LEEDS BECKETT UNIVERSITY
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THE RETAIL INSTITUTE

HEALTH, NUTRITION & THE FOOD ENVIRONMENT

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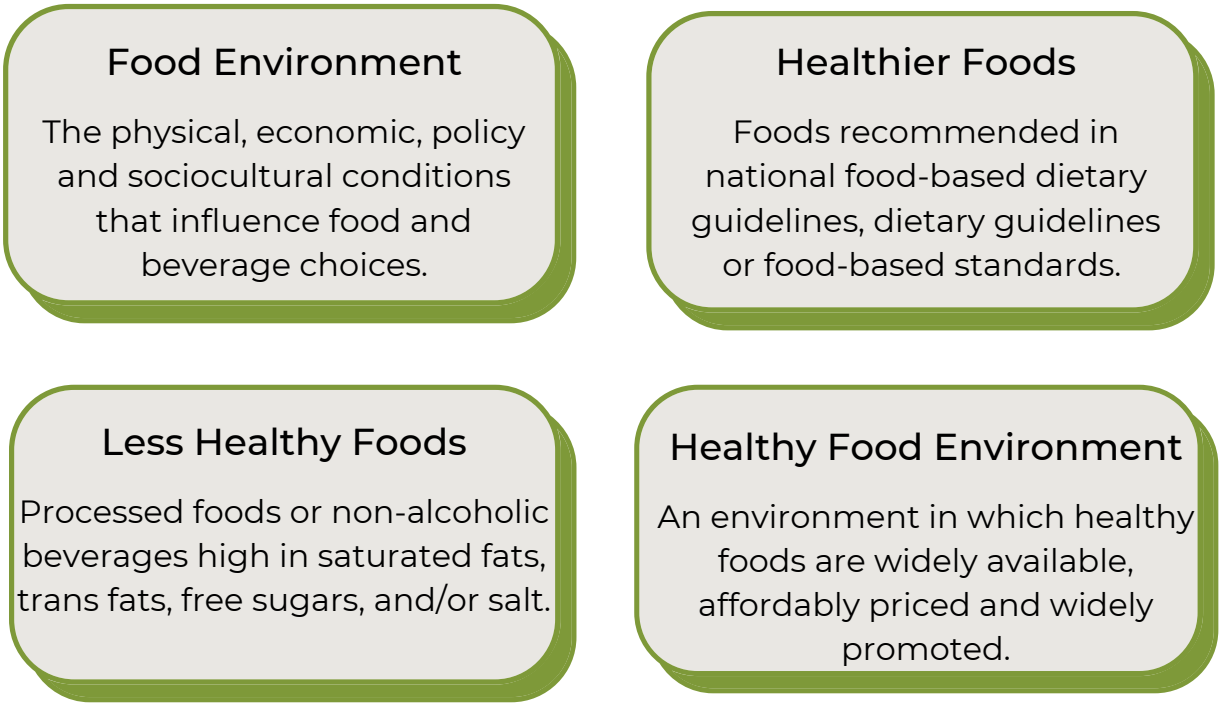
Introduction

"*We are what we eat*". This phrase suggests that individuals can control their health, the implication being that what you put into your body determines whether you will experience good or bad outcomes. However, if we, as individuals, determine our own health, what is the role of our wider environment in influencing the decisions we make about what to eat? Harvard historian Steven Shapin has observed that the modern interpretation of you are what you eat "*is about the constituents of foods and the causal effects these constituents have on human bodies*" but acknowledges that "*consumption decisions express the civilized state, establish personal and collective identity, and mark social differences*" [1]. Therefore, it may be equally accurate to say, "*We are all products of our environment.*"



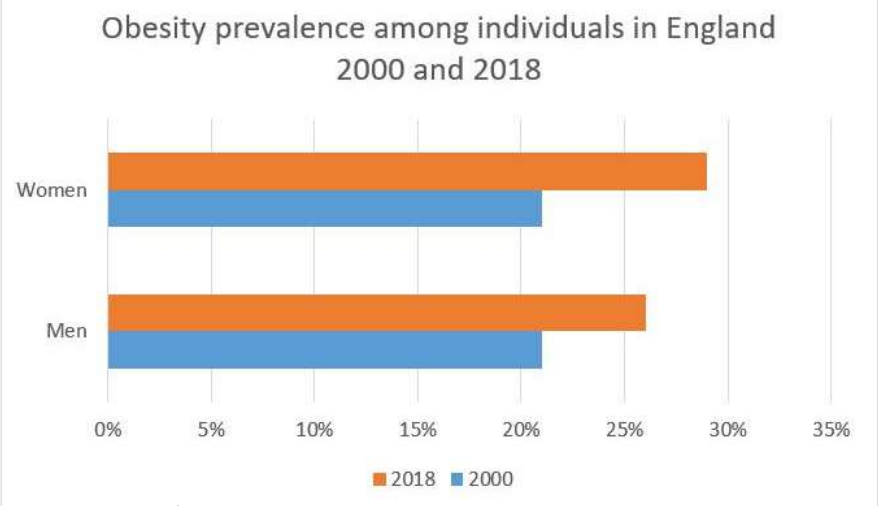
Source: Food Foundation (2016) [2]

This Retail Institute Annual Report considers the relationship between food and health at both individual and society levels. It summarises recent trends in food consumption and discusses some of the public health problems that are the collective responsibility of all in society, including consumers, government and business. It places grocery retail and packaging within the wider food environment, highlighting their roles in holistic approaches to promoting healthier living. In doing so, the report summarises the concept of the 'obesity environment' before reporting research on the effectiveness of retail, packaging and labelling interventions in encouraging healthy consumerism. The conclusion outlines the report's findings and offers some insights into the potential impact of the current Covid-19 crisis on these themes.

Healthy Consumerism

This report focuses on two distinct issues to do with the relationship between food and health. Firstly, we acknowledge the public health problems in the UK and elsewhere with regard to obesity and poor nutrition. Secondly, we note the increasing desire or intention among many consumers to eat more healthily or improve their diets.

The second offers an opportunity for businesses to benefit from producing and selling goods that enable people to live healthier lives. Responding successfully to these challenges means overcoming various social, economic and cultural barriers that encourage unhealthy lifestyles and discourage healthy eating.



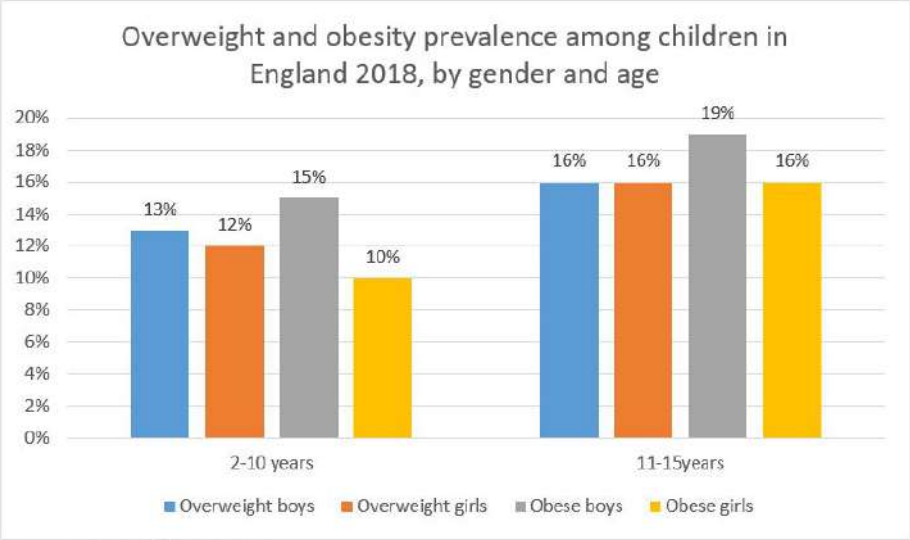
Source: Statista/NHS Digital

Starting with the public health problem, a compelling fact is that six out of 10 UK adults are overweight or obese [3]. The Institute for Public Policy Research (IPPR) states that a high body mass index and poor diet make significant contributions to England's disease burden, including cardiovascular disease, diabetes and kidney disease along with other metabolic risks, such as high blood pressure and hyperglycaemia, that contribute to preventable diseases [4]. Obesity prevalence is increasing, with rates among children a particular concern.

The Food Foundation states that vegetable consumption in Britain is in decline and, despite campaigns such as '5 A Day', it is no higher than it was in the 1970s [5].

It also notes "one in four secondary school children and 13 per cent of primary school children eating less than a portion a day. Half of adults eat less than the average (median) of 2.3 portions a day" [6].

