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Finding the sweet spot

A pragmatic route to free sugars implementation



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Executive summary

Diet-related ill health and obesity are major UK public health and economic challenges, with obesity costing society over £126 billion annually. In January 2026, the UK government published its updated nutrient profiling model (NPM 2018), which will replace total sugars with free sugars as a scoring component and establishes lower sugar thresholds to impose stricter limits on high-sugar foods. Free sugars are sugars that have been added to foods or drinks or released from the structure of fruits and vegetables through processing.

Crucially, the NPM 2018 must be implementable for both current and future public health regulations. Immediate changes to the NPM will first impact existing advertising and promotions restrictions (HFSS regulations) across 13 regulated categories. However, any ongoing debates around the model's implementation should not delay the proposed healthy food standard (HFS), which the NPM will also underpin.

The HFS, which is set to introduce mandatory reporting and healthiness of sales targets for large food businesses, must remain front of mind for policymakers. Evidence shows HFS could drive a ~20% reduction in national obesity prevalence, an impact far exceeding that of other existing obesity policies. To implement NPM 2018 quickly, simplifying free sugars calculations – which are complex and require precise data on ingredient weights, their total sugar content, and the processing levels of fruit and vegetable ingredients – is essential.

Until now, the debate around NPM 2018 has lacked evidence on what the challenges of calculating free sugars actually means for policy implementation and compliance in practice; specifically quantifying the burden on industry, the range of values free sugars calculations could result in given incomplete ingredient data, and by how much that uncertainty in free sugars content alters final NPM scores. By quantifying these calculation challenges and proposing pragmatic simplifications, with public health front of mind, we aim to accelerate government and industry collaboration on effective solutions.

We ran a project at pace using publicly available data on over 11,000 products to quantify calculation challenges and identify scope for pragmatic simplifications. This included developing a Bayesian probabilistic model to quantify likely uncertainty in calculated free sugars values based on known information about a product and

similar products. Our analysis is based on product back-of-pack label data; therefore, we expect our calculated free sugars values to be more uncertain than they may actually be. While recognising the challenges faced by the food industry of obtaining proprietary product and ingredient specifications, many businesses may have access to more detailed data about their products for free sugars calculation than we have had access to.

Our analysis shows the Department of Health and Social Care (DHSC)'s current technical guidance for free sugars implementation represents a significantly resource-intensive approach, requiring detailed ingredient data for up to 73% of products in our dataset. In our dataset, we found that calculating free sugars is not as complex as it can seem, with calculation complexity concentrated in product categories that only minimally contribute to population free sugars intake, such as soups and ready meals. The 10 categories with the highest share of products requiring full free sugars calculation together account for less than 5% of children's free sugar intake. In contrast, for major sugar sources like confectionery, cakes, and sweet biscuits, free sugar levels so far exceed the NPM 2018 maximum score threshold that calculation uncertainties do not alter their NPM scores. For example, if the maximum negative score of 10 points is reached at >9.3g/100g, then whether a product sits at 15g, 20g or 30g/100g free sugars, its final score and HFSS status remain exactly the same.

In our dataset, uncertainty in 'healthier' vs 'less healthy' status, relevant to products covered by the HFSS regulations, affects around 500 products (4%). This represents a much more manageable quantity for businesses to prioritise for detailed data collection compared to a full portfolio, though that proportion will vary depending on portfolio composition. This suggests that requiring precise calculations for every product would be disproportionate when it rarely impacts overall NPM scores or the 'healthier' vs 'less healthy' status for HFSS regulations.

We tested two ways to make free sugars calculation simpler and potentially cheaper, yet still accurate enough for immediate regulatory purposes.

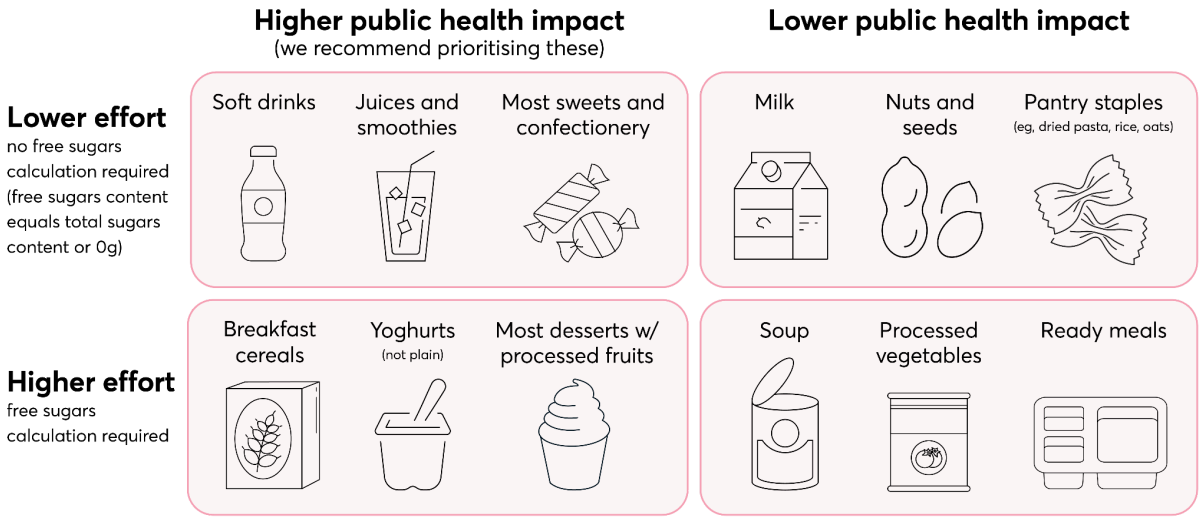
First, making minor revisions to DHSC's October 2026 decision trees could reduce the number of products requiring the most detailed ingredient information (by 50% in our dataset). These revisions include ensuring all decision tree questions can be answered using back-of-pack information only, and ordering them by increasing difficulty so that as many products as possible are triaged based on questions that can easily and immediately be answered without sourcing ingredient-level details.

Second, regulators could set fixed assumptions for the free sugars content of fruit and vegetable ingredients where processing levels are ambiguous or undeclared (as was the case for 89% of products in our dataset containing fruit(s) or vegetable(s) [56% of all products]), instead of requiring product or ingredient specifications to verify processing levels. We show that for fruit and vegetable ingredients that are neither minimally processed (0% free sugars) nor in drinks (100% free sugars), assuming 50% of these fruit or vegetable ingredients' total sugars are free sugars leaves NPM 2018 scores unchanged for 90% of the products, with only 0.5% of total products affected by a shift in 'healthier' vs 'less healthy' status for HFSS regulations. These figures are relative to our main analysis, for which we assessed the likelihood of free sugars release for each fruit and vegetable ingredient of undeclared processing level using all known information about the ingredient, product and similar products. Updating the official guidance to include this assumed percentage would greatly reduce NPM 2018 implementation effort, establish a transparent industry-wide baseline, eliminate incentives to 'game' ingredient names, and potentially simplify auditing to just verifying that standard calculations were applied.

While the simplifications we present will not entirely eliminate the implementation burden of NPM 2018 (as knowing the weight and total sugars content of ingredients relevant to free sugars calculation would still be required), they could together greatly streamline the process. In our analysis, using both simplifications made free sugars calculations easier for 73% of our products.

Resolving any uncertain 'healthier' vs 'less healthy' HFSS classifications for foods of higher public health impact must be the immediate focus. To guide prioritising these higher-impact products for free sugars calculation, we partitioned foods and drinks into four groups based on free sugars calculation effort versus their public health impact. Officially adopting simplifications would ease the free sugars calculation effort for all of these product groups, but would have the greatest benefit for lower-impact, higher-effort categories, crucially preventing them from delaying action on the higher-impact products.

Table 1. Example categories by free sugars calculation effort vs public health impact (via contribution to population free sugars intake)



Our analysis suggests both sides of the free sugars debate make valid points. Free sugars calculation is simple for some product categories, as health advocates argue, and highly complex for others, as manufacturers have evidenced. By introducing targeted simplifications, unnecessary complexity can be eliminated without compromising public health goals.

The immediate focus should be on determining, with certainty, whether products covered by the HFSS regulations are 'healthier' or 'less healthy'. In our analysis that only used publicly available information, free sugars uncertainty boiled down to uncertain 'healthier' vs 'less healthy' statuses for a small proportion of products in our dataset. Then, while the legal framework for HFS is not yet set, we anticipate that for the first year of mandatory reporting, only NPM 2018 scores would need to be reported (sales-weighted averages), and we demonstrate that highly precise free sugars calculation is not always required for accurate NPM 2018 scores. Our analysis shows that we need not and should not wait until we have achieved high precision on everything before we start doing anything.

We hope the simplifications we present help to drive forward conversations on NPM 2018 implementation with public health advocates and the food industry alike. Above all, timely implementation of HFS and its public health benefits is paramount. We must avoid spending years debating technical details that do not meaningfully impact public health, which risks delaying vital action. Agreeing on calculation simplifications offers a pragmatic, evidence-based way forward.

Introduction and background

The NPM 2018: what it is and why it matters

In January 2026, the UK government published its updated nutrient profiling model (NPM 2018). This is a tool for classifying foods and drinks based on their nutritional composition that underpins important regulations for improving dietary health. The 2018 update is required to align the NPM with national nutrition guidelines established following a major government evidence review on carbohydrates published over a decade ago, including free sugars and fibre. As at the time of writing, we await the UK government's response to a consultation on the new NPM, alongside further details on implementation and timelines.

The NPM not only underpins UK regulations on advertising, placement and promotion for less healthy food and drink but it is also a likely candidate metric for the healthy food standard (HFS) outlined in the 10 Year Health Plan. This is a policy that would require large UK food businesses to report on the healthiness of their portfolio sales and achieve sales-weighted targets for increasing sales of healthier food. Nesta modelling suggests the resulting changes to our food environment could help around 3 million people achieve a healthier weight – at least 20% of adults and children – a significantly greater impact than updating the NPM for existing regulations alone and a much greater impact on reducing obesity than is possible under existing regulation.

A major blocker to realising the full potential of the NPM update is the technical challenge posed by the shift to using free sugars (NPM 2018) from total sugars (used in NPM 2004-2005) in the model's calculations. This update significantly changes the nature and quantity of the information needed to calculate a product's NPM score and introduces a level of uncertainty to the process, which needs urgent resolution.

Until now, the debate over the burden of NPM 2018 implementation has lacked empirical data to quantify free sugars calculation difficulty or uncertainty. Recent analysis by Oxford University explored how NPM scores and the healthiness classifications of regulated products would likely shift from NPM 2004-2005 to the 2018 methodology. In this report, we add to the evidence by conducting original analysis to quantify likely free sugars calculation uncertainty using a retailer's food and drink product portfolio. Our intention is to contribute new insights, move debate beyond preconceptions and identify where targeted pragmatic solutions for timely implementation of NPM 2018 can be found. This matters as much for the upcoming

HFS mandatory data reporting (as called for by many food retailers and manufacturers) as it does for existing HFSS regulations. To accelerate implementation, our immediate focus must be building the evidence base to find the right compromises and workarounds, which we believe this present report contributes to.

The remainder of this chapter sets out the background and rationale for our research. It explains how NPM 2018 functions, how switching to free sugars increases implementation complexity and uncertainty relative to the 2004-2005 model, and the trade-offs between technical effort and public health impact. We highlight the data and knowledge gaps surrounding implementation that our research answers and why this matters.

Box 1: How do NPM scores work and how are scores applied for regulation?

NPM scores are based on a product's nutritional composition per 100g. Negative points are awarded for nutrients of concern to health, for example, (free) sugars, saturated fat, salt and calories, using 11 distinct scoring bins for assigning negative points (Table 2a). Negative points are offset by positive beneficial components such as protein, fibre, fruit, vegetables, nuts and, in the updated NPM 2018, seeds (Table 2b). Scores can theoretically range from -20 (most healthy) to +40 (least healthy) in NPM 2018. For HFSS regulations, products falling within one of the 13 regulated categories are deemed 'less healthy' (HFSS) if they score four or more (one for drinks).

Table 2a. Underlying system for nutrient/component scoring of negative points for NPM 2018. Reproduced from NPM 2018 technical guidance, 2026

Points	Energy (kJ per 100g)	Saturated fats (g per 100g)	Free sugars (g per 100g)	Salt (g per 100g)
0	≤ 315	≤ 0.9	≤ 0.9	≤ 0.2
1	> 315	> 0.9	> 0.9	> 0.2
2	> 630	> 1.9	> 1.9	> 0.5
3	> 945	> 2.8	> 2.8	> 0.7
4	> 1,260	> 3.7	> 3.7	> 0.9
5	> 1,575	> 4.7	> 4.6	> 1.1
6	> 1,890	> 5.6	> 5.6	> 1.4
7	> 2,205	> 6.6	> 6.5	> 1.6
8	> 2,520	> 7.5	> 7.4	> 1.8
9	> 2,835	> 8.4	> 8.3	> 2.0
10	> 3,150	> 9.4	> 9.3	> 2.3

Table 2b. Underlying system for nutrient/component scoring of positive points for NPM 2018. Reproduced from NPM 2018 technical guidance, 2026

Points	Protein (g per 100g)	Fruit, vegetable, nuts and seeds (g per 100g)	Fibre (AOAC) (g per 100g)
0	≤ 1.7	≤ 40	≤ 0.6
1	> 1.7	> 40	> 0.6
2	> 3.4	> 60	> 1.2
3	> 5.1	N/A	> 1.8
4	> 6.8	N/A	> 2.4
5	> 8.5	> 80	> 3.0
6	N/A	N/A	> 3.6
7	N/A	N/A	> 4.2
8	N/A	N/A	> 4.8
9	N/A	N/A	> 5.4
10	N/A	N/A	> 6.0

If the UK were to transition from NPM 2004-2005 to NPM 2018 under existing regulation, the new NPM would apply to only 13 HFSS food and drink categories. However, implementing NPM 2018 for mandatory data reporting under the planned HFS would expand a retailer's calculation requirements to all food and drink products, thereby also impacting most branded manufacturers. Binary HFSS thresholds would therefore be replaced with a continuous score to assess incremental progress in improving overall portfolio healthiness. For example, Sainsbury's, Asda and Premier Foods have already published annual sales-weighted average NPM scores. An explanation as to why continuous NPM scoring is needed for HFS can be found in our recently published blog, 'How companies should measure and set targets for the healthiness of their products'.

Box 2: How NPM 2004-2005 and NPM 2018 differ from one another

- **Free sugars replaces total sugars**
  - Aligns the NPM with the Scientific Advisory Committee on Nutrition (SACN)'s 2015 recommendation that free sugars should account for no more than 5% of daily energy intake.
  - Assesses free sugars, rather than total sugars, per 100g.
  - Both models have 11 scoring bins (0 to 10 points), but there are some key differences:
    - **narrower scoring bands:** NPM 2018 reduces the scoring bin width from ~4.5g/100g to ~0.9g/100g per negative point, making the scoring more sensitive to small variations in sugar content
    - **lower entry threshold:** scoring begins at >~0.9g/100g (previously >~4.5g/100g)
    - **lower maximum threshold:** reaches the maximum 10-point cap at >9.3g/100g (previously >45g/100g)
- Increasing the maximum awardable positive points for fibre from 5 to 10, alongside lower entry thresholds to start earning points.
- Awarding positive points to seeds alongside fruits, vegetables and nuts.
- Replacing sodium with a salt count to increase clarity.

What exactly are free sugars and why do they matter?

Put simply, free sugars are sugars that have been added to foods or drinks or released from the structure of fruits and vegetables through processing. The free sugars definition encompasses all added sugars, as well as sugars naturally present in fruits and vegetables that have undergone mechanical disruption or extended heating, such as liquidising, blending, mashing, pressing and crushing. The intrinsic sugars found within dairy, and in whole or largely intact fruits and vegetables, are not counted as free sugars. SACN's November 2026 position statement provides fuller lists of processing methods for fruits and vegetables that result vs do not result in free sugars release.

There is a clear public health recommendation from SACN's 2015 Carbohydrates and Health report that population intakes of free sugars should be reduced to no more than 5% of energy intake. It concluded that eating less free sugars will lower the risk of tooth decay, excess calorie consumption and obesity. Currently, 81% of UK adults and 91% of children exceed the recommended limits for free sugars intake. Average daily intakes account for around 10% of total energy. Girls aged 11 and 18 recorded the highest intake level, at 12% of energy.

How does shifting to free sugars create implementation challenges for NPM 2018 compared to NPM 2004-2005?

For NPM 2004-2005, calculating a score requires looking up total sugars per 100g. That figure is already available on the back-of-pack nutrition declarations, is available through standardised UK nutrition databases, and can be measured with laboratory testing when greater precision is needed. Company nutritionists therefore already possess, in most cases, the information needed to calculate NPM 2004-2005 scores.

Free sugars are a different proposition. Calculating them for each product requires three key pieces of information:

1. Which ingredients contain, or are likely to contain, free sugars.
2. How much free sugars each of those ingredients contributes.
3. For any fruit and vegetable ingredient, how extensively its cellular structure has been broken down through processing.

Unlike total sugars, free sugars are not declared on nutrition labels and there is no standardised laboratory test for measuring them directly. The UK's Composition of Foods Integrated Dataset (CoFID) offers ingredient-level nutrition data, but no free sugar values. The information therefore must be pieced together from product labels, incomplete databases, product specifications and recipes. To guide this process, the Department of Health and Social Care (DHSC) provides official technical guidance, including step-by-step decision trees to determine free sugars calculation requirements. The technical guidance outlines how companies should identify specific free sugars ingredients, determine their precise weights and assess the manufacturing processing levels of fruit and vegetable components to calculate a final free sugars value.

The effort involved varies considerably across categories. Composite foods, particularly those containing fruit and vegetable ingredients, are hardest. At the other end of the spectrum, soft drinks, table sugar, or zero sugar items require no free sugars calculation, as their free sugars content simply equals their total sugars content or is 0g. Complexity is highest when free sugars calculations require undeclared information about ingredient weights and/or processing information. Industry stakeholders have highlighted these complex cases as a primary source of scoring uncertainty.

