Policy context relating to sugars in Australia and New Zealand

Contents

Executive Summary

Excess sugar consumption has been identified as an area of concern in Australia and New Zealand. The Australia New Zealand Ministerial Forum on Food Regulation has agreed to a program of work to investigate labelling approaches to providing information on sugars.

As part of this program of work, the Australian Government Department of Health prepared an updated policy context paper to provide Ministers with a summary of current issues and policies relating to sugars in Australia and New Zealand.

About sugar

Sugar is a type of carbohydrate that occurs naturally in foods such as milk and fruit and can also be added to foods and drinks by the manufacturer or the consumer. Sugars are not only added to a product to provide sweetness, they can also be added for functional reasons. Sugars added to a food or drink by the consumer or manufacturer are commonly referred to as 'added sugars'. Added sugars are not chemically different to sugars naturally occurring in foods such as fruit and milk, which makes it difficult to distinguish between added and naturally occurring sugars using analytical methods.

There is no universally accepted definition for 'added sugar'. Both the Australian and New Zealand dietary guidelines recommend limiting consumption of added sugars, however, neither guideline provides a clear definition of what are added sugars.

Foods and beverages that are high in added sugars tend to be lower in micronutrients (vitamins and minerals) compared to whole or less processed foods, and can displace more nutritious foods and beverages in the diet. There is good evidence to suggest that dietary sugars may lead to overconsumption of energy, hence, contribution to overweight and obesity; however more evidence is needed to determine whether added sugar per se has a negative impact on health.

Recommended intakes

Some international agencies have developed guidelines for sugar intake:

- The World Health Organization (WHO) recommendation that 'free sugars[1]' should account for less than 10% of total energy intake (approx. 50 grams/12 teaspoons) for the prevention of unhealthy weight gain and dental caries.
- In 2015, the UK Scientific Advisory Committee on Nutrition (SACN) advised that the UK population's intake of 'free sugars' should be less than 5% of total energy intake.
- The 2015-2020 Dietary Guidelines for Americans recommend a limit for added sugar intake of less than 10% of total energy for adults and children

Sugar consumption

Researchers in Australia and New Zealand have recently analysed sugar consumption:

- Over half of consumers in Australians (52%) and New Zealand adults (58%) are exceeding the WHO recommended intakes, with adolescents and young adults recording the highest sugar consumption.
- The majority (81%) of free sugars consumed in Australia came from energy-dense, nutrient-poor 'discretionary' foods and beverages.
- Sugar sweetened beverages are the major source of free sugars in Australian diets and beverages were the major source of total sugar in New Zealand children's diets.
- Australians consuming sugar sweetened beverages dropped from 43% in 1995 to 34% in 2011-12 and small non-significant reductions in sweetened beverage consumption were also observed in New Zealand adults between 1997 and 2008/09.

[1] includes sugars added to foods and drinks as well as sugars in honey, fruit juice and fruit juice concentrates.

Conditions associated with sugar consumption

Consuming too much free/added sugar is associated with dental caries and weight gain, which in turn increases the risk of non-communicable diseases (NCDs) such as heart disease, type 2 diabetes, stroke and some cancers.

- For Australians aged 18 years and over, the prevalence of overweight and obesity increased in Australia from 56.3% in 1995 to 63.4% (11.2 million people) in 2014-15. For children aged 5-17 years, the proportion who were overweight or obese increased from 20.9% in 1995 to 25.7% in 2011-12 and then remained stable to 2014-15 (27.4%).
- In Australia, during the 30 year period 1989-2007, 46% of children under the age of 6 had already experienced caries.
- In New Zealand, obesity rates for adults are increasing, with more than three in ten adults (32%) obese in 2015/2016, up from 27% in 2006/07. However, obesity rates in children have been stable since 2011/12 with (11%) classified as obese.
- In New Zealand, despite improvements in oral health over time, dental caries remain the most prevalent chronic (and irreversible) disease

Policy initiatives in relation to sugars in Australia and New Zealand

A range of healthy eating policies, campaigns, and initiatives relating to sugar are being implemented in Australia and New Zealand.

- Government activities at the national and jurisdictional level are wide ranging but many focus on reducing the consumption of sugar sweetened beverages. Examples include restricting high sugar foods (and sugary drinks) in school canteens and health care settings, plus health promotion messages through social marketing.
- Non-government initiatives focus on raising consumer awareness of the added sugar content of foods and drinks, particularly sugary drinks, plus advocating for changes to food labels to allow consumers to more easily identify foods high in added sugars. There are some strong messages coming from individual anti-sugar advocates which may conflict with some of the evidence-base for sugar and confuse consumers.
- Food industry initiatives focus on providing information to consumers about the sugar content of foods, and reformulating products to reduce sugar content.

Sugar Labelling in Australia and New Zealand

The Overarching Strategic Statement for the Food Regulatory System recognises that food labelling policy is complex, and to support decision making in the area of food labelling, the aims of the food regulatory system have been translated into the following risk-based issues hierarchy:

1. Food safety
2. Preventive health
3. Consumer values

Preventive health issues include the indirect, long term impacts on health and particularly include chronic disease and overweight and obesity. Providing information on the label to assist consumers to understand the sugar content of foods and beverages may support consumers to make food choices that support prevention of obesity and chronic diseases.

Labelling of sugars on packaged food products is regulated in the Australia and New Zealand Food Standards Code (the Code):

- In most cases, it is mandatory to declare sugar content per serve and per 100g (of total sugars) in a Nutrition Information Panel (NIP) and declare sugars in the statement of ingredients (in descending order of weight).

- Some stakeholders consider that the NIP should distinguish between naturally occurring and added sugars to help consumers to identify foods high in added sugars. Consumer advocates also claim that the current requirements for the statement of ingredients may be misleading as added sugars may appear in the ingredients list under at least 40 different names, which can make it difficult for consumers to identify foods containing added sugars.
- The Code also regulates optional aspects of sugar labelling: Percentage Daily Intake and Nutrition Content Claims (such as 'no added sugar', 'low sugar' or '% sugar free').

Other labelling initiatives relating to sugar that are outside of the Code include the Health Star Rating (HSR)System and Daily Intake Guide (DIG).:

- The HSR algorithm is based on the balance of multiple nutrients, including sugars; it uses the total sugar content of a food, rather than added sugars. The HSR permits an optional nutrient icon where information about the energy content of a product, as well as the levels of saturated fat, sodium, and total sugars are displayed.
- The scheme uses 'thumbnails' on the front of the package to display the amount and %DI for energy, fat, saturated fat, sugars and sodium per serve, using a serving size set by the manufacturer.

Sugar labelling internationally

Various sugar labelling options have been adopted internationally.

- The United States is the only country to include added sugar in their labelling scheme. Justification for this was based on supporting consumers to identify foods containing added sugar and the need for consumers to have a consistent basis on which to compare products.
- Canada initially considered labelling added sugar, however following a consultation period, it decided to focus its labelling on total sugars to avoid misconceptions added sugars are nutritionally different from naturally occurring sugars, and enforcement challenges due to the lack of a current analytical method able to distinguish between sugars and total sugars.

Consumer research

FSANZ has examined the available literature on consumer knowledge, attitudes and behaviours relating to sugars in foods as presented on food labelling:

- Consumers report being interested in sugar.
- Consumers have trouble classifying sugars as 'natural' or 'added' and perceive that 'natural' sugars are healthier than added sugars.
- International studies indicate labelling the amount of added sugars, in additional to total sugars, may confuse consumers and cause them to overestimate the total sugar content of a product. While the layout and wording of the label can reduce the proportion of consumers who make this error, further research would be needed to determine whether this error rate could be reduced further.
- Consumers in Australia and New Zealand are generally able to identify which of two products is the lower in sugar from the mandated information on food labels for sugar information. However, consumers' motivation to reduce sugar in the diet influenced whether they would actually use the label information.
- However, international research reports that when examining a single product, consumers had difficulty in determining whether a single product was high or low in sugars.
- Additional contextual information on the label, such as %Daily Intake, may offer consumers further assistance in understanding food labels and making decisions about purchasing and/or consuming particular products.

Introduction

This paper describes the broad policy context relating to sugars in foods and in the diet in Australia and New Zealand. It has been prepared to support Minister's consideration of the program of work prepared by Food Standards Australia New Zealand (FSANZ) to further investigate labelling approaches to providing information on sugars.

This work originated to support consideration of Recommendation 12 in the *Labelling Logic: Review of food labelling law and policy* (2011) report (Labelling Review): '*That where sugars, fats or vegetable oils are added as separate ingredients in a food, the terms 'added sugars' and 'added fats' and/or 'added vegetable oils' be used in the ingredient list as the generic term, followed by a bracketed list (e.g. added sugars (fructose, glucose syrup, honey), added fats (palm oil, milk fat) or added vegetable oils (sunflower oil, palm oil)'.*

While Recommendation 12 in the Labelling Review relate to labelling of added sugars, added fats and added vegetable oils, this paper will focus specifically on sugars.

It is acknowledged that the Labelling Logic report is now over 5 years old and evidence around the impact of added sugars on health, and public concern relating to the issue, has increased significantly since the recommendation was made. The paper investigates current issues relating to sugars, with an emphasis on added sugars, in Australia, New Zealand by discussing health impacts of added sugars, dietary advice about added sugars, food labelling policy. The paper also considers broader issues such as health promotion campaigns and policies as well as pricing policies and taxes designed to discourage consumption of foods high in added sugars.

About Sugar

Sugar in foods and drinks

Sugar is a type of carbohydrate. Sugar can occur naturally in foods such as fruits (i.e. fructose), milk and milk products (i.e. lactose). Sugars can also be added to foods and drinks by manufacturers during processing or manufacturing (for example in the form of fructose, glucose or sucrose), or by consumers and cooks during food preparation or at the time of consumption. These types of sugars are commonly referred to as 'added sugars'.

The use of sugars by the manufacturing industry is not limited to sweetening a product. Sugar is added for a number of functional reasons which contributes uniquely to the food's appearance, texture and shelf-life[2] .

Foods and drinks can contain a combination of naturally occurring and added sugars. For example, flavoured milk contains sugars naturally occurring in the milk as well as sugars that have been added by the manufacturer. The term 'total sugars' refers to the total amount of sugars in the product from both of these sources.

Definition of added sugar

There is no universally agreed definition for 'added sugars', with different definitions used in Australia, New Zealand and internationally. The World Health Organization (WHO) uses the term 'free sugars' which is defined as including sugars added to foods and drinks as well as sugars in honey, fruit juice and fruit juice concentrates.

[2] Sugar Research Advisory Service, n.d. 'The function role of sugar in food' Available at this link: Sugar Research Advisory Service (accessed 22 June 2017).

Added sugars are not chemically different to sugars naturally occurring in foods such as fruit and milk, which makes it difficult to distinguish between added and naturally occurring sugars using analytical methods. There is no standard method for analysing added sugar content of foods and beverages.

Impact of sugar on health

Many processed foods and beverages that are high in added sugars are lower in micronutrients (vitamins and minerals) compared to whole or less processed foods[3]. Foods and beverages high in added sugars may displace more nutritious foods and beverages and make it difficult for people to achieve the recommended intakes of micronutrients while controlling their energy intake[4,5].

There is good evidence to suggest that dietary sugars may lead to overconsumption of energy, hence, contribution to overweight and obesity; however more evidence is needed to determine whether added sugar per se has a negative impact on health.

