2023

Food Reformulation Task Force:

A technical report on the methodology for setting nutrient baseline values and evaluating progress

Version 2

Food Reformulation Task Force: A Technical Report on the Methodology for Setting Nutrient Baseline Values and Evaluating Progress V2

Published by:
Food Reformulation Task Force
Food Safety Authority of Ireland
The Exchange, George's Dock, IFSC,
Dublin 1, D01 P2V6

T +353 1 817 1300
E info@fsai.ie / foodreformulation@fsai.ie

Food Reformulation | Food Safety Authority of Ireland (fsai.ie)

ISBN: 978-1-910348-61-1

Contents

Version history and updates

Version name	Date of change	Description of change
V1	03/04/2023	In section 1.2 date for the publication of reformulation targets for product ranges explicitly produced for babies and young children changed from 2022 to 2023. Information added about the purchase of a third-party commercial data set in section 2.1 and with the addition of section 3. Clarifying statement added on the use of the approach outlined by the Food Reformulation Task Force on page 9.
V2	17/07/2023	Addition of new section 4 advising of an allowance for lactose in dairy based yogurt of 3.8 g /100 g and how this will be applied as part of the reformulation monitoring approach.

List of Figures

List of Tables

1. Background

'*The Obesity Policy and Action Plan – A Healthy Weight for Ireland'* published in 2016, outlines ten steps to be taken within a 10-year time frame to prevent overweight and obesity in Ireland [1]. Step three of the plan relates to food reformulation. It aims to '*secure appropriate support from the commercial sector to play its part in obesity prevention and agree food industry reformulation targets and review progress'*. To achieve this a Food Reformulation Subgroup of the Obesity Policy Implementation Oversight Group developed a **Roadmap for Food Product Reformulation in Ireland** [2].

In order to deliver the **Roadmap,** the Food Reformulation Task Force, a strategic partnership between Healthy Ireland and the Food Safety Authority of Ireland (FSAI), was established in 2021. The Food Reformulation Task Force will implement the **Roadmap** and monitor progress made in reducing energy (calories), saturated fat, sugar and salt in processed packaged food.

1.2 Targets

When referred to in the context of the **Roadmap for Food Product Reformulation in Ireland,** food reformulation means **improving** the nutritional content of commonly consumed processed foods and drinks. This is achieved by **reducing** energy (calories) and target nutrients (saturated fat, salt and sugar) to ensure a healthier food supply. Specifically, the Roadmap sets targets for the reduction of energy (calories) and sugar by 20% and salt and saturated fat by 10% between 2015 and 2025, see Figure 1.

Figure 1 Reformulation targets for Ireland 2015 - 2025

As well as the above, targets will be developed for product ranges explicitly produced for babies and young children in 2023.

1.3 Priority food categories for food reformulation in Ireland

In order to identify and select a list of priority food categories for reformulation in Ireland a review was undertaken. The list of 40 priority food categories for reformulation and background on how the food categories were selected is outlined in 'Priority Food Categories for Reformulation in Ireland' available here. Subsequently, the nutritional characteristics and recommended serving sizes of the priority food categories were established and area available here.

2. Overview of approach

2.1 Identifying data sources

The Food Reformulation Task Force will analyse progress in meeting nutrient reduction targets in priority food categories to date (2015 – 2021) and monitor progress going forward, to the end of 2025. Although data will be collected prospectively from 2022 onwards, the Task Force will use available data in a retrospective manner prior to 2022. While the FSAI has a range of data sources available, the Irish National Food Ingredient Database (INFID) is the most comprehensive in terms of its coverage across food types. INFID is a database of pre-packaged food product labels consumed by Irish University Nutrition Alliance dietary survey participants. It lists detailed information at brand level (e.g., ingredient and nutrient information) from food packaging labels [3].

