

Data considerations for the success of policy to restrict in-store food promotions: A commentary from a food industry nutritionist consultation

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Abstract

New plans to restrict in-store price and location-based promotions of less healthy foods and drinks in the UK aimed to encourage healthier choices. With responsibility for implementation likely falling to food retailers, it is important to understand the feasibility of implementation and to ensure policy success. To ensure compliance, retailers will need to assess which products are restricted under the legislation. The large number of products in retailers' portfolios poses a problem of scale. A recent research case study found the data available to retailers to be insufficient to accurately apply the rules-based approach set out by the policy proposal. Misclassification would result in some less healthy products being incorrectly promoted and vice versa. Problems with implementation feasibility have the potential to undermine the public health goals of the legislation. Interviews were carried out with nutrition representatives from the UK food retail and manufacturing sector, to understand the real-world implications of the proposed legislation. Industry nutritionists recommended a review of the use of the UK's Nutrient Profiling Model as the legislative basis, proposed data-related solutions to implementation problems and suggested a need for shared retailer-manufacturer responsibility, given the context of data availability.

Keywords: food choice, nutrition, obesity, policy, public health, United Kingdom

Introduction

What is the problem?

Sixty-three percent of adults in England are now overweight or obese (Baker 2019; NHS Digital 2019),

putting them at increased risk for a host of non-communicable diseases, including type 2 diabetes (Forouhi *et al.* 2018), heart disease (Bowen *et al.* 2018) and some cancers (WCRF 2018a). Poor diet is a known risk factor for obesity (King 2007) and other chronic illnesses (WCRF 2018b), independent of obesity. With obesity in childhood increasing the likelihood of an individual becoming obese in adulthood (Clarke & Lauer 1993), rising rates of childhood obesity in the UK (NHS Digital 2017, 2018) are of concern to policymakers. Children

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are particularly vulnerable to food marketing (Carter *et al.* 2011), which promotes the over-consumption of high-calorie foods and drinks contributing to obesity (PHE 2015, 2018b). To address this, the UK has restricted food advertising during children's television and other digital media since 2007 (The Food Foundation 2017). The government's latest obesity strategy plans to limit food marketing in England even further, by restricting price and location-based promotions of products high in saturated fat, salt and/or sugars (HFSS) (DHSC 2020b). The idea, first introduced by Chapter 2 of England's *Childhood Obesity Plan* (DHSC 2018a) led to publication of a draft for these plans (DHSC 2019), in a bid to reduce obesity, not just in children but across the whole population and improve public health.

A public consultation on the proposals was conducted between January 2018 and April 2019 (GOV.UK 2019), a response to which was released in December 2020 (GOV.UK 2020). The Scottish Parliament has announced its own plans to limit promotions of HFSS foods and drinks across both the retail and out of home sectors (Scottish Government 2018). Although introduction of the new legislation in Scotland has been put on hold in the light of the COVID-19 pandemic (Talking Retail 2020), the proposals have sparked debate among industry stakeholders about the potential divergence in the UK legislative framework for food promotions and consideration of the feasibility of the two proposals.

What does the proposed legislation look like?

The plans in England promote healthier dietary choices by reducing the purchase of less healthy products by removing them from prime locations, such as the end of aisles and store checkouts, and banning volume-based price promotions like 'buy one get one free' deals. Societal cost savings are projected in the region of £4.2 billion over 25 years; including costs to the NHS, social care and from premature mortality associated with poor dietary choices (DHSC 2018b, 2018c).

As the plans were still under consultation at the time of analysis, we assumed Option 1 of the DHSC (2019) plans to be the most likely approach. This applies restrictions to products defined as 'in scope' for the Soft Drinks Industry Levy (SDIL) and Public Health England's (PHE) sugar and calorie reduction programmes, which additionally fail the UK's Nutrient Profiling Model (NPM) (2004/2005). The government's consultation response outlines some changes to the list of products in scope of the policy (GOV.UK

2020), which is largely aligned to the SDIL and PHE calorie and sugar reduction target categories, with a few exemptions including non-pre-packaged products.

The 2004/2005 UK NPM is currently applied by Ofcom on a case-by-case basis to determine whether products may be advertised to children across different media platforms. However, the new legislation would require automated application to assess whole retailer product portfolios (tens of thousands of products). Additionally, a new draft 2018 NPM is under consideration to supersede the current model (PHE 2018a). The new model is to be even stricter, accounting for changes to national dietary recommendations; a reduced reference intake for sugar, with a switch in focus from total to 'free' or added sugars, and an increase in the reference intake for fibre.

The food industry has warned of negative impacts for food affordability and substantial cost burden for retailers and manufacturers of the proposals (FDF 2019), but their role in implementation is key to policy success. While the consultation now confirms the 2004/2005 UK NPM is to be the basis of the legislative proposal (GOV.UK 2020), this was unknown at the time of analysis. Thus, we included the hypothetical scenario that the new NPM may eventually supersede it, in an assessment of the challenges of implementing the proposal (Jenneson *et al.* 2020a).

