Energy Poverty: defining, measuring and examining recent trends in Ireland
30th of November 2022.
Assessing measures for fuel poverty: Evidence for Ireland

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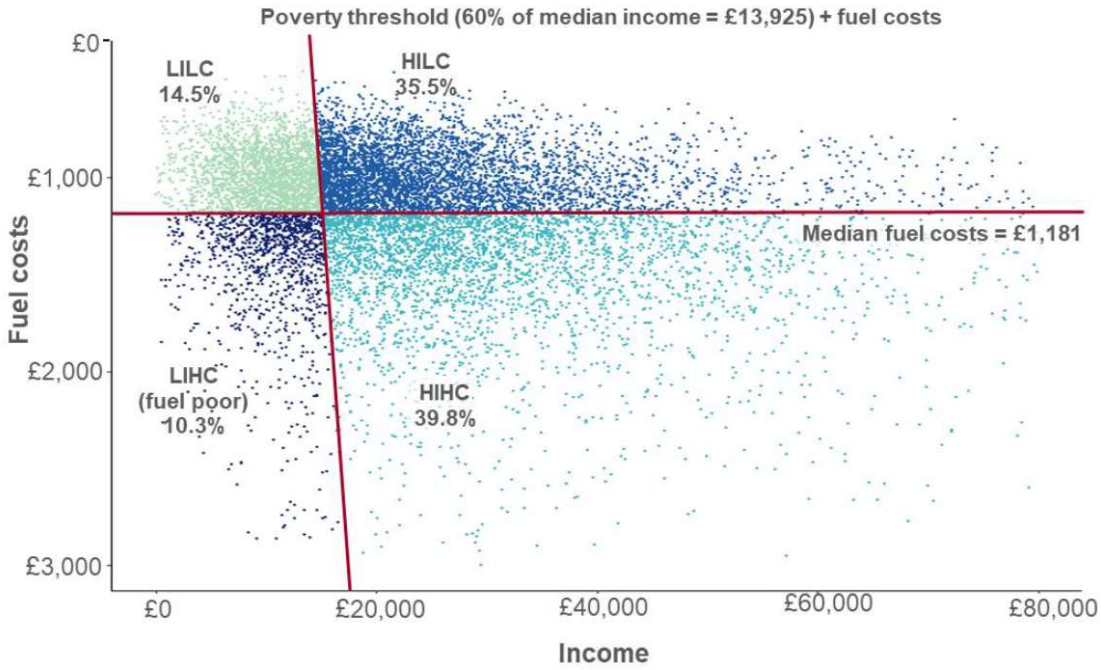
Motivation

- No agreement on how to measure it
- Lack of suitable data
- The role of demand responses
- The capability of existing metrics to measure changes in fuel poverty when energy prices, energy efficiency and income change

Motivation. (Taken from Annual Fuel Poverty Statistics in England)



- "Fuel poverty in England is now measured using the Low Income Low Energy Efficiency (LILEE) indicator rather than the old Low Income High Costs (LIHC) indicator.."

Motivation

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Are fuel poverty metrics fit for purpose? An assessment using behavioural microsimulation

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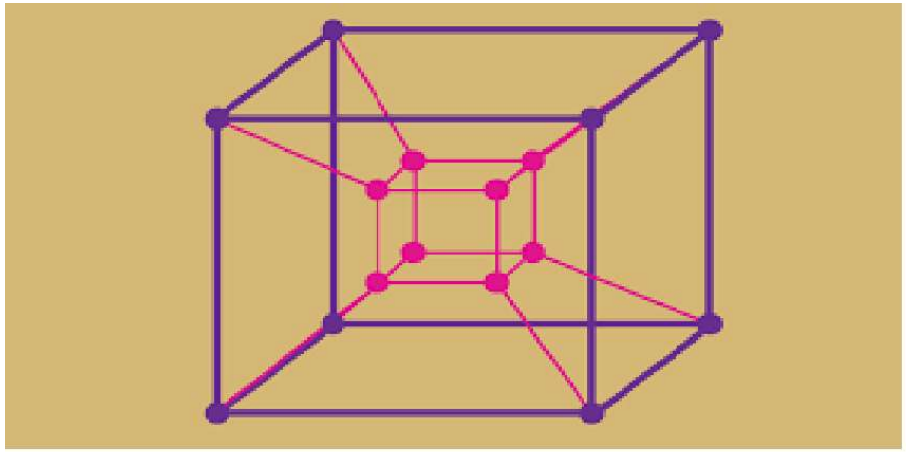
ABSTRACT

