

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

**HSR Technical Advisory Group (TAG)**

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**Fruit, Vegetable, Nut and Legume (FVNL) content**

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## Summary

Fruit, vegetable, nut and legume (FVNL) content may contribute to the final calculation of a score in the HSR system. A product needs to contain  $\geq 40\%$  FVNL or  $>25\%$  concentrated FVNL content before points can be received.

The inclusion of FVNL in the HSR calculator is intended to provide benefit to foods high in FVNL content and offset intrinsic sugar content (for instance, in fruit) which is captured as total sugars. This is in line with the underpinning policy and principles of the HSR system to take account of both risk increasing (negative) and reducing (positive) components of a food.

Stakeholders have raised a number of issues relating to FVNL during the 5 year review, including:

- definitional issues such as what ingredients should/should not be eligible for FVNL
- whether all products should be eligible to gain FVNL points
- whether FVNL is weighted correctly in the HSR algorithm
- lack of detail in system guidance on FVNL and concentrated FVNL eligibility.

In addition a number of questions have also been asked of the HSR Advisory Committee regarding eligibility of particular ingredients for FVNL.

FVNL, while an integral component of the HSR algorithm, only has significant impact on the HSR score for a limited number of food categories namely non-dairy beverages, fruits and vegetables, protein foods and salty snacks. Each of these categories is being looked at in depth by TAG in category specific papers. The appropriateness of foods high in negative components being able to also gain any modifying points (including FVNL) and the relative weightings of negative and positive components of the HSR algorithm is also being considered in depth in papers on saturated fat, sugar, sodium and protein.

TAG considered the following options to address the above issues:

1. Status quo, including additional guidance to help industry correctly interpret and calculate FVNL and concentrated FVNL.
2. Changing eligibility for what can contribute to FVNL or concentrated FVNL by:
  - Removing eligibility for any or all of the following
    - fruit juice
    - fruit juice concentrates
    - fruit purees
    - coconut flesh in any form
    - the water inside the coconut
  - Adding eligibility for
    - cereal grains
    - whole grains
3. Removing eligibility for certain foods to score FVNL points by:
  - Setting a threshold for maximum baseline points
  - Setting individual component thresholds
4. Changing the weighting of FVNL in the HSR algorithm.

Having considered the above options in the context of the linkages with other TAG papers, TAG considers that issues related to FVNL, including relative weighting of FVNL and other components of the algorithm; what components should be eligible to gain FVNL points such as the potential addition of wholegrain content to FVNL; and which foods should be eligible for FVNL points, are best dealt with in those other papers. Appropriate weighting and treatment of sugar, saturated fat and sodium in the HSR algorithm would ensure that where ingredients contributing FVNL points are also contributing to these negative nutrients, or where foods gaining FVNL points are high in negative nutrients, that this was managed. Therefore TAG considers that no further separate consideration of FVNL is required.

## **Problem definition**

One of the aims of the HSR system is to “increase awareness of foods that, within the overall diet may contribute positively or negatively to the risk factors of diet related chronic diseases.”<sup>1</sup> Fruit, vegetables, nuts and legumes (FVNL) are recommended by Australian and New Zealand dietary advice as they provide some protection against chronic disease. FVNL content above set thresholds is rewarded in the HSR system, however, a number of issues have been raised regarding the application of FVNL modifying points. These can be grouped into four main themes:

- definitional issues, including a consideration of components eligible for FVNL points
- whether all products should be eligible to score FVNL points
- whether the weighting given to FVNL points in the algorithm is appropriate
- the need for more guidance in calculating FVNL.

## **Issues raised**

### **Definitions of FVNL**

The need for further consideration of the appropriateness of ingredients eligible for FVNL points was raised by a number of submissions to the five year review. Suggestions included removing particular ingredients from FVNL eligibility, including fruit juice, concentrated fruit juice, fruit purees, “fruit pieces” (i.e. products not whole fruit but containing fruit), coconut and coconut water. There were also suggestions to make extra ingredients and nutrients eligible to gain FVNL points, such as wholegrains, cereal grains, and calcium.

### **Eligibility for FVNL points**

There were a number of proposals to limit which products could count FVNL content or points. Most notably, this was proposed for all discretionary products, products which exceeded a threshold for total baseline points or individual negative nutrients (sugar, saturated fat or sodium) and specific food categories such as salty snack foods (particularly fried potato products).

### **Weighting of FVNL**

The appropriateness of the weighting given to FVNL in the algorithm was also questioned, with a suggestion that the impact of FVNL content be increased to greater than or at least equal to the points allocated for negative components.

### **Need for additional guidance in calculating FVNL**

Submissions indicated some difficulty in determining whether an ingredient should be counted as concentrated FVNL or FVNL. It was suggested that a summary of ingredients that can count as FVNL/concentrated FVNL, and/or ingredients that aren't eligible, be added to guidance

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<sup>1</sup> Australia and New Zealand Food Regulation Ministerial Council, 2009, Front of Pack Labelling Policy Statement, available at <http://foodregulation.gov.au/internet/fr/publishing.nsf/Content/frontofpackobjectives>

## Population level consumption

### Australia<sup>2</sup>

In 2014-15, only one in twenty (5.1%) Australian adults consumed the recommended daily amount of both fruit and vegetables, with nearly one in two (49.8%) meeting the guideline for daily serves of fruit and less than one in ten (7.0%) meeting the guideline for daily serves of vegetables. Over two thirds (68.1%) of children aged 2-18 years met the guidelines for recommended daily serves of fruit and 5.4% for serves of vegetables. Only one in twenty (5.1%) children met both guidelines.

A separate survey undertaken in 2011-12 reported that 31% of the population met the recommendation for fruit intake on the day of the survey.<sup>3</sup> Further analysis revealed 27% of this was fruit juice, and in children juice accounted for 32% of fruit.<sup>4</sup> 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%.

Nut consumption contributes to serves within the “lean meat and alternatives” food group and “unsaturated fats and oils” group. Similarly legumes and bean consumption contributes to serves within the “vegetable” food group and the “lean meats and alternatives” food groups. It is not possible to determine the contribution to total consumption of these food groups that comes from nuts and legumes in isolation.

### New Zealand<sup>5</sup>

According to the 2016-17 New Zealand Health Survey, over a third of New Zealand adults (aged 15 and over) met both fruit and vegetable intake guidelines, with 62% consuming the recommended servings of vegetables per day and 54% consuming the recommended servings of fruit per day. Over two thirds (72.4%) of children aged 2-18 years met the guidelines for recommended daily serves of fruit and over half (51.4%) for serves of vegetables. Around half (49.8%) of children met both guidelines.