Recent research from the University of Leeds highlighted the implementation challenges for in-store marketing restrictions, under the two UK NPMs with a research case study (Jenneson *et al.* 2020a). In brief, the research case study and results are described here.

Quantitative case study

A case study was carried out to assess the data feasibility of implementing the proposed new legislation on restricting promotions (DHSC 2018b, 2018c), using a large database of approximately 45 000 products. The database is described in more detail elsewhere (Carter *et al.* 2016), but, briefly, is comprised of nutrient information (per 100 g of product) for branded products (from a commercial product database), own-brand products from a large UK retailer and generic products from UK food tables. Thus, it broadly represents the scale and diversity of a retailer product portfolio. An algorithm was developed (Jenneson 2020) to automate the application of the NPM at scale and compared the feasibility and performance of the current (DH 2011) and draft 2018 UK NPM (PHE 2018a) as the legislative basis (Jenneson *et al.* 2020a).

What did the research find?

Around 25% of products in the analysis portfolio were in categories outside the scope outlined in the policy proposal (DHSC 2019) (including alcoholic beverages, oils, and fruit and vegetables) and were therefore excluded. The remaining 75% of products fell into categories deemed to contribute most significantly to calorie intake in children and were assessed under the two UK NPMs to determine if promotional restrictions should apply.

Across almost all remaining product categories, the revised 2018 NPM were more restrictive than the current UK 2004/2005 NPM, especially for beverages (Figs 1,2) and resulted in more than 60% of products being ineligible for promotion. With large brands paying a premium for positioning in prime store locations, promotional restrictions are likely to have significant implications for store layouts, supplier contracts and retailer revenues. However, without clarity on the details of the proposal, it is not possible to model the actual implications for either businesses or for public health. The quantitative case study highlighted a mismatch between the data held by retailer and that required to implement the legislative rules (Jenneson *et al.* 2020a). Challenges include the availability and accuracy of information required for decision-making and compliance, for example, the high degree of missing ingredient information in commercial product datasets, and the need for information not available on the product back of pack (Jenneson *et al.* 2020a).

The aim of this paper is to report reflections on the findings of our case study from interviews with six food industry nutritionists.

Methods

Interviews with industry nutritionists

Interviews were conducted with nutritionists from food retail and manufacturing organisations, to understand how findings from the research case study relate to the real world and to seek potential solutions to the challenges observed. This study has been granted ethical approval by the University of Leeds Ethics Committee (reference AREA 20-038).

Participant sample and recruitment

Participants were convenience sampled from the authors' networks, to include nutritionists working in industry, for large food retail and manufacturing

businesses operating in the UK. Representatives from eight companies were contacted, via email or LinkedIn. Two of those contacted were unavailable to participate. Participants gave written consent, via email, for their anonymised views to be included, and for the company they represent to be named as a contributor in this scientific research paper. Consent was not given for direct quotes. In total, six interviews were conducted; with nutritionists at four major UK supermarket retailers and two UK-based nutritionists from global food manufacturers.

Data collection

Semi-structured interviews with industry nutritionists were conducted by the lead researcher (VJ). Interviews took place via telephone or video call between March 2020 and June 2020 and lasted between 30 minutes and 1 hour in duration. In advance of interviews, interviewees received a draft copy of a research policy briefing document (Jenneson *et al.* 2020b) which summarised the findings from the quantitative case study (Jenneson *et al.* 2020a) and a list of questions to consider (Table 1). Interview questions were based on findings from the quantitative research findings and focussed on the feasibility of implementing the proposed legislation under three potential scenarios: (1) the current proposal (DHSC 2019), using the 2004/2005 NPM as the basis; (2) the current proposal, with the NPM replaced by the draft 2018 UK NPM and (3) consideration of alternative legislative bases.

The policy brief and example questions were used during the interviews as a framework, but not all questions were covered with all participants. Interview format was purposefully flexible and conversational to enable interview participants to shape the discussion and cover aspects that were important to them but may not have been considered by the research.

Interviews were not transcribed verbatim, but notes taken during the discussions were shared with participants afterwards to confirm that key ideas had been fully and accurately documented. At this stage, participants were asked to consent for their organisation to be a named contributor.

