

FNFNES National Report Corrigenda September 2021

Corrigendum to the FNFNES Final Report for Eight Assembly of First Nations Regions: Draft Comprehensive Technical Report. November 2019.

Laurie Chan¹, Malek Batal², Tonio Sadik³, Constantine Tikhonov⁴, Harold Schwartz⁴, Karen Fediuk¹, Amy Ing², Lesya Marushka⁴, Kathleen Lindhorst¹, Lynn Barwin¹, Peter Berti¹, Kavita Singh¹ and Olivier Receveur²

¹ Department of Biology, University of Ottawa, 180 Gendron Hall, 30 Marie Curie, Ottawa, ON, Canada, K1N 6N5

² Department of Nutrition, Faculty of Medicine, Université de Montréal, Montreal, QC, Canada

³ Assembly of First Nations, Ottawa, ON, Canada

⁴ Environmental Public Health Division, First Nations and Inuit Health Branch (FNIHB), Indigenous Services Canada, Ottawa, ON, Canada

The authors regret to inform that some results concerning dietary intake, BMI and food insecurity were incorrect in the printed and online versions of the report. A corrected electronic version of the report will be available for download in the near future.

Changes to the text are in **red** and the corrected accompanying figures and tables are as follows:

Page 36

When participants without traditional food on their 24h recall¹ were removed from the analysis, the average daily traditional food intake increased from **39** grams (Figure 3.18) to **216** grams or about 1 cup (Figure 3.19). The average daily intake ranged from **124** grams (or $\frac{1}{2}$ a cup) in the Mixedwood Plains to **282** grams (or over **1 cup**) in the Hudson Plains. Among adults at the 95th percentile of the distribution of reported intake in the sample, the amount of traditional food consumed was **648** grams (or **2 $\frac{1}{2}$ cups**) (Figure 3.20). Traditional food intakes were over **700** grams a day among consumers at the 95th percentile in the Montane Cordillera (**797** grams), **Prairies (740 grams)**, Taiga Plains (**738 grams**), ~~Hudson Plains (1393 grams)~~ and the Atlantic Maritime (~~1106 grams~~) and the **Taiga Shield (712 grams)**.

Figures 3.21 and 3.22 display the intake of traditional food from each of the major food categories, calculated from both the FFQ and 24-hour recall data for all adults. When the intakes by traditional food category are averaged across all ecozones, land animals are the largest contributor (mean of 18 grams from the FFQ and **25** grams from the 24-hour recall data), followed by fish (14 grams from the FFQ and **8** grams from the 24-hour recall), birds (4 grams from the FFQ and **2** grams from the 24-hour recall), plants (combined wild and cultivated) and seafood.

The relative contribution of each traditional food category to the overall gram intake among consumers, as per analyses of the 24-hour recall data is presented in Figure 3.23. Except for adults in the Pacific Maritime ~~and the Mixedwood Plains~~, the largest proportion of traditional food is from land animals. In the Pacific Maritime, fish (**46%**) and seafood (**26%**) contribute a greater share to the overall gram intake than land animals (**23%**). The contribution of plants was highest in the Mixedwood Plains (**33%** combined for wild and cultivated).

Figure 3.18 Average grams of TF consumed daily (consumers and non-consumers) by ecozone in the fall season from the 24-hour recall data

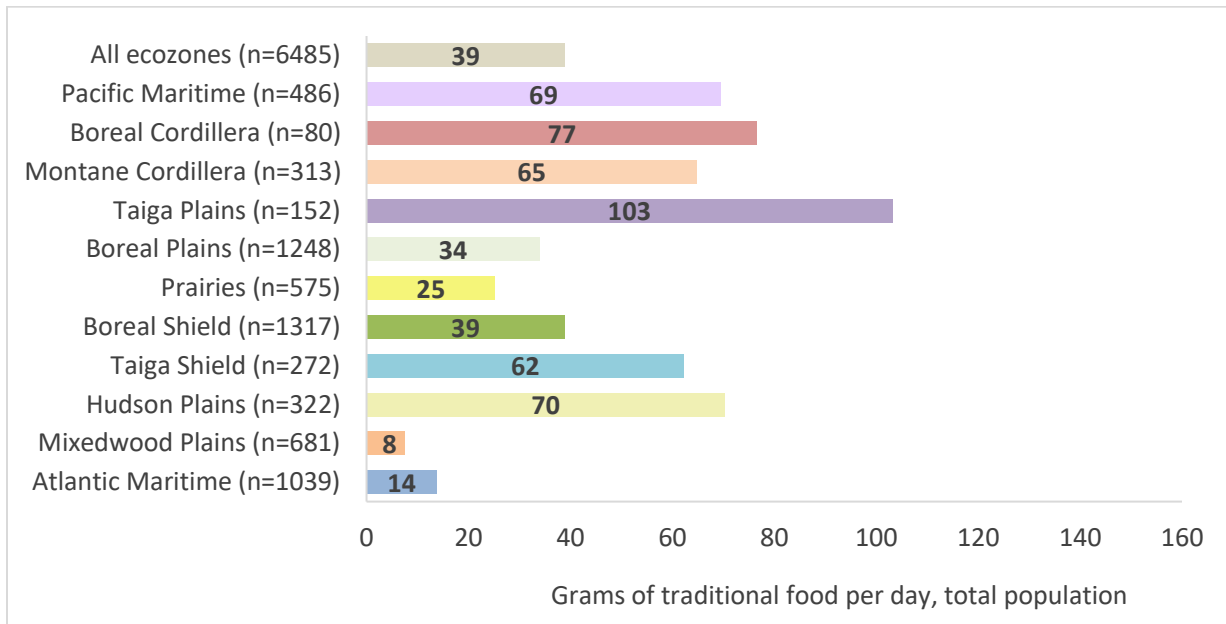


Figure 3.19 Average grams of TF consumed daily by consumers only by ecozone in the fall season from the 24-hour recall data

