3 Nutrient Intakes and Dietary Sources: Energy and Macronutrients

New Zealanders obtain the energy and nutrients they require from a wide variety of foods and beverages, and in some cases from dietary supplements as well. This chapter on energy and macronutrients presents the intake of energy and nutrients from food and beverages, without adding the nutrients from supplements (other than supplements providing energy, eg, meal replacements).

3.1 Explanatory notes

Usual intake distributions

Using repeat 24-hour diet recalls on a subsample (25%) of participants, nutrient intakes for each subgroup were adjusted for intra-individual variability using the PC-SIDE programme to obtain usual intake distributions. Nutrient ratios (eg, percent energy from protein) presented in this section were not adjusted for intra-individual variation because the only methods that have been developed for ratios use multiple day repeats.

Note that comparisons between NZDep2006 quintiles are based on nutrient intake, adjusted for intra-individual variation using PC-SIDE, whereas the overall test for trend (gradient) by neighbourhood deprivation is not adjusted for intra-individual variation.

Accuracy of energy and nutrient intake estimates

The accuracy of nutrient estimates depend on two factors: the accuracy of information provided by participants in the 24-hour diet recall and the accuracy of the food composition data. These two potential sources of error are briefly outlined briefly below (see Chapter 2 and the Methodology Report for more information).

Misreporting of a food intake, especially under-reporting, is a well-known problem in all types of dietary surveys. If food intake is under-reported, energy and nutrient intakes may also be underestimated, and the prevalence of inadequate intake may be overestimated.

The New Zealand Food Composition Database (NZFCDB) was the main source of nutrient data for the survey. The NZFCDB includes approximately 2740 foods, and an additional 5000 nutrient lines were created for the survey based on data from the NZFCDB and other sources (eg, overseas databases).

Nutrient adequacy

For protein, the probability of inadequate intake was estimated by comparing the *usual* intake distribution to the estimated average requirement (EAR) from the Nutrient Reference Values (NRV) for Australia and New Zealand (NHMRC 2006). Nutrient adequacy could not be determined if there was no EAR for a nutrient. When interpreting the prevalence of inadequate intakes it is important to note the following.

- Nutrient intake estimates are from food and drinks only and exclude intake from dietary supplements (other than supplements providing energy, eg meal replacements).
- Nutrient intake estimates depend on the accuracy of the information provided by participants in the 24-hour diet recall and the accuracy of the food composition data.
- The prevalence of inadequate intakes partly reflects the criterion on which the requirement is based. For example, if the requirement for nutrient X is based on maintaining body stores (assuming normal losses), and it is estimated that 15% of the population have inadequate intakes, this indicates that 15% are not consuming enough nutrient X to maintain body stores but does not indicate functional impairment or a deficiency disorder. It also does not indicate which specific individuals in the population have inadequate intakes to maintain their body stores. A cautionary comment on the interpretation of adequacy of intake for a nutrient has been made when the derivation of the reference value is either unclear or scientifically debatable.
- Accurate assessment of nutrient status requires a combination of dietary, anthropometric, biochemical and clinical measurements (Gibson 2005). Adequacy or inadequacy of nutrient status cannot be determined from dietary data alone.

Dietary sources

For each nutrient, the percentage contribution from different food groups is presented. In this way, the adequacy of nutrient intake can be understood in the context of the foods from which each was sourced.

It is important to understand how foods were classified when interpreting information on dietary sources. If a participant was able to provide a detailed description for a mixed dish, then the individual ingredients were assigned to their separate food groups. However, if a detailed description could be provided, then the dish was assigned to the food group of its main ingredient. For example, macaroni cheese would be assigned to the *Grains and pasta* group because pasta is its main ingredient, even though it contains milk and cheese. Food group descriptors are written in italics to indicate these are food groups rather than foods per se.

Details of the food groups used and the types of foods included within each group are summarised in Chapter 2 (Table 2.2). It is important to review the foods included in each group rather than simply focusing on the food group descriptor, which was created for the 1997 National Nutrition Survey. The order of foods listed as examples does not necessarily reflect current consumption patterns. For example, the *Butter and margarine* group includes more margarine than butter.

In this report, comments in the text are restricted to the top 10 dietary sources for each nutrient. Note that the largest single contributor to nutrient intake (sometimes referred to as the principal source) partly depends on how foods are grouped and how many participants consumed items within each group. Foods frequently consumed (eg, *Bread*) are more likely to feature in the top 10 dietary sources than food groups consumed by only a small proportion of participants (eg, *Fats and oils* and *Other meat)*. Note that most fats and oils added during food preparation and cooking are included in the foods to which they were added (eg, *Potatoes, kumara and taro*) rather than in the *Fats and oils* group.

Sex differences

Males have a higher body weight and a greater proportion of lean body mass than females. They therefore require more food (energy) to maintain their body mass and to meet their requirements for exercise. Therefore, daily energy intake, on average, for males will exceed that for females, as will their intake of macronutrients.

Percent energy from macronutrients

Percent energy from macronutrients per day was calculated from day 1 of recall as follows (NHMRC 2006):

- percent energy from fat = (fat (g/day) x 37.7 kJ/g) / energy (kJ/day)
- percent energy from carbohydrate = (carbohydrate (g/day) x 16.7 kJ/g) / energy (kJ/day)
- percent energy from protein = (protein (g/day) x 16.7 kJ/g) / energy (kJ/day)
- percent energy from alcohol = (alcohol (g/day) x 29.3 kJ/g) / energy (kJ/day).

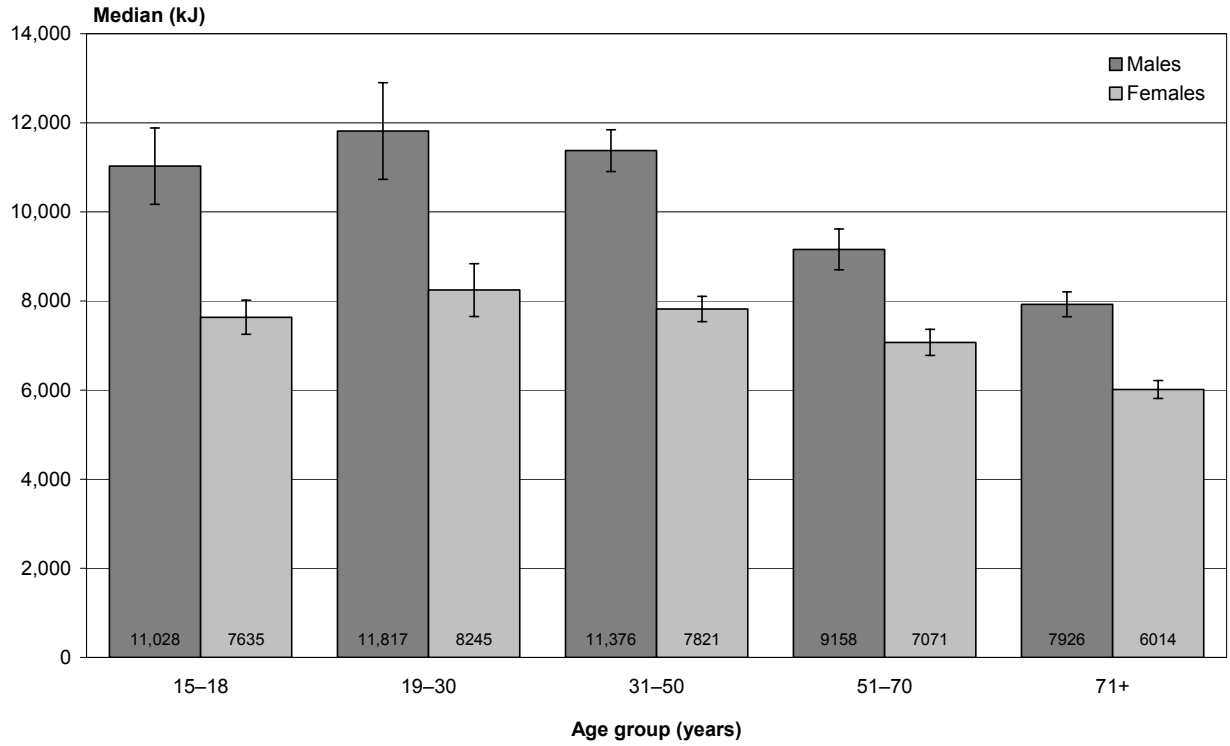
3.2 Energy

Energy is required in the body for metabolic processes, physiological functions, muscular activity, heat production, growth and the synthesis of new tissues. Food components release energy through oxidation during the digestive process. Protein, carbohydrate, fat and alcohol (the macronutrients) from food and drinks are the only sources of energy for humans. Energy requirements can vary widely according to sex, body size and physical activity (NHMRC 2006).

Energy intake

The median usual daily energy intake was 10,380 kJ for males and 7448 kJ for females (Table 3.1). Males aged 51+ years and females aged 71+ years had lower usual daily energy intakes than younger males and females (Figure 3.1).

Figure 3.1: Median energy intake (kJ), by age group and sex



Among Māori males, those aged 51+ years had a lower median usual daily energy intake than younger males; Māori females 51+ years had intakes lower than those aged 19–30 years. Pacific females aged 51+ years had a lower median usual daily energy intake than those aged 31–50 years.

For both males and females there were no differences in energy intake between NZDep2006 quintiles. Overall, there was no gradient across NZDep2006 quintiles for energy intake, after adjusting for age, sex and ethnic group.

Dietary sources of energy

The *Bread* group was the principal source of energy, contributing 11%, followed by *Grains and pasta* (7%) and *Potatoes, kumara and taro* (6%); *Fruit, Non-alcoholic beverages*, *Milk*, *Bread-based dishes* and *Alcoholic beverages* each contributed 5%, and *Sugar and sweets* and *Poultry* each contributed 4% (Table 3.2).

Although *Bread* was the largest source of energy for males and females of all age groups, for females aged 19–30 years *Grains and pasta* and *Bread* each contributed 9% of energy. Males aged 71+ years had a higher proportion of energy from *Bread* (14%) than males aged 15–30 years (10%). Females aged 71+ years obtained more energy from *Bread* than all younger age groups (Figure 3.2).

The contribution of other food sources to energy in the diet varied according to age and sex groups. Females consumed more energy than males from *Fruit* (6% and 4%, respectively). Males consumed more energy than females from *Bread-based dishes* (6% and 4%, respectively) and *Alcoholic beverages* (6% and 4%). Older females (71+ years) obtained less energy from *Grains and pasta* and *Non-alcoholic beverages* than females aged 15–50 years. Younger males (15–18 years) obtained more energy from *Potatoes, kumara and taro* (9%) compared to males aged 31+ years (6%).

