Department for Business, Energy & Industrial Strategy

ANNUAL FUEL POVERTY STATISTICS REPORT, 2018 (2016 DATA)

England

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This document is also available from our website at
https://www.gov.uk/government/collections/fuel-poverty-statistics

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Executive Summary

Aim

The aim of this publication is to provide a comprehensive view of the latest statistical trends and analysis of fuel poverty in England. Fuel poverty in England is measured using the Low Income High Costs indicator, which considers a household to be fuel poor if:

- they have required fuel costs that are above average (the national median level);
- were they to spend that amount, they would be left with a residual income below the official poverty line.

Headline Figures

- In 2016[1], the average fuel poverty gap (the amount needed to meet the fuel poverty threshold) in England was estimated at £326, which was a decrease of 4.4 per cent in real terms from 2015 and continues the steady downward trend since 2012.
- The aggregate fuel poverty gap for England also continued to decrease in 2016 (by 1.8 per cent in real terms) to £832 million.
- The proportion of households in England in fuel poverty was estimated to have increased by 0.1 percentage points from 2015 to 11.1 per cent in 2016 (approximately 2.55 million households).
- In 2016, further progress was made towards the interim 2020 fuel poverty target, with 91.3 per cent of all fuel poor households living in a property with a fuel poverty energy efficiency rating of Band *E* or above.

Year	Fuel Poverty Target	2010 (%)	2016 (%)	Percentage point change
2020	**Band *E* or above**	81.1	91.3	10.2
2025	**Band *D* or above**	32.7	65.9	33.2
2030	**Band *C* or above**	1.5	7.7	6.2

[1] Users are advised not to compare data published in 2018 to data published in preceding years due to new RdSAP assumptions.

Drivers of Fuel Poverty

The relative nature of the fuel poverty indicator makes it difficult to isolate accurately absolute reason for change. The fuel poverty status of a household depends on the interaction between three key drivers; household incomes, fuel poverty energy efficiency ratings (FPEER) and required fuel costs. These are summarised below for 2016:

2016 data	Fuel poor	Non-fuel poor	All households
Median income	£10,325	£24,050	£22,017
Median FPEER	59.15	65.22	64.48
Median SAP	57.37	64.72	63.95
Median fuel costs	£1,366	£1,140	£1,177

Energy efficiency, dwelling and household characteristics

- Households with insulated cavity walls are least likely to be in fuel poverty (7.6 per cent of households with an average gap of £220) compared to households with uninsulated solid walls (16.8 per cent and an average fuel poverty gap of £433).
- Older dwellings tend to have a higher proportion of households in fuel poverty compared to newer dwellings. Households in dwellings built between 1900-1918 were most likely to be fuel poor (18.6 per cent) with an average gap of £379. This is compared to just 4.2 per cent of fuel poor households in dwellings built post 1990 with an average fuel poverty gap of £226.
- The level of fuel poverty is highest in the private rented sector (19.4 per cent) compared to those in owner occupied properties (7.7 per cent). Those in the private rented sector also tend to be deeper in fuel poverty, with an average fuel poverty gap of £383, compared to just over £200 for those in local authority and housing association properties.
- When considering household composition, those living in 'multi-person (adult) households' are deepest in fuel poverty with an average fuel poverty gap of £413 compared to a single person under 60 (£208). However, the highest prevalence of fuel poverty is seen for lone parents with dependent child(ren) (26.4 per cent).

Chapter 1: Introduction

In December 2014, the Government introduced a new statutory fuel poverty target for England[2]. The target is to ensure that as many fuel poor homes as reasonably practicable achieve a minimum energy efficiency rating of a Band *C*[3,4], by 2030. To support the implementation of this target, the Government published 'Cutting the cost of keeping warm: a fuel poverty strategy for England[5], in March 2015. The strategy also set out interim milestones to lift as many fuel poor homes in England as is reasonably practicable to Band *E* by 2020; and Band *D* by 2025, alongside a strategic approach to developing policy to make progress towards these targets.

A household is considered to be fuel poor if it has higher than typical energy costs *and* would be left with a disposable income below the poverty line[6] if it spent the required money to meet those costs. It captures the fact that fuel poverty is distinct from general poverty: not all poor households are *fuel* poor, and some households would not normally be considered *poor* but could be pushed into fuel poverty if they have high energy costs. Fuel poverty is therefore an overlapping problem of households having a low income *and* facing high energy costs.

The Government is interested in the amount of energy people need to consume to have a warm, well-lit home, with hot water for everyday use, and the running of appliances. We therefore measure fuel poverty based on *required* energy bills rather than *actual* spending. This ensures that we do not overlook those households who have low energy bills simply because they actively limit their use of energy at home, for example, by not heating their home.

[2] Fuel poverty is a devolved matter, with each nation in the UK having its own policy target, measurement and outputs. See Annex C for further information.
[3] Banding relates to the Fuel Poverty Energy Efficiency Rating (FPEER), see key definition on Page 10.
[4] Household energy efficiency ratings are banded from *G* (lowest) to *A* (highest).
[5] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/408644/cutting_the_cost_of_keeping_warm.pdf
[6] The poverty line (income poverty) is defined as an equivalised disposable income of less than 60% of the national median (Section 2): https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/articles/persistentpovertyintheukandeu/2015

1.1 Measuring Fuel Poverty in England

Fuel poverty in England is measured using the Low Income High Costs (LIHC) indicator. Under the LIHC indicator, a household is considered to be fuel poor if:

- they have required fuel costs that are above average (the national median level).
- were they to spend that amount, they would be left with a residual income below the official poverty line.

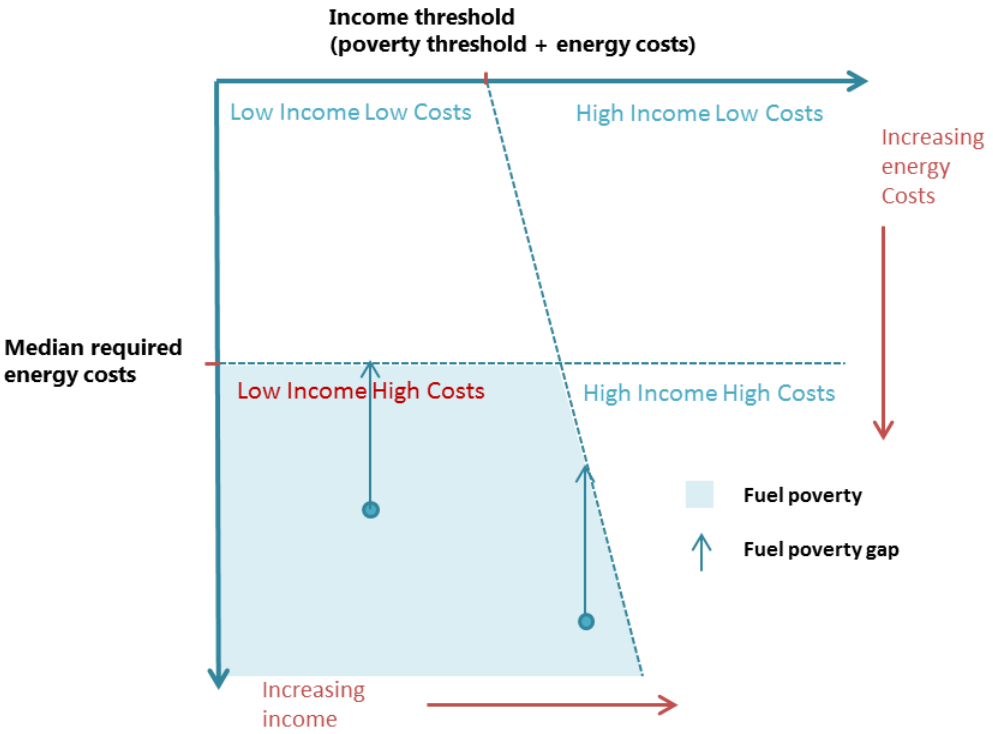
Low Income High Costs is a *dual* indicator, which allows us to measure not only the *extent* of the problem (how many fuel poor households there are), but also the *depth* of the problem (how badly affected each fuel poor household is). The depth of fuel poverty is calculated by taking account of the **fuel poverty gap**. This is a measure of the additional fuel costs (in pounds) faced by fuel poor households to meet the threshold that would make them non-fuel poor. This is illustrated in Figure 1.1, where the indicator consists of:

- the **number** of households that have both low incomes *and* high fuel costs (shown by the shaded area in the bottom left hand quadrant in Figure 1.1); and
- the **depth** of fuel poverty among these fuel poor households. This is measured through a **fuel poverty gap** (shown by the vertical arrows in Figure 1.1), which represents the difference between the required energy costs for each household and the nearest fuel poverty threshold (in pounds).

To get a sense of the depth of fuel poverty at a national level, the fuel poverty gap for each individual household is aggregated across all fuel poor households to produce an overall **aggregate fuel poverty gap**.

The fuel poverty indicator is a *relative* measure, as it compares households to national income thresholds and national median energy costs. A change in income will only have an impact on fuel poor households when they see relatively larger income changes (increase or decrease) than the overall population; the same is true for household energy costs. As a result, the proportion of households in fuel poverty remains, on the whole, stable over time (between 10-12 per cent), whereas the fuel poverty gap (which is measured in pounds) is more closely linked to changes in energy prices and the economy and therefore, a more informative measure when looking at the direct impacts of fuel poverty over time.

Figure 1.1: Fuel poverty under the Low Income High Costs indicator



Fuel poor households (bottom left hand quadrant of Figure 1.1) include some households who may not traditionally be considered to be poor but are pushed into fuel poverty by their high energy requirements (this is reflected in the gradient of the income threshold).

Those in the bottom right hand quadrant also have high required energy costs but their relatively high incomes mean that they are not considered to be *fuel* poor.

Those in the top right hand quadrant have both high incomes and low required energy costs and are not fuel poor.

While it is recognised that households in the top left hand quadrant have low incomes, they also have relatively low required energy costs, and so are not considered to be *fuel* poor.

The fuel poverty status of a household depends on the interaction between three key drivers: household incomes, household energy efficiency, and fuel prices. These are explored in more detail in Chapter 2.

KEY DEFINITIONS

Fuel Poverty
A household is considered to be fuel poor if: they have required fuel costs that are above average (the national median level); and, were they to spend that amount, they would be left with a residual income below the official poverty line[4].

Low Income High Costs Indicator
A dual indicator, which allows us to measure both the level (number of households) and depth (fuel poverty gap) of fuel poverty.

Fuel Poverty Gap
The difference in pounds between the required energy costs for *each* fuel poor household and the nearest fuel poverty threshold.

Average Fuel Poverty Gap
The average (mean) *fuel poverty gap* across *all* fuel poor households (in pounds).

Aggregate Fuel Poverty Gap
The *fuel poverty gap* for each individual household is aggregated across *all* fuel poor households to produce a national total (in pounds).

SAP
The Standard Assessment Procedure (SAP) is the methodology used by the Government to assess and compare the energy and environmental performance of dwellings. Its purpose is to provide accurate and reliable assessments of dwelling energy performances that are needed to underpin energy and environmental policy initiatives.

RdSAP
Reduced Data SAP (RdSAP) was developed for use in existing dwellings based on a site survey of the property, when complete data for a SAP calculation is unavailable.

RdSAP changes

A new version of RdSAP (v9.93) [7] was introduced in November 2017 with a number of improved assumptions to better estimate heat loss, which in turn has an impact on the energy consumption estimates of dwellings affected.

These improved assumptions mean that:

- Uninsulated cavity and solid walls see a higher thermal performance
- Insulated cavity and solid dwellings see a lower thermal performance

BEIS have a commitment to use the latest RdSAP assumptions when monitoring the Fuel Poverty Energy Efficiency Rating (FPEER) target to ensure policy making is based on the most up-to-date information.

The Ministry of Housing, Communities and Local Government (MHCLG) publish SAP figures to monitor the efficiency of the housing stock in England but will not implement the new version of RdSAP in their statistics until 2018 data, to align with when this would have come into effect for surveyors issuing EPCs[8].

To ensure SAP figures remain consistent across departments both BEIS and MHCLG will report figures on SAP/ EPC using the old version of RdSAP assumptions (v9.92), however BEIS will report their FPEER target with the latest RdSAP assumptions (v9.93).

The introduction of updated RdSAP assumptions has had a minor effect on the fuel poverty statistics, details of this can be found in Section 5.13 in the methodology document[9].

The full fuel poverty time series has been updated back to 2003, therefore figures in this publication and the trends tables[10] are comparable. Users are advised not to compare data published in 2018 with data published in preceding years. As, for example, 2015 data published in the 2017 fuel poverty data tables, will not match 2015 figures published in the 2018 fuel poverty data tables. This applies to the whole series.

[7] https://www.bre.co.uk/filelibrary/SAP/2012/RdSAP-9.93/RdSAP_2012_9.93.pdf
[8] https://www.gov.uk/buy-sell-your-home/energy-performance-certificates
[9] https://www.gov.uk/government/publications/fuel-poverty-statistics-methodology-handbook
[10] https://www.gov.uk/government/statistics/fuel-poverty-trends-2018

KEY DEFINITIONS

Fuel Poverty Energy Efficiency Rating (FPEER) [1]

FPEER is a measure of the energy efficiency of a property based on the Standard Assessment Procedure (SAP)[1] *but* accounts for policies that directly affect the cost of energy[1]. Similar to SAP, the FPEER methodology generates a rating between 1 and 100, which is then translated into an energy efficiency Band from *G* (lowest) to *A* (highest) and underpins the Government's fuel poverty target.

The FPEER methodology requires that data inputs should as far as possible be directly observed from the housing survey data. In circumstances where inputs cannot be observed or reasonably derived from the housing survey data, default input values referenced in RdSAP should be used.

Further information

Further information on how the LIHC indicator works, drivers of fuel poverty, data sources, and methodological updates for the 2016 estimates can be found in Annex B. A full Methodology Handbook[11] is also available alongside this publication.

The 2016 fuel poverty dataset with 11,924 records [12], will be made available later this year via the UK Data Archive, where previous year's data are also available. These releases contain the underlying data used to calculate fuel poverty and the corresponding breakdown variables used within the fuel poverty report. Documentation covering variable names and descriptions are also provided alongside the datasets.

The majority of fuel poverty variables are included in the dataset deposited at the UK Data Archive under the standard End User Licence. To comply with data protection guidance issued by the Government Statistical Service, supplementary fuel poverty variables are released under a more restricted Special Licence on the UK Data Archive. To maintain the confidentiality of respondents, disclosure control is applied to both the End User Licence and Special Licence fuel poverty datasets on the UK Data Archive.

Please note: users will need to register with the UK Data Archive website to access the data: http://data-archive.ac.uk/.

[11] https://www.gov.uk/government/publications/fuel-poverty-statistics-methodology-handbook
[12] Number of households in the English Housing Survey sample

Chapter 2: Summary of Fuel Poverty in England, 2016[13]

2.1 Fuel Poverty in England Overview

In 2016, the average fuel poverty gap (in real terms[14]) was £326. This is a decrease of around 4.4 per cent from 2015[15]. The aggregate fuel poverty gap (summed across all households in fuel poverty) also decreased, by 1.8 per cent in real terms to £832 million in 2016. The proportion of households in England in fuel poverty was estimated to have increased by 0.1 percentage points[16] from 2015 to 11.1 per cent in 2016 (approximately 2.55 million households).

Table 2.1: Headline fuel poverty figures for 2016

Average fuel poverty gap	£326
Aggregate fuel poverty gap	£832 million
Proportion of households in fuel poverty	11.1 per cent

We recommend using the average fuel poverty gap as an indication of fuel poverty trends at the national level, since this is a real terms value showing how much extra money households in fuel poverty would need to spend in order to cross the fuel poverty threshold.

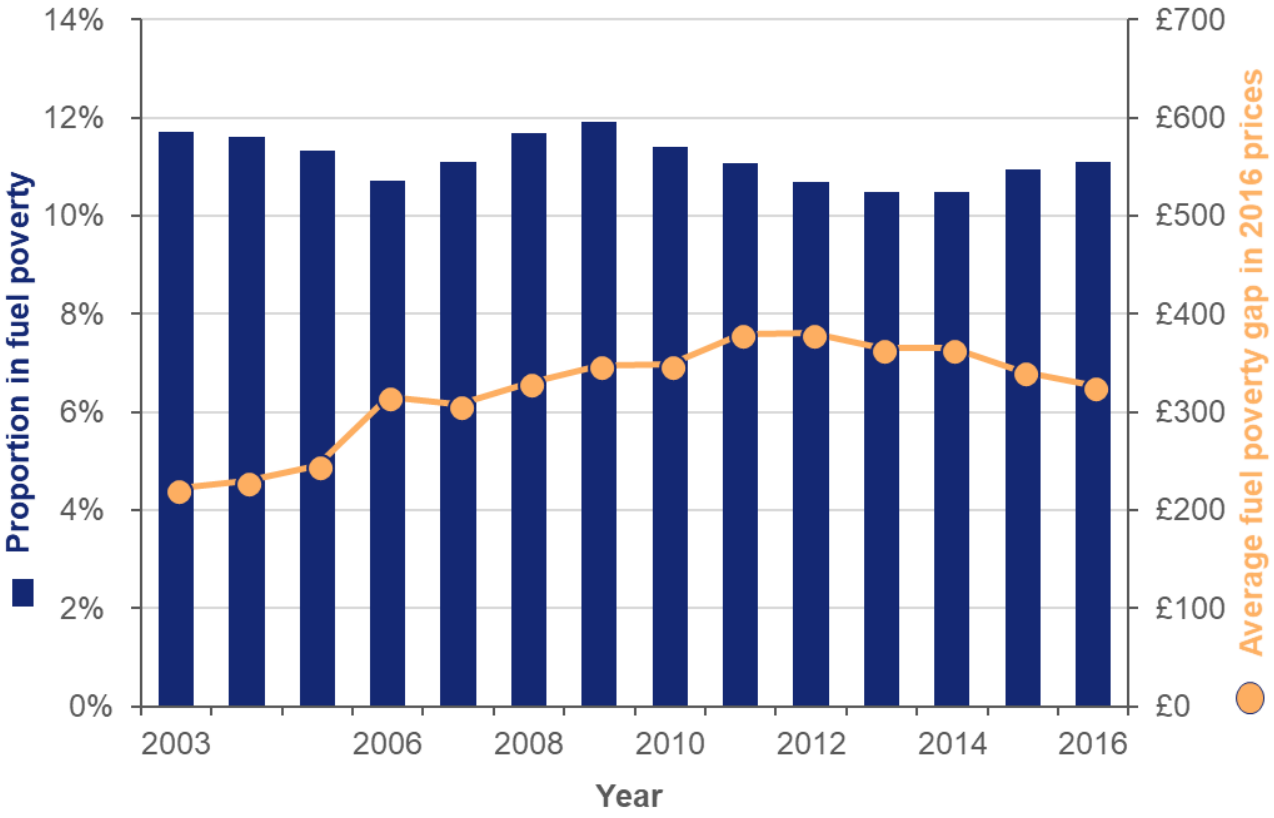
Figure 2.1 shows the overall trend in fuel poverty in England between 2003 and 2016, where the average fuel poverty gap has been steadily decreasing since 2012 and is now at approximately the same level seen in 2008[17].

Due to the relative nature of the fuel poverty measure, the proportion of households in fuel poverty remains fairly stable over time, fluctuating between 10 and 12 per cent. As shown in Figure 2.1, in more recent years, the proportion of households in fuel poverty was seen to decline between 2009 and 2013 and then increase again between 2014 and 2016.

[13] Users are advised not to compare data published in 2018 to data published in preceding years due to new RdSAP assumptions, as described in Chapter 1.
[14] "in real terms" means an adjusted financial number after correcting for the effect of inflation, these figures are adjusted to 2016 prices.
[15] Note that caution should be used when interpreting year on year changes as the sample is not independent; fuel poverty is based on a two year combined sample (see Annex B).
[16] A percentage point is the unit for the arithmetic difference between two percentages (e.g. an increase of 20 per cent to 30 per cent is classed as a 10 percentage point increase but is a 50 per cent increase in what is being measured).
[17] Note that historic average and aggregate fuel poverty gaps have been rebased to 2016 prices, and thus differ to those presented in the previous version of this publication.

There is some evidence that the proportion of fuel poor households and the average fuel poverty gap *can* be negatively correlated, for example, when the proportion of fuel poor increases the average gap decreases. This is a mathematical property of the measure. If households clustered above the thresholds are pushed into fuel poverty (due to a disproportionate change in one of the key drivers of fuel poverty), this would increase the proportion of fuel poor households. These properties would sit close to the threshold and have relatively small average fuel poverty gaps which would decrease the *average* gap. On the other hand, if households clustered below the thresholds are pushed out of fuel poverty, their small average gap values are no longer included, giving more weight to the larger fuel poverty gaps and resulting in an overall increase. This holds *only* for those households clustered around the fuel costs thresholds. There is more fluctuation in whether a given household would be classed as fuel poor or not year-on-year close to the thresholds. This is unlikely to hold if there is a *large* change in one of the key drivers of fuel poverty. If a household with a large average fuel poverty gap has a significant change in circumstances and is lifted out of severe fuel poverty this would, if all other factors are held constant, decrease the average fuel poverty gap.

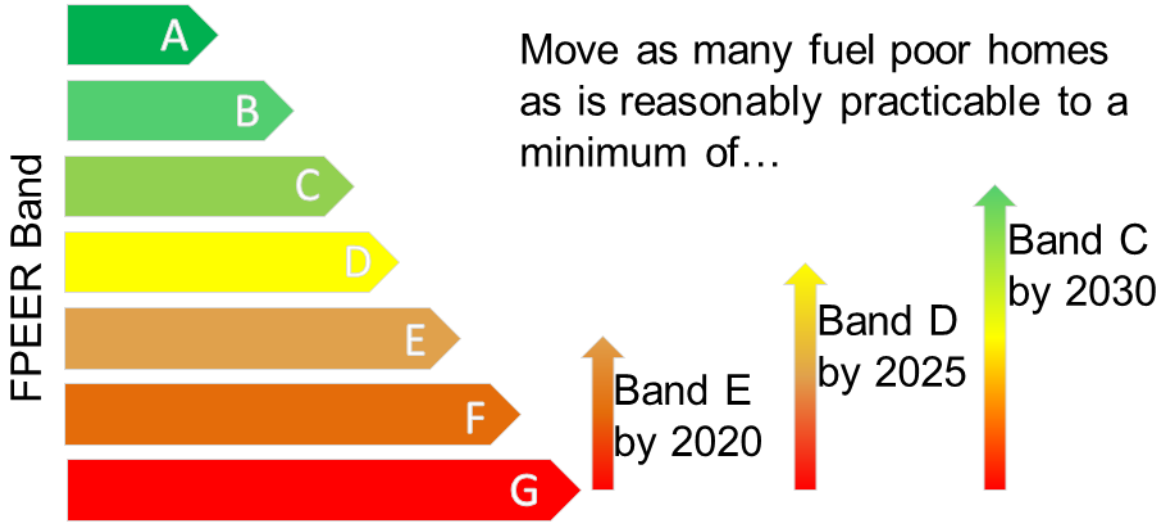
Figure 2.1: Fuel poverty in England, 2003-2016



2.2 Progress Against the Target

In 2014, the Government put in place a new statutory fuel poverty target for England: to ensure that as many fuel poor households as reasonably practicable achieve a minimum FPEER rating of Band *C* by 2030, with interim targets of Band *E* by 2020, and Band *D* by 2025. This is depicted in Figure 2.2.

Figure 2.2: Fuel poverty targets for England



In 2016 91.3 per cent of fuel poor homes were in Band *E* or above; 65.9 per cent of fuel poor households were in Band *D* or above; and 7.7 per cent of fuel poor households were in Band *C* or above (see Table 2.2 and Figure 2.3).

In relation to the 2020 target, the proportion of fuel poor households in Band *E* or above has increased by 10.2 percentage points since 2010, seeing a steady increase from 81.1 per cent in 2010 to 91.3 per cent in 2016.

The proportion of fuel poor households in Band D or above has steadily increased by 33.2 percentage points between 2010 and 2016, peaking in 2015 at 67.0 per cent before decreasing slightly by 1.1 percentage points to 65.9 per cent. The *absolute number* of Band D fuel poor properties has *increased* by 0.5 per cent (around 7,000) between 2015 and 2016. However, there has been larger increases in fuel poor properties in Band E of around 66,000 and an increase of around 12,000 in fuel poor properties that are Band C or above. This has resulted in a decrease in the proportion of Band D or above properties due to the larger denominator (increase of 69,000) of the overall housing stock (see Table 4.1).

The proportion of dwellings classed as Band D or above in the overall housing stock has increased by 0.3 percentage points, in contrast to the decrease seen for fuel poor

households (see Table 2.3). Due to the complex nature of the fuel poverty measure it is difficult to accurately isolate reasons for change, however there are a number of contributing factors that are discussed in Section 4.2.

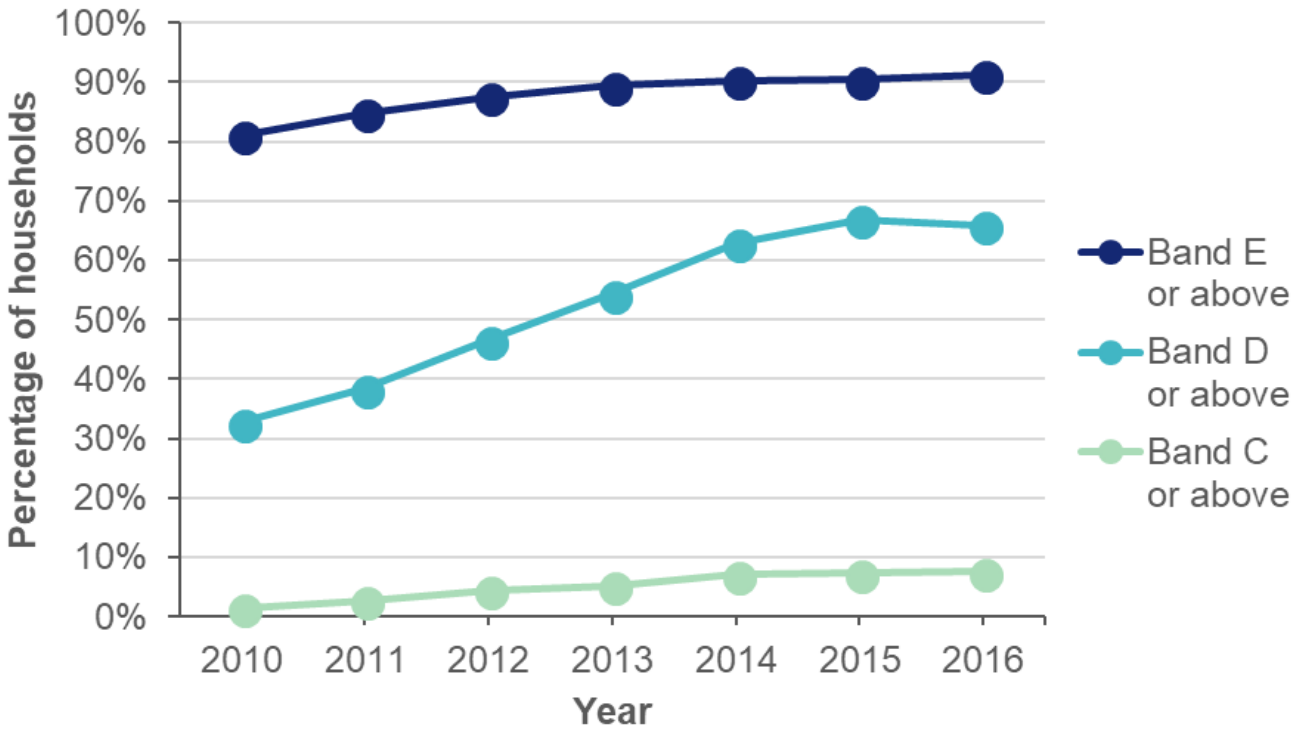
Table 2.2: Proportion of fuel poor households by FPEER band (%), 2010-2016

	2010	2011	2012	2013	2014	2015	2016
Band E or above	81.1	84.8	87.5	89.4	90.3	90.4	91.3
Band D or above	32.7	38.5	46.7	54.3	62.9	67.0	65.9
Band C or above	1.5[18]	2.7	4.6	5.2	7.1	7.4	7.7

Table 2.3: Proportion of all households by FPEER band (%), 2010-2016

	2010	2011	2012	2013	2014	2015	2016
Band E or above	91.5	93.0	94.4	95.0	95.6	96.1	96.0
Band D or above	62.6	67.0	72.4	76.6	80.1	81.9	82.2
Band C or above	13.1[18]	15.5	19.6	23.6	27.5	31.1	31.7

Figure 2.3: Progress towards fuel poverty targets for England, 2010-2016[19]



[18] In the fuel poverty trends tables (https://www.gov.uk/government/statistics/fuel-poverty-trends-2018), the 2010 figure has been suppressed due to small sample size – inferences should not be made on this figure in isolation.
[19] The change between 2015 and 2016 is not statistically significant.

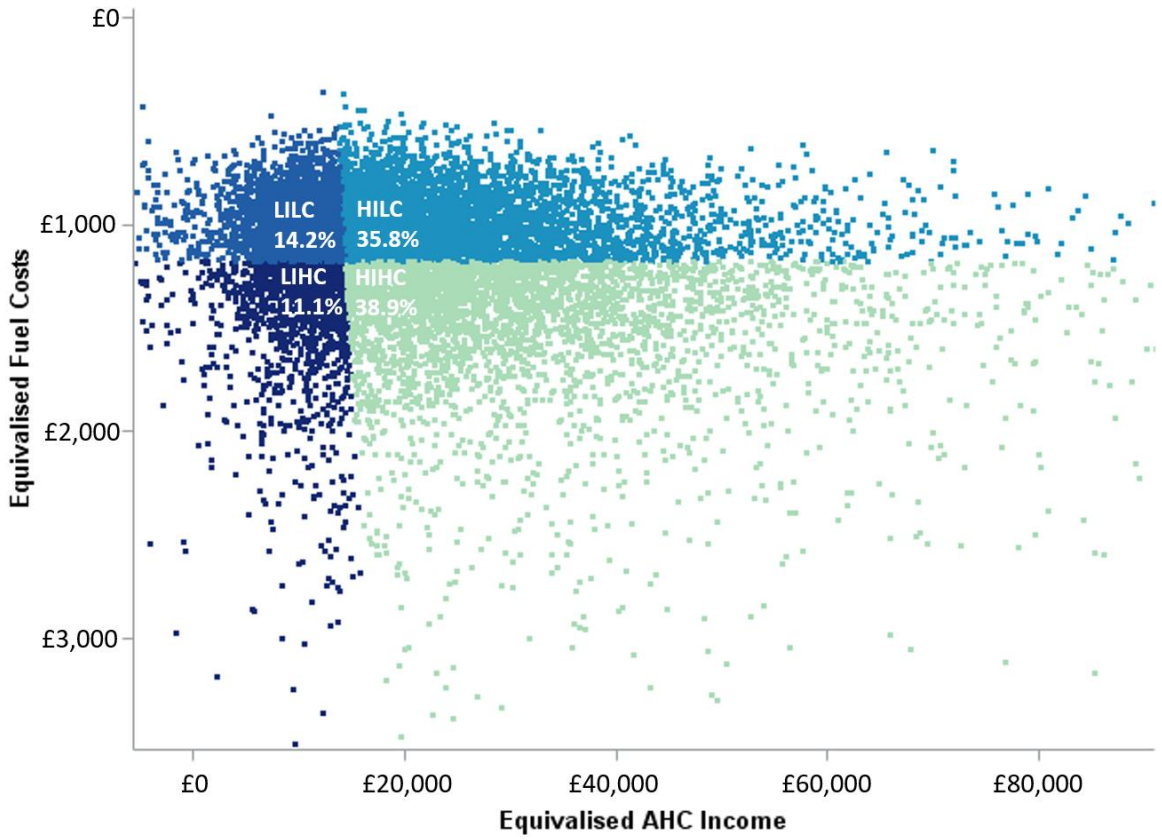
2.3 The Low Income High Costs Quadrant

Fuel poverty in England is measured under the Low Income High Costs indicator, which is defined in Section 1.1. Based on a combination of a household's income, energy requirements and energy prices, the indicator allows households to be grouped into one of the following four quadrants:

- Low Income High Costs (LIHC)
- Low Income Low Costs (LILC)
- High Income Low Costs (HILC)
- High Income High Costs (HIHC)

The Low Income High Costs quadrant provides an estimate of those who are in fuel poverty, with Figure 2.4 showing the distribution of the population across all four quadrants of the indicator[20]. In 2016, of those households with low incomes, 43.9 per cent were classed as fuel poor. Of those households with high fuel costs, 22.2 per cent were classed as fuel poor.