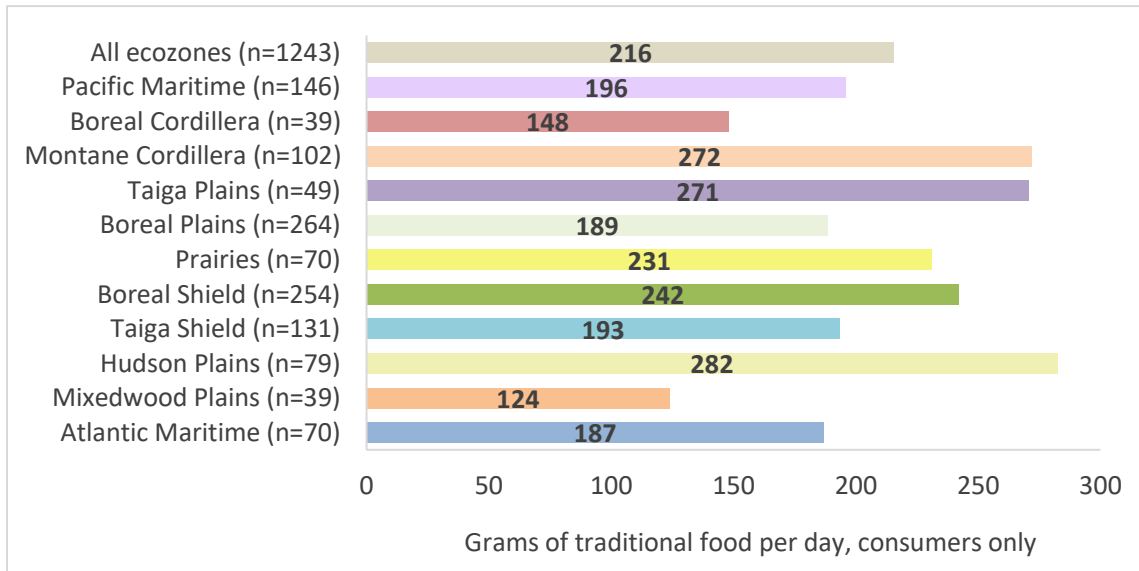


Figure 3.20 High consumers (95th percentile) daily intake of traditional food from the 24-hour recall data

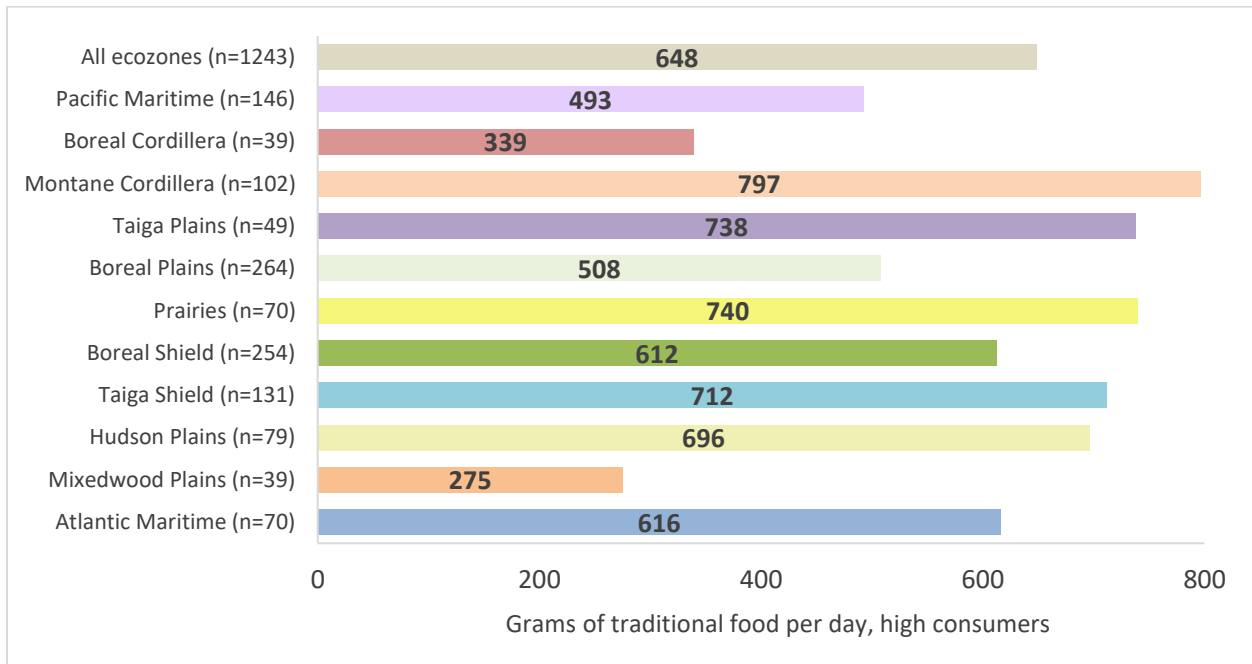


Figure 3.22 Average grams of traditional food by category (consumers and non-consumers), by ecozone, based on the fall 24-hour recall data

