 are given a value of 0.3 to take account of their lower living costs, children aged 14 and over are given a value of 0.5 because their living costs are assumed to be the same as an adult.

Table 3A: OECD-modified equivalence scale as applied by household composition

Type of Household Member	Equivalence value
First adult	1.0
Additional adult	0.5
Child aged: 14 and over	0.5
Child aged: 0-13	0.3

The equivalence values for each household member are summed to give a total equivalence number for the household. For example, the total equivalence value for a household with a married couple with 2 children aged 10 and 14 is calculated as follows:

1 (first adult) plus 0.5 (second adult) plus 0.5 (14-year-old child) plus 0.3 (10-year-old child) is 2.3

The total equivalence value of 2.3 shows that the household needs more than twice the income of a single adult household in order to achieve a comparable standard of living.

In the final step of the calculation the total income for the household is divided by the equivalence value. For example, if the household described in the example above has an annual income of £30,000, their equivalised income is calculated as follows:

- £30,000 divided by 2.3 is £13,043

For a single adult household with an income of £30,000, the equivalised income remains at £30,000. This is because the equivalence value for this household is equal to 1. This demonstrates that a single adult household will have a higher standard of living than a larger household with the same level of income.

7 . Equivalisation results

Equivalised household incomes were calculated for each household using the modified OECD equivalence scale. Household equivalised incomes were then ranked in ascending order and divided into 10 equally-sized (decile) groups. Households with the lowest equivalised income make up the first decile group. Non-equivalised disposable income data are presented in [Tables 3.1 \(423 Kb Excel sheet\)](#) to [3.11 \(45.5 Kb Excel sheet\)](#); equivalised disposable income data based on the modified OECD scale are shown in [Tables 3.1E \(89 Kb Excel sheet\)](#) to [3.11E \(46 Kb Excel sheet\)](#). The income decile groups are shown in Table 3B.

Table 3B: Income deciles for disposable weekly income and equivalised disposable weekly income

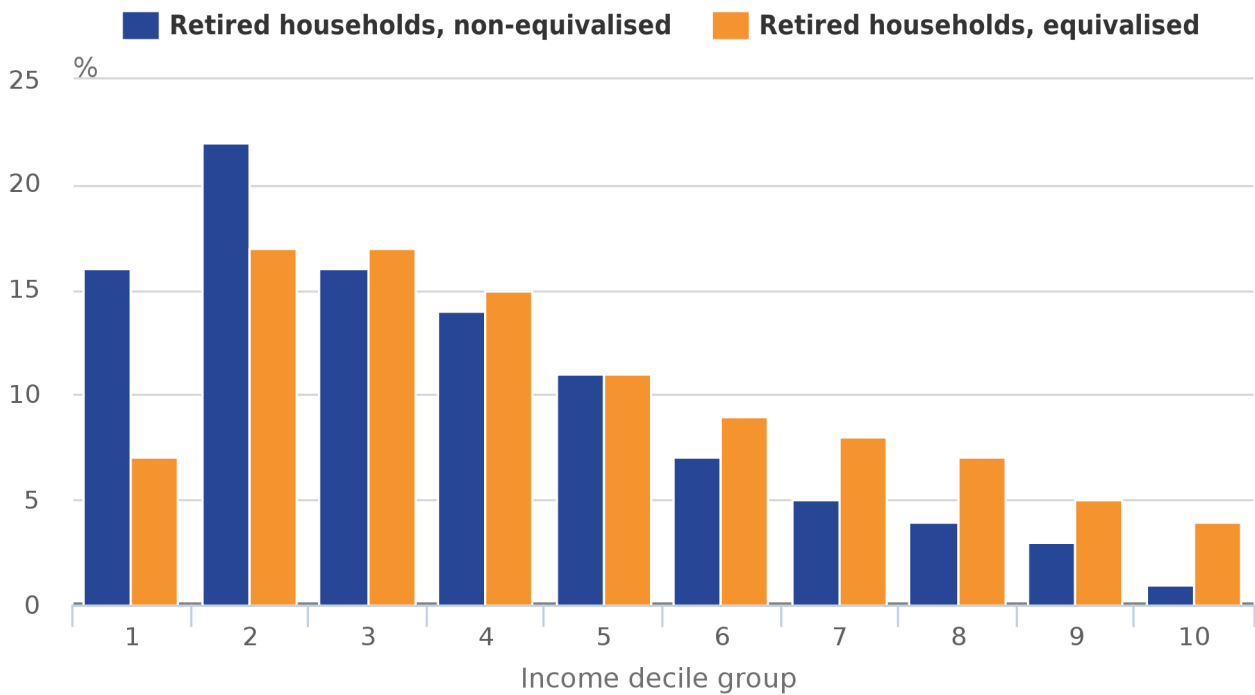
Income Decile	Disposable weekly income	Equivalised disposable weekly income (OECD-modified scale)
1	Up to £187	Up to £149
2	£188 to £272	£150 to £200
3	£273 to £357	£201 to £244
4	£358 to £441	£245 to £287
5	£442 to £534	£288 to £334
6	£535 to £634	£335 to £388
7	£635 to £764	£389 to £451
8	£765 to £930	£452 to £540
9	£931 to £1,209	£541 to £697
10	£1,210 and over	£698 and over

[Table 3.12 \(43.5 Kb Excel sheet\)](#) shows the household composition of the non-equivalised disposable income decile groups and the OECD-equivalised disposable income decile groups. Equivalisation has a large impact on the income positioning of households containing 1 adult without children. Households containing 1 non-retired adult accounted for only 2% of households in the highest non-equivalised disposable income decile group, but when income was equivalised they accounted for 13%. These households tended to move to a higher income decile group after income was equivalised. These results demonstrate that when equivalisation is used to look at the incomes of all households on a comparable basis, single adult households tend to be better off than they appear pre-equivalisation.

