Canadians' eating habits

Didier Garriguet

Abstract

Objectives

This report is an overview of Canadians' eating habits: total calories consumed and the number of servings from the various food groups, as well as the percentage of total calories from fat, protein and carbohydrates.

Data sources

The data are from the 2004 Canadian Community Health Survey (CCHS) - Nutrition. Published results from the 1970-1972 Nutrition Canada Survey were used for comparisons over time.

Analytical techniques

An initial 24-hour dietary recall was completed by 35,107 people. A subsample of 10,786 completed a second recall 3 to 10 days later. Data collected in the first interview day were used to estimate, by selected characteristics, average calorie intake and average percentages of calories from fat, protein and carbohydrates. Usual intake of macronutrients was estimated with the Software for Intake Distribution Estimation (SIDE) program, using data from both interview days.

Main results

Although a minimum of five daily servings of vegetables and fruit is recommended, 7 out of 10 children aged 4 to 8 and half of adults did not meet this minimum in 2004. More than a third of 4- to 9-year-olds did not have the recommended two daily servings of milk products. Over a quarter of Canadians aged 31 to 50 obtained more than 35% of their total calories from fat. Snacks account for more calories than breakfast, and about the same number of calories as lunch.

Keywords

diet, dietary habits, eating, energy intake, food intake, nutrition, nutrition surveys

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At home, at work or at school, in a five-star restaurant or in a neighbourhood take-out, Canadians can chooose from an ever-increasing variety of foods. Grocery stores offer an abundance of imported products, along with frozen meals that can be ready in minutes to satisfy the needs of time-crunched households. Fresh fruits and vegetables once considered exotic are now available throughout the year. And today, fast food has become part of a typical diet. In the midst of this array of choices, just what are Canadians eating?

The 2004 Canadian Community Health Survey (CCHS)—Nutrition was the first national survey of Canadians' eating habits since the early 1970s. It was the largest and most comprehensive survey of its kind ever conducted in Canada. Throughout 2004, over 35,000 people were asked to recall what they had eaten during the previous 24 hours. They were also asked when they ate—breakfast, lunch, dinner and snacks—and where the food they ate had been prepared—at home, in a restaurant, or in a fast-food outlet.

Methods

Data source

Most of the data in this analysis are from the 2004 Canadian Community Health Survey (CCHS) - Nutrition, which was designed to collect information about the dietary habits of Canadians (http://www.statcan.ca/english/concepts/hs). The CCHS excludes members of the regular Canadian Forces and people living in the territories, on Indian reserves, in institutions, in some remote regions, and all residents (military and civilian) of Canadian Forces bases. Detailed descriptions of the CCHS design, sample and interview procedures are available in a published report.[1]

An initial 24-hour dietary recall was completed by 35,107 people; a subsample (10,786) completed a second recall 3 to 10 days later. A five-step method was used to maximize recollection of food consumed the previous day:

- a quick list (respondents reported all items in whatever order they wished)
- questions about specific food categories and frequently forgotten foods
- questions about the time and type of meal
- questions seeking more detailed, precise descriptions of foods/beverages and quantities consumed
- a final review

Respondents could report basic food items (for example, an apple) or a recipe (for example, lasagna). To determine the individual food items that constitute recipes, standard recipes were used. However, when respondents reported a recipe, interviewers probed in order to find out if the recipe contained non-standard ingredients.

The response rate for the first interview was 76.5%, and for the second, 72.8%. Composition of the food in terms of macro- and micronutrients came from the Canadian Nutrient file 2001b Supplement[2] of Health Canada.

A total of 112 cases with invalid intake and 20 cases with null intake were excluded from this analysis. Pregnant women (175), women who were breastfeeding (91), and 4-year-old children who were being breastfed (3) were also excluded.

Published results from the 1970-1972 Nutrition Canada Survey were used to compare calorie and fat intake three decades ago with the 2004 results. The response rate for the 1970-1972 survey, which collected data for 10,994 respondents aged 5 or older, was 47%.

Analytical techniques

Data collected on the first interview day were used to estimate, by age and sex, average energy intake (calories) and average percentages of energy from fat, protein and carbohydrates. To determine the calories derived from each of these three macronutrients, amounts in grams were multiplied by 9, 4 and 4, respectively. Averages were defined as the average of the ratios for each individual. Total energy intake includes calories from alcoholic beverages (7 calories per gram), but the percentage of calories from alcohol is not shown separately.

Usual intake of macronutrients was estimated using data from both interview days and the Software for Intake Distribution Estimation (SIDE) program[3,4] (see *One-day versus usual intake*).

The foods (basic food items, recipes, or ingredients) were categorized into four groups as defined in *Canada's Food Guide to Healthy Eating*[5]—vegetables and fruit, milk products, meat and alternatives, and grain products—and "other foods." There was no double-counting; for example, if a recipe was coded as "other foods," the recipe, not the ingredients, was used, and vice versa. As was done for macronutrients, descriptive statistics were used to estimate daily calories from each food group and the number of servings consumed per day. The distribution of usual servings from each food group was estimated with the SIDE program.[3]

Quantities expressed in grams were transformed into servings for vegetables and fruit, milk products, and grain products, using the Canadian Nutrient File[2] provided by Health Canada. Quantities for the meat and alternatives group were expressed in terms of cooked meat, with one serving containing 50 to 100 grams of meat. Servings defined without a range (peanut butter, for example) were multiplied by a factor equal to 50 grams of cooked meat.

The percentage of energy from a particular food group was defined as total calories from that food group in a population, divided by the total calories consumed by that population. The same method was used to calculate the percentage of fat coming from particular food groups.

The foods accounting for the most calories from "other foods" were derived using food item and recipe categories (Table 2). Categories are specific to a food item or a recipe. Some categories are similar for food items and recipes. Therefore, salad dressings and fruit drinks include elements assigned as a food item or as a recipe.

To determine the foods accounting for the most fat consumed in a day, basic food items and recipes were considered (Table 4). The categories "sweet baked goods," "milk and milk-based beverages," "chicken dishes" and "egg dishes" are from food and recipe categories. However, "salads" include dressing only if it is part of the recipe, not if it is reported separately. "Pasta dishes" do not include pasta reported separately, and "cheese dishes" do not include cheese reported separately.

The percentage of calories or fat is defined as total calories or total fat from a category, divided by total calories or total fat for all categories (Tables 2 and 4).

The percentage of the population who had a specific meal (breakfast, lunch, dinner) or ate between meals (snacks) was defined as the number of people who did so the first day of the interview divided by the total population reporting on the first day. This percentage is a snapshot of a given day; it does not show the frequency with which individuals typically have a particular meal or consume snacks. Similarly, the percentage of calories from a specific meal (breakfast, lunch, dinner, snacks) was also defined as the number of calories that the population consumed from that meal, divided by the total number of calories the population consumed in a day.

The same method was used to determine locations where food was prepared (home, fast-food outlet, other).

The bootstrap method, which takes into account the complex survey design,[6-8] was used to estimate standard errors, coefficients of variation and confidence intervals. The significance level was set at $p < 0.05$.