Analysis

Notes from each interview were analysed qualitatively and key themes and sub-themes identified by highlighting and organising into thematic thought maps. Thematic analysis began after the first interview, permitting an iterative approach and allowing for

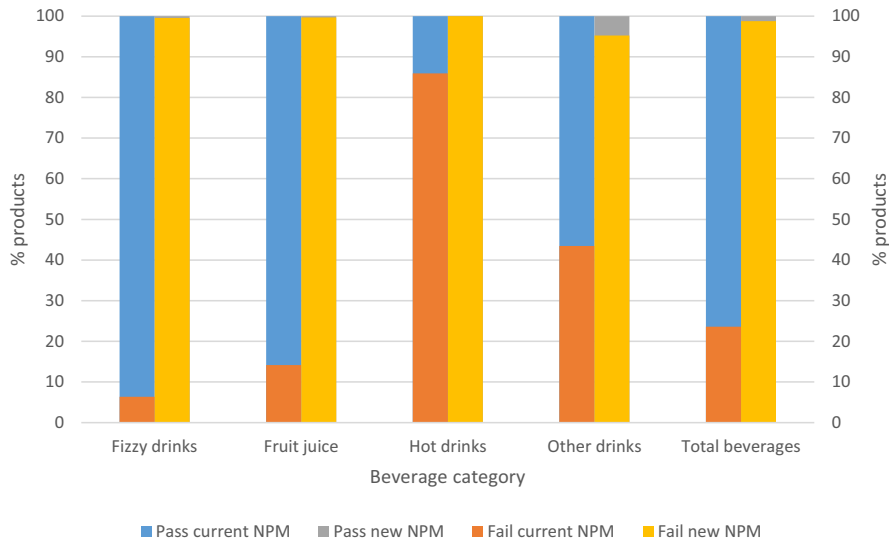


Figure 1 Proportion of beverage products passing and failing under the current (2004/2005) and new (draft 2018) UK Nutrient Profiling Model (NPM) [Colour figure can be viewed at wileyonlinelibrary.com]

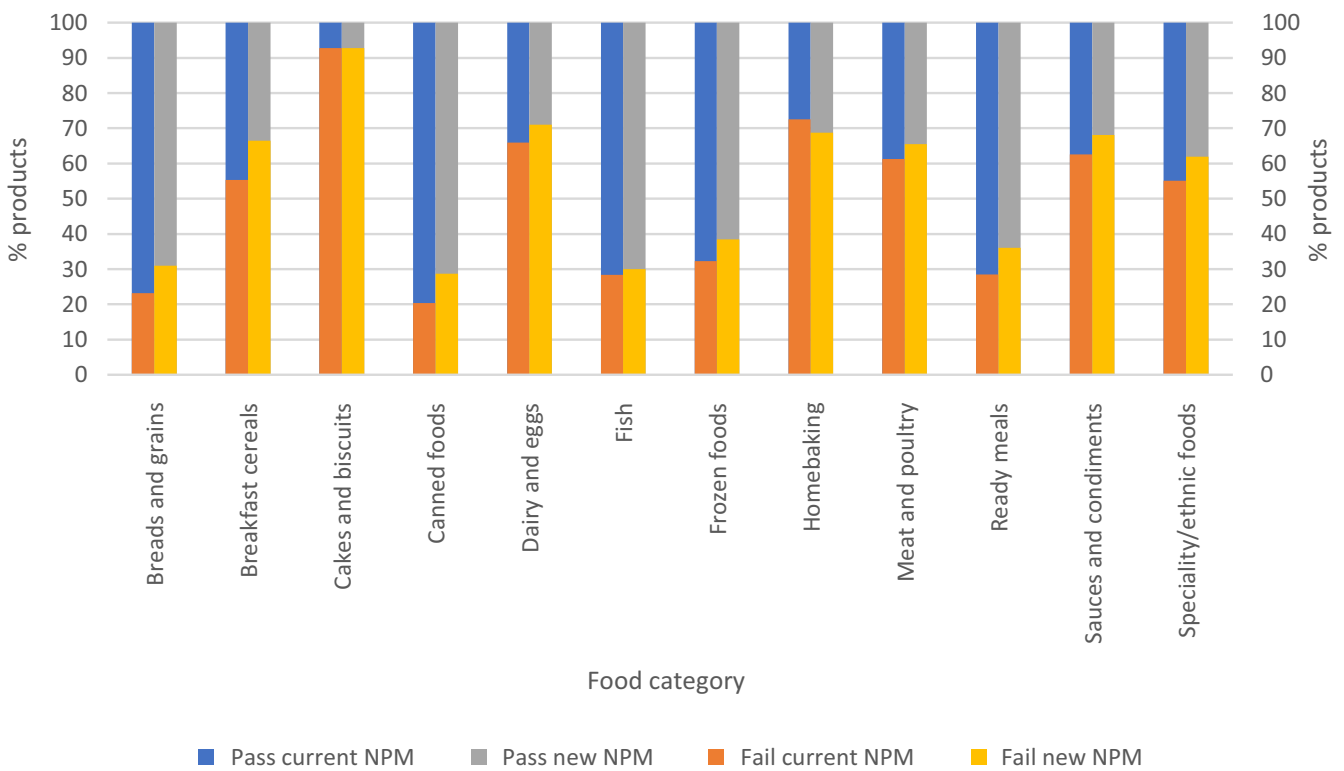


Figure 2 Proportion of food products passing and failing under the current (2004/2005) and new (draft 2018) UK Nutrient Profiling Model (NPM) [Colour figure can be viewed at wileyonlinelibrary.com]

inclusion of emerging themes in remaining interviews, to understand if themes were commonly regarded among different interviewees. Where there was good consensus of opinions across industry nutritionists,

these are presented as paraphrased quotations written in italics, to protect anonymity. A summary of findings from the interviews is provided thematically below.

