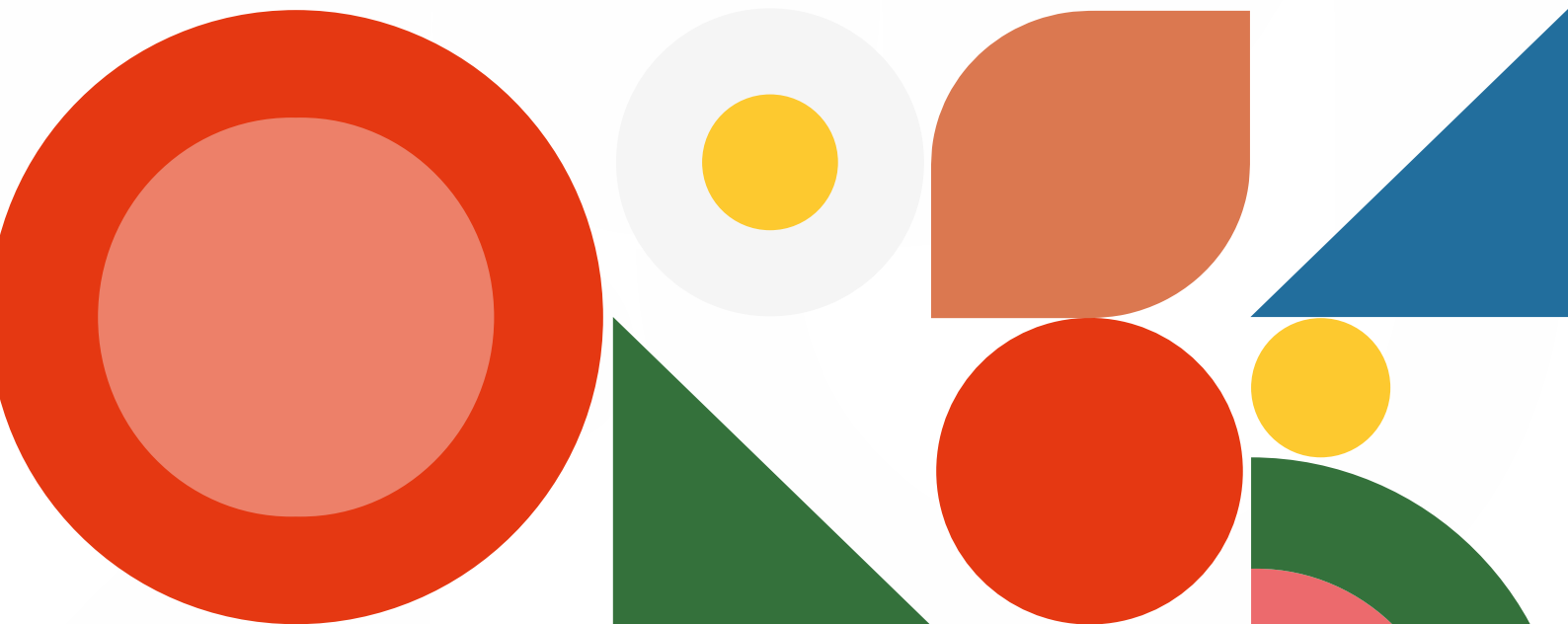


May 2026

Beyond Ultra-Processed Foods:

A Review of Evidence-Based Interventions
for the UK Food Environment

Summary Report



Executive Summary

The UK faces a significant public health challenge. Poor diets and an obesogenic food environment are driving rising rates of overweight and obesity, with over one-third of children affected by the time they are in Year 6 (aged 10-11 years), alongside 64% of adults. Dietary intakes of saturated fat, free sugars and salt remain above recommendations, while fibre, fish and fruit and vegetable consumption fall short. Less than 1% of the population adheres to all of the recommendations made in the UK's healthy eating model the Eatwell Guide. These trends contribute to increased risk of chronic diseases, reduced life expectancy and escalating healthcare costs. The food environment, not only individual choices, is central to both the problem and solution.

The link between ultra-processed foods and health has dominated discussions on public health nutrition over recent years. There is a large body of observational evidence linking diets high in foods classified as ultra-processed with a range of poor health outcomes. But questions remain about the mechanisms by which these foods cause ill health. As the debate continues, action to improve diets should not wait for further research - the impact of poor diet quality on health is clear and must be addressed.

The purpose of this report, aimed at stakeholders with an interest in diet-related health, is to move beyond the debate on ultra-processed foods and to explore research on what the retail and out of home sectors can do now to support the UK population to have healthier foods and drinks. Our aim is to stimulate change within the food industry to create a healthier, more sustainable food environment for all.

The food environment - comprising retail and out-of-home (OOH) settings, with products produced by manufacturers being sold within both - strongly influences consumer choices. Current UK environments are often dominated by foods high in fat, sugars or salt (HFSS), which are widely available, particularly in deprived areas. Addressing these structural drivers is central to achieving health-related Sustainable Development Goals and the UK Government Food Strategy.

Key Findings and Opportunities

The report reviews evidence for interventions, as well as summarising published recommendations for best practice, to help shift consumer food choices in the retail and OOH sectors, focusing on strategies that influence purchasing without removing choice. Since branded products are sold both within retail and the OOH sector, some approaches are also relevant to manufacturers.

