

The impact of eco-labels and price discounts on the sustainability of online grocery purchases

A randomised controlled trial using a bespoke browser extension in a real-world retail environment

Principal investigators: Oyinlola Oyeboode and Thijs van Rens

Contributors: T. van Rens, H. Bentil, P. Scarborough, H. Borzadaran, A. Kumar, E. Hillier, M. Clark, C. Thompson, J. Brock, E. Becker, L. Cornelson, M. White, O. Oyeboode

The objective

We evaluated interventions designed to shift online grocery purchases towards environmentally more sustainable products. We estimated the impact of colour-coded eco-labels and price discounts, and also examined potential synergies between the two interventions.

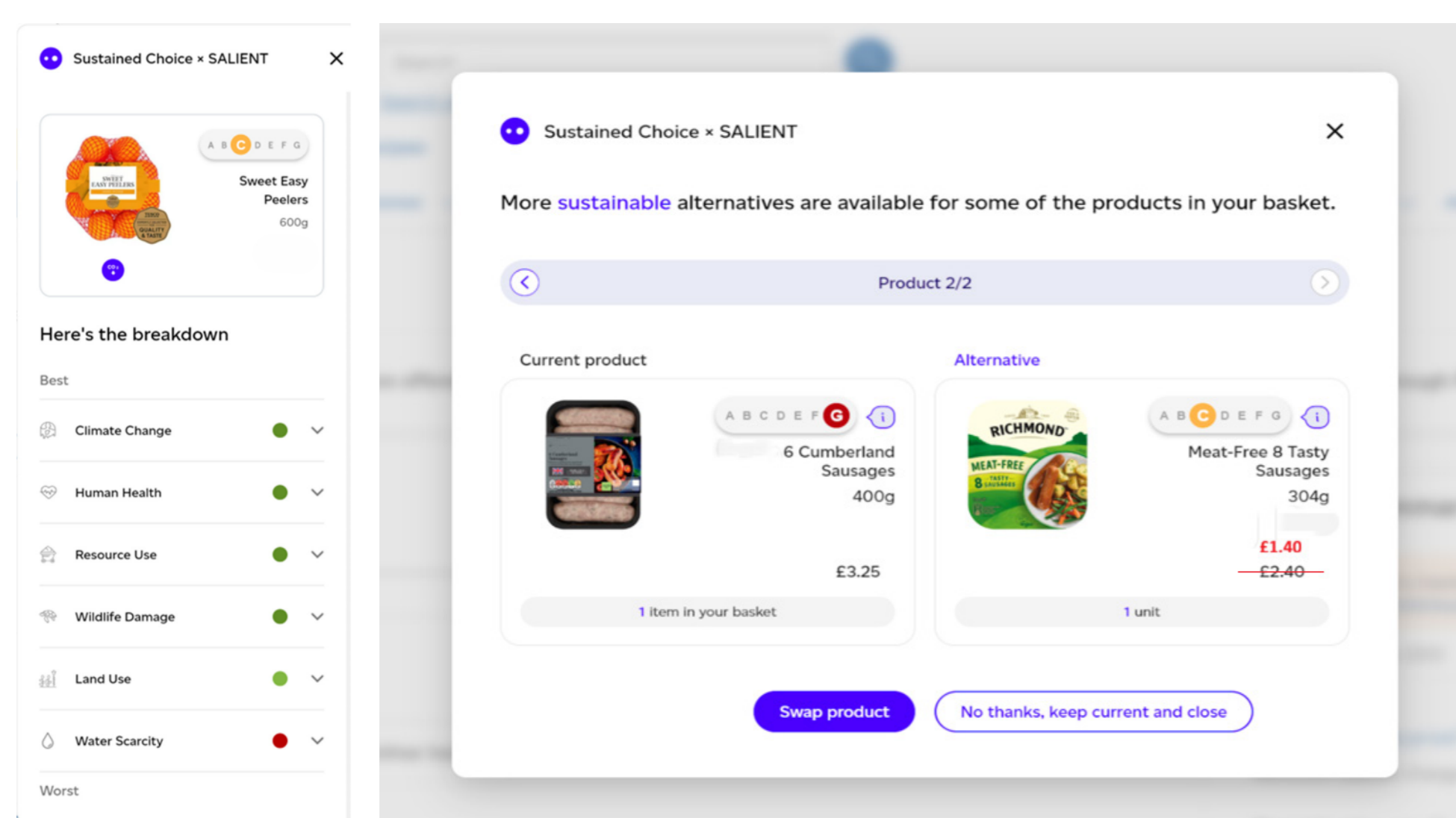


The interventions

The trial took place on the website of (a) large UK supermarket(s). Participants were recruited from the usual customers of this/these supermarket(s), and were asked to place online grocery orders as they usually would. We used a custom-built browser extension for Google Chrome to collect data on their purchases, and to modify the website to implement the interventions.

Colour-coded eco-labels: Products were assigned a score from A (green, lowest impact) to G (red, highest impact). These were calculated by mapping ingredients to life cycle assessment databases across 16 categories of the Product Environmental Footprint (PEF) methodology.

Discounts on more sustainable swaps: At the checkout screen, participants were offered more sustainable alternatives (swaps) for up to three items in their basket. These swaps were nutritionally similar and intended for similar culinary uses. Swaps were offered at either no discount, a £0.50 discount, or a £1.00 discount. Participants were reimbursed for any discounts on products that they purchased.



Study setting & methodology

- **Location:** The website of (a) major UK supermarket(s).
- **Population:** UK residents who are primary grocery shoppers for their household and shop online at least once a month at the supermarket(s) concerned. 1,835 participants were included in the final analysis.
- **Design:** An 8-week, 2x3 parallel-design randomised controlled trial, with recruitment conducted in six adaptive waves.
- **Data sources:** A browser extension collected real-time data on initiated, updated, and completed checkouts. This included product descriptions, pack sizes, prices, and environmental eco-scores. These purchase data were complemented with surveys at the start and end of the trial period.
- **Timeframe:** Data collection ran from 15th April - 15th December 2024, and 10th February - 14th April 2024.

Key findings

Economic incentives in the form of discounts on more sustainable alternatives are effective in promoting sustainable grocery shopping. Information in the form of eco-labels alone was insufficient to change behaviour, but eco-labels did substantially amplify the effect of the discounts.

How to promote more sustainable (online) grocery shopping?

	No price incentives	Discounts on more sustainable alternative product swaps
No information on environmental sustainability provided		Significant reduction in basket eco-score ($p = 0.03$) of a £1 discount. The effect of a £0.50 discount was less than half the size and not significantly different from zero.
Eco-labels visualising the environmental impact of all products	No significant effect on basket eco-score ($p = 0.88$)	Synergies: The effect of the £1 discount more than doubled when participants were also shown eco-labels.

Scientific & policy implications

Price discounts: Economic incentives are effective to promote more sustainable grocery shopping.

Information provides synergies: Labels are only effective in combination with discounts. Information-based policy is most effective as a supportive framework for price-based incentives rather than a standalone tool.

Digital tools for research: Browser extensions are a feasible way to influence and evaluate real-world behaviour. Lessons learned in the online environment may or may not carry over to physical retail settings.

Future research: Digital tools designed for mobile phone users could reach more people. Future research should also consider takeaways and restaurants, which make up a substantial part of food consumed and often have a higher environmental impact than groceries bought to eat at home.

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