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Nutrition: Findings from the Canadian Community Health Survey

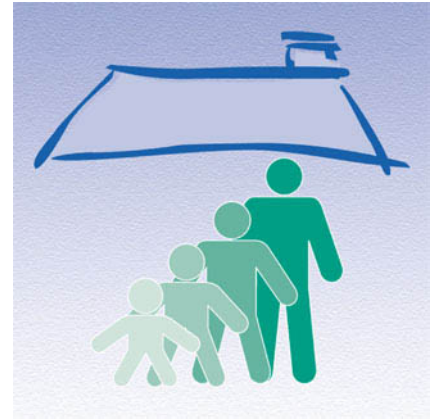
Overview of Canadians' Eating Habits

2004

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Canadians' Eating Habits

2004

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Nutrition: Findings from the Canadian Community Health Survey (Cycle 2.2)

Overview of Canadians' Eating Habits

Didier Garriguet

Highlights

- Although a minimum of five daily servings of vegetables and fruit is recommended, seven out of 10 children aged 4 to 8 and half of adults do not meet this minimum.
- More than a third (37%) of children aged 4 to 9 do not have the recommended two daily servings of milk products. By age 30, more than two-thirds of Canadians do not attain the minimum daily levels.
- Over a quarter of Canadians aged 31 to 50 get more than 35% of their total calories from fat, the threshold beyond which health risks increase, according to the Institute of Medicine, an independent, non-governmental organization in the US, which provides science-based advice on health issues.
- Snacks, that is food and drink consumed between meals, account for more calories than breakfast, and about the same number of calories as lunch.
- Adults in low and lower-middle income households are less likely than those in the highest income households to get more than 35% of their daily calories from fat.
- Members of the highest income households are more likely than lower income groups to eat food prepared in a fast-food outlet.
- The food consumption patterns of children and adolescents are not as closely associated with household income as are those of adults.

Introduction

At home, at work or at school, in a five-star restaurant or in a neighbourhood take-out, Canadians are confronted by an ever-increasing variety of foods. Grocery stores now offer an abundance of imported products, along with frozen meals that can be prepared in minutes to satisfy the needs of time-crunched households. Fresh fruits and vegetables that were once considered exotic are available throughout the year. Technology has made it possible to genetically modify foods (Royal Society of Canada 2001). Some foods are irradiated to prolong their shelf life. And today, fast food is part of a typical diet.

In the midst of this array of choices, just what are Canadians eating? Do they eat enough vegetables, drink enough milk, consume too much fat?

This report, the first in a series, presents the initial results of the 2004 Canadian Community Health Survey (CCHS): Nutrition, which was designed to answer some of these questions. It is the first national survey of Canadians' eating habits since the early 1970s and is the largest and most comprehensive survey of its kind ever conducted in Canada.

Throughout 2004, in face-to-face interviews, over 35,000 people were asked to recall what they had eaten during the previous 24 hours. The survey also asked when they ate—breakfast, lunch, dinner and snacks—and where the food they ate was prepared—at home, in restaurants, in fast-food outlets.

This report is an overview of what Canadians are eating: how many calories they consume; whether they eat the daily minimum recommended number of servings (Health Canada 1997) 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. Regional and economic differences in consumption patterns are examined. To provide some historical context, conclusions from the last national survey of Canadian dietary habits, the 1970-1972 Nutrition Canada Survey, are also presented.

(See Appendix A for data sources and analytical techniques, Appendix B for one-day versus usual intake, Appendix C for definitions, and Appendix D for limitations).

Findings

Calorie intake

Calories are a measure of the amount of energy in food. An individual's energy needs, that is, the number of calories he or she must consume to maintain health, vary according to a number of factors, notably, age, sex, weight, height and activity level (Institute of Medicine 2005).

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 (Institute of Medicine 2005). A sedentary 65-year-old woman who is 1.55 metres (5 feet 1 inch) and weighs 60 kilograms (132 pounds) needs 1,600 calories a day. 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.

Results for 2004 indicate that calorie consumption is highest during adolescence and declines with age (Chart 1). Males aged 12 to 19 average 2,800 calories a day, and females, just over 2,000 (Table 1). By age 65 or older, the corresponding figures are 1,950 and 1,550. At all ages, men tend to consume more calories than do women.

The only other similar national survey was the 1970-1972 Nutrition Canada Survey (National Health and Welfare 1977). Although it, too, was based on individuals' recall of their food consumption the previous day, the collection method differed substantially from that employed in 2004. In 1970-1972, collection was done manually by dietitians/nutritionists, whereas in 2004, trained interviewers used an automated system. As well, the 1970-1972 response rate (47%) was much lower than that obtained in 2004 (77%).

While the 2004 data cannot be strictly compared with those for 1970-1972 (National Health and Welfare 1997), an examination of results from the two surveys suggests that Canadians' calorie consumption has not increased. On the contrary, initial findings suggest 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 (Trends in intake of energy and macronutrients 2004).

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 (Health Canada 2002). 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 (Health Canada 1997), had been released in 1992.

The Guide separates foods into four groups: vegetables and fruit, milk products, meat and alternatives, and grain products such as bread and cereals. An "other foods" category covers foods that are mostly fats, oils or sugar; high-fat and/or high-salt snack foods; beverages; and herbs, spices and condiments.

The calories that individuals consume each day can be classified according to these food groups. Grain products are the top energy provider for both children and adults, supplying 31% of calories at ages 4 to 18, and 28.5% at age 19 or older (Chart 2). The "other foods" category ranks second, providing, on average, 22% of daily calories for both children and adults.

For each of the four food groups, the Guide recommends a range for the number of servings per day. "Other foods," according to the Guide, should be consumed in moderation.

Not enough vegetables and fruit

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

Even the averages indicate that Canadians' vegetable and fruit consumption tends to be low (Table 2). Children and adolescents have an average of 4.5 servings a day; for adults, the average is 5.2 servings.

In fact, at most ages, a majority of Canadians eat fewer than five servings of vegetables and fruit a day (Chart 3). Seven out of 10 children aged 4 to 8 do not meet the five-serving minimum. At ages 9 to 13, the figures are 62% for girls and 68% for boys. Consumption is somewhat higher among adults, but around half of them fall short of the five-serving threshold.

Among people aged 14 to 50, males are significantly less likely than females to have fewer than five servings of vegetables and fruit a day.

However, around 20% of all age-sex groups have between four and five servings of vegetables and fruit a day (data not shown).

One in three children below recommended minimum for milk products

Milk products include not only milk per se, but also foods such as cheese and yoghurt. The Food Guide recommends 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 from this food group amounts to 250 millilitres (1 cup) of milk, 50 grams of cheese, or 175 grams (3/4 cup) of yoghurt.

On average, children and young teens consume the recommended daily number of servings of milk products (Table 2). However, by their late teens, Canadians' average consumption is below the recommended level. Moreover, figures on average consumption hide the fact that a substantial share of every age group is below the recommended levels.

The 2004 CCHS found that more than one-third of children aged 4 to 9 do not have the minimum recommended two daily servings of milk products (Chart 4). By ages 10 to 16, 61% of boys and 83% of girls do not meet their recommended minimum of three daily servings.

As well, the majority of seniors do not get the suggested minimum number of servings of milk products: about 80% of men and women aged 71 or older have less than two servings of milk products a day.

Consumption of meat and alternatives high among men

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 Food Guide suggests two to three daily servings from this food group, the equivalent of 100

to 300 grams of cooked meat. One serving from this food group would be, for instance, 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.

Regardless of their age, Canadians' meat consumption averages at least 100 grams a day (Table 2). Among males aged 14 to 70, average daily consumption is at least 200 grams, and about one in four has more than 300 grams of meat a day (data not shown).

At all ages, women eat less meat than men do, and almost no women consume more than 300 grams a day (data not shown).

Consumption of grain products declines with age

Grain products are the principal source of calories (Chart 2) and include foods such as bread, cereals, pasta and rice. The Food Guide recommends 5 to 12 servings a day. One serving would amount to, for example, one slice of bread, 30 grams of cold cereal, half a bagel, or one cup of cooked pasta or rice.

More than a quarter of children aged 4 to 8 do not eat the recommended daily minimum of five servings of grain products (Chart 5). And for both sexes, the proportion of people not meeting the minimum tends to rise with age.

At all ages, females are much more likely than males to fall short of the recommended level. For instance, at ages 14 to 18, 33% of girls, compared with 6% of boys, have fewer than five daily servings of grain products. By age 71 or older, the corresponding figures are 66% and 43%.

“Other foods”

“Other foods” is a broad category covering foods and beverages 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 Food Guide recommends moderate consumption of “other foods,” this category accounts for 22% of the total calories consumed by Canadians (Chart 2). For adolescents aged 14 to 18, 25% of all calories come from “other foods” (Table 3).

A wide range of foods and beverages make up the “other foods” category, but a relatively small number of specific items account for most consumption. In fact, the ten most commonly consumed “other foods” represent two-thirds of the calories derived from this category. Soft drinks rank first, followed by salad dressing, sugars/syrups/preserves, beer, and oils/fats (Table 4). Given the high sugar and fat content of the top ten “other foods,” the sizeable contribution of this category to daily calorie intake is not surprising.

Macronutrient balance

In 2002, as part of the Dietary Reference Intakes project, the Institute of Medicine (IOM) published a report titled Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein and Amino Acids (Institute of Medicine 2005). The document specifies ranges for the percentage of calories that should come from the three macronutrients:

fat, protein and carbohydrates. These “acceptable macronutrient distribution ranges” (AMDR) have been adopted by health officials in Canada. An AMDR is a range of intakes for a particular energy source that is associated with reduced risk of chronic diseases while providing adequate intakes of essential nutrients. An increase in the proportion of total calories from one macronutrient necessarily reduces the proportion from one or both of the others.

On average, the Canadian diet falls within the AMDR. This is generally true for both sexes, all age groups, regions, and household income groups (Table 5). Averages, however, conceal the fact that many people fall outside the AMDR.

Many exceed upper limit for fat

Fat is a source of energy and an important part of a healthy diet. The AMDR for total fat intake is 25% to 35% of calories for children and teens, and 20% to 35% of calories for adults aged 19 or older. When 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 at that time averaged about 40% of calories (National Health and Welfare 1977) (Table 6). By 2004, an appreciable change was evident, with fat accounting for an average of just over 31% of Canadians' daily calories (Table 5).

While this average is within the acceptable range, substantial shares of the population exceed the suggested percentage of total calories from fat. Among children aged 4 to 8, the figure is about 7% (Chart 6). Excess fat consumption peaks among people aged 31 to 50. More than a quarter of men and women of these ages derive more than 35% of their total calories from fat. At older ages, although the percentage declines somewhat, around one person in five gets more than the recommended share of their calories from fat (Chart 6).

The meat and alternatives group is the primary source of fat for both children and adults (Chart 7). However, children get nearly equal percentages of fat from meats and alternatives, milk products, and “other foods” (24% or 25%). Adults get almost a third of their fat from the meat group, and about a quarter from “other foods.”

The fat that Canadians consume comes from a relatively small number of specific foods. The main contributor, accounting for 15.9% of fat intake, is what can be classified as the “sandwich” category, consisting of items such as pizza, sandwiches, submarines, hamburgers and hot dogs (Table 7). This is followed by sweet baked goods, such as cake, cookies, and doughnuts (8.5%).

Canadians within acceptable ranges for protein

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. According to the results of the 2004 CCHS, Canadians' average daily calorie intake from protein is within these ranges. The average for children and adolescents aged 4 to 18 is 14.7% of total calories; for adults, 16.8% (Table 5). Almost no one falls below or above these ranges.

Among children and teenagers, boys derive a larger proportion of their calories from protein than do girls. At older ages, this difference disappears.

Carbohydrates primary source of energy

Carbohydrates are the body's most important source of energy. They may be obtained as sugars, starch or fibre. According to the IOM, 45% to 65% of daily calories should come from carbohydrates.

Canadian children and adolescents, on average, derive 55.4% of their calories from carbohydrates; adults, 50.1% (Table 5). Both figures are within the suggested range.

At all ages, women get a larger percentage of their calories from carbohydrates than do men.

