

TECHNICAL REPORT

**ALIGNMENT OF NSW  
HEALTHY FOOD PROVISION  
POLICY WITH THE HEALTH  
STAR RATING SYSTEM**



Health

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## SECTION ONE

# Executive Summary

In June 2014, Food and Health Ministers endorsed the voluntary 'Health Star Rating' (HSR) front-of-pack labelling system for use on packaged foods in Australia. The development of an easy to interpret front-of-pack labelling system to make it easier for consumers to make healthier packaged food and beverage choices was a recommendation of the *Labelling Logic: Review of Food Labelling Law and Policy* (2011) report.<sup>1</sup> The system was developed by the Australian Government in partnership with industry, public health and consumer groups. The HSR system complements the standard information already presented on the Nutrition Information Panel on the back of the pack by providing at-a-glance interpretive information on the front of packaged food and beverage products in the form of a star rating from ½ to 5 stars.

The NSW Government supports the introduction of the HSR system to assist consumers to make healthier food and beverage choices when purchasing foods in the supermarket and is investigating how the HSR may promote healthy food provision in NSW public settings. NSW Health currently uses a Traffic Light classification system linked to nutrient criteria to differentiate between healthy and energy-dense, nutrient-poor foods and beverages sold in settings such as schools and hospital workplaces. While the nutritional criteria for Traffic Light systems may differ slightly across policies and programs, they typically classify foods into three colour categories according to their nutritional value.

- **Green** products have high nutritional value and therefore should be actively promoted and make up the majority of products available e.g. vegetables, fruit, lean meats, whole grain products, reduced-fat dairy.
- **Amber** products have moderate nutritional value and therefore should be sold and consumed in moderation with appropriate serving sizes. e.g. full fat dairy and healthier versions of snack foods such as savoury biscuits with reduced fat and salt content.
- **Red** products are low in nutritional value and therefore their sales are restricted or prohibited depending on the setting e.g. confectionery and soft drinks.

In addition to the Traffic Light schemes the National Health and Medical Research Council produces the *Australian Dietary Guidelines*.<sup>2</sup> These guidelines dichotomously classify foods and beverages as either:

- **Core** – Nutritious foods from the 5 food groups that form the basis of a healthy diet, or
- **Discretionary** – Foods high in saturated fats, sugars, salt and/or alcohol that can be included occasionally in small amounts by those who are physically active, but are not a necessary part of the diet.

In order to understand the feasibility of including the HSR in current healthy eating policies, research was required to determine the alignment of the HSR with NSW school and hospital workplace Traffic Light schemes and the *2013 Australian Dietary Guidelines* definition of core and discretionary foods. To assess this, a two-phase project involving a research phase and a policy-translation phase was undertaken. This report summarises the findings of the research phase of the project and makes preliminary recommendations for how this research may inform future policy decision making. The second policy translation phase is ongoing and requires further work investigating the feasibility of using the HSR system in healthy food provision guidelines for public settings.

## Research Project

The NSW Ministry of Health engaged the support of The George Institute for Global Health to analyse alignment of the HSR system with current Traffic Light schemes and the *2013 Australian Dietary Guidelines* using their 2013 Monitoring Database of food and beverage products. This database provides an estimated HSR for approximately 15,000 products. Details on how the estimate is calculated can be found in Appendix 1.

Three food classification schemes were examined for their alignment with the HSR system;

- *Live Life Well @ Health (LLW@H)* (2010): The NSW Health policy directive for healthier food and drink choices for staff and visitors in NSW Health facilities<sup>3</sup>
- *Fresh Tastes @ School Healthy School Canteen Strategy (FT@S)* (2006): a joint initiative between Department of Education and NSW Health to assist NSW school canteens to provide healthy food and drinks to students consistent with the Nutrition in Schools Policy<sup>4</sup>
- *Australian Dietary Guidelines* (2013): The national guidelines to support healthy eating in Australia.<sup>2</sup>

Approximately 11,500 products (53% core and 47% discretionary) were analysed across 30 food categories e.g. milk, canned and frozen vegetables, sweet biscuits, processed meats. This analysis led to the identification of a proposed range of HSRs that aligned with each Traffic Light colour and core and discretionary foods summarised below. These cut-offs were then applied to the 11,500 products to assess alignment at a category level. Products that did not align with the proposed HSR cut-offs could be considered possible outliers and were quantified and described.

- **Green** = 3.5 – 5 stars
- **Amber** = 2 – 3 stars
- **Red** = 0.5 – 1.5 stars
- Core = 3.5 – 5 stars
- Discretionary = 0.5 – 3 stars

## Key Findings

Generally, alignment of the HSR system with the *2013 Australian Dietary Guidelines* core versus discretionary foods classification system was better than with the two Traffic Light schemes. Approximately 82% of all products analysed had a HSR that aligned with the range corresponding to its classification as a core or discretionary food by the *Australian Dietary Guidelines*. Around 79% of foods classified as core scored  $\geq 3.5$  stars while only 14% of foods classified as discretionary scored  $\geq 3.5$  stars. Core and discretionary foods differed significantly in their mean HSR (for core foods, mean = 3.7 stars; for discretionary foods, mean = 1.9 stars).

**79% of foods and beverages classified as core scored  $\geq 3.5$  stars, while only 14% of foods and beverages classified as discretionary scored  $\geq 3.5$  stars.**

In regards to the alignment of the HSR system with the two Traffic Light schemes examined, products classified as Green by the Traffic Light criteria on average received a HSR of  $\geq 3.5$  (LLW@H mean = 3.9 stars; FT@S mean = 3.9 stars) while products classified as Amber or Red on average had a HSR  $< 3.5$  stars (LLW@H mean = 2.8 and 2.0 stars respectively; FT@S mean = 3.0 and 1.7 stars respectively) and these differences were statistically significant. However, there was less evidence to suggest a clear HSR cut-off that discriminated between Amber and Red classified products. For both LLW@H and FT@S criteria there was considerable overlap in the HSR Amber and Red products received.

Products with a HSR that did not fall within the proposed HSR range for their Traffic Light category or *2013 Australian Dietary Guidelines* classification were considered to be possible outliers. For each classification scheme an in-depth analysis of 30 food and beverage categories was undertaken to quantify and describe outliers to assess reasons for possible misalignment.

**Generally, the HSR system aligned better with the *Australian Dietary Guidelines* concepts of core and discretionary foods than with the Traffic Light schemes.**



Across the three classification schemes and the 30 food categories examined, there were some common reasons for misalignment identified. Notably these included categories where the Traffic Light Criteria were out of date with current nutritional evidence and/or changes in the food supply. Generally however, it was found that the HSR system has good alignment with the *2013 Australian Dietary Guidelines* classification system of core versus discretionary foods and with the Traffic Light schemes differentiation of products classified as Green versus Amber/Red.

## Future Directions

- The HSR system has the potential to support provision of healthier food in NSW public settings. The system could offer a simpler way to assess the nutritional quality of packaged food and beverages than the current approach which often requires end users to interpret complex nutritional information on products to determine their Traffic Light rating.
- Future work on how the HSR system may be incorporated into NSW policy should consider recommendations for use of the HSR system within the framework of the *2013 Australian Dietary Guidelines* concepts of core and discretionary foods.
- Broadly, the findings from this research suggest that healthy core foods with a HSR of  $\geq 3.5$  can be confidently promoted in public settings as healthier choices. A known limitation of the HSR system is that it does not address serving size so some core food categories may also need to incorporate serving size limits or qualitative guidance along with the  $\geq 3.5$  stars recommendation.

- In line with the *Australian Dietary Guidelines*, discretionary foods high in saturated fat, sugar and salt should be limited and should not make up a substantial portion of one's diet. The HSR may be useful for some discretionary food categories to indicate a healthier choice within the category. However, as these foods currently provide around one third of total daily energy intake on average,<sup>5</sup> caution should be taken when applying a HSR cut-off to discretionary categories as the overall goal is to reduce their consumption. Further work is required to assess the utility of using the HSR system for discretionary foods in NSW public settings however recommendations focused on reducing the availability, serving size and promotion of these foods more generally in settings will be required.
- As the HSR is only applicable to packaged foods and not freshly prepared or food service products, it would need to be introduced into public settings as part of a broader set of guidelines to promote healthy food and beverage provision.

**The findings from this research suggest that healthy core foods with a HSR of  $\geq 3.5$  can be confidently promoted in public settings as healthier choices.**

## SECTION TWO

# Background

### Overview of the Health Star Rating Front-of-Pack Labelling System

In June 2014, the 'Health Star Rating' (HSR) front-of-pack labelling system for packaged foods in Australia was endorsed by Food and Health Ministers. It was agreed that the system would be voluntarily implemented over a five year period commencing on 27 June 2014.

The development and implementation of the HSR system was jointly funded by Australian, State and Territory Governments. The implementation of the system will be initially reviewed by Food and Health Ministers in 2016.

The purpose of the HSR system is to provide convenient, relevant and readily understood nutrition information and guidance on food packaging to assist consumers to make informed food purchases and healthier eating choices.<sup>6</sup> The HSR was designed to allow consumers to quickly and easily compare the nutritional value of similar foods. It is not intended to compare foods from different food groups or product categories. The HSR system complements the standard information already presented on the Nutrition Information Panel on the back of the pack by providing interpretive information on the front of packaged food products.



Food manufacturers and retailers are responsible for correct and accurate use of the HSR system. This includes correctly calculating the HSR, accurately displaying nutrient information, ensuring consistency of information between the HSR and the Nutrition Information Panel, and complying with all relevant legislation and regulations.

There are some food products which are not expected to display the HSR, which include:

- Fresh unpackaged food (such as fresh fruit and vegetables)
- Alcoholic beverages
- Formulated products for infants and young children
- Non-nutritive condiments (such as vinegar, herbs and spices)
- Non-nutritive foods (such as tea, coffee)
- Single ingredient foods not intended to be eaten on their own (such as flour)
- Foods where a Nutrition Information Panel is not required.

While the HSR was designed as a front-of-pack labelling system for consumers, given the robust nature of the system in assessing the nutritional value of food, it may be beneficial to use the system to guide food selection in other contexts such as in school or hospital canteens. This would also ensure a consistent approach to classifying packaged foods across a range of retail channels.

### Calculation of the Health Star Rating

Underlying the HSR system is an algorithm that awards a star rating based on assessment of positive and risk nutrients in food. These components are energy, saturated fat, total sugars, sodium, protein, dietary fibre, fruit, vegetables, nuts and legumes (FVNL) and for some products calcium. The algorithm was developed in consultation with Food Standards Australia New Zealand and other technical and nutrition experts. The star ratings for all products are calculated based on a consistent measure of 100g or 100mL of a product.

Broadly, the HSR system requires products to be first categorised into a group (calibration category) and then assigned points based upon positive and negative aspects of the product. These points are then converted into stars.

The food is placed into one of the ten calibration categories: Non-dairy beverages, core cereals, core dairy beverages, core dairy cheeses, core dairy yoghurt and soft cheese, fats and oils, fruit, vegetables, protein foods or discretionary foods.

- Baseline points are awarded for energy, saturated fat, total sugars and sodium.
- Modifying points are awarded for FVNL content (%) and for protein and fibre.
- An overall point score is calculated by subtracting modifying points from baseline points (with a lower point score reflecting a more nutritious food product).
- The HSR (from a half-star to 5 stars in half-star increments) is assigned based on the overall point score.

More information on the HSR and the calculator can be found at [www.healthstarrating.gov.au](http://www.healthstarrating.gov.au).

## National Policy Context

The *2013 Australian Dietary Guidelines* provide up-to-date advice about the amount and kinds of foods required for optimal health and wellbeing and to reduce the risk of chronic disease.<sup>2</sup> A summary of the *2013 Australian Dietary Guidelines* is included on page 11. They are based on scientific evidence and are regularly updated. Central to the *2013 Australian Dietary Guidelines* are the concepts of core and discretionary foods:

**Core foods:** These are foods and drinks from the five food groups that form the basis of a healthy diet. Recommendations for core foods are developed with reference to recommended daily intakes (RDIs) for essential nutrients. The five food groups include:

- Vegetables and legumes/beans
- Fruit
- Grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties
- Lean meats and poultry, fish, eggs, tofu, nuts and seeds and legumes/beans
- Milk, yoghurt cheese and/or alternatives, mostly reduced fat

**Discretionary foods:** These are foods and drinks that are not considered necessary to provide the nutrients the body needs, but may add variety to the diet. However, many of these foods can be high in saturated fats, sugars, salt and/or alcohol and are therefore described as energy dense. They can be included occasionally in small amounts by those who are physically active, but are not a necessary part of the diet.

The results of the *Australian Health Survey* show that on average, discretionary foods currently provide just over one third of daily energy intake.<sup>5</sup>

For more information on the *Australian Dietary Guidelines* please visit [www.eatforhealth.gov.au](http://www.eatforhealth.gov.au).

## NSW Policy Context

As part of the *NSW Healthy Eating and Active Living Strategy 2013-2018*, NSW has committed to improving access to healthy food and beverages across a range of settings.<sup>7</sup> In NSW, there are several healthy food provision guidelines as well as programs to promote the availability of healthy foods in public settings. These policies and programs cover a range of population groups and settings including workplaces, schools and sport and recreation environments. A number of these policies and programs have nutritional guidelines which use Traffic Light nutrient criteria to determine which foods should be provided for sale.

While the nutritional criteria for Traffic Light systems may differ slightly across policies and programs they typically classify foods into three colour categories according to their nutritional value. **Green** foods are core foods with high nutritional value and therefore should be actively promoted and make up the majority of products sold. **Amber** products have moderate nutritional value and therefore should be sold and consumed in moderation with appropriate serving sizes. Amber products include both less healthy versions of core foods and healthier versions of discretionary foods. **Red** products are discretionary foods with low nutritional value and therefore their sales are restricted or prohibited depending on the setting. Current NSW policies and programs providing nutritional criteria for foods to be sold or provided in different settings are outlined below.

## *Live Life Well @ Health* NSW Health Policy Directive

The *Live Life Well @ Health Policy Directive* (LLW@H) provides guidance on the provision of foods sold in NSW Health facilities. The policy directive aims to make healthier choices easier by improving the nutritional quality of foods and drinks which are available and promoted to staff and visitors in NSW Health facilities. The policy is applicable in situations where foods are available to staff and the general public such as hospital canteens, vending machines and kiosks. The policy does not apply to meals or snacks provided by the facility to in-patients.

The policy is designed to be implemented by staff involved in selecting and preparing food for NSW Health facilities including retailers and caterers operating within NSW Health, and contract managers.

LLW@H includes both Nutritional and Marketing Standards to promote healthy food environments in NSW Health facilities. The Nutritional Standards use a Traffic Light approach to categorise foods in line with the *2003 Australian Dietary Guidelines*. The quantitative nutrient criteria used to classify products as Red includes cut-off values for kilojoules, saturated fat, and sodium either per 100g or per serve. Red products should not exceed 20% of products sold within NSW Health facilities. The LLW@H Policy Directive is currently being reviewed and updated. There is an opportunity to assess the appropriateness of including the HSR as part of the Nutritional Standard in the policy.

### ***Fresh Tastes @ School Healthy School Canteen Strategy***

*The Fresh Tastes @ School Healthy School Canteen Strategy (FT@S)* forms part of the NSW Department of Education and Communities' Nutrition in Schools Policy and requires all NSW government schools to provide a healthy, nutritious canteen menu. Implementation of the strategy is mandatory for government school canteens through the Nutrition in Schools Policy. To support the policy the *Canteen Menu Planning Guide* provides Traffic Light nutritional guidelines for school canteens based on the *2003 Australian Dietary Guidelines for Children and Adolescents*. The *Canteen Menu Planning Guide* with Communication Kit outlines qualitative information to classify foods as Green or Amber and quantitative nutrient criteria cut-offs to classify foods as Red "occasional" products.<sup>4</sup> Red products can only be provided on two occasions per term in school canteens. The quantitative nutrient criteria used to classify products as Red includes cut-off values for kilojoules, saturated fat, and sodium either per 100g or per serve. There is an opportunity to assess the appropriateness of including the HSR as part of the nutrient criteria in the guidelines.

### ***Get Healthy at Work and Finish with the Right Stuff***

*Get Healthy at Work* is a free NSW Government workplace health service that aims to help improve the health of working adults by giving workplaces tools and support to address healthy eating and active living. *Get Healthy at Work* has nutritional guidelines for food provision in workplaces. For more information visit: [www.gethealthyatwork.com.au](http://www.gethealthyatwork.com.au).

*Finish with the Right Stuff* is a state-wide program that encourages children who participate in junior community sport to drink water and make healthier food and drink choices before, during and after their game. The program provides guidance to community sports canteens to increase provision of healthy food and drinks. For more information visit: [www.rightstuff.health.nsw.gov.au](http://www.rightstuff.health.nsw.gov.au).

Get Healthy @ Work and Finish with the Right Stuff were out of scope for this project but findings from the project may be applied to future revisions of program guidelines.

# 2013 Australian Dietary Guidelines

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- Guideline 1**    **To achieve and maintain a healthy weight, be physically active and choose amounts of nutritious food and drinks to meet your energy needs**
- Children and adolescents should eat sufficient nutritious foods to grow and develop normally. They should be physically active every day and their growth should be checked regularly.
  - Older people should eat nutritious foods and keep physically active to help maintain muscle strength and a healthy weight.
- 

- Guideline 2**    **Enjoy a wide variety of nutritious foods from these five groups every day:**
- Plenty of vegetables, including different types and colours, and legumes/beans
  - Fruit
  - Grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties, such as breads, cereals, rice, pasta, noodles, polenta, couscous, oats, quinoa and barley
  - Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans
  - Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat (reduced fat milks are not suitable for children under the age of 2 years)
- And drink plenty of water.
- 

- Guideline 3**    **Limit intake of foods containing saturated fat, added salt, added sugars and alcohol**
- a. Limit intake of foods high in saturated fat such as many biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks.
    - Replace high fat foods which contain predominantly saturated fats such as butter, cream, cooking margarine, coconut and palm oil with foods which contain predominantly polyunsaturated and monounsaturated fats such as oils, spreads, nut butters/pastes and avocado.
    - Low fat diets are not suitable for children under the age of 2 years.
  - b. Limit intake of foods and drinks containing added salt.
    - Read labels to choose lower sodium options among similar foods.
    - Do not add salt to foods in cooking or at the table.
  - c. 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 drinks.
  - d. If you choose to drink alcohol, limit intake. For women who are pregnant, planning a pregnancy or breastfeeding, not drinking alcohol is the safest option.
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**Guideline 4**    **Encourage, support and promote breastfeeding**

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**Guideline 5**    **Care for your food; prepare and store it safely**

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Source: National Health and Medical Research Council, 2013.

## Research Process

### Research Rationale and Aims

NSW supports the HSR system and initiatives to encourage high level adoption of the system. With the review of key NSW healthy food provision policies in public settings, it is timely to consider whether the HSR system can be incorporated into these policies. Recent research commissioned by the NSW Ministry of Health in high school canteens showed that while the Traffic Light classification concept was easy to understand, the nutrient criteria used to classify foods into Traffic Light colours were complex and confusing.<sup>8</sup> The HSR may support easier implementation of healthy food policies in schools and workplaces by providing at-a-glance information on the nutritional quality of a food without requiring knowledge and application of nutrient criteria. However, research on the feasibility of including the HSR in NSW policy is required. In addition, it is important to note that public settings such as schools and health facilities provide a range of both freshly prepared and packaged foods and meals and the use of the HSR in these settings would mainly be relevant for packaged foods.

NSW Health engaged The George Institute to conduct research exploring the alignment of the HSR system with Traffic Light nutrient criteria currently in use in these policies and core foods/discretionary foods as defined by the *2013 Australian Dietary Guidelines*.

Throughout this report references to 'workplaces' refer to hospital workplaces as per the LLW@H policy directive.

### Project Aims

1. *To assess the validity of using the HSR system in NSW healthy food provision policies.*
  - Determine if there is a range of HSRs that can be reliably aligned with Traffic Light classifications
  - Determine if there is a range of HSRs that can reliably discriminate between core and discretionary foods
2. *If it is valid to use the HSR system, how can the HSR enhance the current approach to healthy food provision in public settings?*
  - Test proposed HSR approach for each food category and make policy recommendations for school and workplace settings

### Guiding Principles

A number of overarching principles guided the project direction.

- The *2013 Australian Dietary Guidelines* distinction between the five core food groups and discretionary foods. The guidelines recommend eating a wide variety of nutritious foods from the five core food groups and only consuming discretionary foods occasionally and in small amounts.<sup>2</sup>
- The *NSW Healthy Eating Active Living Strategy 2013-2018* objectives to increase consumption of vegetables, fruit and water and to decrease consumption of energy-dense nutrient-poor (discretionary) food and drinks.<sup>7</sup>
- *Australian Health Survey 2011-12* data on current food consumption patterns.<sup>5</sup> Data on what people are eating as well as what is being sold in school and workplace settings is critical to informing future policy to increase access to healthy food and beverages in public settings. The common themes from the *Australian Health Survey* to be considered in developing guidelines are:
  - The majority of adults and children are not eating according to the five food group recommendations.
  - Excessive consumption of discretionary foods, which represent on average a third of total energy in adults and younger children, and over 40% in teenagers.
  - Sodium intakes for all groups exceed the upper level of recommended daily intake.
  - Calcium intakes are low in more than 50% of women and girls aged over two years.
  - Iron intakes in 23% of women and 40% of teenage girls are low.



- The need to adopt a pragmatic approach to what can feasibly be implemented in school and workplace settings taking into account the unique characteristics of these settings.

## Research Questions

A two phase process was undertaken with phase one focusing on conducting the research and phase two focusing on translating the research findings into policy recommendations. As part of the research component, the level of agreement between the HSR system with NSW Traffic Light schemes and the *2013 Australian Dietary Guidelines* was examined. In this phase, ranges of stars that can be used to categorise the Traffic Light colours and core versus discretionary foods were identified. This involved an in-depth analysis of the outlier food products where Traffic Light schemes and the *2013 Australian Dietary Guidelines* had poor alignment with the HSR system. Phase two is on-going and will be finalised as part of the review process for the FT@S and LLW@H policies.

1. *Research Component:*
  - a) Assess the overall alignment of the HSR with Traffic Light criteria from NSW school canteen and hospital guidelines (FT@S, LLW@H).
  - b) Assess the alignment of the HSR with core and discretionary foods.
  - c) Based on the findings from parts 1a. and 1b, propose a range of HSRs that correspond to Traffic Light colours and core versus discretionary foods.
  - d) Quantify and describe any outliers per food category where the proposed range of HSRs and the Traffic Light colours do not correspond.
2. *Policy Translation Component:*
  - a) Using the data and guiding principles make recommendations on how the HSR may be used in revised guidelines for each setting.
  - b) Examine what products meet/do not meet the recommendations and revise recommendations where required.

## Methodology

### Summary

To estimate the alignment of the HSR system, NSW policy nutritional criteria, and the *2013 Australian Dietary Guidelines*, approximately 11,500 products were assigned a HSR, a Traffic Light colour and classified as core or discretionary. Green, Amber and Red Traffic Light colours were then analysed to identify if they significantly differed in their mean HSRs. Similarly, the mean HSRs of core and discretionary foods were compared to see if they differed. This analysis led to the identification of a proposed range of HSRs that align with each Traffic Light colour and core versus discretionary foods.

Using the proposed HSR ranges, products were then analysed by food group to examine alignment of HSRs, Traffic Light colours, and core versus discretionary classification on a food category level. There were 30 food categories included in the study, for example, bread, yoghurt, salty snacks and confectionery. Products with a HSR that did not fall within the proposed range for their Traffic Light colour or the *2013 Australian Dietary Guidelines* core and discretionary food classification were referred to as outliers. In-depth analysis of the outliers was conducted to identify possible reasons why the HSR did not fall within the proposed range for the Traffic Light colour and the *2013 Australian Dietary Guidelines* core/discretionary food classification. Appendices with individual product listings for outlier products are available on request but have not been included in this report. Detailed explanation of the methodology follows below.