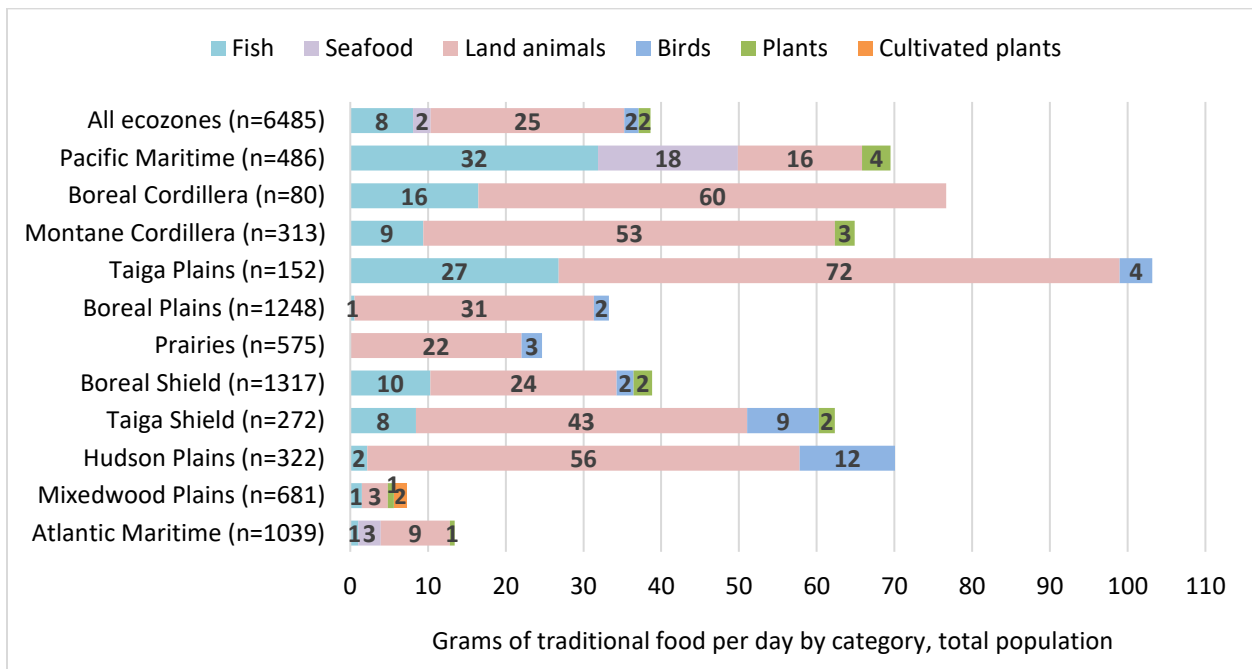


Figure 3.23 Average grams of traditional food by category, consumers only, by ecozone, from the fall 24-hour recall data

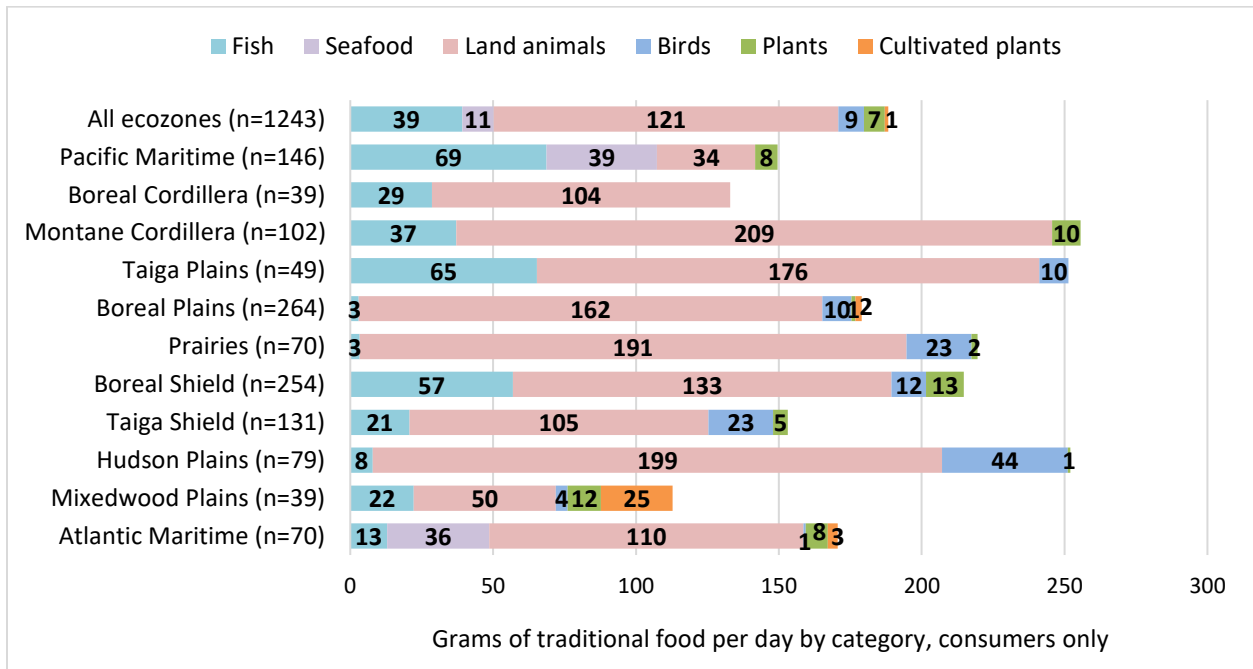


Table 4.4 shows the top 10 store-bought beverages and foods consumed in the greatest amounts by First Nations adults. By weight, water (tap and bottled combined) and soup were the beverage and food item consumed in the greatest amount. When soft drinks were combined with fruit drinks, iced tea and sports drinks, the intake of sugar-sweetened beverages averaged **341** ml (1 1/3 cup) per person per day.

Information on the foods that are the most important contributor to each nutrient can be found in Appendix H. Wild meats were the top contributor to both protein and iron intake. About half of the iron in the diet came from white bread, cereal, wild meat, beef and pasta. About **one-quarter** of vitamin D came from fish, while approximately **48%** came from milk, margarine and eggs. Processed meats such as cold cuts and sausages were the top contributor to both total fat and saturated fat, while the main sources of salt were processed food: soup, white bread and processed meats.

Table 4.2 Mean number of *Eating Well with Canada's Food Guide-First Nations, Inuit and Métis* (EWCGF-FNIM) servings compared to recommendations