Figure 3.2: Percent energy from bread, by age group and sex

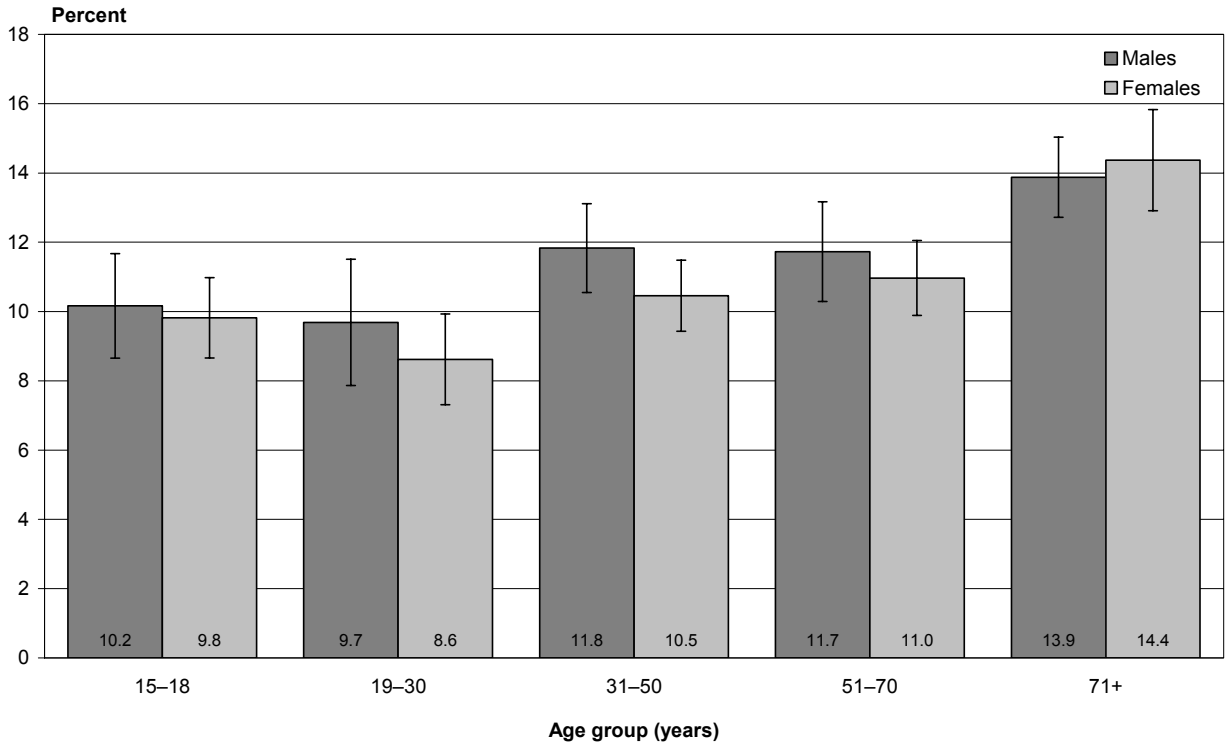


Table 3.1: Energy intake, by age group, ethnic group, NZDep2006 and sex

		Energy (kJ)[1]			
		Mean	**10th[2]**	**Median (50th),[2] 95% CI**	**90th[2]**
Total population (15 years+)		9103	5890	8742 (8544–8940)	12,750
By age group (years)					
Males	15–18	11,201	8460	11,028 (10,171–11,885)	14,165
	19–30	11,940	9921	11,817 (10,733–12,901)	14,114
	31–50	11,493	8971	11,376 (10,908–11,844)	14,160
	51–70	9371	6387	9158 (8701–9615)	12,635
	71+	8067	5968	7926 (7646–8206)	10,334
	Total	10,683	7500	10,380 (10,053–10,707)	14,268
Females	15–18	7856	5488	7635 (7253–8017)	10,506
	19–30	8426	5664	8245 (7653–8837)	11,361
	31–50	7921	6165	7821 (7537–8105)	9799
	51–70	7205	4994	7071 (6777–7365)	9579
	71+	6116	4458	6014 (5812–6216)	7906
	Total	7644	5305	7448 (7275–7621)	10,220
Māori					
Males	15–18	11,820	8059	11,513 (9874–13,152)	16,011
	19–30	12,918	9040	12,290 (11,051–13,529)	17,517
	31–50	11,871	9088	11,769 (10,807–12,731)	14,783
	51+	8953	6009	8897 (7966–9828)	11,956
	Total	11,630	8824	11,449 (10,839–12,059)	14,669
Females	15–18	7678	5611	7409 (6045–8773)	10,085
	19–30	8880	6195	8668 (7923–9413)	11,802
	31–50	7474	4764	7195 (5850–8540)	10,541
	51+	6590	4569	6483 (5930–7036)	8752
	Total	7928	5215	7632 (7285–7979)	10,976
Pacific					
Males	15–18	11,080	8864	11,008[#]	13,390
	19–30	11,995	7667	11,563 (8976–14,150)	16,828
	31–50	11,027	7995	10,858 (9900–11,816)	14,278
	51+	8871	5129	8580 (7143–10,017)	12,991
	Total	11,027	6968	10,711 (9843–11,579)	15,496
Females	15–18	7615	5256	7376 (6214–8538)	10,275
	19–30	8832	5259	8217 (6500–9934)	13,086
	31–50	8619	5458	8311 (7580–9042)	12,176
	51+	6940	4358	6554 (5860–7248)	9974
	Total	8321	5525	7970 (7564–8376)	11,540

		Energy (kJ)[1]			
		Mean	**10th[2]**	**Median (50th),[2] 95% CI**	**90th[2]**
NZEO					
Males	15–18	11,121	8080	10,933 (9963–11,903)	14,404
	19–30	11,635	7814	11,242 (10,274–12,210)	15,957
	31–50	11,499	9170	11,416 (10,883–11,949)	13,938
	51+	9073	6566	8864 (8511–9217)	11,855
	Total	10,602	7591	10,375 (9885–10,865)	13,901
Females	15–18	7839	5514	7623 (7202–8044)	10,435
	19–30	8311	5567	8151 (7447–8855)	11,264
	31–50	7875	6150	7797 (7479–8115)	9697
	51+	6918	4868	6794 (6571–7017)	9121
	Total	7589	5301	7431 (7243–7619)	10,073
By NZDep2006 quintile					
Males	1	10,507	6847	10,301 (9609–10,993)	14,429
	2	11,133	8496	10,955 (10,157–11,753)	14,006
	3	10,312	8541	10,205 (9386–11,024)	12,228
	4	10,248	7354	10,049 (9287–10,811)	13,399
	5	10,872	7188	10,530 (9822–11,238)	14,941
Females	1	7555	5273	7447 (7043–7851)	9938
	2	7665	5692	7556 (7133–7979)	9774
	3	7834	5957	7710 (7330–8090)	9847
	4	7463	5028	7225 (6847–7603)	10,188
	5	7602	5126	7333 (6986–7680)	10,395

1 Usual daily intake. These data were adjusted for intra-individual variation using PC-SIDE.

2 Percentiles.

Confidence interval could not be calculated. Estimate should be interpreted with caution.

Table 3.2: Energy sources, percent (95% CI),[1] by age group, sex and food group

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Bread	11.0 (10.6–11.4)	10.2 (8.7–11.7)	9.7 (7.9–11.5)	11.8 (10.5–13.1)	11.7 (10.3–13.2)	13.9 (12.7–15.0)	11.4 (10.8–12.1)	9.8 (8.7–11)	8.6 (7.3–9.9)	10.5 (9.4–11.5)	11.0 (9.9–12.0)	14.4 (12.9–15.8)	10.6 (10.0–11.2)
Grains and pasta	6.8 (6.3–7.4)	7.0 (5.2–8.7)	9.4 (7.1–11.7)	6.8 (5.7–7.9)	6.5 (4.9–8.1)	4.7 (3.6–5.7)	7.1 (6.3–7.9)	7.9 (6.5–9.2)	8.7 (6.9–10.5)	7.1 (5.9–8.2)	5.2 (4.1–6.2)	4.1 (3.3–4.8)	6.6 (6.0–7.2)
Potatoes, kumara and taro	6.4 (6.0–6.7)	8.8 (7.3–10.4)	6.3 (4.8–7.7)	6.2 (5.3–7.1)	6.3 (5.3–7.3)	6.3 (5.6–7.0)	6.5 (5.9–7.0)	8.2 (6.9–9.4)	7.4 (5.7–9.0)	6.1 (5.2–7.1)	5.4 (4.6–6.2)	5.6 (4.9–6.2)	6.3 (5.7–6.8)
Fruit	5.4 (5.1–5.6)	3.4 (2.7–4.2)	3.6 (2.7–4.4)	4.0 (3.3–4.6)	4.8 (4.1–5.4)	7.0 (6.2–7.7)	4.3 (4.0–4.7)	4.3 (3.7–4.9)	4.8 (4.0–5.6)	5.8 (5.1–6.4)	7.8 (7.0–8.6)	8.8 (8.1–9.5)	6.3 (5.9–6.7)
Non-alcoholic beverages	5.0 (4.7–5.3)	7.6 (6.4–8.8)	7.6 (6.5–8.7)	4.5 (3.8–5.2)	3.6 (2.8–4.4)	2.2 (1.8–2.6)	4.9 (4.5–5.4)	8.1 (7.1–9.1)	7.0 (5.9–8.1)	4.7 (4.0–5.5)	4.1 (3.4–4.7)	2.7 (2.3–3.1)	5.0 (4.6–5.4)
Milk	5.0 (4.7–5.2)	4.5 (3.8–5.2)	3.7 (2.9–4.5)	4.6 (4.0–5.1)	5.2 (4.6–5.9)	5.8 (5.2–6.4)	4.7 (4.4–5.0)	4.0 (3.3–4.7)	4.2 (3.5–4.9)	5.8 (5.0–6.5)	5.2 (4.6–5.9)	6.2 (5.7–6.8)	5.2 (4.9–5.6)
Bread-based dishes	5.0 (4.4–5.5)	10.6 (8.5–12.7)	9.3 (6.5–12.2)	5.3 (4.1–6.5)	4.6 (3.1–6.1)	1.7 (1.1–2.3)	6.0 (5.1–6.9)	8.9 (7.0–10.9)	4.9 (3.5–6.4)	4.4 (3.4–5.4)	2.2 (1.6–2.8)	1.7 (1.1–2.2)	4.0 (3.4–4.5)
Alcoholic beverages	4.9 (4.5–5.4)	2.5 (1.2–3.8)	6.0 (4.1–7.9)	6.0 (4.7–7.4)	6.1 (4.8–7.4)	5.3 (4.1–6.5)	5.7 (5–6.4)	2.3 (1.1–3.4)	4.9 (2.6–7.3)	4.6 (3.5–5.7)	4.1 (3.1–5.1)	3.1 (2.2–3.9)	4.2 (3.6–4.8)
Sugar and sweets	4.2 (3.9–4.5)	3.1 (2.2–4.0)	4.5 (3.2–5.8)	4.4 (3.7–5.1)	3.9 (3.4–4.5)	4.3 (3.8–4.8)	4.2 (3.8–4.6)	4.9 (3.8–5.9)	4.7 (3.7–5.8)	4.8 (4.1–5.5)	3.6 (2.9–4.2)	3.1 (2.7–3.5)	4.3 (3.9–4.7)
Poultry	3.8 (3.5–4.1)	4.5 (3.4–5.5)	4.1 (2.9–5.3)	4.5 (3.4–5.6)	3.3 (2.3–4.2)	2.0 (1.5–2.6)	3.9 (3.3–4.4)	4.1 (3.0–5.1)	4.7 (3.7–5.6)	4.1 (3.4–4.9)	2.9 (2.2–3.7)	2.5 (1.8–3.2)	3.7 (3.3–4.2)
Vegetables	3.8	2.0	2.4	3.1	3.6	4.3	3.1	2.4	3.5	4.1	5.7	4.7	4.4
Cakes and muffins	3.7	1.7	2.4	3.7	3.8	3.6	3.3	4.5	4.1	3.4	4.6	5.1	4.1
Breakfast cereals	3.5	3.1	2.5	2.9	5.0	4.1	3.5	2.4	2.6	3.5	4.1	4.4	3.5
Beef and veal	3.3	3.2	3.1	3.7	3.5	4.0	3.5	2.5	2.1	3.3	3.5	3.7	3.1
Butter and margarine	3.0	1.9	2.0	2.9	3.7	4.9	3.1	1.8	2.2	2.8	3.4	4.8	3.0
Fish and seafood	2.8	1.5	1.9	3.2	2.8	3.3	2.7	1.1	2.4	2.9	3.4	2.8	2.8
Biscuits	2.7	2.7	1.0	2.4	2.5	3.7	2.3	3.8	2.5	3.2	2.9	3.7	3.1
Pies and pasties	2.5	3.9	4.4	3.1	1.9	1.6	3.0	2.6	2.9	1.9	1.7	1.4	2.0
Dairy products	2.5	2.5	1.7	2.1	2.6	2.5	2.2	3.0	3.0	2.1	2.9	3.1	2.7
Sausages and processed meats	2.3	2.4	2.7	2.6	2.0	2.1	2.4	2.6	1.9	2.2	2.0	1.9	2.1
Cheese	1.9	1.6	1.9	2.0	1.5	1.4	1.8	1.9	1.2	2.5	1.9	1.9	2.0
Pork	1.7	2.1	2.2	1.5	2.3	2.1	2.0	1.1	1.3	1.4	1.7	1.6	1.5
Eggs and egg dishes	1.5	1.6	1.1	1.4	1.6	1.9	1.4	0.9	2.0	1.2	1.6	2.0	1.5

