

DEPARTMENT OF
**ENGINEERING
SCIENCE**

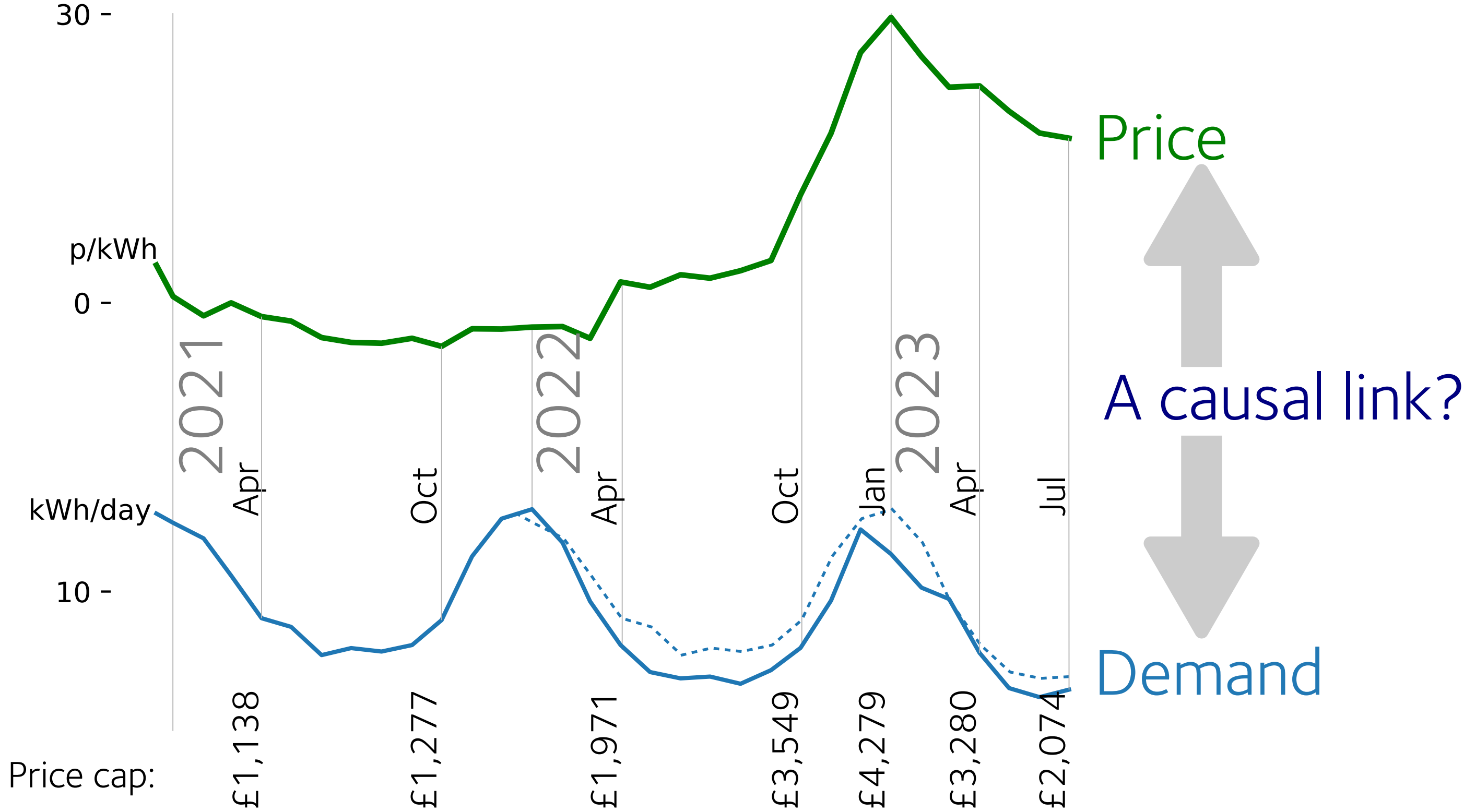


Energy use in crisis – lessons for net-zero?