Retail Sector

- **Price and Promotions:** Short term promotions can spark but rarely sustain behaviour change; consistent lower pricing for healthy staples is more effective. Voucher schemes (e.g., Healthy Start top ups) increase fruit/veg purchasing among low-income families and therefore should be promoted, and topped up where possible, by retailers. Restrictions on volume price promotions of HFSS products (e.g., multibuy bans) have strong health/economic rationales.
- **Placement and Availability:** HFSS placement restrictions (effective from 2022) have reduced sales of less healthy products. Increasing shelf space and online prominence for healthier products, alongside availability changes, can reduce energy purchased; yet real-world effects vary by category and context, underscoring the need for iterative testing and evaluation.
- **Signposting and Multi-Component Nudges.** Shelf tags, healthier swaps, tasting/sampling and recipe cards show **mixed but sometimes positive effects**—most effective when combined with price or placement strategies.
- **Reformulation: “Health by Stealth”** (reducing salt/sugar/calories without relying on consumer behaviour change) is a cornerstone. Mandatory or fiscal levers (e.g., the Soft Drinks Industry Levy) tend to drive faster, broader progress than voluntary efforts. Opportunities also exist to increase ‘positive’ nutrients/ingredients (fibre, pulses, fruit, vegetables) and to reduce portion sizes - with careful attention to acceptability and pricing parity.
- **Front-of-Pack Labelling:** Interpretive, colour coded systems (e.g., Multiple Traffic Lights, Nutri Score, warning labels) can improve understanding and simulated choices; consistency and mandate matter more than the precise scheme. While long-term impacts on diet and health may be modest and require more real-world evidence, such labelling can incentivise reformulation and reduce “health halo” distortions.

Out-of-Home Sector

- **Menu Architecture:** Positioning healthier options first and using descriptive language can often nudge consumers toward better choices.
- **Defaults** (e.g., healthier sides/drinks, plant based mains), **availability changes** and strategic **positioning** can reduce calories ordered.
- **Calorie Labelling:** Mandatory labelling (introduced in 2022) has increased awareness but shows **small/mixed** impacts on purchases; its greater promise may lie in **industry reformulation and adaptation** (lower calorie items, menu curation).
- **Portion Size:** Downsizing portions reduces energy intake, with only partial compensation at subsequent meals (i.e. they do not consume the equivalent amount of additional calories at later eating occasions). Gradual reductions and offering smaller options at proportional prices are recommended.
- **Digital Ordering Platforms.** Choice architecture online (prominent positioning of lower energy items, healthier defaults, simple swaps offered at checkout) can **reduce calories and nutrients of concern (e.g. saturated fat, sugars, salt)** ordered, with equity benefits across socio-economic groups. Durability requires sustained implementation and multi strategy designs.

Schools, Universities and Workplaces

- **Schools** provide a critical setting for shaping lifelong habits. Whole school approaches (education + cafeteria choice architecture + policy) are more likely to be effective; engaging families and staff amplifies effects and reduces inequalities.
- Multicomponent interventions in **higher education settings** that combine some of the following policies, choice architecture, price incentives, labelling, point-of-sale nutrition messaging, education and digital tools are likely to be effective in helping students choose healthier and more sustainable options.
- **Workplace Interventions**, including healthier catering policies and nudges in cafeterias, can support employee health and productivity.

Strategic Priorities

1. **Embed nutrition into governance and commercial strategies** across retail and OOH sectors.
2. **Scale up reformulation and portion size reduction**, striving towards voluntary targets and moving beyond these (e.g. by increasing the content of 'positive' nutrients/food components that are lacking in the UK diet).
3. **Enhance affordability and accessibility** of healthy foods through pricing strategies and voucher schemes.
4. **Support mandatory consistent front-of-pack labelling** and display these on all products.
5. **Leverage digital platforms** for innovative nudging strategies.
6. **Adopt multi-component interventions** in schools and workplaces to reinforce healthy behaviours.

This report has been compiled as part of on-going work around the topic of food processing and health. The British Nutrition Foundation is grateful to Associated British Foods, Coca Cola, Co-operative Group, Danone, Pladis and Tesco for supporting this programme of work. The programme has been directed by the British Nutrition Foundation alone, which is committed to producing independent, evidence-based information, resources and training on food and nutrition. The funders had no input into this report.

Introduction

Understanding the Food Environment Challenge

The UK faces a profound public health crisis driven by poor diets and an obesogenic food environment. Current data show that **64% of adults and over one-third of children in Year 6 (aged 10-11 years) are overweight or living with obesity**, consuming excess calories daily. Intakes of saturated fat, free sugars and salt remain above recommended levels, while fibre, fruit and vegetable and fish consumption fall short. Alarmingly, **less than 1% of the population adheres to all of the recommendations made in the UK's healthy eating model the Eatwell Guide**, underscoring the scale of dietary inadequacy. These patterns contribute to rising rates of chronic diseases, reduced life expectancy and escalating healthcare costs.

The **food environment**—defined as the physical, economic, political and sociocultural context in which food choices occur—plays a pivotal role in shaping dietary behaviours. The term “**obesogenic environment**” describes surroundings that make unhealthy choices the default, encouraging overconsumption and inactivity. In the UK, this environment is dominated by foods high in fat, sugars or salt (HFSS), which continue to receive greater promotion than healthier options and are widely available, particularly in deprived areas. For example, takeaway outlets cluster disproportionately in low-income neighbourhoods, and advertising for HFSS products far outweighs promotion of healthier options like fruit and vegetables. These structural drivers amplify health inequalities and hinder progress toward national health goals.

The government's **Food Strategy for England** and the **10-Year Health Plan** recognise the need to transform the food environment to support healthier, sustainable diets. Policy priorities include mandatory reporting on healthy food sales and incentivising industry to shift resources toward nutritious, affordable options. Current interventions span the **Nuffield Intervention Ladder**, ranging from providing information (e.g., the Eatwell Guide, NHS campaigns) to enabling healthier choices (front-of-pack labelling, calorie menu labelling), improving defaults (voluntary reformulation programmes) and applying fiscal levers (the Soft Drinks Industry Levy). Restrictions on HFSS advertising and location-based promotions further aim to curb unhealthy influences.

This report highlights the complexity of dietary behaviour change compared to other public health challenges like tobacco or alcohol. Food is essential and choices involve trade-offs influenced by biological, psychological and social factors. Behavioural economics concepts such as **choice architecture** and **nudging**—subtle environmental modifications that steer decisions without removing freedom—are increasingly applied to food retail and out-of-home (OOH) settings. Evidence suggests that interventions targeting **heuristic, automatic decisions** (e.g., product placement, pricing strategies, defaults) can improve purchasing patterns without requiring high motivation or cognitive effort.