Figure 2.4: The proportion of households in each quadrant of the fuel poverty indicator, 2016[21,22]



[20] Negative income values occur in a small proportion of cases, where basic income is zero *before* deduction of housing related payments, such as council tax.
[21] See definition of Equivalised AHC income on page 16.
[22] Each dot represents one household in the survey sample of 11,924.

2.4 The Drivers of Fuel Poverty

The fuel poverty status of a household depends on the interaction between three key drivers: household incomes, household energy efficiency and fuel prices. Due to the relative nature of the fuel poverty indicator, it is important to assess these drivers in terms of their likely effect on the fuel poor population, and their resulting depth of fuel poverty.

For any factor to affect the number of households in fuel poverty, it must change by a greater amount for those *in* fuel poverty, than for those *not* in fuel poverty. For example, a change in income will only have an impact on fuel poverty if households with low incomes and high fuel costs see relatively larger income changes (increases or decreases) compared to those who are not in fuel poverty.

2.4.1 Income

KEY DEFINITION

Equivalisation
An adjustment factor, dependent on the composition of the household, to standardise spending and energy requirements across households.[23]

Equivalised After Housing Cost (AHC) income
This is the official income definition used to estimate fuel poverty. It is based on a households' full income[24] (after income tax and National Insurance contributions) *minus* housing costs (mortgage and rent payments), which is then equivalised by an adjustment factor to standardise spending and energy requirements based on a households' composition (see Annex B for further details).

Income is an important driver of fuel poverty. By definition, fuel poverty requires households to have a low income, therefore, changes in income can impact fuel poverty estimates. Under the LIHC indicator, housing costs are taken off the full income of each household; this is referred to as the 'After Housing Costs' (AHC) income, since money spent on housing costs cannot be spent on energy costs.

[23] See Table 10 and 11 of the methodology document for details (https://www.gov.uk/government/publications/fuel-poverty-statistics-methodology-handbook).
[24] See Chapter 3 for details (https://www.gov.uk/government/publications/fuel-poverty-statistics-methodology-handbook).

In 2016, median equivalised AHC incomes increased, rising from £21,333 in 2015 to £22,017 in 2016 (around 3.2 per cent in cash terms[25]). However, as Figure 2.5 shows, equivalised AHC income did not rise equally across all household income decile groups[26].

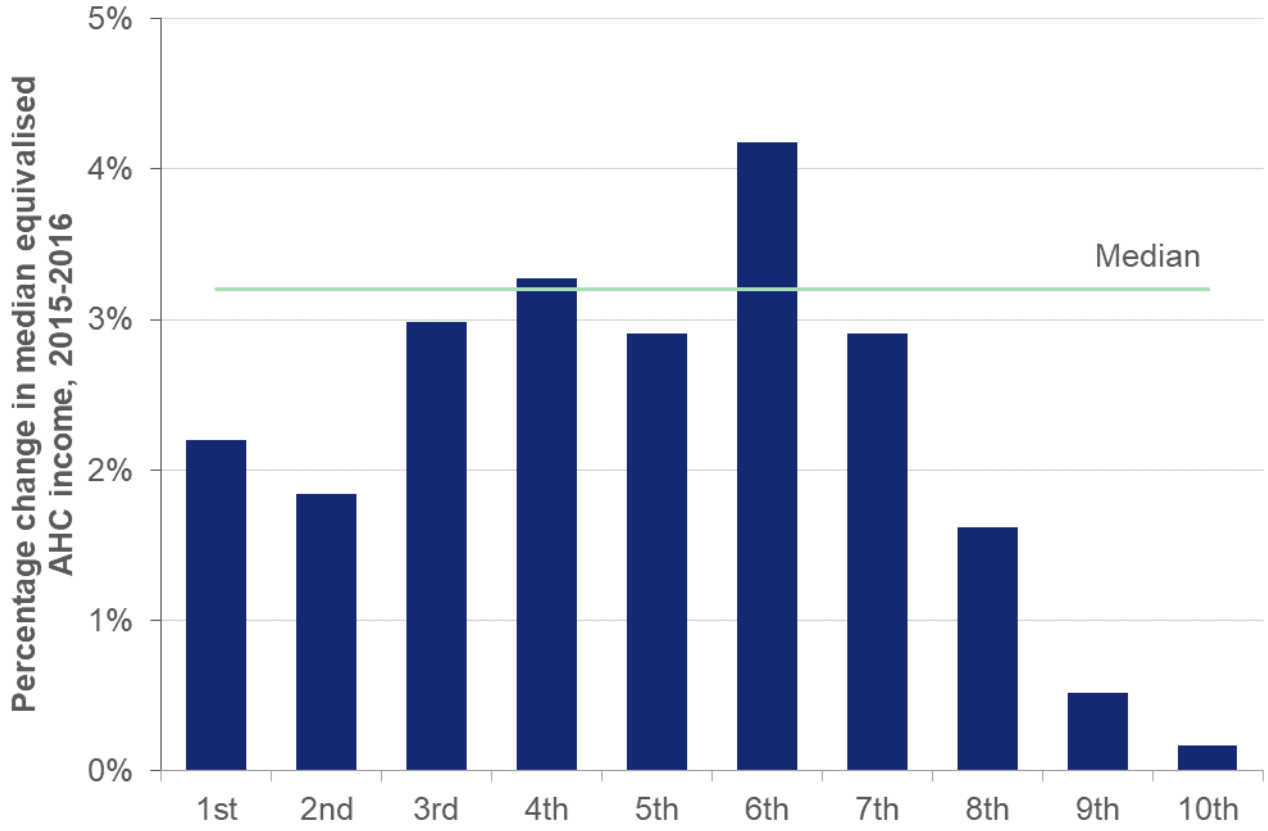
Between 2015 and 2016, those in the lowest three income deciles had a lower than average median increase in equivalised AHC income, whereas, those in the 4th and 6th decile had a higher than average increase.

The 8th decile and above are seeing a smaller increase in median equivalised AHC income than the lower deciles. This appears to be partly due to a shift in the composition of households reporting income from employment, with the number of couples in the English sample declaring income from employment decreasing and the number of lone parents in the sample declaring income from employment increasing. Couples tend to, on average, have greater incomes that single households.

A similar drop in the increase in AHC income for the higher income deciles can be seen in the Households Below Average Income statistics[27].

[25] Cash terms means a nominal value which has not been adjusted for inflation
[26] Deciles are ten equal groups that the population can be divided into to according to the distribution of the values.
[27] https://www.gov.uk/government/statistics/households-below-average-income-199495-to-201617

Figure 2.5: Comparison of annual percentage change in median equivalised AHC income, 2015-2016



In 2016, the disproportionate changes in equivalised AHC income will have an impact on fuel poverty. Households in the lower income deciles have seen disproportionate changes in equivalised AHC income which will have resulted in these households being worse off compared to the overall population. This contributes to the shifting of households across the income threshold into fuel poverty.

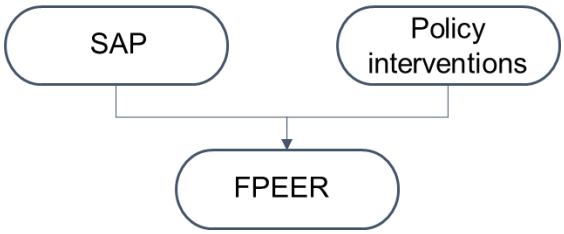
2.4.2 Energy efficiency

The standard definition for measuring the energy efficiency of the housing stock in England is described using the Standard Assessment Procedure (SAP[28]) for the Energy Rating of Dwellings[29] and is a key indicator of a property's energy saving potential. SAP differs slightly from FPEER, as it does not take into account policies aimed at reducing the amount households need to spend on their energy. SAP and FPEER are key indicators of fuel

[28] BRE 2012. The Government's Standard Assessment Procedure for energy rating of dwellings: 2012 edition. http://www.bre.co.uk/filelibrary/SAP/2012/SAP-2012_9-92.pdf

[29] SAP is based upon the predicted running costs of a dwelling per square metre of floor area (independent of occupancy) under a defined set of conditions. SAP ratings run from 1 (lowest level of energy cost efficiency) to 100 (highest level). These ratings can also be banded into *A* to *G* bands (with *A* being the highest).

poverty as the higher a household's energy efficiency level, the lower the energy requirements should be for the dwelling, all else being equal.



Changes in SAP and changes in policy interventions directly impact upon FPEER ratings.

Table 2.4 shows the continued increase in the median SAP and FPEER rating of the English housing stock between 2010 and 2016. Between 2015 and 2016 there has been no change in the FPEER rating of the housing stock in England and only a small increase in the SAP value. The small increase in SAP is partly due to the relative decrease in the number of energy efficiency measures installed in 2016 in Great Britain through ECO and the Green Deal as reported in the Household Energy Efficiency National Statistics[30]. The 2016 EHS data has observed a decrease in the number of wet central heating systems[31] and a decrease in dwellings with cavity wall insulation, this could be due to the properties sampled during the field survey and we will be able to confirm whether this is a trend we are likely to see in future in the next annual publication.

The Government Electricity Rebate (GER) was a £12 government contribution to help lower the impacts of Government environmental and social policy costs on consumer energy bills in 2014 and 2015. For the purposes of producing the fuel poverty statistics, two years of the English Housing Survey are combined. In both sample years that formed the 2015 fuel poverty data (2014 and 2015 sample) the £12 electricity rebate was awarded, whereas in the 2016 data (2015 and 2016 sample) the £12 electricity rebate was only awarded to those households sampled in 2015 (half the sample). Any rebate has a direct, positive effect on FPEER scores, meaning that, without the rebate and with all other factors remaining equal, there is a reduction in the average FPEER rating.

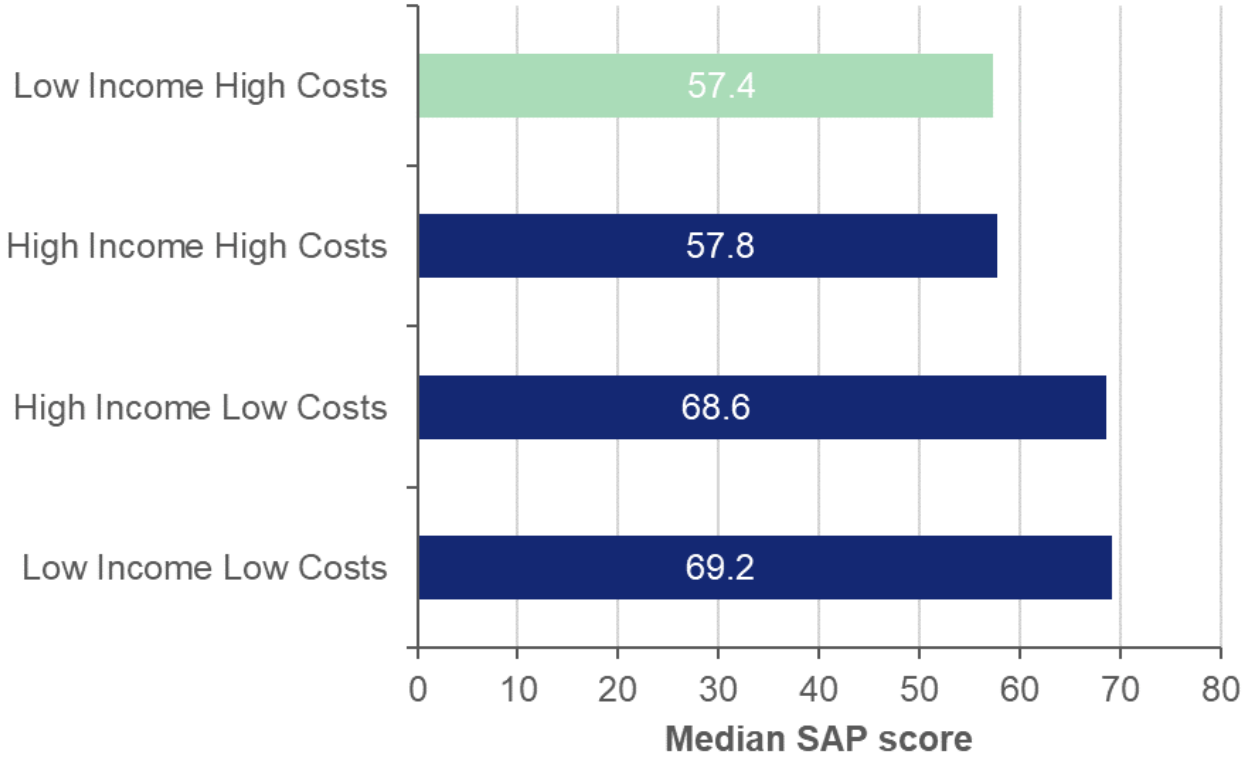
[30] https://www.gov.uk/government/statistics/household-energy-efficiency-national-statistics-headline-release-june-2018
[31] In wet central heating systems hot water circulates through a system of pipes that connect to the radiators in the house.

Table 2.4: Median FPEER and SAP ratings for all households, 2010-2016[32]

Year	SAP	FPEER
2010	57.9	58.1
2011	59.2	59.5
2012	61.0	61.2
2013	62.2	62.5
2014	63.2	63.7
2015	63.7	64.5
2016	64.0	64.5

Fuel poverty and energy efficiency are closely linked. When looking at energy efficiency improvements across the fuel poor quadrants (Figure 2.6), we can see that *high* energy cost households (LIHC, HIHC) have on average lower SAP ratings compared to *low* energy cost households (LILC, HILC).

Figure 2.6: Median SAP rating by each quadrant of the fuel poverty indicator, 2016

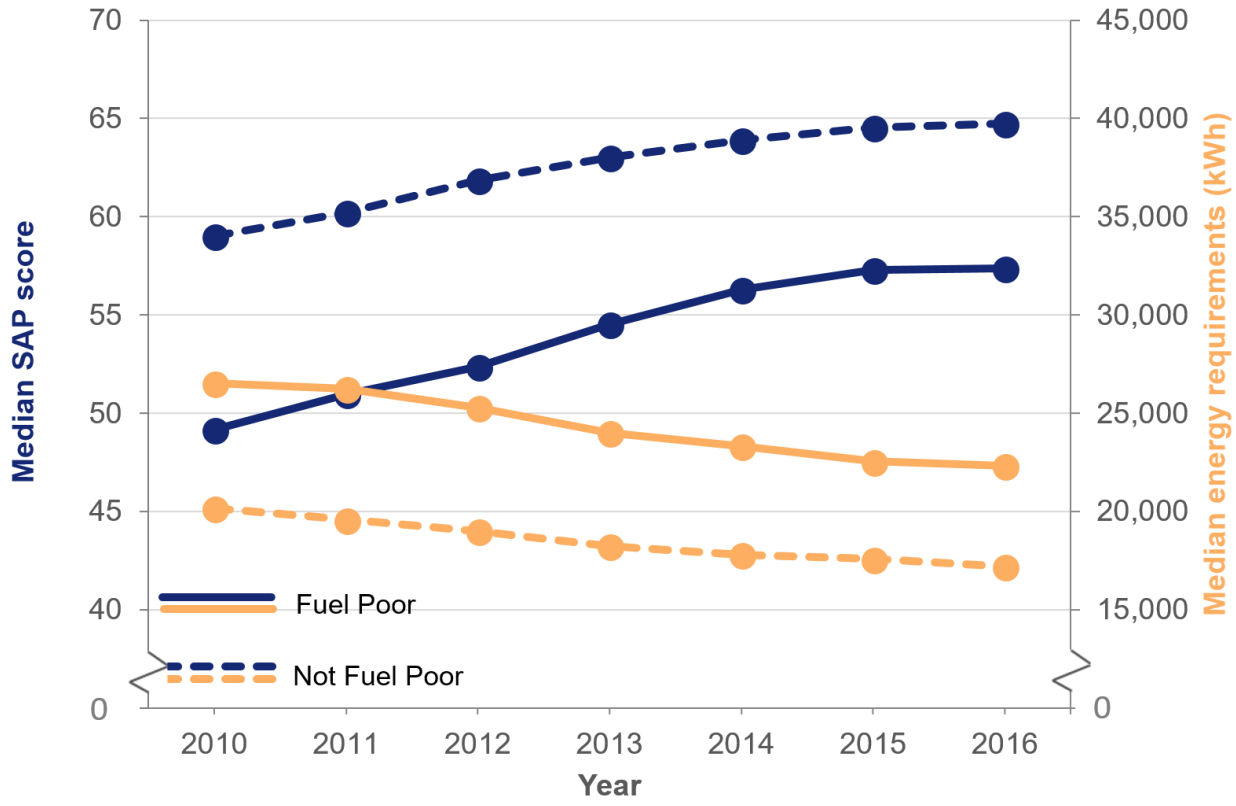


As energy efficiency improves, the amount of energy required to heat the dwelling will decrease. This is evident in Figure 2.7, which shows that the median SAP scores have

[32] SAP and FPEER are not strictly comparable due to the update in RdSAP methodology, but trends are broadly similar. See Page 8 in Chapter 1 for more information.

increased over time (blue lines) and the median energy requirements (orange lines) have decreased. As expected, this figure shows that as the fuel poor population have lower average SAP scores than the non-fuel poor population and their average energy requirements are greater.

Figure 2.7: Change in median energy requirements and median SAP score, 2010-2016



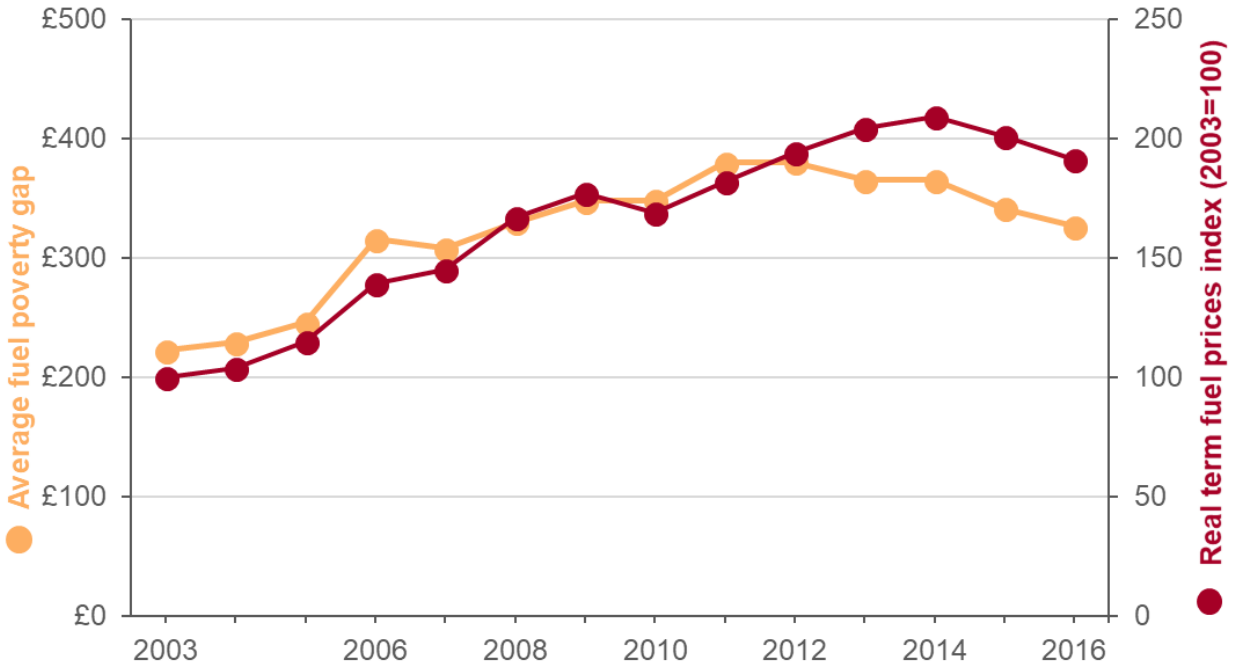
2.4.3 Energy Prices

Energy prices are used to calculate how much the required energy for a household would cost. In 2016, domestic energy prices decreased by approximately 5.0 per cent in real terms compared to 2015, this is the second consecutive year that they have fallen, as Figure 2.8 shows. If everything is equal, a decrease in energy prices would reduce the average fuel poverty gap. This is because households with higher energy requirements are more affected by energy price changes (see Figure A2, Annex B, for a full explanation).

There is a strong correlation between fuel prices in real terms and the depth of fuel poverty (i.e. the average fuel poverty gap), as seen in Figure 2.8. When prices increased steadily between 2003 and 2009, the fuel poverty gap also increased; this trend continued between 2010 and 2011 where both continued to increase. Between 2012 and 2014 a divergence in the trend emerged. This divergence is likely to be related to the downward trend in household energy requirements that is due to improving energy efficiency of the English

housing stock which seems to outweigh any price increases in these years. Between 2014 and 2016 the average gap and fuel prices in real terms both decrease.

Figure 2.8: Average fuel poverty gap and real term fuel prices, 2003-2016[33]



Fuel poverty data is a combination of two consecutive years[34] (i.e. 2015 and 2016), which means that the effects of price changes are staggered over a two year period. When considering changes in fuel poverty from one year to the next, it is best to consider national price changes over a two year period. Between 2014 and 2016 there was an 8.6 per cent real term decrease in fuel prices.

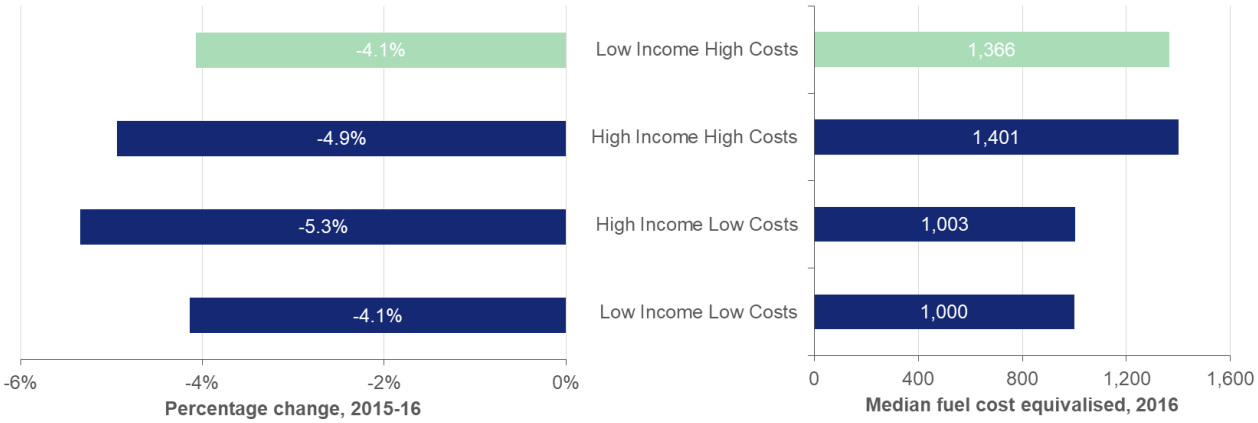
2.4.4 Household energy requirements

A household's required energy costs are calculated by multiplying the cost of a unit of energy (plus standing charges) by the estimated number of units of energy required and then equivalised[35] to reflect each household's composition, which allows direct comparisons across the data. As shown in Figure 2.9, required household energy costs (median equivalised fuel costs) decreased for *all* quadrants of the fuel poverty indicator in 2016

[33] Table 2.1.2, Quarterly Energy Prices: https://www.gov.uk/government/statistical-data-sets/monthly-domestic-energy-price-stastics
[34] See methodology document: https://www.gov.uk/government/publications/fuel-poverty-statistics-methodology-handbook
[35] Equivalisation is an adjustment factor to standardise spending and energy requirements across households.

compared to 2015. This is a result of both energy prices (Figure 2.8) and the amount of energy required (Figure 2.7), decreasing over this period.

Figure 2.9: Median fuel cost equivalised (2016) and percentage change (2015-2016) by each quadrant of the fuel poverty indicator



As seen in Figure 2.9, the reduction of fuel costs is greater for those with high incomes compared to those with low incomes. On average those with high incomes saw a £68 reduction in fuel costs, compared to those with low incomes who saw a £48 reduction (see Table 2.5). Therefore, those low income households have seen a disproportionate change in fuel costs compared to the overall population (£66). This contributes to the shifting of households across the fuel costs threshold into fuel poverty.

Table 2.5: Reduction in median fuel costs, 2015-2016

	Median fuel costs reduction (2015-2016)
Low income	-£48
High income	-£68
All households	-£66

Households with high energy requirements would have seen a larger impact as a result of energy price changes between 2015 and 2016, compared to those with low energy requirements (see Annex B) However, those with high incomes saw a larger reduction in fuel costs, compared to those with low incomes (see Table 2.5).

In 2016, domestic energy prices decreased by approximately 5.0 per cent in real terms compared to 2015 (Section 2.4.3). Although energy prices decreased overall, fuel prices for households paying by prepayment decreased by a smaller amount than prices decreased

for those paying by direct debit. A larger proportion of low income households pay their electricity bill by prepayment, 26 per cent of households in the 2nd income decile pay by prepayment, versus 3 per cent of households in the 10th income decile. A similar pattern is seen with gas payments. Generally, for both electricity and gas, the proportion of households within each decile paying for their fuel via prepayment decreases as income increases. This will explain, in part, why a lower reduction in electricity and gas costs was observed for low income households than for high income households.

Between 2016 and 2017, fuel prices for households paying by prepayment decreased by a larger amount than other payment methods[36]. It is therefore likely that households with low incomes will see a larger reduction in fuel costs than those with high incomes.

2.5 Interaction of Key Drivers

The relative nature of the fuel poverty indicator makes it difficult to accurately isolate individual reasons for change. For any factor to affect the level or depth of fuel poverty it must change by a greater or lesser amount for those in fuel poverty, than for those not in fuel poverty.

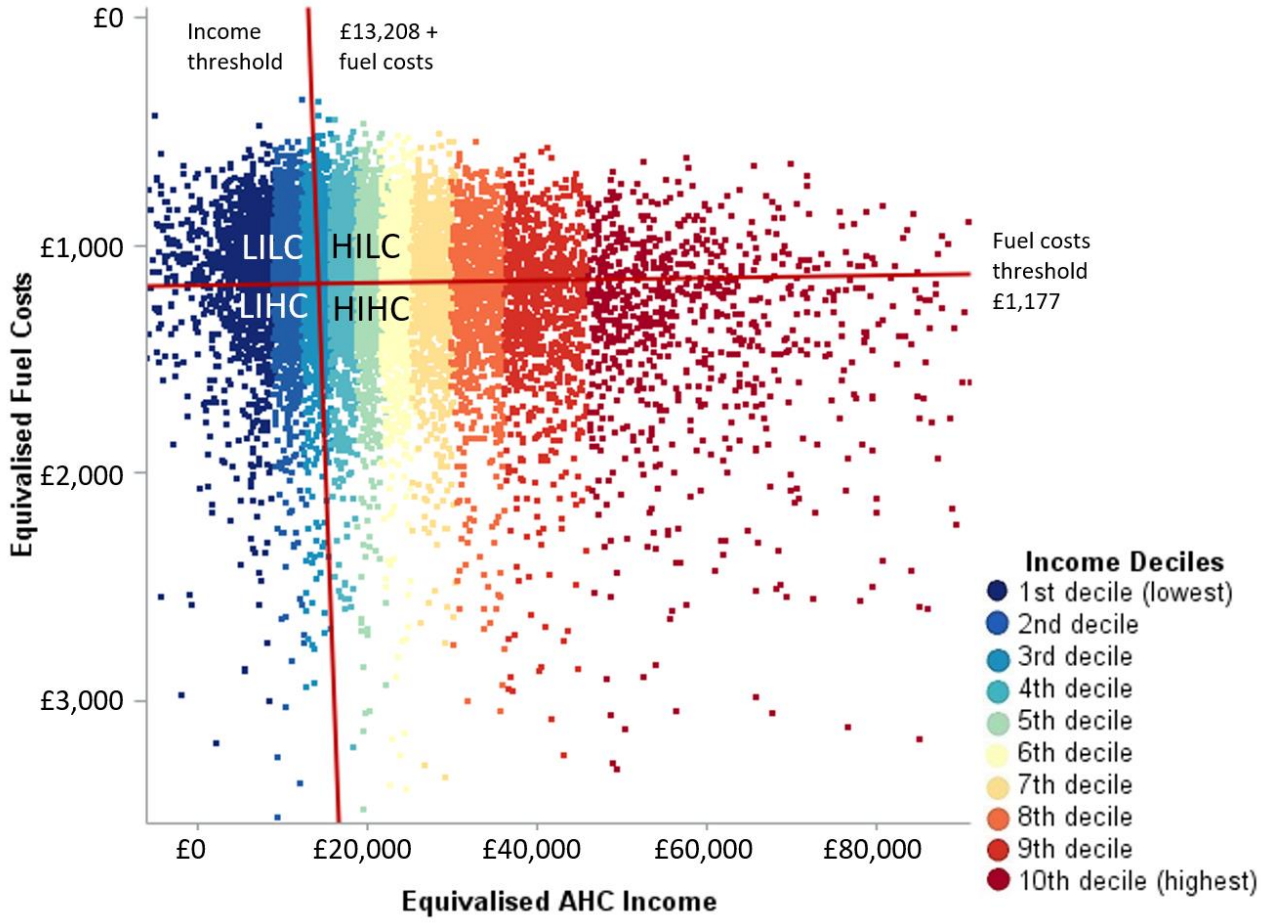
In 2016 we have seen an increase in the median income, an increase in energy efficiency of the English housing stock and a decrease in energy prices.

Figure 2.10 shows the distribution of all households in relation to the interaction of income and energy cost thresholds. The colours of the points represent different income deciles. This chart shows that if a household's increase in equivalised AHC income was less than the increase in the national median income, they would shift to the right, but by less than the upwards shift in the income threshold. Due to the lower than average increase in median equivalised AHC income for those in the lower income deciles, this could have resulted in households crossing the income threshold into fuel poverty.

The reduction in energy prices in combination with the improvement in the energy efficiency of the English housing stock has resulted in a reduction in median fuel costs, this reduction for all households has resulted in the fuel costs threshold decreasing. As the reduction in fuel costs has reduced for those with low incomes by less than the reduction for all households (see Table 2.5) this could have pushed some households around the fuel costs threshold into fuel poverty.

[36] Table 2.2.1 and Table 2.3.1, Quarterly Energy Prices.
https://www.gov.uk/government/statistical-data-sets/annual-domestic-energy-price-statistics

Figure 2.10: Distribution of households across the fuel poverty quadrants, 2016[37]



[37] Each dot represents one household in the survey sample of 11,924.

