

FIVE YEAR REVIEW OF THE HEALTH STAR RATING (HSR) SYSTEM

HSR Technical Advisory Group (TAG)

Non-dairy beverages

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Summary

In the HSR system, “non-dairy beverages” refers to all non-alcoholic beverages captured in Category 1 (Beverages) that do not meet calcium content thresholds for inclusion in Category 1D (Dairy Beverages). This includes fruit and vegetable juices/drinks and sugar-sweetened beverages.

For non-dairy beverages with a fruit, vegetable, nut or legume (FVNL) content $\geq 40\%$, FVNL is the main driver of the HSR. For other beverages (i.e. $< 40\%$ FVNL), total sugars and energy are the components that primarily determine HSRs.

Current scoring for this category results in a bimodal distribution of HSRs: 100% juices receive high HSRs and most other non-dairy beverages fall into a low, narrow range (0.5 - 1.5 HSRs). Some 100% fruit juices may receive HSRs which match or exceed their whole fruit equivalent, due to the scaling and weighting of components of the different HSR categories in which they reside.

Furthermore, as a result of a previous HSR Advisory Committee (HSRAC) policy decision, plain water receives an automatic HSR of 5, while unsweetened flavoured water must be put through the HSR Calculator and receives a HSR of 2.

Monitoring indicates that 84% of fruit and vegetable juices currently display a HSR of 5, while 82% of sugar-sweetened beverages currently display the energy icon only.

Four issues have been raised by stakeholders:

1. Promotion of fruit juice as the “most healthy” beverage option, despite Australian and New Zealand dietary guidelines recommending only occasional consumption.
2. High HSRs for fruit juices, despite high levels of sugars, sometimes matching or exceeding their whole fruit equivalent, despite often containing lower amounts of positive nutrients.
3. Water with any additives, which has a similar nutrient profile to plain water, must be put through the HSR Calculator.
4. The lack of differentiation between other non-dairy beverages (e.g. regular, low and no sugar products).

This paper explores a number of options to address these issues:

1. No change/status quo
2. Mandate that non-dairy beverages (other than plain water) use the energy icon only, which provides differentiation solely on energy content
3. Consider non-dairy beverages ineligible for FVNL content, providing differentiation on energy and total sugars only
4. Cap HSRs in this category (other than plain water) and rescale accordingly.

No identified option presents an acceptable resolution to all the issues above. However, all options other than status quo provide for plain water to be clearly differentiated as the best non-dairy beverage option and advantage whole fruit relative to juices, in line with dietary guidelines.

Therefore, the key consideration is whether products with $\geq 40\%$ FVNL content should rate better than non-juice products with similar energy and total sugar content.

If so, option 4 would clearly position plain water as the healthiest non-dairy beverage. Fruit juices would also not rate higher than their whole fruit equivalent but would continue to rate better than flavoured water, diluted juice and low/no sugar non-juice products; differentiation between non-juice products would not improve.

If not, option 3 would mean that total sugars and energy are the only considerations in the calculation of a HSR. All non-dairy beverages with $\geq 40\%$ FVNL content would

receive lower HSRs, potentially lower than low/no sugar non-juice products, and there would be little differentiation between all products in this category. Fruit juices would rate lower than their whole fruit equivalent.

Alternatively, guidance documents could be amended to require all non-dairy beverages other than plain water to display only the energy icon (option 2), which provides differentiation solely on energy content (noting that total sugars contribute to energy), with no differentiation based on FVNL, i.e. between juice and non-juice products. The HSRAC should consider whether this aligns with the intention of the HSR system to provide meaningful information to consumers on the overall nutritional value of a product.

Currently, the automatic rating applied to plain, packaged water is not necessarily obvious in system guidance documents. It is proposed that this clause be moved to a more prominent location, regardless of the preferred option.

Problem definition

In the HSR system, “non-dairy beverages” refers to all products included in Category 1 (Beverages), except alcoholic products (>1.15% alcohol by volume), and dairy beverages and dairy substitutes (derived from legumes, cereals, nuts or seeds) with sufficient calcium to meet the requirements for a ‘source of calcium’ claim as set out in Schedule 4 of the Australia New Zealand Food Standards Code (FSC)). Examples include waters and flavoured waters, fruit and vegetables juices and drinks, cordials, soft drinks, energy drinks, electrolyte drinks, coconut waters and unfortified rice, soy or nut based beverages.

All fruit juices and plain waters are classified as non-discretionary under the Australian Health Survey (AHS): Users’ Guide, 2011-13 — Discretionary Food List.¹ All fruit drinks, soft drinks, flavoured mineral waters, electrolyte, energy and fortified drinks and fortified waters are discretionary.

Monitoring of the implementation of the HSR system² indicates there are 562 non-dairy beverages displaying the HSR system as of end March 2018, distributed across three groups: “fruit and vegetable juice,” “sugar-sweetened beverages,” and “plain water.”

Table 1 provides a breakdown of categories/products by HSR. 65% of non-dairy beverages using the HSR system (n=366) are sugar-sweetened beverages, of which 82% display the energy icon only. Among fruit and vegetable juices, 84% display a HSR of 5.

¹ Australian Bureau of Statistics, 2014, Australian Health Survey - Discretionary Food List, available at: <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4363.0.55.0012011-13?OpenDocument>

² National Heart Foundation of Australia, 2018, Report of products displaying the Health Star Rating (HSR) system (HSR products) in FoodTrack™ over time, up to 31st March 2018 (Quarter Five)

Table 1: Number and proportion of non-dairy beverage products, by HSR or energy icon, FoodTrack™

HSR	Fruit & vegetable juice ¹		Sugar-sweetened beverages ²		Plain water		Total ³	
	n	%	n	%	n	%	n	%
Energy icon only	1	1	300	82	5	19	306	54
0.5	1	1	0	0	0	0	1	0
1	4	2	23	6	0	0	27	5
1.5	14	8	9	2	0	0	23	4
2	0	0	22	6	0	0	22	4
2.5	2	1	1	0	0	0	3	1
3	0	0	0	0	0	0	0	0
3.5	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
4.5	5	3	0	0	0	0	5	1
5	143	84	11	3	21	81	175	31
Total	170		366		26		562	

Notes:

1 – includes all liquid fruit and vegetable products

2 – includes coconut waters

3 – excludes dairy alternatives not meeting calcium content thresholds for inclusion in category 1D

This category currently has a bi-modal distribution of HSRs, as shown in Figure 1, based on data from the TAG database:

- Plain water (as the result of a HSRAC policy decision) and 100% fruit and/or vegetable juice products rate at the higher end of the distribution curve
- All other non-dairy beverages are compacted into a relatively narrow range of lower HSR values (0.5-1.5).

Flavoured, unsweetened plain water receives a “neutral” HSR of 2.

Currently, the distribution of Star Points for non-dairy beverages other than plain water is strongly dependent on the FVNL content of the beverage, only beverages with ≥40% FVNL content being eligible for these modifying points. For beverages with <40% FVNL content, the key nutrients are total sugars and energy. Figure 2 demonstrates the effect of a one standard deviation change to the relevant component on HSR (e.g. a one SD increase in FVNL would improve the HSR by 0.9, whereas a one SD increase in total sugar would only lower the HSR by 0.1).