More calories from snacks than breakfast

The nutritional benefits of eating breakfast include higher intake of fibre, vitamins and minerals (Tietzen, Fleming 1995). As well, breakfast consumption has been associated with a lower likelihood of being overweight (Song, Chun, Obayashi et al. 2005). However, close to 10% of people reported that they had not had breakfast the day before they were interviewed for the survey (data not shown). Men aged 19 to 30 were least likely to have eaten breakfast: 19% of them had not done so (data not shown).

On average, about 18% of daily calories are consumed at breakfast (Table 8). Snacks, that is, food or drinks consumed between meals, actually account for more calories: 27% for children and adolescents and 23% for adults. Lunch makes up another 24% of daily calories, and dinner, 31% for children and adolescents and 36% for adults.

The proportion of calories derived from snacks peaks among 14- to 18-year-olds at 30% for males and 28% for females, and then falls with advancing age to around 16% among seniors aged 71 or older (Chart 8).

When Canadians eat between meals, more than 41% of these calories come from the "other foods" category (Chart 9). Even so, snacks are not necessarily foods and beverages that are high in sugar, fat and calories. Vegetables and fruit make up just 13% of calories from snacks, but such foods tend to be low in calories. Consequently, this relatively small proportion of calories does not represent the number of times that Canadians choose snacks from this food group.

A quarter eat food prepared in fast-food restaurant

Overall, a quarter of Canadians reported that on the day before their interview they consumed something that had been prepared in a fast-food outlet (Table 9). Among 14- to 18-year-olds, the figure is one-third; at 39%, the percentage is highest among men aged 19 to 30 (Chart 10).

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 as healthy as a salad without dressing. However, 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 the population reported that all the food they ate on the day before the interview had been prepared at home. For

children, the figure was 60% (Table 9). Elderly women were the group most likely to eat only food prepared at home: 75% had done so. By contrast, among young adult men, the figure dropped below 40%.

Regional consumption patterns

Canadian diets are generally similar across the country, although each region has consumption patterns that distinguish it from the others.

In the Atlantic provinces, and also in the Prairies, relatively high proportions of residents eat fewer than five daily servings of vegetables and fruit. The figures for the Atlantic region are 79% of children and adolescents and 67% of adults, and for the Prairies, 75% and 57%, respectively, compared with 64% and 49% for Canada overall (Chart 11). On the other hand, in Quebec, relatively low percentages of residents have fewer than five daily servings of vegetables and fruit: 51% of children and adolescents and 37% of adults.

The proportion of children aged 4 to 9 in the Atlantic region who have less than the minimum recommended three servings of milk products a day is low: 26% compared with 37% for this age group nationally (Chart 12).

Residents of the Atlantic region get a significantly large percentage of their calories between meals. Children and teens in that region consume 32% of their calories as snacks, compared with 28% of calories for this age group in Canada as a whole (Table 8). Snacking accounts for 26% of calories consumed by adults in the Atlantic region, compared with 23% of calories for Canadian adults overall. In the Prairies, too, relatively high percentages of children's and adults' calories come from snacks. This is also the case for children in British Columbia. By contrast, Quebec residents get a comparatively small proportion of their calories from snacks: 23% for children and teens, and 20% for adults.

A significantly low percentage of Quebec residents eat food prepared in fast-food outlets. On the day before their interview, 19% of children and adolescents and 18% of adults in that province had eaten something that had been prepared in a fast-food establishment (Table 9). The comparable national figure is 25% for both age groups.

A relatively high percentage of Quebec children and teens get more than 35% of their calories from fat: 22% versus 11% of children and teens in Canada overall (Chart 13).

With almost 40% of the country's population, it is not surprising that Ontario has few divergences from the national food consumption profile. However, significantly high proportions of Ontario residents—27% of children and adolescents and 29% of adults—reported having consumed something prepared in a fast-food outlet on the day before their interview (Table 9).

Adult diet linked to household income

In several respects, adults' food consumption is associated with their household income.

For example, the percentage of calories from fat tends to rise with income. While 25% of adults in the highest income households get more than 35% of their total calorie intake from fat, this was the case among 15% of those in the lowest income households (Chart 14).

Adults in the highest income households were significantly more likely than those in any other

income group to report having eaten something from a fast-food outlet the day before their interview (Table 9).

Adults in the highest income households are less likely than those in the lowest to have fewer than five daily servings of vegetables and fruit: 41% versus 58% (Chart 15).

Children's diets less closely tied to income

Compared with adults, children's and teens' diets are less closely linked with household income. Except for those in upper-middle income households (among whom the percentage is significantly low), the percentage of calories that children and adolescents derive from fat does not differ significantly by household income (Chart 14). As well, there are no significant differences by household income in the proportion of young people who have fewer than five servings of vegetables and fruit each day (Chart 15).

The consumption of milk products does not vary with household income among children aged 4 to 9. However, at ages 10 to 16, 62% in the highest income households consumed fewer than the recommended minimum of three daily servings, compared with about three-quarters of youth in the other household income categories (Chart 16).

As is true for adults, the likelihood that children and adolescents will have something from a fast-food outlet tends to rise with income. On the day before their interview, 28% of children from the highest income households ate something that had been prepared in such an establishment, compared with 19% of children from the lowest income households (Table 9).

Concluding remarks

When averages are considered, Canadians are generally within acceptable ranges for the number of servings from the four major food groups and the percentage of calories from fat, protein and carbohydrates. This is generally true for both sexes, all age groups, by region, and by household income.

But averages mask the fact that many people do not have a balanced diet. The majority of Canadians do not eat the recommended daily minimum of five servings of vegetables and fruit. More than a quarter of men and women in their thirties and forties get more than 35% of their calories from fat. More than one-third of children aged 4 to 9 do not have the recommended two servings of milk products a day, and among seniors aged 71 or older, the proportion surpasses 70%. Canadians of all ages get more than a fifth of their calories from "other foods," and on a given day, a quarter of Canadians, adults and children alike, eat something that was prepared in a fast-food outlet.

This report is the first to examine the nutrition data collected in the 2004 Canadian Community Health Survey (CCHS). As an overview of the results, the report shows only a small part of the wealth of information that was collected. Obviously, each of the topics presented here requires much more in-depth analysis. As well, other topics have yet to be addressed: for instance, beverage consumption; salt intake; specific types of fat consumed; vitamin and mineral intake; the relationship between diet, physical activity and weight; food insecurity; etc. The CCHS offers researchers an unprecedented opportunity to examine these and other aspects of the dietary habits of Canadians.

Methods, concepts and data quality

Appendix A

Data sources and analytical techniques

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 food and nutrient intakes of Canadians (see <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 (Béland 2002).

A total of 35,107 people completed an initial 24-hour dietary recall. A subsample of 10,786 completed a second recall three to ten days later. A five-step method was used to maximize recollection of food consumed the previous day:

- a quick enumeration of the foods;
- questions about specific food categories and frequently forgotten foods;
- questions about the time and the kind of meal;
- a precise description of the foods and the quantities consumed;
- a final review.

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

Data collected on the first interview day were used to estimate, by selected characteristics, 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. Energy intake includes calories from alcoholic beverages (7 calories per gram), but the percentage of energy coming from alcohol is not presented separately.

Data from both interview days were used to estimate usual intake from the macronutrients using the Software for Intake Distribution Estimation (SIDE) program (Novenario 1996; Dodd 1996) (see Appendix B 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 (Health Canada 1997)—vegetables and fruit, milk products, meat and alternatives, and grain products—and an “other foods” category. 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 with the 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.

Quantities expressed in grams were transformed into servings for vegetables and fruit, milk products, and grain products, using the Canadian Nutrient File (Health Canada 2005) 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 derived from a particular grouping of foods was defined as total calories from that grouping in a population, divided by total calories consumed by that population. The same methodology was used to calculate the percentage of fat coming from particular groupings of foods.

In Table 4, the foods accounting for the most calories from “other foods” were derived using food item and recipe categories. 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.

In Table 6, which shows the foods accounting for the most fat consumed in a day, basic food items and recipes were considered. 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.

In Tables 4 and 6, the percentage of energy or fat is defined as total calories or total fat from a category, divided by total calories or total fat for all categories. The result is a picture of the population, not of an individual.

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. Therefore, it does not show the frequency with which individuals have a particular meal or consume snacks over time. The percentage of calories from a meal was also defined as the number of calories that the overall population consumed from that meal, divided by the total number of calories the population consumed in a day.

The same methodology was used to determine locations where food was prepared (home, fast-food, other). Again, these figures represent a given day, not the behaviour of any particular individual.

It is possible that the results for adults based on household income would differ if age were taken into account, because household income varies considerably by age. However, even when the data are age-adjusted, the relationships between nutritional intake and household income persist.

The bootstrap method, which takes account of the complex survey design (Rao, Wu, Yue 1992; Rust, Rao 1996; Yeo, Mantel, Liu 1999), was used to estimate standard errors, coefficients of variation and confidence intervals. The significance level was set at $p < 0.05$.

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

Appendix B

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 are collected during an interview in which respondents are 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.

Usual intake cannot be directly estimated based on one-day intake. Usual intake varies from one individual to another. One-day intake, too, varies from one individual to another, but for a given individual, it also varies from day to day. Therefore, to estimate usual intake, it is necessary to separate the variation of an individual's intake and that between individuals. To do this, Software for Intake Distribution Estimation (SIDE), developed by Iowa State University (Novenario 1996), was used. With a series of mathematical transformations, the software is able to estimate each component of the variance and to estimate the distribution of usual intake of a nutrient (Dodd 1996; Nusser, Carriquiry, Dodd et al. 1996). For these calculations, the day of the week was used to partially account for the effect of classification. Since the average from the first interview day is used as a benchmark, averages using one-day intake and usual intake are the same. However, estimates of the proportion of the population below or above a given threshold require a usual intake distribution.

The two curves in Chart 17 show the distributions of the percentage of calories from fat for one-day intake and usual intake for the population aged 19 or older. Average intake is essentially the same in both cases, but the distributions differ radically. Usual intake varies much less than one-day intake because, to estimate usual intake, day-to-day variation for individuals was removed.

Appendix C

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. When responding to the question, some respondents may have provided information about the location where they consumed the food rather than the place 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 *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.

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

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. Except in table 2, data on milk products were presented for the 4 to 9, 10 to 16, and 17 or older age groups, which are used by the Canadian Food Guide “to Healthy Eating for People Four Years and Over” for Eating Healthy to establish guidelines for daily servings. To be comparable with the other food groups, the IOM age breakdowns are used for milk products in Table 2.

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 Canadian Community Health Survey (CCHS) interview:

Household income group	Number of 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.

Appendix D

Limitations

Since the data are self-reported, 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 (Moshfegh, Borrud, Perloff 1999; Moshfegh, Raper, Ingwersen et al. 2001) which was developed in the United States. Under controlled conditions, this method has effectively assessed average energy intake (Conway, Ingwersen, Vinyard 2003; Conway, Ingwersen, Moshfegh 2004) but in different settings, some studies show underreporting (Johnson, Soultanakis, Matthews 1998; Jonnalagadda, Wikman, Ahren et al. 2001; Johanssen, Wikman, Arhen et al. 2001) and others, overreporting (Gersovitz, Madden, Smicklas-Wright 1978; Myers, Klesges, Eck et al. 1988; Kahn, Appel et al. 1995).

The fact that eating 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.

Analyses based on calories (for example, percentage of calories) may not allow the role of vegetables and fruit or of "other foods" to be assessed appropriately. Vegetables and fruit tend to be low in calories, so while they contribute relatively few calories, they may be the source of a large number of servings. On the other hand, because "other foods" are often high in calories, the high percentage of calories coming from this category might reflect relatively few servings.

Despite efforts to ensure an equitable representation of days of the week during data collection, some days could be under-represented, and a bias is always possible.

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 behaviour of specific individuals.

Children younger than 6 did not reply directly to the 2004 CCHS; a parent responded on their behalf. 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. Moreover, some concepts and collection methods differ between the two surveys. In 1970-1972, collection was done manually by dieticians/nutritionists, whereas in 2004, trained interviewers used an automated system. As well, 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).

