

FoodSwitch:
**State of the
Fast Food
Supply**

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BACKGROUND

Unhealthy diets are a leading contributor to poor health in Australia and globally. Unprecedented levels of availability and aggressive marketing of unhealthy foods are key drivers of obesity and diet-related conditions including high blood pressure, heart disease, type 2 diabetes, dental caries and some cancers. Australia has some of the highest obesity rates in the world: nearly two-thirds of Australian adults and one in four children are overweight or obese.¹ Poor diet is estimated to account for at least 25,000 Australian deaths each year.²

The Australian Dietary Guidelines provide sensible advice on how to promote health and well-being by recommending that Australians eat a wide variety of nutritious foods from five groups that include fruit, vegetables, grain foods, lean proteins and dairy. They also recommend drinking plenty of water.³ Unfortunately, fewer than one in 10 Australians consumes a diet in line with these recommendations.⁴ Key problems with the Australian diet include inadequate consumption of vegetables, fruits, whole grains, nuts, seeds and fibre, and excess consumption of unhealthy, often highly-processed, foods. These 'discretionary' foods and beverages, defined by the Guidelines as not necessary to provide the nutrients the body needs and that are high in salt, saturated fat and added sugars, account for about 35% of the energy intake of Australian adults, and 39% of energy for children and young people.⁴

As Australians lead increasingly busy lifestyles, they are spending more on fast food and meals consumed outside the home.³ Australians are estimated to make 51.5 million visits to fast food chains each month,⁵ and spend nearly 32% of their household food budget on eating out.⁶ Foods eaten away from home are frequently less healthy than similar home-cooked meals, and typically served in larger sizes.^{7,8} This means that improvements in the nutritional quality of foods offered in these settings have significant potential to improve Australian diets.

The World Health Organization recommends limiting the levels of harmful nutrients in products and ensuring that consumers can access and afford healthy food options.⁹ Australian governments have made a start in implementing policies to promote healthier fast food provision. At a state level, New South Wales first initiated legislation requiring the display of energy content in kilojoules on fast food menus in 2010.¹⁰ Chains with more than 20 outlets in the state or more than 50 outlets nationally are required to display the energy content in kilojoules (kJ) of each standard food item along with the reference statement 'The average adult daily energy intake is 8700kJ'. Similar legislation has now been enacted in South Australia, the Australian Capital Territory, Queensland and Victoria. There is evidence that such information improves consumer understanding of recommended energy intake and results in the selection of meals with fewer kilojoules.¹¹

At a federal level, the Australian Government launched the multi-stakeholder Healthy Food Partnership in 2016. Its agenda includes a pledge scheme for fast food industry members to voluntarily commit to providing healthier options and more appropriate serving sizes.¹² However, by late 2019 there was little information publicly available on the partnership's progress. The Partnership is intended to complement other federal programmes underway, including the Health Star Rating system front-of-pack nutrition label that aims to guide consumers toward healthier options when shopping for packaged foods.

In 2019, The George Institute for Global Health used the Health Star Rating to benchmark the healthiness of packaged foods and beverages available in Australian supermarkets in our report "The State of the Australian Food Supply".¹³ This report now builds upon that work by benchmarking the healthiness of Australian fast food products available in Australia.

PURPOSE

The purpose of this “FoodSwitch - State of the Fast Food Supply” report is to support government, business and community efforts to promote healthier Australian diets. This report benchmarks the healthiness of Australian fast food products in 2019 and explores changes in healthiness over a three year period from 2016-2019.

This report uses three indicators to assess the healthiness of fast food supply in Australia: (1) The nutrient profiling algorithm underpinning the Health Star Rating system (HSR) is used to compare overall nutritional quality on a per 100g/mL basis, (2) serving size and kilojoules per serving are used to assess energy content, including as a contribution to the average adult daily energy intake of 8700kJ, and (3) nutrient composition is used to analyse levels of energy, total sugar, saturated fat and sodium.

APPROACH

Terminology used in this report

The following terminology agreed by the Australian Government Department of Health is used to describe the size of food and beverages in this analysis:¹⁴

Serving: The size or amount of a product (food and/or drink) suggested by a manufacturer or provided by a food business (e.g. fast food chain). Food businesses suggest amounts to be consumed on labels or through the amount of food provided for a menu order.

Serve: A reference amount of a food or beverage described by the Australian Dietary Guidelines (ADG). The ADG serves are reference amounts of foods and drinks used by health professionals, educators and businesses to support Australians to build healthy diets and quantify recommended amounts of specific food groups, e.g. five serves of vegetables are recommended daily.

Portion: The size or amount of food and/or drink selected by an individual from what is on offer on a particular eating occasion. This is influenced by factors including what is offered or available. For example, the amount actually eaten from a meal served by a fast food chain.

Fast Food Chains Included

The largest fast food chains, also called ‘quick service restaurants’, were selected for this assessment. These businesses typically offer standard food items from a limited menu, usually available for take away although seating may be provided.

We included chains covered by New South Wales’ menu labelling legislation, i.e. chains with at least 20 outlets in New South Wales or 50 outlets nationally.¹⁰

Data sources

The Fast Food Database

The George Institute for Global Health has collected nutritional data on Australian fast food chains annually since 2009. As noted above, larger fast food chains in New South Wales and several other Australian states and territories are now required by law to provide kilojoule information on menu boards and other promotional material including websites. Many chains supplement this information on energy content with more detailed nutritional information online or in-store in pamphlet form.

The George Institute for Global Health compiles this detailed nutrition information in its Fast Food Database.

Data are primarily obtained from fast food chain websites, and, if necessary, in-store or by contacting the chain directly. For all standard menu items, we extract the business name and product name, and nutrition information per 100g/mL, per serving, and per whole product depending on availability. We also extract available data on ingredients, serving information and serving size.

This report uses the 2019 fast food dataset for the primary analyses to benchmark the current state of the fast food supply. To be included in this analysis, chains were required to provide nutrient data on their product portfolio per 100g/mL for energy (kJ), protein (g), saturated fat (g), total sugars (g) and sodium (mg). To be included in the comparison of healthiness over time, these data were required for both 2016 and 2019.

The FoodSwitch Database

To analyse nutritional quality, this report supplements available fast food data with data on analogous packaged foods available in The George Institute for Global Health's FoodSwitch Database (FoodSwitch). FoodSwitch comprises annually updated information collected through in-store surveys in major Australian supermarkets. Images are captured (front of pack, nutrient declaration, ingredients list, manufacturer details) using a bespoke smartphone application and then the data and images are extracted.¹¹

For all products we extract information from the nutrient information panel on the packaging. Published details of energy (kJ/100g), protein (g/100g), saturated fat (g/100g), total sugar (g/100g) and sodium (mg/100g) levels are mandatory in the Australian nutrient declaration. Additional detail on fibre (g/100g) and fruit, vegetable, nut and legume (FVNL) content (%) are necessary to generate a HSR, but are currently optional on nutrient panels. Where these details are not provided by a manufacturer, we estimate appropriate levels using methods described previously.¹⁵ For the HSR component of this report, proxy values on fibre and FVNL derived for packaged products in FoodSwitch were applied to matched fast food items to allow generation of an HSR.

Product Categorisation

Products were assigned to one of 47 food categories commonly used by the fast food industry and across previous academic work.⁴ This hierarchical system classifies foods into major categories (e.g. desserts), and further subcategories (e.g. ice cream and frozen desserts). As described above, these categories were matched to analogous packaged food categories from the FoodSwitch database to provide supplementary information on fibre and FVNL where necessary. Results are provided for 20 major categories and selected sub-categories.

Products Included

To be eligible for inclusion in the analysis, products needed to have a minimum amount of nutrition information provided directly by the fast food chain. This minimum data requirement covered 'key' nutrient information: energy, protein, saturated fat, total sugars and sodium. Products missing information on one or more of these key nutrients were excluded.

Where nutrition information per 100g/mL was not provided but nutrient values per serving and serving size were available, we used this to calculate values per 100g/mL. Where per 100g/mL data were not available but nutrient values per whole product, product size and number of servings per product were available, we used this to calculate per 100g/mL values.

Indicators of Nutritional Quality

Three indicators of nutritional quality were assessed:

Health Star Rating

The Australian and New Zealand HSR system uses a nutrient profiling algorithm to assign foods and beverages a rating between 0.5 (least healthy) and 5.0 stars (most healthy) in ten half-star increments.¹⁶ Ratings are based on a standardized amount of the product (per 100g/mL) to facilitate comparison between similar products.