Obesity prevalence is increasing, with rates among children a particular concern.



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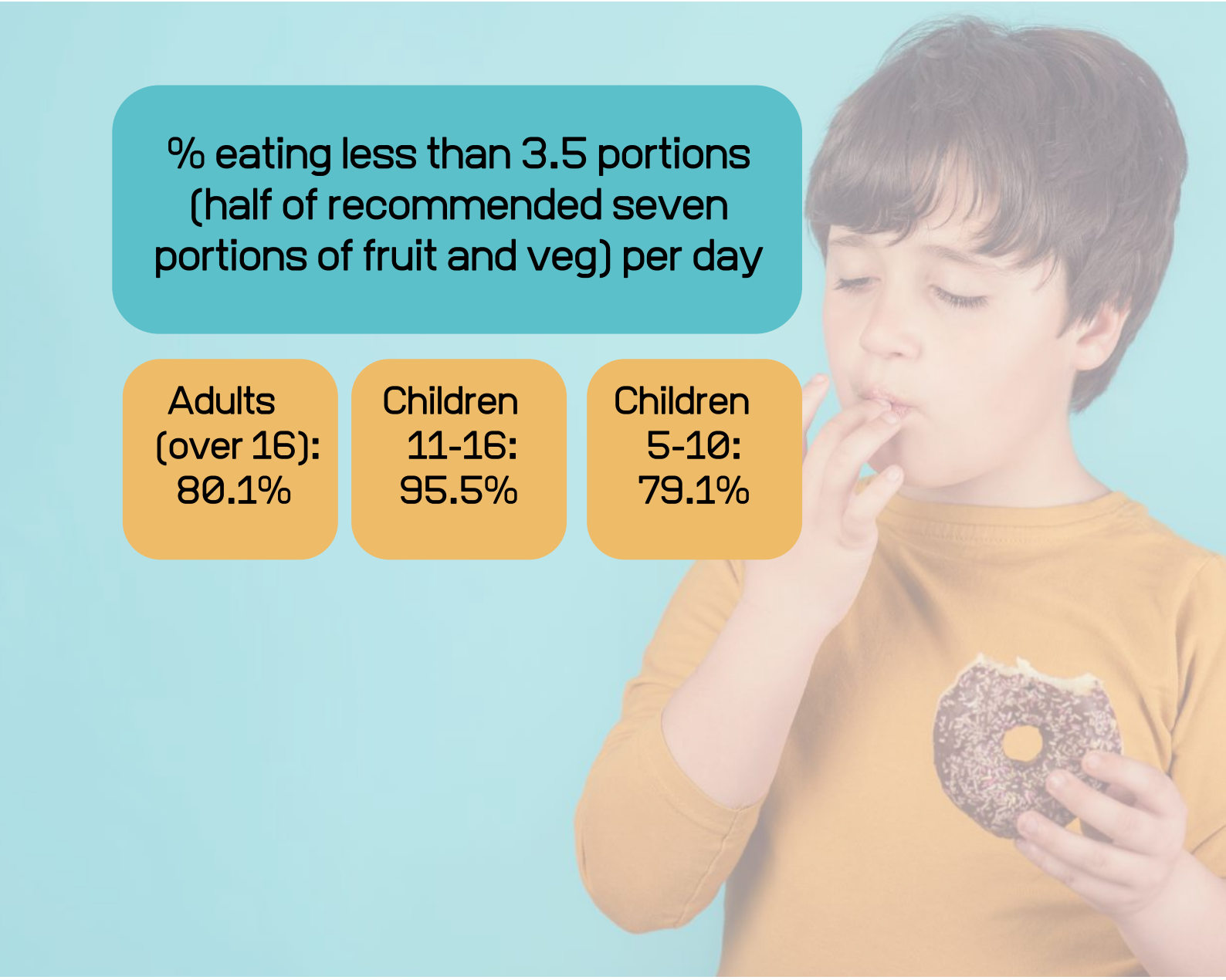


% eating less than 3.5 portions (half of recommended seven portions of fruit and veg) per day

Adults (over 16): 80.1%

Children 11-16: 95.5%

Children 5-10: 79.1%

Nutrition Policy and Regulation

The extent that government could or should tackle public health problems like obesity is a matter for debate. While there is a limit to how much the state can tell us to live our lives, the impact of poor public health outcomes due to diet and other aspects of lifestyle is significant for public services and also the economy, not to mention the potential for inequalities in life expectancy and healthy life expectancy. The Institute for Public Policy Research has called for an end to the UK's pro-obesity environment by "making the healthy choice, the easy choice". Recommended actions include "providing free fruit and vegetables in schools, introducing plain packaging for confectionery, crisps and high-sugar drinks, supermarket sponsored community cooking classes and ensuring that no school is adjacent to a fast food restaurant" [7].

Healthy convenience food could become a target for public health intervention. Research has found that interventions that create incentives/disincentives to choose/avoid healthier/less healthy options can have a positive impact on customer outcomes from a health perspective [8]. However, providing information or just more choice has a negligible impact. Such findings could encourage policy makers to intervene in a similar way to the Soft Drinks Industry Levy ('Sugar Tax'). Industry may continue to act independently of government as seen when food to go brands signed up to a code of practice to cut sugar by 20% in order to meet Public Health England targets [9].

The table below summarises other ways that government can reduce obesity.

INTERVENTION TYPE	EXAMPLES AND SUGGESTIONS
FISCAL POLICIES & FOOD PRICING	Food pricing policies (e.g. taxes and subsidies) help to make the healthier eating choices the easier, cheaper choices. Includes adding VAT to products like cakes and biscuits. The soft drinks sugar levy led to re-formulation of some products to include less sugar.
FOOD LABELLING & HEALTH NUDGES	The regulatory system implemented by the government for labelling on food packaging enables consumers to make informed food choices and to prevent misleading claims. Nutritional information is required on pre-packaged food, but the traffic light system to alert people to health risks is not mandatory. There are no obligations for health food placements in stores.
FOOD PROMOTION & PROVISION REGULATIONS	Government policies to reduce the impact (exposure and power) of promotion of less healthy foods to children (<16years) across all media. In addition, systems implemented to ensure that, where practicable, processed foods minimise the energy density and the nutrients of concern. Regulations could address practices such as advertising crisps, confectionary and sugary drinks, the fact that junk food can be purchased by anyone regardless of age and lack of restrictions in what can be sold in the vicinity of schools.
FOOD PROVISION & RETAIL	The government actively encourages and supports private companies to implement policies to ensure that food provision encourages healthier food choices. The government has the power to implement policies and programs to support the availability of healthier foods and limit the availability of less healthy foods in communities (outlet density and locations) and in-store (product placement).

Source: Adapted from IPPR, *Ending the Blame Game* and The Food Foundation (2016)

The amount and proportion of advertising devoted to fatty or sugary foods compared with heathier alternatives, is a problem highlighted by IPPR and other organisations such as the Food Foundation. The IPPR states that industry spends up to £143 million each year on advertising crisps, confectionery and sugary drinks. The Food Foundation's trends analysis notes that while that proportion of food and drink advertising spent on promoting vegetables remained stable between 2010 and 2015 at 1.2%, the proportion spent on advertising cakes, biscuits, confectionery and ice creams increased from 18.8% to 22.2% during the same period." [10] Considering the purpose of advertising is to influence food purchase decisions, this is an obvious area of intervention for policymakers seeking to improve the general health of the population.

Trends

The impetus for healthier eating does not only come from society's need to improve public health and reduce diseases generated by poor diets. There is also an increasing awareness and desire among individual consumers to improve their diets and customise their lifestyles to their own health needs. There is plenty of evidence from survey organisations suggesting that many consumers believe they follow a healthy diet or at least want to improve their health. IGD states that 85% of shoppers are actively trying to improve their diet and 70% would like more information from UK food and grocery companies to inspire them to make healthier choices [11]. In addition, 63% of consumers state that wellness expectancy drives their food choices and nearly 20% use food to address specific health concerns. [12]

The slight contradiction in consumers' collective survey responses is understandable given our relationship with food.

IGD's figures suggest that while 43% of shoppers claim to always or mostly eat healthy foods, around two thirds (65%) recognise that their diets are not as healthy as they should be (but think they are fine as they are). Around 60% of us admit to treating themselves often, while 85% say they want to improve their diet in some way. However, of those with that aspiration only one in five are trying to eat smaller portions. [13] Nonetheless, many understand what it takes to live a healthy life. According to Ipsos Mori's Global trends Survey, around four fifths of the population believe that eating is most important for maintaining good health while 88% of the UK population say they would like to be fitter [14]. We still want to enjoy our food. The Food Standards Agency's Food and You survey states that 72% of people agreed that they like trying new things to eat and 67% enjoy cooking and preparing food [15].

