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# What happens to vegetarian ready-meal sales when a frozen ready meal retailer increases the proportion of vegetarian ready-meals visible to customers?

**Submission date**
06/08/2024

**Recruitment status**
No longer recruiting

**Registration date**
12/08/2024

**Overall study status**
Completed

**Last Edited**
29/10/2026

**Condition category**
Other

[_] Prospectively registered
[X] Protocol
[X] Statistical analysis plan
[_] Results
[_] Individual participant data
[X] Record updated in last year

## Plain English summary of protocol

Background and study aims
People's health and the environment are affected by dietary choices, as certain diets have higher environmental impacts than others and contribute to ill health. The National Food Strategy recommends increasing fruit and vegetable consumption and reducing meat consumption to promote better health outcomes and a more sustainable food system. Research has shown that food selection can be influenced by changing food environments. Findings from experiments conducted in university and worksite canteens suggest that increasing the availability of vegetarian food increases its sales. This, in turn, may help increase the consumption of these foods as what is purchased is associated with what is eaten. However, more evidence from real-world retail settings is needed. This study aims to understand whether increasing the proportion of vegetarian ready meals visible to customers in COOK stores, a frozen ready meal retailer, increases the sales of these products. The health, economic and environmental impacts of this intervention will also be assessed.

Who can participate?
COOK stores with at least 18 freezers that stock the Chef’s wall ready-meals range, vegetarian meals currently comprise over 20% of their Chef’s wall ready meals and can increase vegetarian facing in the Chef’s wall range to 44-45%.

In addition to using the inclusion criteria, COOK selected intervention stores based on their geographical spread (1 store in the West Midlands and 4 stores in the Southeast) and the likelihood of store engagement in the trial.

What does the study involve?
The study involves increasing the facings of vegetarian ready meals (including vegan meals) in the freezer sections of five COOK stores between 29 July and 8 September 2024.

Two of the five participating stores have 18 freezers, and the three others have 19 freezers. The proportion of vegetarian options will increase from approximately 31% to 44% in stores with 18 freezers and to 45% in stores with 19 freezers.

A researcher unaware of the store identities will randomly decide the order in which the stores start the intervention. The five stores will be randomly assigned an order to implement this change. Each week, a new store will start increasing its vegetarian facings until all have done so in a step-wise manner. After starting the change, each store will keep the new proportion of vegetarian options daily until the study ends.

The control periods in this study are the weeks before the changes have been introduced. The study will compare vegetarian sales during the intervention weeks to the control weeks to see if having more vegetarian ready meals available affects sales.

The main outcome of this trial will measure the proportion of vegetarian meal sales out of total sales in the intervention vs. control periods through analysis of the sales data. The study will also assess other (secondary) outcomes, such as the environmental impact of food, cost-effectiveness of the trial, health impact and nutritional quality of food during the trial.

What are the possible benefits and risks of participating?
Previous studies have shown that changing food environments, like in cafes, can influence people to make healthier choices. This study employs that hypothesis. In the theory of change constructed for this trial, one of the desired outcomes is a substantial change in the purchasing behaviour of customers and other retailers following suit to increase their vegetarian provisions and sales. This could improve public health, as eating more vegetarian food is linked to a lower risk of diabetes and heart disease. It would also support the goal of reaching net zero emissions by 2050. Risks are not anticipated for the participants or the wider community.

Where is the study run from?
University of Oxford (UK)

When is the study starting and how long is it expected to run for?
June 2023 to October 2024 in three phases:
Pre-intervention period: 1st – 28th July 2024
Intervention period: 29th July – 8th September 2024
Post-intervention period: 9th September – 6th October 2024

Who is funding the study?
Economic and Social Research Council (UK)

Who is the main contact?
Prof. Peter Scarborough, peter.scarborough@phc.ox.ac.uk

# Contact information

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Principal investigator

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# Additional identifiers

**Protocol serial number**
ESRC Ref: ES/Y00311X/1

# Study information

## Scientific Title
The effect of a relative availability intervention on the sale of vegetarian ready meals in a frozen ready meal retailer

## Study objectives
Increasing the relative availability of vegetarian ready meals out of total options increases the proportion of their unit sales without changing overall sales of ready meals in the intervention periods compared to the control periods. These changes will reduce the environmental impact and increase the nutritional quality of the overall ready-meal sales.

## Ethics approval required
Ethics approval required

## Ethics approval(s)
Approved 16/07/2024, Medical Sciences Interdivisional Research Ethics Committee (Research Services, Boundary Brook House, Churchill Drive, Headington, oxford, OX3 7GB, United Kingdom; +44 (0) 1865 616575; ethics@medsci.ox.ac.uk), ref: R94522/RE001

## Primary study design
Interventional

## Study design
Multicentre interventional stepped wedge randomized controlled trial

## Study type(s)
Prevention

## Health condition(s) or problem(s) studied
Increasing the uptake of healthy and sustainable diets and reducing the environmental impacts of the food system.

## Interventions
The intervention involves increasing the proportion of freezer facings of frozen vegetarian ready-meals in five COOK stores between 29 July and 8 September 2024 (6 weeks).