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Savoury sauces and condiments	1.4	1.7	1.1	1.2	1.2	1.0	1.2	1.2	1.6	1.6	1.5	1.1	1.5
Nuts and seeds	1.2	1.0	0.7	1.1	1.4	1.0	1.1	0.6	0.8	1.7	1.8	0.7	1.3
Lamb and mutton	1.1	0.6	0.9	1.0	1.6	0.9	1.1	0.6	1.2	0.7	1.5	1.1	1.0
Puddings and desserts	1.0	0.9	0.4	0.9	1.1	2.2	0.9	0.8	1.0	0.8	1.2	1.3	1.0
Soups and stocks	0.8	0.2	0.6	0.4	0.7	1.4	0.6	0.5	0.9	0.9	1.3	1.6	1.0
Snack bars	0.7	1.5	0.6	1.1	0.4	0.2	0.8	1.4	0.4	0.6	0.8	0.3	0.7
Snack foods	0.6	1.0	0.9	0.5	0.2	0.1	0.5	1.4	1.4	0.7	0.3	0.0	0.7
Fats and oils	0.3	0.0	0.6	0.3	0.1	0.3	0.3	0.1	0.6	0.3	0.4	0.2	0.4
Supplements providing energy	0.2	0.5	0.6	0.3	0.1	0.0	0.3	0.2	0.3	0.2	0.1	0.3	0.2
Other meat	0.2	0.1	0.1	0.2	0.4	0.3	0.2	0.1	0.1	0.1	0.2	0.3	0.1

1 Proportion of total nutrient intake obtained from each food group. Results for Māori, Pacific, NZEO and NZDep2006 are in the online data tables. For full food group definitions, see Table 2.2. 95% confidence intervals are presented only for the top 10 food groups.

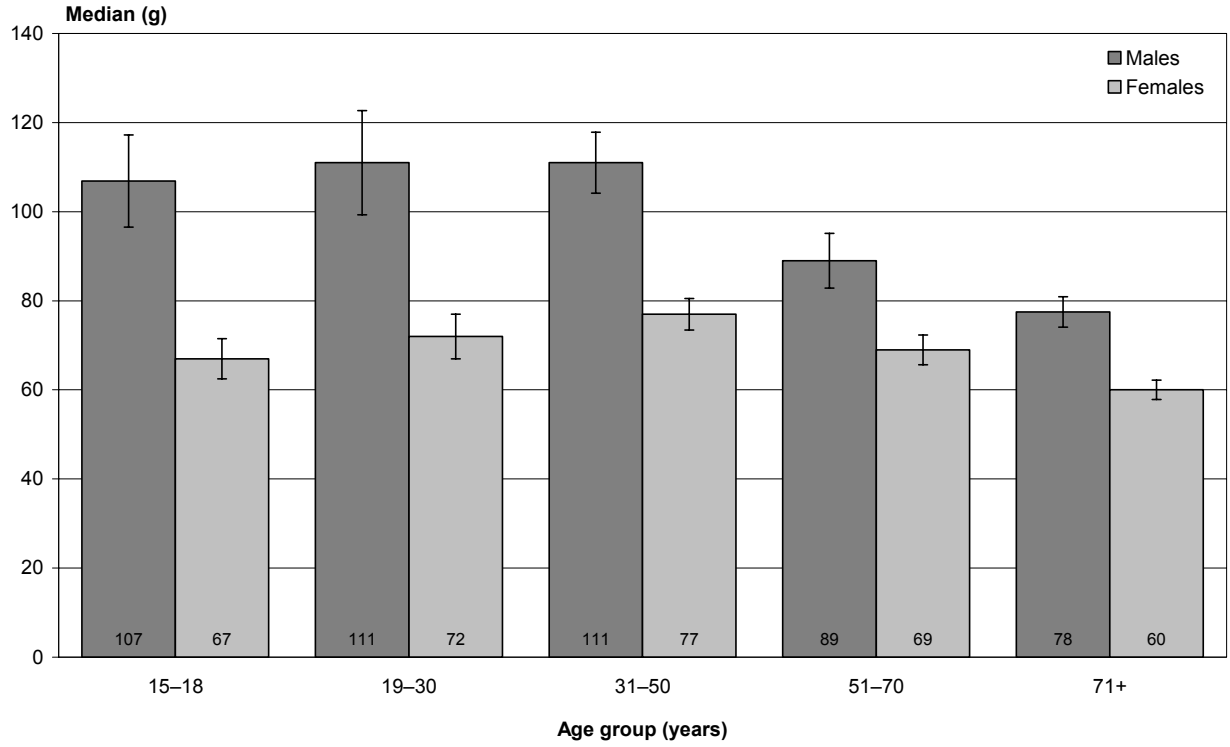
3.3 Protein

Protein is necessary to build, maintain and repair tissue and to synthesise hormones, enzymes and antibodies. Protein can also be used as a source of energy. Proteins are made up of 20 amino acids, some of which the body can synthesise, but others must be obtained from food (Mann and Truswell 2007). The acceptable macronutrient distribution range (AMDR) for protein is 15–25% of total energy (NHMRC 2006).

Protein intake

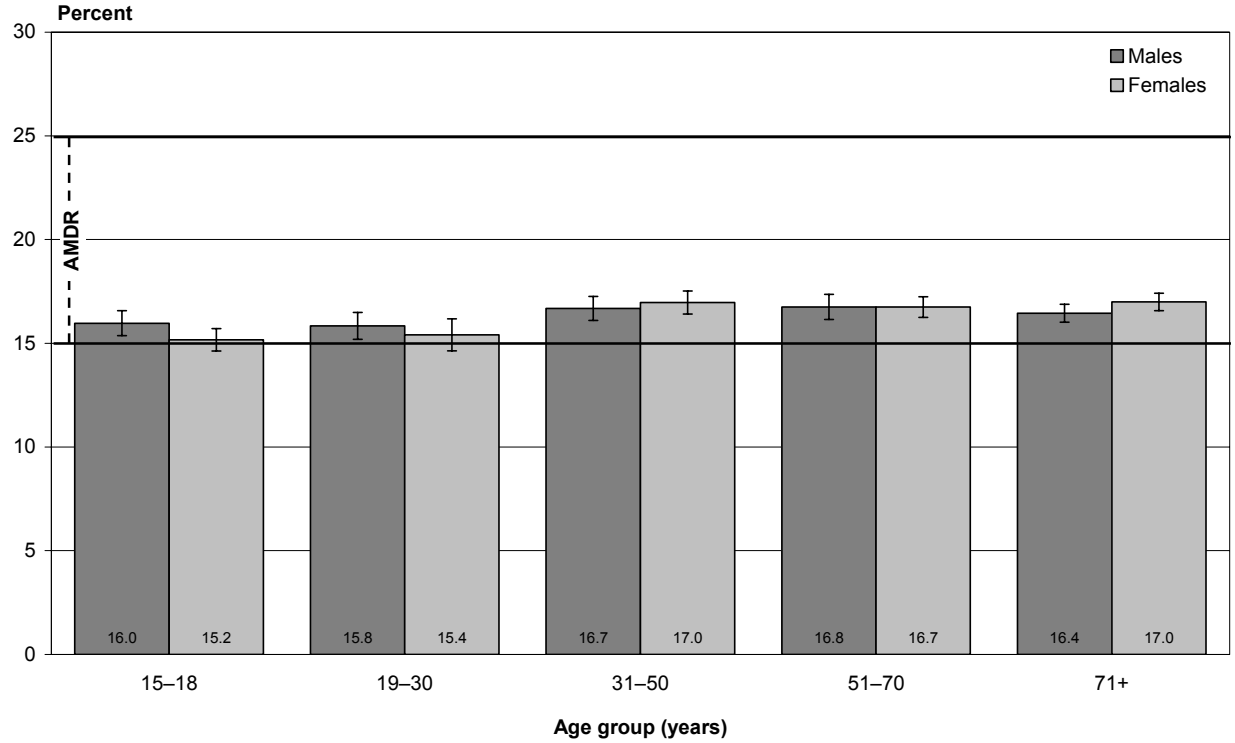
The median usual daily protein intake was 102 g for males and 71 g for females (Table 3.3). Males aged 51+ years and females aged 71+ years had lower intakes than younger males and females (Figure 3.3).

