

Designing methodology and engaging participant support: practical questions

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energy saving trust[®]

Developing an evaluation approach

This presentation aims to develop fuel poverty research by using conventional 'consumer survey' methods. The presentation seeks to cover:

- Peculiarities of 'hard to measure' benefits and what methodological approaches are best?
- What strategies are effective in quantification?
- What types of evaluation model or experiment can yield the data needed?
- Can indirect methods such as a consumer survey work?

Research methods for fuel poverty

It is difficult to measure fuel poverty. An exact analysis requires costly research, combining:

- a full survey of the property
- accurate fuel bill details
- potentially smart grid technology

Research is therefore complex and costly

Indirect survey methods

To investigate fuel poverty in an simple and inexpensive way, it is possible to use existing surveys, such as the Energy Saving Trust's consumer survey

The consumer survey provides sufficient data to investigate fuel poverty research methods

High level objective: has the Trust's energy advice helped reduce fuel poverty?

Methodological objective: how can we measure this, inexpensively?

The Energy Saving Trust

- The Trust provides advice to the UK public about 'energy efficiency'
- In 2009/10, 1.3 million people in the UK were advised
- As part of routine performance evaluation, the Trust surveys customers to identify the impact of advice

Peculiarities of 'hard to measure' determinants of fuel poverty

A challenge is the number and complexity of factors characterising fuel poverty, for example:

- Fuel costs relate to the cost of heating as part of a rounded living environment, not just actual payments. People may not use the heating as they are very worried about bills
- The average person cannot accurately recall 'needed' vs. 'actual' fuel costs
- Similar dwellings may contain householders with very different lifestyles that affect fuel poverty (stay-at-home parent vs. working family)
- Some people may not manage bills easily, and so be 'needlessly' in fuel poverty on a periodical basis
- The impact of fuel poverty can be physical and mental health issues from damp, cold living environments

What strategies are effective in quantification?

The Trust consumer survey captures questions that are 'measures' of fuel poverty:

- **Fuel bill** costs (ranges - to help recall)
- **Physical factors:** dwelling type and number of rooms
- **Social factors:** employment status, family size to give an indication of energy needs
- **Income:** household level (ranges)

How can we model or 'experiment' on the data?

The following provides two experimental analyses that seek to identify fuel poverty in the survey sample through:

- Comparing reported fuel bills to reported income
- Comparing reported income to estimated bills based on dwelling type

Comparing fuel bills to income

The table sets out the % of respondents in each 'cell' comparing bills to income

If in any cell fuel bill costs are greater than 10% of income household is 'fuel poor' (bold)

The model finds that 19% fuel poor in 2010 (2007 value for UK 16%)

Accuracy may be better than expected. In larger samples, errors can cancel out

		Average reported fuel bills		
		£800	£1,000	£1,200
Household income (10% of actual income)	£500	3%	2%	2%
	£625	3%	3%	1%
	£875	4%	3%	3%
	£1,250	3%	5%	4%
	£1,750	3%	5%	5%
	£2,500	5%	8%	7%
	£4,000	4%	6%	8%
	£5,000	2%	4%	8%

Comparing income to dwelling type

Base on dwelling type – fuel poverty figure is 22%

Highly sensitive to assumption about energy price rises

		Dwelling type and estimated fuel costs					
		Det bungalow	Det house	Flat	Terrace	Semi bungalow	Semi house
		£899	£1,388	£629	£849	£899	£989
Household income (10% of actual income)	£500	1%	1%	1%	1%	1%	2%
	£625	1%	1%	1%	2%	0%	2%
	£875	1%	1%	2%	2%	1%	3%
	£1,250	2%	2%	1%	3%	1%	4%
	£1,750	2%	3%	1%	2%	1%	4%
	£2,500	3%	4%	2%	3%	0%	7%
	£4,000	2%	6%	1%	3%	0%	6%
	£5,000	1%	6%	1%	1%	0%	4%

Other comparisons

There are a number of other possible comparisons:

- Income to dwelling size (M²)
- Comparing household structures, employment status

Methodological considerations

Using the approaches indicated, it is possible to conduct 'models' or 'experiments' on existing datasets to obtain results. This means inexpensive research from available fieldwork data.

How accurate are these results?

- Simple income bands to help engage participants
- These are accurate (they are just not precise)
- When averaged, variations can cancel out
- Assumptions used were not changed to improve the result

Missing data needs consideration. Income bands generated 12% missing. Going forward, we can estimate incomes through data modelling (CHAID & SPSS analysis)

Qualitative research

Building on existing qualitative research

Participants identified from the consumer survey. We know who is 'at risk' of fuel poverty. They are asked if they are happy to participate in further research

We can ask about fuel bill 'management'

- Do they understand and manage their bills?
- Relationship of lifestyle to bills?
- Is the house 'difficult to heat'?

Method of verifying quantitative results

Conclusions and findings

This paper is about exploring research methods (not a prescription)

To measure fuel poverty exactly is complex and costly. Fuel poverty also relates to the dwelling type, family size and lifestyle, not just bills paid

Utilising existing consumer surveys provides an inexpensive means of securing data

Questions need to be simple enough to engage participants (and not encourage artificial accuracy). This is important as it means accurate results

Accuracy of the final results may be better than expected due to averaging effects

Here, two different models of fuel poverty (bill-based, property-based) secured similar values for fuel poverty. These were 'blind' experiments, which gives more credibility (assumptions were not 'tweaked'). This builds in independence

Two repeated data models yielded similar results (bootstraps approach)

However, extracting the results requires data modelling, not just devising the original methodology