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Supporting document 1

Performance of the Health Star Rating algorithm

Proposal P1067 – Health Star Rating System

Executive summary

This report assesses whether the proposed changes to the Health Star Rating (HSR) system at the 2nd call for submissions (CFS) of Proposal P1067 affects its alignment with dietary guidelines in Australia and New Zealand. Data from the Australian Branded Food Database and 2013 Australian Dietary Guidelines (ADG) have been used as a proxy for assessing alignment of the HSR algorithm with dietary guidelines for New Zealand given the similarities in food supply and dietary guidelines across countries.

The analysis found that overall alignment between the HSR algorithm and the ADG remains unchanged from the 1st CFS at 79%. Alignment for core foods also remained unchanged at 85%, and discretionary food alignment increased slightly by 1% to 74%.

Areas of misalignment were also similar to those identified in the 1st CFS. The most common categories for core food misalignment were cheese, fruit and vegetable juices, savoury biscuits and instant noodles. The most common categories for discretionary food misalignment were sauces and condiments, snacks, fruit and cereal bars, carbonated drinks, and soups and stocks.

Overall, the modelling shows the mandatory HSR approach as proposed in P1067 maintains a similar level of alignment with dietary guidelines as the current voluntary system, with changes to the HSR for only a small number of foods.

Additional modelling explored a targeted option to better align core Category 3D cheeses with the ADG while minimising changes to the current HSR algorithm. Modelling using a larger and more contemporary dataset than that used to establish the existing Category 3D scale, found improved alignment with the ADG, but also resulted in lower HSR ratings for many cheeses, including most reduced-fat cheeses.

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1 Introduction

1.1 The HSR system

The Health Star Rating (HSR) system is a nutrient profiling¹ front of pack nutrition labelling (FoPL) system that rates the overall nutritional profile of packaged food and assigns it a rating from 0.5 to 5 stars. It is intended to provide a quick, easy, standardised way for consumers to compare the nutritional value of similar packaged foods to help them make informed food choices aligned with dietary guidelines. The higher the star rating compared to similar foods, the healthier the choice.

The system was implemented in 2014 in Australia and New Zealand on a voluntary basis. The system was reviewed after two and five years of implementation. No changes were introduced following the two-year review. However, a package of updates was introduced following the 5-year review, including updates to the algorithm used to determine a food's HSR (Department of Health, Disability and Ageing 2020).

Proposal P1067 is considering amending the Australia New Zealand Food Standards Code (the Code) to require foods for sale in Australia and New Zealand to display a HSR symbol. This report assesses whether the proposed changes to the HSR system at the 2nd call for submissions (CFS) of P1067 affects its alignment with the 2013 Australian Dietary Guidelines (ADG) and follows earlier modelling of the voluntary system included in the 1st CFS (see SD3 to the 1st CFS for further information).

1.2 How to calculate a HSR

The HSR calculator is used to determine the HSR of foods using an algorithm. It is currently available as an off-line excel-based calculator and an on-line web-based calculator.

The HSR algorithm is based on a modified version of the Nutrient Profiling Scoring Criterion (NPSC) used to determine eligibility for making health claims about food in Australia and New Zealand. In the voluntary system, foods are assigned to one of 6 HSR categories (1, 1D, 2, 2D, 3 and 3D²) based on the general food type and compositional requirements. The algorithm used to calculate a HSR includes components of food considered to increase the risk of chronic disease (energy, saturated fat, total sugars and sodium) and components considered to decrease the risk of chronic disease (protein, dietary fibre and fruit, vegetable, nut and legume (FVNL) content). Baseline points are determined for the risk-increasing components, which are offset by modifying points determined for the risk-decreasing components to determine a total HSR score which is converted to a star rating. The combination of components that contribute to any single calculation differ by food.

The operation of the HSR algorithm is illustrated below in Figure 1. For further information on how to calculate a HSR under the voluntary system refer to the HSR System Implementation Guide (Department of Health, Disability and Ageing 2025).

¹ Nutrient profiling is the science of classifying or ranking foods according to their nutritional composition for reasons related to preventing disease and promoting health (WHO 2021).

² 1 Non-dairy beverages, jellies and ice-confectionery; 1D Milk and dairy beverages (and analogues); 2 Foods (not in any other categories); 2D Non-frozen dairy foods (and analogues); 3 Fats, edible oils and their spreads; 3D Cheese (and analogues)