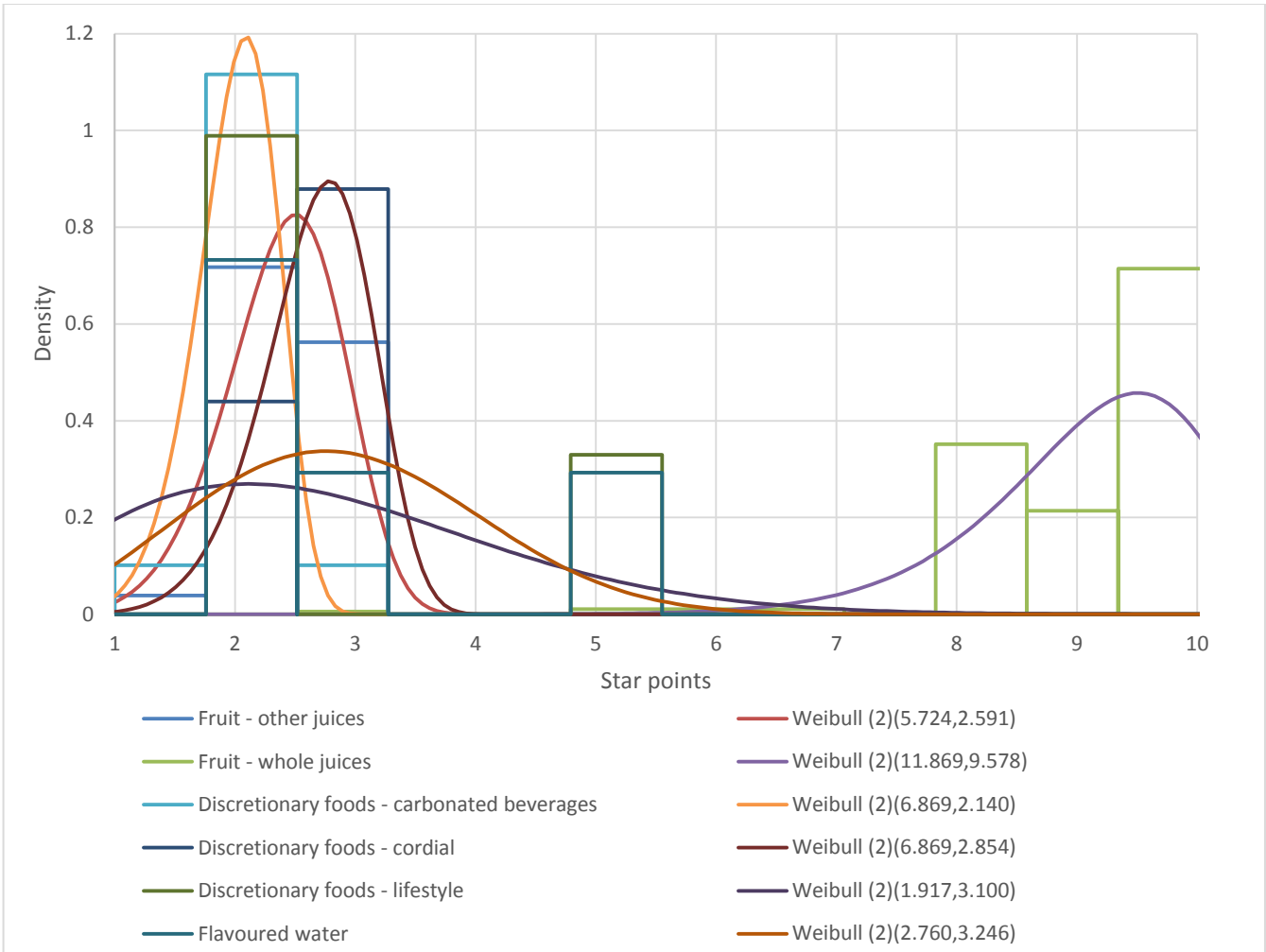


Figure 1: Current distribution of Star Points for categories of non-dairy beverages (TAG database)

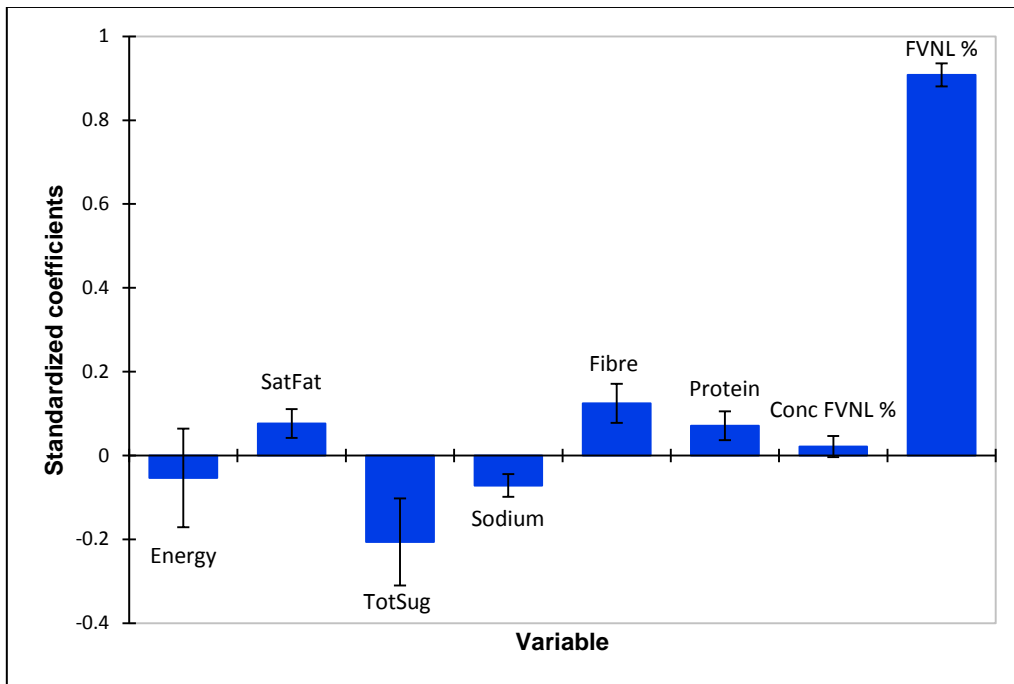


Figure 2: Nutrient sensitivities for non-dairy beverages, with 95% confidence intervals

HSRs within categories are scaled back from a “FFG” product in that category to give a good spread of products across the 10 point HSR scale. In the non-dairy beverages category 100% fruit and/or vegetable juice is the product from which the other non-dairy beverages are scaled. This results in minimal differentiation for all other non-dairy beverages at the lower range within this category due to the impact of FVNL at the upper end.

Non-dairy beverage consumption data

Australia

Overall, Australians aged 2 and over obtain 33% of their daily added sugar intake, and 37% of their daily free sugars intake, from non-dairy beverages (33% and 30.5% from discretionary sources, respectively) (see Table 2).³

Table 2: Source of daily added and free sugar* intake in Australians aged ≥2 years, 2011-12⁴

AHS 3-digit category	Added sugars (% of total)			Free sugars (% of total)		
	FFG	Discretionary	Total	FFG	Discretionary	Total
Fruit and vegetable juices and drinks	0.1	6.2	6.2	6.4	6.6	13.0
Cordials	0	5.4	5.4	0	4.9	4.9
Soft drinks and flavoured mineral waters	0	19.4	19.4	0	17.0	17.0
Electrolyte, energy and fortified drinks	0	2.3	2.3	0	2.0	2.0
Total	0.1	33.3	33.3	6.4	30.5	36.9

*Note that free sugars includes sugars from honey, fruit juice and fruit juice concentrate.

The AHS 2011-13 found that only 31% of the population met the recommendation for fruit intake on the day of the survey.⁵ Further analysis revealed 27% of this was fruit juice, and in children juice accounted for 32% of fruit consumption.⁶ When fruit juice and dried fruit were excluded, the proportion of Australians meeting the minimum recommended number of fruit serves on the day of the survey was 12% (note that similar data is not available for New Zealand as fruit juice is not considered a source of fruit).