In this report, HSR was calculated for each fast food menu item using rules developed for packaged foods provided in the Guide for Industry to the HSR Calculator.¹⁶ 'Baseline' points were assigned for energy, saturated fat, total sugar and sodium content per 100g/mL using data provided directly by manufacturers, and 'modifying' points assigned for FVNL content, protein and fibre where applicable and using proxies where necessary. An overall HSR was determined depending on where the product falls in one of six HSR categories.⁸ While the HSR was developed for the purposes of front-of-pack nutrition labelling for packaged foods, The George Institute for Global Health has previously demonstrated the feasibility of its extension to fast foods.¹⁷

A HSR was calculated for each standard food or beverage item and a mean HSR was calculated per chain and category. Single meal combos, multiple meal combos and children's meals were excluded from the HSR analysis as they are made up of products in different HSR categories (e.g. non-dairy beverages, foods) that are not intended to be combined under HSR Guidelines.¹⁶ Duplicate products of different serving sizes (e.g. fries) were also excluded for the purpose of generating a chain's mean HSR.

Fast food chains were ranked based on the mean HSR across their product portfolio in both 2016 and 2019.

Serving size, kilojoules per serving, and proportion of average adult daily energy intake

To assess the size of products provided by fast food chains we compared serving sizes sold against recommended serve sizes in the Australian Dietary Guidelines (ADGs). The ADGs recommend a standard serve size and standard number of serves for some foods to support healthy dietary patterns. For example, one serve of fruit juice with no added sugar is 125mL, and one serve of discretionary food or drink is the amount of that item that provides 600kJ.¹³

To assess these servings' contribution to dietary energy intake, we compared the kJ content of each serving against the benchmark of 8700 kJ, which is used as an approximate figure for the 'average' Australian adult to maintain their weight.¹⁸

All products of all serving sizes provided by each chain were included for this analysis. Results are provided by company and by category.

Nutrient composition

There are robust and consistent associations between excess consumption of nutrients such as sodium, saturated fat and sugars, and adverse health outcomes. Mean levels of each of these per 100g/mL were examined by category.

For sodium in particular, we also benchmarked content per serving against the Australian Government's Suggested Dietary Target (SDT) for sodium of 2000mg/day.¹⁴ We flagged menu items that exceeded this SDT as eligible for a 'salt shaker' warning symbol, based on laws currently operating in New York and Philadelphia that require items exceeding the United States SDT to display this via a graphic icon on menus.¹⁹

RESULTS – STATE OF THE FAST FOOD SUPPLY

Chains and products analysed

Of the 54 large chains identified for potential analysis, all met minimum legislative requirements by providing energy information in kilojoules per serving. Of these, 27 chains provided sufficient additional nutrition information and these chains formed the basis of our 2019 analysis. In total this analysis covered 4702 standard menu items.

Out of the 27 chains identified for 2019 analysis, 23 provided sufficient additional nutrition information across both years and these chains formed the basis of our 2016-2019 change analysis. A full list of included and excluded chains is included in an Appendix as Supplementary Table 1.

Health Star Rating

Mean HSR by company is set out in Table 1. The chain with the healthiest overall product portfolio was Top Juice with a mean HSR of 3.6 out of 5.0. Top Juice benefits in this analysis from having a product range consisting predominantly of fruit- and vegetable-based juices and smoothies and a 100% fruit and vegetable juice range, which perform well using the current HSR algorithm. Sumo Salad, Zambrero, Grill'd and Mad Mex were among the top five ranking outlets based on mean HSR.

The lowest scoring chains were Chatime, Baskin Robbins, McCafe, Gloria Jean's Coffee and Muffin Break. Discretionary items such as cakes, pastries and desserts were a significant component of the portfolio for these chains and these types of products generally score poorly using the HSR algorithm.

In general, cafe and dessert chains had a lower mean HSR than burger, chicken and pizza chains. Juice, salad, Mexican and sandwich chains had higher mean HSRs.

Serving size, kilojoules per serving and proportion of average adult daily energy intake

By Company

Red Rooster had the largest mean serving size (693g) and mean kJ per serving (4224kJ) (Table 1). Bakers Delight had the lowest mean serving size (79g), with an average kJ content (958kJ) per serving, mainly due to the chain's range consisting of predominantly cake and bread snack products. Boost Juice had the lowest mean kJ content per serving (889kJ).



Table 1: Healthiness of fast food chain offerings in 2019

Chain	Primary product portfolio	Number of products	HSR (Mean (SD))	Serving size (Mean (SD))	Kilojoules per serving (Mean (SD))	Per serving kilojoule contribution to Daily Intake* (%)
Top Juice	Beverages	114	3.6 (1.4)	573 (206)	1405 (943)	16.2
Sumo Salad	Salads / Sandwiches	134	3.5 (0.8)	380 (129)	2375 (1194)	27.3
Zambrero	Mexican	85	3.5 (0.3)	291 (148)	1916 (933)	22.0
Grill'd	Burgers	127	3.5 (0.4)	330 (73)	2921 (787)	33.6
Mad Mex	Mexican	51	3.5 (0.6)	347 (125)	2276 (635)	26.2
Salsa's	Mexican	53	3.4 (0.6)	320 (166)	2189 (1080)	25.2
Subway	Salads / Sandwiches	53	3.3 (1.0)	166 (106)	1106 (480)	12.7
KFC	Chicken	56	3.2 (0.9)	543 (631)	3717 (4508)	42.7
Soul Origin	Salads / Sandwiches	46	3.2 (1.4)	297 (133)	1429 (710)	16.4
Guzman Y Gomez	Mexican	401	3.2 (0.7)	309 (170)	2245 (1256)	25.8
Boost Juice	Beverages	183	3.2 (1.3)	427 (151)	889 (406)	10.2
Brumbys	Bakery	46	3.1 (0.9)	103 (66)	1121 (677)	12.9
Oporto	Burgers	44	3.1 (0.8)	385 (299)	2575 (1856)	29.6
Crust	Pizza	85	3.0 (0.7)	246 (42)	2433 (416)	28.0
Red Rooster	Chicken	72	3.0 (1.0)	693 (798)	4224 (4017)	48.5
Domino's	Pizza	208	3.0 (0.8)	96 (74)	960 (724)	11.0
Pizza Hut	Pizza	67	3.0 (0.7)	160 (120)	1017 (1400)	11.7
McDonald's	Burgers	88	2.9 (1.0)	368 (239)	1916 (1341)	22.0
Jamaica Blue	Dessert / Café	294	2.9 (0.9)	300 (126)	2499 (1079)	28.7
Bakers Delight	Bakery	320	2.8 (0.9)	79 (29)	958 (388)	11.0
Hungry Jack's	Burgers	122	2.5 (0.9)	459 (437)	2211 (1793)	25.4
Wendy's	Dessert / Café	64	2.3 (0.7)	355 (233)	1289 (767)	14.8
Muffin Break	Dessert / Café	393	2.2 (0.9)	202 (97)	1936 (937)	22.3
Gloria Jean's Coffee	Dessert / Café	132	2.2 (0.9)	405 (138)	1134 (560)	13.0
McCafe	Dessert / Café	87	2.2 (0.8)	303 (156)	1041 (693)	12.0
Baskin Robbins	Dessert / Café	142	2.1 (0.4)	111 (39)	1045 (402)	12.0
Chatime	Beverages	100	1.8 (1.0)	563 (82)	1007 (389)	11.6
Total		3,567	2.9 (1.0)	323 (274)	1794 (1546)	20.6

* The average adult daily energy intake is 8,700 kilojoules

By Category

The major category with the largest mean serving size was beverages (451mL) (Table 2). The category with the highest mean energy content was pasta and risotto (2951kJ per serving). One serving averaged 426g and contributed around 34% of an average adult's daily energy intake. On average, burgers were smaller than servings of pasta and risotto (286g), but contributed 2755kJ, or around 32% of daily energy intake before taking into account any drinks or sides.

