

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

HSR Technical Advisory Group (TAG)

Ice confection, jelly and frozen milk products

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Summary

This paper primarily discusses water-based ice confections (e.g. ice blocks) and jelly. There is a minor focus on frozen milk products (e.g. ice cream). Water-based ice confection and jelly fall into Category 2 (all foods other than those included in Category 1, 1D, 2D, 3 or 3D) but have an ingredient profile similar to non-dairy beverages (Category 1) and could therefore be considered frozen/gelatinous beverages. HSRs received by water-based ice confections in Category 2 are higher than similar products that fall within Category 1 (non-dairy beverages) using the current HSR algorithm.

There have been two HSR Advisory Committee (HSRAC) determinations regarding these products. In relation to a product sold liquid but to be consumed frozen, the HSRAC ruled that “manufacturers may choose which category to apply to their products”, whereas in the case of a product with a similar nutrient profile to protein beverages/yoghurts, HSRAC agreed a frozen product should be classified as a food not a beverage.

These cases show that there needs to be clear guidance on definitions to identify the products that are captured within Category 2. Definitions also need to cover products made with coconut milk or 99% fruit juice and those jellies with low fruit content.

Lack of differentiation between HSRs for frozen milk products, as well as specific products considered to have inappropriately high HSRs, have been raised as areas of concern; however consideration of these foods has led to TAG agreement that the category is treated appropriately (i.e. products are appropriately distributed according to saturated fat, total sugar and energy content).

Four options to address water-based ice confections and jelly are proposed, with options 2-4 improving alignment with dietary guidance:

1. No change
2. A change in definitions to include water-based ice confection and jelly as Category 1 (non-dairy beverages) with clear product definitions
3. A change to Category 2 to shift more products towards the bottom end of the HSR range
4. A wider strategy to address perceived anomalies, particularly where discretionary foods receive higher HSRs. This would include separating Category 2 into four FFG and one discretionary food categories and then rescaling the discretionary category. This option is not modelled here as it is dependent on other TAG work.

Option 2 lowers HSRs for ice confectionery and jelly while improving discrimination between high and low sugar products. Water-based products would move from 3-3.5 HSR to 0.5-1 HSR and jellies would move from 3-4 HSR to 0.5-1.5 HSR. HSRAC should consider whether this redefinition is appropriate.

Option 3 shifts low-scoring products in Category 2 towards the lower end of the scale, effectively decreasing HSRs for all low-scoring products (including others not considered here) by 0.5.

This category is linked to papers on sugar. The potential distribution of HSRs outlined in this paper may change once all recommended adjustments to the HSR algorithm are made.

Problem definition

This paper primarily covers the Australian Health Survey (AHS) category 'dishes and products other than confectionery where sugar is the major component'. It discusses ice confections and jelly that fall within that AHS category but will also consider frozen milk products, to look at previous work done and investigate the implications of the recommendations in this paper.

Jelly, frozen milk products, soy-based ice confections and water ice confection, including gelato and sorbet, are classified as discretionary under the Australian Health Survey: Users' Guide, 2011-13 — Discretionary Food List¹.

Scope of products in this paper

Water-based ice confection is defined in this context as a frozen (whether purchased frozen or intended to be frozen at home) sweetened product that is water-based, not milk-based. The category includes a diverse range of products such as lemon sorbet (water, lemon juice, sugar), creamy ice bars (water, sugar, skim milk powder, concentrated apple juice 5%, yoghurt 1%), 99% fruit and vegetable juice ice blocks and ambient liquid products such as freeze-at-home fruit ice (with 38-70% coconut milk and 50-17% fruit puree).

Jelly includes jelly crystals to be made up with water and 'ready-to-eat' jellies. Some low kilojoule jelly products exist.

Frozen milk products include ice creams and frozen yoghurts. Under the Australian New Zealand Food Standards Code (the Code),² food sold as 'ice cream' must contain at least 10% milk fat.

Monitoring (in FoodTrackTM) of the implementation of the HSR system reports that, as of end March 2018, 7 jellies, 152 frozen dairy/soy desserts and 15 frozen fruit-based desserts display a HSR.³ Table 1 displays the number of relevant products in the TAG database, by AHS category, noting that these categories are substantially different from those used in monitoring of the system.

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 Food Standards Australia New Zealand, 2015, Standard 2.5.6 – Ice cream, available at <https://www.legislation.gov.au/Details/F2015L00424>

³ National Heart Foundation of Australia, 2018, Report of products displaying the Health Star Rating (HSR) system (HSR products) in FoodTrackTM over time, up to 31st March 2018 (Quarter Five)

Table 1: AHS categories included and number of products in TAG database

Code	Group and sub-group	Number of samples from TAG database
273	Dishes and products other than confectionery where sugar is the major component	-
27301	Sugar-based desserts (jelly, bakery & cakes)	19 (7 bakery & cake products considered in modelling Option 3 only)
27302	Sugar-based desserts, intense sweetened	0
27303	Water ice confection, gelato, sorbet	49
27304	Frostings and icing	0
195	Frozen milk products	-
19501	Ice cream, tub varieties, fat content >10 g/100 g	55
19502	Ice cream, tub varieties, fat content 4 - 10 g/100 g	31
19503	Ice cream, tub varieties, fat content <4 g/100 g	27
19504	Ice cream, individual bar, stick and cone varieties, fat content >10 g/100 g	37
19505	Ice cream, individual bar, stick and cone varieties, fat content 4 - 10 g/100 g	14
19506	Ice cream, individual bar, stick and cone varieties, fat content <4 g/100 g	0
19507	Frozen yoghurts, all types	3
19508	Frozen dairy desserts, other	3

Ice confection, jelly-based and frozen dairy-based products in the TAG database

Most water-based ice confections received Star Points that would allow the display of 3 - 3.5 HSRs (Figure 1). For jellies, most products would receive 3 – 3.5 HSRs as Category 2 foods (Figure 2). Note that the raw outputs of the HSR algorithm are called 'Star Points' and correspond 2:1 to HSRs.

