Statistical Briefing Note No 5

BBC1 Panorama: Too Poor to Stay Warm

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Introduction

On 21st March 2016 at 8.30pm, BBC1 broadcast a Panorama programme highlighting the problems of fuel poverty in the UK. It was watched by 2.4 million viewers and will be available to view on the iPlayer for the next 11 months (see http://www.bbc.co.uk/iplayer/episode/b0756g0x/panorama-too-poor-to-stay-warm).

The Poverty and Social Exclusion in the UK (PSE) project team worked closely with the BBC and produced a number of scientific calculations which were discussed in the programme. The purpose of this statistical briefing is to explain this research.

Fuel Poverty in the UK

Fuel poverty is a relatively new concept. It was originally defined by Brenda Boardman in 1991 (*Fuel Poverty: From Cold Homes to Affordable Warmth*, Belhaven Press, London), based on her PhD research. The *Family Expenditure Survey* data showed that the poorest 30% of households were, on average, spending 10% of their disposable incomes on fuel, which was twice the average expenditure. Thus, this expenditure was considered to be 'disproportionate' by Boardman. However, the idea that the 'fuel poor' were those households which incurred twice the median fuel expenditure was first proposed by Isherwood and Hancock in 1979 (*Household expenditure on fuel: distributional aspects*. Economic Adviser's Office, DHSS, London). They identified "*victims of fuel poverty*" as "*households with high fuel expenditure as those spending more than twice the median (i.e. 12%) on fuel, light and power*". The median quoted by Isherwood and Hancock (1979) was based on the 1977 Family Expenditure Survey data.

Boardman (1991) argued that fuel poverty should be based on the '*need to spend*' to keep the home adequately warm[1] rather than the actual amount spent on fuel. This

[1] Adequately warm is defined as 21 degrees for the main living rooms and 18 degrees for other occupied rooms, Scotland has an additional heating regime for vulnerable people, defined as 23 degrees for living rooms and 18 degrees for other rooms.

'*need to spend*' concept allowed the energy efficiency of the dwelling to be incorporated into the definition of fuel poverty. The 10% median disposable income '*need to spend*' definition of 'fuel poverty' was used as the target measure in the 2001 UK Fuel Poverty Strategy, which committed the UK Government to eradicating fuel poverty amongst vulnerable households[2] by 2010 and eradicate fuel poverty in all households by 2016 (2018 in Wales).

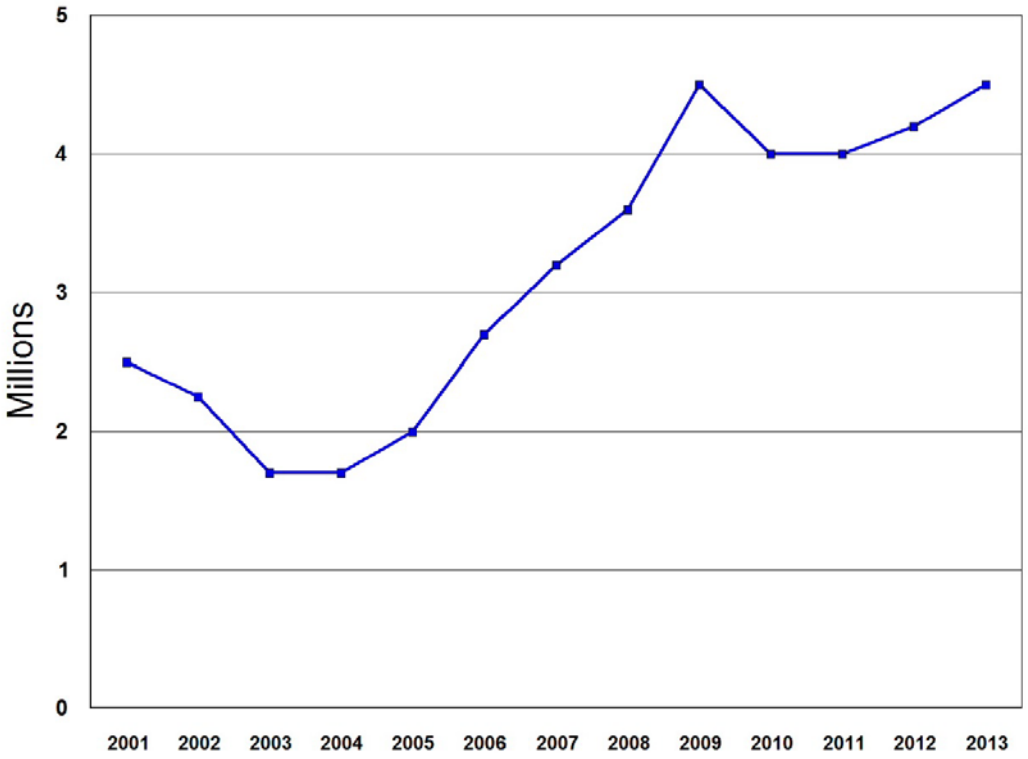
The 10% '*need to spend*' definition of fuel poverty was used across the UK until the Energy Act 2013 removed the duty on the UK Government to eradicate fuel poverty in England by 2016 and a new Low Income/High Cost (LIHC) definition of fuel poverty was adopted in England.