This article is based on the initial results of the 2004 CCHS—Nutrition. It presents an overview of what Canadians are eating: how many calories they consume; whether they eat the daily minimum recommended[5] number of servings of vegetables and fruit, milk products, meat and alternatives, and grain products; and what percentage of their total calories come from fat, protein and carbohydrates. To provide historical context, results from the last national survey of Canadian dietary habits, the 1970-1972 Nutrition Canada Survey,[9] are also presented (see *Methods*, *Definitions* and *Limitations).*

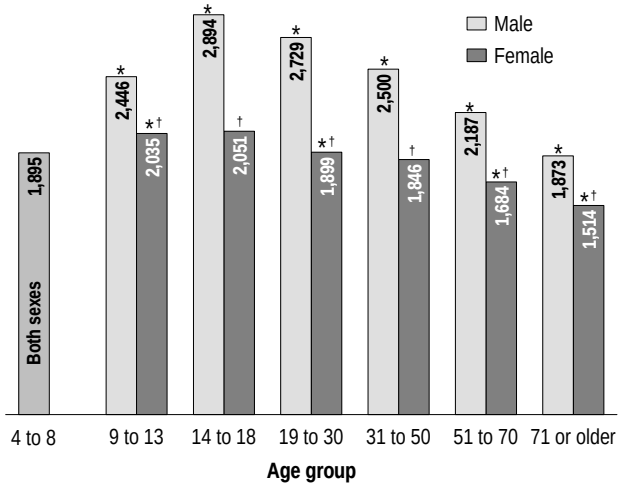
Calorie intake

Calories are a measure of the amount of energy in food. An individual's energy needs—the calories he or she must consume to remain healthy—vary according to a number of factors, notably, age, sex, weight, height and activity level.[10] For example, a moderately active 30-year-old man who is 1.75 metres tall (5 feet 9 inches) and weighs 75 kilograms (165 pounds) needs 2,750 calories a day; a sedentary 65-year-old woman who is 1.55 metres tall (5 feet 1 inch) and weighs 60 kilograms (132 pounds) needs 1,600 calories a day; and an active 12-year-old boy who is 1.5 metres tall (4 feet 11 inches) and weighs 46 kilograms (101 pounds) needs 2,625 calories a day.

Calorie consumption is highest during adolescence and declines with age (Chart 1). In 2004, males aged 12 to 19 averaged 2,800 calories a day, and females, just over 2,000 (Table 1). Among seniors, average daily intake was 1,950 calories for men and 1,550 calories for women.

The last time comparable information was gathered was the 1970-1972 Nutrition Canada Survey.[9] While the 2004 data cannot be strictly compared with those for 1970-1972 (see *Limitations*), an examination of results of the two surveys suggests that Canadians' average calorie consumption has not increased. On the contrary, initial findings indicate that the trend is down among males aged 12 to 64, and essentially stable among women and older men (Table 1). This is counter to the situation in the United States, where calorie intake rose between 1971-1974 and 1995-2000.[11]

Chart 1
Average daily calorie consumption, by age group and sex, household population aged 4 or older, Canada excluding territories, 2004



* *Significantly different from estimate for preceding age group of same sex (p < 0.05)*
† *Significantly different from estimate for males in same age group (p < 0.05)*
Note: *Excludes women who were pregnant or breastfeeding.*
Source: *2004 Canadian Community Health Survey - Nutrition*

Table 1
Average daily calorie consumption, by age group and sex, household population aged 5 or older, Canada excluding territories, 1972 and 2004

	1972	2004	
Age group	Average calories	Average calories	95% confidence interval
5 to 11	2,300	2,041	2,005 to 2,076
12 to 19			
Male	3,251	2,806	2,736 to 2,877
Female	2,243	2,047	2,002 to 2,092
20 to 39			
Male	3,374	2,660	2,585 to 2,735
Female	2,001	1,899	1,835 to 1,963
40 to 64			
Male	2,671	2,345	2,280 to 2,410
Female	1,726	1,757	1,720 to 1,794
65 or older			
Male	2,056	1,948	1,889 to 2,007
Female	1,530	1,544	1,507 to 1,581

Notes: *Excludes women who were pregnant or breastfeeding. Estimates of energy intake include calories from alcoholic beverages. Statistical comparisons with 2004 were not possible.*
Sources: *2004 Canadian Community Health Survey - Nutrition; Food Consumption Patterns Report, 1977*

Choices determine a balanced diet

Food choices determine the degree to which an individual's diet is balanced. Since 1942, Health Canada has helped Canadians make healthy choices by publishing a food guide.[12] The version that was in effect when the 2004 CCHS was conducted, *Canada's Food Guide to Healthy Eating for People Four Years Old and Over*,[5] had been released in 1992.

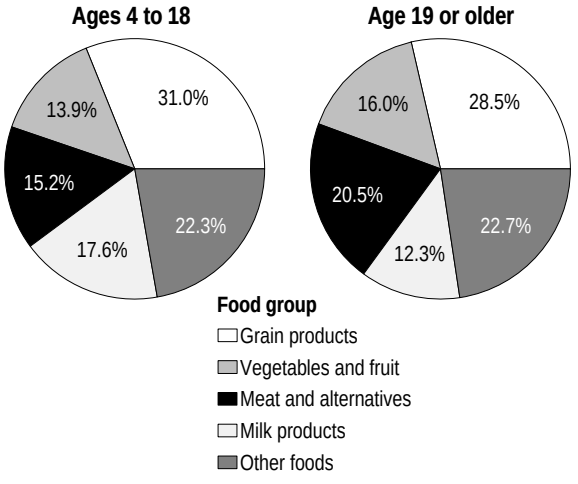
The Guide identified four food groups: vegetables and fruit, milk products, meat and alternatives, and grain products. An "other foods" category covered foods that are mostly fats, oils or sugar; high-fat and/or high-salt snack foods; beverages; and herbs, spices and condiments.

In 2004, grain products were the top energy provider for both children and adults, supplying 31% of daily calories at ages 4 to 18, and 28.5% at age 19 or older (Chart 2). The "other foods" category ranked second, providing, on average, 22% of daily calories for both children and adults.

For each of the four food groups, the Guide recommended a range for the number of servings per day. "Other foods," according to the Guide, should be eaten in moderation. On average, Canadians consumed the recommended daily number of servings of most food groups (Appendix Table A). However, average consumption hides the fact that substantial shares of the population were not within the suggested ranges.

Chart 2

Percentage distribution of sources of calories, by food group and age group, household population aged 4 or older, Canada excluding territories, 2004



Note: *Excludes women who were pregnant or breastfeeding.*
Source: *2004 Canadian Community Health Survey - Nutrition*

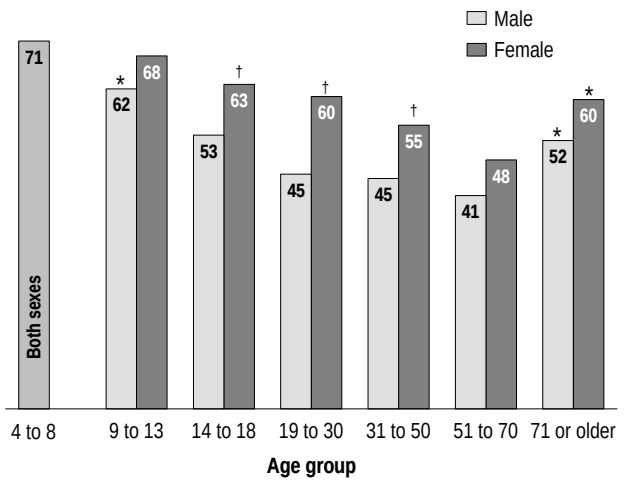
Not enough vegetables and fruit

The 1992 Food Guide recommended at least five daily servings of vegetables and fruit. One serving would be, for example, a medium-sized apple, two stalks of broccoli, or 125 millilitres (1/2 cup) of juice.