			Mean number of servings per day ± SE (95% CI)							
Canada's Food Guide Recommended # of servings/day			All regions (n=4010)	British Columbia (n=652)	Alberta (n=349)	Saskatchewan (n=673)	Manitoba (n=451)	Ontario (n=855)	Quebec (n=392)	Atlantic (n=638)
Women	7-8	Vegetables and Fruit	2.8 ± 0.07 (2.7, 2.9)	3.2 ± 0.08 (3.1, 3.4)	2.7 ± 0.23 (2.3, 3.2)	2.5 ± 0.11 (2.3, 2.7)	2.6 ± 0.24 (2.1, 3.1)	2.7 ± 0.19 (2.3, 3.1)	2.9 ± 0.13 (2.6, 3.1)	2.6 ± 0.08 (2.5, 2.8)
	6-7	Grain Products	4.9 ± 0.14 (4.6, 5.2)	4.3 ± 0.45 (3.4, 5.2)	5.2 ± 0.41 (4.4, 6.0)	5.1 ± 0.35 (4.4, 5.8)	5.0 ± 0.38 (4.2, 5.7)	4.7 ± 0.19 (4.3, 5.1)	5.5 ± 0.30 (4.9, 6.1)	4.4 ± 0.14 (4.2, 4.7)
	2-3	Milk and Alternatives	0.8 ± 0.04 (0.8, 0.9)	0.8 ± 0.08 (0.7, 1.0)	0.8 ± 0.15 (0.5, 1.1)	0.6 ± 0.07 (0.5, 0.8)	0.8 ± 0.08 (0.6, 1.0)	1.0 ± 0.09 (0.8, 1.2)	0.8 ± 0.03 (0.8, 0.9)	0.9 ± 0.06 (0.8, 1.0)
	2	Meat and Alternatives	3.0 ± 0.08 (2.8, 3.2)	3.1 ± 0.15 (2.8, 3.4)	3.2 ± 0.26 (2.7, 3.7)	2.8 ± 0.15 (2.5, 3.1)	3.0 ± 0.27 (2.5, 3.5)	3.1 ± 0.22 (2.6, 3.5)	3.0 ± 0.12 (2.8, 3.2)	2.3 ± 0.07 (2.1, 2.4)
Canada's Food Guide Recommended # of servings/day			All regions (n=2191)	British Columbia (n=394)	Alberta (n=218)	Saskatchewan (n=317)	Manitoba (n=229)	Ontario (n=531)	Quebec (n=153)	Atlantic (n=349)
Men	7-10	Vegetables and Fruit	3.0 ± 0.12 (2.8, 3.3)	3.4 ± 0.46 (2.5, 4.3)	2.8 ± 0.21 (2.4, 3.2)	3.0 ± 0.24 (2.5, 3.5)	2.9 ± 0.23 (2.4, 3.3)	3.0 ± 0.17 (2.7, 3.3)	3.1 ± 0.49 (2.2, 4.1)	2.9 ± 0.17 (2.6, 3.2)
	7-8	Grain Products	5.9 ± 0.23 (5.4, 6.3)	4.8 ± 0.43 (4.0, 5.7)	5.6 ± 0.52 (4.6, 6.7)	7.0 ± 0.85 (5.3, 8.7)	5.9 ± 0.18 (5.5, 6.2)	6.3 ± 0.23 (5.9, 6.8)	6.3 ± 1.85 (2.7, 9.9)	5.5 ± 0.28 (4.9, 6.1)
	2-3	Milk and Alternatives	1.0 ± 0.05 (0.9, 1.1)	0.8 ± 0.16 (0.5, 1.1)	0.9 ± 0.07 (0.8, 1.1)	1.0 ± 0.11 (0.8, 1.2)	0.9 ± 0.17 (0.6, 1.2)	1.1 ± 0.08 (1.0, 1.3)	0.9 ± 0.08 (0.7, 1.0)	1.1 ± 0.11 (0.9, 1.3)
	3	Meat and Alternatives	4.0 ± 0.14 (3.7, 4.3)	4.0 ± 0.31 (3.4, 4.6)	4.2 ± 0.28 (3.7, 7.8)	4.3 ± 0.29 (3.7, 4.9)	3.9 ± 0.43 (3.1, 4.8)	4.1 ± 0.26 (3.5, 4.6)	3.7 ± 0.59 (2.5, 4.8)	3.1 ± 0.11 (2.9, 3.3)

Table 4.3 Top 5 contributors to Canada's Food Guide (% of total group intake), First Nations women and men in Canada

Canada's Food Guide Food Groups								
Gender	Vegetables and Fruit	(%)	Meat and Alternatives	(%)	Grain Products	(%)	Milk and Alternatives	(%)
Women	Fresh/frozen vegetables	23.5	Beef	21.3	White bread	27.6	Fluid milk	27.8
	Canned vegetables ^a	19.8	Chicken	16.1	Pasta/noodles	20.4	Cheese	21.6
	Potatoes	16.2	Pork	14.2	Cereal ^c	10.6	Mixed dishes with cheese ^e	19.9
	Fruit	14.7	Eggs	10.6	Whole wheat bread	10.4	Mashed potatoes with milk	11.4
	Fruit/vegetable juice	10.4	Wild meats ^b	9.0	Grains ^d	10.0	Cream soups	9.2
Men	Canned vegetables ^a	21.4	Beef	18.5	White bread	28.5	Fluid milk	34.2
	Potatoes	21.0	Chicken	15.2	Pasta/noodles	20.2	Mixed dishes with cheese ^e	22.9
	Fresh/frozen vegetables	17.6	Pork	14.7	Bannock	10.3	Cheese	15.4
	Fruit	12.1	Wild meats ^b	14.6	Cereal ^c	10.1	Cream soups	11.0
	Fruit/vegetable juice	10.3	Eggs	10.9	Whole wheat bread	9.7	Mashed potatoes with milk	9.7

Table 4.4 Top 10 consumed store-bought beverages and foods (grams/person/day), consumers and non-consumers combined, ranked by overall decreasing amount of consumption, total participants

Total FNFNES participants (n=6487)	
Beverages	grams/person/day
Coffee	436
Water, tap	403
Carbonated drinks, regular	213
Tea	198
Water, bottled	198
Fruit drink	94
Milk	68
Fruit juice	43
Carbonated drinks, diet	38
Iced tea	34
Food	grams/person/day
Soup	106
Pasta/noodles	65
Vegetables	63
Bread/buns, white	57
Potatoes	50
Cereal	45
Fruits	45
Mixed dishes	40
Chicken	37
Eggs	35

Appendix H. Top 10 contributors to macro and micronutrients

A) Energy		B) Protein		C) Fat		D) Carbohydrates	
FOOD	% of total	FOOD	% of total	FOOD	% of total	FOOD	% of total
Bread/buns, white	8.3	Game meat ^e	10.8	Cold cuts/sausages	8.5	Bread/buns, white	12.5
Pasta/noodles	5.2	Chicken ^a	10.3	Beef ^b	6.5	Carbonated drinks, regular	9.2
Chicken ^a	4.6	Beef ^b	10.0	Chicken ^a	6.3	Pasta/noodles	7.2
Beef ^b	4.3	Bread/buns, white	6.6	Snack food ^c	5.6	Condiments, sweet ^s	5.6
Carbonated drinks, regular	4.3	Pork ^f	6.0	Eggs	5.4	Cereal	5.3
Cold cuts/sausages	4.1	Eggs	5.1	Margarine	5.3	Fruit drinks	4.4
Snack food ^c	3.7	Cold cuts/sausages	4.9	Fried vegetables	3.9	Potatoes	4.1
Fried vegetables ^d	3.4	Pasta/noodles	4.7	Pizza	3.9	Fried vegetables ^d	4.0
Pizza	3.4	Mixed dishes	3.5	Pork ^f	3.9	Grains	3.9
Cereal	3.2	Fish	3.4	Mixed dishes	3.5	Pastries ^h	3.5