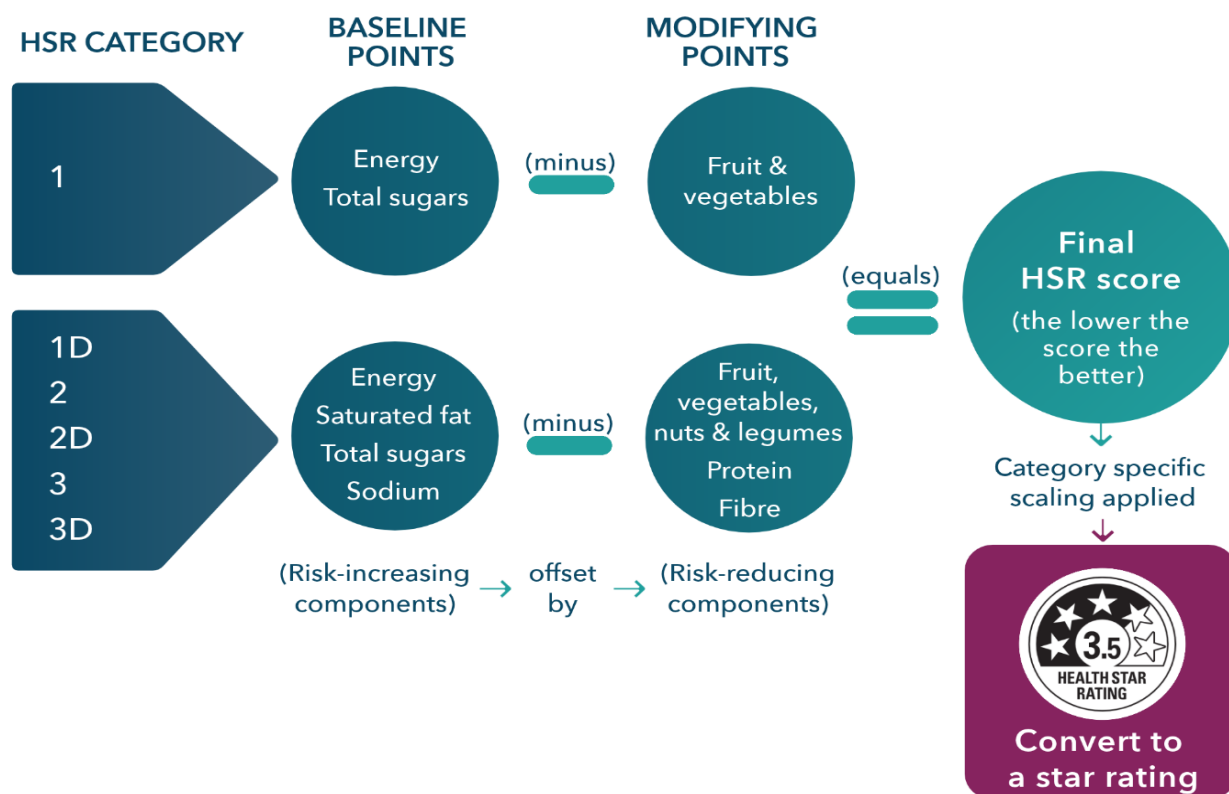


Figure 1. Determining a HSR

1.3 Modifying the HSR algorithm to change ratings

The HSR algorithm can be modified to account for changes in the food supply, or to address specific concerns if required. The most common methods to change a HSR include:

- changing how foods are categorised
- altering the components that contribute to baseline and/or modifying points for a HSR category
- increasing or decreasing the baseline or modifying points awarded for any given component
- changing the scales used for the application of points
- altering the points tables used for the conversion of a score to a rating.

1.4 Review of the HSR algorithm

A comprehensive review of the HSR algorithm was undertaken as part of the 5-year review of the HSR system between 2017-19. This included investigating a broad range of stakeholder concerns such as which foods should use the algorithm, the appropriateness of the HSR categories and ratings, which components should and should not be part of the algorithm, and how these components should be treated within the algorithm. Despite many issues being investigated, only a small number of updates were implemented to better align HSRs with dietary guidelines, reflect emerging evidence, address stakeholder concerns and encourage positive reformulation. For further information see Health Star Rating 5 Year Review Report³.

A full review of the HSR algorithm was not undertaken as part of P1067. Therefore, changes

³ [Health Star Rating system reviews | Health Star Rating System](#)

to the types of components used in the algorithm, the baseline and modifying points tables and the methodology used for converting the final HSR score into a star rating were not specifically considered. However, FSANZ is proposing some changes to the application of the HSR system and the category definitions as part of the 2nd CFS to more closely align and incorporate the HSR algorithm into the Code's statutory framework. FSANZ also considered an option for improving the alignment of foods in Category 3D with dietary guidelines.

2 Impact of proposed changes on the alignment of the HSR algorithm with Dietary Guidelines

2.1 Purpose

This analysis assesses how the changes to the voluntary HSR system proposed at the 2nd CFS affect its alignment with the ADG (NHMRC 2013).

2.2 Methodology

The data used for this analysis is the same data extracted from the Australian Branded Food Database (BFD) in May 2025 for use in the 1st CFS.

It includes 21,773 products that would be required to use the HSR system under a mandatory scheme, using the HSR category definitions and criteria proposed as part of the 2nd CFS (see Sections 2 and 3 of SD2). This is slightly higher than the 21,675 products identified as permitted and intended⁴ that was used to support the modelling in the 1st CFS.

Product data from the BFD was used as a proxy for assessing the New Zealand food supply given the similarity of products across these countries, as for the 1st CFS. FSANZ acknowledges there will be some New Zealand specific foods not represented in the BFD and therefore missing from this analysis.

For further information on how the data were generated, classified and validated for analysis refer to Section 2.2 of SD3 to the 1st CFS.

2.3 Analysis

FSANZ calculated the HSR of foods required to display a HSR for this analysis regardless of whether a HSR was present on pack and available in the BFD, to ensure the HSR reflected the changes proposed at the 2nd CFS. For further information on how to calculate a HSR for this analysis refer to Appendix 1.

Alignment of the HSR algorithm with the ADG was determined using a food's Core and Discretionary Classification⁵ and HSR, which was compared to a threshold, as per the 1st CFS. The HSR algorithm was considered to align with dietary guidelines if a food classified as core had a HSR ≥ 3 , and a food classified as discretionary had a HSR < 3 . As noted in the 1st CFS these thresholds were selected for consistency with modelling undertaken for the 5-year review. The threshold reflects the original design intent of the voluntary HSR system, to maintain close alignment with the NPSC on which the system is based. A threshold of 3 stars broadly aligns with the NPSC threshold used to determine whether foods are eligible to make

⁴ Foods intended to display a HSR as part of the voluntary scheme

⁵ a flag that identifies a food as core or discretionary according to the ADG using criteria developed for use in the NNPAS (ABS 2025).

a health claim (mpconsulting 2018a). Under this approach, foods that are not eligible to make a health claim would generally receive a HSR of 0.5 to 2.5 stars, while foods that are eligible to make a health claim would generally receive 3 to 5 stars (mpconsulting 2018b). This threshold separates the 10 possible HSRs into two equal groups: five ratings below 3 stars for discretionary foods, and five ratings of 3 stars or higher for core foods.

FSANZ acknowledges the core and discretionary classifications were not developed for this purpose and its use for determining HSR alignment with dietary guidelines may not be considered appropriate in all cases. This approach also assumes the ADG are representative of recommendations made in the New Zealand Eating and Activity Guidelines (NZEAG). However, it is noted the NZEAG do not use the term 'discretionary', instead providing advice to limit foods high in saturated fat, salt and sugars which could be considered similar to 'discretionary' foods.