85% of shoppers are actively trying to improve their diet and 70% would like more information from UK food and grocery companies to inspire them to make healthier choices .

Of course, what 'healthier' can mean to people varies considerably. It could involve avoiding meat or artificial flavours and preservatives, it could mean coping with health conditions or food intolerances, or it could be following a specific fitness-training programme. That diversity of interpretation generates a need for the food market to offer considerable choice and help consumers to understand the particular nutritional attributes of different products.

The focus on healthy eating, therefore, is part of a drive for greater choice and diversity in all food markets. Social media and online advice tools support this. Phone apps help consumers to do their own health and food research and many appear willing to pay more for naturally healthy foods [17]. There has been significant growth in healthy snacks following demand from consumers [18].

However, it appears that consumers still experience some problems when shopping for healthier options. One recent survey suggests that better informed consumers are now "pushing for more evidence on health claims" while IGD states that 24% of shoppers mention not being able to easily locate healthier alternatives when buying food and drink in supermarkets [20]. This presents an extra challenge for retailers who must continue to offer speed and convenience for consumers who state they have little time for a proper meal.

85% Shoppers who are actively trying to improve their diet

I actively try to eat healthily 59%

25% I avoid artificial flavours and preservatives

UK adult shoppers who claim to be teetotal all year round 12%

76% I eat to feel good and take control of my life

I eat to enrich/enhance mental alertness and spiritual wellbeing 55%

Sources: IGD and Ipsos Mori

Meat and Veg

Trends such as increased vegetarianism and consumption of 'Free From' foods demonstrate the greater diversity and nuance of contemporary food consumption and the role of health considerations.

There is a clear trend, shown by various market intelligence organisations, for people reducing their meat intake, especially red meat. An Ipsos Mori survey in 2019 found that almost a quarter of people planned to eat less red meat in the New Year. Women, over 55s and higher social classes were most likely to make that resolution. Improving health was the most popular reason for reducing red meat although other reasons include not liking meat very much, wanting to save money and wanting to help the environment [21].

While changing attitudes to meat eating is a trend distinct from healthy eating, more consumers appear to be interested in altering their diets to either reduce or cut out meat products. The Food Standards Agency's *Food and You Survey* monitors these trends, including fall in meat consumption [22]. In 2012, 75% of adults ate cuts of beef, lamb or pork and 65% ate pre-cooked meats at least once a week. By 2018, the figures were down to 55% and 52% respectively. However, 81% ate chicken or turkey at least once a week in 2018, a slight fall from 86% in 2012. In addition, the *Waitrose Food and Drink repor*t 30% of people eat less meat than they did five years ago, although many also say they are more likely to buy good quality meat than previously.

55%

British grocery shoppers actively reducing, or considering reducing, their meat intake in 2019

UK consumers who say they try to eat less meat

29%

27%

My diet is mainly vegetarian

Women and men who ate raw fruit every day

63% /45%

60% /40%

Vegans and vegetarians who have adopted the lifestyle over the past five years

Improving health was the most popular reason for reducing red meat although other reasons include not liking meat very much, wanting to save money and wanting to help the environment .

There is also a definite growth in people pursuing various types of low meat or vegetarian lifestyles. While the *Food and You* survey reports that proportions of vegetarians (3%) and vegans (1%) are still small, the vegan population tripled in the 10 years up to 2016 [23] and Waitrose noted in 2018 that 40% of vegetarians had adopted that lifestyle over the previous five years [24].

Figures on vegetarianism and veganism appear to be disputed. Research for *Waitrose's Food and Drink Report 2018-19* states that or almost 13% of the population – is now vegetarian or vegan, with a further 21% identifying as 'flexitarian' [25]. The Vegan Society also states that around 1% of the UK population is vegan and that 42% of vegans made the change in the last year, suggesting that we are currently in a period of rapid growth [26].

This is supported by figures relating to younger generations. Past research by survey organisation YouGov stated that 25% of millennials are either vegan, vegetarian or flexitarian [27]. More recent YouGov figures suggest that a greater proportion of young people are flexitarian, pescatarian, vegetarian or vegan than the national average, with the numbers higher among females than males.

In addition, YouGov that 7% of the population are likely to become vegan or vegetarian within the next year and describes flexitarianism as being "the prevailing diet of the future".

	FLEXITARIAN	PESCATARIAN	VEGETARIAN	VEGAN
Female 18-24	18%	7%	4%	3%
Female 25-34	17%	3%	7%	3%
Male 18-24	10%	4%	4%	1%
Male 25-34	14%	4%	4%	2%
UK average	14%	3%	3%	1%

Source: YouGov, 2019[28]

This would all suggest that the number of vegetarian meals people eat is rising substantially. Sales revenue for vegetarian products grew steadily between 2010 and 2017. However, this behaviour may only apply to a limited proportion of the population. The *Food and You survey* states that just 43% of women and 37% of men ate cooked vegetables every day, and 32% of women and 24% of men ate raw vegetables.

Consumption of raw fruit and cooked vegetables was lowest among respondents aged 16 to 24 and highest among those aged over 75 years. These figures suggest that despite the growth in low or no meat diets, many people still do not consume a healthy intake of fruit and vegetables.

Free From

The rise of the 'Free From' category has been a significant part of the growth in demand for healthy food and drinks. As we reported in our *Retail Review* in 2017, the category has expanded beyond providing for people with definite medical intolerances, to offer products with more general positive health outcomes and to meet the desire among customers to avoid certain ingredients that they perceived to be bad for them. Gluten-free is still expanding in categories such as convenience, indulgence and breakfast. Awareness of coeliac disease is still considered to be under-diagnosed in the global population and more people now believe that cutting out gluten will help them to reduce weight or provide other health benefits.

17% Suffer an adverse reaction when eating certain foods

Consumers saying they suffer a food intolerance or a food allergy — 44% /24%

6% UK consumers following a gluten free diet

UK consumers following a lactose free diet — 5%

10% UK consumers following a low/no carb diet

Free From category growth in the UK in the year up to September 2018 — 37.5%

Other major Free From trends include a high number of new product launches in lactose and dairy-free products [32], reflecting survey findings showing that digestive health has joined weight management as a key health factor [33]. According to the Office for National Statistics, one in five UK adults is now teetotal, and among 16-24 year olds, it is now one in four individuals [34].

Broadening the appeal of Free From products to those with a more general interest in healthy or 'cleaner' food, along with the extension into snacks and drinks, has led to concerns about the claims used to advertise these products. Businesses should support Free From claims with evidence of:

- The absence of the specific allergen;
- A product environment that strictly follows good manufacturing and allergen management practices;
- Regular, thorough and accurate product testing;
- Fully descriptive labelling which complies with the relevant legal requirements [35].

It can be difficult to ensure that food is entirely free of specific components [36] and a gluten-free diet completely devoid of gluten is unrealistic. Those who do suffer food intolerances still feel their choice is limited. A survey of British consumers found that 42% believed there are not enough product options for people who suffer food intolerances [37].

The motivations behind Free From often come from greater awareness and concern about personal health and well-being and this, in turn, creates an expectation that food producers demonstrate the healthy credentials of their products.

Other reasons include concerns about the environment, with 41% of free-from buyers agreeing that free-from food helps the environment [38]. At a glance, these trends look set to grow significantly in the coming years. This includes forecasted double-digit growth in the global dairy-free milk alternative market [39].

The Obesity Environment and Retail

With more people wanting to change their lifestyles in order to improve their long-term wellbeing and clear problems in the UK with overweight and obesity, the question is whether society, infrastructure and business is able to create the conditions that meet these challenges. Obesity is a problem caused and perpetuated by the environment in which people live. The concept of the 'obesity environment' recognises that multiple factors, such as geography, education, social norms and media affect the capabilities and opportunities of people to consume a healthy diet.

There is considerable medical and health promotion research that demonstrates the 'obesogenicity' of modern environments. Much of it builds on the ANGELO ('analysis grid for environments linked to obesity') Framework, developed by Swinburn and others in 1999 [40]. This dissects the environment into types, consisting of physical (what is available), economic (what are the costs), political (what are the rules) and sociocultural (what are the attitudes and beliefs). Each of these operates at both a macro and micro level with elements that influence food intake and physical activity characterised as obesogenic and 'leptogenic' (promoting leanness).