Figure 2.11: Distribution of fuel poor households by poverty gap, 2016

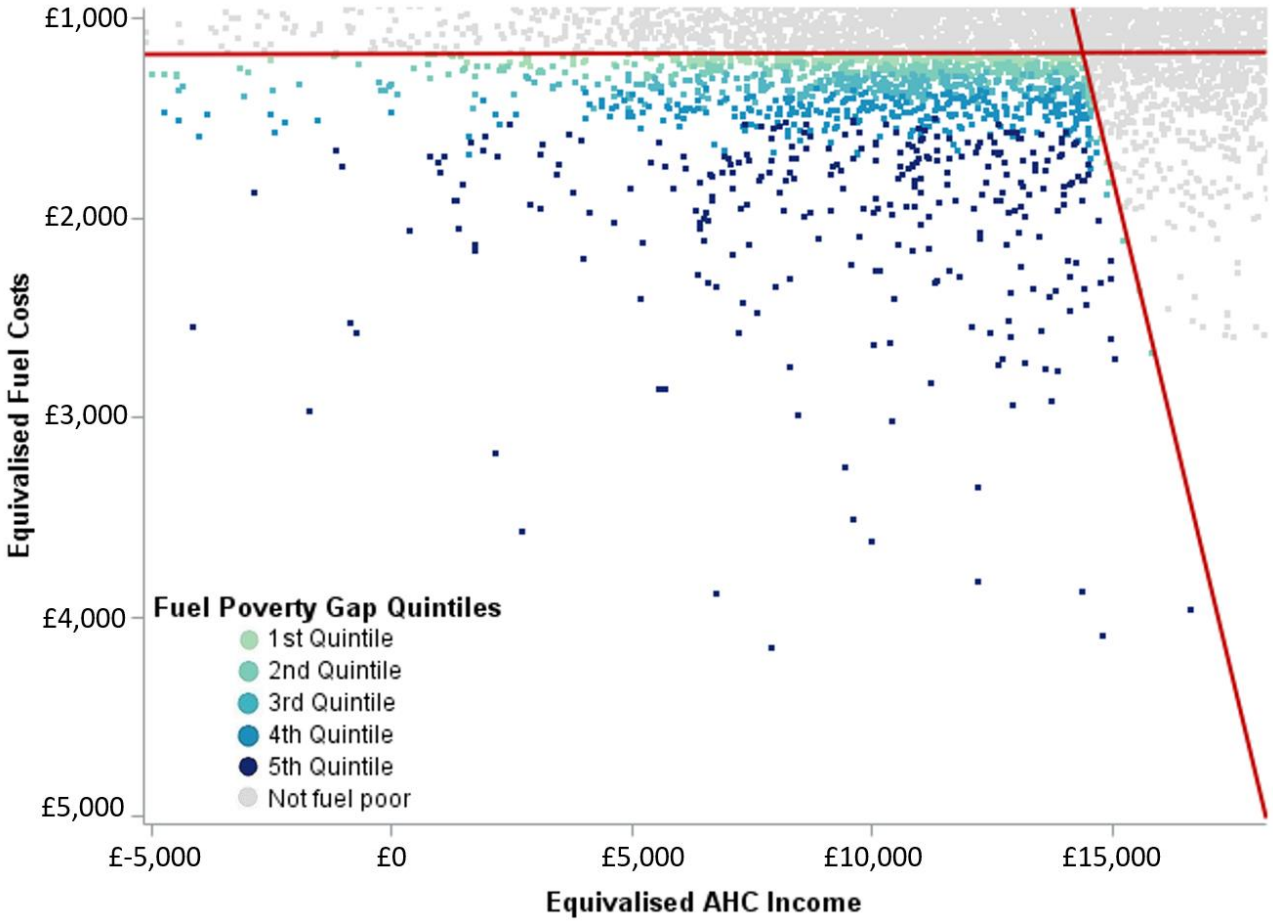


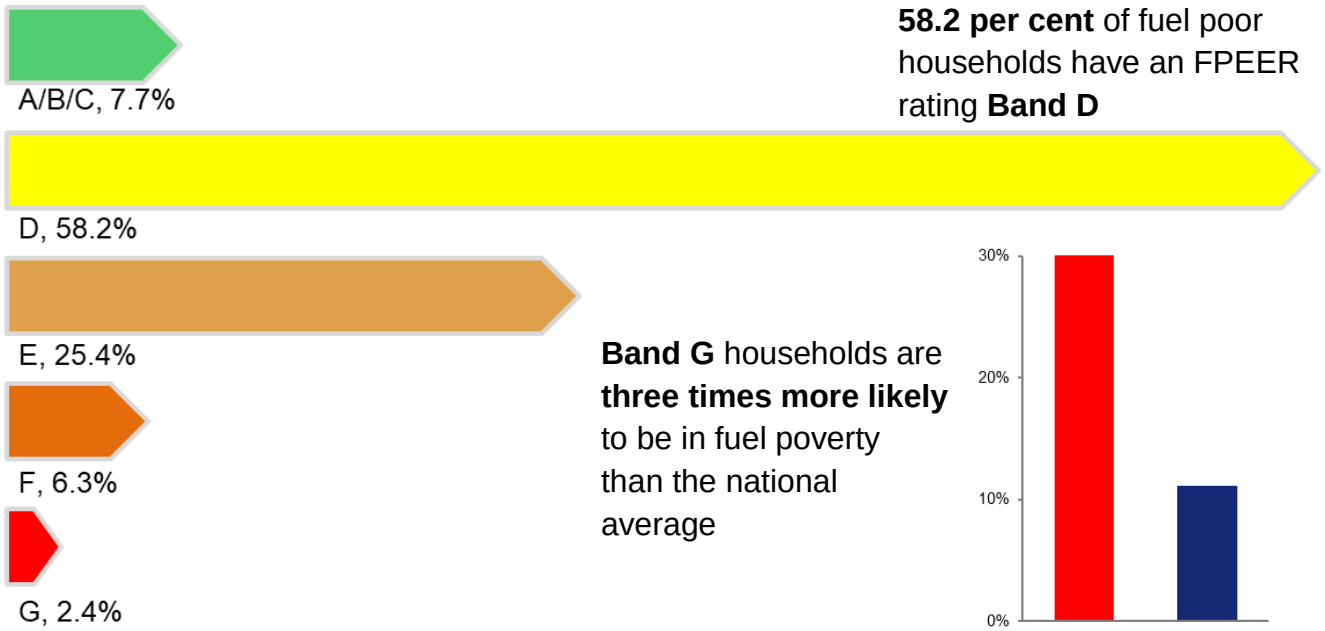
Figure 2.11 shows the distribution of fuel poor households in the LIHC quadrant, grouped by the depth of their fuel poverty gap. Households with the smallest fuel poverty gaps are in the first quintile (the lowest 20 per cent of values closest to the energy threshold) and the biggest fuel poverty gaps are seen in the fifth quintile (the highest 20 per cent of values). This chart indicates that the majority of households in quintiles one to four are clustered quite close to the thresholds but households in quintile five, are widely spread out. These are the households in extreme fuel poverty with the largest fuel poverty gaps.

Chapters 3 and 4 explore dwelling and household characteristics that help to identify which households are in fuel poverty and where the most severe fuel poverty gaps exist.

Chapter 3: The Fuel Poor

3.1 Who are the fuel poor?

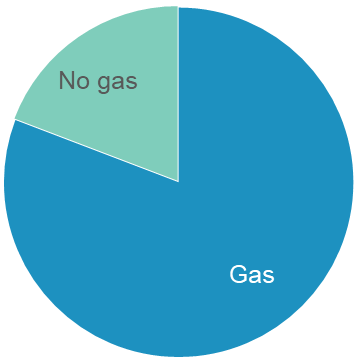
3.1.1 Dwellings – features of the buildings people live in

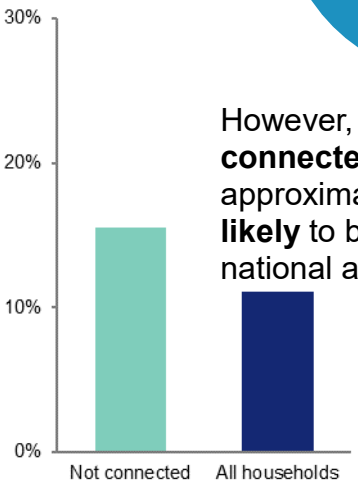


58.2 per cent of fuel poor households have an FPEER rating **Band D**

Band G households are **three times more likely** to be in fuel poverty than the national average

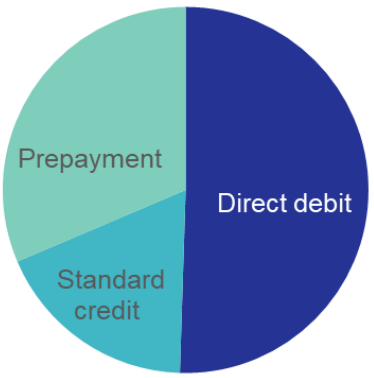
80.8 per cent of fuel poor households are **connected to the gas grid**

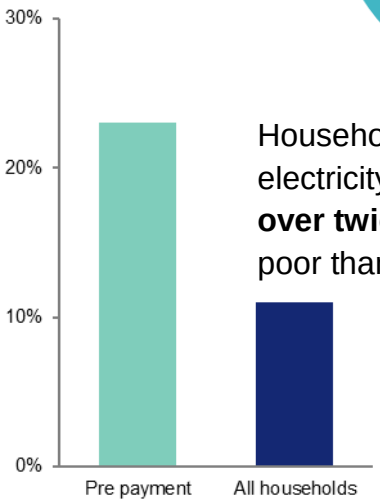




However, households **not connected to the gas grid** are approximately **1.5 times more likely** to be fuel poor than the national average

31.4 per cent of fuel poor households pay for their electricity by **prepayment**





Households who pay for their electricity by **prepayment** are **over twice as likely** to be fuel poor than the national average

3.1.2 Households – characteristics of the inhabitant(s) of a house

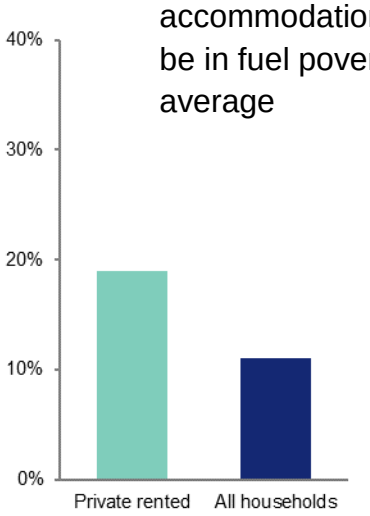
Owner Occupied, 43.3%

Private Rented, 35.4%

Social Housing, 21.3%

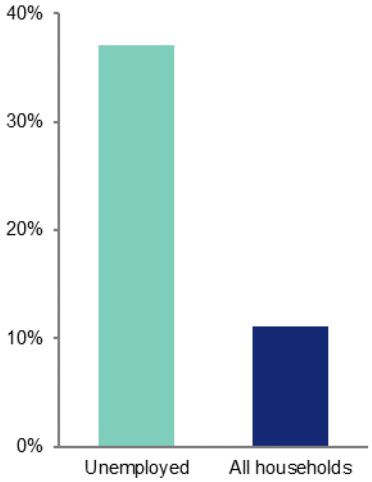
43.3 per cent of fuel poor households are **owner occupied**

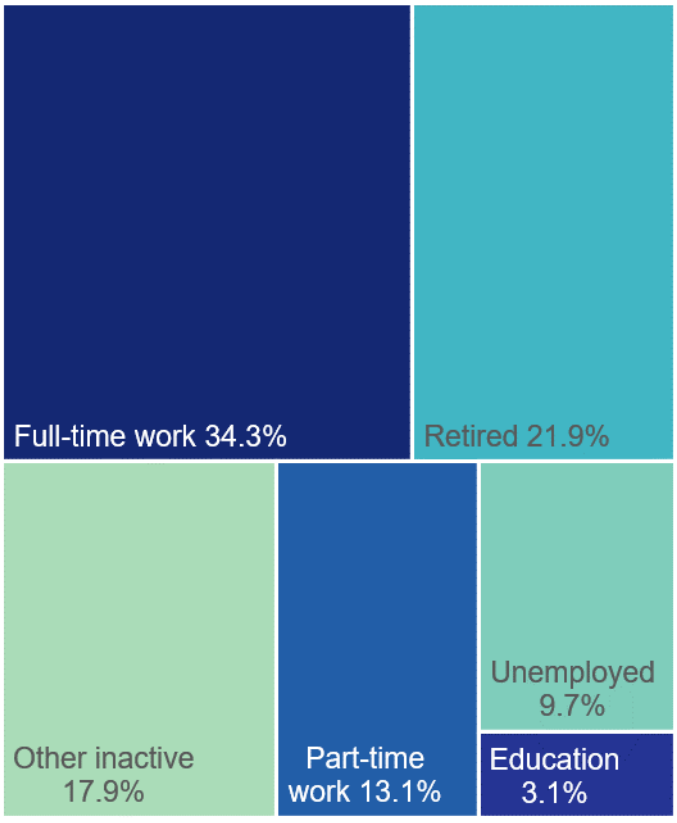
However, households in **private rented** accommodation are **twice as likely** to be in fuel poverty than the national average



47.4 per cent of fuel poor households are in **employment,** and **9.7 per cent** of fuel poor households are unemployed

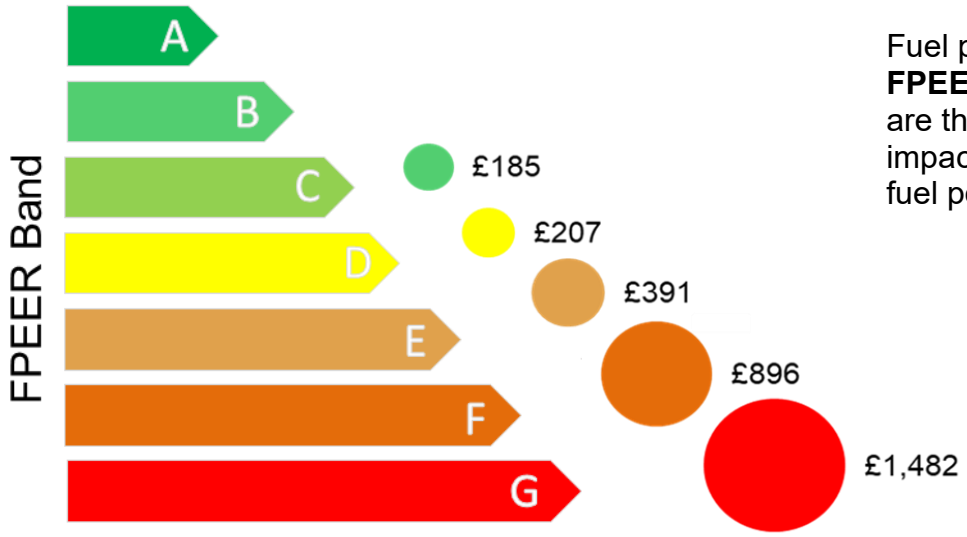
However, households where the household reference person is **unemployed** are around **four times more likely** to be in fuel poverty than the national average





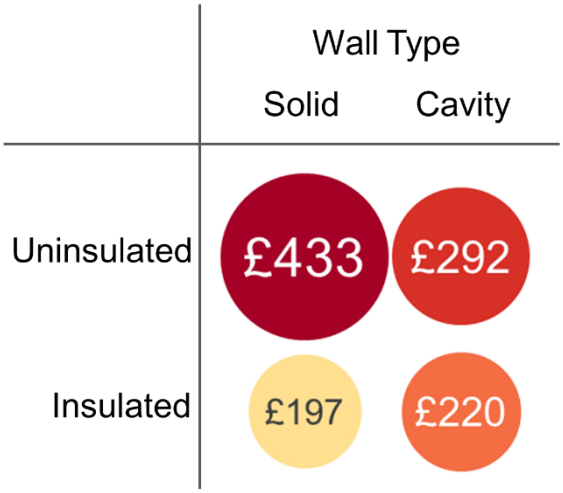
3.2 Who are most severely impacted by fuel poverty?

3.2.1 Dwellings – features of the buildings people live in



Fuel poor households with an **FPEER rating of Band G** are the most severely impacted, with an average fuel poverty gap of **£1,482**

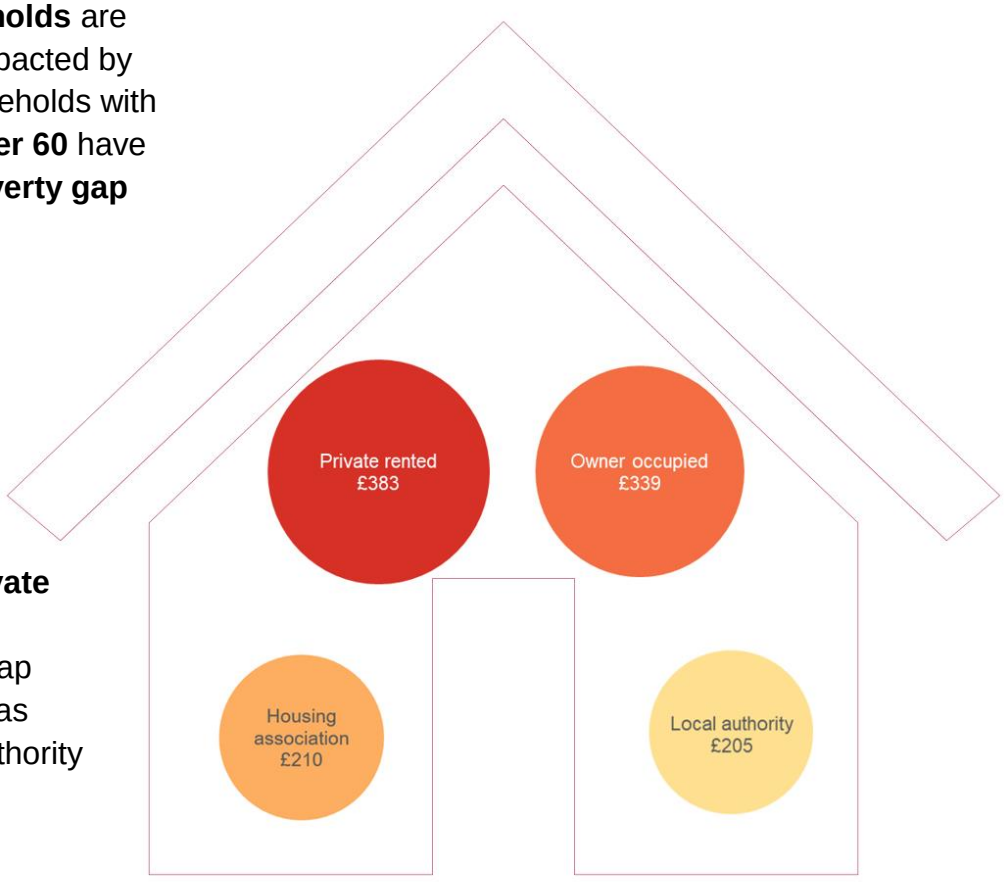
The average fuel poverty gap is the **largest** (£433) for households in dwellings with **uninsulated solid walls** and is the smallest (£197) for **insulated solid walls**



Households in dwellings **not connected** to **the gas grid** have an average fuel poverty gap almost **twice as large** as those households connected to the gas grid

3.2.1 Households – characteristics of the inhabitant(s) of a house

Multi-person households are the most **severely** impacted by fuel poverty and households with a **single person under 60** have the **smallest fuel poverty gap**



Households in the **private rental sector** have an average fuel poverty gap nearly **twice as large** as households in local authority housing

Further breakdowns by characteristics, and the key drivers of fuel poverty are explored in Chapter 4.

This chapter is under development, please contact Fuelpoverty@beis.gov.uk if you have any feedback.

Chapter 4: Further Analysis of Fuel Poverty in England, 2003-2016

Fuel poverty in England is affected by multiple characteristics, many of which are inter-related. This means that assigning causality to one factor alone is not possible. The following chapter analyses these individual characteristics, but users should be aware of the inherent interactions likely to exist between them.

The data behind this analysis is available in the fuel poverty detailed tables and trend tables online, which can be accessed at the following links:

https://www.gov.uk/government/statistics/annual-fuel-poverty-statistics-report-2018

https://www.gov.uk/government/statistics/fuel-poverty-trends-2018

4.1 Comparison of the Main Drivers of Fuel Poverty

Chapter 2 explored the three main drivers of fuel poverty and their interaction with the fuel poverty measure – income, energy efficiency (including FPEER or SAP) and energy prices. Figure 4.1 shows the difference in these drivers when split by fuel poor, non-fuel poor and all households.

Households that are classed as fuel poor have a median equivalised after housing cost (AHC) income less than half that of the non-fuel poor population.

The median FPEER for fuel poor households is 6.1 points less than the median FPEER of households that are classed as non-fuel poor.

The median (annual) equivalised fuel costs for a household that is fuel poor is around £226 more than the median for non-fuel poor households.

KEY TERMINOLOGY USED IN THIS CHAPTER

To simplify terminology used in this chapter, unless stated otherwise, we refer to:

'equivalised after housing cost (AHC) income' as *income* and

'equivalised fuel costs' as *fuel costs*

Figure 4.1: Fuel poor vs. non-fuel poor households by the three key drivers of fuel poverty, cash prices, 2016

2016 data	Fuel poor	Non-fuel poor	All households
Median income	£10,325	£24,050	£22,017
Median FPEER	59.15	65.22	64.48
Median SAP	57.37	64.72	63.95
Median fuel costs	£1,366	£1,140	£1,177

4.2 Fuel Poverty Energy Efficiency Rating (FPEER)

As discussed in Chapter 2, energy efficiency is strongly linked to the energy costs incurred by households, which impacts the likelihood of being fuel poor. If households require a greater amount of energy to run their homes, they will have higher fuel costs. Heating a household to an adequate standard of warmth[38] is dependent on the energy efficiency of the dwelling. As expected, households with a lower energy efficiency rating have a higher likelihood of being fuel poor.

In 2016, 30.9 per cent of households in *G* rated homes in England were classed as fuel poor, with this percentage decreasing as we progress to more energy efficient Bands. In 2016, 22.0 per cent of households in Band F were classed as fuel poor, compared to 20.4 per cent for Band E and 12.8 per cent for Band D. Only 2.7 per cent of *C* rated properties and above were fuel poor (see Figure 4.2). The highest average fuel poverty gap is in *G* rated properties. This average gap of around £1,482 is around eight times larger than the average fuel poverty gap for A/B/C rated properties (£185), over seven times higher than for *D* rated properties (£207) and around four times higher than the average fuel poverty gap for all fuel poor households (£326).

[38] An adequate standard of warmth is defined as 21ºC for the main living area and 18 ºC for other occupied rooms. Further detail can be found in the Methodology Handbook at: https://www.gov.uk/government/publications/fuel-poverty-statistics-methodology-handbook

Figure 4.2: Fuel poverty proportion and average fuel poverty gap by FPEER Band, 2016

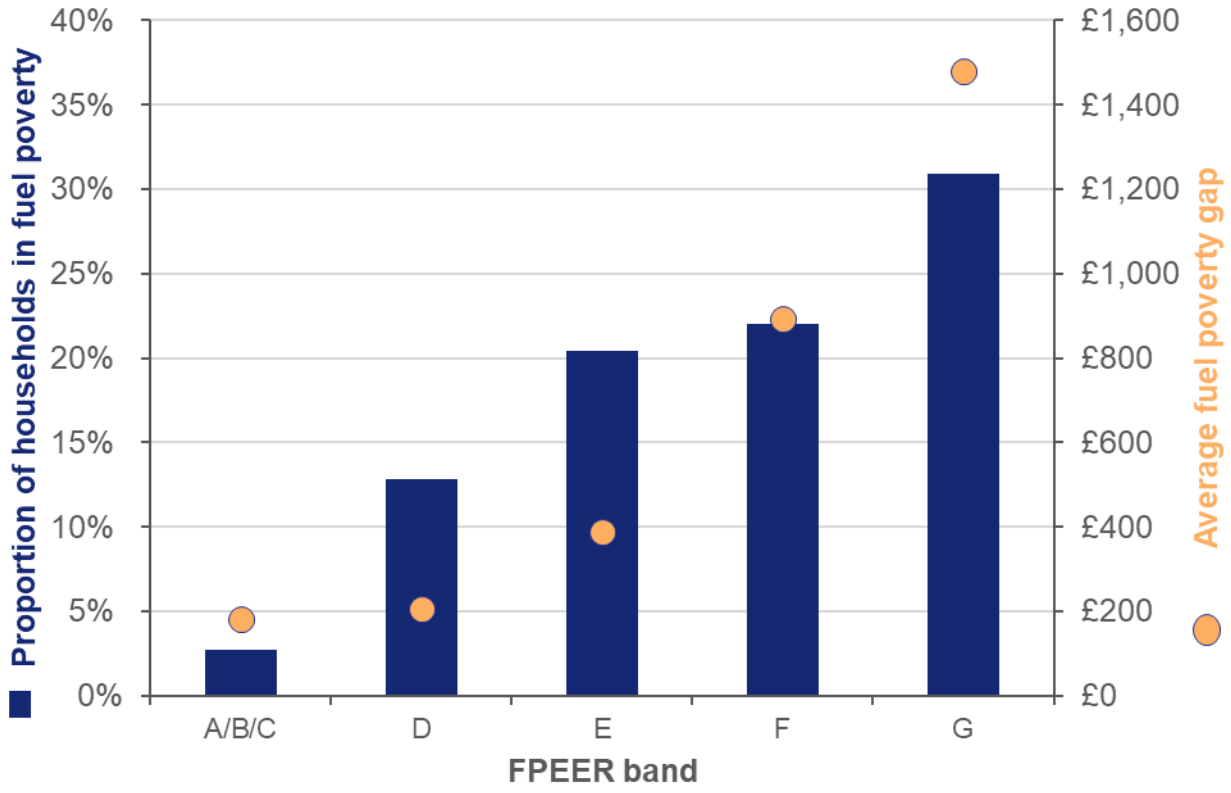


Figure 4.3 presents the proportion of *all* households in each FPEER Band between 2010 and 2016. This shows that the largest proportion of households in the English housing stock sit within Band *D* (around 50 per cent), and this has stayed relatively stable since 2010. The decrease since 2013 is likely to be a result of the general upward shift into bands over time. The proportion of properties rated *C* and above has increased year on year (from 13.1 per cent in 2010 to 31.7 per cent in 2016) while the proportion of households in *E*, *F* and *G* has steadily decreased. Households rated as Bands *F* and *G* account for a small proportion of all households in the English housing stock (4.0 per cent).

Figure 4.3: Proportion of *all* households by FPEER Band, 2010-2016

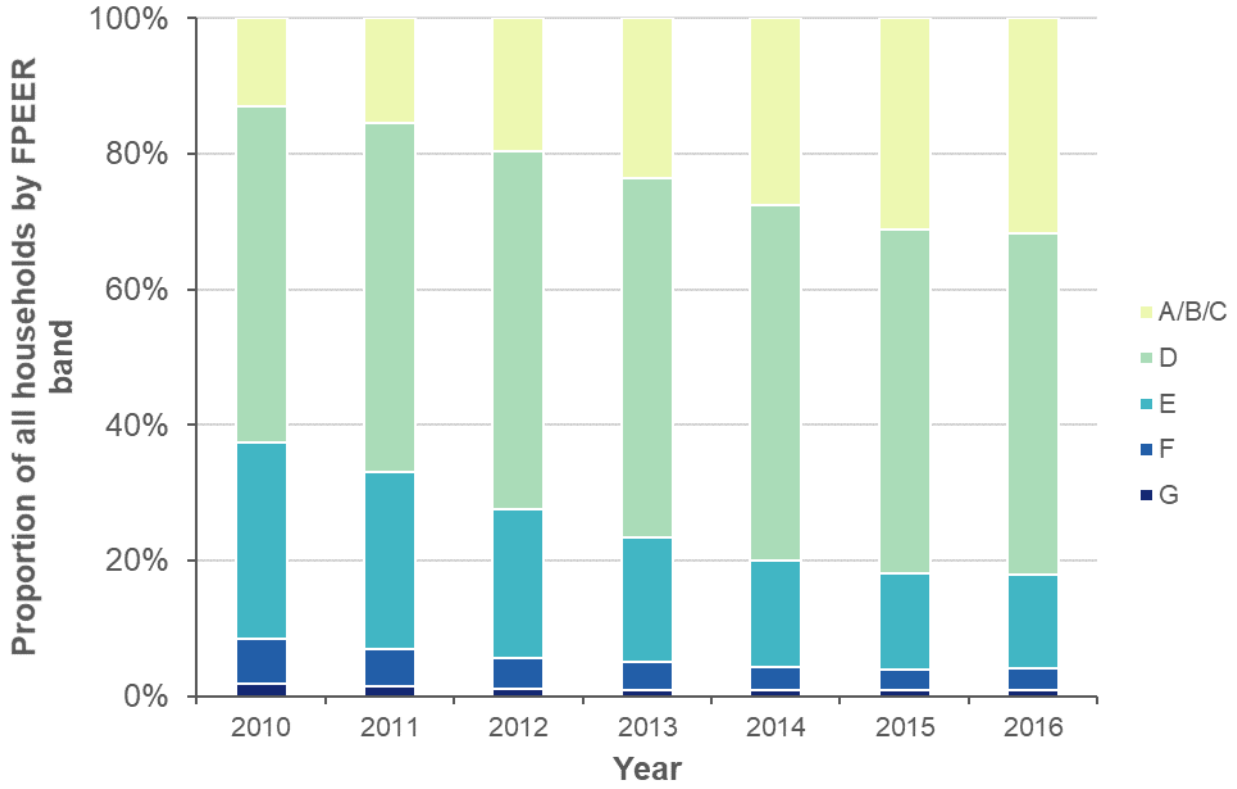


Figure 4.4: Proportion of *fuel poor* households by FPEER Band, 2010-2016

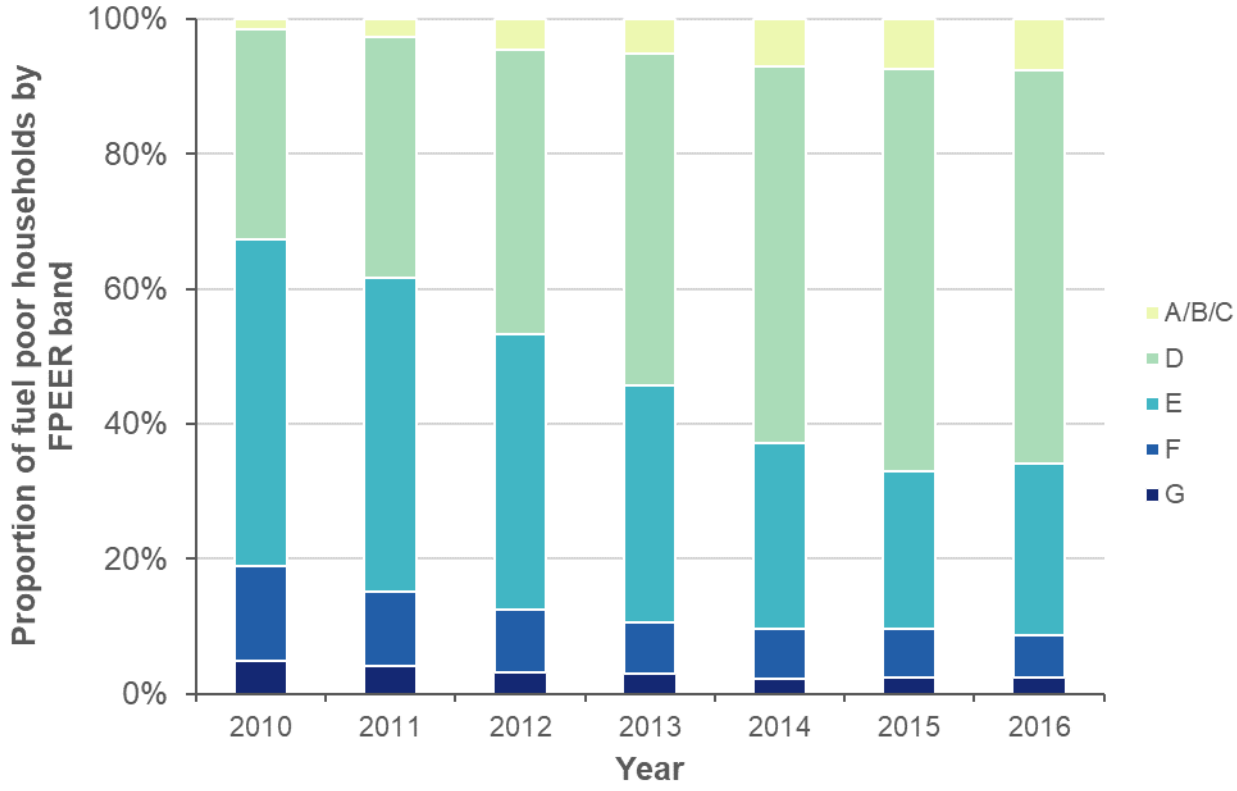


Figure 4.4 looks specifically at the *fuel poor population* by FPEER Band between 2010 and 2016 (for a breakdown of government FPEER targets, see Chapter 2). This shows that the proportion of fuel poor households in Band *C* or above has increased over time, from 1.5 per cent in 2010[39] to 7.7 per cent in 2016, with this proportion increasing each year. The proportion of fuel poor households in Band D has increased from 31.2 per cent in 2010 to 58.2 per cent in 2016, although this fell slightly (by around one percentage point) between 2015 and 2016.