As with the Australian data, no data is available for nut and legume consumption.

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<sup>2</sup> ABS, 2015, National Health Survey: First Results, 2014-15, available at <http://www.abs.gov.au/ausstats/abs@.nsf/mf/4364.0.55.001>

<sup>3</sup> ABS, 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>

<sup>4</sup> ABS, 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>

<sup>5</sup> Ministry of Health, 2017, Annual Data Explorer 2016/17: New Zealand Health Survey, available at <https://minhealthnz.shinyapps.io/nz-health-survey-2016-17-annual-update>

## Alignment with system objectives and priorities

### Linkages with other TAG work and issues raised in submissions

Any action taken on FVNL may have implications across the HSR system. In particular, there are significant linkages to the following TAG work being conducted:

- Wholegrains (whether wholegrain content should be added to FVNL)
- Non-dairy beverages (whether FVNL should apply to products such as fruit juices and drinks)
- Salty snack foods (whether FVNL should apply to this product category)
- Snack bars (whether it is appropriate for FVNL to offset negative nutrients)
- Sugar (whether added sugar should be included in the HSR algorithm, whether sugar is penalised heavily enough and offsetting of intrinsic sugars by FVNL points).

### Dietary guidelines

Fruits and vegetables (including legumes) are nutrient dense and recommended in Australian and New Zealand dietary guidelines for their vitamin, mineral, dietary fibre and phytonutrient content. Most are also low in energy relative to many other foods.<sup>6</sup>

Intake of nuts is recommended as they are high in protein, fibre, unsaturated fats and rich in micronutrients including folate, several forms of vitamin E, selenium, magnesium and other minerals. Legumes provide protein, iron, some essential fatty acids, soluble and insoluble dietary fibre and micronutrients. Both nuts and legumes are considered to be nutritious alternatives to animal based products.<sup>7</sup>

The Australian Dietary Guidelines (ADG) promote the intake of fruit, vegetables (including a variety of types and colours), nuts and legumes,<sup>8</sup> in particular recommending that adults consume a minimum of 5 servings of vegetables and 2 servings of fruit<sup>9</sup> and between 2.5 and 3.5 servings of “lean meats and poultry, fish, eggs, tofu, nuts and seeds and legumes/beans”<sup>10</sup> per day. The ADG does 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 (125mL)<sup>11</sup> as “[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.”<sup>12</sup>

The New Zealand Eating and Activity Guidelines (NZEAG) recommend consuming a “variety of nutritious foods every day including: plenty of vegetables and fruit... some legumes, nuts...”<sup>13</sup> The NZEAG advise that New Zealand adults eat at least 3 servings of vegetables and 2 servings of fruit a day,<sup>14</sup> with juices excluded from this recommendation. It also recommends the intake of 2 servings of legumes, nuts or seeds a day<sup>15</sup> in the absence of animal proteins, while noting that nuts are high in unsaturated fats but eating a small amount each day should not cause excess weight gain especially if eaten instead of less healthy

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<sup>6</sup> National Health and Medical Research Council, 2013, Australian Dietary Guidelines, p. 36, available at [https://www.nhmrc.gov.au/\\_files\\_nhmrc/file/publications/n55\\_australian\\_dietary\\_guidelines1.pdf](https://www.nhmrc.gov.au/_files_nhmrc/file/publications/n55_australian_dietary_guidelines1.pdf)

<sup>7</sup> National Health and Medical Research Council, 2013, Australian Dietary Guidelines, p. 49

<sup>8</sup> National Health and Medical Research Council, 2013, Australian Dietary Guidelines, p. v

<sup>9</sup> National Health and Medical Research Council, 2013, Australian Dietary Guidelines, p. 42

<sup>10</sup> National Health and Medical Research Council, 2013, Australian Dietary Guidelines, p. 53

<sup>11</sup> National Health and Medical Research Council, 2013, Australian Dietary Guidelines, p. 43

<sup>12</sup> National Health and Medical Research Council, 2013, Australian Dietary Guidelines, p. 43

<sup>13</sup> 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](https://www.health.govt.nz/system/files/documents/publications/eating-activity-guidelines-for-new-zealand-adults-oct15_0.pdf)

<sup>14</sup> Ministry of Health, 2015, Eating and Activity Guidelines for New Zealand Adults, p. 13

<sup>15</sup> Ministry of Health, 2015, Eating and Activity Guidelines for New Zealand Adults, p. 21

foods. Of note is that the NZEAG recommend products that are “mostly ‘whole’ and less processed.”<sup>16</sup>

## FVNL in the HSR system

The nutrient profiling system used in the HSR algorithm is based on the Nutrient Profiling Scoring Criterion (NPSC),<sup>17</sup> a nutrient profiling system developed by Food Standards Australia New Zealand (FSANZ) for the regulation of health claims in Australia and New Zealand. It takes into account four ‘negative’ aspects associated with increasing risk factors for chronic diseases (energy, saturated fat, sodium and total sugars) along with certain ‘positive’ aspects (FVNL, dietary fibre and protein). When calculating the HSR of a food, ‘HSR baseline points’ are first allocated for the energy, saturated fat, total sugars and sodium content of the food. ‘HSR modifying points’ can then be obtained for FVNL, fibre and protein content. The resultant HSR scores are then scaled to a HSR according to the relevant HSR category. FVNL (and concentrated FVNL) is one of the modifiers (positive factors) in determining a product’s overall nutrient profile in the HSR system.

Modifications were made to the NPSC FVNL tables (i.e. points available based on content) in order to accommodate a wider range of component contents. For FVNL (and concentrated FVNL), gaps in the existing NPSC tables were filled in at the intermediate to higher FVNL content levels, allowing greater discrimination by the HSR for foods with FVNL at these intermediate levels.

*Table 1: Modifying points for FVNL and concentrated FVNL*

Points	FVNL (%)	Concentrated FVNL (%)
0	≤40	<25
1	>40	≥25
2	>60	≥43
3	>67	≥52
4	>75	≥63
5	>80	≥67
6	>90	≥80
7	>95	≥90
8	100*	100*

Note that for the purposes of the HSR algorithm, products with >99.5% FVNL which also contain any food additives or fortificants are considered to be 100% FVNL.