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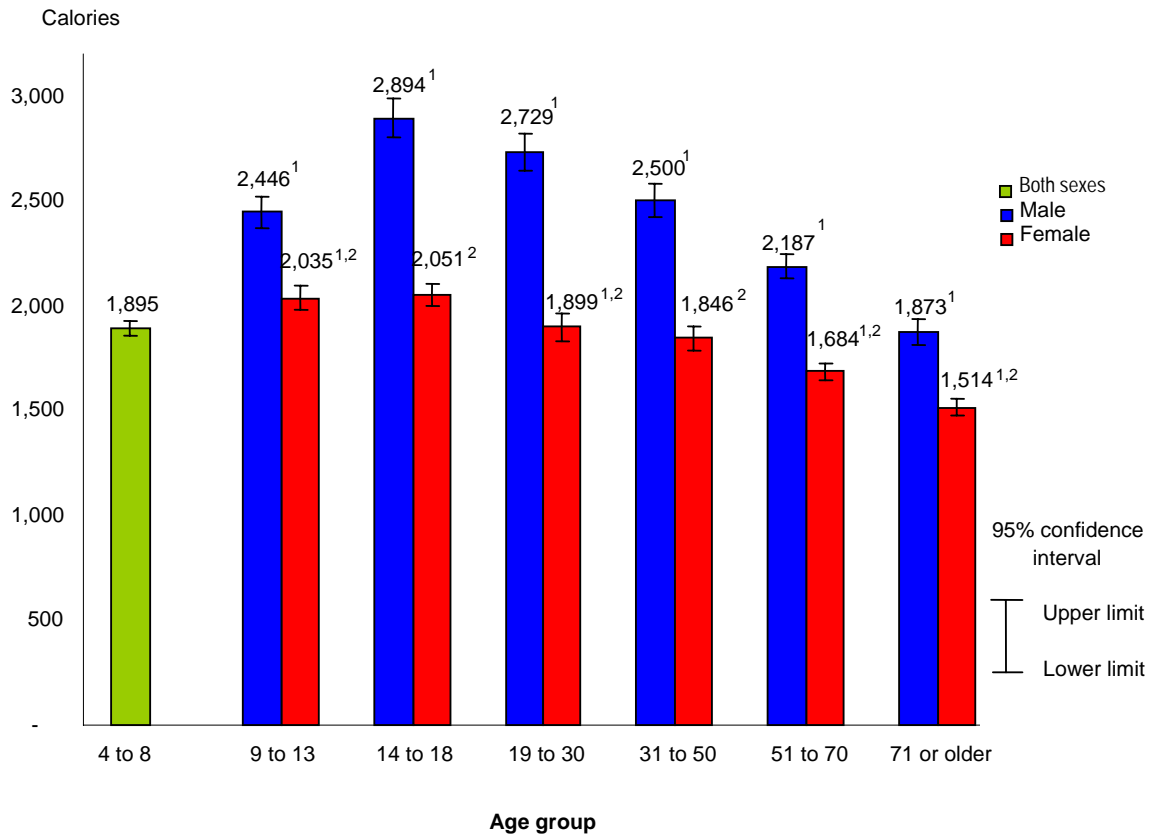
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Charts

Chart 1

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



1. Significantly different from estimate for previous age group of same sex ($p < 0.05$)

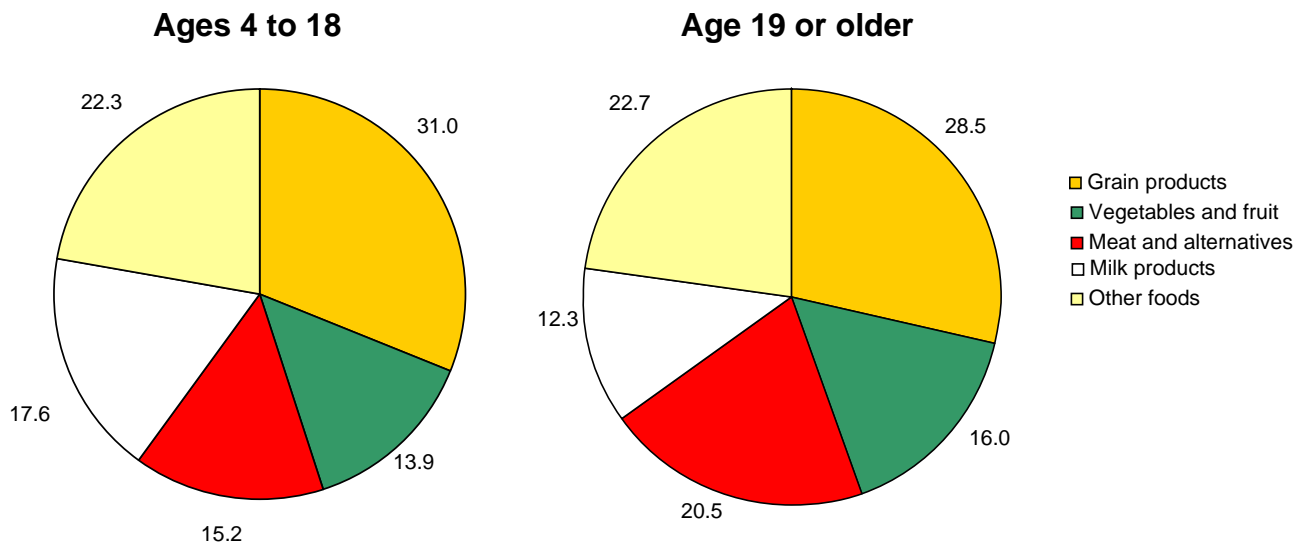
2. Significantly different from estimate for males in same age group ($p < 0.05$)

Notes: Excludes women who were pregnant or breastfeeding.

Data source: 2004 Canadian Community Health Survey: Nutrition

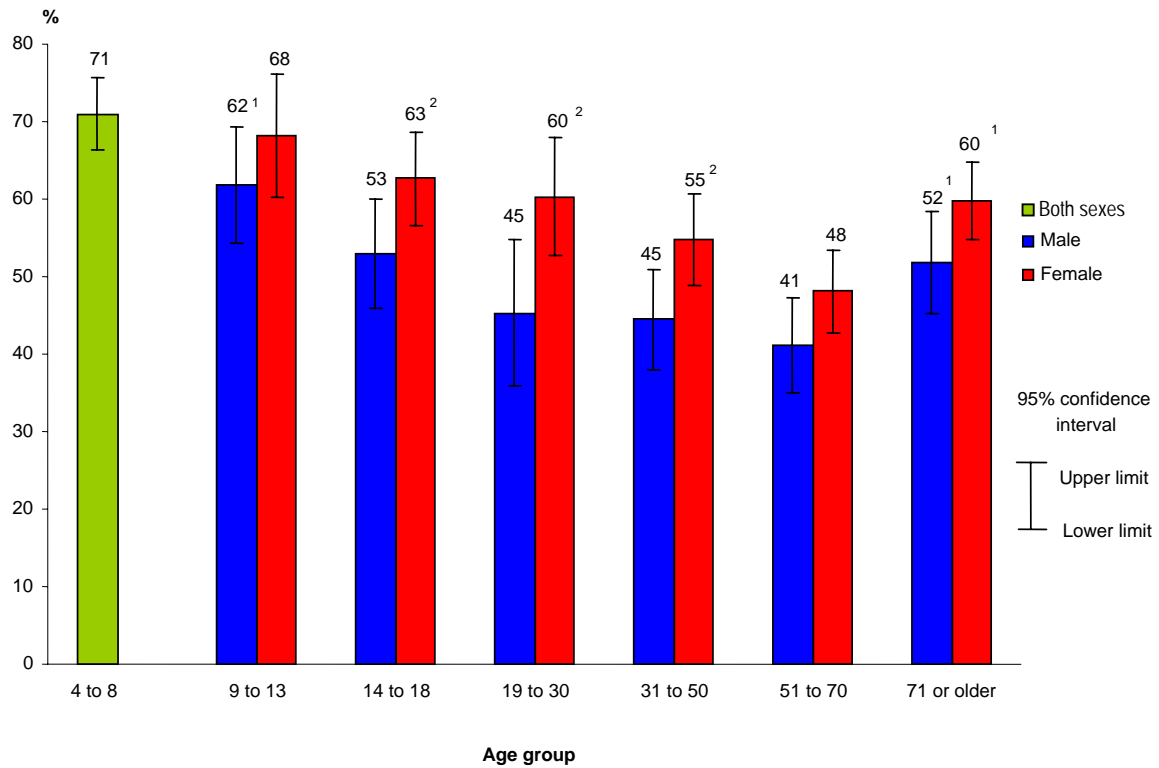
Chart 2

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
 Data Source: 2004 Canadian Community Health Survey: Nutrition

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



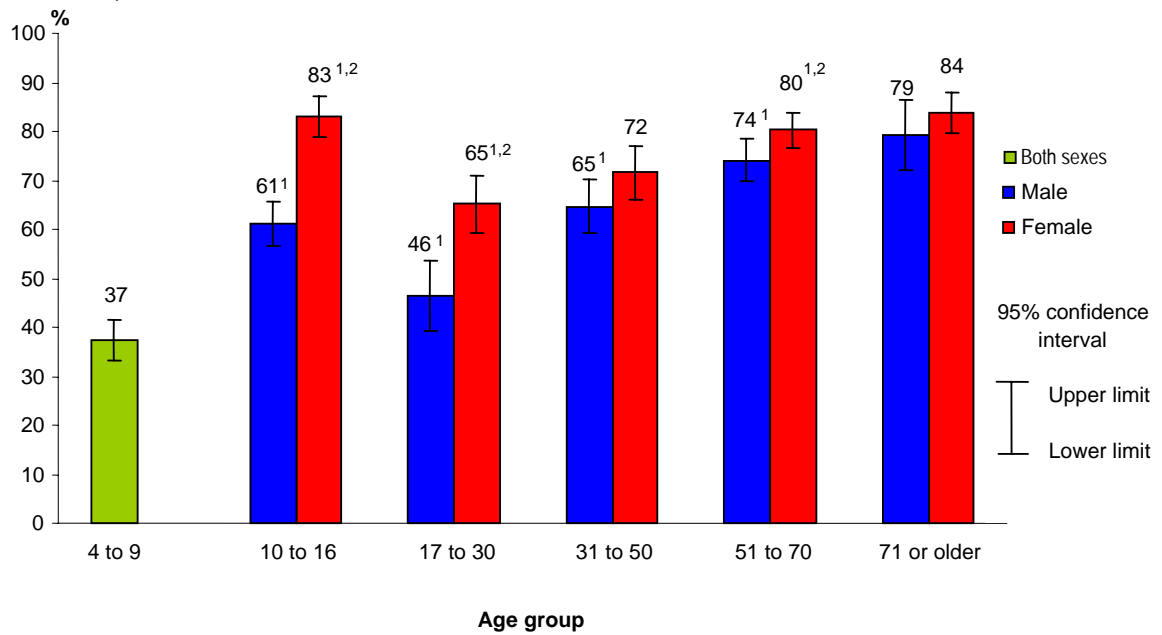
1. Significantly different from estimate for previous age group of same sex ($p < 0.05$)

2. Significantly different from estimate for males in same age group ($p < 0.05$)

Notes: 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. Excludes women who were pregnant or breastfeeding.