Currently, within INFID, two data collections have been carried out, one in 2017/2018 (food more relevant to children's diets) and another in 2019/2020 (food more relevant to adolescent's diets). As well as this, the Food Reformulation Task Force are seeking a data set from a third-party data provider that will provide a snapshot of the average energy and target nutrient content between 2015 – 2025. This is covered in more detail in section 3.

These datasets, along with data collected or purchased by the FSAI, will be used to determine baseline values (2015) to monitor changes in energy (calories), saturated fat, sugar and salt from 2015 – 2025.

2.2 Evaluating progress 2015 - 2025

To evaluate total progress during the full period 2015 to 2025 with respect to each target nutrient, the percentage change from 2015 to 2025 will be calculated as follows:

$$\%\text{ change} = 100 \times \frac{(\text{nutrient content in 2025}) - (\text{nutrient content in 2015})}{(\text{nutrient content in 2015})}.$$

Here, the nutrient contents (in 2015 and 2025) are expressed per 100g (or 100ml for drinks). These nutrient content values will usually be the average value (mean or median) determined from a number products within a food category. For example, if the average sugar content for yoghurts is 11.8 g/100g in 2015 and 8.6 g/100g in 2025, then the percentage change for this category is calculated as 100 × (8.6 – 11.8) / 11.8 = –27.1%. As well as monitoring changes in food category averages, percentage change in matched products over time will be monitored.

Although total progress to 2025 is the primary focus, it is also useful to evaluate progress made prior to 2025. Consider the situation where sugar content reduces from 11.8 g/100g to 11.54 g/100g from

2015 – 2016. In this case, the sugar content decreased by 2.2% over the 1-year period 2015 – 2016, or, equivalently, the sugar content in 2016 is 97.8% of the value from 2015, i.e., 11.8 × 0.978 = 11.54 g/100g. If a further 2.2% decrease is achieved from 2016 – 2017, then the sugar content in 2017 will be 11.28 g/100g. This is a 4.4% decrease compared to 2015 since 100 × (11.28 – 11.8) / 11.8 = –4.4%. If consistent year-on-year progress of 2.2% for sugar (and energy) is maintained over the full period 2015 – 2025, then the target reduction of 20% will be met (because $(0.978)^{10} = 0.8$). Similarly, if saturated fat and salt decrease consistently by 1% year-on-year, then the target reduction of 10% will be met. Assuming this consistent progress, Table 1 provides example benchmarks to be achieved for each year from 2016 – 2025 compared to 2015.

Table 1. Example percentage change benchmarks from 2016 to 2025.

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
• Sat Fat • Salt	1.0%	2.0%	3.0%	4.0%	5.0%	6.0%	7.0%	8.0%	9.0%	10.0%
• Sugar • Energy	2.2%	4.4%	6.5%	8.5%	10.5%	12.5%	14.4%	16.3%	18.1%	20.0%

There are only two rows in this table since the numbers are the same for saturated fat and salt and for sugar and energy.

It is recognised that reformulation may not have been a priority for food companies during the pandemic, so progress in 2020/2021 may be lower than expected.

It is important to note that the only targets set in the reformulation roadmap are the total percentage reductions to be achieved between 2015 and 2025 (i.e., 10% and 20% by 2025), however the values in Table 1 are useful benchmarks for assessing performance over time. For example, if no progress was made prior to 2020 in saturated fat, then we could say that we are "behind" by about 5%, since a 5% reduction is what would be expected if consistent year-on-year progress had been made. In this scenario, the full 10% reduction would then be expected to be made between 2021 – 2025, which would be more difficult in practice due to the compressed timeframe.

2.3 Observed reduction 2018 - 2025

Given the chosen data sources, information going back to 2015 will not always be available (see next section on Modelling 2015 baseline values), and, hence, the overall reduction from 2015 to 2025 may not be known. However, we will also directly evaluate progress within the period wherein data is available. For example, if sugar is 11.0 g/100g in 2018 and 8.6 g/100g in 2025, then the percentage change over this period is 100 × (8.6 – 11.0) / 11.0 = –22%. In this case, the target 20%

has been achieved in the period from 2018 – 2025, so we may reasonably assume that it has been achieved overall from 2015 – 2025.

