

A comprehensive analysis of sodium levels in the Canadian packaged food supply

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Abstract

Background—Population-wide sodium reduction strategies aim to reduce the cardiovascular burden of excess dietary sodium. Lowering sodium in packaged foods, which contribute the most sodium to the diet, is an important intervention to lower population intakes.

Purpose—To determine sodium levels in Canadian packaged foods and evaluate the proportion of foods meeting sodium benchmark targets set by Health Canada.

Methods—A cross-sectional analysis of 7234 packaged foods available in Canada in 2010–11. Sodium values were obtained from the Nutrition Facts table.

Results—Overall, 51.4% of foods met one of the sodium benchmark levels: 11.5% met Phase 1, 11.1% met Phase 2, and 28.7% met 2016 goal (Phase 3) benchmarks. Food groups with the greatest proportion meeting goal benchmarks were dairy (52.0%) and breakfast cereals (42.2%). Overall 48.6% of foods did not meet any benchmark level and 25% of all products exceeded maximum levels. Meats (61.2%) and canned vegetables/legumes and legumes (29.6%) had the most products exceeding maximum levels. There was large variability in the range of sodium within and between food categories. Food categories highest in sodium (mg/serving) were dry, condensed and ready-to-serve soups (834 ± 256 , 754 ± 163 , and 636 ± 173 , respectively), oriental noodles (783 ± 433), broth (642 ± 239), and frozen appetizers/sides (642 ± 292).

Conclusion—These data provide a critical baseline assessment for monitoring sodium levels in Canadian foods. While some segments of the market are making progress towards sodium reduction, all sectors need encouragement to continue to reduce the amount of sodium added during food processing.

INTRODUCTION

Hypertension is the leading cause of preventable deaths, for which excess dietary sodium intake is a major attributable risk factor.^{1, 2} Lowering population sodium intake is considered a highly effective strategy to address hypertension and reduce stroke, cardiovascular diseases and related health care expenditures.^{3–5} Such outcomes are relevant to Canadians who on

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average consume approximately 3400 mg of sodium per day,⁶ which is more than two times higher than the recommended Adequate Intake level of 1500 mg, and much higher than the tolerable upper level of 2300 mg/day.⁷ To address this issue, the Canadian federal government appointed a multi-stakeholder Sodium Working Group to develop a *Sodium Reduction Strategy for Canada*.⁸ The *Strategy* aims to reduce sodium intakes to less than 2300 mg/day by 2016 through recommended interventions targeted at the food supply, consumer and industry education and awareness, and research.^{8, 9} Since the majority of dietary sodium is derived from processed and prepared foods, it is projected that food supply interventions will have the largest impact in lowering sodium intakes.¹⁰ Bread products, processed meats, soup, and canned and pickled vegetables contribute the most sodium to the Canadian diet.¹¹

Health Canada recently published sodium benchmark targets to guide the food industry in structured, voluntary reductions in the sodium content of processed foods, which provides food manufacturers with the opportunity to address any concerns related to consumer acceptance, technological barriers and microbial safety during reformulation.^{12,13} However, there is presently no nationally coordinated monitoring framework to track sodium reduction progress in the food supply in relation to the published targets. Without timely monitoring and evaluation, the food industry cannot be held accountable to these targets, nor can their successes be measured. The objective of this study was to provide an analysis of sodium levels in packaged foods available in Canada and to evaluate the proportion of foods that meet Canadian sodium benchmark targets.¹³ Such data provide a critical baseline assessment of the sodium content of the food supply, which can be used as an objective comparator in upcoming years, as Canadian foods are reformulated to be lower in sodium. Such data are also essential in generating revised population-based estimates of sodium intakes when coupled with published national food intake data from surveys such as Canadian Community Health Survey 2.2.⁶