In 2004, 7 out of 10 children aged 4 to 8 had less than five servings of vegetables and fruit a day (Chart 3). At ages 9 to 13, 62% of girls and 68% of boys did not meet the minimum. Consumption was somewhat higher among adults, but around half fell short of the five-serving minimum.

Chart 3

Percentage below recommended minimum number of servings of vegetables and fruit, by age group and sex, household population aged 4 or older, Canada excluding territories, 2004



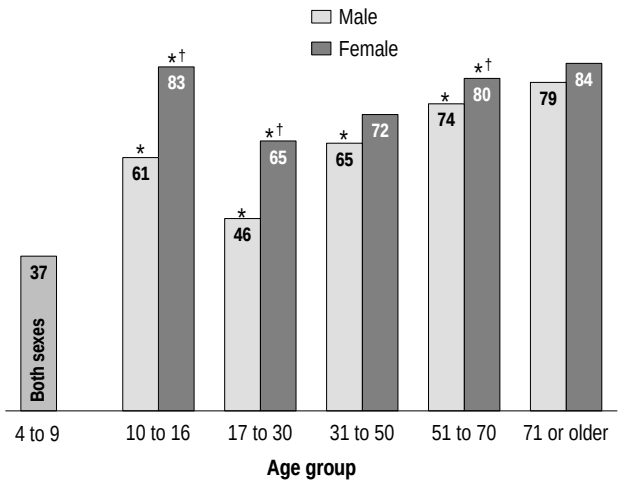
* *Significantly different from estimate for preceding age group of same sex ($p < 0.05$)*
† *Significantly different from estimate for males in same age group ($p < 0.05$)*
Notes: *Excludes women who were pregnant or breastfeeding. Based on usual consumption. Canada's Food Guide to Heathy Eating for People Four Years Old and Over recommends a minimum of five servings a day of vegetables and fruit.*
Source: *2004 Canadian Community Health Survey - Nutrition*

One in three children below minimum for milk products

Milk products include not just milk itself, but also foods such as cheese and yogourt. The 1992 Food Guide recommended two to three daily servings for children aged 4 to 9; three to four servings for 10- to 16-year-olds; and two to four servings for people aged 17 or older. One serving would be 250 millilitres (1 cup) of milk, 50 grams of cheese, or 175 grams (3/4 cup) of yogourt.

In 2004, more than one-third of children aged 4 to 9 did not consume the minimum recommended two daily servings of milk products (Chart 4). By ages 10 to 16, 61% of boys and 83% of girls did not meet their recommended minimum of three daily servings. And at age 71 or older, about 80% of both men and women had less than two servings of milk products a day.

Chart 4
Percentage below recommended minimum number of servings of milk products, by age group and sex, household population aged 4 or older, Canada excluding territories, 2004



* *Significantly different from estimate for preceding age group of same sex ($p < 0.05$)*
† *Significantly different from estimate for males in same age group ($p < 0.05$)*
Notes: *Excludes women who were pregnant or breastfeeding. Based on usual consumption. Age groups are based on Canada's Food Guide to Heathy Eating for People Four Years Old and Over, which recommends a minimum of two servings of milk products a day for children aged 4 to 9 and adults aged 17 or older, and three servings a day for 10- to 16-year-olds.*
Source: *2004 Canadian Community Health Survey - Nutrition*

Meat and alternatives

The meat and alternatives group includes beef, pork, lamb, chicken and fish; legumes such as beans and lentils; soy products such as tofu; and eggs. The 1992 Food Guide suggested two to three daily servings from this group, the equivalent of 100 to 300 grams of cooked meat. One serving would be a chicken leg or a beef patty; 125 to 250 millilitres (1/2 to 1 cup) of beans; 100 grams (1/3 cup) of tofu; or one or two eggs, depending on their size.

Among males aged 14 to 70, average daily consumption of meat and alternatives was at least 200 grams (Appendix Table A), and about one in four had more than 300 grams (data not shown). No female age group averaged more than 200 grams of meat and alternatives a day. As well, 14% to 18% of girls aged 9 to 18 had less than 100 grams, as did 15% of women aged 71 or older (data not shown).

Grain products

The 1992 Food Guide recommended 5 to 12 servings a day of grain products. A serving would amount to one slice of bread, 30 grams of cold cereal, half a bagel, or half a cup of cooked pasta or rice.

In 2004, more than a quarter of children aged 4 to 8 did not eat the recommended daily minimum of five servings of grain products (data not shown). And for each sex, the proportion of people not meeting the minimum rose with age. By age 71 or older, 43% of men and 66% of women had less than five daily servings of grain products.

"Other foods"

"Other foods" covers foods and drinks that are not part of the four major groups. Included here are: fats and oils such as butter and cooking oils; foods that are mostly sugar such as jam, honey, syrup and candies; high-fat and/or high-salt foods such as chips (potato, corn, etc.); beverages such as soft drinks, tea, coffee and alcohol; and herbs and condiments such as pickles, mustard and ketchup.

While the 1992 Food Guide recommended moderate consumption of "other foods," 22% of the total calories consumed by Canadians in 2004 came from this category (Chart 2). For adolescents aged 14 to 18, the figure was 25% (Appendix Table B).

Although a wide range of foods and beverages make up "other foods," a relatively small number of specific items accounted for most consumption. In fact, the 10 most commonly consumed "other foods" represented two-thirds of the calories obtained from this category. Soft drinks ranked first, followed by salad dressing, sugars/syrups/preserves, beer, and oils/fats (Table 2). Given the high sugar and fat content of the top 10 "other foods," this category's sizeable contribution to daily calorie intake is not surprising.

Table 2
Foods and drinks accounting for most calories from "other foods," household population aged 4 or older, Canada excluding territories, 2004

Food/Drink	% of "other foods" calories
Soft drinks	11.3
Salad dressing	9.4
Sugars, syrups, preserves	8.7
Beer	8.2
Fruit drinks	6.1
Vegetable oil, animal fats, shortening	5.8
Margarine	5.3
Chocolate bars	4.8
Potato chips	4.7
Butter	3.9

Note: *Excludes women who were pregnant or breastfeeding.*
Source: *2004 Canadian Community Health Survey - Nutrition*

Macronutrient balance

In a 2002 report, the Institute of Medicine, an independent, non-government organization in the United States, specified "acceptable macronutrient distribution ranges" (AMDR) for the percentage of total calories supplied by fat, protein and carbohydrates, the three "macronutrients."[10] Intake within an AMDR is associated with reduced risk of chronic diseases and provides adequate consuumption of essential nutrients. These AMDRs have been adopted by health officials in Canada.