A review of the available evidence commissioned by NSW Health in 2015 concluded there is clear evidence to be concerned about levels of sugar intake in the form of sugar-sweetened beverages but insufficient evidence to support concern regarding the added sugar content of otherwise nutritious foods (such as yoghurt, flavoured milk or breakfast cereal), beyond their contribution to overall kilojoule intake [6]. It is important to note that most of this evidence is from observational studies.

Sugar-sweetened beverages have no nutritional value, are often consumed in large amounts, and provide little satiety, leading to overconsumption, increased energy intake and consequently increased risk of unhealthy weight gain and NCDs[7]. There is good evidence that sugar-sweetened beverages are associated with dental diseases and accumulating evidence from observational studies of a relationship between sugar-sweetened beverages and blood pressure/hypertension, risk of developing cardiovascular disease, risk of diabetes and metabolic disease. The Australian Burden of Disease Study [8] estimated that in 2011 0.3% of the total burden of disease was associated with a diet high in sugar-sweetened beverages.

Sugar intake recommendations internationally

The WHO notes that consuming too much 'free sugar' (defined above) can lead to weight gain, which in turn increases the risk of non-communicable diseases (NCDs) such as heart disease, type 2 diabetes, stroke and some cancers [9].

The WHO 2015 *Sugars Intake for Adults and Children*[10] guideline provides a 'strong' recommendation that free sugars should account for less than 10% of total energy intake (approx. 50 grams/12 teaspoons) for the prevention of unhealthy weight gain and dental caries. The WHO guideline makes an additional 'conditional' recommendation that intake of free sugars at less than 5% of total energy intake

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[3] Institute of Medicine (IOM) of the National Academies 2005. 'Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids (Macronutrients), Chapter 6: Dietary Carbohydrates: Sugars and Starches", Washington, DC'. Available here: the National Acadamies Press (accessed 17 June 2016).

[4] World Health Organization, 2015. 'Guideline: Sugars intake for adults and children'. Available at: World Health Organisation (accessed 20 June 2016).

[5] United States Food and Drug Administration (USFDA) 2014. 'Food Labelling: Revision of the Nutrition and Supplement Facts Labels': Available at Federal Register, the Daily Journal of the United States Government (accessed 17 June 2016).

[6] Boylan S & Mihrshahi S, 2015. 'Sugar intake and health outcomes – A Rapid Evidence Review'. Available at Physical Activity Nutrition Obesity Research Group (accessed 22 August 2016).

[7] World Health Organization. 2016. 'Reducing consumption of sugar-sweetened beverages to reduce the risk of childhood overweight and obesity'. Available at: World Health Organisation e-Library (accessed 4 August 2016).

[8] Australian Institute of Health and Welfare. 2016. 'Australian Burden of disease Study – Impact and causes of illness and deaths in Australia 2011'. Available at Australian Institute of Health and Welfare (accessed 25 August 2016).

[9] World Health Organization, 2015. 'Guideline: Sugars intake for adults and children'. Available at: World Health Organisation - Guideline: Sugars intake for adults and children (accessed 20 June 2016).

[10] 1 teaspoon refers to a level teaspoon of white sugar

(approx. 25 grams/6 teaspoons) would provide additional health benefits, particularly in relation to dental caries. These recommendations were based on the totality of evidence reviewed regarding the relationship between free sugars intake and body weight (low and moderate quality evidence) and dental caries (very low and moderate quality evidence).

In 2015, the UK Scientific Advisory Committee on Nutrition (SACN) advised that the UK population's intake of 'free sugars' should be less than 5% of total energy intake based on evidence on the effect of free sugars on the risk of dental caries and on total energy intake. The SACN adopted the WHO definition of 'free sugars' for this recommendation[11].

The *2015-2020 Dietary Guidelines for Americans*[12] recommend a limit for added sugar intake of less than 10% of total energy for adults and children. This is justified by the explanation that, for most calorie[13] levels, there are not enough calories available after meeting food group needs to consume 10 percent of calories from added sugars and 10 percent of calories from saturated fats and still stay within calorie limits. Added sugars are defined as 'syrups and other caloric sweeteners used as a sweetener in other food products'.

Following a request from Nordic countries, the European Food Safety Authority will provide scientific guidance on the daily intake of added sugar in food by early 2020. The aim of this work is to provide a science-based cut off value for the daily consumption of added sugar that is not associated with adverse health effects. The assessment will consider the adverse health effects of added sugar on the general population in regards to body weight, glucose intolerance and insulin sensitivity, type-2 diabetes, cardiovascular risk factors, as well as dental caries[14].

Sugar intake recommendations in Australia and New Zealand

The 2013 Australian Dietary Guidelines[15] and 2015 Eating and Activity Guidelines for New Zealand Adults [16](both guidelines will hereafter be referred to as 'Dietary Guidelines') recommend limiting intakes of foods and drinks containing added sugars (as well as saturated fats, salt and alcohol). These Dietary Guidelines provide examples of types of foods and drinks high in added sugars, however, neither guideline provides a specific definition of added sugar or recommend a quantified limit on the amount of added sugars the population should consume.

At the time of publication, the Australian Dietary Guidelines noted that there was insufficient evidence to recommend an exact intake of added sugars suitable for the whole population. However, the Australian Dietary Guidelines acknowledge a probable association between the consumption of sugar sweetened beverages and increased weight gain in children and adults.

[11] Scientific Advisory Committee on Nutrition 2015. 'Carbohydrates and Health'. Available at: Scientific Advisory Committee on Nutrition: Carbohydrates and Health (Accessed 21 July 2016).
[12] U.S. Department of Health and Human Services and U.S. Department of Agriculture, 2015. '2015–2020 Dietary Guidelines for Americans'. Available at: Australian Government Department of Health (accessed 22 June 2017).
[13] Calorie is a unit of energy and is used in the United States. Australia and New Zealand use kilojoules to refer to energy from food.
[14] European Food Safety Authority (EFSA) 2017. 'EFSA to give advice on the intake of sugar added to food' Available at: https://www.efsa.europa.eu/en/press/news/170323-0 (Accessed 14 July 2017).
[15] National Health and Medical Research Council, 2013. 'Eat For Health: Australian Dietary Guidelines', Canberra: Australian Government. Available at National Health and Medical Research Council (accessed 10 June 2016).
[16] Ministry of Health, 2015. 'Eating and Activity Guidelines for New Zealand Adults', Wellington: Ministry of Health. Available at: Eating and Activity Guidelines for New Zealand Adults (accessed 24 June 2016).

Sugar intakes in Australia and New Zealand

Australia

In April 2016 the Australian Bureau of Statistics (ABS) released the results of an analysis on consumption of 'free', and 'added' sugars in the Australian population in 2011-12[17]. This work was commissioned by the Australian Government Department of Health.

The analysis combined food consumption data from the 2011-12 National Nutrition and Physical Activity Survey with food composition data prepared by FSANZ on the added and free sugar content of foods consumed by survey participants (2011-13 AUSNUT database). In this analysis, 'added' sugars included all ingredients defined as sugars in the Australia New Zealand Food Standards Code[18,19], while 'free' sugars referred to the WHO definition of free sugars[20]. Because there is no recommended intake for added sugar in Australia, only the results from the analysis of free sugar intakes have been reported in this paper.

The ABS reported that in 2011-12, Australians consumed an average of 105 grams of total sugars per day. Just over half of this was free sugars (60 grams, equivalent to approximately 14 level teaspoons of white sugar), with the balance (45 grams) being the naturally occurring sugars.

Adolescents aged 14-18 years old recorded the highest intake of free sugars, with males consuming an average of 92 grams per day (22 teaspoons) and females 70 grams (17 teaspoons). The top 10% of males in this age group consumed at least 160g (38 teaspoons) of free sugars per day.

The majority (81%) of free sugars consumed in Australia were from energy-dense, nutrient-poor 'discretionary' foods and beverages. The leading contributors towards intakes of free sugars were soft drinks and sports and energy drinks, accounting for 19% of free sugar intake in the population, followed by fruit and vegetable juices and drinks (13%). In particular, 14-18 year old males obtained approximately 35% of their free sugar intakes from soft drinks and sports and energy drinks.

More than half of Australians (52%) exceeded the WHO recommendation to limit energy from free sugars to less than 10% of energy intakes, with the average intake being 10.9%. Children and adolescents were most likely to exceed the recommendation with almost three-quarters of 9-18 year olds exceeding the recommendation.

The majority (90%) of Australians also exceeded the WHO conditional recommendation that free sugars be reduced to less than 5% of energy intake. Children and teenagers (aged between 4 and 18 years) were most likely to exceed this recommendation (97% of this group exceeded the recommendation). The group least likely to exceed this recommendation were adults aged 51-70 years, however, 81% of this group still exceeded the recommendation.

[17] Australian Bureau of Statistics, 2016. 'Australian Healthy Survey: Consumption of added sugars, 2011-12'. Available at: Australian Bureau of Statistics (accessed 20 July 2016).

[18] Using the second definition of 'sugars' in the Code. Includes sucrose, fructose, dextrose, lactose and sugar syrups such as glucose syrup.

[19] Food Standards Australia New Zealand (FSANZ). 2015. 'Determining the amount of added sugars and free sugars in foods listed in the AUSNUT 2011-13 dataset' Available at: Food Standards Australia New Zealand (accessed 21 July 2016).

[20] World Health Organization, 2015. 'Guideline: Sugars intake for adults and children'. Available at: World Health Organisation - Guideline: Sugars intake for adults and children (accessed 20 June 2016).

New Zealand

The 2008/09 Adult Nutrition Survey (ANS 08/09) collected information on the food and beverage intake of 4721 New Zealand adult's (aged 15 years and older) through 24 hour diet recalls[21].

The survey reported that the median intake of total sugars from all sources for adults was 107 g/day, with both males and females aged 19-30 years consuming the highest median amount (140 g/day and 120 g/d respectively). The major dietary contributors were fruit (18%), non-alcoholic beverages (17%), sugar and sweets (15%), and milk (10%).

In 2016, University of Otago researchers estimated the intake of free and added sugars in New Zealand using dietary intake data from the ANS 08/09[22,23]. The Otago researchers applied a ten-step protocol[24] to estimate the amount of free and added sugars in the foods consumed by survey participants. For the purpose of this research, added sugars were defined as per the United States Department of Agriculture (USDA) definition for added sugars and free sugars as per the WHO definition for free sugars. To better enable comparison with the Australian results, only the free sugar results are reported here. The research did not report on the contribution of food groups to added or free sugars intake in the New Zealand diet.

The researchers estimated that New Zealand adults consume a median of 57g (14 teaspoons) of free sugars. Compared to females, males consumed significantly more free sugars (median intake of 51g and 64g; respectively). Younger age groups generally had significantly higher intakes of free sugars, with males aged 15-18 years consuming a median 84g of free sugars per day.

By ethnicity, there was no significant difference in consumption of free sugars, however there was a trend for Maori to consume more free sugars than Pacific or New Zealand European and Other (NZEO). Overall, Pacific females aged 51 years and older had the lowest intake of free sugars (median intake of 28 g/day).

Over half (58%) of New Zealand Adults exceeded the WHO recommendation to limit energy from free sugars to less than 10% of energy intake, with the median intake being 11%. NZEO females aged between 15-18 years were the most likely to exceed this recommendation, with 80% of this group exceeding this recommendation. Pacific females aged 51 years and over were least likely to exceed this recommendation.