This paper contributes to the literature on fuel poverty measurement by analysing the ability of different metrics to identify fuel poor households. We consider existing expenditure-based metrics and recently-developed metrics for multidimensional poverty, and compare three aspects: (a) Their ability to identify households at high risk of experiencing fuel poverty, (b) their ability to identify low income households with a large carbon tax burden, (c) their ability to measure changes in fuel poverty under carbon taxes and compensatory measures, including increases in fuel efficiency. We employ a fully flexible model to quantify demand responses to changes in fuel prices and energy expenditure for residential heating. We find that in general all analysed metrics perform well at identifying the household types frequently mentioned in the

Data and methodology



Multidimensional factors

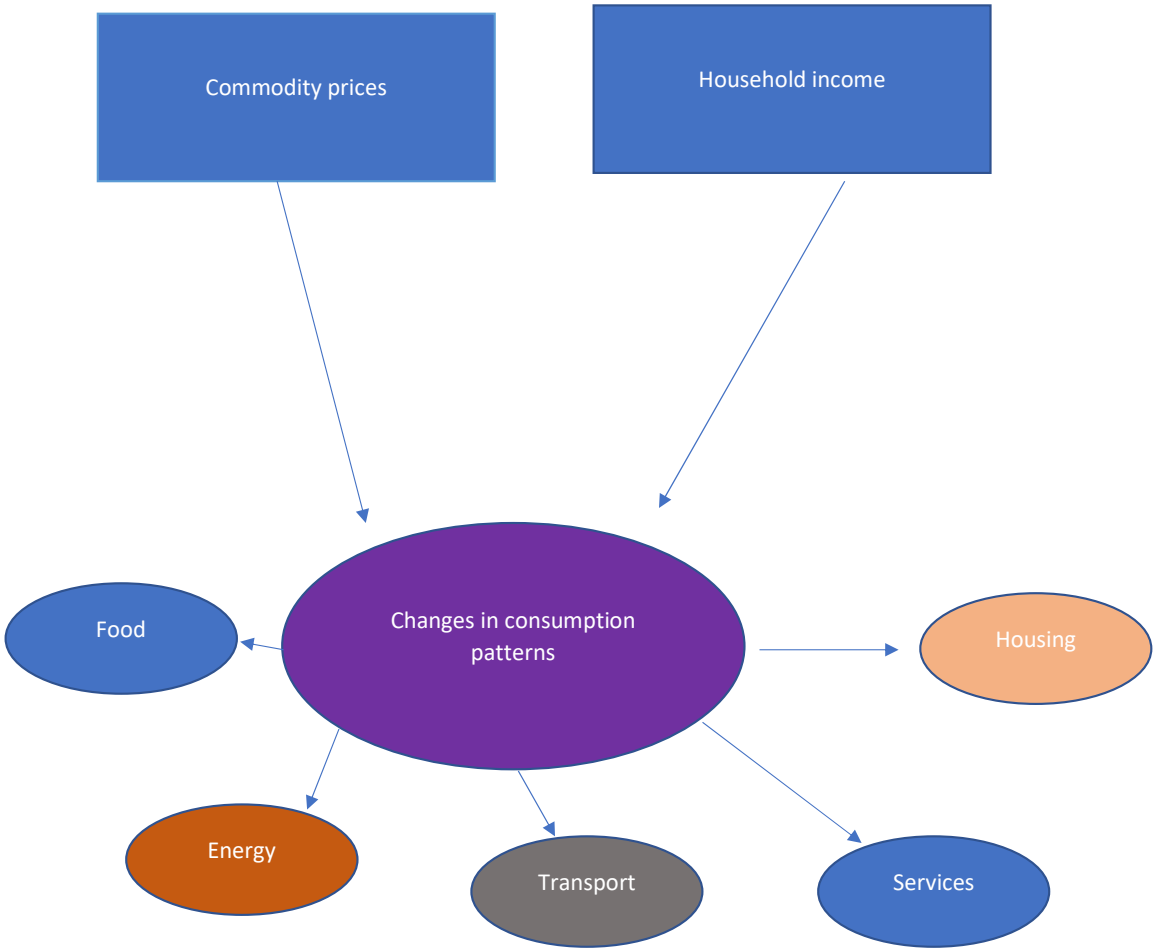
- Income, energy expenditure and BER
- "Expenditure level is high or energy requirement (BER) is higher than its median"

Data and methodology

Data

- Household Budget Survey (CSO) 2015-2016
- Building Energy Rating Certificate (SEAI)