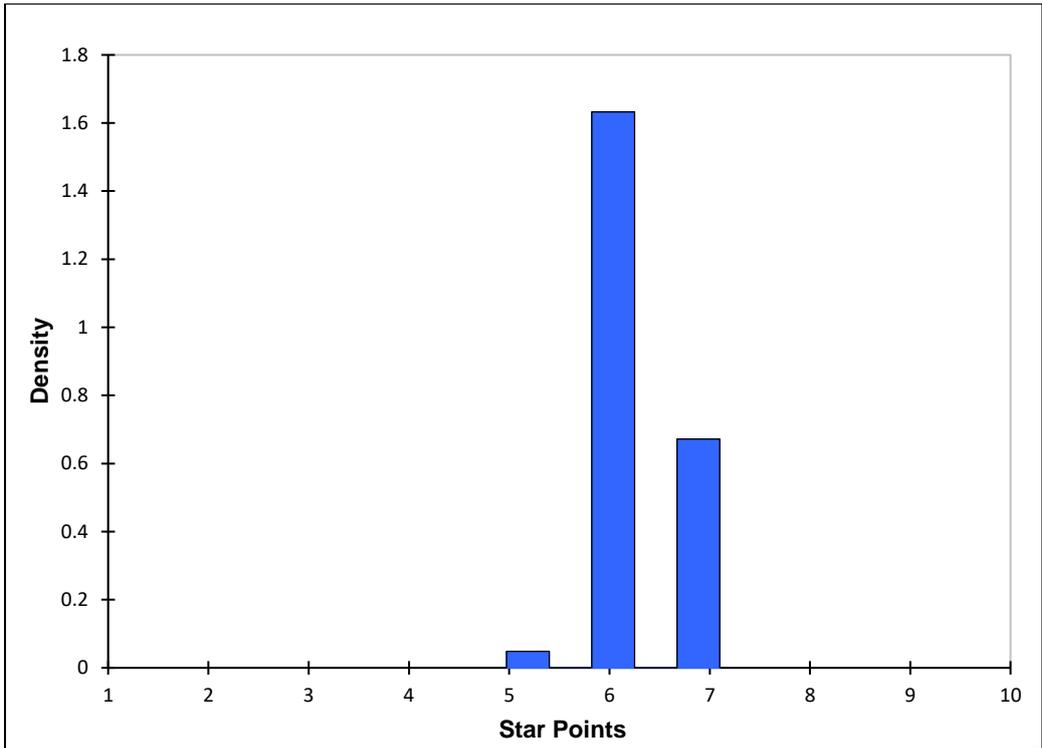


Figure 1: Star Points distribution for water-based ice confectionery, based on TAG database

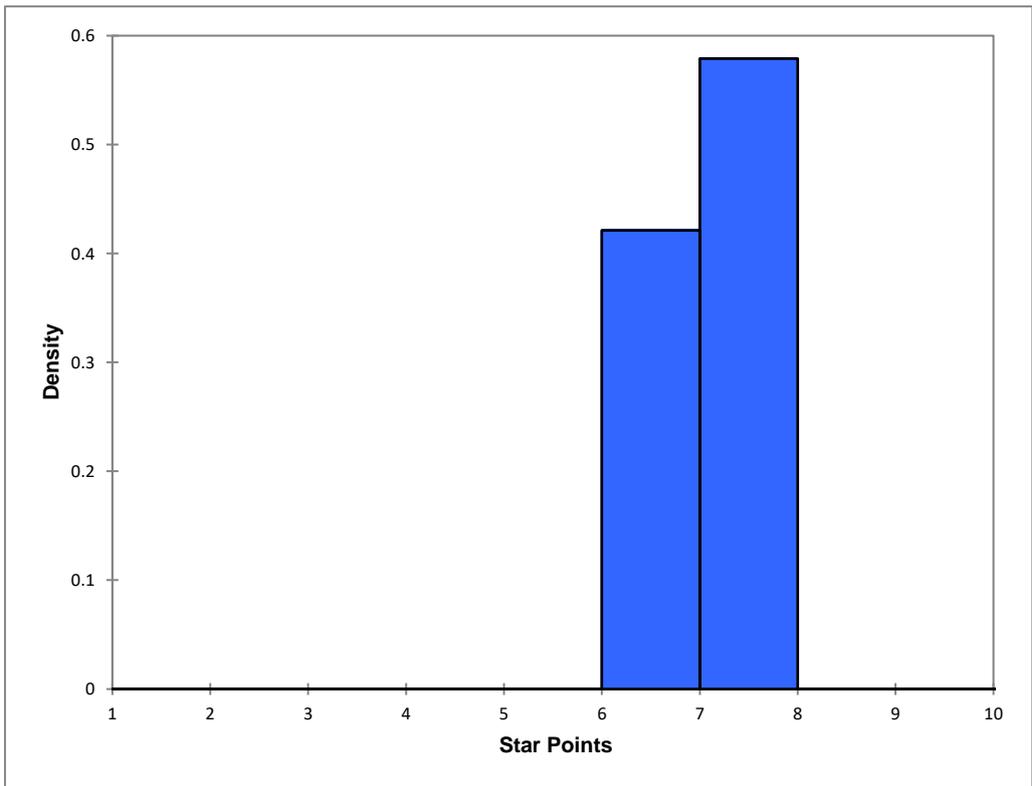


Figure 2: Star Points distribution for jelly, based on TAG database

Figure 3 shows the current distribution of frozen milk products in the TAG database (Appendix 1 shows the distribution by AHS category). All these products are categorised as discretionary, with products lower in saturated fat scoring highest (the highest HSR for a product in this category is currently 3.5). The HSR responds to saturated fat, energy and sugar in these products whereas for ice confection/jelly only sugar and energy is considered.

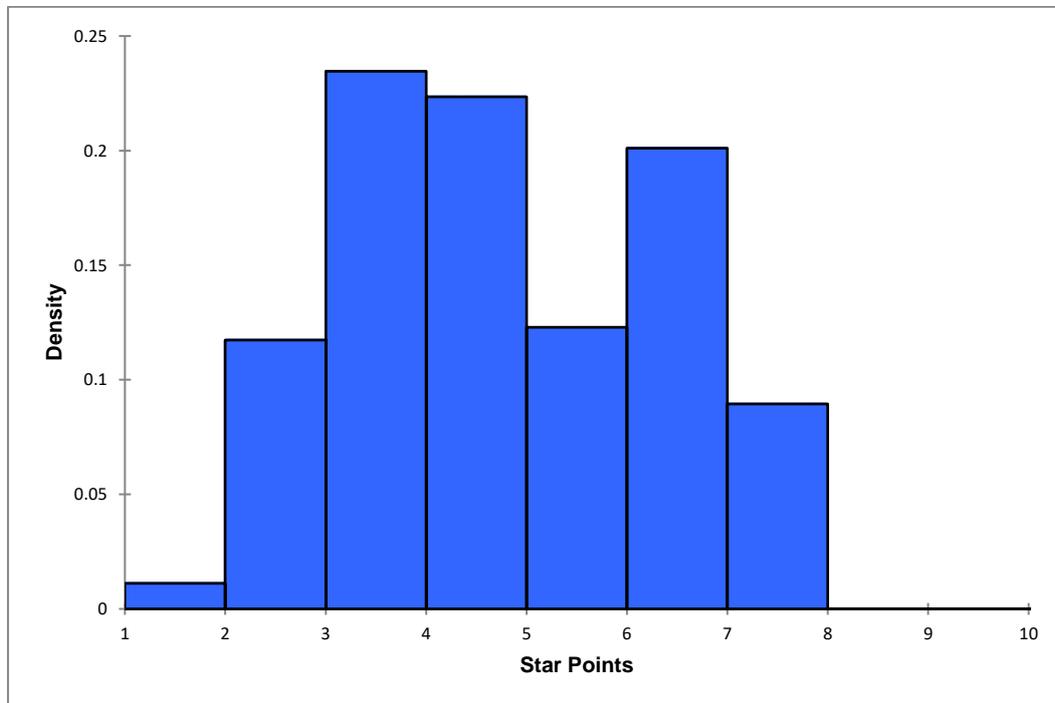


Figure 3: Star points distribution for frozen milk products, based on TAG database
 TAG considers that it is not necessary to further investigate any specific changes to this category. Some frozen milk products have been identified as 'outliers' in other TAG analysis (i.e. discretionary products scoring ≥ 3), however, TAG considers that 'outliers' in this category are highlighted because of the application of a binary classification (healthy/unhealthy) over the continuum of the HSR system (more healthy/less healthy). Frozen dairy-based products with higher HSRs are lower in saturated fat, total sugar and total energy than lower scoring products so TAG considers the current scores appropriate.