Table 1 Food industry nutritionist interview questions

Questions relevant to both retailers and manufacturers	
Do you routinely apply the UK NPM to your products? Describe approach.	
Who should be responsible for implementing promotional restrictions? Should and can responsibility be shared between retailers and manufacturers?	
Who is responsible for implementing the Soft Drinks Industry Levy? Could a similar approach be used?	
How are products in scope for the Soft Drinks Industry Levy and PHE calorie and sugar reduction programmes identified?	
What are the considerations for feasibility? (e.g. data format, scale etc.)	
Questions for retailers	Questions for manufacturers
How problematic is missing ingredient information?	Is it feasible for manufacturers to calculate free sugars from the product specification?
Do retailers hold data on free sugars? How is this calculated/estimated?	Is it feasible for manufacturers to share fruit, vegetable and nut content (%) and/or NPM points for these?
Can policy-relevant product categories be incorporated into retail product databases? What could help with this?	Is it possible for manufacturers to flag HFSS products to retailers?

NPM, Nutrient Profiling Model; PHE, Public Health England; HFSS, high in fat, salt and/or sugar.

Results

Four key themes (indicated in rectangles in Fig. 3) were identified from the interviews (discussed next in turn): responsibility, barriers to identifying products in scope, appropriateness of the UK NPM as the basis for promotional restrictions and the data landscape. Further sub-themes (ovals) were identified within these.

Barriers to identifying products in scope

Guidance to align legislative and retailer product categories would be useful

A common barrier to industry nutritionists' ability to identify products in scope for promotional restrictions is the use of the SDIL (HMRC 2018) and PHE calorie and sugar reduction categories (PHE 2015, 2018b). They commented that the PHE product categories:

“This is particularly challenging given the nutritional heterogeneity of retailer product categories, which are built according to business structures, such as product placement in store, and therefore do not

easily align with PHE's categorisation approaches. For example, while ready meals may be considered their own category by PHE, they can be found within fresh, frozen and grab-and-go type categories in retailer product datasets. Furthermore, each of PHE's salt (PHE 2017), sugar (PHE 2015) and calorie (PHE 2020) reformulation targets use a different set of categories, and each retailer too has its own unique product categorisation approach.”

Interviewees suggested that:

“guidance documentation which clearly sets out category inclusions, with examples, would promote consistency in interpretation, helping to level the playing field for retailers and manufacturers alike.”

While industry nutritionists reported that at the time of introduction, PHE salt and sugar reduction targets were an important key performance indicator for reformulation efforts, they have not had a lasting longevity in business databases or routine reporting and monitoring systems. Some businesses reported starting work to incorporate PHE categories into product datasets, but this was not universal across the industry nutritionists interviewed, as category alignment is a time-consuming manual process, which requires periodic updates.

No interviewees reported using automated approaches to match product categories. Indeed, automation feasibility was questioned due to the nuanced nature of PHE calorie and sugar reduction inclusion criteria, which, for example, include some pack sizes yet exclude other pack sizes of the same product. This led some industry nutritionists to call into question the appropriateness of using PHE sugar and calorie-reduction categories as the basis for defining scope for promotional restrictions.

Appropriateness of UK Nutrient Profiling Model

Estimation of free sugars, and fruit, vegetables and nuts 'requires a lot of assumptions'

The current legislative proposal outlines the use of the 2004/2005 UK NPM as the basis for promotional restrictions. Yet, industry nutritionists anticipate its eventual superseding with the draft 2018 NPM and questioned the practicality of two different NPMs in concurrent use. Both models require estimation of the proportion of fruit, vegetables and nuts (FVN), and the 2018 NPM additionally requires the calculation of free sugars (FS). Both of these emerged as prominent