The majority (91%) of New Zealand Adults exceeded WHO's conditional recommendation to limit energy from free sugars to less than 5% of energy intake. Again NZEO females aged 15-18 years were the most likely to exceed these recommendations, with 97% of this group exceeding these recommendations. The least likely to exceed these recommendations were Maori males aged over 51 years, however, still only 24% of this group managed to meet these recommendations.

The 2002 New Zealand National Children's Nutrition Survey provides data on intakes of total sugars and selected disaccharides in children aged 5-14 years. Median intakes of total sugars increased with age, but overall were 121 g/day. The major dietary contributor categories were beverages (26%), fruit (21%) and sugar and sweets/biscuits (both 11%)[25].

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[21] University of Otago and Ministry of Health, 2011. '*A Focus on Nutrition: Key findings of the 2008/09 New Zealand Adult Nutrition Survey*'. Wellington: Ministry of Health.

[22] Nettleton A, 2016. Estimating added sugars intake in New Zealand [Thesis]. Dunedin, New Zealand: University of Otago.

[23] Kibblewhite RL, 2016. Estimating free sugars intake in New Zealand [Thesis]. Dunedin, New Zealand: University of Otago.

[24] Louie JCY, Moshtaghian H, Boylan S, Flood VM, Rangan AM, Barclay AW, et al, 2015. A systematic methodology to estimate added sugar content of foods. *European journal of clinical nutrition*: 69(2), 154-61.

[25] New Zealand Ministry of Health, 2003. '*NZ Food NZ Children: Key results of the 2002 National Children's Nutrition Survey*'. Wellington: Ministry of Health. Available at New Zealand Food New Zealand Children: Key results of the 2002 National Children's Nutrition Survey (accessed 20 July 2016).

Sugar sweetened beverages

As described above, soft drinks and sports and energy drinks were the major source of free sugars in Australian's diets, and beverages were the major source of total sugar in New Zealand children's diets. Given these findings, in addition to the convincing evidence that consumption of sugar-sweetened beverages is detrimental to health, consideration of consumption patterns of these beverages is warranted.

In Australia, the ABS has investigated consumption of sugar-sweetened beverages using data from the 2011-12 National Nutrition and Physical Activity Survey and reported that the proportion of Australians consuming sugar sweetened beverages dropped from 43% in 1995 to 34% in 2011-12. However, the ABS notes that under-reporting increased between the 1995 and 2011-2012 surveys, particularly in males[26].

Among consumers of sugar sweetened beverages, the amount consumed varies widely. The median amount consumed was around the size of a typical can (375mLs), however, the top 10% of consumers consumed more than one litre per day, peaking at 1.4 Litres for males aged 19-30[27]. Aboriginal and Torres Strait islander people were more likely to consume sugar sweetened beverages than non-Indigenous people (50% compared with 34%), with their median intake being higher at 450mLs.

In New Zealand, an analysis of the 1997 National Nutrition Survey and the 2008/09 New Zealand Adult Nutrition Survey reported that the proportion of men consuming sweetened beverages in 2008/09 was 37.1%, compared to 38.4% in 1997. This was a non-significant decrease. A similar small but non-significant decrease was found in women (1997: 34.3% and 2008/09:30.8%)[28]. This report did not distinguish between sugar-sweetened and artificially sweetened beverages.

Using dietary intake data from the 08/09 ANS, University of Otago researchers[29] estimated that New Zealand adults consumed on average 23 grams[30] of sugar from sugar sweetened beverages each day, contributing to 16.7% of total sugar intake. Both males and younger age groups tended to consume more sugar from these drinks, with the top 10% of male consumers in the 15-18 year old age group consuming 128 grams per day.

The 2015/2016 New Zealand Health Survey[31] reported that 17% of New Zealand children (aged 2-14 years) consumed at least three 'fizzy' drinks (including energy drinks and diet 'fizzy' drinks) in the past week, this had remained static since 2006/07. There were disparities between ethnic and socioeconomic groups, with children living in the most socioeconomically deprived areas 3.5 times more likely to have consumed 'fizzy' drinks than children living in the least deprived areas, after adjusting for age, sex and ethnic differences. Similarly, Māori children and Pacific children were more likely to have 'fizzy' drinks compared to non-Māori or non-Pacific children (adjusted ratio 1.5 and 1.9; respectively). Note that it is unclear on what proportion of these 'fizzy' drinks where sugar sweetened and what proportion were artificially sweetened.

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[26] Australian Bureau of Statistics, 2015. Australian Health Survey: Nutrition First Results – Foods and Nutrients, 2011-12 'Consumption of Sweetened Beverages'. Available at Australian Bureau of Statistics (accessed 20 July 2016).

[27] Australian Bureau of Statistics. 2016. '2011-12 Australian Health Survey: Selected percentiles of consumption of sugar sweetened beverages in ml per consumer' (personal communication).

[28] Smith C, Gray A, Mainvil L, Fleming E and Parnell W. 2015. 'Secular changes in intakes of foods among New Zealand adults from 1997 to 2008/09'. *Public Health Nutrition*: 18(18), 3249–3259.

[29] University of Otago, 2015. 'Beverages as Sources of Sugars in the New Zealand Diet, 2008/09 New Zealand Adult Nutrition Survey'. Technical report no. 2015.139.

[30] Median not reported.

[31] New Zealand Health Ministry of Health, 2016. 'Annual Update of Key Results 2015/16: New Zealand Health Survey'. Available at New Zealand Ministry of Health (accessed 14 July 2017).

Dental caries and overweight and obesity in Australia and New Zealand

As the added sugars have been associated with unhealthy weight gain and dental caries, this section examines the prevalence of these conditions in Australia and New Zealand. Causes of both these conditions are complex and do not relate solely to added sugar consumption.

Overweight and obesity in Australia

High body mass index[32] accounted for 6.8% of the total disease burden in Australia in 2015[33] and was the second leading risk factor contributing to total disease burden after smoking (7.2%)[34]. For Australians aged 18 years and over, the prevalence of overweight and obesity increased in Australia from 56.3% in 1995 to 63.4% (11.2 million people) in 2014-15[35]. For children aged 5-17 years, the proportion who were overweight or obese increased from 20.9% in 1995 to 25.7% in 2011-12 and then remained stable to 2014-15 (27.4%)[36].

The prevalence of overweight and obesity in the Aboriginal and Torres Strait Islander population (aged 15 years and over) in 2012/13 was 66%, with 29% being overweight and 37% being obese. Aboriginal and Torres Strait Islander adults (aged 15 years and over) were reported to be 1.2 times more likely to be overweight, and 1.6 times more likely to be obese compared to the non-Indigenous population[37].

Overweight and obesity in New Zealand

In New Zealand, high body mass index accounted for 7.6% of the total burden of disease in 2015, and was the third leading risk factor contributing to total disease burden after blood pressure (8.1%) and smoking (7.9%). In New Zealand the total disease burden attributed to high body mass index has remained static since 2010 (7.6%) and increased slightly since 2005 (7.4%)[38]. However, obesity rates for adults are increasing, with more than three in ten adults (32%) obese in 2015/2016, up from 27% in 2006/07. However, obesity rates in children have been stable since 2011/12, with one in nine children aged 2-14 years (11%) classified as obese[39].

Obesity rates are strongly linked to socioeconomic deprivation[40], with the obesity rate for children living in the most deprived neighbourhoods being five times that of those living in the least deprived neighbourhoods. For adults the equivalent rate ratio is 1.7 times, after adjusting for age, sex and ethnic differences. However, this inequality was more pronounced for extreme obesity rates (BMI ≥ 40), with adults living in the most deprived neighbourhoods 4.1 times more likely to be extremely obese than adults living in the least deprived neighbourhood. Māori adults have higher obesity rates (47%) than non-Māori, with Māori children in particular having comparatively high rates of obesity (14.7%). Pacific adults and children have the highest rates of obesity. About two-thirds of Pacific adults (67%) and almost one-third of Pacific children (29.8%) are obese.

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[32] defined as a body mass index of 22.5kg/m^2 or greater

[33] Institute for Health Metrics and Evaluation, 2015. 'GBD Compare Viz Hub'. Available at: Institute for Health Metrics and Evaluation (accessed 3 August 2017).

[34] Note that the Australian Institute of Health and Welfare has undertaken an Australian Burden of Disease Study which is more tailored to the Australian context, however, the Global Burden of Disease Study is cited here to enable comparison with New Zealand estimates.

[35] Smith C, Gray A, Mainvil L, Fleming E and Parnell W. 2015. 'Secular changes in intakes of foods among New Zealand adults from 1997 to 2008/09'. *Public Health Nutrition*: 18(18), 3249–3259

[36] Australian Bureau of Statistics, 2015. 'National Health Survey: First Results, 2014-15'. Available at Australian Bureau of Statistics (accessed 22 June 2017).

[37] Australian Bureau of Statistics, 2014. Australian Aboriginal and Torres Strait Islander Health Survey: Updated Results, 2012–13'. Available at: Australian Bureau of Statistics (accessed 5 August 2016)

[38] Institute for Health Metrics and Evaluation, 2015. 'GBD Compare Viz Hub'. Available at: Institute for Health Metrics and Evaluation (accessed 14 July 2017).

[39] New Zealand Health Ministry of Health, 2016. 'Annual Update of Key Results 2015/16: New Zealand Health Survey'. Available at New Zealand Ministry of Health (accessed 14 July 2017).

[40] New Zealand Health Ministry of Health, 2016. 'Annual Update of Key Results 2015/16: New Zealand Health Survey'. Available at New Zealand Ministry of Health (accessed 14 July 2017).

Dental caries in Australia

In Australia, during the 30 year period 1989-2007, 46% of children under the age of 6 had already experienced caries. Dental decay is also estimated to affect up to five million people in Australia each year[41].

Dental caries in New Zealand

In New Zealand, despite improvements in oral health over time, dental caries remain the most prevalent chronic (and irreversible) disease. The 2009 Our Oral Health survey[42] found large improvements in oral health had occurred for children since the 1980s, with the proportion of 12–13-year-olds who were caries-free almost doubling between 1988 (28.5%) and 2009 (51.6%). The oral health of most preschool children (aged 2–4 years) was also relatively good, with four in five (79.7%) 2–4-year-olds were caries-free in their primary teeth.

Policy initiatives in relation to sugars in Australia and New Zealand

Government, public and media attention towards added and total sugar has noticeably increased in recent years. With assistance from FRSC members, the Australian Government Department of Health has completed a non-exhaustive review of the initiatives that are currently in place in Australia and New Zealand focussing on sugars.

Government activities relating to sugars

Attachment A provides a summary of the current activities relating to added and total sugar that are being implemented in Australia and New Zealand at the national and jurisdictional level. In response to the Australian Government's consultation on this work, FRSC members provided information on a range of healthy eating policies, campaigns, and initiatives that are in place. However as the focus of this paper is specifically sugar, some of these have not been included in the attachment as they are very broad.

Many of the initiatives relating to sugar have a key focus on reducing the consumption of sugar-sweetened beverages. The evidence cited in this paper supports the focus on sugar-sweetened beverages as these beverages are particularly detrimental to health. Examples of initiatives in this area include posters depicting the number of teaspoons of sugar in sugar-sweetened beverages, swap ideas including swapping sugar-sweetened beverages for water, and health promotion messages through social marketing. Other initiatives include restricting high sugar foods being sold in venues such as school canteens and health care settings.