Consumption data

Australia

For consumers of water-based ice confections in the AHS⁴, median consumption across all the surveyed population was 75 g/day and they were consumed by 2.6% of the population. The AHS and the New Zealand Adult Nutrition Survey do not go into enough disaggregated detail to analyse the contribution of dairy-based ice confection or jelly products to population intake of nutrients.

For milk-based products, the AHS⁵ reports that, on the day before the interview:

- Frozen milk products were consumed by 15% of the population aged 2 years and over.
- Children in the age groups of 4-8 years (21%) and 9-13 years (27%) were most likely to have consumed these products.
- Varieties with fat content >10 g/100 g were the most commonly consumed.
- Frozen milk products contributed 4.2% of daily intake of saturated fat, 2.9% of sugar, 2.1% of calcium, 1.6% of energy and 0.7% of protein.

New Zealand

Results from the 2002 New Zealand National Children's Nutrition Survey indicate that of the dairy items (excluding milk) most frequently consumed weekly, 64% were ice creams.⁶ Data for New Zealand adults are not available.

Nutrient profile

As ice confections and jelly are water-based they are closer in profile to non-dairy beverages than foods (similar to cordials or juices).

Issues raised in five year review submissions

Concerns have been raised that water-based ice confectionery (consisting primarily of water, flavouring and sugar) receives an inappropriately high HSR (≥ 3) when classified as HSR Category 2 products. Lemon sorbet, in particular, has previously been raised at HSRAC and other examples have been highlighted in the media and submissions to the five year review and HSRAC. These products are closer in ingredient and nutrient profile to beverages than foods, although consumed in quantities more similar to foods.

Similar concerns have been raised around jelly which, due to the dilution effect of water, receives a HSR of 3-3.5. Jelly is affected by the 'as prepared' review although directions always advise preparation with water. The Nutrition Information Panel (NIP) of jellies indicate nutrition information "when made up according to directions for use". Jelly has a high water content, similar to beverages, though they are generally not consumed in equal quantities.

It has previously been raised that there is little differentiation between HSRs for frozen milk products despite there being some objectively healthier options. There is also concern regarding specific products considered to have inappropriately high HSRs.

A 2016 study⁷ on consumers' responses to various front-of-pack labelling schemes found consumers felt products with HSRs ≤ 2 were generally considered unhealthy, whereas those with HSRs of ≥ 3 were seen as healthier options.

No issues regarding frozen dairy products were raised in submissions.

⁴ 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>

⁵ Australian Bureau of Statistics, 2014, Australian Health Survey: Nutrition First Results - Foods and Nutrients, 2011-12

⁶ Ministry of Health, 2003, NZ Food NZ Children – Key results of the 2002 National Children's Nutrition Survey, p. 123, available at <https://www.health.govt.nz/system/files/documents/publications/nzfoodnzchildren.pdf>

⁷ Talati Z, Pettigrew S, Kelly B, Ball K, Dixon H, Shilton T. Consumers' responses to front-of-pack labels that vary by interpretive content. *Appetite* 2016; 101:205–213

Alignment with system objectives and priorities

Previous HSRAC decisions on related issues

18 November 2016

- The market for 'natural' juice ice confections is increasing and several companies have released products that are 99-100% juice, just frozen. When juice is frozen and categorised as a 'Food' (category 2) these products most often receive a lower rating than the 'unfrozen' juice (beverage) equivalent. One such product that is available on shelf as 'ready to freeze' juice icy pole has categorised itself as a Category 1: Beverages for the purposes of determining a Health Star Rating (HSR).⁸
- Members considered the information provided and agreed that, for consistency, manufacturers may choose which category (Category 1 or Category 2) to apply to their products provided there is no change in the nutritional profile of the product.⁹

15 November 2017

- ...the manufacturer claims that the product will have a similar nutrient profile to protein blend beverages and protein yoghurts. The manufacturer has asked whether the product can be classified as a beverage rather than a food and marketed as being frozen rather than chilled. The product may receive a higher Health Star Rating (HSR) when classified as a Beverage (Category 1 or 1D depending on the calcium content) than when classified as a Food (Category 2 or 2D depending on the calcium content).¹⁰
- ...Members agreed that a product that is sold frozen should be classified as a food not a beverage and should therefore be classified as a HSR Category 2 or 2D product. The decision made on 18 November 2016 about frozen juice products was seen as a different issue as those types of products are sold on the shelf as a liquid.¹¹

Nutrient Profiling Scoring Criterion (NPSC)

Products with a NPSC of less than 4¹² (equivalent to a HSR >3) qualify to carry general level health claims; some ice confectionery, jelly and frozen milk products pass this eligibility requirement, subject to meeting other claim-specific requirements. The NPSC treats ice confectionery and jelly as foods.

Linkages with other TAG work

The following relevant issues have been raised for consideration in the 5 year review and are being considered by TAG separately:

- Treatment of sugars (whether total or added)
- Fruit juices/beverages
- Confectionery
- Definitions of dairy categories

⁸ HSRAC Meeting 13, agenda paper - item 14

⁹ HSRAC Meeting 13, minutes - item 14

¹⁰ HSRAC Meeting 13, agenda paper - item 11

¹¹ HSRAC Meeting 13, minutes - item 11

¹² Australia New Zealand Food Standards Code Schedule 4 – Nutrition, Health & Related Claims, available at <https://www.legislation.gov.au/Details/F2017C00711>

Dietary guidelines

These products are considered discretionary in the Australian Dietary Guidelines (ADG) and Australian Guide to Healthy Eating (AGHE). The specific advice provided is:

Limit intake of foods and drinks containing added sugars such as confectionery, sugar-sweetened soft drinks and cordials, fruit drinks, vitamin waters, energy and sports drinks¹³

Supporting ADG documentation specifically states that:

'Discretionary choices' are called that because they are not an essential or necessary part of healthy dietary patterns... discretionary choices include: most sweet biscuits, cakes, desserts and pastries; processed meats and sausages; ice-cream and other ice confections¹⁴

The New Zealand Eating and Activity Guidelines state:

Choose and/or prepare foods and drinks with unsaturated fats instead of saturated fats and little or no added sugar¹⁵

World Health Organisation recommendations

The World Health Organisation (WHO) strongly recommends adults and children reduce their daily intake of free sugars to less than 10% of their total energy intake¹⁶. A conditional recommendation is for a further reduction to below 5% or roughly 25 grams (6 teaspoons) per day, which would provide additional health benefits. The recommendations are based on analysis of scientific evidence that shows that consumption of sugars has an effect on body weight and higher rates of dental caries when the intake of free sugars is above 10% of total energy intake. However, over half of Australians¹⁷ and New Zealanders¹⁸ exceed these recommendations.