Global frameworks, including WHO's “Best Buys,” advocate for creating healthy, equitable and sustainable food systems. The UK's challenge is to operationalise these principles through coordinated action across manufacturers, retail, OOH, schools, higher education settings and workplaces. This chapter sets the stage for exploring practical interventions such as pricing, placement, reformulation, labelling and portion control—that collectively aim to make the healthy choice the easy choice, reduce inequalities and deliver measurable health benefits.

The Retail Environment

Opportunities for Healthier Choices

Retail settings account for **76% of UK food and drink spend**, making supermarkets and convenience stores critical influencers of dietary behaviour. Seven major retailers dominate nearly 88% of the grocery market, giving them significant leverage to shape consumer choices. This chapter explores interventions across **pricing, placement, availability, promotional strategies, reformulation, portion size and labelling** to create healthier retail environments.

Pricing and Promotions

Price is consistently cited as the most significant barrier to healthy eating. Around **29% of food purchased for home consumption is bought on promotion**, with HFSS products disproportionately featured. Evidence shows that **price promotions on less healthy items drive higher volumes and increase obesity risk**, while promotions on healthier items have smaller, short-lived effects. Sustained **lower pricing of healthy staples** (e.g., making wholegrain bread cheaper than white) is more effective for habit formation than short-term discounts.

Voucher schemes, such as **Healthy Start**, improve fruit and vegetable purchasing among low-income families. Retailer-led trials offering **£2 top-up vouchers** alongside Healthy Start increased fruit and vegetable purchases by 7% and reduced discretionary items by 4%, with stronger uptake in deprived areas. Provision of digital vouchers (as opposed to paper vouchers) could further enhance accessibility and reduce stigma. From **October 2025**, restrictions on HFSS multibuy promotions (e.g., “buy one get one free”) apply in England and Northern Ireland, and are projected to deliver **£2.7 billion in health benefits over 25 years**.

Placement and Availability

Product placement strongly influences purchasing. HFSS items have historically dominated **high-salience locations** such as checkouts, aisle ends and store entrances. Legislation introduced in **October 2022** restricts HFSS placement in these areas and online equivalents (e.g. homepages, pop-ups, favourites). Early evaluations show a **0.63 percentage point reduction in HFSS sales share**, equating to **2 million fewer products sold daily**, with equitable impact across socio-economic groups.

Increasing the **prominence and availability of healthier options**—both in-store and online—can further drive change. Virtual supermarket studies show that reordering products by nutritional quality (e.g., fibre content) or sustainability significantly improves basket healthiness. Real-world trials confirm that expanding fresh produce sections and removing confectionery from checkouts boosts fruit and vegetable sales without reducing overall store revenue.

Other Promotional Strategies

Signposting, recipe cards and product sampling can complement structural changes. Shelf-edge labels highlighting healthier swaps (e.g., lower sugar drinks) show mixed results but perform better when combined with **price incentives**. In-store tasting sessions and recipe promotions help overcome barriers like unfamiliarity and lack of cooking confidence, particularly among vulnerable groups. Multi-component interventions—combining pricing, placement and signposting—are most effective, though behaviour change often fades when promotions end.

Key Takeaways

- **Price matters most:** sustained affordability of healthy staples is critical.
- **Placement works:** Initial evaluation indicates that HFSS location restrictions can reduce unhealthy purchases; prioritising healthy options online and in-store amplifies impact.
- **Combine strategies:** pairing price, placement and signposting yields stronger results than isolated interventions.
- **Equity lens:** voucher schemes and structural nudges benefit low-income households and may help reduce health inequalities.

Reformulation

Driving Health by Stealth

Reformulation is one of the most powerful strategies for improving population diets because it reduces nutrients linked to harm when consumed in excess without requiring active behaviour change from consumers (in cases where ‘standard’ products are reformulated). This chapter explores the rationale, progress and challenges of reformulation in the UK, highlighting its role in closing the gap between current dietary intakes and dietary recommendations.

Why Reformulation Matters

UK dietary surveys show persistent excesses in saturated fat, free sugars and salt, alongside inadequate fibre intake. These imbalances contribute to obesity, cardiovascular disease, diabetes and other non-communicable diseases. Reformulation—altering product composition to improve nutritional quality—offers a “health by stealth” approach, enabling consumers to benefit without changing purchasing habits. Modelling studies predict substantial health gains from reformulation. For example, modelling suggests that reducing calories by 10% in selected categories could result in an estimated **300,000 Quality Adjusted Life Years (QALYs)** gained over 25 years. Similarly, national salt reduction programmes could prevent **4,450 deaths annually**. The UK has implemented voluntary reformulation programmes led by the Office for Health Improvement and Disparities (OHID), targeting reductions in sugar, salt and calories across key food categories. In addition, the statutory **Soft Drinks Industry Levy (SDIL)** incentivises sugar reduction in beverages.

Progress and Impact

- **Sugar Reduction Programme:** Achieved a modest 3.5% overall reduction in sugar levels (against a 20% target), with notable success in breakfast cereals (-14.9%) and yogurts (-13.5%).
- **Calorie Reduction Programme:** Limited progress, with stronger industry commitment needed.
- **Salt Reduction:** Industry progress is hailed as a success across the world. However, early gains have plateaued; average adult intake remains above the 6g/day recommendation.
- **SDIL Outcomes:** From 2015–2024, sugar sold from drinks covered by the levy fell by nearly 40%, despite increased volume sales. Reformulation drove a 47% reduction in sugar content per 100ml and a 42% reduction in calories per portion, with benefits observed across all social groups.

Challenges and Opportunities

Technical barriers include maintaining taste and texture. Reformulation is likely to be particularly challenging for smaller businesses with limited resources. Reformulation should additionally focus on **adding ‘positive’ nutrients/ingredients**—such as fibre, pulses, and vegetables—to improve overall diet quality and nutrient profiling scores, rather than just focusing on ‘negative’ nutrients. Front-of-pack labelling thresholds and HFSS restrictions can act as additional incentives for manufacturers. Portion size reduction is an important lever for some products.