³ Australian Bureau of Statistics, 2016, Australian Health Survey: Consumption of added sugars, 2011-12, available at <http://www.abs.gov.au/ausstats/abs@.nsf/mf/4364.0.55.011>

⁴ Australian Bureau of Statistics, 2016, Australian Healthy Survey: Consumption of added sugars, 2011-12

⁵ Australian Bureau of Statistics, 2014, Australian Health Survey: Nutrition First Results - Foods and Nutrients, 2011-12, available at <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4364.0.55.007Main+Features12011-12?OpenDocument>

⁶ Australian Bureau of Statistics, 2016, Australian Health Survey: Consumption of Food Groups from the Australian Dietary Guidelines, 2011-12, available at <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/4364.0.55.012main+features12011-12>

New Zealand

The 2008/09 New Zealand Adult Nutrition Survey⁷ indicates that “sweetened beverages” account for 3.5% of adult daily energy intake, with soft drinks and fruit juices providing 1.5% and 0.9% of daily energy intake respectively. Sweetened beverages contribute 16.9% of the average adult total daily sugar intake with soft drinks and fruit juice again the main contributors, contributing 6.2% and 3.5% of total daily sugar intake respectively.⁸ From this, it is estimated that sweetened beverages contribute 16.7% to daily added sugar intake (soft drinks 6.6%, fruit juice 2.8%).⁹

The 2002 National Children’s Nutrition Survey¹⁰ reports that beverages were the main source of sucrose in the diets of New Zealand Children, contributing 26% of total sucrose intake. 54% of New Zealand children consumed powdered fruit drink at least weekly, followed by soft drinks (45%), fruit juice (43%), cordial (32%) and sports drinks (8%).

Consumer research

Research commissioned by NSW Health and undertaken by Deakin University¹¹ supports the use of the HSR “stars” graphic to help consumers switch to healthier beverage options. The research was an on-line survey of around 900 Australian adults aged 18-35 years that looked at the effect of four different sugar labels, including the HSR graphic, on intended drink purchases. All labels had the potential to reduce selection of sugar-sweetened beverages, i.e. the HSR graphic prompted healthier product selection.

Alignment with system objectives and priorities

Linkages with other TAG work

This issue is linked with a number of other issues that have been raised for consideration in the 5 year review and are being considered by TAG separately:

- The application of FVNL points more generally (i.e. whether this offset is appropriate)
- Treatment of sugars (i.e. whether added sugar is included in the HSR calculator and/or modifications to the current use of total sugars)
- Unprocessed fruit and unprocessed vegetables (i.e. to align with dietary guidance promoting both equally).

⁷ University of Otago and Ministry of Health, 2011 A Focus on Nutrition: Key findings of the 2008/09 New Zealand Adult Nutrition Survey, available at <https://www.health.govt.nz/publication/focus-nutrition-key-findings-2008-09-nz-adult-nutrition-survey>

⁸ University of Otago, 2015, Beverages as sources of sugars in the New Zealand Diet: 2008/09 New Zealand Adult Nutrition Survey, Technical Report No. 2015.139

⁹ University of Otago, 2015, Beverages as sources of sugars in the New Zealand Diet: 2008/09 New Zealand Adult Nutrition Survey, Technical Report No. 2015.139

¹⁰ Ministry of Health, 2003, NZ Food NZ Children: Key results of the 2002 National Children’s Nutrition Survey, available at <https://www.health.govt.nz/system/files/documents/publications/nzfoodnzchildren.pdf>

¹¹ Billich N, Blake MR, Backholer K, Cobcroft M, Li V, Peeters A, 2018, The effect of sugar-sweetened beverage front-of-pack labels on drink selection, health knowledge and awareness: An online randomised controlled trial, *Appetite*, Vol, 128, pp. 233-241, available at <https://doi.org/10.1016/j.appet.2018.05.149>

This issue also links with two anomaly submissions, both rejected by the HSRAC, who nevertheless agreed that the issues should be considered as part of the five year review of the HSR system:

- 10 June 2015 – high HSR received by a juice product aimed at children, despite high energy and sugar content and large serve size
- 11 March 2016 – fruit and vegetables receiving lower HSRs than juices.

World Health Organisation recommendations

The World Health Organisation (WHO) recommends adults and children reduce their daily intake of free sugars to less than 10% of their total energy intake.¹² For an average adult diet providing 8700 kJ/day, 10% of daily energy intake amounts to 52 g of free sugar. A further reduction to further reduce intake to below 5%, or to roughly 26 grams (6 teaspoons) per day, is to minimise lifetime risk of dental caries. However, over half of Australians¹³ and New Zealanders¹⁴ exceed the 10% of energy recommendation.

Note that the definition of free sugars is broader than ‘added sugars’ and includes monosaccharides and disaccharides added to foods and beverages, as well as sugars naturally present in honey, syrups, fruit juices and fruit juice concentrates.¹² That is, the WHO considers fruit juice concentrate or any fruit not in its intact form to be a form of “added” sugar.

Treatment of non-dairy beverages in other front-of-pack labelling schemes

The Nutri-Score system¹⁵, a front-of-pack labelling scheme in France, provides a comparison of the treatment of non-dairy beverages. Similarly to the HSR system:

- Non-dairy beverages are considered separately to other products
- Energy, sugar and fruit/vegetable content are the key components
- Mineral waters receive an automatic “healthiest” rating.

¹² World Health Organization, 2015, Guideline: Sugars intake for adults and children, p. 4, available at http://apps.who.int/iris/bitstream/10665/149782/1/9789241549028_eng.pdf?ua=1

¹³ Australian Bureau of Statistics, 2016, Australian Healthy Survey: Consumption of added sugars, 2011-12

¹⁴ Kibblewhite R, Nettleton A, McLean R, Haszard J, Fleming E, et al., 2017, Estimating Free and Added Sugar Intakes in New Zealand, *Nutrients* 9(12), available at <https://doi.org/10.3390/nu9121292>

¹⁵ Santé Publique France, 2018, Nutri-Score Frequently Asked Questions – Scientific & Technical, available at https://www.santepubliquefrance.fr/Media/Files/NUTRIScore/Questions_reponses_EN

However, a different scoring mechanism produces a different “order” of products (with A/dark green being the most healthy and E/red the least healthy):

Product	Nutri-Score ranking
Water	A
Diet soft drink	B
Flavoured water 100% fruit juice	C
Electrolyte drink 50/50 fruit juice/water	D
Full sugar soft drink Fruit drinks Cordial (prepared) Energy drinks	E

In brief, 100% fruit juices perform less well and diet soft drinks perform better than under the HSR system. This may be due to a different ratio between the impact of negative components and positive components, i.e. offset points are less efficacious in improving ratings. Further information is available in Appendix 1.

Consideration of issues raised

Four key concerns have been raised by stakeholders:

1. Current scoring inappropriately promotes fruit juice as the “most healthy” beverage option. Both the Australian (ADG) and New Zealand (NZEAG) dietary guidelines consider water to be the best beverage option.
2. Fruit juices (including reconstituted) receive high HSRs, despite high levels of sugars, as a result of FVNL content. Some fruit juices also receive HSRs which match or exceed their whole fruit equivalent. However, fruit juices are not nutritionally equivalent to whole fruits and both the ADG and NZEAG recommend consumption of whole fruit over juice.
3. Water containing any additives, including plain water with simple, unsweetened flavourings, must be put through the HSR Calculator. Although such beverages are nutritionally comparable to plain water they receive a HSR of only 2.
4. The lack of differentiation between other non-dairy beverages may not provide sufficient information to guide consumers towards healthier options, that is, products lower in sugar.

Other issues raised include the current propensity for manufacturers/retailers to use the energy icon only on the majority of sugar-sweetened beverages, the eligibility of fruit juice and concentrate in particular to score FVNL, and concerns around sugar-sweetened beverages displaying a “health” star rating. However, these are either considered through other TAG work or out of scope for TAG.

No issues have been raised with the treatment of vegetable juices.

1. 100% fruit juice and water receive equal HSRs

The ADG¹⁶ and the NZEAG¹⁷ both clearly favour water as the healthiest non-dairy beverage. HSRAC's policy decision to automatically assign a HSR of 5 to plain water (as set out in FSC Standard 2.6.2 - Non-alcoholic beverages and brewed soft drink¹⁸) reflects this advice.