The overall alignment, and alignment of core and discretionary foods was also compared between the 1st and 2nd CFS.

2.4 Results

Of the 21,773 foods in the BFD, 10,704 (49%) were classified as a core food and 11,069 (51%) were classified as a discretionary food.

2.4.1 Overall alignment

Overall alignment of the HSR algorithm under the proposed mandatory approach with the ADG is 79%, with 9,111 (85%) of core foods receiving a HSR ≥ 3 , and 8,177 (74%) of discretionary foods receiving a HSR < 3 . The range of HSRs in both groups is 0.5 to 5 stars as shown in Figure 2, with a mean HSR for core and discretionary foods of 3.5 and 2 respectively.

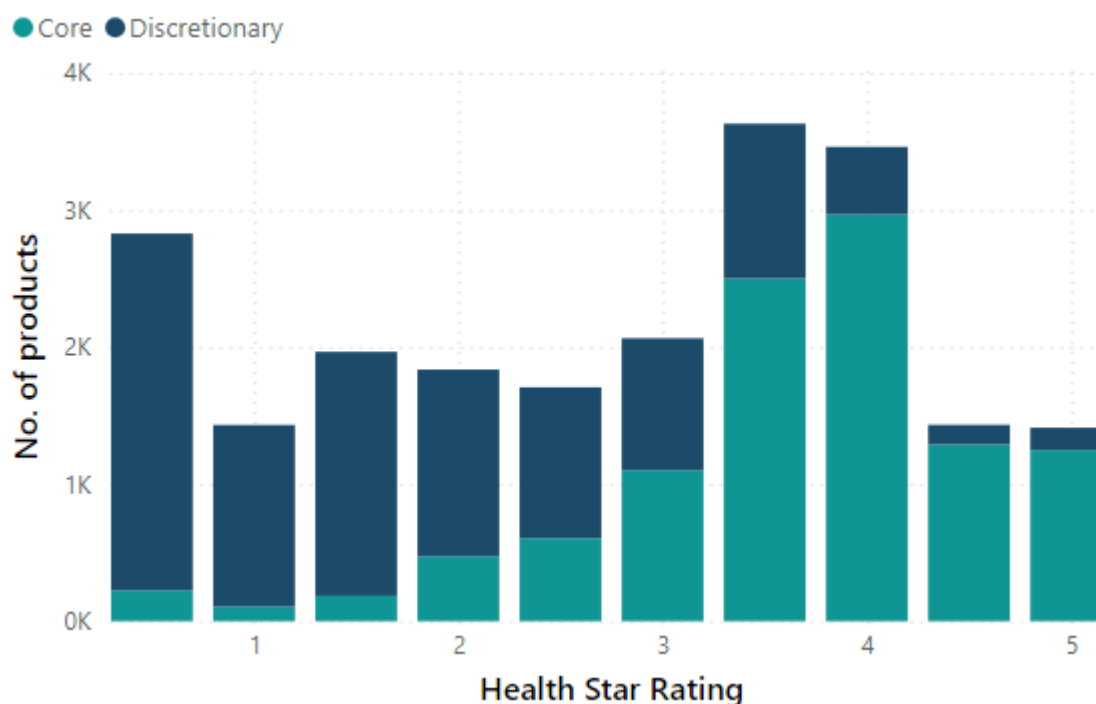


Figure 2. Number of products by HSR and core and discretionary classification

2.4.2 Misalignment

2.4.2.1 Core foods

There were 1,593 (15%) core foods with a HSR <3. These were spread across multiple food categories. The most common categories included cheese (393; 55%), fruit and/or vegetable juices (173; 45%), savoury biscuits (138; 42%), instant noodles (91; 47%), other mixed dishes (85; 11%), dried fruit (73; 37%), other dairy beverages (i.e. flavoured milks) (67; 34%), dressings (61; 94%) and bread/wraps (51; 7%). The major food category contributors to core food misalignment are summarised in Table 1 along with the distribution of HSRs below 3 stars. Most misaligned core foods scored between 2 to 2.5 stars, except for instant noodles and plant-based milk alternatives which mostly scored between 0.5 to 1 star and 1 to 1.5 stars respectively.

Table 1. Major food category contributors to core food misalignment*

HSR modelling category	Total foods	Total core foods	Core foods with HSR <3 (%)	Distribution of core HSRs <3 n (% of misaligned foods)**				
				0.5	1	1.5	2	2.5
Cheese	749	710	393 [^] (55%)	109 (28%)	22 (6%)	52 (13%)	88 (22%)	122 (31%)
Fruit &/or vegetable juices	383	383	173 (45%)	2 (1%)	2 (1%)	6 (3%)	40 (23%)	123 (71%)
Savoury biscuits	456	325	138 (42%)	5 (4%)	13 (9%)	16 (12%)	48 (35%)	56 (41%)
Instant noodles	194	194	91 (47%)	47 (52%)	14 (15%)	5 (5%)	9 (10%)	16 (18%)
Other mixed food/dishes	882	748	85 (11%)	4 (5%)	2 (2%)	12 (14%)	40 (47%)	27 (32%)
Fruit – dried	197	196	73 (37%)	1 (1%)		8 (11%)	23 (32%)	41 (56%)
Other dairy beverages	227	195	67 (34%)	8 (12%)	6 (9%)	5 (7%)	5 (7%)	43 (64%)
Dressings	230	65	61 (94%)	8 (13%)	8 (13%)	11 (18%)	22 (36%)	12 (20%)
Breads/wraps	708	705	51 (7%)	1 (2%)		4 (8%)	30 (59%)	16 (31%)
Plant-based milk alternatives	155	153	47 (31%)	2 (4%)	15 (32%)	12 (26%)	9 (19%)	9 (19%)

* Represents 74% of misaligned core foods.

** Due to rounded numbers some percentages may not add to 100%.

[^] Following the 1st CFS modelling, errors were identified and corrected in the nutrient data for three cheeses. As a result, 393 cheeses were identified as misaligned in the current analysis, compared with 391 reported at the 1st CFS.