E) Saturated Fat		F) Monounsaturated Fat		G) Polyunsaturated Fat		H) Cholesterol	
FOOD	% of total	FOOD	% of total	FOOD	% of total	FOOD	% of total
Cold cuts/sausages	9.5	Cold cuts/sausages	10.0	Snack food ^c	11.6	Eggs	39.9
Beef ^b	8.2	Beef ^b	7.8	Margarine	8.8	Chicken ^a	9.0
Cheese	6.4	Chicken ^a	6.6	Chicken ^a	7.4	Beef ^b	7.4
Butter	6.0	Margarine	6.2	Bread/buns, white	5.6	Game meat ^e	6.6
Chicken ^a	5.0	Eggs	5.9	Vegetable oil	4.8	Cold cuts/sausages	4.9
Eggs	4.9	Vegetable oil	5.6	Fried vegetables ^d	4.7	Pork ^f	4.7
Pizza	4.6	Snack food ^c	4.9	Eggs	4.6	Sandwiches	2.7
Pork ^f	4.4	Pork ^f	4.4	Salad dressing/dips	4.2	Mixed dishes	2.6
Fried vegetables ^d	3.7	Fried vegetables ^d	4.0	Cold cuts/sausages	4.1	Cheese	2.4
Mixed dishes	3.6	Pizza	4.0	Pastries	3.7	Fish	2.1

I) Total Sugars		J) Fibre		K) Vitamin A		L) Vitamin C	
FOOD	% of total	FOOD	% of total	FOOD	% of total	FOOD	% of total
Carbonated drinks, regular	23.4	Bread/buns, white	15.9	Vegetables	22.6	Fruit drink	34.1
Condiments, sweet ^g	15.3	Cereal	9.8	Eggs	15.0	Fruit juice	19.9
Fruits	6.2	Vegetables	9.3	Margarine	9.3	Vegetables	11.1
Fruit juice	5.2	Fruits	6.5	Milk	9.0	Fruits	10.7
Fruit drinks	5.1	Pasta/noodles	6.1	Soup	5.2	Potatoes	5.2
Milk	4.8	Fried vegetables ^d	5.9	Butter	4.1	Snack food ^c	3.0
Pastries	4.1	Potatoes	5.7	Cheese	3.9	Fried vegetables ^d	2.9
Iced tea	4.0	Snack food ^c	5.3	Game meat ^e	2.9	Soup	2.1
Bread/buns, white	3.9	Mixed dishes	4.1	Cream	2.7	Mixed dishes	1.7
Cereal	2.8	Pizza	3.7	Pizza	2.6	Game meat ^e	1.1

M) Vitamin D		N) Folate		O) Calcium		P) Iron	
Food	% of total	Food	% of total	Food	% of total	Food	% of total
Fish	24.3	Bread/buns, white	20.4	Milk	14.1	Bread/buns, white	13.2
Milk	17.6	Pasta/noodles	16.8	Bread/buns, white	13.0	Cereal	10.9
Margarine	16.9	Vegetables	5.4	Cheese	8.9	Game meat ^e	10.0
Eggs	13.6	Eggs	5.1	Pizza	6.1	Beef ^b	5.8
Cold cuts/sausages	4.4	Pizza	4.8	Bannock	4.9	Pasta/noodles	5.5
Pasta/noodles	3.8	Bannock	4.6	Pasta/noodles	4.0	Soup	4.0
Pork ^f	3.5	Cereal	3.4	Fruit drink	3.6	Mixed dishes	3.8
Chicken ^a	2.1	Soup	2.9	Eggs	3.0	Pizza	3.3
Beef ^b	1.9	Tea	2.8	Vegetables	3.0	Eggs	3.2
Potatoes	1.2	Fruit juice	2.6	Mixed dishes	2.8	Bannock	3.0

q) Sodium		r) Zinc	
Food	% of total	Food	% of total
Soup	12.2	Beef ^b	16.3
Bread/buns, white	11.1	Game meat ^e	14.4
Cold cuts/sausages	8.9	Bread/buns, white	5.0
Condiments ⁱ	7.1	Chicken ^a	4.7
Mixed dishes	4.7	Cold cuts/sausages	4.4
Pizza	4.5	Pork ^f	4.4
Pasta/noodles	4.0	Cereal	4.3
Snack food ^c	3.3	Mixed dishes	4.0
Chicken ^a	3.1	Pasta/noodles	3.9
Sandwiches	3.1	Eggs	3.5

^achicken= roasted, baked, fried and stewed

^bbeef= ground, steak, ribs and brisket

^csnack food=potato chips, pretzels, popcorn

^dfried vegetables= French fries, hash browns, onion rings, battered & deep-fried zucchini

^egame meat=moose, caribou, deer, elk, rabbit, bear, beaver, groundhog, muskrat, porcupine, goose, duck, ptarmigan, grouse and pheasant

^fpork= loin, chops and ribs

^gcondiments, sweet=sugar, jam, syrup, honey

^hpastries=cakes, pies, muffins, doughnuts

ⁱcondiments=sauces, ketchup, mustard, salt, vinegar

Table 4.5 Distribution of Healthy Eating Index (HEI) scores, by sex and age group