METHODS

This cross-sectional analysis utilized the University of Toronto Food Label Information Program database, which contains nutrition information on a national sample of packaged food and beverages available in Canadian grocery stores.¹⁴ Briefly, the database includes sodium and other nutrition and food label data from 10,487 food and beverages collected between February 2010 and April 2011. National and private-label brand foods were purchased from the four largest Canadian grocery chains, accounting for 56% of the Canadian grocery food and beverage market share.¹⁵ Food products available at multiple retailers and/or in multiple package sizes were captured only once. Foods were acquired according to 23 distinct food group categories and 153 sub-group categories, as defined by the Food and Drug Regulations.¹⁶ Data entered into the database included the Nutrition Facts table information, Universal Product Code, company, brand, price, container size, date and location of collection, and nutrition marketing information (e.g., nutrient content claims, health claims, and front-of-pack rating systems). Quality assurance steps for data validation were implemented, as previously described.¹⁴

Assessment of Sodium Levels

Foods were classified into sodium-focused food group categories, major subcategories and minor subcategories, as published in Health Canada's *Guidance for the Food Industry on Reducing Sodium in Processed Foods* (Online Supplementary Tables S1–S3).¹³ The sodium content in foods was obtained from the Nutrition Facts table (mg/serving) and was converted to standardized units (mg/100g and mg/kcal). Excluded from the analysis were foods with missing sodium values on the food package (n=17, entire database), and/or foods that do not contain significant amounts of sodium (e.g., dry rice, grain and pasta without seasoning). We determined means, medians and minimum and maximum levels for each food category and subcategory. Data were not weighted according to market share.

Health Canada's sodium benchmarks include two interim benchmark target levels (Phase 1 and 2), a 2016 goal level (Phase 3), and a maximum level for each food category (Online Supplementary Table S3).¹³ Standardized units (mg/100g) were used to determine the proportion of products meeting the phased benchmarks and the maximum level. Continuous variables are presented as mean \pm standard deviation. Categorical variables are presented as frequency (percent). All analyses were conducted using SAS version 9.1 (SAS Institute Inc., Cary, NC).

RESULTS

Mean sodium levels

This analysis included 7234 food items from 13 food groups, 52 major sub-group categories, and 171 minor sub-group categories. The highest mean sodium levels per serving were found among dry, canned condensed and canned ready to serve soups (834 ± 256 mg/serving, 754 ± 163 mg/serving, and 636 ± 173 mg/serving, respectively), fresh and instant oriental noodles (783 ± 433 mg/serving), broth (642 ± 239 mg/serving), refrigerated and frozen appetizers and sides (642 ± 292 mg/serving), and sausages and wieners (636 ± 217 mg/serving), canned/dry shelf stable mixed dishes (e.g., pasta with sauce, seasoned rice, canned chili) (613 ± 270 mg/serving) pizza, pizza snacks and frozen sandwiches (631 ± 171 mg/serving) (Table 1, Online Supplementary Table S1). There was high variability in sodium levels across several product categories including: seasoning mixes (33 to 10741 mg/100g), sauces, dips and gravies and condiments (0–7250 mg/100g), canned vegetables (0 to 2800 mg/100g), and natural cheese (0 to 2533 mg/100g). In contrast, there was relatively less variability in the sodium content of canned soups: condensed soups (128 to 477 mg/100g) and ready to serve soups (55 to 474 mg/100g). In relation to sodium content per calorie, the highest density was observed among broth (62.8 ± 51.1 mg/kcal), seasoning mixes (14.7 ± 10.3 mg/kcal), canned vegetables (12.1 ± 18.6 mg/kcal), dry and canned condensed soup (11.4 ± 9.7 mg/kcal and 9.0 ± 4.2 mg/kcal, respectively), and sauces, dips, gravies and condiments (10.5 ± 13.8 mg/kcal) (Table 1, Online Supplementary Table S2).