Both dietary guidelines also recommend limiting the intake of fruit juice,¹⁹ with the NZEAG considering 100% fruit juices as high sugar beverages to be limited.²⁰ As such, non-dairy beverages are eligible for FVNL content that balances against total sugars and energy content and contributes to an improved HSR.

100% vegetable juice also tends to receive a HSR of 5. Vegetable juices are typically much lower in total sugar content than fruit juices, though they may contain extra sodium, and fruit/vegetable juice blends may experience a dilution of both sugars and sodium content. Neither the ADG nor NZEAG make reference to vegetable juices.

2. Fruit juices are not nutritionally equivalent to whole fruits

Some fruit and vegetable juices may also receive HSRs which match or exceed their whole fruit equivalent (for example, whole pineapple, celery and tomato may receive HSRs of 4.5, while their juices may receive HSRs of 5²¹), due to the different scaling and weighting of components in different HSR categories. Fruit and vegetable juices and coconut water benefit from FVNL content despite often not containing equivalent amounts of certain positive nutrients, e.g. fibre. Positive nutrients may be lost in many of the processes used in the production of juices (extraction, concentration, reconstitution).

The ADG do permit 100% fruit juice to count as a serving of fruit, with the caveat that it is only to be consumed "occasionally as a substitute for other foods in the group" and in a restricted serve size (125 mL).²² However, they also state that "[f]ruit should mostly be eaten fresh and raw because of the low fibre content of fruit juice..." and "acidic drinks, including juices, increase the risk of dental erosion." According to the NZEAG, "[f]ruit is more filling than juice and provides available vitamins, phytonutrients (beneficial chemicals), fibre and much less sugar than juice."²³

Despite this, many 100% fruit juices and 100% coconut water receive high HSRs due to the offset of their total sugar and energy contents by the positive points they gain from their FVNL content. For example, 100% apple juice with a sugar content of 11.2% and energy content of 207 kJ/100 mL receives a HSR of 5. For comparison, full sugar soft drinks receive 1 star while containing 10-11% sugar and an energy content of approximately 180 kJ/100 mL.

¹⁶ National Health and Medical Research Council, 2013, Australian Dietary Guidelines, p. 61 - 63, available at <https://www.nhmrc.gov.au/guidelines-publications/n55>

¹⁷ Ministry of Health, 2017, Eating and Activity Guidelines for New Zealand Adults, p. 6, available at: <https://www.health.govt.nz/publication/eating-and-activity-guidelines-new-zealand-adults>

¹⁸ Food Standards Australia New Zealand, Australia New Zealand Food Standards Code, 2017, Standard 2.6.2 - Non-alcoholic beverages and brewed soft drink, available at <https://www.legislation.gov.au/Series/F2015L00465>

¹⁹ National Health and Medical Research Council, 2013, Australian Dietary Guidelines, p. 34

²⁰ Ministry of Health, 2017, Eating and Activity Guidelines for New Zealand Adults, p. 29

²¹ Food Standards Australia New Zealand, 2016, AUSNUT 2011-13 Food Nutrient Database File, available at

<http://www.foodstandards.gov.au/science/monitoringnutrients/ausnut/ausnutdatafiles/Pages/foodnutrient.aspx>

²² National Health and Medical Research Council, 2013, Australian Dietary Guidelines, p. 43

²³ Ministry of Health, 2017, Eating and Activity Guidelines for New Zealand Adults, p. 29

3. Limited differentiation between most non-dairy beverages

Other than fruit and vegetable juices and coconut waters, no non-dairy beverages receive positive points in the HSR algorithm, gaining only negative points based on energy and total sugar content. This effectively limits the HSRs of non-dairy beverages containing <40% FVNL to a maximum HSR of 2. With current scaling of the category based on 100% fruit and/or vegetable juices scoring 5, there is limited ability to spread the lower scoring beverages out to allow for more differentiation between products ineligible for FVNL.

4. Unsweetened, flavoured water receives a HSR of 2

As noted previously, a decision was made during the development of the HSR system to automatically assign all plain, packaged water a HSR of 5. This was agreed in light of the view that plain water is the best non-dairy beverage option for the general population.

Water which has any additions, including simple flavourings without sweeteners, must be run through the HSR Calculator as for any other beverage. As there are neither positive nor negative nutrients/components of water considered by the algorithm, such products receive a “neutral” HSR of 2 despite being compositionally similar to plain water.

Options to address identified issues

Several options to address the above issues have been identified through submissions or by the TAG:

1. No change/status quo
2. Mandate that non-dairy beverages (other than plain water) use the energy icon only
3. Consider non-dairy beverages ineligible for FVNL content
4. Cap HSRs in this category (other than plain water) and rescale accordingly.

Additional analysis of options

Methods

The initial database used in the development of the HSR system was expanded with data provided by food industry. This revised HSR database (the TAG database) covers the range of HSR component data (where applicable) for over 5,800 food products across 42 food categories based on the Australian Guide to Health Eating (AGHE), such as fats and oils, core cereals and dairy, processed and unprocessed fruits and vegetables, animal protein etc. The data are not independently verified. All data analysis was conducted on the most recent active version of this database using the current version of the HSR algorithm obtainable from the HSR website, or otherwise as defined in the current Guide for Industry²⁴.

The analysis was undertaken using the most recent version of Microsoft Excel for Mac (version 16.11.1) and the Microsoft software partner add-in application XLSTAT 2017: Data Analysis and Statistical Solution for Microsoft Excel²⁵. XLSTAT provides modelling tools that help to predict general trends from limited data. This includes:

²⁴ FoPL Secretariat, 2018, Guide for industry to the Health Star Rating Calculator (HSRC), v. 6, available at: <http://healthstarrating.gov.au/internet/healthstarrating/publishing.nsf/Content/guide-for-industry-document>

²⁵ Addinsoft, 2017, XLSTAT 2017: Data Analysis and Statistical Solution for Microsoft Excel

- use of Weibull curves (a graphical method of portraying a distribution of malleable shape determined by the underlying data) for predicting the “maximum likelihood” distribution of expected star ratings from limited though high quality data
- standard food modelling techniques for predicting dilution effects on nutrient content
- standardised residuals from linear regression to predict the sensitivity of star ratings to the different nutrients, for example within food categories. When regression is used, 95% confidence intervals or 95% confidence ellipses are used to provide readers with an estimate of the predictive reliability of the underlying data.

Further details of all analysis types and techniques may be obtained from TAG.

The TAG database contains 363 non-dairy beverages, classified by AGHE categories to provide a sufficient level of aggregation (see Table 3).

Table 3: Non-dairy beverages in TAG database, by AGHE category and with descriptors

AGHE category	Category name	Number of products
Fruit - other juices	Fruit drinks	69
Fruit - whole juices	Fruit juice	240
Discretionary foods - beverage dry mixes	Beverage dry mixes (e.g. for milk)	3
Discretionary foods - carbonated beverages	Soft drinks	26
Discretionary foods - cordial	Cordial	6
Discretionary foods - lifestyle	Energy drinks	4
Water	Water, plain	6
Flavoured water	Water, flavoured	9
Total		363

Results

Option 2 –Require non-dairy beverages to use the energy icon only

A table which details energy content of a sample of products in the TAG database is at Appendix 2.

Differentiation between products within this category will rely solely on energy content. Plain water could retain an automatic HSR of 5 to clearly provide the best option. Many “discretionary” products such as unsweetened fruit drinks and no-sugar soft drinks have lower energy contents than 100% fruit juices and would be advantaged.

Option 3 – FVNL points cannot be scored by non-dairy beverages

Appendix 3 provides outputs of modelling of this option.