Data and methodology



Results

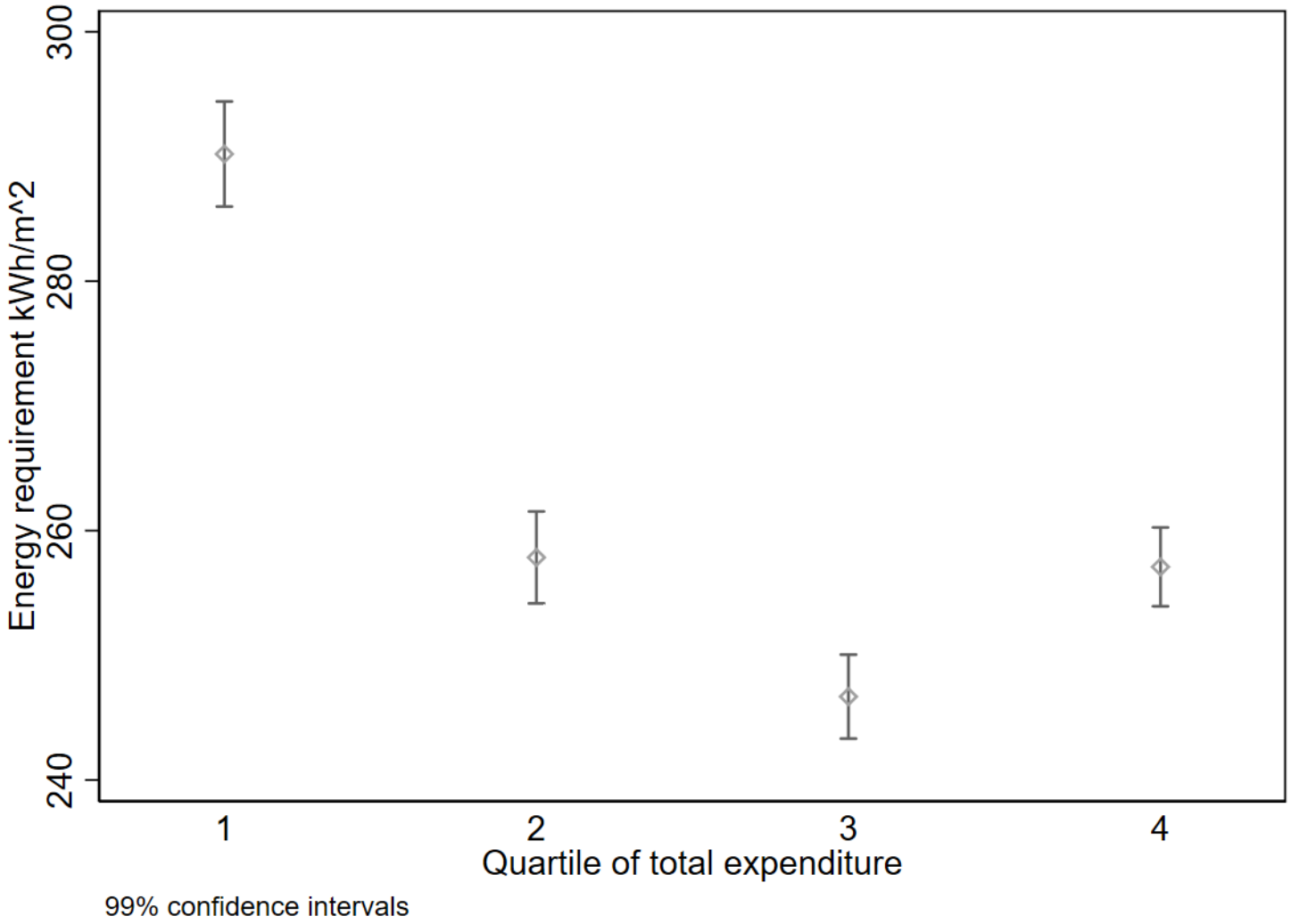


Figure: Energy requirement

Results. Headcount ratio

Table: Fuel poverty.