Comparison with sodium benchmarks

Proportion meeting sodium benchmarks—Overall, 51.4% of food products met one of the sodium benchmark levels: 11.5% met Phase 1 benchmarks, 11.1% met Phase 2 benchmarks, and 28.7% met the goal benchmark (Phase 3) (Table 2, Figure 1). The greatest

proportion of products meeting the Phase 3 goal benchmark targets were dairy products (52.0%) and breakfast cereals (42.2%); whereas canned vegetables and legumes (16.1%), snack foods (21.6%), and sauces, dips, gravies and condiments (24.3%) had the fewest number of products meeting goal benchmarks (Figure 2). There was large within-group variation in the proportion of products meeting the benchmarks across many product categories (Online Supplementary Table S32). For example, among packaged bread products, 51.4% of hearth breads met the goal benchmark target as compared to 0% of diet breads.

Proportion exceeding all benchmark levels—Overall, 48.6% of products evaluated contained high levels of sodium, exceeding both the interim (Phase 1 and 2) or 2016 goal (Phase 3) benchmark levels. Canned vegetables and legumes (66.9%), and fish and seafood products (56.1%) had the highest proportion of products not meeting benchmarks. In contrast, nut butters (10.5%), dairy products (34.2%), breakfast cereals (36.5%), and seasonings (37.8%) had the lowest number of products. Similar to the proportion of products meeting the benchmarks, there was also much within-group variation. For example, 56.3% of canned soups exceeded all benchmarks, whereas only 26.8% of ready-to-serve soups exceeded all benchmarks. Among dairy products, processed cheeses had a much higher proportion of products exceeding the benchmarks as compared to natural cheeses (63.3% versus 30.8%).

Proportion exceeding maximum levels—Sodium levels in 24.7% of all products exceeded the maximum levels set by Health Canada. Meat and meat substitutes (61.2%), and canned vegetables and legumes (29.6%) had the greatest proportion of products that exceeded maximum levels. However, soups and broth (11.7%), nut butter (13.3%) and dairy products (16.1%) had the lowest proportion of products that exceeded maximum levels.

DISCUSSION

These data provide a critical baseline evaluation of sodium levels in the food supply that may be used to inform policies and actions by government and the food industry to lower sodium in food items, and to conduct longitudinal evaluations to determine the magnitude of sodium reduction across the food supply as well as to determine resulting changes in population sodium intakes and health outcomes. This study demonstrates that in 2010–11, 51% of packaged foods met at least one of the benchmark targets. Almost one third of these foods met the 2016 goal benchmark target. However, it also should be emphasized that approximately half of all foods contained sodium levels that exceeded all benchmark targets, and 25% of foods overall had unacceptably high amounts of sodium that surpassed the maximum levels established by Health Canada.¹³ There was large variability in the range of sodium and in the proportion of foods meeting benchmark targets both within and between food group categories and sub-categories. Thus, while some segments of the market are already making progress towards sodium reduction, food manufacturers in all sectors must be encouraged to take continual action in reducing the amount of sodium added during food production. Indeed, these findings are similar to other countries,^{17, 18} and are encouraging since they suggest that lower sodium reformulations are achievable while preserving the sensory and functional characteristics that sodium imparts on food. Such food supply

interventions are paramount in supporting individuals to reduce sodium consumption, both in the general population and in subgroups with greater sensitivity to excess dietary sodium such those with prehypertension or hypertension, African Americans, those over 51 years of age, and those with advanced diseases (e.g., heart failure), who may be recommended to consume more stringent levels of sodium.⁷

