

Modelling a Stronger Approach to Total Sugars and Sodium

a paper developed by the

**Food Regulation Standing Committee
Health Star Rating Review Implementation Working Group**

Introduction

The Health Star Rating (HSR) is a front-of-pack labelling system that rates the overall nutritional profile of packaged food and assigns it a rating from ½ a star to 5 stars. It was designed to provide a quick, easy, standard way for consumers to compare similar packaged foods. The more stars, the healthier the choice. The HSR system was implemented as a voluntary food product front-of-pack labelling program in Australia in June 2014.

When the HSR system was approved by the Australia New Zealand Forum on Food Regulation (the Forum), Ministers agreed that an independent review of the system be carried out after five years of implementation. This review of the HSR system (the Review) was completed in May 2019 and recommended a range of changes to improve the operation of the HSR calculator, drive uptake by industry and better manage and monitor the HSR system.

In its response to the Review, the Forum agreed the HSR system is a useful tool and should continue with some amendments. The Forum requested that Food Standards Australia New Zealand (FSANZ) do a peer review of the modelling provided in the Review report and provide advice on the combined impact of a proposed package of changes to the way the HSR is calculated¹ to better align foods with dietary guidelines. These changes, outlined in Recommendation four of the Review, were:

- 4a allow fresh, frozen or canned fruit and vegetables (with no added salt, sugars or fat) to automatically receive a HSR of 5
- 4b more strongly penalise total sugars
- 4c improve sodium sensitivity to reduce the HSR of products with sodium in excess of 900 mg/100 g
- 4d redefine and rescale dairy categories to better differentiate and improve comparability between four/five food group² (FFG) and dairy dessert type products
- 4e re-categorise water-based ice confections and jellies, and calculate HSRs for these products on an ‘as prepared’ basis³

See FSANZ paper 1 for the peer review of the impact of all recommended changes.

The Forum also asked FSANZ to undertake additional modelling on recommendations 4b and 4c, and provide advice on the impact of a stronger approach to total sugars and sodium in the HSR calculations. All other HSR calculator recommendations were incorporated into a revised HSR calculator and were reflected in the additional modelling of impacts⁴.

Modelling undertaken as part of the Review used the database of food products developed and used by the HSR Technical Advisory Group (the TAG database). While noting it has some limitations, to be consistent in assessing the impact of a stronger approach to total sugars and sodium, FSANZ

¹ Health star ratings for foods in each of the six food categories (1, 1D, 2, 2D, 3, 3D) are calculated by summing positive HSR baseline profiler points for risk increasing nutrients (energy, saturated fat, total sugars and sodium) and negative HSR modifying profiler points for risk reducing components (protein, fruit, vegetable, nut and legume content, and fibre). The lower the final profiler points score, the higher the HSR.

² Used to refer to both the Australian Five Food Groups and the New Zealand Four Food Groups, referring to the basic (or core) food groups from which people are recommended to choose the majority of their food every day.

³ In June 2018 the Forum agreed to limit the application of the HSR system to food products ‘as sold’, i.e. that the HSR should be calculated and displayed on the basis of the product as it appears on the shelf with the exception of products which must be rehydrated with water, diluted with water, drained of water or drained of brine.

⁴ Note that a minor error in relation to rounding of values in the HSR calculator has been identified, the impact of which has been evaluated as negligible. Any amendments to modelling values reported in this paper as a result of correcting the error will be made prior to publication.

used the same TAG database and updated HSR calculator reflecting all changes recommended by the Review.

Overall summary of findings:

Stronger approach to total sugars:

- A stronger approach to total sugars resulted in 10% of food products in HSR Categories 1D, 2 and 2D, being affected by a reduction in HSR.
- Overall, the proportion of five food group FFG (5%) and discretionary (5%) products impacted by the stronger sugars scenario were approximately equal.
- The majority of affected products received a 0.5 HSR reduction with a small proportion of products receiving a 1 HSR reduction.

Stronger approach to sodium

- A stronger approach to sodium resulted in 78% of cheeses in HSR Category 3D being affected by a reduction in HSR of 0.5 stars, but with some products receiving up to a 1.5 star reduction, including some reduced fat cheeses.
- HSR Category 3 fats, oils & oil based spreads, was minimally affected, with 13% of food products affected by a reduction of 0.5 stars.
- Approximately 14% of products in HSR Categories 1D, 2 and 2D were affected by reductions in HSR are a result of the stronger sodium scenario.
- FFG (7%) and discretionary (8%) products were approximately equally impacted by the stronger sodium scenario.
- The majority of affected products received a 0.5 HSR reduction but with a small proportion of products receiving a 1 or 1.5 star reduction.