In most cases, mean serving sizes exceeded recommended serves for each major category. For example, fruit and vegetable juice had a mean serving size of 512mL, exceeding the ADGs recommended serve of 125mL by 400%.¹² The mean kJ content and serving size for sugar sweetened beverages was 900kJ and 489mL respectively. One 'discretionary' serve of sugar sweetened beverages is 375mL.¹³

Table 2: Healthiness by category

Major and minor food category	Number of products	HSR (Mean (SD))	Serving size (g/ml) (Mean (SD))	Kilojoules (KJ) per serving (Mean (SD))	Per serving kilojoule contribution to Daily Intake* (%)
Beverages	721	2.5 (1.3)	451 (160)	1086 (661)	12.5
Hot beverages	196	1.6 (0.6)	329 (111)	823 (485)	9.5
Cold milk or milk substitute beverages	179	2.7 (1.0)	488 (122)	1520 (613)	17.5
100% Fruit/vegetable juice	101	5.0 (0.1)	512 (200)	760 (406)	8.7
Fruit/vegetable juice drinks and frappes	42	2.5 (0.7)	445 (125)	801 (279)	9.2
Dairy-based fruit smoothies	12	3.4 (0.4)	444 (127)	1285 (414)	14.8
Fruit-based smoothies	78	2.2 (0.6)	519 (200)	1687 (997)	19.4
Protein shakes/ smoothies	26	2.5 (0.4)	501 (92)	1203 (387)	13.8
Water based sugar sweetened beverages	56	1.2 (0.3)	489 (140)	900 (342)	10.3
Water based diet beverages	26	1.8 (0.3)	566 (118)	473 (302)	5.4
Water	5	5.0 (0.0)	550 (87)	0 (0)	0.0
Breakfast	155	2.6 (0.8)	281 (128)	2392 (1065)	27.5
Breakfast - Sweet	37	2.5 (0.8)	299 (153)	2656 (1424)	30.5
Breakfast - Savoury	118	2.6 (0.8)	276 (120)	2309 (916)	26.5
Burgers	222	3.2 (0.6)	286 (87)	2755 (819)	31.7
Burgers - Beef	98	2.9 (0.6)	290 (89)	2998 (871)	34.5
Burgers - Chicken	82	3.5 (0.5)	253 (83)	2334 (704)	26.8
Burgers - Vegetable	31	3.3 (0.4)	349 (51)	3097 (500)	35.6
Burgers - Lamb	8	3.4 (0.2)	339 (30)	2948 (317)	33.9
Burgers - Fish	3	3.5 (0.0)	255 (129)	2227 (805)	25.6
Pizza	272	3.1 (0.6)	110 (72)	1096 (693)	12.6
Pizza - Meat	198	3.1 (0.6)	106 (65)	1092 (684)	12.6
Pizza - Vegetarian	60	3.2 (0.4)	111 (77)	1034 (693)	11.9
Pizza - Seafood	14	3.2 (0.3)	187 (106)	1523 (788)	17.5
Burritos/Tacos/bowls	483	3.2 (0.5)	330 (162)	2373 (1131)	27.3
Pasta, risotto	16	3.2 (0.7)	426 (101)	2951 (1216)	33.9
Chicken	96	3.2 (0.6)	281 (350)	1877 (2650)	21.6
Seafood	4	2.9 (0.9)	229 (189)	2012 (1640)	23.1
Wraps, sandwiches	226	3.2 (0.6)	289 (100)	2526 (1011)	29.0
Sides	104	3.4 (0.7)	186 (135)	1577 (1277)	18.1
Sides - Vegetables/fruit	23	4.3 (0.4)	175 (166)	971 (1013)	11.2
Sides - Fries	26	3.5 (0.3)	208 (125)	1972 (1168)	22.7
Sides - Breads	13	2.8 (0.7)	162 (56)	2118 (713)	24.3
Sides - Nachos/tortilla chips	9	3.4 (0.4)	243 (87)	2804 (608)	32.2
Sides - Other	33	2.8 (0.5)	156 (144)	1040 (1335)	12.0
Muffins	181	2.6 (0.6)	162 (21)	2168 (480)	24.9
Muffins - Sweet	168	2.6 (0.6)	160 (17)	2194 (480)	25.2
Muffins - Savoury	13	2.6 (1.0)	183 (45)	1824 (323)	21.0
Pastries	83	2.1 (0.8)	186 (95)	1982 (709)	22.8
Pastries - Sweet	28	1.7 (0.7)	97 (44)	1439 (608)	16.5
Pastries - Savoury	55	2.4 (0.8)	232 (81)	2259 (590)	26.0
Cake	94	1.6 (0.7)	141 (88)	2117 (1387)	24.3
Biscuits/cookies	38	1.1 (0.6)	96 (65)	1906 (1285)	21.9
Bread	341	3.0 (0.8)	82 (43)	958 (476)	11.0
Bread - Sweet	114	2.6 (0.6)	80 (35)	1049 (517)	12.1
Bread - Savoury	227	3.2 (0.8)	83 (46)	914 (450)	10.5
Desserts	261	2.0 (0.7)	134 (87)	1303 (933)	15.0
Desserts - Ice cream & frozen desserts	202	2.1 (0.4)	116 (52)	1066 (529)	12.3
Desserts - Yoghurt & dairy desserts	19	2.1 (1.4)	337 (165)	2213 (1196)	25.4
Desserts - Other	40	1.6 (1.0)	170 (113)	2403 (1573)	27.6
Soups	29	3.4 (0.3)	391 (130)	1140 (565)	13.1
Salads	204	4.1 (0.4)	332 (132)	1792 (1040)	20.6
Salads - Garden salads with protein	52	4.1 (0.5)	289 (91)	1475 (651)	17.0
Salads - Garden salads without protein	15	4.1 (0.4)	299 (130)	1152 (711)	13.2
Salads - Other salads	137	4.0 (0.3)	352 (141)	1991 (1129)	22.9
Fruit	7	4.5 (0.0)	165 (184)	296 (299)	3.4
Snacks/light meals	30	2.3 (1.2)	172 (155)	1515 (1054)	17.4

*The average adult daily energy intake is 8,700 kilojoules

Nutrient composition

Biscuits and cookies had the highest energy content with a mean kJ content of 1986kJ per 100g. They also had the highest sugar (34.6g/100g) and saturated fat content (11.8g/100g). The categories with the highest sodium content were seafood (608mg/100g) and pizza (538mg/100g). Mean nutrient content per 100g by category is set out in full in Supplementary Table 2.

We identified 254 menu items available in 2019 that exceeded the Suggested Dietary Target of 2000mg in one serving, and would potentially be eligible to display a 'salt shaker' warning logo (Table 3). The worst offenders by company were Red Rooster (53 items), Guzman Y Gomez (46), Jamaica Blue (33) and Sumo Salad (30).

Product healthiness of selected fast food categories

This section looks at three major fast food categories in more detail: burgers, pizzas and single meal combos.

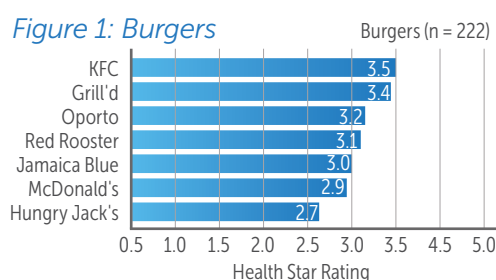
Table 3: Menu items exceeding entire daily sodium target¹

Company	Primary product portfolio	Number of products	Number of products exceeding SDT for sodium 2000mg/serving*
Red Rooster	Chicken	124	53
Guzman Y Gomez	Mexican	414	46
Jamaica Blue	Dessert / Café	305	33
Sumo Salad	Salads / Sandwiches	230	30
Hungry Jack's	Burgers	248	22
KFC	Chicken	100	21
Oporto	Burgers	67	17
Pizza Hut	Pizza	85	10
Soul Origin	Salads / Sandwiches	111	6
Salsa's	Mexican	71	4
Muffin Break	Dessert / Café	430	4
Mad Mex	Mexican	51	2
Grill'd	Burgers	143	2
McDonald's	Burgers	147	1
Brumbys	Bakery	46	1
Crust	Pizza	114	1
Domino's	Pizza	208	1
Chatime	Beverages	173	0
Baskin Robbins	Dessert / Café	142	0
McCafe	Dessert / Café	117	0
Gloria Jean's Coffee	Dessert / Café	352	0
Wendy's	Dessert / Café	84	0
Bakers Delight	Bakery	340	0
Boost Juice	Beverages	242	0
Top Juice	Beverages	202	0
Zambrero	Mexican	103	0
Subway	Salads / Sandwiches	53	0
Total		4,702	254

*Australian Government's Suggested Dietary Target (SDT) for sodium is 2000mg/day.

Burgers

There were 222 burger products sold by seven companies (Figure 1: Burgers). Overall they received a mean HSR of 3.2 out of 5.0. KFC had the highest mean HSR of 3.5, edging out Grill'd (HSR 3.4). Hungry Jack's had the lowest mean HSR of 2.7. Chicken burgers generally had higher HSRs than beef burgers, benefitting KFC in this analysis given its narrow product range.



There was variation in the serving size of different burger categories (Table 4). Vegetable burgers, including newer plant-based meat substitutes had the largest mean serving size (349g), which likely contributed to their higher energy content (mean 3097kJ). Beef burgers on average provided 2998kJ per serving (290g), contributing 34.5% of the average

adult daily energy intake. Chicken and fish burgers were smaller (253g and 255g respectively) with lower energy content on average.

The individual burger with the highest energy per serving overall and in the beef burger category was the Hungry Jack's Double Angus Smokey BBQ Burger with 5610kJ, contributing 64% of the average adult daily energy intake. One of these burgers contained 1740mg of sodium, or 87% of the SDT for sodium. This stands in contrast with the McDonald's Hamburger, which had the lowest energy content of any beef burger (1060kJ per serving, 12% average adult daily energy intake).