Non-Government activities

Attachment B provides a summary of selected examples of the campaigns and activities focusing on sugar which are being conducted outside of Government. This list does not represent a thorough audit of all activities undertaken outside Government as total activities are not coordinated by any one organisation. The activities listed mostly focus on raising consumer awareness of the added sugar content of foods and drinks and/or advocating for changes to food labels to allow consumers to more easily identify foods high in added sugars.

The activities identified in this attachment contain some mixed messages about which types of sugar to reduce in the diet, which may be confusing to the general public.

[41] Australian Institute of Health and Welfare (AIHW) 2012. 'Child Dental Health Survey Australia 2007 – 30 year trends in child oral health'. Available at Australian Institute of Health and Welfare (accessed 22 August 2016).

[42] Ministry of Health, 2010. 'Our Oral health: Key findings of the 2009 New Zealand Oral Health Survey'. Available at New Zealand Ministry of Health (accessed 23 August 2016).

Industry initiatives

Food and beverage manufacturers are looking for ways to reduce the sugar content of products in response to perceived consumer demand. However, from a food technology perspective this is challenging due to the many functions sugar provides in processing, including bulk, density, and viscosity of food products. For example, replacing high sugar containing products with lower energy sweeteners requires the addition bulking agents which don't necessarily reduce the energy content (which is the intention of reducing sugar content)[43].

Attachment B includes some examples of food industry action relating to sugar and other nutrients of concern. The Australian Food and Grocery Council provides information on its website about sugar, such as types of sugar and function of sugars in food, but at the time of writing this paper, the website did not provide detail on any industry action to reduce sugar in foods[44]. However, the AFGC is a member of a Healthy Food Partnership (see **Attachment A**) which, amongst other things, will consider food reformulation to reduce the content of various unhealthy ingredients, including sugar.

Some public health advocates have called for mandatory limits to be established for the added sugar (as well as salt and trans-fat) content of foods and drinks to drive reformulation[45]. The Australian Government Department of Health is not aware of any examples mandatory limits on added sugar being established elsewhere.

Sugar labelling in Australia and New Zealand

The Overarching Strategic Statement for the Food Regulatory System notes that the aims of the food regulatory system are:

- Protecting the health and safety of consumers by reducing risks related to food;
- Enabling consumers to make informed choices about food by ensuring that they have sufficient information and by preventing them from being misled;
- Supporting public health objectives by promoting healthy food choices, maintaining and enhancing the nutritional qualities of food and responding to specific public health issues; and
- Enable strong sustainable food industry to assist in achieving diverse, affordable food supply and general economic benefit.

Sugar labelling can be related to the second and third objectives of the Food Regulatory System.

The Overarching Strategic Statement also recognises that food labelling policy is complex, and to support decision making in the area of food labelling, the aims of the food regulatory system have been translated into the following risk-based issues hierarchy:

1. Food safety
2. Preventive health
3. Consumer values

Preventive health issues include the indirect, long term impacts on health and particularly include chronic disease and overweight and obesity. Providing information on the label to assist consumers to understand the sugar content of foods and beverages may support consumers to make food choices that support prevention of obesity and associated chronic diseases.

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[43] Sugar Advisory Service, n.d. 'The role of sugar in food'. Available at Sugar Research Advisory Service (accessed 26 August 2016).

[44] Australian Food and Grocery Council, n.d. 'Industry Action on Sugar, Salt and Fat'. Available at: Australian Food & Grocery Council (accessed 20 June 2017).

[45] Obesity Policy Coalition 2017. 'Policies for tackling obesity and creating healthier food environments: Scorecard and priority recommendations for the Australian Federal Government'. Available at: Policies for Tackling Obesity and Creating Healthier Food Environments (accessed 20 June 2017).

Current labelling requirements in relation to sugar

The Australia New Zealand Food Standards Code (the Code) currently regulates labelling of sugars in the statement of ingredients, Nutrition Information Panel, and for nutrition content claims.

Statement of Ingredients

Statement of Ingredients requires ingredients to be listed in descending order (by ingoing weight). This means that when the food was manufactured, the first ingredient listed contributed the largest amount and the last ingredient listed contributed the least. For example, if sugar or a sugar containing ingredient, such as honey, is listed near the start of the list the product contains a greater proportion of this ingredient.

Ingredient lists are intended to support consumers to make informed choices about the foods they buy and/or consume. Anecdotally, consumers may use the ingredient list to make healthy food choices. For example, a common rule of thumb recommended by nutrition professionals is to avoid foods that contain sugar, salt or fat in the first three ingredients[46] [47]. Further research would be required to understand how well consumers use the ingredient list for preventive health purposes, and how effective this practice is.

In listing the ingredients, manufacturers must describe the ingredient by a name that it is commonly known, or a name that describes the true nature of the ingredient, or a generic name specified in the Code. In relation to sugar, the generic name 'sugar' is permitted to be used for various forms of sucrose. The generic name 'sugars' is not permitted.

Stakeholder issues

Consumer advocates claim that the current requirements for the statement of ingredients may be misleading as added sugars may appear in the ingredients list under at least 40 different names, which can make it difficult for consumers to identify foods containing added sugars and to limit intakes of these foods as recommended by dietary guidelines[48] .

Nutrition Information Panel (NIP)

Most food labels are required to carry a NIP which provides the average amount of energy, protein, fat, saturated fat, carbohydrate, sugars and sodium in the food (per serve and per 100g), as well as any other nutrient about which a claim has been made.

A food's sugar content is reported in the NIP as part of the total carbohydrates and is also listed separately. Sugars are defined as monosaccharides and disaccharides for the purposes of the NIP declaration and therefore the amount of sugars in the NIP includes sugars naturally present, such as those found in fruit or milk, as well as added sugars.

Stakeholder issues

Consumer groups have criticised the current NIP labelling requirements because the sugar content labelling in the NIP does not distinguish between naturally occurring and added sugars which may make it difficult for consumers to identify foods high in added sugars and avoid these foods, as recommended in the dietary guidelines[49]. However, it can be difficult to provide information on the added sugar content of a product in the NIP as there is no standard analytical method available that can distinguish

[46] Dietitians Association of Australia 2015. 'Understanding Food Labels'. Available at: Australia's Healthy Weight Week (accessed 20 June 2017/2017).
[47] Australian Government Department of Health, n.d. 'Reading food labels'. Available at: Australian Government Department of Health (accessed 5 August 2016)
[48] CHOICE Australia, 2017. 'End the sugar coating. Available at: Choice (accessed 20 June 2017).
[49] ibid

between added and naturally occurring sugars[50]. Limitations in the measurement of added sugars also create difficulties for enforcement of labelling added sugar content. However, a proposed systematic methodology to estimate added sugar values on the basis of analytical data and ingredients of foods has recently been published[51].

Percentage Daily Intake

Percentage daily intake (%DI) may be voluntarily provided in the NIP. The %DI expresses the percentage of the daily intake for selected nutrients, including sugar, obtained from consuming one serving of the food (the serving size is established by the manufacturer). For sugar, the reference value for calculating the %DI is 90g per day, which is 17.5% of daily energy. Therefore, as an example, a food that contains 45g of sugar per serve may state in the NIP that the product contains 50% of the Daily Intake for sugar. The %DI values are based on a single set of average reference values for adults, and as such, are not directly applicable to individual needs or specific sub-groups of the population such as children. The %DI for sugar in the NIP is not comparable to the recommended free sugar intake expressed as a portion of total energy set by the WHO, because the NIP relates to total sugars whereas the WHO recommendations relate to free sugars only.

The %DI reference value for sugar was sourced from the following statement in the 2003 Australian Dietary Guidelines[52]: *There is no evidence that, for most Australians, consumption of up to 15-20 per cent of energy as [total] sugars is incompatible with a healthy diet*. The mid-point of the range (17.5%) was used as the basis of the reference value.

These guidelines were updated in 2013, however, the 2013 Australian Dietary Guidelines do not provide a quantified recommendation for total or added sugar intakes[53].

Nutrition content claims

Nutrition content claims are voluntary claims about the content of certain nutrients or substances in a food, such as 'no added sugar', 'low sugar' or '% sugar free'. In relation to sugar, these claims are permitted under the Code if the product meets particular conditions about its sugar content, for example, a 'low sugar' claim and a '% sugar free' claim can be made if the food contains no more than 5g sugars per 100g of solid food, or no more than 2.5g sugars per 100mL of liquid food.
There is currently no specific definition of 'added sugars' in the Code, though 'no added sugars' is defined. Under the second definition of sugars[54] in the Code, 'sugars' include monosaccharides and disaccharides and other products such as starch hydrolysate and maltodextrin. Foods and beverages that claim to have 'no added sugar' must not have added any of these ingredients as well as no added honey, malt and malt extracts, and added concentrated fruit or deionised fruit juice (with some exceptions in relation to these juices). The Code does not have any specific provisions for 'sugar free' claims; these are permitted and regulated under fair trading laws.

[50] Sugar Research Advisory Service, n.d. 'Sugar & Health', Available at: Sugar Research Advisory Service (Accessed 20 June 2017).
[51] Louie J C, Moshtaghian H, Boylan S, Flood V M, Rangan A M, Barclay A W, Brand-Miller J C, Gill T P, 2015. 'A systematic methodology to estimate added sugar content of foods' *European Journal on Clinical Nutrition.*
[52] National Health and Medical Research Council, 2013. 'Dietary Guidelines for Australian Adults' Available at: National Health and Medical Research Council (Accessed 20 June 2017).
[53] National Health and Medical Research Council, 2013. 'Eat For Health: Australian Dietary Guidelines', Canberra: Australian Government. Available at https://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/n55_australian_dietary_guidelines.pdf (accessed 10 June 2016).
[54] The first definition of sugars in the Code is for NIP purposes.

Other labelling initiatives in Australia and New Zealand

Sugar labelling activities are also occurring outside of the requirements in the Code, some of which are described below.

Health Star Rating (HSR) System

The HSR system is a voluntary front of pack labelling system that is intended to make it easier for consumers to choose healthier packaged foods. It uses a star rating scale of half a star to five stars. The HSR algorithm is based on the balance of multiple nutrients, including sugars; it uses the total sugar content of a food, rather than added sugars. Amongst other things, this is based on the need for alignment with the NIP for packaged foods relating to total (not added) sugar, the lack of methodology to accurately analyse added sugars in processed foods, and the potential burden on industry associated with reporting added sugar content. Re-scaling of dairy beverages and food category in the HSR scheme recognises, and in some way compensates for, the naturally occurring sugars in milk and milk products.

The HSR permits an optional nutrient icon where information about the energy content of a product, as well as the levels of saturated fat, sodium, and total sugars are displayed.

In July 2017, the George Institute for Global[55] Health published a report which examined how HSR ratings would change if the HSR algorithm used added, rather than total, sugars. Added sugar content of foods was drawn from the 2011-13 AUSNUT database[56]. The George Institute Reported that using added sugars in the HSR algorithm would better align with the Australian Dietary Guidelines, because discretionary foods would generally score lower HSRs than foods recommended in the five foods groups.

The five-year review of the HSR system has recently commenced and it is expected that the review report will be provided to the Forum in June 2019. The issue of whether the algorithm could consider added sugars may be raised in this review.

Daily Intake Guide

Daily Intake Guide is a voluntary front-of-pack labelling scheme developed by the Australian Food and Grocery Council[57] and the New Zealand Food and Grocery Council[58]. The scheme uses 'thumbnails' on the front of the package to display the amount and %DI for energy, fat, saturated fat, sugars and sodium per serve, using a serving size set by the manufacturer. Manufacturers can also display optional nutrients: protein, carbohydrates and vitamins and minerals. The reference values for %DI are based on the %DI labelling requirements in the Code, and therefore the daily intake reference value for sugar is 90g, sourced from the 2003 Australian Dietary Guidelines.