Key Takeaways

- **Mandatory targets and fiscal levers** accelerate progress compared to voluntary schemes.
- Reformulation delivers **equitable benefits** and avoids reliance on consumer motivation.
- Expanding scope to include **positive nutrient/ingredient additions** and portion size adjustments can amplify impact.
- **Transparent reporting and regular evaluation** are essential to sustain momentum.

Portion Size

Resetting Norms for Healthier Eating

Portion size is a critical driver of energy intake and is likely a major contributor to bodyweight. This chapter explores the evidence behind the “portion-size effect,” its implications for public health, and strategies to reduce portion sizes in retail and out-of-home (OOH) settings without compromising consumer satisfaction or business viability.

Why Portion Size Matters

Portion sizes of many food categories have increased over recent decades, both in retail packaging and OOH servings. Research consistently shows that **larger portions lead to higher energy intake**, regardless of hunger or satiety cues. People tend to eat what they are served, influenced by psychological norms such as **unit bias** (perceiving one unit as appropriate regardless of size) and learned expectations of fullness. Analyses estimate that eliminating oversized portions could reduce daily energy intake, with only partial compensation (the full number of calories that are removed from the reduced portions are not replaced at later meals, therefore overall energy intake across a day is lower).

Consumer Acceptance and Practical Challenges

While reducing portion size can be effective, implementation must consider consumer perceptions of **value for money**, as well as ensuring that portion size is not reduced below the ‘tipping point’ (past which consumers will simply consume two units instead of one). Strategies such as **proportional pricing**—charging more per unit for larger sizes - can encourage uptake of smaller options. Offering a **variety of smaller pack sizes** and introducing changes gradually (e.g., 5–10% reductions over time) can improve acceptability. Evidence suggests that downsizing may be more readily adopted in some categories than others. Retailers and manufacturers face operational challenges, including packaging redesign, shelf-space constraints and potential increases in production costs. For OOH operators, smaller portions may raise concerns about profitability and customer satisfaction, particularly in settings where “value” is linked to size.

On-Pack Portion Guidance

Clear, realistic and consistent portion-size information on packaging can help consumers make informed choices. However, current UK labelling is often confusing or unrealistic, and consumed portions frequently exceed recommended serving sizes. Visual cues - such as pictorial representations or on-pack markings - can support better portion control, especially for consumers with low numeracy skills. Studies show mixed results, highlighting the need for creative, aspirational designs rather than purely informational labels.

Behavioural Nudges and Packaging Innovations

Packaging features such as **partitioned packs**, **resealable options** and **single-serve** formats can help limit intake of energy-dense foods. Multipacks may reduce consumption by introducing pauses between servings, though evidence is mixed. Combining structural cues with visual prompts (e.g., portion stripes) can reinforce norms without requiring conscious effort.

Key Takeaways

- **Downsizing portions reduces energy intake**, with only partial compensation.
- **Gradual reductions and proportional pricing** can improve consumer acceptance.
- **Clearer portion labelling** and **innovative packaging** can support behaviour change.
- Portion control strategies should be applied **broadly across categories** to prevent substitution effects.
- **Resetting cultural norms around portion size** is essential for long-term impact.

Front-of-Pack Nutrition Labelling

Making Health Information Visible

Front-of-pack nutrition labelling (FOPNL) is a key policy tool for helping consumers make healthier choices quickly and easily. This chapter examines the effectiveness of different labelling systems, the UK's current approach and the case for mandatory implementation.

Why FOPNL Matters?

Consumers face thousands of choices in supermarkets, often spending less than 10 seconds selecting each item. Back-of-pack nutrition panels are too detailed for quick decisions, making simplified front-of-pack labels essential. FOPNL provides at-a-glance information on a product's nutritional quality, enabling comparisons and guiding healthier choices. It also incentivises manufacturers to reformulate products to achieve better label ratings.

The World Health Organization (WHO) recommends FOPNL as a cost-effective intervention to prevent diet-related diseases. Evidence shows that interpretive labels—those that use colours, symbols, or scores—are more effective than numeric-only systems.

Types of FOPNL

- **Interpretive Systems:** Multiple Traffic Lights (UK), Nutri-Score (France), Warning Labels (Chile), Health Star Rating (Australia/New Zealand).
- **Non-Interpretive Systems:** Guideline Daily Amounts (%GDA), Reference Intakes.

Interpretive systems use colour coding or symbols to indicate whether a product is high, medium or low in nutrients of concern (fat, saturated fat, sugar, salt). Colour coding is particularly influential in helping consumers identify healthier and more indulgent options.

Evidence of Effectiveness

Evidence suggests that FOPNL improves consumer understanding and leads to healthier choices compared to no labelling in experimental and observational studies, though more real world studies are needed. Analyses of study findings show interpretive systems outperform numeric systems, though long-term effects on actual dietary intake and health outcomes remain modest. Mandatory schemes achieve greater impact than voluntary ones because they ensure broad consistency and prevent selective use on healthier products only.

Studies also show that colour-coded labels (e.g., traffic lights) are easier for children and adolescents to understand than numeric systems.

UK Context

The UK currently uses a voluntary Multiple Traffic Light system, which is widely recognised by consumers, though only half report using it regularly. Research comparing UK traffic lights with Nutri-Score (used in some European countries) and Warning Labels found (used in some South American countries) that all systems improved ranking of product healthiness. Therefore, the use of Multiple Traffic Light labelling is to be encouraged.

Policy Considerations

Health charities and industry stakeholders advocate for mandatory FOPNL to create a level playing field and drive reformulation. Modelling suggests that mandatory Warning Labels could reduce obesity prevalence more than traffic lights, but consistency and consumer familiarity are critical. Changing systems would require extensive education campaigns and could risk disengagement.

Key Takeaways

- **Interpretive, colour-coded labels** are most effective for quick decision-making.
- **Mandatory implementation** would aid broad impact and equity.
- **Front-of-pack nutrition labelling** can incentivise reformulation and reduce “health halo” effects from misleading claims.
- **Consumer education** and **consistent application** are vital for success.