Sex	Age	n	Mean (SE)	Percentiles (SE) of usual intake						
				5 th (SE)	10 th (SE)	25 th (SE)	50 th (SE)	75 th (SE)	90 th (SE)	95 th (SE)
Male	19-50	1385	45.8 (0.8)	38.9 (1.7)	40.3 (1.4)	42.7 (1.1)	45.5 (0.9)	48.5 (1.1)	51.3 (1.6)	53.0 (1.9)
	51-70	680	51.8 (0.7)	40.5 (1.3)	43.0 (1.1)	47.3 (0.9)	52.1 (0.8)	56.8 (0.9)	60.8 (1.1)	63.1 (1.2)
	71+	126	51.0 (2.8)	39.6 (4.3)	41.8 (4.1)	45.9 (3.7)	50.7 (3.5)	55.7 (3.5)	60.1 (3.7)	62.5 (3.9)
Female	19-50	2661	48.6 (0.4)	38.9 (0.9)	41.0 (0.8)	44.5 (0.6)	48.6 (0.5)	52.8 (0.5)	56.7 (0.7)	59.0 (0.8)
	51-70	1131	51.8 (0.6)	42.1 (0.7)	44.2 (0.7)	47.7 (0.7)	51.7 (0.7)	55.8 (0.8)	59.5 (0.9)	61.7 (0.9)
	71+	218	53.8 (1.6)	50.1 (3.4)	51.0 (3)	52.6 (2.3)	54.2 (1.9)	55.9 (2)	57.4 (2.4)	58.2 (2.8)

Page 51

Traditional Food Attributes and Contributions to Nutrient Intake

Among all adults, traditional food provided an average of **3.2%** of the daily calories, ranging from **0.5%** in the southern ecozone of the Mixedwood Plains to **7.3%** in the northwestern ecozone of the Boreal Cordillera **and the western ecozone of the Pacific Maritime** (Figure 4.4). Among consumers, **18%** of calories were from traditional food (Figure 4.5) while those eating at the 95th percentile derived over half their calories (**53.3%**) from traditional food (data not shown). On days that traditional food was eaten, the intake of almost all nutrients was significantly higher while the intake of saturated fat was lower (Table 4.6).

Page 60

Figure 4.4 Mean (SE) percent of energy (calories) from traditional food for all adults from 24-hour recall data

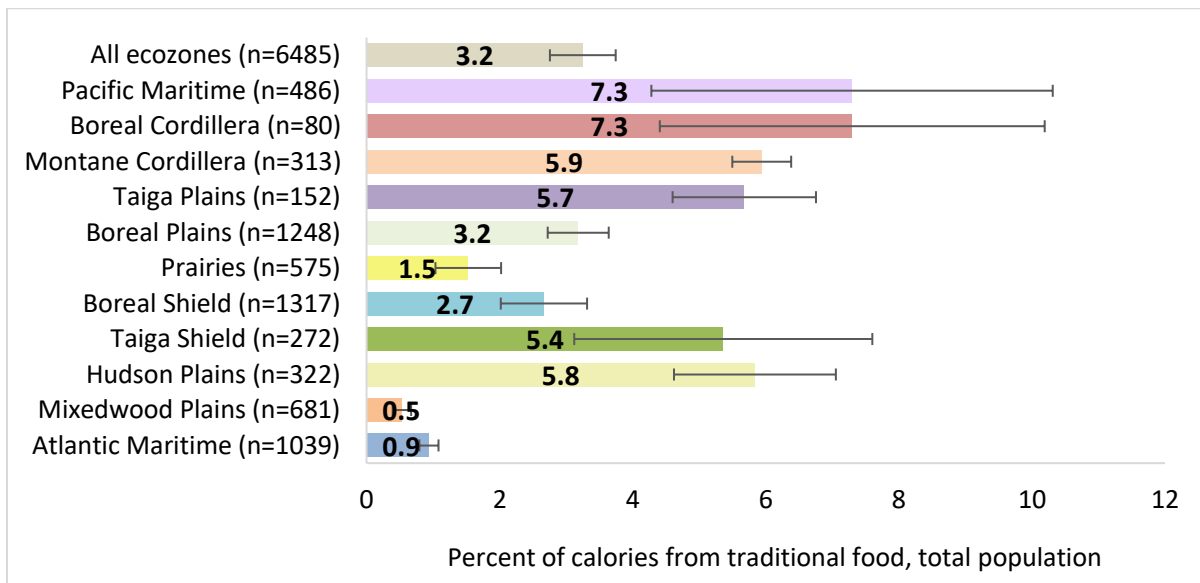


Figure 4.5. Mean (SE) percentage of calories from traditional food for consumers only, from 24-hour recall data

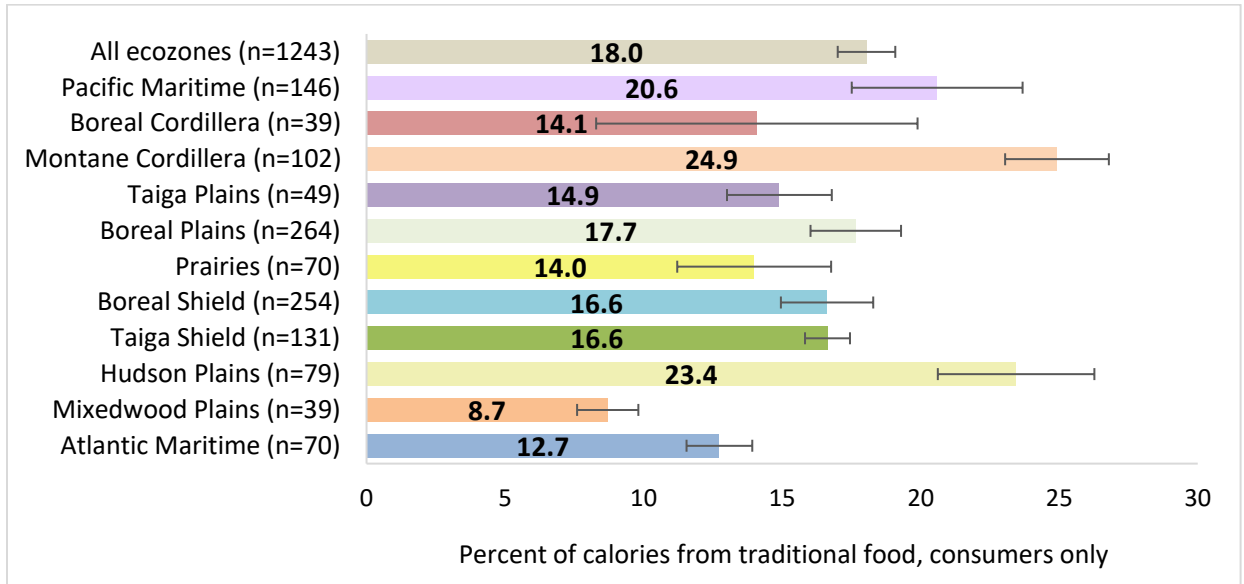


Table 4.6 Comparison of nutrient intake on days with and without traditional food