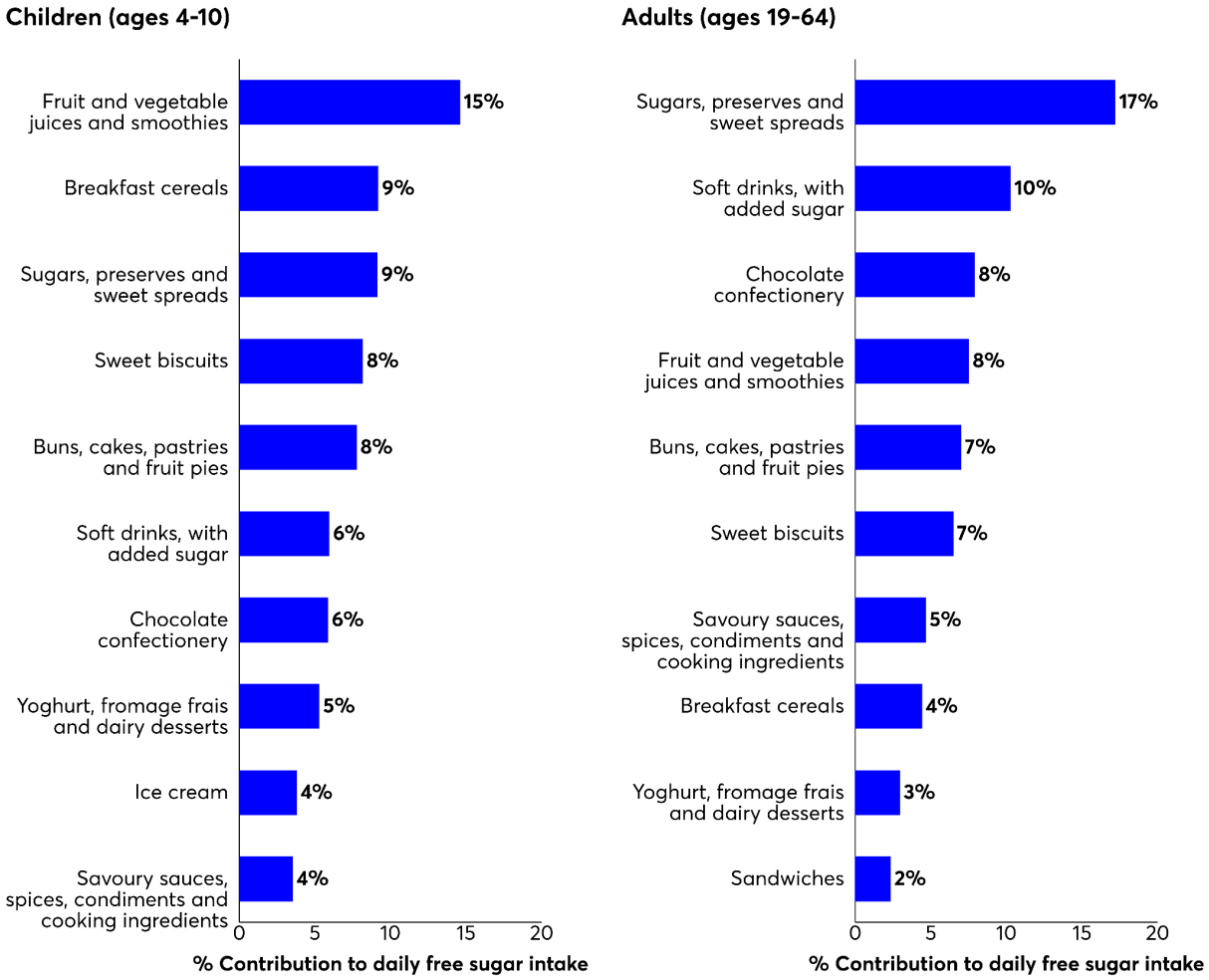
How difficult free sugars calculations will be at scale is less clear. The challenge is not merely obtaining data, but establishing data collection and calculation processes that result in sufficiently precise and consistent information to produce a reliable free sugars value, and ultimately, an NPM score with sufficient certainty for policy purposes. The key challenges are:

- While there is a general understanding that there will be some variability in free sugars values – because of estimation errors and inherent ingredient and product variability – there is a lack of data to quantify this uncertainty and the scale of its potential impact on policy.
- There are no readily available tools or methods for estimating accurate free sugars values without access to full product and ingredient specifications. This makes calculations hard for those who are missing critical information, such as government, research and non-governmental organisations, and companies who do not have immediate visibility of information across ingredients, products and manufacturing processes in their wider supply chain.

Focus action where public health impact is set to be greatest

Irrespective of the challenges, uncertainty over small calculation discrepancies in minor ingredients should not be allowed to delay the implementation of impactful policies, including HFS, and we believe pursuing absolute precision at scale should not be the goal if the result were to be continued delay in the rollout of NPM 2018. To implement NPM 2018 quickly, we must focus our efforts on the food categories known to contribute most to free sugars intake. Requiring a uniformly high level of precision across an entire retail portfolio will inevitably delay progress. National Diet and Nutrition Survey (NDNS) data show that UK population free sugars intake is concentrated in a small number of food categories, mainly soft drinks, confectionery and sweet bakery (Figure 1). While we recognise that the commercial impacts of updating the NPM may affect some companies more than others, we should act quickly to resolve implementation in these high-impact categories instead of allowing difficulties in low-impact categories, such as savoury sauces and ready meals, to disrupt progress for relatively little public health gain.

Top contributors to free sugars intake in the general population



Source: National Diet and Nutrition Survey 2019 to 2023 and Nesta analysis

Figure 1. Food and drink categories contributing most to UK free sugars intake. All percentage values rounded to the nearest integer.

What we did and why

Aims of the research

The debate over free sugars calculation threatens to delay NPM 2018 implementation and, with it, the introduction of HFS and the huge public health benefits it is set to bring. We recognise that, overall, free sugar calculations are neither trivially easy nor impossibly hard, and this varies significantly across products.

We set out to generate evidence on the uncertainty that exists in free sugars calculations and how that may impact NPM scoring, and investigate whether there could be options for simplifying free sugars calculations without a negative impact on public health.

To do this, we aimed to address three practical questions:

1. What is the scale of products that are likely to require more complex free sugars calculations? What is the scale of likely complexity in calculating free sugars across different grocery retail food and drink categories, and where are difficulties concentrated?

2. How do the ranges of free sugars estimates vary across different categories? For free sugars scores to stand up to legal scrutiny, they need to be certain within agreed margins. Where data is available, are free sugars estimated ranges acceptably low? When full manufacturer product or ingredient specifications are unavailable, how accurately can a product's free sugars content be estimated using publicly available data alone?

3. What do estimated free sugar calculations mean for NPM 2018 scores, and does free sugars calculation uncertainty change a product's HFSS status for regulation? When a product's free sugars content is uncertain, how does that uncertainty carry over to the product's NPM 2018 score, and how often does the NPM 2018 uncertainty range straddle the threshold used in HFSS legislation (4 for food and 1 for drink) for 'healthier' vs 'less healthy' classification?

Why use back-of-pack labels

Our goal was to test what it takes to implement NPM 2018 at scale using real-world data. In an ideal world, we would use manufacturer specification sheets for each product and ingredient to do this. However, this was unfeasible for us as product specification sheets are proprietary, commercially sensitive and not publicly available, precluding analysis at scale.

Additionally, comprehensive product and ingredient specification datasets are not consistently available across the sector. Specifications are frequently held in systems that are not integrated with internal, unified nutrition reporting databases. Back-of-pack label data therefore represents the single universal, 'lowest common denominator' data accessible to every business, regulator and auditor. Using back-of-pack data allowed us to test how far standard product labels can support free sugars calculations under the government's technical guidance. This helped us identify where back-of-pack data could reliably be used as a pragmatic alternative to full product and ingredient specifications, and where it would fall short.

Our primary datasets

We based our analysis on a primary dataset of UK retail food and drink products supplemented by an official food composition table.

1. Product dataset

Food and drink product data scraped from a major UK supermarket website in July 2026. While this sample of products does not represent the entire retail sector, it provided a volume of products across categories sufficient for our analytical purposes. This dataset includes mandatory nutrition composition per 100g/ml, full ingredient text lists, declared ingredient percentages (where disclosed) and information about the product, including product description, product/brand name and category/aisle classification. Non-food items, infant foods, alcohol, dietary supplements, foods requiring reconstitution and items missing an ingredient list or with mathematically implausible nutrition composition values were excluded.

2. Food composition table

For both the purposes of free sugars calculation and ingredient weights estimation, we needed to look up the nutritional composition of each ingredient in our dataset.

The UK food composition table (McCance and Widdowson's The Composition of Foods Integrated Dataset) was previously found to not accurately report product variability. Capturing the variability in the total sugars content of ingredients was essential for our analytical purpose in determining uncertainty ranges. We therefore chose to use the French food composition table (Ciqual), as it presents minimum and maximum values of nutrient values observed across multiple data sources (spanning Ciqual-commissioned laboratory analyses, label data, industry analyses and the scientific literature). Ciqual is also one of the most comprehensive food composition tables in Europe, comprising over 3,000 entries.

Overview of our analytical approach

This section provides a summary of key analytical steps and reasoning. A companion technical report with full details of our methods, statistical model and assumptions will be published separately in late 2026.

Clean and structure the ingredient data

We cleaned, standardised and classified our ingredient data, retaining declared processing terms and quantitative ingredient declarations (QUID), and consolidated variations in ingredients names. This left around 6,000 unique ingredients. We also captured the relationships between parent and child sub-ingredients in compound ingredients (for example, chocolate containing sugar and cocoa butter) by constructing an ingredient 'tree' from each list. We subsequently tagged each ingredient if it belonged to categories relevant to free sugars and/or NPM 2018 calculation as defined by the government's technical guidance. In summary, these were: dairy ingredients, added sugars ingredients (including lactose, hydrolysed lactose, galactose and sugars in whey powder added as ingredients), fruit and vegetable ingredients, and nut and seed ingredients.

Chocolate-flavoured breakfast cereal

Worked example 1: Simplified step-by-step illustration of our methodology, showing how it used back-of-pack information to calculate free sugars content and the NPM 2018 score for a product. In this example, all ingredient weights had to be estimated using our statistical model, as none were declared on back-of-pack. Note: this example is illustrative only and should not be treated as a formal calculation for any specific product.

Clean and structure ingredient data

- **Classify ingredients:** out of 16 ingredients, 3 are added sugars, 0 are fruit or vegetable, 0 are dairy and 0 are nut or seed. 13 are 'other'.
- **List all possible sources of free sugars:** sugar, glucose syrup, barley malt extract.
- **Assess likelihood that fruit and vegetable ingredients release free sugars:** not applicable in this product as no fruit and vegetable ingredient is present.

1

Estimate ingredients weight

- **Count declared ingredient weights on label:** Provided for 0 of the 16 ingredients. All ingredient weights are therefore estimated.
- **Look up ingredient-level nutrition values in food composition database.**
- **Model different feasible recipes of ingredient weights (central estimates of weights per 100g of product shown here):** rice (74%), sugar (13%), glucose syrup (6%), fat reduced cocoa (4%), salt (1%), cocoa mass (1%), barley malt extract (1%), flavourings, niacin, iron, vitamins B6, B12, D, riboflavin, thiamin, folic acid (all trace amounts).

2

Calculate product-level free sugars content

- **Calculate free sugars content (g/100g) using the ingredient weights and nutrition values, and applying feasibility rules*:** 16.8g/100g (95% uncertainty interval 14.1g - 17.0g/100g).

**Using declared total sugars, ingredient order, and their maximum possible sugar content.*

3

Back-of-pack ingredient list and nutrition composition table

Chocolate-flavoured breakfast cereal.

INGREDIENTS: RICE, SUGAR, GLUCOSE SYRUP, FAT REDUCED COCOA POWDER, SALT, COCOA MASS, BARLEY MALT EXTRACT, FLAVOURINGS, NIACIN, IRON, VITAMIN B6, RIBOFLAVIN, THIAMIN, FOLIC ACID, VITAMIN D, VITAMIN B12

NUTRITION	
TYPICAL VALUES	**PER 100g**
Energy	1636 kJ / 391 kcal
Fat	1.9g
of which saturates	0.9g
Carbohydrate	84.0g
of which sugars	17.0g
Fibre	3.8g
Protein	6.3g
Salt	0.7g

Calculate NPM 2018 score and assess 'healthier' vs 'less healthy' status where applicable

- **Calculate NPM 2018 free sugar points using the lower and upper bounds of the feasible range of free sugars:** (14.1g and 17.0g/100g).
- **NPM 2018 score:** 11 for both ends of the range. Greater than 4, so deemed as 'less healthy' under current HFSS regulation.
- **NPM 2004/05 score:** 3. Less than 4, so deemed 'healthier' under current regulation.

4

Determine whether the sugars of fruit and vegetable ingredients are free

For fruit and vegetable ingredients, their sugars are treated as free sugars when their cellular structure is sufficiently broken down. For example, the total sugars in fruits and vegetables that have been blended or juiced are treated as free sugars, whereas they are treated as not free sugars in whole or chopped fruits and vegetables. To identify an ingredient's processing level, we used the processing terms declared on the back-of-pack label wherever they were present. Where no term was given (around half of fruit and vegetable ingredients), we assigned a probability that the fruit or vegetable ingredient was sufficiently processed to release free sugars, using all known information about the ingredient, the product it is contained in and similar products. For example, for drinks, the probability that a fruit or vegetable ingredient was sufficiently processed to release free sugars is high. The sugars of a fruit and vegetable ingredient were then flagged as free, not free, or uncertain depending on processing probability.

Look up ingredient nutrition composition

Ingredients were matched to the French food composition table (Ciqual). Where no match was available, an approximation using similar ingredients within Ciqual was used.

Estimate ingredient weights

For ingredients without a weight (a 'QUID') declared on back-of-pack labels, we developed a statistical model to estimate their weights within any given product, bringing together all available data, legislative rules and known policy and nutritional context.

Under UK labelling laws, which derive their rules on ingredient ordering and QUIDs from assimilated EU legislation, there is no requirement to declare weights for every ingredient, but two rules offer hints about the product's ingredient composition. First, ingredients must be listed in descending order of weight (though anything below 2% can be placed at the end in any order). Second, where an ingredient is emphasised in the product name or packaging, its percentage weight contribution must be declared. We also drew on the products' nutrition composition values: because they represent the sum of the nutrition composition of their constituent ingredients, they can be used to infer the contributions of the individual ingredients within the product.

Taken together, these provide clues, but not a full picture. While an informed guess could be made based on these clues, any fixed estimates would lend false precision to our findings.

This context led to us adopting a Bayesian statistical modelling approach. For each product, we simulated thousands of plausible recipes and weighted each by how well it agrees with everything we know about the product: the legally mandated descending order of ingredients, declared ingredient weights, data from similar products and both ingredient- and product-level nutrition (energy, fats, carbohydrates, total sugars, fibre, protein and salt). This produces a probability distribution of ingredient weights, providing the most likely picture of the product's potential composition. A benefit of using this methodology is that we could reflect two main sources of uncertainty in our estimates: the complexities in calculation that may exist for a specific product as well as any lack of data.

We then used the ingredients' plausible ranges of weights and sugars content, the product's declared total sugars and our free vs non-free sugars judgements to derive 95% uncertainty intervals (95% UI) and central estimates of free and non-free sugars content for each product. Where the implied total sugar in a product from the ingredients and the product label disagree, we scale the free sugars proportionally so that the totals match.

Chunky vegetable pasta sauce

Worked example 2a: A product where the processing levels of most of its vegetable ingredients are not declared on the back-of-pack label and are ambiguous. For each vegetable ingredient of undeclared processing, the probability of it being sufficiently processed to release free sugars was assigned using all back-of-pack information available about the ingredient, the product, and that of similar products. Note: this example is illustrative only and should not be treated as a formal calculation for any specific product.

Clean and structure ingredient data

- **Classify ingredients:** out of 17 ingredients, 1 is added sugars, 9 are fruit or vegetable, 0 are dairy and 0 are nut or seed. 7 are 'other'.
- **List all possible sources of free sugars:** tomatoes, tomato purée, yellow peppers, red peppers, courgette, sugar, onions, onion powder, garlic purée, parsley.
- **Assess likelihood that fruit and vegetable ingredients release free sugars:** likely to release free sugars: tomatoes, tomato puree, onion powder, garlic puree; unlikely to release free sugars: yellow peppers, red peppers, courgette, parsley; unsure: onions.

1

Estimate ingredients weight

- **Count declared ingredient weights on label:** Provided for 5 of the 17 ingredients: (tomatoes, tomato purée, yellow peppers, red peppers, courgette). All other ingredient weights were therefore estimated.
- **Look up ingredient-level nutrition values in food composition database.**
- **Model different feasible recipes of ingredient weights (central estimates of weights per 100g of product shown here):** tomatoes (57%), water (14%), tomato purée (11%), yellow peppers (4%), red peppers (3%), courgette (3%), sugar (2%), all remaining ingredients (≤1%).

2

Calculate product-level free sugars content

- **Calculate free sugars content (g/100g) using the ingredient weights and nutrition values, and applying feasibility rules*:** 4.7g/100g (95% uncertainty interval 1.4g - 5.5g/100g).

**Using declared total sugars, ingredient order, and their maximum possible sugar content.*

3

Back-of-pack ingredient list and nutrition composition table

Chunky vegetable pasta sauce.

INGREDIENTS: TOMATOES (57%), WATER, TOMATO PURÉE (11%), YELLOW PEPPERS (4%), RED PEPPERS (3%), COURGETTE (3%), SUGAR, MODIFIED MAIZE STARCH, ONIONS, SALT, ACIDITY REGULATOR: CITRIC ACID; ONION POWDER, RAPESEED OIL, GARLIC PURÉE, PARSLEY.

NUTRITION	
TYPICAL VALUES	**PER 100g**
Energy	177 kJ / 42 kcal
Fat	0.6g
of which saturates	0.1g
Carbohydrate	7.6g
of which sugars	5.5g
Fibre	0.6g
Protein	1.2g
Salt	0.7g

Calculate NPM 2018 score and assess 'healthier' vs 'less healthy' status where applicable

- **Calculate NPM 2018 free sugar points using the lower and upper bounds of the feasible range of free sugars:** (1.4g and 5.5g/100g).
- **NPM 2018 score:** ranges from -2 to 2. Less than 4, so deemed as 'healthier ' under current HFSS regulation.
- **NPM 2004/05 score:** -2. Less than 4, so deemed 'healthier' under current regulation.