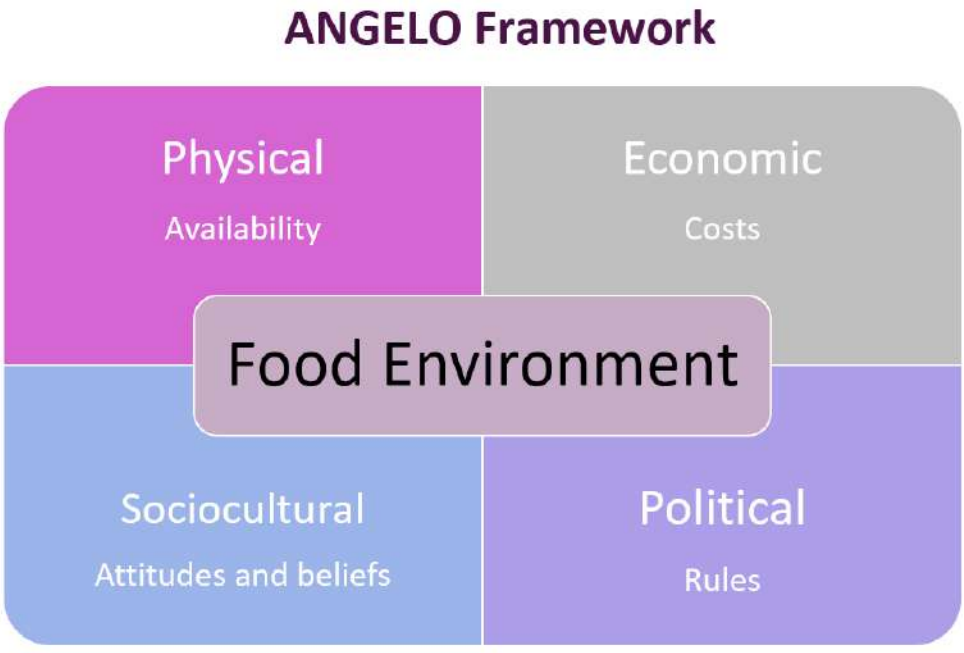


Image adapted from Alvarado, 2014[41]

Food is part of the *Physical* environment in terms of its availability in food outlets including restaurants, supermarkets, vending machines, schools, worksites and community venues. This also includes nutrition labels and other logos, which are important leptogenic influences affecting consumer choice. The *Economic* environment is important, in terms of both costs and income. Those factors affect income levels, which in turn determine body weight, through food choices and physical activity. Swinburn and colleagues noted that in industrialized countries, higher socioeconomic status, educational levels and occupations tend to be associated with a lower prevalence of obesity, especially in women.

The *Political* environment concerns rules, such as regulations and policies, that relate to food and physical activity. These rules determine food labels, the use of health claims in advertising, and nutritional descriptions in the marketplace, all of which influence food choices. Finally, the *Sociocultural* environment refers to attitudes, beliefs, and values relating to food and physical activity. Gender, age, ethnicity, traditions, religion, and group affiliations influence social and cultural norms. The sociocultural influences of different environments are difficult to measure because various elements are often intangible and interconnected.

However, their influence on food attitudes and health outcomes are equally significant as each of the other environmental types.

The concept of the obesity environment and, more generally, the food environment, challenges the perception that individuals primarily determine their own health and wellbeing. While it is equally important to understand the psychological influences on food choices, the collective physical, economic, policy and sociocultural environment massively influence the outcomes of any actions attempted at the individual level [42]. Therefore, the efforts of business or government to improve public health must take into account how each aspect of the food environment, operating at both macro and micro levels, interacts with individual choices.

In addition, the complexity of the existing food system means that significant changes to the current environment are very challenging because of the need to alter business models to make healthier foods more profitable. Finally, increasing the availability of healthy foods may only change consumption behaviour if retailers position and promote those foods in a way that works for all who need them.

Individual vs Environment

Despite research demonstrating the complexity of food environments, public health responses to food-related health issues tend to focus on healthy eating, with the implication that people are responsible for monitoring their own health by eating 'healthy food and engaging in healthy behaviours' [43]. Advocating a holistic approach to food environments, Traverso-Yepez and Hunter note that the individualization of healthy eating implies citizens can only change the system by 'voting with their dollars'; in other words, generating demand for healthy, sustainable food by buying such items for themselves.

However, individual diets and physical activity behaviours are not a sufficient explanation of obesity. As an article in the *American Journal of Health Promotion* put it, "advice to simply "eat less and move more" ignores the complex influences of the social and built environments on individuals' access to affordable, healthful food and activity-friendly communities" [46]. Another paper in the *British Medical Journal* noted, *"Our tastes and desires for foods are both physiologically driven and culturally embedded within societies."*

Research into such approaches has found that both supermarket environments and the psychological resources of consumers influence individual dietary behaviours. Therefore, understanding the relationship between the psychological and environmental determinants of diet could help to optimise allocation of resources. This could involve tackling nutrition self-efficacy and perceptions of healthy food affordability while also introducing initiatives in supermarkets such as reducing the promotion of unhealthy foods and providing more affordable healthy options [46].

The Food System

To change what is on offer in shops means changing the food that industry produces. Critics argue that current commercial food systems rely on high volume sales of unhealthy foods in order to generate profits and value for shareholders. This does not allow for consideration of high costs of such approaches for societies, health, or the environment [47]. Processed foods offer longer shelf life and convenience and, while they are not necessarily unhealthy, the processing and its associated marketing is what adds value to the raw ingredients, thus driving profits. There is also a tendency to limit production to those fruits and vegetables that are easiest to harvest. Not all varieties are nutritionally equal, so this limits consumers' options for healthier alternatives [48].

Health promotion researchers also state that the drive for profits leads to aggressive marketing and the avoidance of regulation [49]. This creates barriers to reform of the food system. However, some claim that it is possible to expand the market for healthier foods, reduce the availability of less healthy foods and remain profitable. While this would require significant technical and business model innovations, the growing appetite for healthy alternatives suggest some commercial potential in grocery retailing.

Health researchers have proposed the following actions for the closer alignment of the commercial food system with public health goals:

- More profitable retailing of fruits, vegetables, legumes, nuts and whole grains, with reduced reliance on profits from highly processed foods that are high in energy, salt, sugar and unhealthy fats.
- Voluntary policies promoting healthier food sales/restricting unhealthy food sales.
- Supportive public health regulation, advice and infrastructure to help industry achieve these goals.

Food Choice Architecture

In addition to the choices provided by the food system, the arrangement, availability and promotion of food is a key aspect of the food environment and, therefore, the obesity environment. The Food Foundation [50] refers to the combined influence of physical structure and the information provided by the retail environment as 'choice architecture' [51]. This concerns the tendency for retailers to promote chocolate, sweets and other high fat, sugary or salty foods in multiple places around a store, whereas vegetables are only available in one or two locations "*in a way that does little to promote the pairing of veg with other products or encourage the perception that they are convenient products*" [52]. Other aspects of the food choice architecture include the ingredients of ready meals, spending on advertising and design of labels within stores and on packaging, particularly relating to nutritional information.

These factors, along with the physical placement of different types of food provider within locations of various demographic profiles, plus the price of healthy food compared with less healthy food, constitute the food environment in which we all live. Policy makers and businesses can manipulate each one to meet public health, economic or other targets. The concept of the obesity environment recognises not only the multiple causes of obesity but also the idea that manipulations of multiple factors together are more likely to be effective than interventions in a single area.

For example, promoting healthy food purchases while also improving access to healthy food and reducing access to less healthy foods (using taxes) can make it easier for people to make healthy dietary choices. Therefore, strategies that do more than simply provide nutrition information by helping people to recognise environmental manipulations and make them feel good about their choices, may have the greatest potential to succeed [54].

The Retail Environment

Access to healthy/unhealthy food

The geographical aspect of the food environment is a natural place to start when considering impact on dietary behaviours. While researchers are devoting a considerable amount of attention to the connections between food outlet locations, demographics, diets and public health outcomes, accurate measurement of those relationships is fraught with difficulty. There are so many factors to consider that it is very difficult to be sure whether a correlation between, for example, a high local density of takeaways and high levels of obesity, truly indicate causation. Other factors could include the incomes, ethnicity, age profile of the local population, or the presence of various types of employer, recreational spaces or transport infrastructure. However, research does suggest that geographical factors do matter to public health.

Several studies published in recent years consider the local availability of particular kinds of retailer from a public health and nutrition perspective. Specific studies have looked at the availability and accessibility of supermarkets and convenience stores and the effect on fruit and vegetable purchases [55], and the impact of urbanisation and economic up- and downturns on household food production (versus use of commercial food outlets). In the latter case, researchers found that urban consolidation and the reduction of space limited household food production, arguably increasing consumers' reliance on readily available meals from retailers.

