Heat or Eat: Food and Austerity in Rural England

Final Report July 2015

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with Professor Elizabeth Dowler

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Contents

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Executive Summary

This research project explores the theme of food and austerity through the lens of one of the most high profile, yet under-evidenced, phenomena in the current era of austerity: the decision to 'heat or eat'. With support from National Energy Action and the Trussell Trust foodbank Network and focusing on experiences in Cornwall, England, this project scrutinises the 'heat or eat' dilemma in a rural context, investigating the legitimacy and complexity of such claims, and critically assessing existing and potential policy responses.

Research Aims and Objectives

Aim 1: to assess whether the heat or eat dilemma discussed within policy debates is part of the lived experience of rural poverty in the current era of austerity. Specific objectives of this are to:

- determine whether low income rural householders have ever had to make choices between food and heating;
- understand how food and heating costs are prioritised in household budgeting decisions;
- ascertain whether the concept of heating or eating reflects lived experiences.

Aim 2: to critically assess existing rural community-based and (local and national) policy support, and to identify the most appropriate policy responses for addressing the root causes of these experiences. Specific objectives are to:

- identify key rural areas with both high levels of fuel poverty and uptake of food banks where a more strategic response may be required;
- come to a better understanding of how community stakeholders are responding to these experiences locally and what the most effective policy responses do/should look like.

Methodology

In meeting these aims the project involved two main phases of research:

Phase 1: Desk based research:

- A literature and evidence review
- A secondary analysis of the Family Resources Survey (FRS) and Living Costs and Food Survey (LCFS)
- GIS mapping of fuel poverty data and Trussell Trust Foodbank Network data

Phase 2: Primary research using qualitative interview methods which involved:

- Face-to-face interviews with 11 householders sampled through Trussell Trust foodbank projects in Cornwall
- Telephone interviews with 9 stakeholders, defined as providers of food and fuel poverty related services in Cornwall

Key Findings

I. This project has found clear evidence of a relationship between food and fuel expenditure and/or consumption. Our research suggests that there is a 'heat or eat' dilemma but there are nuances to this which make it hard to distinguish this as a discrete and standalone dilemma, notably that:

   a. Some people are in desperate circumstances where they cannot afford sufficient food or fuel.
   b. There is nothing in the (albeit limited) literature which indicates that one is entirely sacrificed for another or that price spikes in one commodity might affect spending on the other.
   c. All interviewees described their home as not being warm enough
   d. Almost all interviewees described substantial deficiencies in their diet as a result of cost.
   e. The qualitative analysis also found that householders tended to prioritise energy uses such as lighting, cooking and hot water above heating, suggesting a far more complex set of decisions being made than simply 'heat or eat'.

II. Being behind on fuel bills and fuel payment method appear to be particularly important factors in relation to people being able to afford enough food. Those interviewees on pre-payment meters (PPMs) described a 'top up or eat' situation, with cases of self-disconnection being reported.

III. Structural drivers of food and fuel poverty and the 'heat or eat' dilemma are key, particularly challenges resulting from rurality (increased costs and distances and being 'off the energy grids'), (low and insecure) income and (inadequate, low quality, rented) housing.

IV. There appears to be a lot of activity in the case study area designed to help people in food and fuel poverty. However, it was impossible from this pilot study to gauge the extent to which is reaches people. Furthermore, this provision is not on the whole focussed on root causes or structural drivers.

V. The evidence base on the 'heat or eat' dilemma is highly limited and key questions remain about: the exact nature of the concept of 'heat or eat'; the best methodological approach for measuring and understanding it; and the need for greater understanding about the impact of energy billing periods on food security.

Summary Findings

1. Is the heat or eat dilemma part of the lived experience of rural poverty in the current era of austerity?

Key findings from the literature review, quantitative and qualitative analysis are outlined below. The findings are explored in terms of the relationship between food and fuel consumption and/or expenditure (which is actually what much existing research considers), whether there is evidence of a heat or eat dilemma, and key drivers of this. In summary, our empirical analysis revealed a desperate situation where some households were regularly unable to afford sufficient energy or food. Whether this can or should be presented as a 'heat or eat' dilemma requires more detailed investigation and discussion around its true reflection of these experiences and its utility in furthering effective policy responses.

The relationship between food and fuel consumption and/or expenditure

- The literature review, quantitative and qualitative data all point to a relationship between food and fuel consumption and/or expenditure, largely due to the relative elasticity of these commodities compared to other household costs.
- There is nothing to suggest in the existing literature or our data that one commodity is being entirely sacrificed for the other.
- Our quantitative analysis shows that more households that are unable to afford a protein based meal every two days are likely to report experiences of not being warm enough, damp housing conditions, being unable to afford to keep their home warm, and energy debt. Regression analysis indicates that the odds of being unable to afford to eat a protein based meal every two days are increased where a household has energy debt (especially gas) and are unable to keep their home sufficiently warm.
- The literature review and qualitative data highlighted a decrease in both the amount and quality of food consumed amongst households that were faced with increased energy costs (as a result of both cold periods and price rises), however, our qualitative data suggested decreases in energy use as well.
- Our qualitative data suggests that the relationship between food and fuel expenditure and consumption is highly nuanced, and affected by factors such as household composition, income, welfare sanctions, housing, and living in a rural area.

Is there evidence of a heat or eat dilemma?

- There is no agreement on the meaning of the phrase 'heat or eat'. The existing literature base tends to use proxy measures of food and energy consumption rather than asking householders directly, so it is impossible from this to say whether a direct, conscious trade off between commodities is being made.
- However, in the qualitative phase of our research, householders, foodbank managers and stakeholders were asked whether the heat or eat dilemma reflected lived experiences, and without exception all said that it did.

- The qualitative analysis also found that householders tended to prioritise energy uses such as lighting, cooking and hot water above heating, suggesting a far more complex set of decisions being made than simply 'heat or eat'
- Moreover, the qualitative data suggests that in many situations householders are unable to afford sufficient food or fuel. Almost all participants reported being cold over the winter period.
- The literature review, quantitative and qualitative findings suggest that it is very unlikely that there is a straight choice made between energy and food, instead, rationing of both is more likely. The qualitative findings suggested that in extreme cases the food bank became an emergency buffer as did self-disconnection in the case of PPM users.
- One clear gap in knowledge in the existing evidence base is the impact of energy payment methods on food consumption and/or expenditure. Our quantitative analysis shows that households using PPMs also have the lowest food expenditure. Yet, our qualitative analysis highlighted a more immediate 'top up or eat' situation, whereby householders reported having to choose between topping up a PPM or buying food. For those paying for their energy less frequently this issue did not arise, however the impact of a large quarterly bill placed a much larger (but less frequent) strain on household finances.

Drivers

- The rising, and sometimes fluctuating, cost of energy and food, and the impact of cold weather/seasonal effects were highlighted in the literature review and our qualitative analysis as factors which made household spending decisions harder.
- The qualitative analysis found that structural factors including housing condition and tenure, household composition, rurality, family structure and income all had an effect on household spending decisions.
- Our qualitative analysis also highlighted the complexities of rural energy supply, whereby some householders relied on expensive forms of heating (such as electricity due to a lack of gas mains), or bottled gas or oil. In some situations householders were required to pay for large amounts of energy in advance, a situation that in some instances led to 'self disconnection' from heating supply because of the expense.
- In our qualitative analysis repaying energy debt through a PPM had a harmful effect on a household's ability to afford sufficient food or fuel.
- The literature review and qualitative findings both indicated the positive effects of fuel poverty schemes on poor households. Within the literature review it was suggested that households in receipt of fuel poverty schemes also had better nutritional outcomes. In the case of the qualitative analysis, where fuel poverty support worked efficiently it could mean the difference between access to hot water or not. On the other hand, schemes that were inefficient or poorly organised were perceived as an additional burden. Familial and social networks and effective policy support may cushion against some of the negative effects described within this report. However, ineffective policy measures are clearly having the opposite effect and contributing to these experiences, particularly social security sanctions, delays in

social security payments, faulty energy efficiency measures, and schemes that do not work in a timely or straightforward manner.

2. **Critical assessment of existing rural community-based and (local and national) policy support.**

Within the case study area:

- The stakeholder interviews suggested that existing provision does provide positive forms of support but that the sector faces key challenges (many of which are applicable generally to the voluntary sector - short term funding, lack of co-ordinated working, root causes for example income and low paid work left unresolved).
- The gaps in provision which were identified included: the need for longer term, more secure, funding, smarter and more joined up working; and both addressing root causes and securing emergency/responsive provision.
- The household interviews indicated the negative effects of cuts to other local services and the loss of local services (such as libraries, internet facilities in the job centre) places a greater (often financial) burden on households

Within the national context:

- Delays in social security payments and social security sanctions had disastrous effects on households in this sample. Sanctions pushed households into debt, and in some cases led to more risky behaviours, such as driving uninsured. They were also harmful to children in the affected households, with households reporting having little food in the house and self disconnection from their energy supply.
- Households reported repaying energy debts through their PPM, this was usually out of their control, and had a substantial knock on effect in terms of being able to use sufficient energy or purchase other essentials including food.
  The complexity of energy efficiency and fuel poverty schemes acted as a barrier for both advisors and households

Policy Recommendations

- A clearer picture of available support, and how and whether it is currently reaching those most in need is necessary.
- Responses are required which address root causes and work towards prevention of (fuel and food) poverty as well as provide immediate relief.
- There is a need for longer-term, more secure funding, joined up working, and cohesion across schemes and programmes.
- There is a need for recognition of the negative effects of social security payment delays and sanctions, and greater protection needs to be put in place to support the most vulnerable households.

1. Introduction

This research project explores the theme of food and austerity through the lens of one of the most high profile, yet under-evidenced, phenomena in the current era of austerity: the decision to 'heat or eat'. In the context of rising costs of living, stagnating incomes and extensive reforms to the welfare state including social security, there is increased policy discussion about households having to make stark choices between 'heating and eating' (Hansard 2012; 2014).

The Department for the Environment, Food and Rural Affairs (Defra) (2014: 20) highlight that falling incomes and rising costs of living, including rising food prices, have meant that food is now over 20 per cent less affordable for those living in the lowest income decile in the UK compared to 2003. At the same time, there has been a high profile rise of food banks (charitable projects providing emergency parcels of food for people to take away, prepare and eat) (Lambie-Mumford and Dowler 2014). In 2013-14 the UK's largest network of charitable food banks distributed nearly one million food parcels representing a 610 per cent increase in provision since 2011-2012 (Trussell Trust no date). The growth of this provision has sparked a fierce political debate about its causes and the nature of hunger in the UK today, and prompted an All Party Parliamentary Inquiry (Food Poverty Inquiry 2014). Traditionally in the UK, approaches to ensuring everyone has access to healthy food have been left to the operation of efficient markets in retail and employment, appropriate consumer choice and a social welfare system which is meant to enable those lacking employment to be able to purchase food (Dowler *et al,* 2011). Whilst the Parliamentary Inquiry into Hunger and Food Poverty was an important step in signalling policy makers' engagement with these issues, in the context of evidence suggesting this approach has not succeeded, substantive policy responses are still to emerge (Lambie-Mumford 2015).

Conversely, fuel poverty, driven by the interaction of low incomes, poor energy efficiency and high energy prices, has been an explicit policy concern since the 1990s. The severe social costs of fuel poverty are recognised by policy makers - for example, in 2009 the Chief Medical Officer Report found that for every £1 investment in keeping homes warm the NHS would see a saving of 42 pence (Marmot Review Team 2011) - and national fuel poverty reduction targets have been in place since 2001.The majority of support measures are funded through levies and obligations placed on energy companies, and some additional forms of financial support are provided through the benefits system. In addition to this the industry is regulated by the Office of Gas & Electricity Markets (OFGEM), and a number of other public sector departments and organisations are involved in the delivery of policy support including Local Authorities and Clinical Commissioning Groups (CCGs) (Snell and Thomson 2013). Specific measures that are currently in place to support fuel poor households include: the Warm Home Discount Scheme (WHDS), Cold Weather Payments (CWPs), and the Carbon Savings Communities Obligation (CSCO) element of the Energy Companies Obligation (ECO) (Snell and Thomson 2013).

As food and fuel poverty researchers, the increasing NGO and political reference to the 'heat or eat' issue (see Cooper *et al* 2014) led us to this collaborative project. We intend to explore these assertions and the lived experiences they are supposed to represent,

especially in the current policy climate of austerity. Specifically our research is driven by three limitations in the existing knowledge base. First, is the striking lack of evidence despite the high profile rhetoric. The evidence base that exists is largely made up of single household case studies and small scale surveys conducted by NGOs - it is rarely the central focus of the research in which it appears. Second and closely related, is the common perception within existing debates that the driver of the 'heat or eat' phenomena is the relative flexibility of food and fuel costs compared to other household expenses. Whilst this may be the case, at present there is insufficient evidence to support this claim. Third, existing evidence pays little or no attention to spatial disparities within such debates, largely ignoring the very different, and often more challenging circumstances faced by the rural poor, including disparate and more stretched public services, a limited and energy inefficient housing stock, and restricted access to cheaper forms of fuel such as mains gas. With support from National Energy Action and the Trussell Trust foodbank Network this project scrutinises the 'heat or eat' dilemma in a rural context, investigating the legitimacy and complexity of such claims, and critically assessing existing and potential policy responses.

2. Research Aims

This research is comprised of two main aims. The first aim is to assess whether the heat or eat dilemma discussed within policy debates is part of the lived experience of rural poverty in the current era of austerity. Specific objectives of this are to:

- determine whether low income rural householders have ever had to make choices between food and heating;
- understand how food and heating costs are prioritised in household budgeting decisions;
- ascertain whether the concept of heating or eating reflects lived experiences.

The second aim is to critically assess existing rural community-based and (local and national) policy support, and to identify the most appropriate policy responses for addressing the root causes of these experiences. Specific objectives are to:

- identify key rural areas with both high levels of fuel poverty and uptake of food banks where a more strategic response may be required;
- come to a better understanding of how community stakeholders are responding to these experiences locally and what the most effective policy responses do/should look like.

3. Research Design and Methodology

In meeting these aims the project involved two main phases of research: desk based research including a literature review, mapping and secondary analysis; and primary research using qualitative interview methods with households and providers of food and

fuel poverty services. Full ethical clearance for the primary research was obtained on 27/11/2014 from the University of Sheffield.

The **literature review** was conducted between October and December 2014. The following databases were used in the searches: ASSIA, Web of Science, Scopus, Science Direct, Sociological Abstracts, Social Sciences Citation Index, British Library, British Humanities Index, Google Scholar and Google. The search was restricted to the English language and developed countries from 1996 onwards. Key search terms were agreed by the research team: heat and eat; food poverty and fuel poverty; food insecurity and fuel poverty; poor and food and fuel; low income, food and fuel; austerity, food and fuel; austerity, heat and eat. Overall 29 academic articles were shortlisted although only 15 had a direct relevance to this research project. In addition 62 news articles, opinion pieces and other types of 'grey literature' were found using the same research terms in a google search.

The **secondary analysis of food and fuel related data** was undertaken in February and investigated whether there are relationships between food and fuel poverties in deprivation indicators (data from Understanding Society, Family Resources Survey, Living Costs and Food Survey). This phase involved the secondary analysis of consensual measures of food and fuel poverty (such as the presence of damp, ability to pay energy bills, having one hot meal per day) alongside energy and food expenditure and socio-economic and demographic variables. The Family Resources Survey and Living Costs and Food Survey were particularly useful datasets and extensive findings are presented in Annex A.

The **GIS mapping** was conducted between October and December 2014 and aimed to identify overlaps and under laps between fuel poverty policy priority areas[1] and the presence of Trussell Trust foodbanks. By doing so, the focus was on mapping food and fuel poverty provision; rather than claiming to identify levels of food or fuel need.[2] The focus on food charity provision was deemed to be necessary at the outset of the research, in light of the absence of direct measures of food insecurity. The focus on fuel poverty priority areas was found to be more appropriate than data of direct measures of fuel poverty, as a result of our initial data exploration phase. Initially, fuel poverty rates (as published by DECC) were mapped by Lower Super Output Area (LSOA) and overlaid by the presence of food banks. However, using these data at such a small level produced abnormalities in the first map, including more households being defined as fuel poor than actual households in the LSOA. Given this, the decision was taken to map DECC fuel poverty priority areas specified through the Carbon Saving Communities Obligation (CSCO) of the Energy Companies' Obligation (ECO). Draft maps were created in November 2014, however, on the 5th December 2015 these priority areas were redefined by DECC. The changes were made in recognition of the difficulties in providing support to fuel poor households in rural areas. As a result of these changes, all households situated in the 25 per cent most deprived rural LSOAs and 25 per cent most deprived LSOAs (as opposed to those living on certain low income benefits) are now eligible for subsidised or free energy efficiency measures. The

[1] As defined by the Department for Energy and Climate Change, and thus eligible for additional fuel poverty support measures

[2] For a discussion on the problems of using foodbank statistics to infer information about food poverty/insecurity see Lambie-Mumford and Dowler 2014.

final maps that have been created identify these newly defined areas. Foodbank data was obtained directly from the Trussell Trust. They included information on foodbank location including postcodes as well as relating to food received and given out and numbers of parcels distributed by each project.

One map of Greater London and one of each region in England was produced. These were used to identify the location of foodbanks and highlight rural areas eligible for CSCO support. Shapefiles for regions and LSOAs were obtained through the UK Data Service. Postcodes for foodbanks were obtained and converted to geocoordinates using GeoConvert available through the UK Data Service. Some foodbanks operated at more than one location within a city or town. If possible the postcode for the centre that carries out administration for the foodbank was used. In all cases the final plotted location did not significantly vary because of the scale used: a distance of even one or two kilometres is negligible when plotted on a regional map. Rural areas eligible for CSCO were obtained from DECC (2014) and matched to LSOA codes and plotted accordingly as a thematic map. Mapping was carried out in the R programming language and statistical environment using robust spatial analysis packages. The Source code used in producing the maps is available from https://github.com/philmikejones/heateat. The final maps represent areas that DECC consider to be most in need of fuel poverty support (such as energy efficiency measures), and that also contain a food bank. Whilst the maps provide data on the presence of fuel poverty priority areas and food banks, they have also been used as a sampling device. Given the lack of comparable, direct, measures of *both* food and fuel poverty experiences we have taken these indicators to suggest increased vulnerability to food and fuel poverty given the presence of support mechanisms.