When non-dairy beverages are not permitted to gain modifying points for FVNL content, total sugar content exerts the most influence on their HSR, as shown in Figure 3.

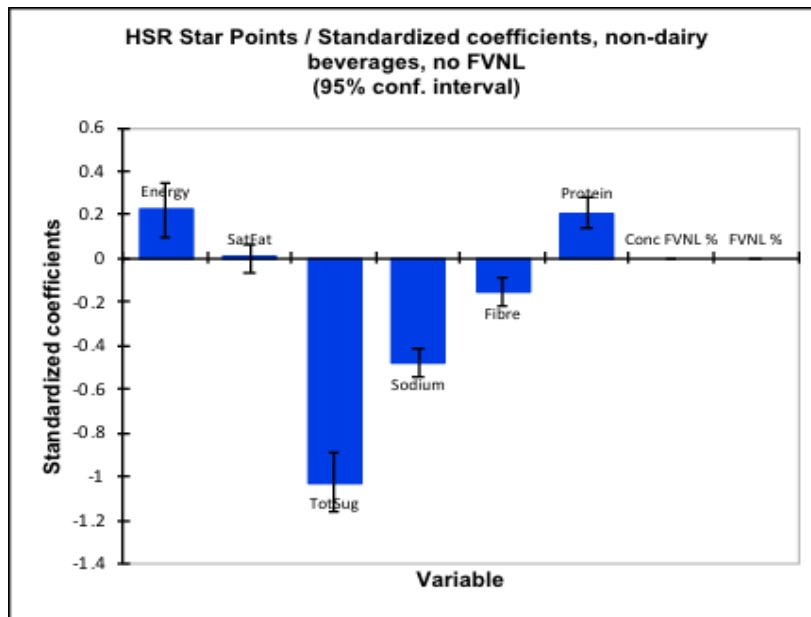


Figure 3: Nutrient sensitivities for non-dairy beverages, no FVNL (option 3)

This option significantly lowers HSRs for previously high scoring fruit and vegetable juices, with flavoured waters now the highest scoring products. However, lack of differentiation between products is compounded, as previously high-scoring products now fit into the same narrow range as all other products. The distribution (without rescaling) of non-dairy beverages without FVNL is shown in Figure 4, Appendix 3.

A possible solution to the lack of differentiation is to rescale the non-dairy beverages category once FVNL is removed. Soft drinks would rate between 2.5-4 HSRs and fruit juices between 3-4 HSRs. Flavoured waters would still receive the highest ratings. However, because only total sugar provides significant information for this category, this may considerably advantage/disadvantage products with similar compositions but with sugar content on either side of thresholds. The large gap between sugar thresholds themselves may be a disincentive to meaningful reformulation. The effect of removing FVNL from this category and rescaling is also available in Figure 5, Appendix 3.

Option 4 – Cap the maximum rating in this category (other than plain water) and rescale

Appendix 4 provides outputs of modelling of this option.

HSRs could be capped at 4.5 or 4, with products scaled back from the top-scoring product. This option retains the relatively high HSRs for 100% fruit and/or vegetable juices but does clearly position plain water as the best non-dairy beverage option and ensures that fruit juices would not rate higher than their whole fruit equivalent. Juices with progressively less FVNL content (to 40%) would fall away from those ratings, and all products currently scoring HSRs of 2 or less would likely maintain their current ratings. However, the issue of a lack of differentiation between non-juice products persists, as all lower-scoring products are now fit into a narrower range than currently. Appendix 4 provides distributions for non-dairy beverages with caps at 4 and 4.5.

HSRs for a sample of non-dairy beverages are shown by option in Table 4, ordered by current HSR.

Table 4: Energy content of selected non-dairy beverages,²⁶ current HSR and estimated HSR for Options 3-4

Product	Energy (kJ/100g)	Option 1 (current)	Option 3 (no FVNL)	Option 4 (4.5 cap)	Option 4 (4.0 cap)
Water	0	5	5	5	5
100% apple juice (from concentrate)	207	5	1	4.5	4
100% pineapple juice (from concentrate)	201	5	1	4.5	4
100% orange juice (from concentrate)	178	5	1.5	4.5	4
100% fruit juice	168	5	1	4.5	4
Coconut water	81	5	2	4.5	4
Soy milk <80 mg/100g Ca	124	2.5	2.5	2.5	2.5
50% juice (reconstituted)	91.3	2.5	2	2.5	2.5
Nut milk <80 mg/100g Ca	170	2	2	2	2
Flavoured water	40	2	2	2	2
Low sugar soft drink	4.2	2	2	2	2
Cordial (as prepared)	132	1.5	1.5	1.5	1.5
Electrolyte drink	105	1.5	1.5	1.5	1.5
Ginger beer	184	1	1	1	1
Fruit drink (5-6% juice)	179	1	1	1	1
Full sugar soft drink	172	1	1	1	1
Energy drink	195	0.5	0.5	0.5	0.5

²⁶ National Institute of Health Innovation, 2018, Nutrtrack 2017 data, available at: <https://nutriweb.org.nz/>

Options summary

Table 5: Outline of options to address issues identified for non-dairy beverages

Option no.	Option	Benefits	Disadvantages	Comments
1	No change to category	<ul style="list-style-type: none"> No change to existing labels 	<ul style="list-style-type: none"> Will not address concerns raised May be discouraging uptake of “stars” 	<ul style="list-style-type: none"> 99% of juice products with the HSR display “stars” 82% of sugar-sweetened beverages display the energy icon only
2	Non-dairy beverages to use energy icon only	<ul style="list-style-type: none"> Minimal changes to labels Clearly positions water as the healthiest option Provides some differentiation between full sugar, low sugar and no sugar products Incentivises reformulation Does not promote juices (NZEAG) 	<ul style="list-style-type: none"> Does not promote juices (ADG) Beverages currently displaying “stars” would need to remove labels Does not align with social marketing advice on using the HSR Does not align with intent of HSR system to provide information to consumers 	<ul style="list-style-type: none"> Plain water could retain automatic HSR of 5 Provides differentiation solely on energy content Would advantage low/no sugar non-juice products Would require a change to HSR guidance documents only
3	Beverages not eligible to use FVNL points	<ul style="list-style-type: none"> Clearly positions water as the healthiest option Incentivises reformulation Does not promote juices (NZEAG) 	<ul style="list-style-type: none"> Does not promote juices (ADG) Would decrease HSRs for products currently displaying HSRs Would reduce consistency with the NPSC 	<ul style="list-style-type: none"> Plain water could retain automatic HSR of 5 Provides differentiation almost solely on total sugars content Would advantage low/no sugar non-juice products Would require a change to HSR guidance documents and potentially the HSR Calculator

Option no.	Option	Benefits	Disadvantages	Comments
4	Non-dairy beverages capped at 4.5 or 4.0, FVNL allowed	<ul style="list-style-type: none"> • Clearly positions water as the healthiest option • Juices will not rate higher than their whole fruit counterpart • Promotes fruit juices relative to other non-juice products (ADG) 	<ul style="list-style-type: none"> • Provides some advantages to juices (NZEAG) • Would decrease HSRs for some products currently displaying HSRs • Does not address the lack of differentiation between non-juice beverages 	<ul style="list-style-type: none"> • Plain water could retain automatic HSR of 5 • Does not require a significant change to the HSR Calculator

Discussion and conclusions

This paper attempts to address the problem definition by providing options to disadvantage 100% fruit/vegetable juice relative to plain water and “whole” fruit and/or provide greater differentiation between non-juice beverages.

Fruit and/or vegetable juices are promoted in the current HSR system through FVNL content, which allows such products to offset often high energy and total sugar content. However, juices do not contain the same nutritive value as whole fruits and vegetables. All options (other than status quo) would address this issue, though the mechanisms are different.