¹³ National Health and Medical Research Council, 2013, Australian Dietary Guidelines, p. v, available at https://www.nhmrc.gov.au/_files_nhmrc/file/publications/n55_australian_dietary_guidelines1.pdf

¹⁴ National Health and Medical Research Council, 2013, Australian Dietary Guidelines – Summary, p. 27, available at

https://www.nhmrc.gov.au/_files_nhmrc/file/your_health/healthy/nutrition/n55a_australian_dietary_guidelines_summary_131014_1.pdf

¹⁵ Ministry of Health, 2015, Eating and Activity Guidelines for New Zealand Adults, p. 6, available at https://www.health.govt.nz/system/files/documents/publications/eating-activity-guidelines-for-new-zealand-adults-oct15_0.pdf

¹⁶ 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

¹⁷ ABS, 2016, Australian Healthy Survey: Consumption of added sugars, 2011-12, available at <http://www.abs.gov.au/ausstats/abs@.nsf/mf/4364.0.55.011>

¹⁸ 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>

Options to address identified issues

Four options have been proposed:

1. No change
2. A change in definitions to include water-based ice confection and jelly as Category 1 (non-dairy beverages) with clear definitions for products.
3. A change to Category 2 to shift more products towards the bottom end of the HSR range
4. A wider strategy to address perceived anomalies, particularly where discretionary foods receive higher HSRs. This option would include separating Category 2 into four 'FFG' and one 'discretionary' food categories and then rescaling the 'discretionary' category (unable to be modelled at present).

Additional analysis undertaken

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 Industry¹⁹.

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 Excel²⁰. XLSTAT provides modelling tools that help to predict general trends from limited data. This includes:

- 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.

¹⁹ FoPL Secretariat, 2018, Guide for Industry to the Health Star Rating Calculator, v. 6, available at www.healthstarrating.gov.au/internet/healthstarrating/publishing.nsf/Content/guide-for-industry-document

²⁰ Addinsoft, 2017, XLSTAT 2017: Data Analysis and Statistical Solution for Microsoft Excel

Results

Option 2 – Water-based ice confectionery/jelly to be included with beverages

The distribution of HSRs for ice confections and jelly was modelled in its existing category (Category 2, see Figures 4 and 6) and proposed category (Category 1, see Figures 5 and 7). In sum, water-based products move from 3-3.5 HSRs to 0.5-1 HSRs and jellies move from 3-4 HSRs to 0.5-1.5 HSRs.

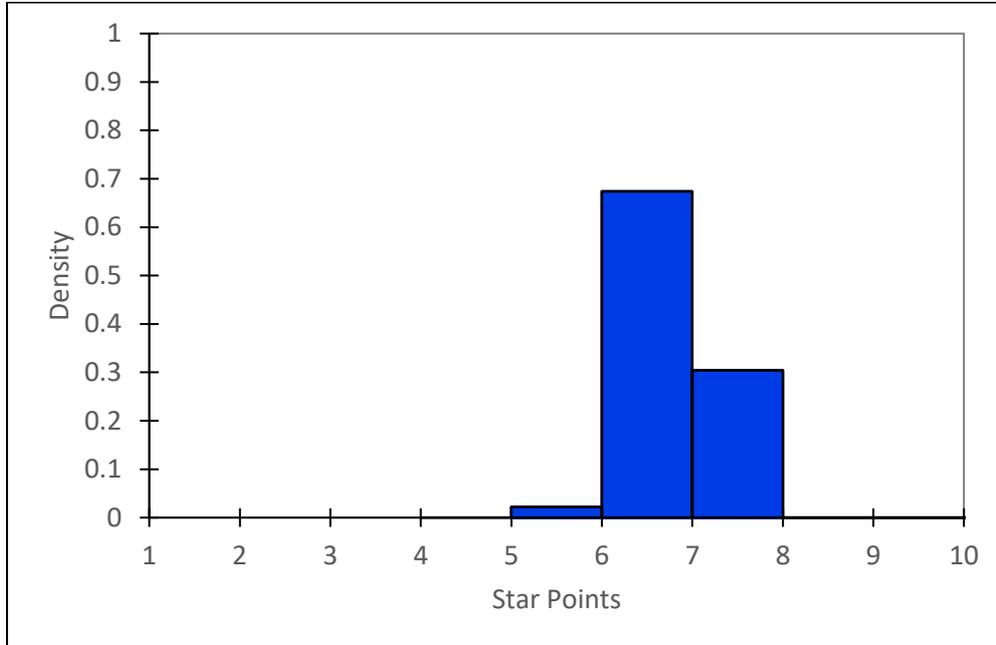


Figure 4: Spread of ice confection products from the TAG database, current categorisation as Category 2

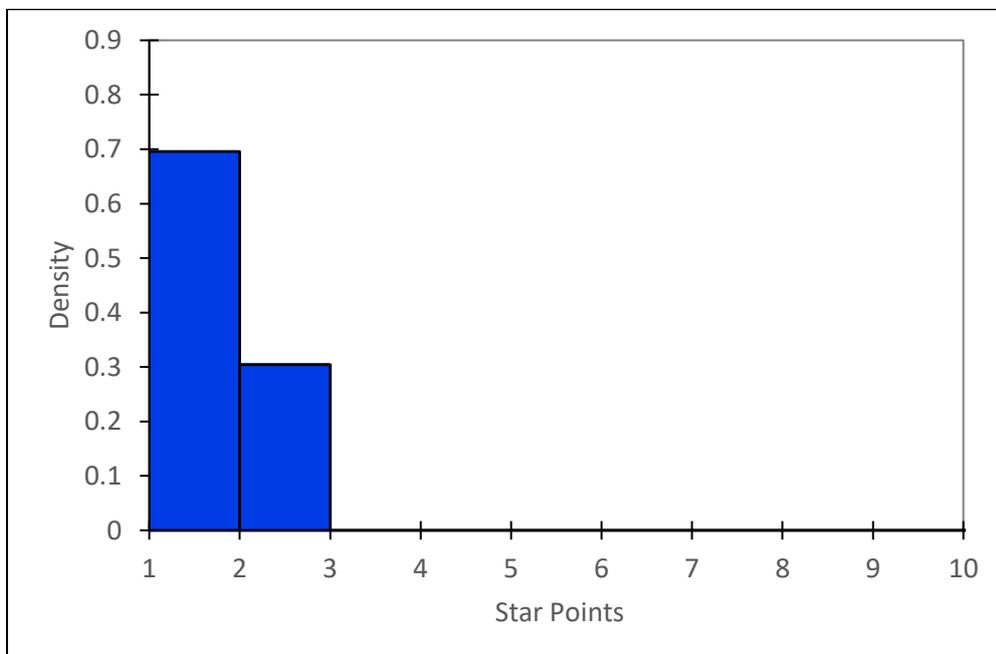


Figure 5: Spread of ice confection products from the TAG database as Category 1 (option 2)