4

Completing the picture with NPM 2018 scoring and mapping how scoring certainty impacts regulatory HFSS classification

To calculate NPM 2018 scores in line with DHSC guidance, we combined the free sugars estimates with the mandatory back-of-pack data provided for product calories, saturated fat, salt, protein and fibre alongside estimated percentages for fruit and vegetables and nuts and seeds based on ingredient weights. Any missing fibre information was jointly estimated by our Bayesian probabilistic model alongside free sugars, based on known information about the product and similar products. For the purpose of NPM scoring, where nutrient values were reported as 'less than' on the label, we assumed the most conservative case, eg, treats '<0.5g' as 0.5g. This would mean an affected product was more likely to be deemed 'less healthy' than if its actual, undisclosed nutrient value was lower. This primarily affected salt, where NPM scoring (on both 2004-5 and 2018 versions) starts from 0.2g/100g. We used the raw NPM 2018 scale, ie, which can theoretically range from -20 (healthiest) to +40 (least healthy), throughout our analyses.

As discussed previously, the narrower sugar scoring bins in NPM 2018 mean that even minor uncertainties in free sugars estimates could push a product into a different scoring bin. To account for this, we used each product's lower and upper free sugars estimate (from its 95% uncertainty interval) in the NPM 2018 calculation to see whether, and if so how, any uncertainty in free sugars calculation translated into uncertainty in its NPM 2018 score. We then compared these NPM 2018 score ranges to the legal HFSS thresholds (≥4 for food, ≥1 for drink) to identify cases where uncertainty in a product's NPM 2018 score translated into ambiguity in its HFSS status. We conducted our analyses for both our overall dataset and for the 13 product categories covered by the HFSS regulations. We also mapped our results to the contribution of broad categories to the UK population's free sugars intake, as reported in the latest (2019 to 2023) National Diet and Nutrition Survey report.

We report unweighted NPM 2018 scores as our product dataset was not linked to sales data. Further work will be required to understand the impact of free sugars calculations on sales-weighted average NPM 2018 scores of business portfolios, relevant for HFS.

How confident are we in our modelling?

The very driver behind our analysis – the lack of publicly available data on ingredients and free sugars values – makes it challenging to validate our results. However, given the vast array of information we were able to bring together and our statistical modelling choices, we believe our approach provides a statistically sound baseline that can identify genuine calculation uncertainty without relying on proprietary recipes.

We took steps to validate our work: our data preparation, assumptions made and modelling was reviewed by nutritionists and an independent Bayesian modelling expert. A sample of products was checked against their original labels, and we conducted human reviews across modelling stages, particularly where we used artificial intelligence (AI) tools to assist in rapidly scaling up data preparation and classifications.

As noted, our analysis was based on one retailer's portfolio and so specific results may differ across retailers or the retail sector as a whole. However, we believe that the volume of products that we analysed provided a sufficient basis for identifying key sources of uncertainty in free sugars estimates and NPM 2018 scores for products in the retailer sector and contributes valuable evidence to the free sugars calculation challenge.

Findings

Box 3. Interpreting these findings

These findings are an empirical assessment of the practical implementation of free sugars calculations for NPM 2018 based on a single dataset. They should not be treated as a detailed audit of individual product recipes, their free sugars calculations nor their NPM scores. Every free sugars calculation here represents an estimation rather than an absolute, immutable or binding value.

We encourage readers to evaluate these findings through a pragmatic and policy-focused lens. The value lies in the broad view across a retailer portfolio that this analysis provides, and its mapping to public health impact.

Quantifying the challenge of implementing free sugars

Free sugars calculation appears to be resource intensive. According to DHSC's October 2026 decision trees, extensive ingredient-level data sourcing would be required for around three-quarters of products.

The decision trees in DHSC's technical guidance (as published in October 2026) help assess whether any free sugars calculation is required or the value can be assumed to be equal to either 0g or total sugars content (Figure 7a on page 37; Figures A1 and A2 in general appendix). In our full dataset (n ≈ 11,100), following DHSC's October 2026 decision trees would triage 8,200 (73%) of our products into requiring calculation (Figure 2), which would mean obtaining (and accurately interpreting) data for close to 43,000 ingredient instances that could contain free sugars. Issues with sharing, integrating, and/or interpreting ingredient data have previously been reported, making NPM 2018 implementation seem particularly resource intensive.

In the subset of products that belong to one of the 13 categories covered by the HFSS regulations (n ≈ 4,700), DHSC's October 2026 decision trees paint an even more challenging picture, with the share of products triaged into requiring a full sugars calculation rising to almost 90%. An exception is the soft drinks category, where only drinks containing dairy would require free sugars calculation (Figure 3).

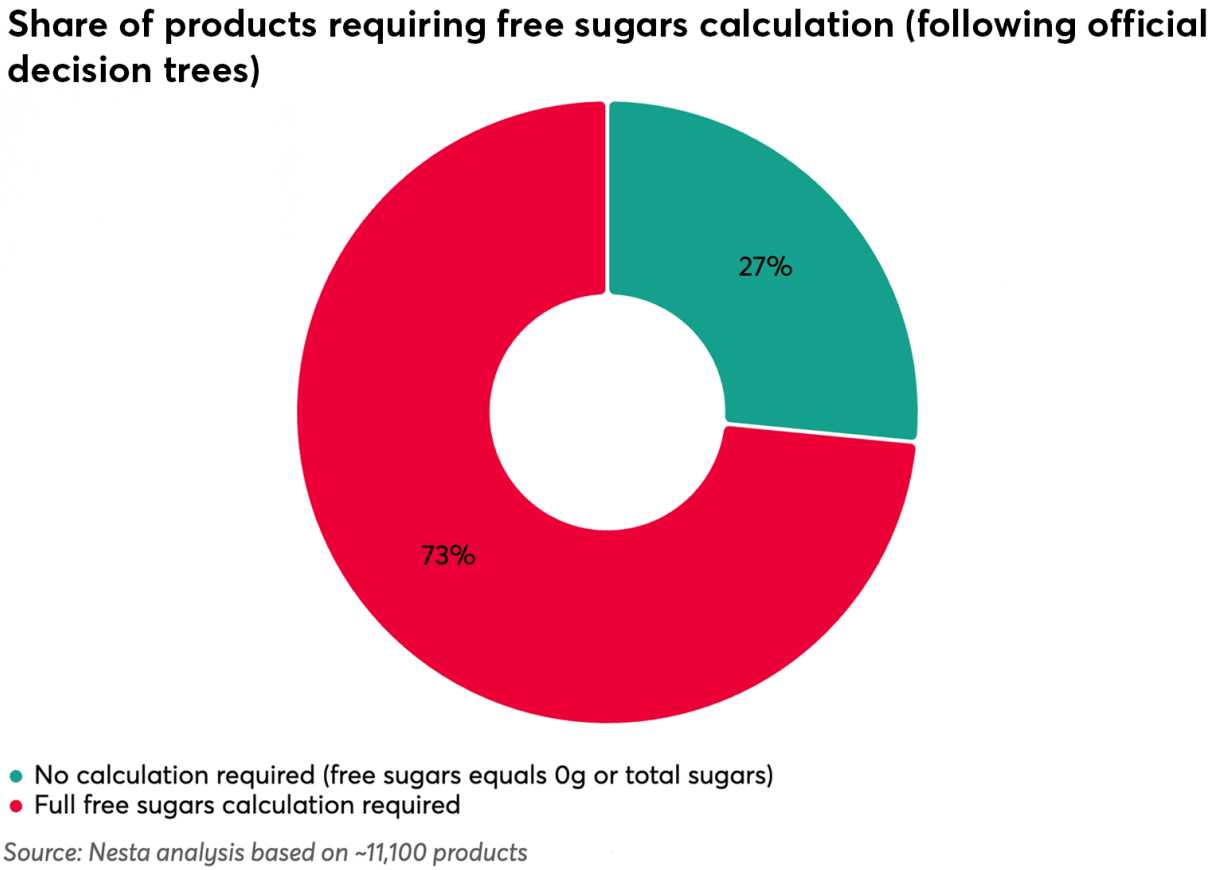


Figure 2. According to DHSC's October 2026 decision tree diagrams for food and drinks, free sugars calculations would be required for the majority of products, making NPM 2018 implementation seem more resource intensive than it might actually be.

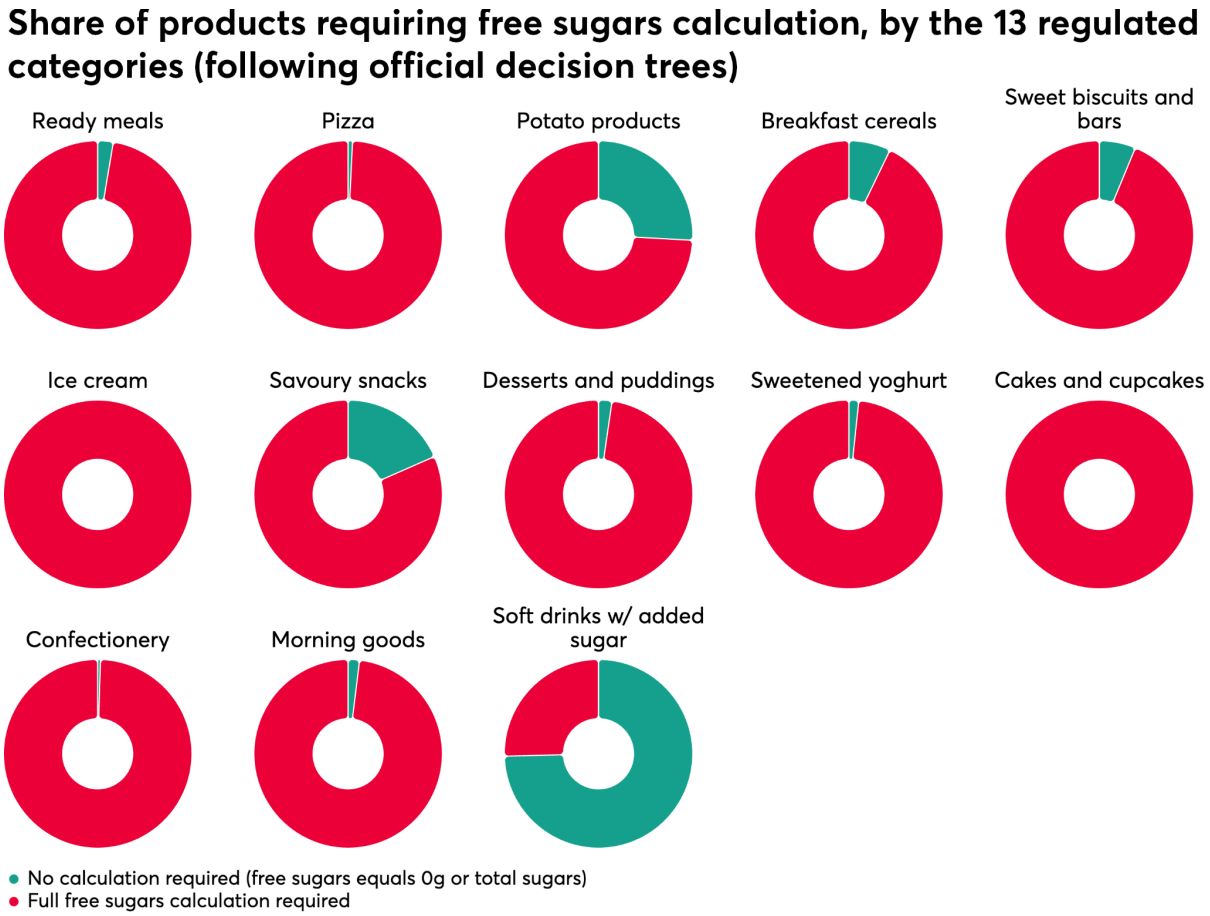


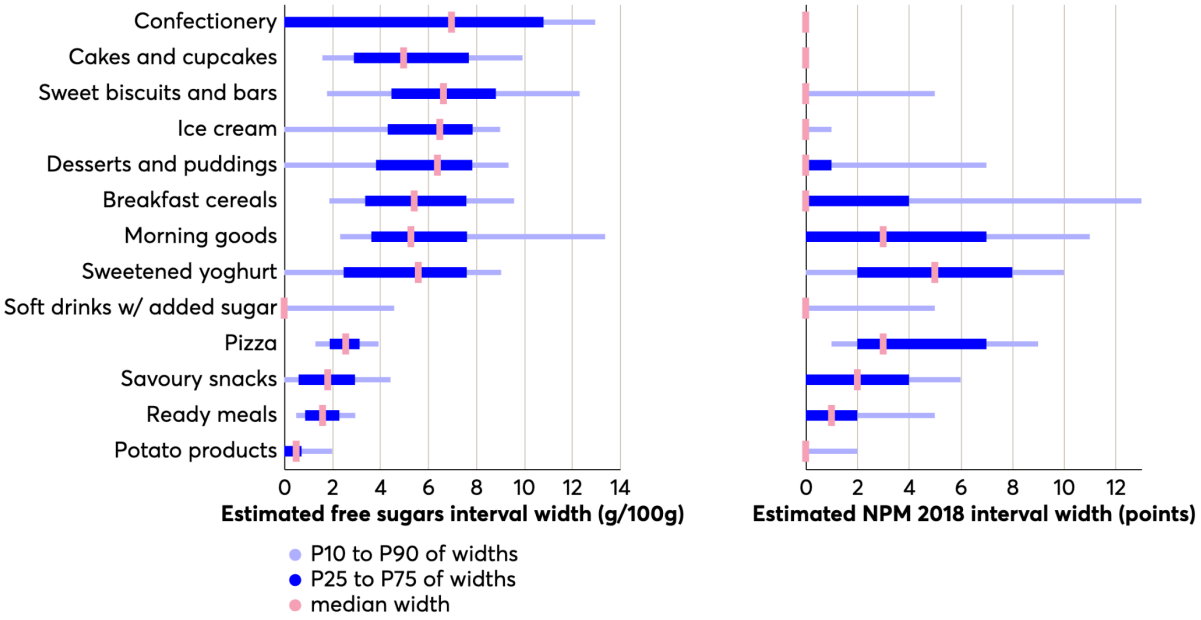
Figure 3. DHSC's October 2026 decision trees also make NPM 2018 implementation seem particularly resource intensive for the 13 categories covered by the HFSS regulations.

Without product specifications, free sugars estimates are uncertain. Back-of-pack labels do not always provide sufficient data for precise free sugars calculations, but high precision is not necessarily required for all NPM 2018 or 'healthier' vs 'less healthy' status assessments.

Relying on information from back-of-pack labels, our free sugars estimates were often a range rather than a precise value, meaning there was uncertainty in a product's free sugars content. This varied between the 13 regulated categories (Figure 4, Table A1 in general appendix). For example, there was typically no uncertainty in our free sugars estimates for soft drinks (where free sugars simply equal total sugars for

products without dairy), and there was smaller overall uncertainty with products containing lower sugars, such as potato products. In contrast, our analysis produced much wider uncertainty intervals for products in the confectionery category, particularly where ingredients containing sugars lacked product weight information.

Estimated uncertainty of free ugars content (left) and NPM 2018 score (right) by the 13 regulated categories



Source: Nesta analysis based on ~4,700 products

Figure 4. Uncertainty in free sugars calculations did not always translate into uncertainty in NPM 2018 scoring. Products high in free sugars, such as confectionery and cakes, received the same nutrient profile score regardless of that uncertainty, because even at the lower end of their feasible estimates, their free sugars content was high enough to leave no doubt of them scoring the maximum points for free sugars (seen in the right-hand side chart as an estimated 0 NPM 2018 interval width). (Further detail in Box 4).

How to read this figure: the P10-P90 percentile range shows where the middle 80% of our estimates for free sugars / NPM score lie (using each product's 95% uncertainty interval width). We excluded the highest and lowest 10% so that the most unusual or outlier recipes did not distort the overall picture. Similarly, the P25-75 range shows the middle 50% of estimates. A wider percentile range means that category includes more products where we are less certain about the product's true value.

In our analysis, we generally observed that products with the following characteristics often resulted in wide uncertainty intervals in free sugars estimates (g/100g):

- containing a mixture of free and non-free sugars, ie, the product's free sugars content is not simply 0g or equal to total sugars content
- a high free sugars content
- unknown ingredient weights
- for products containing fruit or vegetable ingredient(s): unknown and/or ambiguous processing level of the fruit or vegetable ingredient(s)

Note that as our analysis relied on publicly available information, we had access to less information on ingredient weights and processing levels than food businesses may be able to access from available product specifications. We discuss issues related to specification access and proprietary information in Box 5.

However, depending on whether free sugars ranges fell within the NPM 2018 scoring region where negative points for free sugars could change (ie, between 0.9g and 9.3g/100g), uncertainty in free sugars calculation did not necessarily translate into uncertainty in NPM 2018 scoring (Figure 4, Table A2 in general appendix). For example, a product with a free sugars value that could range from 20g to 30g/100g would always score 10 negative points for free sugars (further explanations in Box 4).

Our research was predominantly focused on free sugars uncertainty. As such, we present our results using central estimates for imputed fibre values and for fruit, vegetables, nuts and seeds. In the sensitivity analysis, incorporating uncertainty from fibre and fruit, vegetables, nuts and seeds estimates increased total uncertainty in NPM 2018 scores most notably for the confectionery; cakes and cupcakes; ice cream; and sweetened yoghurts categories (Table A3 in general appendix).

Box 4: How free sugars content affects how sugars uncertainty carries over to NPM 2018 scoring uncertainty

In the NPM 2018, a product's free sugars content per 100g is scored using 10 distinct ~0.9g-wide scoring bins, ranging from 0.9g to 9.3g/100g (Table 2 in Box 1). This means that in addition to the *width of* the free sugars uncertainty intervals, the *location* of the free sugars uncertainty intervals also matters for how much of the uncertainty propagates to NPM 2018 scoring.