The lack of differentiation between regular, low and no sugar non-juice products also stems from the distinct advantage that FVNL content brings to qualifying products. Due to scaling back from the “most healthy” option, in this case 100% fruit and/or vegetable juice, all products with a FVNL content <40% have few profile points and are therefore restricted to a low, narrow range of HSRs. Only option 2 would provide for a greater differentiation for the majority of non-dairy beverages, however only on energy content.

An additional consideration is reformulation. By removing the additional bonus awarded by FVNL, juices are no longer advantaged against non-juice products and sugar becomes the key component, which may incentivise reformulation in non-juice products to increase HSRs. 100% fruit and vegetable juices are unable to reformulate (beyond dilution) and thereby might be disadvantaged against the capacity of other products to reduce total sugars/energy content.

No identified option presents an acceptable resolution to all the above issues. However, all options other than status quo provide for plain water to be clearly differentiated as the best non-dairy beverage option and advantage whole fruit relative to juices, in line with dietary guidelines of both Australia and New Zealand.

Therefore, the key consideration is whether products with $\geq 40\%$ FVNL content should rate more highly than non-juice products with similar energy and total sugar content.

If so, option 4 (capping ratings for this category; rescaling accordingly; and retaining the automatic rating for plain water) would clearly position plain water as the healthiest non-dairy beverage. Fruit juices would also not rate higher than their whole fruit equivalent. However, fruit juices will continue to rate better than flavoured water, diluted juice and low/no sugar non-juice products and differentiation between non-juice products would not improve.

If not, option 3 (non-dairy beverages being ineligible for FVNL content, requiring a modification to HSR guidance documents) would mean that total sugars and energy are the only considerations in the calculation of a HSR. All non-dairy beverages with $\geq 40\%$ FVNL content would receive lower HSRs, potentially lower than low/no sugar non-juice products, and there would be little differentiation between all products in this category. Fruit juices would rate lower than their whole fruit equivalent.

Alternatively, guidance documents could be amended to require all non-dairy beverages other than plain water to display only the energy icon (option 2), which provides differentiation solely on energy content (noting that total sugars contribute to energy), with no differentiation based on FVNL, i.e. between juice and non-juice products. All non-dairy beverages other than plain water currently using the HSR graphic would need to display only the energy icon in order to be compliant with HSR guidance. The HSRAC should consider whether this aligns with the intention of the HSR system to provide meaningful information to consumers on the overall nutritional value of a product.

Currently, the automatic rating applied to plain, packaged water is not necessarily obvious in system guidance documents. It is proposed that this clause be moved to a more prominent location, regardless of preferred option (see Appendix 5).

APPENDIX 1: Non-dairy beverages in the Nutri-Score system²⁷

Nutri-Score is a voluntary front-of-pack labelling system launched in October 2017 in France. It intends to provide an at a glance summary of the nutritional value of packaged foods. Products are categorised between A/dark green (most healthy) and E/red (least healthy) based on their overall nutrient content.

The Nutri-Score beverages category includes plain and flavoured water, fruit juices and smoothies, sugar- or intensely-sweetened products and tea and coffee made up with water only. Dairy beverages, dairy analogues and beverages reconstituted with a liquid other than water are excluded.

Scores for beverages are calculated using different criteria to that of other products (note that points are added for energy and total sugars and subtracted for fruit and vegetable content):

Points	Energy (kJ/100 g)	Total sugars (g/100 g)	Fruits and vegetables (%)
0	≤ 0	≤ 0	≤ 40
1	≤ 30	≤ 1.5	
2	≤ 60	≤ 3	> 40
3	≤ 90	≤ 4.5	
4	≤ 120	≤ 6	> 60
5	≤ 150	≤ 7.5	
6	≤ 180	≤ 9	
7	≤ 210	≤ 10.5	
8	≤ 240	≤ 12	
9	≤ 270	≤ 13.5	
10	> 270	> 13.5	> 80

Scores are then assigned to the following colour/rating:

Class	Score ranges	Colour
A	Water	Dark green
B	≤1	Light green
C	2 - 5	Light orange
D	6 - 9	Orange
E	≥10	Red

²⁷ Santé Publique France, 2018, Nutri-Score Frequently Asked Questions – Scientific & Technical, available at https://www.santepubliquefrance.fr/Media/Files/NUTRISCORE/Questions_reponses_EN

APPENDIX 2: Option 2 (energy icon only)

Table 6: Sample of products from TAG database, energy only

ABS 5-digit classification	ABS FFG/discretionary list ²⁸	Energy content (kJ/100 g)	Current HSR
Fruit juices, commercially prepared	FFG	430	3.5
Fruit drinks (ready to drink or made from concentrate)	Discretionary	295	0.5
Fruit juices, commercially prepared	FFG	238	5.0
Soft drinks, non-cola	Discretionary	236	0.5
Fruit juices, commercially prepared	FFG	195	5.0
Flavoured mineral waters	Discretionary	194	1.0
Energy drinks	Discretionary	194	1.0
Fruit juices, commercially prepared	FFG	192	5.0
Fruit drinks (ready to drink or made from concentrate)	Discretionary	192	1.0
Fruit juices, commercially prepared	FFG	190	5.0
Fruit drinks (ready to drink or made from concentrate)	Discretionary	184	1.0
Soft drinks, cola	Discretionary	184	1.0
Fruit and vegetable juice blends	FFG	181	5.0
Fruit juices, commercially prepared	FFG	180	5.0
Cordial concentrate	Discretionary	173	1.0
Flavoured mineral waters	Discretionary	173	1.0
Soft drinks, cola	Discretionary	167	1.0
Fruit drinks (ready to drink or made from concentrate)	Discretionary	167	1.0
Fruit and vegetable juice blends	FFG	167	5.0
Fruit juices, fortified	FFG	157	5.0
Soft drinks, non-cola	Discretionary	124	1.5
Cordial concentrate	Discretionary	115	1.5
Fruit juices, commercially prepared	FFG	95	2.5
Fruit and vegetable juice blends	FFG	85	5.0

²⁸ Australian Bureau of Statistics, 2014, Australian Health Survey Users' Guide – Discretionary Foods, available at: <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/4363.0.55.001Chapter65062011-13>

APPENDIX 3: Effect of Option 3 (no FVNL points) on Star Points in non-dairy beverages