Data source: 2004 Canadian Community Health Survey: Nutrition

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

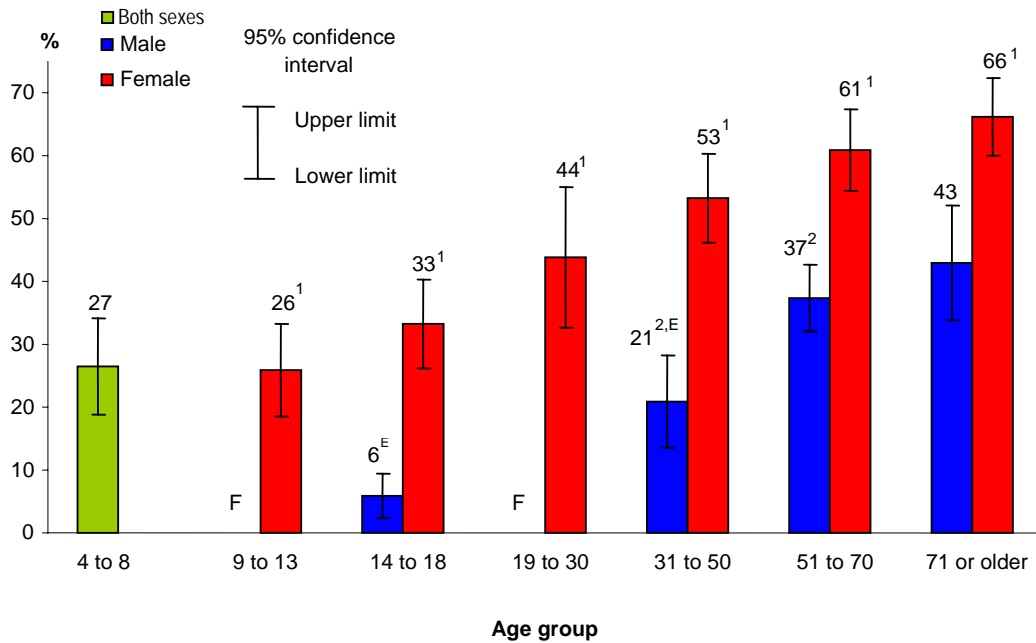


- 1. Significantly different from estimate for previous age group of same sex ($p < 0.05$)
- 2. Significantly different from estimate for males in same age group ($p < 0.05$)

Notes: Based on usual consumption. Age groups are based on Canada's Food Guide to Healthy Eating for People Four Years Old and Over, which recommends a minimum of two servings 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. Excludes women who were pregnant or breastfeeding.

Data source: 2004 Canadian Community Health Survey: Nutrition

Chart 5
Percentage below recommended minimum number of servings of grain products,
by age and sex, household population aged 4 or older, Canada excluding
territories, 2004



1. Significantly different from estimate for males in same age group ($p < 0.05$)

2. Significantly different from estimate for previous age group of same sex ($p < 0.05$)

Notes: 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. Excludes women who were pregnant or breastfeeding.

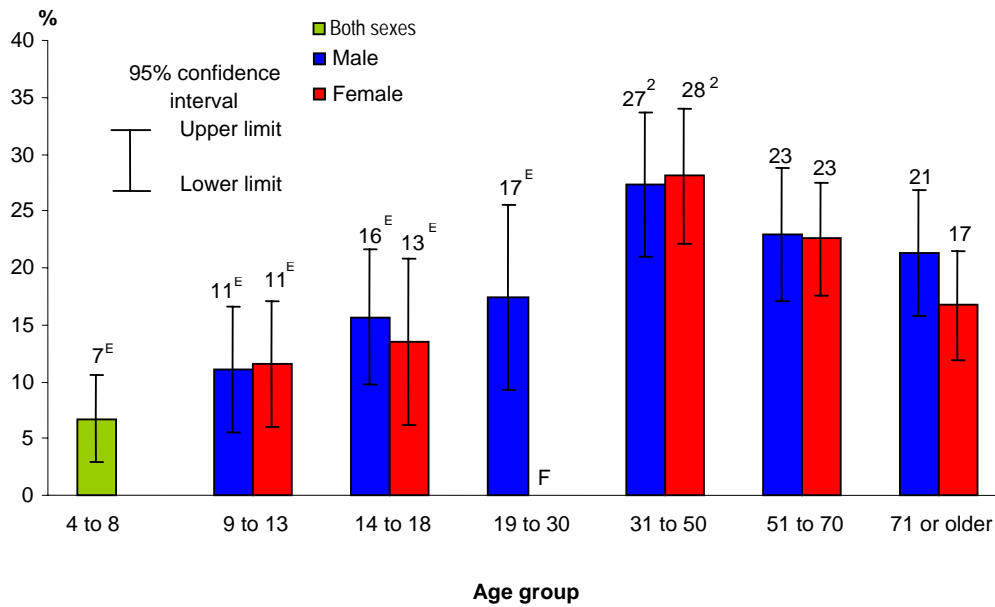
E use with caution

F too unreliable to be published

Data source: 2004 Canadian Community Health Survey: Nutrition

Chart 6

Percentage above upper end of recommended range ¹ of total calories from fat, by age group and sex, household population aged 4 or older, Canada excluding territories, 2004



1. Based on acceptable macronutrient distribution range established by Institute of Medicine: 25% to 35% of calories at ages 4 to 18 and 20% to 35% of calories at age 19 or older.

2. Significantly different from estimate for previous age group of same sex ($p < 0.05$)

Notes: Estimates of energy intake include calories from alcoholic beverages. Based on usual consumption. Excludes women who were pregnant or breastfeeding.

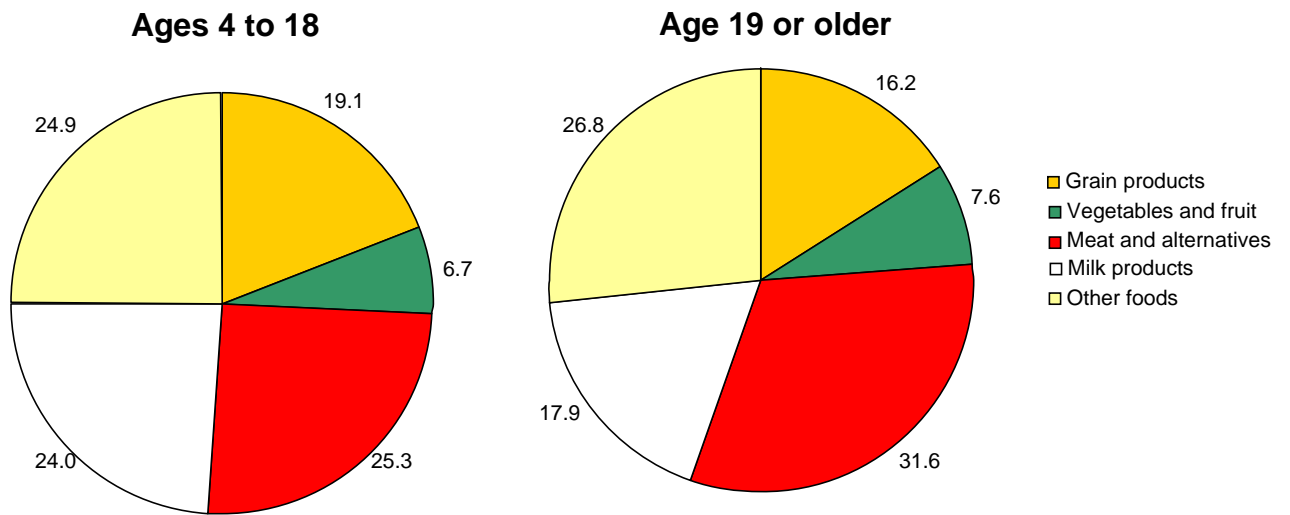
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F too unreliable to be published

Data source: 2004 Canadian Community Health Survey: Nutrition

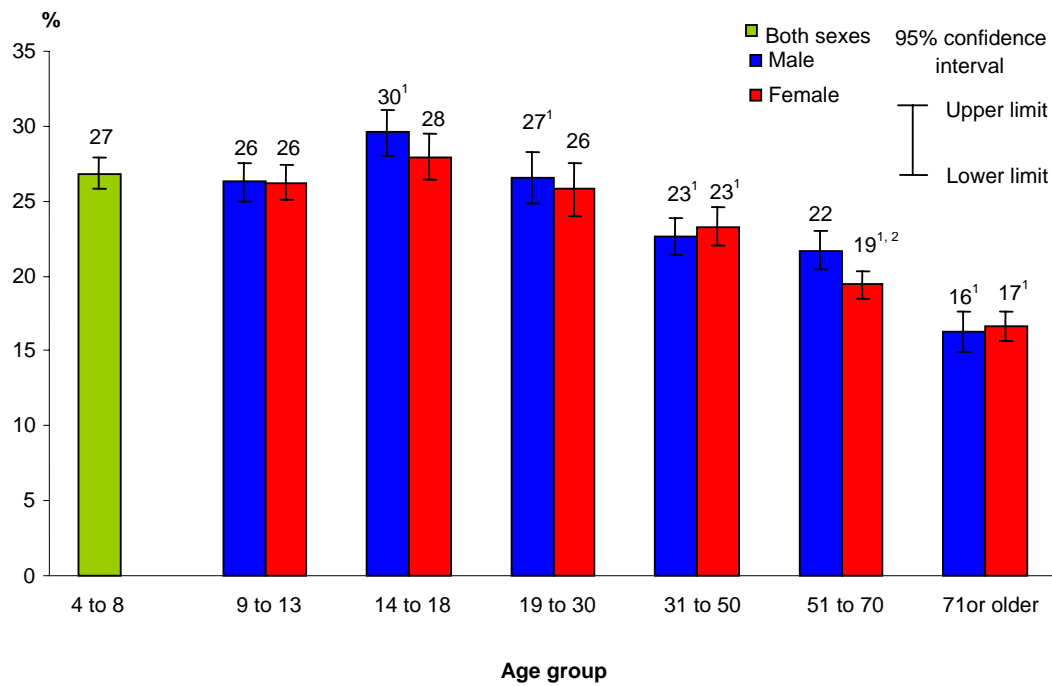
Chart 7

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.
 Data Source: 2004 Canadian Community Health Survey: Nutrition

Chart 8
Percentage of calories derived from between-meal consumption, by age and sex,
household population aged 4 or older, Canada, excluding territories, 2004



1. Significantly different from estimate for previous age group of same sex ($p < 0.05$)

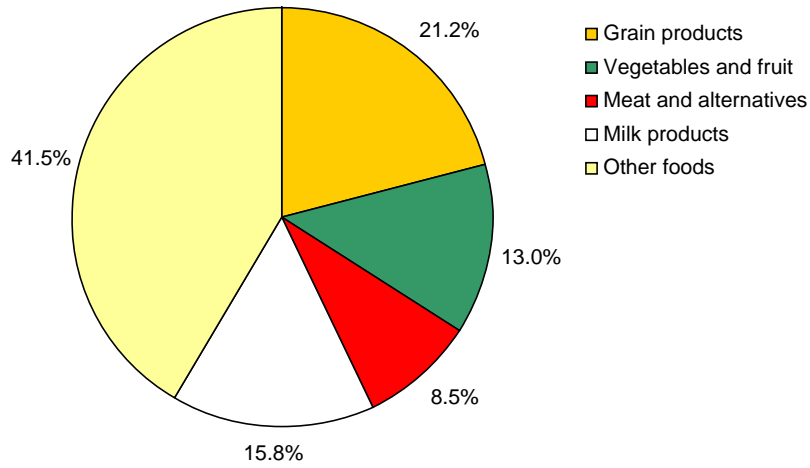
2. Significantly different from estimate for males in same age group ($p < 0.05$)

Notes: Excludes women who were pregnant or breastfeeding.