Voluntary declaration of added sugar content

Observation of products available at the supermarket has identified that some manufacturers are choosing to voluntarily state the amount of added sugars in their products, for example, *Milo Active Go* states underneath the NIP that 'over half the total sugars are naturally occurring in the milk with just over 1tsp (4.7g) of added table sugar per pack'. It is not known what proportion of manufacturers have adopted this practice.

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[55] Peters SE, Dunford E, Jones, A, Ni Mhurchu C, Crino, M, Taylor F, Woodward M Neal B, 2017. 'Incorprating Aded Sugar Improves the Performance of the Health Star rating Front-of-Pack Labelling System in Australia', *Nutrients,* 9 (701).

[56] Food Standards Australia New Zealand (FSANZ). 2015. 'Determining the amount of added sugars and free sugars in foods listed in the AUSNUT 2011-13 dataset' Available at: Food Standards Australia New Zealand (accessed 21 July 2016)

[57] Australian Food and Grocery Council, 2011. 'Daily Intake Guide: Healthy Eating Made Easy'. Available at: http://www.mydailyintake.net/ (accessed 21 June 2017).

[58] New Zealand Food and Grocery Council, n.d. 'Daily intake labelling scheme'. Available at: New Zealand Food & Grocery Council (accessed 29 July 2016).

Sugar labelling internationally

Food regulators internationally have adopted various options for labelling of total sugars and added sugars. The paper prepared by FSANZ on international sugar labelling approaches provides detail on these approaches. It is relevant to note that, from all the other labelling schemes examined by FSANZ, the United States was the only labelling scheme that focussed on added sugar with all other approaches focusing on total sugars. Front-of-pack labelling approaches have also been adopted internationally to raise consumers' awareness about the sugar content of foods.

Some brief additional observations about the new approaches to sugar labelling adopted in the United States and Canada are provided below.

United States

The new % Daily Value for added sugars will be based on the USDA Daily Reference Value (DRV) for added sugar: 50g for adults and children aged 4 years and over59.

When presenting the proposed added sugar labelling for public consultation in October 2015[60], the USFDA justified the proposal based on:

1. the variability in ingredients used-i.e. the various types of added sugars used in food products which may make it difficult for consumers to identify foods containing added sugar;
2. the need for consumers to have a consistent basis on which to compare products;
3. the need for consumers to identify the presence or absence of added sugars; and
4. when added sugars are present, the need for consumers to identify the amount of added sugars added to the food.

The USFDA also noted that the mandatory declaration of added sugars may also prompt product reformulation of foods high in added sugars. This same trend was observed when trans-fat labelling was mandated[61].

Canada

The % Daily Value for total sugars will be based on a reference value of 100g of total sugars, which is equivalent to 20% of energy from a 2000 Calorie diet. Health Canada states that dietary intake data indicates that approximately half of Canadians consume more than 20% of their energy as total sugars, with the highest intakes reported in younger age groups (<19 years) and that this approach could therefore support an overall reduction in total sugar intakes for many Canadians62.

Previous proposals to change Canada's sugar labelling requirements considered labelling of added sugar in the nutrition facts table, however, consultation papers on this proposal noted labelling of added sugars may support the misbelief that added sugars per se are nutritionally different from naturally occurring sugars and would create enforcement challenges due to the absence of an analytical method to distinguish added sugars from total sugars[63].

[59] United States Government, 2016. 'Food Labeling: Revision of the Nutrition and Supplement Facts Labels'. Available at: Regulations.gov (accessed 21 June 2017).
[60] United States Government, 2014. 'Proposed Rule: Food Labeling: Revision of the Nutrition and Supplement Facts Labels'. Available at: Federal Register, the Daily Journal of the United States Government (accessed 29 June 2016).
[61] ibid
[62] Health Canada, 2014. Health Canada's Proposed changes to the Core Nutrients Declared in the Canadian Nutrition Facts Table. Available at Government of Canada (accessed 26 August 2016).
[63] Health Canada, 2014. Health Canada's Proposed changes to the Core Nutrients Declared in the Canadian Nutrition Facts Table. Available at Government of Canada (accessed 26 August 2016).

Consumer research

As part of the program of work to investigate approaches for sugar labelling, FSANZ has also undertaken a literature review to examine consumer knowledge, attitudes and behaviours relating to sugars in foods as presented on food labelling.

The literature review reported that consumers in Australia and New Zealand seek out sugar information as one of the first elements they look at on a food label. Using the mandated information on food labels in Australia and New Zealand, consumers in these countries are generally able to identify which of two products is the lower in sugar. However international research reports that when examining a single product, consumers had difficulty in determining whether a single product was high or low in sugars. The evidence suggested that additional contextual information on the label, such as %DI, may offer consumers further assistance in understanding food labels and making decisions about purchasing and/or consuming particular products.

The literature review identified that consumers may be confused about the different names for sugar ingredients and have trouble deciding whether these are added and 'natural' sugars. Sugars that are derived from sources such as honey and fruit are often considered to be natural sugars, however, consumers are unsure how to classify sugars with more 'technical' names such as isoglucose. Other research reported that consumers considered 'fruit sugar' to be healthier than 'sugar' suggesting that the source of the sugar may play a role in its perceived healthfulness.

The research found that consumers have a negative view towards added sugars, and one study indicated that some consumers placed too much weight on 'added sugar' information when evaluating the healthiness of food products. This can cause them to underestimate the healthiness of some products and overestimate the healthiness of other products.

There is a limited number of studies examining the effects of labelling interventions on consumers' ability to make healthier choices with respect to sugar. International research indicates consumers in some instances show confusion when presented with labelling that lists added and total sugar, rather than just 'sugar'.

When looking at labels that presented the amount of added sugars, in addition to total sugars, some consumers thought that the added sugar was in addition to the total sugar on the label, which may result in consumers overestimating the overall amount of sugar in a product. Some wording changes tested in the literature have reduced the proportion of consumers making this error but further research would be needed to determine whether this error rate could be reduced further.

However, in relation to 'no added sugar' claims, Australian and New Zealand consumers generally understand that a product that makes a 'no added sugar' claim can still contain natural sugars. When a disclaimer that the product 'contains natural sugar' was added to the label, fewer consumers incorrectly believed that the product contained no sugar.

Other research reviewed reported that consumers generally understood that sugar-sweetened beverages and other discretionary foods have a high sugar content (but may underestimate the total amount of sugar in these products). However, intention to consume those foods often depends on attitudes and priorities relating to health.

Sugar taxes

There has been growing interest from consumers, public health experts, and advocacy groups for Australia and New Zealand to follow other countries and introduce a sugar tax, or more specifically a tax on sugar-sweetened beverages[64,65,66]. While the issue of taxation is outside of the remit of the Australia New Zealand Ministerial Forum on Food Regulation, information on taxes in Australia, New Zealand and internationally is presented at **Attachment C** to provide context.

Analysis of sugar policy context in Australia and New Zealand

Diets high in added sugars may displace more nutritious foods in the diet and can contribute to unhealthy weight gain and associated NCDs. Dietary guidelines advise Australians and New Zealanders to reduce their intakes of foods high in added sugars. These dietary guidelines recommend eating a diet predominantly comprised of core foods, and limiting intakes of all types of discretionary foods (foods containing in added sugars, saturated fats, salt and alcohol). The dietary guidelines in Australia and New Zealand do not specify a limit for added sugar intakes.

There is no internationally agreed definition for added sugars, and the WHO uses the term 'free sugars'. Consumption of free sugars in Australia and New Zealand is currently above the WHO recommendations, with young adults consuming particularly high amounts. Main contributors to sugar intakes are discretionary foods, particularly sugar-sweetened beverages.

There is strong consumer interest in added sugars, however, most of the evidence about the health impacts of added sugar relate to sugar-sweetened beverages and more evidence is needed to support concern regarding the added sugar content of otherwise nutritious foods (such as yoghurt, flavoured milk or breakfast cereal), beyond their contribution to overall kilojoule intake.

Outside of the food regulatory system, there are a range of policy initiatives in place to support and promote healthy eating, some of which focus specially on foods containing added sugar (particularly sugar-sweetened beverages), while others are broader initiatives about limiting availability and consumption of all types of discretionary foods. Internationally, taxation measures have also been introduced to discourage consumption of sugar-sweetened beverages.

The FSANZ literature review on consumer knowledge, attitudes and behaviours relating to sugars reported that consumers are confused about how much sugar they should be consuming, and therefore may not know whether they need to reduce their intake. The food regulatory system in Australia and New Zealand identifies preventive health in the second tier of the food labelling issues hierarchy. The food regulation system may be able to assist consumers to understand how much sugar they are consuming and assist them in making food choices that support prevention of chronic diseases; however, other health promotion and education initiatives also have a place.

Some consumers may be confused when both added and total sugars are presented on a food label and overestimate the total amount of sugar in the food. However, some wording changes tested in the literature have reduced the proportion of consumers making this error but further research would be needed to determine whether this error rate could be reduced further.

[64] Obesity Policy Coalition 2016. 'Australia should follow UK with 20% sugary drinks tax'. Available at: Obesity Policy Coalition (accessed 24 July 2016).
[65] Obesity Policy Coalition 2017. 'Policies for tackling obesity and creating healthier food environments: Scorecard and priority recommendations for the Australian Federal Government'. Available at: Obesity Policy Coalition (accessed 20 June 2017).
[66] Swinburn, BDominick, C.H., and Vandevijvere, S., 2014. 'Benchmarking Food Environments: Expert's Assessments of Policy Gaps and Priorities for the New Zealand Government'. Available at: Benchmarking Food Environments (accessed 21 June 2017).

There is also consumer confusion about how to classify sugars, with some consumers perceiving that foods such as honey or molasses are 'natural' sugars. Confusion about the healthfulness (or otherwise) of sugars that are considered to be 'natural' is also noted.

Food labelling about sugars in Australia and New Zealand currently focusses on total sugars. While consumers in Australia and New Zealand are able to use the current mandated information on nutrition labels to compare products and identify a lower sugar product, the degree to which consumers do actually use this information is influenced by factors such as health priorities, motivation and attitudes.

Consumers may have difficulty using a food label to determine whether a single product is high or low in sugar. International examples indicate there are a range of possible options for sugar labelling that may assist consumers interpret food label information and place this information within the context of their overall diet and dietary advice relating to sugars. However, international developments also highlight that there are challenges in implementing and enforcing some of these sugar labelling initiates, particularly in relation to the ability to analyse the amount of added sugar in a food.