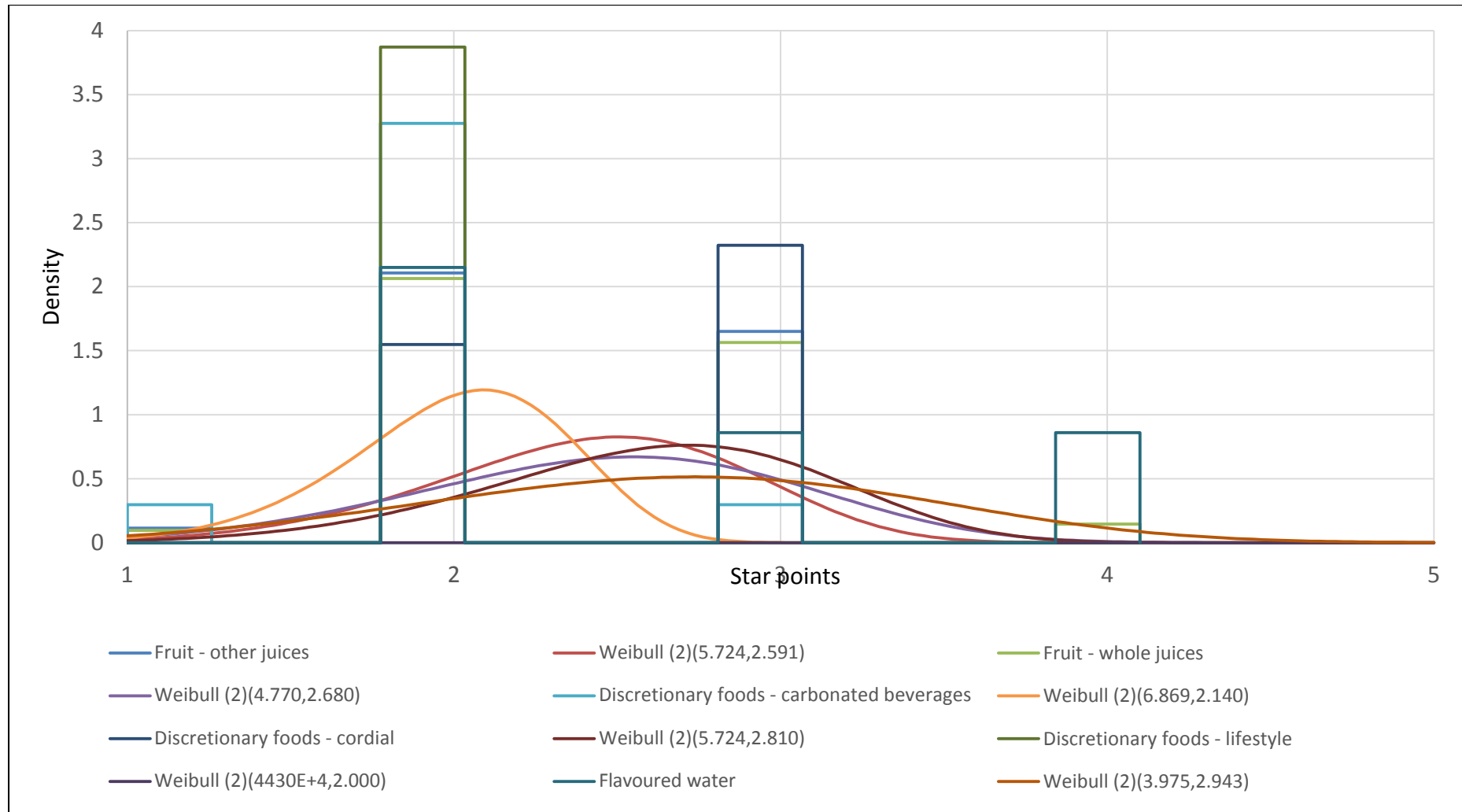


Figure 4: Distribution of non-dairy beverages, no FVNL, not re-scaled (please note that the x-axis has been truncated for clarity – no products receive >5 Star Points)

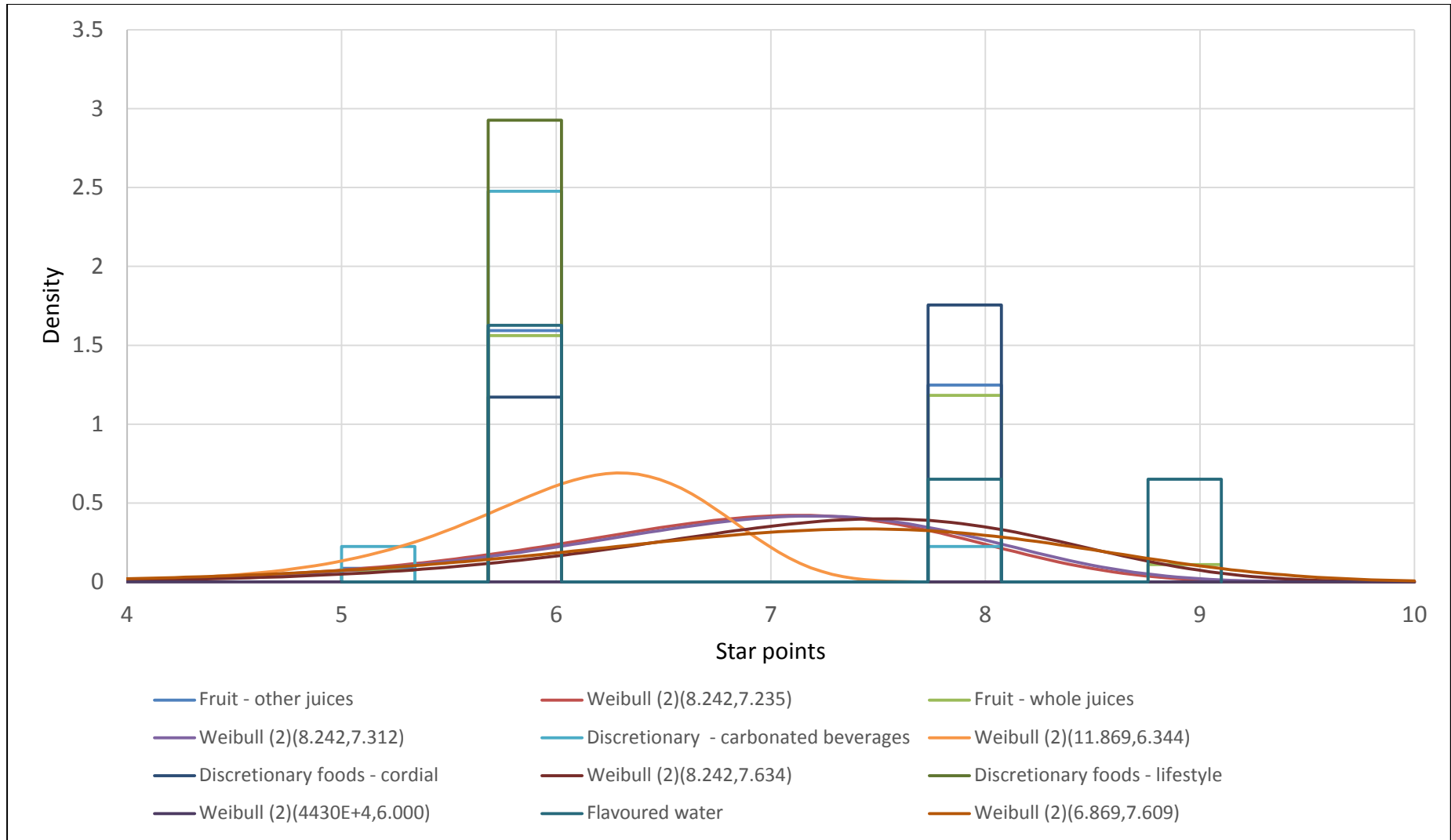


Figure 5: Distribution of non-dairy beverages, no FVNL, re-scaled (please note that the x-axis has been truncated for clarity – no products receive <4 Star Points)

APPENDIX 4: Effect of Option 4 (cap category and re-scale) on Star Points in non-dairy beverages, with caps of 4.5 HSR and 4.0 HSR