- High content: free sugars uncertainty intervals well above 9.3g/100g. However wide the free sugars uncertainty interval is, as long as its lower bound was still above 9.3g/100g, the product would invariably score 10 negative points for free sugars for the NPM 2018 calculation. In this scenario, uncertainty in free sugars collapses to result in a precise NPM 2018 score. This was often the case in high free sugars products, such as confectionery and cakes (Figure 5, Table A4 in general appendix).
- Very low content: free sugars uncertainty intervals well below 0.9g/100g: similarly, any uncertainty in free sugars where the upper bound of the uncertainty interval was still below ~0.9g/100g would score 0 negative points for free sugars, resulting in a precise NPM 2018 score. This would occur in products very low in free sugars, such as potato products (Figure 5, Table A4 in general appendix).
- Moderate content: free sugars uncertainty intervals between 0.9g and 9.3g/100g: in contrast, free sugars uncertainty was less forgiving when its interval crossed multiple negative scoring brackets, making even small free sugars uncertainty intervals result in wide NPM 2018 uncertainty intervals. Since the free sugars scoring bins are only ~0.9g wide, even being uncertain by a few grams could make free sugars ranges span multiple scoring bins. This was often the case in categories such as morning goods, ready meals and, most noticeably, pizza, where a small amount of uncertainty in free sugars estimates translated into wide NPM 2018 ranges in our analysis (Figure 4).

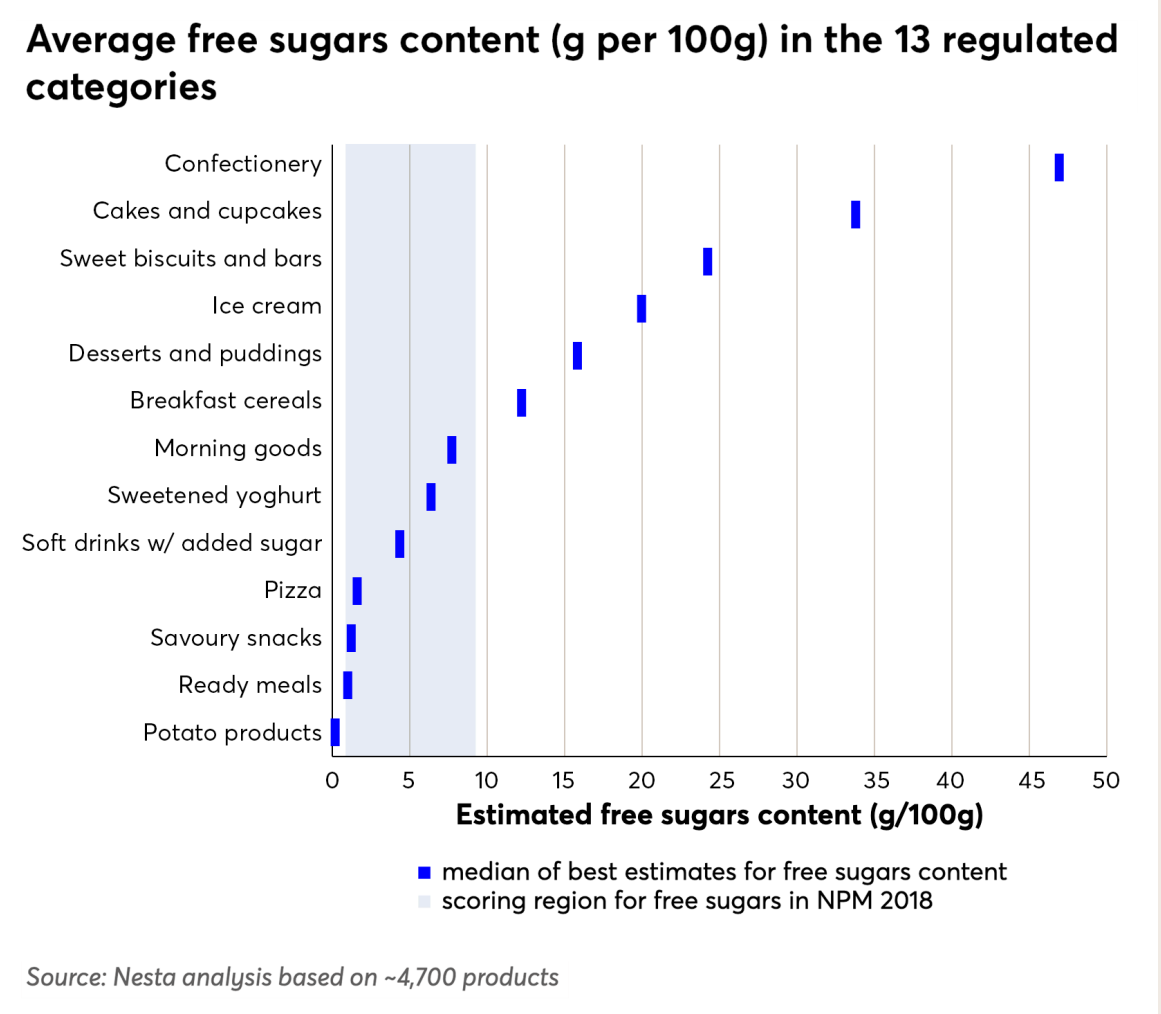


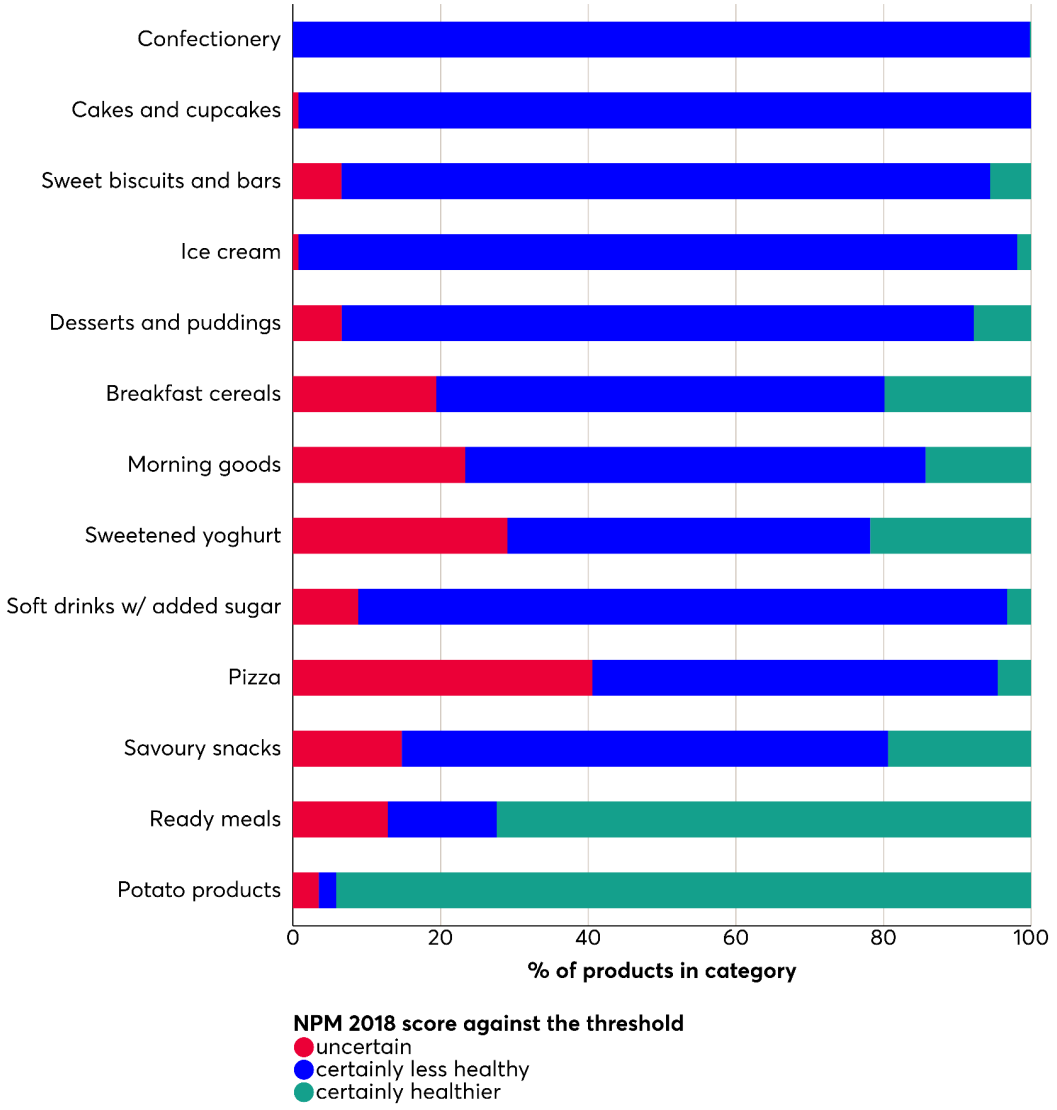
Figure 5. For the purpose of NPM 2018 scoring, uncertainty in free sugars calculation really only matters for products with a free sugars content likely to fall between 0.9g and 9.3g per 100g (light blue-shaded area). If a product's likely free sugars content is well below 0.9g or well above 9.3g per 100g, even large uncertainties collapse and have no effect on its free sugars score, since it will always receive 0 or 10 negative points.

Likewise, among the 13 regulated categories, depending on how close or far a product's NPM 2018 score was to the HFSS thresholds (≥4 for food, ≥1 for drink), uncertainty in NPM 2018 score did not always translate into uncertainty in 'healthier' vs 'less healthy' status. For example, the widths of the uncertainty intervals in NPM 2018 observed in the dessert and sweetened yoghurts categories were similar (Figure 4). However, the proportion of sweetened yoghurts with an uncertain 'healthier' vs

'less healthy' status was over four times larger than that of desserts and puddings (Figure 6). This is because sweetened yoghurts tended to have NPM 2018 scores closer to their respective HFSS thresholds (≥1 for drinking yoghurts, ≥4 otherwise) than desserts and puddings (which typically had less healthy NPM 2018 scores), making it more likely for the uncertainty intervals in sweetened yoghurts' NPM 2018 scores to straddle their HFSS thresholds.

Among the products in our dataset belonging to any of the 13 regulated categories (n ≈ 4,700), 10% had an NPM 2018 uncertainty interval that straddled the HFSS thresholds (Figure 6, Table A5 in general appendix). These represented just 4% of our full dataset. These overall proportions remained similar in a sensitivity analysis where the uncertainty associated with estimating fruits, vegetables, nuts and seeds, and imputing missing fibre content values, was fully accounted for (instead of using their most likely values to isolate the effect of free sugars calculation uncertainty) (Table A6 in general appendix).

Share of products by certainty in 'healthier ' vs 'less healthy' status



Source: Nesta analysis based on ~4,700 products

Figure 6. Among the 13 regulated categories, ranges in free sugars estimates resulted in uncertain 'healthier' vs 'less healthy' status for only 10% of the products.

Box 5. Protecting proprietary information (trade secrets) in free sugars calculations

Free sugars calculation requires knowing the weight, processing level (for fruit or vegetable ingredients) and total sugars content of free sugars-bearing ingredients. Manufacturers would hold most available information about their manufacturing process and the ingredients they procure, but there are challenges around immediate visibility into ingredient specifications (eg, 'spec-in-spec' challenges) and concerns around commercial sensitivities preventing ingredient/end product manufacturers from sharing the data required upstream or downstream for third-party calculations. Businesses in the out-of-home sector may face unique challenges in accessing specification sheets for product sub-components.

We believe that free sugars calculation would not necessarily require manufacturers to divulge proprietary recipe secrets to retailers, government, or third parties.

- Ingredient weights: Quantitative Ingredient Declaration (QUID) is already a legal requirement for a product's key ingredients, ie, if they appear in the product name, are emphasised on the labelling, or are an essential characteristic of the product. Any commercial risk would only come from sharing the weight of any ingredient that does not already have a QUID. In our dataset, free sugars-bearing ingredients that did not already have a QUID declared on back-of-pack labels represented less than 20% of all ingredients. We believe that the fewer key ingredients businesses need to share information on, the smaller the risk may be of exposing proprietary recipes.
- Processing levels: concerns around proprietary fruit and vegetable processing techniques and determining what proportion of each is processed to what degree (eg, what percentage of a can of chopped tomatoes is tomato juice, tomato puree and chopped tomatoes) could be fully mitigated by using fixed assumptions, within regulatory technical guidance, on the percentage of their total sugars that are free sugars.
- Ingredients' sugars content: the total sugars content of ingredients is typically part of standard ingredient specifications, introducing no new operational burden or intellectual property risks under NPM 2018.

Where these safeguards would still feel insufficient to protect commercially sensitive data, manufacturers could calculate their own product's free sugars content internally and provide this result, in place of sharing ingredient data, subject to potential audit.

Summary of what we found on the challenges of free sugars implementation

1. DHSC's October 2026 decision trees give the appearance that NPM 2018 is extremely resource intensive to implement, triaging 73% of our dataset (n ≈ 11,100 products) into requiring full free sugars calculation, this share rising to 90% among the subset of products belonging to the 13 categories covered by the HFSS regulations (n ≈ 4,700).

2. In our analysis based on publicly available data, free sugars estimates were most uncertain when a product's free sugars content was not simply 0g or equal to its total sugars content (ie, free sugars calculation was required), free sugars content was high, ingredient weights and the processing level of any fruit or vegetable ingredient was unknown and had to be estimated (noting this may not be required for businesses who can access product specifications).

3. However, uncertainty in free sugars estimates only carried over to uncertainty in NPM 2018 scoring when the free sugars ranges fell within the region where free sugars points could change (0.9g to 9.3g per 100g). In turn, uncertainty in NPM 2018 scores only translated into uncertainty in 'healthier' vs 'less healthy' status when the NPM 2018 scores were sufficiently close to the HFSS thresholds (≥4 for food, ≥1 for drink). In many cases, uncertainty collapsed at either stage in our analysis.

4. Uncertainty in free sugars calculation boiled down to around 500 products covered by the HFSS regulations carrying uncertainty in their 'healthier' vs 'less healthy' status, which represented 4% of our total dataset. While the products might be concentrated in some businesses that are disproportionately affected, from a public health perspective this is a minority of products that require immediate focus to ensure compliance with HFSS regulations.

Potential ways to facilitate free sugars implementation while protecting public health impact

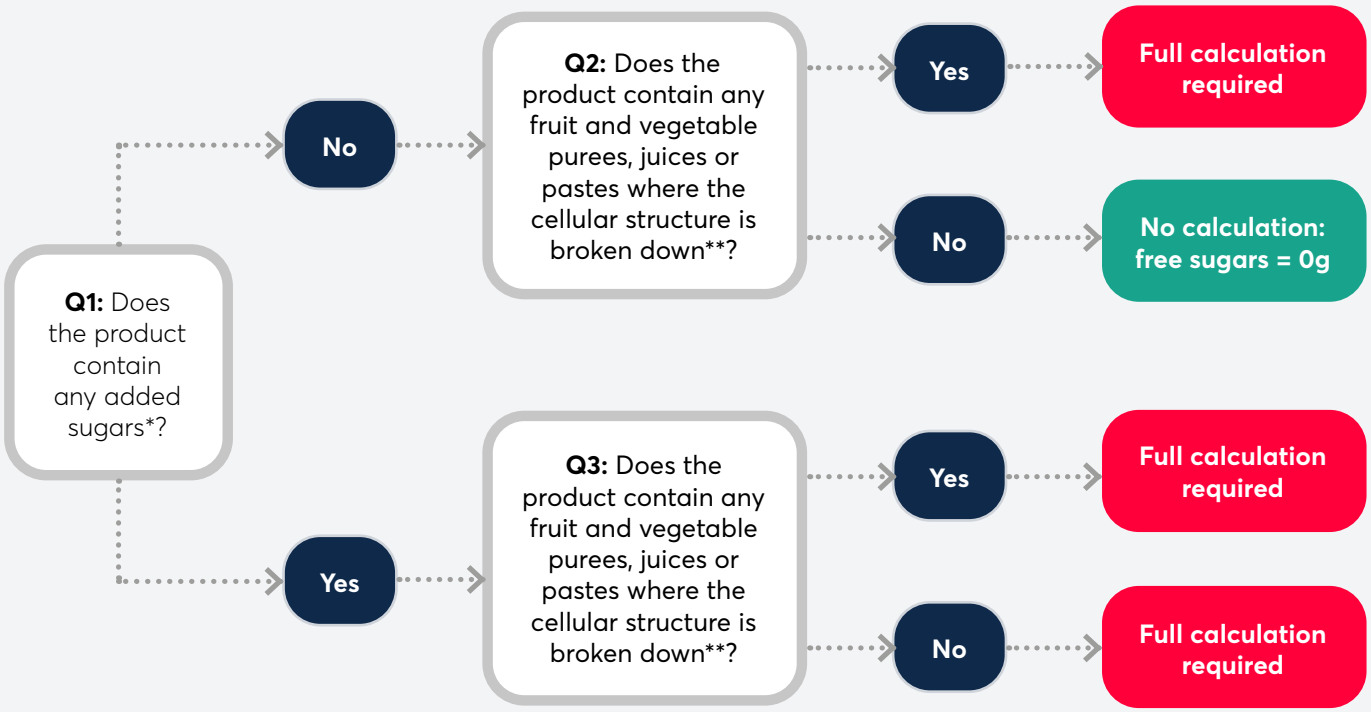
In the previous section, we demonstrate that in the immediate term, uncertainty in free sugars estimates would not seem to pose an insurmountable problem for compliance with the HFSS regulations. However, for the first year of mandatory data reporting as part of the upcoming HFS, NPM 2018 scores will be required for all products, not just those in the 13 regulated categories.

To implement NPM 2018 at this scale in a timely manner, we need to simplify free sugars calculation. There are many ways this could be done. In this section, we focus on two simplifications that could greatly streamline free sugars calculations, while preserving the intended public health impact of the policy.

Simplification 1: reduce product calculation burden through revisions to DHSC's October 2026 decision trees. Our revised decision trees would only need back-of-pack information and could triage 50% more products into simpler free sugars calculations.