Another study looked at the food purchasing behaviours of young adults in Canada, finding significant associations with demographics, the space-based food environment and self-reported health [56]. The research challenged assumptions in other studies that suggested people use food retailers closest to their homes. It notes that price sensitivity is one reason why people may be willing to travel further. This makes a person's mobility an important factor in the foods they purchase. The study also found that young adults who reported better health made fewer purchases at convenience stores. The association of such stores with prepared and packaged food may mean that shoppers do not consider them as helpful in maintaining a nutritious diet.

A systematic review of research on the role of retail environments in obesity prevention found mixed results [57]. Most studies suggested an association between the proximity of certain types of food outlets or the availability of healthy food options and better dietary quality and risk of being overweight. In addition, several found that supermarket access increases fruit and vegetable intake and distance to large supermarkets was negatively associated with fruit and vegetable consumption in metropolitan areas, although this was not the case in non-metropolitan areas.

However, other research suggesting that such relationships were not significant indicate that it is important to consider nuances of access and consumer perceptions. A qualitative review aiming to tackle the inconsistent evidence base identified availability, accessibility and affordability as key determinants of store choice and purchasing behaviours that lead to less healthy food choices [58].

The affordability issue includes the tendency for less healthy foods to be relatively cheaper than healthier options. One report found it was three times more expensive to get the energy we need from healthy food than unhealthy food, also noting that it is harder to buy healthy foods in deprived parts of the UK [59]. Another study observed a higher prevalence of less healthy product varieties in price promotions, particularly in supermarkets. In addition, larger product package sizes were more likely to be part of price promotions than smaller ones [60]. These tendencies demonstrate how the food environment can affect access to healthy foods, especially for those on lower incomes, with a greater likelihood of negative outcomes such as overweight and obesity.

The perception of higher prices does not just influence the choice of food; it can also affect the choice of food outlet from which people purchase their meals. Consumers adapt to their local food environment with strategies such as shopping at multiple stores and using particular ones for specific purchases due to cost as well as preference [61].

Many seek to minimise costs at the expense of all other considerations, including nutritional quality. Other strategies in stores include buying in bulk and searching for items on sale, with quantity often prioritised over quality. However, individual responses to food environments vary.

For example, an exploration of supermarket food shopping identified four distinct types of routine, determined by how willing customers are to follow a pre-determined plan or interact with in-store prompts.

- 'Chaotic and reactive' routines involved very little planning and heavy reliance on marketing cues within the supermarket environment.
- 'Working around the store' routines also use the supermarket environment to drive purchases, many of which were familiar and repeated.
- 'Item by item' routines consisted of customers relying on relatively detailed planning, often using shopping lists, although they did expect to engage with some features of the supermarket environment.
- 'Restricted and budgeted' routines are very controlled with customers having clear objectives and limiting any choices according to money or health considerations. These shoppers often spend considerable time examining product labels to check value and ingredients.

The perception of higher prices does not just influence the choice of food; it can also affect the choice of food outlet from which people purchase their meals. (...) Many seek to minimise costs at the expense of all other considerations, including nutritional quality.

The researchers (Thompson and others in *Health and Place*) contend these findings show that in-store marketing can exert a strong influence over some shoppers.

This means that interventions designed to improve food behaviours could be effective for those people with a more improvised approach to supermarket shopping.

In-store routines of practice for supermarket food shopping

Chaotic and reactive	Working around the store	Item by item	Restricted and budgeted

Passive	Active
Passivity, reliance on in-store prompts and unconstrained choice	Planning, low levels of interaction with in-store prompts, self constrained choice

Source: Thompson et al[62]

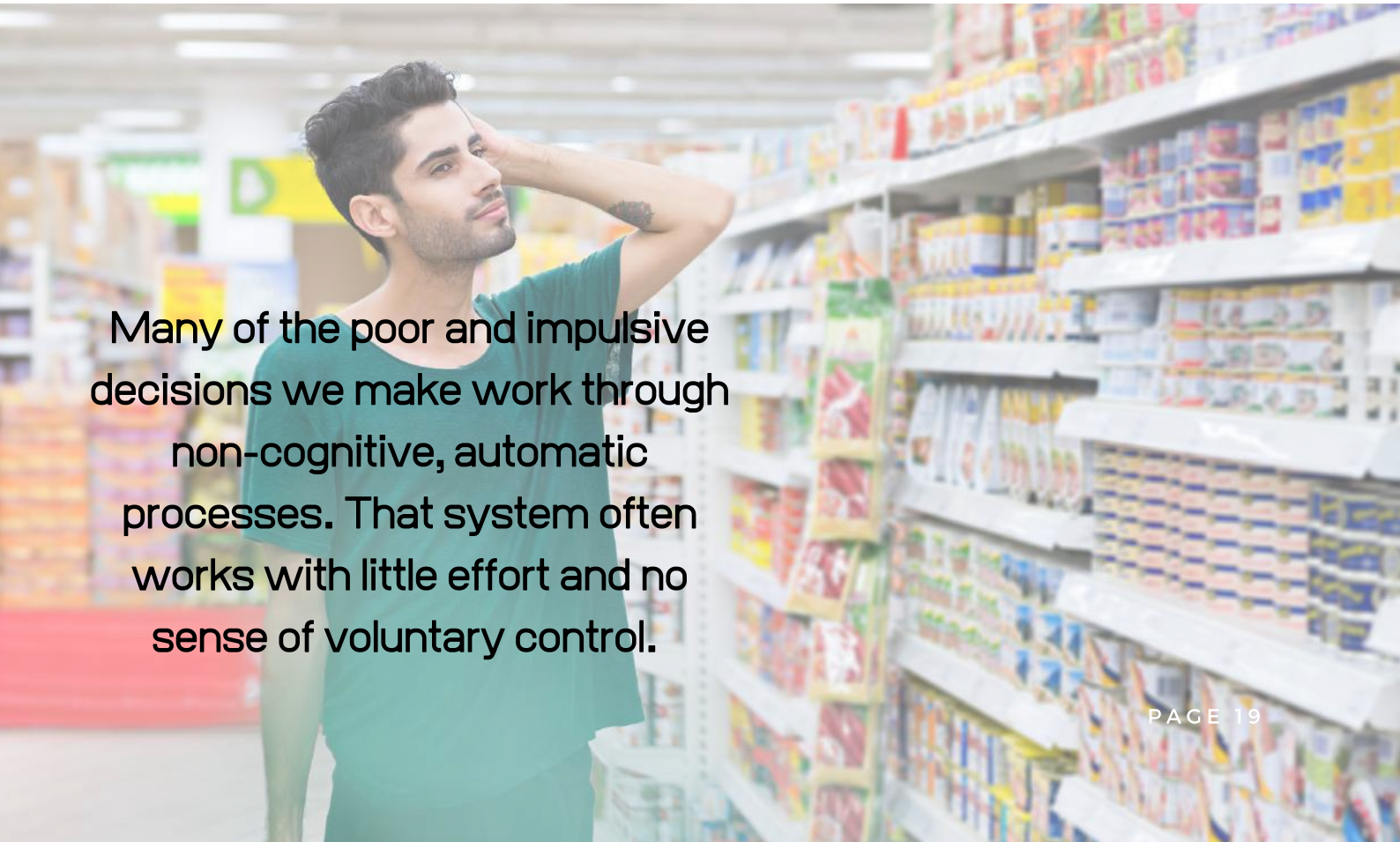
In-store Health Promotion Approaches

In-store marketing consists of the product placement, promotions, layout and messages that consumers may experience within a store that retailers use to influence purchasing behaviours. To encourage healthy eating, businesses might choose to increase the availability, affordability, prominence, and promotion of healthful foods and/or restrict the marketing of unhealthy foods. A review of research into product placement within stores suggests that prominent positioning of healthy foods or reduced availability and less prominent positioning of unhealthy foods, improves dietary-related behaviours, although not all findings were statistically significant (reflecting the noted methodological difficulties of this field) [64].

The point of purchase is key to explaining food shopping behaviours because that is where many of us make decisions, either consciously or sub-consciously. Many of the poor and impulsive decisions we make work through non-cognitive, automatic processes (*System 1* in psychological terms). That system often works with little effort and no sense of voluntary control.