### Data Preparation/Extraction

The George Institute's 2013 Monitoring Database was used for this project. The Monitoring Database is an annually updated dataset which captures nutrient information for around 20,000 packaged foods from the 4 major supermarket retailers in Sydney. The 2013 dataset contained 15,164 products. A full description of the data in The George Institute's 2013 Monitoring Database and how it is used to estimate the HSR can be found in Appendix 1. An iterative process was undertaken between The George Institute and the NSW Ministry of Health to identify the categories and sub-categories required for analysis.

For the purpose of this project, the following information was extracted:

- Product name
- Serving size (g/mL)
- Nutrient information per 100g/mL and per serve
- Category assigned by The George Institute
- HSR category
- Calculated HSR

11,415 products were analysed with around 2,700 products excluded from the analysis because they were not considered to contribute significantly to nutrient intake, were not as relevant in school or workplace settings or were ingredients used in small amounts to prepare a meal. A full list of excluded products and sub-categories can be found in Appendix 2. Additional products were excluded if they had no nutrition information panel e.g. variety packs or if they had missing data.

Data were categorised as closely as possible to align with the two Traffic Light schemes and the *2013 Australian Dietary Guidelines* core/discretionary food classification. Despite The George Institute's database having approximately 650 sub-categories, for certain Traffic Light criteria further/different sub-categorisation was required.

### **Classification according to Traffic Light schemes**

For the Traffic Light schemes, the quantitative nutrient criteria used to differentiate between Red and Amber products was applied to products in The George Institute's database. However the qualitative criteria used to differentiate between Green and Amber products were not always able to be applied to the database of products because this information is not available in the nutrition information panel. For this reason, in some categories, proxy criteria were applied to facilitate the analysis.

For example, in the case of breakfast cereals, wholegrain cereals are defined as Green and refined cereals are classified as Amber but it is not possible to determine if a product is wholegrain from the nutrition information panel. In this instance, "wholegrain breakfast cereals" were defined using the fibre and sugar cut-offs used in the dietary modelling for the *2013 Australian Dietary Guidelines*.<sup>10</sup> Another example is 'full fat' and 'reduced fat' dairy products which are classified as Amber and Green respectively, under the FT@S and LLW@H schemes.

As neither scheme provides fat cut-offs to define full versus reduced fat the NUTTAB 2010 proximate for fat for regular fat cow's milk was used to define 'full fat' products and products with fat content 25% less than this proximate were considered 'reduced fat'.<sup>11</sup> The same approach was taken with cheese and yoghurt products. For a limited number of categories it was not possible to find a proxy for qualitative criteria. For example, under FT@S, chocolate-coated ice-cream products are all labelled Red whereas non-chocolate coated ice-cream can be either Red or Amber but it was not possible to differentiate chocolate-coated ice-cream products from other ice-cream products. In this case all ice-cream products were assessed using the criteria for non-chocolate coated ice-cream. However, for most categories the criteria were able to be applied in full without the need to use proxy criteria.

### **Classification according to the 2013 Australian Dietary Guidelines as core or discretionary**

As the definition of discretionary foods in the *2013 Australian Dietary Guidelines* is broad and provides examples only, the *Discretionary Food List* from the *Australian Health Survey 2011-13* was used to classify foods as core or discretionary in this analysis.<sup>9</sup>

### **Data analysis**

For each of the 3 schemes, the number of foods in each HSR range was identified per category and sub-category. Descriptive statistics summarising HSR (mean, median, interquartile range, minimum, maximum, and standard deviation) were generated for each Traffic Light colour, separately for the 2 classification schemes, as well as for core vs. discretionary foods. Mean differences in average HSRs between Traffic Light groups were assessed using linear regression. Two sided p-values of <0.05 were considered significant. Statistical analyses were conducted using Stata 13.1 (Stata Corp, College Station, TX, USA).



## SECTION FOUR

# Results

## Level of alignment between Traffic Light schemes and Health Star Ratings

### Live Life Well @ Health

#### Summary

11,415 products were categorised according to the LLW@H Traffic Light criteria. The number of products in each subcategory ranged from 33 (eggs) to 937 (confectionery). The relatively large sample size in each subcategory enhanced statistical power to allow precise descriptive statistics, and also increased confidence that the results should be generalisable to packaged foods most commonly encountered in leading food retailers in Australia.

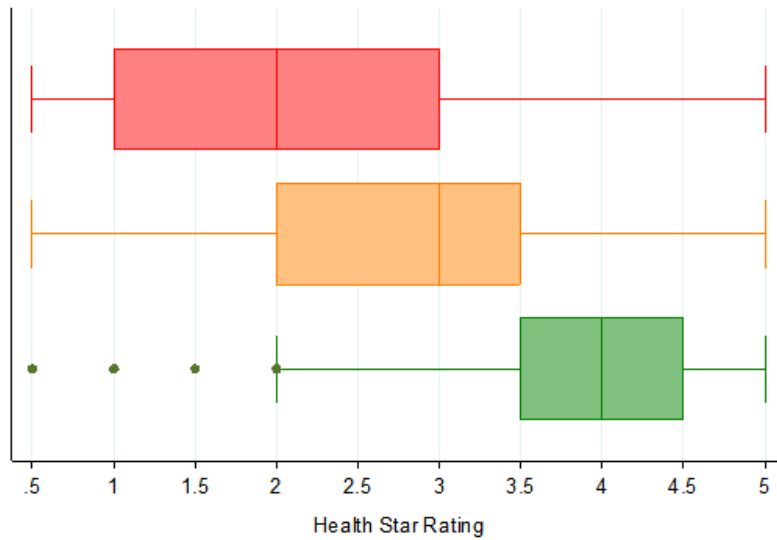
Overall, we observed concordance between the Traffic Light criteria for the LLW@H scheme and average HSR, with those products classified as Amber or Green Traffic Light associated with higher mean HSR than those with Red Traffic Light. Similarly, products with a Green Traffic Light had a higher mean HSR than those with an Amber Traffic Light. At an individual food category level, concordance between the Traffic Light criteria and the HSR was also observed for most categories (see Appendix 3). However there were a few categories where this was not observed. One example was processed meats where there was no significant difference between the mean HSR for products rated Amber or Red.

**Table 1: Summary statistics for HSRs by Traffic Light category in 'LLW@H'**

	N	Mean	SD	Min	25th percentile	50th percentile	75th percentile	Max
<b>Red</b>	3591	2.0	1.2	0.5	1	2	3	5
<b>Amber</b>	4335	2.8	1.1	0.5	2	3	3.5	5
<b>Green</b>	3489	3.9	0.7	0.5	3.5	4	4.5	5
<b>Total</b>	11415	2.9	1.3	0.5	2	3	4	5

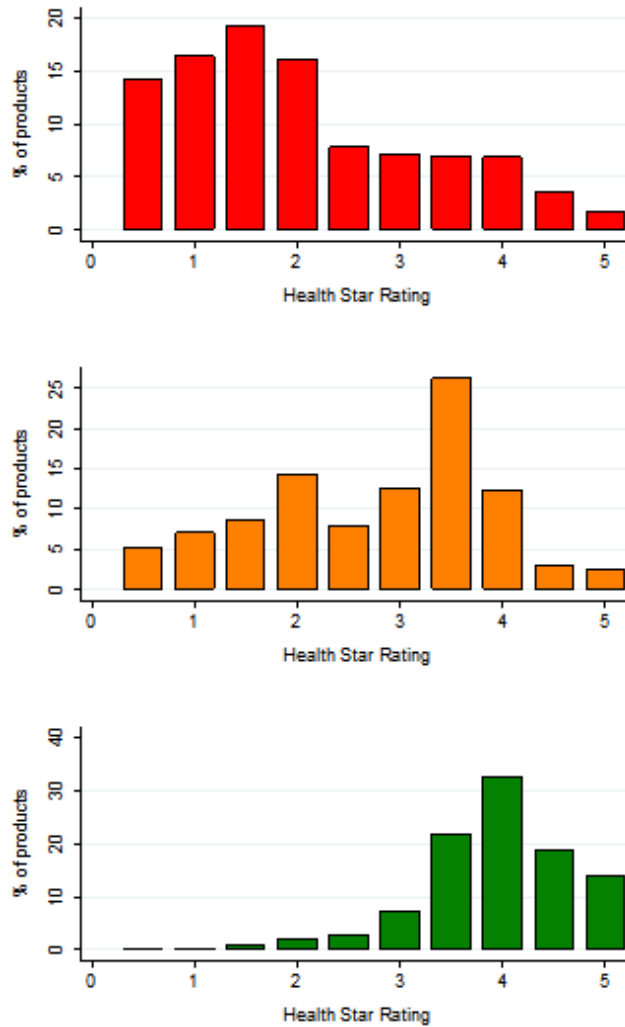
The differences in means were highly statistically significant by linear regression:

- The mean (95% CI) difference in HSR between the Amber and Red products was 0.75 (0.70, 0.79, P<0.001).
- The mean (95% CI) difference in HSR between the Green and Red products was 1.93 (1.88, 1.98, P<0.001).
- The mean (95% CI) difference in HSR between the Green and Amber products was 1.18 (1.14, 1.23, P<0.001).



**Figure 1: Distribution of HSR according to LLW@H Traffic Light categories.**

The box displays the interquartile range and the median value is marked as the line inside the box. The lines extending above and below the box indicate the most extreme value within the 75th percentile+1.5 x (interquartile range) and 25th percentile-1.5x (interquartile range), and additional values outside of this range are marked as circles.



**Figure 2: Histogram of the distribution of HSR for the different Traffic Light categories in LLW@H.**

Figure 2 shows the distribution of HSRs for products in each of the Traffic Light colour categories. As expected, there is a gradual increase in the HSR products received, moving from Red to Green products. However, the HSRs also overlapped considerably for the three Traffic Light colour categories.

**Table 2: LLW@H food category outlier analysis summary – Core Foods – 66% agreement between LLW@H and HSR**

Core Foods	No. of products	% of products within each HSR cut-off		
		HSR ≤1.5	HSR =2-3	HSR ≥3.5
<b>Products classified as Green by LLW@H</b>				
Breads	437	2	20	78
Breakfast cereal	273	0	11	89
Cheese, cheese spreads and speciality cheese	214	6	16	78
Couscous, noodles and pasta	119	0	6	94
Milk	135	0	4	96
Yoghurts	205	0	16	84
Eggs	33	0	0	100
Seafood	505	1	5	94
Fruits	408	1	30	70
Nuts	246	0	8	92
Vegetables	574	0	0	100
Raw meat and meat replacements	167	3	14	83
Soups	71	0	0	100
<b>Sum and average</b>	<b>3387</b>	<b>36 (1%)</b>	<b>383 (11%)</b>	<b>2968 (88%)</b>
<b>Products classified as Amber by LLW@H</b>				
Breakfast cereal	60	3	62	35
Cheese, cheese spreads and speciality cheese	402	12	32	56
Milk	75	1	23	76
Yoghurt	164	32	50	18
Vegetables	70	0	0	100
Juices	51	2	6	92
Soup	264	0	31	69
Nuts	96	0	16	84
Couscous, noodles and pasta	125	0	26	74
<b>Sum and average</b>	<b>1307</b>	<b>103 (8%)</b>	<b>400 (30%)</b>	<b>804 (62%)</b>
<b>Products classified as Red by LLW@H</b>				
Couscous, noodles and pasta	69	1	61	38
Juices	459	3	0	97
Vegetables	8	0	0	100
<b>Sum and average</b>	<b>536</b>	<b>14 (3%)</b>	<b>44 (8%)</b>	<b>478 (89%)</b>

**Table 3: LLW@H sub-category outlier analysis summary – Discretionary Foods – 48% agreement between LLW@H and HSR**

Discretionary Foods	No. of products	% of products within each HSR cut-off		
		HSR ≤1.5	HSR =2-3	HSR ≥3.5
<b>Products classified as Green by LLW@H</b>				
Cakes, puddings and cake mixes	31	0	74	26
Spreads	43	0	0	100
Salty snacks, chips, pretzels	4	0	0	100
RTE meals, frozen pies and pizza	24	0	13	87
<b>Sum and average</b>	<b>102</b>	<b>0 (0%)</b>	<b>26 (25%)</b>	<b>76 (75%)</b>
<b>Products classified as Amber by LLW@H</b>				
Savoury biscuits	288	15	52	33
Sweet biscuits	343	75	24	1
Cakes, puddings and cake mixes	138	44	56	0
Pastries	23	48	39	13
Snack bars	162	13	51	36
RTE meals, frozen pies and pizza	470	0	11	89
Dairy desserts	25	0	12	88
Ice blocks, frozen desserts and ice cream	140	0	73	27
Oils, margarine, butter and mayonnaise	268	16	23	61
Processed meats	525	43	21	36
Cordial and juice syrups	58	57	43	0
Energy drinks	6	17	83	0
Mixers, regular and diet soft drinks	126	20	79	1
Spreads	280	26	74	0
Salty snacks, chips, pretzels	176	4	30	66
<b>Sum and average</b>	<b>3028</b>	<b>803 (26%)</b>	<b>1114 (37%)</b>	<b>1111 (37%)</b>
<b>Products classified as Red by LLW@H</b>				
Savoury biscuits	87	31	59	10
Sweet biscuits	185	94	6	0
Cakes, puddings and cake mixes	220	67	33	0
Pastries	143	44	53	3
Snack bars	132	23	67	10
Confectionery	937	84	16	0
RTE meals, frozen pies and pizza	294	1	74	25
Dairy desserts	106	20	43	37
Ice blocks, frozen desserts and ice cream	218	54	46	0
Oils, margarine, butter and mayonnaise	47	45	51	4
Processed meats	134	34	62	4
Cordial and juice syrups	29	100	0	0
Energy drinks	63	79	21	0
Mixers, regular and diet soft drinks	205	84	16	0
Salty snacks, chips, pretzels	255	35	42	23
<b>Sum and average</b>	<b>3055</b>	<b>1776 (58%)</b>	<b>1072 (35%)</b>	<b>207 (7%)</b>

**Note:** For ease of use whole categories were listed in either the core or discretionary tables above. However in the analysis some categories contained a mix of core and discretionary products e.g. the sub-category of ‘plain popcorn’ in the ‘salty snacks, crisps and pretzels categories is considered core, but the majority of products in the broader category of ‘salty snacks, crisps and pretzels’ are discretionary and therefore the whole sub-category was listed in the discretionary tables above. For detailed analysis of sub-categories please see the outlier analysis and interpretation section.

## Fresh Tastes @ School Canteen Guidelines

### Summary

11,415 products were categorised according to the FT@S Traffic Light criteria. The number of products in each subcategory ranged from 33 (eggs) to 937 (confectionery). The relatively large sample size in each subcategory enhanced statistical power to allow precise descriptive statistics, and also increased confidence that the results should be generalisable to packaged foods most commonly encountered in leading food retailers in Australia.

Overall, we observed concordance between the Traffic Light criteria for the FT@S scheme and average HSR, with those products classified with Amber or Green Traffic Light associated with higher mean HSR than those with Red Traffic Light. Similarly, products with a Green Traffic Light had higher mean HSR than those with an Amber Traffic Light.

**Table 4: Summary statistics for HSRs by Traffic Light category in 'FT@S'**

	N	Mean	SD	Min	25th percentile	50th percentile	75th percentile	Max
<b>Red</b>	3459	1.7	0.92	0.5	1	1.5	2	5
<b>Amber</b>	4510	3.0	1.08	0.5	2	3.5	4	5
<b>Green</b>	3446	3.9	0.73	0.5	3.5	4	4.5	5
<b>Total</b>	11,415	2.9	1.3	0.5	2	3	4	5

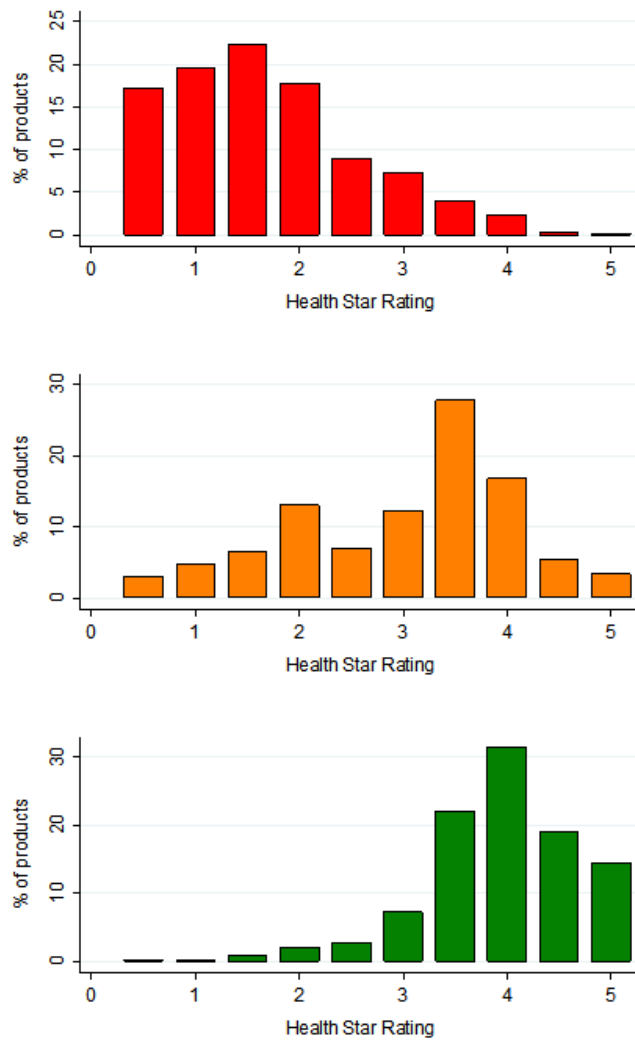
The differences in means were highly statistically significant by linear regression:

- The mean (95% CI) difference in mean HSR between the Amber and Red products was 1.3 (1.2, 1.3, P<0.001).
- The mean (95% CI) difference in mean HSR between the Green and Red products was 2.2 (2.1, 2.2, P<0.001).
- The mean (95% CI) difference in mean HSR between the Green and Amber products was 0.9 (0.9, 1.0, P<0.001).



**Figure 3: Distribution of HSR according to FT@S Traffic Light categories**

The box displays the interquartile range and the median value is marked as the line inside the box. The lines extending above and below the box indicate the most extreme value within the 75th percentile+1.5x (interquartile range) and 25th percentile-1.5x (interquartile range), and additional values outside of this range are marked as circles.



**Figure 4: Histogram of the distribution of HSR for the different Traffic Light categories in FT@S**

Figure 4 shows the distribution of HSRs for products in each of the Traffic Light colour categories. As expected, there is a gradual increase in the HSR products received, moving from Red to Green products. However, the HSRs also overlapped considerably for the three Traffic Light colour categories.

**Table 5: FT@S food category outlier alignment analysis - Core Foods - 70% agreement between FT@S and HSR**

Core Foods	Number of products	% of products within each HSR cut-off		
		HSR ≤1.5	HSR =2-3	HSR ≥3.5
<b>Products classified as Green by FT@S</b>				
Breads	437	2	20	78
Breakfast cereal	273	0	11	89
Couscous, noodles and pasta	119	0	6	94
Cheese, cheese spreads and speciality cheese	214	6	16	78
Milk	135	0	4	96
Yoghurts	205	0	16	84
Eggs	33	0	0	100
Seafood	399	1	5	94
Fruits	408	1	30	70
Nuts	246	0	8	92
Vegetables	574	0	0	100
Raw meat and meat replacements	167	3	14	83
Soups	71	0	0	100
<b>Sum and average</b>	<b>3281</b>	<b>36 (1%)</b>	<b>380 (12%)</b>	<b>2865 (87%)</b>
<b>Products classified as Amber by FT@S</b>				
Breakfast cereal	60	3	62	35
Couscous, noodles and pasta	125	0	26	74
Cheese, cheese spreads and speciality cheese	402	12	32	56
Milk	75	1	23	76
Yoghurt	164	32	50	18
Nuts	96	0	16	84
Seafood	89	0	0	100
Vegetables	70	0	0	100
Soups	264	0	31	69
<b>Sum and average</b>	<b>1345</b>	<b>102 (8%)</b>	<b>397 (30%)</b>	<b>846 (63%)</b>
<b>Products classified as Red by FT@S</b>				
Seafood	17	0	18	82
Vegetables	8	0	0	100
Couscous, noodles, pasta and rice	69	1	61	38
<b>Sum and average</b>	<b>94</b>	<b>1 (1%)</b>	<b>45 (48%)</b>	<b>48 (51%)</b>



**Table 6: FT@S food category outlier alignment analysis – Discretionary Foods – 48% agreement between FT@S and HSR**

Discretionary Foods	Number of products	% of products within each HSR cut-off		
		HSR ≤1.5	HSR =2-3	HSR ≥3.5
<b>Products classified as Green by FT@S</b>		<b>HSR ≤1.5</b>	<b>HSR =2-3</b>	<b>HSR ≥3.5</b>
Juices	106	3	1	96
RTE meals, frozen pies and pizza	24	0	13	87
Cakes, puddings and cake mixes	31	0	74	26
Salty snacks, chips, pretzels	4	0	0	100
<b>Sum and average</b>	<b>165</b>	<b>3 (2%)</b>	<b>27 (16%)</b>	<b>135 (82%)</b>
<b>Products classified as Amber by FT@S</b>		<b>HSR ≤1.5</b>	<b>HSR = 2-3</b>	<b>HSR ≥3.5</b>
Savoury biscuits	285	14	52	34
Sweet biscuits	54	37	59	4
Cakes, puddings and cake mixes	138	44	56	0
Pastries	3	0	100	0
Snack bars	133	3	54	43
RTE meals, frozen pies and pizza	498	0	31	69
Dairy desserts	25	0	12	88
Ice blocks, frozen desserts and ice cream	140	0	73	27
Oils, margarine, butter and mayonnaise	268	16	23	61
Juices	399	3	1	96
Processed meats	525	43	21	36
Cordial and juice syrups	58	57	43	0
Energy drinks	6	17	83	0
Mixers, regular and diet soft drinks	126	20	79	1
Spreads	323	22	64	14
Salty snacks, chips, pretzels	4	0	0	100
<b>Sum and average</b>	<b>3165</b>	<b>549 (17%)</b>	<b>1058 (34%)</b>	<b>1558 (49%)</b>
<b>Products classified as Red by FT@S</b>		<b>HSR ≤1.5</b>	<b>HSR = 2-3</b>	<b>HSR ≥3.5</b>
Savoury biscuits	90	31	59	10
Sweet biscuits	474	87	13	0
Cakes, puddings and cake mixes	220	67	33	0
Pastries	143	51	45	4
Snack bars	161	29	62	9
Soup	88	0	30	70
Confectionery	937	84	16	0
RTE meals, frozen pies and pizza	146	2	60	38
Dairy desserts	106	20	43	37
Ice blocks, frozen desserts and ice cream	218	54	46	0
Oils, margarine, butter and mayonnaise	47	45	51	4
Processed meats	134	34	62	4
Cordial and juice syrups	29	100	0	0
Energy drinks	63	79	21	0
Mixers, regular and diet soft drinks	205	84	16	0
Salty snacks, chips, pretzels	255	35	42	23
<b>Sum and average</b>	<b>3365</b>	<b>2041 (61%)</b>	<b>1132 (33%)</b>	<b>192 (6%)</b>

**Note:** For ease of use whole categories were listed in either the core or discretionary tables above. However in the analysis some categories contained a mix of core and discretionary products e.g. the sub-category of ‘plain popcorn’ in the ‘salty snacks, crisps and pretzels categories is considered core, but the majority of products in the broader category of ‘salty snacks, crisps and pretzels’ are discretionary and therefore the whole sub-category was listed in the discretionary table above. For detailed analysis of sub-categories please see the outlier analysis and interpretation section.