The mapping phase enabled the selection of sites that were rural, fuel poverty priory areas and that contained foodbanks. Site selection was based on two factors, firstly, to identify LSOAs which were fuel poverty priority areas and which had a foodbank and, as a secondary concern, with an eye on project capacity and finance, whether there were areas nearby to the research team which filled these criteria. Two foodbanks were identified in fuel poverty priority areas in Yorkshire and the Humber. However, following discussions with the Trussell Trust these sites were not pursued given capacity at the foodbanks to participate in the research. A second analysis of the regional maps led to the identification of four fuel poverty priority areas, each with a foodbank, in Cornwall. The maps showed a particularly high number of fuel poverty priority areas containing foodbanks in this part of England. Both the Trussell Trust and the foodbank managers in the County were receptive to involvement in the project, and fieldwork was undertaken in March 2015.

Primary data collection included interviews with local stakeholders and face-to-face interviews with householders and foodbank managers. Telephone interviews were conducted with **nine local policy makers**, practitioners or community groups involved in food or fuel poverty assistance. The interviews aimed to explore stakeholders' perceptions of the 'heat or eat' problem, whether (and if so how) it was being addressed in the case study area, and whether further support was required.

Overview of stakeholder interviewees: Public Health consultants from Cornwall and Plymouth Councils; South West National Energy Action initiative 'Improving Energy Efficiency in Communities; one of the Directors from the Diocese; two strategic Trussell Trust personnel covering the area; founder of a network of independent food banks in Cornwall; and managers from two Cornwall charities Community Energy Plus and Cornwall Community Charity. Four stakeholders identified themselves as dealing with food poverty issues and three with fuel poverty issues; two stakeholders said their work addressed both to some extent.

Face-to-face **in depth interviews with 11 participants**, sampled through four local foodbanks were also undertaken. These interviews drew on a Sustainable Livelihoods Approaches and budgeting interview techniques (see May *et al* no date). During the field visit the managers from the four foodbanks were also interviewed.

Overview of household interviewees: three participants lived in individual rooms in a hostel, seven had children under the age of 16 that lived with them some or all of the time, and two lived alone. All interviewees lived in some form of rented accommodation, either in the private rented sector (PRS), or Social or Council Housing sector. All interviewees were partly or entirely reliant on social security at the time of the interview, with some receiving Job Seeker's Allowance (JSA) and others receiving Employment and Support Allowance (ESA).

In analysing the empirical data a theoretically informed coding framework was drawn up.

<table>
<tr><td colspan="6">Structures

(Structural drivers of household experiences)</td></tr>
<tr><td colspan="2">Rurality</td><td>Housing</td><td>Income</td><td colspan="2">Family Structure</td></tr>
<tr><td colspan="6">Agency – lived experience

(How people adapt, prioritise and make decisions within these structural contexts)</td></tr>
<tr><td>Health and wellbeing</td><td>Debt</td><td>Food</td><td>Fuel</td><td>Social networks</td><td>State and community services</td></tr>
<tr><td colspan="6">Specific trade-off</td></tr>
<tr><td colspan="6">'Heat or Eat'</td></tr>
</table>

4. Key Findings and Key Issues

Key Findings

II. This project has found clear evidence of a relationship between food and fuel expenditure and/or consumption. Our research suggests that there is a 'heat or eat' dilemma but there are nuances to this which make it hard to distinguish this as a discrete and standalone dilemma, notably that:

a. Some people are in desperate circumstances where they cannot afford sufficient food or fuel.
b. There is nothing in the (albeit limited) literature which indicates that one is entirely sacrificed for another or that price spikes in one commodity might affect spending on the other.
c. All interviewees described their home as not being warm enough
d. Almost all interviewees described substantial deficiencies in their diet as a result of cost.
e. The qualitative analysis also found that householders tended to prioritise energy uses such as lighting, cooking and hot water above heating, suggesting a far more complex set of decisions being made than simply 'heat or eat'.

VI. Being behind on fuel bills and fuel payment method appear to be particularly important factors in relation to people being able to afford enough food. Those interviewees on pre-payment meters (PPMs) described a 'top up or eat' situation, with cases of self-disconnection being reported.

VII. Structural drivers of food and fuel poverty and the 'heat or eat' dilemma are key, particularly challenges resulting from rurality (increased costs and distances and being 'off the energy grids'), (low and insecure) income and (inadequate, low quality, rented) housing.

VIII. There appears to be a lot of activity in the case study area designed to help people in food and fuel poverty. However, it was impossible from this pilot study to gauge the extent to which is reaches people. Furthermore, this provision is not on the whole focussed on root causes or structural drivers.

IX. The evidence base on the 'heat or eat' dilemma is highly limited and key questions remain about: the exact nature of the concept of 'heat or eat'; the best methodological approach for measuring and understanding it; and the need for greater understanding about the impact of energy billing periods on food security.

Key issues

This pilot project has raised several key issues, particularly conceptual and policy related.

Conceptual issues

- At present, despite the popularity of the phrase 'heat or eat', there is no clear way of conceptualising it. The majority of existing work relies on proxy measures of food and fuel expenditure and/or consumption rather than directly asking those affected about their spending decisions.
- Whilst a convenient term, the characterisation of a heat or eat dilemma has the danger of being reductionist in nature, whereas there are instances where some households are unable to afford enough food or fuel, and evidence of some types of energy use being prioritised over others.

Policy issues

- Terminology aside, the evidence demonstrates an urgent policy problem whereby some households are unable to afford enough food or fuel, and some households are in a desperate situation with very little prospect of change.
- Reductions in local services, changes to benefits (sometimes resulting in delays), and sanctions are exacerbating this problem. There are also specific rural issues that worsen this situation including access to affordable food and fuel, the quality and availability of broadband/mobile internet, and limited public transport. The combination of these factors can lead to a crisis situation, for example where an individual cannot afford home internet access to complete job searches, is unable to use library internet services due to service closure or limited public transport, is then sanctioned for not conducting job searches on the internet, and as a result is unable to pay for housing, food or fuel. Whilst a peripheral solution, affordable, reliable internet coverage would enable households to meet benefit conditions, to investigate and apply for fuel poverty schemes, and potentially to access more affordable food.
- Emergency food aid is providing a buffer to some households (where it is accessible to people and for the duration of its availability), as does fuel poverty support (in one instance meaning that a household containing children could have hot water). However, the latter operates in a highly complex environment and eligibility criteria are not necessarily understood by referral agencies or householders. Furthermore, neither response addresses the root causes of the (food and fuel) poverty underpinning households' experiences.

5. Detailed Findings

5a. Literature Review: Investigating the 'Heat or Eat' literature base

Development of the phrase 'Heat or Eat'

The literature is almost exclusively quantitative and is heavily biased towards northern America. The seminal work is that of Bhattacharya et al (2003) who investigate 'Heat or Eat? Cold Weather Shocks and Nutrition in Poor American Families'. Their starting point is a number of American media reports from 2001 suggesting that the winter can impose a disproportionate financial burden on poor families. Bhattacharya et al attempt to evidence this, aiming 'to investigate whether poor American families have lower food expenditures and worse nutritional outcomes…during cold weather periods' (2003: 1149).

Three years later Frank et al (2006) published 'Heat or Eat: The low income home energy assistance program and nutritional and health risks among children less than 3 years of age'. This Paediatrics paper builds on the work of Bhattacharya et al and also cites a number of other papers that have found links between hunger and energy disconnection/a lack of heating. In the same year Nord and Kantor (2006) published 'Seasonable Variation in Food Insecurity Is Associated with Heating and Cooling Costs among Low Income Elderly Americans'. The authors intend their analysis to extend and complement Bhattacharya et al's work by examining the relationship 'between season differences in temperature, measured as heating degree days and cooling degree days, and household food security' (2006: 2940). Six years later two further pieces of research were conducted. In "Food or Fuel": Calculating Elasticities to Understand Heat or Eat Behavior' Murray and Mills (2012) use household expenditure data from 1999-2009 to calculate elasticities for food and fuel, and to consider cross price elasticity to investigate whether heat or eat trade offs are made. In the same year Emery et al (2012) extend the US research base to Canada in their paper 'Evidence of the Association between Household Food Insecurity and Heating Cost Inflation in Canada, 1998-2001'. The authors take data from a number of expenditure surveys in combination with energy price indices, and consider the relationship between household food security and energy prices.

Two pieces of work have been conducted in the UK. Beatty et al's (2014) paper 'Is there a heat or eat trade off in the UK' cites the American literature and applies a similar, expenditure and meteorological data based methodology. Beatty et al seek to provide the 'first evidence on this issue for the UK' (2014: 282). In addition to this, one qualitative study has been published in the UK. O'Neill et al (2008) conduct a piece of work with ten elderly people entitled 'Heating is More Important than Food'. Unlike previous studies that are grounded in economics, nutritional studies, and paediatrics, this research is published in the field of housing and cites much of the fuel poverty literature with no reference to 'heat or eat' in the background sections. This paper is something of an anomaly, despite its title and passing reference to some research findings that suggest a direct trade-off, the researchers do not set out to investigate the household food-energy relationship.

Several other papers make passing reference to the household food-energy relationship and tend to be focused on poverty (Zuckerman et al 2005, La Grange and Lock 2002),

fuel/energy poverty (Anderson et al 2012, Hernandez and Bird 2010) and food security (Cook 2008, Dower et al 2011). These papers typically reference the sources listed above especially Bhattacharya et al 2003 and Frank et al 2006, using phrasing such as: 'the heat or eat phenomenon' (Zuckerman et al 2005); 'hard choices around whether to spend money on food or energy' (Hernandez and Bird 2010: 6); and 'food and fuel are often the focus of these daily trade-offs…because they are perceived…to be flexible and amendable to daily variation' (Anderson et al 2012: 41).

Indicators and methods

The six quantitative pieces of research use a range of datasets and indicators. Food is typically quantified through household spending, nutritional outcomes, and consensual measures of food insecurity. Energy is quantified through: household fuel spending; climatic data including days that require heating or cooling, 'unusually cold spells', or seasons; or receipt of energy assistance measures (e.g. insulation, subsidised energy etc.). The quantitative studies use various combinations of these indicators, usually treating food as the dependent variable and energy as the independent variable. The methodology of Dowler et al (2011) is also noteworthy here. Whilst their paper focuses on issues of food security rather than the heat or eat trade-off, their work presents the only direct measure of a deliberate trade-off as their survey respondents are asked whether they have reduced energy use in order to pay for food.

Indicators used	Bhattacharya et al (2003)	Murray and Mills (2012)	Beatty et al (2014)	Emery et al (2012)	Nord and Kantor (2006)	Frank et al (2006)	Dowler et al (2011)
Food expenditure/ price data	**x**	x	x	x			
Fuel expenditure/ price data	x	x	x	x			
Metrological data inc. heating degree days/cooling degree days	x	x	x		x		
Food intake (calories/ dietary quality)	x						
Nutritional outcomes (e.g. weight gain/	x					x	

nutritional deficiencies/ hospital trips)							
Fuel consumption							
Consensual measures of food security				X	X	x	
Consensual measures of fuel poverty							
Receipt of fuel poverty support						x	
Asking specifically about trade offs							x

In addition to the quantitative studies**,** O'Neill et al (2008) conducted 10 interviews with elderly people in the UK with questions focusing on fuel poverty experiences (e.g. feeling cold, worrying about heating), take up of policy support (e.g. insulation) and general questions about the importance of warmth to older people.

Key findings

Very little work has investigated whether deliberate heat or eat trade-offs are made, instead most research focuses on proxy indicators such as changes in household energy or food consumption or expenditure, or nutritional outcomes. The presence of energy shocks (price rises), unseasonably cold or hot weather, and the installation of energy efficiency measures are all used to assess whether a household reduces food expenditure, has lowered food security, reduces food consumption or has reduced nutritional outcomes. These main themes are explored below.

The impact of energy shocks on food expenditure or security: Two studies consider the impact of energy shocks on food expenditure and/or security. Murray and Mills find that poorer households reduce both food and energy expenditure as a result of price increases, with these being most vulnerable to the 'heat or eat dilemma', and estimate that 'an energy price shock of 10 per cent can lead to reductions in food at home expenditures of up to five per cent' (2012). They also note that expenditure on energy falls as food prices increase. Equally, Emery et al (2012) find that food insecurity 'is predicted to increase by .8 percentage points for a 10 per cent increase in heating costs, and heating cost inflation can explain nearly 61 per cent of the variation in the change in provincial marginal effects on

food insecurity (2012: 193). They conclude that changes in household food insecurity in Canada can be explained largely by energy price shocks

The impact of extreme weather on food expenditure or security: Several researchers find a link between food expenditure and extreme weather (Bhattacharya et al 2003, Beatty et al 2014, Nord and Kantor 2006). Bhattacharya et al (2003) find that a 10° Fahrenheit degree drop in temperature is associated with a $9 per month decrease in food expenditures amongst poor families versus a $11 increase amongst richer families. Equally, Beatty et al estimate that '…the effect is largest for the poorest households during winter months. These households reduce food spending by about 6.8 per cent' (2014: 292). Similarly, Nord and Kantor found that very low food security amongst poor households with no children was associated with seasonal variations in home heating and cooling costs (2006: 2942). They also found that households below the American poverty line which were in 'high heating' states were substantially more vulnerable to low food security during the winter than the summer, with most noticeable results amongst poor elderly households (2006: 2943).

Decreases in food consumption or nutritional quality: Two studies have considered the relationship between nutritional outcomes and energy. Bhattacharya et al find that 'In poor households adults and children alike reduced their calorific intake by 10 per cent during winter months' (2003: 1153). They go on to suggest that household fuel expenditure is increased at the cost of food expenditure and nutritional wellbeing, which they characterise as a 'stark choice' for poor American families. Similarly, Frank et al (2006) find that children living in households that receive the energy assistance programme 'LIHEAP' have 'small but statistically significant greater weight for age z scores and lower odds of nutritional risk for depressed growth than children in eligible families that did not receive LIHEAP benefits' (2006: 1300). Frank et al also found a lower risk of acute hospitalisation amongst children in LIHEAP families compared to those that were not. They give a number of physiological explanations for these findings, one notable point is that children lose heat more quickly than adults and by staying warmer may handle a lower calorific intake more effectively than children who are in colder homes.

Conscious trade-offs*:* As with much of the literature discussed above, Anderson et al (2012:44) found reductions in both food and heating amongst households in order to make ends meet, with reports of households 'juggling core spending priorities' (ibid). However, Anderson et al's findings suggest some evidence of fuel being prioritised over food because 'the bills have to come first…and then the food' (2012: 45). Similarly, O'Neil et al conclude that 'if they [elderly respondents] had to choose between fuel and food they would reduce the amount of money they spent on food in order to heat their homes adequately' (2008: 107). Conversely, in their survey Dowler et al found that 'almost a third said they had reduced heating or electricity consumption to meet food bills, a proportion which rose to 40 per cent in lower income groups' (2011: 408). Equally, Hernandez and Bird (2010:6) stress the importance of food to their respondents, citing energy saving measures including limited cooking times being employed to save money.

Discussion and gaps in knowledge

These findings are not necessarily mutually exclusive given their different methods, indicators and populations. Indeed, the majority of the evidence points to simultaneous reductions in energy and food expenditure in response to a variety of exogenous factors. However, these findings demonstrate the complexity of decisions that households face, and that are lost in the larger expenditure based studies. Indeed, there are currently three main gaps in existing knowledge, and these are discussed below.

Firstly, terminology within this research area is highly varied, discipline dependent and inconsistent. For example, within paediatrics focus is placed on children's calorific and nutritional intake, whereas within social policy emphasis is placed on food expenditure or consensual indicators such as 'having enough to eat'. Given this, there is no single understanding of what 'heat or eat' is referring to and arguably very little of the research manages to measure whether a conscious trade-off has been made - instead considering variations in energy and food expenditure or changes in nutritional intake during periods of cold. Several qualitative pieces make reference to households having to make trade-offs and choices between the two, however, without exception these are not the main focus of the research and are based on one or two cases. In addition to this, there is nothing to suggest in the existing literature that one commodity is being *entirely* sacrificed for the other. What is more evident are overall reductions in spending and consumption of food that correspond to increases in energy (prices or use). There is also some evidence to suggest the reverse effect when food prices increase.

Research gap: we need a clearer idea of what we mean by a 'heat or eat trade-off'.

Secondly, household energy and food prices have typically been described as relatively elastic outgoings that can be adjusted more simply than other costs such as rent or council tax. However, a small body of evidence in the review suggests that householders' experiences of this so-called elasticity may be somewhat different to what the expenditure-based data utilised in the studies cited above, implies. Anderson *et al* (2012) found substantially different attitudes amongst their survey respondents when it came to making savings on food and energy, for example. Food cost savings were regarded by survey participants as being relatively straightforward (e.g. by switching brands and types of food) compared to making equivalent fuel savings (such as switching supplier) which were perceived as harder to make, and less immediate. Furthermore, there is an issue of how far some households with very low incomes even have elasticity. Recent research published by Defra highlighted most significant changes in the nutritional content of food purchases in the second lowest income decile (purchasing 9 per cent less energy content in 2012 compared with 2007 – against a 3 per cent change in the lowest income decile), pointing to a distinct lack of elasticity for the lowest income decile, highlighting that they have very little room for making cuts to/changing the nature of their food expenditure (Defra 2014). On the basis of these issues there are urgent questions about the adequacy of using expenditure data to capture the lived experiences of food and fuel poverty, the hard choices people have to make, and (especially in the case of switching fuel providers or payment methods) the structures which may provide barriers for them to do so.

Research gap: what is the most appropriate way to measure heat or eat trade-offs? Are proxies such as spending on food or fuel sufficient or should there be a focus on deliberate decision making?

Thirdly, how households pay for energy is essential to understanding claims around the impact of energy expenditure or usage. In the UK households typically have the choice of a monthly direct debit, standard credit (where bills are issued over a 3, 4, 6 or 10 month period), or by pre-payment meter, where households pay for energy before they use it. It is the immediacy (or lack thereof) that is key here, for example, Beatty *et al* find that 'equal [energy] instalment plans automatically smooth the cost of heating due to unseasonable weather over several payment periods' (2014: 292). In other words, for households that are able to pay by monthly direct debit, increased winter usage costs are typically absorbed by lower summer costs. However, this is not universal, with Beatty *et al* finding that the poorest older households are unable to smooth their spending, and are most vulnerable to having to make 'heat or eat' decisions (*ibid*). Where *Beatty et al's* discussion stops short is that there is a well-documented association between low income households and the presence of pre-payment meters (PPMs) in the UK. PPMs are installed in homes for a number of reasons ranging from landlord or householder choice through to being installed as part of a debt management plan put in place by the energy company. It is PPM households that are presented with a direct, comparable, daily choice around energy and food expenditure and consumption. Energy costs for these households will not represent an automatic outgoing or bill that needs to be paid by a certain date. For PPM households there is an immediate choice to: go without energy completely; delay top ups; choose whether to top up by smaller amounts; ration energy knowing that there is an immediate financial effect; or to strictly monitor how much *money* is left on the PPM. Potentially this points to two different types of heat or eat trade-offs, those that are made over longer periods of time as energy bills increase and households gradually have less disposable income (chronic), and those that are immediate and made on a daily basis (acute).

