

International Journal of Population Data Science

Journal Website: www.ijpds.org



Utilising User Data from a Food-Sharing App to Evidence the "Heat-or-Eat" Dilemma

Torran Semple¹, John Harvey², Lucelia Rodrigues¹, Mark Gillott¹, Graziela Figueredo³, and Georgiana Nica-Avram²

¹Department of Architecture & Built Environment, University of Nottingham

²N/Lab, Nottingham University Business School

³School of Computer Science, University of Nottingham

Introduction & Background

Previous literature has found that financially vulnerable households often make involuntary spending trade-offs between necessities, particularly energy and food. This effect is especially pronounced during winter, when homes require greater energy expenditure to maintain an adequate temperature. Despite frequent colloquial and journalistic references to the "heat-or-eat dilemma", there remains limited recent empirical evidence of this phenomenon in the UK. This is a considerable knowledge gap, given recent economic hardship and rising energy costs.

Objectives & Approach

This study uses survey data ($n=2877$), collected during winter 2022 in London, UK, to analyse the sociodemographic and behavioural characteristics of respondents affecting self-reported heat-or-eat trade-offs. The survey was deployed via users of the food-sharing app, OLIO, and quota restraints were enforced to ensure the socioeconomic representativeness of the sample (based on Index of Multiple Deprivation). The survey question of interest (i.e., the dependent variable) was "in the past year, how frequently did your household reduce or forego expenses for basic household necessities, such as medicine or food, in order to pay an energy bill?" and responses were recorded using a discrete, ordinal scale: never; 1-2 months; some months but not every month; almost every month.

Given the nature of the dependent variable, the Random Parameters Ordered Probit (RPOP) model, a statistical modelling framework used in the case of discrete, ordered outcomes, was considered suitable. The RPOP approach allows the effect of various independent variables to be explored, which in this case, are sociodemographic and behavioural characteristics of respondents.

Relevance to Digital Footprints

The relevance to the digital footprints theme is embedded in the study's aim: to draw insights into social issues through the analysis of sociodemographic and behavioural data retrieved from the users of a mobile app.

Results

Initial results show that a considerable proportion ($\sim 37\%$) of the sample made heat-or-eat trade-offs at least one month of the year. Interestingly, this is several times higher than the official rate of fuel poverty in London (11.9%), suggesting that the government's fuel poverty metric fails to capture many homes that display signs of energy unaffordability. The RPOP model estimation results show that a broad range of sociodemographic variables (including features of household composition and disability), as well as several behavioural features derived from the respondents' use of the OLIO app, including the frequency of app usage and food requests, significantly affected the likelihood of heat-or-eat trade-offs.

Conclusions & Implications

Our results can be used to guide remedial food and fuel poverty policies. It may be particularly useful to focus on the sociodemographic variables that lead to heat-or-eat trade-offs, given that the English fuel poverty metric places arguably unjust focus on a home's energy efficiency, rather than occupant characteristics.