2.4.2.2 Discretionary foods

There were 2,892 (26%) discretionary foods with a HSR ≥3. These were also spread across multiple food categories. The most common categories included Sauces and condiments (429; 41%), Snacks such as potato/vegetable crisps/corn chips (359; 38%), Fruit, nut, seed & cereal bars or balls (339; 53%), Carbonated drinks (336; 44%), Soups and stocks (201; 84%), Vegetables & legumes-canned (102; 58%), Meat-processed (85; 21%), Sugar-based confectionery (83; 17%), Savoury pastries (73; 29%) and Breakfast cereals, ready to eat (62; 65%). The major food category contributors to discretionary food misalignment are summarised in Table 2 below along with the distribution of HSRs ≥3. Most misaligned discretionary foods scored between 3 to 3.5 stars. The Sauces & condiments, Snacks, Fruit, nut, seed & cereal bars or balls, Sugar-based confectionery and Breakfast cereals, ready to eat were the categories to most commonly score above 3.5 stars.

Table 2. Major food category contributors to discretionary food misalignment*

HSR modelling category	Total foods	Discretionary foods	Discretionary foods with HSR ≥3 n (%)	Distribution of discretionary HSRs ≥3 n (% of misaligned foods)				
				3.0	3.5	4.0	4.5	5.0
Sauces & condiments	1133	1049	429 (41%)	180 (42%)	85 (20%)	147 (34%)	16 (4%)	1 (<1%)
Snacks	1052	956	359 (38%)	96 (27%)	134 (37%)	72 (20%)	25 (7%)	32 (9%)
Fruit, nut, seed & cereal bars or balls	661	639	339 (53%)	88 (26%)	69 (20%)	84 (25%)	40 (12%)	58 (17%)
Carbonated drinks	770	762	336 (44%)	27 (8%)	309 (92%)			
Soups & stocks	523	240	201 (84%)	84 (42%)	103 (51%)	13 (6%)	1 (<1%)	
Vegetables & legumes - canned	547	176	102 (58%)	41 (40%)	40 (39%)	17 (17%)	4 (4%)	
Meat - processed	417	400	85 (21%)	22 (26%)	53 (62%)	8 (9%)	2 (2%)	
Sugar based confectionery	477	477	83 (17%)	27 (33%)	32 (39%)	2 (2%)	5 (6%)	17 (20%)
Savoury pastries	401	252	73 (29%)	62 (85%)	10 (14%)	1 (1%)		
Breakfast cereals, ready to eat	433	96	62 (65%)	2 (3%)	9 (15%)	43 (69%)	8 (13%)	

* Represents 72% of misaligned discretionary foods.

2.5 Key findings

The proposed mandatory approach outlined in the 2nd CFS maintains a similar level of alignment with the ADG to the voluntary system modelled at the 1st CFS. Both overall and core food alignment remain unchanged at 79% and 85% respectively. Discretionary food alignment increased by 1 percentage point, to 74%, under the proposed mandatory approach. This increase reflects the differences in how foods are categorised as permitted and intended and required to display a HSR between the two approaches.

Food categories contributing to misalignment also remained similar to that reported at the 1st CFS, with core food misalignment most commonly associated with categories such as Cheese, Fruit and/or vegetable juices, Savoury biscuits and Instant noodles, and discretionary food misalignment most commonly associated with Sauces and condiments, Snacks, Fruit, nut, seed and cereal bars or balls, Carbonated drinks, and Soups and stocks.

Changes in ratings under the proposed mandatory approach are limited and largely reflect the proposed changes for calculating cheese and cracker snack packs, clarifications to the Category 1 inclusions and treatment of FVNL. Further details of the food categories impacted are provided in Table A2.1 at Appendix 2.

3 Category 3D cheeses

At the 1st CFS, some industry submitters raised concerns that HSR Category 3D cheeses remain insufficiently aligned with dietary guidelines, noting FSANZ findings that 55% of core cheeses receive a HSR below 3 stars. They expressed concern low ratings may confuse consumers and discourage consumption of a core food.

3.1 Purpose

The purpose of the modelling was to explore a targeted option to better align core Category

3D cheeses with the ADG while minimising changes to the HSR algorithm, noting a comprehensive review of the algorithm was not undertaken.

3.2 Methodology

FSANZ considered whether rescaling Category 3D could improve the alignment of cheese ratings with dietary guidelines. This approach retains the existing intent, structure, components and methodology of the HSR algorithm without affecting ratings for other food categories. Other options such as updating components and baseline and modifying points tables used in the algorithm were considered out of scope as these aspects are more appropriately considered as part of a holistic review of the algorithm.

The approach to rescaling Category 3D cheeses involved:

- identifying the cheeses classified in HSR Category 3D from the 21,773 foods in the BFD used to support the above analysis.
- calculating the HSR Score for each of the Category 3D cheeses and identifying the 5th and 99th percentile values to use as the lower and upper scaling endpoints.
- dividing the range between these endpoints into 10 equal intervals, with the end intervals assigned ratings of 0.5 stars and 5 stars respectively.
- calculating a revised HSR for each of the Category 3D cheeses using the updated HSR Score to HSR table and assessing the alignment of the HSR with the ADG.

The rescaled HSR Score to HSR table used in the analysis is shown below in Table 3 along with those used currently under the voluntary system for comparison.

Table 3. HSR Score for Category 3D, with final Health Star Rating

Health Star Rating	HSR Score (Current voluntary system)	HSR Score (After rescaling)
5	≤24	≤21
4.5	25 – 26	22 – 24
4	27 – 28	25 – 27
3.5	29 – 30	28 – 30
3	31	31 – 33
2.5	32 – 33	34 – 36
2	34 – 35	37 – 39
1.5	36 – 37	40 – 42
1	38 – 39	43 – 45
0.5	≥40	≥46

The current analysis is limited to Category 3D cheese to reflect the specific concerns raised by submitters about alignment of these products with dietary guidelines. This approach is consistent with the method used to scale other HSR categories and only changes how the final HSR Score is converted to a star rating. Alternate approaches, such as reducing the number of rating increments or using different percentile values as the scaling end points, were not considered because they would represent a more substantial shift from the way other HSR categories are treated and are therefore considered out of scope for this proposal.