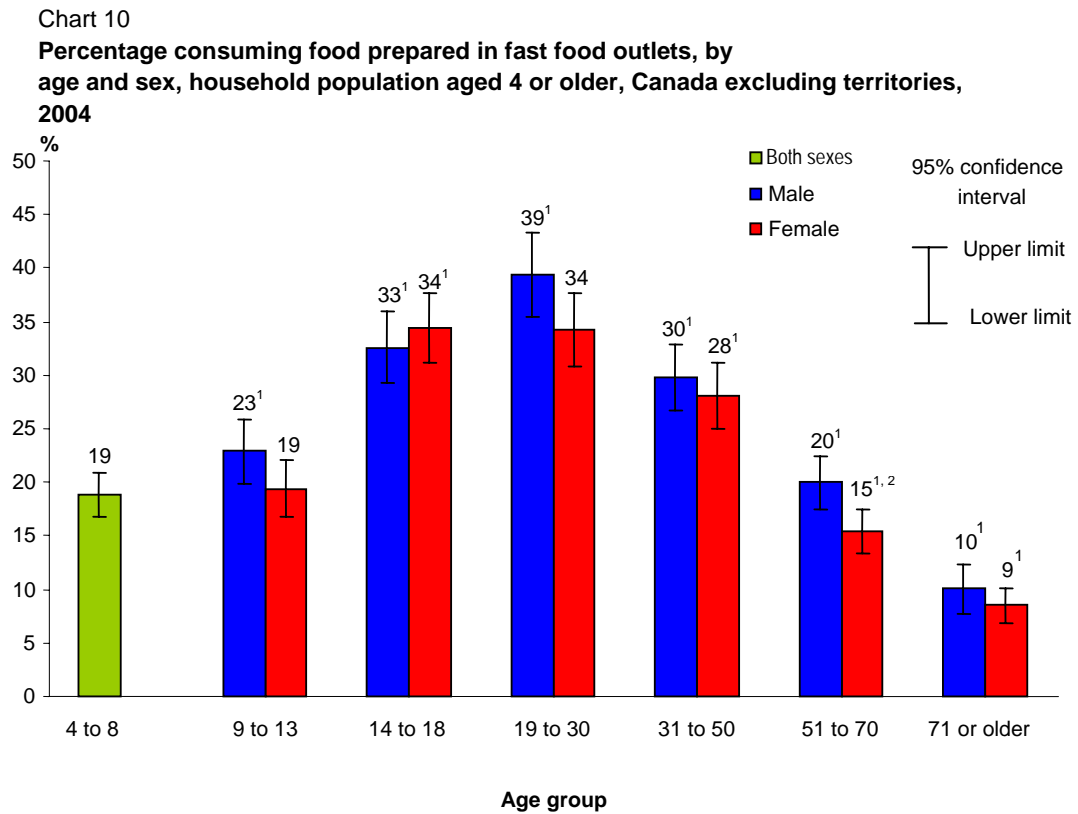
Data source: 2004 Canadian Community Health Survey: Nutrition

Chart 9

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



Note: Excludes women who were pregnant or breastfeeding.
Data source: 2004 Canadian Community Health Survey: Nutrition



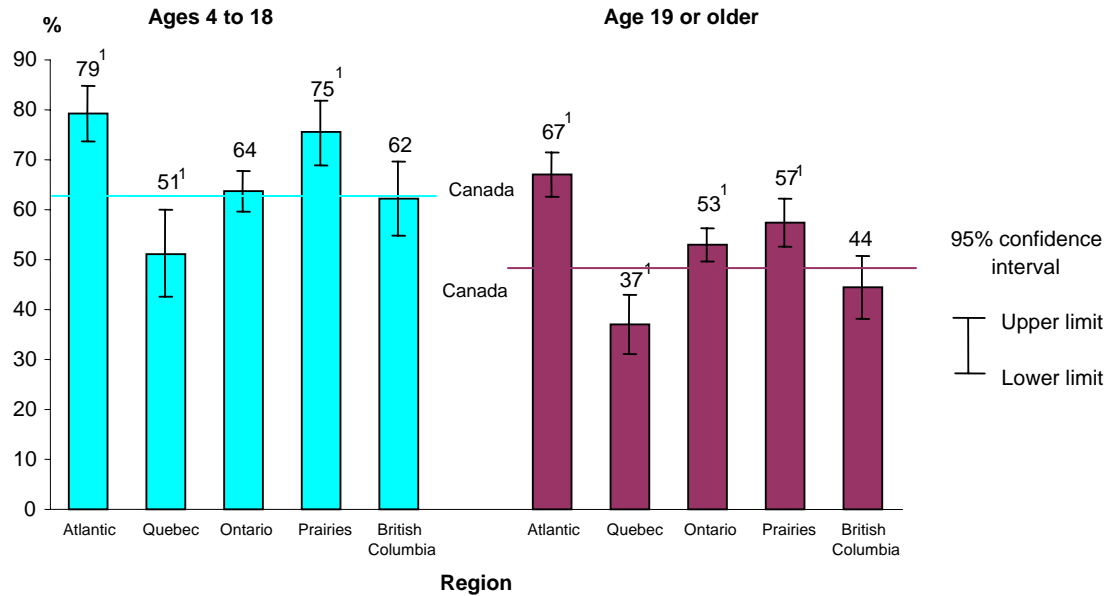
1. Significantly different from estimate for previous age group of same sex ($p < 0.05$)

2. Significantly different from estimate for males in same age group ($p < 0.05$)

Note: Excludes women who were pregnant or breastfeeding.

Data source: 2004 Canadian Community Health Survey: Nutrition

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

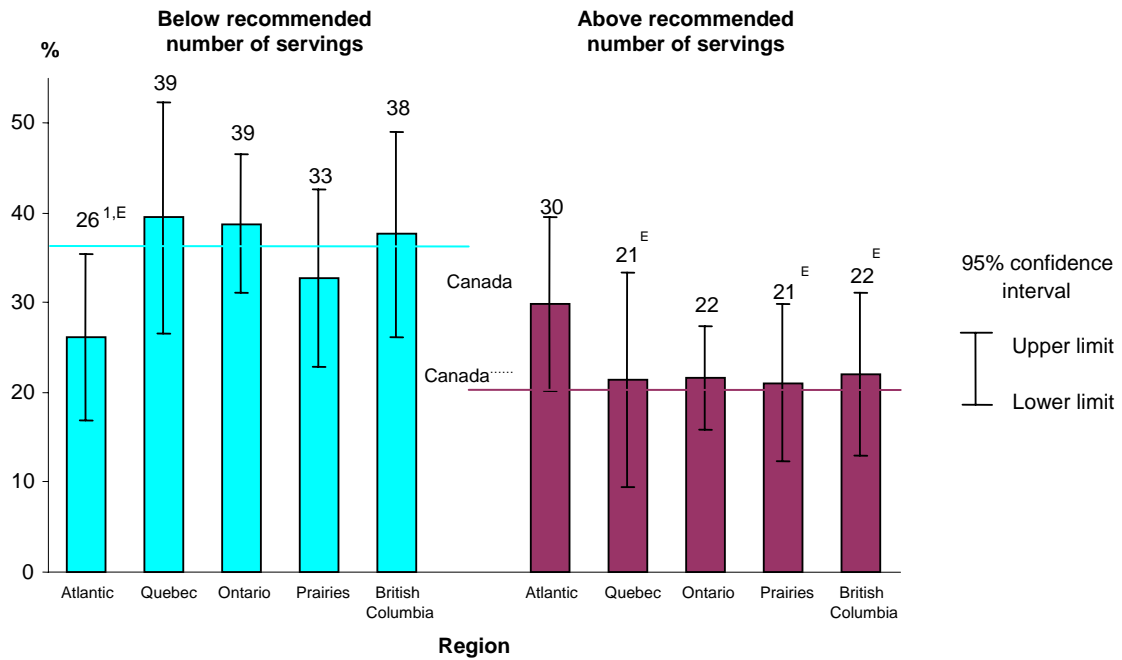


1. Significantly different from estimate for Canada ($p < 0.05$)

Notes: 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. Excludes women who were pregnant or breastfeeding

Data source: 2004 Canadian Community Health Survey: Nutrition

Chart 12
Percentage below and above recommended number of servings of milk products, by region, household population aged 4 to 9, Canada excluding territories, 2004



1. Significantly different from estimate for Canada ($p < 0.05$)

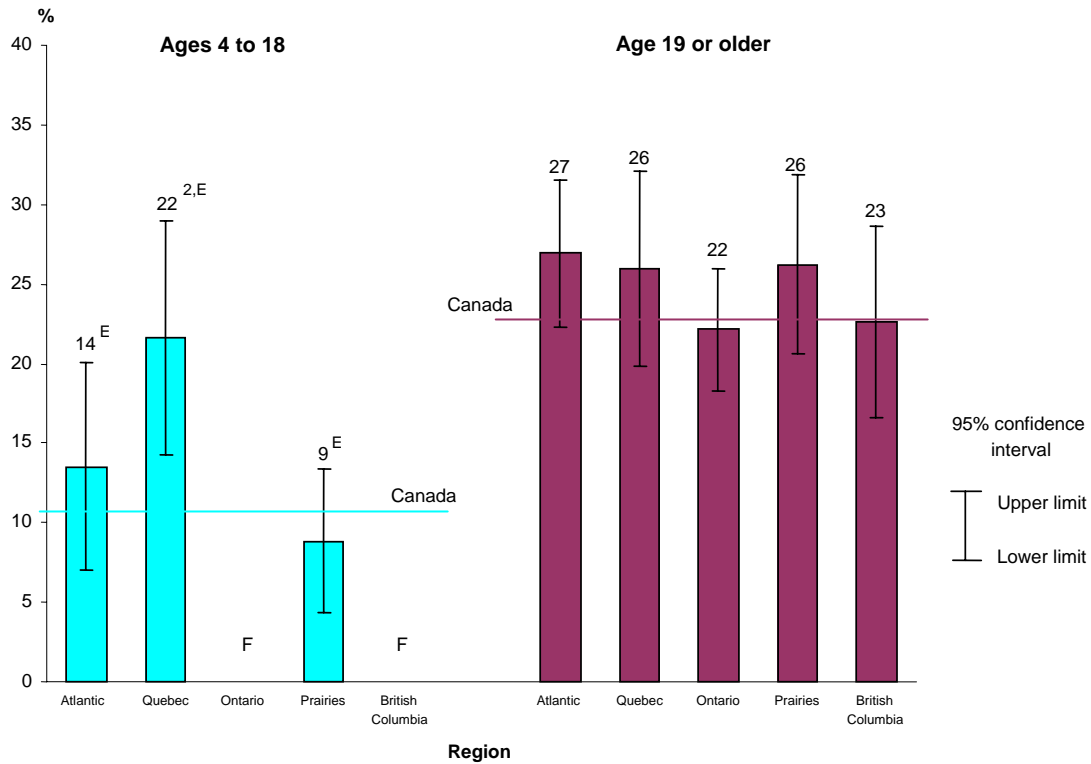
Notes: Based on usual consumption. Canada's Food Guide to Healthy Eating for People Four Years Old and Over recommends two to three daily servings for children aged 4 to 9.

E use with caution

Data source: 2004 Canadian Community Health Survey: Nutrition

Chart 13

Percentage above upper end of recommended range¹ of total calories derived from fat, by age group and region, household population aged 4 or older, Canada excluding territories, 2004



1. Based on acceptable macronutrient distribution range established by Institute of Medicine: 25% to 35% of calories at ages 4 to 18 and 20% to 35% of calories at age 19 or older.

2. Significantly different from estimate for Canada ($p < 0.05$)

Notes: Based on usual consumption. Estimates of energy include calories from alcoholic beverages. Excludes women who were pregnant or breastfeeding

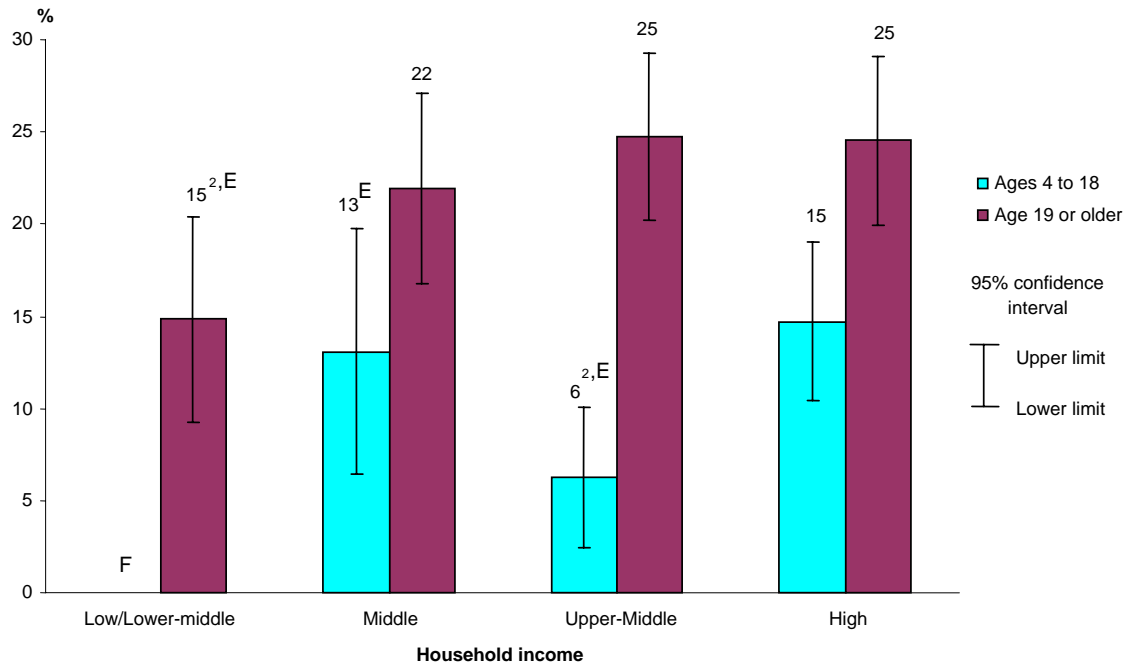
E use with caution

F too unreliable to be published

Data source: 2004 Canadian Community Health Survey: Nutrition

Chart 14

Percentage above upper end of recommended range¹ of total calories derived from fat, by age group and household income, household population aged 4 or older, Canada excluding territories, 2004