	Headcount (%)
LIHC	9.08
Multidimensional	16.06

Results. Energy demand changes

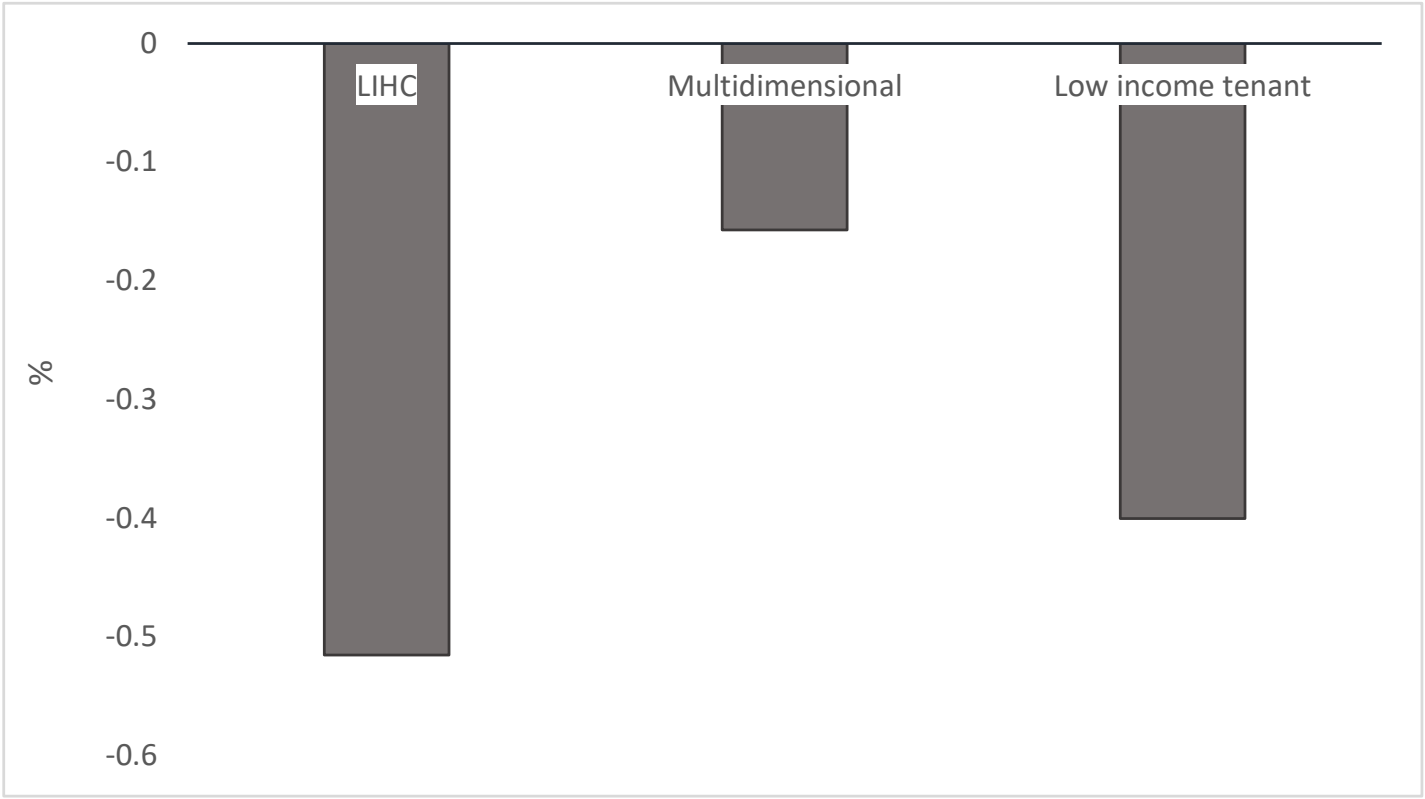


Figure: Changes in energy demand to 1% in energy prices

Simulations

Scenario	Implementation
Carbon tax	70 Euro per tonne
Transfers after tax	Lump-sum
Efficiency after tax	-10 kWh/m2

Table: Scenario overview

Simulations. Incidence of increases in energy prices (LIHC)