Research gap: we need to understand more about the impact of energy billing periods on food expenditure, consumption or security.

5b. Secondary Analysis

The Family Resources Survey (FRS) and measures of fuel poverty and food security

Previous research has neglected the relationship between consensual measures of fuel poverty and food security. The FRS uses several established consensual measures of fuel poverty, and two key questions around food consumption. An account of data transformations and full results are presented in Annex A. Results are generalisable at the national level and the application of household weights enable population estimates to be made.

Do you eat at least one filling meal a day and consensual measures of fuel poverty: This question is asked in households where there are no dependent children and at least 1 adult aged State Pension Age. In the most recent data (2012/2013), a chi-square test of independence found a statistically significant association between people of pension age eating at least one filling meal per day and keeping their home adequately warm. However, in terms of the effect size, the Phi-Coefficient indicates a negligible relationship. Of those not eating a filling meal once a day 84.6 per cent were able to keep their home sufficiently warm compared to 15.4 per cent who reported that they were not. For those who were eating a filling meal per day 96.4 per cent reported being able to keep their home sufficiently warm compared to 3. 6 per cent who were not.

A chi-square test of independence found a statistically significant association between people of pension age eating at least one filling meal per day and having a damp-free home. However, in terms of the effect size, the Phi-Coefficient indicates a negligible relationship. Of those not eating a filling meal once a day 87.5 per cent reported living in a damp free home compared to 12.5 per cent who reported that they did not. For those who were eating a filling meal per day 93.8 per cent reported being in a damp free home compared to 6.2 per cent who were not.

Being able to afford to eat meat or fish (or vegetarian equivalent) every second day and consensual measures of fuel poverty: This question is asked to all FRS households, and the relationship with a variety of fuel poverty indicators is explored below.

Energy debt

A significant association was found between being behind with electricity bills and being able to afford to eat meat or equivalent every second day. In terms of the effect size, the Phi-Coefficient indicates a weak positive relationship. A similar trend was present for those reporting being behind with their gas bills. For those behind with their electricity bill, 66 per cent reported being able to afford to eat a meat or fish meal every second day compared to 34 per cent who said that they could not afford this. These figures were similar for those who were not behind with their electricity bill. Of those behind with their gas bill 61.5 per cent reported being able to afford to eat a meat or fish meal compared to 38.5 per cent who said that they could not. Of those who were not behind with their gas bill 69.5 per cent said they could afford a meat or fish meal every second day compared to 30.5 per cent who said that they could not.

Self reported measures of fuel poverty

A chi square test of independence found a significant association between being able to afford to keep the accommodation warm enough in winter and being able to afford to eat meat or equivalent every second day, with the Phi-Coefficient indicating a weak positive relationship. Of those unable to afford a meat or fish meal 37.2 per cent reported being unable to keep their home warm, compared to 8.2 per cent who were able to afford a meat or fish meal. A chi square test of independence found a significant association between the accommodation having a leaking roof, damp walls/floors/foundation and being able to afford to eat meat or equivalent every second day, however, the Phi-Coefficient indicates a negligible relationship. Of those able to afford to eat a meat or equivalent meal every

second day 14.6 per cent reported poor housing conditions, conversely, of those unable to afford such a meal 29 per cent reported poor housing conditions.

Logistic regression

The likelihood of a household being unable to afford to eat meat or equivalent every second day, on the basis of various predictors, has been calculated using binary logistic regression. Notable results include households in the lowest two income deciles, who are 6.3 and 6.1 times more likely respectively to be unable to eat meat or equivalent every second day compared to households in the richest decile. Households that are currently behind on their gas and/or electricity bills, or that have previously been behind in the last 12 months, are more likely to be unable to afford meat meals every second day compared with households that are not in energy debt. Households that are currently behind on their gas bill are particularly at risk, and are 2.2 times more likely to be unable to afford meat meals every second day. Similarly, households that report an inability to afford to keep their home adequately warm are 2.8 times more likely to be unable to afford to eat meat or equivalent every second day, compared with households that can afford to keep their home warm.

Logistic regression statistics 2012/13 data

	B	S.E.	Exp(B)	95% C.I.for EXP(B)	
				Lower	Upper
DAMPbin(1)	.221	.002	1.248	1.242	1.253
DEBT01bin(1)	.133	.014	1.142	1.111	1.173
DEBT02bin(1)	.783	.014	2.189	2.131	2.248
DEBTAR01bin(1)	.678	.008	1.970	1.939	2.001
DEBTAR02bin(1)	-.361	.010	.697	.684	.710
COMCOrec					
COMCOrec(1)	.350	.005	1.420	1.406	1.433
COMCOrec(2)	.320	.005	1.377	1.363	1.391
COMWArec					
COMWArec(1)	.248	.004	1.282	1.272	1.291
COMWArec(2)	-.022	.004	.978	.971	.986
TENURE					
TENURE(1)	.071	.003	1.074	1.067	1.081
TENURE(2)	.685	.012	1.984	1.938	2.032
TENURE(3)	.689	.003	1.992	1.981	2.004
TENURE(4)	.364	.008	1.439	1.417	1.462
HHCOMP					
HHCOMP(1)	.114	.003	1.120	1.114	1.127
HHCOMP(2)	-.118	.004	.889	.882	.896
HHCOMP(3)	-.229	.003	.796	.791	.801

HHCOMP(4)	-.429	.010	.651	.638	.664
HHCOMP(5)	.512	.004	1.669	1.657	1.680
HHCOMP(6)	.563	.004	1.756	1.741	1.772
INCDEC					
INCDEC(1)	1.840	.005	6.298	6.239	6.358
INCDEC(2)	1.804	.005	6.071	6.012	6.130
INCDEC(3)	1.232	.005	3.429	3.396	3.463
INCDEC(4)	.792	.005	2.208	2.187	2.230
INCDEC(5)	.823	.005	2.276	2.255	2.298
INCDEC(6)	.331	.005	1.393	1.379	1.406
INCDEC(7)	.301	.005	1.351	1.338	1.364
INCDEC(8)	-.177	.005	.838	.829	.846
INCDEC(9)	-.060	.005	.942	.932	.951
HOUSHE1bin(1)	1.025	.003	2.786	2.769	2.803
Constant	-3.827	.005	.022		

Note 1 R^2 = .07 (Cox & Snell), .17 (Nagelkerke). p *<.00*

Living Costs and Food Survey (LCFS)

Data from the 2012 edition of the Living Costs and Food Survey (LCFS) has also been analysed. The LCFS is the successor to the Expenditure and Food Survey, and since January 2008 it has provided information on all household expenditure patterns across the United Kingdom, including food and energy expenditure. The primary use of the LCFS is to provide information for the Retail Prices Index. Information about data transformations and all data tables can be found in Annex A. Whilst a range of tests were conducted, for the purposes of this report only the most notable findings are reported.

Analysis of expenditure on food and fuel

Median weekly food expenditure surpasses expenditure on fuel, with households spending on average £73 and £21 respectively. Weekly gross household income was used to create an income deciles variable, with 10 equal groups of income (rather than people). The income decile variable was used to split the file. There is a strong gradient to the results, with households in the lowest income decile (1), consistently spending the least on fuel and food, whereas households in the highest income decile (10) consistently spend the most. For example 29.6 per cent of group 1 households spend more than the sample median on fuel, of which 2.3 per cent spend twice median. By comparison, 74.7 per cent of group 10 households spend over the median on fuel, of which 22.5 spend twice median. Across all income groups, weekly expenditure on food is higher than on fuel, ranging from approximately two to five times higher.

Expenditure by gas payment method

Households on a fixed annual bill spent the most on fuel and food, and have the highest proportions of households paying over the sample median and twice-median, with the exception of Fuel Direct customers, all of who pay over the sample median for food.

Household on PPMs have the lowest levels of expenditure on fuel and food, and the lowest proportion of households spending over the sample median.

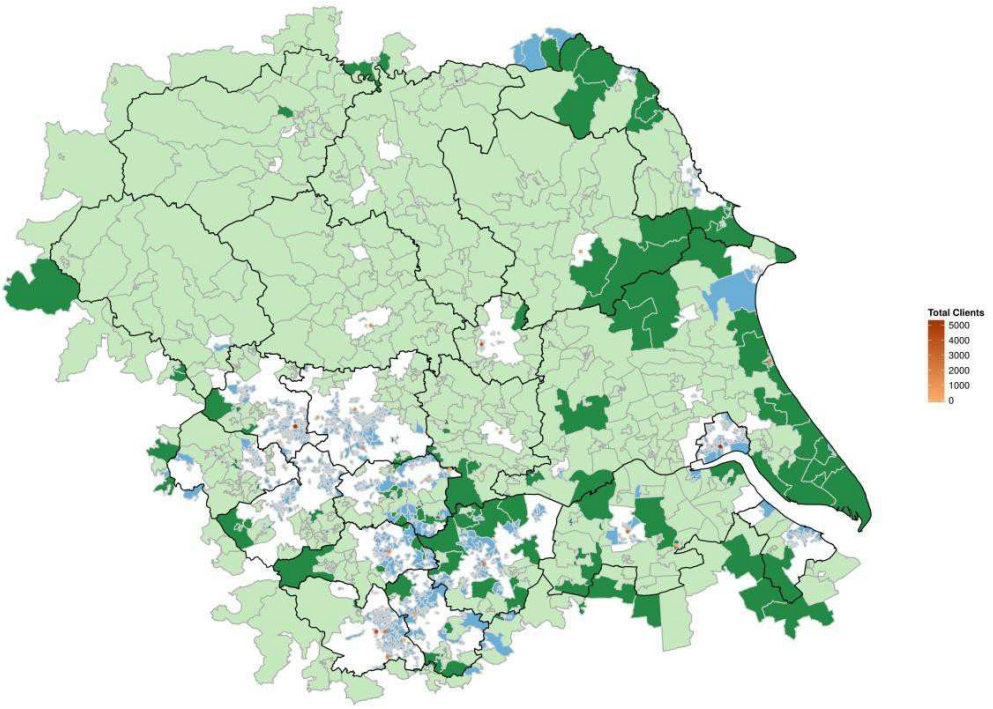
Expenditure by electricity payment method

Households using PPMs have the lowest median level of expenditure on fuel and food, and the lowest proportion of households paying over the sample median compared to other payment methods. Households on fixed annual bills spend the most on food.

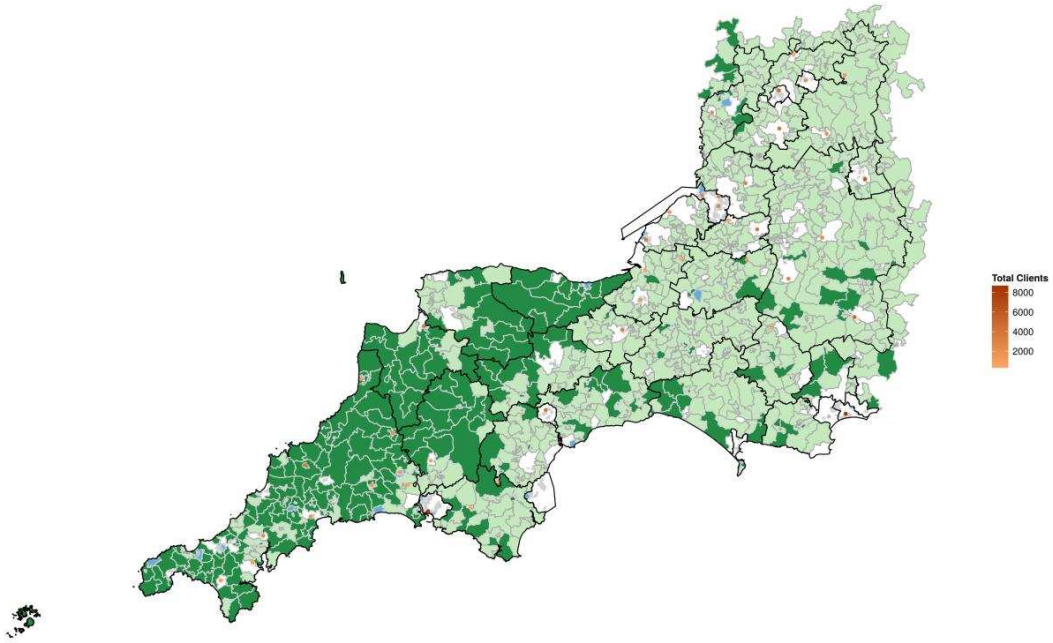
5c. Mapping

Overall, the regional mapping (for all regions) identified that the South West appears to have the highest number of fuel poverty priority areas with foodbank provision. Whilst other regions including Yorkshire and the Humber had areas which were both fuel poverty priority areas and had a foodbank, the South West differed in light of the concentration and number of areas with the presence of both indicators. Initial informal conversations with both the Trussell Trust and National Energy Action indicate that Cornwall has a particularly active set of community and policy responses to issues of food and fuel poverty and our scoping of stakeholders for telephone interviews certainly appears to support this perception. Below we present the maps for Yorkshire and the Humber (map 1) and the South West (map 2). See also 'Annex C' for full versions of these maps.

Map 1: Yorkshire and the Humber



Map 2: the South West



5d. Household Interviews

The household interviews directly addressed the first aim of this research project – i.e. to assess whether the heat or eat dilemma discussed within policy debates is part of the lived experience of rural poverty in the current era of austerity. Objectives here were to:

- determine whether low income rural householders have ever had to make choices between food and heating;
- understand how food and heating costs are prioritised in household budgeting decisions;
- ascertain whether the concept of heating or eating reflects lived experiences.

The experiences of 11 interviewees, all recruited based on their attendance at one of four Cornish foodbanks are described below. Participant experiences were substantially shaped by contextual factors, and these are outlined first.

Context[3]

Income: With one exception all interviewees were either partly or wholly dependent on social security for their income at the time of the interview. Several reported being on ESA with DLA/PIP payments or living in a hostel and as a result had been cushioned from some of the changes in the benefits system. However, the majority of the participants had experienced a reduction in their incomes as a result of the welfare reforms. Whilst specific changes such as the removal of the 'spare room subsidy' had a financial impact on some households, '*[the] money's gone down so it's been hard to adjust what I spend my money'* [Laura], other cuts to services such as reduced library hours, job centre facilities, and CAB debt relief provision were all reported to have a detrimental knock on financial effect. In addition to this several participants referred to the financial impact of rising costs such as rent, energy, fuel, and a variety of goods and services. One participant (Jane) was in formal, full time work. Whilst her contract only guaranteed 12 hours per week she usually worked between 30-32 hours, and sometimes up to 70 hours. This uncertainty was problematic in terms of budgeting, and also affected her ability to claim in-work benefits. Other participants worked informally (Roger, Duncan, Christine), but this was on a highly varied, *ad hoc* basis.

Delays and sanctions: Several participants had experienced benefit sanctions (Roger, Peter, Steven, Duncan) resulting in virtually no household income for extended periods of time. Roger, a recent widower and single father described having no income for a month and falling behind with his rent and bills as a result. For several participants the cuts to local services made it harder to conduct the job searches required for JSA, and the lack of internet search facilities at the library or job centre made personal internet access essential given the threat of sanctions. Other participants reported substantial delays in benefit payments, again, resulting in a period of serious financial hardship (Sam, Steven, Christine, Laura, Dan). One participant reported waiting for a period of 11-12 months before receiving her PIP (Christine). Similar to Roger's situation, interviewees in this position reported falling behind with payments such as rent and council tax, using little fuel in the home, and relying more heavily on the foodbank as a result as described in Box 1.

Box 1: the impact of benefit delays and sanctions

'The payment wasn't made, so she was like, "Get down to the food banks, see what they can do' [Steven]

'I'm in rent arrears at the moment because when I first moved in five months ago the ESA took three/four weeks to pay me…I now owe £156 and they keep saying, "Oh, you've got to pay £60/£70, but … I can't pay it because I've got to feed myself, at the end of the day. Then they say, "Oh, if you don't pay it you're going to get evicted", pretty much' [Dan]

' Well I was on ESA and I applied for PIP September last year or August last year and I didn't get it until September this year. That was pretty savage because I was on £100 a fortnight…that was a nightmare. And feed them [children] and make sure that there was electric and that they had clean underwear and school clothes' [Christine]

Benefit changes: Interviewees also talked about the effects of receiving benefits less frequently, which made budgeting more difficult [Dan, Sam, Peter, Andrea, Roger, Christine]. Several reported finding it hard to make the money last for the longer period: '*That's why I've had to come to the food bank today'* [Sam].

Living in a rural area: Living in a rural area made fulfilling job seekers' requirements difficultand access to a car made a substantial difference to participants' ability to participate in everyday activities (such as attending job interviews, going to the job centre, taking children to school, going to the supermarket). However, this was dependent on having sufficient money for fuel, tax and insurance, with one participant reporting that he had driven uninsured and had lost access to his car as a result of being caught. The majority of participants commented that public transport was expensive and that routes were time consuming, infrequent, limited and unreliable. Several participants reported being sanctioned for not attending job centre meetings despite accessibility problems *'Peter was in an awful situation, they actually sanctioned him because he was unable to get to benefit centre for four days and he didn't actually have any transport and there's no regular buses where he lives and all of these reasons apparently aren't valid'* [Andrea referring to Peter, same issue also experienced by Roger]. For other people transport added a substantial cost to weekly outgoings, for example, Christine did not have access to a car and had an arrangement where her children visited on certain weekdays and weekends. In her case she relied on taxis costing approximately £15 per trip. Several interviewees described not having access to the gas infrastructure, and in some instances a reliance on coal, wood, or oil for heating.

Household composition and family structure: Household composition and family structures played a substantial role in both shaping coping mechanisms and shielding some households from financial shocks (see section 4.2). Where children were present in the home a variety of actions were taken to protect them from the effects of financial hardship. In Rachel's case she relied on family members for support during periods of severe financial hardship '*Yes, before I have gone to my dad's with the kids just to make sure they can have a meal and have eaten and been fed'* [Rachel]. Equally, finding ways of keeping children warm was also mentioned '*I go to the library with the kids quite a lot on the weekends because they like going there and they've got computers there and toys and that. They don't really read books when they go in there but we go there quite a lot... [it's] warmer than my house. Anywhere is warmer than my house'* [Christine].