The Low Income/High Cost fuel poverty measure is not used in Northern Ireland, Scotland or Wales so UK Fuel Poverty estimates remain based on the 10% '*need to spend*' definition. However, the UK estimates are based on a considerable amount of educated guesswork (projections) as there is a notable lack of up-to-date data in some parts of the UK (e.g. the last Housing Conditions Survey in Wales was in 2008 and in 2011 in Northern Ireland).

Figure 1 (below) shows the change in the estimated number of fuel poor households in the UK during the 21st Century. In 2001, when the target to eradicate fuel poverty by 2016 was set, the number of fuel poor households in the UK was about 2.5 million. The numbers fell below 2 million households in 2003 and 2004 then, unfortunately, began to increase quickly and, by 2013 (the latest year available), there were 4.5 million fuel poor households (about 17% of UK households). There are now more fuel poor households in the UK than at any time during the 21st Century.

[2] A 'vulnerable' household is defined as one containing elderly or disabled people, children or the long-term sick.

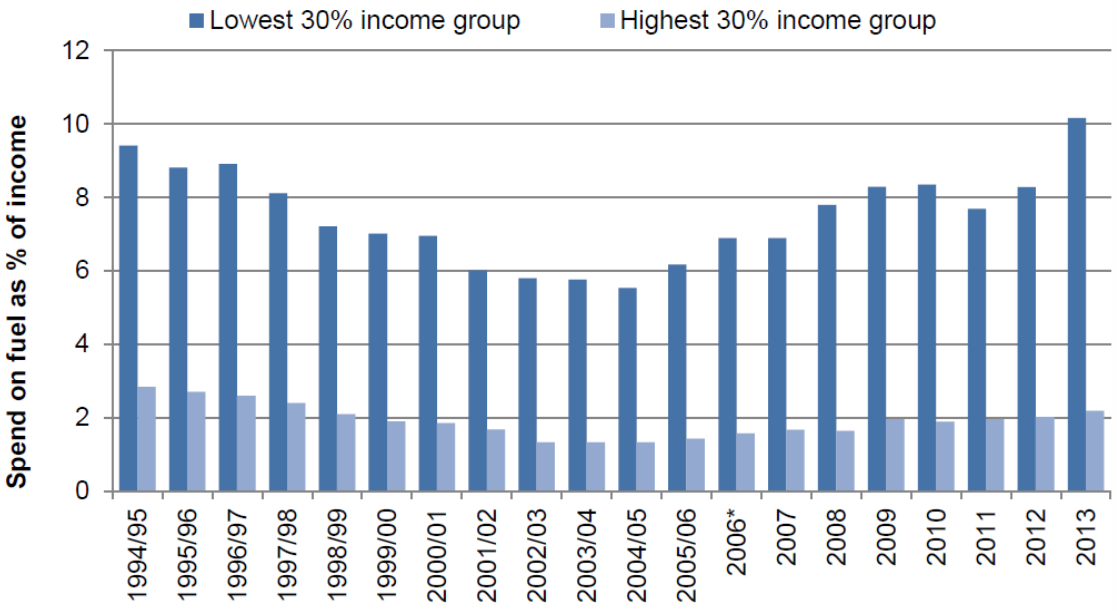
Figure 1: Number of Fuel Poor Households in the UK: 2001 to 2013