The chicken burger with the highest energy content was the Red Rooster Bacon and Cheese Ripa with 4560kJ per serving, contributing 52% of the average adult daily energy intake. The chicken burger with the lowest energy content was the KFC Baked

Table 4: Healthiness of burgers by type

Company	Number of products*	HSR (Mean (SD))	Serving size (g/ml) (Mean (SD))	Kilojoules (KJ) per serving (Mean (SD))	Per serving kilojoule contribution to Daily Intake** (%)
Burgers - Beef	98	2.9 (0.6)	290 (89)	2998 (871)	34.5
Grill'd	55	3.2 (0.4)	319 (58)	3207 (587)	36.9
Hungry Jack's	28	2.5 (0.6)	253 (105)	2815 (1129)	32.4
Jamaica Blue	2	2.5 (0.7)	485 (35)	4150 (990)	47.7
McDonald's	13	2.4 (0.5)	222 (73)	2334 (806)	26.8
Burgers - Chicken	82	3.5 (0.5)	253 (83)	2334 (704)	26.8
Grill'd	26	3.9 (0.2)	283 (54)	2465 (539)	28.3
McDonald's	7	3.6 (0.2)	263 (61)	2410 (460)	27.7
KFC	11	3.5 (0.5)	178 (79)	1762 (717)	20.3
Oporto	8	3.4 (0.2)	274 (85)	2031 (558)	23.3
Jamaica Blue	3	3.3 (0.3)	394 (31)	3247 (581)	37.3
Hungry Jack's	12	3.2 (0.6)	218 (58)	2477 (667)	28.5
Red Rooster	15	3.1 (0.6)	241 (102)	2358 (892)	27.1
Burgers - Vegetable	31	3.3 (0.4)	349 (51)	3097 (500)	35.6
Grill'd	28	3.4 (0.3)	353 (49)	3135 (506)	36.0
Jamaica Blue	2	2.8 (1.1)	351 (67)	2805 (375)	32.2
Oporto	1	2.0 (0.0)	256 (0)	2600 (0)	29.9
Burgers - Lamb	8	3.4 (0.2)	339 (30)	2948 (317)	33.9
Grill'd	8	3.4 (0.2)	339 (30)	2948 (317)	33.9
Burgers - Fish	3	3.5 (0.0)	255 (129)	2227 (805)	25.6
McDonald's	2	3.5 (0.0)	185 (64)	1830 (594)	21.0
Jamaica Blue	1	3.5 (0.0)	395 (0)	3020 (0)	34.7

* Excludes single meal combos

** The average adult daily energy intake is 8,700 kilojoules

Aioli Slider (901kJ per serving; 10% average adult daily energy intake).

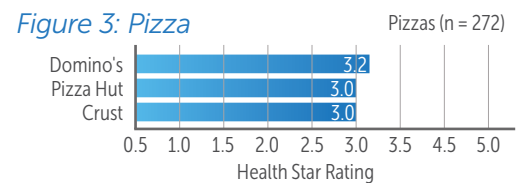
The vegetable burger with the highest energy content was the Grill'd Beyond Garden Goodness Burger on a gluten-free bun. It had 4160kJ per serving, contributing 48% of the average energy intake. Grill'd also made the vegetable burger with the lowest energy content, the Mushroom Parma Veggie Burger with 2224kJ per serving, contributing 26% of the average adult daily energy intake.

Of the 222 burgers analysed, eight exceeded the entire day's recommended sodium target in one burger. Three of these were from Hungry Jacks, two from Red Rooster, two from KFC and one from Jamaica Blue. The burger with highest sodium content per serving was the Jamaica Blue Beef and Vintage Cheese Burger, which contained 3160mg sodium.

Pizza

There were 272 pizza products sold by three companies. On average pizzas had a mean HSR of 3.1 out of 5.0, with little overall variation between companies: Domino's received a mean HSR of 3.2, with Pizza Hut and Crust both 3.0 (Figure 3: Pizza).

Pizza Hut had the highest average kilojoule content across all three pizza categories (Table 5). Pizza sizes and nutrition information 'per serving' were not consistent between companies, but a 'large' pizza with eight slices was larger at Crust and Pizza Hut than at Domino's.



In general, vegetarian and seafood-based pizzas performed better than meat-based pizzas (Table 5). Meat-based pizzas on average provided 6430kJ per whole pizza and 804kJ per slice (based on 8 slices per whole), contributing 9.2% of average adult daily energy intake. The large pizza with the highest energy content overall was the Domino's New Yorker The Big Three Meats with 11040kJ per pizza. The meat-based pizza with the lowest kilojoule content per whole pizza was the Domino's Ham & Cheese on classic base at 3944kJ per whole pizza and 493kJ per slice.

Table 5: Healthiness of pizzas by type

Company	Number of products	HSR (Mean (SD))	Large whole pizza serving size (g)	Kilojoules per whole pizza (Mean (SD))	Per pizza kilojoule contribution to Daily Intake* (%)	Kilojoules per slice (Mean)	Per slice kilojoule contribution to Daily Intake* (%)
Pizza - Meat	198	3.1 (0.6)	624 (209)	6430 (1896)	73.9	804	9.2
Crust	47	2.9 (0.7)	664 (87)	7002 (753)	80.5	875.0	10.1
Domino's	127	3.1 (0.5)	605 (231)	6113 (2009)	70.3	764.0	8.8
Pizza Hut	24	3.1 (0.7)	706 (76)	7919 (562)	91.0	990.0	11.4
Pizza - Vegetarian	60	3.2 (0.4)	578 (124)	5484 (1410)	63.0	686	7.9
Crust	14	3.2 (0.2)	716 (73)	6556 (621)	75.4	820.0	9.4
Domino's	41	3.3 (0.3)	540 (111)	4993 (1072)	57.4	624.0	7.2
Pizza Hut	5	2.7 (0.8)	680 (69)	8025 (1457)	92.2	1003.0	11.5
Pizza - Seafood	14	3.2 (0.3)	688 (159)	5791 (1188)	66.6	723.8	8.3
Crust	9	3.2 (0.3)	788 (111)	6260 (139)	72.0	782.5	9.0
Domino's	3	3.3 (0.3)	504 (11)	4352 (238)	50.0	544.0	6.3
Pizza Hut	2	3.3 (0.4)	755 (0)	7261 (0)	83.5	907.6	10.4

* The average adult daily energy intake is 8,700 kilojoules

Vegetarian-based pizzas on average provided 5484kJ per whole pizza and 686kJ per slice, or 7.9% of the average adult daily energy intake. The vegetarian-based pizza with the highest kilojoule content per whole pizza was Domino's The New Yorker The Big Cheese at 9520kJ per whole pizza and 1190kJ per slice. The vegetarian-based pizza with the lowest energy content per whole pizza was the Domino's Spicy Veg Trio on Classic base with 3728kJ per large pizza.

Seafood-based pizzas on average provided 5791kJ per whole pizza and 724kJ per slice, or 8.3% of average adult daily energy intake. The seafood-based pizza with the highest kilojoule content was Pizza Hut Garlic Prawn Traditional Base at 7261kJ per whole pizza and 908kJ per slice. The seafood-based pizza with the lowest kilojoule content per whole pizza was the Domino's Garlic Prawn on gluten-free base with 4184kJ per whole pizza and 523kJ per slice.

Single Meal Combos

There were 144 single meal combos sold by five different companies (Table 6). We defined single meal combos as items that are advertised as a meal that include multiple standard menu items. For example, a burger, chips and a soft drink. We analysed single meal combos based on the nutrition content of the default option presented by each chain. Generally, this was a main menu item, a medium fries and a medium coke. Most chains also offered small and large sizes as well as multiple variations of sides and drinks which were not analysed for this purpose.

Single meal combos had an average energy content of 4785kJ per serving, representing 55% of the average adult daily energy intake (Table 6). Overall, Red Rooster had the highest average kilojoule content per serving at 5720kJ representing two thirds of the average adult daily energy intake. Unlike other chains, Red Rooster's default meal combos included a large drink and large fries.

The individual meal with the highest kilojoule content per serving was the Red Rooster Bacon & Cheese Rippa meal. One meal consisting of one Bacon & Cheese Rippa Roll, 1 large fries and 1 large coke contained 7730kJ, or 89% of the average adult daily energy intake in one meal. It also contained 4571mg sodium, more than double the suggested dietary target.

Hungry Jack's came in second and third for high energy meals. Its Double Angus Smokey BBQ Meal contained 7651kJ (88% of the average adult daily energy intake). In third, the Hungry Jacks' Whopper Tamers Meal, which included two burgers, three chicken nuggets, small fries and a medium coke by default contained 7600kJ per serving, or 87% of the average adult daily energy intake in one meal. Both meals easily exceeded the SDT for sodium (2375mg and 2640mg respectively).