Housing: Three interviewees (Dan, Duncan and Sam) were in a hostel, whereas the remainder rented their accommodation privately, through a social landlord, or the council. Whilst fuel poverty research typically identifies the private rented sector as the most energy inefficient, there were no discernable differences across tenure type. Indeed, some private landlords appeared willing to help in terms of energy efficiency improvements and repairs, whereas in other instances the social/council landlord was not, and vice versa. Experiences of housing varied substantially with various problems with the physical build and housing

quality reported (Laura, Peter, Christine, Roger, Rachel and Andrea). In one instance an interviewee (Rachel) and her family were living in Housing Association accommodation that had substantial energy efficiency improvements (including solar panels), however, problems with these meant that household energy bills were substantially higher than expected. However, even living in an energy efficient house did not mean that participants were able to afford to use sufficient heating.

Managing household finances

Interviewees were asked to rank their financial priorities. These varied depending on household composition (most notably where there were children spending time in the home, or the number of earners within the house), tenure, social & familial networks (being able to borrow or access support from friends or family), household income, presence of debt, and specific needs (such as internet access for job searches). Transport was an additional complexity for many of those interviewed, who were either trying to keep a car on the road (Andrea, Peter, Rachel); for those that relied on taxis for childcare arrangements (Christine); or those who had to use unreliable, expensive public transport or face walking long distances (Peter, Dan, Sam, Duncan). Rent was typically prioritised, although some participants reported being behind with the rent (Christine, Peter, Laura), especially where this was not directly paid to the landlord or involved paying direct top ups (Laura). Two examples of the ranking exercise are illustrated in Box 2.

Several respondents (Roger, Peter, Duncan) referred to the need to pay certain bills/debts to prevent legal action, this typically included council tax debt given the consequences of not paying it compared to other debts (including a threat of court or prison): ''*Debt I am slowly trying to cut through and as long as I'm starting to pay that I'm not going to end up in court, which would be a problem' [Duncan].* Some bills or debts were side-lined, for example, participants reported not paying their water bills (Andrea, Roger, Jane), or TV licence (with a variety of justifications for these actions including that it was not recognised as a legitimate charge, that it was unaffordable, or that the householder simply deprioritised it in terms of other pressing costs (Christine, Roger)). Across the interviews participants reported struggling to manage day-to-day costs of living, although the effects of being in this situation varied in terms of the support they received (including informal support through friends and family, or formal modes such as CAB debt relief). This is discussed further below.

Box 2: Spending priorities

'Housing comes first because without the house then I wouldn't have food to put in the cupboards or fuel. I wouldn't have anywhere to call my base. So keeping the rent and the council [tax] as it should be is very important. That secures my home so I've got no threat of homelessness for my children. Food is the next important thing because I think everybody in the house needs to be fed and there's not the threat of running out of food. Fuel, because that's going to keep us warm and keep us clean. Clean, housed and fed I think is very important. Private transport so that we can look after ourselves and we can attend appointments' [Andrea]

'Peter: Keep the roof over my boy's head. Keep food in his tummy. We live in the middle of nowhere, we need a car to get about. I put the fuel after that because you wear jumpers and you do get used to the cold. You shouldn't have to, but you do. I need a phone, certainly now I'm starting to work again as well.' [Peter]

Heat or Eat: lived experiences

The ranking exercise covered a broad range of costs including food and fuel. Following on from this, interviewees were asked specifically about food and fuel expenditure, what the term 'heat or eat' meant to them, and whether it reflected their own experiences.

Heat, light, cook or eat? During the ranking exercise fuel was initially placed before food by most interviewees, but in the subsequent discussion most people said they would prefer to 'eat' rather than 'heat' and revised their ranking. These changes were largely as a result of different uses of energy - whilst most interviewees described being much colder than they wanted to, they regarded other uses of energy such as lighting and cooking as more important than heating. For example, Christine said that she wouldn't have access to her children if she didn't have lighting or wasn't able to cook; Laura described needing to use additional energy for laundry as her child had a bladder problem, and Jane commented '*As long as I've got electric, I can boil the kettle and I can have the lights*' [Jane]. Additionally, Roger and Laura both described the importance of having gas or electricity for cooking: '*if you run out of fuel then I haven't got anything….I can't actually cook anything, so that will come before food*' [Roger].

In the specific discussion around 'heat or eat' the overriding sentiment amongst households paying for their energy[4] was that food was a greater priority. Numerous respondents agreed that the phrase reflected their experiences (Roger, Duncan, Andrea, Peter, Christine, Laura), with several interviewee comments outlined in Box 3.

[4] Those living in Hostel arrangements did not pay for the energy they used

Box 3: Experiences of Heat or Eat

'Roger: 'If we have a cold spell I don't have any heating on or anything. I just don't have any money to put in the electric, it is quite sad. I have been sat there with loads of jumpers on and you can see your breath…but I would rather have food than heat. As long as you have got food inside you then you are heating yourself because you have got fuel'

'Duncan: It's always been food. Because I'd always- my mum's the same, she'd always rather I picked up food that we had, so we have food rather than heat and then go hungry… I'd rather make sure I've got food that I can eat regardless. Because if I'm going cold I'm going cold. It's life'

'Christine: It means deciding whether to have the lights on and some heating on or eating. That's literally it. That is my life struggle basically.

Interviewer: It is a reality?

Christine: Yes, it's a total reality'

'Laura: I've had to make sure that we've got food in the house before we have heating. If I haven't got food in the house then obviously we're going to end up being ill, so we need to make sure there's food in the house. If that means we can't afford heating then we can't afford heating'

However, despite these comments, much of the evidence within the interviews was not of a binary 'heat or eat' choice, but instead reflected rationing expenditure on both food and fuel. In terms of fuel, there was evidence of people relying on blankets and extra clothing in place of spending additional money on heating (Duncan, Roger, Christine, Andrea). Equally, participants reported only heating certain rooms, usually for short periods of time: '*I'd love to have more heaters on in the house. Every time I have to go to the toilet, I have to gear myself up for ages because I don't want to have to go upstairs and then take a layer of clothes off*' [Christine], or only using heating when children were present.

Similarly all participants discussed the quality of the food they were consuming '*I think everybody wants for a few more quid, but when you're wanting it for things that are a fridge full of food and some oil in a tank, and it's trying to get both rather than either or…Because your diet suffers definitely, most definitely*' [Andrea]. Several participants commented that their diets were not as they would like them to be, particularly lacking in fresh meat, fruit and vegetables. A variety of quotations are indicated in Box 4.

Box 4: Food consumed

Duncan: I would be on a lot more protein, a lot more high quality protein and a lot more on the carbs etc., than I am. I'm eating a lot of tinned stuff that's not giving me exactly what the body needs to function correctly.

Interviewer: Do you get as much variety as you want with your food?

Rachel: No, when we get the milk vouchers through we will go and get fruit and vegetables so the kids get the nutrients they need. But no, not really.

Interviewer: Okay, so you don't get the variety of food that you-?

Sam: Yes, that I'd prefer. Yes.

Roger: No, not at all. For the training I do I should be eating a lot more greens and I just can't afford it. There is just no way…[instead I eat] pasta and rubbish like that. You have got to do what you have got to do.

Peter: But it is cheap, convenient foods, like your frozen chicken kievs and your frozen this and your frozen that. That's what we live on

Christine: Just being skint, not being able to afford the things that you need just to have a comfortable life, like not being cold all the time and not being able to afford things like bread and milk and things, things that you need.

Laura: Respondent: It's because it's the cheapest option. It's a cheaper option, fruit and vegetables nowadays are more expensive than a bag of chips. So it's like no, get a bag of chips instead.

Andrea: But I'm speaking as the mum of the house, quite regularly and that, we don't even have a weekly roast, things like that because of money. That frustrates the life out of me.

For many interviewees (who were all sampled through a foodbank) the foodbank and other emergency food support provided a buffer in terms of food spending, albeit one that was recognised as extreme and unsustainable.

The impact of billing periods: For those on standing credit modes of payment (Roger, Rachel) the quarterly energy bill had a substantial effect on household finances. When Rachel's family received its winter energy bill the family often struggled to have enough food (despite a payment plan being in place) resulting in a visit to the food bank: *'Yes, we get given our bill and this one was £690 and then it is broken down over the next three months for what you pay until it is paid off. At the end of the three months whatever is outstanding we will pay a lump sum, which isn't very good because sometimes it can be £200. That is when we need help and we end up at the food bank'* [Rachel]. For Rachel's family the effects of the quarterly bill meant that financial pressures occurred less regularly than other interviewees: *'I think if I was on a key meter then yes I would have to make that [heat or eat] choice'* [Rachel], but the consequence was a financial crisis at certain points in the year, especially following a cold winter. Equally, Roger reported a similar experience: *'I do try and keep my bills up to date so I am not chasing them all the time. Some weeks it is really difficult. When I first moved in there it was six months before I got a gas bill and it was £90-odd. I was like, "There is my giro gone." Obviously that affects you then for the next two weeks'* [Roger].

Another interviewee, Andrea, relied on kerosene heating oil which could only be delivered in quantities of 500 litres or more, costing between £200-300. She found that saving up for this was difficult '*normally I find it very, very hard to try and – out of weekly or monthly money – save up the money to get the £300 in advance for the delivery. So then obviously if I'm trying, like now, if I said, "Right I'm going to save for the next month to get this oil", if it gets cold and it's winter in the meantime between now and when I'm trying to save, I will dip into that money to put on extra electric to plug in more electric heaters to try and make my house warmer for the children, but then I'm in the trap that I'm not saving because I keep dipping into that money*' [Andrea]. Eventually, she received support for this payment, however, once again, it indicates the impact of billing periods on household finances, and the added complexities of living in a rural area.

Various respondents reported being placed on a PPM after falling behind with large bills (Jane, Laura). Almost all participants interviewed were on a PPM, and the decision to top up the PPM versus buying food was discussed on several occasions, with priority usually given to food (Box 5). Several participants reported being disconnected from their energy supply for a couple of days if they could not afford to top up their meter (Duncan, Christine, Jane). The effects of repaying energy debts through PPMs was mentioned by several participants who commented that as a top up was made, money was reclaimed by the energy company (rather than being available for spending on fuel).

Box 5 Topping up or buying food?

'Interviewer: For your electric you're both on the pre payment meters. Has it ever come to a point of like, £5.00 food?
Peter: Yes.
Andrea: Yes. I've had it on the emergency beeping at me, thinking £5.00, do I put it on now or do I try and chance it until the Monday, until pay day and get the food? It has to come to food like Peter said… Whereas, if you put on extra jumpers and do a hot water bottle and have something to eat, you know what I'm saying?'

'Interviewer: So sometimes you'll let the prepayment run out if there's no food?
Laura: Yes'

'Christine: I hardly ever shop. It's only really when I've got the kids that I actually go to the shop and do some shopping. All my money goes on electric so I hardly ever go shopping unless I've got the kids and then I make an effort to make sure I've got stuff for them'

Health and well being:
The health impacts of a poor diet and living in cold, damp conditions were discussed by several participants. Andrea, Laura and Christine all reported underlying health conditions (including asthma and pleurisy) that they felt were worsening as a result of living in a cold, damp home.

The stress of living with money problems and debt was mentioned by several participants: '*Rachel: when we have got rent problems and bill problems as well, it kind of gets me down then. Last week I went and saw [manger] at the food bank and I was in tears because of it all. I suffer with depression anyway so it got to me a bit more'*. Several respondents reporting embarrassment or shame because they had to ask for help: *' I first used them, I came down here [foodbank] about last summer some time. We got to the point where the cupboards were totally and utterly empty. I couldn't even send John to school. It was embarrassing as hell. I had to take him up to school and ask the Headmistress, the teacher, if they could provide [my son] with a packed lunch because I didn't even have anything in the cupboard to do that' [*Peter].

Coping strategies

Networks: Where there was more than one adult in the house there was greater ability to 'juggle' finances – e.g. offset bills against benefit payments. Where householders were alone, and especially if they had no familial or social network they had fewer options during times of financial hardship. Interviewees that were able to draw on social or familial networks (within or beyond the household) described borrowing money (Brendan, Duncan) in some cases specifically for food, electricity or petrol (Andrea, Peter, Dan, Christine), being fed or given food (Dan, Christine, Rachel, Roger), using other people's hot water (Andrea), or having essentials such as electric (Christine) or Broadband (Jane) paid for by other

people. Christine commented: '*I'll just leave the house for a couple of days and go and stay at a friend's house until I can afford to get electric*'. For others, the combination of a lack of support network, a preference not to ask for help, led to the extreme situation of having no food in the home: *'She [foodbank manager] she gives me food…like out of date stuff because she knows I won't ask unless I really need it. I would rather have nothing in my house*' [Roger].

Other than relying on friends, family or formal modes of support, participants had turned to extreme measures in order to cope. Andrea reported stealing *'I've shoplifted things to feed my child, my situation has been that bad'* to ensure that she had food, whereas Laura described having taken a doorstep loan in the run up to Christmas, and had just been dropped off at the foodbank by a debt collector. She was paying back the £200 loan at a rate of £10 per week for 12 months: *'We were really struggling, we didn't have any food, we didn't have anything, electric, gas or anything like that. It was just a door stop loan person knocked on the door with a leaflet and I was just like, "Come in, I need a loan." I was right at rock bottom then and I just thought I got to get it…, I took out the loan to secure everything and get obviously electric and gas and a bit of frozen food because obviously the Food Bank only do tinned, they don't do anything frozen'* [Laura].

Policy support: Whilst all participants had accessed emergency food support (indeed this was how they were sampled), some had been referred through the CAB and Salvation Army (Laura, Charlotte), whereas others had accessed the services informally having previously built up relationships with food bank staff. Several participants also reported receiving healthy start food vouchers (Rachel) and being eligible for free school meals (Peter and Laura). However, Peter provided his son with packed lunches, and preferred not to accept the support offered.

In terms of fuel poverty support there was very little awareness of available schemes, despite this being a rural fuel poverty policy priority area. Additionally, despite many of the participants being in receipt of the qualifying benefits for the Warm Home Discount scheme (WHD) very few appeared to have applied for it. Experiences of fuel poverty schemes were mixed. On the one hand Andrea had been helped by the council to apply for the WHD and reported a positive experience: *'When I asked for help from these people they said yes and then I got my [hot] water switched back on. Honestly, the way the kids were reacting about hot water coming out of the tap, you would think that I'd just told them we were going to Disneyland. They were like, "The hot water's running. Yay mummy, you fixed it, you're a superhero, we can have our bath". And in a way it makes you feel happy but in an also way it makes you feel rubbish that you haven't been able to meet that basic need for however long. Do you know?'* [Andrea]

On the other hand, Roger was informed that he was eligible for a £12 discount on his electricity PPM, but this did not appear easy to claim and took eight months to organise:

'Roger: Only that £12 government thing which is a big hassle for me. When it first came out I got a letter and I went to the shop to put it on and it fucked my electric key up and then

fucked the meter up. I had to have a new meter and a new key. It has taken eight months to give that to me on a key meter. I phoned them up two weeks ago because it ended on the 20th February and because it had gone past the 20th February they weren't going to let me have it. I said, "Hang on a minute you wrote me a letter on the 1st January saying I am entitled to this." They said, "Yes, but it is the 21st February now." I said, "Irrelative, you still offered it in black and white, you owe me £12." They weren't going to do it. I had to kick up holy hell to get that'

In addition to the payments available to fuel poor households, Duncan's family had accessed a fuel debt management scheme which had eased financial pressure on the household.

As described in section 1, two interviewees lived in houses that had the potential to provide cheap energy, but were not feeling the benefits of this. The solar panels on Rachel's Housing Association accommodation did not work (a problem that had been escalated to the local MP), this resulted in her paying more than anticipated in electricity bills. On the other hand, Laura lived in a modern, energy efficient house but still could not afford to heat it.

Messages to policy makers

Respondents were asked what they needed from policy, and whether they had a message for policy makers. The overriding message was 'live a week on my budget' (Christine, Andrea), and a suggestion that policymakers didn't understand the needs of people on very low incomes (Jane, Roger, Duncan, Steven). Almost all participants described the cost of living being problematic, especially in the context of increasing fuel bills and housing costs and decreasing welfare payments.

Comments from Foodbank Managers

Given the relatively small number of household interviews conducted, the managers of the foodbanks they were sampled from were also interviewed. The challenges and drivers identified in the interviews very much reflect the national statistics provided by Trussell Trust (2015). The particularly localised issues appear to be the cost/availability of transport, cost of heating and predominance of low paid seasonal work. Particular issues identified across the interviews were:

- Low income (in and out of work) not making ends meet/not going far enough
- Low paid, insecure (including zero hour contracts), seasonal work
- Debt (of varying kinds)
- Social Security administration - Sanctions and benefit delays and problems associated with switching benefits
- General cost of living
    - Cost of heating (and the fact costs are required in advance for fuels such as oil), transport, and high water bills.
- Domestic violence

Other issues cited in individual interviews included: housing occupancy (poor/very expensive heating provision in rented homes); food prices (lack of variety of shops); ill health; job losses; cuts to council services meaning less support readily available; a perceived lack of life skills (meaning people are less self-sufficient); and perceived issues with budgeting.

When asked about the existence of a heat or eat dilemma, all of the foodbank managers thought this was a choice their clients faced:

> 'Yes, it's the most common thing, really, we're seeing. I haven't got any accurate stats for that, but it's a day-to-day problem.'

> 'So because of it being a rural area the transport and the heating means you can't eat well, in my view'

One foodbank have obtained a grant to run a scheme called Surviving Winter, alongside their foodbank provision:

> 'We've got a grant which is called Surviving Winter. We can, at our discretion, give people money or take them to the Co-Op or wherever, and top up their key meter. Or if they need winter clothes'

5e. Stakeholder Interviews

The stakeholder interviews addressed both of the research aims, in specific ways. They provided insight on the extent to which stakeholders considered the heat or eat notion reflected lived experiences and the challenges and barriers people faced. These interviews were also key to meeting the project's second aim of critically assessing existing rural community-based and (local and national) policy support.

Heat or Eat: Stakeholder perspectives on lived experiences

There was a sense from some stakeholders that people couldn't afford either sufficient food or fuel. A general point was made about how people adapt their diets because they can't

afford the fuel to cook, but also that some people are not able to afford to heat the food they obtain from a foodbank. All the stakeholders reported that some people in Cornwall struggled to both heat their homes and afford food, suggesting that the 'heat or eat' dilemma reflects lived experiences. Stakeholders were asked what the key issues and challenges were that people faced in terms of food and fuel poverty and the 'heat or eat' choice. Structural issues of rurality, income, housing and household structure were highlighted as key drivers of food and fuel poverty and the heat or eat dilemma.