Nutrient	Days with TF (n=1243 recalls)	Days without TF (n=5242 recalls)
	mean \pm SE	
Calories, kcal	1970 \pm 26.9	1912 \pm 13.4
Protein, grams***	118 \pm 2.13	74.7 \pm 0.61
Fat, grams***	71.4 \pm 1.3	78.5 \pm 0.69
Carbohydrates, grams**	220 \pm 3.48	232 \pm 1.78
Total sugars, grams***	70.8 \pm 1.89	79.5 \pm 0.92
Fibre, grams	13.1 \pm 0.24	13.2 \pm 0.12
Cholesterol, grams***	385 \pm 8.49	312 \pm 3.73
Total saturated fat, grams***	20.5 \pm 0.4	25.4 \pm 0.24
Monounsaturated fat, grams**	27.8 \pm 0.58	30.1 \pm 0.28
Polyunsaturated fat, grams	15.2 \pm 0.36	15.6 \pm 0.18
Linoleic acid, grams*	11.6 \pm 0.3	12.3 \pm 0.14
Linolenic acid, grams***	1.85 \pm 0.06	1.37 \pm 0.02
Calcium, mg**	571 \pm 10.7	612 \pm 6.26
Iron, mg***	20.2 \pm 0.41	12.9 \pm 0.11
Zinc, mg***	17.1 \pm 0.39	10.2 \pm 0.1
Magnesium, mg***	279 \pm 4.31	231 \pm 1.78
Copper, mg***	1.64 \pm 0.03	1.13 \pm 0.02
Potassium, mg***	2913 \pm 42.9	2258 \pm 17.2
Sodium, mg***	2764 \pm 55.3	3136 \pm 27.1
Phosphorus, mg***	1490 \pm 23.4	1076 \pm 8.44
Vitamin A, ug**	563 \pm 31.8	453 \pm 6.8
Vitamin D, ug***	7.6 \pm 0.4	3.22 \pm 0.05
Vitamin C, mg*	89.7 \pm 4.31	79.8 \pm 1.85
Folate, ug	362 \pm 7.05	350 \pm 3.48
Thiamin, mg	1.63 \pm 0.03	1.63 \pm 0.02
Riboflavin, mg***	2.22 \pm 0.04	1.87 \pm 0.01
Niacin, mg***	47.8 \pm 0.82	35.4 \pm 0.29
Vitamin B6, mg***	1.72 \pm 0.03	1.40 \pm 0.01
Vitamin B12, ug***	14.0 \pm 0.58	3.95 \pm 0.13

*significantly different, unpaired t-test, *p<0.05; **p<0.01; ***p<0.0001

Page 51 Body Mass Index and Obesity

The Body Mass Index (BMI) is a proxy measure of body fat based on a person's weight and height and is an index used to categorize body weights and risk of disease. BMI was calculated using both measured heights and weights when the data were available. ~~In cases where only reported or a combination of reported and measured heights and weights were available, the BMI values were adjusted by the addition of the estimated bias value. The estimated bias value is the mean difference found between the BMIs using measured and reported values using a paired t-test.~~ **BMI values that were calculated with reported height and/or weight values were adjusted for bias in reporting by applying results from simple regression analyses by gender, using the reduced model 4 as described by Gorber et al, 2008.** Based on the BMI categories, 83% of all adults were either overweight or obese (Figures 4.6 and 4.7). In the general Canadian population, based on measured weight and height data from the 2015 CCHS, 61.3% of Canadians aged 18 years and older are either overweight or obese. (Statistics Canada n.d. (f)).

Gorber, S.C., M. Shields, M.S. Tremblay, and I. McDowell, 2008. "The feasibility of establishing correction factors to adjust self-reported estimates of obesity." *Health Reports*. Sep;19 (3):71-82.