3.3 Results

FSANZ identified 593 Category 3D cheeses in the BFD. Of these, 297 (50%) cheeses receive a HSR <3 and are considered misaligned with dietary guidelines. These figures are lower than those reported in the 1st CFS, which identified 749 cheeses, of which 391 (55%) received a HSR <3. This difference reflects the scope of the analysis, with the 1st CFS

including cheeses in HSR categories 2, 2D and 3D, whereas the current analysis is limited to Category 3D cheeses. The current distribution of HSRs for cheeses in Category 3D is shown in Figure 3.

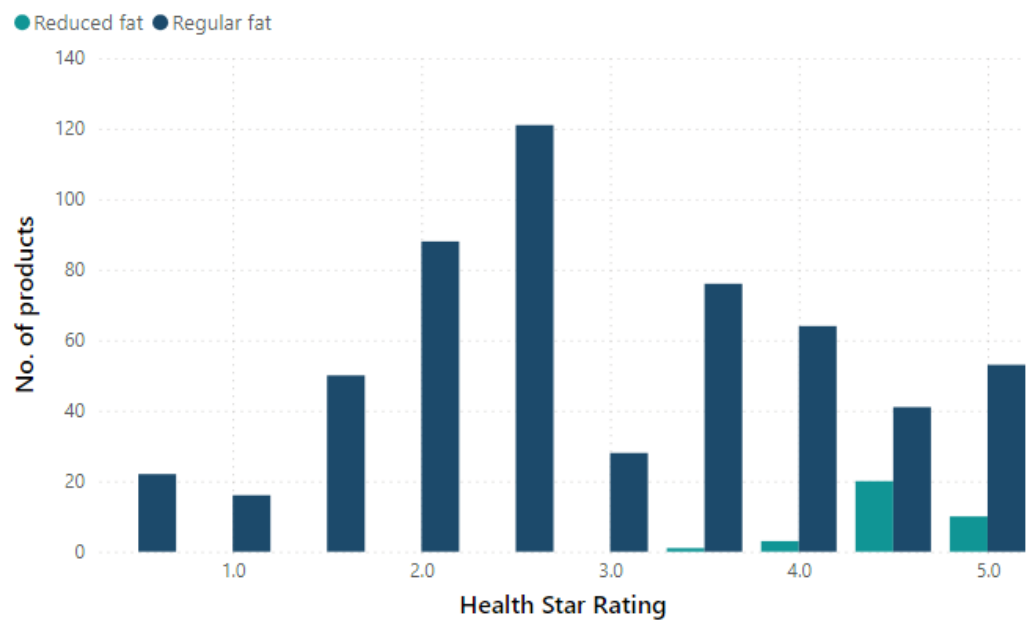


Figure 3: Current distribution of HSRs for Category 3D cheeses

Rescaling Category 3D using a larger and more current dataset than used to establish the existing Category 3D scale increased the proportion of 3D cheeses aligned with dietary guidelines by 20 percentage points, from 50% to 70%. Figure 4 shows the distribution of HSRs after rescaling.

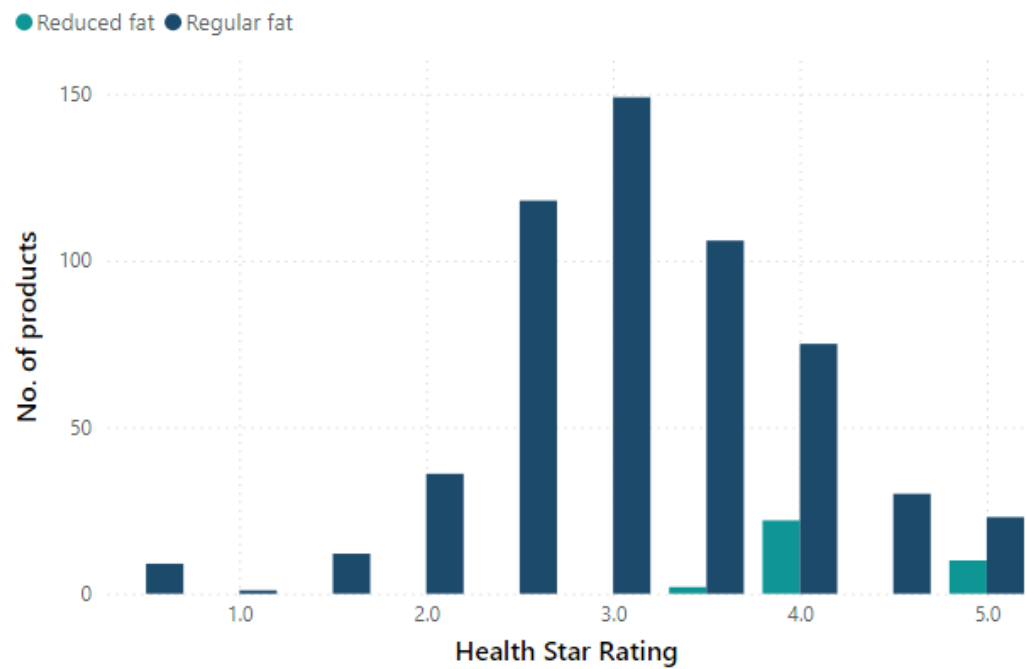


Figure 4: Distribution of HSRs for Category 3D cheeses after rescaling

Rescaling 3D cheeses also reduced the number of cheeses receiving the highest ratings. The number of cheeses rated 5 stars decreased from 63 to 33, while the number of cheeses rated 4.5 stars decreased from 61 to 30. Ratings also decreased for 21 of the 34 reduced-fat cheeses (62%). However, no ratings decreased by more than 0.5 stars. Further information on the distribution of star ratings under the current voluntary system and after rescaling is shown in Table 4.