BIEE conference – Oxford
20–21 September 2023
Phil Grünewald

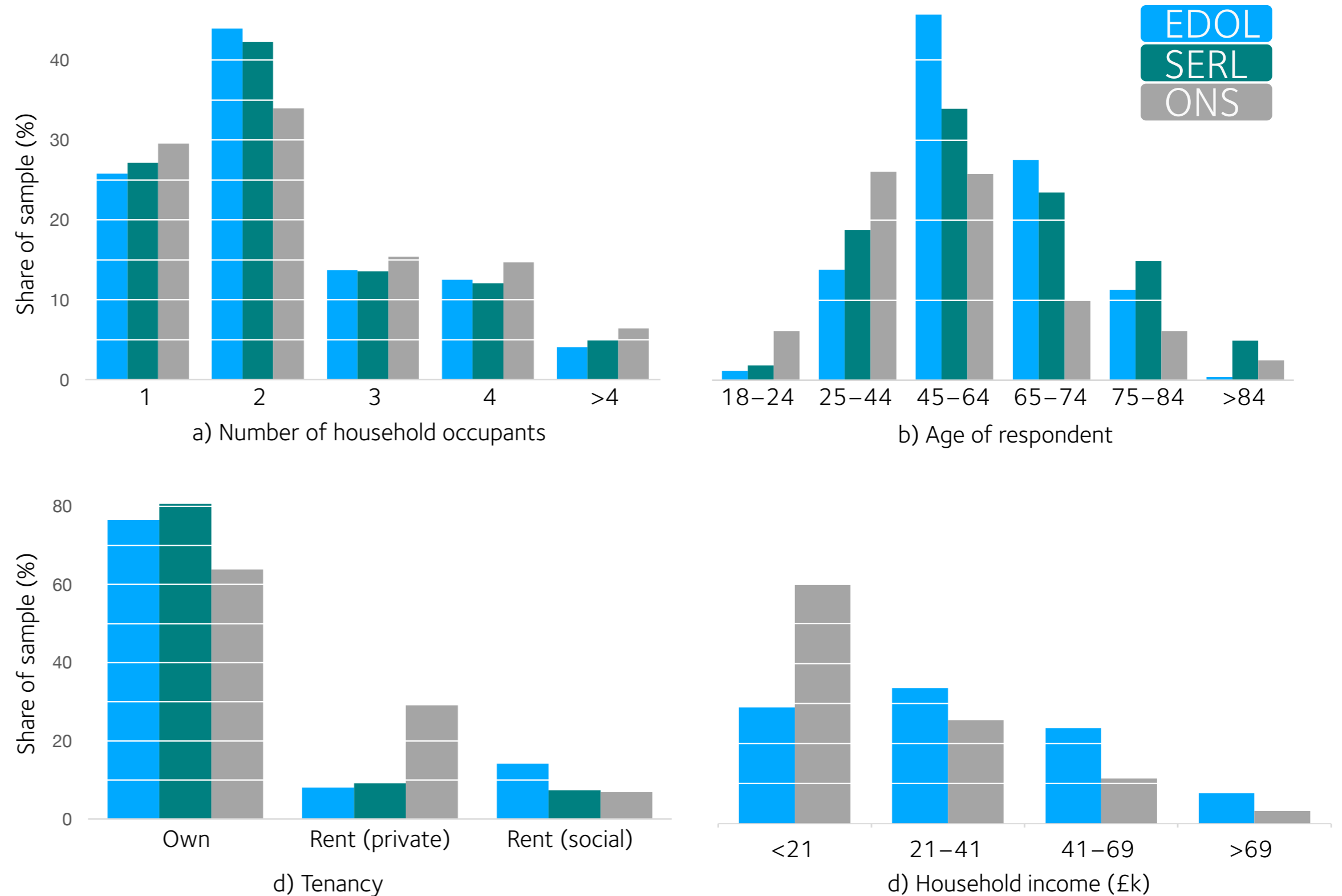
edol.uk/23_BIEE

Household energy prices up, demand down



The sample: aiming for size and representativeness