Figure 3.3: Median protein intake (g), by age group and sex



The mean contribution of protein to energy intake was 16.4% for males and 16.5% for females and varied little across age groups (Table 3.3, Figure 3.4).

Figure 3.4: Mean percent energy from protein,[1] by age group and sex



1 Acceptable macronutrient distribution range for protein is 15–25% of energy (NHMRC 2006).

Māori males aged 51+ years had a median usual daily protein intake lower than those aged 19–30 years, and the mean percent energy from protein was lower for the 15–18-year-old Māori males and females (14.7% and 15.3%, respectively) compared to those aged 51+ years (17.7% and 17.6%).

There were no differences in the median usual daily intake of protein, or in mean percent energy from protein, across age groups for Pacific males or females.

For both males and females there were no differences in intakes of protein consumed and the mean contribution of protein to energy intake between NZDep2006 quintiles. Overall, there was no gradient across NZDep2006 quintiles for amounts of protein consumed and the contribution of protein to energy intake, after adjusting for age, sex and ethnic group.

The estimated prevalence of inadequate intake for protein was 2.0% (males 1.7%; females 2.3%). The estimated average requirement (EAR) has been augmented by 25% for males and females aged 71+ years (NHMRC 2006) and the estimated prevalence of inadequate intake is higher for this age group than for all younger adults (13.4% for males aged 71+ years; 15.5 % for females aged 71+ years).

Dietary sources of protein

The *Bread* group was the single largest contributor of protein to the diet (11%), followed by *Poultry* and *Milk* (each 9%), *Beef and veal* (8%), *Grains and pasta* and *Bread-based dishes* (each 7%), *Fish and seafood* (6%) and *Pork* (5%) (Table 3.4).

Older males (71+ years) obtained more protein from *Bread* than those aged 15–30 years, and older females (71+ years) more than all younger females. In contrast, males aged 15–30 years and females aged 15–18 years obtained more protein from *Bread-based dishes* than older age groups.

The contribution of other food sources to protein intake varied according to age and sex. Older males (71+ years) and females aged 51+ years obtained less protein from *Poultry* compared to younger age groups (Figure 3.5). Males aged 15–30 years and females aged 15–50 years obtained less protein from *Milk* than older age groups; and older males (71+ years) and females aged 31+ years obtained more protein from *Fish* than younger age groups.

Figure 3.5: Percent protein from poultry, by age group and sex

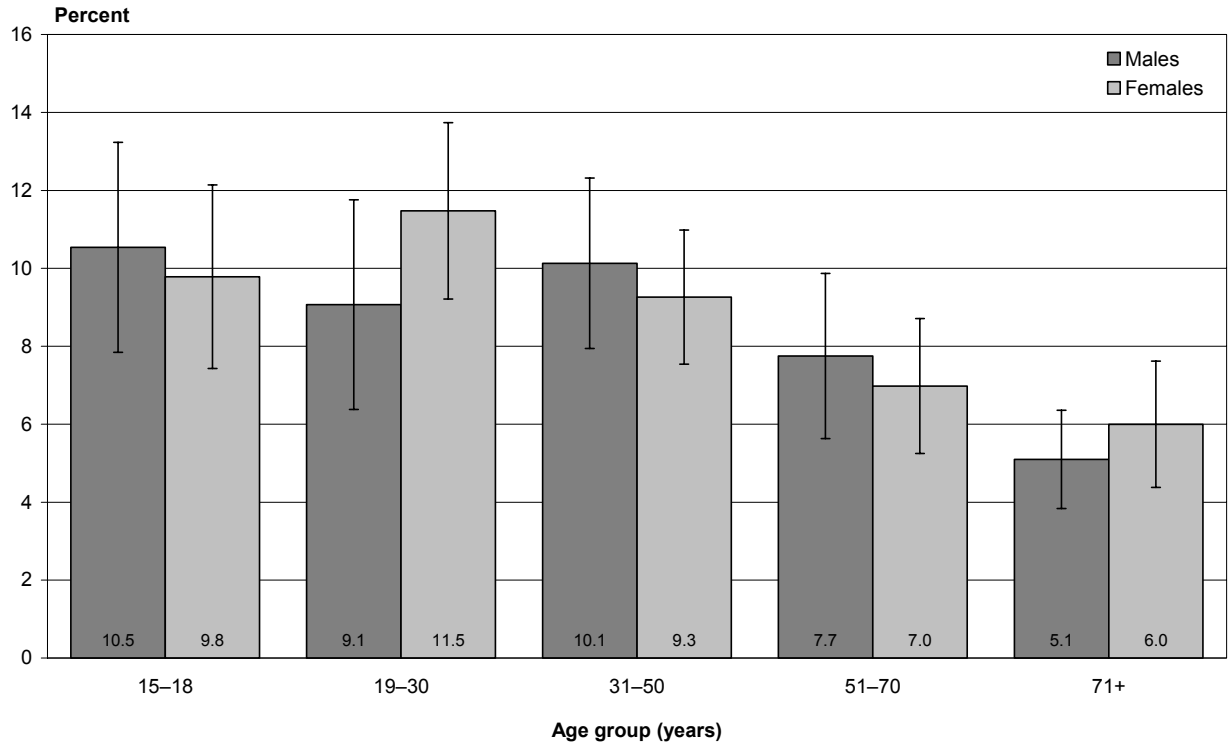


Table 3.3: Protein intake (g) and % energy from protein, by age group, ethnic group, NZDep2006 and sex

Protein intake (g)[1]

		Mean	10th[2]	Median (50th),[2] (95% CI)	90th[2]	Inadequate intake: percent [3]
Total population		88	57	84 (82–86)	124	2.0
By age group (years)						
Males	15–18	108	91	107 (97–117)	125	0.0
	19–30	113	88	111 (99–123)	140	0.0
	31–50	113	87	111 (104–118)	142	0.0
	51–70	92	65	89 (83–95)	124	1.7*
	71+	79	63	78 (74–81)	95	13.4*
	Total	104	76	102 (98–106)	136	1.7
Females	15–18	69	49	67 (63–71)	93	0.7*
	19–30	73	52	72 (67–77)	97	0.5*
	31–50	79	57	77 (73–81)	103	0.3
	51–70	71	48	69 (66–72)	95	1.6*
	71+	62	43	60 (58–62)	83	15.5
	Total	73	50	71 (69–73)	99	2.3
Māori						
Males	15–18	102	66	98 (83–113)	144	1.5*
	19–30	127	84	119 (107–131)	176	0.3
	31–50	118	76	113 (104–122)	167	1.3
	51+	95	55	92 (79–105)	138	8.0*
	Total	114	87	113 (107–119)	144	2.5
Females	15–18	67	44	63 (51–75)	95	1.4*
	19–30	81	60	79 (71–87)	104	0.0
	31–50	76	49	73 (67–79)	107	1.1*
	51+	68	49	67 (62–72)	89	0.9*
	Total	76	52	73 (70–76)	102	0.8*
Pacific						
Males	15–18	117	79	117 (89–145)	153	1.2*
	19–30	114	61	106 (79–133)	178	5.1*
	31–50	167	60	100[#]	225	5.4*
	51+	86	50	83 (70–96)	126	11.3*
	Total	109	69	105 (95–115)	154	5.9*
Females	15–18	66	47	65 (49–81)	88	1.5*
	19–30	81	53	79 (67–91)	113	1.0*
	31–50	87	67	85 (75–95)	108	0.0
	51+	73	45	68 (59–77)	106	3.9*
	Total	81	49	77 (71–83)	117	1.4*
NZEO						
Males	15–18	107	84	105 (94–116)	131	0.0
	19–30	110	87	109 (97–121)	134	0.0
	31–50	113	89	112 (103–121)	139	0.0
	51+	89	66	87 (81–93)	114	0.8*
	Total	103	78	101 (97–105)	130	0.3

		Mean	10th[2]	Median (50th),[2] (95% CI)	90th[2]	Inadequate intake: percent (95% CI)[3]
Females	15–18	69	49	67 (63–71)	91	0.5*
	19–30	71	51	70 (64–76)	93	0.9*
	31–50	79	59	77 (73–81)	100	0.2
	51+	68	48	66 (63–69)	90	1.7
	Total	73	51	71 (69–73)	96	0.9
By NZDep2006 quintile						
Males	1	101	76	99 (89–109)	129	[4]
	2	106	81	104 (97–111)	133	[4]
	3	102	64	96 (88–104)	145	[4]
	4	98	78	97 (89–105)	120	[4]
	5	109	70	105 (96–114)	154	[4]
Females	1	72	54	71 (67–75)	92	[4]
	2	73	57	73 (68–77)	91	[4]
	3	75	49	72 (68–76)	105	[4]
	4	73	49	71 (67–75)	98	[4]
	5	72	49	69 (65–73)	99	[4]

Percent energy from protein[5]

		Mean (95% CI)	10th[2]	Median (50th)[2]	90th[2]
Total population		16.5 (16.3–16.7)	11	16	23
By age group (years)					
Males	15–18	16.0 (15.4–16.6)	10	16	22
	19–30	15.8 (15.2–16.5)	11	16	22
	31–50	16.7 (16.1–17.3)	11	16	24
	51–70	16.8 (16.2–17.4)	11	16	24
	71+	16.4 (16.0–16.9)	11	16	22
	Total	16.4 (16.2–16.7)	11	16	23
Females	15–18	15.2 (14.6–15.7)	9	14	22
	19–30	15.4 (14.6–16.2)	10	15	22
	31–50	17.0 (16.4–17.5)	11	16	24
	51–70	16.7 (16.2–17.2)	11	16	24
	71+	17.0 (16.6–17.4)	11	16	23
	Total	16.5 (16.2–16.8)	11	16	23
Māori					
Males	15–18	14.7 (13.3–16.1)	9	15	20
	19–30	16.8 (15.3–18.4)	10	16	23
	31–50	17.0 (15.9–18.1)	11	16	24
	51+	17.7 (16.5–19.0)	11	17	24
	Total	16.8 (16.1–17.5)	10	16	23
Females	15–18	15.3 (13.9–16.6)	9	14	21
	19–30	15.8 (15.0–16.6)	10	15	22
	31–50	16.2 (15.3–17.1)	10	15	23
	51+	17.6 (16.8–18.4)	11	17	24
	Total	16.3 (15.8–16.7)	10	15	23