Source: DECC Annual Fuel Poverty Statistics Reports 2014 & 2015

In addition, Figure 2 shows that, in 2013, the poorest 30% of UK households spent more than 10% of their incomes on fuel, i.e. the average household in the lowest 30% income group is fuel poor based on their actual expenditure.

Figure 2: Percent of income spent on fuel by households in the top and bottom 30% income groups in the UK

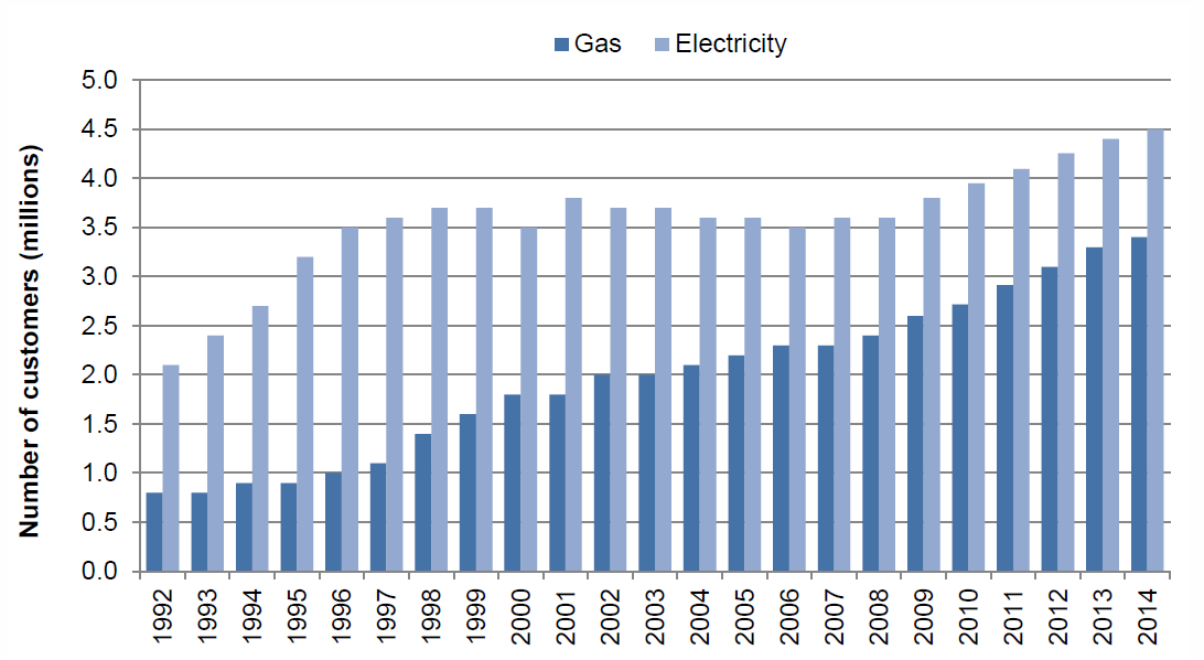


Source: DECC (2015) *Fuel Poverty Additional Indicators* based on Living Costs and Food Survey (LCFS) data

The poorest 30% of the population spent a larger proportion of their incomes on fuel in 2013 than at any time since comparable records began 25 years ago.