Online panel 100,000
 Surveyed 248
 Eligible 200
 Registered 157
 Reward p.a. £15–20



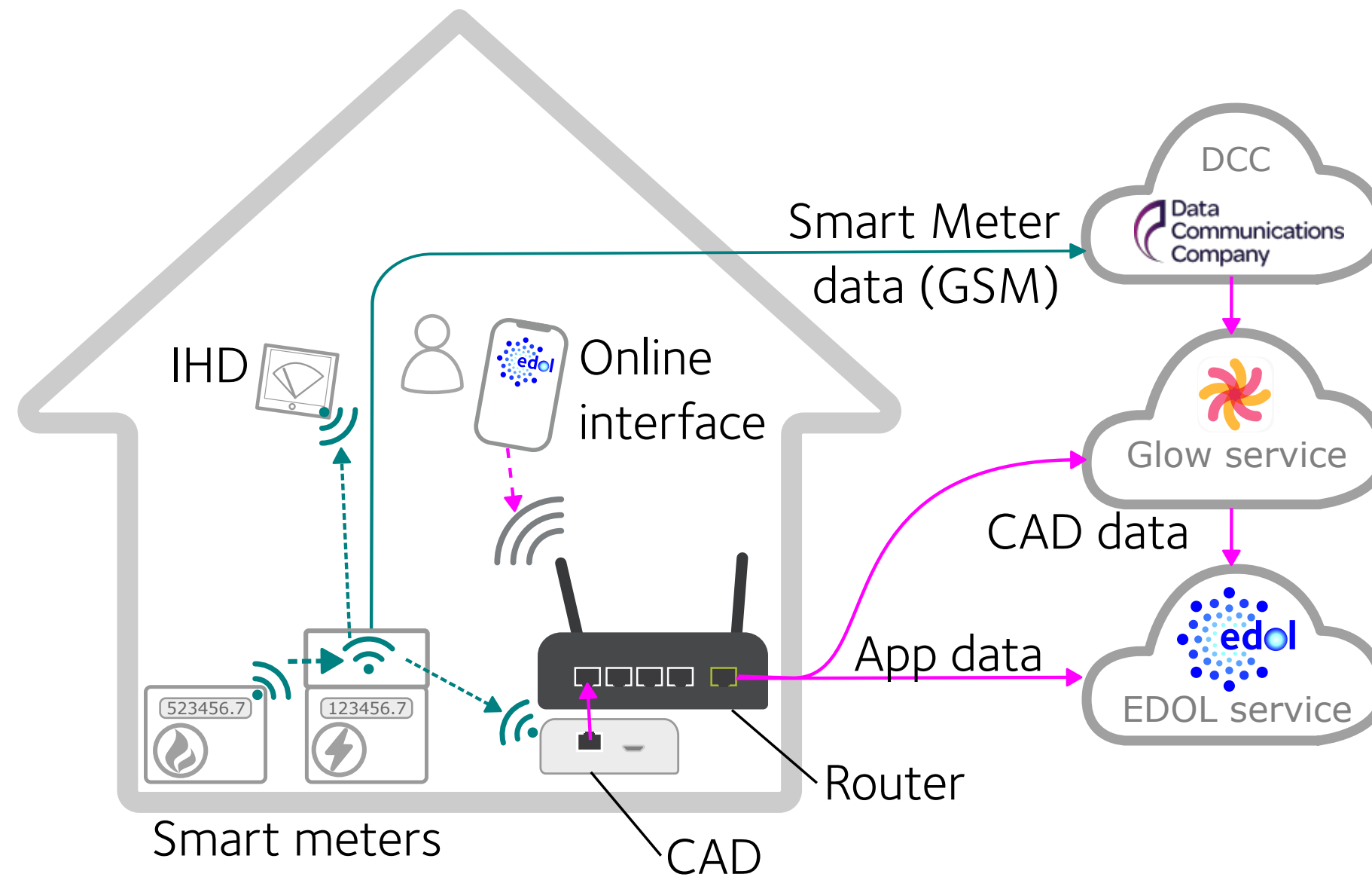
The data: linking smart meters with smart phones