In relation to 'heat or eat' specifically, rural isolation (social and physical) and problems accessing support were raised. The increased travel required to get to services combined with short opening times made accessing available support problematic. Equally, the extent to which existing services were able to cover everyone in need was also questioned. Access to CAB advice was one example given, and the fact that providing telephone support was not felt to be appropriate for some clients, as was the example of limited library computer provision meaning people struggled to access computers to apply for jobs (this issue was also raised in the household interviews). Access to shops via public transport was also seen as a significant challenge. Houses being off the gas and electricity grids was seen as particularly problematic and the consequences of this, such as high fuel costs. It was also noted that cabling can be poor, causing power cuts and that people can have difficulty getting help sorting this out if mobile and broadband coverage is poor. One stakeholder cited that only 50 per cent of homes were on mains gas (typically used for heating). Given this, 13 per cent of households relied on electric heating with the remainder using LPG, oil or solid fuel (all typically more expensive than gas).

The local labour market was highlighted as a specific driver of 'heat or eat' , as the dominance of seasonal, low paid, insecure and part-time work available typically resulted in greater hardship over winter (which is when energy bills are highest). There was also a sense amongst the interviewees that welfare reforms had heightened vulnerability.

In terms of the decision to 'heat or eat', some stakeholders cited housing costs as an issue as well as the quality of housing stock, particularly in the private rented sector but also the stock being cold and damp generally. The effect of second homes was also mentioned in relation to artificially raising local rents, and encouraging short tenancies through the winter, because they are holiday lets in the summer. The issue of park homes and the private landlords of these was also raised.

A variety of problems associated with PPMs were raised by stakeholders regarding food and fuel poverty and included: standing charges building up over the summer; being more expensive; a lack of awareness that people can still switch provider on a PPM, and low uptake of people on PPMs to the 'Collective Switch' initiative (only 1 per cent of people registered were on PPMs).

Policy and community support

As Annex B illustrates there exists a suite of local level initiatives serving Cornwall. Fuel poverty provision includes national schemes operating locally such as the work of National Energy Action and funds provided by British Gas and EDF. There are a similar range of food

poverty initiatives ranging from food banks (Trussell Trust and independent projects) to the Food and Cornwall Programme and other hub/connectivity work – such as the Feeding Britain regional hub.

Connectivity between the provision that exists: The stakeholders cited numerous networks, though it is hard to tell from the data how co-ordinated efforts are within them. The Winter Wellbeing Programme was mentioned as a key point of connectivity and Community Energy Plus was also cited a few times. There appears to be a variety of other networks in the area, covering a range of social issues including debt forums, financial capacity forums, Cornwall Food bank Forum (including independent and Trussell Trust initiatives), and the Feeding Britain regional hub that the Bishop of Truro is establishing.

Stakeholder perspectives on efficacy: Stakeholders suggested that what existed did a good job, that there was growing uptake of the provision available and that there was a variety of initiatives at work. However, stakeholders also acknowledged the limitations and challenges of what was available and interviewees referred to provision being 'limited but better than nothing' or 'effective where projects are'.

Challenges highlighted by stakeholders included: lack of funding; lack of recognition of the good work done with limited resources; raising awareness of the help available; limited joined up or co-ordinated work; and accessing hard to reach groups. Stakeholders also commented that the need for support appeared to be increasing, and concern was expressed that community initiatives shouldn't come to replace the welfare state was.

Challenges particular to fuel poverty support were also highlighted and included: the changing nature of funding for fuel poverty interventions, with less direct installations and more advisory and signposting work involving other agencies; and lack of consistency between energy companies (and their targets) and commercial interests. It was also noted that the Green Deal had not been the success it could have been; and there is little assistance to help people improve their own properties (for example they can't help replace boilers).

What is required or forthcoming: Stakeholders discussed a range of requirements in terms of responding to issues of food and fuel poverty including: longer term, more secure, funding for initiatives; smarter and more joined up working; and both addressing root causes and suring up and improving emergency/responsive provision.

There seems to be fairly little concrete upcoming work. The Trussell Trust has two pilot programmes (triage for debt and finance advisors; and 'eat well, spend less' courses) which could be rolled out and there are directives from national government for a central heating fund and from the Food Poverty APPG on minimum standards for pre-payment meter customers.

6. Policy Implications and Recommendations

Within the case study area:

- The stakeholder interviews suggested that existing provision does provide positive forms of support but that the sector faces key challenges (many of which are applicable generally to the voluntary sector - short term funding, lack of co-ordinated working, root causes for example income and low paid work left unresolved).
- The gaps in provision which were identified included: the need for longer term, more secure, funding, smarter and more joined up working; and both addressing root causes and securing emergency/responsive provision.
- The household interviews indicated the negative effects of cuts to other local services and the loss of local services (such as libraries, internet facilities in the job centre) places a greater (often financial) burden on households

Within the national context:

- Delays in social security payments and social security sanctions had disastrous effects on households in this sample. Sanctions pushed households into debt, and in some cases led to more risky behaviours, such as driving uninsured. They were also harmful to children in the affected households, with households reporting having little food in the house and self disconnection from their energy supply.
- Households reported repaying energy debts through their PPM, this was usually out of their control, and had a substantial knock on effect in terms of being able to use sufficient energy or purchase other essentials including food.
- The complexity of energy efficiency and fuel poverty schemes acted as a barrier for both advisors and households

Policy Recommendations

- A clearer picture of available support, and how and whether it is currently reaching those most in need is necessary.
- Responses are required which address root causes and work towards prevention of (fuel and food) poverty as well as provide immediate relief.
- There is a need for longer-term, more secure funding, joined up working, and cohesion across schemes and programmes.
- There is a need for recognition of the negative effects of social security payment delays and sanctions, and greater protection needs to be put in place to support the most vulnerable households.

7. Next Steps

More direct research investigating the heat or eat trade off is needed, preferably through survey data. Both consensual and expenditure information are necessary in order to

capture both what people spend and how far they achieve minimally acceptable standards of living. Diary information would also be helpful to see how long PPM customers go before topping up and how spending decisions are made. Focus groups might also be useful following this, to understand spending decisions.

It will also be important to ascertain the perspectives of national stakeholders, for example energy companies, and what they think about these issues and also those managing schemes such as fuel direct offered through the DWP. It would also be important to gather stakeholder perspectives on the extent to which energy debt is treated differently compared to other debts.

8. Impact

A stakeholder workshop was held on the 21st July 2015 with attendees from a variety of sectors including independent governmental, third and private sector organisations. The findings were well received and participants made several points about the value of the research most notably:

- The usefulness of the 'heat or eat' concept, in terms of highlighting the stark choices people faced regarding these two distinct commodities on a day to day basis, and communicating results to policy makers
- The importance of the 'lived experience' dimension of our research
- The importance of continuing this research agenda

We will also promote findings on social media. Stakeholders involved in the research will receive a summary of the research findings.

9. Dissemination

The findings of this research have been presented at the following events:

- December 2014 CCN+ Collaborative Futures event
- Energy poverty workshop, University of Manchester, 14th May 2015
- Stakeholder Meeting 21st July 2015

In addition to this report we plan to publish at least two journal articles from this research.

10. Funding

N/A to date but we are working on a bid now. Participants at the stakeholder workshop suggested that future work could consider: the relationship between health, food and fuel; how food is rationed by households; the relationship between energy billing periods and other expenditure; the role of Local Authorities, Clinical Commissioning Groups (e.g. public health) and Energy Companies in the food-fuel policy agenda.

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Heat or Eat: Food and Austerity in Rural England

Final Report July 2015

Annex A – Full statistical analysis of the Family Resources Survey and Living Costs and Food Survey

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Carolyn Snell
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Family Resources Survey – household weight applied

Do you eat at least one filling meal a day? (OAP) *OAMEAL*

Descriptive statistics

This question is asked in households where there are no dependent children and at least 1 adult aged State Pension Age: Do you eat at least one filling meal a day? Binary yes/no answers.

Table 1 Do you eat at least one filling meal a day 2012/13 data

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	8539932	31.9	99.0	99.0
	No	88283	.3	1.0	100.0
	Total	8628215	32.2	100.0	
Missing	System	18179559	67.8		
Total		26807774	100.0		

Filling meal per day by consensual measures of fuel poverty (OAWARM and OADAMP)

A chi-square test of independence found a statistically significant association between people of pension age eating at least one filling meal per day and keeping their home adequately warm X^2 (1, *N*=8628215) = 33406.62 *p* <.001. However, in terms of the effect size, the Phi-Coefficient indicates a negligible relationship φ = .06, *p* <.001.

Table 2 Cross tab of OAMEAL and OAWARM 2012/13 data

			Is your home kept adequately warm		
			Yes	No	Total
Do you eat at least one filling meal a day	Yes	Count	8229226	310706	8539932
		Expected Count	8218950.2	320981.8	8539932.0
		% within Do you eat at least one filling meal a day	96.4%	3.6%	100.0%
		% within Is your home kept adequately warm	99.1%	95.8%	99.0%
		% of Total	95.4%	3.6%	99.0%
		Std. Residual	3.6	-18.1	
	No	Count	74689	13594	88283
		Expected Count	84964.8	3318.2	88283.0
		% within Do you eat at least one filling meal a day	84.6%	15.4%	100.0%
		% within Is your home kept adequately warm	0.9%	4.2%	1.0%
		% of Total	0.9%	0.2%	1.0%
		Std. Residual	-35.3	178.4	
Total		Count	8303915	324300	8628215
		Expected Count	8303915.0	324300.0	8628215.0
		% within Do you eat at least one filling meal a day	96.2%	3.8%	100.0%
		% within Is your home kept adequately warm	100.0%	100.0%	100.0%
		% of Total	96.2%	3.8%	100.0%

A chi-square test of independence found a statistically significant association between people of pension age eating at least one filling meal per day and having a damp-free home X^2 (1, *N*=8628215) = 5876.77 *p* <.001. However, in terms of the effect size, the Phi-Coefficient indicates a negligible relationship φ = .03, *p* <.001.

Table 3 Cross tab of OAMEAL and OADAMP 2012/13 data

			Do you have a damp-free home		
			Yes	No	Total
Do you eat at least one filling meal a day	Yes	Count	8007854	532078	8539932
		Expected Count	8002350.3	537581.7	8539932.0
		% within Do you eat at least one filling meal a day	93.8%	6.2%	100.0%
		% within Do you have a damp-free home	99.0%	98.0%	99.0%
		% of Total	92.8%	6.2%	99.0%
		Std. Residual	1.9	-7.5	
	No	Count	77222	11061	88283
		Expected Count	82725.7	5557.3	88283.0
		% within Do you eat at least one filling meal a day	87.5%	12.5%	100.0%
		% within Do you have a damp-free home	1.0%	2.0%	1.0%
		% of Total	0.9%	0.1%	1.0%
		Std. Residual	-19.1	73.8	
Total		Count	8085076	543139	8628215
		Expected Count	8085076.0	543139.0	8628215.0
		% within Do you eat at least one filling meal a day	93.7%	6.3%	100.0%
		% within Do you have a damp-free home	100.0%	100.0%	100.0%
		% of Total	93.7%	6.3%	100.0%

Filling meal per day by income deciles (INCDEC)

Total household income was used to create an income deciles variable, with 10 equal groups of income (rather than people), as shown below in Table 4. This can be reconfigured if necessary. Across the dataset, the minimum household income is -£1,934 and the maximum income is £20,008

Table 4 Income decile groups

N	Valid	26806355
	Missing	1419
Percentiles	10	209.00
	20	286.00
	30	363.00
	40	451.00
	50	555.00
	60	675.00
	70	828.00
	80	1037.00
	90	1413.00

A chi-square test of independence found a statistically significant association between people of pension age eating at least one filling meal per day and income deciles X^2 (9, *N*=8628215) = 24340.45 *p* <.001. However, in terms of the effect size, Cramer's V indicates a negligible relationship = .05, *p* <.001.

Table 5 Crosstab of OAMEAL and INCDEC 2012/13 data

			Household Income Deciles										Total
			1	2	3	4	5	6	7	8	9	10	
Do you eat at least one filling meal a day	Yes	Count	1125608	1458754	1324595	1143623	920820	791698	612873	505116	342488	314357	8539932
		Expected Count	1129955.9	1470017.4	1326690.1	1144715.3	920622.9	786134.2	607968.0	502090.6	338983.7	312753.9	8539932.0
		% within Do you eat at least one filling meal a day	13.2%	17.1%	15.5%	13.4%	10.8%	9.3%	7.2%	5.9%	4.0%	3.7%	100.0%
		% within Household Income Deciles	98.6%	98.2%	98.8%	98.9%	99.0%	99.7%	99.8%	99.6%	100.0%	99.5%	99.0%
		% of Total	13.0%	16.9%	15.4%	13.3%	10.7%	9.2%	7.1%	5.9%	4.0%	3.6%	99.0%
		Std. Residual	-4.1	-9.3	-1.8	-1.0	.2	6.3	6.3	4.3	6.0	2.9	
	No	Count	16029	26460	15810	12926	9320	2563	1380	2165	0	1630	88283
		Expected Count	11681.1	15196.6	13714.9	11833.7	9517.1	8126.8	6285.0	5190.4	3504.3	3233.1	88283.0
		% within Do you eat at least one filling meal a day	18.2%	30.0%	17.9%	14.6%	10.6%	2.9%	1.6%	2.5%	0.0%	1.8%	100.0%
		% within Household Income Deciles	1.4%	1.8%	1.2%	1.1%	1.0%	0.3%	0.2%	0.4%	0.0%	0.5%	1.0%
		% of Total	0.2%	0.3%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%
		Std. Residual	40.2	91.4	17.9	10.0	-2.0	-61.7	-61.9	-42.0	-59.2	-28.2	
Total		Count	1141637	1485214	1340405	1156549	930140	794261	614253	507281	342488	315987	8628215
		Expected Count	1141637.0	1485214.0	1340405.0	1156549.0	930140.0	794261.0	614253.0	507281.0	342488.0	315987.0	8628215.0
		% within Do you eat at least one filling meal a day	13.2%	17.2%	15.5%	13.4%	10.8%	9.2%	7.1%	5.9%	4.0%	3.7%	100.0%
		% within Household Income Deciles	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	13.2%	17.2%	15.5%	13.4%	10.8%	9.2%	7.1%	5.9%	4.0%	3.7%	100.0%

Afford to eat meat or fish every second day *EUMEAL_first*

Descriptive Statistics

This question is asked in all households: Can I just check whether your household could afford to eat meat, chicken or fish (or vegetarian equivalent) every second day? Binary yes/no answers.

Table 6 Do you eat meat or fish every second day? 2012/13 data

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	24228013	90.4	91.0	91.0
	No	2410487	9.0	9.0	100.0
	Total	26638500	99.4	100.0	
Missing	System	169274	.6		
Total		26807774	100.0		

Eat meat every 2nd day by consensual measures of fuel poverty (DEBT01_first, DEBT02_first, HOUSHE1_first, COMWArec, COMCOrec, DAMP_first)

A significant association was found between being behind with electricity bills and being able to afford to eat meat or equivalent every second day, with the chi square test of independence as follows X^2 (2, *N*= 26629288) = 1804825.49 *p* <.001. In terms of the effect size, the Phi-Coefficient indicates a weak positive relationship φ = .26, *p* <.001.

Table 7 Crosstab of EUMEAL_first and DEBT01_first 2012/13 data

			Behind with the electricity bill			
			Yes	No	None	Total
Afford to eat meat or fish every second day	Yes	Count	497535	1086913	22640031	24224479
		Expected Count	685566.5	1463644.3	22075268.2	24224479.0
		% within Afford to eat meat or fish every second day	2.1%	4.5%	93.5%	100.0%
		% within Behind with the electricity bill	66.0%	67.6%	93.3%	91.0%
		% of Total	1.9%	4.1%	85.0%	91.0%
		Std. Residual	-227.1	-311.4	120.2	
	No	Count	256089	522030	1626690	2404809
		Expected Count	68057.5	145298.7	2191452.8	2404809.0
		% within Afford to eat meat or fish every second day	10.6%	21.7%	67.6%	100.0%
		% within Behind with the electricity bill	34.0%	32.4%	6.7%	9.0%
		% of Total	1.0%	2.0%	6.1%	9.0%
		Std. Residual	720.8	988.3	-381.5	
Total		Count	753624	1608943	24266721	26629288
		Expected Count	753624.0	1608943.0	24266721.0	26629288.0
		% within Afford to eat meat or fish every second day	2.8%	6.0%	91.1%	100.0%
		% within Behind with the electricity bill	100.0%	100.0%	100.0%	100.0%
		% of Total	2.8%	6.0%	91.1%	100.0%

Similarly, being behind with the gas bill is also found to be significantly associated with being able to afford to eat meat or equivalent every second day, X^2 (2, *N*= 26629288) = 1842149.71 *p* <.001, with the Phi-Coefficient indicating a weak positive relationship φ = .26, *p* <.001.

Table 8 Crosstab of EUMEAL_first and DEBT02_first 2012/13 data

			Behind with the gas bill			
			Yes	No	None	Total
Afford to eat meat or fish every second day	Yes	Count	442120	1142328	22640031	24224479
		Expected Count	653864.6	1495346.2	22075268.2	24224479.0
		% within Afford to eat meat or fish every second day	1.8%	4.7%	93.5%	100.0%
		% within Behind with the gas bill	61.5%	69.5%	93.3%	91.0%
		% of Total	1.7%	4.3%	85.0%	91.0%
		Std. Residual	-261.9	-288.7	120.2	
	No	Count	276655	501464	1626690	2404809
		Expected Count	64910.4	148445.8	2191452.8	2404809.0
		% within Afford to eat meat or fish every second day	11.5%	20.9%	67.6%	100.0%
		% within Behind with the gas bill	38.5%	30.5%	6.7%	9.0%
		% of Total	1.0%	1.9%	6.1%	9.0%
		Std. Residual	831.1	916.2	-381.5	
Total		Count	718775	1643792	24266721	26629288
		Expected Count	718775.0	1643792.0	24266721.0	26629288.0
		% within Afford to eat meat or fish every second day	2.7%	6.2%	91.1%	100.0%
		% within Behind with the gas bill	100.0%	100.0%	100.0%	100.0%
		% of Total	2.7%	6.2%	91.1%	100.0%

Moving on to self-reported measures of fuel poverty, a chi square test of independence found a significant association between being able to afford to keep the accommodation warm enough in winter and being able to afford to eat meat or equivalent every second day, X^2 (2, *N*= 18858515[i]) = 1492045.54 *p* <.001, with the Phi-Coefficient indicating a weak positive relationship φ = .28, *p* <.001.