Figure 3 shows the significant increase in the number of customers who pay for gas and electricity by prepayment meter, which can cost significantly more per unit of energy (e.g. the 'poverty' premium[3]). In 2013, there was a similar number of electricity prepayment customers as there were fuel poor households – circa 4.5 million.

Figure 3: Number of customers with prepayment meters for Gas and Electricity



Source: DECC (2015) Fuel Poverty Additional Indicators based on OFGEM data[4]

The official fuel poverty statistics show how many households are fuel poor and the regions where they live but they say little about how fuel poverty affects peoples' lives and behaviours in attempting to cope with the cold. In 2012, the Poverty and Social Exclusion in the United Kingdom (PSE) project undertook the most comprehensive survey of living standards in UK history and included a question module about fuel poverty (Gordon et al, 2013).

[3] See http://www.church-poverty.org.uk/news/pressroom/resources/reports/letthemswitch
[4] https://www.ofgem.gov.uk/publications-and-updates/domestic-suppliers-social-obligations-2013-annual-report

Table 1: *'Describe the overall level of warmth in your home last winter?'*

Much colder than you would have liked	**10%**
A bit colder than you would have liked	**24%**
About right	62%
A bit warmer than you would have liked	2%
A lot warmer than you would have liked	1%
Both too warm and too cold	0%
Total	**100%**

Table 1 shows the number of households who had homes which were colder than they wanted in the previous winter. Ten percent of households said that their homes were much colder than they would have liked and a further 24% said their homes were a bit colder than they wanted. In total, a third of UK homes (34%) were colder than respondents wanted.

Table 2 shows the actions that UK households take in winter to cut back on fuel use because they cannot afford the costs. The percentages in the table do not sum to 100% as some households had to change their behaviour in several different ways to reduce fuel costs.

Table 2: *'Did your household cut back on fuel use at home in any of these ways last winter, because you could not afford the costs?'*

Turned heating down or off, even though it was too cold in the house/flat	21%
Only heated and used part of the house	14%
Cut the number of hours the heating was on to reduce fuel costs	29%
Used less hot water than I/we needed to reduce fuel costs	8%
Turned out more lights in my home than I/we wanted to, to try to reduce the electricity bill	21%
Had fewer hot meals or hot drinks that I/we needed to reduce fuel costs	2%
Other cut back on fuel use to reduce fuel costs	6%
SPONTANEOUS ONLY: None of these	54%

Note: Multiple Responses are allowed so percentages do not sum to 100%

Table 2 shows that 46% of UK households made some cut backs on fuel use, including a fifth (21%) who turned the heating down or off even though it was too cold in their home. This is a subjective measure of fuel poverty, which was defined in the 2001 UK Fuel Poverty Strategy as a household *'that cannot afford to keep adequately warm at reasonable cost.'*

The PSE survey results indicate that over 5 million UK households suffered from fuel poverty which is about 1 million more households than the official fuel poverty statistics.

Table 3: Effect of cold and other housing problems

Made an existing health problem or problems worse	17%
Brought on a new health problem or problems	9%
Made me/us feel miserable, anxious or depressed	36%
I/we did not feel able to invite friends or family to the house	17%
I/we spent as much time as possible away from the house	10%
I/we stayed in bed longer than we wanted to keep warm	22%
SPONTANEOUS ONLY: None of these	46%

Note: Multiple Responses are allowed so percentages do not sum to 100%

Table 3 shows how cold and other housing problems such as damp, rot, condensation, etc. affected peoples' lives. One or more people in over a third (36%) of UK households felt miserable or depressed because of their housing problems and more than one in five (22%) had to stay in bed longer then they wanted simply to keep warm. One in six households (17%) said that fuel poverty and other housing problems had made their existing health problems worse. Similarly, a survey in 2013 for the Children's Society (Royston, 2014[5]) showed that a third of families (34%) were worried that their children would become ill because their home was too cold.