Table 6: Healthiness of single meal combos by chain

Company	Number of products	Serving size (Mean (SD))	Kilojoules per serving (Mean (SD))	Per serving kilojoule contribution to Daily Intake* (%)
Meal - Single	144	834 (147)	4785 (1087)	55
McDonald's	25	748 (69)	4158 (682)	47.8
KFC	32	770 (110)	4561 (983)	52.4
Oporto	16	804 (98)	4111 (551)	47.3
Hungry Jack's	48	812 (101)	5037 (1192)	57.9
Red Rooster	23	1087 (86)	5720 (820)	65.7

* The average adult daily energy intake is 8,700 kilojoules

Of all default single meal combos, the KFC Original Recipe chicken Fillet Meal had the lowest energy content at 2541kJ per serving, contributing 29% of the average adult daily energy intake. McDonald's came in second and third: its McDonald's Hamburger Meal had 2912kJ per serving, and its 6 Chicken McNugget meal had 2962kJ per serving.

Of the 144 meals analysed, 60 exceeded the SDT for sodium, and would potentially qualify for a 'salt shaker' warning logo if similar legislation existed in Australia. Of these, 23 were from Red Rooster, 18 from Hungry Jacks, 10 from KFC, eight from Oporto and one from McDonald's.

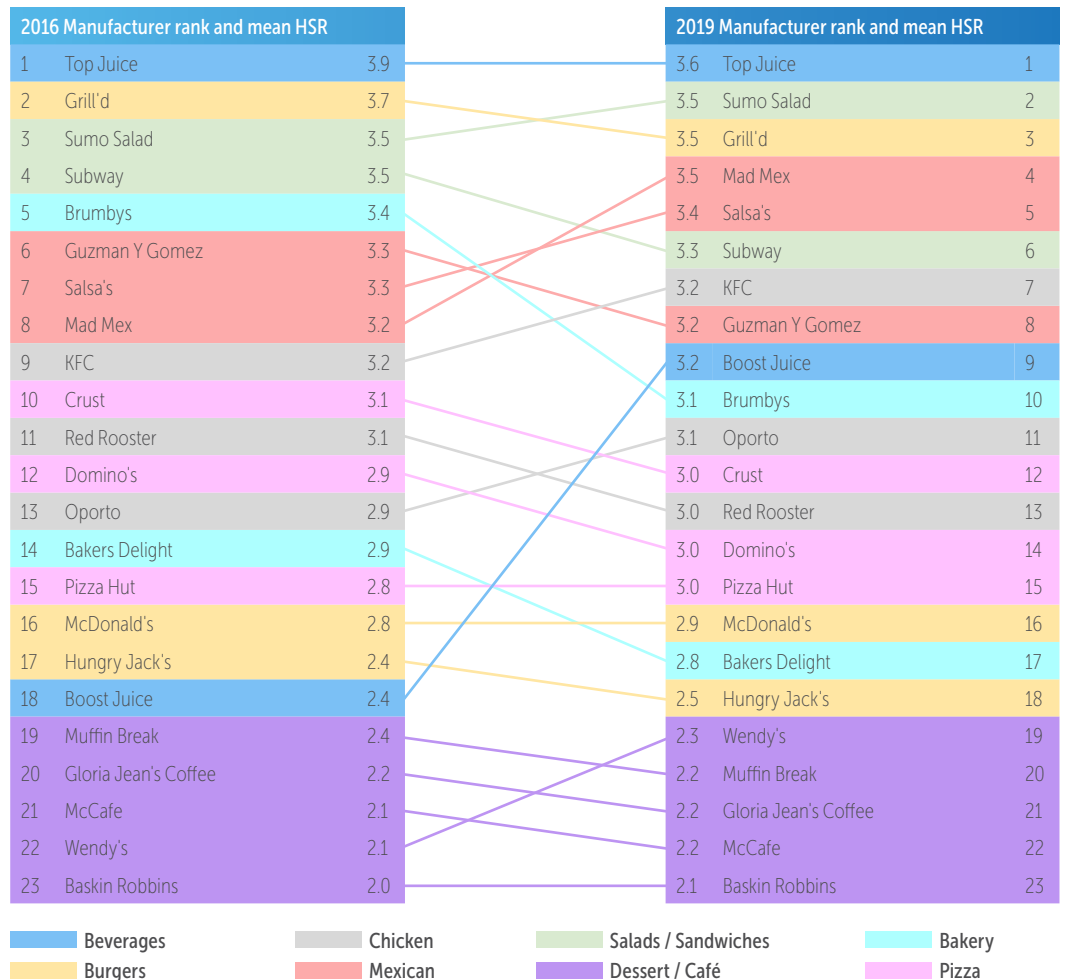
RESULTS – CHANGES FROM 2016-2019

Health Star Rating

By Company

Overall between 2016 and 2019, the mean HSR increased for 11 chains, decreased for nine chains, and remained unchanged for three chains (Figure 2). The largest movers in the rankings were Boost Juice (moved up eight places from 17th to 9th), Mad Mex (up five places from 8th to 4th), Brumby's (down five places from 5th to 10th) and Bakers Delight (down by four places from 14th to 17th).

Figure 2: Fast food chain rankings for 2016 and 2019



The rise in the ranking of Boost Juice reflects the addition of 100% fruit and vegetable juices and blends to the company's product range since 2016.

By Category

Differences in the mean HSR of food and beverage categories between 2016 and 2019 were mostly small (Supplementary Table 3). Across the 20 major categories examined, the mean HSR decreased in eight categories, increased in seven categories and was unchanged in five categories. The largest change was a 0.4 star decrease for the pasta and risotto category.

The categories with some improvements in HSR were beverages, pizza, chicken, sides, pastries biscuits and cookies and desserts. The categories with worsening HSRs over the three-year period were breakfast, pasta and risotto, wraps and sandwiches, muffins, cake, bread and soups.

Serving size, kilojoules per serving and proportion of average adult daily energy intake

By Company

Overall, the mean serving size increased for 15 chains and decreased for eight chains (Table 7). The mean kilojoule content increased for 13 chains and decreased for nine chains. KFC and Red Rooster had the largest increases in serving size and kilojoule content with both measures increasing by more than 30%. This is likely due to more single meal combos being presented as standard menu options by both chains in 2019.



By Category

Differences in the serving size of food and beverage categories between 2016 and 2019 were mostly small, and there was no consistent pattern of change (Supplementary Table 3). Across the 20 major categories examined, mean serving size increased in 12 categories and decreased in 7 categories. Mean kilojoule content increased in 10 categories and decreased in 9 categories.

The category with the most positive improvements in serving size and kilojoules per serving was the desserts category with a decrease of 115g and 549kJ. Breakfast and wraps and sandwiches had the largest increase in serving size, with an increase of 57g and 528kJ for breakfast and 56g and 687kJ for wraps and sandwiches. Burgers also increased in serving size by 33g and 359kJ. Increases in serving size and kilojoule content per serving were also seen in the burritos and tacos, muffins, pastries, bread, soups, cake and snacks and light meals categories.

Table 7: Changes in serving size and kJ content between 2016 and 2019 by fast food chain

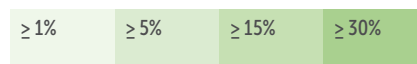
Company	Number of products in 2016 and 2019	Absolute change compared to 2016	
		Mean serving size (g/mL)	Mean kilojoules (KJ) per serving
Top Juice	478	9	-314
Sumo Salad	299	-5	-64
Zambrero	NA	-	-
Grill'd	189	37	593
Mad Mex	121	134	562
Salsa's	126	56	275
Subway	130	-41	2
KFC	122	183	1429
Soul Origin	NA	-	-
Guzman Y Gomez	508	-45	-159
Boost Juice	349	-23	-177
Brumbys	120	21	269
Oporto	124	-24	-74
Crust	183	-25	-2944
Red Rooster	161	105	924
Domino's	379	19	170
Pizza Hut	208	62	-41
McDonald's	264	6	-20
Jamaica Blue	NA	-	-
Bakers Delight	613	-2	-18
Hungry Jack's	320	63	177
Wendy's	147	49	23
Muffin Break	877	-1	124
Gloria Jean's Coffee	375	2	86
McCafe	216	21	-31
Baskin Robbins	233	19	177
Chatime	NA	-	-
Total	7,067	23	89

Worse

Percentage change



Unchanged



Better

Nutrient composition

By Category

Differences in the nutrient composition of foods and beverages between 2016 and 2019 were mostly small, and there was no consistent pattern of change (Supplementary Table 4). Across the 20 major food categories examined, the numbers of major food categories for which there were improvements were similar for sodium and sugar (9 categories), saturated fat and energy (8 categories each).