In this baseline analysis, 29% of foods already met the 2016 goal benchmark targets. This does not necessarily represent progress as this data is expected given the methodologies Health Canada applied during the benchmark setting process.¹³ For example, when assessing the distribution of sodium in a food category, Health Canada set benchmark targets at approximately the 25th percentile and they excluded products labeled “low sodium”, which constitute 4.5% of packaged foods in Canada.¹⁴ However, while Health Canada’s benchmark targets are relatively consistent with those in other countries,¹⁹ the data in this study point to variability in the application of the target setting methodology i.e., 52% of dairy products met benchmark targets at baseline as compared to 16% of canned vegetables. This finding suggests that some food types were considered to be more amenable to reformulation. Indeed, some food categories will have greater challenges based on the functional properties of sodium i.e., reducing microbial growth in processed meats and controlling the stickiness of dough.²⁰ Despite the level of stringency applied, it is important that all food categories and sub-categories be reformulated with lower sodium levels so that the health benefits of sodium reduction can be achieved among all Canadians. This is relevant since not all consumers select the same types of food. For example, should wieners (hot dogs) fail to meet benchmark targets, the individuals who frequently consume wieners (e.g., children) would continue to be exposed to higher sodium levels than is necessary.¹¹

Monitoring of sodium in the food supply is critical to evaluating the successes and shortcomings of the efforts made by food industry to reduce the sodium content of food items. Indeed, many of the successes of trans fat reduction in the Canadian food supply are likely attributable to the Health Canada’s Trans Fat Monitoring Program, which conducted planned, periodic analysis and public reporting of trans fat levels.^{21–23} However, the federal government disbanded the Canadian Sodium Working Group prior to the completion of the final part of the Terms of Reference, which included the development and implementation of a nationally coordinated sodium monitoring and evaluation program. Some analyses, however, have been conducted by independent third parties in other countries and by industry groups.^{24–26} For example, the Baking Association of Canada has reported that sodium in pantry breads was reduced by 8% from 2009 to 2011 (473 mg/100g to 433 mg/100g).²⁵ However, planned and periodic third party evaluations are paramount to providing an objective and comprehensive monitoring of sodium levels across the entire food supply, as opposed to a single product category.

These data have significant implications for Canadian consumers, many of whom report taking personal action to reduce sodium.²⁷ First, we identify the foods that are most sodium dense in relation to serving size and calories. This data has provided the foundation for the development of a web-based “Salt Calculator” (www.projectbiglife.ca), translating this data for consumer use.²⁸ For the consumer, it is important to understand which food categories have made progress in reducing sodium levels and to be generally knowledgeable the

absolute levels of sodium relative to what they consume, per serving, per 100 g, or per calorie, so that they can consider limiting higher sodium products or to search for low sodium varieties. Sodium levels per calorie, which we have uniquely described in this analysis, can also be a useful guide when translated into dietary patterns.^{29–31} Based on a 2000 kcal/day diet and a dietary sodium recommendation of less than 2300 mg/day, a food with a sodium to calories ratio that is greater than or approaching 1.0, can be considered sodium dense. When examined on a calorie basis, a number of foods contribute significant amounts of sodium, suggesting that products such as soups, seasonings, dips, sauces, condiments and canned vegetables should be used sparingly. Interpretation of this approach, however, should be carefully considered since foods with a high caloric content may have a reduced sodium to calorie ratio and may inappropriately be viewed as a favorable choice (e.g., bacon, processed meats, cheese, cakes, cookies).

Although consumer action in selecting lower sodium foods is an important factor in reducing sodium intakes, and a focus of national sodium awareness campaigns, these data highlight the need for creating supportive food environments so that consumers have a sufficient selection of lower sodium options. While Canadian consumers have reported a preference for lower sodium products,³² the top reported barriers to limiting dietary sodium intake are lack of variety of lower sodium packaged foods and restaurant foods.²⁷ While target setting for the packaged food sector has occurred, targets for foods consumed outside the home are also needed, especially given the extremely high sodium levels documented in restaurant foods and menus of public institutions (e.g., schools, hospitals, long term care facilities).^{33–35}