Register your smart meter

Please enter the 16 digit code under your smart meter display and confirm your postcode

xx xx xx xx xx xx xx xx

postcode



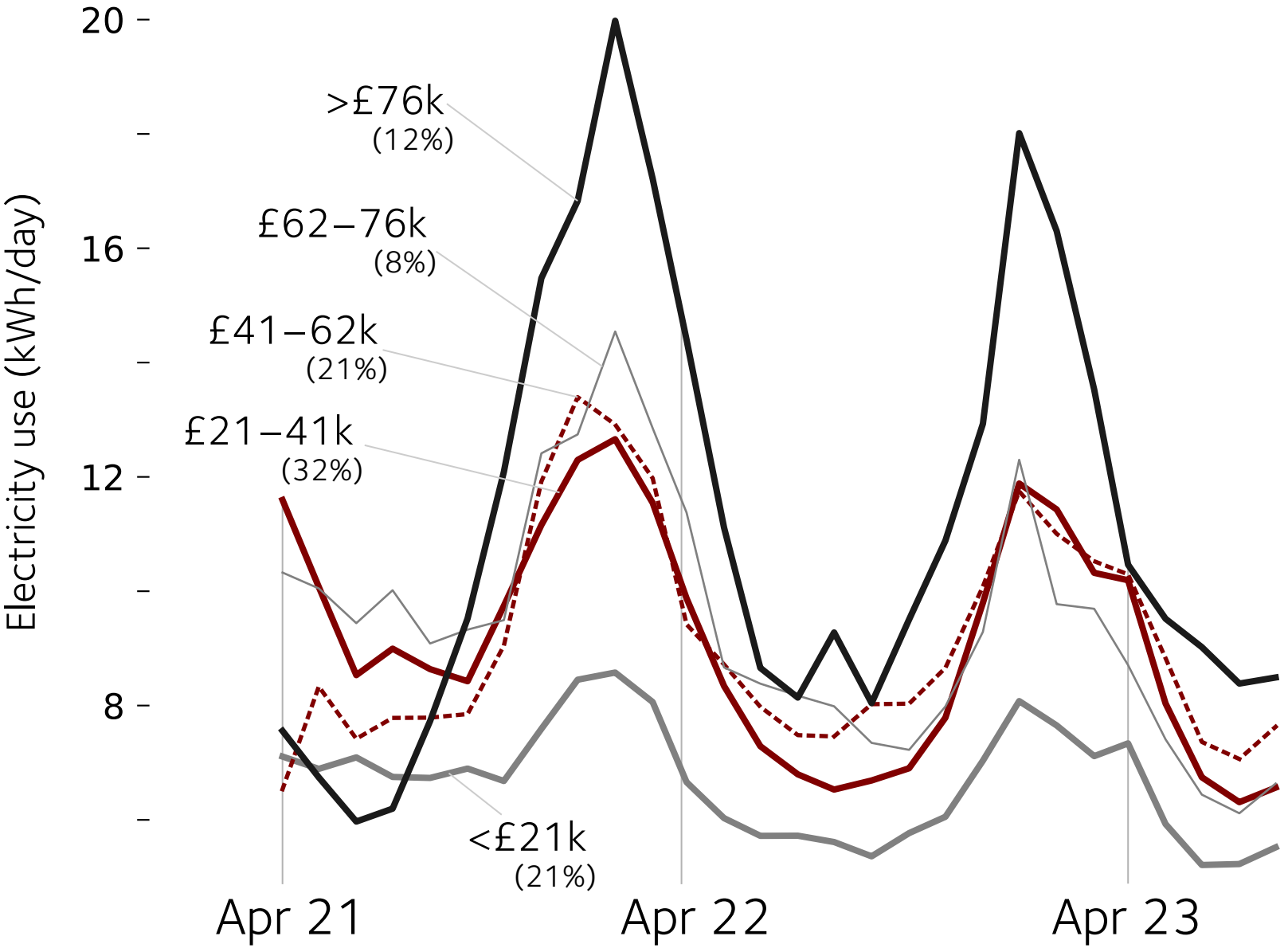
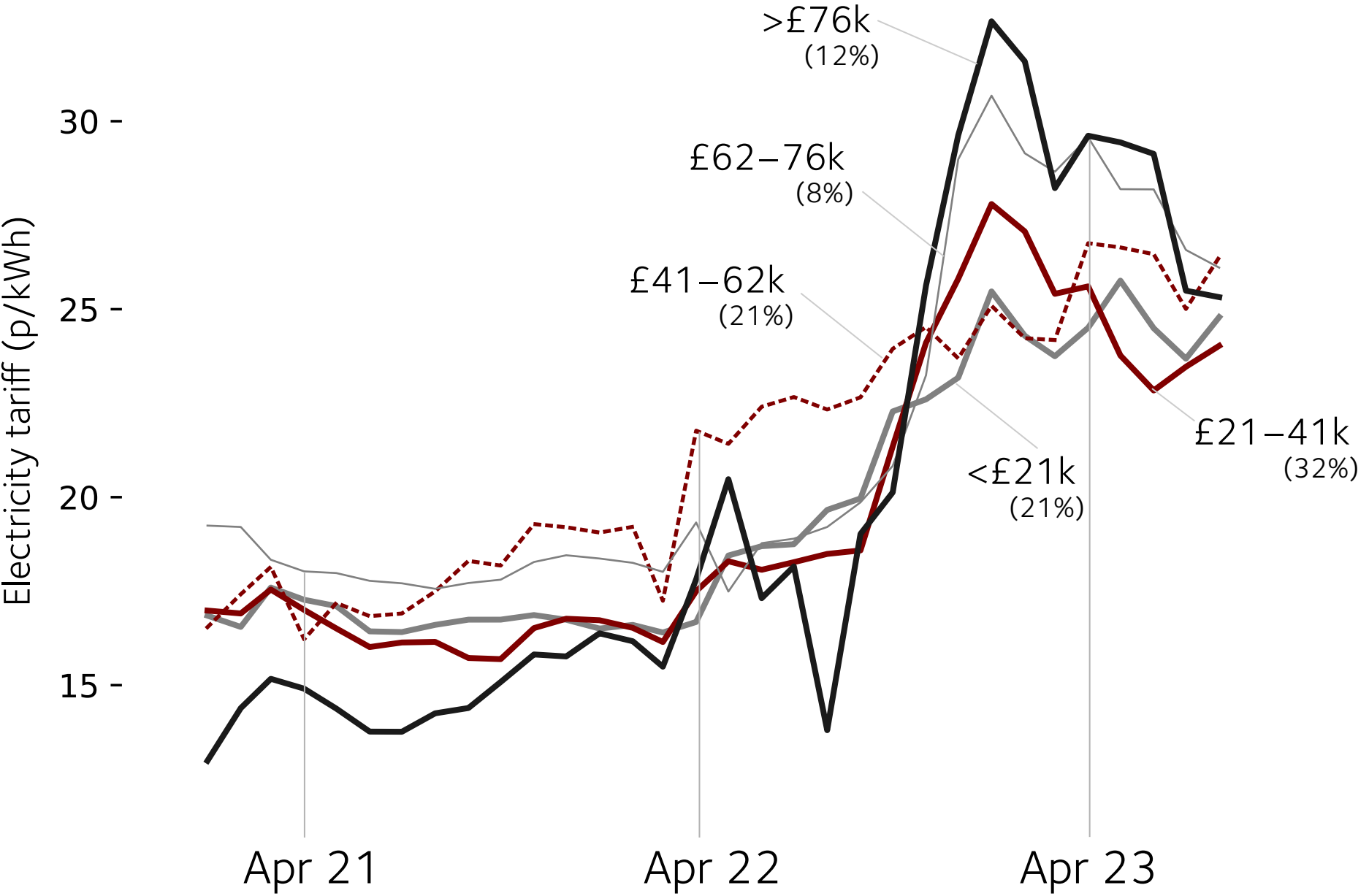
GLOW **ReNEW** **UNIVERSITY OF OXFORD**