The rules around what can be counted as FVNL in the HSR system<sup>18</sup> were also replicated from the NPSC. Eligible ingredients/products are “fruits, vegetables, nuts and legumes including coconut, spices, herbs, fungi, seeds and algae”, including “fresh, cooked, frozen, canned, pickled or preserved” and “peeled, diced or cut (or otherwise reduced in size), puréed or dried” forms. A “constituent, extract or isolate” of the above (e.g. peanut oil, fruit pectin), “cereal grains mentioned as a class of food in Schedule 22” (i.e. barley, buckwheat,

<sup>16</sup> Ministry of Health, 2015, Eating and Activity Guidelines for New Zealand Adults, p. 6

<sup>17</sup> FSANZ, 2017, Australia New Zealand Food Standards Code – Standard 1.2.7 – Nutrition, health and related claims, available at <https://www.legislation.gov.au/Series/F2015L00394>

<sup>18</sup> HSR Advisory Committee, 2018, Guide for industry to the Health Star Rating Calculator (HSRC), v 6, available at <http://www.healthstarrating.gov.au/internet/healthstarrating/publishing.nsf/Content/guide-for-industry-document>

maize, millet, oats, popcorn, rice, rye, sorghum, triticale, wheat and wild rice)<sup>19</sup> and “processed coconut products such as coconut milk, coconut cream or coconut oil” are explicitly excluded. Explicitly included are “fruit juice or vegetable juice... including concentrated juices and purees,” “coconut flesh... whether juiced, dried or desiccated” and “the water in the centre of the coconut.”

It is acknowledged that there may be some ambiguity regarding FVNL and eligibility in the above guidance. During the implementation of the HSR system several issues have been brought to the attention of the HSR Advisory Committee (HSRAC) with regards to products/ingredients not clearly captured above. The HSR Advisory Committee has determined that:

- Quinoa is ineligible as it contains a similar nutritional profile to, and is consumed in the same way as, products defined as cereal grains
- Cacao/cocoa and coffee are ineligible as they are intended for use in beverages and sweets and do not contain equivalent levels of nutrients as other seeds
- Carob is ineligible as it is intended for use in beverages and sweets and does not provide sufficient nutritive value
- Flours derived from vegetables and legumes are eligible, with vegetable flours considered concentrated FVNL and legume flours a non-concentrated FVNL source, as they retain nutritive value.

These decisions are based on a pragmatic understanding of how the ingredient is commonly used in practice, in addition to consideration of the nutritive value of the product.

In order to gain points for FVNL, a product must contain either  $\geq 40\%$  FVNL or  $>25\%$  concentrated FVNL. This is an attempt to ensure that a significant amount of “healthy” ingredients is present in order to gain benefit, under the assumption that products with this level of FVNL content would likely tend towards a healthier nutrient profile.

In addition, FVNL offsets intrinsic sugar content in products such as fruit, i.e. the natural sugars present contribute to total sugar content, thus lowering scores, and FVNL is intended to counter this aspect of the HSR algorithm.

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<sup>19</sup> FSANZ, 2015, Australia New Zealand Food Standards Code – Schedule 22 – Foods and classes of foods, available at <https://www.legislation.gov.au/Series/F2015L00433>

## Analysis of issues

### Are the ingredients currently eligible to score FVNL modifying points appropriate?

#### Fruit juice, fruit juice concentrates and fruit purees

Whilst 100% fruit juice is considered to be an acceptable replacement for whole fruit in the ADG, it is also advised that it be consumed occasionally and only in small amounts due to the relatively high energy content, low fibre content and high acidity compared with other forms of fruit. In the NZEAG, fruit juice is considered a high-sugar drink as it contains all the naturally occurring sugar found in the many pieces of fruit required to make one glass of juice. Eating fresh fruit and drinking plain water is recommended rather than drinking fruit juice.

The total sugar content in fruit juice, fruit juice concentrates and purees contributes to baseline points. The HSR algorithm currently offsets the sugar in fruit juice, concentrates and purees to some degree by allowing these products to contribute towards FVNL and/or concentrated FVNL. This means that fruit juice (and coconut water) score better than other beverages with similar total sugar.

Currently the *Guide for Industry to the Health Star Rating Calculator* does allow fruit juice, fruit juice concentrate and fruit purees to contribute to %FVNL, but not deionised fruit juice.

A number of submitters raised issues with fruit juice and/or concentrates and/or purees being included in the ingredients that contribute to FVNL. This was mainly on the basis that fruit juice contains more sugar and less nutrients and fibre than whole or minimally processed fruit. The World Health Organisation (WHO) definition of ‘free sugars’ includes sugars naturally present in fruit juices and fruit juice concentrates, and it is recommended by WHO that such sugars should make up no more than 10% of the daily intake.<sup>20</sup> It is therefore seen to be contradictory to allow fruit juice and concentrates to contribute to FVNL.

The Australia New Zealand Food Standards Code (the Code) permits a claim for “no added sugar” to be made if a product contains no added sugars (defined as per section 1.1.2-2), honey, malt, or malt extracts; and the food contains no added concentrated fruit juice or deionised fruit juice, unless the food is a fruit juice, fruit drink, juice blend or other non-alcoholic beverage to which juice may be added.<sup>21</sup> Therefore it appears that the Code would consider concentrated fruit juice and deionised fruit juice to be added sugars in foods but not in beverages.

It should be noted that any decision about the eligibility of juices to contribute to FVNL should be considered in the context of decisions regarding the non-dairy beverages category.

#### Coconut

Coconut flesh, whether juiced, dried or desiccated, is currently scored as a nut and therefore contributes to FVNL. Processed coconut products such as coconut milk, coconut cream or coconut oil however do not.

Unlike most nuts, coconut is high in saturated fats rather than unsaturated fats and is not as rich a source of vitamins and minerals. The saturated fat content of coconut scores baseline points, however, as with juice, the HSR algorithm currently offsets the negative component

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<sup>20</sup> World Health Organization, 2015, Guideline: Sugars intake for adults and children, available at [http://apps.who.int/iris/bitstream/10665/149782/1/9789241549028\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/149782/1/9789241549028_eng.pdf?ua=1)

<sup>21</sup> FSANZ, 2017, Australia New Zealand Food Standards Code – Schedule 4 – Nutrition, health and related claims, available at <https://www.legislation.gov.au/Series/F2015L00474>

of the coconut to some degree by allowing coconut to contribute to FVNL. This means coconut as a food scores less well than most nuts, fruits and vegetables but scores better than other foods of similar saturated fat level which cannot score FVNL points.

### **Coconut water**

Coconut water is also specifically identified as able to contribute to FVNL. Coconut water has a very different composition to coconut flesh, having no significant fat content. However, it also does not contain significant positive components, whether considered by the HSR algorithm (fibre or protein) or not (e.g. vitamins and minerals). Due to eligibility for FVNL modifying points, coconut water rates relatively high compared to other non-dairy beverages other than juice.