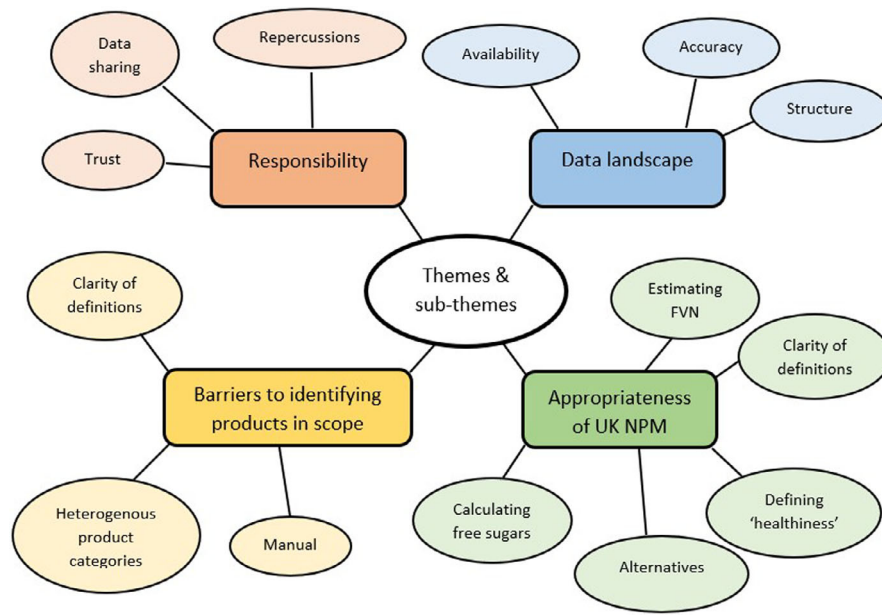


Figure 3 Themes and sub-themes identified from interviews with industry nutritionists. NPM, nutrient profiling model; FVN, fruit, vegetables and nuts [Colour figure can be viewed at wileyonlinelibrary.com]

themes of concern among industry nutritionists due to two key factors: (1) absence of quantified information about these aspects on the back-of-pack (BOP) nutrition panel (neither required by law) and (2) difficulties quantifying FS.

Where retailers have attempted to estimate FVN and FS, they reported using:

“a cautious approach which tends to over-estimate free sugars and underestimate FVN, in order to protect compliance.”

Product specifications are held by manufacturers and, for own-brand products, by the retailer. They contain detailed recipe information for the product that could, in theory, aid FVN and FS estimation. Yet, even with the product specification, industry nutritionists expressed that:

“estimation is not straightforward”

as systems are not designed to report on FVN or FS. Furthermore, they explained that:

“it is impossible to quantify FVN and FS through laboratory analysis.”

Analytical methods can only quantify single sugars and cannot distinguish FS from non-FS. Estimation is therefore reliant on broad assumptions and interpretation of the FS definition. While industry nutritionists had differing levels of confidence in their ability to estimate FVN, they expressed that:

“the free sugars definition has no legal certainty, which opens it up to misinterpretation and human error.”

With different approaches taken to calculate FS, it is possible to derive different estimates for the same product. There was therefore a strong consensus among interviewees that:

“if the draft 2018 NPM is to be the basis for promotional restrictions, there is a need for greater clarity in the free sugars definition.”

Clarity of definitions

Small retailers could be significantly disadvantaged

While the focus of the research case study and interviews with industry nutritionists was on the data considerations for implementation of the policy as described (DHSC 2019), the types of promotional restrictions and how these would be defined emerged as a clear sub-theme. Industry nutritionists called for clarification of the legislative definitions of store areas and promotion types, with particular apprehension for small retailers and convenience stores, where the majority of store space may be classed as a ‘prime location’. Additionally, one interviewee pointed out that:

“hindering retailers’ ability to meet customer demand during the Christmas period in particular,

where a substantial amount of store space and price promotions are dedicated to seasonal treat products.”

Defining ‘healthiness’

The UK Nutrient Profiling Model is too ‘all or nothing’

While industry nutritionists supported the review of the current NPM from a public health perspective, there was concern that the draft 2018 NPM may be too prohibitive in the context of in-store promotional restrictions. Interviewees were uneasy that:

“restrictions under the new model misalign with current UK dietary guidance.”

They felt that:

“the binary model of ‘healthiness’ represented by the UK NPM is too ‘all or nothing’ and fails to acknowledge the broad range of options available to customers within a product category.”

They warned of a potential unintended consequence of disincentivising customers to choose a healthier option, such as a smoothie or 100% juice, instead of a sugary carbonated drink. Moreover, losing the ability to promote the ‘healthier options’ within a category would disincentivise product development and reformulation by manufacturers, limiting choice available to customers.

Alternatives

The Nutrient Profiling Model should acknowledge a spectrum of healthiness to nudge customers to make healthier choices

Industry nutritionists interviewed were critical of the appropriateness of the UK NPM 2004/2005 as the basis for in-store promotional restrictions for adults. Interviewees wished to see a more holistic view of ‘healthiness’ which moves away from a binary classification and unhelpful ‘healthier’ or ‘less healthy’ terminology. Instead, they advocated for:

“an approach to nutrient profiling which highlights differentiation within categories and promotes healthier nudges,”

even among products, which are traditionally considered ‘less healthy’ (e.g. biscuits).

In the light of this, some industry nutritionists reported making steps to develop their own in-house

nutrient profiling scheme to drive reformulation and product development and to communicate choice to consumers. Others advocated for a consistent approach across the industry in order to level the playing field and prevent consumers becoming confused by the use of different icons by different retailers. Indeed, nutritionists operating in different regions of the UK, Europe and worldwide were also keen for alignment with approaches used elsewhere. While interviewees supported an alternative basis of the UK NPMs for the proposed in-store promotional restrictions, the current model was favoured over the draft 2018 NPM, in terms of both data availability for implementation and fewer unintended consequences for consumers.