Attachment A

Australia and New Zealand preventive health initiatives relating to sugar

Initiatives working with the Food Industry

Type of Policy/Program	Jurisdiction	Description summary	Target audience
Healthy Food Partnership	Australian Government	A joint initiative between government, food industry bodies and public health groups focusing on increased health knowledge, healthier choices and better health outcomes for the Australian population. The focus of the Partnership includes: • Portion Control – promoting and communicating information about appropriate portion sizes and consumption of portion sizes that align with the Guidelines; • Communication, education and meal planning on whole foods and total diet – based on the Australian Dietary Guidelines (including limiting intakes of added sugar; and • Reformulation activities optimising the appropriate balance of nutrients and ingredients in food in manufactured foods, including added sugar.	All Australians
Healthy kids industry pledge	New Zealand Government- Ministry of Health	As part of the New Zealand Government's Childhood Obesity Plan the Healthy kids industry pledge involves partnerships with the food and beverage industry to make commitments that will make a contribution to reducing the incidence of childhood obesity. The overarching pledge includes commitments to healthy product reformulation, labelling, education, marketing, addressing health inequalities and communication and public reporting. Companies and industry groups already committed include the New Zealand Food and Grocery Council, Coca-Cola, McDonalds NZ, Nestle, Fonterra, Retail NZ and the Association of New Zealand Advertisers.	New Zealand Children

Resources focusing on sugar-sweetened drinks

Type of Policy/Program	Jurisdiction	Description summary	Target audience
Sugary Drinks - Healthy Bodies Need Healthy Drinks	Australian Government	This resource package promotes healthy drink choices and discourages excessive consumption of sugar-sweetened drinks among Aboriginal and Torres Strait Islander school aged children, their families and communities. The amounts of natural and added sugars in milk drinks and fruit juice are included as a comparison with high added sugar beverages Teaspoon measures are used to depict sugar content.	Aboriginal and Torres Strait Islander peoples
Swap Soft Drinks for Water initiative	Northern Territory	Provides information sheets and promotional resources on replacing soft drinks with water for use by different health promotion sectors including schools, child care, community groups, stores, council (through Sport and Recreation Officers) and health centres.	All ages
Good Habits for Life – Sugar Swap Challenge (delivered in 2016)	ACT	Online resources and advice for families to recognise added sugar in their food and drinks, and to 'swap them out' for healthier alternatives for one month. Includes an online sugar swap game for children.	Parents and carers with children 0 - 8 years.
100% water resources Health Promotion	New Zealand	Sugary drink infographics and suite of '100% Water' posters. Also available are Player of the Day certificates.	All consumers
Move Well Eat Well early childhood and primary school program	Tasmania	Includes a 'Think before you drink' poster promoted through the Move Well Eat Well early childhood and primary school programs – promoting water as main drink and clarifies naturally occurring sugar in milk versus fruit juice.	Children aged 0 – 12 years

Social Marketing

Type of Policy/Program	Jurisdiction	Description summary	Target audience
Live Lighter campaign	Australian State and Territory jurisdictions (WA, ACT, VIC and NT) implement this campaign (developed in WA)	Aims to increase knowledge about healthy eating, physical activity and healthy weight. Phase two and three of the campaign delivered at the end of 2015 and throughout 2016 focused on avoiding sugary drinks. Promotion includes mass media, advertising, social media, online and printed resources, advocacy and retailers. Online resources includes sugar related education material on avoiding sugary drinks and tips to cut back on added sugar in the diet.	Adults and parents of children 0 - 12 years
Make Healthy Normal campaign	NSW	The Make Healthy Normal campaign aiming to support healthy eating and active living in NSW includes targeted consumer messaging to replace sugar sweetened beverages with water as part of the key campaign message '*Make Water Your Drink*'	NSW population
Family Food Patch – You Tube clips sugar in drinks	Tasmania	State-wide promotion through the family Food Patch peer education program. Includes you-tube educational videos designed for peer food educators and communities.	All ages
Big Changes Starts Small	New Zealand	National social marketing campaign run by New Zealand Health Promotion Agency (Nov-Dec 2015) and June-July 2017.	All ages
Healthier Happier Campaign	Queensland	Social marketing campaign including a website, TVC, social media. Key messages of campaign include: 1. Add fruit and veg to your meal 2. Have smaller portion sizes; 3. Cut back on sugary drinks; 4. Less sitting and more moving; and 5. Choose healthier when eating out	All ages

Settings based food and drink policies

Type of Policy/Program	Jurisdiction	Description summary	Target audience
Healthy food and drink policies in Government work places and public facilities	All Australian States and Territories, and New Zealand	Mandatory and voluntary policies for food service facilities, including cafeterias, kiosks, and vending machines in government run facilities including public schools, public health sites such as hospitals, health centres, recreation centres, public events and sports facilities. Policies include limiting/restricting the availability of unhealthy foods and drinks (including those high in added/total sugar) and increasing the availability of healthy food. Implementation is varied according to local health districts and jurisdictions. Some jurisdictions include additional guidelines for: • fundraising, advertising and sponsorship • workplace health education programs • Guidelines for retail food outlets (e.g. cafeterias, cafes, coffee shops - implemented by WA, Victoria and SA).	Staff working at these facilities and visitors
Healthy eating guidelines for government schools	Australian Government, Australian States and Territories.	Canteen guidelines in school settings, based on a traffic light food categorisation system (green, amber, red) which ranks foods according to their nutritional value. Foods and drinks high in sugar are categorised as RED and are banned from sale in school canteens, vending machines and preschools. These are generally supported by the Catholic and independent school sectors. NSW has recently released a new Policy Framework categorising foods as according to the Australian Dietary Guidelines concepts of Core(Everyday)/Discretionary (Occasional), supported by the use of HSR to select healthier versions of some foods. In the NSW policy, sugary drinks should not be sold. A number of jurisdictions include additional policy guidelines for food provided in school settings for: curriculum activities, sporting events, camps, excursions, homework centres, out of school hours care, student rewards or behaviour management programs.	School children
Healthy Food Provision in early childhood settings	Australian Government, States and Territories	Guidance on healthy eating (and physical activity) specific for early childhood (0-5 years) care settings, based on recommendations in the Australian Dietary Guidelines – including limiting the amount of added sugar.	All children in organised care aged 0-5 years

Type of Policy/Program	Jurisdiction	Description summary	Target audience
Fuelled4 Life	New Zealand	Managed by the Heart Foundation is a Food and Beverage Classification System (using 'everyday' or 'sometimes' categorisation) designed specifically for foods and beverages children commonly consume in an education setting.	School and preschool aged children
Healthy Lifestyles – Drink Water promotion	New Zealand	Encouraging all schools in NZ to provide water and plain milk only. Includes infographic posters and guidance on how to implement plain water drink policy in schools.	School children
The Victorian Healthy Eating Enterprise (VHEE)	Victoria	A coordinated platform to support healthy eating targeting state-wide and local organisations and workforce (beyond the health sector) promoting access to nutritious food in Victoria. Priority areas: - Increasing fruit and veg - Reducing Sugar-Sweetened beverages - Increase access to nutritious food	Non-government organisations, local government, community and health services, sport and recreation health professionals and food relief organisations.
Healthy Eating Advisory Service	Victoria	A state service providing practical support to key settings and organisations to meet Government nutrition policies and guidelines.	Schools, workplaces. sport and recreation centres and health services
Premier's Healthy Kids Menus Initiative	South Australia	Aims to increase the provision of and access to, healthy menu options for children in SA restaurants, cafes, hotels and clubs. Criteria specific to sugar reduction include: • Free tap water is easily accessible • Meal deals do not include soft drinks containing sugar or artificial sweeteners. • Guidance on desserts on the menu: To be voluntarily adopted by industry (restaurants, cafes, hotels, clubs) in South Australia. The draft Code will be finalised in August 2017.	Children
Healthy Children Initiative	NSW	Provides training and resources to promote healthy eating and physical activity to children and their families in early childhood, school and community settings. Key program messages encourage the consumption of water over sugar sweetened drinks and discourage the consumption of foods with added sugar.	Children aged 0-16 years

Attachment B

Non-Government activities and initiatives focussing on sugar

The sugar research advisory service

The sugar research advisory service is funded by the Australian Sugar Industry Alliance (ASA) and New Zealand Sugar, and is managed by health professionals including Accredited Practising Dietitians and Registered Dietitians from Australia and New Zealand. The service aims to provide an evidence-based view on the role of carbohydrates, and particularly sugars, in nutrition and health. It disseminates the latest scientific research and evidence-based resources and facts sheets for health care professionals. The service has developed a resource called *How discretionary foods fit into a healthy diet*? which provides information for health professionals and their patients about how many serves of discretionary foods can be consumed within the recommendations set out in the Australian Dietary Guidelines and how many discretionary food serves are in commonly consumed foods[1].

New Zealand Food and Grocery Council Healthier New Zealanders Initiative

New Zealand Food and Grocery Council Healthier New Zealanders Initiative aims to promote and support the work by members to deliver health & wellness across the New Zealand population. Many of the programs under this initiative are part of broader work in NCD prevention[2].

The Initiative is being progressed within a framework includes the establishment of company nutrition policies & product formulation. Under this part of the framework, companies such as Nestle and Heinz Watties develop company nutrition policies regarding nutrients of concern, which includes sugar, such as offering low-sugar products (Heinz Watties), aiming to improve the nutritional profile of products and monitoring the composition of the product range (Nestle)[3] [4].

Rethink sugary drink

Rethink sugary drink [5] is a partnership between 13 public health organisations including the Cancer Council, Diabetes Australia, Parent's Voice, National Heart Foundation, Australian Dental Association, VACCHO, the Obesity Policy Coalition (OPC), Nutrition Australia and the Kidney Health Foundation. The Rethink Sugary Drink website provides various advocacy materials to promote reducing intakes of sugar-sweetened beverages and a position statement calling for activities in a range of areas such as investigating the possibility of a tax on sugar-sweetened beverages, social media campaigns to raise awareness of the health impacts of consumption of sugar-sweetened and reducing children's exposure to marketing for sugar-sweetened beverages. Aboriginal and Torres Strait Islander specific tools and strategies are also available.

FIZZ

In New Zealand, a similar campaign has been developed to *rethink sugary drink* called FIZZ which represents a group of researchers and public health doctors who work with schools, communities and food retailers to advocate for reducing the sale of sugar-sweetened beverages in New Zealand[6].

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[1] Sugar Research Advisory Service, n.d. Sugar Research Advisory Service. Available at: Sugar Research Advisory Service (accessed 10 June 2016)New Zealand Food and Grocery Council, n.d. FGC Healthier New Zealanders Initiative. Available at: New Zealand Food & Grocery Council (accessed 4 August 2016).

[2] New Zealand Food and Grocery Council, n.d. Company Nutrition Polices & Product Formulation. Available at: New Zealand Food & Grocery Council (accessed 4 August 2016)

[3] Heinz Watties, 2017. Nutrition Policy. Available at: Heinz Wattie's (accessed 21 June 2017.

[4] Nestle, n.d. Nutrition. Available at: https://www.nestle.co.nz/csv/nutrition (accessed 4 August 2016).

[5] Cancer Council Victoria, 2017. Rethink Sugary Drink. Available at: http://www.rethinksugarydrink.org.au (accessed 21 June 2017).

[6] FIZZ, n.d. FIZZ: Fighting Sugar in Soft Drinks. Available at: Fizz: Fighting Sugar in Soft drinks (accessed 29 June 2016).

FIZZ advocates for actions such as introducing taxes on sugar-sweetened beverages, restricting sales and advertising, implementing sugary-drink free policies in workplaces and public institutions, and legislating graphic warning labels on product.

The New Zealand Dental Association

In March 2017, the New Zealand Dental Association launched a new consensus statement on sugary drinks[7], endorsed by key health organisations (e.g. The Public Health Association, The Heart Foundation, Activity and Nutrition Aotearoa).The actions seek to reduce harm caused by sugary drink consumption. The seven actions relate to:

- introducing an icon on drinks indicating the amount of sugar (in teaspoons)
- independent monitoring and evaluation of food marketing, with emphasis in marketing to children
- urging the government to adopt WHO limit guidelines on sugar
- encouraging the public to switch to water by introducing warning labels, education campaigns, 'water only' policies in schools and councils and introducing a 'sugary drinks' tax.