Conclusion

In 2001, the UK Government made a legally binding commitment to eradicate fuel poverty by 2016. Despite some initial successes in reducing fuel poverty to fewer than 2 million households in 2003 and 2004, a decade later, fuel poverty afflicts more households (4.5 million) than at any other time in the 21st Century. The UK Government's response to the large increase in fuel poverty has been to 'move the goalposts'[6] by repealing the legislation that required fuel poverty to be eradicated. This represents one of the greatest policy failures of the century.

In the UK, millions of people live in cold homes each winter which results in widespread misery, depression and worsening health problems.

[5] http://www.childrenssociety.org.uk/sites/default/files/tcs/behind_cold_doors_-_final.pdf

[6] http://www.theguardian.com/books/2013/oct/11/bedroom-tax-poet-laureate-carol-ann-duffy

Appendix 1:

Fuel Poverty Calculations for the people featured in *Too Cold to be Poor*

The data used in the analysis of the three case study households includes personal information (e.g. address information, etc.) as defined by the Data Protection Act 1998 and therefore needs to be kept confidential unless specific permission has been obtained to make this information public. However, the results from these analyses can be made public.

In all three cases, the household's address and information about the income, actual expenditure on fuel, number and age of household members was supplied to the University of Bristol and stored as an encrypted file on a secure server. The costs of adequately heating each home per year were calculated from the dwelling's Energy Performance Certificate (EPC) where this was available or from the EPCs of similar neighbouring dwellings (in one case).

EPCs have been produced since 2007 for about half of all dwellings in the UK. The energy efficiency calculations are undertaken by trained professional Domestic Energy Assessors using the RdSAP (Reduced Data Standard Assessment Protocol) methodology. This is a simplified version of the full Building Research Establishment. Domestic Energy Model (BREDEM) and makes a number of assumptions about households' energy use (which may or may not be correct) e.g. living rooms should be heated to 21^{o}C and other rooms to 18^{o}C, electricity and hot water needs are calculated based on the number of household occupants using fairly simple methods, etc.

The Centre for Sustainable Energy's[7] Fuel Poverty Community Assessment Tool was used to identify if each case study household was fuel poor using the 10% 'need to spend' or the 'Low Income High Cost' definitions of fuel poverty.

A) Case Study One: Name: Olive

Olive is a pensioner who lives alone in a two bed bungalow that she owns outright. She lives in a rural village, on the coast. The village is off the mains gas supply. She rations her energy substantially. She has oil central heating but mainly relies on Calor canisters to power a gas fire in the living room.

Olive lives in a detached bungalow and has good insulation in her pitched roof loft, fully double glazed windows and many low energy light bulbs. Unfortunately, a lot of heat is lost through the walls and floor of the bungalow so it has a relatively low energy efficiency rating according to her 2015 EPC (i.e. an RdSAP of just 30, which is half the average rating for dwellings in England and Wales). The amount of money that Olive is assumed to need to spend on fuel is £1,486 per year (i.e. £62 less than she actually spends per year). This means that:

[7] https://www.cse.org.uk/

1) *Olive is Fuel Poor using the 10% defin*ition (i.e. she needs to spend 13.7% of her income on fuel to adequately heat her home) - so she would be considered to be 'officially' fuel poor if she lived in Wales, Scotland or Northern Ireland.

2) Olive's equivalised disposable household income is above the Low Cost High Income fuel poverty threshold which means that *she is NOT fuel poor using the Low Income High Cost definition* that is used in England.

Since Olive lives in England she is NOT officially fuel poor.

B) Case Study Two: Maria

Maria lives alone in the top floor flat of a converted pre-War house. She has prepayment meters for both her gas and electricity. She is not paying back any debts on her prepayment meters. She has gas central heating and uses electricity for her oven and other appliances.