Responsibility

Shared responsibility may be the only feasible option, but can responsibility truly be shared?

The theme of responsibility was closely aligned with the theme of data availability and the wider data landscape, such that accurate information is key to decision-making and accountability under a legislative framework. Retailers expressed that the data they hold is insufficient to accurately apply all of the rules for the UK NPM and they cannot, therefore, be held wholly responsible for promotional restrictions. Retailer nutritionists felt that access to product specification information puts manufacturers in a better position to apply the NPM but were wary of the potential repercussions of inadvertently promoting a product that was incorrectly labelled as passing the NPM by the manufacturer.

Assignment of responsibility emerged as a complex issue, to which there was no consensus for resolution. While there was a common recognition among industry nutritionists that:

“shared responsibility between manufacturers and retailers may be the only feasible option,”

there was an equally strong sense of scepticism around the practicalities of this. Discussions considered due diligence for each party and the ability of enforcement officers to assess compliance without publicly available data and the expertise to apply technical nutritional concepts. Interviewees suggested that:

“a transparent data sharing infrastructure is therefore critical to enabling shared responsibility”

They advocated for a centralised system with which manufacturers may share product information (e.g.

flags showing that a product is in scope for PHE calorie and sugar reduction targets or the SDIL, NPM score and a breakdown of scores for each NPM component, *that is* FVN, saturated fat etc.).

Additionally, retail nutritionists expressed a need to consider how responsibility is assigned internally within the business. They reported that, as promotional activities typically sit within marketing and sales functions, company nutritionists have little involvement, with the exception of signing-off promotional activities currently aimed at children. Assignment of responsibility to different teams can lead to a lack of transparency across business functions around how decisions are made. For example, retailer nutritionists mentioned that responsibility for implementing the SDIL rules is owned by the buyers and corporate affairs teams, and not overseen by the nutrition team, consequently company nutritionists do not hold a comprehensive list of included products. In addition, decisions made at head office level can be difficult to filter down to store-level implementation. Retailers raised concern about receiving hard sanctions for the failure of store managers to comply with head office guidance, which is difficult for retailers to police. Industry nutritionists reflected that:

“the introduction of legislation on promotional restrictions is likely to accelerate a need for more joined-up thinking within businesses, which would in turn need to be supported by joined-up data structures and additional nutrition resource.”

Data landscape

Data infrastructure is currently insufficient and must adapt to the legislative landscape

The data landscape was a common theme which ran as an undercurrent throughout discussions of the three previously explored themes. Data, its availability, accuracy and structure were considered both barriers to, and enablers of the implementation of future legislation to restrict in-store promotions. Here, we summarise the industry nutritionists' views of the current data-related challenges and how new approaches to data management and sharing could provide potential solutions.

Retailers reported ongoing efforts to integrate internal business datasets and suggested that the current situation, where:

“data used by different teams across the business does not talk to each other,”

could constitute a barrier to decision-making and compliance with legislation. Data infrastructure redesign is therefore critical to aligning data from currently disparate business functions. Yet, most interviewees appeared to be in the early stages of this journey and proposed that:

“greater clarity of the legislative landscape is needed to inform the design of internal data infrastructure.”

Current database structure and capacity constraints mean that:

“incorporating PHE categories into product databases, for ease of identifying products in legislative scope, is more complicated than it seems.”

Problems with the accuracy and availability of data also emerged as important sub-themes in discussions, with retailers holding a greater level of data for own-brand products, compared with branded products. While a centralised NPM data-sharing system, as previously discussed, may help to address issues with transparency and data availability, industry nutritionists lacked confidence in the information available to them as the basis for legislative decision-making. Discussions highlighted the frequency of missing and inaccurate information in commercial product databases, such as different nutritional information (per 100 g) available for different pack sizes of the same product, as well as a lag in the timelines of updates. Additionally, interviewees wished to see increased sophistication in the reporting capacity of product specification systems, which are currently prone to human error and incompleteness.

Finally, industry nutritionists advocated for government support in the development of data tools to aid application of the NPM. Suggestions included the development of an open data-sharing platform for use by retailers and enforcement officers, and a tool for calculating product NPM scores. While interviews revealed the development of an NPM calculator-style tool recently trialled by PHE, it appears that associated costs to retailers may have halted its progress as conversations have reportedly ceased and its existence was not widely known among all interviewees. Nevertheless, there was a clear expression of interest in a free and easy-to-use tool, which would level the playing field by offering a consistent estimation approach to establish the NPM score. Interviewees also speculated that without a free-to-all government-supported tool there would be an emergence of businesses offering this service, which could further disadvantage

small food retail and manufacturing businesses, which may feel increased pressure to pay for this service, particularly if they lack in-house nutrition support.