Switch to water

Switch to water campaign has been developed by the New Zealand Dental Association to encourage families to switch their sugary drinks for water for better physical and dental health[8].

Food switch

Food switch (available in both Australia and New Zealand) is a smart phone app and searchable online database developed by the George Institute for Global Health and funded by Health Insurer Bupa in Australia, and Bupa and the National institute for Health Innovation-University of Auckland in New Zealand. It allows users to scan barcodes of packaged foods or search the database and see a traffic-light-style analysis of the energy, saturated fat, sugar and salt content of the food. This is accompanied by suggestions for healthier alternative products. The app can also show the Health Start Rating (HSR) for a product (based on applying HSR algorithm to the information in the product's Nutrition information Panel). Users can apply different filters to the app, which focus on either fat, energy, salt, sugar or gluten, and suggest alternative foods that are low in the ingredient of interest[9].

CHOICE campaign

CHOICE in Australia is running a campaign in support of Recommendation 12 in the Labelling Review relating to added sugars, and calling for added sugar content to also be included in a product's NIP. The organisation presents information on the campaign on its website and provides a pre-completed letter for that the public can email to the relevant food Minister in their jurisdiction[10]. The pre-completed letter is below and was updated following the outcomes from the Forum meeting in April 2017.

Dear Minister,

Thank you for renewing your commitment to public health objectives and announcing your support for new healthy eating initiatives at the last Forum of Food Regulation meeting.

Over-consumption of added sugar is a prime contributor to unhealthy diets and I support your initiative to tackle this issue in November.

[7] New Zealand Dental Association, 2016. 'Consensus Statement Sugary Drinks'. Available at New Zealand Dental Association: Consensus Statement - Sugary Drinks(Accessed 17 July 2017).

[8] New Zealand Dental Association, n.d. Switch to water and stop the decay. Available at: Healthy Smiles: New Zealand Dental Association (accessed 20 June 2016)

[9] The George Institute for Global Health, 2015. FoodSwitch. Available at: Bupa (accessed 10 June 2016).

[10] CHOICE Australia, 2015. Support clear labelling of sugar. Available at: http://choice.sugarlabelling.e-activist.com/ea-action/action?ea.client.id=1965&ea.campaign.id=42501 (accessed 21 June 2017).

Food companies make it hard for us to identify added sugars in their products. As it stands, the Nutrition Information Panel doesn't differentiate between added sugar content and sugars that naturally occur in the product. So the only way for me to find out is by identifying the 43 different names for sugar in the ingredients list.

Added sugars should be clearly identified on food labels. This would allow me to follow the advice from the Australian Dietary Guidelines and World Health Organisation which recommend we limit our consumption of added sugars.

A recent CHOICE report calculates that if consumers could identify added sugars in food products they could avoid 26 teaspoons of unnecessary sugar each day and up to 38.3 kilograms of unnecessary sugar a year.

Sugar labelling is the first step to helping people make healthier choices and I look forward to action on this when you meet in November.

In April 207 CHOICE released a report[11] calling for clearer sugar labelling in Australia. This report discussed added sugar consumption in Australia and the statistics which report that Australians exceed the WHO recommendations for added sugar intake. The report also claimed that neither the NIP nor statement of ingredients allow consumers to easily determine how much added sugar in a product. CHOICE calculated the added sugar content of various food products (e.g. yoghurt, breakfast cereals, snack bars) and recommended six product swaps to reduce intake of added sugars. CHOICE claimed that if these six swaps were made every day, consumers could reduce added sugar intakes by 38.3 kilograms a year. CHOICE claimed that these sugar intake reductions can only be achieved with true an meaningful sugar labelling.

Heart Foundation[12]

In January 2013, the New Zealand Heart Foundation released an evidence update on sugar and the heart. This report concluded that evidence supports advice to limit intakes of added sugar as one part of an eating pattern that supports health and heart health. The report recommended that:

- High intakes of sugar and sugary drinks may adversely impact on risk factors for heart disease, and should be avoided.
- Small amounts of added sugar (less than 10% total energy) are unlikely to be harmful in the context of a healthy diet.
- Foods or drinks that are high in added sugar with little nutritional value are best kept for special occasions only. Reducing added sugar intake (including sugary drinks) can help reduce body weight.
- There are naturally occurring sugars in nutritious foods like fruit and plain milk, which we encourage people to eat as part of a healthy dietary pattern.

Based on this evidence paper, the New Zealand Heart Foundation also developed a consumer-focused page *'The Truth About Sugar'* on their website[13]. This provides consumers with information on free sugars, natural sugar, the common names of sugar, and how to cut back their free sugar intake.

Teaspoon labelling campaign Fair-Go, a consumer affairs television program in New Zealand is advocating for food labels to include the number of teaspoons of sugar in the product to allow consumers to easily identify high-sugar products. The program has broadcast a number of episodes highlighting the sugar content of commonly consumed foods that are often perceived to be healthy such as juice.

[11] CHOICE, 2017. 'End the sugar-coating: A choice report into added sugar labelling in Australia'. Available at: Choice: End the sugar-coating (accessed 22 June 2017).

[12] [105] The Heart Foundation, 2017. The truth about sugar. Available at: Heart Foundation New Zealand (accessed 26 July 2017).

[13][13] The Heart Foundation, 2017. The truth about sugar. Available at: Heart Foundation New Zealand (accessed 26 July 2017).

'I Quit Sugar'[14] is a book and social media campaign established by television personality Sarah Wilson. Wilson particularly focusses on fructose (a type of sugar), claiming that it is addictive and contributes to obesity and a range of health conditions. 'I Quit Sugar' encourages readers to 'quit sugar' by initially eliminating all sugar from the diet, including natural sugars found in foods such as fruits, for five weeks and then slowly reintroduce a small amount of sugar through foods such as fruits and milk. Wilson claims that 'quitting sugar' can lead to weight loss, increased energy levels, improved, skin, a better immune system and lower risk of diabetes and cancer. The books and social media pages provide recipes and information to help readers 'quit sugar' and offers a paid 8-week program providing additional support to follow this diet. The 'I Quit Sugar' brand also produces food products such as make at home bars and snacks which have been criticised for misleading labelling as they are only 'fructose free' rather than free of all sugars[15] [16].

'That Sugar Film'[17]is a documentary movie released in early 2015 which follows a Damon Gameau, a film producer and actor, as he conducts an experiment on himself where he consumes 40 teaspoons of sugar per day (the amount Gameau claims is the average sugar consumption in Australia) and monitors the impact on his health. In this experiment, Gameu only consumes foods often considered 'healthy' such as muesli bars, cereals and low fat yoghurt to raise awareness of the sugar content of these foods. Gameau also travels internationally to speak to experts/popular figures, visits dentists to portray the impact of sugar consumption of dental health and also visits an Aboriginal community to look at sugar consumption in the Aboriginal and Torres Strait Islander population. The film is accompanied by a range of resources including books, blogs and recipes on social media, school educational material and a mobile phone app developed by the George Institute which allows users to estimate their sugar intakes using FSANZ food composition data. .

David Gillespie[18] is an Australian lawyer and author who claims that removing sugar from his diet enabled him to lose 40kg. Mr Gillespie has published the books 'Sweet Poison: Why sugar makes us fat' and 'The Sweet Poison Quit Plan: How to kick the sugar habit and lose weight'. In his books and website, Mr Gillespie discusses the evidence he used to inform himself about sugar and provides recommendations about how others can eliminate sugar from their diets to also lose weight. Mr Gillespie's focus is on removing fructose from the diet and some of the recipes promoted by Mr Gillespie's use dextrose, which is a type of sugar Mr Gillespie also operates the 'How much sugar' website which provides information about sugar and sugar-free alternatives and recipes for a subscription fee. He also writes and campaigns about other health and food issues such as vegetable oil.

[14] Sarah Wilson, 2016. 'I Quit Sugar'. Available at: I Quit Sugar (accessed 29 June 2016)
[15] Dr Joanna, 2015. 'Not so sugar-free after all'. Available at: Dr Joanna (accessed 21 June 2017).
[16] Glycemic Index Foundation, 2017. 'Perspectives with Dr Alan Barclay'. Available at: Glycemic Index Foundation (accessed 21 June 2017).
[17] Damon Gameau, 2016. 'That Sugar Film'. Available at: That Sugar Film (accessed 29 June 2016)
[18] David Gillespie, Available at: How Much Sugar (accessed 21 June 2017).
[104] Gorton D. January 2013. Evidence update: sugar and the heart. The New Zealand Heart Foundation. Available at: Heart Foundation: Fulfil a Lifetime (accessed 26 July 2017).

Attachment C

Taxes on sugar or sugar-sweetened beverages

International tax initiatives

Internationally, sugar taxes or taxes on sugar-sweetened beverages have been implemented or proposed in a number of countries[1][2], including:

- Hungary, where an excise on soft drinks, energy drinks, confectionary and snacks that are high in sugar resulted in 40% of manufacturers reformulating their products and demand for sugary drinks falling by 7.5% within a year.
- France, where a tax on beverages sweetened with artificial sweeteners and sugars resulted in reduced demand for these products by 3.4% within a year.
- Mexico, where an excise tax on sugar-sweetened beverages resulted in an average reduction of 12% in the purchase of taxed beverages over 12 months.
- The UK, where the Government announced in the 2016 budget, the introduction of a sugar tax on sugar sweetened drinks for manufacturers (small producers exempt) based on the volume of sugar sweetened drinks produced or imported, commencing in 2018-2019. A pro rata sugar tax will be imposed on drinks with sugar content above 5 grams per 100mL and 8 grams per 100mL, and will be based on the volume of sugary drinks companies produce or import. Pure fruit juices and milk-based drinks will be excluded. The UK estimates this measure will raise 520 million pounds per year which will be allocated to sport programs in primary schools[3].

The evidence described above indicates that the taxes are influencing purchasing patterns or supporting product reformation, however, further time is required to determine whether these taxes are having an impact on the prevalence of overweight or obesity. Other countries with targeted sugar taxes include Finland, Belgium, Chile, Barbados, Dominica, several states in the United States, and Tonga[4].

Australia and New Zealand

In Australia, most basic foods such as fresh fruit, vegetables, bread, cereals, unflavoured milk and cheese are Goods and Services Tax (GST) exempt, whereas most processed foods are not GST free. In general, GST exempt foods are from the five food groups in the Australian Dietary Guidelines. However, foods that have been prepared and sold in a food service outlet such as a café or restaurant will have GST applied regardless of their ingredients.

In New Zealand, GST is a universal tax and applies to most goods and services with limited exemptions only (e.g. donated goods sold by non-profit bodies). There are no exemptions for foods.