It should be noted that we are assuming above that the overall reduction from 2015 – 2025 is greater than the observed reduction from 2018 – 2025. However, if, for example, the unobserved 2015 value was 10.1 g/100g, rising to 11.0 g/100g in 2018, before falling to 8.6 g/100g in 2025, then the target 20% (from 2015 – 2025) would not have been achieved since it would be 100 × (8.6 – 10.1) / 10.1 = –15%. Our assumption that the overall reduction is greater than the observed reduction is equivalent to assuming that sugar would *not* have risen from 2015 – 2018. This assumption is considered to be reasonable since the general focus is on reducing such target nutrients. Moreover, in the absence of 2015 data, such assumptions are necessary.

2.4 Modelling 2015 baseline values

As mentioned, we will be assuming that the overall reduction (from 2015) is greater than the observed reduction. It will also be useful to get a sense of what this overall reduction is. Since the most comprehensive available data (INFID) goes back to 2017/2018, we propose to take the approach of modelling the gap between 2017/2018 and 2015. For simplicity here, we will assume that the earliest data available was collected in 2018. This is a 3-year gap to 2015 by which time it is expected (from Table 1) that the percentage change, if following a consistent year-on-year decrease, will be approximately 3% for saturated fat and salt and approximately 6.5% for sugar and energy. Using this approach, if sugar is 11.0 g/100g in 2018, then it is expected that it would have been 11.8 g/100g in 2015 since 100 × (11.0 – 11.8) / 11.8 = –6.5%.

Here we show how to calculate the above modelled 2015 value of 11.8 g/100g given the observed 2018 value of 11.0 g/100g. First, we will assume that the sugar content was indeed 11.8 g/100g in 2015 and that a year-on-year decrease of 2.2% was consistently achieved. Given this, the sugar content would then be 11.54 g/100g (= 11.8 × 0.978) in 2016, followed by 11.28 g/100g (= 11.54 × 0.978) in 2017, and, finally, 11.0 g/100g (= 11.28 × 0.978) in 2018. Note that, to go directly from 2015 to 2018, this can be calculated as $11.8 \times (0.978)^3 = 11.0$ g/100g since we are multiplying by 0.978 three times in a row. However, for our purposes, we will actually have the 2018 data, and aim to do the opposite – to go from 2018 *back* to 2015. Therefore, we *divide* by the factor $(0.978)^3$ rather than multiply, i.e., the observed 2018 value is 11.0 g/100g and the modelled 2015 value is calculated as $11.0 \div (0.978)^3 = 11.8$ g/100g.

It is important to note that this approach to modelling baseline data produces an optimistic value, based on an assumption of consistent year-on-year progress. Given this assumption, the Reformulation Task Force recognise that it is unlikely that reductions will greatly exceed the benchmarks in Table 1. (However, this is unknown in the absence of specific data.) It is also worth mentioning that for some individual product categories, data is available prior to 2017/2018, e.g., FSAI has data on yoghurts and breakfast cereal in 2016/2017 and sodium data since 2003. These earlier datasets can also be used as part of a sensitivity analysis to compare with the modelled baseline values computed from the INFID data. Moreover, if there is little or no evidence of reformulation for a particular nutrient/category, then modelling may not be applied.

2.5 Example baseline values based on 2017/2018 INFID study

Table 2 displays the average nutrient contents from the 2017/2018 INFID study for 10 food categories as an example (but the Reformulation Task Force will be monitoring other categories beyond these).