Discussion

Building upon the modelled data-related challenges of implementing proposed new legislation to restrict price-based and location-based food promotions (Jenneson *et al.* 2020a), this study presents these in a real-world context and proposes solutions supported by food industry nutritionists. Although government documentation confirms the use of the 2004/2005 NPM for future legislation on promotions (DHSC 2019; GOV.UK 2020), we explored the hypothetical situation of its replacement by the draft 2018 NPM, which was developed for the restriction of marketing to children. This paper contributes to discussions of implementation and enforcement rules, which are to be determined through further consultation with local authorities and business representatives (GOV.UK 2020).

Industry nutritionists interviewed called for guidance to align product categorisation for PHE calorie reduction targets, such as which has been created by a trade body joint working group from the Food and Drink Federation (FDF) and the British Retail Consortium (BRC) for salt and sugar reduction categories. However, as product definitions are a 'moving target' and must adapt to new products coming to market as trends emerge, guidance documents would require regular maintenance to ensure that they remain up-to-date. Who should take responsibility for this, given the potential for legal sanctions, is therefore worthy of debate.

The existence of various sets of non-aligned and potentially conflicting reformulation targets (including voluntary salt, sugar and calorie reduction) and legislative demands (including the SDIL and children's food marketing restrictions), to which the food industry is asked to respond, results in multiple categories and criteria with which to align and assess their products. PHE's decision to focus on nutrients in isolation and the introduction of different nutrient-specific targets at different timepoints appear to have resulted in constantly shifting business priorities, with which data systems have not kept up. The co-existence of two UK NPMs for different purposes, would compound this problem. There is, therefore, a shared desire among industry nutritionists for alignment of a single holistic nutritional target for products.

For branded products, the BOP nutrient information is the key source available to retailers. However, there

is currently no reporting of FS (only total sugars) or FVN on the BOP (DH 2016). While additional ingredient information from supplier contact, online searches, or commercial product databases such as Brandbank (Nielsen 2020) and Brand View (Edge by Ascential 2020) may aid estimation, it does not state ingredient quantities in order to protect competitive advantage. Retail nutritionists must therefore make broad assumptions about the FVN and FS content of branded products, based on their expertise and FS guidance (Swan *et al.* 2018; PHE 2018a). FS calculation is complex and practically difficult (PHE 2018a, 2018c), making calculations across the whole retail portfolio, which may contain upwards of 10 000 products, prone to error (Jenneson *et al.* 2020a). Retailers may therefore be tempted to take a cautious approach to estimating FVN and FS, which has the potential to penalise some products that are 'healthier within their category' and may otherwise have passed the NPM. In turn, this is likely to affect revenue and supplier contracts, although the extent of this would require further modelling.

Industry nutritionists interviewed expressed the view that restrictions contradict UK dietary guidelines and raised concerns for public trust and negative implications for consumer choice. For example, under the 2018 NPM almost all juice drinks are ineligible for promotions (Jenneson *et al.* 2020a), yet, juices and smoothies may contribute up to one portion of the 5 A DAY fruit and vegetables recommendation (NHS 2018a, 2018b), in recognition of their inclusion as part of a balanced diet. Furthermore, changes to the fibre scoring bands under the new model would impose the same promotional restrictions on many high-fibre breakfast cereals as on the highest sugar cereal options (PHE 2018a; Jenneson *et al.* 2020a).

Often referred to in the literature as the 'Ofcom' model, the UK NPM is the most restrictive NPM in use worldwide (Poon *et al.* 2018) and was designed for limiting advertisements to children (DH 2011). Given the range of factors upon which adults may base food purchase decisions, such as price, taste preference, environmental and ethical considerations (Smeaton *et al.* 2011; Caswell & Yaktine 2013), amongst which health may be relatively unimportant, interviewees advocated a more holistic view of 'healthiness'. Industry nutritionists supported the Consumer Goods Forum's goal to promote switching to better alternatives (Consumer Goods Forum 2020) by acknowledging the spectrum of 'healthiness' represented by the options available to customers. The hybrid nutrient and food-based nutrient density score

proposed by Drewnowski *et al.* (2019) is one such approach supported by industry nutritionists.

The European Commission (EC) plans to mandate the use of front-of-pack (FOP) NPM schemes (European Commission 2020) and the use of a common NPM for health claims by 2022 (European Commission 2020), for all member states. NutriScore, a candidate NPM scheme for the EC mandate (European Commission 2020), meets some of the needs expressed by interviewees by categorising overall healthiness as a spectrum and communicating the position on the spectrum to the customer through colour and alphabetisation (Chantal *et al.* 2017). Alternatively, the WHO NPM (WHO 2011) may provide a holistic category-led approach for ease of applying the legislation.