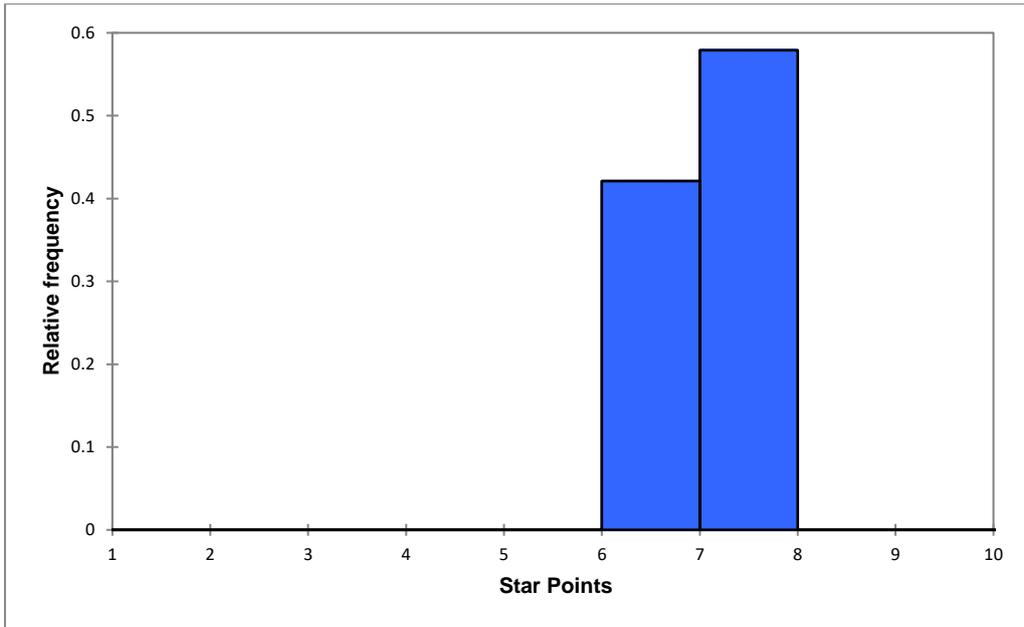


Figure 6: Spread of jelly products (as prepared) from the TAG database, current categorisation as Category 2

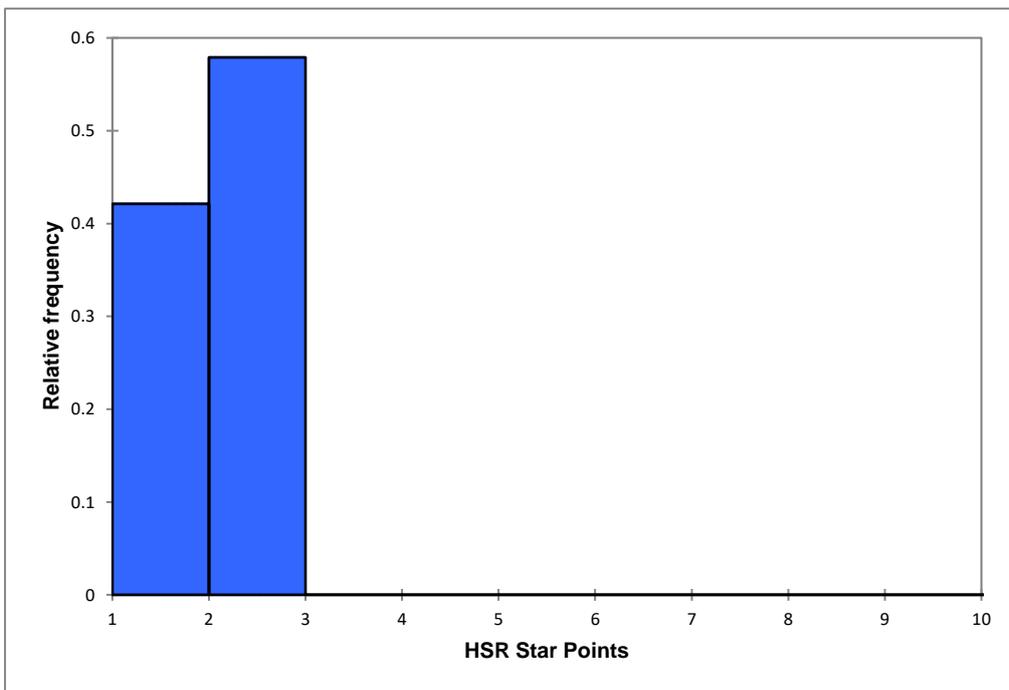


Figure 7: Spread of jelly products (as prepared) from the TAG database as Category 1 (option 2)

Products not captured in the TAG database include 99% fruit and vegetable frozen juice and 'freeze at home' fruit ice with coconut milk. Low kilojoule jellies were sampled from the supermarket and modelled as they were also not in the database. Table 2 below demonstrates the effect of categorisation on these products.

Table 2: Comparison of the HSR of jelly products, as either category 1 or category 2

Food	Energy (as prepared) (kJ/100 g)	Total sugar (as prepared) (g/100 g)	HSR if Cat 1	HSR if Cat 2
Jelly (crystals)	266	14.4	◇	★★★
30% lower sugar jelly (crystals)	175	9	★◇	★★★◇
Low kilojoule/low sugar jelly (crystals)	25	0	★★	★★★◇
Ready to eat jelly	340	19.5	◇	★★★

◇ Half star

★ Full star

Option 3 - shift products at the lower end of the HSR range down

This option may have a minor impact on the HSR of these products due to their water-based profile. In sum, products tend to receive HSRs 0.5 lower than currently, i.e. jelly and water-based ice confections would receive HSRs between 2.5 and 3 and dairy-based ice confectionery would receive HSRs between 0.5 and 3.5. Full results of modelling are shown in Appendix 2.

Options summary

Table 3: Outline of options to address identified issues with ice confections, jelly and frozen milk products

Option number	Option	Benefits	Disadvantages	Comments
1.	No change/status quo	No change to existing labels, HSR calculator or guidance documents	Will not address concerns raised	
2.	Categorise ice confectionery and jelly as Category 1 (non-dairy beverages)	<ul style="list-style-type: none"> • Similar nutrient profiles to beverages • Would address concerns raised 	<ul style="list-style-type: none"> • HSR calculator moves further away from NPSC • Would require changes to existing scores 	<ul style="list-style-type: none"> • Modelling provided. • Guidance documents would need clear definitions • Change in range of HSR, from 2.5-3.5 to 0.5-1
3.	Shift products at lower end of HSR scale in Category 2 down	<ul style="list-style-type: none"> • Would address concerns, including around other products with low nutritional value in Category 2 • Improves demarcations between discretionary and FFG foods. 	<ul style="list-style-type: none"> • All Category 2 products would need to be rescaled • Would require changes to existing scores 	<ul style="list-style-type: none"> • Modelling provided • Would affect all products at lower end of Category 2 • HSRs would decrease by 0.5
4.	Separate Category 2 into four 'FFG' and one 'discretionary' food categories and then rescaling the 'discretionary' category	<ul style="list-style-type: none"> • May address concerns, including around other food products/categories • Would mitigate comparisons between FFG and discretionary foods • May provide greater differentiation between more and less healthy products 	<ul style="list-style-type: none"> • Would require remodelling all Category 2 products • Would require changes to existing scores for a large number of products • Would require significant definitional work 	<ul style="list-style-type: none"> • Unable to be modelled at present • Would affect all products currently in Category 2

Conclusions

Water-based ice confection and jelly have an ingredient and component profile similar to beverages and could therefore be considered frozen/gelatinous beverages. The previous decision made by HSRAC in November 2016, allowing manufacturers to determine whether a product sold liquid but consumed frozen is considered as Category 1 or 2, is problematic given the large difference between HSRs for products with the same nutrition profile.