Combined stronger approach to total sugars and sodium

- Approximately 23% of products in HSR Categories 1D, 2 and 2D would be affected by a reduction in HSR.
- The proportion of FFG (11%) and discretionary (12%) products impacted by a combined scenario was approximately equal.
- 10% of affected products were impacted by both the stronger total sugars and stronger sodium scenarios.
- More than 90% of products affected by the combined scenario received a 0.5 HSR reduction, with a small proportion of products receiving a 1-1.5 HSR reduction.
- If the impact of a stronger approach to sodium on HSR Category 3 and 3D products is considered in addition to the combined impact, the overall impact on Categories 1D, 2, 2D, 3 and 3D was a reduction in HSR for 28% of products, of which 17% are FFG and 11% are discretionary products.
- The reductions of HSRs due to a stronger approach to total sugars or sodium or both combined are in addition to those impacts arising from implementing amendments to the HSR calculator as recommended in the Review.

The Forum asked FSANZ to explore the impact of a 30 HSR baseline points scale for total sugars, compared to the 25 baseline point scale recommended by the Review. Analysis was limited to consideration of HSR Categories 1D (dairy beverages), 2 (all other foods) and 2D (dairy foods) only.

The FSANZ analysis of the impact of a 30 baseline point total sugars scale showed that of the 4919 products in HSR Categories 1D, 2 and 2D, 471 (10%) of products would be affected by reductions in HSR. Food categories⁵ that were affected are listed in Table 1. For the majority of affected foods there was a reduction of 0.5 stars. A total of 23 products had a reduction of 1 star in four categories: breakfast cereals, cream, custards/desserts, and snacks. There were 12 categories that were unaffected by the stronger total sugars scenario: beverage dry mix/milk powder, cream cheese, dairy alternative beverages, dips, meats/fish, pasta/grains/flour, pizza, plant proteins, soups/stocks, unprocessed fruit, unprocessed vegetables, and yeast spread.

If there is to be greater consistency with dietary guidelines, FFG foods would generally score higher HSRs and discretionary⁶ foods lower. Overall, the proportion of FFG (5%) and discretionary (5%) products impacted by the stronger total sugars scenario was approximately equal (Table 1).

Table 1 Summary of impact of the stronger total sugars scenario on AGHE categories by 'FFG' and 'Discretionary' foods flagged products, for affected AGHE categories only

Food category	Total count of products	Count of FFG products	SCENARIO Count FFG products affected (%)	Count of Discretionary products	SCENARIO Count Discretionary products affected (%)
Bread	226	217	1 (0)	9	0 (0)
Breakfast Cereal	300	275	58 (19)	25	5 (2)
Pasta/flour/grains	185	185	0 (0)	0	0 (0)
Dairy alternative beverages	64	64	0 (0)	0	0 (0)
Dairy beverages	485	461	53 (11)	24	0 (0)
Beverages dry mix/milk powder	2	2	0 (0)	0	0 (0)
Yoghurt, soft cheese	415	412	70 (17)	3	1 (0)
Cream	68	4	0 (0)	64	1 (1)
Cream cheese	67	67	0 (0)	0	0 (0)
Processed fruit	124	94	26 (21)	30	7 (6)
Unprocessed fruit	33	33	0 (0)	0	0 (0)
Bakery/cake mixes	122	13	2 (2)	109	24 (20)
Biscuits	258	70	0 (0)	188	30 (12)
Confectionery	94	0	0 (0)	94	20 (21)
Custard/desserts	82	33	11 (13)	49	15 (18)
Dips	28	0	0 (0)	28	0 (0)
Dressings	95	4	0 (0)	91	7 (7)
Ice cream	179	0	0 (0)	179	40 (22)
Meals/meal bases	292	171	1 (0)	121	1 (0)

⁵ Foods in the TAG database were categorised based on the Australian Guide to Healthy Eating (AGHE) food groups, such as fats and oils, breakfast cereals, dairy beverages, fruits and vegetables. These were further grouped as 'core' or 'non-core', generally based on the proportion of FFG or discretionary foods within the category

⁶ Used in the ADGs to refer to foods and drinks not necessary to provide the nutrients the body needs, but that may add variety. However, many of these are high in saturated fats, sugars, salt and/or alcohol, and are therefore described as energy dense.