Table 2. INFID 2018 nutrient contents (g/100g for Saturated Fat, Salt, and Sugar; kcal/100g for Energy)

Category	Number of products (n)	SatFat	Salt	Sugar	Energy
Biscuits including crackers	226	8.250	0.758	21.900	454.0
Ready to eat breakfast cereal	88	1.710	0.537	19.000	395.0
Cakes, pastries and buns	75	5.660	0.700	30.500	381.0
Sausages	36	10.600	2.430	1.390	335.0
Cheese	93	16.300	1.830	1.300	326.0
White sliced bread and rolls	72	0.630	1.100	3.240	251.0
Ice creams	67	7.010	0.153	20.300	202.0
Bacon and ham	64	2.840	2.290	0.627	159.0
Yogurts	146	1.960	0.149	11.100	97.9
Peas, beans and lentils	30	0.156	0.360	2.900	86.3
All values are per 100g and shown to three significant digits.					

Using the INFID values from Table 2, we assume for simplicity that all of these data were collected in 2018 (so that there is a 3-year gap to the 2015 baseline). Given this, the baseline values can then be modelled, for example, assuming consistent year-on-year progress as described previously (which amounts to dividing by $(0.99)^3$ for saturated fat and salt and dividing by $(0.978)^3$ for sugar and energy). These modelled values are displayed in Table 3 along with modelled 2025 target values. The targets are computed by multiplying the modelled baseline values by 0.9 for saturated fat and sugar (corresponding to a 10% reduction) and 0.8 for sugar and energy (corresponding to a 20% reduction).

Table 3. Baseline & target values based on 2018 INFID (g/100g for Saturated Fat, Salt, and Sugar; kcal/100g for Energy)

	2015 Modelled Baseline				2025 Target			
Category	Sat Fat	Salt	Sugar	Energy	Sat Fat	Salt	Sugar	Energy
Biscuits including crackers	8.510	0.783	23.40	486.0	7.660	0.705	18.700	389.0
Ready to eat breakfast cereal	1.770	0.554	20.30	422.0	1.590	0.499	16.300	338.0
Cakes, pastries and buns	5.840	0.722	32.60	408.0	5.260	0.651	26.100	326.0
Sausages	10.900	2.510	1.48	358.0	9.820	2.260	1.190	287.0
Cheese	16.900	1.890	1.39	348.0	15.200	1.700	1.120	279.0
White sliced bread and rolls	0.650	1.130	3.47	268.0	0.586	1.020	2.770	215.0
Ice creams	7.240	0.158	21.70	215.0	6.520	0.142	17.400	173.0
Bacon and ham	2.940	2.360	0.67	170.0	2.640	2.130	0.536	136.0
Yogurts	2.020	0.154	11.80	105.0	1.820	0.138	9.470	83.8
Peas, beans and lentils	0.161	0.371	3.10	92.2	0.145	0.335	2.480	73.8
All values are per 100g and shown to three significant digits.								

The above values should only be taken as indicative of the approach being taken, rather than providing definitive targets; other data/information may be used to shape the modelling approach as previously mentioned. Moreover, the approach outlined is only for the purpose of Task Force monitoring. It does not yield targets for any particular food business operator, who will need to achieve the 10% (saturated fat and salt) and 20% (sugar and energy) reductions by 2025 for their own specific products and baseline data. It should also be noted that, although nutrient content is the focus of this document, portion size reduction is an alternative approach to reducing intake of target nutrients. Therefore, the Task Force will also be considering data on portions and recommended serving size.

2.6. Sales weighted average nutrient content

When evaluating progress on target nutrients, in addition to looking at average nutrient values across food categories, we will also consider sales weighted average (SWA) nutrient content for food categories. The SWA nutrient content takes into account the volume sold for different products/brands to provide a better estimate of the average *consumed* nutrients. The sales data available to the Task Force is at the resolution of brands, and, therefore, we will be working with a brand-level SWA; this involves brand-level sales volumes (total sales across products within a brand) matched to brand-level nutrients (average nutrient content across products).