The Out-of-Home Environment

Nudging Healthier Choices Beyond the Home

The Out-of-Home (OOH) food sector—including restaurants, cafés, takeaways, pubs and school, university and workplace canteens—plays a major role in shaping dietary habits. In the UK, **81% of adolescents and 77% of adults purchase food OOH**. Research suggests that two-thirds of OOH meals surpass the 600 kcal guidance for lunch or dinner from Public Health England, and about 20% contain more than half of the daily energy (calorie) requirement for adults. OOH foods are typically higher in energy density, saturated fat, sugar and salt compared to home-prepared meals, making this sector a critical target for intervention. The sector is diverse, with many small businesses exempt from mandatory regulations like calorie labelling, creating challenges for uniform implementation. However, OOH settings offer unique opportunities for choice **architecture interventions**—strategies that modify the environment to make healthier choices easier without restricting freedom.

Menu-Based Interventions

Menu design strongly influences consumer decisions. Evidence supports:

- **Optimal Defaults:** Making healthier sides (e.g., salad instead of fries) or drinks (e.g., water instead of sugary beverages) the default option in combo meals can significantly reduce calorie intake.
- **Menu Positioning:** Listing lower-calorie items first or integrating healthier vegetarian options into main menus (rather than placing these in separate sections) increases selection of healthier dishes.
- **Descriptive Language:** Using appealing, taste-focused descriptions for healthier items boosts their appeal and closes the gap with indulgent options.
- **Visual Cues:** Photos of healthier meals can enhance ordering intentions, especially among health-conscious consumers.

Pricing Strategies

Price reductions on healthier menu items can be effective, particularly for lower-income groups. Conversely, avoiding promotions that encourage upsizing of HFSS items is essential.

Availability and Portion Control

Increasing the proportion of lower-energy options on menus and reducing the availability of oversized portions can significantly lower energy (calories) purchased. Downsizing portions - especially for discretionary items like desserts - has shown positive effects without major consumer backlash when implemented gradually.

Key Takeaways

- OOH meals can contribute substantially to **excess calorie** and **nutrient intake**.
- Structural nudges—such as **healthier defaults**, **menu positioning** and **availability changes**—appear to be more effective than information-only strategies such as calorie labelling.
- **Pricing interventions** and **portion control** complement menu architecture changes.
- **Multi-component interventions** combining structural and informational strategies offer the greatest potential for improving diet quality in OOH settings.

Reformulation

Reformulation and Menu Adaptations in OOH Settings

Reformulation in the OOH sector is a critical strategy for improving diet quality, given the high energy density and nutrient profile of meals consumed outside the home. This chapter explores approaches to reduce nutrients of concern (i.e. saturated fat, sugars and salt), increase 'positive' nutrients/ingredients (such as fibre, pulses, fruit and vegetables), and adjust portion sizes in restaurants, cafés and takeaways.

Why Reformulation in OOH Matters

Unlike retail, where packaged goods dominate and a wider variety of ingredients may be used, OOH offerings are typically (though not exclusively) freshly prepared, making reformulation more likely to be dependent on recipe changes, cooking practices and portion control. OOH businesses that use pre-prepared elements from suppliers will need to request and negotiate changes to product formulations.

Current Landscape and Challenges

The UK Government's voluntary reformulation programme sets targets for sugar, salt and calorie reduction in OOH meals. However, compliance is uneven. A 2024 analysis of leading UK restaurant chains found:

- **61% of menu items met calorie targets,**
- **58% met salt targets,**
- **36% met sugar targets,**
- But only **43% met all applicable targets.**
- Pizza chains showed the lowest adherence, while sandwich chains varied widely, indicating feasibility but inconsistent engagement.

Small, independent businesses are more likely to feel greater impact of barriers to reformulation such as limited resources, high staff turnover and concerns about customer satisfaction and profitability. Facilitators can include low-cost changes (e.g., reducing salt or sugars in recipes) and easy ingredient swaps (e.g., semi-skimmed milk instead of whole milk).

Strategies for Reformulation

1. Nutrient Reduction:

- Lower salt, sugar and saturated fat through recipe adjustments and ingredient substitutions.
- Switch cooking oils to those higher in unsaturated fats (e.g., rapeseed instead of palm oil).
- Modify cooking techniques—grilling or poaching instead of frying.

2. Portion Size Control:

Downsizing portions of high-calorie items (e.g., fries, desserts) can recalibrate norms and reduce energy intake. Trials in fish and chip shops showed increased sales of smaller meals when supported by promotional materials and smaller packaging.

3. Increasing Positive Ingredients:

Reformulation should also focus on adding fibre-rich foods, pulses, vegetables, fruit, fish and wholegrains, as well as reducing contents of nutrients of concern. Campaigns like “Bang in Some Beans” encourage OOH operators to integrate healthier plant-based ingredients into menus. Despite progress in the sector, assessments reveal that many outlets still lack fruit and vegetable-based options, and pulses and fish remain a rarity on many menus.

4. Menu Innovation:

Introducing calorie-capped meals and healthier sides and plant-based options can broaden consumer choice. Vegetarian or vegan dishes are not always nutritionally superior, highlighting the need for nutrient profiling.

Policy and Future Directions

Public-private partnerships and staff training can support engagement of OOH sector operators with government reformulation targets, while supplier involvement (e.g., providing smaller packaging or healthier ingredients) can help to overcome logistical barriers.

Key Takeaways

- **Reformulation** in OOH settings is essential for reducing population-level intakes of sugar, salt and saturated fat.
- Combining nutrient reduction with **portion control** and **positive ingredient additions** offers the greatest impact.
- Industry **collaboration with stakeholders** such as NGOs and academics on interventions to nudge healthier choices can aid success.

Portion Size in OOH Settings

Tackling the Oversized Norm

Portion size is a major determinant of energy intake, and may require tackling in the OOH sector in particular. This chapter outlines strategies for reducing portion sizes in restaurants, cafés, and takeaways.

Why Portion Size Matters in OOH

OOH meals are often significantly larger than home-prepared meals, contributing to excess calorie consumption. Public Health England's 2017 Calorie Reduction Programme set an ambition for a 20% reduction in calories in OOH meals, yet overall progress has been minimal. Between 2017 and 2021, calorie content in main meals and sides add (on average) increases rather than reductions. Children's menus also remain problematic, with many offering oversized portions and limited healthy options, and only one portion size available for children's meals that are intended for a wide age range.