COOK is a frozen ready-meal manufacturer and retailer in the UK with over 90 stores nationwide, including 25 franchise stores. Stores contain 18 or 19 freezers. Two of the five selected stores have 18 freezers, and the remaining three have 19 freezers. More specifically, the intervention will take place in the Chef's wall - a group of five freezers (in 18 freezer stores) or 6 freezers (in 19 freezer stores) containing COOK's core product range, accounting for approximately 44% of sales. The term "Chef's wall" is an internal term used by COOK and is not communicated to customers.

Facings refer to the number/proportion of viewable labels. For example, if 16 products are visible at the top of each pile/stack within a chest freezer, and behind each of the 16 products is a stack of 10 identical items, the number of facings is 16. If there are 2 piles of macaroni cheese, each consisting of 5 products, then that will count as 2 facings.

The five stores will be randomised to start the intervention at the start of each week during the trial period, and the baseline data will be collected retrospectively after the trial starts. An external and blinded researcher will perform a simple, unconstrained random allocation, where all shops are equally likely to be allocated to each position in the sequence. The five stores in the study will be placed into an order randomly. This random order will determine when the stores introduce the intervention. The intervention will be implemented in a step-wise manner (i.e. each week, a new store will start the intervention). This means that one store will run the intervention for 5 weeks, whereas others will run the intervention for either 4, 3, 2, or 1 week(s). After the intervention is introduced, each store will consistently provide the intervention every day until the end of the study.

The control periods in this study are the weeks when no intervention is implemented. During the 6-week intervention period, the store managers will send the trial team weekly pictures of products, freezer layouts and facings on the Chef's wall in the intervention stores to ensure that the intervention is being implemented as per protocol. Additionally, an in-person fidelity check will be conducted in each intervention store during the intervention period.

## Intervention Type
Behavioural

## Primary outcome(s)
Units sold of vegetarian ready meals out of total ready meals sales (i.e. meat-based and vegetarian) will be measured using sales data collected pre-intervention (four weeks), during the intervention period (six weeks) and post-intervention (four weeks). Sales data will be obtained from electronic point-of-sale tills.

## Key secondary outcome(s)
The following secondary outcome measures will be measured using the collection of the vegetarian product names, the units sold, their sales revenue (£), the ingredient list and the nutritional composition of the products before, during, and after the intervention. These data will be used for secondary analyses assessing the longer-term time trends in the outcome measures:

1. Units sold and £ revenue will be measured using sales data of all ready meals (vegetarian and meat-based).
2. The nutritional quality of ready meals will be measured using nutritional information provided by the retailer on the following nutrients: Kcal, total fat (unsaturated and saturated), sugar, fibre, protein, carbohydrates, and salt.
3. The nutritional profile of foods purchased will be measured by analysing the proportion of products purchased that pass or fail the UK Nutrient Profile Model (UK NPM).
4. The environmental impact of meals sold will be estimated by calculating four environmental indicators (greenhouse gas emissions, scarcity-weighted water stress, land use and eutrophication) using a method established by Clark et al. (Clark, 2022).
5. The health impact of increasing relative vegetarian meal availability on the morbidity and mortality of the UK population will be assessed using an established proportional multistate life table model, the PRIMEtime model.
6. The cost-effectiveness analysis will be conducted by analysing the additional costs and/or savings and any revenue losses or gains associated with increasing the availability of vegetarian meals.

## Completion date

08/09/2024

# Eligibility

### Key inclusion criteria
1. COOK stores stocking the Chef's Wall ready-meals range.
2. Have at least 18 freezers.
3. Vegetarian meals currently comprise at least 20% of the Chef's wall ready meals.
4. The freezer space required to increase vegetarian facing in the Chef's wall range to at least 44%.

### Participant type(s)
Other

### Healthy volunteers allowed
No

### Age group
Other

### Sex
All

### Total final enrolment
5

### Key exclusion criteria
1. Stores outside of England
2. Stores that have less than 18 freezers

### Date of first enrolment
29/05/2024

### Date of final enrolment
29/05/2024

# Locations

### Countries of recruitment
United Kingdom

England

### Study participating centre
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## Sponsor information

**Organisation**
University of Oxford

**ROR**
https://ror.org/052gg0110

## Funder(s)

**Funder type**
Research council

**Funder Name**
Economic and Social Research Council

**Alternative Name(s)**
Social Science Research Council, ESRC, SSRC, UKRI ESRC

**Funding Body Type**
Government organisation

**Funding Body Subtype**
National government

**Location**
United Kingdom

## Results and Publications

**Individual participant data (IPD) sharing plan**
The datasets generated/analysed during the current study will be available upon request from Professor Peter Scarborough at peter.scarborough@phc.ox.ac.uk. The datasets are commercially sensitive, including sales and product data for the participating COOK stores. They will be anonymised and stored on an encrypted password-protected server maintained by the Nuffield

Department of Primary Care Health Sciences and be stored for 5 years before deletion. The data is not available for commercial use. Anonymised datasets can be requested to replicate the findings.

## IPD sharing plan summary

Available on request, Stored in non-publicly available repository

## Study outputs

| Output type | Details | Date created | Date added | Peer reviewed? | Patient-facing? |
|---|---|---|---|---|---|
| Protocol file | | 12/08/2024 | 12/08/2024 | No | No |
| Statistical Analysis Plan | | 12/08/2024 | 12/08/2024 | No | No |
| Study website | Study website | 11/11/2025 | 11/11/2025 | No | Yes |