## LLW@H and FT@S sub-category outlier analysis and interpretation

### Core food categories

#### Bread and bread-type products

*Includes all bread-based products such as sliced white, wholemeal and grain breads, garlic bread, fruit breads, crumpets and English muffins.*

##### HSR vs LLW@H and FT@S Traffic Light colours for Bread products

		HSR $\leq 1.5$	HSR 2-3	HSR $\geq 3.5$	Total
<b>Green</b>	n	10	88	339	437
	%	2.29	20.14	77.57	100
<b>Total</b>	n	10	88	339	437
	%	2.29	20.14	77.57	100

#### Product examples meeting recommendations

- Mountain Bread Wraps range
- Coles Bakery Raisin Toast
- Tip Top Sunblest Soft Multigrain Sandwich
- Bakers Life (ALDI) Bakehouse White Rolls
- Tip Top English Muffins Original
- Coles Smart Buy Garlic Bread
- La Famiglia Lite Garlic Bread
- Mighty Soft Original Crumpet Splits
- Woolworths Home Brand White Sandwich
- Helga's Continental Bakehouse Light Rye

**Interpretation:** LLW@H and FT@S use the same nutrient criteria to classify these products. According to the Traffic Light criteria all bread products are classified as Green. The subcategories of garlic bread and sweet or savoury buns may be Amber, however, as no criteria are provided to differentiate between Green and Amber products, all products were analysed as Green. More than 75% of all bread products classified as Green received a correspondingly high HSR ( $\geq 3.5$  stars). However, 20% of bread products received a HSR of 2-3 stars and 2% received a rating of  $\leq 1.5$  stars. In examining the list of products that did not rate 3.5 stars or above it appears that many of the products scoring 2-3 stars are wraps and tortillas. Another sub-category frequently scoring 2-3 stars is crumpet products, which generally have higher sugar levels than other bread products. The outliers in this category reflect a lack of clear criteria in the Traffic Light schemes to differentiate between Amber and Green products, rather than a misclassification with the HSR system. The HSR appears to rate wholemeal bread products higher than white bread products and breads higher in sodium also receive a lower rating as expected. Not all garlic bread products received a low HSR, but certain individual brands and products with higher levels of saturated fat and sodium received lower ratings, as expected. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** All bread products receiving 3.5 stars and above can be promoted under the LLW@H and FT@S schemes with a recommendation to choose mostly wholegrain varieties. Setting a recommended cut-off of  $\geq 3.5$  stars should still enable a variety of brands of each type of bread product to be sold.

## Couscous, noodles, pasta and rice

*Includes all plain and flavoured packet couscous, noodle, pasta and rice products.*

### HSR vs LLW@H and FT@S Traffic Light colours for Couscous, noodles, pasta and rice

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Red</b>	n	1	42	26	69
	%	1.45	60.87	37.68	100
<b>Amber</b>	n	0	32	93	125
	%	0	25.6	74.4	100
<b>Green</b>	n	0	7	112	119
	%	0	5.88	94.12	100
<b>Total</b>	n	1	81	231	313
	%	0.32	25.88	73.8	100

#### Product examples meeting recommendations

- Woolworths Select Cous Cous
- Sun Rice Quick Cups Aromatic Basmati Rice
- Woolworths Home Brand Basmati Rice
- Coles Brown Rice Medium Grain

**Interpretation:** LLW@H and FT@S use the same nutrient criteria to classify these products. According to the current LLW@H and FT@S criteria, products in this category can be classified as Red, Amber or Green. 98% of Red products received a HSR higher than expected (2 stars and above), with almost 61% receiving a star rating that is more closely aligned with an Amber rating. On examination of the list of outlier products, it appears that there are a number of noodle products that would be classified as Red under the LLW@H and FT@S schemes due to their sodium levels but get a 3.5 star rating due to their higher fibre content. On the other hand, 94% of products that would receive a Green in the LLW@H scheme received a HSR of 3.5 or more as expected. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** All products with a HSR of 3.5 or above with a preference for unflavoured and wholegrain products such as brown rice can be promoted under the LLW@H and FT@S schemes as core ingredients in mixed dishes. Snack-style products, such as flavoured instant noodles, should rather be considered within salty snacks (if sold dry) or RTE/mixed foods. Further work is needed to understand the range in this sub-category, as well as the typical way they are served per setting.

## Breakfast cereal

*Includes all Ready to Eat and hot breakfast cereals.*

### HSR vs LLW@H and FT@S Traffic Light colours for Breakfast Cereal

	HSR $\leq$ 1.5	HSR 2-3	HSR $\geq$ 3.5	Total
<b>Amber</b>				
n	2	37	21	60
%	3.33	61.67	35	100
<b>Green</b>				
n	0	30	243	273
%	0	10.99	89.01	100
<b>Total</b>				
n	2	67	264	333
%	0.6	20.12	79.28	100

**Interpretation:** LLW@H and FT@S use the same nutrient criteria to classify these products. According to the Traffic Light criteria, breakfast cereal products can be classified as Green or Amber. 89% of products rated Green by the Traffic Light schemes received a correspondingly high HSR ( $\geq$ 3.5). However a small number (30 products; 11%) received a lower rating than expected (2-3 stars). On examination of the list of outlier products, they appear to be mainly toasted muesli and granola products with higher levels of sugar and saturated fat. Interestingly, 35% of cereals rated as Amber by the Traffic Light criteria received a higher HSR than expected (3.5 stars or above). There was a large mix of products in this case, with the differences predominantly due to the Traffic Light criteria being less sensitive discriminators than the HSR. The Traffic Light criteria state that refined products that are not wholegrain or whole-wheat are Amber. This means for example, that muesli is classified as Amber, even if it has a higher fibre and lower sodium content. Whereas, the HSR holistically considers multiple nutrients and therefore it assigns a higher rating. Two products received a HSR of 1.5 stars or less - these were both cocoa-based breakfast cereals. (Full listings for outlier products in this category are available on request).

**Preliminary Recommendation for Workplaces and Schools:** All breakfast cereal products receiving 3.5 stars and above can be promoted under the LLW@H and FT@S schemes with a preference for wholegrain products. This will still enable a variety of brands of each type of cereal product to be sold.

### Product examples meeting recommendations

- Uncle Tobys Oats Creamy Honey
- GoldenVale (ALDI) Corn Flakes
- Coles Bran Flakes With Sultanas
- Kellogg's Sultana Bran
- Woolworths Select Berry Bircher Museli
- Black & Gold Tropical Muesli
- Sanitarium Weet-Bix
- Nestle Milo Breakfast Cereal
- Uncle Tobys Cheerios

## Canned and frozen vegetables

*Includes all canned legumes and canned and frozen vegetable products including frozen potato products.*

### HSR vs LLW@H and FT@S Traffic Light colours for Canned and Frozen Vegetables

		HSR 2-3	HSR $\geq$ 3.5	Total
<b>Red</b>	n	0	8	8
	%	0	100	100
<b>Amber</b>	n	0	70	70
	%	0	100	100
<b>Green</b>	n	1	573	574
	%	0.17	99.83	100
<b>Total</b>	n	1	651	652
	%	0.15	99.85	100

**Interpretation:** LLW@H and FT@S use the same nutrient criteria to classify these products. According to the Traffic Light criteria, vegetable products can be classified as Green, Amber or Red. Oven baked potato products (e.g. fries, wedges and hash browns) have Red or Amber criteria. All but one product received a high HSR ( $\geq$ 3.5). This product was a legume product with a low HSR due to its high sodium content. Frozen potato products likely derive their higher HSR from their high level of vegetable content. Vegetable content is taken into account in the HSR algorithm, however it is not considered in the LLW@H and FT@S criteria. (Full listings for 'outlier' products in this category are available on request).

**Preliminary Recommendation for Workplaces and Schools:** All vegetable products with the exception of potato products (fries/wedges/hash browns) can be promoted under the LLW@H and FT@S schemes as per current guidelines. Potato products such as fries and wedges are considered to be discretionary foods. Recommendations should limit their availability and serve size and include healthier cooking methods e.g. oven baked, use of healthier oils.

## Fruit products

*Includes all dried fruit (with and without nuts/seeds) and canned fruit products.*

### HSR vs LLW@H and FT@S Traffic Light colours for Fruit products

		HSR $\leq 1.5$	HSR 2-3	HSR $\geq 3.5$	Total
<b>Green</b>	n	3	121	284	408
	%	0.74	29.66	69.61	100
<b>Total</b>	n	3	121	284	408
	%	0.74	29.66	69.61	100

#### Product examples meeting recommendations

- Sunbeam Snacks That Go Apricots, Almond & Cashew Mix
- Woolworths Select Sultanas
- Black & Gold Dried Apricots
- Golden Circle Australian Pineapple Slices in Juice
- Goulburn Valley Diced Apricots in Fruit Juice

**Interpretation:** LLW@H and FT@S use the same nutrient criteria to classify these products. According to the current LLW@H and FT@S criteria, all fruit products are classified as Green. However only 70% of fruit products classified as Green by the LLW@H and FT@S criteria received a corresponding high HSR ( $\geq 3.5$ ). On examination of the listing of outliers for this category, products such as fruit and nut mixes with yoghurt coatings, banana chips and tinned fruit in syrup products were the reason for this.

Example products include *Sweet Valley Dark Sweet Cherries in Syrup*, *Freshlife Sweetened Dried Pineapple* and *Lucky Oven Roasted Almonds with Yoghurt Sultanas*. (Full listings for “outlier” products in this category are available on request).

**Preliminary Recommendation for Workplaces and Schools:** In principle, all fruit products receiving 3.5 stars and above can be promoted under the LLW@H and FT@S schemes with an additional recommendation of no added sugar. There is a sufficient range of tinned fruit in juice products scoring about 3.5 stars. Dried fruit is only recommended to be consumed occasionally and in small amounts in the *2013 Australian Dietary Guidelines*. The HSR does not differentiate as well between plain, sweetened and coated dried fruit and the recommendation would be to sell small serves of plain dried fruit.

## Juices

*Includes all fruit and vegetable juices.*

### HSR vs LLW@H Traffic Light colours for Juices

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Red</b>	n	13	2	444	459
	%	2.83	0.44	96.73	100
<b>Amber</b>	n	1	3	47	51
	%	1.96	5.88	92.16	100
<b>Total</b>	n	14	5	491	510
	%	2.75	0.98	96.27	100

### Product examples meeting recommendations

- Woolworths Select 100% Australian Apple Juice
- Coles Smart Buy Apple & Blackcurrant Juice No Added Sugar
- Berri Orange Juice
- Appletiser Sparkling Apple Juice
- V8 Apple Berry Fusion Fruit & Vegge Juice

### HSR vs FT@S Traffic Light colours for Juices

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Amber</b>	n	11	4	389	404
	%	2.72	0.99	96.29	100
<b>Green</b>	n	3	1	102	106
	%	2.83	0.94	96.23	100
<b>Total</b>	n	14	5	491	510
	%	2.75	0.98	96.27	100

**Interpretation:** According to the current LLW@H and FT@S criteria, juices can only be classified as Amber or Red depending on the fruit juice content (both schemes), serving size (FT@S) or kilojoule and sodium content (LLW@H). Overall there was poor agreement between the LLW@H and FT@S classifications and the HSR for products in this category. For both analyses the majority of products (96%) received a HSR of 3.5 stars or above. 40% received 4.5 or 5 stars and 54% received 3.5 or 4 stars. Products that are 99.5% fruit juice and above (such as *Sunraysia Organic Apple 100% Juice* for example), in the HSR scheme, receive a 4.5 or above rating. Juice products with a lower percentage of fruit (such as *Mildura Orange 25% Fruit Juice* for example) receive a corresponding lower HSR. The higher than expected HSR for fruit juice is due to their high fruit content (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** Fruit juice is recommended to be consumed occasionally and in small amounts in the current *Australian Dietary Guidelines*. Fruit juices with 3.5 stars and above can be promoted occasionally under the LLW@H and FT@S schemes, provided they contain 99% juice or above and have a serving size limit applied. A higher HSR cut-off could be applied to ensure inclusion of only juices with ≥99% juice.

## Milk

*Includes all fresh and long life plain and flavoured milks (dairy, soy and lactose-free).*

### HSR vs LLW@H and FT@S Traffic Light colours for Milk

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Amber</b>	n	1	17	57	75
	%	1.33	22.67	76	100
<b>Green</b>	n	0	5	130	135
	%	0	3.7	96.3	100
<b>Total</b>	n	1	22	187	210
	%	1	10	89	100

#### Product examples meeting recommendations

- Coles Chocolate Flavoured Milk
- Devondale Our Strawberry Flavoured Milk
- All Low Fat/Lite Dairy Milks
- All Skim Dairy Milks
- Sanitarium So Good Almond Milk Unsweetened
- Vitasoy Oat Milk
- Black & Gold Soy Milk
- Coles Lite Soy Milk
- Liddells Lactose Free Low Fat Milk

**Interpretation:** LLW@H and FT@S use the same nutrient criteria to classify these products. According to the current LLW@H and FT@S criteria, all milk products are classified as Green or Amber. Low-fat milk products are classified as Green with all other milk products receiving an Amber classification. Almost 100% of products were found in line with this according to the HSR (meaning almost 100% of products received 2 stars and above). 96.3% of products rated Green by the Traffic Light schemes score 3.5 stars or more. The key difference between the Traffic Light criteria and the HSR results appear to be that many products rated Amber by LLW@H and FT@S actually have a higher HSR (3.5 stars or more). Most of these include full cream milk products (which in general receive 3.5 or 4 stars) and many full-fat soy and oat milk products. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** All milk products receiving 3.5 stars and above, preferably reduced or low fat and unflavoured, can be promoted under the LLW@H and FT@S schemes in serving sizes in line with the dietary guidelines.



## Cheese, cheese spreads and specialty cheese

*Includes all ripened and unripened soft and hard cheeses.*

### HSR vs LLW@H and FT@S Traffic Light colours for Cheese, Cheese Spreads and Specialty Cheese

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Amber</b>	n	47	130	225	402
	%	11.69	32.34	55.97	100
<b>Green</b>	n	12	35	167	214
	%	5.60	16.36	78.04	100
<b>Total</b>	n	59	165	392	616
	%	9.58	26.78	63.64	100

**Interpretation:** LLW@H and FT@S use the same nutrient criteria to classify these products. According to the current LLW@H and FT@S criteria, all cheese products are classified as Green or Amber. Low-fat cheese products are classified as Green with all other cheese products receiving an Amber classification. In line with this over 90% of products received 2 stars and above. 78% of products rated Green according to the LLW@H and FT@S criteria received a corresponding higher HSR of 3.5 stars or more. However a small proportion of products (<10%) received a lower rating than expected (1.5 stars or less). On examination of the list of outlier products this appears to be due to cheeses such as parmesan and flavoured cream cheeses which generally received a lower HSR due to their high sodium content and saturated fat content. For example, *Black & Gold Parmesan Cheese* received a HSR of 0.5 due to its high sodium (1630mg/100g) and saturated fat (33.7g/100g) compared to other similar products (for example *Perfect Italiano Parmesan* only had 22.5g/100g saturated fat giving it a HSR of 4 stars). Products that were rated as Amber by Traffic Light criteria but received a higher HSR of 3.5 stars or above included a large number of products, both full-fat and reduced-fat cheeses. Higher HSRs were generally associated with lower sodium and saturated fat in this category, such as the parmesan example above. (Full listings for outlier products in this category are available on request.)

- Product examples meeting recommendations**
- Perfect Italiano Shaved Parmesan Traditional
  - Coles Danish Fetta Cheese
  - Black & Gold Mild Cheddar Cheese
  - Coon Tasty
  - Bega Country Light Tasty Natural Cheese Slices
  - Coles Australian Tasty Light Cheese Shredded
  - Cowbelle Cheese Triangles
  - Kraft Singles Light
  - Black & Gold Cream Cheese Spread

**Preliminary Recommendation for Workplaces and Schools:** All cheese products receiving 3.5 stars and above, preferably reduced or low fat, can be promoted under the LLW@H and FT@S schemes. This will still enable a variety of brands of each type of cheese product to be sold. Serving size recommendations should be in line with the current *Australian Dietary Guidelines* (40g/2 slices).

## Yoghurts

*Includes all natural and flavoured yoghurt and custard products.*

### HSR vs LLW@H and FT@S Traffic Light colours for Yoghurts

	HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Amber</b>				
n	52	83	29	164
%	31.71	50.61	17.68	100
<b>Green</b>				
n	1	32	172	205
%	0.49	15.61	83.9	100
<b>Total</b>				
n	53	115	201	369
%	14.36	31.17	54.47	100

**Interpretation:** LLW@H and FT@S use the same nutrient criteria to classify these products. According to the current LLW@H and FT@S criteria, all yoghurt and custard products are classified as Green or Amber. For both schemes, low-fat products are classified as Green with all other products receiving an Amber classification. 85% of products were found in line with this according to the HSR (meaning just over 85% of products received 2 stars and above). The majority of products rated Green according to the LLW@H and FT@S criteria received a corresponding higher HSR of 3.5 stars or more. However one product received a lower rating than expected (1.5 stars), despite meeting the Green criteria. On examination this appears to be due to the relatively high sugar content (18.1g/100g) and low protein content (1.4g/100g) of this product relative to other yoghurt products in the Green category. Also, many products (32%) that were rated as Amber in fact received a lower HSR of 1.5 stars or less. Products in this case included a large number of yoghurts with “thick and creamy” in their product descriptions. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** All yoghurt products receiving 3.5 stars and above, preferably reduced fat, should be promoted under the LLW@H and FT@S schemes. Serving size recommendations should be in line with the current *Australian Dietary Guidelines* (200g).

### Product examples meeting recommendations

- Pauls Custard Low Fat Vanilla
- Calciyum Vanilla Flavoured Yoghurt
- Nestle Ski Double Up Crunchy Muesli
- Brooklea (ALDI) Yoghurt Squishy Banana
- Coles Summer Berry Yoghurt Thick And Creamy
- Chobani Greek Yogurt Strawberry
- Nestle Ski D'Lite Peach & Mango

## Raw meat and meat replacements

*Includes all raw meat and meat replacement products (e.g. meat-free burgers).*

### HSR vs LLW@H and FT@S Traffic Light colours for Raw Meat and Meat Replacements

		HSR $\leq 1.5$	HSR 2-3	HSR $\geq 3.5$	Total
<b>Green</b>	n	5	23	139	167
	%	3.00	13.77	83.23	100
<b>Total</b>	n	5	23	139	167
	%	3.00	13.77	83.23	100

#### Product examples meeting recommendations

- Quorn BBQ Sausages Meat Free Soy Free
- Sanitarium Veggie Delights Not Burgers
- Steggles Chicken Roast
- Woolworths Beef Heart Smart Mince Lean & Tasty

**Interpretation:** LLW@H and FT@S use the same nutrient criteria to classify these products. According to the current LLW@H and FT@S criteria, all raw meat and meat replacement products are classified as Green. The majority of products in this category (83%) classified as Green by the LLW@H and FT@S criteria received a corresponding high HSR ( $\geq 3.5$ ).

On examination of the listing of outliers for this category raw flavoured meat products were products that received a rating of 3 stars or below. For example, *Brannans Butchery Buffalo Style Marinated Chicken Wings* received 3 stars and *Woolworths Australian Lamb Garlic & Lemon Flavoured* received 1.5 stars, due mainly to their higher sodium content than other raw meat products. All but two meat replacer products received a HSR of 3.5 stars or above. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** All raw meat products and meat replacers can be promoted under the LLW@H and FT@S schemes if they receive a HSR of 3.5 or above and are lean cuts such as lean mince, and chicken without skin. This will ensure that flavoured meats with a higher sodium content are not promoted. Recommendations on healthier cooking methods should also be provided.

## Seafood

Includes all frozen, canned and chilled seafood products.

### HSR vs LLW@H Traffic Light colours for Seafood

	HSR $\leq$ 1.5	HSR 2-3	HSR $\geq$ 3.5	Total
<b>Green</b> n	5	23	477	505
%	0.99	4.55	94.46	100
<b>Total</b> n	5	23	477	505
%	0.99	4.55	94.46	100

### HSR vs FT@S Traffic Light colours for Seafood

	HSR $\leq$ 1.5	HSR 2-3	HSR $\geq$ 3.5	Total
<b>Red</b> n	0	3	14	17
%	0	17.65	82.35	100
<b>Amber</b> n	0	0	89	89
%	0	0	100	100
<b>Green</b> n	5	20	374	399
%	1.25	5.01	93.73	100
<b>Total</b> n	5	23	477	505
%	0.99	4.55	94.46	100

### Product examples meeting recommendations

- John West Salmon Tempters Onion & Tomato
- Coles Pink Salmon
- Coles Smart Buy Sardines In Tomato Sauce
- Woolworths Select Flaked Tuna Lightly Smoked Flavour
- I&J Light & Crispy 8 Deep Sea Fish Fillets in Original Crumb
- Birds Eye Fish Cakes

**Interpretation:** According to the current FT@S criteria, all seafood products are classified as Green unless they are crumbed or coated in which case they can be classified as Amber or Red depending on their nutrient content. Crumbed fish products were included as Green in the LLW@H analysis as the classification was less clear. Almost 100% of seafood products classified as Green by the LLW@H and FT@S criteria received a corresponding high HSR ( $\geq$ 3.5). Only 28 products received a HSR of 3 stars or less for LLW@H and only 25 products received a HSR of 3 stars or less for FT@S. Products included items such as *De Costi Seafoods Scallops with Garlic & Herb Butter* and *Woolworths Home Brand Sardines in Oil*; so in general these were products with higher sodium and saturated fat than other seafood items, lowering their HSR. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** All seafood products receiving 3.5 stars and above can be regularly promoted under the LLW@H and FT@S schemes with the possible exception of crumbed and coated seafood products which are considered discretionary foods and their frequency of consumption may need to be limited. For all seafood products, recommendations on healthy cooking methods are required such as oven baking or use of healthier cooking oils.

## Eggs

*Includes all egg products.*

### HSR vs LLW@H and FT@S Traffic Light colours for Eggs

		HSR >3.5	Total
<b>Green</b>	n	33	33
	%	100	100
<b>Total</b>	n	33	33
	%	100	100

**Interpretation:** LLW@H and FT@S use the same nutrient criteria to classify these products. According to the current LLW@H and FT@S criteria, all egg products are classified as Green. All egg products receive a corresponding high HSR of 4 or more. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** Eggs (poached, boiled, scrambled, omelettes) are a healthy choice that should be promoted under the LLW@H and FT@S schemes.

## Nuts

*Includes all salted and unsalted nuts and seeds (without fruit).*

### HSR vs LLW@H and FT@S Traffic Light colours for Nuts

		HSR 2-3	HSR ≥3.5	Total
<b>Amber</b>	n	15	81	96
	%	15.62	84.38	100
<b>Green</b>	n	19	227	246
	%	7.72	92.28	100
<b>Total</b>	n	34	308	342
	%	9.94	90.06	100

#### Product examples meeting recommendations

- Coles Unsalted Peanuts
- Woolworths Select Roasted & Unsalted Cashews
- Santos Unsalted Mixed Nuts

**Interpretation:** LLW@H and FT@S use the same nutrient criteria to classify these products. Unsalted nuts are classified as Green with salted products receiving an Amber classification. In line with this 100% of products analysed scored 2 or more stars. However, the majority of products scored 3.5 stars or more. As the HSR holistically considers multiple nutrients including saturated fat, sodium and protein as well as fruit, vegetable, nut and legume content it is a more sensitive discriminator than the Traffic Light criteria, which only considers sodium. Consequently, salted nuts that are lower in saturated fat and higher in protein e.g. almonds and cashews may receive a higher HSR than unsalted nuts that are higher in saturated fat and lower in protein e.g. macadamias. (Full listings for outlier products in this category are available on request).

**Preliminary Recommendation for Workplaces and Schools:** All unsalted nut products should be promoted under the LLW@H and FT@S schemes as per current guidelines with a serve size limitation. In school settings restrictions on nut products due to allergies must also be considered.