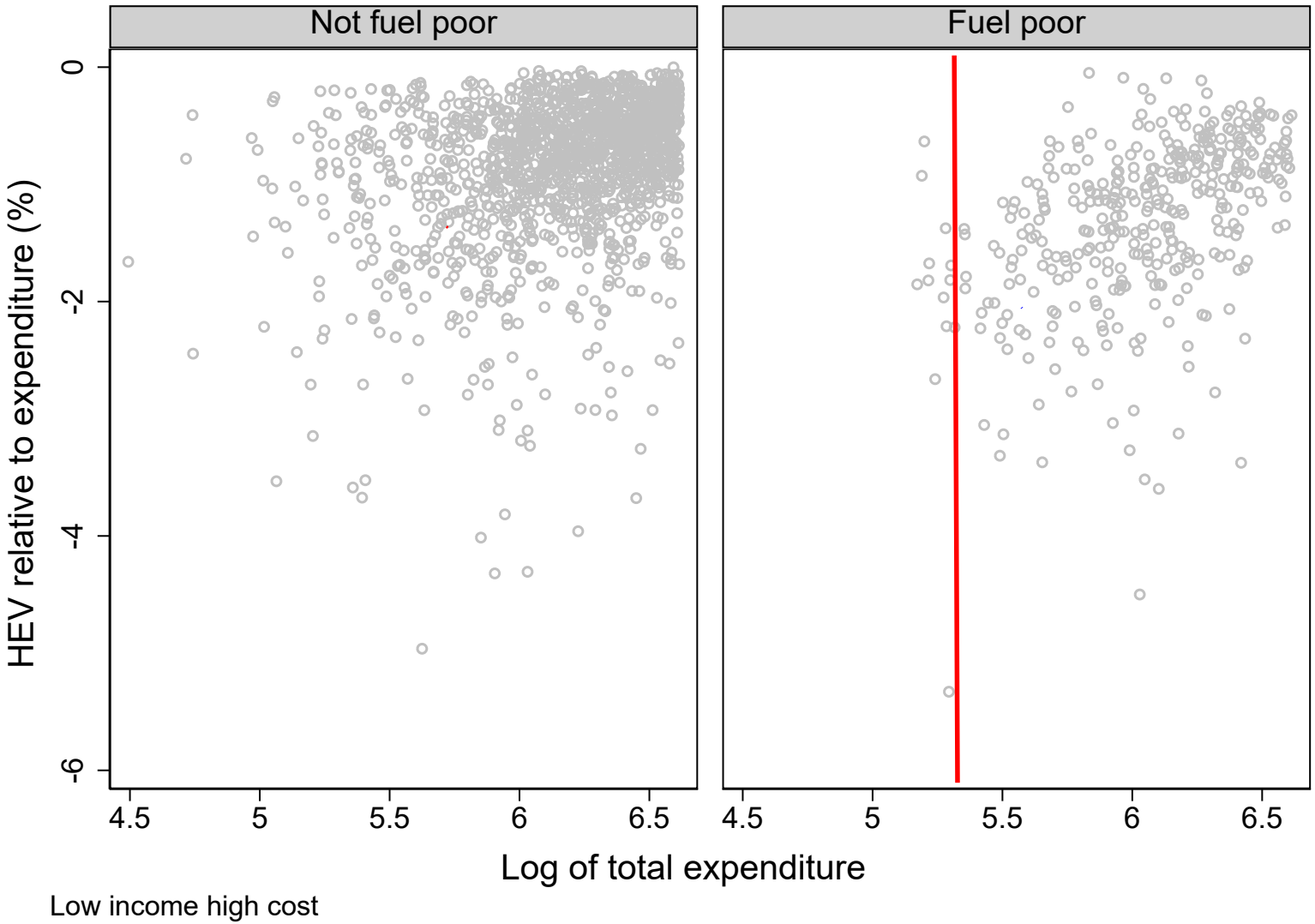


Figure: Incidence of increases in energy prices and measurement of fuel poverty (LIHC)

Simulations. Incidence of increases in energy prices (Multidimensional)

