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Reporting Summary

Nature Research wishes to improve the reproducibility of the work that we publish. This form provides structure for consistency and transparency in reporting. For further information on Nature Research policies, see our Editorial Policies and the Editorial Policy Checklist.

Statistics

For all statistical analyses, confirm that the following items are present in the figure legend, table legend, main text, or Methods section.

n/a	Confirmed	
☐	☒	The exact sample size (*n*) for each experimental group/condition, given as a discrete number and unit of measurement
☐	☒	A statement on whether measurements were taken from distinct samples or whether the same sample was measured repeatedly
☐	☒	The statistical test(s) used AND whether they are one- or two-sided *Only common tests should be described solely by name; describe more complex techniques in the Methods section.*
☒	☐	A description of all covariates tested
☒	☐	A description of any assumptions or corrections, such as tests of normality and adjustment for multiple comparisons
☐	☒	A full description of the statistical parameters including central tendency (e.g. means) or other basic estimates (e.g. regression coefficient) AND variation (e.g. standard deviation) or associated estimates of uncertainty (e.g. confidence intervals)
☐	☒	For null hypothesis testing, the test statistic (e.g. *F*, *t*, *r*) with confidence intervals, effect sizes, degrees of freedom and *P* value noted *Give P values as exact values whenever suitable.*
☒	☐	For Bayesian analysis, information on the choice of priors and Markov chain Monte Carlo settings
☒	☐	For hierarchical and complex designs, identification of the appropriate level for tests and full reporting of outcomes
☒	☐	Estimates of effect sizes (e.g. Cohen's *d*, Pearson's *r*), indicating how they were calculated

Our web collection on statistics for biologists contains articles on many of the points above.

Software and code

Policy information about availability of computer code

Data collection	No own data was collected. Therefore, no software was used for data collection.
Data analysis	Python 3.7.7; Python Packages: Pandas v1.0.5, Numpy v1.16.4, Statsmodels v0.12.2

For manuscripts utilizing custom algorithms or software that are central to the research but not yet described in published literature, software must be made available to editors and reviewers. We strongly encourage code deposition in a community repository (e.g. GitHub). See the Nature Research guidelines for submitting code & software for further information.

Data

Policy information about availability of data

All manuscripts must include a data availability statement. This statement should provide the following information, where applicable:

- Accession codes, unique identifiers, or web links for publicly available datasets
- A list of figures that have associated raw data
- A description of any restrictions on data availability

The income and consumption samples (Einkommens- und Verbrauchsstichprobe) from 2003 and 2018 can be be purchased from https://doi.org/10.21242/63221.2003.00.04.3.1.0 and https://doi.org/10.21242/63211.2018.00.04.3.1.1. The source data for the figures within this paper and other findings of this study are available from the corresponding author upon request.

Field-specific reporting

Please select the one below that is the best fit for your research. If you are not sure, read the appropriate sections before making your selection.

☐ Life sciences ☒ Behavioural & social sciences ☐ Ecological, evolutionary & environmental sciences

For a reference copy of the document with all sections, see nature.com/documents/nr-reporting-summary-flat.pdf

Behavioural & social sciences study design

All studies must disclose on these points even when the disclosure is negative.

Study description	Based on a quota-sample of the Federal Statistical Office of Germany on private households' income and consumption, we analyze how levies on electricity consumption impact consumption behavior and how this effects social justice and energy poverty.
Research sample	Scientific use-files of the Income and Consumption Samples (Einkommens- und Verbrauchsstichprobe) from 2003 and 2018 on German private households. The data was collected by the Federal Statistical Office of Germany. It is a representative quota-sample conducted in 5-year intervals. The raw sample comprises 60,000 households and is meant to include maximum 0.2% of all German households. Participation in the survey is voluntary. This number of households is reduced for the scientific use-files to 42,000 and 43,000 to ensure information is anonymous. Informaton is provided on income, wealth and debt situation, private household consumption expenditure, and consumer good endowment.
Sampling strategy	Quota-sample.
Data collection	Interviews, pen and paper, online.
Timing	Data is collected during the whole year. Some data is reported at the beginning of the respective year (January 1st), other information is collected per month or quarter year so that differences in timing are represented in the data.
Data exclusions	The Income and Consumption Sample excludes households with an monthly income of above 18,000 €. For our analysis of price elasiticies, households with very high (top 0.27%, i.e. three standard deviations of a normal distribution) and very low electricity expenditures (with expenditure below 0 €/quarter year) were excluded from the analysis of price elasticities. For the derivation of base and operating prices, households with very low electricity expenditure (lowest 0.5%) and very high electricity expenditure (highest 10%) were excluded from the regression.
Non-participation	The survey generally has very high response rates (e.g. ~90% for the data sample collected in 1998).
Randomization	The households were grouped into income deciles according to the OECD-modified equivalence scale.

Reporting for specific materials, systems and methods

We require information from authors about some types of materials, experimental systems and methods used in many studies. Here, indicate whether each material, system or method listed is relevant to your study. If you are not sure if a list item applies to your research, read the appropriate section before selecting a response.

Materials & experimental systems

n/a	Involved in the study
☒	☐ Antibodies
☒	☐ Eukaryotic cell lines
☒	☐ Palaeontology and archaeology
☒	☐ Animals and other organisms
☒	☐ Human research participants
☒	☐ Clinical data
☒	☐ Dual use research of concern

Methods

n/a	Involved in the study
☒	☐ ChIP-seq
☒	☐ Flow cytometry
☒	☐ MRI-based neuroimaging