		Mean (95% CI)	10th[2]	Median (50th)[2]	90th[2]
Pacific					
Males	15–18	16.6 (14.7–18.5)	7	17	24
	19–30	16.3 (15.0–17.5)	11	16	23
	31–50	17.0 (15.7–18.4)	12	17	25
	51+	17.2 (15.6–18.8)	10	17	27
	Total	16.8 (16.1–17.5)	11	17	25
Females	15–18	15.8 (13.2–18.3)	9	13	23
	19–30	16.0 (14.8–17.2)	10	15	23
	31–50	17.2 (16.3–18.1)	11	17	24
	51+	18.0 (16.8–19.3)	12	17	26
	Total	16.9 (16.2–17.5)	11	16	24
NZEO					
Males	15–18	15.9 (15.2–16.6)	11	16	22
	19–30	15.7 (15.0–16.4)	11	16	21
	31–50	16.6 (16.0–17.3)	11	16	23
	51+	16.6 (16.1–17.1)	11	16	22
	Total	16.4 (16.1–16.7)	11	16	22
Females	15–18	15.1 (14.5–15.6)	10	14	21
	19–30	15.2 (14.3–16.2)	10	15	21
	31–50	17.0 (16.4–17.6)	11	16	24
	51+	16.7 (16.3–17.1)	11	16	23
	Total	16.4 (16.1–16.8)	11	16	23
By NZDep2006 quintile					
Males	1	16.3 (15.6–16.9)	12	16	22
	2	16.3 (15.6–17.0)	11	16	22
	3	16.5 (15.9–17.2)	11	16	23
	4	16.3 (15.6–16.9)	12	16	22
	5	16.9 (16.4–17.5)	10	16	24
Females	1	16.3 (15.6–17.0)	11	16	22
	2	16.6 (15.9–17.3)	11	16	22
	3	16.5 (15.7–17.3)	11	16	23
	4	16.6 (16.1–17.2)	10	16	23
	5	16.3 (15.8–16.9)	10	16	23

1 Usual daily intake. These data were adjusted for intra-individual variation using PC-SIDE.

2 Percentiles.

3 Calculated by probability analysis (see Chapter 2).

* Coefficient of variation of estimated inadequate intake is greater than 50% and confidence interval lies outside range (0–5%). Estimate should be interpreted with caution due to the high level of imprecision relative to the estimate.

\# Confidence interval could not be calculated. Estimate should be interpreted with caution.

4 NZDep2006 quintiles consist of a range of age groups. Because the requirements differ for each age group, an overall figure was not calculated.

5 These data were not adjusted for intra-individual variation because the only methods that have been developed for ratios use multiple day repeats. Percent energy from protein for each participant was calculated as the energy from protein (conversion factor = 16.7 kJ/g) divided by the total energy intake.

Table 3.4: Protein sources, percent (95% CI),[1] by age group, sex and food group

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Bread	11.1 (10.6–11.5)	9.9 (8.3–11.5)	10.0 (8.1–11.9)	11.7 (10.5–12.9)	11.5 (10.2–12.9)	14.3 (12.8–15.7)	11.4 (10.7–12.1)	10.8 (9.5–12.1)	9.0 (7.5–10.4)	10.4 (9.3–11.4)	11.2 (10.0–12.3)	14.2 (12.8–15.6)	10.7 (10.1–11.3)
Poultry	8.8 (8.1–9.6)	10.5 (7.8–13.2)	9.1 (6.4–11.8)	10.1 (7.9–12.3)	7.7 (5.6–9.9)	5.1 (3.8–6.4)	8.8 (7.7–10)	9.8 (7.4–12.1)	11.5 (9.2–13.7)	9.3 (7.5–11.0)	7.0 (5.2–8.7)	6.0 (4.4–7.6)	8.8 (7.9–9.7)
Milk	8.8 (8.4–9.2)	7.2 (6.1–8.3)	6.1 (4.8–7.4)	7.7 (6.8–8.6)	9.7 (8.4–10.9)	10.8 (9.7–12.0)	8.1 (7.6–8.7)	6.6 (5.5–7.7)	7.7 (6.2–9.1)	9.9 (8.7–11.1)	9.8 (8.7–10.8)	11.5 (10.6–12.5)	9.4 (8.8–10.0)
Beef and veal	7.8 (7.1–8.5)	7.2 (5.0–9.5)	6.5 (4.3–8.7)	8.6 (6.6–10.7)	8.6 (6.3–10.9)	10.1 (8.3–12.0)	8.2 (7.1–9.3)	6.0 (4.2–7.8)	4.6 (2.8–6.4)	7.7 (6.2–9.2)	8.5 (6.6–10.5)	9.3 (7.3–11.2)	7.3 (6.5–8.2)
Grains and pasta	6.8 (6.2–7.4)	7.3 (5.2–9.4)	9.4 (7.0–11.8)	6.8 (5.5–8.1)	6.5 (4.8–8.1)	4.7 (3.4–5.9)	7.1 (6.2–8.0)	9.2 (7.3–11.1)	9.7 (7.0–12.3)	6.7 (5.4–7.9)	4.4 (3.6–5.3)	4.2 (3.3–5.1)	6.6 (5.8–7.4)
Bread-based dishes	6.6 (5.9–7.2)	14.1 (11.6–16.7)	12.9 (9.0–16.8)	6.7 (5.1–8.3)	5.4 (3.6–7.2)	2.1 (1.4–2.8)	7.8 (6.6–9.0)	12.6 (10.0–15.2)	7.7 (5.3–10.1)	5.8 (4.5–7.2)	2.6 (1.8–3.3)	1.9 (1.2–2.5)	5.4 (4.6–6.2)
Fish and seafood	6.0 (5.4–6.6)	3.5 (2.0–4.9)	3.6 (1.9–5.4)	6.5 (4.9–8.1)	6.1 (4.3–7.9)	7.0 (5.5–8.6)	5.6 (4.8–6.5)	2.8 (1.8–3.8)	5.2 (3.3–7.2)	6.4 (4.9–7.8)	8.1 (6.3–9.9)	6.0 (4.8–7.3)	6.3 (5.5–7.1)
Pork	4.5 (4.0–5.0)	4.8 (3.1–6.4)	5.9 (3.8–8.0)	4.1 (3.0–5.2)	6.0 (4.0–8.0)	6.0 (4.6–7.5)	5.2 (4.4–6.0)	3.3 (2.2–4.4)	3.3 (1.8–4.8)	3.9 (2.9–4.9)	4.2 (3.1–5.4)	4.3 (3.2–5.4)	3.9 (3.3–4.4)
Vegetables	4.3 (4.0–4.6)	2.4 (1.5–3.3)	2.8 (1.9–3.7)	3.7 (3.1–4.4)	3.7 (3.0–4.3)	5.0 (4.4–5.6)	3.5 (3.2–3.9)	2.8 (2.2–3.4)	4.7 (3.4–6.0)	4.5 (3.8–5.2)	6.3 (5.4–7.2)	5.5 (4.9–6.1)	5.0 (4.5–5.5)
Potatoes, kumara and taro	3.2 (3–3.4)	4.6 (3.7–5.5)	2.9 (2.2–3.6)	3.0 (2.5–3.5)	3.2 (2.7–3.7)	3.4 (3.0–3.8)	3.2 (2.9–3.5)	4.2 (3.5–4.9)	4.2 (3.0–5.3)	3.1 (2.5–3.6)	2.6 (2.2–3.0)	2.9 (2.6–3.3)	3.2 (2.9–3.6)
Sausages and processed meats	3.1	3.3	3.9	3.5	2.9	3.1	3.3	3.9	3.0	2.9	2.8	2.7	2.9
Cheese	3.1	2.5	3.3	3.1	2.4	2.3	2.8	3.2	2.0	4.1	3.2	3.1	3.3
Eggs and egg dishes	2.9	2.8	2.1	2.8	3.3	3.7	2.8	1.8	3.9	2.3	3.0	3.9	2.9
Breakfast cereals	2.8	2.5	2.2	2.4	4.0	3.5	2.9	2.0	1.9	2.6	3.2	3.5	2.7
Pies and pasties	2.6	3.7	4.6	3.2	2.1	1.8	3.1	2.9	3.0	1.9	1.7	1.5	2.1
Non-alcoholic beverages	2.5	0.9	2.3	2.1	2.2	1.3	2.0	2.0	2.6	3.3	3.1	1.9	2.9
Lamb and mutton	2.0	1.2	1.7	1.7	2.6	1.9	1.9	1.0	2.4	1.4	2.9	2.5	2.1
Dairy products	2.0	1.6	1.3	1.6	1.7	1.6	1.5	2.6	2.6	1.8	2.8	2.8	2.4
Cakes and muffins	1.8	0.9	1.4	1.6	1.7	1.6	1.5	2.5	2.2	1.6	2.0	2.6	2.0
Fruit	1.7	1.2	1.1	1.2	1.5	2.1	1.3	1.5	1.5	1.8	2.5	2.6	2.0
Nuts and seeds	1.2	1.1	0.7	1.1	1.4	1.0	1.1	0.6	0.6	1.5	1.5	0.7	1.2
Biscuits	1.1	1.2	0.5	0.9	1.0	1.4	0.9	1.8	1.0	1.4	1.3	1.5	1.3
Soups and stocks	1.1	0.3	0.9	0.6	0.8	1.7	0.8	0.8	1.0	1.2	1.7	1.7	1.3

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Sugar and sweets	0.9	0.9	1.2	0.8	0.4	0.3	0.7	1.8	1.3	1.1	0.7	0.4	1.0
Savoury sauces and condiments	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.8	0.8	0.9	0.8	0.8	0.8
Alcoholic beverages	0.7	0.5	1.2	1.0	1.0	0.9	1.0	0.1	0.2	0.6	0.3	0.3	0.4
Puddings and desserts	0.5	0.4	0.1	0.5	0.5	1.4	0.5	0.4	0.5	0.4	0.6	0.8	0.5
Other meat	0.5	0.2	0.2	0.5	0.9	0.8	0.6	0.2	0.2	0.3	0.4	0.5	0.4
Snack bars	0.4	1.3	0.3	0.6	0.3	0.1	0.5	0.8	0.3	0.4	0.4	0.2	0.4
Supplements providing energy	0.4	0.7	0.8	0.5	0.1	0.0	0.4	0.2	0.7	0.4	0.1	0.3	0.4
Snack foods	0.3	0.5	0.5	0.3	0.1	0.0	0.3	0.7	0.6	0.4	0.2	0.0	0.4
Butter and margarine	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1
Fats and oils	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1 Proportion of total nutrient intake obtained from each food group. Results for Māori, Pacific, NZEO and NZDep2006 are in the online data tables. For full food group definitions, see Table 2.2. 95% confidence intervals are presented only for the top 10 food groups.