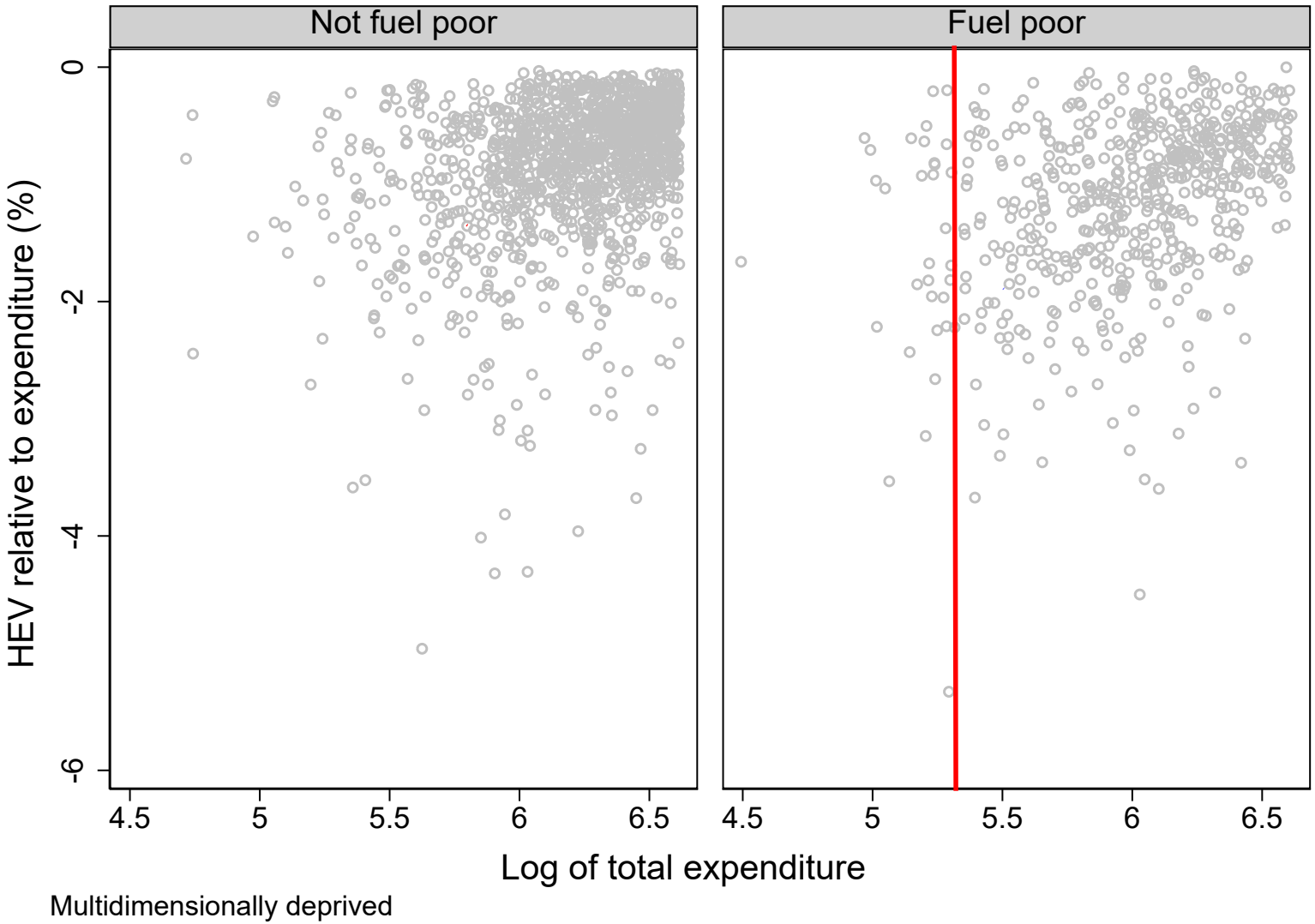


Figure: Incidence of increases in energy prices and measurement of fuel poverty (Multidimensional)

Simulations. Changes in headcount ratios due to changes in energy prices.