## **Should other ingredients be eligible to score FVNL modifying points?**

### **Wholegrain**

Both the ADG and the NZEAG promote the consumption of wholegrain cereals however the HSR system algorithm does not directly account for wholegrain content. Stakeholders raised the issue of the lack of a clear and obvious HSR benefit for a food containing whole grains compared to a similar more refined product (for example white bread compared to wholegrain bread was stated to be a half star difference).

The addition of wholegrain to FVNL has been fully explored in the TAG paper on Wholegrain. Two new options for this have been proposed:

- 1) The addition of wholegrain as a % of food added directly to the FVNL offset points, which raises the HSR for wholegrain containing foods. FFG cereal foods of various types benefit significantly more from wholegrain content than do discretionary foods containing wholegrain. To pursue this option would require the formation of another HSR food category (a subgroup of Category 2) where HSR points are rescaled.
- 2) The addition of wholegrain as a % of food added directly to the FVNL offset points and to disallow foods that gain wholegrain points from also gaining fibre points. Discounting fibre points has a negative impact on HSR eligibility that is out of proportion to the positive impact of consideration of wholegrain. This would also require the formation of another HSR food category (a subgroup of Category 2) where HSR points are rescaled.

Both options would result in a substantially more complex HSR algorithm.

### **Cereals**

Currently cereal grains mentioned as a class of food in Schedule 22 (i.e. barley, buckwheat, maize, millet, oats, popcorn, rice, rye, sorghum, triticale, wheat and wild rice) are excluded from eligibility to gain modifying points for FVNL. This category includes products which are botanically unrelated but are used in similar ways.

No mention is made in Schedule 22 of levels of processing and as such it is assumed that refined cereal grains would be included in the class. Changing the eligibility for FVNL to include all cereal grains would therefore enable refined cereals to also gain modifying points.

Refined grains have fewer naturally-occurring nutrients and much less fibre than wholegrains<sup>22</sup> and dietary guidance for both Australia and New Zealand recommend that wholegrain intake should be prioritised.

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<sup>22</sup> Ministry of Health, 2015, Eating and Activity Guidelines for New Zealand Adults, p. 15

## Should some foods be ineligible to score FVNL modifying points?

### Discretionary foods

The ADG recommends limiting products high in saturated fats, sugars and salt. These are described as 'discretionary' because they are not an essential or necessary part of healthy dietary patterns. Most Australians consume too many discretionary choices instead of choosing foods from the FFG. The ADG do not provide a definitive list of, or criteria to identify and classify, 'discretionary' products. This is particularly problematic for products such as dairy beverages (considered FFG) with added sugar (recommended to avoid) and most mixed products.

For the purposes of the 2011-12 National Nutrition and Physical Activity Survey (as part of the Australian Health Survey (AHS) 2011-13), and in conjunction with a group of expert individuals and organisations, the Australian Bureau of Statistics (ABS) developed a list of discretionary products (the AHS Discretionary Foods List).<sup>23</sup> Some discretionary flags reference threshold levels for a specific nutrient, though these differ according to product category.

The ABS notes that this list was proposed for a specific purpose and may not be suitable for other applications.<sup>24</sup> Since publication, the classification of some product types has been questioned (e.g. breakfast cereals with sugar content >20 g but ≤30 g/100 g, and sweetened and flavoured milk products are not considered discretionary). It may also be inappropriate to classify all products with an absolute label that places products into two discrete categories. However, the ABS work is the only attempt at a definitive list of discretionary (and by inference FFG) foods and beverages readily available. In sum, though the AHS Discretionary Foods List may be used to assess alignment with dietary guidelines or changes to the HSR system, any results referring to the list should be interpreted with caution as this binary analysis may be inappropriate for application to the HSR system (which is a scale).

The NZEAG do not refer specifically to discretionary foods but instead recommend choosing and/or preparing products with unsaturated fats instead of saturated fats, that are low in salt (sodium), with little or no added sugar and that are mostly 'whole' and less processed.

Discretionary foods can vary significantly in nutrient content and therefore in HSRs received. The HSR system, as a scale and not a dichotomous classificatory system, considers the relative healthiness of products. Arguably a high scoring 'discretionary' food may have a significantly improved nutrient profile compared to other, similar products.

One of the principles of the HSR is to *encourage reformulation to improve the healthiness of the food supply*. Rulings which would mean whole groups were ruled ineligible for modifying points could discourage reformulation for those foods.

This issue should be considered in the context of the analysis of outliers in the ADG alignment paper. Many 'discretionary outliers' identified in that paper are currently eligible for FVNL.

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<sup>23</sup> ABS, 2014, Australian Health Survey - Discretionary Food List, available at <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4363.0.55.0012011-13?OpenDocument>

<sup>24</sup> ABS, 2014, Australian Health Survey: Users' Guide, 2011-13, available at <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/4363.0.55.001Chapter65062011-13>

## Products which exceed a baseline points threshold

This option proposes in principle the same idea as not allowing discretionary foods to score points for FVNL content. However, some objectivity in criteria for eligibility of foods may be introduced by setting a maximum number of baseline points a food may score to be eligible to score FVNL points (as is the case with protein modifying points). This approach does not rely on an a priori determination/classification and would retain incentives to reformulate to healthier nutrient profiles.

To implement this suggestion a total number of baseline points above which FVNL could not be scored would need to be agreed. Currently when baseline points reach  $\geq 13$  the food becomes ineligible to score modifying points for protein content.

## Products which exceed individual nutrient content thresholds

This suggests that when a food is “high” in one or more particular components that it should be ineligible to score modifying points to offset that.

The design principles identified by the Project Committee during the development of the HSR system included that it *should be based on elements that inform choice on balance by assessing both health-benefit and health-risk associated nutrients*.<sup>25</sup> Determining eligibility to score FVNL (or any modifying) points based on absolute content could be suggested to go against these underlying design elements/principles of the system.

To implement this option, content levels considered to be “high” for the chosen negative nutrients would have to be determined and agreed. The AHS Discretionary Foods List does include nutrient thresholds for classifying products (e.g. breakfast cereals with  $\geq 30\%$  sugar are considered discretionary), and these cut-offs could be looked at as potential levels for thresholds should this option be progressed. However, these thresholds are not explicit in many instances.

## Is the weighting for FVNL in the HSR calculator appropriate?

During the development of the NPSC, FSANZ took the view that given the prevalence of chronic disease, any profiling system should tend to encourage a reduction of negative components in food products rather than diluting them through the addition of other components. The HSR algorithm, being based on the NPSC, therefore penalises negative components at double the rate that it rewards positive components<sup>26</sup> i.e. modifying points carry approximately half the weight in the HSR algorithm compared to nutrients contributing to baseline points.