On average, the Canadian diet in 2004 was within the AMDRs (Appendix Table C). Averages, however, conceal the fact that large proportions of the population fell outside the AMDRs.

Many exceed upper limit for fat

Fat is a source of energy and an important part of a healthy diet. The AMDR for fat intake is 25% to 35% of total calories for children and teens, and 20% to 35% of total calories for adults aged 19 or older. If fat accounts for more than 35% of calories, this may pose a potential health problem.

One of the recommendations stemming from the results of the 1970-1972 Nutrition Canada Survey was that Canadians reduce their fat intake, which then averaged about 40% of calories[9] (Table 3). By 2004 an appreciable change was evident, with fat accounting for an average of just over 31% of daily calories (Appendix Table C).

While this average was within the AMDR, substantial shares of the population surpassed the suggested maximum. Excess fat consumption

One-day versus usual intake

Two food consumption concepts must be distinguished: one-day intake and usual intake. *One-day intake* is total nutrient intake over a specific 24-hour period. These data were collected by the 2004 Canadian Community Health Survey - Nutrition during an interview in which respondents were asked to describe everything they ate from midnight to midnight the previous day. *Usual intake* is an overview of food typically consumed in a day, and it cannot be directly estimated based on one-day intake. However, estimates of the proportion of the population below or above a given threshold require a usual intake distribution.

Usual intake varies from one individual to another. One-day intake varies not only from one individual to another, but also from day to day for a given individual. To estimate usual intake, day-to-day variation for individuals was removed using Software for Intake Distribution Estimation (SIDE).[3] With a series of mathematical transformations, this software is able to estimate each component of the variance and to estimate the distribution of usual intake of a nutrient.[4,13] For these calculations, day of the week was used to partially account for the effect of classification.

Table 3
Percentage of total calories from fat, by age group and sex, household population aged 5 or older, Canada excluding territories, 1972 and 2004

	1972	2004	
Age group	%	%	95% confidence interval
5 to 11	**38**	**30.5**	**30.1 to 30.8**
12 to 19			
Male	41	31.3	30.8 to 31.8
Female	40	30.8	30.3 to 31.3
20 to 39			
Male	41	31.0	30.4 to 32.7
Female	40	31.2	30.5 to 31.9
40 to 64			
Male	40	31.7	31.1 to 32.3
Female	39	31.8	31.2 to 32.3
65 or older			
Male	39	31.0	30.3 to 31.6
Female	37	30.5	30.0 to 31.0

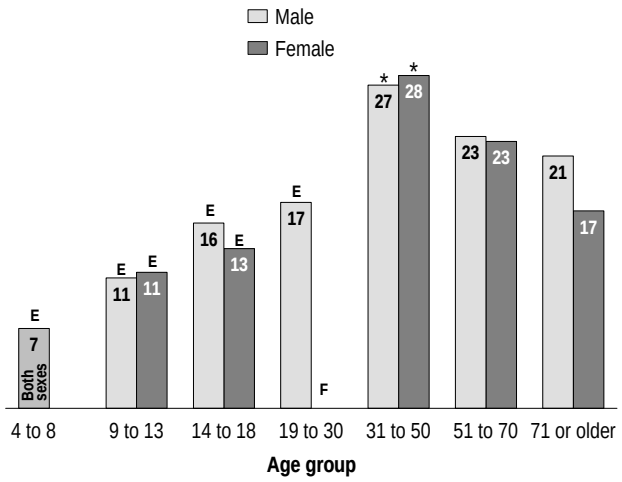
Notes: *Excludes women who were pregnant or breastfeeding. Statistical comparisons with 2004 were not possible. Estimates of energy intake include calories from alcoholic beverages.*
Sources: *2004 Canadian Community Health Survey - Nutrition; Food Consumption Patterns Report, 1977*

peaked among people aged 31 to 50, over a quarter of whom obtained more than 35% of their total calories from fat (Chart 5). At older ages, around one person in five got more than 35% of his or her calories from fat.

The meat and alternatives group was the primary source of fat in 2004 (Chart 6). Adults got almost a third of their fat from the meat group, and about a quarter from "other foods." Among children, meat and alternatives, milk products and "other foods" each accounted for nearly the same percentage of fat: 24% or 25%.

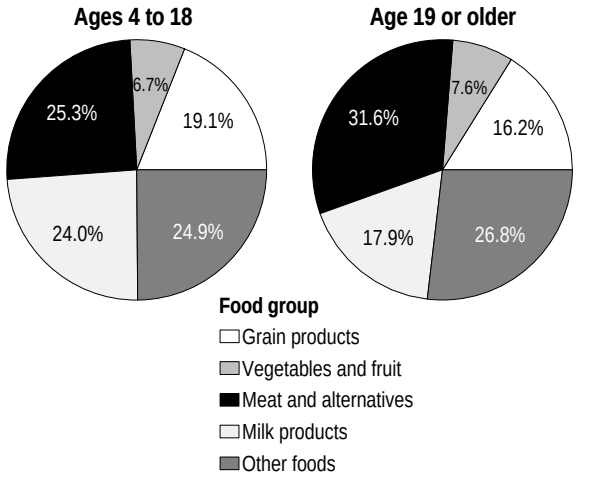
The fat that Canadians consumed came from a relatively small number of specific foods. The main contributor, accounting for 15.9% of fat intake, was what can be classified as the "sandwich" category, consisting of items such as pizza, sandwiches, submarines, hamburgers and hot dogs (Table 4). This was followed by sweet baked goods, such as cake, cookies and doughnuts (8.5%).

Chart 5
Percentage above upper end of recommended range of total calories from fat, by age group and sex, household population aged 4 or older, Canada excluding territories, 2004



* *Significantly different from estimate for previous age group of same sex ($p < 0.05$)*
E *Use with caution (coefficient of variation 16.6% to 33.3%)*
F *Too unreliable to be published (coefficient of variation greater than 33.3%)*
Notes: *Excludes women who were pregnant or breastfeeding. Estimate of energy intake includes calories from alcoholic beverages. Based on usual consumption. The Institute of Medicine recommends 25% to 35% of calories from fat at ages 4 to 18 and 20% to 35% of calories at age 19 or older.*
Source: *2004 Canadian Community Health Survey - Nutrition*

Chart 6
Percentage distribution of sources of fat, by food group and age group, household population aged 4 or older, Canada excluding territories, 2004



Note: *Excludes women who were pregnant or breastfeeding.*
Source: *2004 Canadian Community Health Survey - Nutrition*

Table 4
Foods and drinks accounting for most fat consumption, household population aged 4 or older, Canada excluding territories, 2004

Food/Drink	% of total fat
Pizza, sandwiches, submarines, hamburgers and hot dogs	15.9
Sweet baked goods (cakes, cookies, muffins, donuts, etc.)	8.5
Liquid milk and milk-based beverages	5.0
Chicken dishes	4.6
Salads (includes salad dressing)	4.6
Cheese	4.2
Pasta dishes	3.7
French fries	3.7
Egg dishes	3.0
Margarine	2.3

Notes: *Excludes women who were pregnant or breastfeeding. Includes basic food items and main recipes.*
Source: *2004 Canadian Community Health Survey - Nutrition*

Proteins in acceptable ranges

Protein is required for growth and is a source of energy. It is needed to maintain the structure, function and regulation of the body's cells, tissues and organs. Important sources of protein include meat, poultry, fish, eggs, dairy products and beans. The AMDR for protein is 10% to 30% of calories for children and adolescents, and 10% to 35% of calories for adults.