TAG considers the current distribution of HSRs for frozen milk products appropriate, as those receiving higher HSRs have lower total sugar and saturated fat content.

Other than status quo, there are three options available for these water-based products to improve alignment with dietary guidance.

Option 2 - if HSR guidance documents are amended to define Category 1 as inclusive of jelly and ice confectionery, HSRs for these products would align with beverages with similar nutrient profiles, i.e. water-based products would move from 3-3.5 HSRs to 0.5-1 HSRs and jellies would move from 3-4 HSRs to 0.5-1.5 HSRs. Differentiation between regular, low and no sugar products would improve. HSRAC should consider whether this redefinition is appropriate.

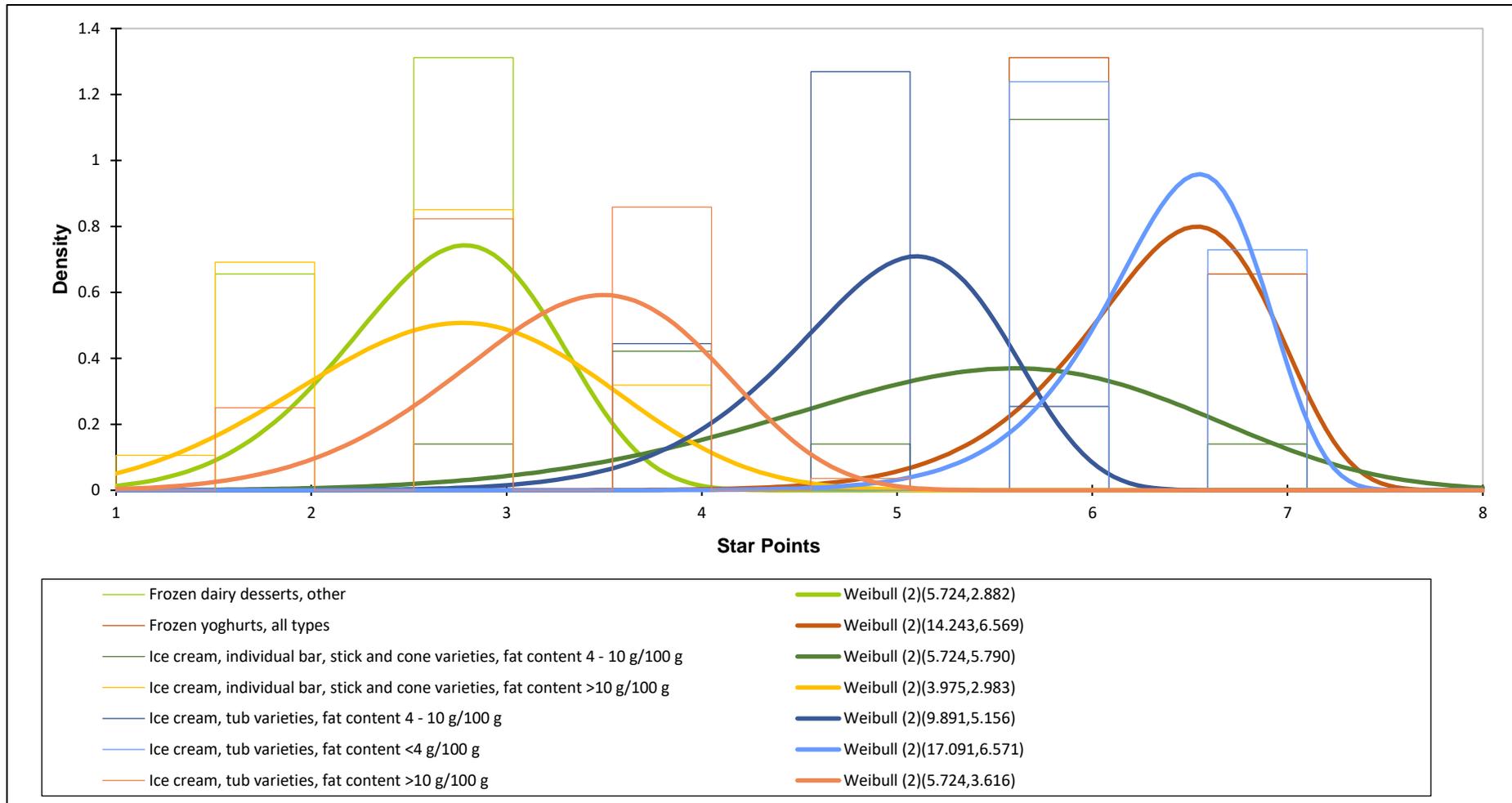
Option 3 - low-scoring products in Category 2 would be shifted further towards the lower end of the HSR scale, effectively decreasing HSRs for all low-scoring products (including others not considered here) by 0.5.