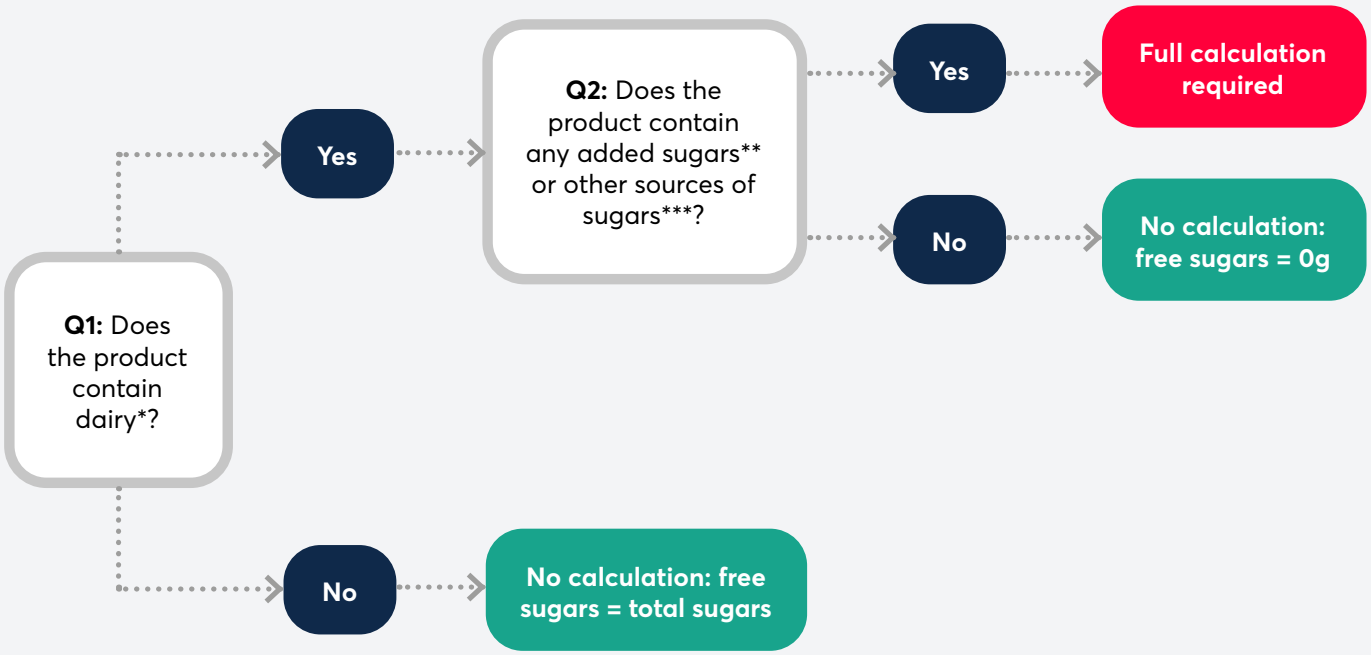
DHSC's October 2026 decision trees require detailed ingredient-level information upfront. For example, the second question in the food decision tree requires knowing the processing state of the fruit and vegetable ingredients – information that can be hard to obtain or interpret in a standardised way (Figure 7a).

DHSC's decision tree diagram for food (as published in October 2026)



*including sugars in honey, syrups or nectars; added glucose, fructose, sucrose, lactose, hydrolysed lactose, or galactose; whey powder
**including sugars naturally present in fruit and vegetable purées, powders, pastes, juices, concentrates, smoothies and extruded fruit and vegetables

DHSC's decision tree diagram for drink (as published in October 2026)



*including milk (liquid and dried) and milk-based products (for example, cream, yoghurt, cheese butter and ice cream)
**including sugars in honey, syrups or nectars; added glucose, fructose, sucrose, lactose, hydrolysed lactose, or galactose; whey powder
**including sugars naturally present in fruit and vegetable purées, powders, pastes, juices, concentrates, smoothies and extruded fruit and vegetables; sugars in dairy alternatives; sugars in milk-derivatives

Figure 7a: DHSC's decision trees for food (above) and drink (below), with the food diagram requiring obtaining and interpreting detailed information about fruit and vegetable ingredients early on; reproduced with minor text changes for readability from NPM 2018 technical guidance (as published in October 2026)

To speed up free sugars calculation at scale, it is important for businesses to be able to quickly triage products by level of free sugars calculation complexity. In our analysis, we found that there are, in fact, three levels of complexity: no calculation (free sugars simply equals 0g or total sugars) vs some calculation (based on ingredient weights) vs full calculation (based on ingredient weights and processing levels).

For our analysis, we built revised decision trees that provide high triaging accuracy without sacrificing practical utility, recasting the decision tree questions so they could be answered using only back-of-pack labels. We consider this data the universal baseline accessible to businesses, regulators and auditors. Then, we tested multiple ways to order the questions, all resulting in the same number of products triaged into each complexity category. We opted for the ordering we believed to be the most user-friendly in terms of enabling clear and quick triaging. In our revised configuration, the questions are ordered so that the trees start with the easiest questions: ie, first checking the product's nutrition composition table, then reading its ingredient list, leaving, in the food diagram, the potentially most difficult question on the processing of fruit and vegetable ingredients for any remaining products to the end. We opted to have consistent rules across products (except food vs drink) as very few categories in our dataset were of uniform free sugars calculation complexity.

Suggested decision tree diagram for food

*also includes sugars derived from cow's milk when added as ingredients (ie, galactose, hydrolysed lactose, lactose, sugars in whey powder) as well as sugars in lactose-free dairy products.

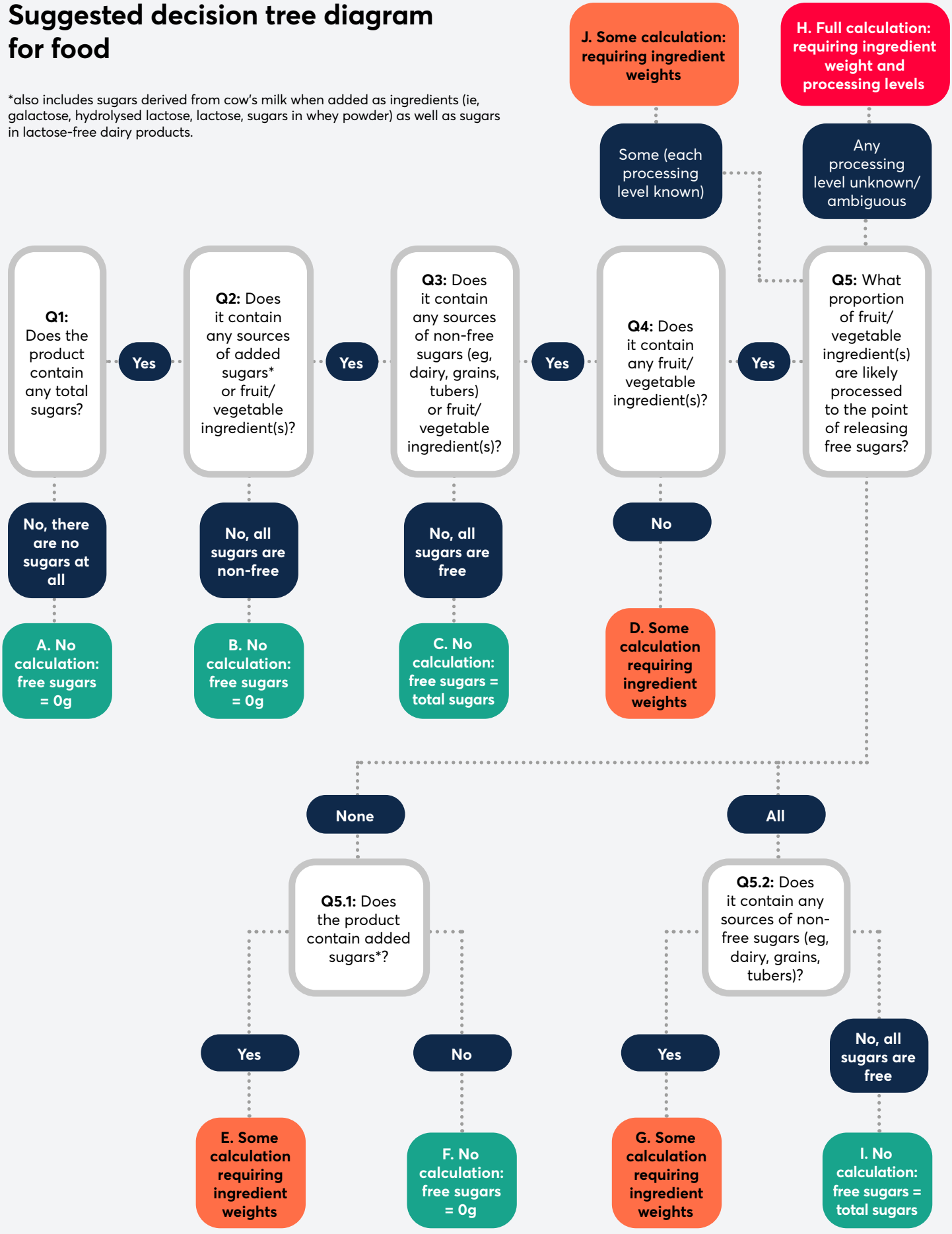
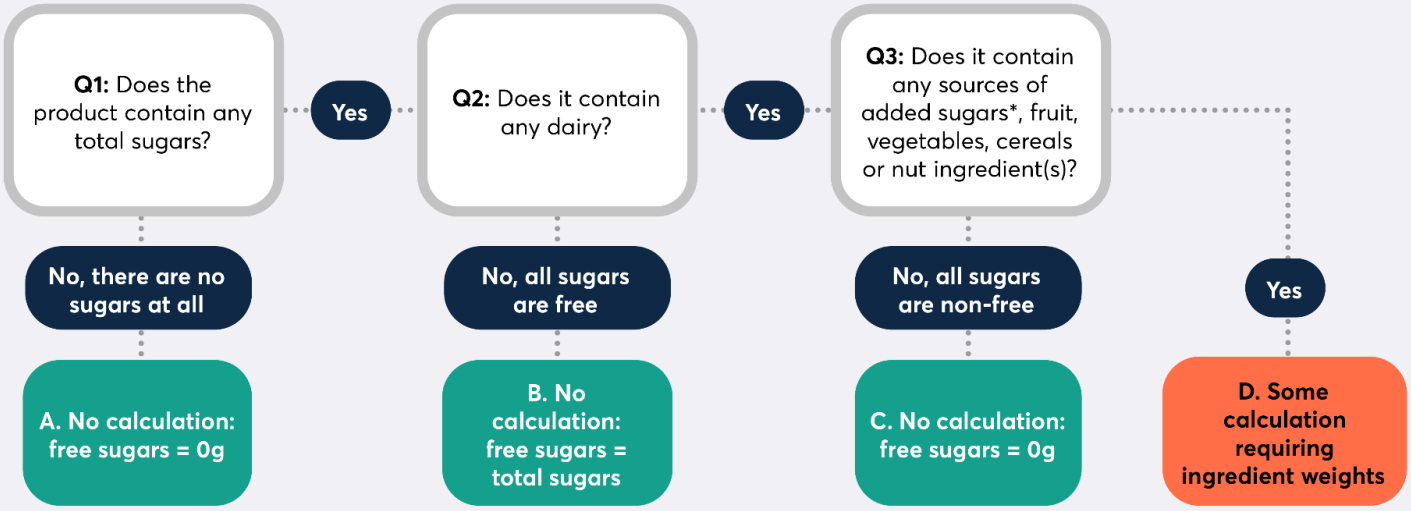


Figure 7b Our revised decision tree for food, with questions that can be answered from just back-of-pack information, and ordered such that users can triage out as many with questions that can be answered from just back-of-pack information, and ordered such that users can triage out as many products into requiring 'no calculation' as quickly as possible, leaving the potentially more difficult questions to the end for any remaining products.

Suggested decision tree diagram for drink



*also includes sugars derived from cow's milk when added as ingredients (ie, galactose, hydrolysed lactose, lactose, sugars in whey powder) as well as sugars in lactose-free dairy products and plant-based dairy alternatives.

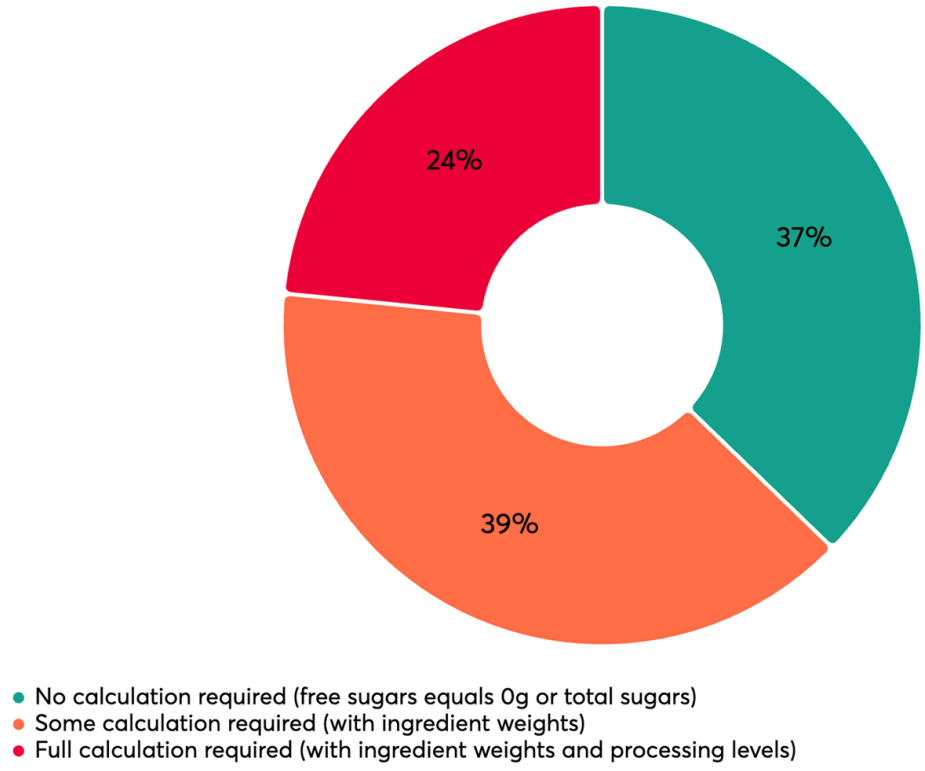
Figure 7c Our revised decision tree for drink, with questions that can be answered from just back-of-pack information, and ordered such that users can triage out as many with questions that can be answered from just back-of-pack information, and ordered such that users can triage out as many products into requiring 'no calculation' as quickly as possible, leaving the potentially more difficult questions to the end for any remaining products.

These revisions not only made triaging by calculation complexity easier, but also increased the share of products where no, or less, free sugars calculation was required.

In our full dataset, compared with how products would be triaged according to DHSC's October 2026 decision trees, our decision trees reduced the share of products where full calculations would be needed by 68% (Figure 8). This was largely achieved by separating out those products where fruit or vegetable ingredient processing levels would not be required for free sugars calculation, because the product contained no fruit or vegetable ingredient(s), or because the processing level of all of its fruit or vegetable ingredient(s) was known, thanks to it being declared or obvious – for example, no explicit back-of-pack declaration is required to know that frozen peas are typically not processed.

Even more dramatic shifts in free sugars complexity were observed in most of the 13 regulated categories, with our revised decision trees reducing the overall share of products requiring full calculation by 77%. Our triaging also revealed that products requiring full free sugars calculations are concentrated in just a few of the 13 regulated categories (Figure 9).

Share of products requiring free sugars calculation (following revised decision trees)



Source: Nesta analysis based on ~11,100 products

Figure 8. Compared with using DHSC's October 2026 decision tree diagrams for food and drink, using our revised trees triaged 50% more products into either not requiring any free sugars calculation or a simpler form of it (based on ingredient weights)

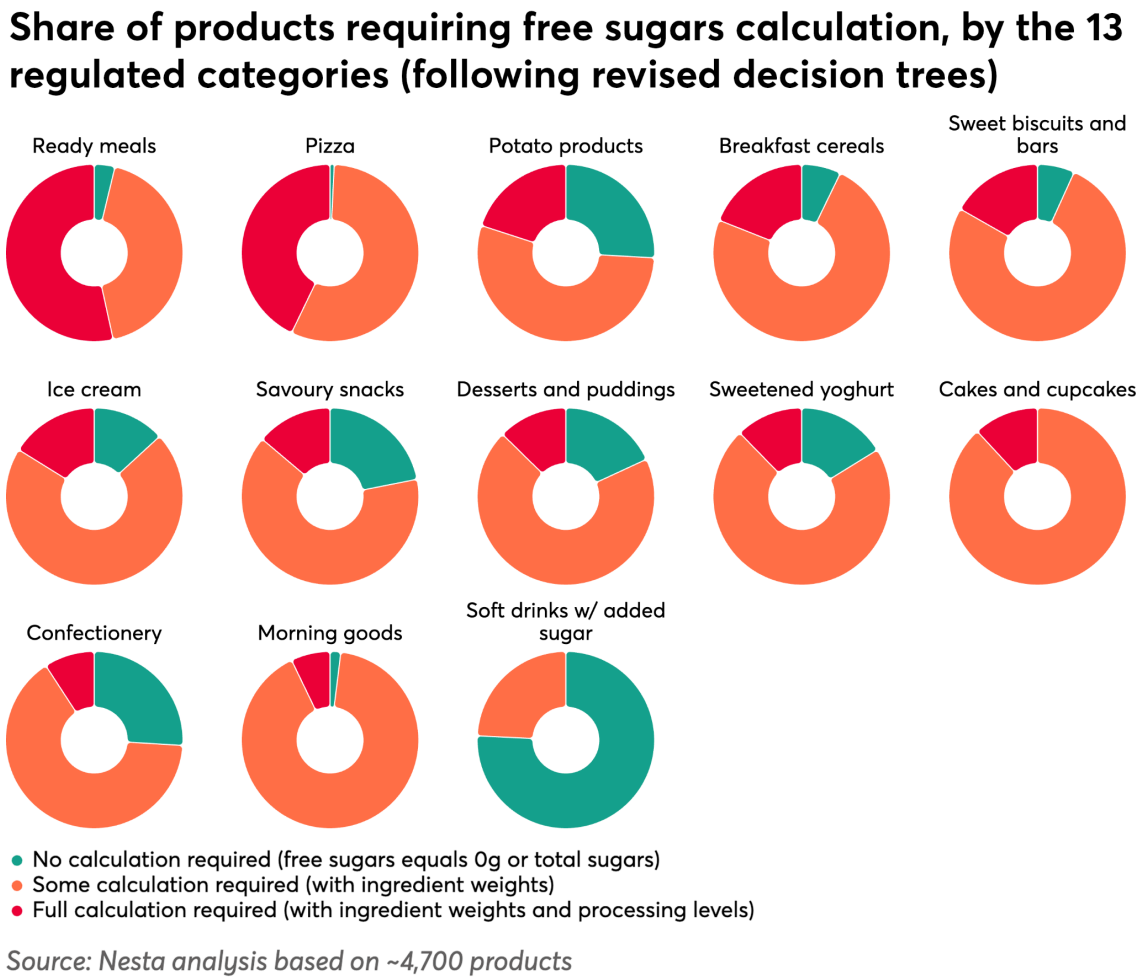


Figure 9. Our revised decision trees reveal that products requiring full free sugars calculation (requiring both ingredient weights and processing levels) are mostly concentrated in just a few of the 13 regulated categories, ie, pizzas and ready meals.