Page 61

Figure 4.6 Percentage of adults who are overweight and obese by region

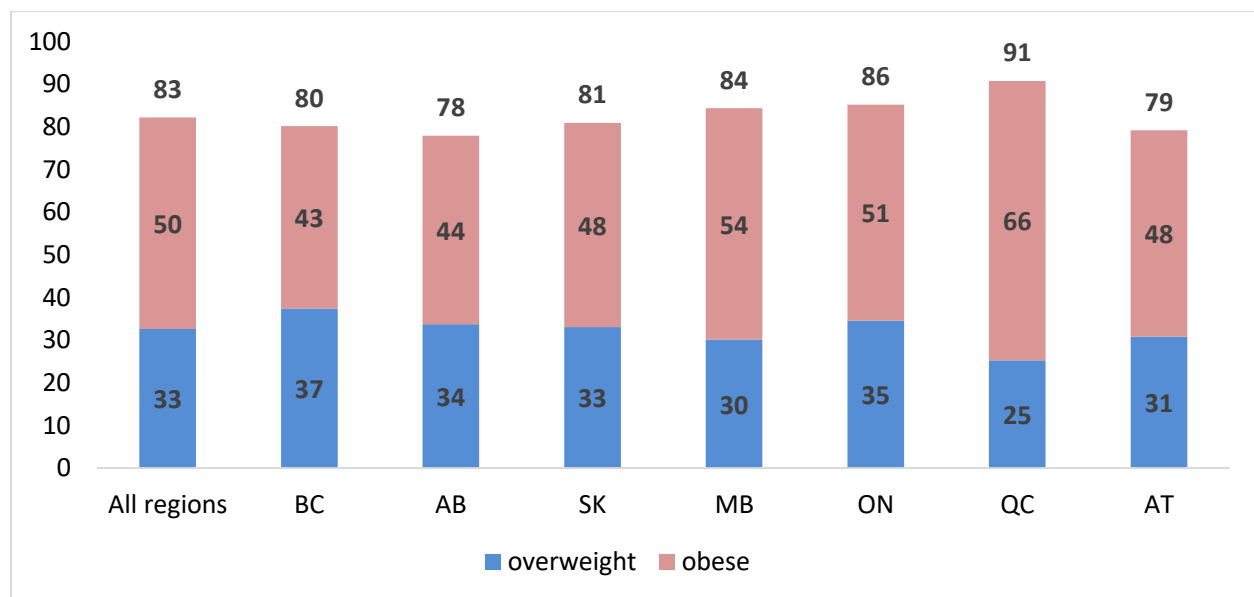


Figure 4.7 Percentage of adults who are overweight or obesity by ecozones

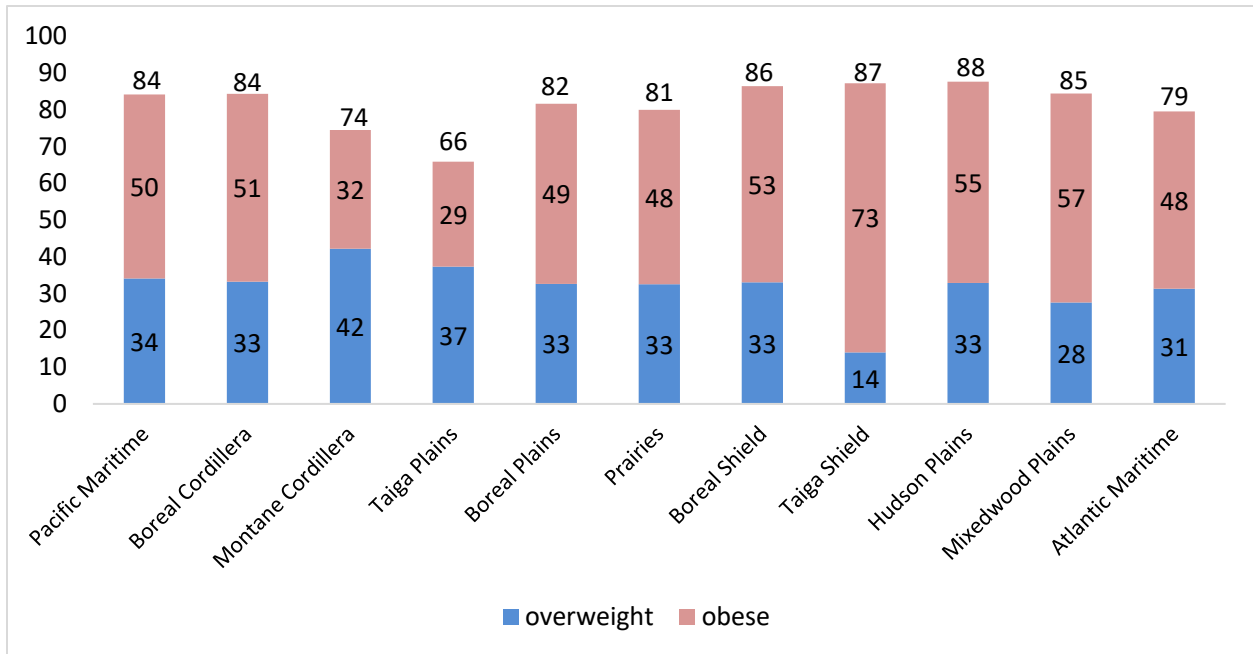
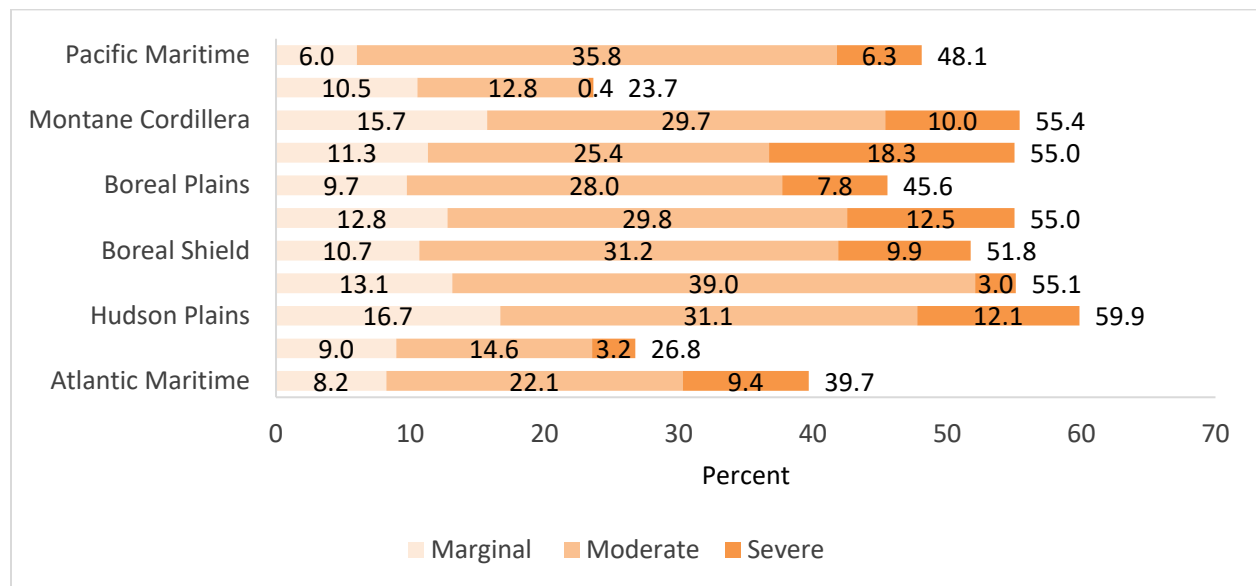


Figure 4.24 Household food insecurity by ecozone

Errors in the original figure:

- 1) The values at the end of each bar erroneously showed the rate for the secure category instead of the total rate of food insecurity (marginal + moderate + severe).
- 2) The bars for the results for moderate and severe food insecurity were reversed by mistake.

The corrected figure is as follows:



Among adults reporting traditional food intake on their 24-hour recall, the average daily calories from traditional food was ~~25~~**18%**, while adults eating at the 95th percentile derived over half their calories ~~58.4~~ (**53.3%**) from traditional food.

The inadequate intake of several nutrients for the population, including vitamins A, D, and C, folate, calcium, and magnesium, reflects a diet pattern with low amounts of traditional food for the overall population (~~4.6~~ **3.2%** of calories for the total population) and a high proportion of store-bought foods with a limited variety.