The major category with the largest increase in energy density was muffins, with an increase of 139kJ per 100g. The major category with the largest decrease in energy density was chicken, with a decrease of 251kJ per 100g.

The major category with the largest increase in saturated fat was pasta and risotto, with an increase of 1.7g per 100g. The major category with the largest decrease in saturated fat was chicken, with a decrease of 1.0g per 100g.

The major category with the largest increase in sodium was snacks and light meals, with an increase of 146mg per 100g. The major categories with the largest decreases in sodium were burritos/tacos/bowls and chicken, with a decrease of 63mg per 100g.

The major category with the largest increase in sugars was cake, with an increase of 2.8g per 100g. The major category with the largest decrease in sugars was snacks and light meals, with a decrease of 10.7g per 100g, mainly due to changes in the product offering to include more savoury items.

The category with the most consistent improvement was the beverages category, which had positive improvements across all four nutrients of concern, again likely to be in part related to changes in the product offering and potentially also due to reformulation to reduce sugar content in particular.



INTERPRETATION

Most of the products made by major fast food chains are unhealthy, sold in oversized servings and packed full of cheap ingredients such as salt, sugar and harmful fats. The average combination meal for one contains more than half the average daily energy intake for an Australian adult, with the worst menu offerings providing nearly 90% of kilojoules and double the amount of salt recommended for an entire day.

Our nutritional analysis is consistent with previous work that found the majority of fast food chains in Australia do not publicly identify nutrition and health as a focus area.²⁰ Examination of change in the healthiness of fast foods between 2016 and 2019 showed little overall improvement. Consistent with previous research, we found some companies improved the nutritional quality of some products and introduced healthier options to their product ranges, while many companies did not.²¹

A key observation from our analysis is the lack of nutrition information for fast foods. Consumers need access to information to make informed choices. Although large chains are meeting minimum legal requirements for declaring kilojoules per serving on menu boards, fewer chains are voluntarily providing nutrient information equivalent to that required on packaged foods in-store or online. Half (27/54) of large chains could not be included in our detailed analysis as insufficient nutrient information was available. Improved transparency is a necessary first step to enable healthier choices. While space on traditional menu boards is limited, increased use of digital menus, in-store kiosks and ordering apps create new opportunities for innovation in integrating this information at the point of purchase.

Where comprehensive nutrition was available, our analyses showed wide variation in HSR, energy content and nutrient values for most product categories. This highlights the feasibility of making healthier versions. For example, a difference of 1.5 stars in chicken nuggets made by different chains demonstrates the possibility of incremental improvements, by reducing added salt or changing cooking techniques (e.g. using oils with lower saturated fat content, baking rather than frying). The availability of healthier options within categories also provides a benchmark for the development of reformulation targets, including those being developed by the government's Healthy Food Partnership as an enabler to drive change.

Perhaps unsurprisingly, our analysis revealed the serving sizes of most products sold exceeded the serve recommended by the Australian Dietary Guidelines. For example, the mean serving size for fruit and vegetable juices was 512mL: four times the recommended serve of 125mL. While juices can contain vitamins and minerals, they are also lower in fibre than whole fruit and contain significant amounts of sugar. It is for this reason the Australian Dietary Guidelines recommend that fruit juices be consumed only occasionally as a substitute for a serve of fruit in this small amount.

Our analyses also showed large variation in the serving sizes of different chains for similar products. In the burger category for example, 'healthy burger' company Grill'd scored relatively well on mean HSR, but sold consistently larger burgers, thereby providing kilojoules than many other chains. Appropriate portions were particularly hard for consumers to assess in the pizza category, where nutrition information was provided per serving, but stated servings varied from one or more slices to a whole pizza. Where serving information is provided only in grams, rather than a household measure (e.g. a slice, half a cup) it is even less likely to be understandable to consumers. This highlights the need for development of standardised servings for common categories and provision of consistent and comparable nutrition information. Standardised servings could also inform healthier product development by chains, in most cases by reducing the serving size sold.

Consistent with previous work,¹⁷ our HSR analysis suggests this kind of nutrient profiling can be a useful tool to differentiate between the overall nutritional quality

of fast foods and beverages. For example, we found that beef burgers had a lower mean HSR (2.9) than burgers based on chicken (HSR 3.5), vegetables (HSR 3.3), lamb (HSR 3.4) or fish (HSR 3.5). They contained on average higher kilojoules, saturated fat and sodium than other burgers per 100g. However, the analysis also revealed the limitations of HSRs based on a standard amount of the product in a fast food context where serving sizes vary considerably and are likely to strongly influence the portions actually consumed. For example, a cola or fries sold in multiple serving sizes from the same company will all receive the same HSR. Without additional contextual information such as kJ, this information provides little incentive to select smaller serving sizes as a healthier choice.

Our analysis also highlighted some areas where the HSR algorithm produces results that appear misaligned with the ADGs. For example, fries had a mean HSR of 3.5, in part due to vegetable and protein content, and also in many cases due to relatively low levels of saturated fat from being cooked in healthier oils. Similar results are produced for many packaged potato chips. However, fries and potato chips are clearly specified as a 'discretionary' food choice. This suggests future review of HSR and its potential application in a fast food context should consider these products as anomalies. Australia could, for example, consider implementing the approach of the French Nutri-Score system that does not allow potato to obtain the benefit of vegetable points.²²

While the data included in this "FoodSwitch - State of the Fast Food Supply" report indicate serious shortcomings in the healthiness of fast food and little sign of improvement, there are clear opportunities. Companies are able to improve the average nutritional quality of their products through three main approaches. First, by reformulating existing products to reduce concentrations of added sugars, sodium, saturated fat and kilojoules. Second, by changing their product mix, removing products that are less healthy and introducing new ones with a better nutritional profile and healthier serving sizes. Third, by being more transparent in menu labelling and showing all information for all nutrients, especially nutrients of concern near the point of purchase, so consumers can identify healthier options.

Government can also set higher standards for how the food industry markets and sells the food we eat. It is now more than four years since the Healthy Food Partnership was convened as a multi-stakeholder initiative of governments, industry, public health and consumer groups to address obesity. Between 2016 and 2018, the Partnership's Food Service Working Group developed a strategy for the food service sector (including fast food chains) to improve the food supply through a pledge scheme, but by 2020 implementation was still not underway. In the absence of visible government leadership and regular monitoring, there is little incentive for industry to voluntarily improve the healthiness of the food supply.²³ This must change.

STRENGTHS AND LIMITATIONS

This report benefits from the highly standardised approach to the collection, processing and evaluation of the data across years and the large range of products captured. The preparation of the report independent of interested parties, in particular the food industry, is an important additional strength.

The report must, however, be interpreted in light of some limitations. While the data are representative of what was available online and on premises during the collection period, they do not represent every fast food product available in every chain throughout the year. Small independent fast food and take away chains are not included in this report as there is no requirement to provide nutrition information. Our focus on New South Wales creates potential to have omitted medium-sized chains in other states.

The research was based on nutrient data provided on websites and in restaurants, and we relied on the displayed data to be accurate. As information was not typically provided for fibre or FVNL content, we relied upon imputation for these metrics as described in our methods. These imputations mean we may have underestimated variation in nutrient content between similar products. Examination of price, and price promotions was beyond the scope of this work. Finally, the data relate to what was available for sale in stores, but not what was actually purchased or consumed.

RECOMMENDATIONS

Governments need to closely monitor the healthiness of Australian food environments. This should include monitoring the policies, commitments and actions of fast food chains operating in Australia. They should consider stronger policy interventions where voluntary company actions are insufficient, as part of a broader strategy to improve population nutrition and address obesity.

Governments should extend mandatory nutrition reporting for standardized fast food items to allow consumers to make informed choices. This should include readily available nutrient information equivalent to that required in the nutrient declaration of packaged foods, and consideration of interpretive labelling on menus to facilitate at-a-glance comparisons.

Fast food chains should set specific, measurable targets for the reduction of added sugar, saturated fat, sodium and kilojoule content across menu items. They should also routinely report against progress in achieving these reformulation commitments.

Fast food chains should commit to making healthier meal options (e.g. healthier sides and drinks) the default option, particularly as part of kids' meals.

Fast food chains should introduce pricing strategies that position healthier menu items at similar or lower prices than less healthy equivalents, and restrict price promotions and value deal incentives that include less healthy sides and drinks.

CONCLUSIONS

Australians are eating more fast food than ever before, but many of the products marketed and sold by large fast food chains are making Australians sick. While some chains have taken positive steps as part of a societal response to unhealthy diets and obesity, there is a greater role for the sector to play. The Australian fast food industry has a responsibility to improve the healthiness of what it produces and to make it easier for their customers to know the nutritional content of menu options and so identify healthier options. There are multiple highly plausible ways that industry could achieve this through better menu labelling, product benchmarking, reformulation and changes to the way foods and beverages are marketed, but rapid and substantive gains will be achieved only with significantly upgraded government leadership. Government policies and industry actions that improve the quality of the Australian food supply have the potential to reduce overweight, obesity and premature death and disability amongst millions of Australians.