In 2004, Canadians' average daily calorie intake from protein was within these ranges. Among children and adolescents aged 4 to 18, protein accounted for an average of 14.5% of total calories; for adults, 16.5% (Appendix Table C). Almost no one fell below or above these ranges.

Carbohydrates primary source of energy

Carbohydrates are the body's most important source of energy. They may be obtained as sugars, starch or fibre. The AMDR for carbohydrates is 45% to 65% of daily calories.

On average, carbohydrates accounted for 55.4% of the calories consumed by children and adolescents in 2004; for adults, the percentage was 50.1% (Appendix Table C).

More calories from snacks than breakfast

Despite the nutritional benefits of eating breakfast,[14,15] close to 10% of Canadians reported that they had not had breakfast the day before they

Definitions

Respondents to the 2004 Canadian Community Health Survey (CCHS) - Nutrition were asked where the food they ate had been prepared: home, which includes someone else's home; fast food, which includes take-outs and pizzerias; and other locations. Other locations cover: restaurants with waiter/waitress; other restaurants; bars, taverns, lounges; school and non-school cafeterias; work; child care centres; family/adult care centres; vending machines; grocery stores; corner stores; other stores; and other locations. The categories used in this analysis are: home only, at least some fast food (fast food only; fast food and home; fast food and other; fast food, home and other); and other combinations. Some respondents may have provided information about the location where they consumed the food rather than where it had been prepared. If a respondent reported having eaten in a fast-food establishment, he or she was considered to have eaten food prepared in a fast-food restaurant on the interview day.

For each food that they had eaten, respondents specified the *occasion*: breakfast, lunch, dinner and between-meal consumption. Breakfast includes brunch. Between-meal consumption covers anything that was not reported as breakfast, lunch or dinner. It includes snacks, drinks consumed outside of a meal, extended consumption (eating or drinking something throughout the day), and other unspecified occasions.

Age groups were defined according to the dietary reference intake groups used by the Institute of Medicine (IOM): 4 to 8, 9 to 13, 14 to 18, 19 to 30, 31 to 50, 51 to 70, and 71 or older. In Chart 4, data on milk products are presented for the 4 to 9, 10 to 16, and 17 or older age groups, which are used in *Canada's Food Guide to Healthy Eating for People Four Years Old and Over*.[5] In Tables 1 and 3, the age groups presented are those that were used for the analysis of data from the 1970-1972 Nutrition Canada Survey.

Household income was calculated based on the number of people in the household and total income from all sources in the 12 months before the CCHS interview:

Household income group	People in household	Total household income
Lowest	1 to 4	Less than $10,000
	5 or more	Less than $15,000
Lower-middle	1 or 2	$10,000 to $14,999
	3 or 4	$10,000 to $19,999
	5 or more	$15,000 to $29,999
Middle	1 or 2	$15,000 to $29,999
	3 or 4	$20,000 to $39,999
	5 or more	$30,000 to $59,999
Upper-middle	1 or 2	$30,000 to $59,999
	3 or 4	$40,000 to $79,999
	5 or more	$60,000 to $79,999
Highest	1 or 2	$60,000 or more
	3 or more	$80,000 or more

In the charts, the two lowest income groups were combined.

For ease of reference, the term "calorie" is used in the text, although the term "kilocalorie" is more accurate.

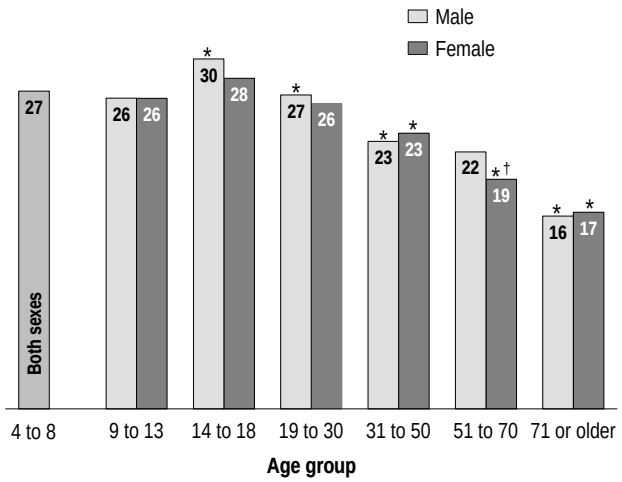
were interviewed for the CCHS (data not shown). Men aged 19 to 30 were the least likely to have eaten breakfast: 19% of them had not done so (data not shown).

On average, Canadians consumed about 18% of their daily calories at breakfast in 2004; lunch made up another 24%; and dinner, 31% for children and adolescents and 36% for adults (Appendix Table D). Snacks, that is, food or drinks consumed between meals, accounted for more calories than breakfast and about the same percentage as lunch: 27% for children and adolescents and 23% for adults.

The proportion of daily calories eaten as snacks peaked among 14- to 18-year-olds, at 30% for males and 28% for females, and then fell with advancing age to around 16% among seniors aged 71 or older (Chart 7).

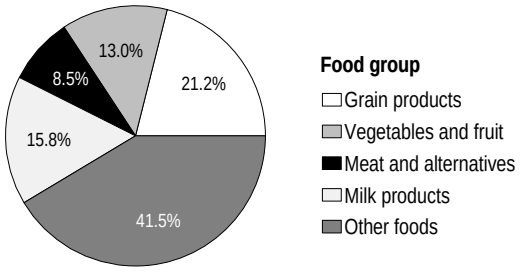
The "other foods" category accounted for 41% of the calories that Canadians ate as snacks in 2004 (Chart 8).

Chart 7
Percentage of calories from between-meal consumption, by age group and sex, household population aged 4 or older, Canada excluding territories, 2004



* *Significantly different from estimate for preceding age group of same sex (p < 0.05)*
† *Significantly different from estimate for males in same age group (p < 0.05)*
Note: *Excludes women who were pregnant or breastfeeding.*
Source: *2004 Canadian Community Health Survey - Nutrition*

Chart 8
Percentage distribution of calories from between-meal consumption, by food group, household population aged 4 or older, Canada excluding territories, 2004

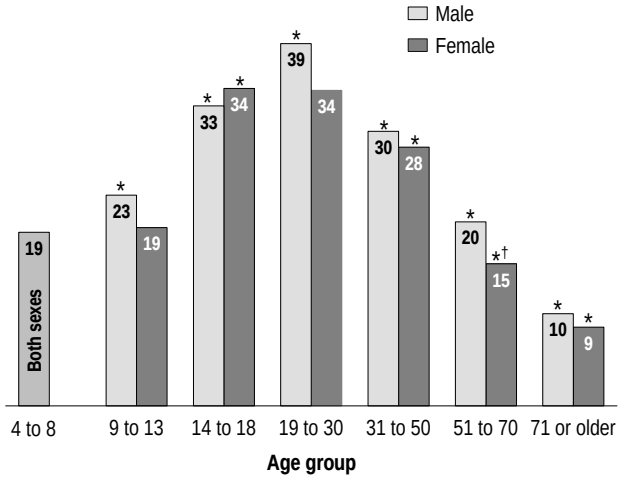


Note: *Excludes women who were pregnant or breastfeeding.*
Source: *2004 Canadian Community Health Survey - Nutrition*

One-quarter consuming fast-food items

A quarter of Canadians reported that on the day before their interview they had eaten something that had been prepared in a fast-food outlet (Table 5). Among 14- to 18-year-olds, the figure was one-third, and at 39%, the percentage was highest among men aged 19 to 30 (Chart 9).