1. Based on acceptable macronutrient distribution range established by Institute of Medicine: 25% to 35% of calories at ages 4 to 18 and 20% to 35% of calories at age 19 or older.
2. Significantly different from estimate for high household income ($p < 0.05$)

Notes: Based on usual consumption. Estimates of energy include calories from alcoholic beverages. Excludes women who were pregnant or breastfeeding

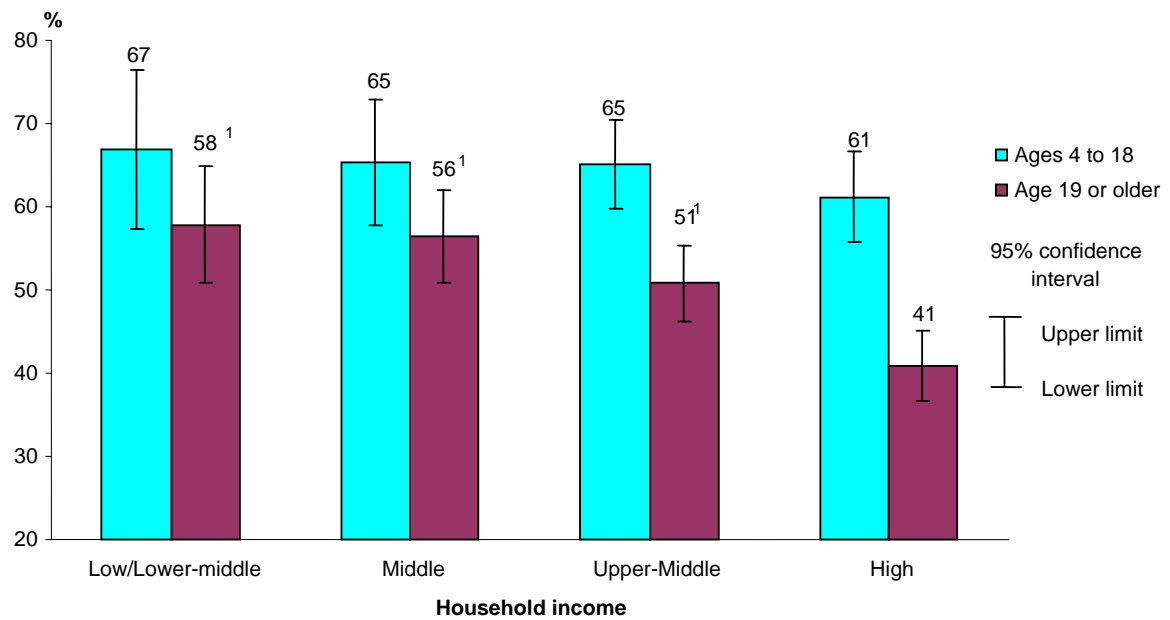
E use with caution

F too unreliable to be published

Data source: 2004 Canadian Community Health Survey: Nutrition

Chart 15

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



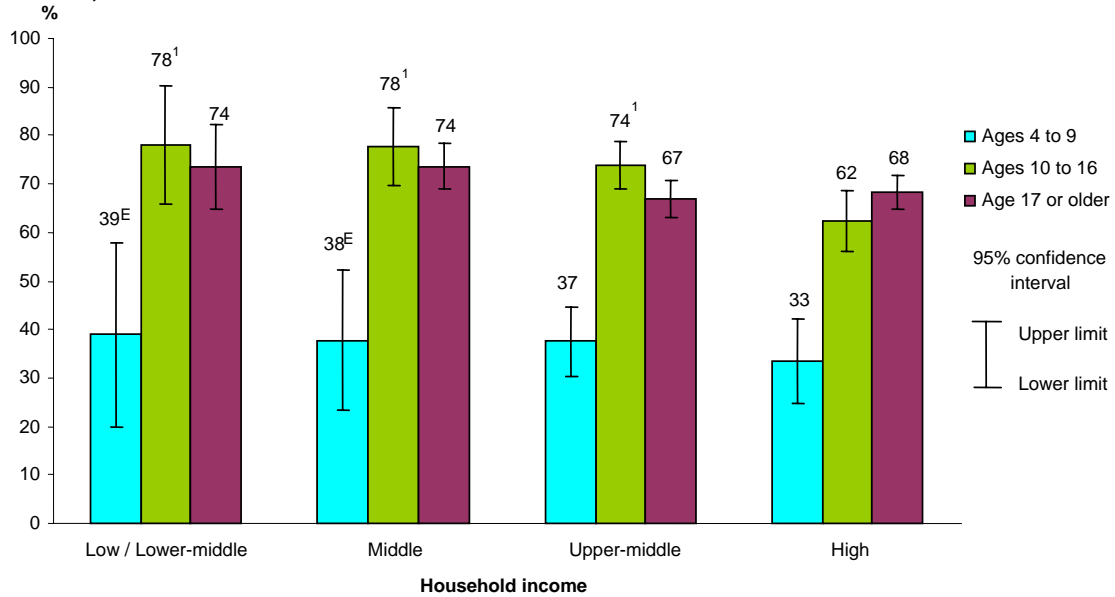
1. Significantly different from estimate for same age group with high household income ($p < 0.05$)

Notes: 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. Excludes women who were pregnant or breastfeeding

Data source: 2004 Canadian Community Health Survey: Nutrition

Chart 16

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



1. Significantly different from estimate for same age group with high household income ($p < 0.05$).

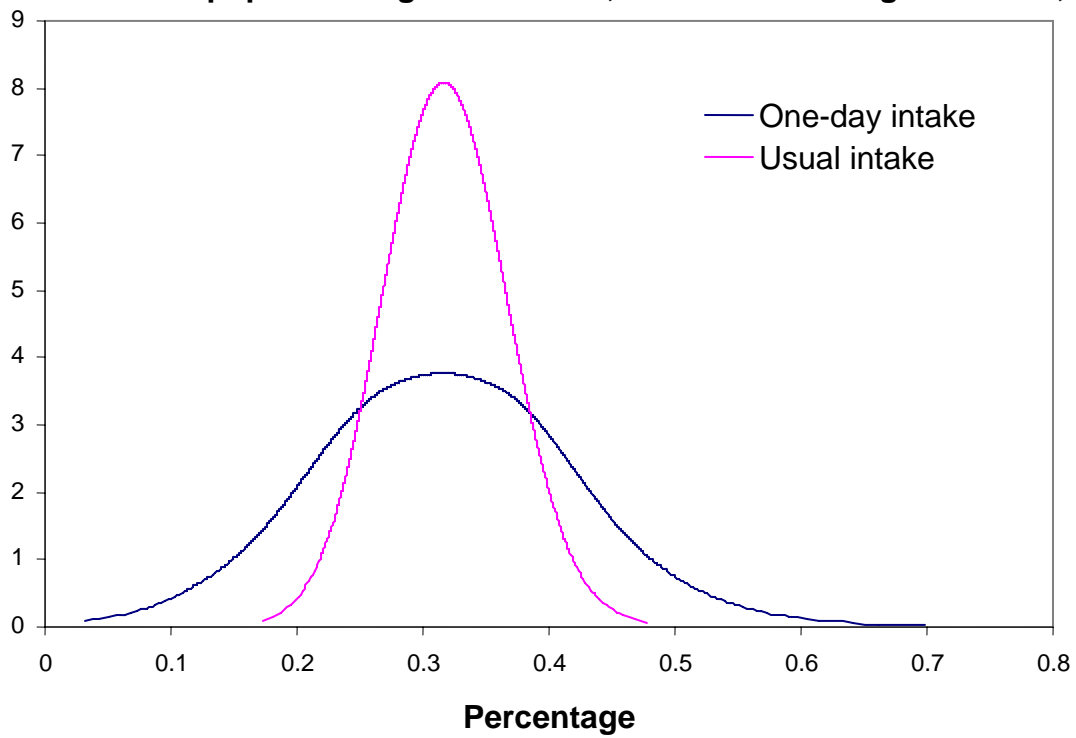
Notes: Based on usual consumption. Age groups are based on Canada's Food Guide to Healthy Eating for People Four Years Old and Over, which recommends a minimum of two servings a day for children aged 4 to 9 and adults aged 17 or older, and three servings a day for 10- to 16-year-olds. Excludes women who were pregnant or breastfeeding.

^E use with caution

Data source: 2004 Canadian Community Health Survey: Nutrition

Chart 17

One-day intake versus usual intake: Percentage of calories derived from fat, household population age 19 or older, Canada excluding territories, 2004



Data source: 2004 Canadian Community Health Survey: Nutrition

Tables

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

Age group	1972	2004	
	Average ¹ kcal	Average kcal	95% confidence interval
5 to 11	2,300	2,041	2,005, 2,076
12 to 19			
Male	3,251	2,806	2,736, 2,877
Female	2,243	2,047	2,002, 2,092
20 to 39			
Male	3,374	2,660	2,585, 2,735
Female	2,001	1,899	1,835, 1,963
40 to 64			
Male	2,671	2,345	2,280, 2,410
Female	1,726	1,757	1,720, 1,794
65 or older			
Male	2,056	1,948	1,889, 2,007
Female	1,530	1,544	1,507, 1,581
<i>1. Statistical comparisons with 2004 are not possible.</i>			
Notes: Estimates of energy intake include calories from alcoholic beverages. Excludes women who were pregnant or breastfeeding.			
Data sources: 2004 Canadian Community Health Survey, Nutrition; Food Consumption Patterns report, 1977			