Overall, the proportion of *fuel poor* households in each Band shows a different distribution compared to *all households*. There is a disproportionately large amount of fuel poor households in Bands *E*, *F* and *G* compared to the overall population. This is unsurprising, given the large difference in median FPEER between fuel poor and non-fuel poor populations, as shown in Figure 4.1.

The households sampled in the English Housing Survey differ year-on-year therefore we cannot track households crossing the thresholds into or out of fuel poverty *or* crossing FPEER bands. We can, however, look at the net change in the number and proportion of households in each band split by fuel poverty. There was an increase of around 242,000 households in Band C or above which is a 3.4 per cent increase from 2015. Overall, there was an increase in the number of all households in Band D, around 104,000 households. Table 4.1 shows that there has been a much larger increase in the number of fuel poor properties in Band E (around 66,000) than the increase in the number of fuel poor properties in Band D (around 7,000). The increase in the number of households in Band C or above has had a positive impact on the overall housing stock, increasing the number of fuel poor households in Band C or above properties. This combined with the increase of fuel poor Band E households has resulted in a decrease in the proportion of Band D or above due to the larger denominator.

Table 4.1: Net change in the number of households by FPEER band, 2015-2016

	Number of households (000's)		Total number of households (000's)
	Not fuel poor	Fuel poor	
A/B/C	230	12	242
D	97	7	104
E	-108	66	-41
F	50	-18	33
G	1	1	2
Total	271	69	339

[39] In the fuel poverty trends tables (https://www.gov.uk/government/statistics/fuel-poverty-trends-2018), the 2010 figure has been suppressed due to small sample size – inferences should not be made on this figure in isolation.

To further understand the fall in the proportion of fuel poor households in Band D or above, we can investigate the reasons why the median FPEER for the fuel poor population (see Figure 4.1) has not increased at the same rate as the overall population. In the fuel poor group, we are observing a decrease in the number and percentage of dwellings on mains gas and an increase in the number of properties with electric heating, which will generally be more expensive than gas. This is also seen as a decrease in the number of 'boiler with radiators' systems. This finding is not consistent with the rest of the housing stock. Furthermore, fuel poor households report having better loft insulation than non-fuel poor households (see Section 4.4.1), however, the numbers reporting this level of insulation has decreased since last year, and the number of households reporting zero insulation has increased.

4.3 Dwelling Characteristics

In addition to the Fuel Poverty Energy Efficiency Rating (FPEER) of a household, some specific features of the dwelling will also affect the levels of fuel poverty. Overall, patterns in dwelling characteristics for 2016 are broadly similar to those seen in previous years.

4.3.1 Wall type[40]

Walls can be constructed in different ways and are dependent on the building regulations at the time of construction. However, modifications can be made to walls after they have been built to improve insulation. The two main types of walls are *cavity* walls and *solid* walls. Cavity walls have a gap between two walls which, on its own, provides some level of insulation but this gap can be filled with insulating materials to provide a greater level of insulation. Solid walls are typically used in older builds, with no gap to add insulation as they are simply a single wall. They can be insulated post-construction by adding a layer of insulation around them.

As discussed in Chapter 1, the latest version of RdSAP has improved assumptions to better estimate heat loss. These improved assumptions mean that *uninsulated* cavity and *uninsulated* solid walls see a better thermal performance and *insulated* cavity and *insulated* solid walls see a lower thermal performance than previously thought.

Between 2003 and 2016 the proportion of dwellings with *insulated* cavity walls has increased by 21.5 percentage points[41] to 46.8 per cent; the proportion of dwellings with *uninsulated* cavity walls has halved to 21.1 per cent between 2003 and 2016. The proportion of dwellings

[40] In 2015, to better align with SAP assumptions, an improvement to the EHS methodology was implemented, where dwellings with cavity walls, built after 1995, are assumed to be insulated. More information can be found in the EHS housing stock tables: https://www.gov.uk/government/statistics/english-housing-survey-2015-to-2016-headline-report.
[41] A percentage point is the unit for the arithmetic difference between two percentages (e.g. an increase of 20 per cent to 30 per cent is classed as a 10 percentage point increase but is a 50 per cent increase in what is being measured.

with solid walls or other construction types remained relatively constant over the same time period and in 2016, 32.1 per cent had a solid or other wall construction.

Figure 4.5 Proportion of *all* households by wall type and fuel poverty status, 2003-2016[42]

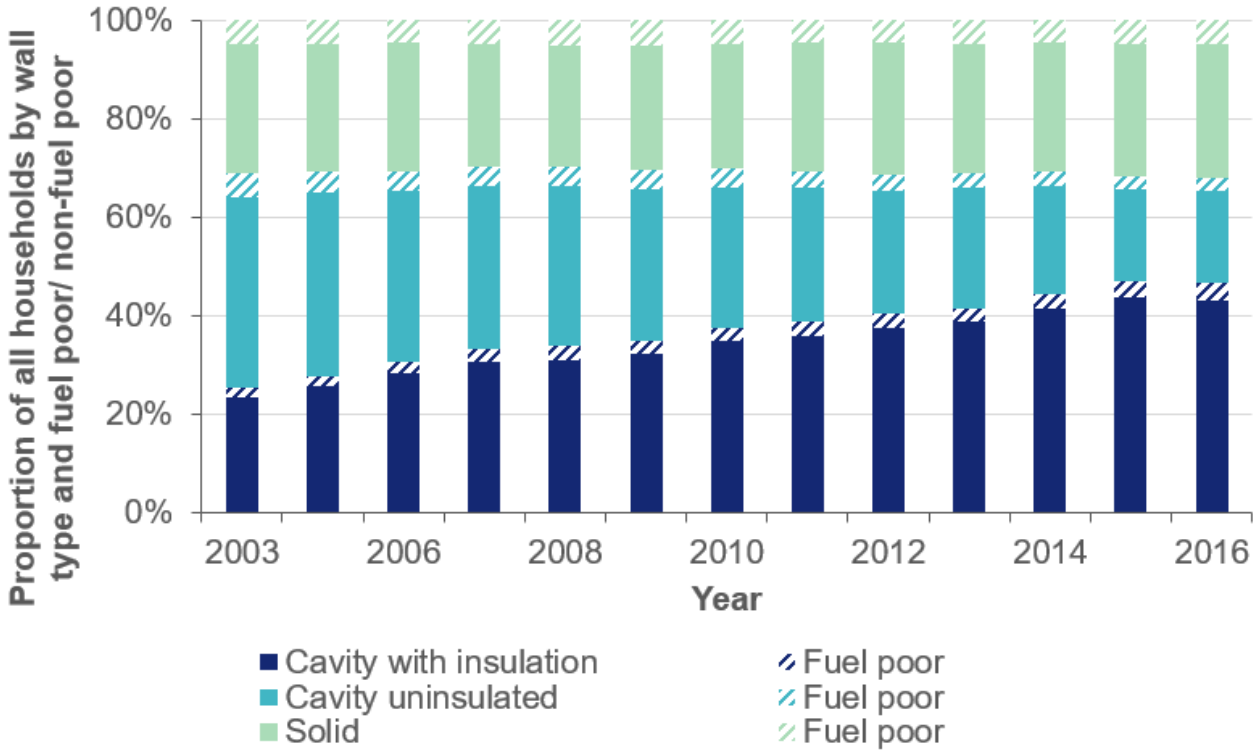


Figure 4.6 shows that households with *uninsulated* walls, whether solid or cavity, have a higher prevalence of fuel poverty and a larger fuel poverty gap than their *insulated* equivalents. Dwellings with *uninsulated* solid walls have the highest likelihood of being fuel poor and a larger average fuel poverty gap.

Dwellings with *uninsulated* solid walls are the most likely to be fuel poor (16.8 per cent) with an average fuel poverty gap of £433. Excluding those whose wall type is classed as 'Other', *Insulated* walls (whether solid or cavity) are the least likely to be fuel poor with an average gap of £218[43].

[42] 'Solid' contains solid with insulation, solid uninsulated and 'other'. These categories have been merged in this FPEER graph due to small sample counts at this level.
[43] The 'Other' category includes dwellings built with stone, pre-fab, timber and other methods.

Figure 4.6: Fuel poverty proportion and average fuel poverty gap by wall type, 2016

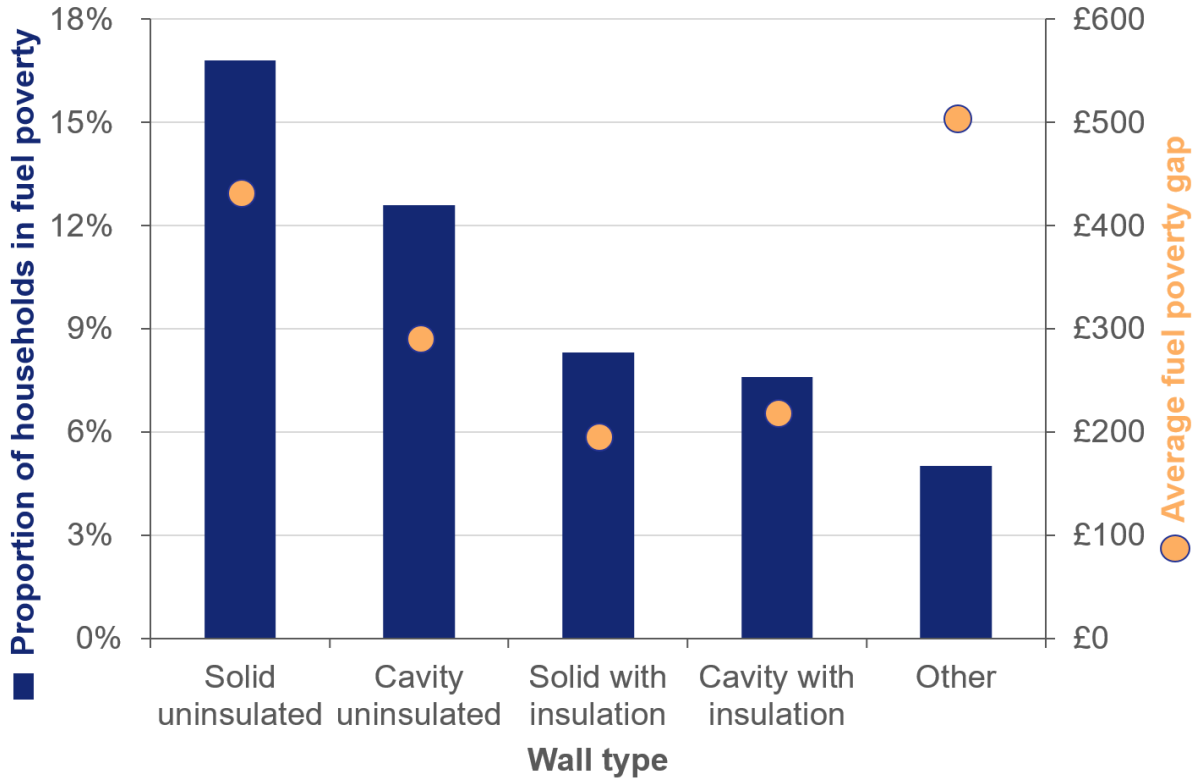
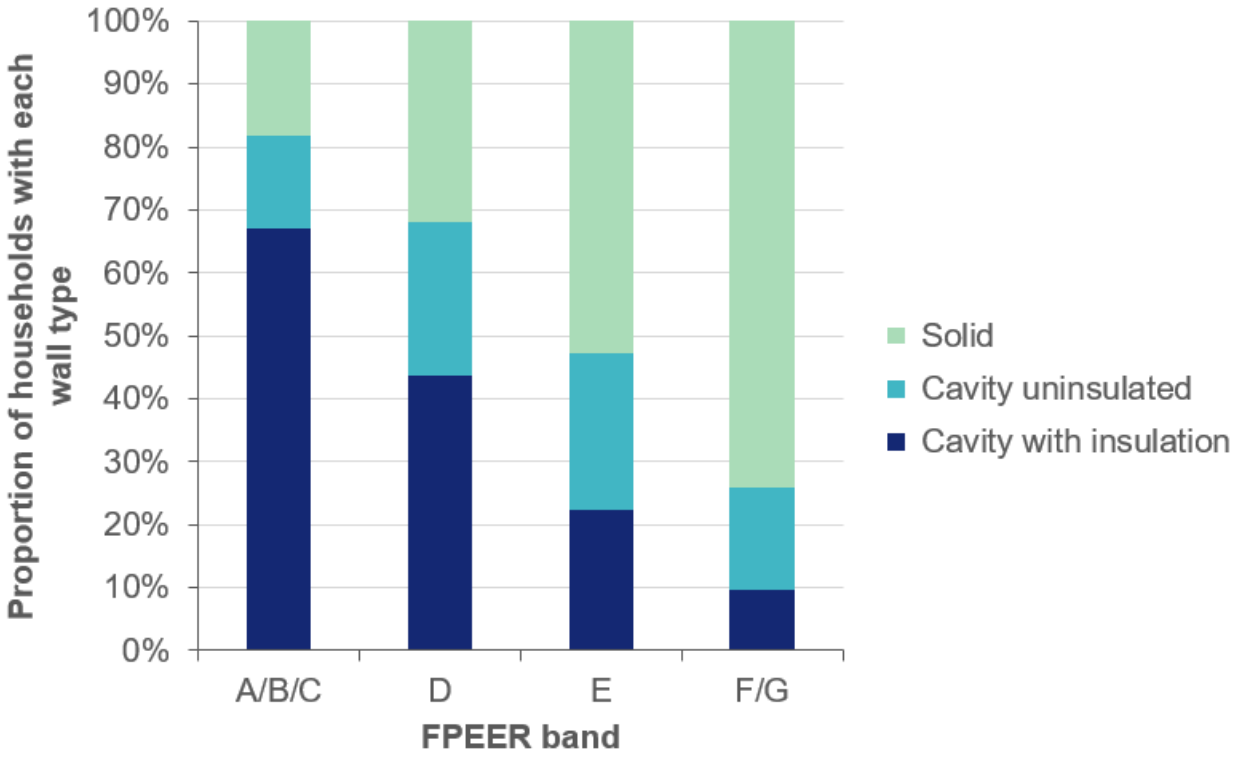


Figure 4.7: Proportion of all households with each wall type and FPEER band, 2016[44]

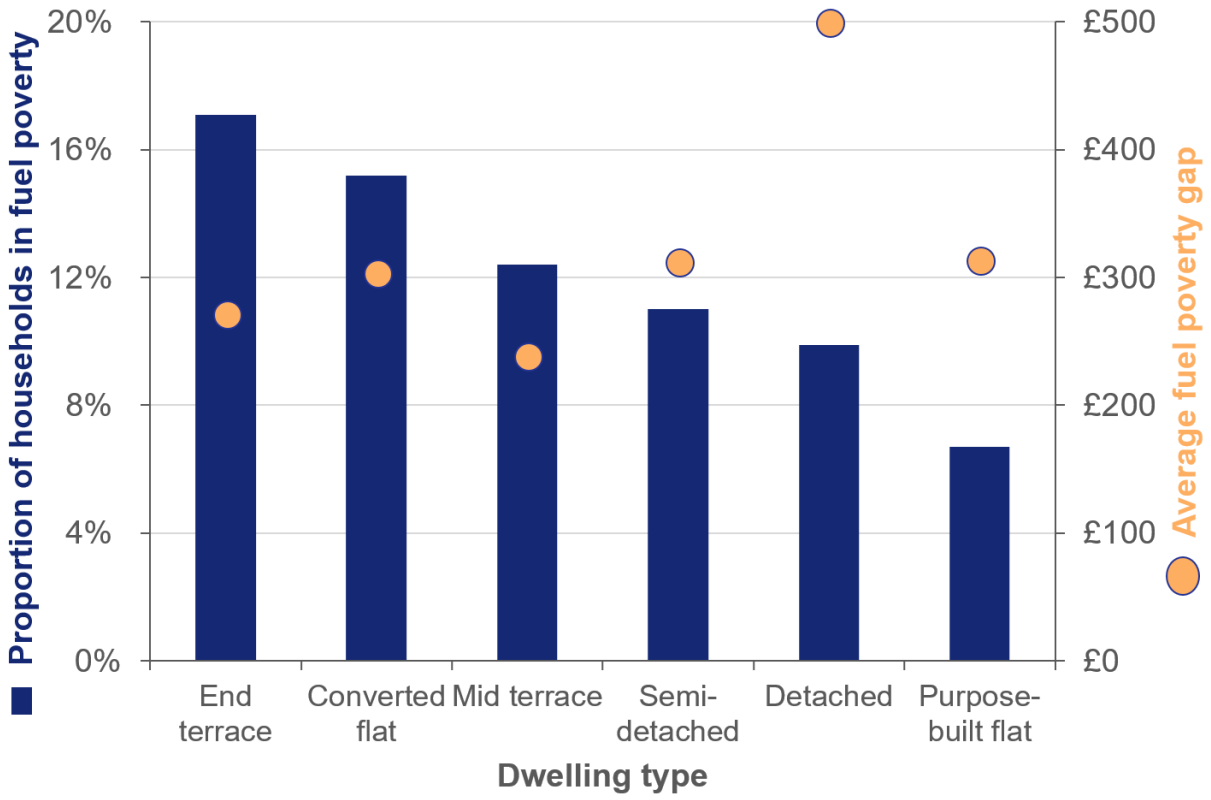


As shown in Figure 4.7, wall type is closely related to FPEER for all dwellings. The majority of dwellings rated as *C* or above, have *insulated* cavity walls. In contrast, the majority of dwellings rated *F* or *G* are of *solid* wall construction. When looking at the fuel poor population, the pattern between wall type and FPEER Band is very similar to that for all dwellings. The vast majority (86.2 per cent) of properties with cavity wall or insulated solid wall rated F or G do not use gas as their main source of heating but other more expensive forms like oil, coal or electricity.

4.3.2 Dwelling type

Figure 4.8 shows that the highest prevalence of fuel poverty is associated with mid or end terraced houses and converted flats, while purpose built flats have a lower prevalence of fuel poverty. Detached properties have the largest fuel poverty gap at £500 which is likely due to their larger floor area and lower FPEER rating. The difference in likelihood of fuel poverty between mid-terrace and end-terraced can partly be explained by the difference in their FPEER rating and the number of exposed walls.

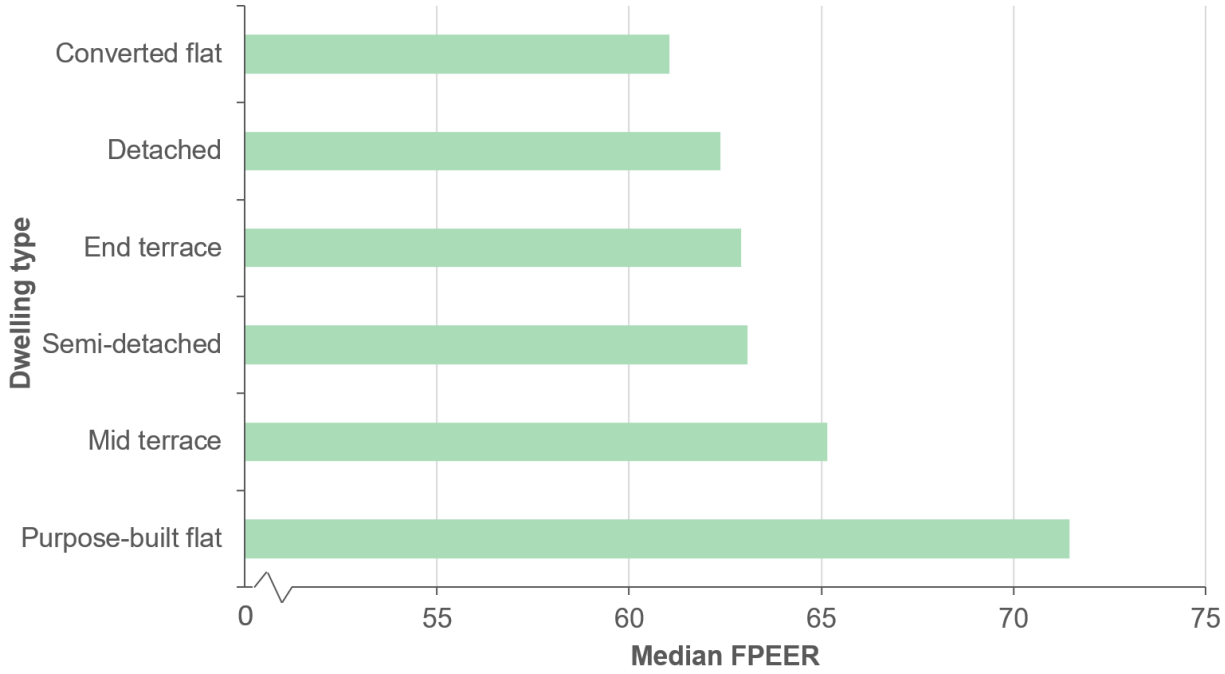
Figure 4.8: Fuel poverty proportion and average fuel poverty gap by dwelling type, 2016



As can be seen from Figure 4.9, purpose-built flats are more energy efficient than any other dwelling type. Their median FPEER rating is over 6 points higher than any other

build form, which is likely due to the reduced heat loss that comes from sharing the majority of their boundaries with other properties. Consequently, this dwelling type has the lowest percentage of fuel poor households.

Figure 4.9: Median FPEER by dwelling type



4.3.3 Floor area

The depth and likelihood of a household being in fuel poverty tends to increase as floor size increases. The likelihood of a household being fuel poor rises from 5.5 per cent for the smallest dwellings (less than 50 square metres) to 14.4 per cent for dwellings that are 90 to 109 square metres (see Figure 4.10) before falling slightly for dwellings 110 square metres or above.

This slight decrease in likelihood of fuel poverty for those living in properties 110 square metres or above is likely due because those that live in larger dwellings tend to have a larger income. The median income for those living in properties of 110 square metres or more is nearly twice the median income of those living in properties of less than 50 square metres.

However, because of greater energy requirements for larger dwellings the fuel poor living in properties 110 square metres or larger have a larger fuel poverty gap (£540).

Figure 4.10: Fuel poverty proportion and average fuel poverty gap by floor area, 2016

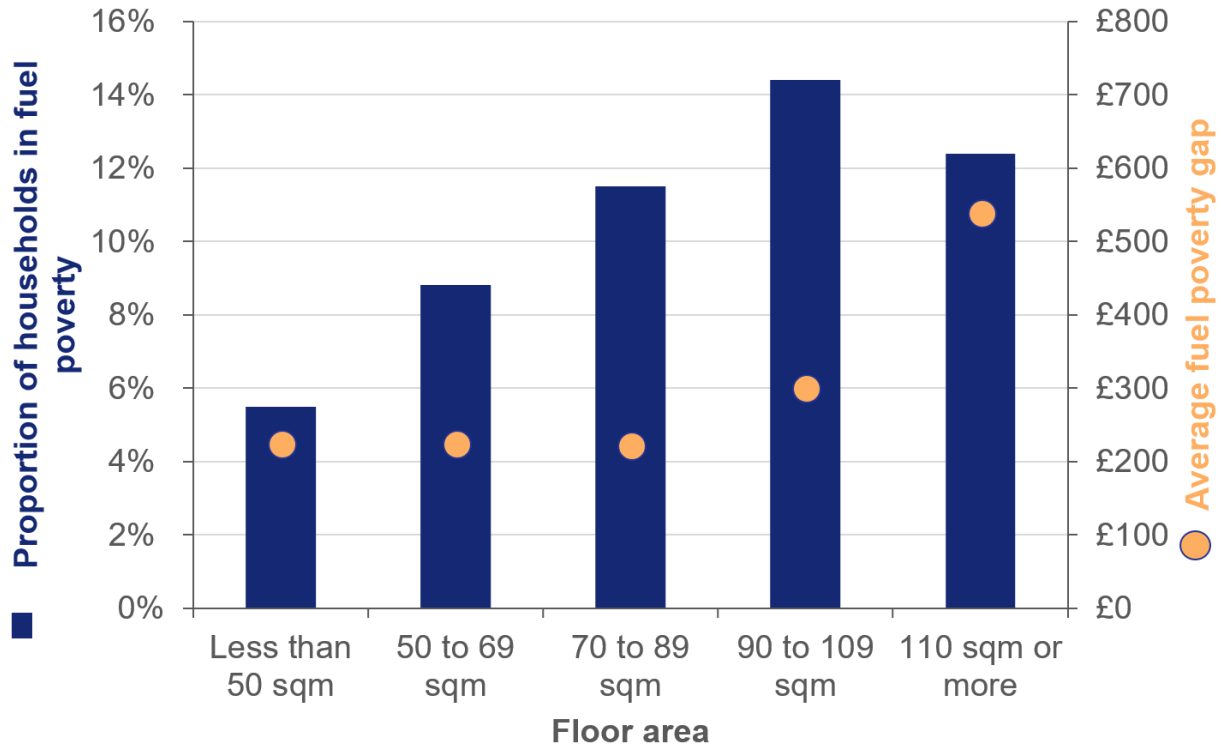


Table 4.2: Energy requirements, income and fuel costs by floor area, 2016

	Median energy requirements (kWh)	Median Income (£)
Less than 50 sqm	9,644	17,330
50 to 69 sqm	13,793	18,800
70 to 89 sqm	17,699	21,050
90 to 109 sqm	20,532	25,160
110 sqm or more	25,648	31,770
All households	18,025	22,020

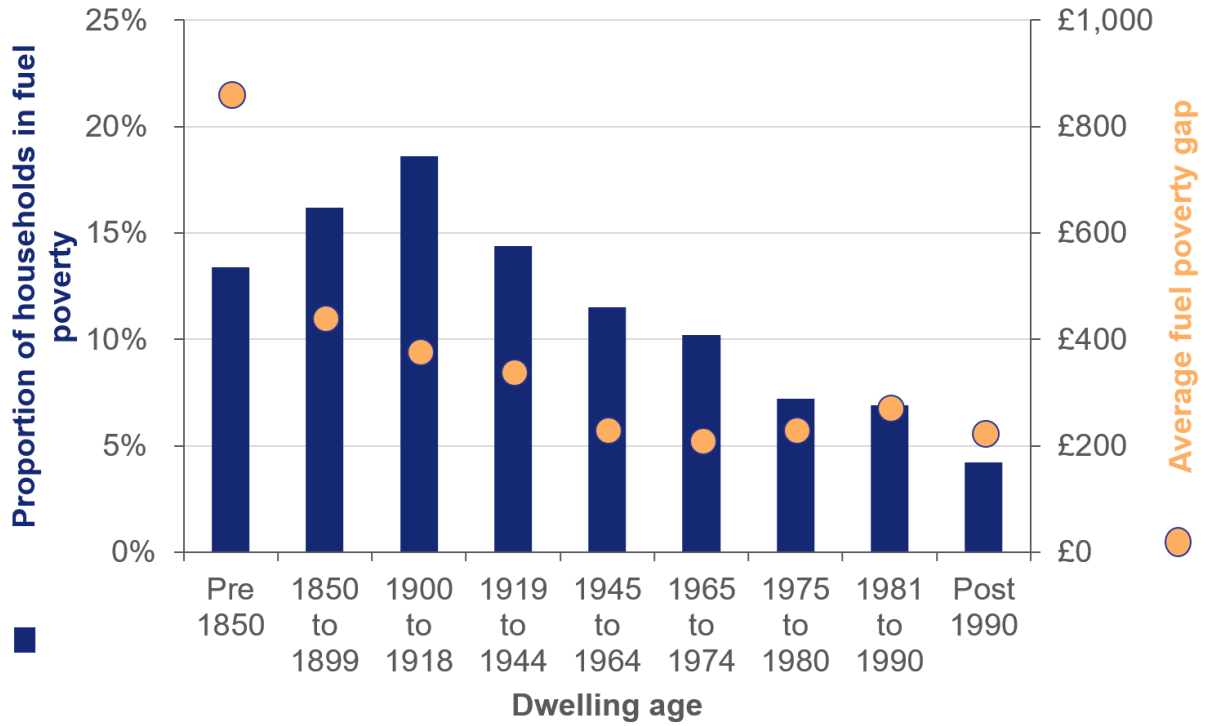
4.3.4 Dwelling Age

Those that live in properties built before 1945 have a higher than average incidence of fuel poverty. The fuel poverty gap is highly dependent on the property age which is likely due to the differing energy efficiency levels at the point of construction.

In 2016, 18.6 per cent of households living in a dwelling built between 1900 and 1918 were fuel poor; this is compared to just 4.2 per cent of those living in dwellings built post-1990.

There is also a large difference in the average fuel poverty gap between the oldest and newest builds, with the average fuel poverty gap at £863 for pre-1850, compared to the newest builds at £226, though 1965 to 1974 have the lowest gap at £211. Figure 4.11 shows categories of dwelling age by the proportion and depth of fuel poverty. The fuel poverty gap is less than £300 for all dwellings built after the Second World War when better standards of construction were used.

Figure 4.11: Fuel poverty proportion and average fuel poverty gap by age of dwelling, 2016



The median FPEER value is closely linked to the average fuel poverty gap (see Figure 4.12), suggesting that the large differences in fuel poverty gap levels between different dwelling ages are likely due to energy efficiency, which impact a household's energy requirements. The median FPEER value for dwellings built pre-1850 (48.5) is lower than the median FPEER value for all households (64.5).

Lower rates of fuel poverty for dwellings built before 1850 compared to those built between 1850 and 1944 is likely due to having a higher median income (see Figure 4.13). People living in properties build after 1990 have the second highest median income, which in addition to their higher FPEER ratings further explains the lower rate of fuel poverty for newer dwellings.