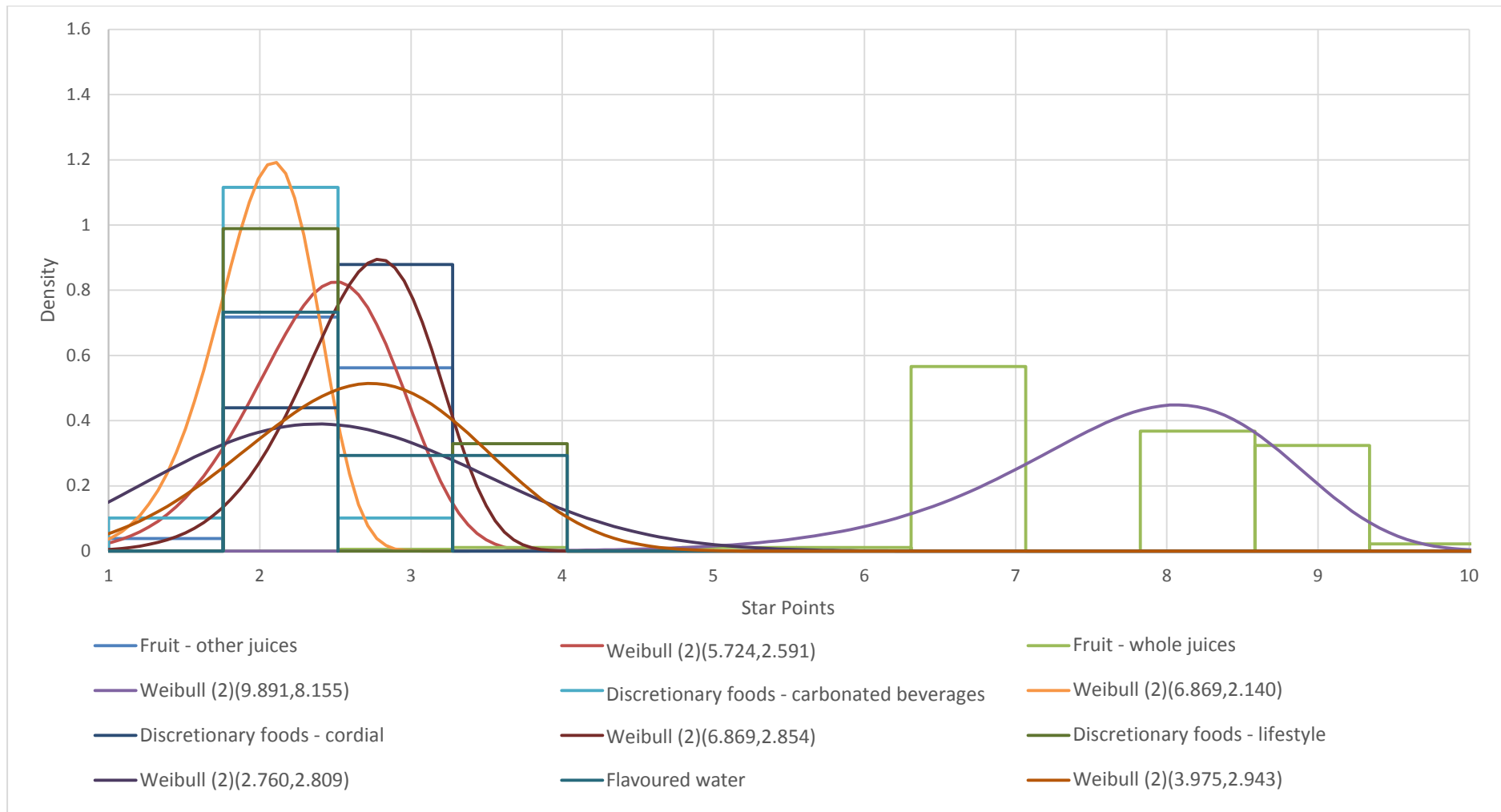


Figure 6: Non-dairy beverages capped at 4.5, re-scaled

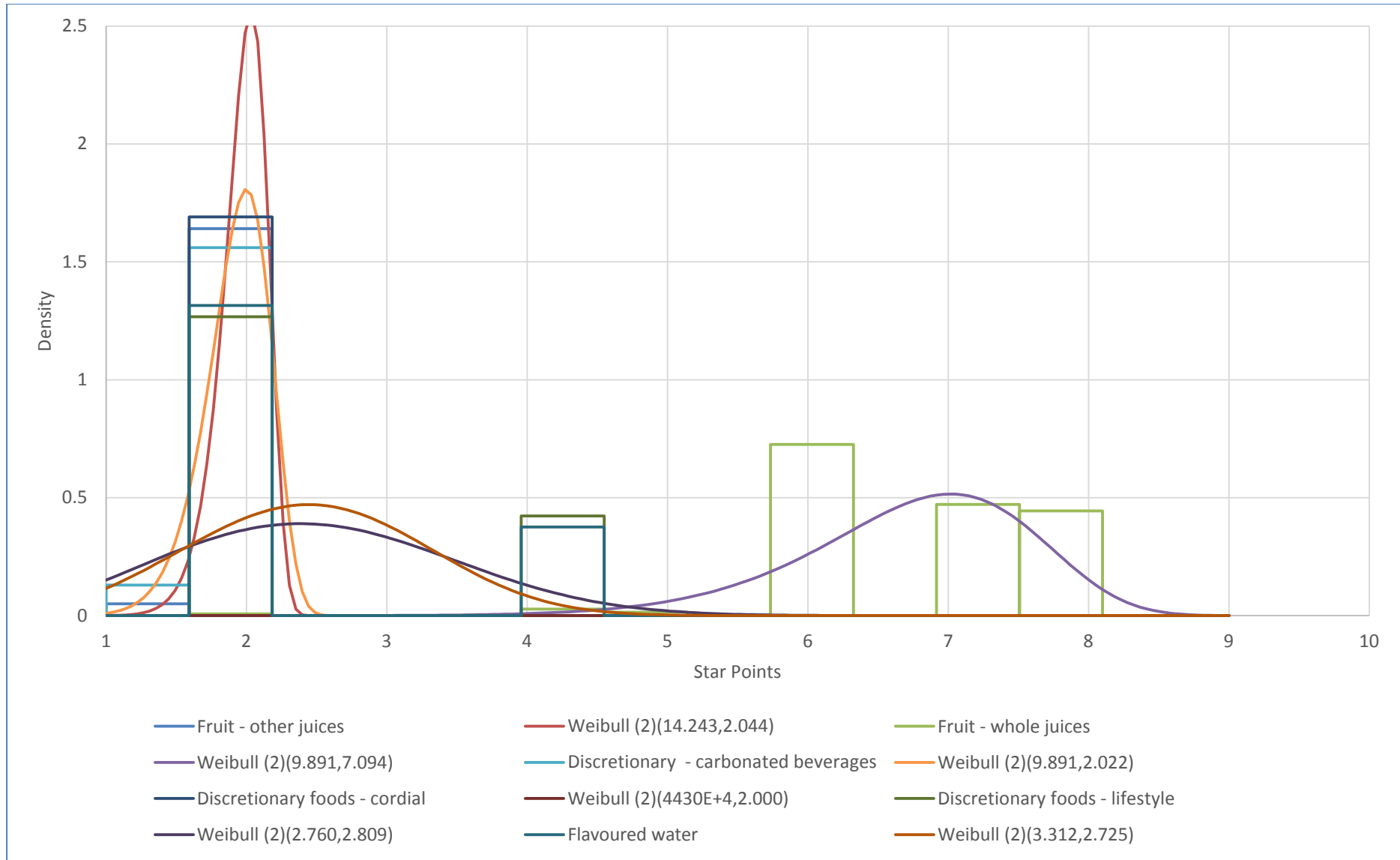


Figure 7: Non-dairy beverages capped at 4.0, re-scaled

APPENDIX 5: Option 1, proposed amendment to HSR guidance

Step 1: Determine the HSR category of the food

There are two major categories in the HSRC, i.e. non-dairy food and dairy foods with three categories under each of them, where specific criteria (e.g. calcium content of the food product) is used to determine if a food product is classified as a dairy food. The category of the food product determines which steps are to be followed to determine its HSR.

The six categories of foods in the HSRC are:

- Category 1 Beverages other than dairy beverages
- Category 1D Dairy beverages
- Category 2 All foods other than those included in Category 1, 1D, 2D, 3 or 3D
- Category 2D Dairy foods other than those included in Category 1D or 3D
- Category 3 Oils and spreads, defined as follows
 - edible oil as defined in Standard 2.4.1
 - edible oil spreads as defined in Standard 2.4.2
 - margarine as defined in Standard 2.4.2
 - butter as defined in Standard 2.5.5
- Category 3D Cheese and processed cheese as defined in Standard 2.5.4 (with calcium content >320 mg/100 g)

An automatic five star rating applies to packaged water as regulated in FSC Standard 2.6.2 – Non-alcoholic Beverages and Brewed Soft Drinks, which sets out composition and chemical limits for packaged water. Companies may choose to use the full HSR system graphic on packaged water in accordance with the hierarchy of presentation described under Section 2.