

APPENDIX 1: METHODOLOGY

Sales Analysis

The approach taken by researchers at the University of Oxford is based on a protocol used in peer reviewed published research^{1,2} and is similar to the approach taken by the Access to Nutrition Initiative (ATNI) for their product profile.³

1 Identify top 10 manufacturers using sales data

The top 10 global food and soft drink manufacturers based on sales of packaged food and drinks in the UK were identified based on Euromonitor global sales data for 2022⁴. A list of brands for each manufacturer was produced based on Euromonitor sales data, and this list was verified by checking the company website.

Brands for Cereal Partners Worldwide were reassigned to global brand owner Nestle in this study. The following exclusions were applied: non-food products (e.g. home care and pet food), alcohol and low-alcohol products, tobacco, dried tea and coffee, infant formula, baby food and seasonal products.

In total 241 brands and 5,298 products were included in the analysis.

2 Identify nutrition information using foodDB⁵

The nutrition information for each brand was identified using foodDB, a database of product information collected from 7 retailer websites in May 2022 (Asda, Iceland, Morrisons, Sainsbury's, Tesco, Ocado, Waitrose), which was the most recently available data to researchers. By modifying existing code, products from foodDB were matched to the brands and companies identified in Step 1. Duplicate products were identified and removed based on exact matches for product name and calorie and salt content per 100g.

¹ Bandy L, Hollowell S, Harrington R, et al. (2021) Assessing the healthiness of UK food companies' product portfolios using food sales and nutrient composition data. *PLoS ONE* 16(8): e0254833.

² Bandy L, Jewell J, Luick M. et al. (2023) The development of a method for the global health community to assess the proportion of food and beverage companies' sales that are derived from unhealthy foods. *Global Health* 19,94.

³ ATNI product profile: <https://accessstonutrition.org/index/global-index-2018/product-profile/>

⁴ Euromonitor International. <https://www.euromonitor.com/>

⁵ Harrington R, Adhikari V, Rayner M, et al. (2019) Nutrient composition databases in the age of big data: foodDB, a comprehensive, real-time database infrastructure. *BMJ Open* 9:e026652

3 Applying the UK nutrient profile model

The UK FSA/Ofcom nutrient profile model (NPM)⁶ was applied to each product. Data given per 100ml was assumed to be equal to 100g, which we acknowledge as a limitation. Foods that scored 4 or more and soft drinks that scored 1 or more were classified as high in fat, sugar or salt (HFSS) or 'unhealthy'. Work was done to identify % fruit, nut and vegetable (FNV) content of products in order to apply the NPM thresholds for FNV based on their category. 57 brands could not be matched with any product data. 22 brands (representing 9% of total value sales) were included based on the reasonable assumption that they were obviously either HFSS (ice cream, chocolate confectionery) or not (bottled water). 35 brands (representing 1% of total value sales) were excluded.

4 Identifying brands with multiple product variants

Brand-level sales data, as opposed to individual product-level sales data, was used in this project. It was assumed that the sales of each product variant was equal for brands where matched products were 100% or 0% HFSS (n = 199). Brands with multiple product variants that had different nutrition content (i.e. flavour variants) and different NPM scores were identified. 42 brands were identified - referred to here as 'mixed brands' and went through an additional verification process.

5 Mixed brand verification

Product and brand level data from the 42 mixed brands were shared with Data Scientists at Nesta⁷ to cross check sales weighting using a separate more detailed sales database which includes detailed product-level sales data. This allowed researchers to more accurately calculate what proportion of sales come from HFSS products rather than assuming that all products under the same brand had equal sales. Euromonitor brand names were matched to the products in the more detailed sales database based on the similarity of the product descriptions using a cosine similarity score. Extra manual steps were then added to ensure that the product names matched were from the same brand as the Euromonitor dataset. The final list of matched products were used to collect all remaining products from those brands in the new more detailed dataset. The proportion of sales from HFSS was then recalculated.

A manual comparison between the Euromonitor HFSS sales proportions and the recalculated sales proportions were carried out by the University of Oxford researchers and Data Scientists at Nesta. The total number of products matched to each brand and the proportion of HFSS sales were compared between the original and additional database. Each brand was discussed between the researchers and a decision by consensus whether to use the additional database was made for each brand.

Of the 42 mixed brands, the proportion of HFSS for 26 brands was recalculated using the additional database while 16 remain equally weighted.

6 Calculating proportion of sales

The proportion of each brand and company's sales that are classed as HFSS, as defined by the UK NPM, were calculated.

⁶ Department of Health (2011). Nutrient Profiling Technical Guidance.

⁷ Nesta. The UK's innovation agency for social good. <https://www.nesta.org.uk/about-us/>

Limitations

Densities for each category were not available, and therefore 100ml was assumed to be 100g.

Both the product data from foodDB and the sales data from Euromonitor were from 2022 and therefore will not reflect new product launches, discontinuations or reformulation of products that have taken place since.

While Euromonitor is an internationally recognised database that is used industry-wide, we are not able to independently verify the accuracy of the sales data they provided.

Advertising Analysis

Analysis was undertaken by members of the Bite Back team and reviewed by Nielsen Ad Intel.

- 1** Advertising data was accessed from the Nielsen Ad Intel database⁸ on 27.07.2023.
- 2** The data was downloaded on digital and social media spend covering January 1st to December 31st 2022 of particular food and drink categories of concern to children's diets (based on their inclusion in the UK Government's calorie or sugar reduction programmes⁹ and/ or their contribution to children's sugar intake)¹⁰.
- 3** The data was divided into retailers and manufacturers and analysed by 'Product Category Minor' field in the Nielsen Ad Intel database. This categorisation was done by Bite Back, as Nielsen Ad Intel does not define retailers and manufacturers.
- 4** Advertising spend for brands included in the sales portfolio analysis were identified and grouped for key categories. The contribution of the top 10 businesses' collective advertising spend to total category spend was calculated.
- 5** The data is owned by Nielsen Ad Intel and the report has been checked and approved by their team. Advertising spend is estimated based on Nielsen Ad Intel costing methodologies

Limitations

Advertising spend is reported by category of concern to children's diets. Adverts included may have featured HFSS and non-HFSS products.

⁸ Nielsen Ad Intel. <https://www.nielsen.com>.

⁹ Office for Health Improvement and Disparities. Sugar, salt and calorie reduction and reformulation <https://www.gov.uk/government/collections/sugar-reduction>

¹⁰ Office for Health Improvement and Disparities. National Diet and Nutrition Survey. <https://www.gov.uk/government/collections/national-diet-and-nutrition-survey>

Nielsen Ad Intel does not include Tik Tok, so online advertising spend will be underestimated.

Reformulation Analysis

Research was undertaken by members of the Bite Back team. Data on the top 10 businesses' reformulation progress was collated from the Office for Health Improvement and Disparities 2022 report: Sugar reduction – industry progress 2015 to 2020¹¹.

¹¹ Office for Health Improvement and Disparities (2022). Sugar reduction programme: industry progress 2015 to 2020.
<https://assets.publishing.service.gov.uk/media/6388cd71d3bf7f328coded27/Sugar-reduction-and-reformulation-progress-report-2015-to-2020.pdf>