Your Smart Meter Access Device

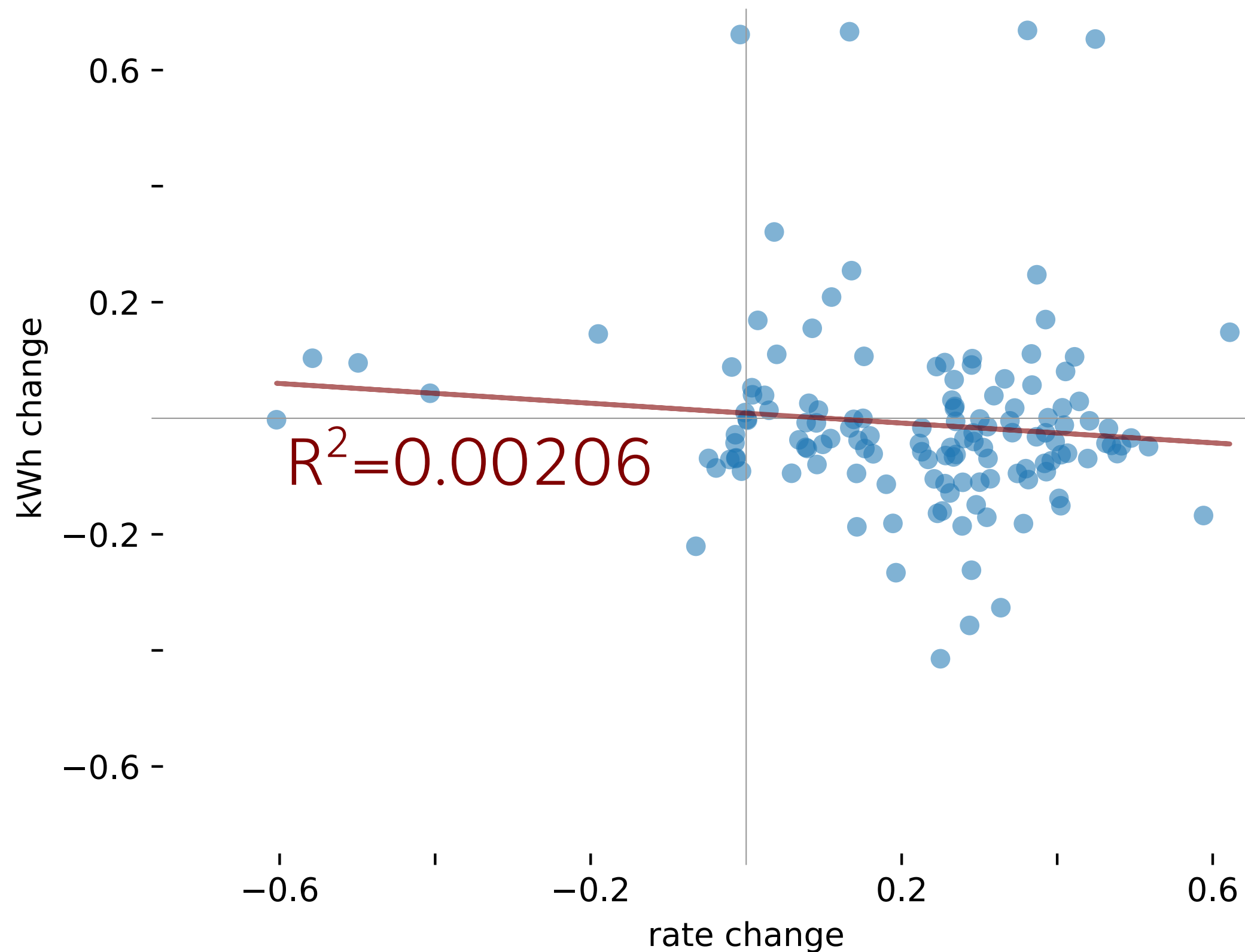
- 1** Connect the USB cable to power
- 2** Connect the Ethernet cable to your router
Done.

The device automatically connects your smart meter. Please leave it plugged in during the study. If you have any questions, email support@joymeter.uk