## Oils, margarine, butter and mayonnaise

*Includes all cooking oils, butters, margarines and mayonnaise products.*

### HSR vs LLW@H and FT@S Traffic Light colours for Oils, margarine, butter and mayonnaise

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Red</b>	<b>n</b>	21	24	2	47
	<b>%</b>	44.68	51.06	4.26	100
<b>Amber</b>	<b>n</b>	43	61	164	268
	<b>%</b>	16.04	22.76	61.19	100
<b>Total</b>	<b>n</b>	64	85	166	315
	<b>%</b>	20.32	26.98	52.7	100

#### Product examples meeting recommendations

- Coles Sunflower Oil
- Always Fresh Spanish Pure Olive Oil
- Meadow Lea Original Spread
- Coles Smart Buy Regular Spread
- Black & Gold Salt Reduced Canola Spread

**Interpretation:** According to the current LLW@H and FT@S criteria, margarine, butter and mayonnaise can only be classified as Amber or Red. Oils are classified as Amber or Red by FT@S but are not covered by LLW@H criteria however for the purposes of this analysis they were included as per the FT@S criteria. Overall, there was not complete agreement between the Traffic Light classifications and the HSRs for products in this category. For example, a number of unsalted and reduced-salt butters received 2 stars, but under the LLW@H and FT@S schemes are classified as Red. A number of mayonnaise products also received the lowest HSR of 0.5 stars due to high sodium and saturated fat levels. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** The current *2013 Australian Dietary Guidelines* recommendations include an allowance for a small amount of healthy, unsaturated fats in cooking, salad dressings and spreads. Products with a HSR with 3.5 stars or more can be recommended when consumed in appropriate serving sizes.

## Ready To Eat (RTE) meals, frozen pies and pizza

Includes all ambient, chilled and frozen RTE meals (e.g. lasagne, pasta), frozen pies, sausage rolls, pizza products, ready-made sandwiches, salads, and sushi rolls.

### HSR vs LLW@H Traffic Light colours for RTE meals, frozen pies and pizza

	HSR $\leq 1.5$	HSR 2-3	HSR $\geq 3.5$	Total
<b>Red</b>				
n	4	216	74	294
%	1.36	73.47	25.17	100
<b>Amber</b>				
n	2	50	418	470
%	0.42	10.64	88.94	100
<b>Green</b>				
n	0	3	21	24
%	0	12.5	87.5	100
<b>Total</b>				
n	6	269	513	788
%	0.76	34.14	65.1	100

### Product examples scoring $\geq 3.5$ stars

- International Cuisine Hawaiian Family Pizza (ALDI)
- McCain Hawaiian Pizza Singles Supreme
- Woolworths Low Fat Coleslaw
- Coles Garden Salad With Cheese
- Hormel Kid's Kitchen Mini Beef Ravioli in Tomato Sauce
- Woolworths Heat & Serve Classic Beef Lasagne
- Coles Smart Buy Beef Lasagne

### HSR vs FT@S Traffic Light colours for RTE meals, frozen pies and pizza

	HSR $\leq 1.5$	HSR 2-3	HSR $\geq 3.5$	Total
<b>Red</b>				
n	5	226	55	286
%	1.75	79.02	19.23	100
<b>Amber</b>				
n	2	57	439	498
%	0.4	11.45	88.15	100
<b>Green</b>				
n	0	3	21	24
%	0	12.5	87.5	100
<b>Total</b>				
n	7	286	515	808
%	0.87	35.4	63.74	100

**Interpretation:** According to the current LLW@H and FT@S criteria, RTE meals, frozen pies and pizza products can be classified as Red, Amber or Green. However, results show that almost no products classified as Red by LLW@H and FT@S had a corresponding low HSR ( $\leq 1.5$ ), with 99% of Red products under LLW@H criteria and 98% of Red products under FT@S criteria receiving 2 stars or above. Similarly, 89% of Amber products under LLW@H criteria and 88% of Amber products under FT@S criteria had a HSR of 3.5 or above. Overall, two thirds of all products in this category received a higher HSR (3.5 stars or above) and less than 1% (6 products in LLW@H and 7 products in FT@S only) received a HSR of  $\leq 1.5$ . Product examples that received a HSR between 2-3 included many pizza products and pasta meals. Products with higher ratings (3.5 stars and above) included products such as RTE salads and sandwiches, and a number of pasta-based meals. As with other food categories, misalignment of LLW@H and FT@S criteria with the HSR may often be at least partly attributed to the fact that Traffic Light criteria take serve size into consideration while the HSR evaluates all products per 100g/100mL. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** This is a large and challenging product category because of the wide range and number of products that receive a similar HSR. A HSR cut-off of 3.5 stars could be applied in combination with a kilojoule per serve limit in workplaces and schools. However further work is required to better understand if and how combining the HSR with energy limits in this category effectively differentiates between the nutritional quality of products, particularly at a sub-category level. Some products in this category are considered to be discretionary foods (pies, sausage rolls) and their availability and serving size should be limited. Additionally, some products in this category can be considered either core or discretionary depending on their saturated fat content. For example according to the Australian Bureau of Statistics *Discretionary Food List*,<sup>9</sup> pizza is a core food if it has <5g of saturated fat per 100g otherwise it is discretionary. Further analysis is required to be able to provide recommendations at a sub-category product level.

## Soup

*Includes all ambient, chilled and dry mix soup products.*

### HSR vs LLW@H and FT@S Traffic Light colours for Soup

		HSR 2-3	HSR ≥3.5	HSR Total
<b>Amber</b>	n	83	181	264
	%	31.44	68.56	100
<b>Green</b>	n	0	71	71
	%	0	100	100
<b>Total</b>	n	83	252	335
	%	24.78	75.22	100

**Interpretation:** LLW@H and FT@S use the same nutrient criteria to classify these products. According to the criteria, soup can be Amber or Green. 75% of all products analysed scored ≥3.5 stars, including many products classified as Amber by the Traffic Light criteria. As with other food categories, this difference between Traffic Light criteria and the HSR is due mainly to the HSR being based on per 100g/mL values and not per serve. The high proportion of vegetables in soup products generally ensures they have a higher HSR. As such no products scored less than 2 stars. (Full listings for outlier products in this category are available on request).

**Preliminary Recommendation for Workplaces and Schools:** The application of the HSR in this category is limited by the HSR based on per 100g/mL and not per serve. Further work is required to understand if simple per serve criteria would also need to be applied to better differentiate between the nutritional quality of soups, in particular the sodium content.

### Product examples scoring ≥3.5 stars

- Heinz Big Red Soup
- The Soup Co (ALDI) Soupa Quick Chicken & Sweetcorn
- Campbell's Country Ladle Chicken Noodle
- Coles Cream of Tomato With Croutons Instant Soup
- Continental Hearty Italian Minestrone Cup a Soup
- Woolworths Home Brand Chicken Noodle Flavoured Instant Soup
- Continental Classic Pea & Ham Cup a Soup



## Discretionary Food Categories

### Salty snacks, chips and pretzels

*Includes all snack products such as potato crisps, extruded snacks, corn chips, pretzels, popcorn and snackpacks.*

#### HSR vs LLW@H and FT@S Traffic Light colours for Salty Snacks, Chips and Pretzels

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Red</b>	n	88	108	59	255
	%	34.51	42.35	23.14	100
<b>Amber</b>	n	8	52	116	176
	%	4.54	29.55	65.91	100
<b>Green</b>	n	0	0	4	4
	%	0	0	100	100
<b>Total</b>	n	96	160	179	435
	%	22.07	36.78	41.15	100

**Interpretation:** LLW@H and FT@S use the same nutrient criteria to classify these products. According to the current LLW@H and FT@S criteria, products in this category can be classified as Red, Amber or Green. 66% of Amber and 65% of Red products received a HSR higher than expected (3.5 stars and 2 stars above, respectively). On examination of the list of outlier products this appears to be due to many products having a high proportion of potato and/or other vegetable or legume as an ingredient, which lends itself to a higher HSR. For example, many snack food items such as wasabi peas and roasted chickpeas received a HSR of 4 or more, due to their high legume content. Similarly, potato-based products such as *Smith's Extra Crunchy Simply Salted* and *Kettle Chilli Naturally Delicious Potato Chips* received a HSR of 4 stars due to their high potato content as well as their lower sodium and saturated fat content relative to other similar products. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** Products in this category are considered to be discretionary foods to be consumed occasionally, if at all, and in small quantities. Future policy recommendations should aim to reduce the consumption of these products by limiting their availability, serve size and promotion in workplace and school settings. Future policy recommendations should also ensure that snack foods which are currently classified as Red continue to be restricted in schools and workplaces. The HSR system may assist with selection of healthier options of salty snack products. For example, the HSR may be useful in selecting potato crisp products with lower saturated fat content. Serve size limits should be applied in conjunction with recommended HSR to ensure kilojoule consumption is not excessive. It should also be noted that there is a high level of variety in the types of products that are included in this category (ranging from tuna snack-packs to potato crisps) so future policy recommendations should also take this into consideration when making HSR recommendations.

## Snack bars

Includes all plain, choc-coated and yoghurt-coated nut and cereal-based bars.

### HSR vs LLW@H Traffic Light colours for Snack Bars

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Red</b>	n	30	89	13	132
	%	22.73	67.42	9.85	100
<b>Amber</b>	n	21	82	59	162
	%	12.96	50.62	36.42	100
<b>Total</b>	n	51	171	72	294
	%	17.35	58.16	24.49	100

### Product examples scoring 3.5 stars or above

- Woolworths Select Nut & Fruit Bars
- Carman's Apricot & Almond Muesli Bars
- Coles Chewy Bars Mixed Berry
- Uncle Tobys Bodywise Almond, Cinnamon & Honey Bar
- Goodness Superfoods Fibre Boost Apple Sultana Cereal Bar
- Nestle Milo Oatie Bar
- Hillcrest (ALDI) Fruity Filled Bars Apricot Flavoured Bars

### HSR vs FT@S Traffic Light colours for Snack Bars

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Red</b>	n	47	99	15	161
	%	29.19	61.49	9.32	100
<b>Amber</b>	n	4	72	57	133
	%	3	54.14	42.86	100
<b>Total</b>	n	51	171	72	294
	%	17.35	58.16	24.49	100

**Interpretation:** According to the current LLW@H and FT@S criteria, snack bar products can only be classified as Red or Amber. Three quarters of products received 3 stars or less, in line with the overall LLW@H and FT@S criteria. However, an interesting observation is that for products rated as Red, the majority (67% in LLW@H; 61% in FT@S) received a HSR of 2-3, with only 22% (in LLW@H) and 29% (in FT@S) receiving a lower HSR of 1.5 stars or less. Similarly, only 51% of products rated Amber by LLW@H (54% in FT@S) received between 2-3 stars, with a large proportion (37% in LLW@H; 43% in FT@S) receiving 3.5 stars or above. On examination of the list of outliers this appears to be due to many products having low levels of saturated fat, sugars and sodium compared to other items. For example, *Goodness Superfoods Fibre Boost Apple Sultana Cereal Bars* have a high protein and fibre content relative to other products, resulting in their 5 star rating. Conversely, *Coles Rice Puffs Vanilla*, with their higher sugar and lower protein content, received only 1.5 stars. (Full listings for outlier products in this category are available on request.)

The snack bar category is diverse, with both cereal-based and nut-based bars available. In the LLW@H and FT@S scheme, a product with a smaller serving size with lower nutritional quality may meet the Amber criteria whereas a product with a larger suggested serving size but higher nutritional quality can be classified as Red.

**Preliminary Recommendation for Workplaces and Schools:** Snack bars are considered discretionary foods to be consumed occasionally, if at all and in small quantities. Future policy recommendations should aim to reduce the consumption of these products by limiting their availability, serve size and promotion in workplace and school settings. Recommendations should also ensure that snack bars which are currently classified as Red continue to be restricted in schools and workplaces. While their availability should be limited, a small range of healthier options could be included but should take into account both the HSR (i.e. the nutritional quality) and serving size restrictions.

## Savoury biscuits

*Includes products such as plain and flavoured crackers, crispbread, rice cakes, breadsticks.*

### HSR vs LLW@H and FT@S Traffic Light colours for savoury biscuits

	HSR $\leq 1.5$	HSR 2-3	HSR $\geq 3.5$	Total
<b>Red</b>				
n	27	51	9	87
%	31.03	58.62	10.35	100
<b>Amber</b>				
n	42	150	96	288
%	14.58	52.08	33.33	100
<b>Total</b>				
n	69	201	105	375
%	18.40	53.60	28.00	100

### Product examples scoring 3.5 stars or above

- Woolworths Select Wafer Crackers Original
- Arnott's Jatz Light
- Fantastic Goodies
- Arnott's Vita-Weat range
- Damora (ALDI) Prista Lite Crispbread
- Coles Thin Corn Cakes
- Sun Rice Original Thin Rice Cakes
- Real Foods Corn Thins

**Interpretation:** LLW@H and FT@S use the same nutrient criteria to classify these products. According to the current LLW@H and FT@S criteria, savoury biscuits can only be classified as Red or Amber depending on the nutrient values provided per one serve of the product. Only 30% of savoury biscuit products classified as Red by the LLW@H and FT@S criteria received a corresponding low HSR ( $\leq 1.5$ ). In contrast, over 50% of savoury biscuits classified as Amber by both schemes received the corresponding HSR (2-3 stars). In examining the list of products that do not have corresponding Traffic Light colours and HSRs it appears that many wholegrain crackers and crispbread, as well as flavoured rice cakes and corn cakes make up the bulk of products that are classified as Red by the LLW@H and FT@S schemes but receive a HSR of 2 or more. For crackers and crispbread this is likely due to the fibre content and low sodium content of many of these products. For flavoured rice cakes and corn cakes this is likely due to their lower energy content (relative to wheat-based products in this category) per 100g. Products that were rated Amber by LLW@H and FT@S but had lower corresponding HSRs ( $\leq 1.5$  - 15% of products) were generally products that had higher levels of saturated fat and/or sodium. Example products included rice cakes with yoghurt coating and flavoured breadsticks.

Interestingly, 28% of all products in this category received  $\geq 3.5$  stars in both analyses and these products tended to be the plain unflavoured crackers. Many products in this category contain fibre and can be low in sodium, saturated fat and sugar, and so the HSR will score highly. This highlights the changes in this product category since the FT@S criteria were developed in 2004 with a larger range of higher nutritional quality products now available. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** According to the current *Australian Dietary Guidelines*, savoury crackers can be classified as core or discretionary depending on the kilojoule content (products with  $>1800$ kJ per 100g are considered discretionary). However this classification does not take into account the potentially high sodium content of some of these products. The HSR may be used to select healthier savoury biscuit products. It is recommended that savoury biscuits with a HSR of 3.5 or above and preferably plain, wholegrain varieties can be promoted under the LLW@H and FT@S schemes. Savoury biscuits with higher kilojoule (and sodium) content are considered discretionary and their availability, serve size, and promotion should be limited to reduce consumption in workplaces and schools. Future policy recommendations should also ensure that savoury biscuits which are currently classified as Red continue to be restricted in schools and workplaces.

## Sweet biscuits

*Includes products such as chocolate-coated biscuits, cream-filled biscuits, choc-chip biscuits and other sweet filled and unfilled biscuits.*

### HSR vs LLW@H Traffic Light colours for sweet biscuits

		HSR $\leq 1.5$	HSR 2-3	HSR $\geq 3.5$	Total
<b>Red</b>	n	174	11	0	185
	%	94.05	5.95	0	100
<b>Amber</b>	n	257	83	3	343
	%	74.93	24.2	0.87	100
<b>Total</b>	n	431	94	3	528
	%	81.63	17.8	0.57	100

### HSR vs FT@S Traffic Light colours for sweet biscuits

		HSR $\leq 1.5$	HSR 2-3	HSR $\geq 3.5$	Total
<b>Red</b>	n	411	62	1	474
	%	86.71	13.08	0.21	100
<b>Amber</b>	n	20	32	2	54
	%	37.04	59.26	3.7	100
<b>Total</b>	n	431	94	3	528
	%	81.63	17.8	0.57	100

**Interpretation:** According to the current LLW@H and FT@S criteria, sweet biscuits can only be classified as Red or Amber. The difference in the two sets of criteria is that FT@S includes a fibre criteria in addition to kilojoules and saturated fat. Almost 100% of sweet biscuit products classified as Red by the LLW@H criteria received a corresponding low HSR ( $\leq 1.5$ ) (87% in FT@S) with only a very small proportion (6%) receiving a star rating of 2-3 (13% in FT@S). In contrast, almost 75% of sweet biscuits classified as Amber by LLW@H received a HSR more in line with the Red Traffic Light criteria ( $\leq 1.5$  stars) ( $\approx 1/3$  of products in FT@S), resulting in 82% of all sweet biscuit items receiving a low HSR in both analyses. The reason for these results is likely due to the LLW@H and FT@S criteria being based on “per serve” nutrient values whereas the HSR is based on per 100g values for products in this category. This means is that if a product is provided in a small enough serve to meet the LLW@H and FT@S criteria, it will be rated as Amber rather than Red. The HSR does not incorporate serving size values in its rating algorithm.

In examining the list of products that did not have corresponding Traffic Light colours and HSRs, it is clear that products that were classified as Amber by LLW@H and FT@S that received a low HSR were products that were high in sugar, energy and saturated fat. Example products include *Arnott's Venetian* biscuits which received 0.5 stars, *McVitie's Digestive Biscuit* range and many biscuit products with macadamia nuts due to the higher than average saturated fat content. The 3 outlier products (out of 532 products in total) that received 3.5 stars or above were *Nestle Milo Starz* in which the ingredients are predominantly wholegrain (reducing the levels of sugar and saturated fat compared to other biscuit products), *Walkers Highland Oatcakes* due to their higher fibre content and *Italian Almond Biscotti* due to their lower sugar content. Not surprisingly, 82% of all products in this category received  $\leq 1.5$  stars for both analyses. Many products in this category are high in both sugar and saturated fat and all are considered discretionary foods in the *2013 Australian Dietary Guidelines*. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** Sweet biscuits are a discretionary food to be consumed occasionally, if at all, and in small amounts. *The Australian Health Survey* found that sweet and savoury biscuits are one of the food groups contributing most to the energy intake from discretionary foods, particularly for young children.<sup>5</sup> As a discretionary food and with 82% of products scoring  $\leq 1.5$  stars, setting a HSR cut-off for sweet biscuits may not be particularly useful. Future policy recommendations should aim to reduce the consumption of these products by limiting their availability, serve size and promotion in workplace and school settings. Future policy recommendations should also ensure that sweet biscuits which are currently classified as Red continue to be restricted in schools and workplaces.

## Cakes, puddings and cake mixes

*Includes all sweet cakes, puddings and cake mixes.*

### HSR vs LLW@H Traffic Light colours for Cakes, Puddings and Cake Mixes

		HSR $\leq 1.5$	HSR 2-3	HSR $\geq 3.5$	Total
<b>Red</b>	n	148	72	0	220
	%	67.27	32.73	0	100
<b>Amber</b>	n	61	77	0	138
	%	44.2	55.8	0	100
<b>Green</b>	n	0	23	8	31
	%	0	74.19	25.81	100
<b>Total</b>	n	209	172	8	389
	%	53.73	44.22	2.06	100

### HSR vs FT@S Traffic Light colours for Cakes, Puddings and Cake Mixes

		HSR $\leq 1.5$	HSR 2-3	HSR $\geq 3.5$	Total
<b>Red</b>	n	145	86	2	233
	%	62.23	36.91	0.86	100
<b>Amber</b>	n	59	86	6	151
	%	39.07	56.95	3.97	100
<b>Total</b>	n	204	172	8	384
	%	53.13	44.79	2.08	100

**Interpretation:** According to the current LLW@H and FT@S criteria, cake/pudding/cake mix products can only be classified as Red or Amber (with the exception of pancakes and pancake mixes which are considered Green under LLW@H but do not have specific criteria under FT@S). Small, plain or fruit scones and buns could also be considered Green under both schemes but were not classified as such in the analysis as there was only one scone mix in the database. Almost two thirds of products in this category classified as Red by both schemes received a corresponding low HSR ( $\leq 1.5$ ) with a smaller proportion (33% in LLW@H; 37% in FT@S) receiving a star rating of 2-3. Similarly, most of the products classified as Amber received a HSR of between 2-3, although 44% of items classified as Amber by LLW@H received a lower HSR than expected ( $\leq 1.5$  stars) (39% in FT@S). Overall, 54% of all products in this category received less than 2 stars in LLW@H and 53% in FT@S. The reasons for these results in both analyses are likely due to the LLW@H and FT@S criteria being based on “per serve” nutrient values whereas the HSR is based on per 100g values for products in this category. What this means is that if a product is provided in a small enough serve to meet the LLW@H and FT@S criteria, it will be rated as Amber rather than Red.

In examining the list of products that did not have corresponding Traffic Light colours and HSRs for both analyses it is clear that products that were classified as Amber by LLW@H and FT@S that received a low HSR were products that were high in sugar, energy and saturated fat. Example products include *Coles Mini Cheesecakes*, which has a small recommended serving size but has 24g of sugar per 100g and 8.6g of saturated fat. The smaller serving size means that it meets the LLW@H and FT@S nutrient criteria (e.g.  $<600\text{kJ/serve}$ ) but the HSR evaluates the nutritional quality of the overall product resulting in a low HSR (1.5 stars). Conversely, looking at a product that is rated as Red by the LLW@H and FT@S criteria but receives a slightly higher HSR (2 stars), the role of serving size restrictions becomes clearer. *Coles Bakery Carrot Cake* has less sugar (21g)/100g and saturated fat (4.7g)/100g than the *Mini Cheesecakes*, but has a larger suggested serving size (72g) which makes it ineligible to be classified as Amber by LLW@H and FT@S but gives it a slightly higher HSR as it is nutritionally slightly better than the *Cheesecake* product. There were 8 products that received a higher HSR (3.5 stars or above) and a corresponding Green rating by the LLW@H criteria and these included pikelet and pancake products, however the majority of pancakes (17/20 products analysed) scored  $\leq 3$  stars. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** Cakes, puddings and cake mixes are considered discretionary foods to be consumed occasionally if at all, in small amounts. Those products rated as Green under FT@S and LLW@H (plain pancakes and scones) received a low HSR and are commonly consumed with toppings such as syrup, jam, butter and cream. *The Australian Health Survey* found that cakes, muffins and scones, and cake-type desserts are one of the food groups contributing most to the energy intake from discretionary foods. As these are discretionary foods and with more than 90% of products scoring 3 stars or less, setting a HSR cut-off for cakes may not be particularly useful. Future policy recommendations should aim to reduce the consumption of these products by limiting their availability, serve size and promotion in workplace and school settings. Future policy recommendations should also ensure that products which are currently classified as Red continue to be restricted in schools and workplaces.

## Pastries

*Includes all sweet and savoury pastry-based products such as danishes, fruit pies, croissants and waffles.*

### HSR vs LLW@H Traffic Light colours for Pastries

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Red</b>	n	63	76	4	143
	%	44.05	53.15	2.80	100
<b>Amber</b>	n	11	9	3	23
	%	47.83	39.13	13.04	100
<b>Total</b>	n	74	85	7	166
	%	44.58	51.20	4.22	100

### HSR vs FT@S Traffic Light colours for Pastries

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Red</b>	n	73	65	5	143
	%	51.05	45.45	3.5	100
<b>Amber</b>	n	0	3	0	3
	%	0	100	0	100
<b>Total</b>	n	73	68	5	146
	%	50	46.58	3.42	100

### Product examples scoring 3.5 stars or above

- Fresh Approach Roast Vegetable Frittata
- Local Hand-Made Food Haloumi & Mushroom Frittata
- Woolworths Roasted Vegetable Quiche
- Hedy's Gourmet Quiche Lorraine
- Woolworths Fetta Spinach Mini Quiche

**Interpretation:** According to the current LLW@H and FT@S criteria, pastry products can only be classified as Red or Amber. The only difference in the nutrient criteria between the two systems is the addition of a fibre criterion in FT@S for sweet pastries. Almost 100% of products received 3 stars or less, in line with the overall LLW@H and FT@S criteria. Only a small number of products were rated Amber by LLW@H. Interestingly, 53% of products rated Red by LLW@H and 45% of products rated Red by FT@S received between 2-3 stars. This is the opposite observation to what was expected. It appears that this was mainly due to many fruit-based tarts and pastries receiving a higher HSR than other pastry products (due to their higher fruit content and hence lower saturated fat and energy contents). These products did not meet the Amber LLW@H and FT@S criteria as their serving sizes were not small enough to ensure their nutrient values met the criteria. The small number of products that received a higher HSR (3.5 stars or above) included savoury pastry items such as frittatas and quiches. Quiches and frittatas were included in the LLW@H analysis but not in the FT@S analysis. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** Pastries are considered discretionary foods to be consumed occasionally, if at all, and in small amounts. Future policy recommendations should aim to reduce the consumption of these products by limiting their availability, serve size and promotion in workplace and school settings. Future policy recommendations should also ensure that products which are currently classified as Red continue to be restricted in schools and workplaces. The only exceptions in this category could be quiches and frittatas that do provide nutrients, particularly if served as a meal with salad. The HSR may assist in differentiating healthier versions of these products.