The brain favours short-term benefits and superficial characteristics of food products such as appearance, price, positioning and convenience. This can make it difficult for many people to ignore ultra-processed and unhealthy foods and several individual factors make us vulnerable to an abundant food environment, including:

- Non-cognitive processing/decision making
- Limited numeracy skills
- Automaticity of eating with multi-tasking capacity
- Lack of control of eye gaze
- Decision fatigue/Limited cognitive capacity
- Dopamine response to novelty and palatable foods
- Limited capacity to follow through on goals
- Limited ability to judge portion sizes
- Inability to estimate calories
- Unconscious learning and response to priming and conditioning [65].



Aggressive marketing can overwhelm our cognitive reasoning and deliberate choices (*System 2*) in order to encourage impulsive, emotionally driven purchases. Obesity researchers, Cohen and Lesser, contend that few people can fully resist, or even recognise, such marketing so that they can successfully reject foods most associated with chronic diseases. They assert, *"to make informed and thoughtful choices, people need both the opportunity to slow down their thought processes and to have cues at the point of purchase that can alert them to long-term consequences"* [66]. Therefore, this is the rationale for intervention from public health institutions to protect consumers from aggressive marketing strategies. Such interventions could include standardised portion sizes, marketing restrictions on highly processed, low nutrient foods and explicit warning labels.

A review of obesity related interventions in grocery stores and supermarkets found that most were effective in promoting the purchase of healthy foods, measured according to sales. Most of the interventions combined information (raising awareness through food labelling and campaigns) with increasing the availability of healthy foods like fruit and vegetables [67].

The review suggests that promotion campaigns alone may not deliver the desired results but are more effective when implemented with 'nudges' such as affordability and shelf space management.

Other research, which took place in North Carolina, USA, evaluated three specific type behavioural economics 'nudges' implemented in grocery (supermarkets) and convenience stores. The nudges consisted of a 'cognitive fatigue' approach, in which floor arrows guided customers to the produce sections, a 'scarcity' nudge that placed a sign in one area of the produce section portraying a 'limited amount' message, and a 'product placement' experiment, which involved moving granola bars into the confectionery aisle. In both the grocery and convenience stores, there were no significant differences in sales for these promoted products when the interventions took place individually. However, the researchers identified an increase in sales in convenience stores (though not in grocery stores) when all three nudges were present. This supports the view that combined approaches to promotion of healthy foods are more effective. It also helps to emphasise the importance of recognising that food consumption exists within a wider context of store location, size, marketing approach and many other environmental factors.

Packaging and Use of Nutrition Labels

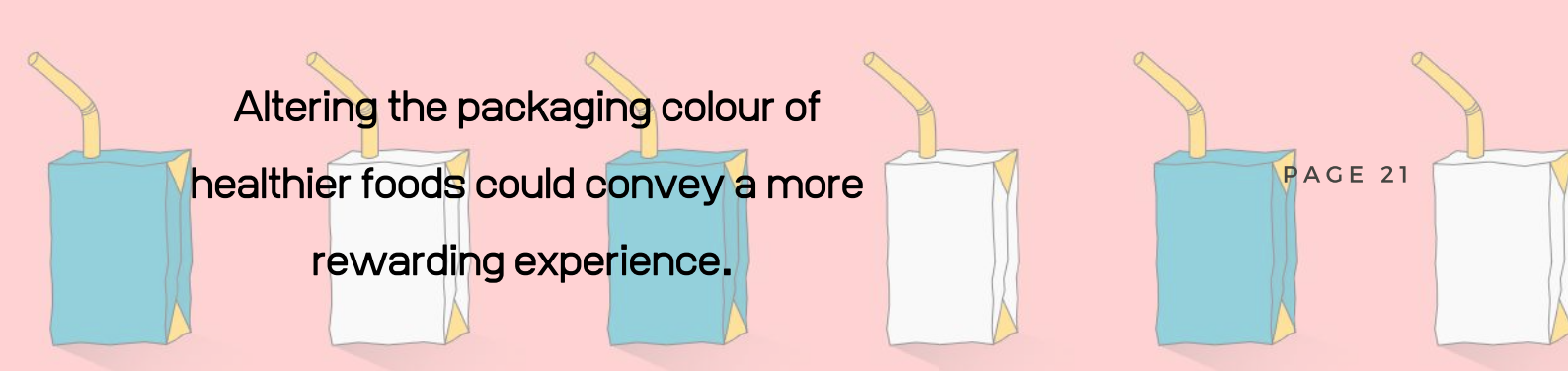
Packaging

Moving beyond the layout and promotion of goods in retail settings, both packaging design and the different types of nutrition labels can influence consumers' decisions. Various aspects of packaging design will influence consumer perceptions, including choice of materials, images, sizes, colours, information and functionality. From a health perspective, key areas include portioning and the symbolism of certain design features such as colour and graphics. In addition, much of the public health literature focuses on the impact of packaging on children's perceptions of the healthiness of food.

There is a relationship between the colour of packaging and perceived attractiveness of products in the healthy products category. In the shopping environment, extrinsic cues, such as colour, set product expectations and the colours that we associate with healthy options might not encourage consumers to choose healthy foods. Scientists from Wageningen University and Unilever [68] in the Netherlands studied the effects of package colour on perceived healthiness and attractiveness of sugar- and fat-reduced products using two categories: low sugar drinks and low fat sausages. Consumers perceive healthier foods as less rewarding and less tasty compared to their regular counterparts. This means that healthier foods must close the gap with regular foods in sensory and reward properties so that healthy choices become easier and more attractive for consumers.

Altering the packaging colour of healthier foods could convey a more rewarding experience. Package colour cues affect product expectations. The Dutch study observed that manufacturers tended to use less vibrant, watered-down colouring for 'healthier alternatives' (e.g. blue hue, high brightness and low saturation) and these were perceived as healthier but less attractive than more vibrantly coloured packages representing 'regular products' (e.g. red hue, low brightness and high saturation). Sensory expectations (e.g. expected sweetness, flavour intensity) for packages representing 'healthier alternatives' were also lower compared to other package variants.

Portioning in packaging encourages moderation, or discourages excessive consumption, of meal and snack sizes. This includes recommendations of portion size, reductions in pack size and packaging that separates into single portions. In each case, there is some potential among consumers to misinterpret the message or to feel frustration with brands, causing them to lose trust. An IGD report published in 2019 highlights the emotiveness of portion sizes, with many consumers expressing concern about reductions and admitting to confusion about what is an appropriate amount for a meal [69]. The research also found that many are unaware of portion information on packs. However, there were some indications that many were willing to accept gradual reduction of portions by around 5-10%.



Another way to influence portion size consumption is through partitioning of packaging. Research examining how perceived food healthfulness interacts with package partitioning to affect consumption outcomes found that intended consumption and actual consumption of perceptually healthier food items increased when they come in non-partitioned packaging [70]. It also found that partitioning did not change consumption of foods perceived as less healthy. This suggests that a positive health halo generates a “healthy = eat more” consumption pattern.

The portion sizes depicted on front-of-pack illustrations are among the most influential packaging features, particularly for products targeted towards children. An experimental study using breakfast cereal boxes showing different portion sizes (the recommended 30g and larger portion of 90g) measured children’s perceptions, the amount they served themselves and the amount they consumed [71]. Half (50%) of the children exposed to the recommended size image and three quarters (76%) of those who saw the larger portion agreed it was the right amount of cereal; suggesting that 63% accepted the image on the cereal box as normal.

When it came to serving and eating the cereal, those exposed to the larger portion size served themselves (+7g, 37%) and ate (+6g, 63%) significantly more cereal than those exposed to the smaller portion. The study demonstrates the likelihood of children accepting the serving suggestions on packaging as an appropriate portion size, which research with adults has also identified [72] .

Source: McGale et al (2019)

Various other studies of how children perceive food healthiness through packaging produced a range of insights, as described in the box below.

They demonstrate the power of packaging to communicate and the need for particular care to avoid confusion and negative health outcomes.

Milk with minimal packaging (glass bottles) was perceived healthier than milk in plain cartons, cartons with macronutrient claims or in a child-friendly container.

Mothers reported that packaging was an important determinant of preferences and a useful, convenient means of portion control.

Children relied heavily on packages' written and visual aspects (colour, images, characters, claims) - to assess the healthfulness of a food product. These elements interfere with children's ability to make healthy choices.

The high volume and power of marketing non-core foods to children via product packaging can mislead and confuse child and adult consumers. In Australia, claims about health and nutrition were found on 56% of non-core supermarket foods. There were an average of 6·43 marketing techniques per product.

An examination of the inferences of children relating to food products linked to fruit through signals in the brand name or packaging found 'extreme confusion in the marketplace'.