Food category	Total count of products	Count of FFG products	SCENARIO Count FFG products affected (%)	Count of Discretionary products	SCENARIO Count Discretionary products affected (%)
Miscellaneous	25	13	5 (20)	12	3 (12)
Pizza	3	1	0 (0)	2	0 (0)
Sauces/condiments	344	11	0 (0)	333	25 (7)
Snacks	310	34	0 (0)	276	49 (16)
Soups/stocks	245	136	0 (0)	109	0 (0)
Yeast spread	4	0	0 (0)	4	0 (0)
Meats/fish	328	221	0 (0)	107	0 (0)
Nuts	76	74	12 (16)	2	0 (0)
Plant proteins	104	104	0 (0)	0	0 (0)
Processed vegetables	299	224	1 (0)	75	3 (1)
Unprocessed vegetables	62	62	0 (0)	0	0 (0)
Total	4919	2985	240 (5)	1934	231 (5)

Another general indicator of alignment with the dietary guidelines is the number of potential ‘outliers’. That is, the number of FFG foods that may be scoring relatively low HSRs (<3) and discretionary foods scoring relatively high HSRs (≥3). Overall, the stronger total sugars scenario resulted in slightly less discretionary foods receiving a HSR of ≥3 and slightly more FFG foods receiving a HSR of <3 (Table 2).

Table 2 Summary of FFG and discretionary TAG database products in HSR Categories 1D, 2 and 2D affected by the stronger total sugars scenario

Health Star Rating	Recommended scenario count of products	Recommended scenario count of products	Stronger total sugars scenario count of products	Stronger total sugars scenario count of products
	FFG	Discretionary	FFG	Discretionary
<3	256 (9%)	1160 (60%)	288 (10%)	1181 (61%)
≥3	2729 (91%)	774 (40%)	2697 (90)	753 (39%)
Total	2985	1934	2985	1934

Product categories impacted tend to be those previously indicated by stakeholders to be of most concern, with the greatest impact on FFG products seen in the processed fruit (21%), breakfast cereals (19%) and yoghurt/soft cheese (17%) categories and for discretionary foods in the ice cream (22%), confectionery (21%), bakery/cake mixes (20%) and custard/desserts (18%) categories. The majority of affected products received a 0.5 HSR reduction with a small proportion of products receiving a 1 HSR reduction in the breakfast cereals, cream, custards/desserts, and snacks food categories.

Stronger approach to sodium

The Forum asked FSANZ to explore the impact of a stronger baseline points scale for sodium, compared the baseline point scale recommended by the Review (Table 3).

Table 3 Recommended and stronger sodium baseline points tables for calculating HSR

Sodium Scenario	Maximum baseline points	Maximum sodium concentration (mg/100 g)	Sodium increments per baseline point (mg/100 g)
Recommended	30	>2700	90
Stronger approach	30	>2250	75

Analysis included HSR Categories 3 (fats, oils and oil based spreads) and 3D (cheeses) in addition to HSR Categories 1D (dairy beverages), 2 (all other foods) and 2D (dairy foods) only.

Amending the baseline points table for HSR Category 3D products resulted in 345 (78%) of the 444 cheeses in this category being affected by a reduction in HSR of 0.5 stars, but with some products receiving up to a 1.5 star reduction. As all cheeses are classified as FFG foods, a broad range of FFG foods would be affected, with a greater reduction in HSRs for some reduced fat cheeses, which is not in line with the dietary guidelines recommendation to eat dairy products, preferably reduced fat products. The category fats, oils & oil based spreads, was minimally affected by the proposed changes to the sodium baseline points table, with a total of 12 (13%) of the 93 products in the TAG database affected by a reduction of 0.5 stars.

Approximately 14% of products in the TAG database in HSR Categories 1D, 2 and 2D were affected by the stronger sodium scenario, with reductions in HSR only. FFG (7%) and discretionary (8%) products were approximately equally impacted.

Food categories with the greatest impact on FFG products as a result of the stronger sodium scenario were bread (22%), plant protein (18%), biscuits (16%), breakfast cereals (15%) and meals/meal bases and nuts (14% respectively), and for discretionary foods in the dressings (44%), dips (32%), sauces/condiments (26%), yeast spread (25%) and biscuits (20%) categories (Table 4). The majority of affected products received a 0.5 HSR reduction but with a small proportion of products receiving a 1 or 1.5 star reduction.

