

Using shopping data to correct misconceptions about the environmental impact of everyday food

– Alexa Spence, Daniel Fletcher

Project overview

Food systems are a major driver of climate change and environmental degradation, contributing substantially to greenhouse gas emissions, biodiversity loss, and pressure on land and water resources. Encouraging more sustainable diets therefore requires not only better food options, but a clear understanding of how people perceive the environmental impact of the foods they buy every day.

Previous research has often focused on a narrow range of food products, typically primary or unprocessed ingredients, leaving a gap in understanding of the complex, processed foods that dominate modern supermarket shopping. Addressing this gap, an ESRC Smart Data UK-funded project has uncovered widespread public misperceptions about the environmental impact of commonly purchased grocery items.

Project highlights and lessons learned

- **Developed the Environmental Food Purchase Index (EFPI)** to measure and compare the environmental impact of grocery shopping decisions across households and over time
- **Combined survey responses with Tesco Clubcard data** to link perceptions, behaviour, and environmental impact
- **Revealed widespread public misconceptions** about the environmental impact of commonly purchased foods using real shopping data

Lead author Daniel Fletcher explains:

“People tend to think about food impact in terms of whether it is animal- or plant-based and how processed it is. This leads to systematic errors—people often overestimate the impact of highly processed foods and underestimate the impact of water-intensive products like nuts. Many are also surprised by just how much higher the impact of beef is compared to other meats, such as chicken.”

Results and impact

Researchers in the School of Psychology, working in collaboration with N-Labs in the Business School developed interactive and visually engaging online tasks to assess public understanding of environmental impact across multiple food categories.

Crucially, this research programme moved beyond self-report measures by using data donation methods to capture real-world behaviour. A representative UK sample completed a survey on environmental food attitudes and donated their Tesco Clubcard shopping data, providing an objective record of actual purchasing decisions. When combined with scientific estimates of product-level environmental impacts, this created a unique dataset linking perceptions, behaviour, and environmental impact.

Building on existing life-cycle assessment research, the team developed the Environmental Food Purchase Index (EFPI), a normalised measure of the overall environmental impact of grocery shopping that allows meaningful comparison across individuals, households, and time. Linking EFPI scores with survey data revealed a significant but weak relationship between perceived and actual impact.

While participants recognised that meat-heavy shopping baskets tend to have higher environmental impact, they underestimated the importance of within-category choices—particularly meat type—which play a major role in determining overall impact.

Scaling impact

Together, these findings highlight important knowledge gaps in public understanding of food sustainability and point to the need for more effective eco-labelling and food communication strategies that reflect the true environmental drivers of everyday food choices.



Dr Alexa Spence works with colleagues across the university to drive research and understanding of public perception of the environmental impact of multiple, staple food items to address food production challenges on our planet.

Dr Daniel Fletcher explaining to participants the environmental impact of meat products and the benefit of donating shopping data for climate action.