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SUPPLEMENTARY
TABLES*Supplementary Table 1: Availability of nutrition information from large fast food chains in Australia*

Chain	Data collected 2016	Data collected 2019	Met minimum menu labelling requirements (kJ)	Excluded from 2019 analysis	Excluded from change analysis	Reason(s) for exclusion*
Bakers Delight	✓	✓	✓			
Baskin Robbins	✓	✓	✓			
Boost Juice	✓	✓	✓			
Breadtop	✓	✓	✓	✓	✓	1
Brumbys	✓	✓	✓			
Caffe Cherry Beans		✓	✓	✓	✓	1,2
Chatime	✓	✓	✓		✓	1
Coffee Club	✓	✓	✓	✓	✓	1
Coffee Emporium	✓	✓	✓	✓	✓	1
Cold Rock	✓	✓	✓	✓	✓	1
Crust	✓	✓	✓			
Domino's	✓	✓	✓			
Donut King	✓	✓	✓	✓	✓	1
Gelatissimo		✓	✓	✓	✓	1,2
Gloria Jean's Coffee	✓	✓	✓			
Gong Cha Tea		✓	✓	✓	✓	1,2
Grill'd	✓	✓	✓			
Guzman Y Gomez	✓	✓	✓			
Hero Sushi		✓	✓	✓	✓	1,2
Hudsons Coffee	✓	✓	✓	✓	✓	1
Hungry Jack's	✓	✓	✓			
Jamaica Blue	✓	✓	✓		✓	1
KFC	✓	✓	✓			
Le Wrap		✓	✓	✓	✓	1,2
Mad Mex	✓	✓	✓			
McCafe	✓	✓	✓			
McDonald's	✓	✓	✓			
Michel's Patisserie	✓	✓	✓	✓	✓	1
Muffin Break	✓	✓	✓			
Nando's	✓	✓	✓	✓	✓	1
New Zealand Natural	✓	✓	✓	✓	✓	1
Noodle Box	✓	✓	✓	✓	✓	1
Oliver Brown		✓	✓	✓	✓	1,2
Oporto	✓	✓	✓			
Pie Face	✓	✓	✓	✓	✓	1
Pizza Capers	✓	✓	✓	✓	✓	1
Pizza Hut	✓	✓	✓			
Red Rooster	✓	✓	✓			
Roll'd		✓	✓	✓	✓	1,2
Salsa's	✓	✓	✓			
San Churro		✓	✓	✓	✓	1,2
Schnitz		✓	✓	✓	✓	1,2
Shingle Inn		✓	✓	✓	✓	1,2
Soul Origin		✓	✓		✓	2
Subway	✓	✓	✓			
Sumo Salad	✓	✓	✓			
Sushi Hub		✓	✓	✓	✓	1,2
The Cheesecake Shop		✓	✓	✓	✓	1,2
Three Beans		✓	✓	✓	✓	1,2
Top Juice	✓	✓	✓			
Wendy's	✓	✓	✓			
Wild Bean	✓	✓	✓	✓	✓	1
Zambrero		✓	✓		✓	2
Zarrafa's Coffee		✓	✓	✓	✓	1,2

* Reason for exclusion: (1) Additional nutrition information not provided (2) Not captured for 2016

Supplementary Table 2: Mean nutrient composition by category in 2019

Major and minor food category	Number of products	Nutrient composition (Mean (SD))			
		Energy (kJ/100g)	Saturated fat (g/100g)	Sodium (mg/100g)	Total Sugars (g/100g)
Beverages	721	240 (126)	0.9 (1.2)	30 (27)	8.0 (3.9)
Hot beverages	196	229 (116)	1.3 (1.4)	39 (25)	5.8 (3.4)
Cold milk or milk substitute beverages	179	330 (140)	1.7 (1.5)	47 (32)	10.2 (4.1)
100% Fruit/vegetable juice	101	148 (45)	0.0 (0.1)	17 (21)	6.7 (2.2)
Fruit/vegetable juice drinks and frappes	42	187 (38)	0.1 (0.1)	8 (7)	9.3 (2.5)
Dairy-based fruit smoothies	12	305 (44)	0.6 (0.4)	44 (11)	11.0 (1.4)
Fruit-based smoothies	78	307 (102)	0.8 (0.9)	23 (14)	10.0 (3.2)
Protein shakes/smoothies	26	241 (64)	0.4 (0.4)	25 (14)	6.2 (1.8)
Water based sugar sweetened beverages	56	177 (47)	0.2 (0.3)	11 (11)	9.5 (2.1)
Water based diet beverages	26	86 (47)	0.1 (0.0)	6 (3)	4.6 (2.7)
Water	5	0 (0)	0.0 (0.0)	4 (2)	0.0 (0.0)
Breakfast	155	882 (209)	4.7 (2.6)	439 (249)	5.2 (6.4)
Breakfast - Sweet	37	948 (286)	4.1 (2.9)	284 (282)	14.2 (7.5)
Breakfast - Savoury	118	861 (176)	4.9 (2.5)	488 (216)	2.4 (1.7)
Burgers	222	980 (156)	3.9 (1.9)	417 (138)	3.1 (1.1)
Burgers - Beef	98	1051 (139)	5.3 (1.6)	425 (100)	3.0 (1.0)
Burgers - Chicken	82	942 (164)	2.7 (1.3)	423 (171)	3.2 (1.4)
Burgers - Vegetable	31	888 (83)	3.0 (1.1)	403 (161)	3.1 (0.9)
Burgers - Lamb	8	878 (131)	4.2 (0.9)	348 (43)	3.3 (0.4)
Burgers - Fish	3	917 (132)	1.9 (0.6)	358 (99)	2.6 (1.1)
Pizza	272	1004 (151)	3.7 (1.4)	538 (111)	3.5 (1.6)
Pizza - Meat	198	1034 (150)	3.9 (1.4)	569 (109)	3.6 (1.6)
Pizza - Vegetarian	60	942 (119)	3.2 (1.6)	454 (72)	3.0 (1.5)
Pizza - Seafood	14	837 (92)	2.6 (0.4)	467 (64)	3.7 (1.6)
Burritos/Tacos/bowls	483	749 (218)	3.4 (1.9)	360 (121)	1.7 (1.0)
Pasta, risotto	16	697 (241)	3.3 (2.7)	388 (306)	2.3 (1.6)
Chicken	96	741 (433)	1.6 (1.1)	525 (273)	1.4 (2.0)
Seafood	4	970 (190)	2.5 (1.4)	608 (319)	1.6 (1.1)
Wraps, sandwiches	226	865 (196)	3.2 (2.1)	442 (154)	2.6 (3.0)
Sides	104	880 (440)	2.4 (2.0)	376 (220)	3.1 (4.0)
Sides - Vegetables/fruit	23	593 (388)	1.6 (1.6)	209 (310)	5.2 (4.4)
Sides - Fries	26	997 (274)	1.8 (1.0)	397 (182)	1.6 (3.0)
Sides - Breads	13	1228 (214)	4.5 (2.3)	479 (84)	5.8 (7.1)
Sides - Nachos/tortilla chips	9	1414 (491)	2.8 (1.7)	358 (93)	1.6 (0.7)
Sides - Other	33	706 (391)	2.6 (2.2)	441 (172)	2.1 (1.8)
Muffins	181	1338 (260)	3.5 (2.9)	247 (165)	20.8 (6.7)
Muffins - Sweet	168	1363 (251)	3.4 (2.9)	223 (136)	22.1 (5.0)
Muffins - Savoury	13	1011 (125)	4.5 (2.0)	563 (195)	4.1 (2.1)
Pastries	83	1199 (372)	8.3 (3.7)	365 (168)	8.7 (10.6)
Pastries - Sweet	28	1507 (227)	7.9 (4.6)	288 (97)	20.7 (10.6)
Pastries - Savoury	55	1042 (332)	8.5 (3.2)	404 (184)	2.6 (1.3)
Cake	95	1493 (355)	8.5 (5.7)	279 (177)	28.5 (10.6)
Biscuits/cookies	38	1986 (189)	11.8 (5.9)	259 (124)	34.6 (11.7)
Bread	341	1181 (168)	2.0 (2.4)	495 (172)	8.3 (10.1)
Bread - Sweet	114	1301 (162)	2.3 (2.6)	353 (82)	21.2 (7.3)
Bread - Savoury	227	1120 (136)	1.8 (2.3)	566 (160)	1.9 (1.3)
Desserts	260	971 (334)	7.3 (3.9)	100 (77)	20.5 (6.9)
Desserts - Ice cream & frozen desserts	202	918 (161)	7.0 (2.2)	91 (39)	20.7 (4.3)
Desserts - Yoghurt & dairy desserts	19	634 (179)	3.4 (2.0)	65 (42)	14.5 (4.0)
Desserts - Other	39	1411 (581)	10.6 (7.3)	162 (162)	22.9 (13.9)
Soups	29	331 (151)	1.9 (1.5)	322 (113)	2.2 (0.9)
Salads	204	525 (228)	1.5 (1.1)	280 (172)	3.0 (2.2)
Salads - Garden salads with protein	52	510 (226)	1.5 (1.0)	303 (186)	2.5 (1.7)
Salads - Garden salads without protein	15	428 (331)	1.2 (0.9)	180 (124)	3.6 (2.2)
Salads - Other salads	137	541 (215)	1.5 (1.1)	282 (168)	3.1 (2.3)
Fruit	7	185 (42)	0.0 (0.1)	5 (3)	8.4 (2.3)
Snacks/light meals	30	1368 (690)	9.3 (8.8)	275 (255)	12.6 (10.0)