The stronger sodium scenario resulted in no or minimal impacts for a range of food categories: dairy beverage dry mix, cream, cream cheese, miscellaneous foods, pizza, unprocessed fruit, unprocessed vegetables, dairy beverages, yoghurt, soft cheese, processed fruit, confectionery, and ice cream.

Table 4 Summary of impact of stronger sodium scenario on AGHE categories by 'FFG' and 'Discretionary' foods flagged products

AGHE Category	Count of products	Count of FFG products	SCENARIO Count FFG products affected (%)	Count of discretionary products	SCENARIO Count discretionary products affected (%)
Bread	226	217	50 (22)	9	0 (0)
Breakfast Cereal	300	275	44 (15)	25	3 (1)
Pasta/flour/grains	185	185	11 (6)	0	0 (0)
Dairy alternative beverages	64	64	6 (9)	0	0 (0)
Dairy beverages	485	461	3 (1)	24	0 (0)
Beverages dry mix/milk powder	2	2	0 (0)	0	0 (0)
Yoghurt, soft cheese	415	412	14 (3)	3	0 (0)

AGHE Category	Count of products	Count of FFG products	SCENARIO Count FFG products affected (%)	Count of discretionary products	SCENARIO Count discretionary products affected (%)
Cream	68	4	0 (0)	64	0 (0)
Cream cheese	67	67	0 (0)	0	0 (0)
Processed fruit	124	94	2 (2)	30	0 (0)
Unprocessed fruit	33	33	0 (0)	0	0 (0)
Bakery/cake mixes	122	13	3 (2)	109	20 (16)
Biscuits	258	70	41 (16)	188	51 (20)
Confectionery	94	0	0 (0)	94	1 (1)
custard/desserts	82	33	4 (5)	49	6 (7)
Dips	28	0	0 (0)	28	9 (32)
Dressings	95	4	1 (1)	91	42 (44)
Ice cream	179	0	0 (0)	179	6 (3)
Meals/meal bases	292	171	40 (14)	121	19 (7)
Miscellaneous	25	13	0 (0)	12	0 (0)
Pizza	3	1	0 (0)	2	0 (0)
Sauces/condiments	344	11	2 (1)	333	89 (26)
Snacks	310	34	5 (2)	276	50 (16)
Soups/stocks	245	136	26 (11)	109	15 (6)
Yeast spread	4	0	0 (0)	4	1 (25)
Meats/fish	328	221	41 (13)	107	44 (13)
Nuts	76	74	11 (14)	2	0 (0)
Plant proteins	104	104	19 (18)	0	0 (0)
Processed vegetables	299	224	9 (3)	75	17 (6)
Unprocessed vegetables	62	62	0 (0)	0	0 (0)
Total	4919	2985	332 (7)	1934	373 (8)

As with the total sugars scenario, the number of FFG foods that may be scoring relatively low (<3) HSRs and discretionary foods scoring relatively high HSRs (≥ 3) was also investigated (Table 5). There was a small increase in the proportion of FFG foods receiving <3 stars and a small decrease in the proportion of discretionary foods receiving ≥ 3 stars.

Table 5 Summary of FFG and discretionary TAG database products in HSR Categories 1D, 2 and 2D affected by the stronger sodium scenario

Health Star Rating	Recommended scenario count of products	Recommended scenario count of products	Stronger sodium scenario count of products	Stronger sodium scenario count of products
	FFG	Discretionary	FFG	Discretionary
<3	256 (9%)	1160 (60%)	314 (11%)	1219 (63%)
≥3	2729 (91%)	774 (40%)	2671 (89%)	715 (37%)
Total	2985	1934	2985	1934

Given that there are relatively few products with sodium concentrations >900 mg/100 g in the TAG database the majority of products receiving a reduction in star points had a sodium concentration of ≤900 mg/100 g sodium.

The impact on specific food classifications that have generally been of greater concern was investigated. Approximately 25% of salty snacks were affected by a 0.5-1.5 HSR reduction, 39% of gravy mixes were affected by a 0.5 HSR reduction, 21% of recipe and sauce mixes were affected by a 0.5 HSR reduction, and 43% of processed meats had a 0.5-1 HSR reduction. For nut and nut products, 15% were affected by a reduction of 0.5 HSR, all of which had a sodium concentration of ≥380 mg/100 g. There was generally already a differentiation in HSR in the recommended HSR calculator between salted and unsalted nuts and nut products.