Cartoon media character branding can increase children's fruit or vegetable intake compared with no character branding. However, such branding is a more powerful influence on children's food preferences and intake, of energy-dense and nutrient-poor foods (e.g. cookies, candy or chocolate) compared with fruits or vegetables.

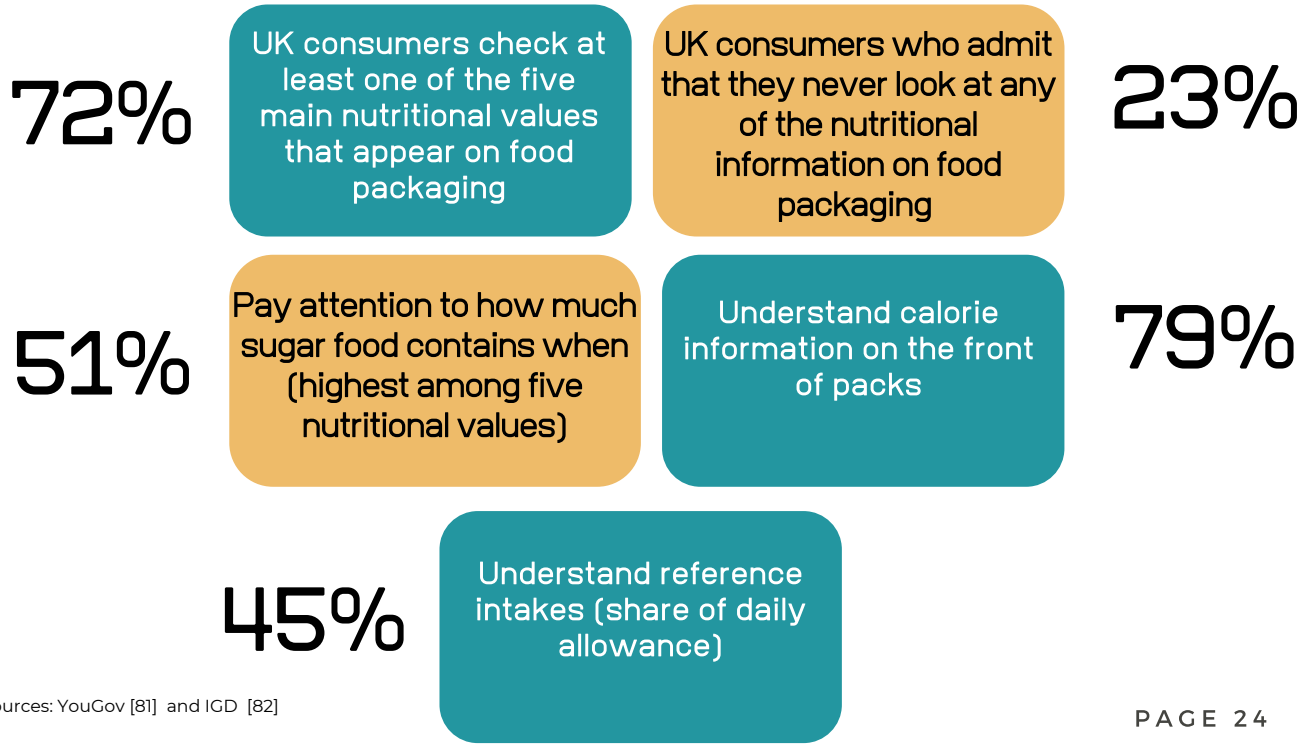
Sources: Elliot (2018) ; Tang et al (2020) ; Elliot and Brierley (2012) ; Mehta et al (2012) ; Maher (2012)

Other research using cereals, cereal bars and yoghurts noted the role of portion size presentation within the context of the food environment. It identified multiple obfuscators that can mystify consumers and lead to 'passive overconsumption' [78]. The obfuscators include products with messages such as 'no added sugar' or 'no added hydrogenated fat' that, while technically correct, often have high levels of naturally occurring sugar or fat. In addition, the extensive range of products combined with the variation in recommended portion sizes add confusion and could cause oversight of recommended portion size to occur. Furthermore, lack of easily identifiable or consistent nutrition information adds to the effort expected of consumers. People have physical and cognitive limitations in their abilities to resist food and make optimal decisions in the supermarket-shopping environment.

Label Types and Effects

The Food and Drink Federation note that labelling is an essential part of companies meeting their responsibility to help people follow a balanced diet. The purpose of nutrition labelling and ingredient information on food packaging is to help people to choose the food that best suits their family by making it easy to make an informed decision about the foods they buy [79]. However, nutritional labelling also produces similar kinds of confusion to that generated by marketing in stores and on packaging.

There is a considerable amount of research on labels relating to which kind of nutritional message is most effective. This concerns factors such as clarity, persuasiveness and authenticity. Strategies involve placement, visualisation and emphasising different information such as nutritional values and reference intakes (the share of the daily allowance of the main nutritional values). Other information might include advice on the amount of exercise people need to do to burn off the calories or the frequency with which they should consume the product as part of a balanced diet [80].



Sources: YouGov [81] and IGD [82]

One study assessing the effects of health claims on front-of-pack labels (FoPLs) highlights and evaluates different formats, categorising them according to the type of message [83]. It notes previous research suggesting that consumers prefer and gauge product healthfulness more effectively when the information is *interpretive* as opposed to *reductive*. Reductive FoPLs such as daily intake guides, which provide little interpretation of nutritional information. In contrast, more interpretive labels, such as multiple traffic lights and health star ratings, help consumers to form a judgement about the food using visual cues. The research examined how the choice of foods of varying levels of healthfulness was affected by the appearance of various FoPLs when shown in combination with different claim conditions, such as no claim, nutrient claims, general-level health claims, and higher-level health claims. It found that people were most likely to choose a healthy product and avoid unhealthy product when a FoPL appeared on-pack, especially in the case of Health Star Ratings.

An additional nutrient or health claim had no effect on the likelihood of picking healthier products and actually increased the likelihood of selecting less healthy foods across all FoPL conditions.

In another study, the same research team looked at the impact of food labels on food choice and willingness to pay, finding that more interpretive FoPLs were more effective in directing consumers to healthier choices [84]. Health Star Ratings were not only the most effective but also was the only type of FoPL to produce a significantly greater willingness to pay for healthier versus less healthy products.

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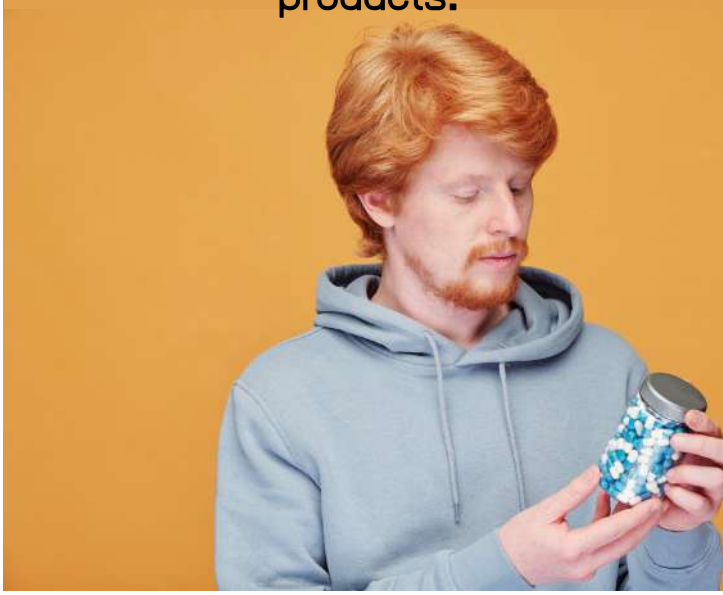

Two recent reviews indicate that the impact of FoPLs on purchase decisions could be limited. A meta-analysis on the outcomes including consumers' perceptions and their purchase and consumption behaviour found that labels help people in the identification of healthier products [86]. However, the ability to encourage healthier choices is limited, partly due to a 'halo effect' that leads consumers to perceive less healthy 'vice' products as having healthy virtues because they have a FoPL. This could encourage the use of warning labels to add greater contrast between healthy and less healthy food products.

The second review included warning labels in assessing the effectiveness of various FoPLs, including multiple traffic lights (MTL), guideline daily amounts (GDA), nutri-score and labels with stars. It supports the findings of other studies by noting that the labels help shoppers to distinguish between healthy and less healthy foods.

In this regard, the reviewer identified MTL, warnings labels and nutri-score as more successful than GDA or those including stars. For increasing intent to purchase healthier foods, the review found warning labels to be the most consistently successful design. While MTL, nutri-score and labels including stars also report some successful outcomes, GDA failed in nearly all of the included studies.