Table 9 Crosstab of EUMEAL_first and HOUSHE1_first 2012/13 data

			are you able to keep this accommodation warm enough			
			Yes	No	Does not apply	Total
Afford to eat meat or fish every second day	Yes	Count	15259263	1389818	208345	16857426
		Expected Count	14748346.8	1907314.1	201765.1	16857426.0
		% within Afford to eat meat or fish every second day	90.5%	8.2%	1.2%	100.0%
		% within are you able to keep this accommodation warm enough	92.5%	65.1%	92.3%	89.4%
		% of Total	80.9%	7.4%	1.1%	89.4%
		Std. Residual	133.0	-374.7	14.6	
	No	Count	1239811	743907	17371	2001089
		Expected Count	1750727.2	226410.9	23950.9	2001089.0
		% within Afford to eat meat or fish every second day	62.0%	37.2%	0.9%	100.0%
		% within are you able to keep this accommodation warm enough	7.5%	34.9%	7.7%	10.6%
		% of Total	6.6%	3.9%	0.1%	10.6%
		Std. Residual	-386.1	1087.6	-42.5	
Total		Count	16499074	2133725	225716	18858515
		Expected Count	16499074.0	2133725.0	225716.0	18858515.0
		% within Afford to eat meat or fish every second day	87.5%	11.3%	1.2%	100.0%
		% within are you able to keep this accommodation warm enough	100.0%	100.0%	100.0%	100.0%
		% of Total	87.5%	11.3%	1.2%	100.0%

Likewise, a statistically significant association was found between being able to afford to eat meat or equivalent every second day and whether the household is able to heat the home to an adequate standard due to the quality of the heating sources, X^2 (2, *N*= 26541567) = 924418.56 *p* <.001. However, Cramer's V indicates a negligible relationship = .19, *p* <.001.

Table 10 Crosstab of EUMEAL_first and COMWArec 2012/13 data

			Can you keep comfortably warm in your accom in winter			
			No	Yes	Some rooms only	Total
Afford to eat meat or fish every second day	No	Count	445609	1716670	237653	2399932
		Expected Count	136797.7	2122128.6	141005.7	2399932.0
		% within Afford to eat meat or fish every second day	18.6%	71.5%	9.9%	100.0%
		% within Can you keep comfortably warm in your accom in winter	29.5%	7.3%	15.2%	9.0%
		% of Total	1.7%	6.5%	0.9%	9.0%
	Yes	Count	1067278	21752586	1321771	24141635
		Expected Count	1376089.3	21347127.4	1418418.3	24141635.0
		% within Afford to eat meat or fish every second day	4.4%	90.1%	5.5%	100.0%
		% within Can you keep comfortably warm in your accom in winter	70.5%	92.7%	84.8%	91.0%
		% of Total	4.0%	82.0%	5.0%	91.0%
Total		Count	1512887	23469256	1559424	26541567
		Expected Count	1512887.0	23469256.0	1559424.0	26541567.0
		% within Afford to eat meat or fish every second day	5.7%	88.4%	5.9%	100.0%
		% within Can you keep comfortably warm in your accom in winter	100.0%	100.0%	100.0%	100.0%
		% of Total	5.7%	88.4%	5.9%	100.0%

The association between the household's ability to keep the dwelling adequately cool during summer (as a result of equipment rather than affordability) and being able to eat meat or equivalent every second day was also tested using a chi square test of independence and was found to be statistically significant, X^2 (2, *N*= 26484797) = 120637.79 *p* <.001. However, Cramer's V indicates a negligible relationship = .07, *p* <.001.

Table 11 Crosstab of EUMEAL_first and COMCOrec 2012/13 data

			Can you keep comfortably cool in your accom in summer			
			No	Yes	Some rooms only	Total
Afford to eat meat or fish every second day	No	Count	141766	2164048	96059	2401873
		Expected Count	65172.2	2271494.2	65206.6	2401873.0
		% within Afford to eat meat or fish every second day	5.9%	90.1%	4.0%	100.0%
		% within Can you keep comfortably cool in your accom in summer	19.7%	8.6%	13.4%	9.1%
		% of Total	0.5%	8.2%	0.4%	9.1%
	Yes	Count	576870	22883098	622956	24082924
		Expected Count	653463.8	22775651.8	653808.4	24082924.0
		% within Afford to eat meat or fish every second day	2.4%	95.0%	2.6%	100.0%
		% within Can you keep comfortably cool in your accom in summer	80.3%	91.4%	86.6%	90.9%
		% of Total	2.2%	86.4%	2.4%	90.9%
Total		Count	718636	25047146	719015	26484797
		Expected Count	718636.0	25047146.0	719015.0	26484797.0
		% within Afford to eat meat or fish every second day	2.7%	94.6%	2.7%	100.0%
		% within Can you keep comfortably cool in your accom in summer	100.0%	100.0%	100.0%	100.0%
		% of Total	2.7%	94.6%	2.7%	100.0%

A chi square test of independence found a significant association between the accommodation having a leaking roof, damp walls/floors/foundation and being able to afford to eat meat or equivalent every second day, X^2 (1, *N*= 26631886) = 316319.90 *p* <.001. However, the Phi-Coefficient indicates a negligible relationship φ = .11, *p* <.001.

Table 12 Crosstab of EUMEAL_first and DAMP_first 2012/13 data

			Does accom have leaking roof, damp walls,floors,foundations		
			Yes	No	Total
Afford to eat meat or fish every second day	Yes	Count	3620882	20600517	24221399
		Expected Count	3927834.3	20293564.7	24221399.0
		% within Afford to eat meat or fish every second day	14.9%	85.1%	100.0%
		% within Does accom have leaking roof, damp walls,floors,foundations	83.8%	92.3%	90.9%
		% of Total	13.6%	77.4%	90.9%
		Std. Residual	-154.9	68.1	
	No	Count	697846	1712641	2410487
		Expected Count	390893.7	2019593.3	2410487.0
		% within Afford to eat meat or fish every second day	29.0%	71.0%	100.0%
		% within Does accom have leaking roof, damp walls,floors,foundations	16.2%	7.7%	9.1%
		% of Total	2.6%	6.4%	9.1%
		Std. Residual	491.0	-216.0	
Total		Count	4318728	22313158	26631886
		Expected Count	4318728.0	22313158.0	26631886.0
		% within Afford to eat meat or fish every second day	16.2%	83.8%	100.0%
		% within Does accom have leaking roof, damp walls,floors,foundations	100.0%	100.0%	100.0%
		% of Total	16.2%	83.8%	100.0%

Eat meat every 2nd day by household composition (HHCOMP)

A significant association was found between household composition and being able to afford to eat meat or equivalent every second day, X^2 (8, *N*= 26638500) = 573278.81 *p* <.001. However, in terms of the effect size Cramer's V indicates a negligible relationship = .15, *p* <.001.

Table 13 Crosstab of EUMEAL_first and HHCOMP 2012/13 data

			Household Composition									
			Pensioner couple	Single pensioner	Working age couple with children	Working age couple no children	Working age single with children	Working age single no children	Couple mixed age no children	Three or more adults no children	Three or more adults with children	Total
Afford to eat meat or fish every second day	Yes	Count	2774116	3522266	4841280	4269735	1206811	3253131	1158708	2211388	990578	24228013
		Expected Count	2657771.7	3383537.9	4765777.5	4255435.4	1342796.8	3542244.9	1110999.7	2180792.2	988656.8	24228013.0
		% within Afford to eat meat or fish every second day	11.5%	14.5%	20.0%	17.6%	5.0%	13.4%	4.8%	9.1%	4.1%	100.0%
		% within Household Composition	94.9%	94.7%	92.4%	91.3%	81.7%	83.5%	94.9%	92.2%	91.1%	91.0%
		% of Total	10.4%	13.2%	18.2%	16.0%	4.5%	12.2%	4.3%	8.3%	3.7%	91.0%
		Std. Residual	71.4	75.4	34.6	6.9	-117.4	-153.6	45.3	20.7	1.9	
	No	Count	148082	197906	398653	409081	269583	641538	62827	186375	96442	2410487
		Expected Count	264426.3	336634.1	474155.5	423380.6	133597.2	352424.1	110535.3	216970.8	98363.2	2410487.0
		% within Afford to eat meat or fish every second day	6.1%	8.2%	16.5%	17.0%	11.2%	26.6%	2.6%	7.7%	4.0%	100.0%
		% within Household Composition	5.1%	5.3%	7.6%	8.7%	18.3%	16.5%	5.1%	7.8%	8.9%	9.0%
		% of Total	0.6%	0.7%	1.5%	1.5%	1.0%	2.4%	0.2%	0.7%	0.4%	9.0%
		Std. Residual	-226.3	-239.1	-109.6	-22.0	372.0	487.0	-143.5	-65.7	-6.1	
Total		Count	2922198	3720172	5239933	4678816	1476394	3894669	1221535	2397763	1087020	26638500
		Expected Count	2922198.0	3720172.0	5239933.0	4678816.0	1476394.0	3894669.0	1221535.0	2397763.0	1087020.0	26638500.0
		% within Afford to eat meat or fish every second day	11.0%	14.0%	19.7%	17.6%	5.5%	14.6%	4.6%	9.0%	4.1%	100.0%
		% within Household Composition	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	11.0%	14.0%	19.7%	17.6%	5.5%	14.6%	4.6%	9.0%	4.1%	100.0%

Eat meat every 2nd day by income deciles (INCDEC)

A significant association was found between household income deciles and being able to afford to eat meat or equivalent every second day, X^2 (9, *N*= 26637081) = 941800.33 *p* <.001. However, Cramer's V indicates a negligible relationship = .19, *p* <.001.

Table 14 Crosstab of EUMEAL_first and INCDEC 2012/13 data

			Household Income Deciles										Total
			1	2	3	4	5	6	7	8	9	10	
Afford to eat meat or fish every second day	Yes	Count	2175572	2227181	2327870	2367184	2425469	2495020	2517994	2558237	2561466	2570601	24226594
		Expected Count	2448235.5	2433828.0	2421785.3	2407839.8	2423737.1	2426637.5	2411005.8	2415403.3	2417017.6	2421104.1	24226594.0
		% within Afford to eat meat or fish every second day	9.0%	9.2%	9.6%	9.8%	10.0%	10.3%	10.4%	10.6%	10.6%	10.6%	100.0%
		% within Household Income Deciles	80.8%	83.2%	87.4%	89.4%	91.0%	93.5%	95.0%	96.3%	96.4%	96.6%	91.0%
		% of Total	8.2%	8.4%	8.7%	8.9%	9.1%	9.4%	9.5%	9.6%	9.6%	9.7%	91.0%
		Std. Residual	-174.3	-132.5	-60.3	-26.2	1.1	43.9	68.9	91.9	92.9	96.1	
	No	Count	516257	448807	334877	280230	239424	173062	132901	97493	96039	91397	2410487
		Expected Count	243593.5	242160.0	240961.7	239574.2	241155.9	241444.5	239889.2	240326.7	240487.4	240893.9	2410487.0
		% within Afford to eat meat or fish every second day	21.4%	18.6%	13.9%	11.6%	9.9%	7.2%	5.5%	4.0%	4.0%	3.8%	100.0%
		% within Household Income Deciles	19.2%	16.8%	12.6%	10.6%	9.0%	6.5%	5.0%	3.7%	3.6%	3.4%	9.0%
		% of Total	1.9%	1.7%	1.3%	1.1%	0.9%	0.6%	0.5%	0.4%	0.4%	0.3%	9.0%
		Std. Residual	552.5	419.9	191.3	83.1	-3.5	-139.2	-218.4	-291.4	-294.6	-304.6	
Total		Count	2691829	2675988	2662747	2647414	2664893	2668082	2650895	2655730	2657505	2661998	26637081
		Expected Count	2691829.0	2675988.0	2662747.0	2647414.0	2664893.0	2668082.0	2650895.0	2655730.0	2657505.0	2661998.0	26637081.0
		% within Afford to eat meat or fish every second day	10.1%	10.0%	10.0%	9.9%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	100.0%
		% within Household Income Deciles	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	10.1%	10.0%	10.0%	9.9%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	100.0%

Logistic regression

A binary logistic regression model was constructed with EUMEAL_rec[ii] as the dependent variable, and eleven predictor variables, as outlined in the table below.

Table 15 Categorical Variables Codings for logistic regression model 2012/13 data

			Parameter coding								
		Frequency	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Household Income Deciles	1	861	1.000	.000	.000	.000	.000	.000	.000	.000	.000
	2	716	.000	1.000	.000	.000	.000	.000	.000	.000	.000
	3	835	.000	.000	1.000	.000	.000	.000	.000	.000	.000
	4	964	.000	.000	.000	1.000	.000	.000	.000	.000	.000
	5	1215	.000	.000	.000	.000	1.000	.000	.000	.000	.000
	6	1274	.000	.000	.000	.000	.000	1.000	.000	.000	.000
	7	1447	.000	.000	.000	.000	.000	.000	1.000	.000	.000
	8	1487	.000	.000	.000	.000	.000	.000	.000	1.000	.000
	9	1565	.000	.000	.000	.000	.000	.000	.000	.000	1.000
	10	1486	.000	.000	.000	.000	.000	.000	.000	.000	.000
Household Composition	Working age couple with children	3619	.000	.000	.000	.000	.000	.000			
	Working age couple no children	2963	1.000	.000	.000	.000	.000	.000			
	Working age single with children	1047	.000	1.000	.000	.000	.000	.000			
	Working age single no children	2483	.000	.000	1.000	.000	.000	.000			
	Couple mixed age no children	157	.000	.000	.000	1.000	.000	.000			
	Three or more adults no children	1022	.000	.000	.000	.000	1.000	.000			
	Three or more adults with children	559	.000	.000	.000	.000	.000	1.000			
Tenure	Owns it outright	2365	.000	.000	.000	.000					
	Buying with the help of a mortgage	5355	1.000	.000	.000	.000					
	Part own, part rent	74	.000	1.000	.000	.000					
	Rents	3937	.000	.000	1.000	.000					
	Rent-free	119	.000	.000	.000	1.000					
Can you keep comfortably cool in your accom in summer	No	296	1.000	.000							
	Some rooms only	293	.000	1.000							
	Yes	11261	.000	.000							
Can you keep comfortably warm in your accom in winter	No	621	1.000	.000							
	Some rooms only	673	.000	1.000							
	Yes	10556	.000	.000							
Behind with the electricity bill	No	11807	.000								
	Yes	43	1.000								
Behind with the gas bill	No	11808	.000								
	Yes	42	1.000								
Been behind with the electricity bill in last 12 months	No	11700	.000								
	Yes	150	1.000								
Been behind with the gas bill in last 12 months	No	11723	.000								
	Yes	127	1.000								
are you able to keep this accommodation warm enough	No	1035	1.000								
	Yes	10815	.000								
Does accom have leaking roof, damp walls,floors,foundations	No	9897	.000								
	Yes	1953	1.000								

The likelihood of a household being unable to afford to eat meat or equivalent every second day, on the basis of various predictors, has been calculated using binary logistic regression. Odds ratios have been produced, as displayed in the column titled Exp(B) in Table 16 below. Notable results include households in the lowest two income deciles, who are 6.3 and 6.1 times more likely respectively to be unable to eat meat or equivalent every second day compared to households in the richest decile. Households that are currently behind on their gas and/or electricity bills, or that have previously been behind in the last 12 months, or more likely to be unable to afford meat meals every second day compared with households that are not in energy debt. Households that are currently behind on their gas bill are particularly at risk, and are 2.2 times more likely to be unable to afford meat meals every second day. Similarly, households that report an inability to afford to keep their home adequately warm are 2.8 times more likely to be unable to afford to eat meat or equivalent every second day, compared with households that can afford to keep their home warm.

Table 16 Logistic regression statistics 2012/13 data

	B	S.E.	Exp(B)	95% C.I.for EXP(B)	
				Lower	Upper
DAMPbin(1)	.221	.002	1.248	1.242	1.253
DEBT01bin(1)	.133	.014	1.142	1.111	1.173
DEBT02bin(1)	.783	.014	2.189	2.131	2.248
DEBTAR01bin(1)	.678	.008	1.970	1.939	2.001
DEBTAR02bin(1)	-.361	.010	.697	.684	.710
COMCOrec					
COMCOrec(1)	.350	.005	1.420	1.406	1.433
COMCOrec(2)	.320	.005	1.377	1.363	1.391
COMWArec					
COMWArec(1)	.248	.004	1.282	1.272	1.291
COMWArec(2)	-.022	.004	.978	.971	.986
TENURE					
TENURE(1)	.071	.003	1.074	1.067	1.081
TENURE(2)	.685	.012	1.984	1.938	2.032
TENURE(3)	.689	.003	1.992	1.981	2.004
TENURE(4)	.364	.008	1.439	1.417	1.462
HHCOMP					
HHCOMP(1)	.114	.003	1.120	1.114	1.127
HHCOMP(2)	-.118	.004	.889	.882	.896
HHCOMP(3)	-.229	.003	.796	.791	.801
HHCOMP(4)	-.429	.010	.651	.638	.664
HHCOMP(5)	.512	.004	1.669	1.657	1.680
HHCOMP(6)	.563	.004	1.756	1.741	1.772
INCDEC					
INCDEC(1)	1.840	.005	6.298	6.239	6.358
INCDEC(2)	1.804	.005	6.071	6.012	6.130
INCDEC(3)	1.232	.005	3.429	3.396	3.463
INCDEC(4)	.792	.005	2.208	2.187	2.230
INCDEC(5)	.823	.005	2.276	2.255	2.298
INCDEC(6)	.331	.005	1.393	1.379	1.406
INCDEC(7)	.301	.005	1.351	1.338	1.364
INCDEC(8)	-.177	.005	.838	.829	.846
INCDEC(9)	-.060	.005	.942	.932	.951
HOUSHE1bin(1)	1.025	.003	2.786	2.769	2.803
Constant	-3.827	.005	.022		

Note 1 R^2 = .07 (Cox & Snell), .17 (Nagelkerke). p <.00

Living Costs and Food Survey 2012 – household weight applied

Dataset background and data transformations

Dataset information

Data from the 2012 edition of the Living Costs and Food Survey (LCFS) has been used. The LCFS is the successor to the Expenditure and Food Survey, and since January 2008 it has provided information on all household expenditure patterns across the United Kingdom, including food and energy expenditure. The primary use of the LCFS is to provide information for the Retail Prices Index.