Supplementary Table 3: Changes in healthiness between 2016 and 2019 by category

Company	Number of products in 2016 and 2019	Absolute change compared to 2016		
		HSR	Serving size (g/mL)	Kilojoules (KJ) per serving
Beverages	1,250	0.2	2	-32
Hot beverages	383	-0.1	21	90
Cold milk or milk substitute beverages	326	0.2	13	-74
100% Fruit/ vegetable juice	138	0.0	-78	-127
Fruit/vegetable juice drinks and frappes	85	0.2	-30	-75
Dairy-based fruit smoothies	15	-0.4	-41	27
Fruit-based smoothies	131	0.0	-29	28
Protein shakes/ smoothies	52	0.0	-76	-181
Water based sugar sweetened beverages	83	0.0	69	116
Water based diet beverages	29	-0.3	45	467
Water	8	0.0	-	-
Breakfast	219	-0.2	57	528
Breakfast - Sweet	46	-0.3	-29	24
Breakfast - Savoury	173	-0.1	78	641
Burgers	360	0.0	33	359
Burgers - Beef	150	0.1	38	379
Burgers - Chicken	152	0.0	9	92
Burgers - Vegetable	40	-0.1	51	823
Burgers - Lamb	14	-0.1	27	331
Burgers - Fish	4	0.0	127	957
Pizza	536	0.1	-8	-803
Pizza - Meat	379	0.0	-15	-880
Pizza - Vegetarian	113	0.3	6	-647
Pizza - Seafood	44	0.1	61	-358
Burritos/Tacos/bowls	676	0.0	37	191
Pasta, risotto	29	-0.4	-16	-382
Chicken	147	0.2	24	-389
Seafood	NA	-	-	-
Wraps, sandwiches	372	-0.1	56	687
Sides	173	0.2	-10	-127
Sides - Vegetables/fruit	35	-0.1	-44	10
Sides - Fries	48	0.2	-6	-141
Sides - Breads	24	0.5	-43	-711
Sides - Nachos/tortilla chips	11	-0.6	98	419
Sides - Other	55	0.1	-11	-169
Muffins	405	-0.1	7	302
Muffins - Sweet	380	-0.1	6	310
Muffins - Savoury	25	0.0	16	279
Pastries	161	0.1	24	65
Pastries - Sweet	51	-0.3	-2	84
Pastries - Savoury	110	0.3	41	96
Cake	181	-0.3	16	382
Biscuits/cookies	68	0.1	-11	-111
Bread	654	-0.1	4	62
Bread - Sweet	206	-0.1	-1	5

Company	Number of products in 2016 and 2019	HSR	Absolute change compared to 2016	
			Serving size (g/mL)	Kilojoules (KJ) per serving
Bread - Savoury	448	-0.1	7	78
Desserts	448	0.0	-109	-450
Desserts - Ice cream & frozen desserts	338	0.0	14	173
Desserts - Yoghurt & dairy desserts	44	-0.2	-157	-793
Desserts - Other	66	0.1	-20	99
Soups	38	-0.2	18	200
Salads	314	0.0	-37	-95
Salads - Garden salads with protein	103	0.0	-80	-299
Salads - Garden salads without protein	43	0.0	-5	-278
Salads - Other salads	168	-0.1	-66	-374
Fruit	16	-0.1	-345	-587
Snacks/light meals	42	0.0	127	742

Worse**Unchanged****Better**

Percentage change	≥ 30%	≥ 15%	≥ 5%	≥ 1%	0%	≥ 1%	≥ 5%	≥ 15%	≥ 30%

Supplementary Table 4: Changes in nutrient composition between 2016 and 2019 by category

Company	Number of products in 2016 and 2019	Absolute change compared to 2016			
		Energy (kJ/100g)	Saturated fat (g/100g)	Sodium (mg/100g)	Total Sugars (g/100g)
Beverages	1,250	-137	-0.8	-16	-3.4
Hot beverages	383	-328	-1.9	-37	-8.4
Cold milk or milk substitute beverages	326	-33	-0.1	1	-1.1
100% Fruit/vegetable juice	138	-8	0.0	2	-0.2
Fruit/vegetable juice drinks and frappes	85	-4	0.0	-4	0.1
Dairy-based fruit smoothies	15	40	0.2	1	0.7
Fruit-based smoothies	131	11	0.2	0.0	-1.3
Protein shakes/smoothies	52	3	0.0	-2	0.4
Water based sugar sweetened beverages	83	-11	0.1	1	-1.0
Water based diet beverages	29	85	0.1	-6	4.6
Water	8	0	0.0	1	0.0
Breakfast	219	-8	0.8	-18	0.4
Breakfast - Sweet	46	-145	1.7	27	-0.3
Breakfast - Savoury	173	5	0.8	-2	-0.9
Burgers	360	21	-0.1	8	0.1
Burgers - Beef	150	-9	-0.6	21	-0.4
Burgers - Chicken	152	25	-0.2	-8	0.4
Burgers - Vegetable	40	106	0.8	43	0.3
Burgers - Lamb	14	37	0.2	50	0.6
Burgers - Fish	4	-71	-0.4	-51	0.6
Pizza	536	-11	-0.3	37	-1.2
Pizza - Meat	379	7	-0.1	41	-1.4
Pizza - Vegetarian	113	-80	-0.9	5	-1.2
Pizza - Seafood	44	-87	-1.3	36	0.0
Burritos/Tacos/bowls	676	-32	0.1	-63	-0.1
Pasta, risotto	29	-18	1.7	86	-0.4
Chicken	147	-251	-1.0	-63	0.1
Seafood	NA	-	-	-	-
Wraps, sandwiches	372	76	0.4	-4	-0.2
Sides	173	-35	-0.4	-16	0.5
Sides - Vegetables/fruit	35	142	0.5	44	0.6
Sides - Fries	48	6	-0.7	28	-0.5
Sides - Breads	24	-130	-1.0	-126	2.7
Sides - Nachos/tortilla chips	11	-321	0.1	151	0.5
Sides - Other	55	-92	-0.3	-8	0.1
Muffins	405	139	1.1	-3	0.3
Muffins - Sweet	380	149	1.1	-9	0.6
Muffins - Savoury	25	81	0.5	-15	1.3
Pastries	161	-27	-1.0	-27	2.4
Pastries - Sweet	51	136	-0.3	31	5.0
Pastries - Savoury	110	-123	-1.2	-44	0.2
Cake	182	-55	0.7	-45	2.8
Biscuits/cookies	68	91	1.0	-42	2.0

Company	Number of products in 2016 and 2019	Absolute change compared to 2016			
		Energy (kJ/100g)	Saturated fat (g/100g)	Sodium (mg/100g)	Total Sugars (g/100g)
Bread	654	32	0.3	11	0.6
Bread - Sweet	206	28	0.4	0	-0.8
Bread - Savoury	448	23	0.2	28	0.0
Desserts	447	19	0.6	-6	-0.1
Desserts - Ice cream & frozen desserts	338	24	0.5	7.0	-1.2
Desserts - Yoghurt & dairy desserts	44	23	0.7	5	-0.6
Desserts - Other	65	-177	-0.9	-103	3.0
Soups	38	86	0.7	85	-0.6
Salads	314	33	0.2	21	-0.4
Salads - Garden salads with protein	103	32	0.0	2	-0.1
Salads - Garden salads without protein	43	-41	0.0	-54	-1.5
Salads - Other salads	168	5	0.6	69	0.1
Fruit	16	12	0.0	2	1.0
Snacks/light meals	42	-482	0.0	146	-10.7

Worse**Unchanged****Better**

Percentage change

≥ 30%

≥ 15%

≥ 5%

≥ 1%

0%

≥ 1%

≥ 5%

≥ 15%

≥ 30%

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