Figure 4.12: Median FPEER by age of dwelling, 2016

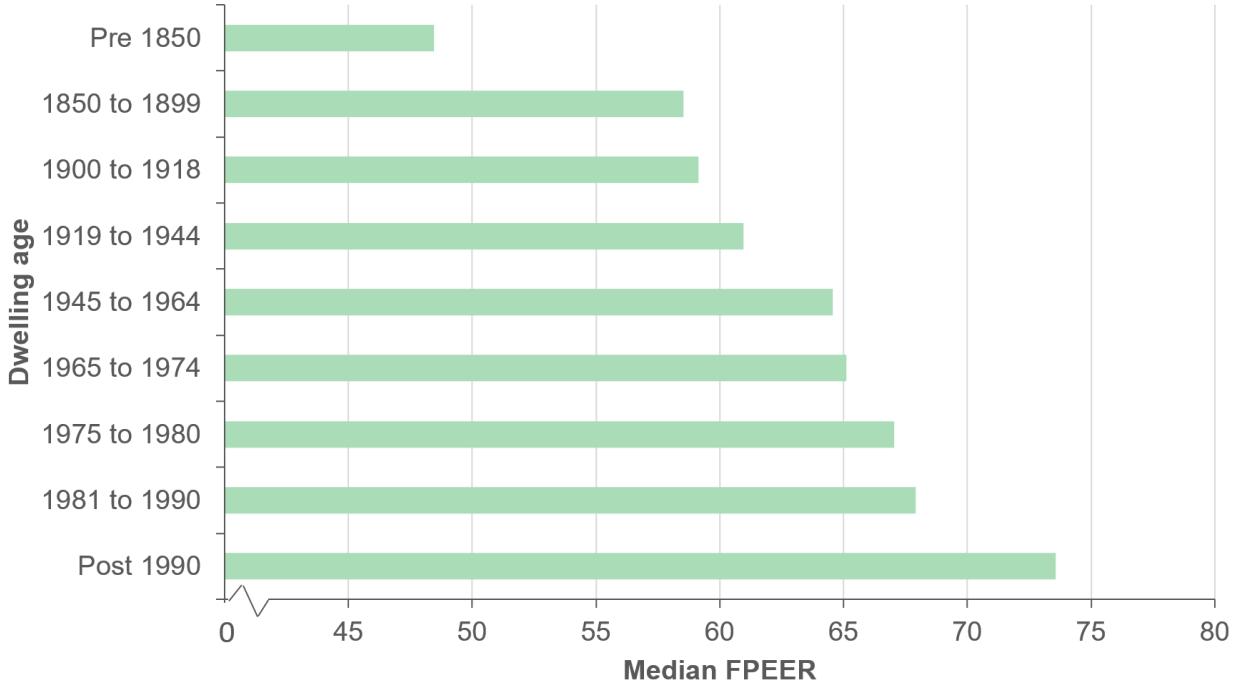
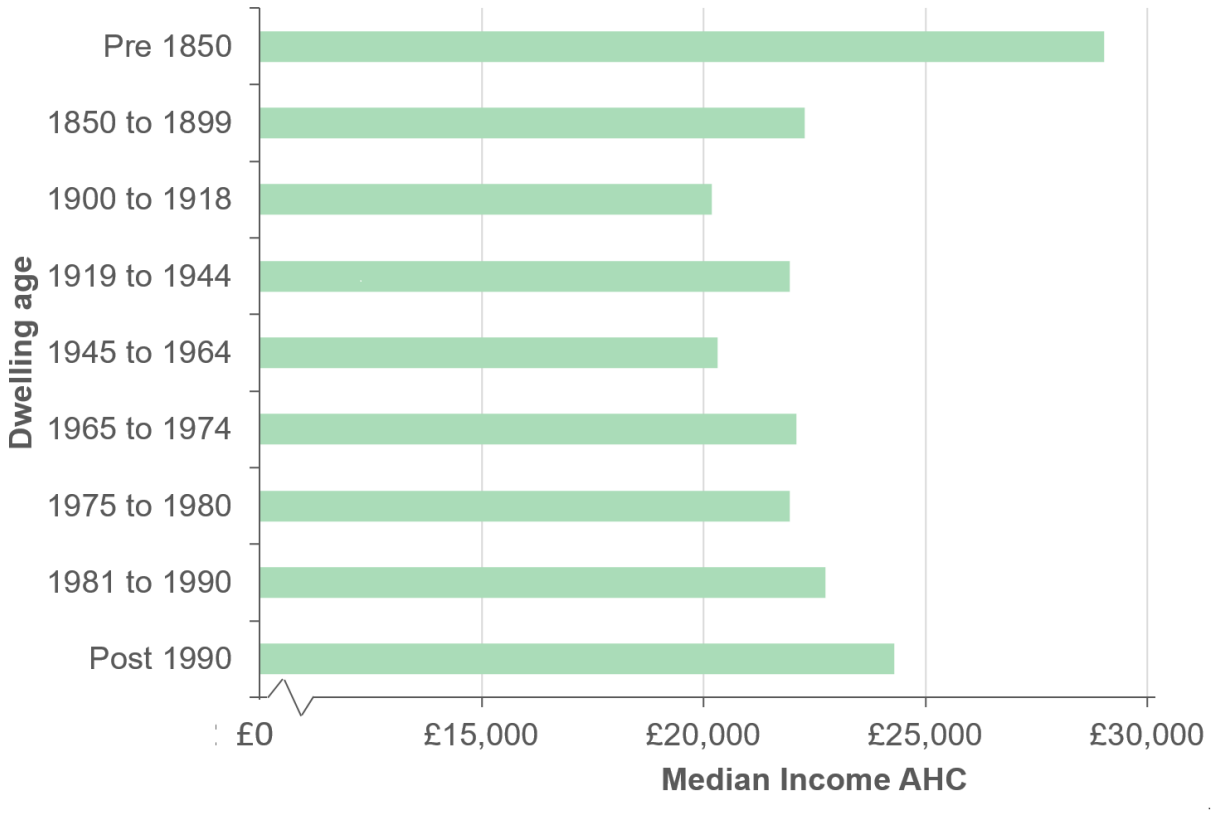


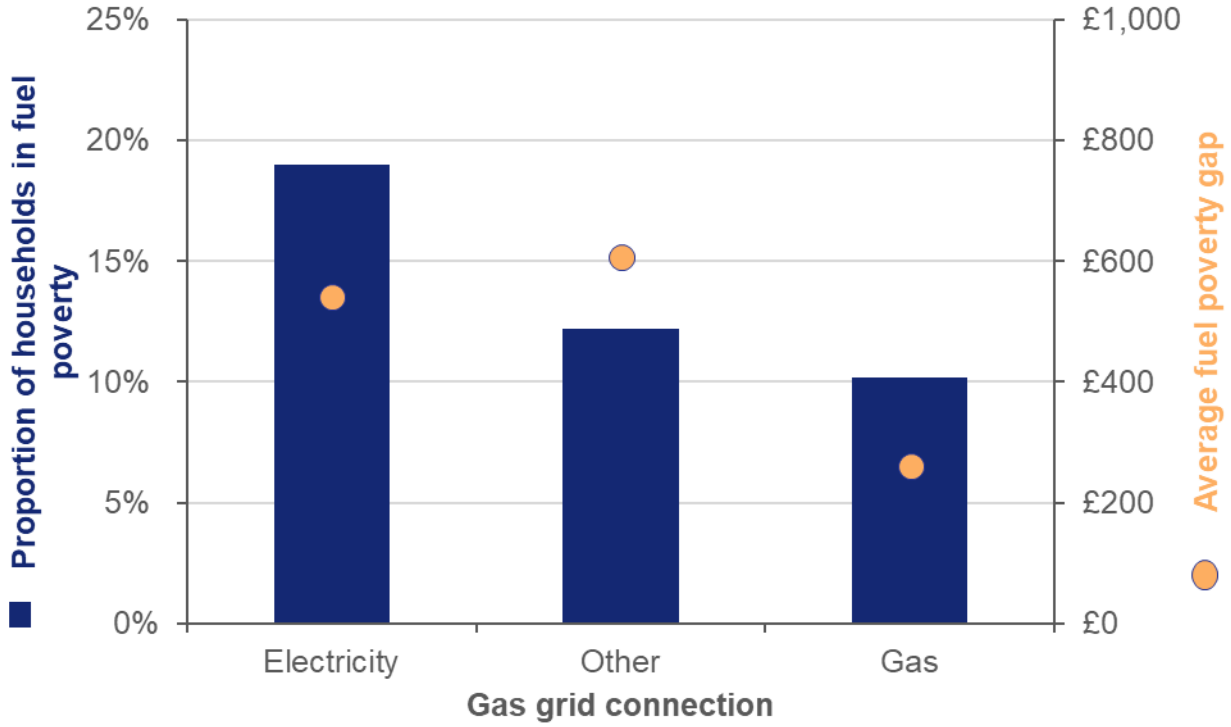
Figure 4.13: Median Income by age of dwelling, 2016



4.3.5 Main fuel type

Main fuel type relates to the *type* of fuel that is used to heat a property. Mains gas is the most common type with 84.9 per cent of all households using this. 98.4 cent of properties that have a gas grid connection use gas as their main fuel type, all other households use electricity, or 'other'[45] fuels. The average fuel poverty gap for households using gas is less than half than for those using other types of fuel, this is likely due to the higher cost associated with electricity and other fuels. Those with electricity as their main fuel type are more likely to be fuel poor than those using either gas or 'other' (see Figure 4.14).

Figure 4.14: Fuel poverty proportion and average fuel poverty gap by main fuel type, 2016



The higher proportion of fuel poor households that use electricity as their main fuel type is explained by higher cost of electricity compared to gas[46] but also by the lower median income of those households as shown by Table 4.3.

Properties using other fuels rather than electricity or gas have the lowest FPEER rating and the highest median income, which is likely why rates of fuel poverty are not as high as those households using electricity as their main fuel.

[45] 'other' includes heating oil, solid fuels, bottled gas and heating from a communal boiler.
[46] Further information on the costs of different fuel types can be found in the Quarterly Energy Prices publication: https://www.gov.uk/government/collections/domestic-energy-prices

Table 4.3: Median FPEER score and income by main fuel type, 2016

	Median FPEER	Median income £
Electricity	72.3	19,110
Gas	65.1	22,130
Other	52.5	24,250
All households	64.5	22,020

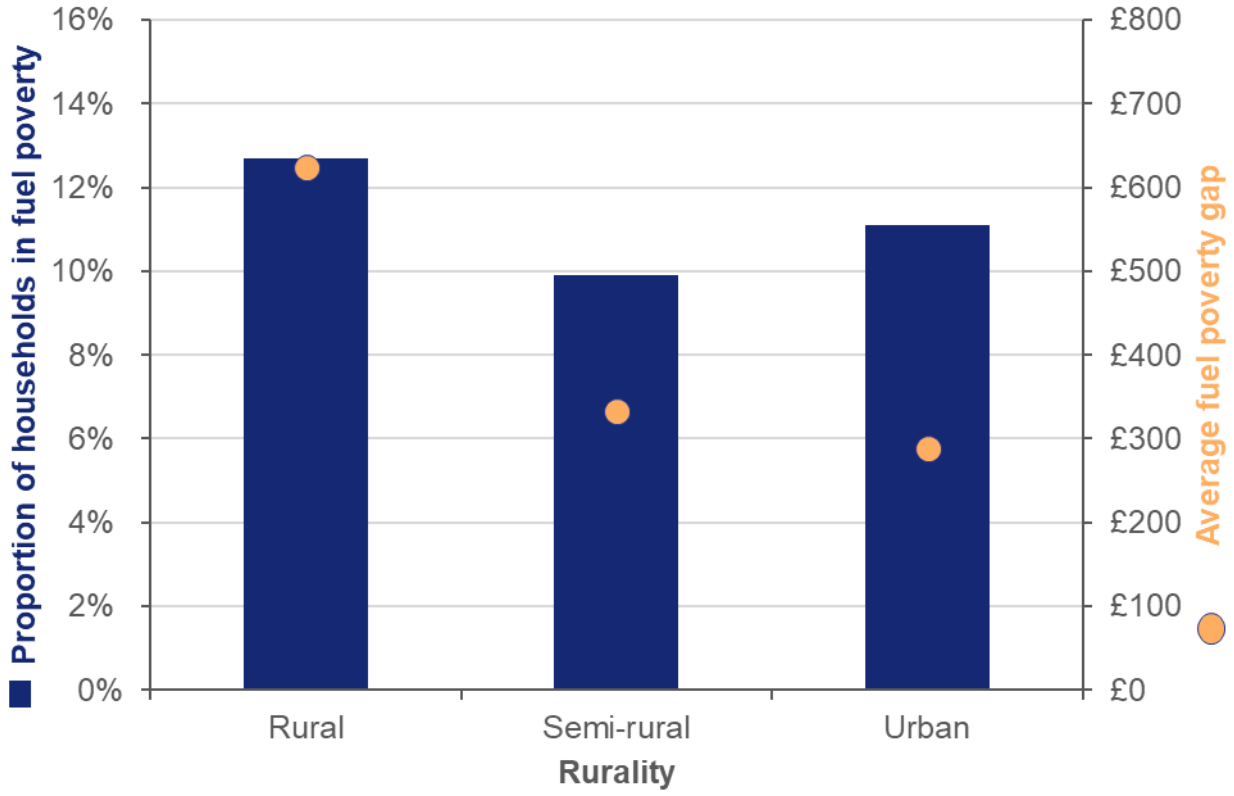
4.3.6. Rurality

Households living in an area classified as *rural*[47] have both a higher proportion of households living in fuel poverty and a larger fuel poverty gap than households classed as semi-rural or urban.

Around 90 per cent of urban (91.1 per cent) and semi-rural (86.3 per cent) households have a gas connection compared to only 40.9 per cent of those in rural areas. Therefore, more isolated households may have higher levels and depth of fuel poverty due a higher proportion being off the gas grid.

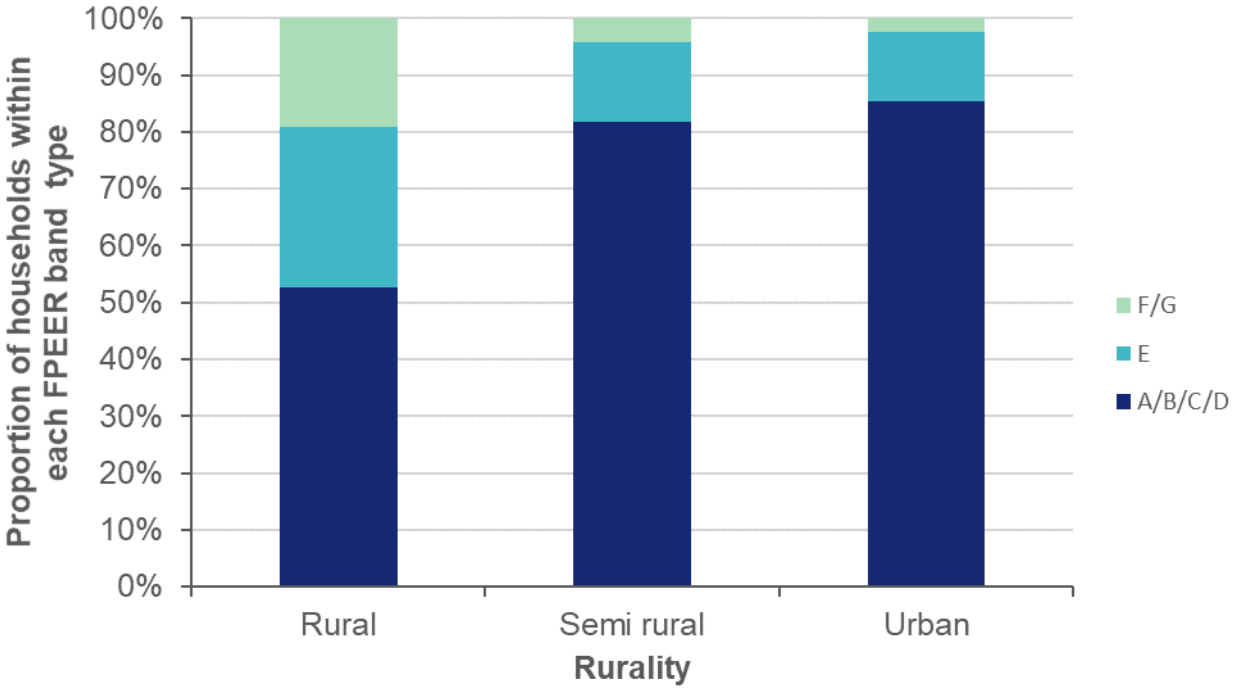
[47] 'Rural' – Villages, hamlets and isolated dwellings; 'Semi-Rural' – Towns and fringe; 'Urban' – Urban. Rurality definitions from ONS https://www.gov.uk/government/collections/rural-urban-classification

Figure 4.15: Fuel poverty proportion and average fuel poverty gap by rurality, 2016



The proportion of households within each FPEER Band differs by rural classification. Overall, urban and semi-rural properties have a lower proportion of households rated as *F* or *G*, and more households rated as *D* or above compared to rural properties. Rural areas have a much greater proportion of *F* or *G* rated households; 19.1 per cent compared to just 2.4 per cent for urban areas (see Figure 4.16). Median income on the other hand is higher for those living in rural and semi-rural settings. This could provide an explanation as to why the difference in rates of fuel poor between urban and rural areas is not as high as the FPEER would suggest. However, when fuel poverty occurs in rural settings their average fuel poverty gap is double the gap for fuel poor living in urban areas.

Figure 4.16: Proportion of households by rurality and FPEER Band[48], 2016



4.3.6. Region

There are a number of regional differences affecting the level and depth of fuel poverty. These differences tend to reflect the age of the housing stock, climatic conditions and relative income levels across the country.

Figure 4.17 shows the proportion of fuel poor households mapped by region at the top, with the three main drivers mapped beneath for *all* households, illustrating how these drivers differ by region. For example, the West Midlands has a lower than average income, lower than average FPEER and higher than average fuel cost, which results in a higher than average proportion of fuel poor households for the region.

[48] The A/B/C FPEER category has been combined with band D due to small sample sizes.

Figure 4.17: Proportion of fuel poor households (and the three main drivers of fuel poverty) by region, 2016

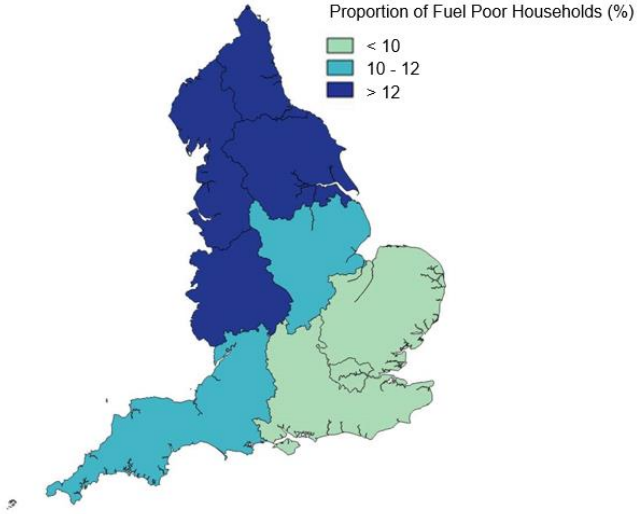
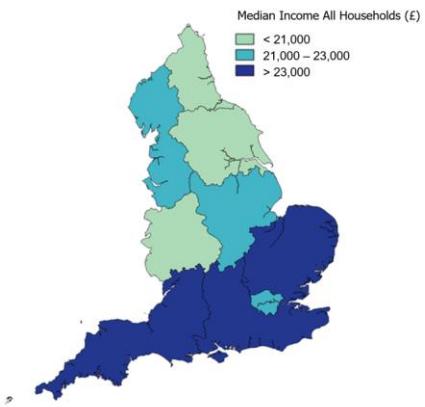
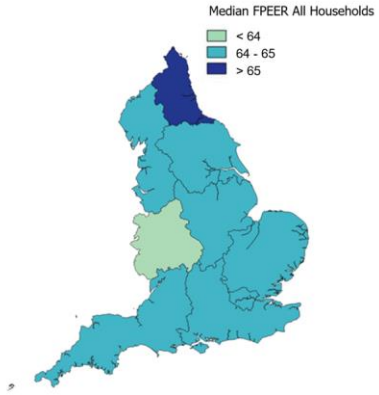
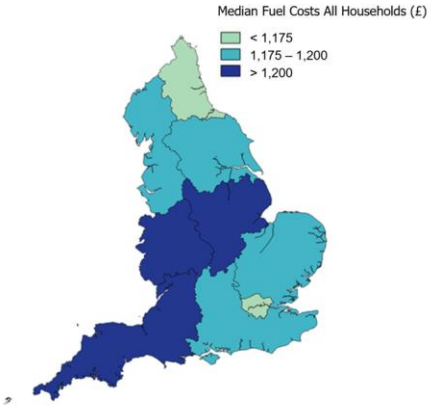


Figure 4.17 shows that households in the North East (13.8 per cent), West Midlands (13.7 per cent), North West (12.8 per cent) Yorkshire and the Humber (12.1 per cent) have a higher than average proportion of households in fuel poverty. Households in the South East (9.0 per cent) and East of England (9.4 per cent) have a lower than average proportion of households in fuel poverty.







Regions where the fuel poverty levels are above average tend to have an average or below average income, and average or above average fuel costs. Of those regions with higher than average fuel poverty levels, there is a mixed picture with average FPEER values across the regions. Data aggregated at regional level hides variation within the region itself which in some cases can be greater than variation between regions, for example the North West includes large urban areas like Manchester and Liverpool and rural areas like Cumbria.

Figure 4.18 shows the average fuel poverty gap mapped by region with the three main drivers mapped for the *fuel poor* population, which helps illustrate the complex interaction between the three key drivers of fuel poverty. For example, the fuel poor in the West Midlands have an average median income, lower than average FPEER and higher than average fuel costs, which results in an overall average fuel poverty gap.

Figure 4.18: Average fuel poverty gap (and the three main drivers of fuel poverty) by region, 2016

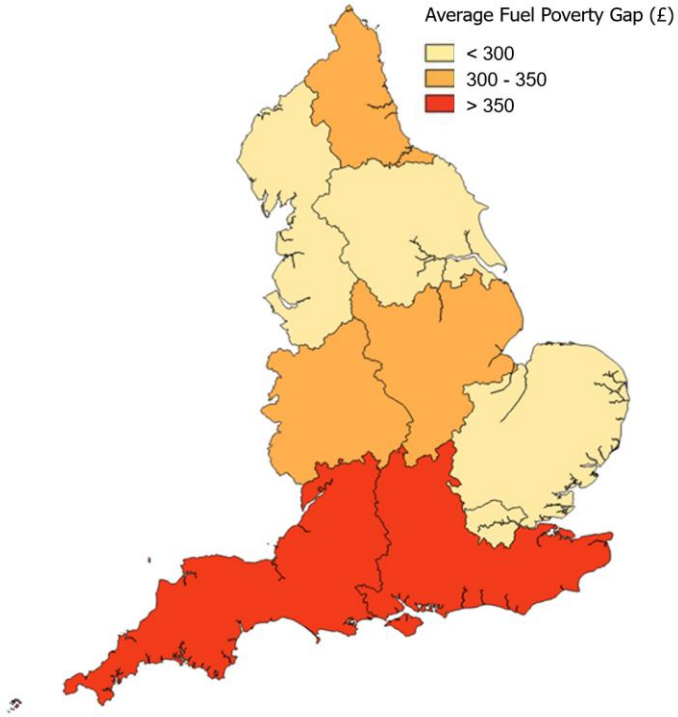
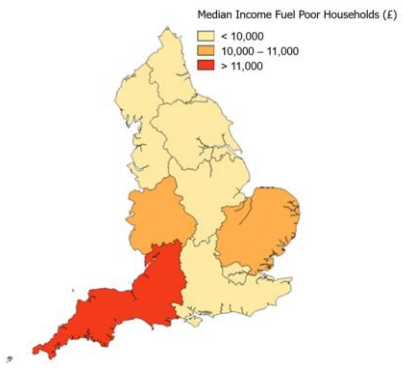
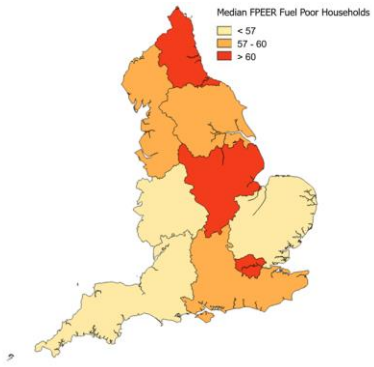
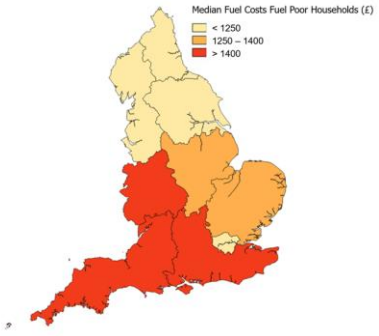


Figure 4.18 shows that households in the South East (£447) and the South West (£391) have the highest average fuel poverty gap. Households in Yorkshire and the Humber (£252), North West (£268) and East of England (£278) have the lowest average fuel poverty gap.





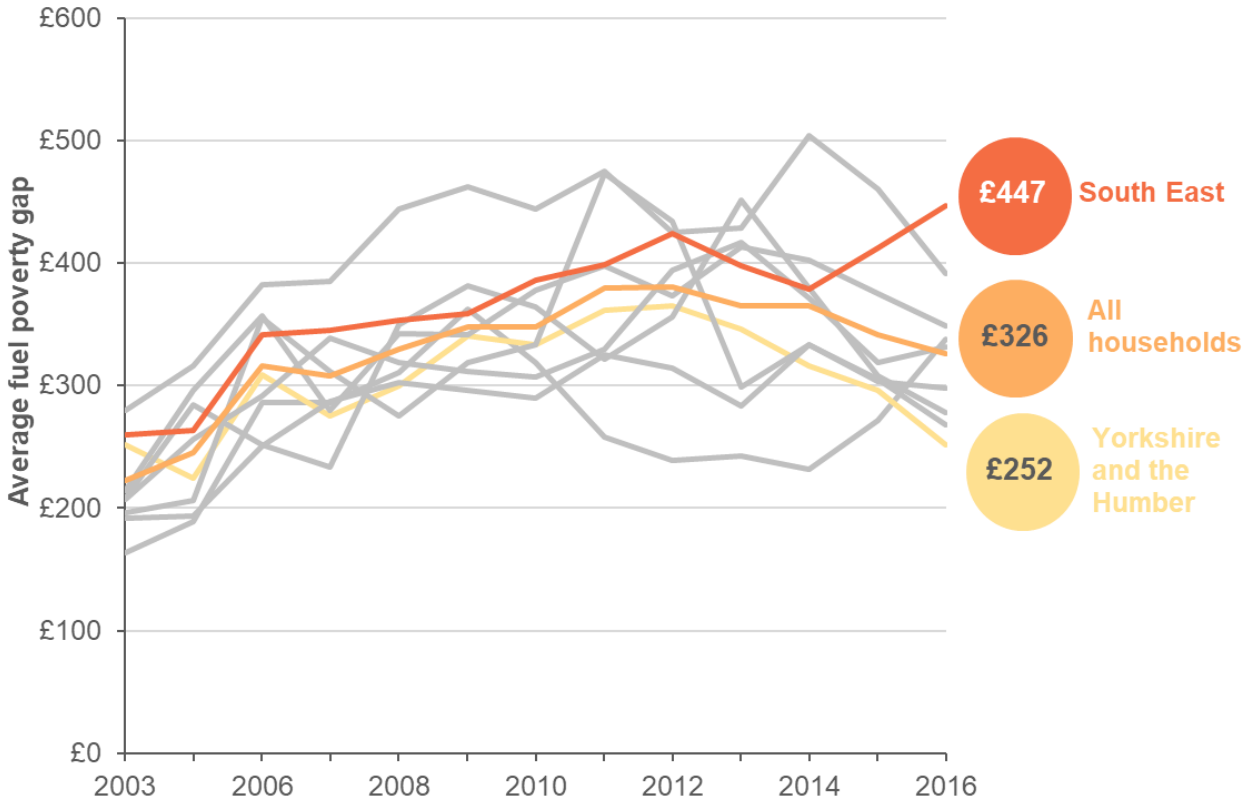


It is also worth highlighting again the fact that regional figures can include areas with substantially different level of fuel poverty, income and FPEER.

Figure 4.19 shows that between 2003 and 2011 the average fuel poverty gap increased for 'All households' and this has then gradually decreased through to 2016. The South East has the largest average fuel poverty gap. Yorkshire and the Humber shows a large decrease since 2012 and has this year on average the lowest fuel poverty gap.

This trend could be partly due to lower than average fuel costs for Yorkshire and the Humber (fuel poor population) and higher than average fuel costs for the South East (fuel poor population), which can be seen in Figure 4.18.

Figure 4.19: Average fuel poverty gap by region[49], 2003-2016



More information and further geographical breakdowns can be found in the sub-regional experimental statistics publication at the following link:

https://www.gov.uk/government/collections/fuel-poverty-sub-regional-statistics

[49] Data in real terms (2016 prices), adjusting for inflation using the GDP (market prices) deflator.

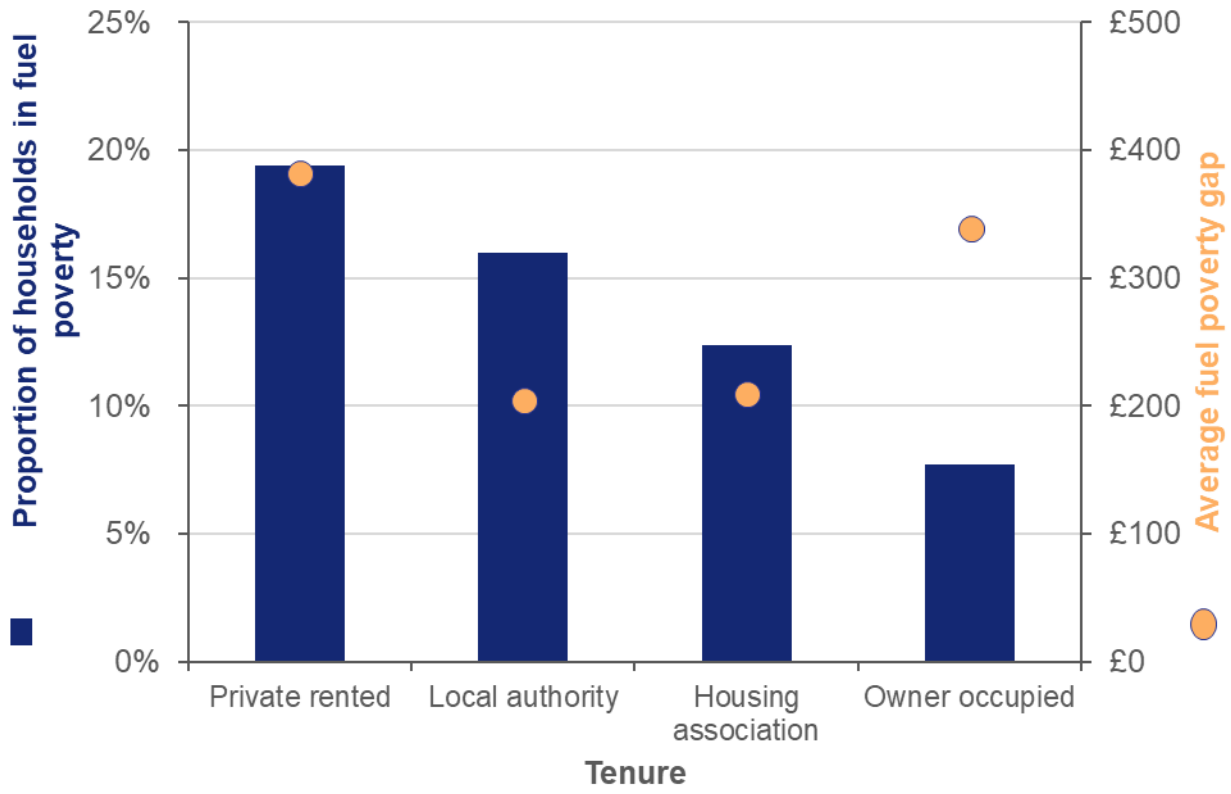
4.4 Household Characteristics

Fuel poverty levels and the fuel poverty gap vary notably across household characteristics. This may be due to differences in income, different energy requirements, or a combination of both, dependent on a household's composition.

4.4.1 Tenure

There are differences in fuel poverty prevalence and the average fuel poverty gap by tenure[50,51] and these reflect both the nature of the housing stock and household characteristics typical to a household's tenure. Figure 4.20 shows that the level of fuel poverty is highest in the private rented sector (19.4 per cent of households in fuel poverty), and lowest in owner occupied properties, (7.7 per cent in fuel poverty). The depth of fuel poverty follows a slightly different pattern; private rented properties have the largest average fuel poverty gap (£383), which is followed by owner occupied properties (£339). Both housing association properties and local authority properties have an average fuel poverty gap that is much lower at just over £200.

Figure 4.20: Fuel poverty proportion and average fuel poverty gap by tenure, 2016



[50] https://www.gov.uk/guidance/definitions-of-general-housing-terms
[51] Table 16: https://www.gov.uk/government/statistics/fuel-poverty-detailed-tables-2018

Table 4.4 shows that the median FPEER score is much higher for local authority and housing association properties than it is for owner occupied and private rented properties. This helps explain why the *depth* of fuel poverty is higher for owner occupied and private rented properties. Social housing (both local authority and housing association) tends to have greater levels of insulation, resulting in lower energy costs, and therefore, limiting the depth of fuel poverty within these property types. In the overall English housing stock, 67.3 per cent of social housing eligible for loft insulation has 150mm or more of insulation, whereas this is 55.2 per cent for private housing. For fuel poor households, these percentages change to 58.1 per cent and 46.3 per cent respectively.