Some submitters suggested that FVNL points should be weighted at least equally if not more than the negative nutrients contributing to baseline points. This would significantly alter the relationship between components of the HSR calculator for affected products, in effect advantaging qualifying products considerably more than currently and allowing a greater offset of total sugars content. This option would move away from the NPSC position above to decrease negative components rather than increase positive components.

Another suggestion is to reduce weighting of FVNL, i.e. FVNL content would be less of an advantage and/or offset than it is currently. This may address concerns that FVNL is inappropriately advantaging products given the current eligibility for FVNL.

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<sup>25</sup> Australia and New Zealand Food Regulation Ministerial Council, 2009, Front of Pack Labelling Policy Statement

<sup>26</sup> FSANZ, 2013, Final Assessment Report for Proposal P293- Nutrition Health & Related Claims: General Level Health Claims (attachment 6), available at [http://www.foodstandards.gov.au/code/proposals/Documents/P293%20Health%20Claims%20FAR%20Attach%2006%20FINAL.pdf?\\_sm\\_au\\_=iHVJtN6S6WD34fj](http://www.foodstandards.gov.au/code/proposals/Documents/P293%20Health%20Claims%20FAR%20Attach%2006%20FINAL.pdf?_sm_au_=iHVJtN6S6WD34fj)

This option would involve a change to the calculator itself, modifying the weighting of FVNL and concentrated FVNL in the algorithm rather than the cut points for FVNL and concentrated FVNL. TAG is considering each of the negative nutrients and their impact on the algorithm in separate papers. The weighting of negative compared to positive nutrients and components is being looked at in these papers.

## **Additional guidance on FVNL**

Some submitters requested extra guidance and increased clarity be added to the *Guide for Industry to the Health Star Rating Calculator* to help with calculating FVNL. In particular information was requested on how to determine when FVNL content should be counted as concentrated FVNL. Lists of examples for both FVNL and concentrated FVNL were requested.

This could be achieved relatively easily within the current guidance document and would not alter the calculator itself. It may also allay concerns that FVNL is being inadvertently or improperly used by manufacturers. However, no list can ever be truly definitive and/or reflect a changing food supply and would be exemplary rather than exhaustive.

Appendix 1 includes an example of how such guidance may look.

A further option is to specify in the Guide for Industry that where FVNL is relied upon for calculation of the HSR it be included in the Nutrient Information Panel. This would improve transparency and assist efforts to accurately assess compliance. Some companies report to be already doing this. Standard 1.2.7 provides a precedent for this with information on FVNL and fibre required to be on the label if it is needed to meet the NPSC.

## **Options to address identified issues**

The following summarises the options to address the above issues:

1. Status quo, including additional guidance to help industry correctly interpret and calculate FVNL and concentrated FVNL.
2. Changing eligibility for what can contribute to FVNL or concentrated FVNL by:
  - Removing eligibility for any or all of the following:
    - fruit juice
    - fruit juice concentrates
    - fruit purees
    - coconut flesh in any form
    - the water inside the coconut
  - Adding eligibility for:
    - cereal grains
    - whole grains
3. Removing eligibility for certain foods to score FVNL points by:
  - Setting a threshold for maximum baseline points
  - Setting individual component thresholds
4. Changing the weighting of FVNL in the HSR algorithm

The advantages and disadvantages of each option are outlined in Table 2.

Table 2: Outline of options to address issues identified for FVNL content

Option number	Option	Benefits	Disadvantages	Comments
1	Status quo	<ul style="list-style-type: none"> <li>Minimises disruption for industry</li> </ul>	<ul style="list-style-type: none"> <li>Does not address issues raised</li> </ul>	<ul style="list-style-type: none"> <li>No change to current HSRs</li> </ul>
2	Changing eligibility to:			
2a	<ul style="list-style-type: none"> <li>Exclude fruit juice</li> </ul>	<ul style="list-style-type: none"> <li>Aligns with WHO guidance on free sugars</li> <li>Aligns with Food Standards Code criteria for added sugar claims in foods (i.e. not beverages)</li> <li>Does not promote juices (NZEAG)</li> </ul>	<ul style="list-style-type: none"> <li>Does not promote juices (ADG)</li> <li>Does not align with NPSC</li> </ul>	<ul style="list-style-type: none"> <li>May lead to change in current HSRs for some products</li> <li>Impacts non-dairy beverages, foods using fruit juice as a sweetener</li> </ul>
2b	<ul style="list-style-type: none"> <li>Exclude concentrated fruit juice and puree</li> </ul>	<ul style="list-style-type: none"> <li>Aligns with WHO guidance on free sugars</li> <li>Aligns with Food Standards Code criteria for added sugar claims in foods (i.e. not beverages)</li> <li>Does not promote juices (NZEAG)</li> </ul>	<ul style="list-style-type: none"> <li>Does not promote juices (ADG)</li> <li>Does not align with NPSC</li> </ul>	<ul style="list-style-type: none"> <li>May lead to change in current HSRs for some products</li> <li>May better align with general guidance on the ineligibility of “extracts”</li> <li>Impacts juices (many use concentrate?) and other foods</li> </ul>
2c	<ul style="list-style-type: none"> <li>Exclude coconut flesh</li> </ul>	<ul style="list-style-type: none"> <li>Coconut flesh is high in saturated fat and low in other positive components</li> </ul>	<ul style="list-style-type: none"> <li>Does not align with NPSC</li> </ul>	<ul style="list-style-type: none"> <li>Several coconut products already excluded from FVNL</li> <li>Most other fruits/nuts eligible for FVNL</li> <li>May lead to change in current HSRs for some products</li> <li>Fewer products impacted</li> </ul>
2d	<ul style="list-style-type: none"> <li>Exclude coconut water</li> </ul>	<ul style="list-style-type: none"> <li>Has little positive components</li> </ul>	<ul style="list-style-type: none"> <li>Does not align with NPSC</li> </ul>	<ul style="list-style-type: none"> <li>Coconut waters and smoothies main products impacted</li> <li>May lead to change in current HSRs for some products</li> </ul>
2e	<ul style="list-style-type: none"> <li>Include wholegrain</li> </ul>	<ul style="list-style-type: none"> <li>May advantage products high in wholegrain</li> </ul>	<ul style="list-style-type: none"> <li>Adds more complexity to algorithm</li> </ul>	<ul style="list-style-type: none"> <li>See wholegrain paper for product categories impacted</li> </ul>
2f	<ul style="list-style-type: none"> <li>Include cereal grains</li> </ul>	<ul style="list-style-type: none"> <li>May advantage products high in wholegrain</li> </ul>	<ul style="list-style-type: none"> <li>May advantage products high in refined cereal content</li> </ul>	<ul style="list-style-type: none"> <li>May lead to change in current HSRs for some products</li> </ul>