Higher income households experience greatest change

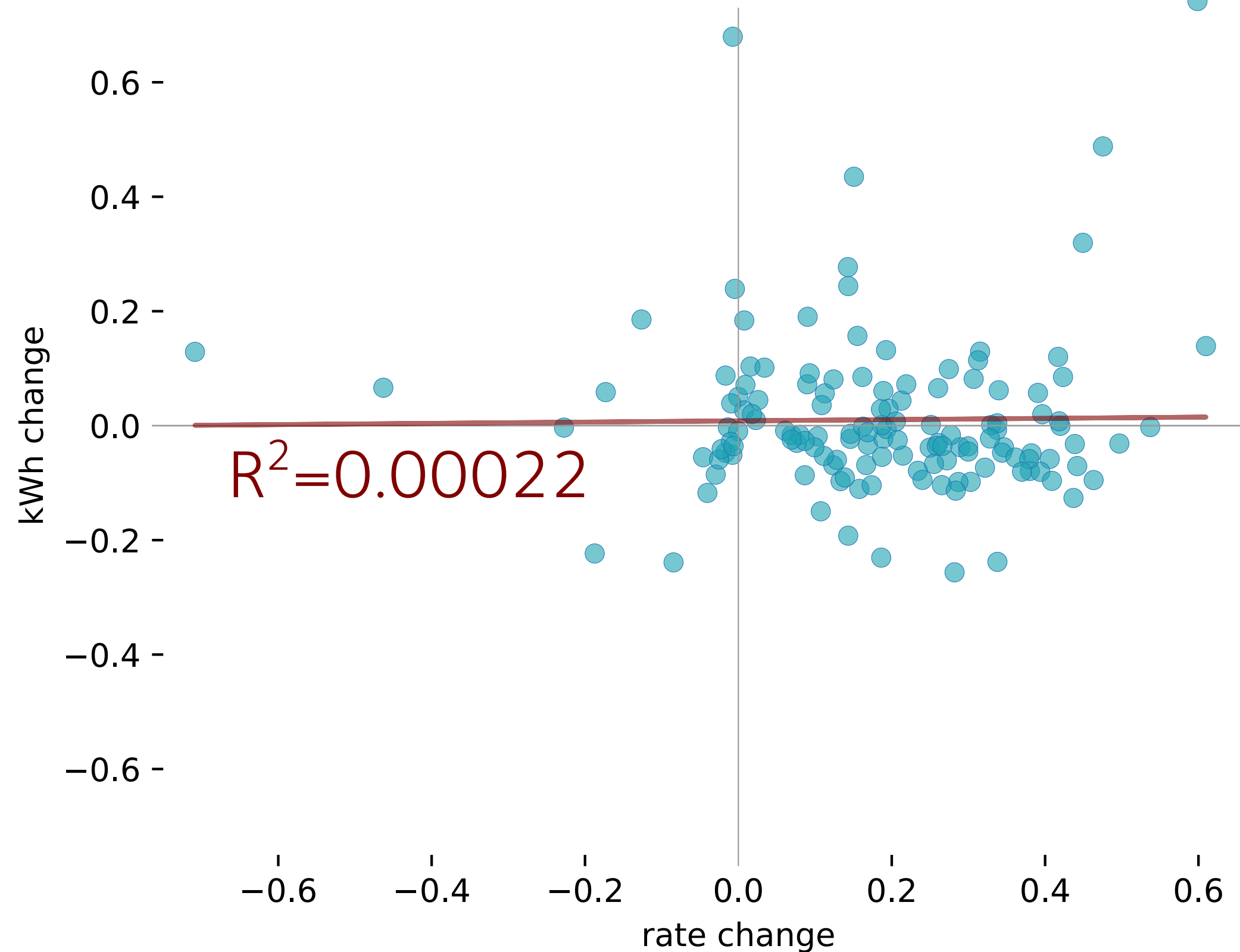


Fitting a line through noise: not much elasticity



Jan 2022
vs.