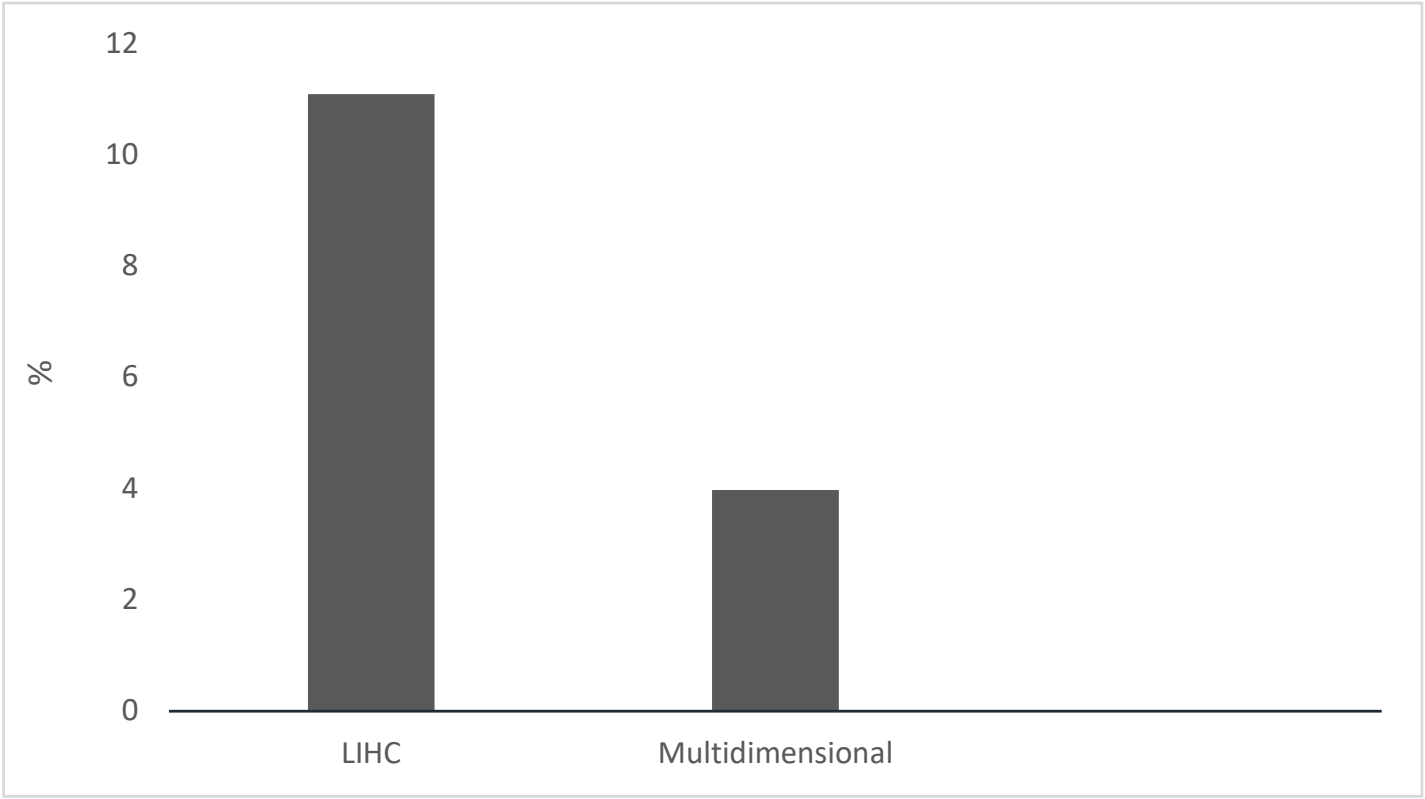


Figure: Changes in fuel poverty after the increase in energy prices

Simulations. Changes in headcount ratios due to lump-sum transfers after price increases

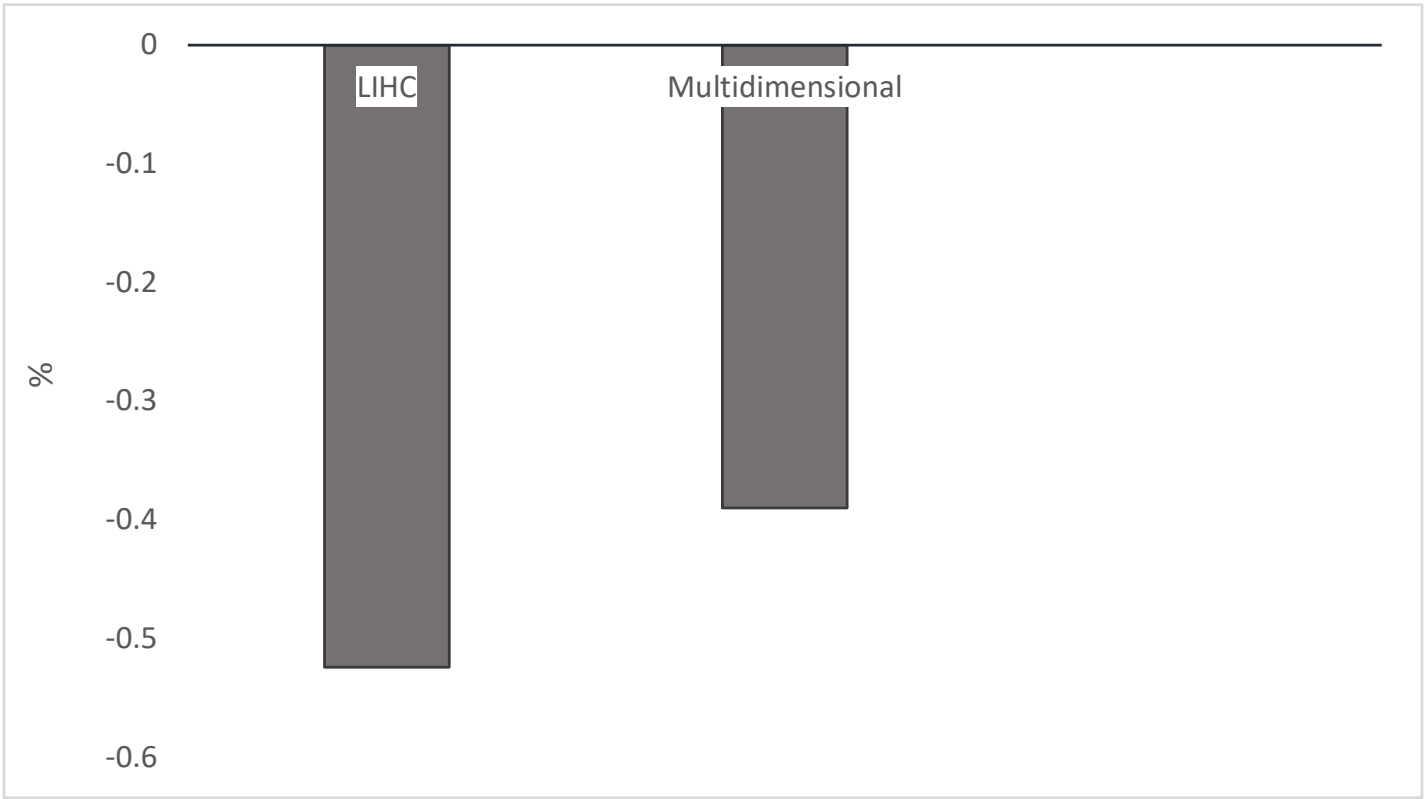


Figure: Changes in fuel poverty after the increase in energy prices

Simulations. Changes in headcount ratios due to increases in energy efficiency after price increases