Simplification 2: apply assumptions for free sugars percentages for fruit and vegetable ingredients. This cuts through the complexity of determining outstanding processing levels, simplifying free sugars calculation for more than half our products without noticeably changing most NPM 2018 scores or 'healthier' vs 'less healthy' statuses.

Determining whether fruit and vegetable ingredients have been sufficiently processed to release free sugars can be challenging and inconsistent. On 10 November 2026, SACN published a position statement to advise on how the UK definition of free sugars applies to processed fruits and vegetables, providing

(non-exhaustive) lists of processing methods that do vs do not result in free sugars release. In doing so, it also introduced previously undescribed processing methods, which may require further clarification. Any remaining ambiguity in defining 'cellular structure breakdown' could devolve into 'language gaming' rather than incentivising genuine product reformulation.

There is a need to cut through the complexity of estimating the free sugars content of fruit and vegetable ingredients while preserving the public health intent of the policy. One way to do this is to make fixed assumptions for the proportion of their total sugars content that is free sugars.

In our independent analysis, we explored what such assumptions could look like and gauge their potential impact on NPM 2018 scores by modelling the following.

- For fruit and vegetable ingredients of drink products: assume that 100% of their total sugars are free (constant across all scenarios tested).
- For fruit and vegetable ingredients explicitly declared (on back-of-pack labels, in our analysis) as 'whole', 'peeled', 'sliced', 'chopped', 'grated', or 'dried', in food products: assume that 0% of their total sugars are free (constant across all scenarios tested). Note that this list of terms is a starting point following DHSC's October 2026 guidance and consistent with SACN's November 2026 position statement, and would require refining before any formal adoption.
- For all other fruit and vegetable ingredients in food products (thereafter referred to as 'ambiguous or undeclared processing'): testing the difference between assuming that 0% vs 25% vs 50% vs 75% vs 100% of the total sugars are free. While arbitrary, these percentages were considered primarily to help address challenges around information uncertainty and as potential options for pragmatic implementation. The remainder of this section compares this group of assumptions.

Like in the rest of our analyses, we used the raw NPM 2018 scale, which can theoretically range from -20 (healthiest) to +40 (least healthy).

Chunky vegetable pasta sauce (with 50% assumption rule)

Worked example 2b: A product where the processing levels of most of its vegetable ingredients are not declared on the back-of-pack label and are ambiguous. This time, we assumed that 50% of the total sugars of each vegetable ingredient was free. This greatly reduced calculation complexity while minimally affecting the product's NPM 2018 score (see worked example 2a). Note: this example is illustrative only and should not be treated as a formal calculation for any specific product

Clean and structure ingredient data

1

- **Classify ingredients:** out of 17 ingredients, 1 is added sugars, 9 are fruit or vegetable, 0 are dairy and 0 are nut or seed. 6 are 'other'.
- **List all possible sources of free sugars:** tomatoes, tomato purée, yellow peppers, red peppers, courgette, sugar, onions, onion powder, garlic purée, parsley.
- **Assess likelihood that fruit and vegetable ingredients release free sugars:** assume that 50% of all of the fruit and vegetable ingredients' total sugars are free, as none were declared 'whole', 'peeled', 'sliced', 'chopped', 'grated' or 'dried'.

Estimate ingredients weight

2

- **Count declared ingredient weights on label: Provided for 5 of the 17 ingredients:** (tomatoes, tomato purée, yellow peppers, red peppers, courgette). All other ingredient weights were therefore estimated.
- **Look up ingredient-level nutrition values in food composition database.**
- **Model different feasible recipes of ingredient weights (central estimates of weights per 100g of product shown here):** tomatoes (57%), water (14%), tomato purée(11%), yellow peppers (4%), red peppers (3%), courgette (3%), sugar (2%), all remaining ingredients (≤1%).

Calculate product-level free sugars content

3

- **Calculate free sugars content (g/100g) using the ingredient weights and nutrition values, and applying feasibility rules*:** 3.6g/100g (95% uncertainty interval 1.9g - 4.9g/100g).

**Using declared total sugars, ingredient order, and their maximum possible sugar content.*

Back-of-pack ingredient list and nutrition composition table

Chunky vegetable pasta sauce (with 50% assumption rule).

INGREDIENTS: TOMATOES (57%), WATER, TOMATO PURÉE (11%), YELLOW PEPPERS (4%), RED PEPPERS (3%), COURGETTE (3%), SUGAR, MODIFIED MAIZE STARCH, ONIONS, SALT, ACIDITY REGULATOR: CITRIC ACID; ONION POWDER, RAPESEED OIL, GARLIC PURÉE, PARSLEY.

NUTRITION	
TYPICAL VALUES	**PER 100g**
Energy	177 kJ / 42 kcal
Fat	0.6g
of which saturates	0.1g
Carbohydrate	7.6g
of which sugars	5.5g
Fibre	0.6g
Protein	1.2g
Salt	0.7g

Calculate NPM 2018 score and assess 'healthier' vs 'less healthy' status where applicable

- **Calculate NPM 2018 free sugar points using the lower and upper bounds of the feasible range of free sugars:** (1.9g and 4.9g/100g).
- **NPM 2018 score:** ranges from -1 to 2. Less than 4, so deemed as 'healthier' under current HFSS regulation.
- **NPM 2004/05 score:** -2. Less than 4, so deemed 'healthier' under current regulation.

4

In our dataset, 7,000 products (63% of our dataset) contained at least one fruit or vegetable ingredient. Of these, 6,200 (89% of the products containing any fruit or vegetable, or ~56% of our full dataset) were food products that contained fruit and vegetable ingredient(s) of ambiguous or undeclared processing, and on which we tested the different free sugars percentage assumptions.

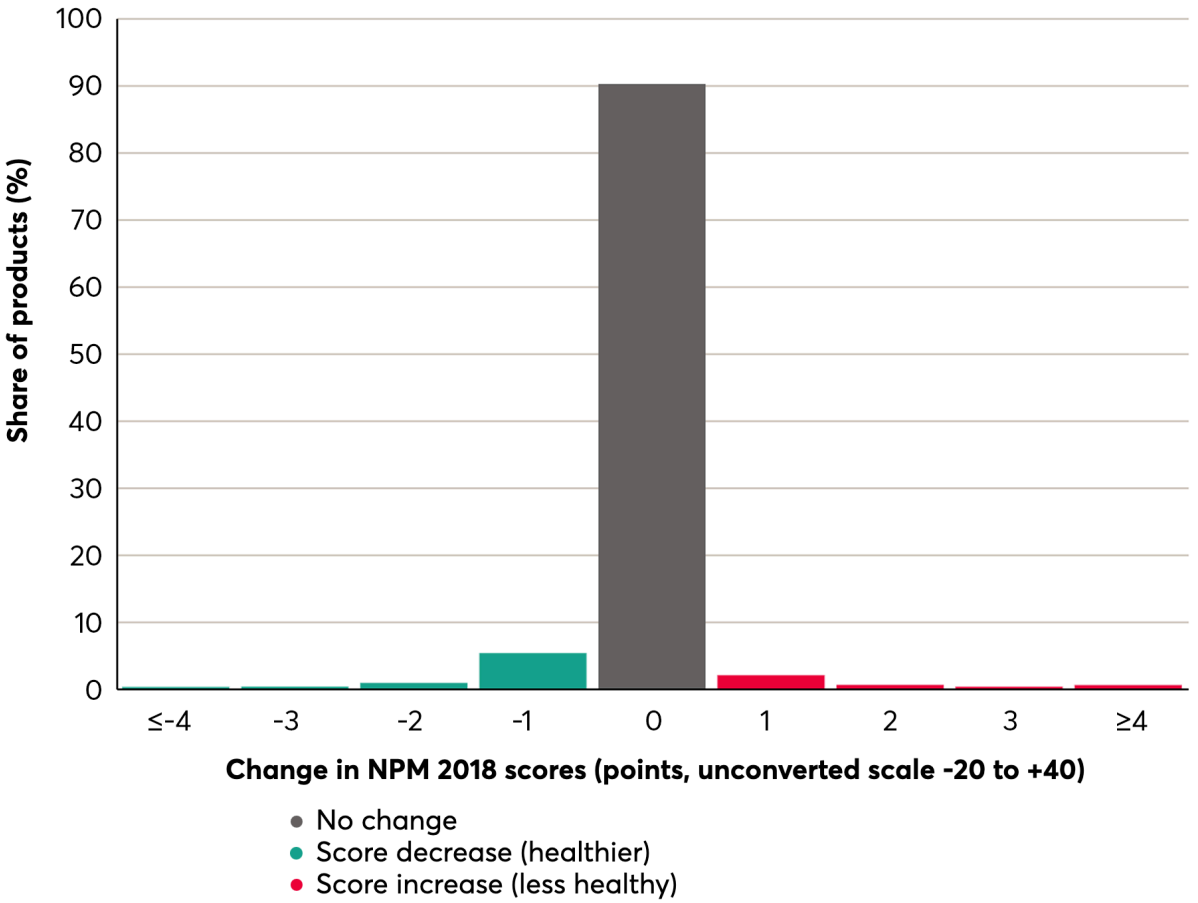
Compared with our best estimates, and for all free sugars percentages tested, the *magnitude* of change in NPM 2018 scores depended on the amount of fruit and vegetable in the product: the higher the amount, the larger the impact. Given the generally low amounts of fruit or vegetable ingredients in products (median 11% in our products containing any, interquartile range 2%-41%), NPM 2018 scores remained unchanged for most products across all free sugars percentages tested (Table 3). Figure 10 illustrates our findings for a 50% assumption. The fact that fruits and vegetables inherently tend to contain little total sugars (compared with added sugars ingredients, for example) also explains the lack of more dramatic changes in NPM 2018 scores.

The *direction* of the change in NPM 2018 score (ie, either improving or worsening it) depended on the baseline processing state of the fruit or vegetable ingredients. For example, products where most total sugars come from processed fruit and vegetable ingredients (such as vegetable-based smooth sauces and marinades, ready meals or meal kits with such sauces, and fruit jelly pouches) would particularly benefit from any assumed free sugars percentages below 100%. Products high in free sugars (such as fruit leathers with ~50g per 100g of free sugars) would not see a change in their NPM 2018 score despite great reductions in their free sugars content, as the reduced free sugars content still exceeded 9.3g per 100g (see explanation in Box 4).

Exemptions could be considered for categories where the use of free sugars calculation assumptions would conflict with other public health goals. Conversely, products where most total sugars come from minimally processed fruit and vegetable ingredients (such as products containing dried fruits like breakfast cereals, baked goods, fruit and nut mixes, frozen chopped vegetables) would be penalised by assumed free sugars percentages above 0%. In such cases, fruit and vegetable ingredients that are not free sugars-releasing (according to DHSC's October 2026 guidance) at the final product stage could avoid undue penalisation by declaring their processing level.

Change in NPM 2018 scores if 50% of the total sugars in fruit and vegetable ingredients of ambigious or undeclared processing are assumed to be free

Unless declared as minimally processed (0% free sugars) or in a drink (100% free sugars)



Source: Nesta analysis based on ~11,100 products

Figure 10. Assuming a free sugars percentage for fruit and vegetable ingredients would only result in NPM 2018 changes in products containing higher amounts of fruit or vegetable ingredient(s). If assuming that 50% of the total sugars in fruit and vegetable ingredients of ambiguous or undeclared processing would be free, products where most total sugars come from processed fruit and vegetable ingredients would seem healthier than they actually are, while those where most total sugars come from minimally processed fruit and vegetable ingredients would seem less healthy. Note that any undue penalisation of minimally processed fruit and vegetable ingredients (as defined by an official list of standardised terms) could be avoided by declaring their processing level.

Table 3. Share of products in our dataset conserving their NPM 2018 scores, by different assumed free sugars percentages for fruit and vegetable ingredients of ambiguous or undeclared processing.

Assumed free sugars percentages for fruit and vegetable ingredients of ambiguous or undeclared processing	**% total products with no change in their NPM 2018 scores**
0% of their total sugars are free	86%
25%	88%
50%	90%
75%	92%
100%	91%

In our dataset, the share of products covered by the HFSS regulations that switched from 'healthier' to 'less healthy' status was minimal across all free sugars percentages tested (Table 4). For instance, even under the most extreme assumptions (ie, assuming that either 0% or 100% of the total sugars in fruit and vegetable ingredients of ambiguous or undeclared processing would be free), less than 1% of total products were affected by a 'healthier' vs 'less healthy' status switch. A 50% assumption achieved the most balanced results, with 0.5% of our total products affected (Table 4).

Table 4. Share of products in our dataset that a free sugars percentage assumption would result in a change in 'healthier' vs 'less healthy' status under HFSS regulations, by different assumed percentages for fruit and vegetable ingredients of ambiguous or undeclared processing.

Assumed free sugars percentages for fruit and vegetable ingredients of ambiguous or undeclared processing	**% total products switching to 'less healthy' status**	**% total products switching to 'healthier' status**
0% of their total sugars are free	0.0%	0.9%
25%	0.1%	0.4%
50%	0.2%	0.3%
75%	0.4%	0.1%
100%	0.5%	0.0%

Overall, our analysis suggests that the processing levels of fruit and vegetable ingredients has little impact on the NPM 2018 scores of most products, relevant for both HFSS regulations and the healthy food standard (HFS). Whenever fruit or vegetable ingredients are present, the technical guidance as currently published requires determining what processing these ingredients underwent and judging whether their cellular structures were sufficiently broken down to release free sugars. These calculation steps add an amount of complexity and risk that seems disproportionate to the difference they would make to public health.

While a 50% assumption seemed to achieve the most balanced outcome, we believe that any moderate percentage (for example, 25%, 50%, or 75%) would help encourage adding more intact fruit and vegetable ingredients to products, a kind of reformulation that could benefit public health, while limiting any unintended consequences.

Using our simplifications could reduce the labour costs associated with NPM 2018 implementation by just over 40%

To illustrate the potential our simplifications could hold for making NPM 2018 implementation less resource-intensive, we estimated the relative reduction in labour costs associated with each of them.

To do this, we used the average time for NPM 2018 assessment and hourly wage for product technicians as assumed in DHSC's 2026 impact assessment:

- Time for NPM 2018 assessment (per product): estimated to take three product technicians, on average, 45 minutes per product in the impact assessment (including time to request ingredient-level information to calculate free sugars content), totalling an average of 135 minutes per product. We assumed that 135 minutes would only be needed for the products requiring a full free sugars calculation (with ingredient weights and processing levels), with the products only requiring some calculation (with ingredient weights only) needing two-thirds of that time (90 minutes), and products requiring no calculation (free sugars simply equals 0g or total sugars) needing only five minutes. These durations are intended as averages for this illustrative exercise; we recognise that within each of the calculation complexity categories, some products could take more or less time to assess depending on the number of ingredients to source data for, and how difficult it is to obtain and interpret that data.

- Hourly wage for product technicians: estimated to be on average £19.31 in the impact assessment. We did not include other costs (such as familiarisation, knowledge sharing, relaying assessment information, updating IT systems, store planning and adjustment, and ongoing product assessment for reformulation) in this analysis, as we assumed that our simplifications were unlikely to affect them. The value of this analysis therefore lies in the relative difference between estimated labour costs as each simplification is implemented. We did not attempt to estimate the absolute and total costs for a business to implement NPM 2018.

Compared with the baseline costs, we found that the first simplification (revising the decision trees) could reduce the labour costs associated with NPM 2018 calculation by a third. Combining this with the second simplification (revising the decision trees and assuming free sugars percentages for fruit and vegetable ingredients) could reduce costs by just over 40% (Table 5).

Table 5. How our simplifications could reduce the labour costs associated with NPM 2018 implementation for a business. Our costings are intended to illustrate the difference that each simplification could make, and we believe that the relative reductions in labour costs (by a third with the first simplification and by around 40% with both) could broadly hold for any baseline labour cost used. Our costings are not meant to represent the absolute and total costs for a business to implement the NPM 2018.

	Products requiring no calculation (free sugars equal 0g or total sugars)	**Products requiring some calculation** (based on ingredient weights)	**Products requiring full calculation** (based on ingredient weights and processing levels)	**Total products** (rounded)
Baseline case				
Number of products	3,000	-	8,200	11,100
Assessment time required (per product)	5 minutes	-	135 minutes	-
Associated labour costs	£5,000	-	£356,000	**£360,000**
With simplification 1: revising the decision trees				
Number of products	4,100	4,400	2,600	11,100

Assessment time required (per product)	5 minutes	90 minutes	135 minutes	-
Associated labour costs	£7,000	£127,000	£113,000	**£247,000**
With simplification 2: assume free sugars percentages for fruit and vegetable ingredients				
Number of products	4,100	7,000	0	11,100
Assessment time required (per product)	5 minutes	90 minutes	135 minutes	-
Associated labour costs	£7,000	£203,000	£0	**£209,000**

Note: all product counts rounded to the nearest hundred and costings to the nearest thousand.

Other ways to simplify free sugars calculation

The approaches we tested are not the only ways to simplify free sugars calculation. Other pragmatic simplification strategies for future consideration could include the following:

- Subtraction method: calculating free sugars content by subtracting non-free sugars from the total sugars content, instead of by adding up free sugars from zero. The backward subtraction method has the potential to reduce calculation effort in products where there are many more free sugars-bearing ingredients than non-free sugars-bearing ingredients (see Worked example 3) and was used in previous research.
- Expanded food composition table: an official reference database, with sufficient entries to cover ingredients commonly used in food and drink sold in the UK, and providing their up-to-date total sugars content, alongside a flag to indicate whether these sugars are free (or what proportion are assumed to be free, if fixed percentages are adopted as assumptions).