Jan 2023

Fitting a line through more data: even less elasticity

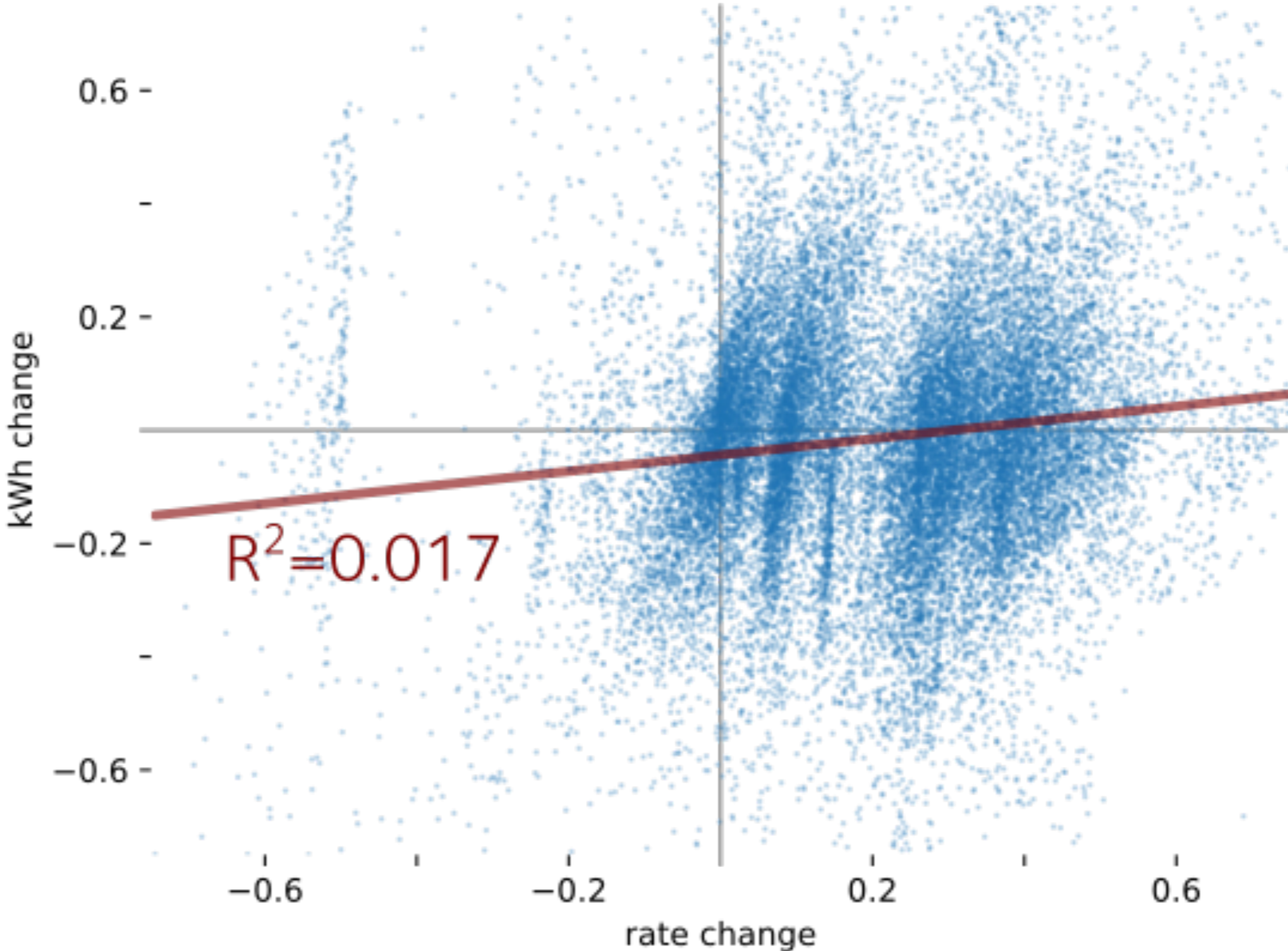


Jan–Jul
2022

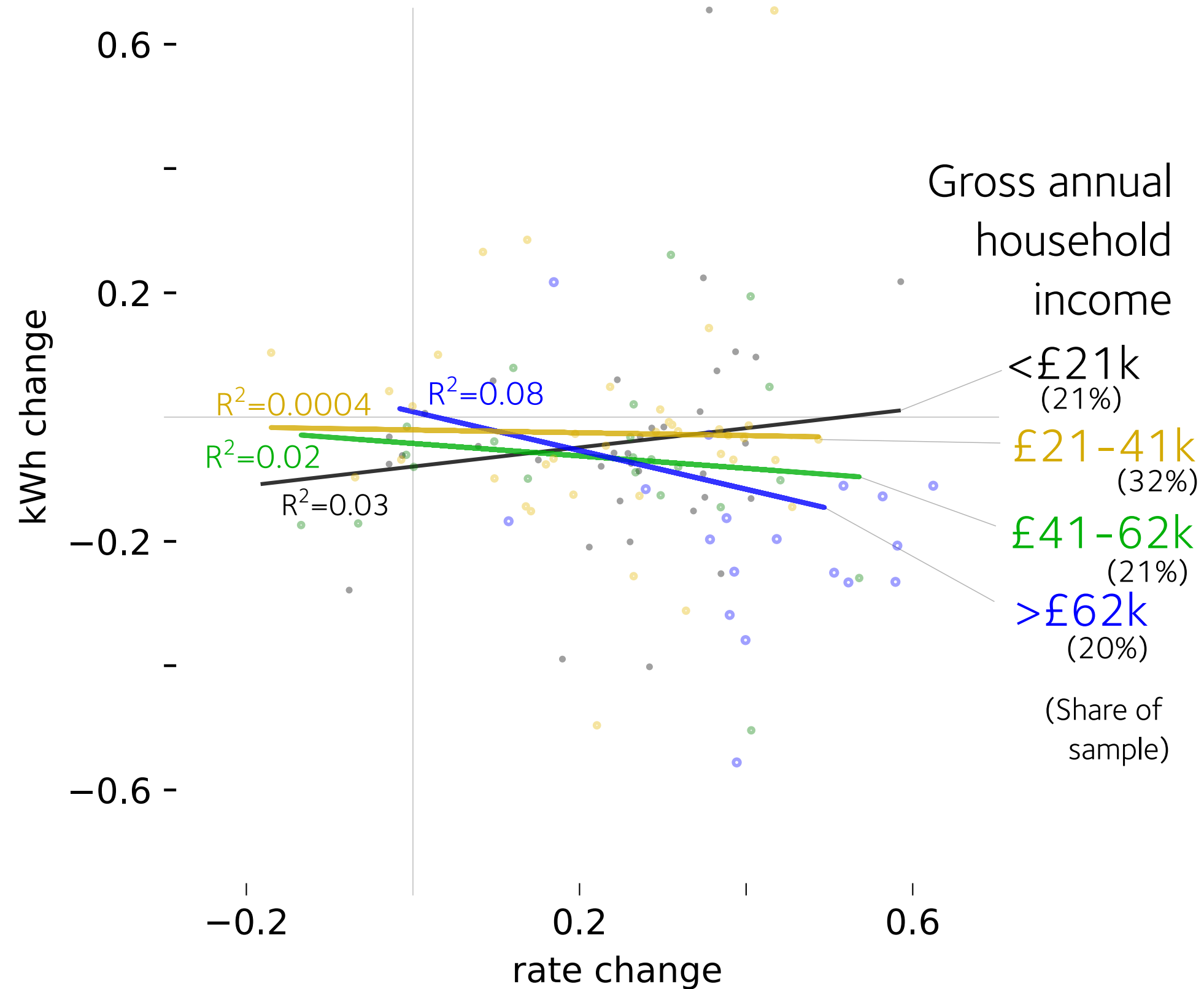
vs.