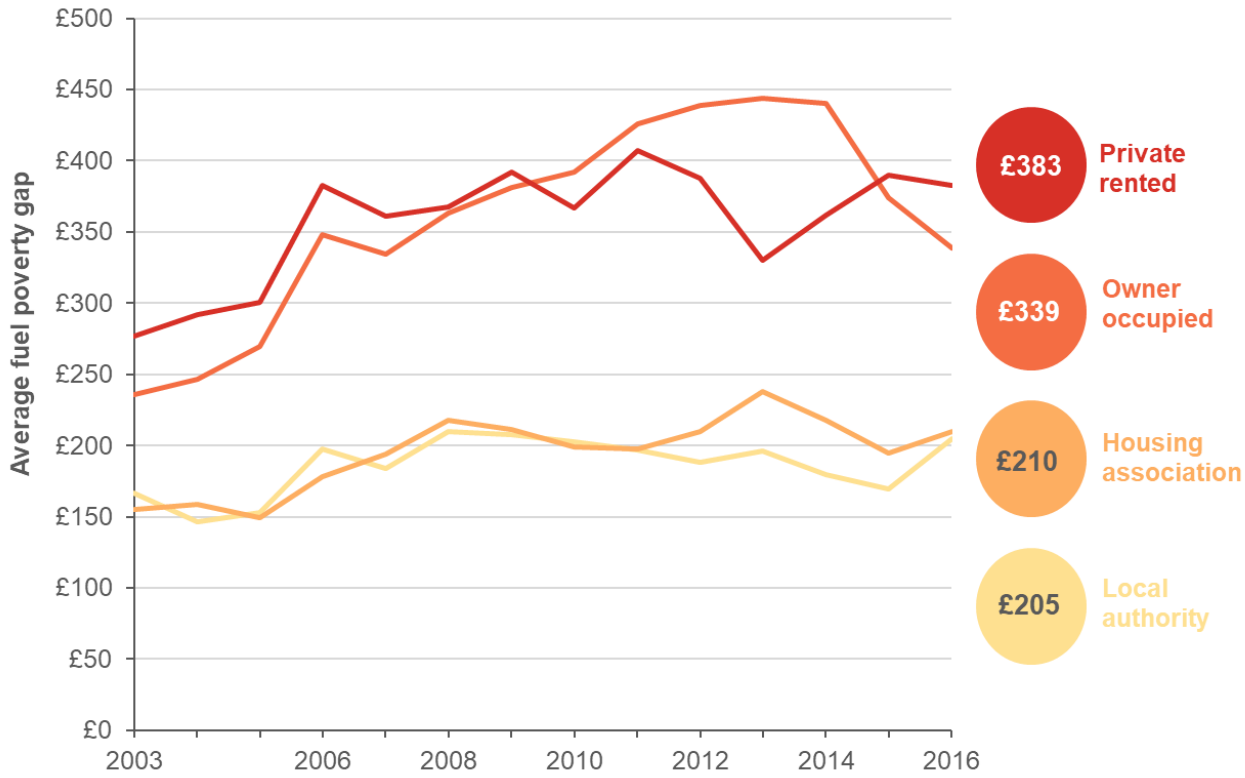
Table 4.4: Median FPEER by tenure, 2016

	Median FPEER
Private rented	63.7
Local authority	68.4
Housing association	70.5
Owner occupied	63.2
All households	64.5

Figure 4.21 shows that, overall, the average fuel poverty gap has increased across all tenure types since 2003, with the largest increase seen within owner occupied and private rented properties. The average fuel poverty gap for owner occupied properties peaked in 2013 where they had a gap of £444, much higher than the average gap of private rented properties at that time (£330). In 2016, private rented properties have the largest average fuel poverty gap (£383), and owner-occupied households, whilst having the second largest fuel poverty gap, continues to fall – between 2014 and 2016, the average fuel poverty gap for owner occupied households has fallen by over £100 in real terms.

The difference in trends between owner occupied and private rented sector since 2013 is likely to be a result of a larger fall in mean fuel requirements (around 10 per cent in real terms) compared to the private rented sector (around 6 per cent). This is due in part to a larger increase in fuel prices - around a three per cent rise for private rented households, but a three per cent fall in fuel prices for owner occupied households.

Figure 4.21: Average fuel poverty gap by tenure[12], 2003-2016



4.4.2 Household composition

The proportion of households in fuel poverty varies depending on a household's composition[52]. In 2016, those categorised as *single parents* saw the highest proportion of households in fuel poverty (26.4 per cent) which can be seen in Figure 4.22 – this is more than ten percentage points above any other household composition. However, the average fuel poverty gap for this group is below the average fuel poverty gap (of £326) at £297, with households classified as 'other multi-person households' having the highest average fuel poverty gap at £413.

[52] 'Couple with child(ren)' – Couple with dependent child(ren); 'Couple over 60' – Couple, no dependent child(ren) aged 60 or over; 'Couple under 60' – Couple, no dependent child(ren) under 60; 'Single parent' – Lone parent with dependent child(ren); 'One person over 60' – one person aged 60 or over; 'One person under 60' – one person; under 60; 'Multi-person' – Other multi-person households

Figure 4.22: Fuel poverty proportion and average fuel poverty gap by household composition, 2016[53]

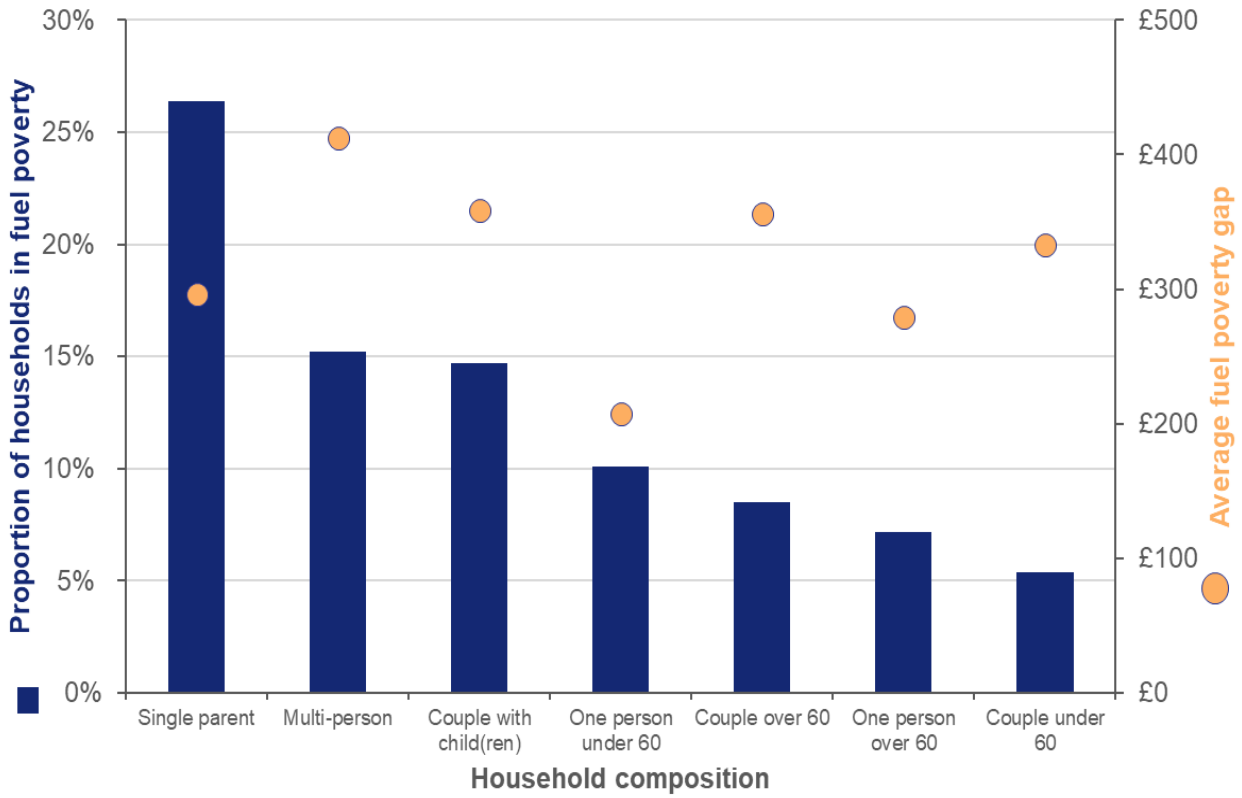
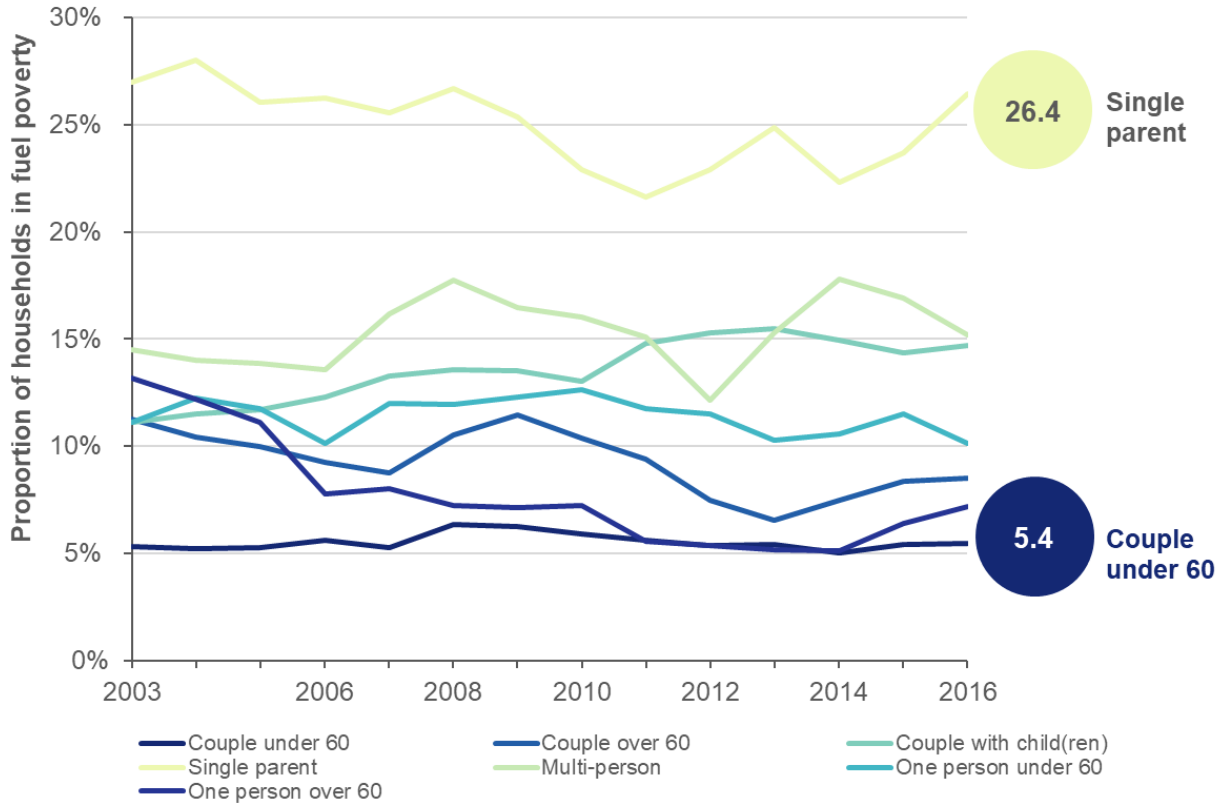


Figure 4.23 shows that since 2003, single parents have consistently seen the highest proportion of households in fuel poverty. A second consecutive annual increase in 2016 has resulted in this proportion reaching its highest level since 2008. This is most likely related to income - the median income for this group is the lowest of all household compositions at around £12,700 a year, whereas the average income is approximately £22,017.

In 2016, there were approximately 1.15 million fuel poor households with one or more children under 16 (5.0 per cent of all households). This is 45.1 per cent of all fuel poor households and around 17.6 per cent of all households with children.

[53] https://www.gov.uk/government/statistics/fuel-poverty-trends-2018

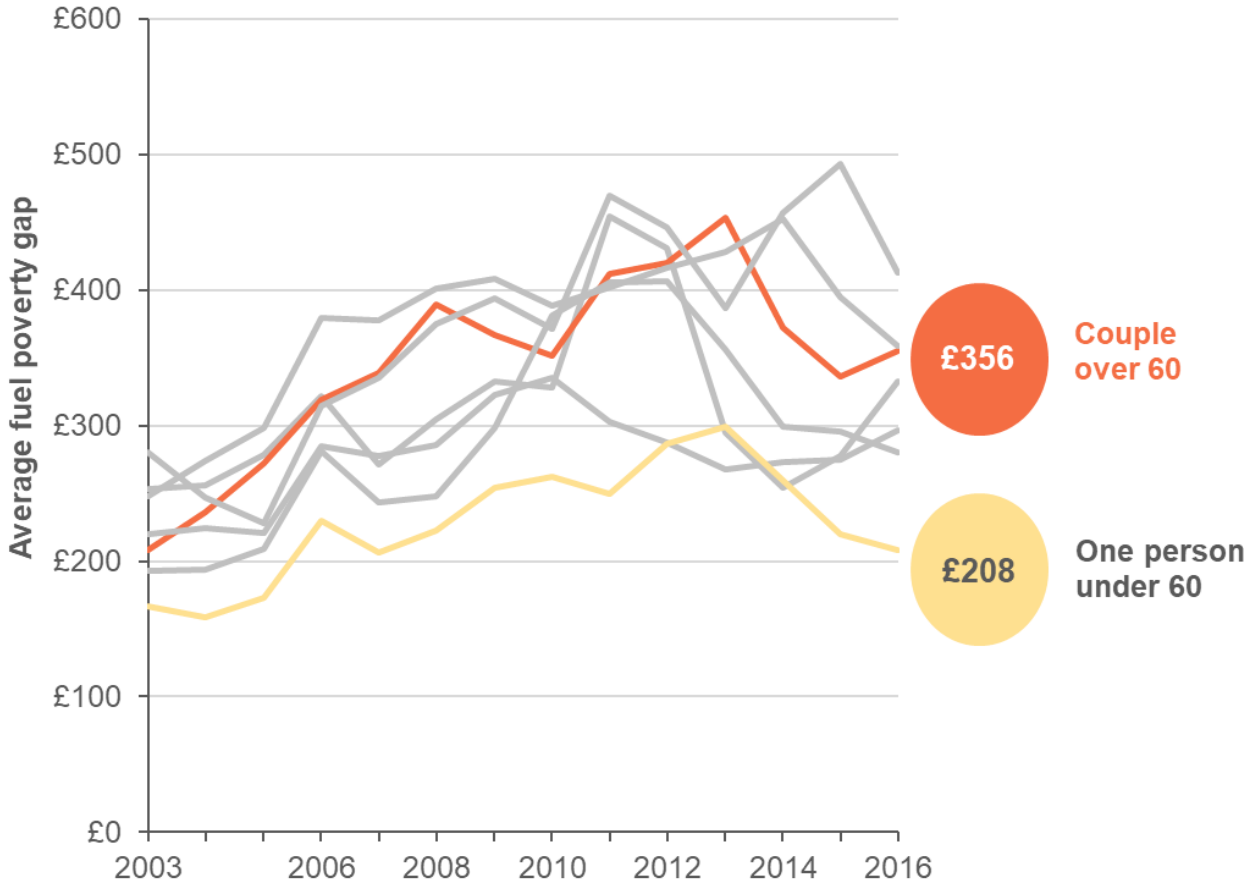
Figure 4.23: Proportion of households in fuel poverty by household composition, 2003-2016[54]



When looking at the average fuel poverty gap (Figure 4.24), this was seen to increase in real terms between 2003 and 2012 for all household composition types. Since 2013, the direction of change is mixed; there have been real terms increases for couples under 60, single parents and multi-person households, with all other compositions seeing a decrease in their average fuel poverty gap. Between 2003 and 2016, the largest percentage increase in the average fuel poverty gap is for couples over 60, which has seen around a 70 per cent increase in real terms. The smallest increase in this time is for households containing one person under 60, where there has been around a 25 per cent rise between 2003 and 2016.

[54] https://www.gov.uk/government/statistics/fuel-poverty-trends-2018

Figure 4.24: Average fuel poverty gap by household composition[55], 2003-2016



4.4.3 Ethnicity

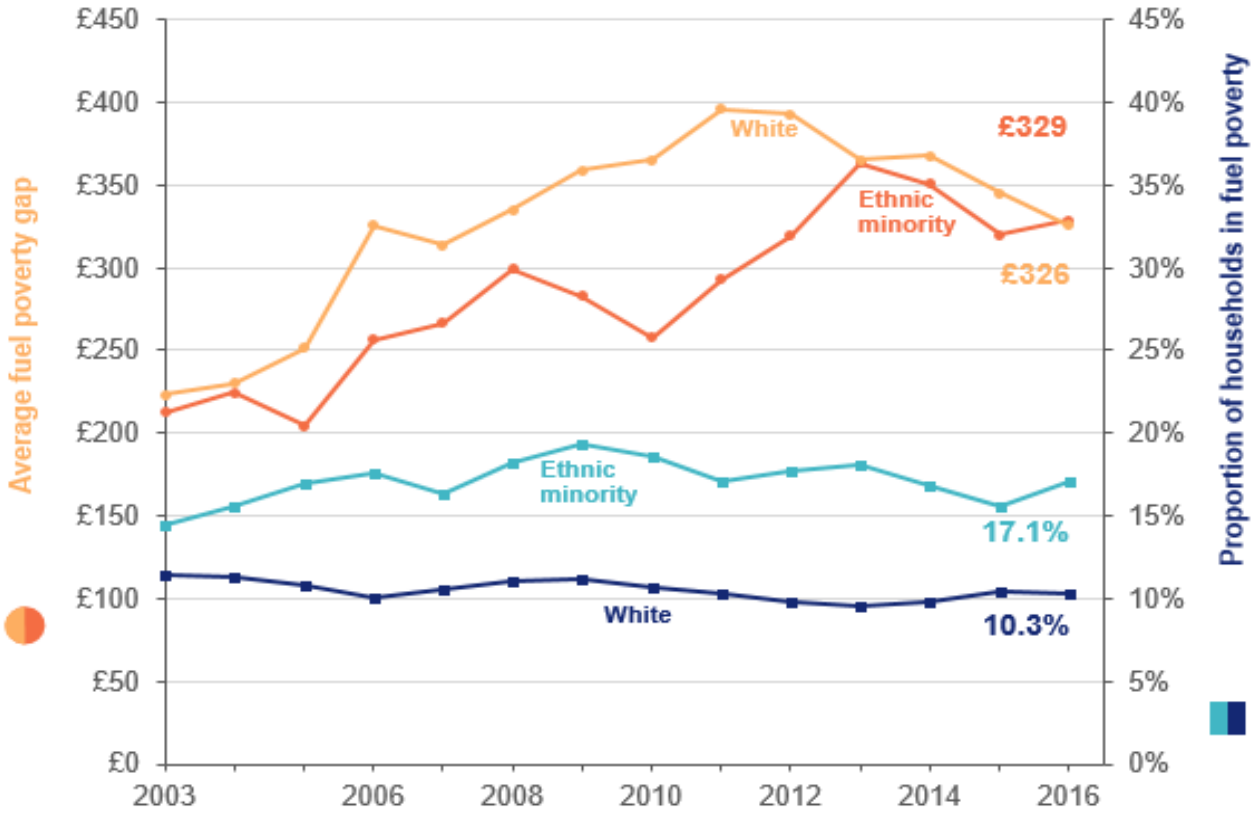
It should be noted that when looking at fuel poverty by ethnicity, data is based on the household reference person. However, some households will contain members from more than one ethnic group, which is not reflected in this analysis.

In 2016 a higher proportion of ethnic minority households were living in fuel poverty (17.1per cent) compared to the proportion of white households living in fuel poverty (10.3 per cent). As can be seen in Figure 4.25, these proportions have remained consistent between 2003 and 2016.

In 2016, for the first time, the average fuel poverty gap is greater for ethnic minority households compared to white households; with an average fuel poverty gap of £329 for ethnic minority households and £326 for white households.

[55] Data in real terms (2016 prices), adjusting for inflation using the GDP (market prices) deflator.

Figure 4.25: Proportion of households in fuel poverty and the average fuel poverty gap by ethnicity[56], 2003-2016[57]



This data is also published as part of the Ethnicity facts and figures collection published by the Cabinet Office:
https://www.ethnicity-facts-figures.service.gov.uk/

[56] Data in real terms (2016 prices), adjusting for inflation using the GDP (market prices) deflator.
[57] Table 15: https://www.gov.uk/government/statistics/fuel-poverty-trends-2018

4.4.4 Age

Age can be analysed in two different ways: age of the *oldest* member of the household which identifies younger households; age of the *youngest* member of the household which identifies older households. This allows us to distinguish between households with young children and households that comprise solely of those aged 75 and over.

In households where the oldest member is aged 16 to 24 years, 22.3 per cent were fuel poor, which is likely to be a result of lower incomes for younger households. This category is also comprised of an above average proportion of multi-person households and single parents, with Section 4.4.2 showing that these two household compositions have the highest proportions of fuel poor households. This can be seen in Table 4.5, which shows that average income is much lower for the youngest households, with a median income of around £11,780 compared to £22,020 for *all* households.

Table 4.5: Median income by age by oldest member, 2016

	Median Equivalised AHC income (£)
16 – 24	11,780
25 – 34	20,290
35 – 49	19,910
50 – 59	23,690
60 – 74	25,010
75+	22,030
All households	22,020

Figure 4.26: Fuel poverty proportion and average fuel poverty gap by age of the *oldest* member of the household, 2003 and 2016

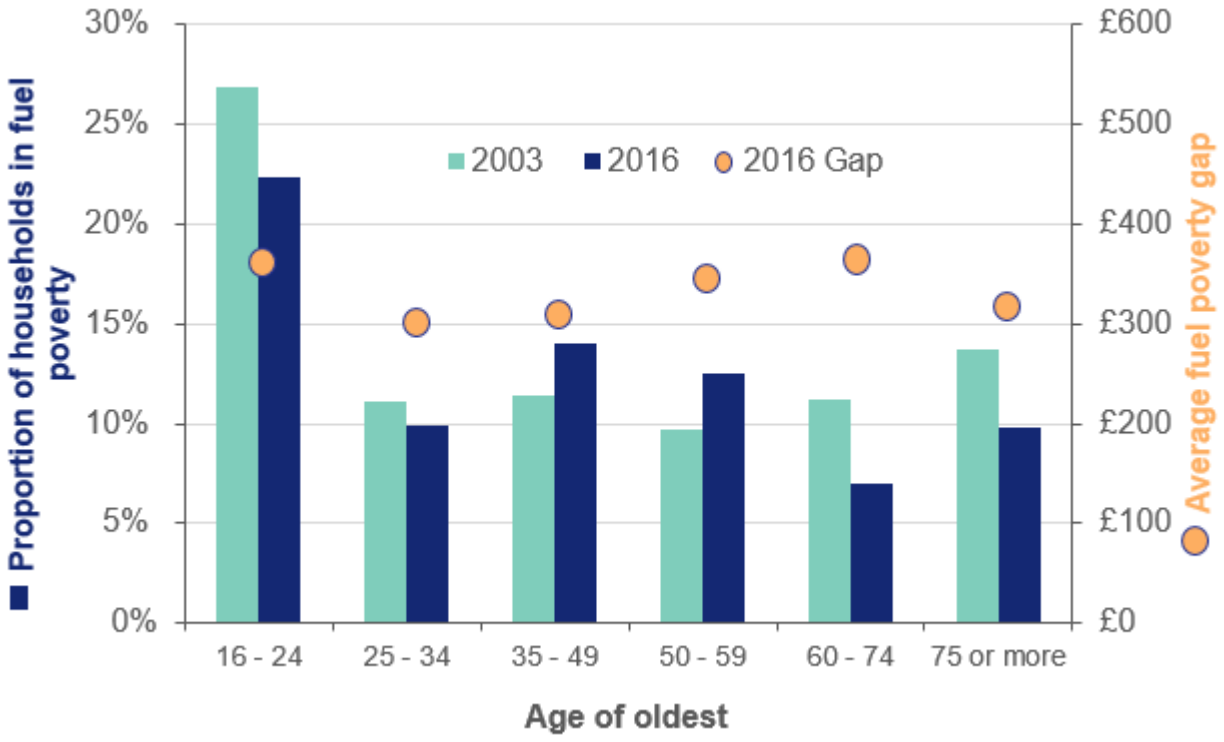


Figure 4.26 shows how the proportion of each age category in fuel poverty has changed since 2003. Those living in households where the oldest person was aged 75 or over had the second highest proportion living in fuel poverty in 2003. In comparison, in 2016, this category had the second *lowest* proportion living in fuel poverty, a fall of over a quarter on the 2003 level – the Warm Home Discount is likely to have had an effect. For the youngest households, the proportion in fuel poverty has fallen from 2003 to 2016 but is still represents the group with the largest proportion in fuel poverty. The average fuel poverty gap is highest in 2016 for those where the oldest member of the household is between 60 and 74 and lowest for those aged between 25 and 34.

Age of the *youngest* member of the household is also important to consider when looking at the effects of age on fuel poverty. Figure 4.27 below shows the proportion of households in fuel poverty by age band of the youngest person. The two dark blue lines highlight the two oldest household categories: ages 60 to 74 and 75 plus. There has been an overall downward trend in the proportion in fuel poverty within these age groups from 2003 to 2013, indicating that the prevalence of fuel poverty has improved for the older ages over this period; however, proportions of those living in fuel poverty have increased for each of the last three years for both the 60-74 and 75 plus groups. Households where the youngest member is 15 years or under consistently have the highest fuel poverty level.

Figure 4.27: Proportion of households in fuel poverty by age of the *youngest* member, 2003-2016[58]

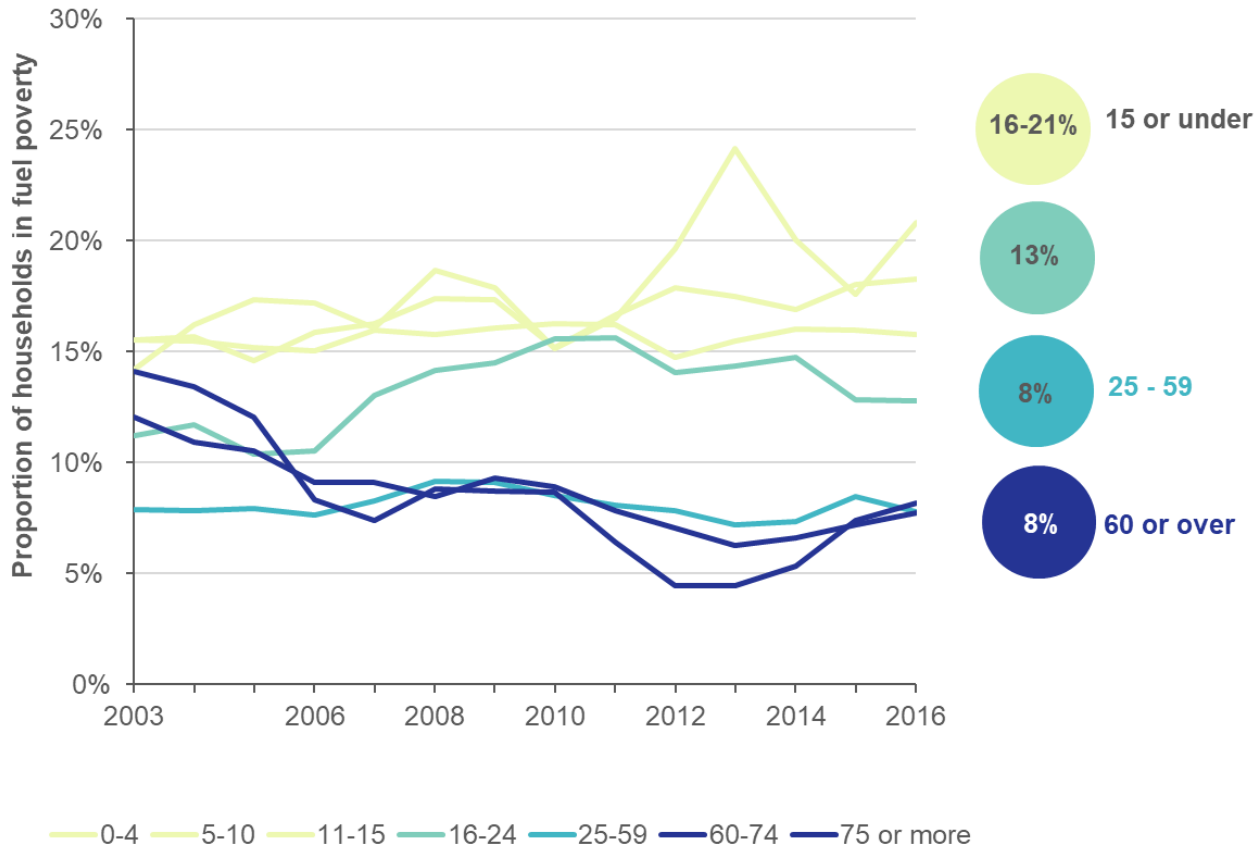
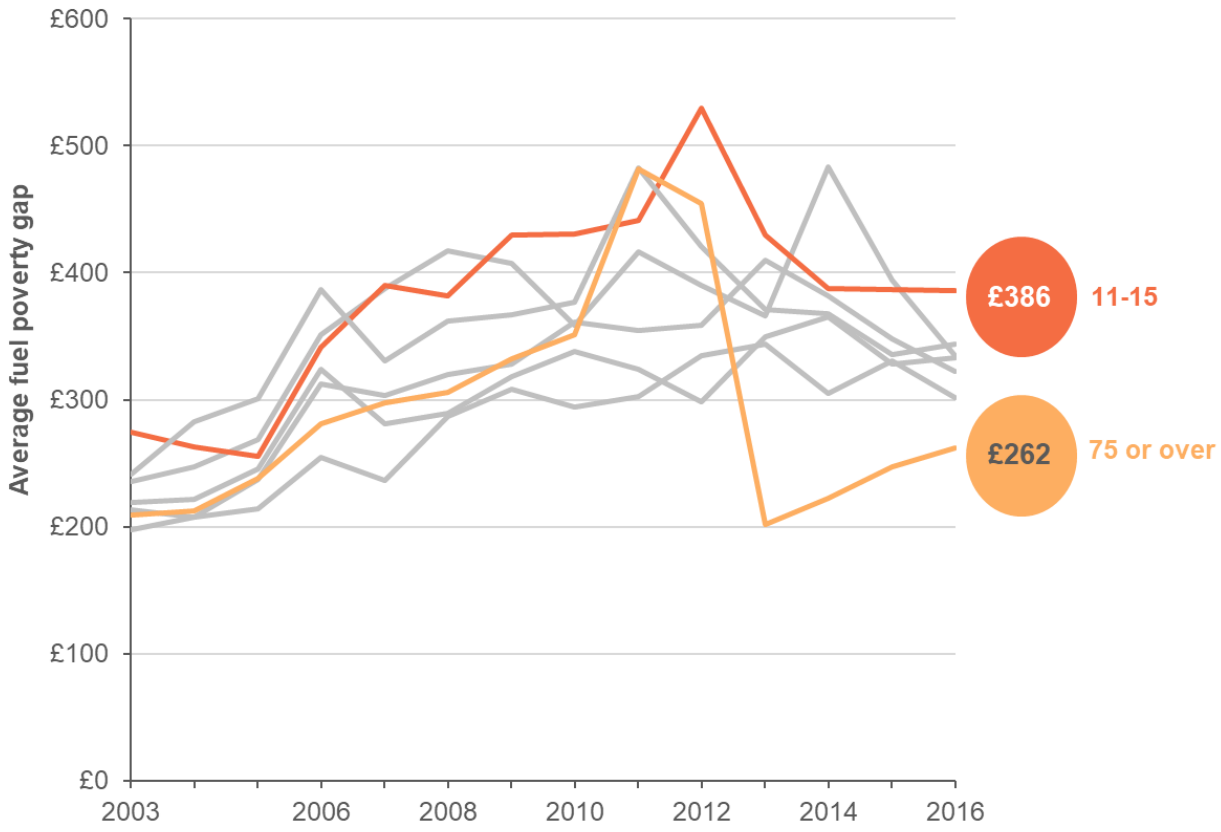


Figure 4.28 shows that the average fuel poverty gap has increased since 2003 for all household types. The 75 or over group saw a sharp decrease in their fuel poverty gap between 2011 and 2016, falling from £481 to £262. This coincided with the introduction of the Warm Home Discount policy[59] and is also the age category where the higher rate of winter fuel payment comes in[60]. In 2016, the group with the highest average fuel poverty gap, at £386, was those households where the youngest member is between 11 and 15.

[58] Table 12: https://www.gov.uk/government/statistics/fuel-poverty-trends-2018
[59] https://www.gov.uk/the-warm-home-discount-scheme/what-youll-get
[60] https://www.gov.uk/winter-fuel-payment/overview

Figure 4.28: Average fuel poverty gap by age of youngest member[61], 2003-2016



[61] Data in real terms (2016 prices), adjusting for inflation using the GDP (market prices) deflator.