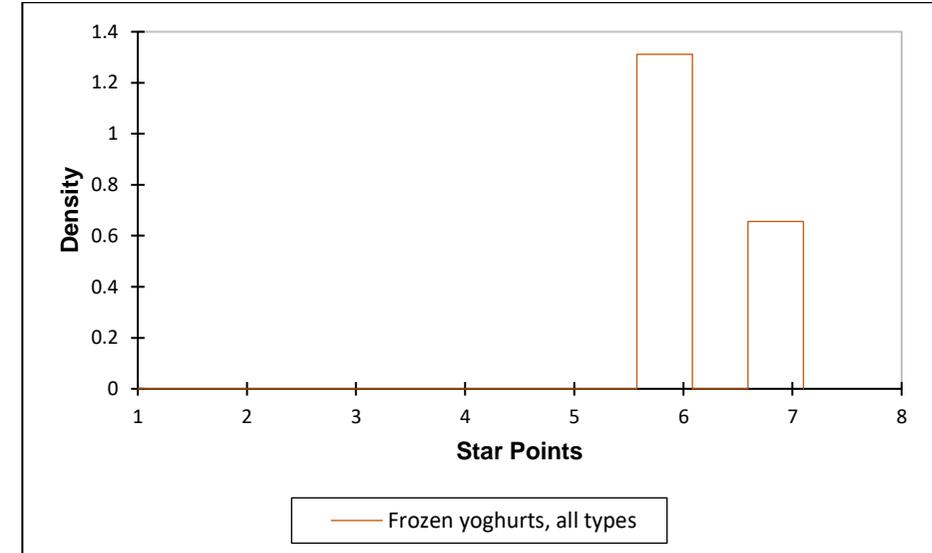
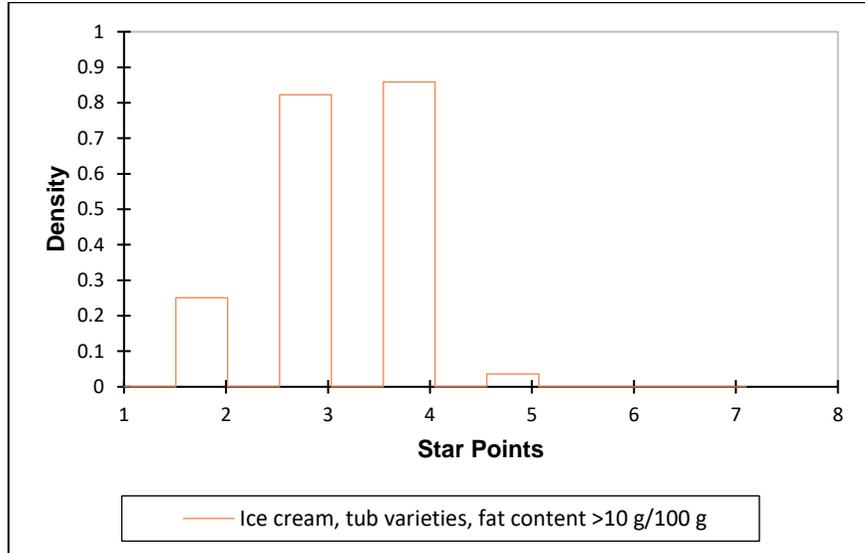
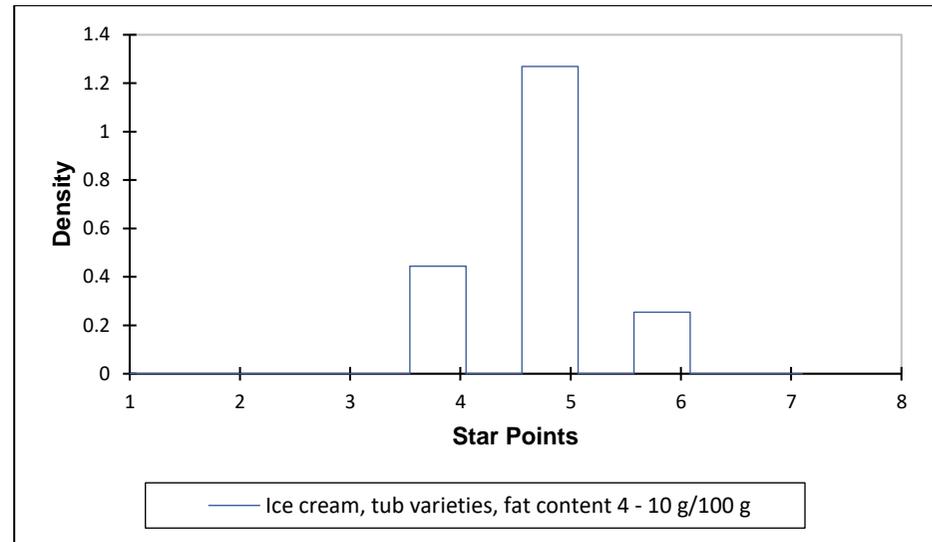
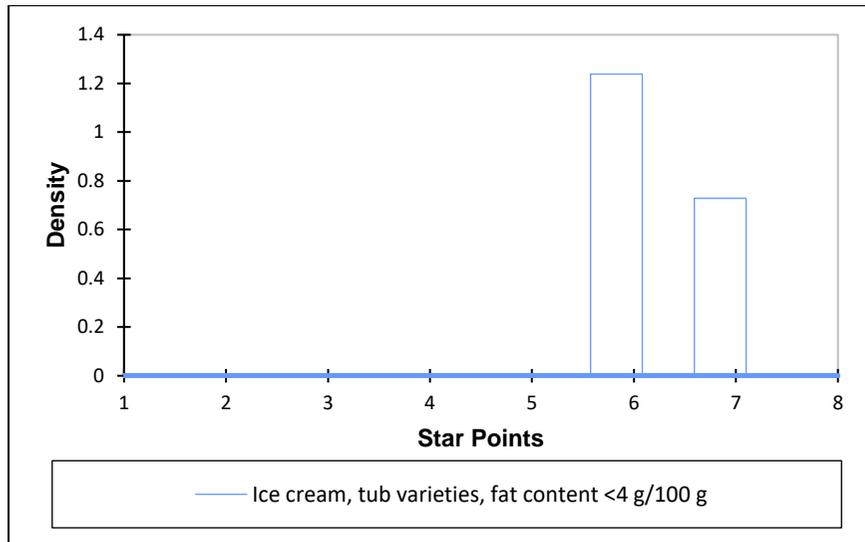
Option 4 - separate 'discretionary' and 'FFG' categories, which is technically feasible. This option can only be considered/modelled once total system enhancements are being deliberated.