While there is some uniformity in these findings, the various studies do not tend to distinguish the different responses of various consumer groups. Nutritional guidance and labelling is likely to appeal more to consumers with a greater existing health focus in the shopping and food consumption. Some messages, therefore, may not reach 'lay consumers' who do not focus so much on a healthy lifestyle [87].

Packaging often clusters information, making choices difficult for some consumers. In addition to the different kinds of nutritional information, more abstract claims, such as 'naturalness', can generate perceptions of healthfulness and having a low calorie content [88]. This could affect the interpretation of nutritional information, potentially creating uncertainty among consumers. With food labelling an important tool for those consumers seeking to limit any perceived risks , this could suggest a need for regulation of 'natural' and other claims. Ipsos Mori has noted that retailers have used food descriptions like 'natural', 'organic' and 'reduced sugar' to convey a healthier image for their products [90]. There is now a greater need for clarity as shoppers are more informed and more interested in moving towards healthier lifestyles. Easy-to understand and clear nutritional information can help consumers take control of their health.

A final factor to consider in ensuring their effectiveness are the specific design characteristics of front-of-pack labels.
A Canadian study asked survey participants to rate five design characteristics - border, background presence, background colour, a caution symbol (exclamation in a red bell shape) and government attribution of warning messages on beverage packaging. Labels with a border, a solid background and contrasting colours made them more noticeable to consumers. The solid background also added readability, while a while a contrasting background colour reduced it. The caution symbol and government attribution both made the labels more believable and more likely to affect consumers' beverage choice.

These findings show that design features can have an impact on the intended outcome of nutritional labels, especially considering all of the other information on most food and beverage packaging. It also demonstrates how the food environment exists not just in our regular cultural experiences, in the local infrastructure of transport, shop locations, layouts and packaging design. It also exists at a very detailed level in which the decisions we make are influenced by the message type, placement, shape and colouring of labels.

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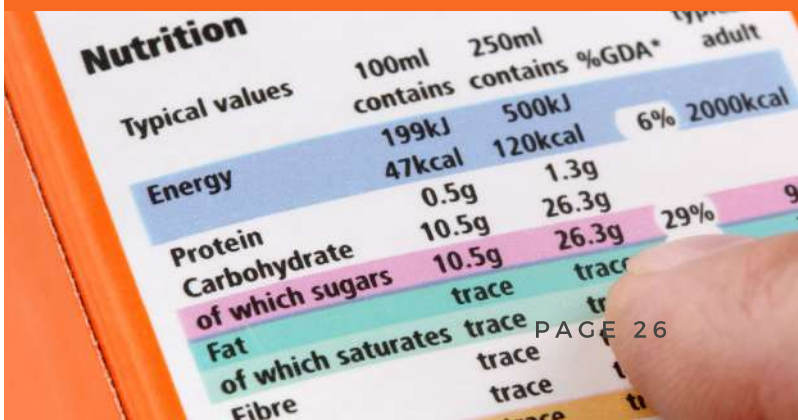


Conclusion

Healthy Consumerism & Covid-19

This report acknowledges that our food environment includes physical, economic, policy and sociocultural factors, which all influence our food and beverage choices. Much of that environment is obesogenic in the sense that it encourages, enables (or prevents) many negative (or positive) behaviours that increase levels of overweight and obesity. To work towards an environment that makes healthy foods widely available, promoted and affordably priced, businesses, government and society in general need to tackle the mechanisms of obesity that activate at both macro and micro levels. This includes the tendency for greater marketing of unhealthy food compared with healthier options, the need for better, clearer information and advice and the lack of access to healthy foods.

There is considerable complexity to this topic, with which stakeholders must engage and work through many types of interventions to tackle. People have many different personal concepts of 'healthy' and methods for achieving that. While trends data demonstrates that many want to improve
their diet, they go about it in different ways. This includes simply cutting down on consumption of certain foods and larger commitments to eliminate meat, dairy, alcohol or whatever food group consumers personally feel to be problematic for them.

There are no overnight solutions to the problem of the obesity environment. From the business perspective, it involves fundamental changes to business models, product positioning and promotion.

Things have to change at all levels with the relationship between individual psychology and socioeconomic structures key to understanding what works in different contexts. Healthy food has to become more profitable than less healthy food. People need to understand the health effects of different foods as well their own vulnerability to the food environment. Many food purchase decisions are automatic and taken within a context of busy lifestyles and many other decisions made while shopping. Therefore, making healthy choices has to be as easy as possible.

Achieving that involves using all the known techniques of food promotion. Promotion within stores works better when combined with pricing strategies and shelf space management. Few interventions work on their own and packaging design has a role through portioning, sensory design and creating positive associations with healthy food. However, some packaging attributes designed to encourage positive behaviours can have perverse effects when they give license to consumers to eat more or avoid healthier options.

Along with choice of nutrition labels, developing the right message for the right market depends on understanding different consumer responses for each food category. The many research studies referenced within this report all make useful contributions to that understanding.

Finally, it is very likely that the current Covid-19 pandemic will have both short- and long-term effects on the trends, relationships and scientific findings reported here. Many different market analysts are providing indicative data on how people have responded to lockdown, economic uncertainty and our increased vulnerability to a dangerous virus. More working from home potentially increases grocery spending and reduces convenience and food-to-go spending and consumption. In addition, greater health concerns, reduced incomes, increased time (if not working or commuting) and fewer social occasions all could lower demand for pre-packaged convenience food.

According to surveys conducted by YouGov and IGD during the lockdown, a significant proportion (between a third and half) of consumers say they are cooking more from scratch and that the outbreak has made them value food more. There also appears to be more openness to healthier diets and more sustainable consumption.

45% Want to see at least some of the personal or social changes they have experienced during the lockdown continue afterwards.

Say they are cooking more from scratch since the start of the lockdown **38%**

42% Say the outbreak has made them value food more

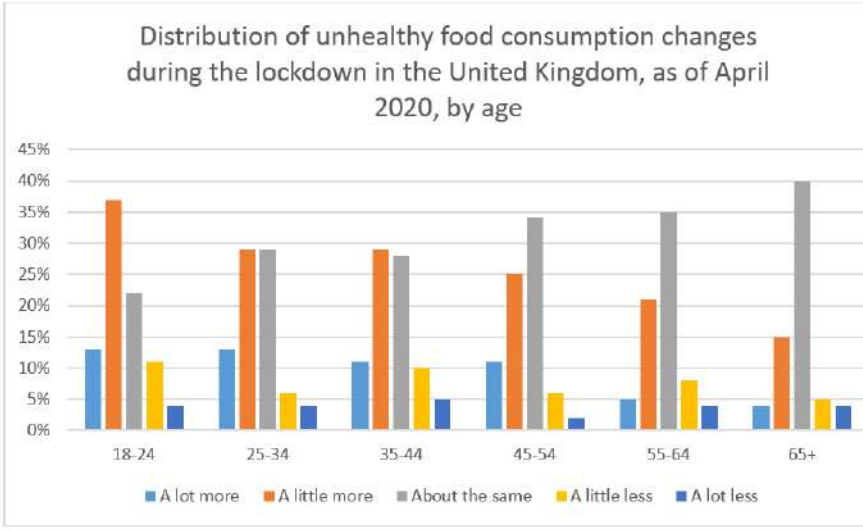
Are throwing away less food **33%**

66% Shoppers who are open to changing their diets to be healthier and more sustainable

Sources: RSA/YouGov [91] ; IGD [92]

A significant proportion of consumers say they are cooking more from scratch and that the outbreak has made them value food more. There also appears to be more openness to healthier diets and more sustainable consumption.

However, there are some concerns that the UK lockdown caused an increase in consumption of unhealthy food among some people. The chart from Populus below (using data gathered in April) shows that half of adults aged 18 to 24 years reported consuming a lot more (13%) or a little more (37%) unhealthy food. This trend declines going through the age groups, with the oldest group (over 65s) reporting the least change to their consumption.



Source: Statista/Populus

Undoubtedly, the impact of the pandemic will evolve as the population experiences successive phases of lockdown easing, returns to work, potential second waves and new norms. The retail experience will be fundamentally different in at least the medium term as we get used to new restrictions. This will alter consumers' relationship with the food environment in terms of exposure to it, our awareness of it and how they respond to the way retailers promote, position, produce and price food. The food environment is a concept that accounts for all aspects of our relationship with food. By placing any action within that context, we can maintain a stronger understanding of what the outcomes might be. This will be crucial in looking after the health and wellbeing of our society.

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