Table 4. Distribution of HSRs in Category 3D*

		Health Star Rating									
	Total	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5
Current voluntary system	593	22 (4%)	16 (3%)	50 (8%)	88 (15%)	121 (20%)	28 (5%)	77 (13%)	67 (11%)	61 (10%)	63 (11%)
After rescaling		9 (2%)	1 (<1%)	12 (2%)	36 (6%)	118 (20%)	149 (25%)	108 (18%)	97 (16%)	30 (5%)	33 (6%)

* Due to rounded numbers some percentages may not add to 100%

The impact of rescaling varied across cheese types. Increased star ratings were more common than decreased star ratings for regular fat hard ripened cheeses, where 263 products increased by 0.5–1 star compared with 65 that decreased by 0.5 stars. In contrast, surface-ripened cheeses were more likely to decrease in star ratings than increase, and almost all regular-fat unripened cheeses remained unchanged. All changes to ratings for reduced fat cheeses were decreases in star ratings. For more information on the impact of rescaling by cheese and fat type refer to Table 5.

Table 5. Impact of rescaling on HSRs by cheese and fat type

Cheese type	No. foods in category	No. foods impacted (% of category)	Decrease in star rating (No. of foods)		No change in star rating (No. of foods)		Increase in star rating (No. of foods)	
			0.5	0	0.5	1	0.5	1
Regular fat	559	389 (70%)	101	170	230	58		
Hard cheese ripened styles	444	328 (74%)	65	116	209	54		
Camembert, brie and other surface ripened cheeses	83	48 (58%)	29	35	17	2		
Cheese, processed	18	12 (67%)	6	6	4	2		
Cheese, unripened styles, including cream and cottage cheese, regular fat	14	1 (7%)	1	13				
Reduced fat	34	21 (62%)	21	13				
Hard cheese ripened styles, reduced fat	32	20 (63%)	20	12				
Cheese, processed, reduced fat	2	1 (50%)	1	1				
Total	593	410 (69%)	122	183	230	58		

Rescaling Category 3D increased both overall alignment of the HSR algorithm with dietary guidelines and core food alignment by 1 percentage point, to 80% and 86%, respectively. It had no impact on the alignment of discretionary foods.

3.4 Key findings

Rescaling Category 3D using a larger and more current dataset than used to establish the existing Category 3D scale increased alignment of Category 3D cheeses with dietary guidelines by 20 percentage points, from 50% to 70%.

Ratings changed for 410 (69%) Category 3D cheeses. Of these, 288 (70%) received a higher rating and 122 (30%) received a rating 0.5 stars lower. The impacts varied by cheese type

with the ratings of regular-fat hard ripened cheeses most likely to increase, the ratings of surface-ripened cheeses most likely to decrease and almost all regular-fat unripened cheeses remaining unchanged.

Rescaling also reduced the number of cheeses receiving the highest ratings, including reductions in the number rated 5 stars from 63 to 33 and 4.5 stars from 61 to 30. Most reduced-fat cheeses (21 of 34 products) would also receive a lower rating under the revised scale.

When combined with the proposed mandatory approach outlined in the 2nd CFS, rescaling increased overall alignment of the HSR algorithm with the ADG from 79% to 80% and core food alignment from 85% to 86%, while discretionary food alignment remained unchanged at 74%.

4 Conclusion

Overall, the modelling indicates the proposed mandatory approach maintains the level of alignment achieved under the voluntary system, while affecting ratings for a small proportion of products.

There is limited opportunity under this proposal to improve the alignment of core Category 3D cheeses with the ADG. Rescaling Category 3D would improve alignment with dietary guidelines but would also reduce the ratings of many cheeses, including most reduced-fat cheeses.

5 References

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APPENDIX 1 How the HSR calculator works

A1.1 Process for calculating a HSR

There are several steps that must be completed to calculate a food's HSR:

1. Determining whether the food is eligible for an automatic HSR
2. Determining the form of the food for the HSR
3. Determining the HSR category for the food
4. Calculating baseline points
5. Calculating modifying points
6. Calculating the final HSR score
7. Converting the final HSR score into a star rating

Step 1. Determining whether the product is eligible for an automatic HSR

The following foods would be eligible for an automatic HSR without the use of the calculator:

- packaged water and carbonated water (5 stars). Cannot contain any ingredients other than carbon dioxide and fluoride.
- unsweetened water-based flavoured beverages (4.5 stars). Must not contain any ingredient other than water and food additives or processing aids permitted to be used in water based flavoured beverages⁶ except for the following substances:
 - caffeine
 - colours
 - intense sweeteners
 - quinine
 - substances containing sodium.
- fresh and minimally processed fruit (excluding coconut), vegetables, fungi, legumes (except peanuts) and herbs (except stevia) (5 stars). These foods could contain water, processing aids permitted to be used in unprocessed fruits and vegetables, and food additives permitted to be used in unprocessed fruits and vegetables other than substances containing sodium and intense sweeteners.

Step 2. Determining the form of the food for the HSR

In most cases the HSR would be calculated based on the form of the food as it appears on the shelf.

A food's HSR would be calculated on a reconstituted basis if it is intended to be reconstituted with water before consumption.

The HSR would be calculated on a drained basis for foods intended to be drained before consumption.

Step 3: Determining the HSR category for the food

Each food needs to be categorised as one of the 6 categories shown in Table A1.1.

⁶ Water-based flavoured drinks for the purposes of Schedules 15 and 18.