3.4 Total fat

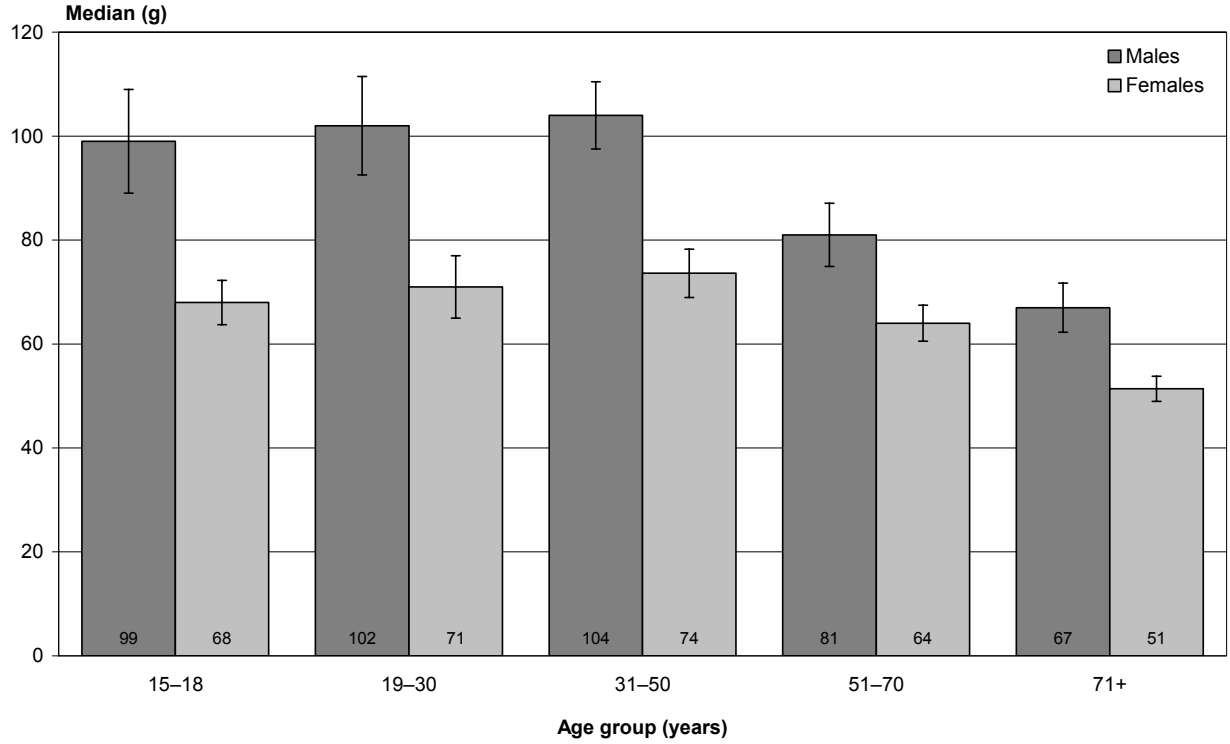
Fats are the most concentrated sources of energy. Dietary fats also help in the absorption of fat-soluble vitamins, are the precursors of many hormones, and are an important structural component of cell membranes (Mann and Truswell 2007). There are three main types of fatty acids in the diet: saturated, monounsaturated and polyunsaturated. Some monounsaturated and polyunsaturated fatty acids have a particular configuration and are called trans fatty acids.

Deficiencies resulting from inadequate fatty acids intake are rare, suggesting the minimum requirements are low. In countries such as New Zealand the major health issues concerning dietary fat are related to excess consumption of dietary fat (especially saturated fat) and/or an imbalance of fatty acids. The acceptable macronutrient distribution range for total fat is 20–35% of energy (NHMRC 2006).

Total fat intake

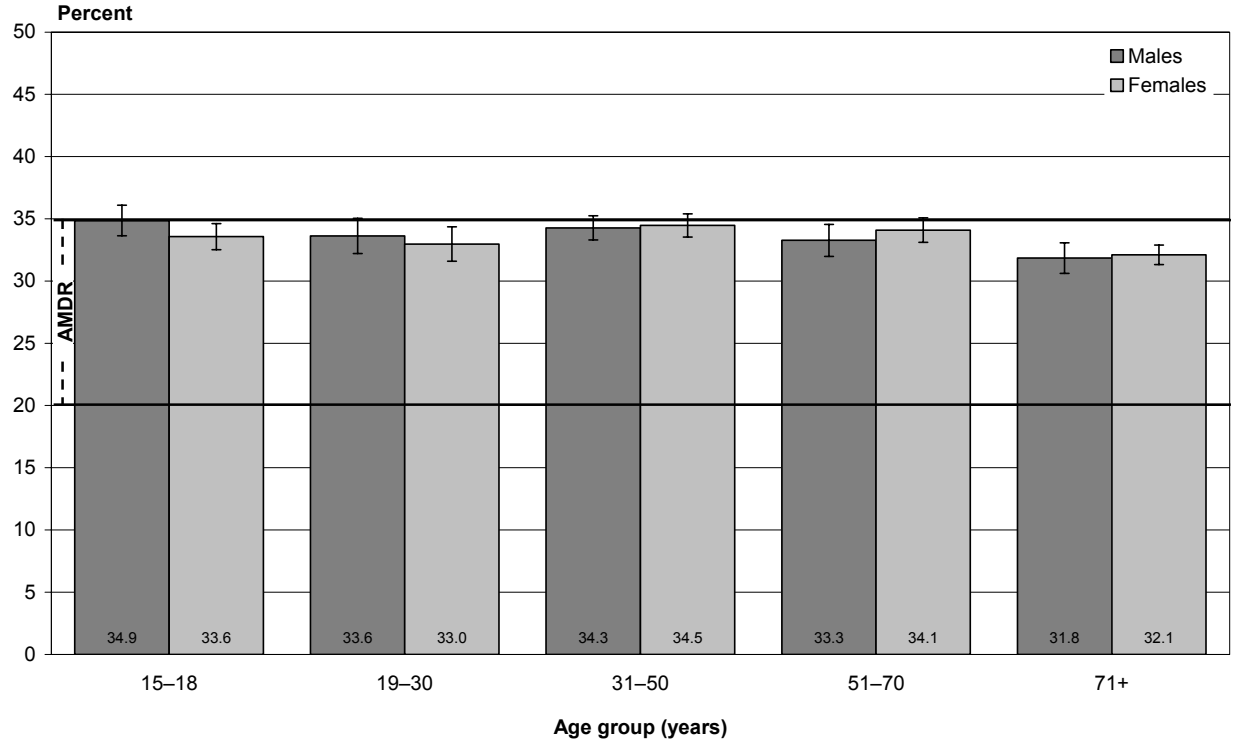
The median usual daily intake of total fat for males was 95 g and for females 67 g (Table 3.5). Males aged 51+ years and females aged 71+ years had lower total fat intakes than younger males and females (Figure 3.6).

Figure 3.6: Median total fat intake (g), by age group, and sex



The mean percent contribution to daily energy intake from total fat was 33.7% for males and 33.8% for females (Table 3.5). This falls within the AMDR of 20–35% of energy for total fat. There was little variation across age groups for percent energy from total fat for both males and females (Figure 3.7).

Figure 3.7: Percent energy from total fat,[1] by age group and sex



1 Acceptable macronutrient distribution range for fat is 20–35% of energy (NHMRC 2006).

Māori males aged 51+ years consumed less total fat (92 g) than those aged 31–50 years (117 g), and Māori females aged 51+ years (62 g) consumed less total fat than those aged 19–30 years (80 g). Pacific females aged 51+ years consumed less total fat (60 g) than those aged 19–30 years (75 g).

For males and females the proportion of energy from fat did not vary between NZDep2006 quintiles. Overall, there was no gradient across NZDep2006 quintiles for total fat intake, after adjusting for age, sex and ethnic group.

Dietary sources of total fat

The largest single contributor of total fat to the diet was the *Butter and margarine* group (9%), followed by *Potatoes, kumara and taro*, *Bread-based dishes* and *Poultry* (each 6%), and *Milk* and *Beef and veal* (each 5%) (Table 3.6). *Bread*, *Cakes and muffins*, *Cheese* and *Grains and pasta* all contributed 4% of total fat.

There were differences in the contribution of *Butter and margarine* to the total fat intake across age groups. Males aged 31+ years and females aged 51+ years obtained proportionately more fat from *Butter and margarine* than those aged 15–18 years. In particular, males and females aged 71+ years obtained 16% and 15% of total fat, respectively, from *Butter and margarine.*

Other variations in the contributions to total fat intake were:

- *Potatoes, kumara and taro* contributed more for 15–18-year-old males and females compared to those 31+ years (Figure 3.8)
- *Bread-based dishes* contributed more total fat to the diet of 15–18-year-old males compared to those aged 31+ years, and to the diet of 15–18-year-old females compared to all older females
- *Poultry* provided less total fat to older males (71+ years) than to those aged 15–50 years
- females aged 51+ years obtained less fat from *Poultry* than females aged 19–30 years.

Figure 3.8: Percent total fat from *Potatoes, kumara and taro*, by age group and sex