Table 2
Average daily servings from the four food groups, by selected characteristics, 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, 4.56	2.29	2.24, 2.35	153	149, 157	6.41	6.30, 6.53
19 or older	5.16	5.05, 5.26	1.52	1.48, 1.56	203	198, 207	5.64	5.53, 5.75
Age group and sex								
4 to 8	4.18	4.00, 4.36	2.31	2.22, 2.41	118	112, 124	5.76	5.60, 5.92
9 to 13								
Male	4.53 ¹	4.25, 4.82	2.55 ¹	2.41, 2.69	176 ¹	164, 188	7.09 ¹	6.79, 7.39
Female	4.40	4.12, 4.69	2.08 ^{1,2}	1.96, 2.21	130 ^{1,2}	122, 137	5.92 ²	5.68, 6.15
14 to 18								
Male	4.87	4.58, 5.17	2.64	2.50, 2.79	229 ¹	216, 243	7.98 ¹	7.63, 8.34
Female	4.45 ²	4.20, 4.69	1.82 ^{1,2}	1.72, 1.93	136 ²	129, 144	5.74 ²	5.50, 5.97
19 to 30								
Male	5.36	4.97, 5.74	1.95 ¹	1.80, 2.09	247	232, 263	7.32 ¹	6.92, 7.71
Female	4.67 ²	4.39, 4.96	1.64 ^{1,2}	1.50, 1.77	145 ²	136, 154	5.19 ^{1,2}	4.91, 5.48
31 to 50								
Male	5.26	4.97, 5.55	1.62 ¹	1.51, 1.72	254	239, 268	6.64 ¹	6.32, 6.96
Female	4.92	4.66, 5.19	1.52	1.42, 1.61	169 ^{1,2}	158, 179	4.87 ²	4.66, 5.08
51 to 70								
Male	5.68	5.36, 6.00	1.37 ¹	1.28, 1.46	241	228, 253	5.74 ¹	5.52, 5.95
Female	5.24 ²	5.04, 5.43	1.28 ¹	1.22, 1.35	174 ²	165, 184	4.66 ²	4.45, 4.86
71 or older								
Male	5.03 ¹	4.73, 5.34	1.36	1.16, 1.56	189 ¹	176, 202	5.59	5.20, 5.97
Female	4.76 ¹	4.57, 4.96	1.24	1.16, 1.33	140 ^{1,2}	132, 149	4.47 ²	4.30, 4.63
Age group and region								
4 to 18								
Atlantic	3.77 ³	3.58, 3.97	2.32	2.19, 2.44	154	145, 162	6.06 ³	5.78, 6.33
Quebec	4.96 ³	4.65, 5.27	2.43 ³	2.28, 2.59	167 ³	155, 178	6.97 ³	6.69, 7.25
Ontario	4.43	4.25, 4.60	2.23	2.15, 2.32	149	143, 155	6.27 ³	6.08, 6.45
Prairies	4.03 ³	3.81, 4.24	2.27	2.18, 2.36	150	142, 158	6.18 ³	5.96, 6.40
British Columbia	4.59	4.27, 4.92	2.25	2.12, 2.37	148	137, 158	6.44	6.14, 6.74
19 or older								
Atlantic	4.28 ³	4.12, 4.44	1.57	1.48, 1.66	203	194, 213	5.40 ³	5.20, 5.60
Quebec	5.78 ³	5.50, 6.07	1.74 ³	1.63, 1.85	195	183, 206	5.98 ³	5.74, 6.23
Ontario	5.02 ³	4.85, 5.18	1.38 ³	1.32, 1.44	201	195, 208	5.41 ³	5.24, 5.59
Prairies	4.70 ³	4.51, 4.89	1.54	1.45, 1.63	204	195, 213	5.39 ³	5.19, 5.59
British Columbia	5.49 ³	5.21, 5.78	1.48	1.37, 1.58	219 ³	204, 235	6.11 ³	5.78, 6.43
Age group and household income								
4 to 18								
Low	4.50	3.76, 5.24	2.35	1.92, 2.78	136	114, 158	6.32	5.53, 7.12
Lower middle	4.20	3.84, 4.56	2.04 ³	1.88, 2.19	151	138, 164	6.38	6.04, 6.71
Middle	4.41	4.13, 4.69	2.19 ³	2.07, 2.31	152	143, 161	6.50	6.25, 6.76
Upper middle	4.42	4.21, 4.63	2.32 ³	2.22, 2.42	150	141, 158	6.37	6.19, 6.55
High ⁴	4.61	4.40, 4.82	2.48	2.38, 2.59	156	147, 164	6.37	6.17, 6.57
19 or older								
Low	4.50 ³	3.95, 5.06	1.45	1.14, 1.77	178 ³	153, 204	5.27	4.77, 5.77
Lower middle	4.50 ³	4.14, 4.86	1.31 ³	1.15, 1.47	178 ³	155, 201	5.65	5.22, 6.07
Middle	4.83 ³	4.59, 5.07	1.38 ³	1.28, 1.49	186 ³	174, 197	5.62	5.37, 5.87
Upper middle	5.06 ³	4.88, 5.25	1.60	1.52, 1.67	207	200, 214	5.77	5.56, 5.98
High ⁴	5.64	5.42, 5.86	1.59	1.51, 1.66	214	205, 222	5.62	5.42, 5.83
1. Significantly different from estimate for previous age group of same sex (p < 0.05)								
2. Significantly different from estimate for males in same age group (p < 0.05)								
3. Significantly different from estimate for reference category (p < 0.05)								
4. Reference category: reference category for regions is Canada.								
Notes: Data were missing for household income (1,759 children, 2,080 adults). Excludes women who were pregnant or breastfeeding.								
Data source: 2004 Canadian Community Health Survey: Nutrition								

Table 3
 Percentage of calories, fat, protein and carbohydrates from "other foods," by selected characteristics, 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, 22.7	24.9	24.4, 25.5	5.2	5.0, 5.4	24.8	24.3, 25.3
19 or older	22.7	22.3, 23.1	26.8	26.2, 27.3	5.4	5.2, 5.6	21.4	20.9, 21.9
Age group and sex								
4 to 8	18.2	17.5, 18.9	21.1	20.2, 22.1	4.1	3.8, 4.4	20.0	19.2, 20.8
9 to 13								
Male	22.3 ¹	21.3, 23.2	24.3 ¹	23.1, 25.5	5.0 ¹	4.6, 5.4	25.4 ¹	24.1, 26.7
Female	22.9 ¹	21.9, 23.9	26.4 ^{1,2}	25.0, 27.7	5.6 ^{1,2}	5.2, 6.1	25.1 ¹	24.0, 26.3
14 to 18								
Male	25.7 ¹	24.7, 26.8	27.1 ¹	25.9, 28.4	5.7 ¹	5.3, 6.2	29.4 ¹	28.1, 30.8
Female	25.3 ¹	24.3, 26.3	28.7 ¹	27.4, 30.0	6.5 ¹	5.9, 7.1	27.4 ^{1,2}	26.2, 28.7
19 to 30								
Male	26.4	25.1, 27.7	25.6	23.9, 27.2	6.6	5.8, 7.5	28.3	26.9, 29.8
Female	24.2 ²	22.9, 25.4	27.7	26.1, 29.3	6.5	5.9, 7.2	24.2 ^{1,2}	22.8, 25.7
31 to 50								
Male	24.3 ¹	23.2, 25.3	25.9	24.6, 27.2	5.7 ¹	5.2, 6.1	24.7 ¹	23.4, 25.9
Female	22.9	21.8, 23.9	27.5	26.1, 29.0	5.7 ¹	5.3, 6.2	21.4 ^{1,2}	20.1, 22.6
51 to 70								
Male	22.6 ¹	21.7, 23.4	26.6	25.4, 27.8	4.7 ¹	4.3, 5.1	19.5 ¹	18.5, 20.4
Female	20.1 ^{1,2}	19.2, 20.9	27.9	26.7, 29.1	4.6 ¹	4.3, 5.0	16.7 ^{1,2}	15.8, 17.6
71 or older								
Male	18.9 ¹	17.8, 20.1	25.8	24.2, 27.4	3.7 ¹	3.3, 4.2	15.1 ¹	14.0, 16.2
Female	16.9 ^{1,2}	16.1, 17.6	26.3	25.1, 27.4	3.5 ¹	3.2, 3.8	13.0 ^{1,2}	12.2, 13.7
Age group and region								
4 to 18								
Atlantic	24.5 ³	23.6, 25.5	26.5 ³	25.2, 27.8	6.3 ³	5.6, 7.0	27.8 ³	26.8, 28.8
Quebec	21.5	20.5, 22.5	24.9	23.7, 26.1	4.8	4.3, 5.3	23.4 ³	22.1, 24.8
Ontario	22.0	21.4, 22.6	24.9	24.1, 25.8	5.0	4.8, 5.3	24.4	23.7, 25.2
Prairies	23.7 ³	23.0, 24.5	24.7	23.8, 25.7	5.5	5.1, 5.9	27.3 ³	26.3, 28.3
British Columbia	21.2 ³	20.1, 22.3	24.4	22.9, 25.9	5.6	5.0, 6.1	22.9 ³	21.5, 24.3
19 or older								
Atlantic	24.4 ³	23.5, 25.3	29.5 ³	28.3, 30.6	5.7	5.2, 6.1	23.6 ³	22.5, 24.7
Quebec	23.1	22.1, 24.2	27.8	26.3, 29.2	5.3	4.9, 5.8	21.1	20.0, 22.2
Ontario	21.9 ³	21.2, 22.5	25.9 ³	25.0, 26.7	5.1 ³	4.7, 5.4	20.8	20.1, 21.6
Prairies	23.3	22.2, 24.3	26.4	25.1, 27.7	5.7	5.3, 6.1	23.1 ³	22.0, 24.2
British Columbia	22.5	21.5, 23.5	26.4	25.1, 27.7	5.9	5.3, 6.5	20.4	19.3, 21.6
Age group and household income								
4 to 18								
Low	24.3	21.5, 27.1	26.0	23.3, 28.8	6.0	4.9, 7.2	26.4	22.5, 30.3
Lower middle	22.4	20.9, 23.9	25.2	23.3, 27.0	4.8	4.2, 5.5	24.9	23.0, 26.7
Middle	21.9	21.0, 22.9	24.8	23.6, 26.0	5.0	4.6, 5.4	24.1	22.9, 25.3
Upper middle	22.5	21.7, 23.3	24.8	23.9, 25.7	5.3	5.0, 5.7	25.2	24.2, 26.2
High ⁴	21.6	20.9, 22.4	24.6	23.6, 25.6	5.2	4.8, 5.6	24.1	23.2, 25.0
19 or older								
Low	23.8	21.8, 25.9	25.9	23.6, 28.2	5.7	4.7, 6.8	24.3 ³	22.0, 26.7
Lower middle	21.3 ³	19.7, 22.9	25.5	23.5, 27.5	5.2	4.3, 6.1	20.6	18.8, 22.3
Middle	21.9 ³	20.8, 22.9	28.0	26.5, 29.5	5.0 ³	4.5, 5.6	20.3	19.2, 21.4
Upper middle	22.9	22.2, 23.7	26.4	25.5, 27.3	5.4	5.1, 5.8	22.3	21.4, 23.3
High ⁴	23.7	23.0, 24.5	27.5	26.5, 28.5	5.8	5.4, 6.1	21.6	20.7, 22.5

1. Significantly different from estimate for previous age group of same sex ($p < 0.05$)
 2. Significantly different from estimate for males in same age group ($p < 0.05$)
 3. Significantly different from estimate for reference category ($p < 0.05$)
 4. Reference category: reference category for regions is Canada.

Notes: Data were missing for household income (1,759 children, 2,080 adults). Excludes women who were pregnant or breastfeeding.
Data source: 2004 Canadian Community Health Survey: Nutrition

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

Food/Drink	% of "other food" 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
<i>Note: Excludes women who were pregnant or breastfeeding.</i>	
<i>Data source: 2004 Canadian Community Health Survey: Nutrition</i>	

Table 5

Percentage of calories from fat, protein and carbohydrates, by selected characteristics, 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, 30.9	14.5	14.4, 14.6	54.6	54.3, 54.9
19 or older	31.3	31.1, 31.6	16.5	16.4, 16.7	49.1	48.8, 49.5
Age group and sex						
4 to 8	30.1	29.8, 30.5	14.3	14.1, 14.5	55.5	55.1, 56.0
9 to 13						
Male	30.9 ¹	30.4, 31.4	14.6	14.3, 15.0	54.5 ¹	53.9, 55.1
Female	30.5	29.9, 31.0	14.0 ²	13.8, 14.3	55.5 ²	54.8, 56.1
14 to 18						
Male	31.5	31.0, 32.1	15.2 ¹	14.8, 15.5	52.7 ¹	52.0, 53.3
Female	30.8	30.2, 31.4	14.4 ²	14.0, 14.7	54.3 ^{1,2}	53.6, 55.1
19 to 30						
Male	31.1	30.4, 31.7	15.6	15.2, 16.1	49.6 ¹	48.8, 50.5
Female	30.5	29.7, 31.3	15.5 ¹	15.1, 16.0	51.9 ^{1,2}	51.1, 52.8
31 to 50						
Male	31.6	30.8, 32.3	16.8 ¹	16.4, 17.3	47.8 ¹	46.9, 48.8
Female	32.2 ¹	31.5, 32.8	16.6 ¹	16.1, 17.1	48.8 ¹	47.9, 49.6
51 to 70						
Male	31.5	30.8, 32.1	17.0	16.6, 17.4	47.3	46.5, 48.0
Female	31.2 ¹	30.6, 31.7	17.1	16.8, 17.5	49.6 ²	49.0, 50.3
71 or older						
Male	30.7	30.0, 31.4	16.4	15.9, 16.8	50.1 ¹	49.1, 51.0
Female	30.3 ¹	29.7, 30.9	16.6	16.2, 17.0	51.9 ^{1,2}	51.2, 52.5
Age group and region						
4 to 18						
Atlantic	31.0	30.3, 31.6	14.2	13.9, 14.5	54.7	54.0, 55.4
Quebec	32.0 ³	31.5, 32.6	14.6	14.3, 15.0	53.0 ³	52.3, 53.7
Ontario	30.0 ³	29.6, 30.4	14.5	14.2, 14.7	55.4 ³	55.0, 55.9
Prairies	30.5	30.1, 30.9	14.5	14.2, 14.8	54.7	54.2, 55.2
British Columbia	30.6	29.9, 31.3	14.5	14.2, 14.8	54.7	53.9, 55.5
19 or older						
Atlantic	32.1 ³	31.6, 32.6	16.4	16.1, 16.7	49.1	48.4, 49.7
Quebec	32.0 ³	31.4, 32.6	16.0 ³	15.6, 16.4	48.8	48.1, 49.5
Ontario	30.7 ³	30.3, 31.1	16.8 ³	16.5, 17.1	49.6 ³	49.1, 50.2
Prairies	31.9	31.3, 32.5	16.8	16.5, 17.1	48.6	48.0, 49.3
British Columbia	31.0	30.4, 31.7	16.6	16.2, 17.0	49.0	48.1, 49.8
Age group and household income						
4 to 18						
Low	30.7	29.2, 32.2	13.7 ³	12.9, 14.4	55.5	53.5, 57.5
Lower middle	30.5	29.6, 31.3	14.0 ³	13.5, 14.5	55.4 ³	54.4, 56.4
Middle	31.2	30.7, 31.7	14.1 ³	13.8, 14.4	54.5	53.9, 55.1
Upper middle	30.4	30.0, 30.8	14.4 ³	14.2, 14.7	55.0 ³	54.5, 55.4
High ⁴	30.7	30.3, 31.2	14.9	14.6, 15.1	54.2	53.7, 54.7
19 or older						
Low	30.4	29.1, 31.6	15.8 ³	15.0, 16.5	51.1 ³	49.2, 53.1
Lower middle	30.1 ³	29.3, 30.8	16.1 ³	15.5, 16.7	51.8 ³	50.8, 52.9
Middle	31.0	30.4, 31.6	16.1 ³	15.7, 16.6	50.9 ³	50.1, 51.6
Upper middle	31.7	31.2, 32.2	16.5	16.2, 16.9	48.9 ³	48.3, 49.5
High ⁴	31.5	31.1, 32.0	16.9	16.5, 17.2	47.7	47.1, 48.3
<p>1. Significantly different from estimate for previous age group of same sex ($p < 0.05$)</p> <p>2. Significantly different from estimate for males in same age group ($p < 0.05$)</p> <p>3. Significantly different from estimate for reference category ($p < 0.05$)</p> <p>4. Reference category; reference category for regions is Canada.</p> <p>Notes: Estimates of energy intake include calories from alcoholic beverages, but calories from alcohol are not shown separately. Data were missing for household income (1,759 children, 2,080 adults). Excludes women who were pregnant or breastfeeding.</p> <p>Data source: 2004 Canadian Community Health Survey: Nutrition</p>						