Option number	Option	Benefits	Disadvantages	Comments
			<ul style="list-style-type: none"> <li>Does not align with NPSC</li> </ul>	<ul style="list-style-type: none"> <li>Impacts many discretionary foods</li> </ul>
3	Remove eligibility from:			
3a	<ul style="list-style-type: none"> <li>Discretionary products</li> </ul>	<ul style="list-style-type: none"> <li>Would not advantage products recommended to be avoided</li> </ul>	<ul style="list-style-type: none"> <li>Classification may prove problematic</li> <li>Reduces incentives for reformulation</li> <li>Criteria not objective</li> <li>Does not align with NPSC</li> </ul>	<ul style="list-style-type: none"> <li>May lead to change in current HSRs for some products</li> <li>Deviates from intent of HSR algorithm to provide relative assessments of nutritive value</li> </ul>
3b	<ul style="list-style-type: none"> <li>Products exceeding a baseline point threshold</li> </ul>	<ul style="list-style-type: none"> <li>Would not provide advantage to products initially considered "less healthy"</li> <li>Incentivises reformulation</li> <li>Criteria for exclusion is objective / based on nutrient profile of product</li> </ul>	<ul style="list-style-type: none"> <li>Does not align with NPSC</li> </ul>	<ul style="list-style-type: none"> <li>May lead to change in current HSRs for some products</li> <li>Precedent set with protein</li> <li>Correct weighting of negative nutrients (through other TAG papers) should address this issue</li> </ul>
3c	<ul style="list-style-type: none"> <li>Products exceeding component content thresholds</li> </ul>	<ul style="list-style-type: none"> <li>Would not provide advantage to products initially considered "less healthy"</li> <li>Incentivises reformulation</li> </ul>	<ul style="list-style-type: none"> <li>Does not align with NPSC</li> </ul>	<ul style="list-style-type: none"> <li>May lead to change in current HSRs for some products</li> <li>Requires definition of "high" content</li> <li>Deviates from intent of HSR algorithm to provide relative assessments of nutritive value</li> </ul>
4	Change weighting of FVNL to:			
4a	<ul style="list-style-type: none"> <li>Increase weighting</li> </ul>		<ul style="list-style-type: none"> <li>May lead to increase in use of fruit as sweeteners</li> <li>Encourages addition of FVNL over decreasing negative - nutrients</li> </ul>	<ul style="list-style-type: none"> <li>May lead to change in current HSRs for some products</li> </ul>
4b	<ul style="list-style-type: none"> <li>Decrease weighting</li> </ul>		<ul style="list-style-type: none"> <li>Does not align with NPSC</li> </ul>	<ul style="list-style-type: none"> <li>May lead to change in current HSRs for some products</li> </ul>

## Discussion

The TAG database contains 94 products that contain  $\geq 25\%$  concentrated FVNL and 1,115 products that contain  $>40\%$  FVNL (see Appendix 2). Products gaining points for concentrated FVNL are mainly in the processed fruits, sauces/condiments and snacks categories (e.g. dried fruit, fruit based bars and confectionary and tomato based foods such as ketchup, pasta sauces etc.). Products gaining points for FVNL are mainly whole fruit juices and processed vegetables, however foods in a wide range of categories contain  $>40\%$  FVNL and can therefore score 'V points'. Table 3 in Appendix 2 outlines food groups that gain points for their FVNL content and the number of FVNL points gained.

FVNL (and concentrated FVNL) has a moderate effect on HSR scores over the whole food supply. Appendix 3 shows the impact of different components on the HSR scores for the whole food supply and by HSR categories and food categories for HSR category 2. When the six HSR categories are separated out, the main category where FVNL has significant impact on the HSR is category 1 non-dairy beverages. As would be expected, FVNL has very little impact on HSR scores in any of the dairy categories or in category 3 fats and oils. The impact of FVNL on foods in the large category 2 is varied. The impact on fruits and vegetables (including processed fruit and vegetable products) is moderate but the impact on HSR scores for discretionary foods overall is small. Breaking down category two/discretionary foods into food categories, it appears protein foods and salty snacks are foods where FVNL has a significant impact on HSR scores.

The food categories where FVNL has the most influence on HSR scores (namely non-dairy beverages, fruits and vegetables, protein foods and salty snacks) are all being addressed in separate TAG papers. FVNL where relevant, is being addressed in relation to those specific food categories in those papers. TAG considers that addressing issues raised regarding the weighting of FVNL in the algorithm (as outlined in option 4) are more appropriate within the context of these food category specific papers.

Option 2 in this paper looks at the rules for what components and ingredients can gain FVNL points and proposes options for the addition or removal of FVNL components. Modelling of this is difficult with the information the TAG has available to it and has not been able to be undertaken.

At a broader level TAG has considered the food categories which are receiving benefit from FVNL and concentrated FVNL and whether these are foods which the dietary guidelines would recommend. From the TAG database it appears that concentrated FVNL is not contributing significantly to the HSR of many products. This would however need to be confirmed against a larger database. Some products where concentrated FVNL is contributing to the HSR, such as fruit bars (roll-ups/fruit leathers etc.), may be gaining FVNL points when they arguably are not in line with dietary guidelines to minimise foods high in saturated fat, sugar and sodium. In a comparison of nutrient content, a 100 g of fruit bar type product<sup>27</sup> contains over 8 times the kilojoules, 7 times the sugar, 10 times the saturated fat and 3 times the sodium of 100g of their fresh fruit equivalent.<sup>28</sup> They do however also contain 7 times the fibre and at up to 100% FVNL they can offset much of the negative nutrients with both FVNL and fibre points.

FVNL points are also gained for potato crisps where arguably the nutrients for which FVNL would be encouraged are no longer present and the food itself is high in energy, sodium and can be high in saturated fat. In a comparison of the nutrient content of boiled mashed potato

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<sup>27</sup> National Institute for Health Innovation, 2018, Nutriweb Database, available at <https://nutriweb.org.nz/>

<sup>28</sup> The New Zealand Institute for Plant & Food Research, Ministry of Health, 2016, The Concise New Zealand Food Composition Tables, 12<sup>th</sup> Edition, available at <https://www.foodcomposition.co.nz/downloads/concise-12-edition.pdf>

flesh to plain salted potato crisps,<sup>29</sup> on a per 100 g basis the crisps had 8 times the energy content, 10 times the saturated fat content and over 270 times the sodium content of boiled mashed potatoes. They also contained none of the vitamin C and less than 10% of the niacin of boiled mashed potatoes, however crisps had a 3.5 times higher folate content than boiled potatoes.