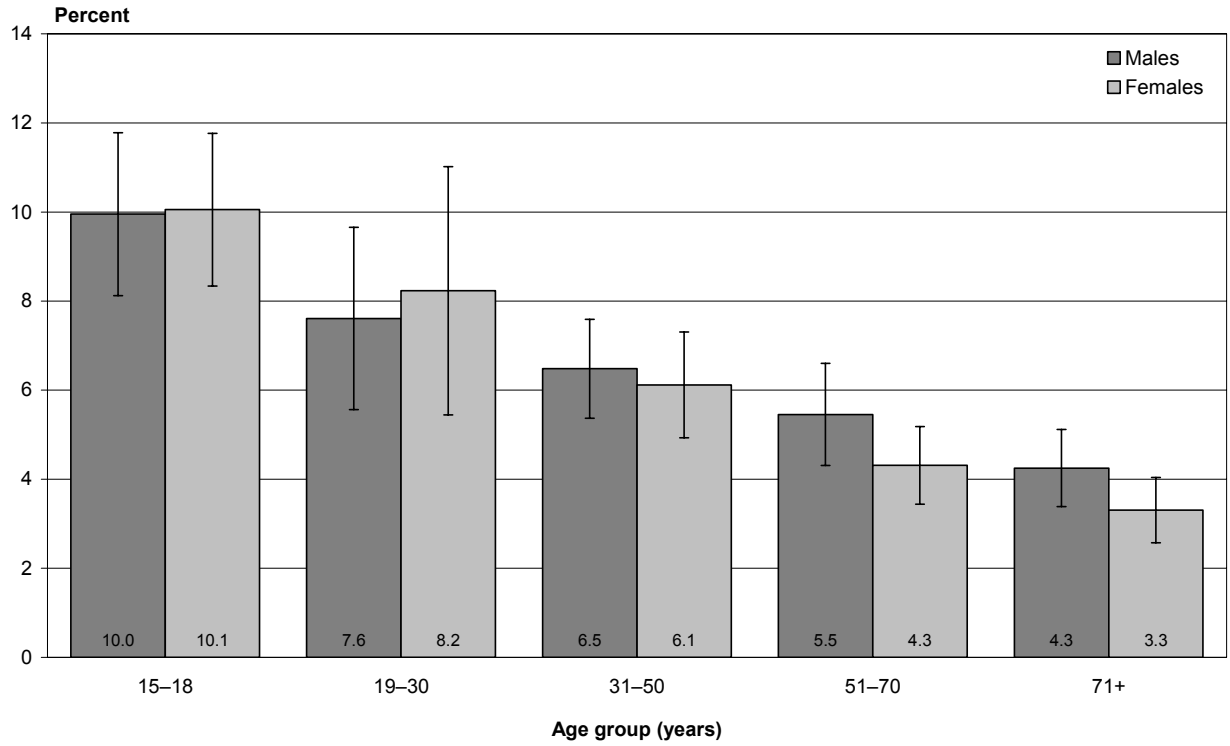


Table 3.5: Total fat intake, by age group, ethnic group, NZDep2006 and sex

		Total fat (g)[1]				Percent energy from total fat[2]			
		Mean	10th[3]	Median (50th) (95% CI)[3]	90th[3]	Mean (95% CI)	10th[3]	Median (50th)[3]	90th[3]
Total population		83	51	79 (77–81)	119	33.7 (33.3–34.1)	23	34	46
By age group (years)									
Males	15–18	104	63	99 (89–109)	151	34.9 (33.6–36.1)	24	34	45
	19–30	108	63	102 (93–111)	159	33.6 (32.2–35.0)	23	35	45
	31–50	105	81	104 (98–110)	131	34.3 (33.3–35.2)	23	35	47
	51–70	85	49	81 (75–87)	125	33.3 (32.0–34.6)	21	33	45
	71+	69	47	67 (62–72)	94	31.8 (30.6–33.1)	23	33	44
	Total	97	67	95 (92–98)	131	33.7 (33.1–34.3)	23	34	45
Females	15–18	70	44	68 (64–72)	101	33.6 (32.5–34.6)	23	34	44
	19–30	74	43	71 (65–77)	110	33.0 (31.6–34.3)	22	35	46
	31–50	74	62	74 (69–78)	87	34.5 (33.5–35.4)	24	35	46
	51–70	66	39	64 (61–67)	98	34.1 (33.1–35.1)	23	34	48
	71+	53	36	51 (49–54)	72	32.1 (31.3–32.9)	22	33	44
	Total	70	44	67 (65–69)	98	33.8 (33.2–34.3)	23	34	46
Māori									
Males	15–18	109	70	103 (82–124)	158	34.7 (32.2–37.2)	25	35	45
	19–30	120	77	113 (101–125)	170	34.9 (32.6–37.2)	24	36	48
	31–50	119	86	117 (106–128)	152	38.0 (36.5–39.6)	26	38	48
	51+	93	62	92 (81–103)	127	37.5 (35.3–39.6)	24	38	48
	Total	113	90	112 (104–120)	139	36.6 (35.5–37.7)	25	37	48
Females	15–18	71	43	67 (53–81)	105	35.7 (33.0–38.5)	23	35	47
	19–30	82	54	80 (72–88)	113	34.8 (33.2–36.4)	23	36	46
	31–50	75	49	73 (63–83)	106	35.6 (34.0–37.3)	26	36	48
	51+	64	44	62 (56–68)	86	36.4 (34.7–38.2)	25	37	48
	Total	75	48	72 (67–77)	107	35.6 (34.6–36.5)	24	36	47
Pacific									
Males	15–18	106	72	104 (70–138)	141	35.0 (30.9–39.1)	19	36	50
	19–30	118	66	112 (78–146)	177	36.8 (33.4–40.3)	26	36	49
	31–50	99	51	92 (75–109)	158	33.7 (30.0–37.5)	21	36	49
	51+	71	35	65 (49–81)	115	30.3 (27.5–33.2)	17	32	43
	Total	103	65	99 (87–111)	146	34.2 (32.2–36.1)	20	35	48
Females	15–18	66	40	63 (50–76)	98	32.6 (29.6–35.7)	21	34	44
	19–30	81	39	75 (64–86)	131	34.2 (32.2–36.2)	22	35	47
	31–50	83	46	78 (70–86)	128	35.6 (34.2–37.1)	23	36	46
	51+	65	37	60 (53–67)	98	35.1 (33.1–37.0)	23	35	48
	Total	78	46	74 (68–80)	115	34.7 (33.7–35.7)	22	35	46

		Total fat (g)[1]				Percent energy from total fat[2]			
		Mean	10th[3]	Median (50th) (95% CI)[3]	90th[3]	Mean (95% CI)	10th[3]	Median (50th)[3]	90th[3]
NZEO									
Males	15–18	102	80	101 (90–112)	125	34.7 (33.3–36.1)	24	34	45
	19–30	102	83	101 (91–110)	122	33.2 (31.5–34.8)	23	34	44
	31–50	104	77	103 (97–109)	134	34.0 (32.9–35.0)	23	34	45
	51+	81	54	78 (74–82)	111	32.7 (31.6–33.8)	22	33	44
	Total	95	68	93 (90–96)	126	33.4 (32.7–34.1)	23	33	45
Females	15–18	70	46	68 (63–73)	98	33.8 (32.6–34.9)	23	34	44
	19–30	73	43	70 (64–76)	107	32.8 (31.2–34.4)	22	35	46
	31–50	73	63	73 (68–78)	84	34.3 (33.3–35.4)	23	34	45
	51+	62	39	60 (57–63)	89	33.3 (32.5–34.1)	22	33	45
	Total	69	44	67 (65–69)	96	33.6 (33.0–34.2)	22	34	45
By NZDep2006 quintile									
Males	1	95	56	90 (82–98)	142	33.6 (32.1–35.0)	24	33	45
	2	102	83	101 (91–110)	122	33.6 (32.3–34.9)	25	34	44
	3	119	86	117 (106–128)	152	33.6 (32.1–35.1)	21	33	45
	4	92	68	90 (82–98)	118	33.6 (32.3–34.8)	23	35	45
	5	100	62	96 (88–104)	141	34.1 (33.0–35.3)	22	35	48
Females	1	68	45	66 (61–71)	94	33.6 (32.2–35.0)	21	34	45
	2	69	44	67 (62–72)	97	33.2 (32.2–34.2)	23	33	44
	3	69	49	67 (62–72)	92	33.0 (31.7–34.3)	23	33	45
	4	70	42	66 (61–71)	103	34.7 (33.6–35.8)	23	34	46
	5	71	46	68 (64–72)	99	34.5 (33.4–35.6)	23	36	47

1 Usual daily intake. These data were adjusted for intra-individual variation using PC-SIDE.

2 These data were not adjusted for intra-individual variation because the only methods that have been developed for ratios use multiple day repeats. Percent energy from fat for each participant was calculated as the energy from fat (conversion factor = 37.7 kJ/g) divided by the total energy intake.

3 Percentiles.

Table 3.6: Total fat sources, percent (95% CI),[1] by age group, sex and food group

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Butter and margarine	9.3 (8.8–9.8)	5.6 (4.4–6.9)	6.3 (5.0–7.7)	9.0 (7.8–10.2)	11.9 (10.1–13.7)	15.8 (14.5–17.2)	9.6 (8.9–10.3)	5.5 (4.5–6.4)	6.7 (5.3–8.0)	8.1 (6.9–9.4)	10.3 (9.0–11.7)	15.0 (13.6–16.5)	9.0 (8.3–9.6)
Potatoes, kumara and taro	6.3 (5.7–6.8)	10.0 (8.1–11.8)	7.6 (5.6–9.7)	6.5 (5.4–7.6)	5.5 (4.3–6.6)	4.3 (3.4–5.1)	6.5 (5.8–7.2)	10.1 (8.3–11.8)	8.2 (5.4–11.0)	6.1 (4.9–7.3)	4.3 (3.4–5.2)	3.3 (2.6–4.0)	6.0 (5.3–6.8)
Bread-based dishes	6.3 (5.6–6.9)	12.3 (9.9–14.6)	11.4 (7.9–15.0)	6.8 (5.1–8.4)	6.0 (4.1–7.9)	2.1 (1.4–2.8)	7.5 (6.4–8.6)	11.4 (8.9–13.9)	6.3 (4.4–8.1)	5.7 (4.3–7.0)	2.9 (2.0–3.8)	2.1 (1.4–2.9)	5.1 (4.4–5.8)
Poultry	5.7 (5.2–6.2)	6.9 (5.2–8.6)	6.7 (4.6–8.9)	6.6 (5.0–8.3)	5.1 (3.4–6.7)	2.9 (2.1–3.7)	5.9 (5.0–6.8)	6.2 (4.5–7.9)	7.5 (5.8–9.2)	5.7 (4.6–6.8)	4.2 (3.1–5.3)	3.8 (2.8–4.9)	5.5 (4.9–6.1)
Milk	5.0 (4.7–5.3)	5.2 (4.3–6.0)	4.5 (3.3–5.7)	4.9 (4.2–5.6)	5.0 (4.1–5.8)	5.5 (4.7–6.3)	4.9 (4.5–5.3)	4.6 (3.7–5.5)	4.5 (3.6–5.4)	5.6 (4.6–6.6)	4.7 (3.8–5.6)	5.8 (5.2–6.5)	5.1 (4.6–5.6)
Beef and veal	4.8 (4.4–5.3)	4.8 (3.2–6.5)	4.6 (2.9–6.3)	5.3 (3.8–6.7)	5.2 (3.7–6.7)	6.1 (4.8–7.4)	5.1 (4.4–5.9)	3.7 (2.4–4.9)	3.1 (1.9–4.3)	4.8 (3.7–5.9)	4.9 (3.7–6.2)	5.7 (4.5–6.9)	4.5 (3.9–5.1)
Bread	4.4 (4.1–4.6)	4.0 (3.3–4.8)	4.5 (3.1–5.8)	4.9 (4.1–5.8)	4.4 (3.8–5.0)	5.5 (4.8–6.1)	4.7 (4.2–5.1)	4.4 (3.6–5.1)	3.4 (2.7–4.1)	3.9 (3.4–4.4)	4.1 (3.6–4.7)	5.7 (5.0–6.4)	4.1 (3.8–4.4)
Cakes and muffins	4.2 (3.8–4.7)	2.1 (1.4–2.9)	2.9 (1.3–4.5)	4.3 (3.1–5.5)	4.4 (3.1–5.7)	4.0 (3.2–4.9)	3.8 (3.2–4.5)	4.9 (3.8–6.1)	4.9 (2.9–6.9)	3.7 (2.9–4.5)	5.3 (3.9–6.6)	5.5 (4.1–6.9)	4.6 (4.0–5.2)
Cheese	4.1 (3.7–4.5)	3.2 (2.2–4.3)	4.1 (2.9–5.3)	4.4 (3.4–5.5)	3.4 (2.4–4.5)	3.2 (2.5–3.9)	3.9 (3.3–4.4)	3.9 (2.8–4.9)	3.0 (1.9–4.1)	5.2 (4.2–6.3)	4.0 (3.0–5.1)	4.3 (3.4–5.2)	4.3 (3.8–4.8)
Grains and pasta	4.1 (3.6–4.6)	5.1 (3.3–6.8)	6.1 (4.1–8.0)	3.7 (2.7–4.7)	3.8 (2.4–5.2)	3.0 (2.0–3.9)	4.3 (3.5–5.0)	5.6 (4.2–7.0)	5.8 (3.6–7.9)	4.3 (3.1–5.5)	2.2 (1.5–2.8)	2.5 (1.9–3.2)	3.9 (3.3–4.6)
Sausages and processed meats	4.0	4.1	4.7	4.6	3.8	3.9	4.3	4.6	4.0	3.9	3.6	3.5	3.8
Vegetables	3.9	2.1	2.5	2.9	3.9	4.5	3.2	2.8	3.3	4.0	6.6	4.7	4.5
Fish and seafood	3.8	2.1	2.3	4.3	4.0	4.5	3.7	1.5	3.2	4.2	4.6	4.0	3.9
Pies and pasties	3.5	5.5	6.1	4.3	2.8	2.4	4.2	3.7	4.0	2.7	2.4	2.0	2.9
Dairy products	3.3	3.3	2.0	2.7	4.1	4.0	3.1	3.9	3.4	2.8	3.9	4.1	3.4
Biscuits	3.0	3.2	1.2	2.5	2.7	4.5	2.5	4.2	2.9	3.4	3.1	4.3	3.4
Eggs and egg dishes	2.8	2.9	1.9	2.7	3.0	3.5	2.7	1.7	3.7	2.2	3.1	4.0	2.9
Nuts and seeds	2.5	2.2	1.6	2.3	2.4	2.2	2.2	1.4	1.6	3.5	3.9	1.8	2.9
Pork	2.5	2.6	3.3	2.3	3.5	3.2	2.9	1.4	1.8	2.0	2.4	2.4	2.0
Fruit	2.3	0.9	1.7	1.9	1.5	2.5	1.7	1.5	1.8	2.9	3.8	3.2	2.8
Sugar and sweets	2.2	1.5	3.2	2.0	1.1	1.0	1.9	3.4	2.4	3.1	2.0	1.0	2.5
Lamb and mutton	2.0	1.0	1.9	1.8	3.0	1.9	2.1	0.9	2.4	1.1	2.9	2.1	1.9
Savoury sauces and condiments	1.9	2.4	1.3	1.8	1.7	1.1	1.6	1.3	2.4	2.5	2.3	1.4	2.2