Jan–Jul
2023

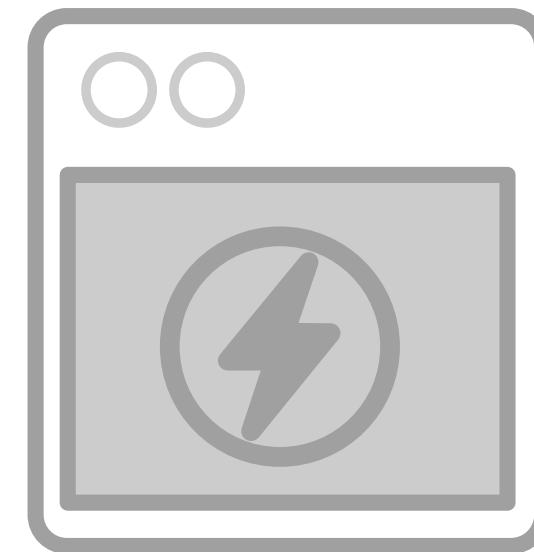
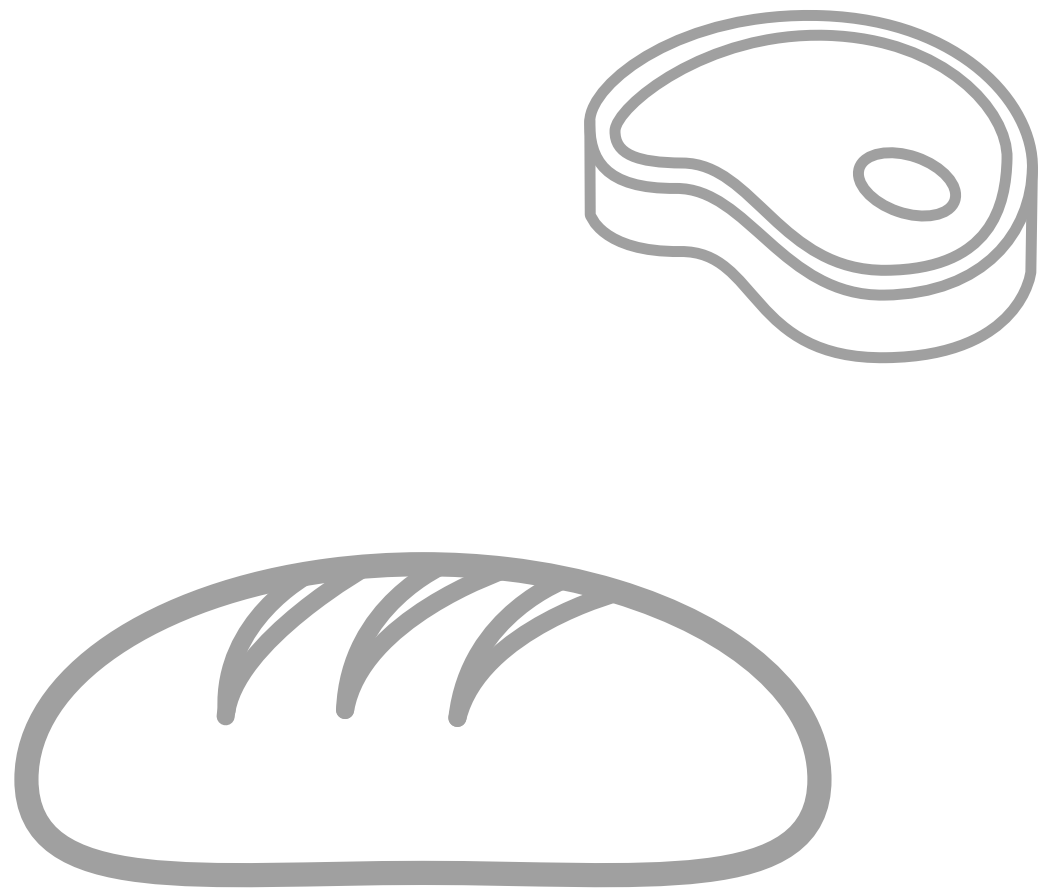
More data – even 'less negative' elasticity



Lower income households have less price elasticity



Does energy have Giffen-good properties?



Conclusions

- Energy use is weakly correlated to price
- Lower income households are less able to reduce demand
- For energy service constrained households energy may exhibit Giffen good properties