## Dairy desserts

Includes all dairy dessert mixes and prepared desserts (e.g. puddings, crème caramel etc).

### HSR vs LLW@H and FT@S Traffic Light colours for Dairy Desserts

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Red</b>	n	21	46	39	106
	%	19.81	43.4	36.79	100
<b>Amber</b>	n	0	3	22	25
	%	0	12.00	88	100
<b>Total</b>	n	21	49	61	131
	%	16.03	37.40	46.57	100

#### Product examples scoring 3.5 stars or above

- Coles Smart Buy Rice Cream Vanilla Flavoured
- Heinz Creamed Rice Vanilla
- Fruche Tropical Mango
- Nestlé Soleil Diet Creme Caramel

**Interpretation:** LLW@H and FT@S use the same nutrient criteria to classify these products. According to the current LLW@H and FT@S criteria, dairy dessert products can be classified as Amber or Red. Dairy dessert products that exceed 600kJ/serve and 3g saturated fat per serve are classified as Red and the remaining products are classified as Amber. Interestingly 80% of products that would be classified as Red by LLW@H and FT@S had a HSR of 2 or more, with only 20% of those products receiving a corresponding low HSR of 1.5 stars or less. As found in other food categories, this is likely due to many of these items having a serving size that means they exceed the kilojoule and/or saturated fat cut-offs for the Amber category. A specific product example would be *Coles Chocolate Mousse* which has a serving size of 85g, meaning its energy content and saturated fat content make it ineligible for the Amber category in LLW@H and FT@S, however gives it a 2 star rating using the HSR algorithm. This is a diverse category that includes milk-based products that can be a source of calcium such as rice puddings and *Fruche*. These products score well because of their high protein content but many are also low in saturated fat. The category also includes many aerated or mousse products that score well per 100g. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** Dairy dessert products are considered discretionary foods to be consumed occasionally if at all, and in small amounts and do not need to be consumed as part of the daily diet. Future policy recommendations should aim to reduce the consumption of these products by limiting their availability, serve size and promotion in workplace and school settings. Future policy recommendations should also ensure that products which are currently classified as Red continue to be restricted in schools and workplaces. However some products in this category can provide a source of calcium and a HSR of 3.5 or more may assist with selection of healthier versions of milk-based products in this category for workplaces and schools.



## Ice blocks, frozen desserts and ice cream

*Includes all ice-based confections, frozen yoghurt and ice cream products.*

### HSR vs LLW@H and FT@S Traffic Light colours for Ice Blocks, Frozen Desserts and Ice Cream

		HSR $\leq$ 1.5	HSR 2-3	HSR $\geq$ 3.5	Total
<b>Red</b>	n	117	100	1	218
	%	53.67	45.87	0.46	100
<b>Amber</b>	n	0	102	38	140
	%	0	72.86	27.14	100
<b>Total</b>	n	117	202	39	358
	%	32.68	56.43	10.89	100

**Interpretation:** LLW@H and FT@S use the same nutrient criteria to classify these products. According to the current LLW@H and FT@S criteria, ice blocks, frozen desserts and ice cream products can only be classified as Amber or Red. Overall, almost 90% of all products in this category received 3 stars or less for both analyses. The 10% of products that received a comparatively higher HSR (3.5 stars or above) consisted mainly of *Weight Watchers* brand ice cream products and most ice confections. Interestingly, 46% of products that were classified as Red by the LLW@H and FT@S criteria received a HSR of 2 or more. Similar to other food categories, the restrictive serving size criteria of the LLW@H and FT@S system means that many products with larger recommended serving sizes, but otherwise better overall nutritional profiles, fall into the Red category regardless of their HSR. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** Ice blocks, frozen desserts and ice cream products are discretionary foods, to be consumed occasionally, if at all, and in small amounts. It is recommended in general that the availability and serving size of these products is limited in workplace and school settings. However the HSR may enable the differentiation of healthier options within this category for example, 100% juice and milk-based options with low kilojoule content. Future policy recommendations should also ensure that products which are currently classified as Red continue to be restricted in schools and workplaces.



## Processed meats

*Includes all deli meats, bacon, crumbed and coated schnitzels, meat patties, sliced meats, burgers, cabanossi and twiggly sticks, sausages, whole hams and chickens and canned meat products.*

### HSR vs LLW@H and FT@S Traffic Light colours for Processed Meats

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Red</b>	n	45	83	6	134
	%	33.58	61.94	4.48	100
<b>Amber</b>	n	227	108	190	525
	%	43.24	20.57	36.19	100
<b>Total</b>	n	272	191	196	659
	%	41.28	28.98	29.74	100

### Product examples scoring 3.5 stars or above

- Heinz Chicken Shreds of Chicken Breast Sweetcorn Mayo
- Coles Simply Less Beef Sausages
- Primo Smallgoods Shaved Chicken Breast
- Don Shaved Leg Ham English Lite

**Interpretation:** LLW@H and FT@S use the same nutrient criteria to classify these products. According to the current LLW@H and FT@S criteria, processed meat products can only be classified as Amber or Red. Overall, 70% of all products in this category received 3.5 stars or less. The products that received a comparatively higher HSR in both analyses (3.5 stars or above) consisted of products such as low-fat sliced ham products (e.g. *Don Shaved Leg Ham English Lite*), turkey (e.g. *Coles Sliced Turkey Breast 97% Fat Free*) and canned chicken products (e.g. *Heinz Chicken Shreds Of Chicken Breast Sweet Chilli*) due to their lower saturated fat and energy content. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** Processed meats are considered to be discretionary foods in the current *Australian Dietary Guidelines* to be consumed occasionally, if at all, and in small amounts. However it is recognised that, in the case of sliced or luncheon meats, when combined with core foods such as bread and salad, they can be used to make a healthier on-the-go sandwich or salad meal option, particularly in workplace and school settings. Sliced or luncheon meat products that receive 3.5 stars or above could be sold.

## Spreads

Includes all jams, honey, marmalades and nut butter products.

### HSR vs LLW@H Traffic Light colours for Spreads

		HSR $\leq$ 1.5	HSR 2-3	HSR $\geq$ 3.5	Total
<b>Amber</b>	n	72	207	1	280
	%	25.71	73.93	0.36	100
<b>Green</b>	n	0	0	43	43
	%	0	0	100	100
<b>Total</b>	n	72	207	44	323
	%	22.29	64.09	13.62	100

### Product examples meeting recommendations

- Woolworths Home Brand Crunchy Peanut Butter
- Coles Crunchy Peanut Butter
- Kraft Peanut Butter Smooth

### HSR vs FT@S Traffic Light colours for Spreads

		HSR $\leq$ 1.5	HSR 2-3	HSR $\geq$ 3.5	Total
<b>Amber</b>	n	72	207	44	323
	%	22.29	64.09	13.62	100
<b>Total</b>	n	72	207	44	323
	%	22.29	64.09	13.62	100

**Interpretation:** According to the current LLW@H criteria, spreads are classified as Amber or Green. According to the current FT@S criteria, spreads are classified as Amber. The majority of products in this category (64%) have a HSR in line with the Amber rating (2-3 stars) for both analyses and 100% of products in line with the Green rating for LLW@H. However a smaller proportion (22%) receive a lower than expected HSR of 1.5 stars or less in both analyses. For example, yeast-extract spreads such as *Kraft Vegemite* and *Promite Vegetable Extract Spread*, due to their high sodium content (>2000mg/100g) receive a HSR of 0.5. Similarly, sweet spreads such as *Nutino Hazelnut Spread* and all honey products receive a low HSR due mainly to their high sugar content. 14% of products also receive a higher HSR than expected ( $\geq$ 3.5 stars) in the FT@S analysis, such as many peanut butter products with no added sugar or salt. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** With the exception of nut butters, such as peanut butter, these products are discretionary foods and their availability, serve size and promotion in the workplace and school settings should be limited. Nut-butter products that receive 3.5 stars and above should be allowed to be sold under the LLW@H and FT@S schemes (subject to the school's policy on peanut allergies).

## Cordial and juice syrups

*Includes all sugar-free and sugar-sweetened cordial and juice syrups.*

### HSR vs LLW@H and FT@S Traffic Light colours for Cordial and Juice Syrups

		HSR ≤1.5	HSR 2-3	Total
<b>Red</b>	n	29	0	29
	%	100	0	100
<b>Amber</b>	n	33	25	58
	%	56.9	43.1	100
<b>Total</b>	n	62	25	87
	%	71.26	28.74	100

**Interpretation:** According to the current LLW@H and FT@S guidelines, cordials can only be classified as Amber or Red, depending on whether they are artificially sweetened or not. Overall there was good agreement between Traffic Light criteria and the HSR system for products in the Red classification, with 100% of products classified as Red having a corresponding low HSR (1.5 stars or less). However, a large proportion of products classified as Amber under the Traffic Light criteria received a lower than expected HSR (1.5 stars or less). This is because artificially sweetened beverages do not fare well under the HSR algorithm as they have no “beneficial” nutrients to “bump up” their score. No products received a HSR of 3.5 stars or above (as expected). (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** Cordials, both sugar-sweetened and artificially sweetened, are discretionary products and are not commonly sold in workplace settings. As per the current policy future policy recommendations should aim to reduce the consumption of these products by limiting their availability, serve size and promotion in workplace and school settings. Future policy recommendations should also ensure that products which are currently classified as Red continue to be restricted in schools and workplaces.

## Energy drinks

*Includes all sugar-free and sugar-sweetened energy and electrolyte drinks.*

### HSR vs LLW@H and FT@S Traffic Light colours for Energy Drinks

		HSR ≤1.5	HSR 2-3	Total
<b>Red</b>	n	50	13	63
	%	79.37	20.63	100
<b>Amber</b>	n	1	5	6
	%	16.67	83.33	100
<b>Total</b>	n	51	18	69
	%	73.91	26.09	100

**Interpretation:** According to the current LLW@H and FT@S guidelines, energy and electrolyte drinks can only be classified as Amber or Red, depending on their kilojoule and sodium content per serving. Overall there was good agreement between Traffic Light criteria and the HSR system, with 80% of products classified as Red having a corresponding low HSR (1.5 stars or less) and 83% of products classified as Amber having a HSR of 2-3. No products received a HSR of 3.5 stars or above as expected. (Full listings for outlier products in this category are available on request)

**Preliminary Recommendation for Workplaces and Schools:** Energy drinks are discretionary products and therefore as per the current LLW@H criteria future policy recommendations should aim to reduce the consumption of these products by limiting their availability, serve size and promotion in workplaces. Energy drinks should not be sold in school canteens as per the current FT@S approach due to their low nutritional value and caffeine content.

## Mixers, regular and diet carbonated beverages

*Includes all sugar-free and sugar-sweetened carbonated drinks.*

### HSR vs LLW@H and FT@S Traffic Light colours for Mixers, regular and diet carbonated beverages

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Red</b>	n	173	32	0	205
	%	84.39	15.61	0	100
<b>Amber</b>	n	25	100	1	126
	%	19.84	79.37	0.79	100
<b>Total</b>	n	198	132	1	331
	%	59.82	39.88	0.30	100

**Interpretation:** According to the current LLW@H and FT@S guidelines, products in this category can only be classified as Amber or Red, depending on their kilojoule and sodium content per serving. Overall there was good agreement between both the Traffic Light criteria and the HSR system, with all but one product receiving less than ≤3.5 stars. Products rated as Red according to LLW@H and FT@S but received a slightly higher star rating than expected (2 stars) included flavoured water products. Products that were considered Amber by LLW@H and FT@S but had a comparatively low HSR included carbonated beverage products such as ginger ales, tonic waters etc. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** Mixers, regular and diet carbonated drinks are discretionary products and their availability and promotion in the health care setting should be limited with a preference for a small range of small serve sugar-sweetened products and diet drinks. As per the current FT@S criteria, sugar sweetened beverages should not be sold in school canteens due to their low nutritional value.

## Confectionery

*Includes all sugar-based and chocolate-based confectionery.*

### HSR vs FT@S and LLW@H Traffic Light colours for Confectionery

		HSR ≤1.5	HSR 2-3	Total
Red	n	786	151	937
	%	83.88	16.12	100
Total	n	786	151	937
	%	83.88	16.12	100

**Interpretation:** According to the current LLW@H and FT@S criteria, confectionery products can only be classified as Red. 84% of confectionery products classified as Red by the Traffic Light criteria received a corresponding low HSR ( $\leq 1.5$ ) with no products receiving a star rating of 3.5 or above. In examining the list of products that did not have corresponding Traffic Light colours and HSRs many products that received more than 1.5 stars but less than 3.5 stars were liquorice products, soft sugar confectionery products with lower sugar content than competitors (e.g. Natural Confectionery Company products) and 70%+ dark chocolate products. Sugar-free lollies were not included in the analysis as they are exempt from LLW@H Red criteria for special uses. While not included in this analysis, sugar-free chewing gum products typically score 3.5 HSR. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** Confectionery products are discretionary foods to be consumed occasionally, if at all, in small amounts. The HSR for these products is low, reflecting their poor nutritional value. The HSR of these products is less relevant in settings where the aim is to reduce the availability of discretionary foods and their serving size. The possible exception would be sugar-free confectionery and sugar-free chewing gum. As per the current FT@S criteria confectionery products should not be sold in school canteens and their availability in health care settings should be limited with serving size restrictions.

SECTION FIVE

# Results: Australian Dietary Guidelines: Core versus Discretionary Foods

## Summary

11,415 products were categorised as either core or discretionary according to the 2013 Australian Dietary Guidelines using the *Australian Health Survey: Users' Guide, 2011-13 – Discretionary Food List*.<sup>9</sup> The number of products in each subcategory ranged from 33 (eggs) to 932 (confectionery). The relatively large sample size in each subcategory enhanced statistical power to allow precise descriptive statistics, and also increased confidence that the results should be generalisable to the range of packaged foods most commonly encountered in leading food retailers in Australia.

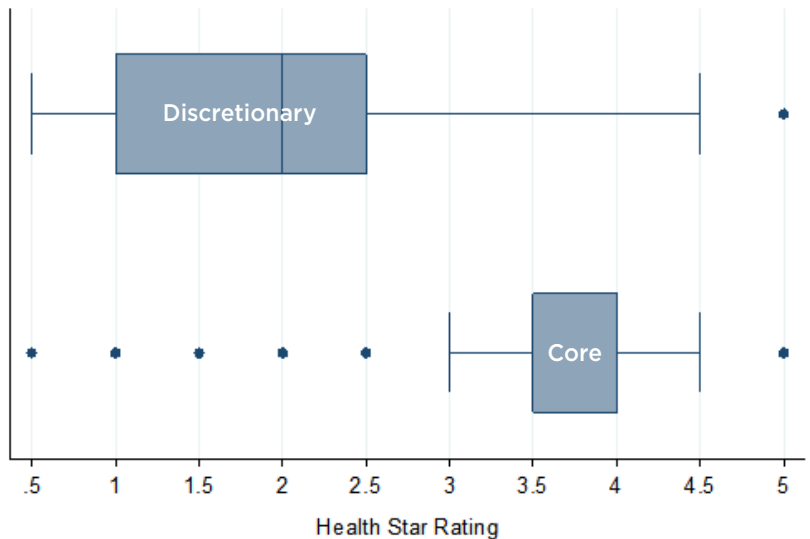
Overall, concordance was observed between the 2013 Australian Dietary Guidelines core versus discretionary categories and average HSR, with those products classified as core associated with higher mean Health Star Rating than those classified as discretionary.

**Table 7: Summary statistics for HSRs by Australian Dietary Guidelines Core vs Discretionary foods**

	N	Mean	SD	Min	25th percentile	50th percentile	75th percentile	Max
<b>Discretionary</b>	5245	1.9	1.05	0.5	1	2	2.5	5
<b>Core</b>	6170	3.7	0.82	0.5	3.5	3.5	4	5
<b>Total</b>	11415	2.9	1.3	0.5	2	3	4	5

The difference in means was highly statistically significant by linear regression:

- The difference in mean HSR between the Core and Discretionary products was 1.76 stars (95% CI = 1.72, 1.79, P<0.001).



**Figure 5: Distribution of HSR according to core and discretionary foods.** The box displays the interquartile range and the median value is marked as the line inside the box (note: for core foods the median HSR was 3.5 which is the same as the 25th percentile). The lines extending above and below the box indicate the most extreme value within the 75th percentile+1.5 x (interquartile range) and 25th percentile-1.5x (interquartile range), and additional values outside this range are marked as circles.

**Table 8: Australian Dietary Guidelines sub-category outlier alignment analysis–Core Foods – 79% agreement with HSR**

Core foods	Number of products	% of products within each HSR cut-off		
		HSR ≤1.5	HSR =2-3	HSR ≥3.5
Savoury biscuits	263	8	54	38
Breads	404	0	17	83
Couscous, noodles, pasta and rice	313	0	26	74
Cakes, puddings and cake mixes (pancakes and scones)	32	0	75	25
Breakfast cereal	307	0	15	85
RTE meals	643	0	21	79
Soup	335	0	25	75
Fruit	408	1	30	70
Cheese	616	10	27	64
Milk	210	0	11	89
Yoghurts	369	14	31	55
Margarine and unsaturated oils	202	3	16	81
Eggs	33	0	0	100
Seafood	399	1	5	94
Juices	510	3	1	96
Nuts	342	0	10	90
Vegetables	574	0	0	100
Raw meat and meat replacements	167	3	14	83
Spreads	43	0	0	100
<b>Total number of products, n (%)</b>	<b>6170 (100%)</b>	<b>171 (3%)</b>	<b>1116 (18%)</b>	<b>4883 (79%)</b>

RTE = ready to eat.

**Table 9: Australian Dietary Guidelines category outlier alignment analysis – Discretionary Foods – 86% agreement with HSR**

Discretionary foods	Number of products	% of products within each HSR cut-off		
		HSR ≤1.5	HSR =2-3	HSR ≥3.5
Salty snacks, chips and pretzels	435	22	37	41
Savoury biscuits	112	42	54	4
Sweet biscuits	528	82	18	1
Bread	33	30	61	9
Cakes, puddings and cake mixes	357	59	41	0
Pastries	166	45	51	4
Breakfast cereal	26	8	85	8
Snack bars	294	17	58	24
Confectionery	937	84	16	0
RTE meals	145	3	92	6
Dairy desserts	131	16	37	47
Ice cream, ice blocks	358	33	56	11
Butter and mayonnaise	113	51	47	2
Seafood	106	0	3	97
Vegetables (oven baked potato products)	78	0	0	100
Processed meat	659	41	29	30
Cordial and juice syrups	87	71	29	0
Energy drinks	69	74	26	0
Mixers, regular and diet carbonated beverages	331	60	40	0
Spreads	280	26	74	0
<b>Total number of products, n (%)</b>	<b>5245 (100%)</b>	<b>2561 (49%)</b>	<b>1924 (37%)</b>	<b>760 (14%)</b>

RTE = ready to eat.

## Summary of discretionary food outliers

Overall, high alignment between the HSR system and the 2013 Australian Dietary Guidelines was seen for discretionary products with 86% (n=4485) products classified as discretionary scoring <3.5 stars. The majority of discretionary foods that were found to contribute the most to energy intake in the recent Australian Health Survey such as cakes, biscuits and soft drinks received a low HSR as expected (Table 9). The remaining 14% (n=760) of outlier discretionary products scoring ≥3.5 stars generally belonged to one of seven food categories out of the 30 categories analysed. Figure 5 summarises the percentage of outlier products by food category and a description of these outlier categories can be found in Table 10.

Three of these categories (coated frozen fish, processed meats and oven-baked potato products) are classified as discretionary foods but a number of these could also be considered to be less healthy versions of core foods, particularly if the crumbed fish or potato wedges are oven baked rather than fried. These are also foods that are commonly consumed as part of a meal. However a large category of discretionary food outliers that will require further management is the salty snacks, chips and pretzel category. These products are receiving a high score because of their high potato and corn content but also because they are lower in saturated fat and salt than other products in the category. However as discretionary foods contribute to excess energy in the Australian diet, their intake should be limited.



Figure 5: Foods scoring  $\geq 3.5$  stars by food category

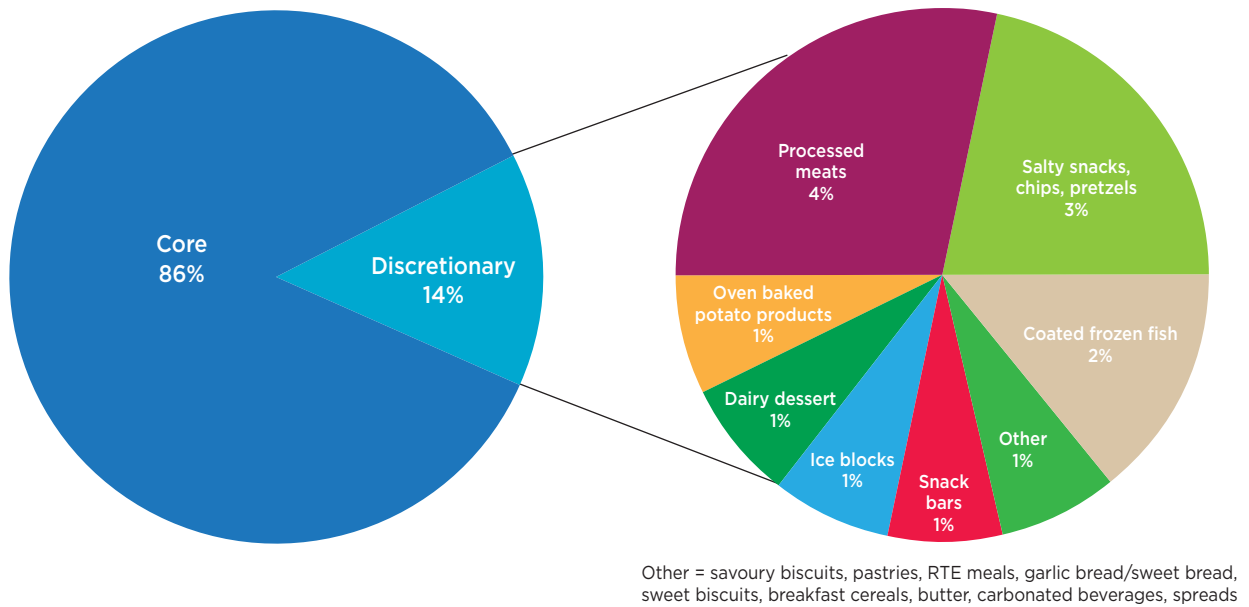


Table 10: Description of Discretionary Food Categories scoring  $\geq 3.5$  stars

Discretionary Food Products with a HSR $\geq 3.5$			
(Sub)Category	Examples	Number	Percentage of (sub) category
Snack bars	Cereal-based and fruit bars including fruit leathers (does not include the majority of chocolate or yoghurt-coated or puff-based bars)	72	24
Dairy dessert	Milk-based products such as tapioca, rice puddings, mousses and some sponge puddings	61	47
Ice block & ice cream	Low fat ice cream tubs, single-serve milk and some fruit-based ice confections	39	11
Coated frozen fish	Crumbed and battered fish and seafood e.g. calamari products	103	97
Oven baked potato products	Frozen chips, wedges and hash brown products	78	100
Processed meats	Beef burgers, canned chicken, a few sausages and healthier versions of luncheon meats	196	30
Salty snacks, chips, pretzels	Corn chips, tuna and cracker snack packs, legume-based snacks e.g. wasabi peas, chickpea crisps, popcorn and some potato chips	179	41

## Recommendations for Core and Discretionary Food Categories

In-depth analysis of the alignment between the HSR system and *2013 Australian Dietary Guidelines* was undertaken for each of the 30 food categories.