As an example, assume for simplicity that a particular food category is made up of two brands with average brand-level sugar values of 9.1 g/100g and 12.9 g/100g respectively. Then, if 100kg of the first brand was sold and 1000kg of the second, the sales weighted average sugar content is calculated as (100 × 9.1 + 1000 × 12.9) / (100 + 1000) = 12.6 g/100g. Clearly this is weighted towards the 12.9 g/100g value since this brand is being consumed much more. In more general terms, the sales weighted average nutrient content is given by

$$\text{Sales Weighted Average} = \frac{v_1x_1 + v_2x_2 + \cdots + v_nx_n}{v_1 + v_2 + \cdots + v_n}$$

where the v is the brand level total sales volume and x is the average nutrient value for a sample of n brands.

The SWA will be calculated for different years, after which the percentage change can be computed:

$$\text{SWA \% change} = 100 \times \frac{(\text{SWA in 2025}) - (\text{SWA in 2015})}{(\text{SWA in 2015})}.$$

Note that this percentage change is driven both by reformulation (via the nutrient contents) and consumer behaviour (via the volumes sold). This is important to monitor since some brands available could be reducing specific target nutrients, but consumers could be switching to brands that are not reducing target nutrients as desired; thus, what is actually being consumed might not change or could even disimprove. This is an important calculation to understand the overall impact at population level.

3. Purchasing a third-party commercial dataset

As well as using INFID to monitor progress over time, the Food Reformulation Task Force intends to purchase a data set from a third party commercial data provider. This data set would at a minimum provide simple average energy and target nutrient content of all 40 priority food categories for 2015 and 2025 and ideally provide sales weighted average energy and target nutrient content of all 40 priority food categories for 2015 and 2025.

4. Advising of an allowance for lactose in dairy based yogurt

Following feedback from the yogurt industry and its representatives regarding the naturally occurring sugar content of yogurt in the form of lactose, an allowance will be made. Research published by the FSAI in 2021 found in a sample of n=191 dairy based yogurts on the Irish market in 2019, the median lactose content was 3.3 g / 100 g with a range of 0.0 g – 5.6 g / 100 g. This is lower than the lactose allowance provided for in the Public Health England (PHE) Sugar Reduction Programme of 3.8 g / 100 g. A Roadmap for Food Product Reformulation in Ireland sets out the intention to align, where possible, with the PHE reformulation programmes approach. Within this context, the Food Reformulation Task Force has taken the pragmatic decision to provide a lactose allowance of 3.8 g / 100 g for dairy based yogurt. This allowance will be applied when reporting on monitoring activities by subtracting the 3.8 g / 100 g from the average total sugar content per 100g.

5. Summary

This report outlines the approach the Food Reformulation Task Force will use to establish a 2015 baseline for the 40 priority food categories for reformulation in Ireland. This baseline will be used to measure food reformulation progress against over the lifetime of the Food Reformulation Task Force. The report also outlines how existing data sources will be used to measure observed nutrient reductions since 2018. Finally, the report introduces how the reformulation Task Force will consider sales weighted average nutrient reduction for priority food categories where data sources allow.

References

1. Department of Health. A Healthy Weight for Ireland: Obesity Policy and Action Plan 2016 – 2025. In: Health Do, ed. Dublin: The Stationery Office; 2016.
2. Department of Health. Roadmap for Food Product Reformulation in Ireland In:2021
3. Gilsenan MB, Lambe J, Gibney MJ. Irish National Food Ingredient Database: application for assessing patterns of additive usage in foods. *Food Additives & Contaminants.* 2002;19(12):1105-1115.

Food Reformulation Task Force
Food Safety Authority of Ireland
The Exchange, George's Dock, IFSC,
Dublin 1, D01 P2V6

T +353 1 817 1300
E info@fsai.ie / foodreformulation@fsai.ie

Join us on LinkedIn
Follow us on Twitter @FSAIinfo
Say hi on Facebook
Visit us on Instagram
Subscribe to our YouTube channel

Food Reformulation | Food Safety Authority of Ireland (fsai.ie)