Combined stronger total sugars and sodium scenario

In order to assess the impact of the combined impact of the total sugars and sodium scenarios described above compared to the recommended HSR, a combined scenario was modelled. This scenario was applied to only HSR Categories 1D, 2 and 2D. Impacts of a combined scenario for Categories 3 and 3D are the same as for the stronger sodium scenario.

The FSANZ analysis of a combined scenario for HSR Categories 1D, 2 and 2D indicated that approximately 23% of products would be affected by a reduction in HSR, compared to the Recommended scenario (Table 6), with the proportion of FFG (11%) and discretionary (12%) products impacted being approximately equal (Table 7).

Of those products affected in the Combined Scenario, 10% were affected by both the total sugars and sodium HSR baseline point adjustments. Product categories impacted by reductions in HSR in the Combined Scenario reflected those impacted in the separate total sugars scenario and the sodium scenario. More than 90% of products in the TAG database affected by the Combined Scenario received a 0.5 HSR reduction with a small proportion of products receiving a 1-1.5 HSR reduction.

Table 6 Summary of number of HSR Categories 1D, 2 and 2D TAG database products affected by the total sugars scenario, sodium scenario and combined scenario

Scenario	Total number of products	Number of affected products (proportion of total)	Number of affected products (proportion of affected products)	Number with 0.5 star reduction (proportion of affected products)	Number with 1 star reduction (proportion of affected products)	Number with 1.5 star reduction (proportion of affected products)
Total Sugars Scenario	4919	471 (10%)	-	448 (95%)	23(5%)	-
Sodium Scenario	4919	705 (14%)	-	654 (93%)	45 (6%)	6 (1%)
Combined Scenario	4919	1143 (23%)	-	1065 (93%)	71 (6%)	7 (1%)
<i>Affected by either Total Sugars or Sodium Scenario</i>	-	-	959 (83%)	-	-	-
<i>Affected by both Total Sugars and Sodium Scenario</i>	-	-	116 (10%)	-	-	-
<i>Affected by Combined Scenario but not Total Sugars or Sodium Scenario</i>	-	-	83 (7%)	-	-	-

Table 7 Summary of FFG and discretionary TAG database products in HSR Categories 1D, 2 and 2D affected by the total sugars scenario, sodium scenario and combined scenario

Scenario	Total number of products in Categories 1D, 2 and 2D	Total number FFG (proportion of total products)	Total number Discretionary (proportion of total products)	Number of FFG products affected (proportion of all FFG products)	Number of discretionary products affected (proportion of all discretionary products)	Number of FFG products affected as a proportion of total products	Number of Discretionary products affected as a proportion of total products
Total Sugars Scenario	4919	2985 (61%)	1934 (39%)	240 (8%)	231 (12%)	5%	5%
Sodium Scenario	4919	2985 (61%)	1934 (39%)	332 (11%)	373 (19%)	7%	8%
Combined Scenario	4919	2985 (61%)	1934 (39%)	559 (19%)	584 (30%)	11%	12%
Combined Scenario including Categories 3 and 3D	5456	3476 (64%)	1980 (35%)	915 (26%)	586 (30%)	17%	11%

The greatest impact on FFG products is seen in the breakfast cereals (33%) bread (23%), processed fruit (22%), nuts (21%) and yoghurt, soft cheese (20%) categories, and for discretionary foods in the dressings (54%), bakery/cake mixes (34%), sauces/condiments (33%), dips (32%), and snacks (29%) categories.

The combined scenario changes to the HSR calculator aligns more closely with the dietary guidelines, with fewer discretionary (approximately 4%) products receiving a HSR of ≥ 3 (Table 8). However, while the majority of FFG products in the TAG database receive a HSR of ≥ 3 , the combined scenario also resulted in an increase in the number of FFG products receiving a HSR of < 3 (3%).

Table 8 Summary of FFG and discretionary TAG database products in HSR Categories 1D, 2 and 2D affected by the combined stronger total sugars and sodium scenario

Health Star Rating	Recommended scenario count of products FFG	Recommended scenario count of products Discretionary	Combined sugars and sodium scenario count of products FFG	Combined sugars and sodium scenario count of products Discretionary
<3	256 (9%)	1160 (60%)	346 (12%)	1241 (64%)
≥3	2729 (91%)	774 (40%)	2639 (88%)	693 (36%)
Total	2985	1934	2985	1934

If the impact of a stronger sodium baseline points table on Category 3 and 3D products is considered in addition to the Combined scenario above, the overall impact on categories 1D, 2, 2D, 3 and 3D was a reduction in HSR for 28% of products, of which 17% are FFG and 11% are discretionary products.