The percentage of households where the household reference person is retired in each income group, before and after equivalisation is shown in Figure 3.10. Equivalisation has a large effect on the proportion of retired households in the lowest income decile group. Before equivalisation, 16% of all retired households appeared in the lowest non-equivalised disposable income decile group; after equivalisation, only 7% of retired households appeared in this group. This result can largely be explained by the fact that a relatively high proportion of retired households contain only 1 adult. Therefore, as explained above, the incomes of single adult households are scaled up (relative to other households) when income is equivalised. The proportion of retired households in the second lowest income decile also decreased after equivalisation, although the effect was smaller. The opposite was true of the higher income decile groups; the proportion of retired households increased slightly after income was equivalised.

Figure 3.10: Percentage of retired households by non-equivalised and OECD-modified equivalised income decile group

UK, 2014



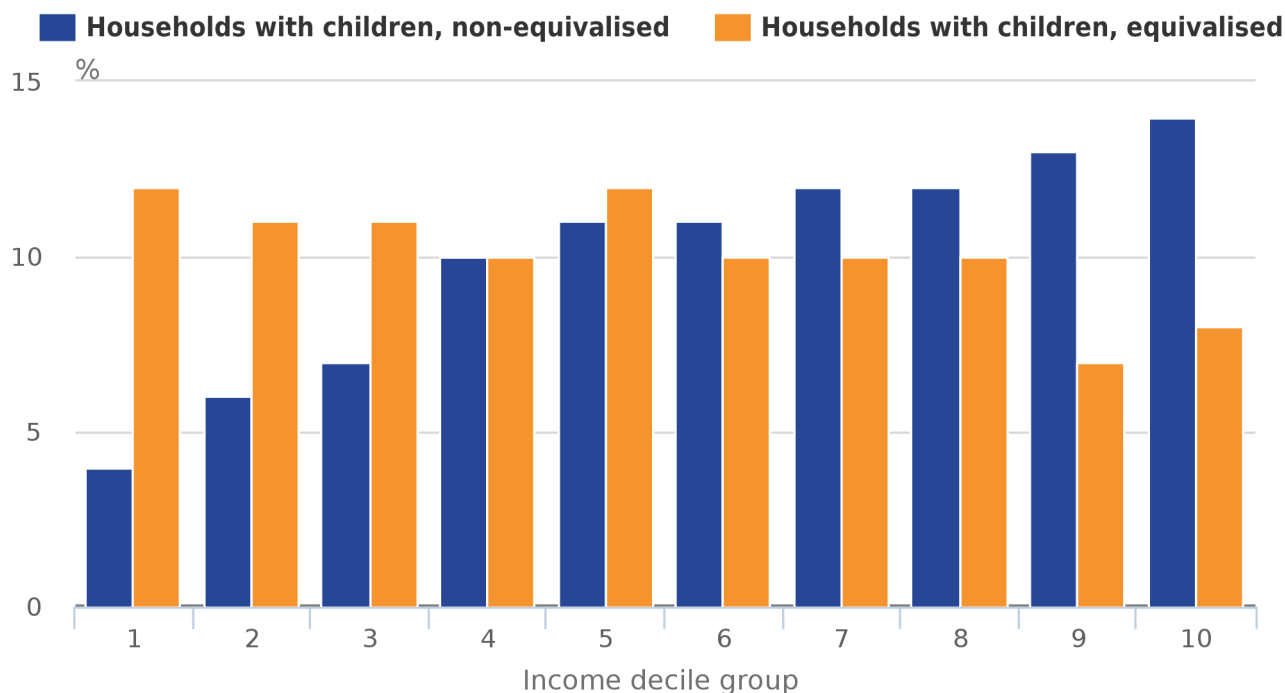
Source: Living Costs and Food Survey - Office for National Statistics

Figure 3.11 shows the percentage of households with children in each income group, before and after income equivalisation. As non-equivalised disposable income increases, the proportion of households with children generally increases through the lower and middle income groups.

Factoring in living costs for children as part of the equivalisation process brings about large changes in the income distribution. There are more households with children in the lower income groups and there is no longer an increase in the number of households with children as income increases.

Figure 3.11: Percentage of households with children in each non-equivalised and OECD-modified equivalised income decile group

UK, 2014



Source: Living Costs and Food Survey - Office for National Statistics

[Table 3.12 \(43.5 Kb Excel sheet\)](#) also shows how equivalisation affects the average household size for each income decile group. As non-equivalised disposable income increases the average number of people in each household also increases. The average household size for the highest income group (3.3 people) was 2 and a half times that of the lowest income group (1.3 people). After income was equivalised, the average number of people in each household was more similar for each income decile group, with the average varying between 2.2 and 2.5. This pattern of results occurs because the equivalisation process scales up the income of households containing one adult (relative to other households) and scales down the income of households with more people.

This is the only chapter that presents equivalised income data. Other tables included in Family Spending are available on an equivalised income basis on request (there is more information in “About this edition of Family Spending”).

8. Background notes

1. Symbols and conventions used in Family Spending 2015 Edition

[] Figures should be used with extra caution because they are based on fewer than 20 reporting households.

.. The data is suppressed if the unweighted sample counts are less than 10 reporting households.

- No figures are available because there are no reporting households.

Rounding: Individual figures have been rounded independently. The sum of component items does not therefore necessarily add to the totals shown.

Averages: These are averages (means) for all households included in the column or row, and unless specified, are not restricted to those households reporting expenditure on a particular item or income of a particular type.

Period covered: Calendar year 2014 (1 January 2014 to 31 December 2014).

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