Research on sugar taxes in Australia and New Zealand

In April 2016, the on-line journal *PLos ONE* published the first Australian modelling study on the potential impact of a tax on sugar sweetened beverages in Australia[5][6]. The study estimated that the

[1] World Cancer Research Fund International, 2015. 'Curbing global sugar consumption-Effective food policy actions to help promote healthy diets and tackle obesity'. Available at http://www.wcrf.org/sites/default/files/Curbing-Global-Sugar-Consumption.pdf (accessed 29 June 2016).
[2] Obesity Policy Coalition 2016. 'Australia should follow UK with 20% sugary drinks tax'. Available at: Obesity Policy Coalition (accessed 24 July 2016).
[3] United Kingdom Government, HM Treasury 2016. Policy paper: Budget 2016, pg 32-33, HC 901, 16 March 2016. Available at https://www.gov.uk/government/publications/budget-2016-documents/budget-2016 (accessed 26 June 2016)
[4] World Cancer Research Fund International 2016. 'Use economic tools to address food affordability and purchase incentives'. Available at World Cancer Research Fund International (accessed 17 June 2016).
[5] Veerman J L, Sacks G, Antonopoulos N and Martin J, 2016. The Impact of a Tax on sugar-Sweetened Beverages on Health and Health Care Costs: A Modelling Study, 'PLoS ONE', 11(4).

introduction of a 20% valoric (flat-rate) tax on sugar-sweetened beverages would generate approximately $400M in revenue each year and reduce healthcare costs by as much as $480 million AUD over 25 years.

Modelling projected over 25 years predicted that the tax would reduce consumption of sugar sweetened beverages by 12.6% and result in a decline in the prevalence of obesity of about 2.7% (0.7 percentage points) among men, and 1.2% (0.3 percentage points) among women. The researchers estimated that over the 25 year period, the tax would result in an estimated 1600 fewer cases of type 2 diabetes per year, 4,400 fewer cases of heart disease and 1,100 fewer cases of stroke.

In November 2016, the Grattan Institute in Australia released a report *A sugary drinks tax – Recovering the community costs of obesity* which called for an excise tax of 40 cents per 100 grams of sugar on non-alcoholic, water-based beverages that contain added sugar. This measure was estimated to raise $500 million AUD in tax per year, generate a drop of about 15% in consumption of sugar sweetened beverages, and likely result in a small decrease in obesity rates – based on people switching to water and other drinks not subject to the tax[7].

A second modelling study released in February 2017 by the University of Melbourne[8] based on taxing sugar, salt, saturated fat and sugary drinks, together with subsidies for fruit and vegetables, over a lifetime could produce savings of $3.4 billion AUD in the health sector and avoid as many as 470,000 disability adjusted life years in the Australian population**.**

While some argue that a sugar tax is a regressive tax (having a bigger impact on low income households), the University of Melbourne study was designed so that the combination of taxes and fruit and vegetable subsidies resulted in a negligible impact on average weekly food expenditure.

When the taxes were analysed individually, the study concluded that a tax on processed foods high in sugar would produce the biggest health gains, followed by taxes on salt, saturated fat and sugar-sweetened beverages.

In 2017, the International Network for Food and Obesity/ non-communicable Diseases Research, Monitoring and Action Support (INFORMAS) released separate Food Environments Policy Indexes (Food-EPI) in Australia[9] and New Zealand[10]. In these indexes, a number of benchmark food environment policy statements were identified and experts in each respective country ranked the level of implementation of these policy statements. From this, separate priorities for action by the New Zealand and Australian federal and state and territory governments were recommended. Both the New Zealand and Australian Federal Government reports have recommendations for a sugar-sweetened beverage tax.

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[6] Obesity Policy Coalition, 2016. 'Sugary drinks tax could save 1,600+ lives: study'. Available at: http://www.opc.org.au/latestnews/mediareleases/pages/sugary-drinks-tax-could-save-1600-lives-study.aspx#.WUn2UPmqpuA (accessed 21 June 2017).

[7] Duckett, S., Swerissen, H. and Wiltshire, T. 2016, 'A sugary drinks tax: recovering the community costs of obesity', Grattan Institute. Available at: Grattan Institute (accessed 21 June 2017).

[8] Cobiac LJ, Tam K, Veerman L and Blakely T., 2017, Taxes and Subsidies for Improving Diet and Population Health in Australia: A Cost-Effectiveness Modelling Study, 'PLoS Med', 14(2).

[9] Sacks G for the Food-EPI Australia project team. February 2017. Policies for tackling obesity and creating healthier food environments: scorecard and priority recommendations for Australian government. Melbourne: Deakin University.

[10] Vandevijvere S, Mackay S and Swinburn B, 2017. Benchmarking Food Environments 2017: Progress by the New Zealand Government on implementing recommended food environment policies and priority recommendations. Auckland: University of Auckland.

In May 2017, another modelling study was published which looked at the potential impact of a 20% tax on sugar sweetened beverages on total lifetime productivity in Australia. The study reported that the proposed tax would reduce the number of employees with obesity by 317,000 persons which would result in productivity gains in the paid sector of $751million AUD in the working age population. The proposed tax was also estimated to provide $1172 million AUD in productivity gains in the unpaid sector. These productivity benefits would be in addition to benefits of 35,000 life years gained and $425 million AUD in reduced healthcare expenditure[11].

In New Zealand Ni Mhurchu et al[12] estimated that a 20% tax on sugar sweetened carbonated drinks would avert or postpone 67 deaths from cardiovascular disease, diabetes and diet-related cancers, equating to 0.2% of all deaths in New Zealand per year.

The above studies assume the full cost of the tax is passed on to the consumers. However, manufacturers and retailers can potentially shift taxes, including distributing costs on to other products, or absorbing costs. This could dilute any change in consumption patterns and confound modelling research on such a tax. Estimating consumption behaviour changes in the general population is also difficult, particularly as consumption volumes vary between cohorts and a price incentive to reduce consumption through a sugar sweetened beverages tax may occur only amongst high consumers.

In May 2017, researchers from Waikato University in New Zealand published a discussion paper series[13] concluding that the Mexican 'Soda Tax' is unlikely to make Mexicans lighter. The authors suggest that previous predictions that the tax on sugar-sweetened drinks will reduce the average weight of Mexicans by two to four pounds, failed to incorporate consumer responses on the quality margin and are biased by correlated measurement errors. These researchers estimate that the tax-induced soda price increases might cut average weights by less than one pound, which is too small to improve health.

Population views

A survey conducted in 2014 in the Australian population reported that 85% of Australians would support a tax on sugar sweetened beverages if the revenue raised was used to fund childhood obesity prevention initiatives, and 71% would support this tax if it subsidised the cost of healthy food[14]. An earlier Australian survey conducted in 2010 reported that 69% of respondents would support taxing soft drinks to reduce the cost of healthy food[15].

In New Zealand, a large scale nation-wide survey in 2015[16] reported that the majority of New Zealanders (52%) support a tax on sugar sweetened beverages, if funds collected are used towards prevention of childhood obesity. An earlier study was conducted in 2014 which found that 44% of

[11] Nomaguchi T, Cunich M, Zapata-Diomedi B and Veerman JL, 2017. The impact on productivity of a hypothetical tax on sugar sweetened beverages', *Health Policy,* 121(6): 715-725.
[12] Ni Mhurchu C, Eyles H, Genc M, and Blakely T, 2014. 'Twenty percent tax on fizzy drinks could save lives and generate millions in revenue for health programmes in New Zealand'. *The New Zealand Medical Journal,* 127 (1389): 92-95.
[13] Andalón M, Gibson J. May 2017. Discussion paper series: The 'Soda Tax' is unlikely to make Mexicans lighter: New evidence on biases in elasticities of demand for soda. IZA Institute of Labour Economics. Available at: Heart Foundation New Zealand (accessed 26 July 2017).
[14] Martin J, Morley B and Niven P, 2015. 'Sugar-sweetened beverage (SSB) tax: Framing the message for public acceptability', Behavioural Research in Cancer Control Conference 2015. Available at Cancer Council (accessed 22 June 2016)
[15] Morley B, Martin J, Niven P, and Wakefield M, 2012. 'Public opinion on food-related obesity prevention policy initiatives', *Health Promotion Journal of Australia*, 23(2): 86-91.
[16] Sundborn G, Thornley S, Lang B, Beaglehole R, 2015. 'New Zealand's growing thirst for a sugar-sweetened beverage tax', The New Zealand Medical Journal, Vol. 128, No. 1422, Sept 2015.

the population would support a tax on sugar-sweetened beverages[17]. However, this survey did not propose that the funds raised from the tax would be put towards childhood obesity prevention. Between these two surveys, the proportion of the population which opposed a tax on sugar-sweetened beverages decreased from 49% to between 35% and 32%, depending on whether the use of the funds was nominated.

Petitions and campaigns for taxes on sugar/sugar-sweetened beverages in Australia and New Zealand

As part of the 2016 Federal election campaign, the Australian Greens Party announced its support for a 20% tax on sugar-sweetened beverages. The proposed tax would be paid by producers or importers, rather than retailers[18].

Australian sugar industry groups, the National Farmer's Federation and Australian Food and Grocery Council opposed the Green's proposal[19]. Information about the Australian sugar growing and milling industry is provided at **Attachment D**.

Health advocates in Australia and New Zealand have established petitions in support of taxing sugar-sweetened beverages. In Australia, a petition to the Australian Government Treasurer has had 18,601 signatures when it closed[20]. In May 2017[21], a petition was submitted to the Australian Government House of Representatives in support for a tax on sugar-sweetened beverages.

In New Zealand a petition to the Parliament had 8,837signatures as of 17 July 2017[22]. This New Zealand petition was started by the New Zealand Healthy Food Guide and is supported by many public health groups including Diabetes New Zealand, the Heart Foundation and the New Zealand Dental Association.

[17] ibid
[18] The Greens 2016. 'Taxing sugary drinks: Fighting childhood obesity, healthy choices for a long and healthy life'. Available at The Greens (accessed 22 June 2016).
[19] Australian Food & Grocery Council, 2016. 'Greens Sugar Tax (GST) an attack on regional jobs'. Available at Australian Food & Grocery Council (accessed 26 August 2016).
[20] Sarah Wilson 2016. 'Petitioning needs a sugar tax on soft drinks to help end the child obesity crisis', Australia. Available at Change.org (accessed 25 August 2016).
[21] Parliament of Australia, 2017. 'House of Representatives Petitions: Petition number EN0146'. Available at: Parliament of Australia (accessed 21 June 2017).
[22] Healthy Food Guide, 2016. 'Petition for a tax on sugar-sweetened beverages', New Zealand. Available at Change.org (accessed 25 August 2016).

Attachment D

Sugarcane industry in Australia[1]

The Australian sugarcane industry is located along Australia's north eastern coastline. There is approximately 4400 cane farming entities growing sugar cane on a total of 380,000 hectares annually. These farms supply 24 mills, owned by seven separate milling companies. Sole proprietors or family partnerships own the vast majority of cane farms. The mill ownership structures are a combination of public and private companies and co-operatives. In turn, these companies own four sugar refineries in Australia and one in New Zealand. The sugar industry directly employs about 16,000 people across the growing, harvesting, milling and transport sectors.

The industry's major product is raw crystal sugar. Australia produces approximately 4-4.5 million tonnes of raw sugar annually, with Queensland accounting for 95 per cent of all sugar produced. Australia exports 85 per cent of its raw sugar generating up to $1.5 billion in export earnings. The majority of Australia's domestic market is supplied by sugar cane grown in northern New South Wales. In 2015 Australia imported a total of 146,221 tonnes of refined and raw sugar.

Sugar Research Australia (SRA) is an Industry Owned Company that invests in and manages a portfolio of research, development and adoption projects to drive productivity, profitability and sustainability for the Australian sugarcane industry. SRA is responsible for directly undertaking research, development and adoption activities as well as managing and investing the funds received from industry levy payers and government, for the benefit of the sugarcane industry and for the wider community. Its priorities are focused on supply side constraints i.e. growing cane and milling sugar.

[1] Information provided by the Australian Government Department of Agriculture and Water Resources