While the UK is no longer mandated by EC rule, a common NPM approach across business operating regions would not only streamline business resource but would also create consistency in customer communication. With new rules for promotional restrictions planned for Scotland too (Scottish Government 2018), there was a lot of interest expressed in exploring a similar category-led approach for the rest of the UK, without the need to apply the UK NPM. Indeed, how the nutritional properties of foods are classified and communicated with the public is highly topical, given the UK government's recent consultation on Front of Pack Nutritional Labelling (DHSC 2020a), sparked by the UK's departure from the European Union.

There was support for a new data-sharing system. This system should be publicly available to all retailers and the legislator in order to reduce the data-sharing burden for manufacturers and to create a level playing field for compliance. Yet, exactly how such a system would operate was not clear. Some industry nutritionists suggested that an existing branded product database, such as Brandbank (Nielsen 2020) or Brand View (Edge by Ascential 2020), may be utilised for this purpose; however, Brandbank is restricted only to products which retail online, and neither database contain unlabelled products such as in-store bakery items. Furthermore, subscription costs are a barrier to data access, especially to smaller retailers and local authorities, whose enforcement officers must impose the legislation. Retailers also subscribe to different systems and manage branded and own-brand product data in distinct databases.

For products specifically advertised to children, manufacturers must submit proof of adherence to nutritional standards to the advertising authorities. Some industry nutritionists suggested that this evidence submission channel may provide a useful basis for sharing product information, if access could be

opened up to all retailers and the legislator. However, this only captures foods for children, a subset of the retail portfolio. Indeed, whatever the system, applying the NPM and sharing relevant information is likely to be substantially more problematic for smaller manufacturers. Clarity from the government around where the responsibility will lie, timescales for phase-in and the potential repercussions are critical to planning for both retailers and manufacturers.

Industry nutritionists noted the need for automated NPM calculation across several products at once, in the light of the substantial time burden of manually entering each product individually. The algorithm developed for the accompanying research case study (Jenneson 2020) provides a starting point for addressing the need for automated calculation of the NPM score, at large scale. It enables the automated application of the UK NPM across a retailer-style product portfolio. Yet, to have wider utility, such a tool would require a graphical user interface and refinement for use with different retailer data structures. Furthermore, while an algorithmic approach may be preferable in terms of scale and repeatability of outcomes, as our work shows, it is not immune to imperfections built in by assumptions (Jenneson *et al.* 2020), which cannot be easily sense-checked by human expertise when applied at scale. Industry nutritionists therefore rightly called for validation of any such tools that are made widely available for use.

Clarification in advance from the UK government around the intended enforcement, responsibilities and associated penalties of proposed legislation are therefore required if nutritionists are to put forward a strong business case for restructuring internal product datasets. Without this, businesses are forced to be reactive rather than proactive in the face of uncertainty. Furthermore, participants expressed concerns about the definitions of 'prime store locations', and what these might mean for small retailers, supporting the views of members of the Association of Convenience Stores (Convenience Store 2019). Further clarity on exemptions in relation to store size is now available in the consultation response (GOV.UK 2020).

Conclusion and recommendations

Industry nutritionists commented on three potential scenarios for the proposed legislation to restrict in-store price- and location-based promotions: (1) implementation of the proposal for which the 2004/2005 UK NPM is the basis, (2) the DHSC (2019) proposal with an update to the UK NPM, taking the draft 2018 NPM as

the legislative basis, (3) the opportunity to rethink the legislative basis of the proposal. Under each of these potential scenarios, data-related challenges to implementation emerged thematically. We acknowledge that the interviewed sample was small and included only representatives from large retail and manufacturing organisations so may not represent the experience of smaller food businesses. Furthermore, food industry nutritionists have a potential interest in opposing the proposed promotional restrictions, to protect business operations. Nevertheless, the views of interviewees can be summarised in the recommendations below.

Under scenario (1), the current proposal, food industry nutritionists called for:

- Imminent publication of the government response to the public consultation.
- Guidance documentation to outline category eligibility for products defined as ‘in scope’.
- Clarity of the legislative framework and plans for enforcement and penalties to inform business data infrastructure design.
- A centralised data system accessible to retailers and enforcers, which enables manufacturers to flag eligibility, NPM score and the score for each NPM criterion.
- A free-to-access government-supported tool to enable automated application of the NPM.

Under scenario (2) using the draft 2018 NPM as the legislative basis, in addition to the above, food industry nutritionists called for:

- Support for redesign of product specification systems to enable calculation of free sugars.
- Greater clarity from government on the free sugars definition.

Under scenario (3) rethinking the legislative basis for the proposal, food industry nutritionists called for as follows:

- Consideration of the unintended consequences to customer choice, ‘healthier’ nudging and reformulation efforts.
- Consideration of product ‘healthiness’ as a spectrum rather than binary classification of ‘healthier’ and ‘less healthy’.
- Alignment with UK dietary recommendations.

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Conflict of interest

Victoria Jenneson and Michelle Morris declare their work in partnership with a national UK retailer.

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