There are limitations to our study. This analysis included a large number of products available on the Canadian food and beverage market and some regionally produced foods may not included. However, national and private label brands were collected at four large national grocery retailers that, combined, have over half of the Canadian food and beverage market share. Furthermore, assessment of private label brands has been excluded in other food supply surveys, which is relevant since private label brands can make up a sizeable share of the market share for many food categories, ranging from a low of <1% for categories such as juices, cheese or chocolate to a high of nearly 50% in categories such as cakes and pastries, breakfast goods, concentrates, canned meats and canned fruit.³⁶ These data were analyzed un-weighted to market share. However, market share data has limited accessibility based on the very significant costs to purchase it from marketing companies, and one study demonstrated little variation between weighted and un-weighted means with only select food group categories being affected.¹⁸ Indeed, such a consideration is not an issue when determining the proportion of products meeting/exceeding the benchmark targets. Although sodium intake was assessed using the Nutrition Facts table, Canadian regulations permit a 20% variance between the published and actual values. Published Canadian data on trans fat levels has demonstrated agreement between the Nutrition Facts table data and chemical analysis, though it remains uncertain if this can be extrapolated to sodium.³⁷

In summary, these data provide a baseline assessment of sodium levels in foods at the time of implementation of Canada's Sodium Reduction Strategy. With longitudinal updating of

our database, we will build upon this data to track the progress the food industry has made over time towards lowering the sodium content of the foods to levels that would benefit the dietary intakes and health of Canadians.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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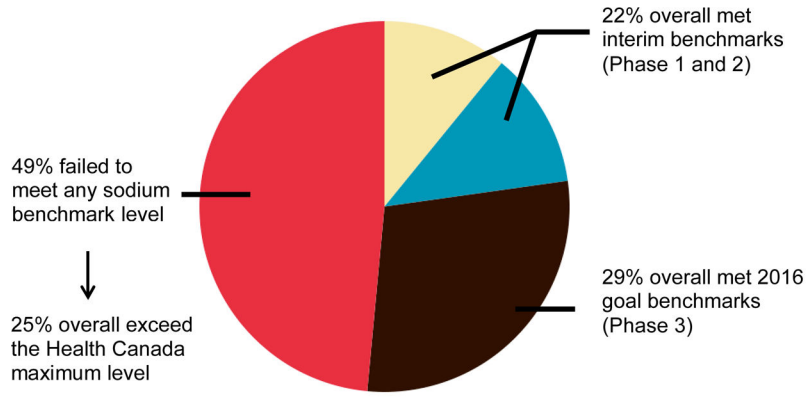


Figure 1. Proportion of packaged foods meeting and exceeding Health Canada’s sodium benchmark targets

The proportion of all packaged food products that do not meet any of the benchmark targets (Red), and that meet the interim benchmark targets Phase 1 (yellow) and Phase 2 (blue), the 2016 goal (Phase 3) benchmark targets (brown), established by Health Canada.¹³ Full set of data described in Online Supplementary Table S1.