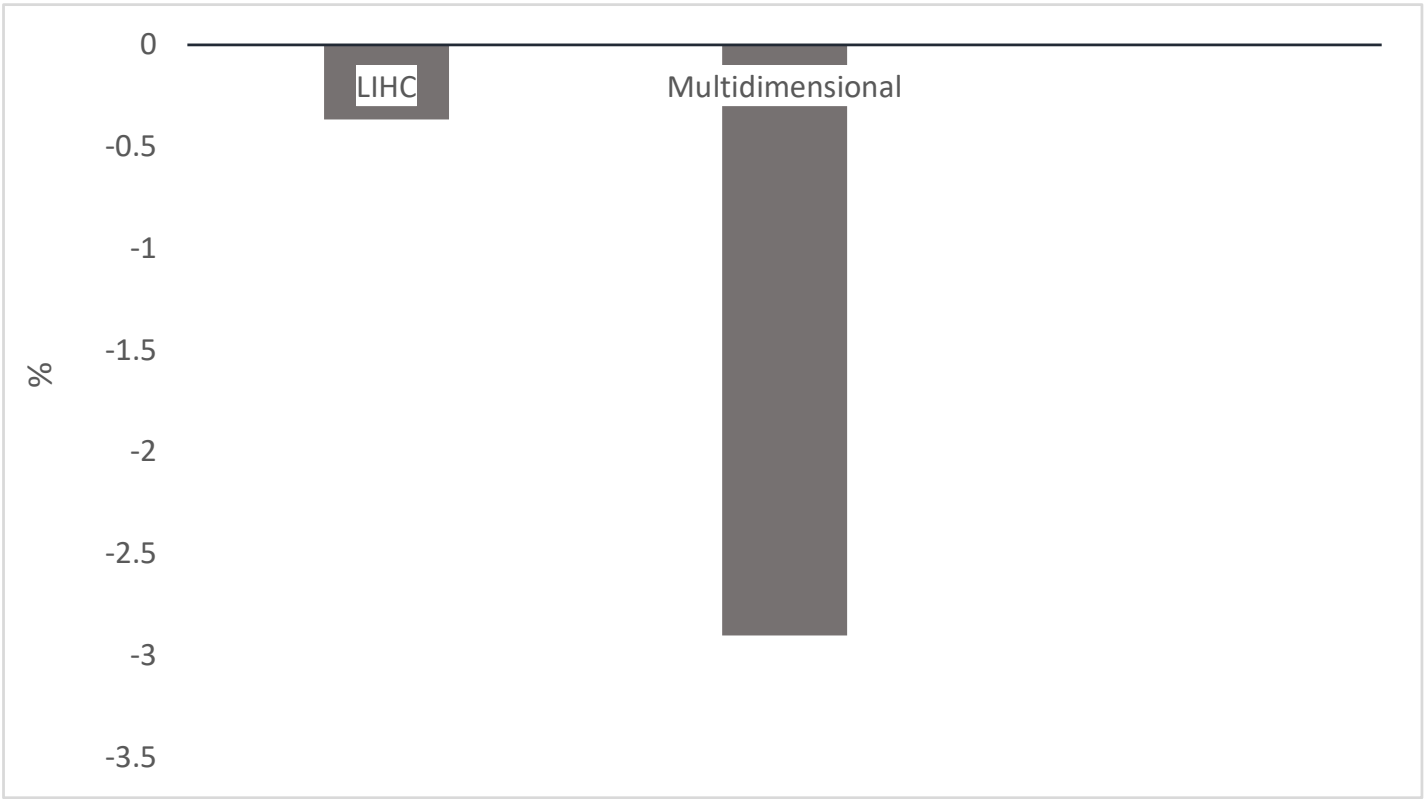


Figure: Changes in fuel poverty after energy efficiency improvements

Reflexions

- It is important to consider demand responses and the role of energy efficiency when measuring fuel poverty
- Using high energy expenditure could mask energy deprivation
- It is also important to consider energy efficiency in our metrics
- What about the trade off between simplicity and accuracy?
- What about the intensity of fuel poverty?
- What about the data we need?