4.5 Household Income

By definition of the fuel poverty indicator (see key definition box on page 8), only households with *low* incomes can be classified as being fuel poor, therefore there are no fuel poor households with an income in the 5th to 10th deciles. Around 42.8 per cent of households in the lowest and second lowest income deciles are classed as fuel poor and 12.7 per cent of those in the third and fourth income deciles. In 2016, the average fuel poverty gap is largest for those households in the lowest income decile - this is despite a strong correlation between income and equivalised fuel costs (see Section 4.3.3).

Table 4.6: Average fuel poverty gap by income decile, 2016

	Average fuel poverty gap (£)
1st decile	353
2nd decile	298
3rd and 4th deciles	330
5th – 10th deciles	N/A
All households	326

4.5.1 Employment status

When looking at fuel poverty by employment status, data is based on the household reference person[62]. However, some households will contain members with a mixture of employment statuses, which is not reflected in this analysis.

Those households where the reference person is unemployed have the highest proportion in fuel poverty. Those in full time education have the largest average fuel poverty gap, which is likely due to having the lowest median income[63], with almost half of the *fuel poor population* in employment (see Chapter 3). Households where the household reference person is inactive have the third highest proportion in fuel poverty but the lowest average fuel poverty gap. This is likely due to a combination of low median income, low median fuel costs and the highest median FPEER of all employment statuses (Figures 4.29 and 4.31) – this is linked to inactive households having the highest proportion living in social housing (49.6 per cent compared to 17.1 per cent of all households).

Figure 4.29 shows the median income for all households, which helps to explain the impact income has on the proportion of households in fuel poverty. The median income for all

[62] The person in whose name the dwelling is owned or rented or who is otherwise responsible for the accommodation. In the case of joint owners and tenants, the person with the highest income is taken as the HRP. Where incomes are equal, the older is taken as the HRP.https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/705821/2016-17_EHS_Headline_Report.pdf

[63] Caution should be given to this finding as there are known quality issues with income data for student households.

households is negatively correlated with the proportion of households in fuel poverty**,** with the exception that unemployed households have both a higher proportion and a higher median income than full-time student households. A possible explanation for this is that student households have on average a higher FPEER rating and lower median fuel costs (Figure 4.31).

Figure 4.29 shows that the median income for the fuel poor population in part-time work, retired or full-time work is much lower than the overall population in the same employment status. The average fuel poverty gap is largest for those households in full-time education which is likely to be due to the low level of median income.

Figure 4.29: Median income by employment status, 2016

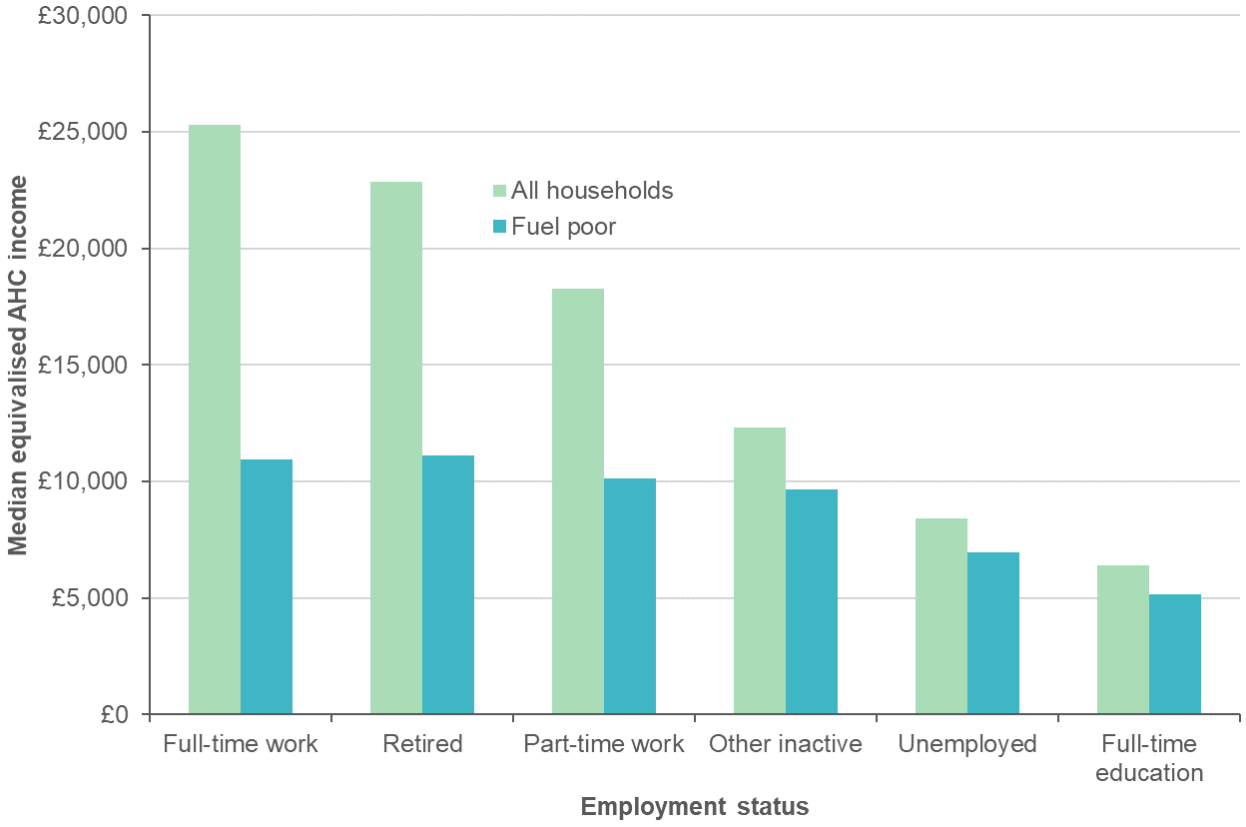


Figure 4.30 Fuel poverty proportion and average fuel poverty gap by employment status, 2016

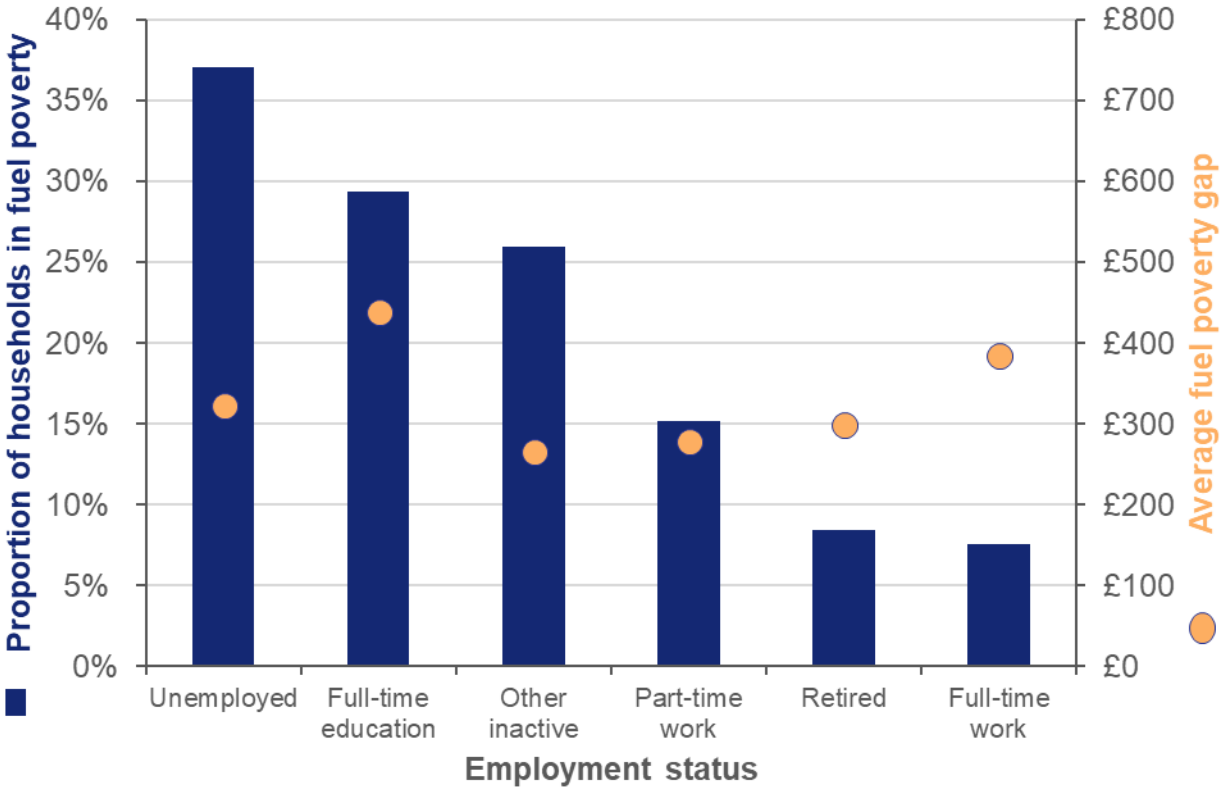
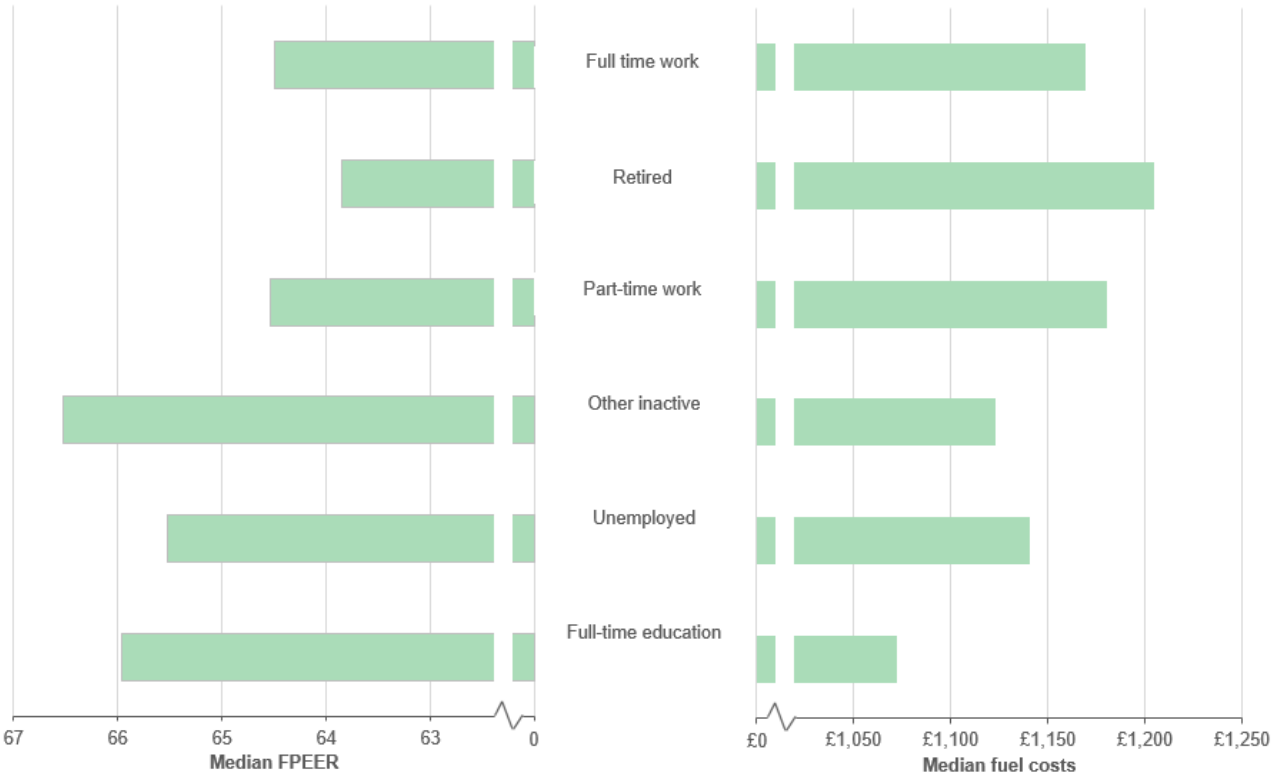


Figure 4.30 shows that although those in full-time work have the lowest proportion that are classed as fuel poor, they have second highest average fuel poverty gap. This is likely due to the fuel poor population having low median incomes compared to all households, and those in full-time work having the third highest fuel costs (£1,169) and the second lowest median FPEER values (64.50) (Figure 4.31).

Those that are not in employment are, on average, living in better energy efficiency rated housing due to the higher proportion living in social housing, which can result in lower energy costs. Those in full time education have the second largest median FPEER (Figure 4.31, all households). This is likely due a greater than average proportion living in both flats and newer dwellings, which have higher energy efficiency ratings compared to other dwelling types.

Figure 4.31: Median FPEER and fuel costs by employment status for all households, 2016



4.6 Fuel Payment Type

The results and analysis contained in this chapter are based on data from 2016 and will not be affected by the price cap on prepayment meters that came into force in April 2017.

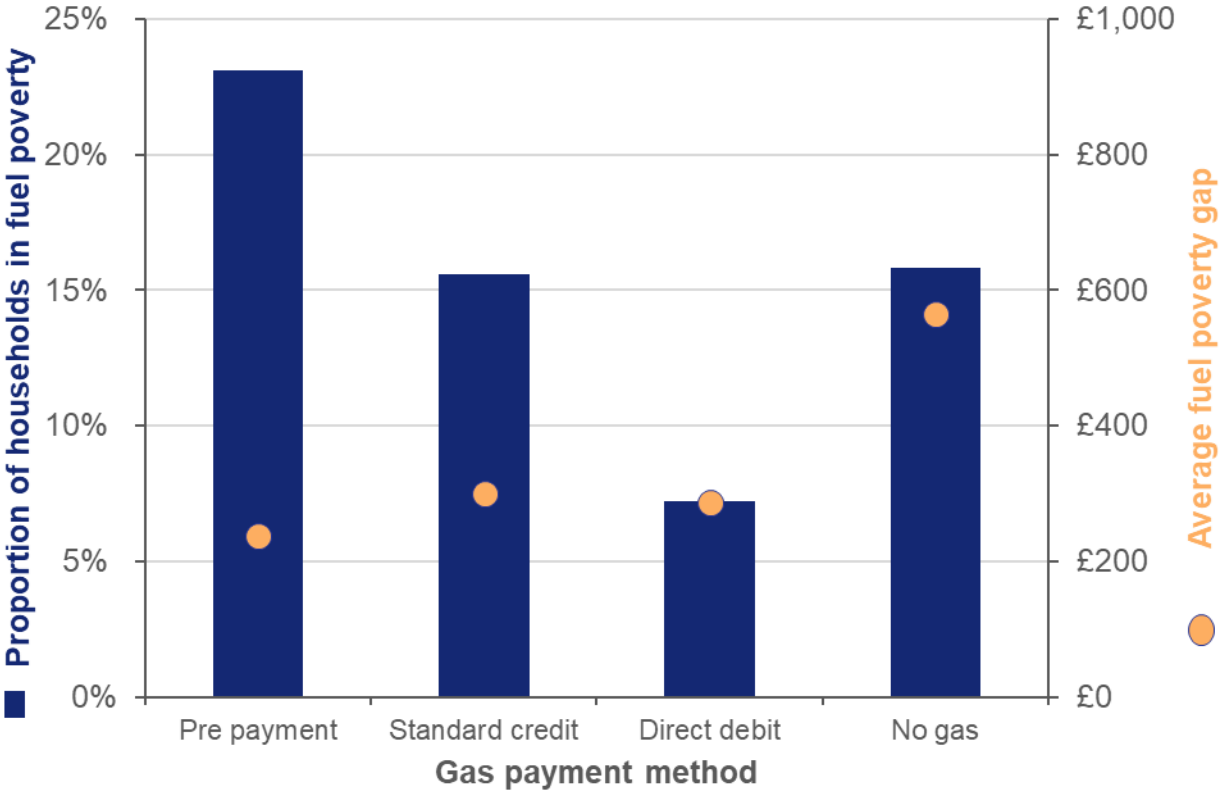
For both gas and electricity, direct debit is the most common method of payment. The proportion of households paying by this method has increased steadily since 2003[64]. The proportion of fuel poor households is lower for direct debit customers for both gas and electricity (around 7 per cent for gas and around 8 per cent for electricity), compared to all other payment types. This may be attributed to the lower costs associated with this payment method[65]. For both gas and electricity, a household is more likely to be fuel poor if using a prepayment meter, with around 23 per cent of households using a prepayment meter in fuel poverty in 2016.

[64] Details on the proportion of people choosing to pay by direct debit can be found in Table 2.4.2 in the Quarterly Energy Prices publication: https://www.gov.uk/government/statistical-data-sets/annual-domestic-energy-price-statistics
[65] Average prices by method of payment can be found in the Quarterly Energy Prices publication:https://www.gov.uk/government/statistical-data-sets/annual-domestic-energy-price-statistics

4.6.1 Gas payment method

Figure 4.32 shows the average fuel poverty gap was greater for households paying by standard credit (£301) and smallest for households paying by prepayment meters (£239). People without a gas connection rely on electricity or other fuels like oil or coal to heat their home which likely contributes to why 15.8 per cent are in fuel poverty and their fuel poverty gap is the highest at £566.

Figure 4.32: Fuel poverty proportion and average fuel poverty gap by gas payment method, 2016



Prepayment has the highest proportion of households in fuel poverty but the lowest fuel poverty gap, which is likely due to a combination of factors. They have both, on average, higher FPEER scores compared to other households and smaller properties, as seen in Table 4.7.

Households using prepayment meters have median income 37.4 per cent below the national median which contributes to why around 23.1 per cent are in fuel poverty. Conversely, people paying by direct debit have income 12.8 per cent above the median.

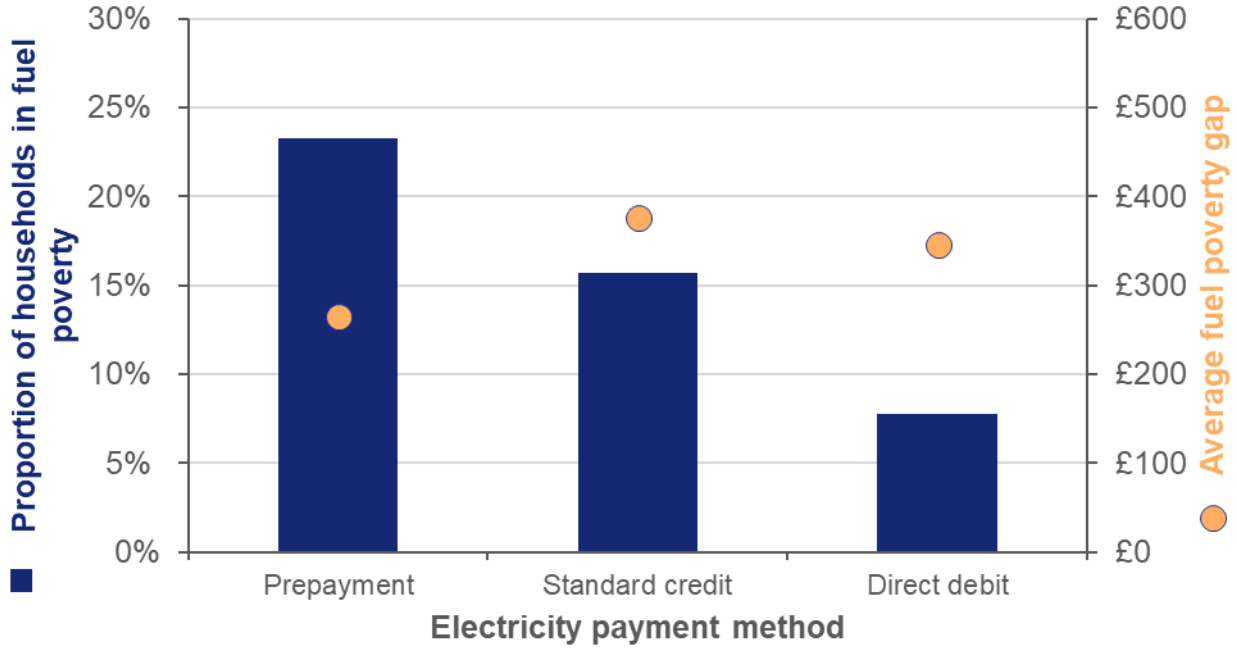
Table 4.7: Median FPEER score and floor area by payment type - gas, 2016

	Median FPEER	Median Floor area (m^2)	Median income £
Prepayment	66.9	71.6	13,790
Standard credit	65.4	77.7	18,800
Direct debit	64.6	87.8	24,840
No gas	55.2	75.1	21,460
All households	64.5	83.1	22,020

4.6.2 Electricity payment method

The proportion of households in fuel poverty and the average fuel poverty gap follows a similar pattern for electricity method of payment as it did for gas method of payment.

Figure 4.34: Fuel poverty proportion and average fuel poverty gap by electricity payment method, 2016



Similar to gas payment method, the lower average fuel poverty gap seen in prepayment households is likely due to the combination of smaller, better insulated households. Table 4.8 shows the average FPEER score by floor area.

Those paying by prepayment meter have a lower than average median income (£13,940) which likely has an impact on the prevalence of fuel poverty in this group.

Table 4.8: Median FPEER score and floor area by payment type - electricity, 2016

	Median FPEER	Median Floor area (m^2)	Median income £
Prepayment	66.7	70.1	13,940
Standard credit	64.8	76.6	19,200
Direct debit	64.0	87.8	24,840
All households	64.5	83.1	22,020

Around 15.8 per cent of the fuel poor using a prepayment electricity meter also do not have a gas connection. This small subgroup, as shown in Table 4.9, tends to live in smaller, less energy efficient properties (usually flats) and tends to be composed of single person households - the median income for this subset at £10,370 is 25.6 per cent lower than the wider group using prepayment.

In over 95 per cent of cases people using a gas prepayment meters also use an electricity prepayment meter, which could mean that people using prepaid meters as their method of payment might not be able to afford a different alternative for their payment method.

Table 4.9: Median FPEER rating, floor area and income for households with prepayment electric meter and no gas connection, 2016

	Median FPEER	Median floor area (m^2)	Median income
Fuel poor on prepayment electricity and no gas connection	51.3	62.4	10,370

As presented in this chapter and summarised in Chapter 3, the prevalence of fuel poverty in England varies by a number of key dwelling and household characteristics.

More detailed information can be found online in the accompanying detailed and trends tables for fuel poverty in England: https://www.gov.uk/government/collections/fuel-poverty-statistics.

Chapter 5: Fuel Poverty Projections

Chapters 2, 3 and 4 analyse the latest available data for fuel poverty, which has an approximate 15 month time lag. This chapter looks at fuel poverty projected through to the end of 2017 and 2018. An overview of changes expected within the drivers of fuel poverty over this period, and how they interact in the context of fuel poverty is given. Headline fuel poverty projections and progress against the target are then presented. FPEER projections are shown in Annex A.

Similar to last year's fuel poverty publication, this publication has reviewed some of the assumptions behind the fuel poverty projections methodology and updated these in order to improve the quality of the outputs. Users are, therefore, advised to interpret year on year projections with caution, as they were based on what we have now established was a less robust methodology. Furthermore, changes to the RdSAP methodology applied to this year's data, and back series, means that last year's projections are not directly comparable to this year's data. However, it is useful to explore differences and similarities in results.

In last year's publication, 2016 headline figures of fuel poverty were projected. Both the fuel poverty gap in real terms and fuel poverty level were projected to decrease in 2016. The actual 2016 estimates for the average fuel poverty gap decreased by slightly more than was projected. The proportion of households in fuel poverty, however, increased in 2016, which is in contrast to the projected decrease in last year's publication. Some of these changes are likely to be driven by the change in the RdSAP methodology and improvements in the projections methodology; however, due to the lack of timely data by income decile for key drivers of fuel poverty, and the relative nature of the measure, projections should be treated as indicative. More detail behind the updated projections methodology can be found in Chapter 7 of the Methodology Handbook[66].

5.1 Changes to the Drivers of Fuel Poverty

As explored in earlier chapters, the relative nature of the fuel poverty indicator means that the three main drivers of fuel poverty (income, energy efficiency and energy prices), interact, and this needs to be taken into account when looking at projecting fuel poverty.

5.1.1 Income

A household's full income can come from multiple sources, which may change year on year by varying amounts. As fuel poverty is relative, if income changes for households in the

[66] https://www.gov.uk/government/publications/fuel-poverty-statistics-methodology-handbook

lower income deciles by a different rate compared to higher incomes deciles, a household's fuel poverty status may change. The elements that comprise a household's full income[67] (after income tax and National Insurance contributions) are categorised as follows:

- Earnings
- Savings
- Benefits
- Other
- Winter fuel payments
- Council tax

In 2017 and 2018, income from earnings is expected to remain fairly constant in cash terms compared to 2016 and have been uprated by the 'average earnings' forecast[68] in the fuel poverty projections. Benefits are expected to increase more than earnings. Savings and income from 'other' sources are expected to fall in both 2017 and 2018 and have been uprated in line with the GDP[68] forecast, with council tax expected to increase in both 2017 and 2018. These non-uniform changes across the income sources will shift the income threshold, as well as changing each household's full income. The values each element was uprated can be found in Table 5.1.

Table 5.1 Percentage increase in forecasted income by income type

	Source of value	2016-2017	2017-2018
Earnings	Average Earnings – CPI	-0.1	0.3
Benefits	RPI – CPI	0.9	1.2
Savings	GDP – CPI	-0.9	-0.9
Other	GDP – CPI	-0.9	-0.9
Council tax	Council tax - CPI	1.3	2.7

It is recognised that income will not move equally across all income deciles, as seen in Section 2.4.1 of Chapter 2, where we saw those households within the lowest three income deciles having a lower than median increase in median equivalised AHC income. This is captured to some extent in the projections, by uprating different categories of income separately. Between 2016 and 2017, benefits rose quicker than earnings. The proportion of households in fuel poverty receiving benefits is greater than households not in fuel poverty, and households in fuel poverty have a lower proportion in employment. This means that total income is increasing at a faster rate for those households in fuel poverty against those not in fuel poverty. However, the full extent of changes to the above components of income

[67] See Chapter 3 for details (https://www.gov.uk/government/publications/fuel-poverty-statistics-methodology-handbook).
[68] Economic and Fiscal outlook: http://budgetresponsibility.org.uk/efo/economic-fiscal-outlook-march-2018/

within *each* income decile is unknown, due to a lack of official data in this area and is therefore not modelled here.

5.1.2 Energy Efficiency

Changes to energy efficiency will have an impact on a household's energy requirement. For example, if the dwelling is insulated well or has a more efficient boiler, less energy will be required to heat a dwelling to the minimum standard temperatures[69].

Certain policies are targeted at those who are less able to pay for improvements to their home. These installations should help towards reducing the fuel poverty gap, as these will lower household's energy requirements, and therefore lower their energy costs.

Current policy areas under which energy efficiency measures are installed have therefore been modelled, this includes: Energy Company Obligation (ECO)[70], Renewable Heat incentive[71] (RHI) and Feed in Tariffs[72] (FiTs). To model energy efficiency improvements to the English housing stock between 2016 and 2018, known or estimated energy efficiency measures are randomly allocated to eligible dwellings based on National Statistics for relevant policies in 2017, and internal BEIS estimates of what is expected to be delivered under these policies in 2018. Estimates of self-improvement to the home are also included.

5.1.3 Prices

In 2017, domestic electricity prices increased compared to 2016. These changes can be seen in the CPI in both cash and real terms (Tables 2.1.1 and 2.1.2 of Quarterly Energy Prices (QEP)[73]). For gas, prices fell in both cash and real terms. Additionally, average annual bills produced in QEP shows how the average domestic energy bill has increased, with increases in electricity prices outweighing falls in gas prices. These year on year changes can be seen in Table 5.2 below.

Table 5.2: Percentage change in prices, 2016-2017

	Gas (%)	Electricity (%)	Domestic fuels/ Combined bills (%)
CPI cash terms	-1.2	6.7	3.8
CPI real terms	-3.1	4.7	1.8
Average annual bills cash terms	-3.1	5.7	1.1

[69] An adequate standard of warmth is defined as 21ºC for the main living area and 18 ºC for other occupied rooms. Further detail can be found in the Methodology Handbook at: https://www.gov.uk/government/publications/fuel-poverty-statistics-methodology-handbook
[70] ECO statistics: https://www.gov.uk/government/collections/household-energy-efficiency-national-statistics
[71] RHI statistics: https://www.gov.uk/government/collections/renewable-heat-incentive-statistics
[72] FiTs statistics: https://www.gov.uk/government/collections/feed-in-tariff-statistics
[73] Quarterly Energy Prices (March 2018): https://www.gov.uk/government/statistics/quarterly-energy-prices-march-2018

The price increase will have had a greater impact on those who have high energy requirements, as it will increase their total energy costs further than those with low energy costs. This means that those with high energy requirements will move more in relation to the energy threshold.

Projections of fuel poverty in 2017 use actual price information for energy. The latest version of Quarterly Energy Prices published by BEIS[74] shows that electricity bills have increased by around six per cent and gas bills have fallen by around three per cent from 2016 to 2017 (Table 5.2). However, the prepayment price cap[75] that came into force in April 2017 has resulted in the average electricity bill in 2017 for prepayment customers falling by 1 per cent and the average gas bill for prepayment customers decreasing by 11 per cent. Given that the fuel poverty detailed tables[76] show that households whose payment method for electricity and gas bills is prepayment have the highest proportion in fuel poverty, this suggests that the large proportion of the fuel poor paying by prepayment will have a lower than average increase in their energy bill, which is likely to decrease the average fuel poverty gap. The effect is difficult to quantify in the projections but will be discussed in next year's main fuel poverty publication.

An increase in the percentage of dwellings in the fuel poor group using electric heating compared to gas between the 2015 and 2016 fuel poverty samples is likely to increase the average fuel poverty gap in 2017. This effect will be amplified due to both more expensive prices in general (electricity unit prices are around four times the size of gas unit prices[77]), and electricity prices rising alongside a fall in gas prices between 2016 and 2017. Furthermore, the proportion of households in fuel poverty that use electricity as their main source is higher than for other households – meaning that relatively large increases in electricity prices compared to gas prices will have a larger effect on those in fuel poverty. As mentioned below in Section 5.2, neither sample in the combined fuel poverty dataset will receive a £12 government electricity rebate on their energy bill – this will have an upward effect on the average fuel poverty gap.