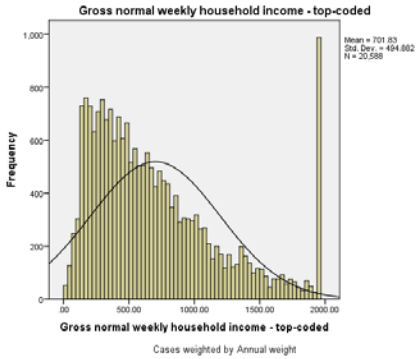
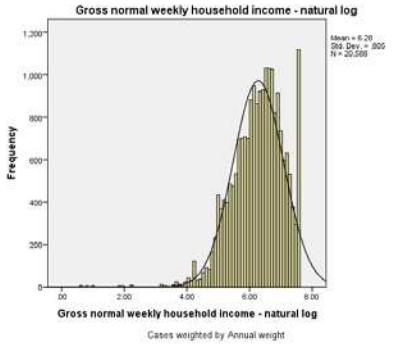
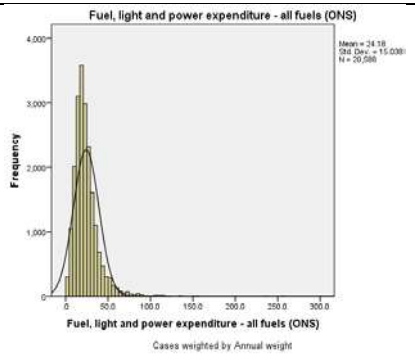
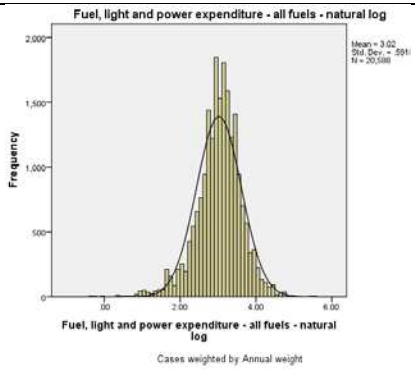
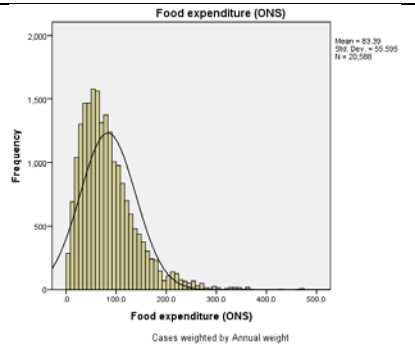
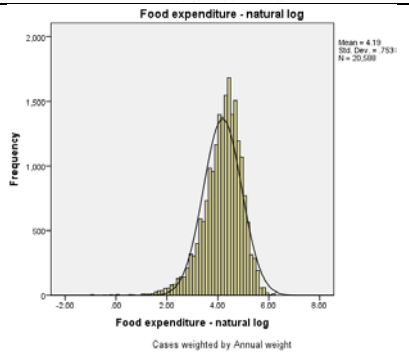
In terms of sampling, the Great Britain sample is a multi-stage stratified random sample with clustering. The Office for National Statistics state that: "*638 postal sectors are randomly selected after being arranged in strata defined by Government Office Regions (sub-divided into metropolitan and non-metropolitan areas) and two 2001 Census variables: socio-economic group of the head of household and ownership of cars*" (Official for National Statistics, 2013: 18). In 2012, a total of 5,425 households across Great Britain co-operated fully in the survey (*ibid*.).

Data transformations

A number of dataset changes were made in order to obtain the final working dataset, including:

- Cases from Northern Ireland, Scotland and Wales were removed from the dataset as the research focuses on England.
- Food expenditure, fuel expenditure and household income were not normally distributed, and so a natural logarithm transformation was applied to these variables to enable correlation tests. The before and after histograms, with a normal curve fitted, are displayed below in Table 17.
- The number of categories in Household Composition was reduced from thirty to six
- Variables were created to determine the proportion of households spending over the sample median, and twice sample median, for fuel and food
- Extreme outliers were removed.

Table 17 Histogram of log-transformed household income, fuel and food expenditure variables

Before transformation	After natural logarithm is applied
	
	
	

Analysis of expenditure on food and fuel

Descriptive statistics

As can be seen in Table 18, median weekly food expenditure surpasses expenditure on fuel, with households spending on average £73 and £21 respectively. Median gross household income is £576 per week.

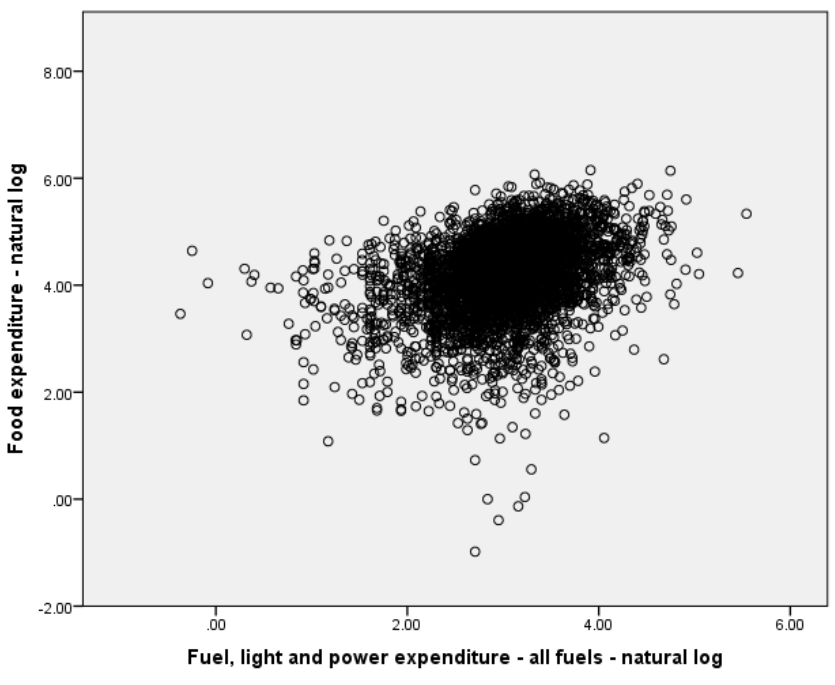
Table 18 Descriptive statistics for weekly fuel expenditure, weekly food expenditure, and weekly income

		Weekly fuel expenditure	Weekly food expenditure	Gross weekly household income
N	Valid	20588	20588	20588
	Missing	0	0	0
Mean		24.18	83.39	701.83
Median		21.24	72.84	575.82
Std. Deviation		15.04	55.59	494.88
Range		254.6	468.8	1954.80
Minimum		.7	.4	1.92
Maximum		255.3	469.2	1956.73

Correlation of food and fuel expenditure

Figure 1 below demonstrates that there is a very weak positive relationship between food and fuel expenditure in the sample, which Pearson's *r* confirms is significant, $r = .35$, $p < .001$.

Figure 1 Scatterplot of natural log-transformed fuel expenditure against natural log-transformed food expenditure



Expenditure by household income

Table 19 presents the correlations between expenditure on fuel and food, as well as gross income. When the effects of weekly household income is controlled for using partial correlation, Pearson's correlation coefficient for the relationship between food and fuel expenditure decreases from $r = .35$, $p < .001$ to $r = .22$, $p < .001$.

Household income has a moderate correlation with food expenditure, but only a weak correlation with fuel expenditure.

Table 19 Correlation matrix of fuel and food spending, and income

Control variable		Fuel expenditure (ln x)	Food expenditure (ln x)	Gross weekly income (ln x)
None	Fuel expenditure (ln x)	1	.35 ***	.32 ***
	Food expenditure (ln x)	.35 ***	1	.57 ***
	Gross weekly income (ln x)	.32 ***	.57 ***	1
Gross weekly income	Fuel expenditure (ln x)	1	.22 ***	
	Food expenditure (ln x)	.22 ***	1	

*** $p < .001$

Weekly gross household income was used to create an income deciles variable, with 10 equal groups of income (rather than people), as shown below in Table 20.

Table 20 Income ranges for weekly income deciles

Decile	Income range (£)
1	<= 180.00
2	180.01 - 275.60
3	275.61 - 364.62
4	364.63 - 463.95
5	463.96 - 575.82
6	575.83 - 701.07
7	701.08 - 853.34
8	853.35 - 1064.63
9	1064.64 - 1457.54
10	1457.55+

The income decile variable was used to split the file. Table 21 displays statistics for weekly fuel and food expenditure within each income group. Information is provided on the proportion of households spending more than the median threshold, and twice the median – please note, the median and twice median thresholds refer to the overall sample medians, rather than the within group figures. There is a strong gradient to the results, with households in the lowest income decile (1), consistently spending the least on fuel and food, whereas households in the highest income decile (10) consistently spend the most. For example 29.6 per cent of group 1 households spend more than the sample median on fuel, of which 2.3 per cent spend twice median. By comparison, 74.7 per cent of group 10 households spend over the median on fuel, of which 22.5 spend twice median. Across all income groups, weekly expenditure on food is higher than on fuel, ranging from approximately two to five times higher.

Table 21 Statistics on weekly fuel and food expenditure, disaggregated by income decile

Income decile			Weekly fuel expenditure	Weekly food expenditure
1 (lowest)	N	Valid	2064	2064
		Missing	0	0
	Mean		17.57	38.10
	Median		15.18	30.96
	Mode		10.0	53.9
	% spending > median[iii]		29.6	9.2
	% spending > 2 x median[iv]		2.3	0.8
2	N	Valid	2057	2057
		Missing	0	0
	Mean		19.82	48.29
	Median		17.51	41.91
	Mode		10.0	41.1
	% spending > median		32.2	15.4
	% spending > 2 x median		4.2	1.4
3	N	Valid	2057	2057
		Missing	0	0
	Mean		20.96	58.03
	Median		18.47	53.63
	Mode		16.2	50.5
	% spending > median		37.7	26.5
	% spending > 2 x median		5.1	1.2
4	N	Valid	2061	2061
		Missing	0	0
	Mean		22.05	69.11
	Median		19.69	60.80
	Mode		18.5	51.3
	% spending > median		42.6	39.0
	% spending 2 x median		6.0	4.7
5	N	Valid	2058	2058
		Missing	0	0
	Mean		23.69	75.78
	Median		21.69	70.06
	Mode		18.5	46.7
	% spending > median		50.3	47.3
	% spending 2 x median		7.0	5.4
6	N	Valid	2053	2053
		Missing	0	0
	Mean		23.85	84.10
	Median		21.41	79.32
	Mode		23.1	157.6
	% spending > median		50.0	58.6
	% spending 2 x median		7.2	7.3
7	N	Valid	2064	2064
		Missing	0	0
	Mean		25.69	92.96
	Median		23.08	87.12
	Mode		23.1	95.8
	% spending > median		57.6	65.1
	% spending 2 x median		9.6	13.2
8	N	Valid	2060	2060
		Missing	0	0
	Mean		27.39	103.19
	Median		24.47	95.55
	Mode		23.1	31.1
	% spending > median		62.1	70.8
	% spending 2 x median		11.2	16.6
9	N	Valid	2058	2058
		Missing	0	0
	Mean		26.77	113.76
	Median		24.24	108.60
	Mode		23.1	223.0
	% spending > median		61.9	78.3
	% spending 2 x median		8.7	21.4
10 (highest)	N	Valid	2057	2057
		Missing	0	0
	Mean		34.06	150.67
	Median		27.70	139.97
	Mode		23.1	168.5
	% spending > median		74.7	89.8
	% spending 2 x median		22.5	45.7

Expenditure by household size and type

Table 22 is a correlation matrix of expenditure on fuel and food, as well as household size (adults and children). Household size has a moderate correlation with food expenditure, but only a weak correlation with fuel expenditure. When the effects of household size is controlled for using partial correlation, Pearson's correlation coefficient for the relationship between food and fuel expenditure decreases from $r = .35$, $p < .001$ to $r = .22$, $p < .001$.

Table 22 Correlation matrix of fuel and food spending, and household size

Control variable		Fuel expenditure (ln x)	Food expenditure (ln x)	Household size
None	Fuel expenditure (ln x)	1	.35 ***	.34 ***
	Food expenditure (ln x)	.35 ***	1	.52 ***
	Household size	.34 ***	.52 ***	1
Household size	Fuel expenditure (ln x)	1	.22 ***	
	Food expenditure (ln x)	.22 ***	1	

*** $p < .001$

The statistics displayed below in Table 23 show a strong difference in weekly expenditure across different household groups. Single adults with no children have the lowest levels of expenditure overall, both in terms of median group expenditure, and the proportion of households spending more than the sample median and twice sample median on fuel and food. By comparison, households containing three or more adults and one or more children have the highest overall levels of expenditure across food and fuel categories.

Table 23 Statistics on weekly fuel and food expenditure, disaggregated by household composition

Household Composition			**Weekly fuel expenditure**	**Weekly food expenditure**
Single with 1+ children	N	Valid	883	883
		Missing	0	0
	Mean		22.85	61.74
	Median		20.77	58.04
	Mode		18.5	57.0
	% spending > median		45.9	31.8
	% spending 2 x median		5.8	0.6
Single no children	N	Valid	5674	5674
		Missing	0	0
	Mean		17.64	41.76
	Median		15.69	36.76
	Mode		10.0	53.9
	% spending > median		27.0	10.5
	% spending 2 x median		2.6	0.6
Two adults with 1+ children	N	Valid	4381	4381
		Missing	0	0
	Mean		27.39	110.89
	Median		24.34	104.94
	Mode		23.1	50.5
	% spending > median		63.0	75.5
	% spending 2 x median		11.6	22.7
Two adults no children	N	Valid	6953	6953
		Missing	0	0
	Mean		24.97	85.66
	Median		22.02	77.08
	Mode		23.1	31.1
	% spending > median		52.5	56.2
	% spending 2 x median		8.3	7.7
Three or more adults with 1+ children	N	Valid	782	782
		Missing	0	0
	Mean		34.34	138.34
	Median		29.08	131.91
	Mode		23.1	57.6
	% spending > median		77.1	82.3
	% spending 2 x median		23.3	40.3
Three or more adults no children	N	Valid	1915	1915
		Missing	0	0
	Mean		29.84	123.10
	Median		26.62	111.80
	Mode		23.1	168.5
	% spending > median		69.7	81.5
	% spending 2 x median		13.6	28.2

Expenditure by area characteristics

The following section considers the relationship between Output Area Classification and expenditure on fuel and food. Output Area Classification (OAC) is a technique for grouping Census output areas into clusters based on similar characteristics, including socio-economic attributes and population density (Vickers and Rees, 2007). In total there are 7 'supergroups', which comprise 21 groups in total, and a further 52 subgroups. The creators of the OAC, Vickers and Rees (2007) argue that by clustering the 223,060 output areas from the 2001 Census into a small number of groups that share similar properties "*our understanding of the areas is greatly increased. The reduction in the amount of data makes it much easier for our brains to process the information; we can begin to see patterns in the distribution of the different types of area*" (2007: 380). Of particular interest for this research is supergroup 3 'Countryside living'. Detailed information about this supergroup, and others, can be found at Office for National Statistics (2005). Across both expenditure types, households in the Constrained by Circumstances group had the lowest levels of expenditure, as shown in Table 24. By comparison, the Countryside and Prospering Suburbs groups had the highest levels of expenditure on food and fuel. As before, the threshold for the proportion of households spending more than the median, and twice median, is the overall sample median rather than in-group median.

Table 24 Statistics on weekly fuel and food expenditure, disaggregated by Output Area Classification (supergroups)

Output Area Classification 1D			Weekly fuel expenditure	Weekly food expenditure
Blue Collar Communities	N	Valid	2884	2884
		Missing	0	0
	Mean		22.30	70.36
	Median		20.08	62.75
	Mode		30.0	95.8
	% spending > median		45.1	41.4
	% spending > 2 x median		5.0	5.8
City Living	N	Valid	1286	1286
		Missing	0	0
	Mean		20.29	90.96
	Median		18.72	74.70
	Mode		23.1	168.5
	% spending > median		38.2	51.2
	% spending > 2 x median		6.0	15.6
Countryside	N	Valid	2329	2329
		Missing	0	0
	Mean		31.04	94.63
	Median		23.98	86.11
	Mode		23.1	325.6
	% spending > median		57.2	59.1
	% spending > 2 x median		19.3	15.8
Prospering Suburbs	N	Valid	3594	3594
		Missing	0	0
	Mean		27.09	96.31
	Median		24.47	83.80
	Mode		23.1	46.7
	% spending > median		64.3	59.0
	% spending > 2 x median		10.3	16.7
Constrained by Circumstances	N	Valid	1794	1794
		Missing	0	0
	Mean		19.39	59.16
	Median		18.00	48.71
	Mode		15.0	45.1
	% spending > median		35.7	29.9
	% spending > 2 x median		4.5	4.5
Typical Traits	N	Valid	4206	4206
		Missing	0	0
	Mean		22.80	83.04
	Median		20.78	74.42
	Mode		23.1	31.1
	% spending > median		48.6	51.7
	% spending > 2 x median		5.3	11.5
Multicultural	N	Valid	2470	2470
		Missing	0	0
	Mean		23.37	84.79
	Median		20.31	71.61
	Mode		30.0	53.9
	% spending > median		47.2	48.3
	% spending > 2 x median		9.0	12.5

Expenditure by tenure

Table 25 shows that mortgaged homeowners have the highest levels of expenditure on fuel and food compared to other tenure groups. Around two-thirds of mortgaged homeowners spend over the sample median on fuel and food, of which 10.9 and 18.2 per cent spend twice-median. By comparison, households with shared ownership arrangements spend the least on fuel, and renters spend the least on food.

Table 25 Statistics on weekly fuel and food expenditure, disaggregated by tenure

Tenure			Weekly fuel expenditure	Weekly food expenditure
Own it outright	N	Valid	6888	6888
		Missing	0	0
	Mean		25.47	80.16
	Median		22.15	68.16
	Mode		23.1	3.0
	% spending > median		53.2	46.6
	% spending > 2 x median		8.6	9.9
Buying it with the help of a mortgage or	N	Valid	7034	7034
		Missing	0	0
	Mean		26.84	101.47
	Median		24.00	92.76
	Mode		23.1	95.8
	% spending > median		60.4	66.4
	% spending > 2 x median		10.9	18.2
Pay part rent and part mortgage (shared ownership)	N	Valid	105	105
		Missing	0	0
	Mean		15.10	75.51
	Median		14.07	56.17
	Mode		15.0	57.0
	% spending > median		17.7	43.1
	% spending > 2 x median		0.0	5.0
Rent it	N	Valid	6394	6394
		Missing	0	0
	Mean		20.09	67.17
	Median		17.75	56.06
	Mode		10.0	53.9
	% spending > median		35.8	35.7
	% spending > 2 x median		5.7	6.9
Living here rent-free (including rent free in relatives/friends property; excluding squatting)	N	Valid	166	166
		Missing	0	0
	Mean		21.36	80.10
	Median		19.23	72.75
	Mode		13.9	56.7
	% spending > median		40.1	49.9
	% spending > 2 x median		2.9	10.0

Expenditure by gas payment method

The following section considers expenditure on fuel and food by gas payment method. From Table 26 we can see that households on a fixed annual bill spent the most on fuel and food, and have the highest proportions of households paying over the sample median and twice-median, with the exception of Fuel Direct customers, all of which pay over the sample median for food. Prepayment meter households have the lowest levels of expenditure on fuel and food, and the lowest proportion of households spending over the sample median.