**Core food categories:** As these are foods and drinks from the five food groups that form the basis of a healthy diet, their consumption should be actively promoted in NSW food provision policy. These foods should make up the majority of foods sold in public settings. Broadly it is recommended that healthy core foods with a HSR of  $\geq 3.5$  should be promoted in public settings. As the HSR assesses products per 100g/mL and not per serve, some core food categories, particularly liquids, may also need to add serving size or kilojoule limits along with the  $\geq 3.5$  stars recommendation. Qualitative advice may also be required for some categories to support healthier core food choices such as promoting wholegrains, reduced fat dairy products and lean cuts of raw meat.

**Discretionary food categories:** These foods and drinks are not considered necessary to provide the nutrients the body needs and currently provide just over one third of total daily energy intake of Australians.<sup>5</sup> As many of these foods can be high in saturated fats, sugars, and salt they are significant contributors to the burden of obesity-related chronic disease.<sup>2</sup> In NSW food provision policy the overall aim is to reduce consumption of these foods in public settings. Reducing consumption of discretionary foods necessarily involves multiple strategies including reducing serving size, limiting sales volumes and limiting product promotion with positioning and pricing. The HSR may be helpful in promoting a healthier version of a discretionary product; however the emphasis in future policy should be on limiting consumption of these categories in general.

## Core Food Categories

### Bread and bread-type products

*Includes all bread-based products such as sliced white, wholemeal and grain breads, garlic bread, fruit breads, crumpets and English muffins.*

#### HSR vs Australian Dietary Guidelines for Bread products

		HSR $\leq 1.5$	HSR 2-3	HSR $\geq 3.5$	Total
<b>Core</b>	n	0	68	336	404
	%	0	16.83	83.17	100
<b>Discretionary</b>	n	10	20	3	33
	%	30.30	60.61	9.09	100
<b>Total</b>	n	10	88	339	437
	%	2.29	20.14	77.57	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, all bread products are classified as core with the exception of sweet breads and garlic breads which are classified as discretionary. More than 83% of all bread products classified as core by the Dietary Guidelines received a corresponding high HSR ( $\geq 3.5$ ). However, 17% of products received a HSR of 2-3 although they were classified as core foods. In examining the list of products that did not receive a rating of 3.5 stars or above it appears that many of the products receiving 2-3 stars are wrap and tortilla products, which in general have a higher sodium level than other bread products, and crumpets which generally have higher sugar levels than other bread products. As expected, the great majority (~91%) of sweet and garlic bread products received  $< 3.5$  stars. There were some brands scoring  $\geq 3.5$  stars and these tended to have reduced saturated fat and sodium levels. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** All bread products receiving  $\geq 3.5$  stars and above can be promoted in schools and workplaces with a recommendation to choose mostly wholegrain varieties. Setting a recommended cut-off of  $\geq 3.5$  stars should still enable a variety of brands of each type of bread product to be sold.

## Couscous, noodles, pasta and rice

*Includes all plain and flavoured packet couscous, noodle, pasta and rice products.*

### HSR vs Australian Dietary Guidelines for Couscous, noodles, pasta and rice

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Core</b>	n	1	81	231	313
	%	0.32	25.88	73.80	100
<b>Total</b>	n	1	81	231	313
	%	0.32	25.88	73.80	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, all products in this category are classified as core. 75% of core products received a HSR in line with the Dietary Guidelines (3.5 stars and above). On examination of the list of outlier products it appears that outliers include mainly noodle-based products. (Full listings for outlier products in this category are available on request)

**Preliminary Recommendation for Workplaces and Schools:** All products with a HSR of 3.5 or above with a preference for unflavoured and wholegrain products such as brown rice can be promoted in schools and workplaces as core ingredients in mixed dishes. Snack-style products, such as flavoured instant noodles, should be considered within salty snacks (if sold dry) or RTE/mixed foods. Further work is needed to understand the range in this sub-category, as well as the typical way they are served per setting.

## Breakfast cereal

*Includes all Ready To Eat and hot breakfast cereals.*

### HSR vs Australian Dietary Guidelines for Breakfast Cereal

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Core</b>	n	0	45	262	307
	%	0	14.66	85.34	100
<b>Discretionary</b>	n	2	22	2	26
	%	7.69	84.62	7.69	100
<b>Total</b>	n	2	67	264	333
	%	0.60	20.12	79.28	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, all breakfast cereal products are classified as core if they contain <30g sugar per 100g, otherwise they are classified as discretionary. 15% of core products (n=45) scored lower than expected (<3.5 stars). From examination of the outlier list, most of these products are toasted muesli, granola and breakfast cookie products with higher saturated fat. The two discretionary products that scored above 3.5 stars were both bran based cereals. (Full listings for outlier products in this category are available on request).

**Preliminary Recommendation for Workplaces and Schools:** All breakfast cereal products receiving 3.5 stars and above can be promoted in schools and workplaces with a preference for wholegrain products. This will still enable a variety of brands of each type of cereal product to be sold.

## Canned and frozen vegetables

*Includes all canned legumes and canned and frozen vegetable products, including frozen potato products such as chips and wedges.*

### HSR vs Australian Dietary Guidelines for Canned and Frozen Vegetables

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Core</b>	n	0	1	573	574
	%	0	0.17	99.83	100
<b>Discretionary</b>	n	0	0	78	78
	%	0	0	100	100
<b>Total</b>	n	0	1	651	652
	%	0	0.15	99.85	100

**Interpretation:** According to the 2013 Australian Dietary Guidelines, vegetable products are classified as core, except for potato products such as chips and wedges which are classified as discretionary. All but one product received a high HSR (≥3.5). This product was a legume with a low HSR due to its high sodium content. All frozen potato products were rated 3.5 stars above due to their high vegetable content. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** All vegetable products with the exception of potato products (fries/wedges/hashbrowns) should be promoted in schools and workplaces. Potato products such as fries and wedges are considered to be discretionary foods. Recommendations should limit their availability and serve size and include healthier cooking methods e.g. oven baked, use of healthier oils.

## Fruit products

*Includes all dried fruit (with and without nuts/seeds) and canned fruit products.*

### HSR vs Australian Dietary Guidelines for Fruit products

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Core</b>	n	3	121	284	408
	%	0.74	29.66	69.61	100
<b>Total</b>	n	3	121	284	408
	%	0.74	29.66	69.61	100

**Interpretation:** According to the current 2013 Australian Dietary Guidelines, all fruit products are classified as core however dried fruit are recommended to be consumed only occasionally and in small amounts. 70% of fruit products classified as core by the Australian Dietary Guidelines received a corresponding high HSR (≥3.5). On examination of the listing of outliers for this category, products such as fruit and nut mixes with yoghurt coatings, banana chips and fruit in syrup products were the reason for this. Example products include *Sweet Valley Dark Sweet Cherries in Syrup*, *Freshlife Sweetened Dried Pineapple* and *Lucky Oven Roasted Almonds with Yoghurt Sultanas*. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** In principle, all fruit products receiving 3.5 stars and above can be promoted in schools and workplaces with an additional recommendation of no added sugar. There is a sufficient range of tinned fruit in juice products scoring about 3.5 stars. Dried fruit is only recommended to be consumed occasionally and in small amounts in the 2013 Australian Dietary Guidelines. The HSR does not differentiate as well between plain, sweetened and coated dried fruit and the recommendation would be to sell small serves of plain dried fruit.

## Juices

*Includes all fruit and vegetable juices.*

### HSR vs Australian Dietary Guidelines for Juices

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Core</b>	<b>n</b>	14	5	491	510
	<b>%</b>	2.75	0.98	96.27	100
<b>Total</b>	<b>n</b>	14	5	491	510
	<b>%</b>	2.75	0.98	96.27	100

**Interpretation:** According to the 2013 Australian Dietary Guidelines, juices are classified as core however they are recommended to be consumed only occasionally and in small serving sizes. Overall there was good agreement between the Australian Dietary Guidelines and the HSR for products in this category. The majority of products (96%) received a HSR of 3.5 stars or above. Products that are 99.5% fruit juice and above (such as *Sunraysia Organic Apple 100% Juice* for example), in the HSR scheme, receive a 4.5 or above rating. Juice products with a lower percentage of fruit (such as *Mildura Orange 25% Fruit Juice* for example) receive a corresponding lower HSR. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** Fruit juices with 3.5 stars and above can be promoted occasionally in schools and workplaces, provided they contain 99% juice or above and have a serving size limit applied. A higher HSR cut-off could be applied to ensure inclusion of only juices with ≥99% juice.

## Milk

*Includes all fresh and long life plain and flavoured milks (dairy, soy and lactose-free).*

### HSR vs Australian Dietary Guidelines for Milk

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Core</b>	<b>n</b>	1	22	187	210
	<b>%</b>	0.47	10.48	89.05	100
<b>Total</b>	<b>n</b>	1	22	187	210
	<b>%</b>	0.47	10.48	89.05	100

**Interpretation:** According to the current Australian Dietary Guidelines, all milk products are classified as core however it is recommended to consume mostly reduced or low fat and unflavoured products. 89% of milk products received a HSR of 3.5 stars and above. However a HSR cut-off of 3.5 did not discriminate well between full fat and reduced fat milks or unflavoured and flavoured milks. Additional qualitative recommendations or a higher HSR cut-off could be applied to improve the differentiation based on fat and sugar content. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** All milk products receiving 3.5 stars and above, preferably reduced or low fat and unflavoured, can be promoted in schools and workplaces with appropriate serve size limits.

## Cheese, cheese spreads and specialty cheese

*Includes all ripened and unripened soft and hard cheeses.*

### HSR vs Australian Dietary Guidelines for Cheese, Cheese Spreads and Specialty Cheese

		HSR $\leq 1.5$	HSR 2-3	HSR $\geq 3.5$	Total
<b>Core</b>	n	59	165	392	616
	%	9.58	26.79	63.64	100
<b>Total</b>	n	59	165	392	616
	%	9.58	26.79	63.64	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, all cheese products are classified as core however it is recommended to consume mostly reduced or low fat products. 64% of products were found in line with this according to the HSR. On examination of the list of outlier products this appears to be due to cheeses such as parmesan and flavoured cream cheeses which generally received a lower HSR due to their high sodium content and saturated fat content. For example, *Black & Gold Parmesan Cheese* received a HSR of 0.5 due to its high sodium (1630mg/100g) and saturated fat (33.7g/100g) compared to other similar products (for example *Perfect Italiano Parmesan* only had 22.5g/100g saturated fat giving it a HSR of 4 stars). Higher HSRs were generally associated with lower sodium and saturated fat in this category, such as the parmesan example above. Similar to milk, a HSR of 3.5 did not generally differentiate between full and reduced fat cheeses. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** All cheese products receiving 3.5 stars and above, preferably reduced or low fat, can be promoted in schools and workplaces. This will still enable a variety of brands of each type of cheese product to be sold. Serving size recommendations should be in line with the *Australian Dietary Guidelines* (40g/2 slices).

## Yoghurts

*Includes all natural and flavoured yoghurt and custard products.*

### HSR vs Australian Dietary Guidelines for Yoghurts

		HSR $\leq 1.5$	HSR 2-3	HSR $\geq 3.5$	Total
<b>Core</b>	n	53	115	201	369
	%	14.36	31.17	54.47	100
<b>Total</b>	n	53	115	201	369
	%	14.36	31.17	54.47	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, all yoghurt products are classified as core however it is recommended to mainly consume reduced or low fat products and preferably with no added sugar. Interestingly only 54% of products were found in line with this according to the HSR (meaning 54% of products received 3.5 stars and above). On examination of the list of outlier products this is likely to be due to the variation in sugar, protein and saturated fat that can be found in yoghurt products. As the HSR takes into account multiple nutrients, it provides an overall rating of the nutritional quality of the product. In the case of yoghurts, full fat products can receive a higher rating than low fat products if they are lower in sugar. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** All yoghurt products receiving 3.5 stars and above, preferably reduced fat, should be promoted in schools and workplaces. Serving size recommendations should be in line with the *Australian Dietary Guidelines* (200g).

## Raw meat and meat replacements

*Includes all raw meat and meat replacement products (e.g. meat-free burgers).*

### HSR vs Australian Dietary Guidelines for Raw Meat and Meat Replacements

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Core</b>	<b>n</b>	5	23	139	167
	<b>%</b>	3.00	13.77	83.23	100
<b>Total</b>	<b>n</b>	5	23	139	167
	<b>%</b>	3.00	13.77	83.23	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, all raw meat and meat replacement products are classified as core. The majority of products in this category (83%) classified as core by the *Australian Dietary Guidelines* received a corresponding high HSR (≥3.5). On examination of the listing of outliers for this category, raw flavoured meat products were products that received a rating of 3 stars or below. For example, *Brannans Butchery Buffalo Style Marinated Chicken Wings* received 3 stars and *Woolworths Australian Lamb Garlic & Lemon Flavoured* received 1.5 stars, due mainly to their higher sodium content than other raw meat products. All meat replacements except two products received a HSR of 3.5 stars or above. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** All raw meat products and meat replacements can be promoted in schools and workplaces if they receive a HSR of 3.5 or above and are lean cuts such as lean mince and chicken without skin. This will ensure that flavoured meats with higher sodium or sugar contents are not promoted. Recommendations on healthier cooking methods should also be provided.

## Seafood

*Includes all frozen, canned and chilled seafood products.*

### HSR vs Australian Dietary Guidelines for Seafood

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Core</b>	<b>n</b>	5	20	374	399
	<b>%</b>	1.25	5.01	93.73	100
<b>Discretionary</b>	<b>n</b>	0	3	103	106
	<b>%</b>	0	2.83	97.17	100
<b>Total</b>	<b>n</b>	5	23	477	505
	<b>%</b>	0.99	4.55	94.46	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, all seafood products are classified as core except for coated frozen fish which are classified as discretionary. Almost 100% of seafood products classified as core by the *Australian Dietary Guidelines* received a corresponding high HSR (≥3.5). Only 25 products received a HSR of 3 stars or less and these included items such as *De Costi Seafoods Scallops with Garlic & Herb Butter* and *Woolworths Home Brand Sardines in Oil* that were higher in sodium and saturated fat than other seafood items, bringing down their HSR. 97% of discretionary crumbed and coated seafood products scored ≥3.5 stars, this is due to their higher protein content and lower saturated fat content compared to other crumbed protein products. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** All seafood products receiving 3.5 stars and above can be regularly promoted in schools and workplaces with the possible exception of crumbed and coated seafood products which are considered discretionary foods and their frequency of consumption may need to be limited. For all seafood products, recommendations on healthy cooking methods are required such as oven baking or use of healthier cooking oils.

## Eggs

*Includes all egg products.*

### HSR vs Australian Dietary Guidelines for Eggs

		HSR $\geq 3.5$	Total
Core	n	33	33
	%	100	100
Total	n	33	33
	%	100	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, all egg products are classified as core. All egg products receive a corresponding high HSR of 4 or more.

**Preliminary Recommendation for Workplaces and Schools:** Eggs (poached, boiled, scrambled, omelettes) are a healthy choice that should be promoted in schools and workplaces.

## Nuts

*Includes all salted and unsalted nuts and seeds (without fruit).*

### HSR vs Australian Dietary Guidelines for Nuts

		HSR $\leq 1.5$	HSR 2-3	HSR $\geq 3.5$	Total
Core	n	0	34	308	342
	%	0	9.94	90.06	100
Total	n	0	34	308	342
	%	0	9.94	90.06	100

**Interpretation:** According to the *Discretionary Food List*<sup>9</sup>, all nuts are classified as core. This is somewhat contrary to the current *Australian Dietary Guidelines* that recommend consuming nuts with no added salt. However the HSR did not discriminate well between salted and unsalted nuts because it also considers a number of other nutrients such as saturated fat, protein as well as fruit, vegetable, nut and legume content. Consequently, salted nuts that are lower in saturated fat and higher in protein e.g. almonds and cashews may receive a higher HSR than unsalted nuts that are higher in saturated fat and lower in protein e.g. macadamias. (Full listings for outlier products in this category are available on request).

**Preliminary Recommendation for Workplaces and Schools:** All unsalted nut products should be promoted in schools and workplaces with a serve size limitation. In school settings restrictions on nut products due to allergies must also be considered.



## Oils, margarine, butter and mayonnaise

*Includes all cooking oils, butters, margarines and mayonnaise products.*

### HSR vs Australian Dietary Guidelines for Oils, margarine, butter and mayonnaise

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Core</b>	n	6	32	164	202
	%	2.97	15.84	81.19	100
<b>Discretionary</b>	n	58	53	2	113
	%	51.33	46.90	1.77	100
<b>Total</b>	n	64	85	166	315
	%	20.32	26.98	52.70	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, butter, mayonnaise and saturated oils are classified as discretionary. Unsaturated plant oils and unsaturated spreads are classified as core when consumed in small serving sizes. Generally, there was good alignment between the *2013 Australian Dietary Guidelines* and the HSR, with over 80% of products classified as core receiving 3.5 stars or above, and 98% of discretionary products receiving a HSR of 3 stars or less.

**Preliminary Recommendation for Workplaces and Schools:** Products with a HSR with 3.5 stars or more can be recommended in schools and workplaces when consumed in appropriate serving sizes.

## Ready to Eat (RTE) meals, frozen pies and pizza

*Includes all ambient, chilled and frozen RTE meals (e.g. lasagne, pasta), frozen pies, sausage rolls, pizza products, ready-made sandwiches, salads and sushi rolls.*

### HSR vs Australian Dietary Guidelines for RTE meals, frozen pies and pizza

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Core</b>	n	2	136	505	643
	%	0.31	21.15	78.54	100
<b>Discretionary</b>	n	4	133	8	145
	%	2.76	91.72	5.52	100
<b>Total</b>	n	6	269	513	788
	%	0.76	34.14	65.10	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, RTE meals, and pizza products are classified as core, unless they have >5g/100g of saturated fat. Frozen pies and sausage rolls are considered to be discretionary foods however for the purpose of this analysis they were assessed using the above criteria. Results were consistent with this, with more than 75% of core products receiving a HSR of 3.5 or above, and 94% of discretionary products receiving a HSR of less than 3.5 stars. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** This is a large and challenging product category because of the wide range and number of products that receive a similar HSR. A HSR cut-off of 3.5 stars could be applied in combination with a kilojoule per serve limit in workplaces and schools. However further work is required to better understand if and how combining the HSR with energy limits in this category effectively differentiates between the nutritional quality of products at a sub-category level. Further analysis is particularly required to be able to provide recommendations for discretionary sub-categories e.g. pizza, sausage rolls and pies. However, generally, the availability and serve size of discretionary foods should be limited in schools and workplaces.

## Soup

*Includes all ambient, chilled and dry mix soup products.*

### HSR vs Australian Dietary Guidelines for Soup

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
Core	n	0	83	252	335
	%	0	24.78	75.22	100
Total	n	0	83	252	335
	%	0	24.78	75.22	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, all soup products are classified as core foods. 75% of all products received a HSR of 3.5 or above, in line with the *Australian Dietary Guidelines*. No products received a HSR of less than 3 stars. The higher HSR of soups can be explained by the relatively high vegetable content of this category and the per 100mL rating. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** The application of the HSR in this category is limited by the HSR based on per 100mL and not per serve. Further work is required to understand if simple per serve criteria would also need to be applied to better differentiate between the nutritional quality of soups, in particular the sodium content.

## Discretionary Food Categories

### Salty snacks, chips and pretzels

*Includes all snack products such as potato crisps, extruded snacks, corn chips, pretzels, popcorn and snackpacks.*

### HSR vs Australian Dietary Guidelines for Salty Snacks, Chips and Pretzels

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
Discretionary	n	96	160	179	435
	%	22.07	36.78	41.15	100
Total	n	96	160	179	435
	%	22.07	36.78	41.15	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, products in this category are classified as discretionary. 59% of products received a HSR in line with the *Australian Dietary Guidelines* (3 stars or less). On examination of the list of outlier products, products with a higher HSR than expected had a higher proportion of potato and/or other vegetable or legume as an ingredient. For example, many snackfood items such as wasabi peas and roasted chickpeas received a HSR of 4 or more, due to their high legume content. Similarly, potato-based products such as *Smith's Extra Crunchy Simply Salted* and *Kettle Chilli Naturally Delicious Potato Chips* received a HSR of 4 stars due to their high potato content as well as their lower sodium and saturated fat content relative to other similar products. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** As products in this category are considered to be discretionary foods future policy recommendations should aim to reduce the consumption of these products by limiting their availability, serve size and promotion in workplace and school settings. The HSR system may assist with selection of healthier options of salty snack products. For example, the HSR may be useful in selecting potato crisps with lower saturated fat and sodium content. Serve size limits should be applied in conjunction with recommended HSR to ensure kilojoule consumption is not excessive. It should also be noted that there is a high level of variety in the types of products that are included in this category (ranging from tuna snack-packs to potato crisps) so future policy recommendations should also take this into consideration when making HSR recommendations.

## Snack bars

*Includes all plain, choc-coated and yoghurt-coated nut and cereal-based bars.*

### HSR vs Australian Dietary Guidelines for Snack Bars

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
Discretionary	n	51	171	72	294
	%	17.35	58.16	24.49	100
Total	n	51	171	72	294
	%	17.35	58.16	24.49	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, snack bar products can only be classified as discretionary. Three quarters of products received 3 stars or less, in line with the overall *Australian Dietary Guidelines*. On examination of the list of outlier products some outliers are due to products having low levels of saturated fat, sugars and sodium compared to other items. For example, *Goodness Superfoods Fibre Boost Apple Sultana Cereal Bars* have a high protein and fibre content relative to other products, resulting in their 5 star rating. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** As snack bars are discretionary, future policy recommendations should aim to reduce the consumption of these products by limiting their availability, serve size and promotion in workplace and school settings. Recommendations should also ensure that products which are currently restricted in schools and workplaces continue to be restricted. While their availability should be limited, a small range of healthier options could be included but should take into account both the HSR (i.e. the nutritional quality) and serving size restrictions.

## Savoury biscuits

*Includes products such as plain and flavoured crackers, crispbread, rice cakes, breadsticks.*

### HSR vs Australian Dietary Guidelines for Savoury Biscuits

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
Core	n	22	141	100	263
	%	8.37	53.61	38.02	100
Discretionary	n	47	60	5	112
	%	41.97	53.57	4.46	100
Total	n	69	201	105	375
	%	18.40	53.60	28.00	100

**Interpretation:** According to the 2013 *Australian Dietary Guidelines*, savoury biscuits can be classified as core or discretionary depending on the kilojoule content (products with >1800kJ per 100g are considered discretionary). 96% of savoury biscuit products classified as discretionary by the *Australian Dietary Guidelines* received a corresponding HSR of less than <3.5 stars. Conversely, a large proportion (>60%) of products classified as core in the *Australian Dietary Guidelines* received a lower HSR than expected (<3.5 stars).

Interestingly, only 28% of all products in this category received ≥3.5 stars, despite the majority of products being classified as core by the *Australian Dietary Guidelines*. Products that received ≥3.5 stars are relatively low in sodium, saturated fat and sugar. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** The HSR may be used to select healthier option savoury biscuit products. It is recommended that savoury biscuits with a HSR of 3.5 or above and preferably plain, wholegrain varieties can be promoted in schools and workplaces. Availability, serve size, and promotion of discretionary savoury biscuits with higher kilojoule (and sodium) content should be limited to reduce consumption in workplaces and schools. Recommendations should also ensure that products which are currently restricted in schools and workplaces continue to be restricted.