Table 6
 Percentage of calories from fat, by age group and sex, household population aged 5 or older, Canada excluding territories, 1972 and 2004

Age group	1972 ¹	2004	
	%	%	95% confidence interval
5 to 11	38	30.5	30.1, 30.8
12 to 19			
Male	41	31.3	30.8, 31.8
Female	40	30.8	30.3, 31.3
20 to 39			
Male	41	31.0	30.4, 32.7
Female	40	31.2	30.5, 31.9
40 to 64			
Male	40	31.7	31.1, 32.3
Female	39	31.8	31.2, 32.3
65 or older			
Male	39	31.0	30.3, 31.6
Female	37	30.5	30.0, 31.0
<i>1. Statistical comparisons with 2004 are not possible.</i>			
<i>Notes: Estimates of energy intake include calories from alcoholic beverages. Excludes women who were pregnant or breastfeeding.</i>			
<i>Data sources: 2004 Canadian Community Health Survey: Nutrition; Food Patterns Consumption report, 1977</i>			

Table 7
Foods and drinks accounting for most fat consumed, 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
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
<i>Note: Includes basic food and main recipes. Excludes women who were pregnant or breastfeeding.</i>	
<i>Data source: 2004 Canadian Community Health Survey: Nutrition</i>	

Table 8
 Percentage distribution of calories, by meal and selected characteristics, 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, 17.6	24.2	23.8, 24.7	31.1	30.6, 31.5	27.4	26.8, 28.0
19 or older	17.7	17.4, 18.1	23.8	23.4, 24.3	35.9	35.4, 36.4	22.6	22.1, 23.1
Age group and sex								
4 to 8	18.0	17.5, 18.6	25.6	24.9, 26.4	29.5	28.6, 30.4	26.8	25.9, 27.8
9 to 13								
Male	18.0	17.2, 18.8	24.9	23.6, 26.1	30.9	29.8, 31.9	26.3	25.0, 27.5
Female	17.1	16.4, 17.9	24.7	23.8, 25.7	31.9 ¹	30.8, 33.0	26.2	25.1, 27.4
14 to 18								
Male	16.4 ¹	15.6, 17.3	22.5 ¹	21.4, 23.6	31.5	30.4, 32.5	29.6 ¹	28.1, 31.0
Female	16.4	15.3, 17.5	23.1 ¹	22.1, 24.2	32.5	31.4, 33.7	27.9	26.4, 29.5
19 to 30								
Male	16.4	15.3, 17.5	22.2	20.9, 23.5	34.9 ¹	33.3, 36.5	26.5 ¹	24.8, 28.2
Female	17.7	16.6, 18.9	23.4	22.0, 24.8	33.1	31.7, 34.4	25.8	24.0, 27.5
31 to 50								
Male	17.1	16.2, 18.0	24.9 ¹	23.8, 26.0	35.4	34.1, 36.8	22.6 ¹	21.4, 23.8
Female	17.0	16.2, 17.9	22.6 ²	21.5, 23.8	37.1 ¹	35.7, 38.4	23.3 ¹	22.0, 24.6
51 to 70								
Male	17.6	16.8, 18.4	23.1 ¹	21.9, 24.2	37.6 ¹	36.4, 38.8	21.7	20.4, 23.0
Female	19.1 ^{1,2}	18.2, 20.0	24.7 ^{1,2}	23.6, 25.8	36.8	35.7, 38.0	19.4 ^{1,2}	18.4, 20.4
71 or older								
Male	21.9 ¹	20.9, 22.8	25.8 ¹	24.3, 27.2	36.1	34.6, 37.5	16.3 ¹	15.0, 17.6
Female	21.2 ¹	20.3, 22.1	27.5 ¹	26.3, 28.6	34.7 ¹	33.5, 35.9	16.6 ¹	15.6, 17.6
Age group and region								
4 to 18								
Atlantic	15.9 ³	15.1, 16.6	23.0	21.7, 24.3	29.1 ³	28.0, 30.2	32.0 ³	30.7, 33.3
Quebec	18.1 ³	17.2, 19.0	25.8 ³	24.6, 27.0	32.8 ³	31.5, 34.0	23.3 ³	21.8, 24.9
Ontario	17.5	16.9, 18.2	24.1	23.3, 24.7	30.9	30.2, 31.6	27.6	26.7, 28.5
Prairies	15.8 ³	15.2, 16.5	24.1	23.1, 25.1	30.6	29.8, 31.5	29.5 ³	28.3, 30.6
British Columbia	17.6	16.6, 18.5	22.9 ³	21.6, 24.2	30.1	28.8, 31.4	29.4 ³	27.5, 31.3
19 or older								
Atlantic	16.6 ³	15.8, 17.4	22.9	22.0, 23.8	34.4 ³	33.3, 35.5	26.2 ³	24.8, 27.6
Quebec	19.3 ³	18.5, 20.1	24.9 ³	23.9, 26.0	36.3	35.3, 37.4	19.5 ³	18.4, 20.6
Ontario	17.0 ³	16.4, 17.6	23.6	22.8, 24.5	36.3	35.4, 37.3	23.0	22.2, 23.9
Prairies	17.1	16.2, 17.9	23.1	22.0, 24.2	35.8	34.8, 36.9	24.0 ³	22.9, 25.1
British Columbia	18.1	17.0, 19.1	23.7	22.5, 24.8	34.9	33.5, 36.3	23.4	21.9, 24.9
Age group and household income								
4 to 18								
Low	17.6	14.8, 20.4	27.4	23.4, 31.5	29.8	26.7, 32.9	25.1	21.8, 28.5
Lower middle	16.5	15.4, 17.7	24.4	22.8, 26.0	30.0	28.3, 31.7	29.0	26.7, 31.4
Middle	17.9	16.8, 18.9	24.1	23.0, 25.2	30.4	29.3, 31.5	27.6	26.2, 29.0
Upper middle	17.3	16.7, 18.0	23.3 ³	22.5, 24.1	31.3	30.3, 32.2	28.1	27.1, 29.1
High ⁴	17.3	16.7, 17.9	24.6	23.7, 25.5	31.4	30.5, 32.2	26.7	25.6, 27.9
19 or older								
Low	16.3	14.2, 18.5	22.5	20.0, 25.0	36.3	32.8, 39.9	24.8	22.2, 27.5
Lower middle	18.6	16.7, 20.4	24.5	22.4, 26.7	34.7	32.4, 37.0	22.2	19.8, 24.5
Middle	18.0	17.1, 18.8	24.4	23.3, 25.5	35.9	34.7, 37.2	21.7	20.4, 22.9
Upper middle	17.4	16.9, 18.0	23.5	22.7, 24.3	35.9	35.0, 36.8	23.1	22.3, 24.0
High ⁴	17.5	16.8, 18.1	23.3	22.4, 24.2	36.6	35.7, 37.5	22.6	21.7, 23.6
1. Significantly different from estimate for previous age group of same sex ($p < 0.05$) 2. Significantly different from estimate for males in same age group ($p < 0.05$) 3. Significantly different from estimate for reference category ($p < 0.05$) 4. Reference category: reference category for regions is Canada.								
Notes: Data were missing for household income (1,759 children, 2,080 adults). Excludes women who were pregnant or breastfeeding								
Data source: 2004 Canadian Community Health Survey: Nutrition								

Table 9
 Percentage distribution of locations where food consumed was prepared, by selected characteristics, household population aged 4 or older, Canada excluding territories, 2004

	Home only	At least some fast food	Other combination
	%	%	%
Total			
4 to 18	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 ¹	22.9 ¹	22.3
Female	60.2 ²	19.4	20.4
14 to 18			
Male	44.6 ¹	32.6 ¹	22.8
Female	44.3 ¹	34.5 ¹	21.2
19 to 30			
Male	37.9 ¹	39.3 ¹	22.7
Female	43.1	34.3	22.6
31 to 50			
Male	44.8 ¹	29.8 ¹	25.4
Female	48.5 ¹	28.1 ¹	23.4
51 to 70			
Male	57.3 ¹	20.0 ¹	22.7
Female	61.2 ¹	15.4 ^{1,2}	23.4
71 or older			
Male	72.1 ¹	10.0 ¹	17.9 ¹
Female	75.7 ¹	8.6 ¹	15.7 ¹
Age group and region			
4 to 18			
Atlantic	48.1 ³	27.3	24.6 ³
Quebec	52.6	19.0 ³	28.4 ³
Ontario	55.1	26.8 ³	18.1 ³
Prairies	54.5	26.5	19.0 ³
British Columbia	55.1	24.6	20.2
19 or older			
Atlantic	53.0	26.5	20.5
Quebec	53.5	17.7 ³	28.8 ³
Ontario	51.4	28.9 ³	19.6 ³
Prairies	51.4	25.6	23.0
British Columbia	49.0	28.5 ³	22.6
Age group and household income			
4 to 18			
Low	51.2	19.1 ^{3E}	29.7
Lower-middle	59.8 ³	17.9 ³	22.3
Middle	59.5 ³	20.6 ³	19.9
Upper-middle	53.1	25.7	21.2
High ⁴	51.1	28.2	20.7
19 or older			
Low	67.2 ³	18.6 ³	14.1 ^{3E}
Lower-middle	61.4 ³	19.7 ³	18.9 ³
Middle	60.2 ³	22.3 ³	17.5 ³
Upper-middle	52.5 ³	23.7 ³	23.8 ³
High ⁴	41.9	31.2	27.0
1. Significantly different from estimate for previous age group of same sex ($p < 0.05$) 2. Significantly different from estimate for males in same age group ($p < 0.05$) 3. Significantly different from estimate for reference category ($p < 0.05$) 4. Reference category: reference category for regions is Canada.			
Notes: Data were missing for household income (1,759 children, 2,080 adults). Excludes women who were pregnant or breastfeeding. E use with caution			
Data source: 2004 Canadian Community Health Survey: Nutrition			