Table 26 Statistics on weekly fuel and food expenditure, disaggregated by gas payment method

Gas - method of payment			Weekly fuel expenditure	Weekly food expenditure
Direct debit	N	Valid	12876	12876
		Missing	0	0
	Mean		24.31	89.34
	Median		22.15	78.16
	Mode		23.1	31.1
	% spending > median		53.3	55.1
	% spending > 2 x median		6.4	13.5
Standing order	N	Valid	304	304
		Missing	0	0
	Mean		23.33	88.08
	Median		20.78	78.64
	Mode		14.4	51.3
	% spending > median		48.2	54.6
	% spending > 2 x median		4.1	17.4
Monthly quarterly bill	N	Valid	2911	2911
		Missing	0	0
	Mean		23.09	73.18
	Median		20.07	61.40
	Mode		18.1	56.7
	% spending > median		46.3	40.7
	% spending > 2 x median		8.7	7.7
Pre-payment (keycard or token) meters	N	Valid	1405	1405
		Missing	0	0
	Mean		21.76	61.53
	Median		19.82	53.17
	Mode		10.0	53.9
	% spending > median		40.6	33.4
	% spending > 2 x median		7.9	5.2
Frequent cash payment method	N	Valid	173	173
		Missing	0	0
	Mean		24.80	65.38
	Median		22.68	57.13
	Mode		22.5	73.7
	% spending > median		57.1	46.7
	% spending > 2 x median		12.9	5.1
Fuel Direct direct from benefits	N	Valid	11	11
		Missing	0	0
	Mean		23.14	82.90
	Median		23.00	81.55
	Mode		18.4	77.3
	% spending > median		55.1	100
	% spending > 2 x median		0.0	0.0
Fixed Annual Bill	N	Valid	17	17
		Missing	0	0
	Mean		35.31	112.78
	Median		32.27	88.90
	Mode		43.1	108.2
	% spending > median		100	83.5
	% spending > 2 x median		44.3	19.4

Income deciles by gas payment method

Table 27 below shows the distribution of income deciles within each gas payment method. The prepayment metering and frequent cash payment methods contain the highest proportions of households from income decile 1 (30.3 and 25.7 per cent respectively), which is the lowest income group (<= £180.00 per week). Fixed annual bills contains the highest proportion of households from group 10 (£1,457.55+ per week).

Table 27 Distribution of income deciles across each gas payment method

Gas - method of payment	Income decile	Frequency	Valid Percent
Direct debit	1 (lowest)	746	5.8
	2	930	7.2
	3	1126	8.7
	4	1191	9.2
	5	1421	11.0
	6	1417	11.0
	7	1479	11.5
	8	1508	11.7
	9	1563	12.1
	10 (highest)	1497	11.6
	Total	12876	100.0
Standing order	1 (lowest)	34	11.1
	2	34	11.1
	3	10	3.1
	4	40	13.2
	5	31	10.1
	6	54	17.9
	7	26	8.4
	8	26	8.6
	9	17	5.7
	10 (highest)	33	10.8
	Total	304	100.0
Monthly quarterly bill	1 (lowest)	416	14.3
	2	418	14.3
	3	387	13.3
	4	335	11.5
	5	202	6.9
	6	294	10.1
	7	268	9.2
	8	201	6.9
	9	166	5.7
	10 (highest)	223	7.7
	Total	2911	100.0
Pre-payment (keycard or token) meters	1 (lowest)	425	30.3
	2	282	20.1
	3	170	12.1
	4	168	11.9
	5	119	8.5
	6	75	5.3
	7	84	6.0
	8	34	2.4
	9	28	2.0
	10 (highest)	20	1.4
	Total	1405	100.0
Frequent cash payment method	1 (lowest)	45	25.7
	2	30	17.5
	3	19	11.2
	4	26	14.8
	5	9	4.9
	6	3	1.9
	7	9	5.3
	8	19	10.9
	9	13	7.8
	Total	173	100.0
Fuel Direct direct from benefits	3	11	100.0
Fixed Annual Bill	4	3	16.5
	5	3	19.8
	8	7	42.8
	10 (highest)	4	20.9
	Total	17	100.0

Expenditure by electricity payment method

The next table presents statistics on weekly fuel and food expenditure, disaggregated by electricity payment method. Prepayment households have the lowest median level of expenditure on fuel and food, and the lowest proportion of households paying over the sample median compared to other payment methods. Table 28 also shows that Fuel Direct households have the highest level of expenditure on fuel, whereas households on fixed annual bills spend the most on food.

Table 28 Statistics on weekly fuel and food expenditure, disaggregated by electricity payment method

Electricity - method of payment			Weekly fuel expenditure	Weekly food expenditure
Direct debit	N	Valid	14478	14478
		Missing	0	0
	Mean		24.76	88.27
	Median		21.92	77.38
	Mode		23.1	31.1
	% spending > median		51.9	54.3
	% spending > 2 x median		8.1	13.4
Standing order	N	Valid	381	381
		Missing	0	0
	Mean		24.15	91.59
	Median		21.54	82.78
	Mode		14.4	51.3
	% spending > median		50.4	58.3
	% spending > 2 x median		6.3	18.2
Monthly quarterly bill	N	Valid	3566	3566
		Missing	0	0
	Mean		23.49	72.76
	Median		20.76	61.76
	Mode		23.1	56.7
	% spending > median		47.3	39.7
	% spending > 2 x median		10.4	8.3
Pre-payment (keycard or token) meters	N	Valid	1861	1861
		Missing	0	0
	Mean		21.15	63.50
	Median		19.08	53.89
	Mode		10.0	53.9
	% spending > median		40.4	34.5
	% spending > 2 x median		7.9	3.8
Frequent cash payment method	N	Valid	186	186
		Missing	0	0
	Mean		22.64	63.30
	Median		20.00	58.79
	Mode		15.0	81.0
	% spending > median		46.4	38.2
	% spending > 2 x median		5.6	4.8
Fuel Direct direct from benefits	N	Valid	13	13
		Missing	0	0
	Mean		24.41	74.38
	Median		27.00	77.33
	Mode		18.4	77.3
	% spending > median		60.1	67.8
	% spending > 2 x median		0.0	0.0
Fixed Annual Bill	N	Valid	83	83
		Missing	0	0
	Mean		25.15	130.96
	Median		24.54	108.18
	Mode		21.2	346.0
	% spending > median		64.4	76.0
	% spending > 2 x median		9.1	33.8

Income deciles by electricity payment method

The final table depicts the spread of gross household income deciles across each electricity payment method. The prepayment meter method contains the highest proportion of households in income decile 1 (26.5 per cent),which is closely followed by the frequent cash payment method (25.6 per cent). As with the gas payment methods, fixed annual bill contains the greatest share of households from income decile 10 (34.4 per cent), followed by standing order (16.2 per cent).

Table 29 Distribution of income deciles across each electricity payment method

Electricity - method of payment	Income decile	Frequency	Valid Percent
Direct debit	1 (lowest)	926	6.4
	2	1121	7.7
	3	1275	8.8
	4	1371	9.5
	5	1528	10.6
	6	1550	10.7
	7	1628	11.2
	8	1683	11.6
	9	1706	11.8
	10 (highest)	1690	11.7
	Total	14478	100.0
Standing order	1 (lowest)	34	8.8
	2	33	8.8
	3	18	4.7
	4	38	10.0
	5	40	10.6
	6	49	12.8
	7	45	11.7
	8	32	8.3
	9	30	8.0
	10 (highest)	62	16.2
	Total	381	100.0
Monthly quarterly bill	1 (lowest)	553	15.5
	2	505	14.2
	3	495	13.9
	4	428	12.0
	5	274	7.7
	6	311	8.7
	7	252	7.1
	8	248	6.9
	9	245	6.9
	10 (highest)	256	7.2
	Total	3566	100.0
Pre-payment (keycard or token) meters	1 (lowest)	494	26.5
	2	360	19.3
	3	219	11.8
	4	196	10.6
	5	191	10.2
	6	139	7.5
	7	120	6.4
	8	71	3.8
	9	66	3.5
	10 (highest)	5	.3
	Total	1861	100.0
Frequent cash payment method (i.e. more	1 (lowest)	48	25.6
	2	21	11.5
	3	34	18.4
	4	25	13.2
	5	16	8.8
	6	3	1.8
	7	19	10.5
	8	15	7.8
	9	4	2.4
	Total	186	100.0
Fuel Direct direct from benefits	3	13	100.0
Fixed Annual Bill	1 (lowest)	9	11.4
	2	12	14.1
	3	4	4.6
	4	4	4.5
	5	8	9.2
	8	13	15.1
	9	6	6.9
	10 (highest)	29	34.4
	Total	83	100.0

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[i] Variable HOUSHE1_first has 29.2% missing cases, which is why the *N* is lower than in other crosstabs in this section
[ii] A recoded version of EUMEAL_first for the purpose of the regression model
[iii] This is the overall sample median rather than within group median
[iv] This is the overall sample median rather than within group median

Heat or Eat: Food and Austerity in Rural England

Final Report July 2015

Annex B – Policy Mapping

Hannah Lambie-Mumford and Carolyn Snell

Fuel Poverty Provision Available

- NEA Project (IEEIC) partnership between NEA and EDF Energy & Partners (runs until end March 2015 but is likely to continue).
- Winter Wellbeing Programme (Cornwall Council plus 30 partners) is aimed at all those considered 'vulnerable'. There is a freephone advice service, grants available, as well as very practical advice, support to switch suppliers, etc. (see http://www.cornwall.gov.uk/health-and-social-care/winter-wellbeing/).
- Community Energy Plus has a range of projects and services including an oil buying club (for people off grid) to reduce oil costs.
- Cornwall Rural Community Charity – organises events, training, visiting existing groups, etc. Provides advice – very proactive.
- West Cornwall Community Renewables has a project to advise practitioners. Incentives to attend include lunch and film screenings.
- National initiatives include CAB fuel advice. The CABs are also a source of the food bank vouchers.
- Plymouth Council has a project where £20 for PPMs when one picks up a foodbank voucher.
- Are national trust funds/ grants available from the energy suppliers. British Gas will consider all energy customers, but EDF will only consider its own customers. All are discretionary.
- CEP has an oil buying scheme to give a competitive price to members – has 2000 members across Devon and Cornwall.
- Park home insulation scheme (linked to 38 other RCCs nationally).
- Charis (http://www.charisgrants.com/) is the organisation that administers financial relief programmes (charitable grants) on behalf of the energy companies (and water companies).
- Get FIT sessions (IT and older people). Comic Relief funded. Very popular – sessions over 6 weeks. One session is all about bills comparison – everyone makes a saving. Most participants have own internet access but don't know how to use it. Sessions take place in a local village hall with a wi-fi set up. Many use ipods/ iphones since better for dexterity with older people (often given as presents to them by younger relatives).
- Oboes is a Bristol based energy company that has tariffs scaled to usage.
- In Plymouth there is a Housing Association project where they bulk buy LED lightbulbs that people couldn't afford otherwise.

- EDF has a fuel poverty helpline run from Plymouth – they work with the CAB. They operate a triage scheme re. Debt.
- Cornwall Neighbourhoods for Change.
- Credit Unions.
- Plymouth Energy Community (social enterprise) – can buy cheaper energy through them. Also fuel debt and energy advice. They have outreach team to go into people's homes. Have a tariff for PPMs.
- Advice Plymouth umbrella agency for organisations like CAB, National Energy Action, Plymouth Community Homes (financial advice and management), etc.
- Emergency Welfare Fund.
- Training volunteers through 'citizens service' to help others by giving advice re. changing tariffs etc. at community events.

Food Poverty Provision Available

- Food and Cornwall Programme:
  - Eat Well Spend Less project
  - one aspect of this is supporting Food banks to become Food bank Plus centres (offering advice, clothing, furniture, etc. to help reduce inequalities and break poverty cycle).
  - Food in schools – developing growing and cooking skills, not just with kids but including parents and grandparents.
  - St Austell Community Kitchen (STAK) provides hot drinks and hot meals.
- CPR Foodbank has collection points at 22 churches, 2 supermarkets, Barclays Bank, 7 schools. Also provides education about food poverty in schools. Expenditure is minimised through the church space being cheap to hire and having lots of volunteer hours.
- Charity funded lunch clubs with food provided by Foodshare/ food bank.
- The Feeding Britain group/ regional hub.
- Devon & Cornwall Food Association – support soup kitchens and other initiatives. They are applying to businesses to provide food to them to distribute rather dispose of it.
- James has a broad overview, rather than detail of specific projects. He describes Cornwall as a very active county with joined-up provision and brokering between agencies done very well.
- Other geographical networks of food support (other than the Trussell Trust) include: Bristol 5K partnership (http://www.5kpartnership.org.uk/) Cornwall's new Feeding Britain Group, Basics Bank foodbank model (strong network in Kent), other strong networks exists in Brighton and Leicester – such networks are patchy though.
- (For both Food and fuel) there are lots of voluntary organisations, e.g. CAB, Age UK, Christians Against Poverty (debt counselling), local charities (for homeless, refugees, etc.). There is a strong voluntary sector in the South West.
- Trussell Trust foodbanks. Level of support varied – often more than food offered, e.g. money advice, 'community champions' to signpost people to other support, 'Eat well

spend less' courses for cooking and budgeting, furniture store (can also offer clothes, sleeping bags, cooking equipment, tents, tin openers, etc.). Recipe cards in each food box. One foodbank has the MP's office officials (CAB trained) there to help resolve people's welfare issues there and then. Another foodbank has people trained by Cornwall Energy Plus to provide advice on switching energy providers.

- Devon and Cornwall Food Association.
- 'Helping Everyone Leave Poverty'
- NHS- Public Health Team.
- 15 Cornwall (Jamie Oliver), Newquay
- Allotments – lots of green space in the city
- 'Grow, share and cook' – help to establish allotments, cooking classes and helping others to set up allotments.
- 'Families with a future' - Veg boxes to 'troubled' families. Provides recipes, boxes, cooking advice, utensils, cooking equipment and fuel advice to approx. 100 families. Kids are involved in the cooking classes. This is a free programme. Boxes are subsidised over time.
- Variations on help and support – e.g. 'jam jar accounts' and budgeting – segregated accounts filled first and then disposable income left at end. Working with private landlords on this too – if person has irregular income then insuring rent jar gets filled first.

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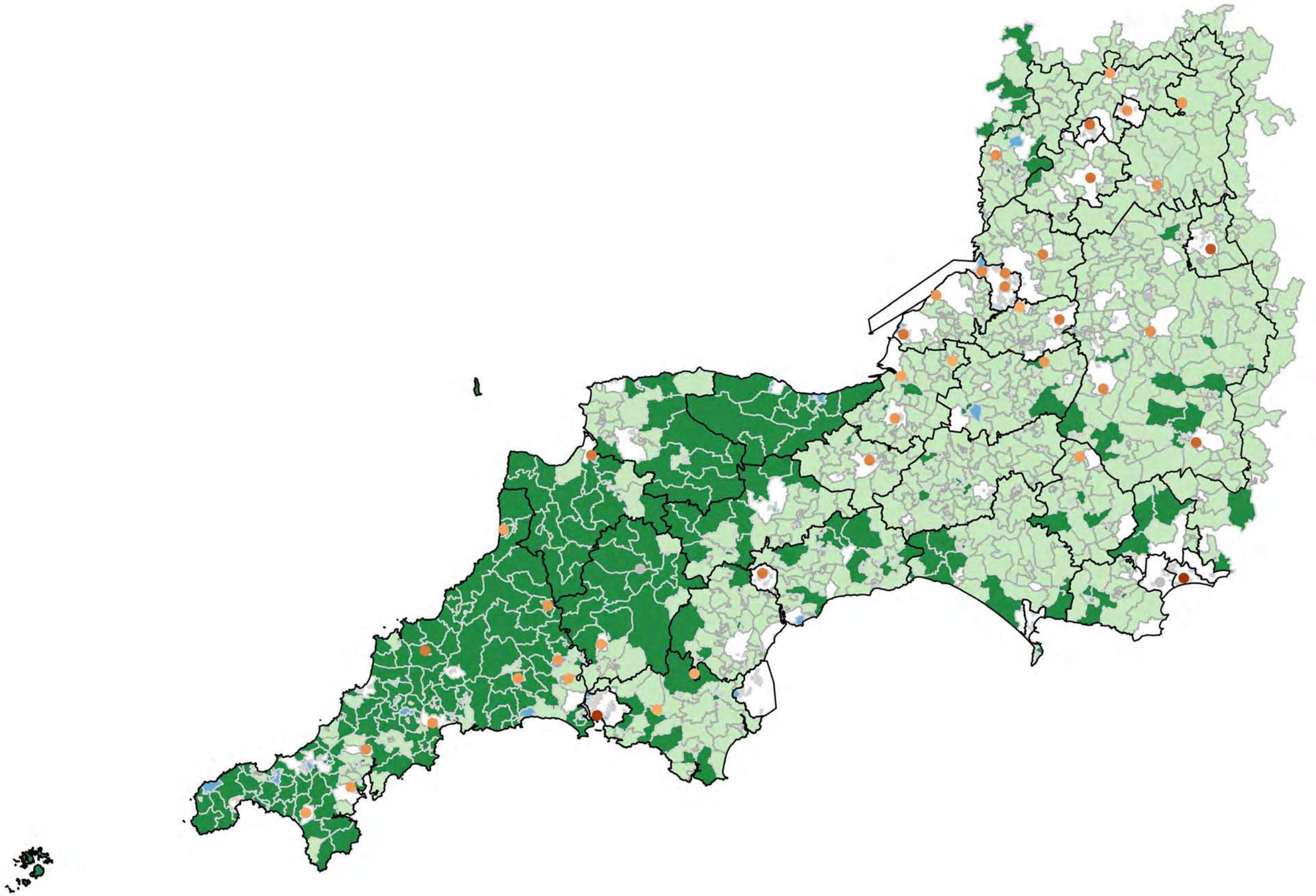

CSCO eligible rural area
Deprived rural area
Eligible low-income area

Total Clients
8000
6000
4000
2000

The University Of Sheffield.

UNIVERSITY of York

Communities & Culture Network+

Research Councils UK Digital Economy Transforming Business and Society

Total Clients

5000
4000
3000
2000
1000
0

CSCO eligible rural area
Deprived rural area
Eligible low−income area