- Exemptions from assumptions: any calculation assumption is bound to benefit some products more than others. For example, in the case of assumed free sugars percentages for fruit and vegetable ingredients of ambiguous or undeclared processing, any percentage that is less than 100% would benefit products where most total sugars come from processed fruit and vegetable ingredients, including, for example, fruit-based snacks marketed to children such as fruit leathers. Where the use of free sugars calculation assumptions would conflict with other public health goals, exemptions could be considered for specific categories – for example, 100% of their fruit and vegetable ingredients' total sugars could be considered free sugars.
- Category-specific free sugars percentages for products: category-specific free sugars assumptions (as percentages of total sugars content) could be proposed for products in categories that have limited public health impact via their free sugars contribution (such as soups, ready meals). There is a need to ease implementation effort in these categories so as to not delay action on categories of greater public health importance (for example, chocolate confectionery, desserts).
- Free sugars and NPM 2018 calculator: creating a calculator that would implement the technical guidance and any officially endorsed simplifications could help accelerate NPM 2018 implementation.

To ensure consistency in how free sugars calculation and NPM 2018 are implemented between businesses, it is essential for any simplification to be officially adopted in updated guidance.

Creamy yoghurt with added fruit

Worked example 3: A product where subtracting the non-free sugars content of two ingredients (Greek style yoghurt and cornflour) from the declared total sugars content would have been easier than adding up the free sugars content of four ingredients (mandarin juice, sugar, passion fruit juice, blood orange extract) (as shown). The subtraction method would reduce calculation effort most for products where there are many more free sugars-bearing ingredients than non-free sugars-bearing ingredients. Note: this example is illustrative only and should not be treated as a formal calculation for any specific product.

Clean and structure ingredient data

1

- **Classify ingredients:** out of 6 ingredients, 1 is added sugars, 3 are fruit or vegetable, 1 is dairy and 0 are nut or seed. 1 is 'other'.
- **List all possible sources of free sugars:** mandarin juice, sugar, passion fruit juice, blood orange extract.
- **Assess likelihood that fruit and vegetable ingredients release free sugars:** likely to release free sugars: mandarin juice, passion fruit juice, blood orange extract; unlikely to release free sugars: 0; unsure: 0.

Estimate ingredients weight

2

- **Count declared ingredient weights on label:** Provided for 2 of the ingredients: (greek style yoghurt, mandarin, passion fruit and blood orange compote). All other ingredient weights were therefore estimated.
- **Look up ingredient-level nutrition values in food composition database.**
- **Model different feasible recipes of ingredient weights (central estimates of weights per 100g of product shown here):** greek style yoghurt (85%), mandarin passion fruit and blood orange compote (15%) [mandarin juice (9%), sugar (3%), passion fruit juice (1%), cornflour (1%), blood orange extract (1%)].

Calculate product-level free sugars content

3

- **Calculate free sugars content (g/100g) using the ingredient weights and nutrition values, and applying feasibility rules*:** 4.9g/100g (95% uncertainty interval 1.6g - 8.4g/100g).

**Using declared total sugars, ingredient order, and their maximum possible sugar content.*

Back-of-pack ingredient list and nutrition composition table

Creamy yoghurt with added fruit.

INGREDIENTS: GREEK STYLE YOGHURT (MILK) (85%), MANDARIN PASSION FRUIT AND BLOOD ORANGE COMPOTE (15%) (MANDARIN JUICE, SUGAR, PASSION FRUIT JUICE, CORNFLOUR, BLOOD ORANGE EXTRACT*), *PERMITTED NON-ORGANIC INGREDIENTS

NUTRITION	
TYPICAL VALUES	**PER 100g**
Energy	524 kJ / 125 kcal
Fat	7.4g
of which saturates	4.7g
Carbohydrate	10.8g
of which sugars	9.4g
Fibre	-
Protein	4.0g
Salt	<0.5g

Calculate NPM 2018 score and assess 'healthier' vs 'less healthy' status where applicable

- **Calculate NPM 2018 free sugar points using the lower and upper bounds of the feasible range of free sugars:** (1.6g and 8.4g/100g).
- **NPM 2018 score:** ranges from 5 to 15. Both greater than 4, so deemed as 'less healthy' under current HFSS regulation.
- **NPM 2004/05 score:** 7. Greater than 4, so deemed 'less healthy' under current regulation.

4

Summary of the simplifications we tested to ease free sugars implementation

- To implement NPM 2018 at scale and in a timely manner, we need to simplify free sugars calculations.
- Our proposed revisions to DHSC's October 2026 decision trees would (i) make them usable with publicly available back-of-pack label information, (ii) enable a more efficient and scalable triaging of products by free sugars calculation complexity (triaging out as many products requiring no calculation as fast as possible, leaving the potentially most difficult question at the end for any remaining products), and (iii) might reflect our analysis, in which 50% products were triaged into simpler calculation categories.
- Using assumptions: assuming that 100% of the total sugars in fruit and vegetable ingredients in drinks are free, 0% for those declared as minimally processed, and 50% for those of ambiguous or undeclared processing simplified free sugars calculation for 56% of products in our dataset, preserve the NPM 2018 score of 90% of products, and only result in 0.5% of products switching 'healthier' vs 'less healthy' status. Similar results were obtained with any other moderate assumption (ie, 25% or 75% of total sugars are free sugars) for fruit and vegetable ingredients of ambiguous or undeclared processing. Where the use of 25%, 50%, or 75% artificially overestimated the free sugars content of fruit and vegetable ingredients that would still be minimally processed at the final product (post-processing) stage, such undue penalty could be avoided by declaring their processing level.
- Implementing both simplifications could ease free sugars implementation even more. In our dataset, combining both simplifications streamlined free sugars calculations for 73% of products. Revising the decision trees would already triage 50% more products into simpler calculation categories. Additionally, applying fixed free sugars percentages for fruit and vegetable ingredients would remove the need to handle missing or ambiguous information on the processing level of fruit and vegetable ingredients. This means that implementing both simplifications would effectively turn all products initially triaged by DHSC's October 2026 decision trees as requiring a free sugars calculation (73% of our products) into cases where no, or a simpler form of, free sugars calculation would be sufficient.
- By saving time on free sugars calculation, the two simplifications we present could reduce businesses' labour costs associated with implementing NPM 2018. A relative reduction in labour cost of around 40% could broadly hold for any baseline labour cost used.

- The simplifications we tested are not exhaustive. There are other ways to simplify free sugars calculation which could be considered in future work. These include calculating free sugars by subtraction (instead of addition), expanding food composition tables, using blanket rules of thumb for products, and/or creating a calculator for businesses that would implement the technical guidance, including any officially endorsed simplifications.

Targeting primary sources of free sugars intake to accelerate NPM implementation

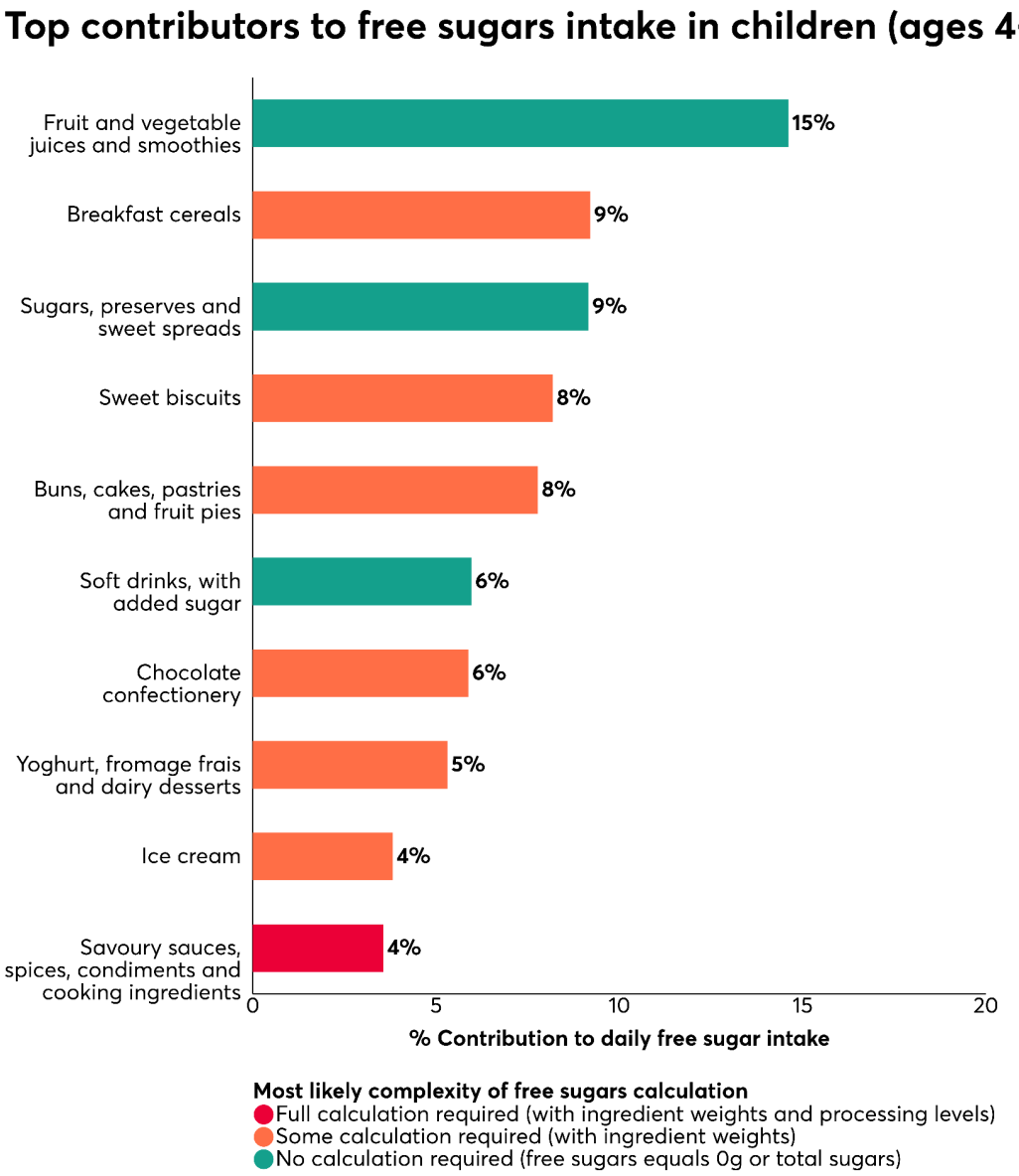
Attempting to calculate free sugars and NPM 2018 scores with a uniformly high precision across all categories could mean investing a lot of effort into assessing products that make little difference to public health, rather than prioritising the top contributors to population free sugars intake. To bring a real-world perspective to these numbers, we looked at how different categories of food and drinks contribute to UK free sugars intake using the latest National Diet and Nutrition Survey (NDNS) results. This allowed us to recommend a prioritisation of implementation effort that is proportional to the actual public health risk from free sugars.

Action on major contributors to free sugars intake (where free sugars calculation is often easier) must not be held back by disproportionate technical effort on categories with minimal public health consequence

The food and drink categories that contribute the most to children's (ages 4-10) free sugars intake happen to be dominated by products requiring no free sugars calculation (free sugars simply equals 0g or total sugars) or only some calculation (based on ingredient weights) (Figure 11).

Conversely, the categories with the highest share of products requiring full free sugars calculation (based on ingredient weights and processing levels, if no blanket free sugars percentages are applied for fruit and vegetable ingredients) happen to contribute only minimally to children's free sugars intake (Figure 12).

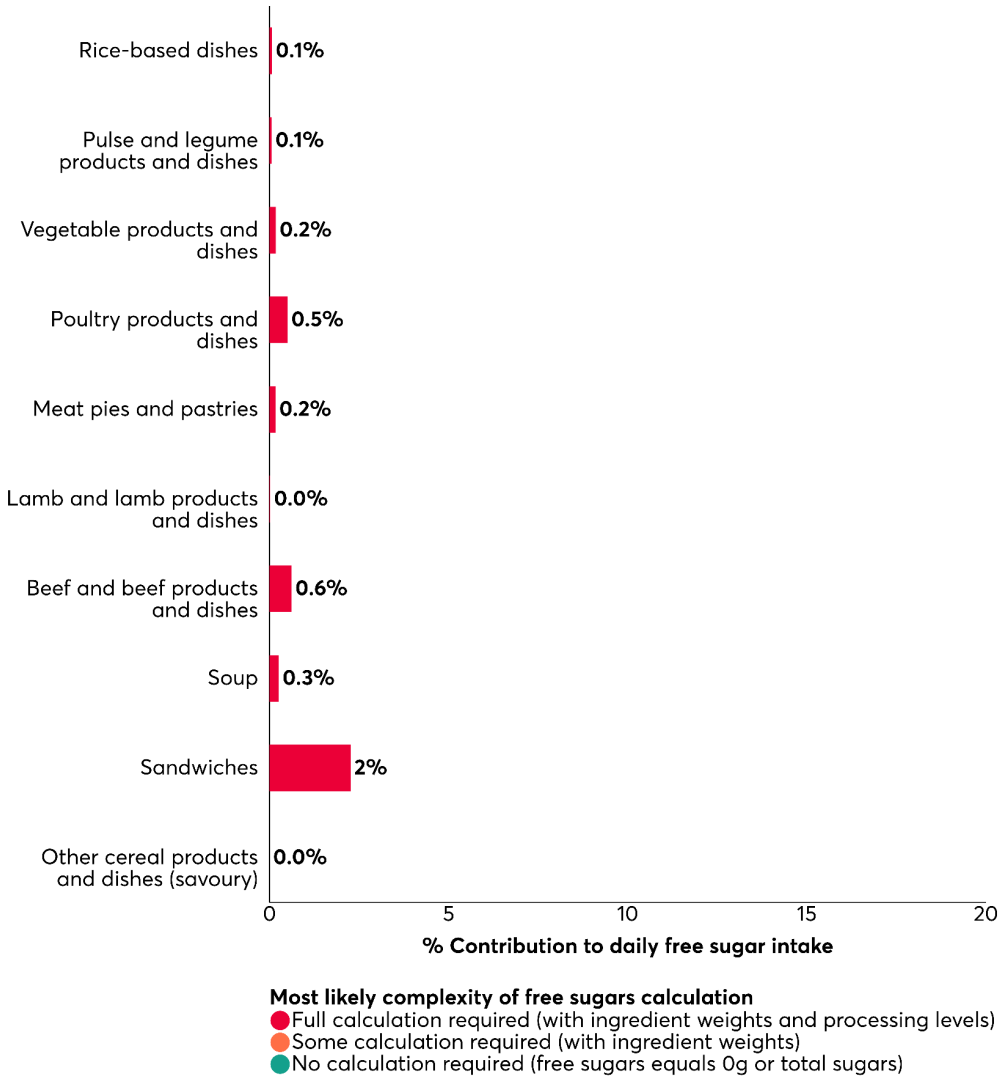
This suggests a need to prioritise implementation effort, so that there isn't a disproportionate amount of resources going into calculating the free sugars content of products where reformulation to further reduce free sugars would largely be inconsequential to public health.



Source: National Diet and Nutrition Survey 2019 to 2023 and Nesta analysis

Figure 11. Priority should be given to the categories contributing most to children's free sugars intake. In our analysis, they also happened to be dominated by products requiring no free sugars calculation (free sugars simply equals 0g or total sugars) or only some calculation (based on ingredient weights). All percentage values are rounded to the nearest integer.

Contribution of most complex categories to free sugars intake in children (ages 4-10)



Source: National Diet and Nutrition Survey 2019 to 2023 and Nesta analysis

Figure 12. The categories with the highest share of products requiring full free sugars calculation (based on ingredient weights and processing levels) in our dataset corresponded to categories contributing only minimally to children's free sugars intake. Simplifying free sugars calculation is needed here to ease implementation effort and prevent delay on more important free sugars contributors.

The categories in this figure are ordered by decreasing share of products triaged into requiring a full free sugars calculation using our revised decision trees. All percentage values under 1 are rounded to one decimal place, otherwise to the nearest integer.

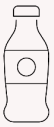
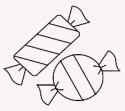
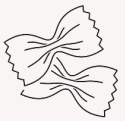
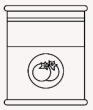
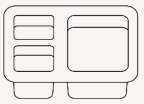
Where to focus effort now: simplify free sugars calculation and prioritise the categories contributing most to population free sugars intake

We believe food and drink categories can broadly be grouped by how easy it is to calculate their free sugars content and how much they contribute to population free sugars intake (Table 1).

The higher impact groups (left-hand side quadrants) should be prioritised. Most categories included here are covered by the HFSS regulations. Among these, the immediate priority would be to resolve any uncertainty on the 'healthier' vs 'less healthy' status of a product. Any such uncertainty will be found among products requiring free sugars calculation (bottom-left quadrant). In our dataset, around 500 products – only 4% – had an uncertain 'healthier' vs 'less healthy' status, which in our view is a manageable number of products to prioritise for reliable information acquisition. Nevertheless, any update to the NPM 2018 technical guidance that would simplify free sugars calculation would be particularly beneficial for higher-effort, higher-impact categories. The lower-effort, higher-impact categories (top-left quadrants) can be viewed as 'quick wins'.

There is a real risk that higher-effort, but lower-impact categories (bottom-right quadrant) delay action on the higher-impact categories. Investing a great amount of resources to aim for the highest level of precision in free sugars calculation in this group would be disproportionate to their minimal contribution to the population's free sugars intake. Agreeing on ways to simplify free sugars calculation while retaining sufficient accuracy, such as with blanket free sugars percentages for fruit and vegetable ingredients or any other rules of thumb, would greatly ease the effort required for free sugars calculation across all quadrants, but would have the greatest benefit in this quadrant.

Table 1. Example categories by free sugars calculation effort vs public health impact (contribution to population free sugars intake)

	Higher public health impact (we recommend prioritising these)	**Lower public health impact**
Lower effort no free sugars calculation required (free sugars content equals total sugars content or 0g)	Soft drinks  Juices and smoothies  Most sweets and confectionery 	Milk  Nuts and seeds  Pantry staples (eg, dried pasta, rice, oats) 
Higher effort free sugars calculation required	Breakfast cereals  Yoghurts (not plain)  Most desserts w/ processed fruits 	Soup  Processed vegetables  Ready meals 

Conclusion

Implementing NPM 2018 at scale is neither impossibly complex nor trivially easy. Sourcing and working with ingredient information is resource-intensive, but without it, free sugars calculations can be uncertain. However, we've shown that most of that uncertainty does not significantly alter NPM scores for immediate regulatory compliance purposes.