## Sweet biscuits

*Includes products such as chocolate-coated biscuits, cream-filled biscuits, choc-chip biscuits and other sweet filled and unfilled biscuits.*

### HSR vs Australian Dietary Guidelines for Sweet Biscuits

		HSR $\leq 1.5$	HSR 2-3	HSR $\geq 3.5$	Total
<b>Discretionary</b>	n	431	94	3	528
	%	81.63	17.80	0.57	100
<b>Total</b>	n	431	94	3	528
	%	81.63	17.80	0.57	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, sweet biscuits can only be classified as discretionary. Almost 100% of sweet biscuit products classified as discretionary by the *Australian Dietary Guidelines* received a corresponding HSR of less than 3.5 stars with only 3 products (1%) receiving a star rating of 3.5 or above. *The Australian Health Survey* found that sweet and savoury biscuits are one of the food groups contributing most to the energy intake from discretionary foods, particularly for young children.<sup>5</sup>

In examining the list of outlier products, the 3 outlier products (out of 528 products in total) that received 3.5 stars or above were *Nestle Milo Starz* in which the ingredients are predominantly wholegrain (reducing the levels of sugar and saturated fat compared to other biscuit products), *Walkers Highland Oatcakes* due to their higher fibre content and *Ital Almond Biscotti* due to their lower sugar content. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** As a discretionary food and with 82% of products scoring  $\leq 1.5$  stars, setting a HSR cut-off for sweet biscuits may not be particularly useful. Future policy recommendations should aim to reduce the consumption of these products by limiting their availability, serve size and promotion in workplace and school settings. Recommendations should also ensure that products which are currently restricted in schools and workplaces continue to be restricted.

## Pastries

*Includes all sweet and savoury pastry-based products such as danishes, fruit pies, croissants and waffles.*

### HSR vs Australian Dietary Guidelines for Pastries

		HSR $\leq 1.5$	HSR 2-3	HSR $\geq 3.5$	Total
<b>Discretionary</b>	n	74	85	7	166
	%	44.58	51.20	4.22	100
<b>Total</b>	n	74	85	7	166
	%	44.58	51.20	4.22	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, pastry products can only be classified as discretionary. Almost 100% of products received 3 stars or less, in line with the overall *Australian Dietary Guidelines*. Only a small number of products (7) rated higher than expected. The small number of products that received a higher HSR (3.5 stars or above) included savoury pastry items such as frittatas and quiches. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** As pastries are considered discretionary foods future policy recommendations should aim to reduce the consumption of these products by limiting their availability, serve size and promotion in workplace and school settings. Future policy recommendations should also ensure that products which are currently classified as Red continue to be restricted in schools and workplaces. Recommendations should also ensure that products which are currently restricted in schools and workplaces continue to be restricted. The HSR may assist in differentiating healthier versions of these products.

## Cakes, puddings and cake mixes

*Includes all sweet cakes, puddings and cake mixes.*

### HSR vs Australian Dietary Guidelines for Cakes, Puddings and Cake Mixes

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Core</b>	n	0	24	8	32
	%	0	75	25	100
<b>Discretionary</b>	n	209	148	0	357
	%	58.54	41.46	0	100
<b>Total</b>	n	209	172	8	389
	%	53.73	44.22	2.06	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, cake/pudding/cake mix products are classified as discretionary with the exception of pancakes and scones which are considered core. Almost 100% of products in this category classified as discretionary by the *Australian Dietary Guidelines* received a corresponding HSR of less than 3.5 stars. Overall, 54% of all products in this category received less than 2 stars. However, 75% of products classified as core by the *Australian Dietary Guidelines* had a lower HSR than expected. In examining the list of products it appears that pancake mixes make up the majority of these items. It should also be noted that scone and pancake products are commonly consumed with additional non nutritious toppings such as syrup, jam, butter and cream so in practice these products may be increasing consumption of energy dense, nutrient poor (EDNP) foods. *The Australian Health Survey* found that cakes, muffins and scones, and cake-type desserts are one of the food groups contributing most to the energy intake from discretionary foods.<sup>5</sup> There were 8 products that received a higher HSR (3.5 stars or above) and a corresponding core rating by the *Australian Dietary Guidelines* and these included pikelet and pancake products. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** As these are discretionary foods and with more than 95% of products scoring less than 3.5 stars, setting a HSR cut-off for cakes may not be particularly useful. Future policy recommendations should aim to reduce the consumption of these products by limiting their availability, serve size and promotion in workplace and school settings. Recommendations should also ensure that products which are currently restricted in schools and workplaces continue to be restricted.

## Dairy desserts

*Includes all dairy dessert mixes and prepared desserts (e.g. puddings, crème caramel etc).*

### HSR vs Australian Dietary Guidelines for Dairy Desserts

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Discretionary</b>	n	21	49	61	131
	%	16.03	37.40	46.57	100
<b>Total</b>	n	21	49	61	131
	%	16.03	37.40	46.57	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, dairy dessert products are classified as discretionary. Just over 50% of products received a HSR of <3.5 stars, in line with the *Australian Dietary Guidelines*, however almost 50% received a higher than expected HSR. This is a diverse category that includes milk-based products that can be a source of calcium such as rice puddings and *Fruche*. These products score well because of their high protein content but many are also low in saturated fat. The category also includes many aerated or mousse products that score well due to their relatively low saturated fat. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** As dairy dessert products are considered discretionary foods, future policy recommendations should aim to reduce the consumption of these products by limiting their availability, serve size and promotion in workplace and school settings. Recommendations should also ensure that products which are currently restricted in schools and workplaces continue to be restricted. However some products in this category can provide a source of calcium and a HSR of 3.5 or more may assist with selection of healthier versions of milk-based products in this category for workplaces and schools.

## Ice blocks, frozen desserts and ice cream

*Includes all ice-based confections, frozen yoghurt and ice cream products.*

### HSR vs Australian Dietary Guidelines for Ice Blocks, Frozen Desserts and Ice Cream

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Discretionary</b>	<b>n</b>	117	202	39	358
	<b>%</b>	32.68	56.43	10.89	100
<b>Total</b>	<b>n</b>	117	202	39	358
	<b>%</b>	32.68	56.43	10.89	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, ice blocks, frozen desserts and ice cream products are classified as discretionary foods. Overall, almost 90% of all products in this category received 3 stars or less, in line with the *Australian Dietary Guidelines*. The 10% of products that received a comparatively higher HSR (3.5 stars or above) consisted mainly of *Weight Watchers* brand ice cream products and most ice confections. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** As ice blocks, frozen desserts and ice cream are discretionary products it is recommended in general that the availability and serving size of these products is limited in workplace and school settings. However the HSR may enable the differentiation of healthier options within this category for example, 100% juice and milk-based options with low kilojoule content. Recommendations should also ensure that products which are currently restricted in schools and workplaces continue to be restricted.

## Processed meats

*Includes all deli meats, bacon, crumbed and coated schnitzels, meat patties, sliced meats, cabanossi and twiggly sticks, sausages, whole hams and chickens and canned meat products.*

### HSR vs Australian Dietary Guidelines for Processed Meats

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Discretionary</b>	<b>n</b>	272	191	196	659
	<b>%</b>	41.28	28.98	29.74	100
<b>Total</b>	<b>n</b>	272	191	196	659
	<b>%</b>	41.28	28.98	29.74	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, processed meat products are classified as discretionary. Overall, 70% of all products in this category received 3 stars or less in line with the *Australian Dietary Guidelines*. The 30% of products that received a comparatively higher HSR (3.5 stars or above) consisted of products such as low fat sliced ham products (e.g. *Don Shaved Leg Ham English Lite*), turkey (e.g. *Coles Sliced Turkey Breast 97% Fat Free*) and canned chicken products (e.g. *Heinz Chicken Shreds Of Chicken Breast Sweet Chilli*) due to their lower saturated fat and energy contents. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** Processed meats are considered to be discretionary foods in the *Australian Dietary Guidelines* to be consumed occasionally, if at all, and in small amounts. However it is recognised that, in the case of sliced or luncheon meats, when combined with core foods such as bread and salad, they can be used to make a healthier on-the-go sandwich or salad meal option, particularly in workplace and school settings. Sliced or luncheon meat products that receive 3.5 stars or above can be sold in schools and workplaces with serve size limits for inclusion in healthier meal options such as meat and salad sandwiches.

## Spreads

*Includes all jams, honey, marmalades and nut butter products.*

### HSR vs Australian Dietary Guidelines for Spreads

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Core</b>	n	0	0	43	43
	%	0	0	100	100
<b>Discretionary</b>	n	72	207	1	280
	%	25.71	73.93	0.36	100
<b>Total</b>	n	72	207	44	323
	%	22.29	64.09	13.62	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, spreads are classified as discretionary except peanut butter which is classified as core. There was good agreement between the *Australian Dietary Guidelines* and the HSR with only 1 product not showing agreement. (Full listings for outlier products in this category are available on request.)

**Preliminary Recommendation for Workplaces and Schools:** With the exception of nut butters, such as peanut butter, these products are discretionary foods and their availability, serve size and promotion in the workplace and school settings should be limited. Nut butter products that receive 3.5 stars and above should be allowed to be sold in schools and workplaces (subject to the school's policy on peanut allergies).

## Cordial and juice syrups

*Includes all sugar-free and sugar-sweetened cordial and juice syrups.*

### HSR vs Australian Dietary Guidelines for Cordial and Juice Syrups

		HSR ≤1.5	HSR 2-3	HSR ≥3.5	Total
<b>Discretionary</b>	n	62	25	0	87
	%	71.26	28.74	0	100
<b>Total</b>	n	62	25	0	87
	%	71.26	28.74	0	100

**Interpretation:** According to the current *Australian Dietary Guidelines* cordials can only be classified as discretionary. Overall there was good agreement between both the *Australian Dietary Guidelines* and the HSR system with all products (100%) having a HSR of 3 stars or less. No products received a HSR of 3.5 stars or above (as expected).

**Preliminary Recommendation for Workplaces and Schools:** Cordials, both sugar-sweetened and artificially sweetened, are discretionary products and are not commonly sold in workplace settings. As per the current policy future policy recommendations should aim to reduce the consumption of these products by limiting their availability, serve size and promotion in workplace and school settings. Recommendations should also ensure that products which are currently restricted in schools and workplaces continue to be restricted.



## Energy drinks

*Includes all sugar-free and sugar-sweetened energy and electrolyte drinks.*

### HSR vs Australian Dietary Guidelines for Energy Drinks

		HSR $\leq 1.5$	HSR 2-3	HSR $\geq 3.5$	Total
Discretionary	n	51	18	0	69
	%	73.91	26.09	0	100
Total	n	51	18	0	69
	%	73.91	26.09	0	100

**Interpretation:** According to the current *Australian Dietary Guidelines* energy drinks can only be classified as discretionary. Overall there was good agreement with 100% of products classified as discretionary having a corresponding HSR (3 stars or less).

**Preliminary Recommendation for Workplaces and Schools:** Energy drinks are discretionary products and therefore as per the current criteria future policy recommendations should aim to reduce the consumption of these products by limiting their availability, serve size and promotion in workplaces. Energy drinks should not be sold in school canteens as per the current FT@S approach due to their low nutritional value and caffeine content.

## Mixers, regular and diet carbonated beverages

*Includes all sugar-free and sugar-sweetened carbonated drinks.*

### HSR vs Australian Dietary Guidelines for Mixers, regular and diet carbonated beverages

		HSR $\leq 1.5$	HSR 2-3	HSR $\geq 3.5$	Total
Discretionary	n	198	132	1	331
	%	59.82	39.88	0.30	100
Total	n	198	132	1	331
	%	59.82	39.88	0.30	100

**Interpretation:** According to the current *Australian Dietary Guidelines* products in this category are classified as discretionary. Overall there was good agreement with all but one product having a corresponding low HSR (3 stars or less).

**Preliminary Recommendation for Workplaces and Schools:** Mixers, regular and diet carbonated drinks are discretionary products and their availability and promotion in the health care setting should be limited with a preference for a small range of small serve sugar-sweetened products and diet drinks. As per the current school canteen policy, sugar sweetened beverages should not be sold in school canteens due to their low nutritional value.

## Confectionery

*Includes all sugar-based and chocolate-based confectionery.*

### HSR vs Australian Dietary Guidelines for Confectionery

		HSR $\leq 1.5$	HSR 2-3	HSR $\geq 3.5$	Total
Discretionary	n	786	151	0	937
	%	83.68	16.12	0	100
Total	n	786	151	0	937
	%	83.68	16.12	0	100

**Interpretation:** According to the current *Australian Dietary Guidelines*, confectionery products can only be classified as discretionary. 100% of products classified as discretionary by the *Australian Dietary Guidelines* received a corresponding HSR of less than 3.5 stars.

**Preliminary Recommendation for Workplaces and Schools:** The HSR of these products is less relevant in school and workplace settings where the aim is to reduce the availability of discretionary foods and their serving size. The possible exception would be sugar-free confectionery and sugar-free chewing gum which have special uses in hospital workplaces. As per the current school canteen policy confectionery products should not be sold in school canteens and their availability in health care settings should be limited with serving size restrictions.



## Policy Implications and Future Directions

### Discussion of high-level research results

This project aimed to assess the validity of using the HSR system in NSW healthy food provision policies and to make recommendations on how the HSR can enhance the current approach to healthy food provision in public settings. The project involved a research component estimating the alignment of the HSR system, nutritional criteria in NSW healthy food provision policies, and the *2013 Australian Dietary Guidelines*.

Generally it was found that the HSR system has better alignment with the dichotomous core/discretionary food classification in the *2013 Australian Dietary Guidelines* than the two Traffic Light schemes examined. As seen in Table 11, 79% of core products and 86% of discretionary products analysed had a HSR within the proposed range. In contrast, the alignment was lower for both Traffic Light schemes particularly for discretionary foods. This suggests that the HSR may be more helpful than Traffic Lights to support selection of packaged products that comply with the *2013 Australian Dietary Guidelines* recommendations.

**Table 11: Alignment of HSR system with labelling schemes**

Labelling Scheme	Percentage of products in each scheme aligning with proposed HSR range	
	Core foods	Discretionary foods
FT@S	70%	48%
LLW@H	66%	48%
<i>2013 Australian Dietary Guidelines</i>	79%	86%

Products with a HSR that did not fall within the proposed HSR range for their Traffic Light category or *2013 Australian Dietary Guidelines* classification were referred to as potential outliers. For example, products rated as Red under the Traffic Light classification that received a HSR >1.5 would be considered an outlier. Similarly, a core food product with a HSR <3.5 could be considered an outlier. For each classification scheme, in-depth analysis of 30 food categories was undertaken to quantify and describe outliers to assess potential reasons for misalignment and if these products could be confirmed as outliers.

In general the 15-20% of products identified as being potential outliers were an overestimate of any misalignment between the HSR and the *2013 Australian Dietary Guidelines*. Some of these products simply represented less healthy core food choices and could not be considered outliers e.g. cheeses higher in saturated fat and salt or fruit tinned in syrup with a HSR <3.5. In the case of discretionary food outliers, some of these products could arguably be classified as less healthy core foods e.g. crumbed oven-baked fish products. However across the three classification schemes and the 30 food categories examined there were some common reasons for actual misalignment identified.

Notably these included categories where:

- Traffic Light Criteria were out of date with current nutritional evidence e.g. fats and oils and/or changes in the food supply with product reformulation e.g. bread
- the HSR system was a more sensitive discriminator than the Traffic Light criteria e.g. yoghurt
- the Traffic Light system often incorporated serving sizes while the HSR system does not e.g. fruit juice. The lack of consideration of serving size is a known limitation of the HSR system.

The in-depth analysis of 30 food groups undertaken as part of this study also revealed that the HSR system is better aligned with *2013 Australian Dietary Guidelines* recommendations for some categories than others. Therefore recommendations on how to use the HSR system in policy should take a category-specific approach overlaid with the *2013 Australian Dietary Guidelines* core versus discretionary classification.

The category-specific preliminary recommendations in this report require further translational analysis to test their feasibility in public settings. This research was on-going at the time of publication. However the preliminary category-specific recommendations presented in detail in the results were developed considering the following principles:

- Alignment of HSR with the *2013 Australian Dietary Guidelines* and existing Traffic Light nutritional criteria where possible
- Analysis and recommendations on a category and sub-category level
- Ensuring a sufficient choice of recommended products in the school or workplace (hospital) setting
- Ease of use for often volunteer and non-skilled staff, particularly in school canteens
- Relevance per setting given that the HSR only applies to packaged foods and that schools and workplaces also use food service products and offer freshly prepared foods

Taking these principles into consideration in the context of the *2013 Australian Dietary Guidelines* core versus discretionary foods classification system, some broad policy recommendations on how the HSR may be used in NSW public settings emerge.

## Core Foods

Broadly it is recommended that healthy core foods with a HSR of  $\geq 3.5$  should be promoted in public settings. For some categories a HSR of  $\geq 3.5$  sufficiently indicates healthier food choices such as in the case of vegetables. However other categories will require additional guidance to support healthy food provision.

**Broadly, it is recommended that healthy core foods with a HSR of  $\geq 3.5$  stars should be promoted in NSW public settings.**

There are few types of additional guidance that may be required including:

- Adding serving size or kilojoule limits along with the  $\geq 3.5$  HSR recommendation. As the HSR assesses products per 100g/mL and not per serve, some core food categories may need serve size limits to prevent excessive kilojoule consumption for example, flavoured milk and juices
- Qualitative advice may be required for some categories to ensure alignment with the *2013 Australian Dietary Guidelines* such as choosing reduced fat dairy products, wholegrains and lean cuts of raw meat, and providing healthy cooking guidance.

For a small number of core foods, the HSR may not be as relevant and other qualitative guidance will be required e.g. eggs and unsalted nuts.

## Discretionary Foods

In line with the *2013 Australian Dietary Guidelines*, discretionary food; high in saturated fat, sugar and salt should be limited and should not make up a substantial portion of one's diet. The majority of discretionary products have a HSR  $\leq 3.5$  (86% of products analysed). A small number of categories however had a relatively high percentage of products scoring  $\geq 3.5$  stars (see Figure 5). Some of these products will require a specific management plan to ensure that use of the HSR in recommendations for these foods is consistent with the *2013 Australian Dietary Guidelines*. For example, in the case of salty snack products, the HSR can indicate a healthy choice but additional recommendations to limit the serving size and availability will also be required.

The HSR may be useful for some discretionary food categories to indicate a healthier choice within the category. However, as these products are not required to be consumed as part of a nutritious diet, caution should be taken when applying a HSR cut-off to discretionary categories as the overall goal is to limit their consumption. Further work is required to assess the utility of using the HSR system for discretionary foods in public settings in NSW.

## Limitations and challenges

The results of this research should be considered in relation to the following limitations:

- HSRs in The George Institute Database are estimated using proxy values for FVNL and fibre (where fibre content is not available on the label).
- Around 2,400 products were excluded from the analysis because they did not contribute significantly to nutritional intake, were not commonly sold in school or hospital settings or were ingredients used in small amounts to prepare a meal or dish. Additional products were excluded from the analysis if they had no nutrition information panel e.g. variety packs or missing data. Exclusion of these categories is not expected to have affected the individual category results but may have affected the overall results, particularly for pasta sauces and dips as both of these product categories are likely to be used in school canteens and hospital settings. These products tend to receive a high HSR because of their high tomato, vegetable or nut and legume content however they are regarded as discretionary foods on the Discretionary Food List.<sup>9</sup> Further analysis of these product categories will be required to develop recommendations for healthy food provision in schools and health settings.
- The number of products analysed is a proportion of the total number of products on the shelf in a supermarket which is estimated to be in the order of 30,000 stock keeping units. However in reality the number of distinct products on shelf is less as the 30,000 includes different package sizes of the same product.
- Data from 2013 were used in the analysis as these were the most up to date complete data available. Product formulations may well have changed since that time, new products will have been introduced into the market and some products may no longer be in the market. The George Institute Monitoring Database was collected from representative stores for 4 of the major supermarket retailers in Australia (Woolworths, Coles, IGA, and ALDI) to provide wide coverage of the food supply. However, since the supermarkets sampled were located in metropolitan areas, these data may not be readily generalisable to products found in regional communities.

## Challenges for integrating the HSR system into NSW policy

While the research indicates that the HSR can be used to guide healthier food and drink choices in schools and workplaces, a number of factors will need to be taken into account when developing specific policy recommendations.

These include:

- As indicated by the HSR campaign ([www.healthstarrating.gov.au](http://www.healthstarrating.gov.au)) a high HSR does not necessarily mean that a particular packaged food provides all of the essential nutrients required for a balanced and healthy diet. The HSR calculator takes into account both nutrients that can have a negative health effect (saturated fat, energy, sodium and sugar) and those that can provide a positive health effect (protein, fibre, fruit/nut/vegetable/legume content). However any nutrient profiling system, including the HSR, does not and cannot take into account all nutrients required for health. The *2013 Australian Dietary Guidelines* recommend eating a balanced diet that includes a variety of nutritious foods every day. Fresh foods such as fruits and vegetables will not have a HSR unless they are sold packaged but should continue to form the basis of a healthy diet. It is also important to note that the HSR system is designed to be used to make healthier food and beverage choices within a category and not between categories. For this reason, category and sometimes sub-category recommendations need to be made for the use of the HSR in schools and workplaces.
- The HSR system is designed for packaged foods only and therefore does not apply to the full range of products sold in NSW school canteen and hospital settings. For example, the HSR does not apply to freshly prepared foods and meals which the *2013 Australian Dietary Guidelines* recommend should be promoted. Therefore, additional policy guidance will be required to promote sales of healthy foods and meals that are not covered by the HSR system.

- Relatedly, the HSR system does not readily indicate whether a food is core or discretionary. Therefore, recommendations for the use of the HSR system need to be situated within the framework of the *2013 Australian Dietary Guidelines* to ensure that core foods are readily available and actively promoted in public settings while the availability and promotion of discretionary foods should be limited. This project used the Australian Bureau of Statistics Discretionary Food List<sup>9</sup> however, in practice there is some disagreement on what constitutes a core versus discretionary food and guidance may be required to clarify these issues when making policy recommendations in NSW settings.
- As the HSR system evaluates products on a per 100g/mL basis, serving size will need to be applied to some food categories to ensure consumption of kilojoules is not excessive.
- Finally, from an implementation standpoint the HSR was launched in June 2014 with a five year implementation plan. The penetration of the HSR in the market is growing but does not yet cover all product categories. In the early phases of implementing the HSR in policy recommendations, additional tools are likely to be required to help food operators identify the HSR of foods that do not yet display it on the front of pack.

## Future Directions

The HSR system has the potential to contribute to the promotion of healthy food provision in public settings. The system could offer a simpler way to assess the nutritional quality of packaged food and beverages than the current approach which often requires end users to interpret complex nutritional information on products to determine their Traffic Light rating. Future work on translating how the HSR system may be incorporated into NSW policy should consider recommendations for use of the HSR system within the framework of the *2013 Australian Dietary Guidelines* and the concepts of core and discretionary foods. As the HSR is only applicable to packaged foods and not freshly prepared meals or food service products, it should be introduced into public settings as part of a broader set of guidelines to promote healthy food environments. The key benefit of the HSR is it allows a quick comparison of packaged products in a particular category to indicate which products contain more of the beneficial nutrients and less of the adverse nutrients that increase risk of chronic disease.

# APPENDICES



## The George Institute's Monitoring Database

### Data Collection

Data for The George Institute's Monitoring Database is updated annually using the same four major supermarket retailers (Coles, Woolworths, ALDI and IGA) in Sydney CBD, Australia. Data collectors are trained to systematically collect photos of all packaged and unpackaged food products that have a barcode. Using the Data Collector App (DCA), photos of the Front of Pack (FoP), Nutrition Information Panel (NIP) and Ingredients List are taken.

All information that is displayed on the NIP (including additional discretionary nutrients) is collected and entered in the database.