Chart 9
Percentage consuming food prepared in fast-food outlets, by age group and sex, household population aged 4 or older, Canada excluding territories, 2004



* *Significantly different from estimate for preceding age group of same sex (p < 0.05)*
† *Significantly different from estimate for males in same age group (p < 0.05)*
Note: *Excludes women who were pregnant or breastfeeding.*
Source: *2004 Canadian Community Health Survey - Nutrition*

Table 5
Percentage distribution of locations where food consumed was prepared, by age group and sex, household population aged 4 or older, Canada excluding territories, 2004

	Home only	At least some fast food	Other combination
	%	%	%
Total			
4 to18	53.9	24.8	21.3
19 or older	51.7	25.4	22.9
Age group and sex			
4 to 8	60.8	18.9	20.4
9 to 13			
Male	54.9*	22.9*	22.3
Female	60.2†	19.4	20.4
14 to 18			
Male	44.6*	32.6*	22.8
Female	44.3*	34.5*	21.2
19 to 30			
Male	37.9*	39.3*	22.7
Female	43.1	34.3	22.6
31 to 50			
Male	44.8*	29.8*	25.4
Female	48.5*	28.1*	23.4
51 to 70			
Male	57.3*	20.0*	22.7
Female	61.2*	15.4*†	23.4
71 or older			
Male	72.1*	10.0*	17.9*
Female	75.7*	8.6*	15.7*

* *Significantly different from estimate for preceding age group of same sex ($p < 0.05$)*
† *Significantly different from estimate for males in same age group ($p < 0.05$)*
Note: *Excludes women who were pregnant or breastfeeding.*
Source: *2004 Canadian Community Health Survey - Nutrition*

Limitations

Respondents may not recall exactly what they ate or how much. To minimize recall errors, the 2004 Canadian Community Health Survey (CCHS) - Nutrition used the five-step multiple-pass method.[16,17] Under controlled conditions, this method has effectively assessed average energy intake,[18,19] but in different settings, some studies show underreporting,[20-22] and others, overreporting.[23-25]

The data on occasion (breakfast, lunch, dinner or snack) and location (where food was prepared) present a snapshot of a given day. These data should not be interpreted as the typical behaviour of specific individuals.

The fact that occasions were self-defined may affect the results. For instance, respondents' definitions of breakfast may range from as little as a cup of coffee to a full meal, and a snack could be a 400-calorie muffin or a cup of tea without milk or sugar. Such variations influence the percentage of calories consumed at different occasions.

Parents responded on behalf of children younger than 6. However, a parent may not know exactly what a child ate when they were not together (at a daycare, for instance).

No statistical comparisons were made between the 2004 CCHS and the 1970-1972 Nutrition Canada Survey; the estimates for 1970-1972 in this article are based on a published report. As well, some concepts and collection methods differ between the two surveys. In 1970-1972 collection was done manually by dieticians/nutritionists, whereas in 2004 interviewers used an automated system. The 1970-1972 response rate (47%) was much lower than that obtained in 2004 (77%).

For more details on the limitations of the survey, see *The Canadian Community Health Survey 2.2, Nutrition Focus: A Guide to Accessing and Interpreting the Data*, published by Health Canada and available on its Web site (http://www.hc-sc.gc.ca/fn-an/surveill/nutrition/commun/index_e.html).

Of course, "something" prepared in a fast-food outlet is not invariably a high-fat, high-calorie item. It might have been as little as a cup of coffee or a salad without dressing. Even so, 40% of patrons of fast-food establishments chose a pizza, sandwich, hamburger or hot dog, and 25% had a regular (as opposed to diet) soft drink (data not shown).

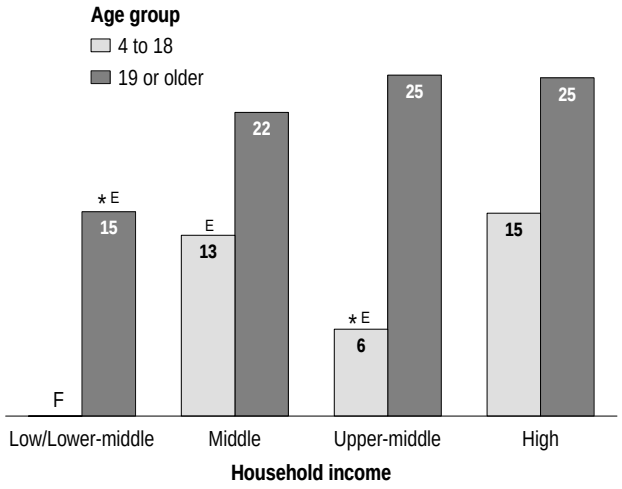
The apparent popularity of fast food notwithstanding, more than half of all Canadians reported that all the food they ate on the day before their interview had been prepared at home. For children aged 4 to 8, the figure was 61% (Table 5). Elderly women were the most likely to have eaten only food prepared at home: 76%. By contrast, among young adult men, the figure was 38%.

Diet and income

In some respects, food consumption patterns were associated with household income, especially among adults. For example, the percentage of calories that adults derived from fat tended to rise with income. While 15% of those in the lowest income households exceeded the AMDR for fat (more than 35% of their total calorie intake), this was the case for 25% of adults in the highest income households (Chart 10). Among children and adolescents, the percentage of calories derived from fat generally did not differ by household income.

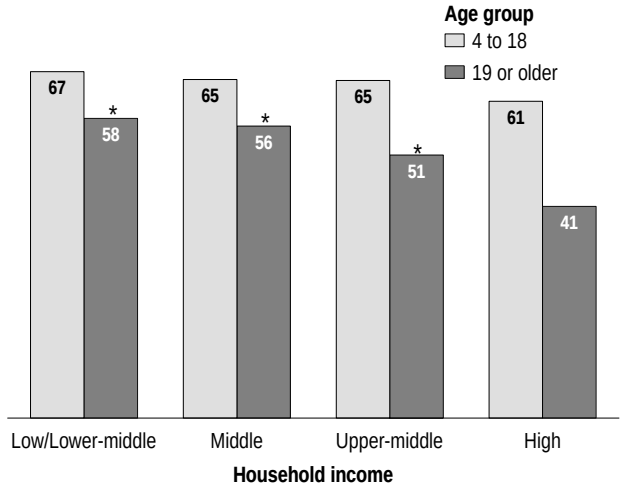
Adults in the highest income households were less likely than those in the lowest to have fewer than five daily servings of vegetables and fruit:

Chart 10
Percentage above upper end of recommended range of total calories from fat, by age group and household income, household population aged 4 or older, Canada excluding territories, 2004



* *Significantly different from estimate for same age group with high household income (p < 0.05)*
E *Use with caution (coefficient of variation 16.6% to 33.3%)*
F *Too unreliable to be published (coefficient of variation greater than 33.3%)*
Notes: *Excludes women who were pregnant or breastfeeding. Estimates of energy include calories from alcoholic beverages. Based on usual consumption. The Institute of Medicine recommends 25% to 35% of calories from fat at ages 4 to 18 and 20% to 35% of calories at age 19 or older.*
Source: *2004 Canadian Community Health Survey - Nutrition*

Chart 11
Percentage below recommended minimum number of servings of vegetables and fruit, by age group and household income, household population aged 4 or older, Canada excluding territories, 2004



* *Significantly different from estimate for same age group with high household income (p < 0.05)*
Notes: *Excludes women who were pregnant or breastfeeding. Based on usual consumption. Canada's Food Guide to Healthy Eating for People Four Years Old and Over recommends a minimum of five servings a day of vegetables and fruit.*
Source: *2004 Canadian Community Health Survey - Nutrition*

41% versus 58% (Chart 11). Again, there were no significant differences by household income in the proportion of children and adolescents eating less than five servings of vegetables and fruit each day.

For people of all ages, the likelihood of having eaten something from a fast-food outlet tended to increase with income. On the day before their interview, 31% of adults and 28% of young people from the highest income households had something that had been prepared in such an establishment, compared with 19% of adults and young people from the lowest income households (data not shown).

Concluding remarks

Results of the 2004 Canadian Community Health Survey—Nutrition show that when averages are considered, Canadians were generally within acceptable ranges for the number of servings from the four major food groups and for the percentage of calories from fat, protein and carbohydrates. But averages mask the substantial proportions of chidren and adults who did not have a balanced diet.

The majority of Canadians did not eat the recommended daily minimum of five servings of vegetables and fruit. Over a quarter of men and women in their thirties and forties derived more than 35% of their calories from fat. One-third of children aged 4 to 9 did not have the recommended two servings of milk products a day, and among seniors aged 71 or older, the proportion surpassed 70%. Canadians of all ages obtained over a fifth of their calories from "other foods," and on a given day, a quarter of adults and children ate or drank something from a fast-food outlet.

This overview of Canadians' eating habits represents only part of the information collected during the 2004 CCHS. This new national database on nutrition offers an unprecedented opportunity

to examine many other topics, including beverage consumption and vitamin and mineral intake, as well as interrelationships between diet, physical activity and weight. ●

An electronic version of this article, "Overview of Canadians' Eating Habits," was released on July 6, 2006, as part of the Nutrition: Findings from the Canadian Community Health Survey *series (82-620-MIE2006002, free). This publication is available at: http://www.statcan.ca/english/research/82-620-MIE/82-620-MIE2006002.htm.*

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Appendix

Table A
Average daily servings from the four food groups, by age group and sex, household population aged 4 or older, Canada excluding territories, 2004

	Vegetables and fruit		Milk products		Meat and alternatives		Grain products	
	Servings	95% confidence interval	Servings	95% confidence interval	Grams	95% confidence interval	Servings	95% confidence interval
Total								
4 to 18	4.45	4.34 to 4.56	2.29	2.24 to 2.35	153	149 to 157	6.41	6.30 to 6.53
19 or older	5.16	5.05 to 5.26	1.52	1.48 to 1.56	203	198 to 207	5.64	5.53 to 5.75
Age group and sex								
4 to 8	4.18	4.00 to 4.36	2.31	2.22 to 2.41	118	112 to 124	5.76	5.60 to 5.92
9 to 13								
Male	4.53*	4.25 to 4.82	2.55*	2.41 to 2.69	176*	164 to 188	7.09*	6.79 to 7.39
Female	4.40	4.12 to 4.69	2.08*†	1.96 to 2.21	130*†	122 to 137	5.92†	5.68 to 6.15
14 to 18								
Male	4.87	4.58 to 5.17	2.64	2.50 to 2.79	229*	216 to 243	7.98*	7.63 to 8.34
Female	4.45†	4.20 to 4.69	1.82*†	1.72 to 1.93	136†	129 to 144	5.74†	5.50 to 5.97
19 to 30								
Male	5.36	4.97 to 5.74	1.95*	1.80 to 2.09	247	232 to 263	7.32*	6.92 to 7.71
Female	4.67†	4.39 to 4.96	1.64*†	1.50 to 1.77	145†	136 to 154	5.19*†	4.91 to 5.48
31 to 50								
Male	5.26	4.97 to 5.55	1.62*	1.51 to 1.72	254	239 to 268	6.64*	6.32 to 6.96
Female	4.92	4.66 to 5.19	1.52	1.42 to 1.61	169*†	158 to 179	4.87†	4.66 to 5.08
51 to 70								
Male	5.68	5.36 to 6.00	1.37*	1.28 to 1.46	241	228 to 253	5.74*	5.52 to 5.95
Female	5.24†	5.04 to 5.43	1.28*	1.22 to 1.35	174†	165 to 184	4.66†	4.45 to 4.86
71 or older								
Male	5.03*	4.73 to 5.34	1.36	1.16 to 1.56	189*	176 to 202	5.59	5.20 to 5.97
Female	4.76*	4.57 to 4.96	1.24	1.16 to 1.33	140*†	132 to 149	4.47†	4.30 to 4.63

* *Significantly different from estimate for preceding age group of same sex ($p < 0.05$)*
† *Significantly different from estimate for males in same age group ($p < 0.05$)*
Note: *Excludes women who were pregnant or breastfeeding.*
Source: *2004 Canadian Community Health Survey - Nutrition*

Table B
Percentage of calories, fat, protein and carbohydrates from "other foods," by age group and sex, household population aged 4 or older, Canada excluding territories, 2004

