

# The effect of increased availability of vegetarian meals on vegetarian meal sales in worksite cafeterias

## A stepped-wedge cluster randomised controlled trial

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### The objective

The aim of the intervention was to increase the proportion of meals sold in worksite cafeterias that were vegetarian by switching one of the meat options on the menu to vegetarian.



### The intervention

The study tested a non-intrusive availability nudge in real-world workplace settings:

**Menu modification:** One meat-based meal on the lunch menu was replaced with a vegetarian option.

**Primary outcome:** Proportion of vegetarian out of total meals sold.

**Secondary outcomes:** Total meals sold per week, energy (kcal), fat (g), saturated fat (g), sugar (g), salt (g), protein (g), fibre (g), carbohydrates (g), greenhouse gas emissions (kg CO<sub>2</sub>-eq), biodiversity loss (species.year\*10<sup>-14</sup>), eutrophication potential (gPO<sub>4</sub>-eq), water scarcity (L-eq), and price (GBP) per meal sold, cafeteria weekly revenue (GBP) from meals. We also analysed food waste (both in kg and GBP per week).

### Study setting & methodology

- **Location:** Six worksite cafeterias across England.
- **Population:** Customers at the worksites served by these cafeterias.
- **Design:** A stepped-wedge cluster-randomised controlled trial where sites started the intervention at different, randomised time points. Each site therefore contributed both control and intervention data points.
- **Data sources:** Sales data, meal energy content and ingredient lists provided by catering companies, ingredients were linked to agri-environmental databases to calculate environmental impact (following methods from Clark et al.). Food waste was analysed from waste records collected by site managers.
- **Timeframe:** September – November 2023.

### Key findings

Increasing the availability of vegetarian options significantly shifted food choices toward more sustainable outcomes without negative impacts on business.

Outcome measure	Result (Intervention effect)	Confidence interval
Primary: Likelihood of veg meal selection	+41% increase	[95% CI: 28 to 55]
Health: Energy content (kcal)	-26.1 kcal per meal	[95% CI: -34.4 to -17.7]
Environmental: GHG emissions	-0.16 kg CO <sub>2</sub> -eq per meal	[95% CI: -0.22 to -0.11]
Business: Weekly revenue	-£98.43 (not significant)	[95% CI: -436 to 239] [-306.80 to 183.53]
Operations: Food waste (kg and GBP per week)	-8.25 kg (not significant) -£61.64 (not significant)	[95% CI: -48.4 to 31.9] [-306.80 to 183.53]

### Scientific & policy implications

**Holistic evidence:** As the first randomised controlled availability trial targeting a diverse range of consumers, this study provides a comprehensive evaluation by simultaneously assessing health, environmental, business, and acceptability outcomes that were previously examined only in isolation.

**Acceptability:** Customers and staff found the intervention acceptable and easy to implement. Initial concerns regarding customer dissatisfaction or increased waste were not supported by data.

**Commercial viability:** The intervention did not lead to significant changes in revenue or food waste, confirming that sustainability goals can be met without compromising business outcomes.

**Policy potential:** Availability interventions offer a scalable tool for diverse food service settings looking to reduce environmental impact and improve public health.

**Future research:** More studies are needed to test the generalisability of this intervention in less captive environments. Individual-level sales data should be collected to ascertain if interventions apply equitably regardless of socioeconomic status.

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