Table A1.1: Summary of HSR Categories

HSR category	Category summary
1	Beverages not captured in Category 1D, jelly and ice confections
1D	<p>Beverages containing milk, and/or dairy analogues derived from legumes, cereals, nuts, and/or seeds</p> <p>Calcium content would need to be:</p> <ul style="list-style-type: none"> • ≥ 75 mg/100 mL or 100 g for milk and dairy-based beverages • ≥ 100 mg/100 mL or 100 g for dairy analogues <p>Protein content would need to be:</p> <ul style="list-style-type: none"> • $\geq 3\%$ m/m protein for legume-derived dairy analogues • $\geq 0.3\%$ m/m protein for seed, nuts and/or cereal derived dairy analogues <p>Would also be required to be $\geq 75\%$ dairy or dairy analogue</p>
2	Foods that are not captured by other categories
2D	<p>Non-frozen dairy foods, and/or dairy analogue derived from legumes, not captured in category 1D or 3D</p> <p>Yoghurt analogues and dairy dessert analogues derived from legumes would need to contain $\geq 3.1\%$ m/m protein derived from legumes</p> <p>Cheese analogues derived from legumes would need to contain $\geq 15\%$ m/m protein derived from legumes (and contain < 320 mg/100 g calcium to not be in Category 3D).</p> <p>Would also be required to be $\geq 75\%$ dairy or dairy analogue</p>
3	Fats, edible oils and/or edible oil spreads
3D	<p>Cheese, processed cheese, and/or analogues of cheese derived from legumes</p> <p>Calcium content would need to be ≥ 320 mg/100 g</p> <p>Cheese analogues derived from legumes would need to contain $\geq 15\%$ m/m protein derived from legumes</p> <p>Would also be required to be $\geq 75\%$ dairy or dairy analogue</p>

Step 4: Calculating HSR baseline points

HSR baseline points must be calculated for the average quantity of the following risk-associated components per 100 g or 100 mL of the food:

Energy (Categories 1, 1D, 2, 2D, 3 and 3D)

- up to a maximum of 10 points for more than 271 kJ per 100 mL for Category 1.
- up to a maximum of 11 points for more than 3,685 kJ per 100 g/mL of a food for categories 1D, 2, 2D, 3 and 3D

Saturated fat (Categories 1D, 2, 2D, 3 and 3D)

- up to a maximum of 30 points for more than 90% saturated fat in a food for categories 1D, 2 and 2D
- up to a maximum of 30 points for more than 30% saturated fat in a food for categories 3 and 3D.

Total sugars (Categories 1, 1D, 2 2D, 3 and 3D)

- up to a maximum of 10 points for more than 13.6% total sugars in a food for Category 1
- up to a maximum of 25 points for more than 99% total sugars in a food for Category 1D, 2 and 2D
- up to a maximum of 10 points for more than 45% total sugars in a food for Category 3 and 3D.

Sodium (Categories 1D, 2, 2D, 3 and 3D)

- up to a maximum of 30 points for more than 2.7% sodium in a food for all categories excluding Category 1.

Baseline points are calculated using the points tables which can be found in Section A1.2.1.

Step 5: Calculating HSR modifying points

HSR modifying points may be scored for the following positive components in a product:

FVNL (V points) (Categories 1, 2 and 3)

- V points can be scored for FVNL in a food from 1 point (for $\geq 25\%$ FVNL) to a maximum of 10 points (for $\geq 96\%$ FVNL) for Category 1.
- V points can be scored for FVNL in a food from 1 point (for $>40\%$ FVNL) to a maximum of 8 points (for 100% FVNL) for categories 2 and 3.

Protein (P points) (Categories 1D, 2, 2D, 3 and 3D)

- P points can be scored for protein if a food scores less than 13 baseline points, or scores ≥ 13 baseline points and 5 or more V points – from 1 up to a maximum of 15 points for more than 50% protein for Categories 1D, 2, 2D, 3, 3D

Fibre (F points) (Categories 2, 2D, 3 and 3D)

- F points can be scored for dietary fibre for foods in Category 2, 2D, 3 and 3D – from 1 up to a maximum of 15 points for more than 20% dietary fibre

Modifying points are calculated using the points tables which can be found in Section A1.2.2.

Step 6: Calculating the final HSR score

The final HSR score is calculated by subtracting the modifying points (V, P and/or F points) if eligible and used in the calculation from the HSR baseline points, using the below formula:

$$\text{Final HSR score} = \text{baseline points} - (\text{V points}) - (\text{P points}) - (\text{F points})$$

Step 7: Converting the HSR score to a star rating

The final HSR score is converted to a star rating for all foods using Table A8, except for a multicomponent food containing cheese (as defined in Standard 1.1.2 and which meets the condition for calcium content specified in Category 3D) and crackers, an additional calculation is required as follows:

$$HSR \text{ of cheese and crackers} = \frac{(cheese \text{ HSR in Category 3D} \times cheese \text{ proportion}) + (cracker \text{ HSR in Category 2} \times cracker \text{ proportion})}{2}$$

The result of the calculation is rounded to the nearest 0.5.

A1.2 Points tables used in algorithm for calculating a HSR

A1.2.1 Baseline points tables

Table A1.2: HSR baseline points for Categories 1D, 2 and 2D

Baseline points	Energy (kJ) per 100 g or 100 mL	Saturated fat (g) per 100 g or 100 mL	Total sugars (g) per 100 g or 100 mL	Sodium (mg) per 100 g or 100 mL
0	≤335	≤1.0	≤5.0	≤90
1	>335	>1.0	>5.0	>90
2	>670	>2.0	>8.9	>180
3	>1005	>3.0	>12.8	>270
4	>1340	>4.0	>16.8	>360
5	>1675	>5.0	>20.7	>450
6	>2010	>6.0	>24.6	>540
7	>2345	>7.0	>28.5	>630
8	>2680	>8.0	>32.4	>720
9	>3015	>9.0	>36.3	>810
10	>3350	>10.0	>40.3	>900
11	>3685	>11.2	>44.2	>990
12		>12.5	>48.1	>1080
13		>13.9	>52.0	>1170
14		>15.5	>55.9	>1260
15		>17.3	>59.8	>1350
16		>19.3	>63.8	>1440
17		>21.6	>67.7	>1530
18		>24.1	>71.6	>1620
19		>26.9	>75.5	>1710
20		>30.0	>79.4	>1800
21		>33.5	>83.3	>1890
22		>37.4	>87.3	>1980
23		>41.7	>91.2	>2070
24		>46.6	>95.1	>2160
25		>52.0	>99.0	>2250
26		>58.0		>2340
27		>64.7		>2430
28		>72.3		>2520
29		>80.6		>2610
30		>90		>2700