We are optimistic that NPM 2018 can be implemented in a timely manner *if* free sugars calculation is officially simplified. We tested two simplifications that could potentially reduce by around 40% the time and associated labour costs a business spends on calculating free sugars while maintaining a reasonable level of accuracy in NPM 2018 scores, and other options could further reduce the resource required.

Uncertainty in free sugars estimates is not a barrier to immediate regulatory compliance

Free sugars calculation is not always needed. There are many products where none of the sugars are free (such as plain crisps), or all are free (such as soft drinks). These very straightforward cases made up about a third of our dataset.

In other cases, free sugars content needs to be calculated. We tested whether using only information from product back-of-pack labels (which are accessible to every business, regulator and auditor) could be used at scale.

We found that back-of-pack labels omitted too much information to produce precise free sugars calculations. But a lot of that uncertainty was inconsequential for NPM 2018 scoring ,as products high in free sugars score the maximum free sugars negative points past 9.3g/100g anyway.

Likewise, for products covered by the HFSS regulations, any uncertainty around NPM 2018 scores mostly disappeared when judging if a product was 'healthier' or 'less healthy'. Only those closest to the HFSS thresholds could have an uncertain status; just 4% (around 500) of the more than 11,100 products in our full dataset (or 10% of the subset covered by the HFSS regulations). We believe this represents a more manageable amount of products for which to source more detailed information for complying with existing HFSS regulations, though that proportion will vary depending on portfolio composition.

We can improve public health through a simplified and sufficiently accurate approach

We must take a proportionate view of the level of detail and accuracy required in free sugars calculation for NPM 2018 to serve its purpose: driving genuine change in the national diet. It is undeniably beneficial to improve public health sooner rather than later. It is also a clear win if we could achieve the same outcome with less work for regulatory enforcers and the food industry alike.

If NPM 2018 is implemented at scale and pace (ie, across current and upcoming regulations), we need to drastically simplify free sugars calculations and require urgent solutions to enable this.

There are many ways to do this. The simplifications we present could make free sugars calculations easier and cheaper, and do so with no or minimal changes in NPM 2018 scores.

DHSC's October 2026 NPM 2018 guidance provides decision trees to triage products by free sugars calculation complexity. Currently, these decision trees give the appearance that NPM 2018 is extremely resource-intensive to implement for businesses. This is not actually the case. We present revised decision trees that would triage many more products (50% of our dataset) into either a simpler level of free sugars calculation (requiring less information), or into 'no calculation at all'. Our revised decision trees also work with just back-of-pack information (for use at scale) and at the outset triage out a maximum amount of products into the easiest tiers of free sugars calculation, so that the last and potentially more difficult step is only applied to the remaining products (for efficiency).

Free sugars calculation becomes most challenging when fruit and vegetable ingredients are present. Whether their sugars are free or not depends on the extent to which they have been processed. This information is often difficult to obtain and interpret in a consistent manner. We found the extent to which fruit and vegetable ingredients have been processed is largely inconsequential. For fruit and vegetable ingredients of ambiguous or undeclared processing, we tested the impact of assuming that a certain percentage of their total sugars is free, for example between 25% and 75%. With a 50% assumption for example, 90% of our total products retained their NPM 2018 scores and only 0.5% were affected by a change in their 'healthier' or 'less healthy' status under HFSS regulations. In this analysis, the total sugars in fruit and vegetable ingredients declared as minimally processed were always assumed to be not free, and those of fruit and vegetable ingredients in drinks were always free across all scenarios tested.

Independently, each of the simplifications we investigated could streamline free sugars calculation for a large share of products: in our analysis, for 50% of products by revising the decision trees and 56% of our total products (89% of those that contained any fruit or vegetable) by assuming free sugars percentages for fruit and vegetable ingredients. Combining both simplifications could result in an even greater share of products where free sugars calculation gets simpler: 73% in our analysis.

What needs to happen for free sugars now

We have shown that there are ways the technical guidance could be updated to dramatically reduce the burden of free sugars calculations for industry and still achieve important public health goals.

There are different levels of uncertainty: the free sugars content, NPM 2018 score and 'healthier' vs 'less healthy' status for HFSS regulations. An efficient business would prioritise getting the most consequential information first. The most immediate uncertainty to resolve is that of 'healthier' vs 'less healthy' status for compliance with current regulations. In our analysis, 'healthier' vs 'less healthy' status was uncertain for just a fraction (4%) of products.

If some information is not consequential for public health, we should not spend huge amounts of time arguing over the minutiae of it. Government and industry hold the necessary context and operational expertise to design practical responses, and these must be agreed quickly.

For mandatory data reporting only, NPM 2018 scores – which we demonstrated would not require highly precise calculated free sugars content for every product – would be required, and linked to sales data for the first year of reporting. We should not wait until we have achieved high precision on everything before we start doing anything.

Unambiguous, straightforward guidance aimed at reducing the complexity of free sugars calculation should be issued as soon as possible. Industry should be given certainty over how to do the calculations and when any changes to regulations will come in, so they can properly plan and prioritise.

We hope the simplifications we present provide a start for this process for government and industry to find a route forward, and that protracted debates around free sugars can be avoided, so as not to delay national policy progress on health.

General appendix

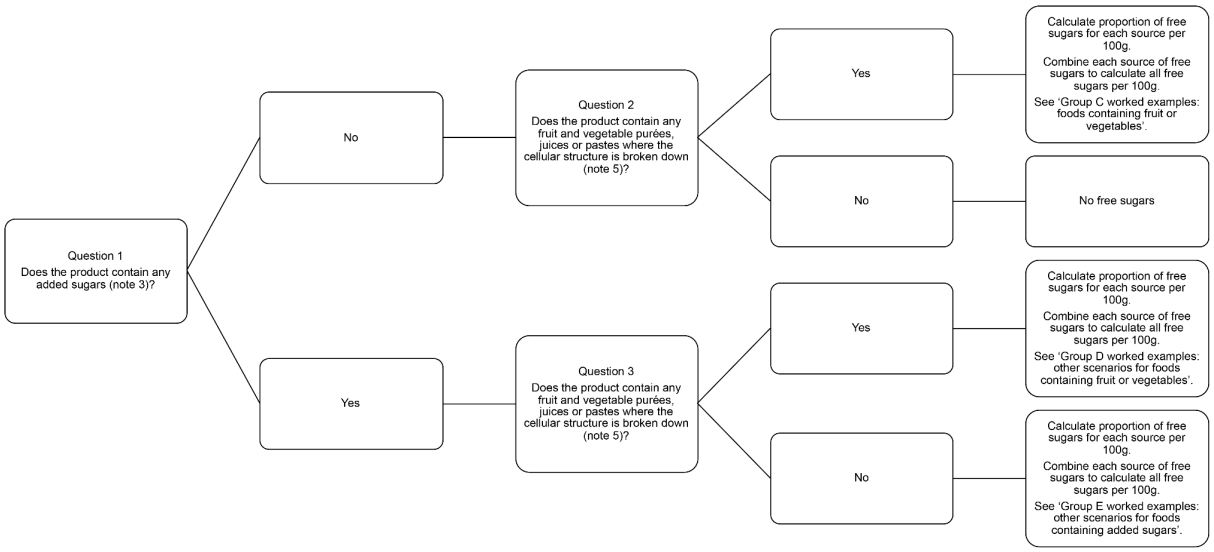


Figure A1. Decision tree diagram for food to assess free sugars from total sugars for the NPM (as published in DHSC's NPM 2018 technical guidance as of October 2026)

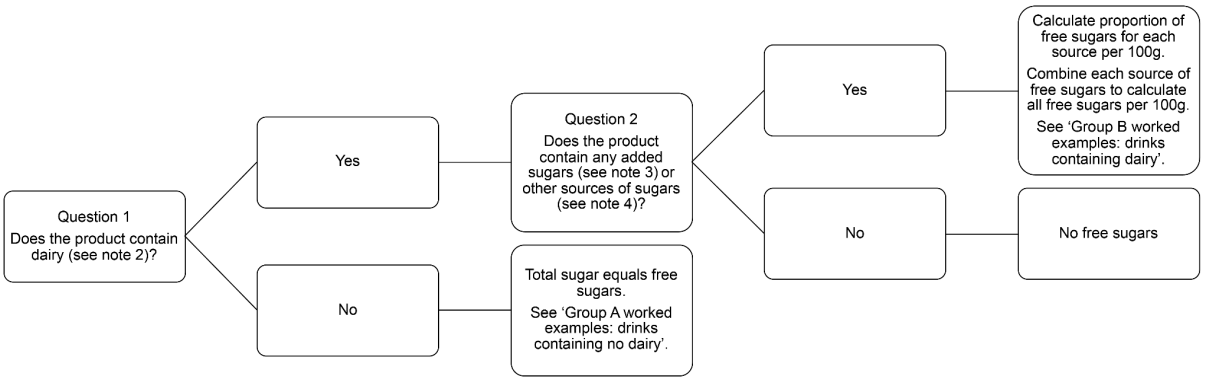


Figure A2. Decision tree diagram for drinks to assess free sugars from total sugars for the NPM (as published in DHSC's NPM 2018 technical guidance as of October 2026)

Notes for decision tree diagrams (as published in DHSC's NPM 2018 technical guidance as of October 2026)

Note 1: total sugars are defined by the mandatory nutrition labelling requirements as shown in the 'Nutrition labelling and ingredients list' section.

Note 2: dairy products include milk (liquid and dried) and milk-based products (for example, cream, yoghurt, cheese, butter and ice cream). Lactose, hydrolysed lactose, galactose and sugars in whey powder added as ingredients are included in the definition of free sugars, so are excluded from dairy products. All sugars in lactose-free dairy products where the lactose has been partially removed through filtration and the remainder broken down to glucose and galactose using lactase are included in the definition of free sugars.

Note 3: added sugars in whatever form, including the sugars in:

- honey, syrups or nectars
- added glucose, fructose, sucrose, lactose, hydrolysed lactose, or galactose
- whey powder

Note 4: other sources of sugars include:

- sugars naturally present in fruit and vegetable purées, powders, pastes, juices, concentrates, smoothies and extruded fruit and vegetables
- sugars in dairy-alternatives
- sugars in milk derivatives

Note 5: the sugars naturally present in fruit and vegetable purées, powders, pastes, juices, concentrates, smoothies and extruded fruit and vegetables. The sugars naturally present in fresh, frozen, dried, stewed and canned fruit and vegetables are excluded from the definition of free sugars.

Table A1. Distribution of the widths of each product's 95% uncertainty interval for free sugars content, by the 13 regulated categories

Category	Products (n)	Widths of each product's free sugars 95% uncertainty intervals (g/100g)				
		10th percentile	25th percentile	Median	75th percentile	90th percentile
Confectionery	643	0.0	0.0	7.0	10.8	13.0
Cakes and cupcakes	261	1.6	2.9	5.0	7.7	9.9
Sweet biscuits and bars	561	1.8	4.5	6.6	8.8	12.3
Ice cream	266	0.0	4.3	6.5	7.9	9.0
Desserts and puddings	348	0.0	3.8	6.4	7.8	9.4
Breakfast cereals	237	1.9	3.4	5.4	7.6	9.6
Morning goods	154	2.3	3.6	5.3	7.6	13.4
Sweetened yoghurt	179	0.0	2.5	5.6	7.6	9.1
Soft drinks w/ added sugar	429	0.0	0.0	0.0	0.0	4.6
Pizza	133	1.3	1.9	2.6	3.2	3.9
Savoury snacks	521	0.0	0.6	1.8	3.0	4.4
Ready meals	902	0.5	0.9	1.6	2.3	3.0
Potato products	85	0.0	0.0	0.5	0.7	2.0
All 13 regulated categories	**4719**	**0.0**	**0.9**	**3.0**	**6.9**	**9.7**

Table A2. Distribution of the widths of each product's NPM 2018 score range, by the 13 regulated categories (main analysis, only accounting for uncertainty from free sugars calculation)

Category	Products (n)	Widths of each product's NPM 2018 range (points)				
		10th percentile	25th percentile	Median	75th percentile	90th percentile
Confectionery	643	0	0	0	0	0
Cakes and cupcakes	261	0	0	0	0	0
Sweet biscuits and bars	561	0	0	0	0	5
Ice cream	266	0	0	0	0	1
Desserts and puddings	348	0	0	0	1	7
Breakfast cereals	237	0	0	0	4	13
Morning goods	154	0	0	3	7	11
Sweetened yoghurt	179	0	2	5	8	10
Soft drinks w/ added sugar	429	0	0	0	0	5
Pizza	133	1	2	3	7	9
Savoury snacks	521	0	0	2	4	6
Ready meals	902	0	0	1	2	5
Potato products	85	0	0	0	0	2
All 13 regulated categories	**4719**	**0**	**0**	**0**	**2**	**6**

Table A3. Distribution of the widths of each product's NPM 2018 score range, by the 13 regulated categories (sensitivity analysis, accounting for uncertainty in free sugars calculation, FVNS estimation and fibre imputation)

Category	Products (n)	Widths of each product's NPM 2018 range (points)				
		10th percentile	25th percentile	Median	75th percentile	90th percentile
Confectionery	643	0	0	0	4	6
Cakes and cupcakes	261	0	0	0	0	3
Sweet biscuits and bars	561	0	0	0	2	7
Ice cream	266	0	0	0	1	4
Desserts and puddings	348	0	0	0	3	8
Breakfast cereals	237	0	0	0	4	13
Morning goods	154	0	0	3	7	11
Sweetened yoghurt	179	0	3	7	10	13
Soft drinks w/ added sugar	429	0	0	0	0	6
Pizza	133	1	2	3	8	9
Savoury snacks	521	0	0	2	4	7
Ready meals	902	0	0	1	3	6
Potato products	85	0	0	0	0	2
All 13 regulated categories	**4719**	**0**	**0**	**0**	**3**	**7**

Table A4. Distribution of the central estimates (best estimates) for each product's free sugars content, by the 13 regulated categories

Category	Products (n)	Central estimates for each product's free sugars content (g/100g)				
		10th percentile	25th percentile	Median	75th percentile	90th percentile
Confectionery	643	29.7	39.4	47.0	56.0	63.7
Cakes and cupcakes	261	16.7	25.4	33.8	40.6	45.0
Sweet biscuits and bars	561	0.5	13.9	24.3	33.0	40.9
Ice cream	266	11.5	15.1	20.0	23.5	26.2
Desserts and puddings	348	4.2	7.9	15.9	23.4	32.2
Breakfast cereals	237	0.9	3.6	12.3	17.5	22.2
Morning goods	154	1.5	4.3	7.8	13.6	24.4
Sweetened yoghurt	179	1.8	4.9	6.4	8.8	11.0
Soft drinks w/ added sugar	429	2.5	3.9	4.4	5.7	11.0
Pizza	133	0.5	1.1	1.7	2.3	3.0
Savoury snacks	521	0.0	0.3	1.3	3.1	4.7
Ready meals	902	0.1	0.4	1.0	1.9	3.8
Potato products	85	0.0	0.0	0.2	0.3	0.7
All 13 regulated categories	**4719**	**0.3**	**1.5**	**6.9**	**25.9**	**44.0**

Table A5. Number and proportion of products of uncertain and certain 'healthier' and 'less healthy' status by the 13 regulated categories (main analysis, only accounting for uncertainty from free sugars calculation)

Category	**Uncertain** (NPM 2018 score range straddling 4 for food and 1 for drink) n (%)	**Certainly less healthy** (≥4 for food, ≥1 for drink) n (%)	**Certainly healthier** (<4 for food, <1 for drink) n (%)
Confectionery	0 (0%)	642 (100%)	1 (0%)
Cakes and cupcakes	2 (1%)	259 (99%)	0 (0%)
Sweet biscuits and bars	37 (7%)	493 (88%)	31 (6%)
Ice cream	2 (1%)	259 (97%)	5 (2%)
Desserts and puddings	23 (7%)	298 (86%)	27 (8%)
Breakfast cereals	46 (19%)	144 (61%)	47 (20%)
Morning goods	36 (23%)	96 (62%)	22 (14%)
Sweetened yoghurt	52 (29%)	88 (49%)	39 (22%)
Soft drinks w/ added sugar	38 (9%)	377 (88%)	14 (3%)
Pizza	54 (41%)	73 (55%)	6 (5%)
Savoury snacks	77 (15%)	343 (66%)	101 (19%)
Ready meals	116 (13%)	133 (15%)	653 (72%)
Potato products	3 (4%)	2 (2%)	80 (94%)
All 13 regulated categories	**486 (10%)**	**3207 (68%)**	**1026 (22%)**

Table A6. Number and proportion of products of uncertain and certain 'healthier' and 'less healthy' status by the 13 regulated categories (sensitivity analysis, accounting for uncertainty in free sugars calculation, FVNS estimation and fibre imputation)

Category	**Uncertain** (NPM 2018 score range straddling 4 for food and 1 for drink) n (%)	**Certainly less healthy** (≥4 for food, ≥1 for drink) n (%)	**Certainly healthier** (<4 for food, <1 for drink) n (%)
Confectionery	1 (0%)	642 (100%)	0 (0%)
Cakes and cupcakes	2 (1%)	259 (99%)	0 (0%)
Sweet biscuits and bars	43 (8%)	492 (88%)	26 (5%)
Ice cream	4 (2%)	258 (97%)	4 (2%)
Desserts and puddings	27 (8%)	294 (84%)	27 (8%)
Breakfast cereals	46 (19%)	144 (61%)	47 (20%)
Morning goods	36 (23%)	96 (62%)	22 (14%)
Sweetened yoghurt	67 (37%)	76 (42%)	36 (20%)
Soft drinks w/ added sugar	44 (10%)	371 (86%)	14 (3%)
Pizza	54 (41%)	73 (55%)	6 (5%)
Savoury snacks	81 (16%)	340 (65%)	100 (19%)
Ready meals	126 (14%)	127 (14%)	649 (72%)
Potato products	3 (4%)	2 (2%)	80 (94%)
All 13 regulated categories	**534 (11%)**	**3174 (67%)**	**1011 (21%)**

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