The portion size effect—where individuals eat more when served larger portions—has been documented across all age groups. Studies show that reducing portion size lowers energy intake without full compensation at later meals (i.e. the full number of calories that are missing from the reduced portions are not replaced at later meals, therefore overall energy intake across a day is lower), resulting in sustained calorie reductions. For example, research suggests that downsizing main courses by 25% could cut daily energy intake by ~235 kcal, a meaningful reduction for weight management.

Trends and Challenges

Portion sizes have steadily increased over decades, driven by consumer expectations of “value for money.” This cultural norm makes downsizing challenging, as customers may perceive smaller portions as poor value. Restaurants fear revenue loss and customer dissatisfaction, while logistical barriers include supplier packaging and menu redesign.

Children's menus often exacerbate the issue by offering uniform portion sizes for wide age ranges, which can lead to overconsumption among younger children. Focus groups highlight parental concerns about less healthy defaults and promotional offers (e.g., free desserts), which reinforce poor habits.

Evidence-Based Strategies

1. Gradual Downsizing:

Introducing small, incremental reductions (e.g. 5–10%) over time can help to normalise smaller portions without triggering backlash. Research suggests most consumers do not notice modest reductions.

2. Proportional Pricing:

Aligning price with portion size is critical. If smaller portions cost disproportionately more, uptake will be low. Conversely, removing “value pricing” for large sizes discourages upsizing.

3. Menu Design and Defaults:

Offering smaller portions as standard or default options—especially for high-calorie items—can reduce energy intake. Providing “mini” desserts or half-size mains alongside regular options increases choice without restricting freedom.

4. Packaging and Presentation:

Using smaller plates, bowls and packaging signals appropriate portion norms. Supplier engagement is essential to ensure availability of smaller packaging formats.

5. Children’s Menu Reform:

Introducing age-appropriate portion sizes and healthier defaults (e.g., fruit/vegetable/salad/pulse-based sides instead of fries) can help establish lifelong healthy habits.

Key Takeaways

- **Large OOH portions** can significantly **contribute to excess calorie intake** and obesity risk, as well as high intakes of nutrients of concern.
- **Downsizing portions can reduce energy intake** without major compensation at later meals.
- Success depends on **proportional pricing, gradual implementation** and **menu-wide application** to prevent substitution.
- Cultural norms around “value” must be addressed through **communication and design strategies**.

Calorie Labelling in OOH

Awareness vs Behaviour Change

Calorie labelling was introduced in England in April 2022 for large OOH businesses (≥ 250 employees) as part of the UK government's obesity strategy. The strategy aims to inform consumers and encourage reformulation. The regulation requires calorie information to be displayed on menus, food labels and online listings, alongside the statement "adults need around 2000 kcal a day." This chapter evaluates the evidence on its effectiveness, consumer engagement and unintended consequences.

Why Calorie Labelling?

Research suggests that consumers often underestimate the energy content of OOH meals by 200–300 kcal, making transparency a key policy goal. Labelling aims to empower informed choices and encourage businesses to reformulate offerings.

Impact on Consumer Behaviour

Studies show **modest reductions in calories ordered** when labelling is present, typically 30–50 kcal per meal in controlled settings. However, real-world evaluations often report **mixed or null effects**:

- A Cochrane review estimated an average reduction of **35 kcal per meal**.
- UK exit surveys post-implementation found no **significant change in calories purchased**, despite increased awareness.
- U.S. studies show initial reductions that diminish over time, suggesting limited durability.

Labelling appears most effective when menus offer a mix of high- and low-calorie options and when consumers are motivated by health concerns. Research suggests that older adults and those actively 'dieting' are more likely to use calorie information. Conversely, individuals with low motivation sometimes select **higher-calorie items**, possibly due to psychological reactance (when individuals perceive their freedom of choice is being restricted).

Consumer Engagement

Mandatory labelling increased noticing from **16.5% pre-policy to 31.8% post-policy**, and self-reported use rose from 4% to 22% in England. Most users reported choosing lower-calorie options when using labels. However, overall engagement remains low and many consumers ignore labels due to time pressure, taste preferences or lack of interest.

Industry Response

While direct consumer behaviour change may be limited, a positive repercussion is that calorie labelling can drive **menu reformulation**. Studies show reductions in average energy content of menu items following mandatory labelling, achieved through:

- Removing high-calorie items.
- Introducing new lower-calorie options.
- Adjusting portion sizes.

This indirect mechanism may deliver greater long-term benefits than consumer behaviour alone.

Unintended Consequences

There has been some concern that mandatory calorie labelling may harm vulnerable groups. Individuals with eating disorders report increased anxiety and guilt when exposed to calorie information. Although businesses are encouraged to provide calorie-free menus on request, compliance has been found to be low (12%).

Key Takeaways

- Calorie labelling increases awareness but has **small, inconsistent effects** on purchasing behaviour.
- Its greatest potential lies in **industry reformulation and menu innovation**.
- Multi-component strategies—**combining labelling with nudges like defaults and pricing**—are needed for meaningful impact.
- **Calorie-free menus** should be available on request.

Online Food Ordering

Digital Nudges for Healthier Choices

The rapid growth of online food delivery platforms has transformed the UK food environment. Valued at **\$48 billion in 2024**, the UK ranks third globally for online food delivery markets. Approximately **25% of calories fast food purchases in Great Britain are ordered digitally**, making this channel a critical focus for public health interventions. This chapter explores how **digital choice architecture**—structural changes in online interfaces—can nudge consumers toward healthier, lower-calorie options without restricting choice.

Why Digital Matters

Online ordering differs from physical settings in a number of ways: decisions are made quickly, often with minimal attention and influenced by interface design. Traditional interventions like calorie labelling or menu restructuring must adapt to this context. Digital platforms offer unique advantages: scalability, personalisation and the ability to implement multiple strategies simultaneously.