### Data Quality

The utilisation of technology, namely the DCA, has improved data quality by enabling all data to be linked with a photo of the original NIP by using each product's barcode. Additionally, smartphone technology has enabled the sources of product data to be flagged so that DCA-sourced data can easily be identified in the system.

In the database, photos that are of a low quality standard and deemed unreadable are assigned a flag. Products containing this flag are saved as 'on hold' within the database. Any new photos for any food product (whether they be new products or updated product information) that get sent into the database through DCA are assigned another flag to indicate that new photos have been sent in. This flag informs the data entry team to update the product information according to the new photos.

### Accuracy of Data Entry

The user interface of The George Institute's Branded Food Composition database (called the Food and Beverage Information Content Management System; FBI CMS) has recently been re-built to incorporate quality rules and logic into the system to minimise data errors.

The FBI CMS contains the following data quality control features:

- TGI has developed brand and manufacturer tables which sit in the backend of the system
- Product brands are selected from a drop-down menu to minimise data entry errors. Only a selected brand from the drop down menu can be entered. For unknown brands or brands not currently identified in the backend brand table, the data entry team will select 'unknown brand'. Senior staff will then identify new or additional product brands, add them to the backend table and assign them to the relevant products
- When a brand is selected from the brand drop-down list, manufacturer information is automatically updated based on the backend brand/manufacturer tables
- Products are unable to be saved in the database if a data entry error has been detected by the system, making the data associate review, check and re-enter their own work
- Restrictions on fields where nutritional information can be entered based upon NIP type:
  - NIP type = **blank** → unable to enter in any of the columns of NIP table in database
  - NIP type = **standard** → only able to enter in the 'per 100g' column of NIP table in database
  - NIP type = **no NIP** → unable to enter in any of the columns of NIP table in database
  - NIP type = **multiple NIPs** → unable to enter in any of the columns of NIP table in database
  - NIP type = **standard plus** → able to enter information in all columns of NIP table in database
  - NIP type = **US NIP** → only able to enter in the 'per serve' column of NIP table in database
- Units (grams/millilitres) selected in serving size field automatically change and update the NIP table in the database
- Restrictions on NIP per 100g fields in database: nutrient information cannot exceed 100g if entered in the per 100g column.

In addition to the in-built data quality checks, the data entry and approval process is 2-stage. In the first stage (data entry) all product information is entered into the database and saved as 'under review'. The second stage (review) involves a more senior level data associate reviewing every field and cross-checking with the information in the associated product photo, edits the product if/as required and saves it as approved - ready for analysis. Once this 2-stage process has been completed, categorization then occurs. During categorization product information is checked and reviewed for a third time, before assigning a food product to a category.

Additional screening of products occurs on a daily basis. Each day a random selection of 5% of the products entered and approved undergo additional quality screening. Discrepancies in data entry are cross-checked, firstly with the product photo, secondly with fellow peers, then thirdly with industry.

### Validation of Data

The George Institute has regular consultations with both research and industry personnel. This provides multiple platforms to validate data. Most commonly, product information is cross-checked by the manufacturer. By following such a process, new products, recently reformulated products and discontinued products can be identified. Furthermore, engaging with industry allows for discussion and queries regarding any discrepancies (outliers, missing values) on pack, identified through data screening. To ensure that the database is capturing the correct and most up to date information, an additional field ('Manufacturer Data Update') has been incorporated into the database. This field determines what information was used to update the product information in the database, i.e. photo information (from DCA or FoodSwitch) or information supplied by the manufacturer. When the *Manufacturer Data Update* field is blank, this means that the product was updated with information from the photos. When information is received from manufacturers and updated in the database, the date is entered into the 'Manufacturer Data Update' field. When new photos or information come through for a product, the most up to date data can be determined and the database updated accordingly.

The following logic rules are then applied:

1. Photo date is before the date in the manufacturer data update field = leave product as is (i.e. do not update) & approve
2. Photo date is after the date in the manufacturer data update field = update product using photos and delete manufacturer data update field so that it is blank
3. Manufacturer data update field is blank = enter product info using photos (as per normal)

### Determination of the Health Star Rating of products in The George Institute Database

In summary, a six step process is used based mostly on the [HSR Guide for Industry](#)<sup>12</sup>

#### Step 1: Determine the HSR category of the food

Each food item is assigned to one of six categories:

- 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
- Category 3D Cheese and processed cheese (with calcium content >320mg/100g)

*Category 1D:* milk and dairy based beverages and dairy beverage analogues derived from legumes and cereals. Note that this differs slightly from the HSR Guide to Industry as calcium content was determined at a food category level as opposed to an individual food product level.

#### Step 2: Determine the form of the food for the HSR

The HSR was derived based on the nutrient values presented in the NIP of the product. As a general rule, if nutrient values for both "as sold" and "as prepared" are provided, the nutrient values for both forms are entered. The "as sold" values are used for monitoring of product formulation and the "as prepared" values are used for the determination of the HSR.



### Step 3: Calculate HSR baseline points

HSR baseline points are calculated for the quantity of energy, saturated fat, total sugars and sodium in 100g or 100mL of the food (based on the units used in the NIP). HSR Baseline Points can be seen in the HSR Guide for Industry.

### Step 4: Calculate HSR Modifying Points

HSR Modifying Points are given for the amount of fruits, nuts, vegetables and legumes (FVNL) in a food and in some cases, the amount of protein and dietary fibre. Note that for FVNL and calcium this is assigned at the *food category* level and not the food product level, unless a manufacturer has specifically provided these values directly to The George Institute. Tables for modifying points can be seen in the HSR Guide for Industry.

### Step 5: Calculate the Final HSR Score

The final HSR score is calculated using the following formula:

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

### Step 6: Assignment of a rating to food based on the final HSR score

The HSR score is assigned a rating (table can be seen in the HSR Guide for Industry), depending on which of the six categories of food in the HSRC it was classified in.

## Missing data logic rules

1. HSR Fibre (F) points: Note that only partial data are available for dietary fibre in The George Institute's database as it is not a required nutrient to declare on the NIP. As such, products in a food category known not to contain fibre (e.g. eggs) are assigned 0 fibre points; products with data available are assigned individual fibre points; and products with no fibre values but in a category of foods known to contain fibre are assigned an imputed value. The imputed value is the average for all products in the category with fibre data present. 74% of products in the TGI Branded Food Composition Database have calculated fibre values.
2. HSR V points: In The George Institute's database, it is not always possible to calculate V points at an individual product level, hence proxy values are assigned at the food category level using the following strategy:
  - a. Products in food categories known not to contain appreciable amounts of fruit and vegetables (e.g. dairy milk) are assigned 0 V points;
  - b. Products in food categories known to contain fruit and vegetables are assigned imputed V points based on the mean V points of a random sample of product ingredient lists from each food category (note there are a total of ~650 categories in the database).
  - c. Products are manually assigned V points if provided to The George Institute directly by the manufacturer and these values override the V points assigned at the food category level.
3. If a product does NOT have any nutrient values provided per 100g or per 100mL, a HSR cannot be assigned and so products cannot be used in analyses.
4. If a product is a variety pack, and therefore provided more than one NIP on-pack, a HSR is not assigned.



## APPENDIX TWO

# Products excluded from the analysis

The following products were excluded from the analysis for one or more of the following reasons:

- They were not considered to contribute significantly to nutrient intake
- They are not commonly sold in the school or workplace setting
- They are ingredients used to prepare meals so the nutritional quality of the end dish rather than the constituent ingredients should be considered
- They are added in small amounts to food to provide flavour e.g. sauces. These products are likely to be managed by considering the nutritional quality of the end meal (e.g. recipe bases) or providing a qualitative recommendation on the type of sauce used (e.g. salt-reduced tomato sauce or salt-reduced stock).

Category	Sub-category	No. of excluded products
Bread and bread-type products	Taco shells	6
	Other plain and savoury bread	6
	Croutons	27
	Plain ice cream cones	16
	Pappadums	8
Cakes, puddings and cake mixes	Meringues	19
	Bavarians	11
	Scones	3
Pasta	Canned pasta	37
	Macaroni and cheese mix	9
Baking ingredients	Flour (white, wholemeal)	49
	Other plain cereals	37
	Bread mixes	15
	LSA mixes and similar products	32
	Breadcrumbs	19
	Polenta	4
	Quinoa	9
	Chia	7
	Bicarb soda	1
	Wheatgerm	4
	Other flours (cornflour, semolina, buckwheat)	8
	Jelly	82
Cream	Cream	75
	Probiotic drinks	8
	Coconut milk and cream	33
Seafood	Anchovies and other canned fish	19
	Chilled smoked salmon	30
	Other fish	30

Category	Sub-category	No. of excluded products
Preserved vegetables	Sun-dried tomatoes	19
	Artichokes	10
	Olives	77
	Pickled vegetables (onions, gherkins, peppers)	107
Meat and meat replacers	Dried meat	32
	Pate and meat spreads	28
	Kebabs	12
	Other meat products	15
	Felafel	10
	Tofu	33
Oils	Coconut oil	1
Sauces and condiments	Vinegars	24
	Gravies and stocks	130
	Marinades	44
	Curry pastes	84
	Ambient, liquid and dried recipe base sauces	348
	Sauces (soy, fish, mustards, BBQ, chilli, tomato, plum, oyster, mint, apple, creamy sauces such as Hollandaise)	269
	Relishes, pickles and chutneys	88
	Pasta sauces (fresh and ambient)	220
Dips	Dips (tzatziki, hummus, guacamole, French onion)	255

## Statistical analysis by food category

**Table 12: Statistical analysis of alignment of HSR and LLW@H criteria by food category**

Category	Red				Amber				Green			
	n	mean	SD	range	n	mean	SD	range	n	mean	SD	range
Savoury biscuits	87	2.1	0.9	0.5-5	288	2.8	1.0	0.5-5	-	-	-	-
Sweet biscuits	185	0.9	0.5	0.5-2.5	343	1.3	0.7	0.5-4	-	-	-	-
Breads	-	-	-	-	-	-	-	-	437	3.5	0.7	1.5-5
Cakes/ cake mixes / puddings	220	1.5	0.6	0.5-2.5	138	1.8	0.5	0.5-3	31	3.1	0.4	2-4
Pastries	143	1.9	0.7	0.5-4	23	2.2	0.9	1-4.5	-	-	-	-
Breakfast cereal	-	-	-	-	60	2.8	0.7	1.5-4	273	4.1	0.6	2.5-5
Snack bars	132	2.3	0.8	0.5-4	162	3.0	1.0	1-5	-	-	-	-
Cous cous/ noodles/ pasta/rice	69	3.1	0.6	1.5-4	125	3.4	0.3	2-4	119	3.8	0.4	2.5-5
Confectionery	937	1.1	0.6	0.5-3	-	-	-	-	-	-	-	-
RTE meals / frozen pies / pizzas	294	2.9	0.6	1.5-4	470	3.5	0.3	1.5-4.5	24	3.7	0.4	2.5-4.5
Soups	-	-	-	-	264	3.4	0.3	3-4	71	3.7	0.4	3.5-5
Cheese / cheese spreads / specialty cheese	-	-	-	-	402	3.2	1.1	0.5-5	214	4.0	1.1	0.5-5
Dairy desserts	106	2.7	0.1	1-4.5	25	3.8	0.5	3-5	-	-	-	-
Frozen desserts / ice cream / ice blocks	218	1.7	0.6	0.5-3.5	140	3.0	0.4	2-4	-	-	-	-
Milk	-	-	-	-	75	3.7	0.9	0.5-5	135	4.4	0.5	3-5
Yoghurts	-	-	-	-	164	2.3	1.1	0.5-5	205	4.0	0.7	1.5-5
Oils / margarine / butter / dressings	47	1.8	0.7	1-3.5	268	3.1	1.0	0.5-5	-	-	-	-
Eggs	-	-	-	-	-	-	-	-	33	4	0	4-4
Seafood	-	-	-	-	-	-	-	-	505	3.9	0.5	1-4.5
Fruits	-	-	-	-	-	-	-	-	408	3.5	0.6	1.5-5
Juices	459	4.0	0.7	0.5-5	51	4.4	0.9	1.5-5	-	-	-	-
Nuts	-	-	-	-	96	3.8	0.6	2-5	246	4.4	0.7	2-5
Canned and frozen vegetables	8	3.7	0.3	3.5-4	70	3.9	0.2	3.5-4	574	4.4	0.5	2-5
Raw meats / meat alternatives	-	-	-	-	-	-	-	-	167	3.8	0.8	1.5-5
Processed meats	134	2.0	0.6	1-3.5	525	2.2	1.3	0.5-4.5	-	-	-	-
Cordial / juice syrups	29	1.3	0.3	1-1.5	58	1.7	0.3	1.5-2.5	-	-	-	-
Energy drinks	63	1.4	0.5	0.5-2.5	6	1.9	0.2	1.5-2	-	-	-	-
Mixers /carbonated beverages	205	1.3	0.4	0.5-2.5	126	1.9	0.4	0.5-5	-	-	-	-
Spreads	-	-	-	-	280	1.9	0.5	0.5-3.5	43	4.3	0.5	3.5-5
Salty snacks / chips / pretzels	255	2.3	1.2	0.5-5	176	3.5	1.0	1-5	4	4	0.7	3.5-5

**Table 12 continued**

Category	Amber vs Red		Green vs Red		Green vs Amber	
	Difference in mean	p	Difference in mean	p	Difference in mean	p
Savoury biscuits	0.7	<0.001	-	-	-	-
Sweet biscuits	0.4	<0.001	-	-	-	-
Breads	-	-	-	-	-	-
Cakes/ cake mixes / puddings	0.3	<0.001	1.6	<0.001	1.2	<0.001
Pastries	0.3	0.11				
Breakfast cereal	-	-	-	-	1.3	<0.001
Snack bars	0.6	<0.001	-	-	-	-
Cous cous/ noodles/ pasta/rice	0.3	<0.001	0.6	<0.001	0.3	<0.001
Confectionery	-	-	-	-	-	-
RTE meals / frozen pies / pizzas	0.7	<0.001	0.9	<0.001	0.2	0.06
Soups	-	-	-	-	0.3	<0.001
Cheese / cheese spreads / specialty cheese	-	-	-	-	0.8	<0.001
Dairy desserts	1.1	<0.001	-	-	-	-
Frozen desserts / ice cream / ice blocks	1.3	<0.001	-	-	-	-
Milk	-	-	-	-	0.6	<0.001
Yoghurts	-	-	-	-	1.7	<0.001
Oils / margarine / butter / dressings	1.2	<0.001	-	-	-	-
Eggs	-	-	-	-	-	-
Seafood	-	-	-	-	-	-
Fruits	-	-	-	-	-	-
Juices	0.4	0.001	-	-	-	-
Nuts	-	-	-	-	0.6	<0.001
Canned and frozen vegetables	0.2	0.30	0.7	<0.001	0.5	<0.001
Raw meats / meat alternatives	-	-	-	-	-	-
Processed meats	0.2	0.04	-	-	-	-
Cordial / juice syrups	0.5	<0.001	-	-	-	-
Energy drinks	0.5	0.01	-	-	-	-
Mixers /carbonated beverages	0.6	<0.001	-	-	-	-
Spreads	-	-	-	-	2.4	<0.001
Salty snacks / chips / pretzels	1.2	<0.001	1.7	0.003	0.5	0.37

**Table 13: Statistical analysis of alignment of HSR and FT@S criteria by food category**

Category	Red				Amber				Green			
	n	mean	SD	range	n	mean	SD	range	n	mean	SD	range
Savoury biscuits	87	2.1	0.9	0.5-5	288	2.8	1.0	0.5-5	-	-	-	-
Sweet biscuits	474	1.0	0.6	0.5-3.5	54	2.0	0.6	1-4	-	-	-	-
Breads	-	-	-	-	-	-	-	-	437	3.5	0.7	1.5-5
Cakes/ cake mixes / puddings	220	1.5	0.6	0.5-2.5	138	1.8	0.5	0.5-3	31	3.1	0.4	2-4
Pastries	143	1.9	0.7	0.5-4	3	2.7	0.3	2.5-3	-	-	-	-
Breakfast cereal					60	2.8	0.7	1.5-4	273	4.1	0.6	2.5-5
Snack bars	161	2.2	0.8	0.5-4	133	3.1	0.9	1.5-5	-	-	-	-
Cous cous/ noodles/ pasta/rice	69	3.1	0.6	1.5-4	125	3.4	0.3	2-4	119	3.8	0.4	2.5-5
Confectionery	937	1.1	0.6	0.5-3	-	-	-	-	-	-	-	-
RTE meals / frozen pies / pizzas	286	2.8	0.6	1.5-4	498	3.5	0.3	1.5-4.5	24	3.7	0.4	2.5-4.5
Soups					264	3.4	0.3	3-4	71	3.7	0.4	3.5-5
Cheese / cheese spreads / specialty cheese	-	-	-	-	402	3.2	1.0	0.5-5	214	4.0	1.1	0.5-5
Dairy desserts	106	2.7	0.9	1-4.5	25	3.8	0.5	3-5	-	-	-	-
Frozen desserts / ice cream / ice blocks	218	1.7	0.6	0.5-3.5	140	3.0	0.4	2-4	-	-	-	-
Milk	-	-	-	-	75	3.7	0.9	0.5-5	135	4.4	0.5	3-5
Yoghurts	-	-	-	-	164	2.3	1.1	0.5-5	205	4.0	0.7	1.5-5
Oils / margarine / butter / dressings	47	1.8	0.7	1-3.5	268	3.1	1.0	0.5-5	-	-	-	-
Eggs	-	-	-	-	-	-	-	-	33	4	0	4-4
Seafood	17	3.6	0.5	2.5-4	89	4.0	0.2	3.5-4.5	399	3.9	0.5	1-4.5
Fruits	-	-	-	-	-	-	-	-	408	3.5	0.6	1.5-5
Juices	-	-	-	-	404	4.1	0.7	0.5-5	106	4.1	0.7	0.5-5
Nuts	-	-	-	-	96	3.8	0.6	2-5	246	4.4	0.7	2-5
Canned and frozen vegetables	8	3.7	0.3	3.5-4	70	3.9	0.2	3.5-4	574	4.4	0.5	2-5
Raw meats / meat alternatives	-	-	-	-	-	-	-	-	167	3.8	0.8	1.5-5
Processed meats	134	2.0	0.6	1-3.5	525	2.2	1.3	0.5-4.5	-	-	-	-
Cordial / juice syrups	29	1.3	0.3	1-1.5	58	1.7	0.3	1.5-2.5	-	-	-	-
Energy drinks	63	1.4	0.5	0.5-2.5	6	1.9	0.2	1.5-2	-	-	-	-
Mixers /carbonated beverages	205	1.3	0.4	0.5-2.5	126	1.9	0.4	0.5-5	-	-	-	-
Spreads	-	-	-	-	323	2.2	1.0	0.5-5	-	-	-	-
Salty snacks / chips / pretzels	255	23.3	1.2	0.5-5	176	3.5	1.0	1-5	4	4	0.7	3.5-5

Category	Amber vs Red		Green vs Red		Green vs Amber	
	Difference in mean	p	Difference in mean	p	Difference in mean	p
Savoury biscuits	0.7	<0.001	-	-	-	-
Sweet biscuits	1.0	<0.001	-	-	-	-
Breads	-	-	-	-	-	-
Cakes/ cake mixes / puddings	0.3	<0.001	1.6	<0.001	1.2	<0.001
Pastries	0.8	0.05	-	-	-	-
Breakfast cereal	-	-	-	-	1.3	<0.001
Snack bars	0.9	<0.001	-	-	-	-
Cous cous/ noodles/ pasta/rice	0.3	<0.001	0.6	<0.001	0.3	<0.001
Confectionery	-	-	-	-	-	-
RTE meals / frozen pies / pizzas	0.8	<0.001	0.9	<0.001	0.2	0.05
Soups	-	-	-	-	0.3	<0.001
Cheese / cheese spreads / specialty cheese	-	-	-	-	0.8	<0.001
Dairy desserts	1.1	<0.001	-	-	-	-
Frozen desserts / ice cream / ice blocks	1.3	<0.001	-	-	-	-
Milk	-	-	-	-	0.6	<0.001
Yoghurts	-	-	-	-	1.7	<0.001
Oils / margarine / butter / dressings	1.2	<0.001	-	-	-	-
Eggs	-	-	-	-	-	-
Seafood	0.4	0.002	0.3	0.03	-0.1	0.01
Fruits	-	-	-	-	-	-
Juices	-	-	-	-	0.1	0.42
Nuts	-	-	-	-	0.6	<0.001
Canned and frozen vegetables	0.2	0.30	0.7	<0.001	0.5	<0.001
Raw meats / meat alternatives	-	-	-	-	-	-
Processed meats	0.2	0.04	-	-	-	-
Cordial / juice syrups	0.5	<0.001	-	-	-	-
Energy drinks	0.5	0.01	-	-	-	-
Mixers /carbonated beverages	0.6	<0.001	-	-	-	-
Spreads	-	-	-	-	-	-
Salty snacks / chips / pretzels	1.2	<0.001	1.7	0.003	0.5	0.37

**Table 14: Statistical analysis of alignment of HSR and *Australian Dietary Guidelines* core versus discretionary foods by food category**

Category	Core				Discretionary			
	n	mean	SD	range	n	mean	SD	range
Bread	404	3.7	0.6	2 - 5	33	2.1	0.6	1.5 - 4
Cereal	307	3.9	0.7	2 - 5	26	2.4	0.5	1.5 - 3.5
Couscous, pasta, rice	313	3.5	0.5	1.5 - 5	-	-	-	-
Ready to eat meals	643	3.5	0.4	1.5 - 4.5	145	2.5	0.5	1.5 - 3.5
Soup	335	3.4	0.3	3 - 5	-	-	-	-
Cheese	616	3.5	1.1	0.5 - 5	-	-	-	-
Milk	210	4.2	0.7	0.5 - 5	-	-	-	-
Yoghurt	369	3.25	1.2	0.5 - 5	-	-	-	-
Oils, margarine, butter, mayonnaise	202	3.5	0.6	1 - 5	113	1.7	0.6	.5 - 3.5
Eggs	33	4	0	4 - 4	-	-	-	-
Seafood	399	3.9	0.5	1 - 4.5	106	4	0.3	2.5 - 4.5
Fruit	408	3.5	0.6	1.4 - 5	-	-	-	-
Juice	510	4.1	0.7	0.5 - 5	-	-	-	-
Nuts	342	4.2	0.7	2 - 5	-	-	-	-
Vegetables	574	4.4	0.5	2 - 5	78	3.8	0.2	3.5 - 4
Raw meat, meat replacers	167	3.8	0.8	1.5 - 5	-	-	-	-
Spreads, peanut butter	43	4.3	0.5	3.5 - 5	280	1.9	0.5	0.5 - 3.5
Savoury biscuits	263	2.9	1	1 - 5	112	1.8	0.7	0.5 - 4
Salty snacks / chips / pretzels	-	-	-	-	435	2.8	1.2	0.5 - 5
Sweet Biscuits	-	-	-	-	528	1.1	0.7	0.5 - 4
Pastries	-	-	-	-	166	2	0.7	0.5 - 4.5
Cakes, cake mixes, puddings	32	0.4	0.6	0.5 - 4	357	1.6	0.6	0.5 - 3
Snack Bars	-	-	-	-	294	2.7	0.9	0.5 - 5
Confectionery	-	-	-	-	937	1.1	0.6	0.5 - 3
Dairy desserts	-	-	-	-	131	2.9	0.9	1 - 5
Ice blocks, frozen desserts, ice cream	-	-	-	-	358	2.3	0.8	0.5 - 4
Processed meats	-	-	-	-	659	2.2	1.2	0.5 - 4.5
Cordial / juice syrups	-	-	-	-	87	1.6	0.4	1 - 2.5
Energy drinks	-	-	-	-	69	1.4	0.5	0.5 - 2.5
Mixers /carbonated beverages	-	-	-	-	331	1.5	0.5	0.5 - 5

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