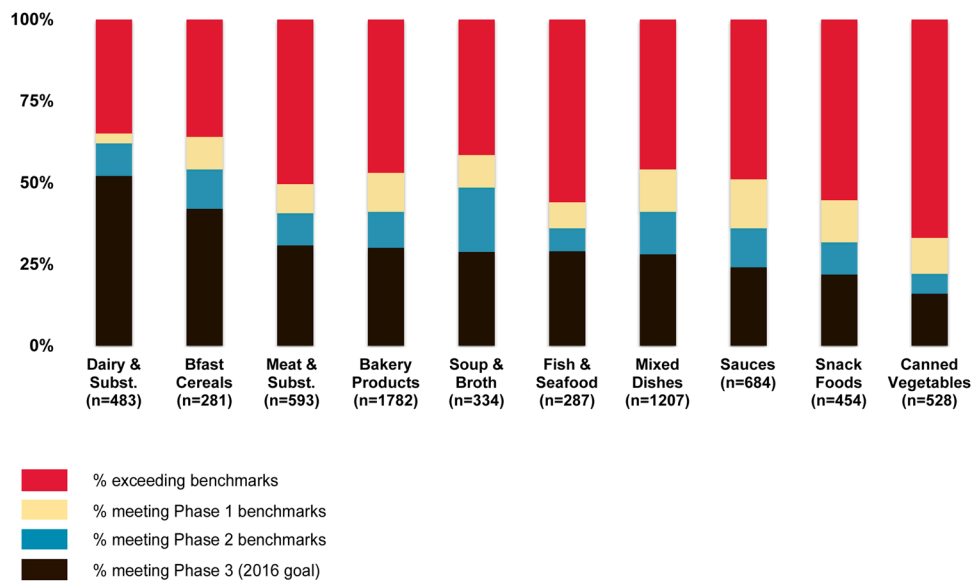


Figure 2. Proportion of packaged foods in by food group categories meeting and exceeding sodium benchmark targets

The proportion of products in food group categories that do not meet any of the benchmark targets (Red), and that meet the interim benchmark targets Phase 1 (yellow) and Phase 2 (blue), the 2016 goal (Phase 3) benchmark targets (brown), established by Health Canada.¹³ Full set of data described in Online Supplementary Table S3.

Table 1

Summary of sodium levels in Canadian packaged foods ^a

	n	Sodium (mg/serving)				Sodium (mg/100g)				
		Mean	Median	Range	Mean	Median	Range	Mean	Median	Range
Bakery Products										
Packaged Bread Products	379	265 ± 117	260	5–1060	447 ± 112	446	11–976	1.8 ± 0.6	1.8	0.04–4.4
Crackers	268	156 ± 94	140	0–900	749 ± 376	676	0–2105	1.7 ± 0.8	1.5	0–4.4
Breadcrumbs and Croutons	56	79 ± 34	70	40–230	886 ± 300	929	133–1357	2.0 ± 0.7	2.1	0.4–3.8
Breakfast Cereal										
Ready to Eat Breakfast Cereals	230	144 ± 89	140	0–400	375 ± 246	383	0–933	1.0 ± 0.7	1.0	0–3.4
Dairy and Dairy Substitutes										
Natural Cheese	428	200 ± 102	200	0–750	652 ± 309	667	0–2533	2.2 ± 1.2	1.9	0–9.5
Processed Cheese	49	386 ± 130	340	65–740	1471 ± 370	1581	310–2000	6.2 ± 2.2	6.2	0.9–10.3
Fats and Oil										
Salad Dressing, Mayonnaise and Mayonnaise-type Spreads	260	151 ± 59	140	35–430	925 ± 302	921	230–1871	5.0 ± 7.6	2.9	0.6–54.0
Fish and Seafood Products										
Canned Tuna	28	186 ± 63	185	50–280	312 ± 107	309	83–500	2.6 ± 1.1	2.5	0.7–5.6
Frozen Fish and Seafood (e.g., breaded, seasoned, smoked, stuffed)	143	439 ± 177	430	90–890	503 ± 263	455	53–1436	2.9 ± 1.1	2.7	0–11.1
Mixed Dishes										
Canned/Dry Shelf Stable Mixed Dishes (e.g. pasta with sauce, seasoned rice, canned chili)	360	613 ± 270	533	0–1540	349 ± 136	314	0–1149	2.9 ± 1.1	2.7	0–11.1
Refrigerated and Frozen Appetizers, Sides and Entrees	573	642 ± 292	620	40–1970	344 ± 159	311	16–1214	2.2 ± 0.8	2.1	0.2–6.6
Pizza, Pizza Snacks and Frozen Sandwiches	154	631 ± 171	620	290–1160	519 ± 131	512	200–906	2.3 ± 0.5	2.2	0.9–4.0
Meat and Meat Substitutes										
Sausages and Wieners	100	638 ± 217	645	200–1150	912 ± 219	872	245–1857	3.7 ± 1.5	3.3	1.9–10.6
Packaged Deli Meats	172	566 ± 224	520	120–1580	1092 ± 348	1000	424–2429	7.0 ± 2.5	6.6	3.0–14.3
Fresh and Frozen Meat and Poultry	221	575 ± 232	540	60–1330	554 ± 232	530	49–1330	2.9 ± 1.3	2.7	0.2–7.2
Soup and Broth										
Broth	48	642 ± 239	630	85–1190	277 ± 84	274	33–469	62.8 ± 51.1	47.6	7.0–320.0
Canned Condensed Soup	71	754 ± 163	750	330–1230	291 ± 62	291	128–477	9.0 ± 4.2	7.9	3.3–23.7
Ready to Serve Soup	142	636 ± 173	650	140–1350	247 ± 67	252	55–474	5.5 ± 2.6	5.0	0.9–18.2