Maria lives in a Flat which has no EPC certificate. However, we assumed that her Flat is likely to be most similar to one of the others on the higher floors, which do have an EPC for 2013. The estimated fuel costs to adequately heat her flat are £1,088 per year at 2013 prices. To calculate the likely fuel cost in 2015, these 2013 estimates need to be inflated and this has been done using the DECC Annual Domestic Energy Bill Statistics[8]. The calculation assumes that the change in Maria's gas and electricity costs are the same as the change in average costs for households in England and Wales who pay using pre-payment meters and that the proportion of her expenditure on gas compared with electricity is also the same as these households (i.e. Total fuel expenditure =54% spent on gas + 46% on electricity).

DECC Annual Domestic Energy Bill Statistics show that average gas prices for households in England and Wales using prepayment meters increased by 0.4% between 2013 and 2015 (i.e. from £759 in 2013 to £762 in 2015) and electricity prices increased by 2.3% between 2013 and 2015 (i.e. from £605 to £619).

Thus, Maria's annual fuel costs are estimated to be £1,102 in 2015.

It is assumed that Maria's flat is a similar size and has similar energy efficiency to the upper floor flat with a 2013 EPC – specifically that she lives in an end-terrace house converted into flats with no pitched roof, wall or floor insulation and with single glazed windows and a few low energy light bulbs. Unfortunately, a lot of heat is lost through the walls and floor of the flat so it has a relatively low energy efficiency rating, according to the neighbouring flat 2013 EPC (i.e. an RdSAP of just 44, which is three-quarters the average rating for dwellings in England and Wales of RdSAP 60).

[8] See https://www.gov.uk/government/statistical-data-sets/annual-domestic-energy-price-statistics - specifically Table 2.2.2 Electricity & Table 2.3.2 Gas. – last updated 22nd December 2015

1) *Maria is Fuel Poor using the 10% defin*ition (i.e. she needs to spend 25% of her income to adequately heat her home) - so she would be considered to be 'officially' fuel poor if she lived in Wales, Scotland or Northern Ireland.

2) Maria's equivalised disposable income is relatively low and her equivalised fuel needs are £1,346, this means that *she is Fuel Poor using the Low Income High Cost definition* that is used in England. Her Fuel Poverty Gap is £66.27p. This represents "*the amounts by which the assessed energy needs of fuel poor households exceed the threshold for reasonable costs".* i.e. if Maria's annual needed fuel gas and electricity expenditure was £66.27p less, she would not be fuel poor using the LIHC definition

Since Maria lives in England she is officially fuel poor – but only by a relatively small amount of £66.27p per year.

C) Case Study Three: Hayley and Dan

Hayley and Dan live in a privately rented house with their two children (aged nine and under one). Hayley works part time and Dan is self-employed, working full time when there is work available. They have prepayment meters for both their gas and electricity. They have gas central heating. The house suffers from damp.

Their 2015 EPC shows that Hayley and Dan live in a small semi-detached house which has good insulation in the pitched roof loft, fully double glazed windows and low energy light bulbs in all fittings. Unfortunately, the house does not have cavity wall insulation or insulation on the flat roof so it has a below average energy efficiency (RdSAP of 51) compared with the average dwelling in England and Wales (which has an RdSAP of 60). Their estimated annual fuel costs are £911 per year, which is considerably less than their actual expenditure on fuel.

1) Hayley and Dan are *NOT Fuel Poor using the 10% definition,* i.e. they only spend 5% of their income on fuel.

2) Hayley and Dan are *NOT Fuel Poor using the Low Income High Cost definition*

Since Hayley, Dan and their two children live in England, they are not officially fuel poor.

However, if Hayley and Dan's actual expenditure on fuel was used rather than the EPC estimate of what they need to spend then they would be fuel poor using the Low Income High Cost definition. Couples with a baby and/or young children may need to spend more on heating their homes than is assumed by the EPC calculations.

Conclusion

These three case studies highlight some of the significant limitations of the UK Government's Low Income High Cost method for estimating fuel poverty. The number of fuel poor households in 2016 seems to be seriously underestimated.

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