Effective Digital Strategies

Evidence shows that structural nudges - those reducing the effort required to make healthy choices - are most effective online. Key interventions include:

1. Menu/Item Positioning:

Placing lower-calorie (or lower-carbon) options at the top of lists exploits the **primacy effect**, and this can significantly reduce energy (calories) ordered.

2. Healthy Defaults:

Setting healthier sides or drinks as the default in combo meals increases uptake of nutrient-dense options. Combining defaults with **salience cues** (e.g., highlighting climate-friendly or low-calorie choices) can amplify impact.

3. Swap Prompts:

Checkout prompts suggesting healthier alternatives (e.g., lower-fat versions) have reduced saturated fat purchases by up to **66%** in experimental trials.

4. Proportional Pricing:

Removing “value pricing” for larger portions and ensuring smaller sizes are competitively priced helps discourage upsizing.

5. Multi-Strategy Interventions:

Combining positioning, defaults and prompts can yield stronger effects than single interventions.

Informational Approaches

Calorie labelling and sustainability indicators (e.g., carbon footprint) have shown **limited standalone impact** online. While numeric calorie information can reduce energy (calories) ordered among motivated users, studies suggest that most consumers ignore it. Hedonic labelling—using taste-focused descriptions—improves appeal of healthy items more than health-focused messaging.

Equity and Acceptance

Digital nudges generally benefit all socio-economic groups, as they do not rely on motivation or literacy. However, perceived intrusiveness can reduce acceptance. Transparent communication (e.g., explaining why defaults are healthier) improves legitimacy without reducing effectiveness.

Challenges and Future Directions

- **Durability:** Effects often disappear when interventions are removed, highlighting the need for sustained implementation.
- **Customisation:** Platforms can leverage data to personalise nudges, but privacy concerns must be addressed.
- **Integration:** Combining health and sustainability goals (e.g., low-carbon defaults) offers co-benefits.

Key Takeaways

- Digital platforms are a **powerful lever** for improving diet quality.
- Structural nudges—**positioning, defaults, and prompts**—outperform information-only strategies.
- Multi-component interventions and **proportional pricing** enhance effectiveness.
- Long-term success requires **continuous application and monitoring** for unintended consequences.

Schools, higher education institutes and workplaces

Creating Healthier Food Environments

Schools, higher education institutes (e.g. universities, colleges) and workplaces are critical settings for improving diet quality and reducing health inequalities. This chapter explores interventions that combine education, environmental changes and policy to make healthier choices easier and more appealing.

Schools: Shaping Lifelong Habits

With over **9 million school-aged children in the UK**, schools provide a unique opportunity to influence dietary behaviours early in life. Children consume up to **half of their daily food intake at school**, making this environment pivotal for promoting balanced diets.

Current Challenges:

- Low fruit and vegetable intake among children and adolescents.
- High consumption of HFSS snacks and sugary drinks.
- Packed lunches and external food purchases often have poorer nutritional profiles than school meals.
- Adolescents prioritise taste, convenience and social time over health, making healthy options less attractive.

Effective Strategies:

- **Whole-School Approach:** Integrating nutrition into the curriculum, dining environment and school policies.
- **Choice Architecture:** Nudges such as placing fruit at eye level, pre-slicing vegetables and making healthier options more visible and convenient.
- **Menu Design:** Reducing frequency of less healthy items, offering culturally appropriate recipes and providing tasting sessions to overcome unfamiliarity.
- **Experiential Learning:** Cooking classes, gardening clubs and farm visits improve food literacy and willingness to try new foods.
- **Digital Nudges:** Studies trialling online pre-ordering systems with colour-coded labels and prompts have increased selection of healthier items by up to 5%.
- **Engaging Families:** Parent workshops and newsletters can help to reinforce healthy habits at home.

Campaign Examples:

- **Bang in Some Beans:** Promoting pulse consumption through pledges and school food standards.
- **Snack-tember:** Encourages children to prepare healthy snacks, improving fibre and fruit intake.

Higher education institutes: supporting young people during their studies

With nearly **3 million students** and almost **400,000 staff** in total, higher education institutes (e.g. universities, colleges) have the **potential and responsibility to influence the health of students and staff** through their culture, structures and operations, thus helping to create healthier workforces and more sustainable workplaces for the future.

Current Challenges:

- Students typically have limited disposable income and find that healthier food choices are often significantly more expensive than convenient high fat, sugars and salt options.
- Heavy academic workloads and stress from exams can lead to erratic eating patterns, such as skipping meals (especially breakfast) or choosing quick grab-and-go foods that require minimal preparation.
- Many students enter university with limited cooking ability and low confidence in preparing meals from scratch, leaving them reliant on pre-packaged ready meals or takeaways.
- University campuses are frequently cited as “obesogenic” environments featuring many vending machines and outlets that offer nutrient-poor foods while providing few affordable healthy alternatives.

Effective Strategies:

- **Choice architecture (nudging):** Rearranging food layouts in campus outlets, for example placing plant-based dishes at the start of self-service lines or moving fruit to the point of purchase, as well as strategic menu manipulation, can increase the selection of healthier items.
- **Economic incentives:** Lowering the price of healthier items like fruit while increasing the cost of less healthy options (e.g. fries) can shift student’s purchasing habits.
- **Interpretive nutritional labelling:** Use of traffic light symbols or stars marking healthier options can help guide students toward better selections.
- **Practical skill-building:** “Cook and eat” sessions and providing cheap recipe booklets can increase student cooking confidence and knowledge.
- **Digital and technology-based tools:** Personalised feedback and motivational mobile messaging can help improve dietary habits.
- **Institutional food sustainability policies:** Policies provide a framework for change by establishing public commitments to increase healthier and more sustainable offerings across campus outlets such as plant-based proteins and higher fibre choices.

Campaign Examples:

- **Raising the Pulse:** aims to increase UK pulse consumption focusing on faba beans including designing pulse-based menus in campus dining facilities, distributing recipe cards, cooking demonstrations and running interactive treasure hunts. The approach taken is to focus on health, sustainability and cost benefits.

Workplaces: Supporting Adult Health

Employees consume roughly **one-third of daily calories at work**, making workplace food environments influential for health and productivity.