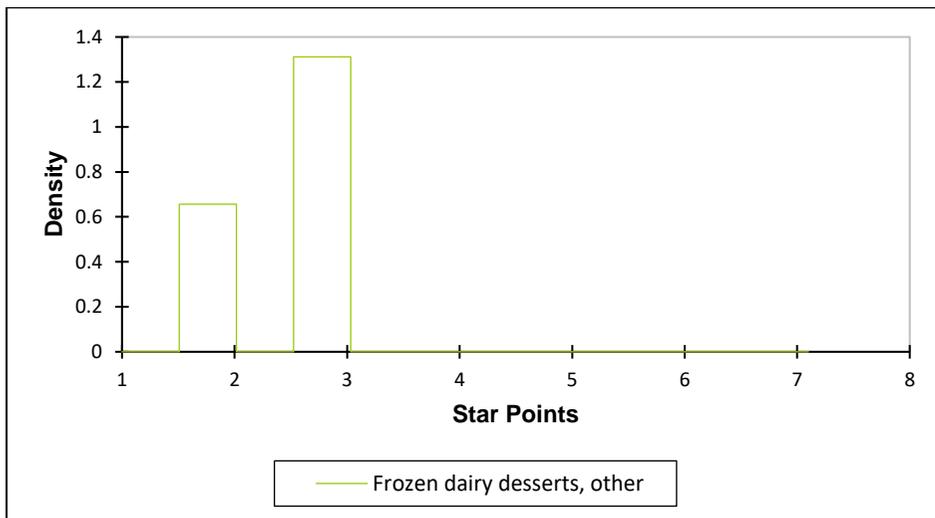
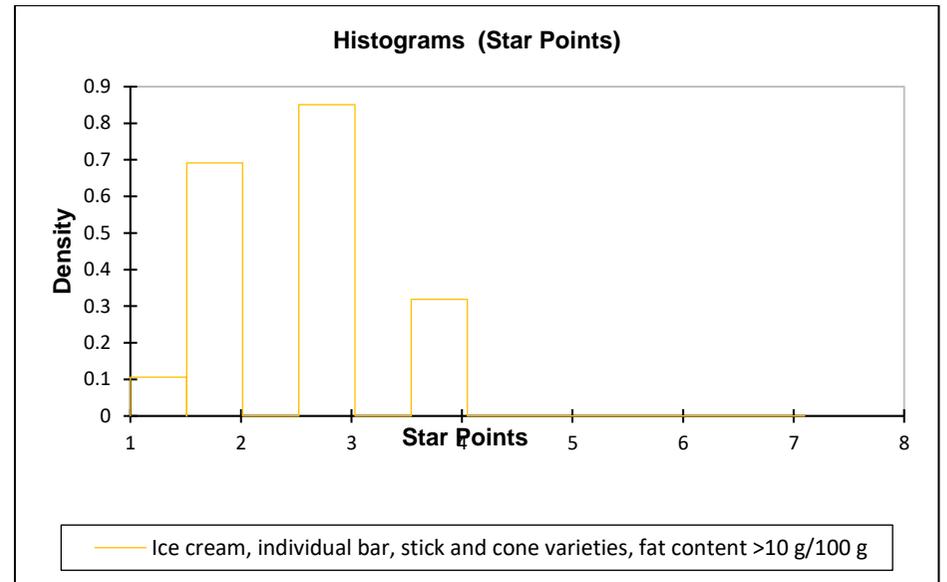
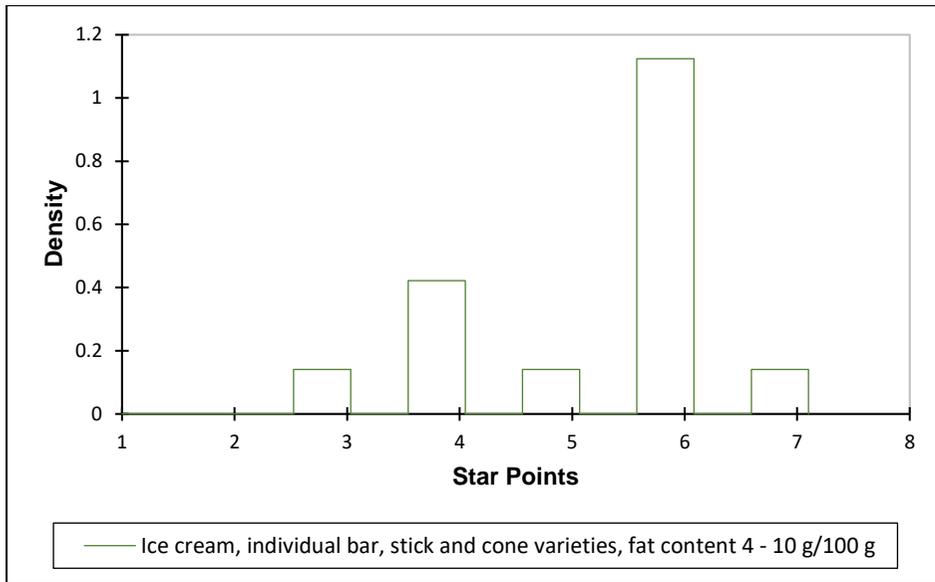
This category is linked to papers on sugar (and potentially beverages). The potential distribution of HSRs outlined in this paper may change once all recommended adjustments to the HSR algorithm are made.

APPENDIX 1: Distribution of Star Points for frozen milk products (n=70) from the TAG database

Note that x-axes have been truncated as no products receive >8 star points

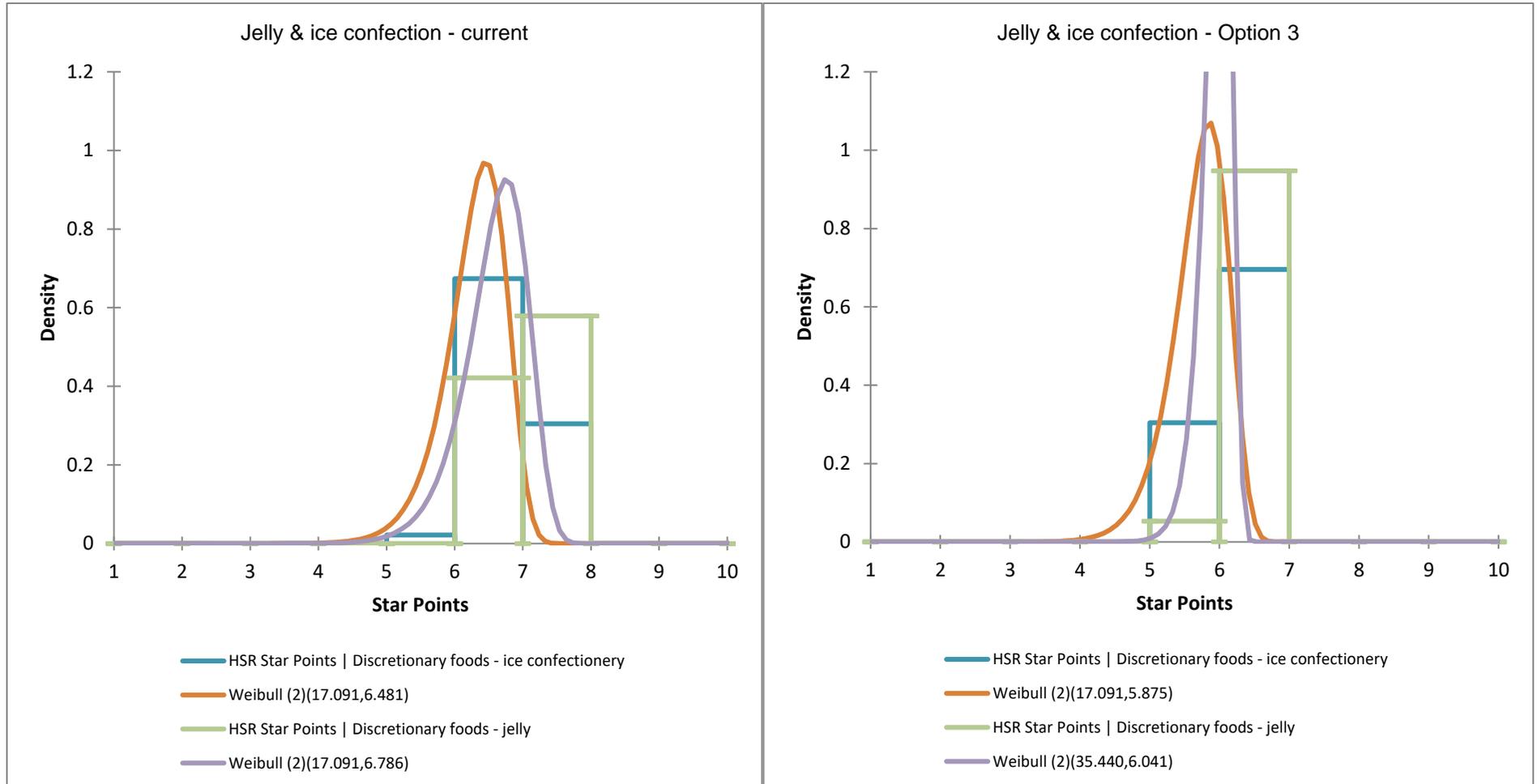






APPENDIX 2: Modelling of option 3 (shift products at the lower end of the HSR range in Category 2 down)

Jelly (n=19) and ice confection (n=47)



Refer to Appendix 1 for the current distribution of frozen milk products (n=70) – note the x axis has been truncated as no products receive >8 star points