	n	Sodium (mg/serving)				Sodium (mg/100g)				
		Mean	Median	Range	Mean	Median	Range	Mean	Median	Range
Dry Soup Mixes	56	834 ± 256	733	410 – 1570	318 ± 95	288	135 – 628	11.4 ± 9.7	8.9	2.2 – 44.9
Fresh and Instant Oriental Noodles	17	783 ± 433	880	135 – 1470	227 ± 106	185	43 – 451	2.8 ± 1.9	2.2	0.6 – 7.0
Snack Foods										
Snack Foods (e.g., chips, pretzels)	336	321 ± 167	301	0 – 1040	698 ± 316	678	0 – 2080	1.5 ± 0.8	1.3	0 – 5.5
Sauces, Dips, Gravies and Condiments										
Pasta Sauce (i.e. tomato, pesto)	169	462 ± 157	440	170 – 860	441 ± 199	399	136 – 1739	6.5 ± 2.7	6.3	0.7 – 16.0
Sauces, Dips, Gravies, Condiments (e.g., oriental, BBQ, salsa, marinades, ketchup, gravy)	502	252 ± 178	210	0 – 1310	989 ± 845	733	0 – 7250	10.5 ± 13.8	6.8	0 – 180.0
Canned vegetables and Legumes										
Canned/Bottled Vegetables and Legumes (incl. sweet- and sour-pickles, olives, vegetable juice)	537	288 ± 178	280	0 – 990	492 ± 481	310	0 – 2800	12.1 ± 18.6	6.4	0 – 148.0

Data presented as mean ± standard deviation.

^a A complete detailed analysis of all subcategories is provided in Supplementary Table 1 (n=7234).

Table 2

Summary of the proportion of Canadian packaged food products meeting Health Canada's sodium benchmark targets ^a