	Calories		Fat		Protein		Carbohydrates	
	%	95% confidence interval	%	95% confidence interval	%	95% confidence interval	%	95% confidence interval
Total								
4 to 18	22.3	21.9 to 22.7	24.9	24.4 to 25.5	5.2	5.0 to 5.4	24.8	24.3 to 25.3
19 or older	22.7	22.3 to 23.1	26.8	26.2 to 27.3	5.4	5.2 to 5.6	21.4	20.9 to 21.9
Age group and sex								
4 to 8	18.2	17.5 to 18.9	21.1	20.2 to 22.1	4.1	3.8 to 4.4	20.0	19.2 to 20.8
9 to 13								
Male	22.3*	21.3 to 23.2	24.3*	23.1 to 25.5	5.0*	4.6 to 5.4	25.4*	24.1 to 26.7
Female	22.9*	21.9 to 23.9	26.4*†	25.0 to 27.7	5.6*†	5.2 to 6.1	25.1*	24.0 to 26.3
14 to 18								
Male	25.7*	24.7 to 26.8	27.1*	25.9 to 28.4	5.7*	5.3 to 6.2	29.4*	28.1 to 30.8
Female	25.3*	24.3 to 26.3	28.7*	27.4 to 30.0	6.5*	5.9 to 7.1	27.4*†	26.2 to 28.7
19 to 30								
Male	26.4	25.1 to 27.7	25.6	23.9 to 27.2	6.6	5.8 to 7.5	28.3	26.9 to 29.8
Female	24.2†	22.9 to 25.4	27.7	26.1 to 29.3	6.5	5.9 to 7.2	24.2*†	22.8 to 25.7
31 to 50								
Male	24.3*	23.2 to 25.3	25.9	24.6 to 27.2	5.7*	5.2 to 6.1	24.7*	23.4 to 25.9
Female	22.9	21.8 to 23.9	27.5	26.1 to 29.0	5.7*	5.3 to 6.2	21.4*†	20.1 to 22.6
51 to 70								
Male	22.6*	21.7 to 23.4	26.6	25.4 to 27.8	4.7*	4.3 to 5.1	19.5*	18.5 to 20.4
Female	20.1*†	19.2 to 20.9	27.9	26.7 to 29.1	4.6*	4.3 to 5.0	16.7*†	15.8 to 17.6
71 or older								
Male	18.9*	17.8 to 20.1	25.8	24.2 to 27.4	3.7*	3.3 to 4.2	15.1*	14.0 to 16.2
Female	16.9*†	16.1 to 17.6	26.3	25.1 to 27.4	3.5*	3.2 to 3.8	13.0*†	12.2 to 13.7

* *Significantly different from estimate for preceding age group of same sex ($p < 0.05$)*
† *Significantly different from estimate for males in same age group ($p < 0.05$)*
Note: *Excludes women who were pregnant or breastfeeding.*
Source: *2004 Canadian Community Health Survey - Nutrition*

Table C
Percentage of calories from fat, protein and carbohydrates, by age and sex, household population aged 4 or older, Canada excluding territories, 2004

	Fat		Protein		Carbohydrates	
	%	95% confidence interval	%	95% confidence interval	%	95% confidence interval
Total						
4 to 18	30.7	30.5 to 30.9	14.5	14.4 to 14.6	54.6	54.3 to 54.9
19 or older	31.3	31.1 to 31.6	16.5	16.4 to 16.7	49.1	48.8 to 49.5
Age group and sex						
4 to 8	30.1	29.8 to 30.5	14.3	14.1 to 14.5	55.5	55.1 to 56.0
9 to 13						
Male	30.9*	30.4 to 31.4	14.6	14.3 to 15.0	54.5*	53.9 to 55.1
Female	30.5	29.9 to 31.0	14.0†	13.8 to 14.3	55.5†	54.8 to 56.1
14 to 18						
Male	31.5	31.0 to 32.1	15.2*	14.8 to 15.5	52.7*	52.0 to 53.3
Female	30.8	30.2 to 31.4	14.4†	14.0 to 14.7	54.3*†	53.6 to 55.1
19 to 30						
Male	31.1	30.4 to 31.7	15.6	15.2 to 16.1	49.6*	48.8 to 50.5
Female	30.5	29.7 to 31.3	15.5*	15.1 to 16.0	51.9*†	51.1 to 52.8
31 to 50						
Male	31.6	30.8 to 32.3	16.8*	16.4 to 17.3	47.8*	46.9 to 48.8
Female	32.2*	31.5 to 32.8	16.6*	16.1 to 17.1	48.8*	47.9 to 49.6
51 to 70						
Male	31.5	30.8 to 32.1	17.0	16.6 to 17.4	47.3	46.5 to 48.0
Female	31.2*	30.6 to 31.7	17.1	16.8 to 17.5	49.6†	49.0 to 50.3
71 or older						
Male	30.7	30.0 to 31.4	16.4	15.9 to 16.8	50.1*	49.1 to 51.0
Female	30.3*	29.7 to 30.9	16.6	16.2 to 17.0	51.9*†	51.2 to 52.5

* *Significantly different from estimate for preceding age group of same sex ($p < 0.05$)*
† *Significantly different from estimate for males in same age group ($p < 0.05$)*
Notes: *Excludes women who were pregnant or breastfeeding. Estimates of energy intake include calories from alcoholic beverages, but calories from alcohol are not shown separately.*
Source: *2004 Canadian Community Health Survey - Nutrition*

Table D
Percentage distribution of calories, by occasion, age and sex, household population aged 4 or older, Canada excluding territories, 2004

	Breakfast/Brunch		Lunch		Dinner		Other	
	%	95% confidence interval	%	95% confidence interval	%	95% confidence interval	%	95% confidence interval
Total								
4 to 18	17.3	16.9 to 17.6	24.2	23.8 to 24.7	31.1	30.6 to 31.5	27.4	26.8 to 28.0
19 or older	17.7	17.4 to 18.1	23.8	23.4 to 24.3	35.9	35.4 to 36.4	22.6	22.1 to 23.1
Age group and sex								
4 to 8	18.0	17.5 to 18.6	25.6	24.9 to 26.4	29.5	28.6 to 30.4	26.8	25.9 to 27.8
9 to 13								
Male	18.0	17.2 to 18.8	24.9	23.6 to 26.1	30.9	29.8 to 31.9	26.3	25.0 to 27.5
Female	17.1	16.4 to 17.9	24.7	23.8 to 25.7	31.9*	30.8 to 33.0	26.2	25.1 to 27.4
14 to 18								
Male	16.4*	15.6 to 17.3	22.5*	21.4 to 23.6	31.5	30.4 to 32.5	29.6*	28.1 to 31.0
Female	16.4	15.3 to 17.5	23.1*	22.1 to 24.2	32.5	31.4 to 33.7	27.9	26.4 to 29.5
19 to 30								
Male	16.4	15.3 to 17.5	22.2	20.9 to 23.5	34.9*	33.3 to 36.5	26.5*	24.8 to 28.2
Female	17.7	16.6 to 18.9	23.4	22.0 to 24.8	33.1	31.7 to 34.4	25.8	24.0 to 27.5
31 to 50								
Male	17.1	16.2 to 18.0	24.9*	23.8 to 26.0	35.4	34.1 to 36.8	22.6*	21.4 to 23.8
Female	17.0	16.2 to 17.9	22.6†	21.5 to 23.8	37.1*	35.7 to 38.4	23.3*	22.0 to 24.6
51 to 70								
Male	17.6	16.8 to 18.4	23.1*	21.9 to 24.2	37.6*	36.4 to 38.8	21.7	20.4 to 23.0
Female	19.1*†	18.2 to 20.0	24.7*†	23.6 to 25.8	36.8	35.7 to 38.0	19.4*†	18.4 to 20.4
71 or older								
Male	21.9*	20.9 to 22.8	25.8*	24.3 to 27.2	36.1	34.6 to 37.5	16.3*	15.0 to 17.6
Female	21.2*	20.3 to 22.1	27.5*	26.3 to 28.6	34.7*	33.5 to 35.9	16.6*	15.6 to 17.6

* *Significantly different from estimate for preceding age group of same sex ($p < 0.05$)*
† *Significantly different from estimate for males in same age group ($p < 0.05$)*
Note: *Excludes women who were pregnant or breastfeeding.*
Source: *2004 Canadian Community Health Survey - Nutrition*