Current Challenges:

- Convenience, taste and price dominate food choices.
- Smaller businesses often lack canteens, limiting intervention opportunities.
- Mobile, remote and shift workers face greater barriers to accessing healthy options.

Effective Strategies:

- **Cafeteria Interventions:** Increasing availability of healthier options and reducing portion sizes of high-calorie items can cut energy purchased by **5–12%**.
- **Proportional Pricing:** Aligning cost with portion size discourages upsizing.
- **Nudges:** Behavioural nudges (e.g., grab-and-go fruit, positioning healthier items first) outperform purely informational approaches.
- **Multicomponent Programs:** Combining nutrition education, menu changes and individual counselling improves diet quality and health markers.
- **Digital Tools:** Pre-ordering platforms and app-based prompts support healthier choices for remote workers.
- **Policy Levers:** Healthy food procurement standards, vending machine guidelines and sustainability-focused menus (e.g., reducing meat frequency) are gaining traction in larger organisations.

Key Takeaways

- Improving school, university and workplace food provision is a **powerful lever** for improving diet quality and reducing inequalities.
- Success depends on **multi-component interventions** combining education, environmental changes and policy.
- **Nudges** that make healthy choices convenient and appealing are highly effective.
- **Engaging families, staff and suppliers** ensures sustainability and scalability.

Best Practice

in Retail and OOH Sectors

This chapter outlines governance frameworks for improving the food environment across retail and out-of-home (OOH) settings. It emphasises the need for alignment with public health goals and industry sustainability commitments.

Why Best Practice Matters

Retailers and OOH operators hold significant influence over dietary patterns. In the UK, seven major retailers account for nearly 88% of grocery market share and OOH consumption contributes substantially to daily energy intake. These sectors can act as powerful levers for change by embedding nutrition into governance, reformulating products and reshaping pricing and placement strategies.

Governance and Strategic Alignment

The **Access to Nutrition Initiative (ATNI)** recommends that retailers and OOH businesses integrate nutrition into core governance structures. This includes:

- Publicly disclosing nutrition strategies and time-bound targets.
- Using nutrient profiling models to define “healthy” products and guide portfolio decisions.
- Reporting progress transparently and linking success to executive accountability.

Similarly, **WWF's Better Baskets** urges retailers to rebalance baskets toward plant-based proteins, fruit, vegetables and wholegrains to reduce environmental impact by 36% by 2030. This requires systems for reporting protein sources and publishing healthy and sustainable diet strategies.

Organisations including the Food Foundation monitor and report on industry progress against published targets.

Summary and Strategic Priorities

A Blueprint for Action

The final chapter consolidates insights from across the report, highlighting suggestions for actions that industry can take to transform the UK food environment to support healthier, sustainable diets. It emphasises that poor diet quality and rising obesity rates are systemic issues requiring structural solutions rather than relying solely on individual willpower.

The Case for Change

Current UK dietary patterns remain far from recommendations: high intakes of saturated fat, sugar and salt, and low consumption of fibre, fruit and vegetables and fish. Less than 1% of the population meets all 9 of the recommendations made in the UK's healthy eating model the Eatwell Guide. These trends drive non-communicable diseases, reduce life expectancy and increase healthcare costs. The food environment—retail, out-of-home (OOH) and digital platforms—shapes choices through pricing, placement, availability and marketing. Addressing these drivers is essential for achieving health-related Sustainable Development Goals and the UK Government Food Strategy. Since branded products are sold both within retail and the OOH sector, improvements to product formulation, portion size and labelling present opportunities for manufacturers to show leadership and make a positive contribution.

Cross-cutting Recommendations

1. Use structural levers first.

Prioritise **pricing, placement, availability, defaults, portioning** and **reformulation**—low cognitive burden, equitable reach, scalable in retail/OOH/digital. Combine with **clear signposting** and **education** for additive effects.

2. Go beyond what is mandated.

Implement **consistent FOPNL** and **transparently report** on healthy sales and reformulation progress.

3. Make healthy affordable.

Expand **voucher schemes**, set **price parity** for healthier staples (e.g., wholegrain vs refined), adopt **proportional pricing** to discourage upsizing.

4. Portion solutions.

Normalise **5–10%** downsizing across less healthy categories, provide **smaller sizes** at **proportional prices** and adopt packaging/serving designs that **cue appropriate portions** without penalising value sensitive consumers.

5. Leverage digital platforms.

Bake in **healthy defaults, prominent positioning, swap prompts** and **proportional pricing**; test durability and ensure **mobile optimised** nudges; monitor **equity** and **unintended effects**.

6. Whole setting approaches.

In schools, universities and workplaces, combine **environmental changes** with **skills, education and policy**, engage stakeholders (students, families, staff), and reduce **queue/time** barriers.

7. Evaluate and iterate.

Require trials to report **substitution, compensation, equity impacts** and **commercial outcomes**; scale what works and sunset what doesn't.

Concluding Note

Improving diets at scale requires **systemic, structural and sustained** changes that tip the balance of daily, often automatic food choices toward **healthier defaults**—in supermarkets, OOH settings, on screens and in canteens. The evidence points to a **portfolio approach: reformulation and portion control, pricing and placement, defaults and availability** and **clear labelling**—implemented consistently, measured rigorously and adapted to context. Making the **healthy choice the easy choice** or default option where people buy and eat food, can help to reduce inequalities, protect vulnerable groups and deliver measurable health benefits—without relying on constant consumer vigilance.

Strategic Priorities

- 1. Embed nutrition into governance and commercial strategies** across retail and OOH sectors.
- 2. Scale up reformulation and portion size reduction**, striving towards voluntary targets and moving beyond these (e.g. by increasing content of ‘positive’ nutrients/food components that often are lacking in the UK diet).
- 3. Enhance affordability and accessibility** of healthy foods through pricing strategies and voucher schemes.
- 4. Support mandatory consistent front-of-pack labelling** and display these on all products.
- 5. Leverage digital platforms** for innovative nudging strategies.
- 6. Adopt multi-component interventions** in schools and workplaces to reinforce healthy behaviours.