	n	% Meeting Phase 1	% Meeting Phase 2	% Meeting Phase 3 (Goal)	% Exceeding all benchmark Levels	% Exceeding Maximum
All products with a benchmark	7029	804 (11.5%)	783 (11.2%)	2023 (28.8%)	3419 (48.6%)	1740 (24.7%)
Bakery Products^c	1782	217 (12.2%)	203 (11.4%)	528 (29.6%)	834 (46.8%)	405 (22.7%)
Packaged Bread Products	379	63 (16.2%)	47 (12.4%)	79 (20.8%)	190 (50.1%)	78 (20.6%)
Crackers	268	20 (7.5%)	24 (9.0%)	113 (42.2%)	111 (41.4%)	74 (27.6%)
Breadcrumbs and Croutons	56	8 (14.3%)	3 (5.4%)	12 (21.4%)	33 (58.9%)	9 (16.1%)
Breakfast Cereal^c	281	27 (9.6%)	33 (11.7%)	119 (42.4%)	102 (36.3%)	41 (14.6%)
Dairy and Dairy Substitutes	483	16 (3.3%)	50 (10.4%)	250 (51.8%)	167 (34.6%)	81 (16.8%)
Natural Cheese	428	12 (2.8%)	46 (10.8%)	238 (55.6%)	132 (30.8%)	65 (15.2%)
Processed Cheese	49	4 (8.2%)	4 (8.2%)	10 (20.4%)	31 (63.3%)	12 (24.5%)
Fats and Oils	329	61 (18.5%)	26 (7.9%)	46 (14.0%)	196 (59.6%)	73 (22.2%)
Fish and Seafood Products^c	287	22 (7.7%)	21 (7.3%)	83 (28.9%)	161 (56.1%)	58 (20.2%)
Other Canned Fish and Seafood (e.g., salmon, sauce packed and kippered fish)	109	6 (5.5%)	2 (1.8%)	37 (33.9%)	64 (58.7%)	15 (13.8%)
Frozen Fish and Seafood (e.g., breaded, seasoned, smoked, stuffed)	143	9 (6.3%)	15 (10.5%)	38 (26.6%)	81 (56.6%)	37 (25.9%)
Mixed Dishes^c	1207	156 (12.9%)	156 (12.9%)	336 (27.8%)	559 (46.3%)	247 (20.5%)
Canned/Dry Shelf Stable Mixed Dishes (e.g., pasta with sauce, seasoned rice, canned chili)	360	41 (11.4%)	55 (15.3%)	107 (29.7%)	157 (43.6%)	66 (18.3%)
Refrigerated and Frozen Appetizers, Sides and Entrees	573	84 (14.7%)	49 (8.6%)	164 (28.6%)	276 (48.2%)	127 (22.3%)
Pizza, Pizza Snacks and Frozen Sandwiches	154	25 (16.2%)	29 (18.8%)	30 (19.5%)	70 (45.5%)	33 (21.4%)
Meat and Meat Substitutes	593	53 (8.9%)	58 (9.8%)	181 (30.5%)	301 (50.8%)	363 (61.2%)
Sausages and Wieners	100	13 (13.0%)	18 (18.0%)	18 (18.0%)	51 (51.0%)	65 (65.0%)
Packaged Deli Meats	172	27 (15.7%)	19 (11.1%)	54 (31.4%)	72 (41.9%)	109 (63.4%)
Fresh and Frozen Meat and Poultry (e.g., marinated, breaded, burgers, meatballs, chicken wings)	221	8 (3.6%)	15 (6.8%)	84 (38.0%)	114 (51.6%)	126 (57.0%)
Soup and Broth^c	334	32 (9.6%)	66 (19.8%)	97 (29.0%)	139 (41.6%)	39 (11.7%)
Broth	48	6 (12.5%)	4 (8.3%)	16 (33.3%)	22 (45.8%)	8 (16.7%)
Canned Condensed Soup	71	6 (8.5%)	15 (21.1%)	10 (14.1%)	40 (56.3%)	6 (8.5%)

	n	% Meeting Phase 1	% Meeting Phase 2	% Meeting Phase 3 (Goal)	% Exceeding all benchmark Levels	% Exceeding Maximum
Ready to Serve Soup	142	9 (6.3%)	41 (28.9%)	54 (38.0%)	38 (26.8%)	8 (5.6%)
Snack Foods	454	57 (12.6%)	45 (9.9%)	98 (21.6%)	254 (56.0%)	102 (22.5%)
Sauces, Dips, Gravies and Condiments	684	99 (14.5%)	84 (12.3%)	166 (24.3%)	335 (49.0%)	158 (23.1%)
Pasta Sauce (tomato, cream, pesto)	169	29 (17.2%)	27 (16.0%)	43 (25.4%)	70 (41.4%)	29 (17.2%)
Sauces, Dips, Gravies, Condiments (e.g., oriental and BBQ sauces, salsa, marinades, ketchup, gravy)	502	65 (13.0%)	57 (11.4%)	119 (23.7%)	261 (52.0%)	129 (25.7%)
Canned Vegetables and Legumes (incl. sweet- and sour-pickles, olives, vegetable juice)	528	60 (11.4%)	30 (5.7%)	85 (16.1%)	353 (66.9%)	156 (29.6%)

Data presented as n (%).

^a A complete detailed analysis of all subcategories provided in Supplementary Table 2 (n=7037).

^b Analysis excludes unsalted products.

^c Data for all foods included in Online Supplementary Table S3.