Option 3 proposes removing eligibility to score points for FVNL or concentrated FVNL points from certain foods, namely all discretionary foods, foods with total baseline points above a set level, or foods which contain one of the negative nutrients at a level considered too high.

Removing eligibility for discretionary foods to score FVNL points removes a level of objectivity from the HSR system as this ignores the fact that many categories of discretionary foods contain a range of foods with differing nutrient profiles, some of which may be relatively healthier. Treating all discretionary foods with blanket rules also discourages reformulation to healthier nutrient profiles, which goes against the principles of the HSR system.

A threshold of baseline points above which FVNL points may not be scored retains a degree of objectivity to the rules for eligibility to score points for FVNL. It would also remove eligibility for foods such as the fruit leathers and potato crisps described above, where their nutrient profile is no longer similar to what was intended to be increased by the inclusion of FVNL content i.e. negative nutrients are increased and vitamins and minerals often decreased from the original fruit, vegetable, nut or legume.

When thresholds are placed on individual nutrients, incentives to reformulate are limited. For sugar this would also punish products with high levels of intrinsic sugar. In addition, thresholds would need to be determined. This deviates from the intention of the algorithm to provide a summary of the combination of nutrient content.

Negative components are each being dealt with in separate TAG papers. Appropriate weighting and treatment of negative nutrients in the HSR algorithm via options in those papers would ensure that both where components contributing FVNL points are also contributing to these negative nutrients (as seen in the fruit bars), or where foods gaining FVNL points are high in negative nutrients (as seen in the potato crisps) that these are managed. This may be preferable to removing eligibility to gain FVNL points for components of food that should be being encouraged in the diet.

## Conclusion

FVNL, while an integral component of the HSR algorithm, only has significant impact on the HSR score for a limited number of food categories. Each of these categories is being looked at in depth by TAG in category specific papers. The appropriateness of foods high in negative nutrients being able to also gain any modifying points (including FVNL) and the relative weightings of negative and positive components of the HSR algorithm is also being considered in papers on saturated fat, sugar, sodium and protein. TAG considers issues related to FVNL are best dealt with in those other papers and no further separate consideration of FVNL is required. However, additional guidance on determining FVNL and concentrated FVNL in the *Guide to Industry for the HSR calculator* would be helpful and should be considered.

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<sup>29</sup> National Institute for Health Innovation, 2018, Nutriweb Database

## **APPENDIX 1: Example of potential additional guidance on eligibility for FVNL and concentrated FVNL**

### ***What can count towards fruit and vegetable points (V points)***

#### General

- Fruits, vegetables, nuts, legumes
- Coconut, spices, herbs, fungi, seeds, algae
- Foods can be fresh, cooked, frozen, canned, pickled, preserved
- Peeled, diced, cut or otherwise reduced in size
- Fruit or vegetable juices, including concentrated juices, purees

#### Specifically % FVNL

- Coconut flesh (to be scored as a nut; i.e. always % FVNL), whether juiced, dried or desiccated
- Water in the centre of a coconut
- Lemons, olives, avocado
- Canned vegetables, legumes – % FVNL determined on the product as consumed; that is, drained
- Seeds – chia seeds, flaxseeds/linseeds, poppy seeds, mustard seeds, pumpkin seeds, sesame seeds, sunflower seeds, linseed meal
- Corn as a vegetable; for example, sweetcorn
- Dates – in most instances FVNL (not concentrated FVNL unless specified in ingredients)
- Legumes in any form, including flours derived from legumes, always % FVNL (not concentrated FVNL)
- Potato crisps – % FVNL only (not conc. FVNL)

#### Specifically % Concentrated FVNL

- Powdered pea, powdered corn (as a vegetable) – only if HSR is calculated dry
- Flours derived from vegetables
- Dried products (e.g. sultanas, sundried tomato)
- Pastes (e.g. tomato paste)
- Dates – packaged, dried specified

### ***What cannot count towards fruit and vegetable points (V points)***

- Coconut cream, coconut milk, coconut oil
- A constituent, extract or isolate of above foods; for example, peanut oil, fruit pectin, soy protein
- Cereal grains mentioned in Schedule 22 of the Food Standards Code of Standard (e.g. barley, buckwheat, millet, oats, popcorn, rice, rye, sorghum and wheat) (16) – and seeds of these products (e.g. millet seeds)
- Corn as a cereal grain (vs as a vegetable); for example, cornflour, cornflakes and corn chips
- Isolates of cacao – that is, cocoa, cocoa powder (and cocoa, e.g. in chocolate)
- Quinoa seeds, cacao nibs, cacao, coffee beans, carob (HSRAC decisions)
- Oils derived from seeds, nuts, vegetables/herbs

## APPENDIX 2: TAG database

The initial database used in the development of the HSR system was expanded with data provided by the food industry in 2017. This revised TAG database includes product nutrient data for 5,885 food products across 42 food categories based on the Australian Guide to Health Eating (AGHE) food groups (e.g. fats and oils, FFG cereals, dairy, processed and unprocessed fruits and vegetables, animal protein etc.). Data cover the range of HSR components found in Australian and New Zealand foods, including fruit, vegetable, nut and legume (FVNL) and fibre content data for all foods where applicable. The data are not independently verified.

*Table 3: Products with concentrated FVNL content  $\geq 25\%$*

<b>AGHE Category</b>	<b>Count</b>
FFG Cereals - breakfast	8
Dairy discretionary foods - cream cheese	2
Fruit - processed	22
Fruit - whole juices	1
Discretionary foods - bakery/cake mixes	3
Discretionary foods - biscuits	5
Discretionary foods - confectionery	1
Discretionary foods - meals/meal bases	1
Discretionary foods - miscellaneous	2
Discretionary foods - sauces/condiments	20
Discretionary foods - snacks	20
Discretionary foods - soups/stocks	1
Protein - plant	4
Vegetables - processed	4
<b>TOTAL</b>	<b>94</b>