In the second year that is projected, 2018, domestic energy prices are expected to increase for both gas and electricity, as announced by the main energy companies[78]. Using these announcements and some assumptions around changes in the underlying components that contribute towards energy prices, the 2017 prices have been uprated to give estimates for

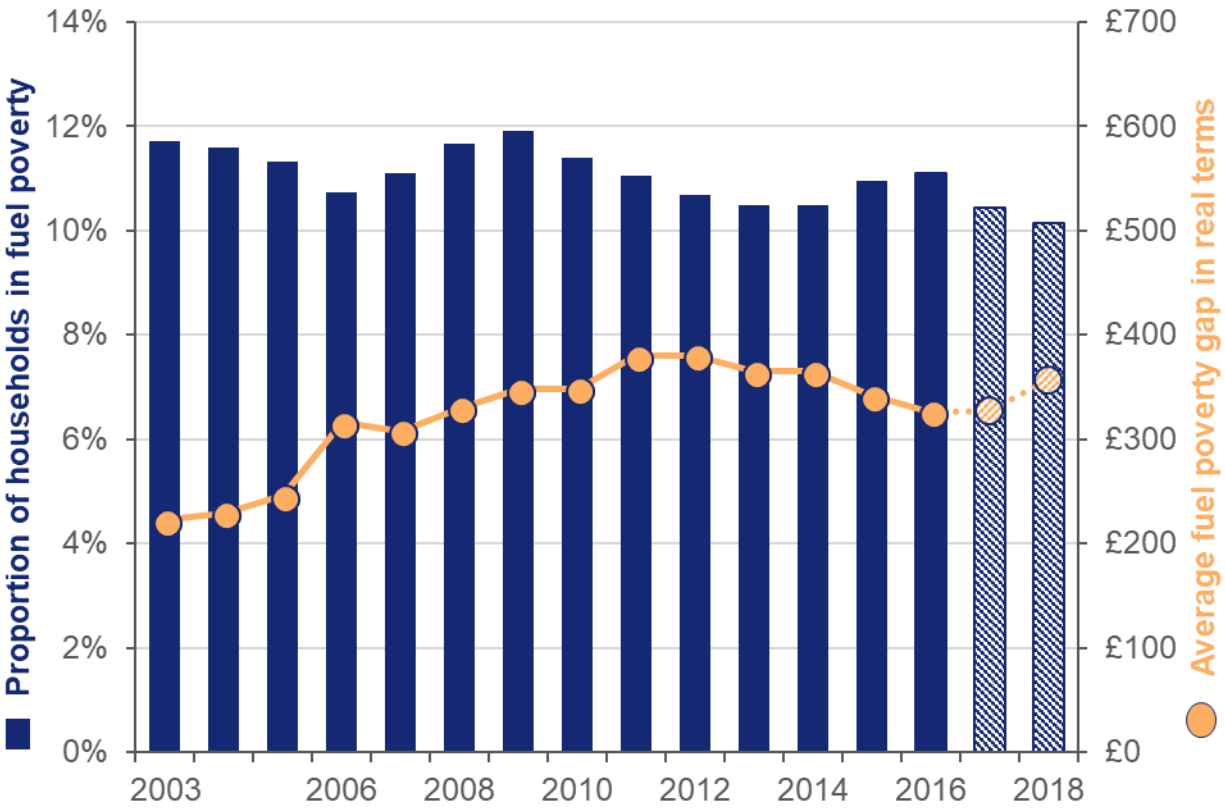
[74] Based on an assumed annual fixed consumption of 3,800kWh for standard electricity and 15,000kWh for gas. Tables 2.2.1 and 2.3.1:
https://www.gov.uk/government/statistical-data-sets/annual-domestic-energy-price-statistics
[75] https://www.ofgem.gov.uk/gas/retail-market/market-review-and-reform/implementation-cma-remedies/safeguard-tariff-or-price-cap
[76] Tables 29 and 30:
https://www.gov.uk/government/statistics/fuel-poverty-detailed-tables-2018
[77] Tables 2.2.4 and 2.3.4:
https://www.gov.uk/government/statistical-data-sets/annual-domestic-energy-price-statistics
[78] Compilation of energy company price announcements: https://www.uswitch.com/gas-electricity/guides/#!energy-prices

2018 prices. Figure 2.8 (see Chapter 2) shows that there is a strong, positive relationship between energy prices and the average fuel poverty gap. Given that both gas and electricity prices are expected to rise in 2018, fuel prices are likely to increase the average fuel poverty gap, particularly given that incomes are expected to remain constant.

5.2 Fuel Poverty Projections for England 2017 and 2018

The interaction of income, housing costs, energy efficiency, and energy prices has resulted in an average fuel poverty gap that is projected to broadly stay the same; a change from £326 in 2016 to £327 in 2017. The 2017 figure is a slight increase in the projection made last year of £309 (in 2016 prices) although this comparison should be treated with caution given the reasons listed in Section 5.1. The proportion in fuel poverty in 2017 has been revised downwards, from 11.0 per cent to 10.4 per cent. In 2018, the average fuel poverty gap is expected to increase to around £357, with the proportion of households in fuel poverty projected to fall to around 10.1 per cent. This is mainly driven by increases in fuel prices, and the observation noted in Section 2.1 that the proportion in fuel poverty and the average gap often move in opposite directions - this can be seen in Figure 5.1 below. As the fuel poverty measure is relative, the proportion of households in fuel poverty has remained in the range from 10 to 12 per cent, although as discussed, this is expected to decrease in both 2017 and 2018.

Figure 5.1: Actual fuel poverty for England 2003-2016; projected fuel poverty for England 2017-2018



As seen throughout earlier chapters, multiple factors impact fuel poverty. Within this chapter, the projections have aimed to capture high level movements expected to occur over the next two years, and the impact this is likely to have on fuel poverty. Due to the relative nature of the measure, this is a complex task. The projections presented here do not capture change in every factor that may impact fuel poverty. Therefore, the fuel poverty projections should be interpreted as indicative rather than precise point estimates – this is one reason for producing estimates to the nearest whole percentage.

ANNEX A: Experimental Statistics: FPEER Projections

The statutory fuel poverty target for England is to ensure that as many fuel poor households as reasonably practicable achieve a minimum FPEER rating of Band *C* by 2030, with interim targets of Band *E* by 2020, and Band *D* by 2025. By modelling the energy efficiency measures that have been installed in 2017 and that are expected to be installed by 2018, it is possible to project what progress may have been made towards the targets in 2017 and 2018.

In last year's publication, we introduced projections of FPEER, including projections against the above fuel poverty targets. However, these projections have been moved into this Annex to reflect that these are experimental statistics and that there is less certainty around FPEER Bands than other fuel poverty headline figures. This also includes displaying FPEER projections to the nearest whole number to reflect this uncertainty. More detail behind the updated projections methodology can be found in Chapter 7 of the Methodology Handbook[79].

In both 2017 and 2018, there is a projected improvement in the mean FPEER of the overall housing stock. However, government targets relate specifically to the FPEER of fuel poor households. Figure A.1 shows that progress towards the Band E and Band C elements of the target is expected to be made in 2017, with these proportions staying broadly the same in 2018.

Like the changes seen in this publication between 2015 and 2016, the proportion of the fuel poor in Band *D* or above is expected to fall in both 2017 and 2018. However, because the same sample is used from 2016 to 2018, we can better track projections at a household level which allows for additional analysis into the driving factors behind this decrease. The main driver in this change is the large volume of fuel poor households within Band D coming out of fuel poverty in 2017 and 2018. Figure 5.1 in Chapter 5 shows that the proportion of households in fuel poverty is projected to decrease from 11.1 per cent in 2016 to 10.4 per cent in 2017, and then down to 10.1 per cent in 2018. This is driven by a large net decrease in the number of households within Band D that are fuel poor. A consequence of this is that if households move out of fuel poverty due to having energy efficiency measures installed in the projections process and having energy efficiency requirements closer to the median required energy threshold (see Figure 1.1 in Chapter 1), the remaining fuel poor population are on average in lower FPEER Bands. This also applies to actual fuel poverty figures as

[79] https://www.gov.uk/government/publications/fuel-poverty-statistics-methodology-handbook

well as projections. This movement, alongside fuel price increases, is also a reason for the average gap increasing in 2018 (see Section 5.2).

An additional contributing factor to this change in 2017 is that around half of the 2016 sample who still received the £12 electricity rebate available for electricity bills in 2014 and 2015 will not receive this rebate in 2017, although this will not affect the 2018 projections. Analysis of this change in Section 4.2 showed that the removal of the £12 electricity rebate results in a decrease in FPEER rating – this is the same with projected figures for 2017. For further analysis of this trend, see Section 4.2.

Figure A.1: Proportion of fuel poor households in Band *E* and above, Band *D* and above, Band *C* and above, 2010-2016, projected to 2018

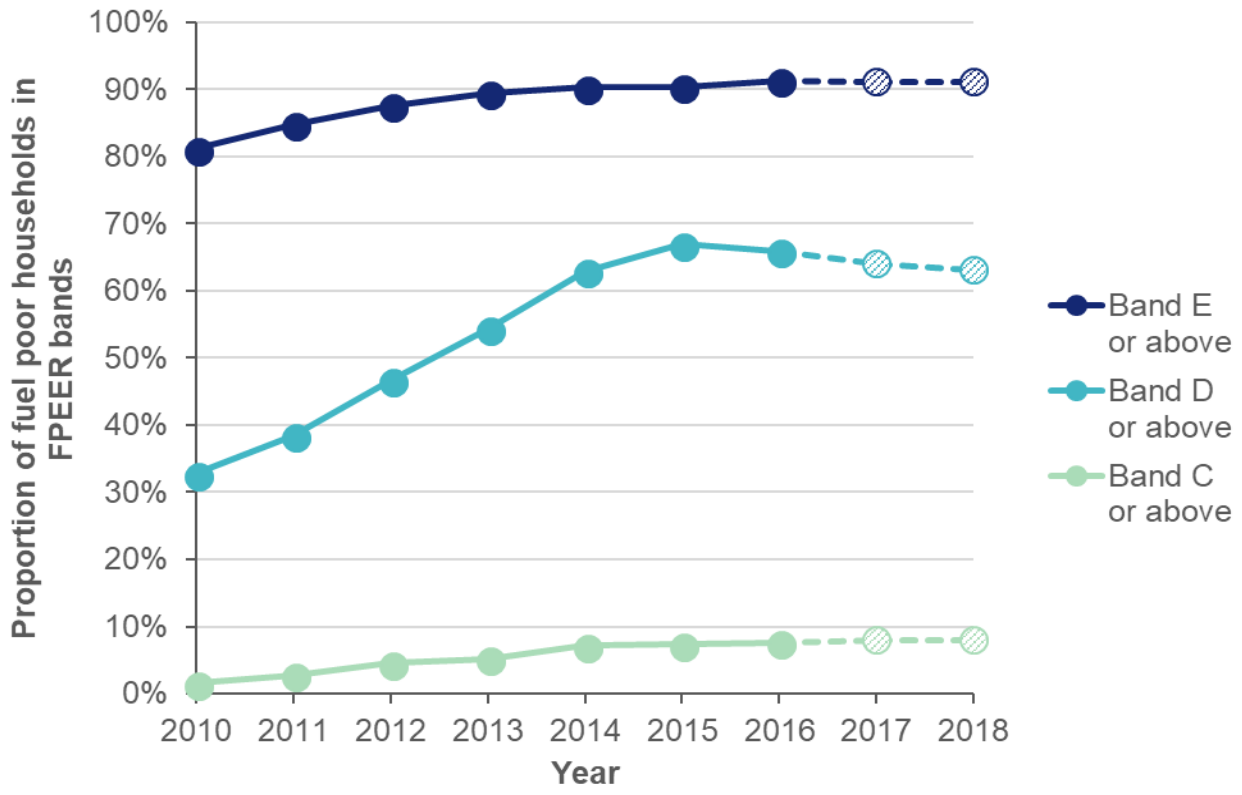


Table A.1 below shows the progress against each stage of the targets from 2010 to 2016, as well as the projected figures for 2017 and 2018, rounded to zero decimal places.

Table A.1: Proportion of fuel poor households by FPEER band, 2010–2016, projected 2017-2018

	2010	2011	2012	2013	2014	2015	2016	Projected 2017	Projected 2018
Band E or above	81.1	84.8	87.5	89.4	90.3	90.4	91.3	91	91
Band D or above	32.7	38.5	46.7	54.3	62.9	67.0	65.9	64	63
Band C or above	1.5[80]	2.7	4.6	5.2	7.1	7.4	7.7	8	8

As seen throughout earlier chapters, multiple factors impact fuel poverty. Within this section, the projections have aimed to capture high level movements expected to occur over the next two years, and the impact this is likely to have on fuel poverty. Due to the relative nature of the measure, this is a complex task. The projections presented here do not capture change in every factor that may impact fuel poverty. For example, newly built properties are not accounted for, as the 2016 sample is used as a basis for projections. Therefore, the fuel poverty projections should be interpreted as indicative rather than precise point estimates.

[80] In the fuel poverty trends tables (https://www.gov.uk/government/statistics/fuel-poverty-trends-2018), the 2010 figure has been suppressed due to small sample size – inferences should not be made on this figure in isolation.

ANNEX B: Further explanation of the fuel poverty methodology

This annex provides more detailed information on the following: how the Low Income High Costs (LIHC) indicator of fuel poverty works, understanding the drivers of fuel poverty, data sources, and methodological updates for the 2016 estimates. A glossary of key terms used throughout this report and supporting links can be found of the end of the Annexes.

B.1 How the Low Income High Costs (LIHC) indicator of fuel poverty works

Fuel poverty is estimated by calculating each household's position relative to two thresholds (illustrated in Chapter 1, Figure 1.1). The first threshold, the median energy cost, is set by ranking households equivalised[81] energy requirements and using the median value of the dataset. The second threshold, After Housing Cost (AHC) income, is calculated in a similar way. Each household's required energy costs are deducted from their equivalised income. These are then ranked and 60 per cent of the median value is calculated. This is the income threshold. To be fuel poor, a household's required energy costs must be higher than the median energy threshold *and* their equivalised AHC income must be below the income threshold.

Due to the relative nature of the Low Income High Costs indicator, for any factor to affect the number of households in fuel poverty, it must change by a greater or lesser amount for those *in* fuel poverty, than for those *not* in fuel poverty. For example, a change in income will only have an impact on fuel poverty if households with low incomes and high fuel costs see relatively larger income changes (increases or decreases) compared to those who are not in fuel poverty.

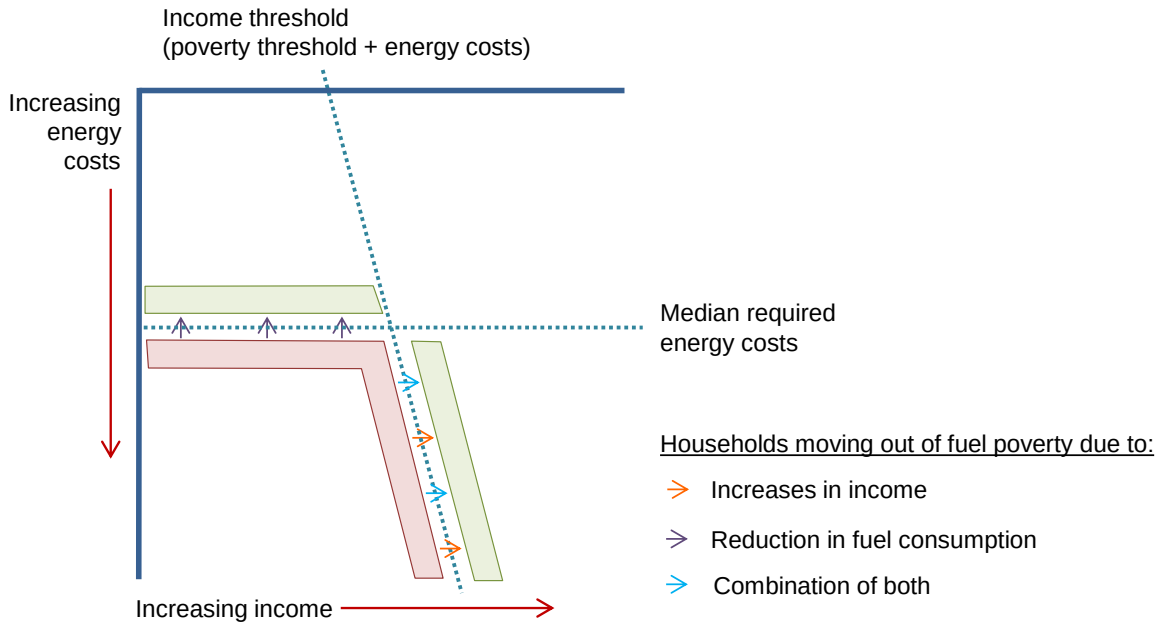
Price changes have a more limited effect than income on the number of households in fuel poverty, as households are measured by the proportion by which their energy costs are greater or less than the average. When prices rise equally across all households, these proportions do not change. For example, if all prices were to rise by 10 per cent for *all* households, then a household that previously had costs that were five per cent above the median required energy threshold will still have costs that are approximately five per cent above the *new* median required energy cost – assuming all other factors remain the same. As a result, the fuel poverty status of the household will not change.

[81] Equivalisation is an adjustment factor to standardise spending and energy requirements across households.

The depth of fuel poverty, on the other hand, is measured in pounds rather than proportions. In the example above, a 10 per cent rise in energy costs for all households will result in a greater increase, in pounds, of the energy costs of households above the median energy threshold. For example, if the median required energy costs are £1,000, then an increase of 10 per cent will result in a rise in the median to £1,100. A household with required energy costs above the median, say £1,500, will see an increase in their energy costs to £1,650. Their fuel poverty gap will therefore increase from £500 to £550.

Figure B1, below, illustrates how fuel poor households may move out of fuel poverty, either due to a reduction in required energy costs, an increase in income, or by a combination of both. However, due to the relative nature of the LIHC measure, it is difficult to isolate accurately an absolute reason for change.

Figure B1: Movement across the income and fuel costs threshold due to either increases in income, reductions in energy consumption or a combination of both



Figures B2 and B3 highlight the different responses to the fuel poverty LIHC indicator under a scenario where fuel prices rise by 10 per cent. In relation to fuel poverty levels, the energy costs of all households should increase by the same amount in proportional terms. For the fuel poverty gap, households with larger energy requirements will see greater increases in their energy costs (and thus greater fuel poverty gaps for those in the LIHC quadrant), in monetary terms.

Figure B2: Fuel poverty *levels* under the scenario where fuel costs increase by 10%

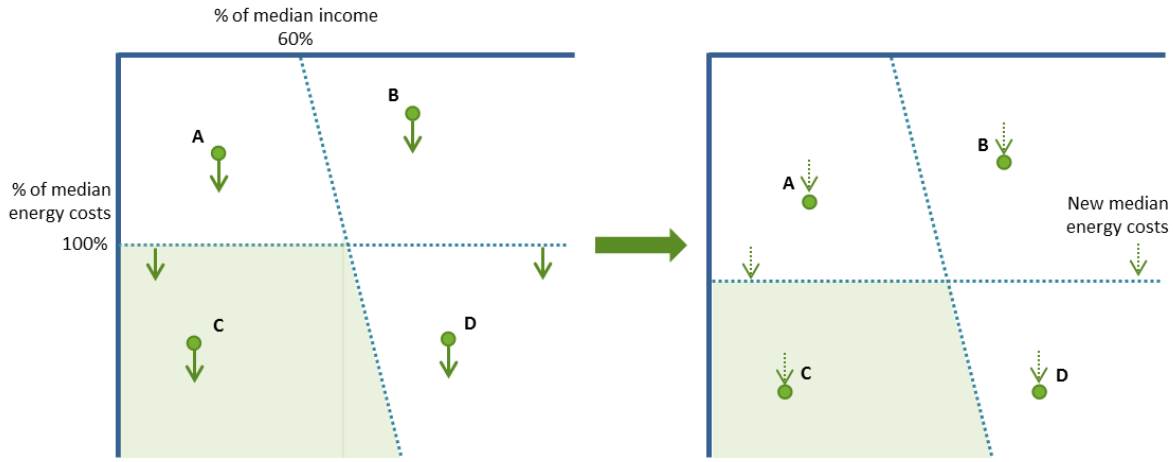
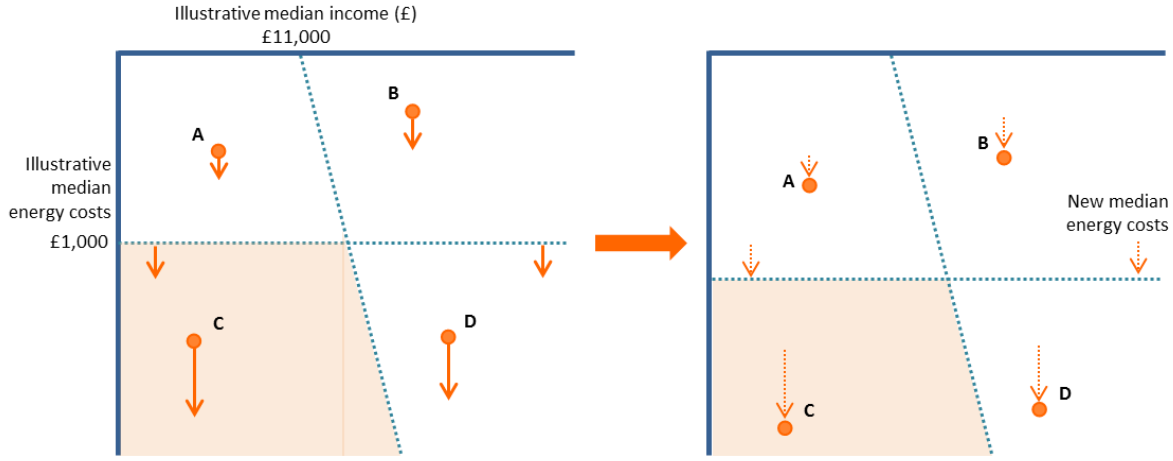


Figure B3: Fuel poverty *gap* under the scenario where fuel costs increase by 10%



In this example (where there are no changes in energy requirements or income), households whose fuel costs are below the median (households A and B) will see their costs increase by less, in pounds, than the median. As a result, these increases will never take them over the threshold into fuel poverty, as the median fuel costs will always increase by more than the individual fuel costs. However, households with fuel costs *above* the median (households C and D) will see a larger increase in their energy costs, in pounds, compared to the median. These households will therefore spend increasingly more than median costs, such that the difference between their fuel costs and the median costs will widen.

Consequently, there will be no change in the number of households in fuel poverty, but households already in fuel poverty will move deeper into fuel poverty. The gap, which represents the difference between household fuel costs and the median fuel costs, will therefore increase.

B.2 Drivers of Fuel Poverty

There are three key elements in determining whether a household is fuel poor: Household Income, Household Energy Requirements, and Fuel Prices.

Measuring household income

The Low Income High Costs indicator is based on modelled incomes calculated after housing costs have been taken into account, since money spent on housing costs cannot be spent on fuel. Mortgage and rent payments are deducted from the full income of each household to give an after housing cost (AHC) measure of income.

Once housing costs are deducted, incomes are then equivalised to reflect the fact that different household types will have different spending requirements. For example, a single person on a given income will usually have more disposable income than a family of four on the same income. The equivalisation factors used for income calculations are the same as in the Department for Work and Pensions (DWP) Households Below Average Income (HBAI) statistics[82]. These equivalisation factors were devised by the Organisation for Economic Co-operation and Development (OECD), and are widely used across Europe, including by Eurostat.

Measuring household energy requirements

The fuel poverty definition of household energy requirements includes fuel for heating the home, heating water, lighting, appliance usage and cooking. In calculating a household's energy requirements, the energy costs are modelled, dependent on the following factors:

- The economic circumstances of householders (for example, if they are unemployed or retired they will be at home for longer periods of the day);
- the heating system and the type of fuel(s) used, and
- the dwelling characteristics.

This allows energy requirements to be standardised to ensure households maintain an adequate standard of warmth[83] based on their household composition and energy set-up. In reality, households may under or over-heat their home, relative to the recommended levels.

[82] https://www.gov.uk/government/collections/households-below-average-income-hbai--2
[83] An adequate standard of warmth is defined as 21ºC for the main living area and 18 ºC for other occupied rooms. Further detail can be found in the Methodology Handbook at: https://www.gov.uk/government/publications/fuel-poverty-statistics-methodology-handbook

Measuring fuel prices

Detailed fuel prices are allocated to each household in the data, based on reported fuel type, regional location and method of payment. This allows us to model the *unit* cost of energy for each household based on their energy set-up, and assign the appropriate standing charge.

In order to calculate fuel poverty, a household's required energy costs are calculated by taking the number of units of energy consumed, multiplying by the cost of a unit of energy, and adding the required standing charge for each household.

Similar to incomes, fuel costs are then equivalised by the number of people in the household, to reflect the fact that different sizes of households will have different energy requirements. For example, a family of four will need to spend more on energy than a single person living in the same home.

B.3 Data Sources

The English Housing Survey (EHS)[84]

Fuel poverty is modelled using data from the English Housing Survey (EHS). The EHS is an annual national survey of people's housing circumstances, household income and the condition and energy efficiency of housing in England. It is commissioned by the Ministry of Housing, Communities and Local Government (MHCLG), covers all tenures (private and social) and involves a detailed physical inspection of properties by professional surveyors.

The two key components of the English Housing Survey for fuel poverty modelling are:

- the interview survey with the householders living in the dwelling; and
- the physical survey (survey of the physical features and condition of the dwelling).

Each year, approximately 12,000 households take part in the interview. Around half of these properties are selected for the follow-up physical survey (key to fuel poverty energy modelling), involving a physical inspection of the property by professional surveyors.

Two years' worth of EHS data from households selected for both the interview *and* physical surveys are combined to ensure an adequate sample size for fuel poverty modelling. For the 2016 data, this covers the period between 1 April 2015 and 31 March 2017, and comprises 11,924 households over two consecutive data collection years (2015/16 and 2016/17). Therefore, users are advised to use caution when looking at year on year changes in fuel poverty, as the samples will not be independent. Headline results from the 2016 EHS were published on 25 January 2018[85]. Full data relating to the 2016 EHS, will be made available by MHCLG later this year through the UK Data Archive.

[84] https://www.gov.uk/government/collections/english-housing-survey
[85] https://www.gov.uk/government/statistics/english-housing-survey-2016-to-2017-headline-report

Fuel Prices Data

The English Housing Survey does not collect information on fuel prices for households. Therefore, to estimate them for each household in the EHS, fuel price information is modelled using data from other sources including: BEIS Quarterly Energy Prices[86]; ONS Consumer Price Index[87]; and Sutherland Tables[88]. Further information on modelled fuel price data is available in the Methodology Handbook[89].

B.4 Methodological Updates

Changes to the BREDEM model

Since the last fuel poverty statistics publication, the inputs into the Building Research Establishment Domestic Energy Model used for the fuel poverty modelling (BREDEM 2012 version 1.1[90]) incorporates the latest U-value assumptions from RdSAP (version 9.93) assumptions. The full time series has been updated back to 2003, therefore figures in this publication and the accompanying trends tables[91] are comparable.

Changes to the English Housing Survey (EHS)

In 2016 there were no major form changes to the EHS interview or physical survey.

Changes to income methodology

For the 2016 statistics there were relatively minor changes to the methodology used for the calculation of household income. More detail can be found in the Methodology Handbook[9].

Changes to fuel prices methodology

In 2016, there were no major changes to the fuel prices methodology.

[86] https://www.gov.uk/government/collections/quarterly-energy-prices
[87] http://www.ons.gov.uk/economy/inflationandpriceindices/bulletins/consumerpriceinflation/previousReleases
[88] http://www.sutherlandtables.co.uk/
[89] https://www.gov.uk/government/publications/fuel-poverty-statistics-methodology-handbook
[90] http://www.bre.co.uk/filelibrary/bredem/BREDEM-2012-specification.pdf
[91] https://www.gov.uk/government/statistics/fuel-poverty-trends-2018

ANNEX C: Fuel Poverty across the Devolved Nations

Fuel poverty is a devolved issue, with each nation in the UK having its own fuel poverty definition, targets and policies to tackle the issue. This is set out in brief below, alongside the latest available estimates produced by each devolved nation.

Scotland[92]

The Scottish Government currently uses a 10 per cent measure of fuel poverty, under which a household is considered fuel poor if it would need to spend more than 10 per cent of its income on all household fuel use. Scotland publishes fuel poverty data in the annual Key Findings report of its Scottish House Condition Survey. In 2016, 649,000 households (26.5 per cent of the total) were in fuel poverty.

Following advice from an independent, expert Review Panel and consultation, this summer the Scottish Government will introduce the Fuel Poverty (Target, Definition and Strategy) (Scotland) Bill which will set a new target for fuel poverty, introduce a new definition of fuel poverty, and mandate the production of a new long-term fuel poverty strategy. More details on the proposed new definition can be found in the consultation document at (http://www.gov.scot/Resource/0052/00527441.pdf).

Wales[93]

Like Scotland, Wales use a 10 per cent indicator. However, their methodology differs from Scotland in relation to the heating assumptions used. Wales has a target to eradicate fuel poverty, as far as reasonably practicable, by 2018. In 2016, 291,000 households, equivalent to 23 per cent of all households in Wales, were predicted to be living in fuel poverty (based on modelling of the 2008 Living in Wales dataset). This represents an estimated reduction of 73,000 households (6 percentage points) since 2012. Fuel Poverty in Wales is to be measured using the Welsh Housing Conditions Survey 2017-18. Initial headline estimates are due at the end of 2018 with detailed reporting to follow in 2019.

Northern Ireland[94]

Northern Ireland use a 10 per cent indicator, but has no statutory target. Fuel poverty was last reported for Northern Ireland in 2016, estimating that 160,000 households were fuel poor (22 per cent of the total). This represents a significant improvement since 2011 when

[92] http://www.gov.scot/Publications/2016/12/1539
[93] http://gov.wales/docs/caecd/research/130430-wales-fuel-poverty-projection-tool-2011-12-report-en.pdf
[94] http://www.nihe.gov.uk/index/corporate/housing_research/house_condition_survey.htm

the figure was 42 per cent (294,000) of the total. The Executive focussed on removing poor energy efficiency as one of the causes of fuel poverty 2011-2016.

The 2016 HCS reported, for the first time, on the 'Low Income High Costs' fuel poverty indicator now used in England. The findings show that 7 per cent of households were in fuel poverty under this definition and this compared with 11 per cent in England (2015). The average fuel poverty gap for all Northern Ireland households was estimated at £436 (£353 in England 2015). This indicated that while the extent of fuel poverty under LIHC is less in Northern Ireland, the depth or severity was greater than in England.

Summary

Due to both definition and methodological differences in fuel poverty for each devolved nation, the figures are non-additive (i.e. should not be combined) in relation to a UK total. More details of the devolved surveys and fuel poverty measures in each of the devolved nations can be found in Section 1.3 of the Methodology Handbook[95].

[95] https://www.gov.uk/government/publications/fuel-poverty-statistics-methodology-handbook

ANNEX D: Relevant Links

D.1 Income Indicators

Households below average income
https://www.gov.uk/government/collections/households-below-average-income-hbai--2

Winter fuel payments
https://www.gov.uk/government/collections/winter-fuel-payments-caseload-and-household-figures

Cold weather payments
https://www.gov.uk/government/collections/social-fund-cold-weather-payments

D.2 Fuel Price Indicators

Actual expenditure on fuel (as percentage of total income)
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/487649/table_261.xls
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/487650/table_262.xls

Fuel prices
https://www.gov.uk/government/statistical-data-sets/monthly-domestic-energy-price-stastics

Number of customers on prepayment
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/511476/table_242.xls
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/511479/table_252.xls

Average annual bills by payment method
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/511466/table_221.xls
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/511470/table_231.xls

Fuel debt and disconnections
https://www.ofgem.gov.uk/publications-and-updates/domestic-suppliers-social-obligations-2015-annual-report

Switching stats
https://www.gov.uk/government/statistical-data-sets/quarterly-domestic-energy-switching-statistics

D.3 Housing Indicators

Indicator SAP rating
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/395007/stats_summary_2015.pdf

Excess winter deaths
https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/excesswintermortalityinenglandandwales/2016to2017provisionaland2015to2016final

Number of insulated homes
https://www.gov.uk/government/collections/household-energy-efficiency-national-statistics

Local Authority housing investment on energy efficiency improvements
https://www.gov.uk/government/collections/local-authority-housing-data

Glossary

Term / Acronym	Definition
Adequate standard of warmth	is defined as 21ºC for the main living area and 18 ºC for other occupied rooms.
Aggregate fuel poverty gap	The *fuel poverty gap* for each individual household is aggregated across *all* fuel poor households to produce a national total
AHC	After Housing Costs
Average fuel poverty gap	The average (mean) *fuel poverty gap* across *all* fuel poor households.
BEIS	Department for Business, Energy an Industrial Strategy
BREDEM	Build Research Establishment Domestic Energy Model
CW	Cavity Wall
DWP	Department for Work and Pensions
ECO	Energy Company Obligation
EHS	English Housing Survey
Equivalisation	An adjustment factor to standardise spending and energy requirements across households
Equivalised AHC income	After housing costs income equivalised by household composition
Equivalised fuel costs	Household fuel costs equivalised by the number of people in the house
FiTs	Feed in Tariffs
FPEER	Fuel Poverty Energy Efficiency Rating
Fuel Poverty	A household is considered to be fuel poor if: they have required fuel costs that are above average (the national median level); were they to spend that amount, they would be left with a residual income below the official poverty line.

Term / Acronym	Definition
Fuel poverty gap	The difference in pounds between the required energy costs for each fuel poor household and the nearest fuel poverty threshold
HILC	High Income, Low Costs
MHCLG	Ministry of Housing Communities and Local Government
OECD	Organisation for Economic Co-operation and Development
ONS	Office for National Statistics
Percentage points	The arithmetic difference between two percentages
Real terms	An adjusted financial number after correcting for the effect of inflation
RHI	Renewable Heat Incentive
RPI	Retail Price Index
SAP	Standard Assessment Procedure
SW	Solid Wall

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