Table A1.3: HSR baseline points for Categories 3 and 3D

Baseline points	Energy (kJ) per 100 g or 100 mL	Saturated fat (g) per 100 g or 100 mL	Total sugars (g) per 100 g or 100 mL	Sodium (mg) per 100 g or 100 mL
0	≤ 335	≤ 1.0	≤ 5.0	≤ 90
1	>335	>1.0	>5.0	>90
2	>670	>2.0	>9.0	>180
3	>1005	>3.0	>13.5	>270
4	>1340	>4.0	>18.0	>360
5	>1675	>5.0	>22.5	>450
6	>2010	>6.0	>27.0	>540
7	>2345	>7.0	>31.0	>630
8	>2680	>8.0	>36.0	>720
9	>3015	>9.0	>40.0	>810
10	>3350	>10.0	>45.0	>900
11	>3685	>11.0		>990
12		>12.0		>1080
13		>13.0		>1170
14		>14.0		>1260
15		>15.0		>1350
16		>16.0		>1440
17		>17.0		>1530
18		>18.0		>1620
19		>19.0		>1710
20		>20.0		>1800
21		>21.0		>1890
22		>22.0		>1980
23		>23.0		>2070
24		>24.0		>2160
25		>25.0		>2250
26		>26.0		>2340
27		>27.0		>2430
28		>28.0		>2520
29		>29.0		>2610
30		>30.0		>2700

Table A1.4: HSR baseline points for Category 1

Baseline points	Energy (kJ) per 100mL	Total sugars (g) per 100mL
0	-	≤ 0.1
1	≤31	>0.1
2	>31	>1.6
3	>61	>3.1
4	>91	>4.6
5	>121	>6.1
6	>151	>7.6
7	>181	>9.1
8	>211	>10.6
9	>241	>12.1
10	>271	>13.6

A1.2.2 Modifying points tables**Table A1.5: HSR V points for Categories 2 and 3**

Points	% FVNL
0	≤40
1	>40
2	>60
3	>67
4	>75
5	>80
6	>90
7	>95
8	=100

Table A1.6: HSR V Points for Category 1

Points	% FVNL
0	< 25
1	≥ 25
2	≥ 33
3	≥ 41
4	≥ 49
5	≥ 57
6	≥ 65
7	≥ 73
8	≥ 81
9	≥ 89
10	≥ 96

Table A1.7: HSR Protein (P) and Fibre (F) Points

Points	Protein (g) per 100 g or 100 mL	Dietary fibre (g) per 100 g or 100 mL
0	≤1.6	≤0.9
1	>1.6	>0.9
2	≥3.2	>1.9
3	>4.8	>2.8
4	>6.4	>3.7
5	>8.0	>4.7
6	>9.6	>5.4
7	>11.6	>6.3
8	>13.9	>7.3
9	>16.7	>8.4
10	>20.0	>9.7
11	>24.0	>11.2
12	>28.9	>13.0
13	>34.7	>15.0
14	>41.6	>17.3
15	>50.0	>20.0

A1.2.3 Table for converting HSR scores into HSR

Table A1.8: HSR scores by category, with final Heath Star Rating

HSR rating	HSR Score					
	Cat. 1	Cat. 1D	Cat. 2	Cat. 2D	Cat. 3	Cat. 3D
			Eligible fruits and vegetables			
5	Water	≤-2	≤-11	≤-2	≤13	≤24
4.5	Unsweetened Flavoured water	-1	-10 – -7	-1 – 0	14 – 16	25 – 26
4	≤0	0	-6 – -2	1 – 2	17 – 20	27 – 28
3.5	1	1	-1 – 2	3	21 – 23	29 – 30
3	2 – 3	2	3 – 6	4 – 5	24 – 27	31
2.5	4 – 5	3	7 – 11	6 – 7	28 – 30	32 – 33
2	6 – 7	4	12 – 15	8	31 – 34	34 – 35
1.5	8 – 9	5	16 – 20	9 – 10	35 – 37	36 – 37
1	10 – 11	6	21 – 24	11 – 12	38 – 41	38 – 39
0.5	≥12	≥7	≥25	≥13	≥42	≥40

APPENDIX 2 Supporting tables

Table A2.1. Categories impacted by the proposed mandatory approach at 2nd CFS

HSR modelling category	No. foods in category	No. foods impacted (% of category)	Decrease in star rating (No. of foods)					Increase in star rating (No. of foods)							
			3	2.5	2	1.5	1	0.5	0.5	1	1.5	2	2.5	3	3.5
Snacks	1052	63 (6%)					3	11	6	5	20	10	2	4	2
Fruit - dried	197	27 (14%)						27							
Fruit, nut, seed & cereal bars or balls	661	20 (3%)				1	3	16							
Ice confectionery	56	17 (30%)	2	10		5									
Pancakes, cakes, muffins & other cake-type desserts	408	9 (2%)					2	7							
Breakfast cereals, ready to eat	433	8 (2%)					1	7							
Sauces & condiments	1133	7 (1%)						7							
Soups & stocks	523	7 (1%)						7							
Vegetables & legumes - other processed	152	7 (5%)						7							
Salt & Seasonings	130	6 (5%)					2	4							
Toddler cereal-based snack foods	58	4 (7%)					1	3							
Toddler fruit-based snacks	18	4 (22%)						4							
Other mixed food/dishes	882	3 (,1%)					1	2							
Sugar based confectionery	477	3 (1%)						3							
Chocolate based confectionery	839	2 (<1%)					1	1							
Dips	275	2 (1%)						2							
Ready meals	640	2 (<1%)						2							
Sweet biscuits	680	2 (<1%)						2							
Sweet breads	78	2 (3%)						2							
Dressings	230	1 (<1%)						1							
Frozen plant-based alternatives	55	1 (2%)										1			
Recipe bases	349	1 (<1%)						1							
Savoury biscuits	456	1 (<1%)						1							
Sweet pastries	99	1 (1%)						1							
Sweet spreads	143	1 (1%)						1							
Total		201	2	10		6	14	119	6	5	20	11	2	4	2