Table 4: Products with FVNL content ≥40%

AGHE Category	Products (n)								
	Total, TAG database	8 FVNL points - 100% FVNL	7 FVNL points - 96 - 99% FVNL	6 FVNL points - 91 - 95% FVNL	5 FVNL points - 81 - 90% FVNL	4 FVNL points - 76 - 80% FVNL	3 FVNL points - 68 - 75% FVNL	2 FVNL points - 61 - 67% FVNL	1 FVNL point - 41 - 60% FVNL
FFG Cereals - breakfast	1			1					
FFG Dairy - cheese	1								1
Flavoured water	2								2
Fruit - other juices	1								1
Fruit - processed	88	3	7	9		1		20	48
Fruit - unprocessed	33	31		2					
Fruit - whole juices	239	119	28	88				2	2
Discretionary foods - bakery/cake mixes	1								1 <sup>29</sup>
Discretionary foods - confectionery	1						1 <sup>17</sup>		
Discretionary foods - dips	10					2 <sup>12</sup>	4 <sup>18</sup>	1 <sup>23</sup>	3 <sup>30</sup>
Discretionary foods - ice confectionery	4							2 <sup>24</sup>	2 <sup>31</sup>
Discretionary foods - jelly	1								1 <sup>32</sup>
Discretionary foods - meals/meal bases	51			1 <sup>5</sup>	1 <sup>9</sup>	2 <sup>13</sup>	3 <sup>19</sup>	3 <sup>25</sup>	41 <sup>33</sup>
Discretionary foods - miscellaneous	5	3 <sup>1</sup>							2 <sup>34</sup>
Discretionary foods - sauces/condiments	94		39 <sup>3</sup>	23 <sup>6</sup>	10 <sup>10</sup>	6 <sup>14</sup>	2 <sup>20</sup>	3 <sup>26</sup>	11 <sup>35</sup>
Discretionary foods - snacks	61	1 <sup>2</sup>	3 <sup>4</sup>	9 <sup>7</sup>		3 <sup>15</sup>	16 <sup>21</sup>	12 <sup>27</sup>	17 <sup>36</sup>
Discretionary foods - soups/stocks	50			1 <sup>8</sup>	6 <sup>11</sup>	2 <sup>16</sup>	8 <sup>22</sup>	7 <sup>28</sup>	26 <sup>37</sup>
Protein - meats/fish	2								2
Protein - nuts	69	36	12	9	10			2	
Protein - plant	63	19	1	12	4	3	7	1	16
Vegetables - processed	277	141	24	39	27	9	3	4	30
Vegetables - unprocessed	61	61							
<b>Total</b>	<b>1115</b>	<b>414</b>	<b>111</b>	<b>194</b>	<b>58</b>	<b>28</b>	<b>44</b>	<b>57</b>	<b>206</b>

**Notes (AHS 5 digit category):**

- 1: dried herbs and spices (n=2), seeds (n=1)
- 2: fruit bar and fruit-based confectionery
- 3: savoury sauces, tomato based, commercial (n=36), savoury sauces, tomato based, commercial (n=3)
- 4: fruit bar and fruit-based confectionery (n=2), dried fruit and nut mixes (n=1)
- 5: other savoury grain dishes
- 6: savoury sauces, tomato based, commercial (n=17), savoury sauces, tomato based, commercial (n=4), tomato products (n=2)
- 7: peanut products (n=6), peanuts (n=1), mixed nuts and seeds (n=1), other nuts and nut products and dishes (n=1)
- 8: soup, vegetable only
- 9: legume and pulse products
- 10: savoury sauces, tomato based, commercial (n=8), savoury sauces, tomato based, commercial (n=1), stock cubes and seasonings (n=1)
- 11: soup, vegetable only (n=5), soup containing meat, poultry or seafood (n=1)
- 12: vegetable based dips
- 13: legume and pulse products (n=1), salads, vegetable based (n=1)
- 14: savoury sauces, tomato based, commercial (n=5), savoury sauces, tomato based, commercial (n=1)
- 15: muesli and cereal style bars, with fruit and/or nuts (n=2), potato crisps (n=1)
- 16: soup, vegetable only
- 17: chocolate-based confectionery with nut fillings or additions
- 18: vegetable based dips (n=3), legume based dips (n=1)
- 19: savoury dumplings (n=2), mature legumes and pulses, commercially sterile (n=1)
- 20: savoury sauces, not tomato based, commercial (n=1), stock cubes and seasonings (n=1)
- 21: potato crisps (n=12), muesli and cereal style bars, with fruit and/or nuts (n=2), muesli and cereal style bars, no fruit (n=1), peanut products (n=1)
- 22: soup, vegetable only
- 23: vegetable based dips
- 24: water ice confection, gelato, sorbet
- 25: mature legumes and pulses, commercially sterile (n=1), poultry dishes, with gravy, sauce or vegetables, added pasta, noodles or rice (n=1), poultry dishes, with gravy, sauce or vegetables (n=1)
- 26: savoury sauces, not tomato based, commercial
- 27: potato crisps (n=9), other vegetable crisps (n=1), extruded snacks (n=1), muesli and cereal style bars, added coatings or confectionery (n=1)
- 28: soup, vegetable only (n=5), soup containing meat, poultry or seafood (n=2)
- 29: savoury pastry products, pies, rolls and envelopes, fried
- 30: vegetable based dips
- 31: water ice confection, gelato, sorbet
- 32: citrus fruit, commercially sterile
- 33: savoury pasta/noodle and sauce dishes, saturated fat  $\leq 5$  g/100 g (n=15), poultry dishes, with gravy, sauce or vegetables, added pasta, noodles or rice (n=6), dry savoury sauces and casserole bases and dry mixes (n=5), processed meat, commercially sterile (includes canned meats) (n=4), salads, vegetable based (n=2), mixed dishes with fish as the major component (n=2), beef dishes, added pasta, noodles or rice (n=2), beef dishes with gravy, sauce or vegetables (n=1), other savoury grain dishes (n=1), sausage dishes with gravy, sauce or vegetables (n=1), soup containing meat, poultry or seafood (n=1), stuffed vegetables and vegetable dishes (n=1)
- 34: coconut and coconut products
- 35: savoury sauces, tomato based, commercial (n=5), vegetable-based pickles, chutneys and relishes (n=3), savoury sauces, not tomato based, commercial (n=2), fruit-based pickles, chutneys and relishes (n=1)
- 36: potato crisps (n=12), other vegetable crisps (n=2), peanut products (n=2), muesli and cereal style bars, with fruit and/or nuts (n=1)
- 37: soup, vegetable only (n=16), soup containing meat, poultry or seafood (n=10)

## APPENDIX 3: Impact of FVNL and concentrated FVNL on HSR scores, by HSR category and select product categories

These figures demonstrate the effect of a one standard deviation (SD) change to HSR components. For example, across the entire system, a one SD increase in FVNL would increase the HSR by the equivalent of approximately 0.25 Star Points. Note that HSR points (i.e. baseline and modifying points within the HSR calculator) are converted to HSR Star Points, which are then scaled to HSRs themselves.

*Please note the different scales of the y-axes across the figures.*