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Breakfast cereals	1.8	0.9	0.9	1.6	3.0	2.1	1.8	0.8	1.1	2.1	2.1	2.4	1.8
Non-alcoholic beverages	1.2	0.5	1.5	1.3	1.1	0.5	1.2	1.0	1.5	1.5	1.2	0.8	1.3
Puddings and desserts	1.0	1.0	0.5	1.0	1.2	2.5	1.1	0.9	1.1	0.7	1.2	1.5	1.0
Fats and oils	0.9	0.1	1.6	0.8	0.3	0.9	0.8	0.3	1.7	0.9	1.2	0.7	1.1
Snack bars	0.9	2.2	0.7	1.2	0.5	0.2	0.9	1.6	0.5	0.9	0.8	0.3	0.8
Snack foods	0.8	1.2	1.2	0.6	0.2	0.1	0.6	2.0	2.1	0.9	0.4	0.0	1.0
Soups and stocks	0.8	0.2	0.6	0.3	0.8	1.5	0.6	0.5	0.9	0.9	1.2	1.2	1.0
Other meat	0.3	0.1	0.2	0.2	0.6	0.6	0.3	0.1	0.1	0.1	0.4	0.5	0.2
Supplements providing energy	0.2	0.6	0.6	0.2	0.1	0.0	0.3	0.2	0.3	0.2	0.1	0.3	0.2
Alcoholic beverages	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.5	0.3	0.1	0.1	0.3

1 Proportion of total nutrient intake obtained from each food group. Results for Māori, Pacific, NZEO and NZDep2006 are in the online data tables. For full food group definitions, see Table 2.2. 95% confidence intervals are presented only for the top 10 food groups.

3.5 Types of fat and cholesterol

All fats are composed of fatty acids attached to a backbone structure. Most dietary fats are triglycerides, which are made up of three fatty acids attached to a unit of glycerol. Other types of dietary fats include phospholipids, phytosterols and cholesterol.

There are three main types of fatty acids in the diet: saturated, monounsaturated and polyunsaturated, and these account for about 90% of total fat intake. Trans fatty acids occur naturally in some ruminant foods, but are also produced by partial hydrogenation of polyunsaturated fats in food processing.

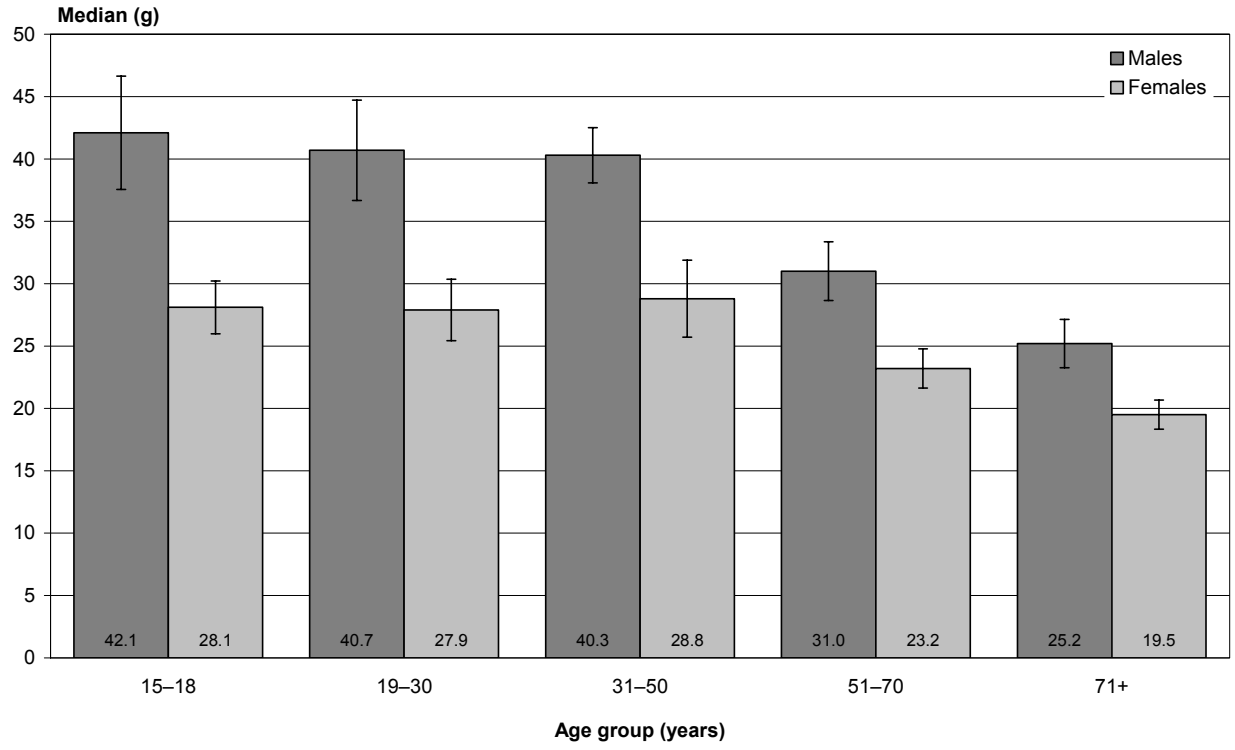
High intakes of saturated fatty acids and trans fatty acids are associated with raised total and low-density lipoprotein (LDL) cholesterol, while high intakes of polyunsaturated fatty acids, and to a lesser extent monounsaturated fatty acids, tend to reduce LDL cholesterol levels (Mann and Truswell 2007).

It is recommended that saturated and trans fats together be limited to no more than 10% of energy (NHMRC 2006).

Saturated fat intake

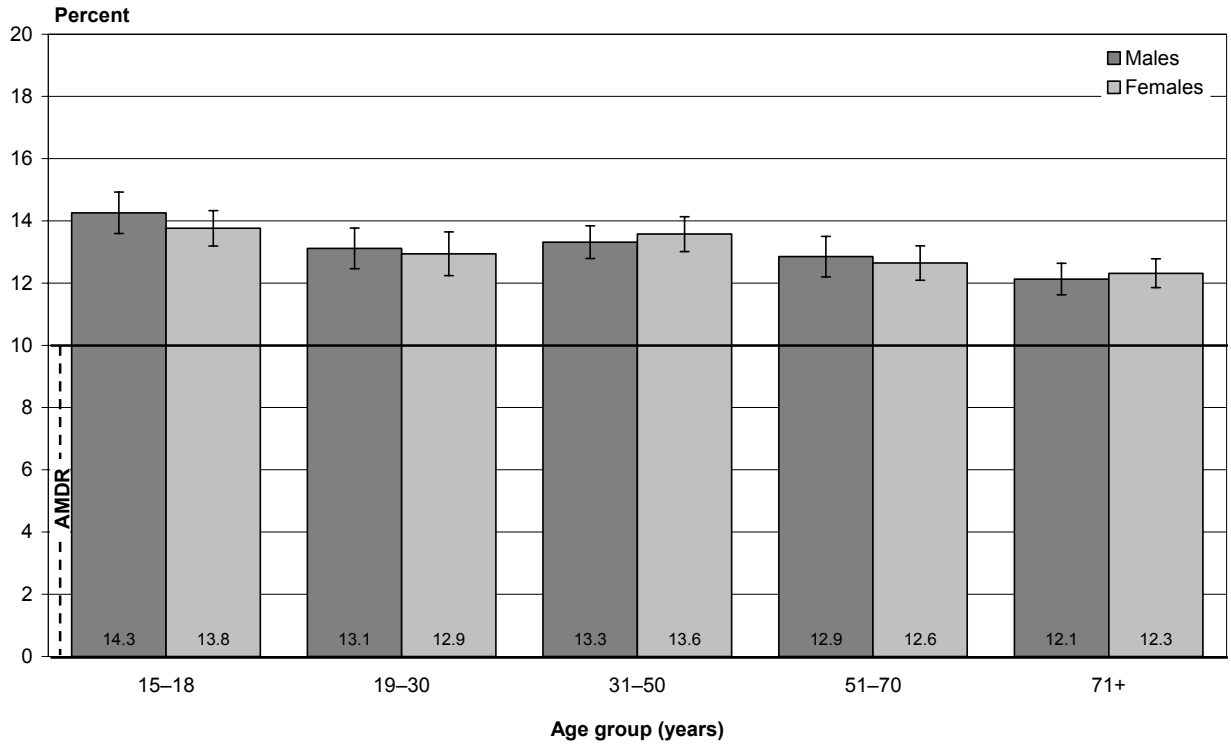
The median usual daily intake of saturated fatty acids (SAFA) was 36.5 g for males and 25.8 g for females (Table 3.7). For both males and females the median usual daily intake of SAFA was lower for those aged 51+ years than for all younger age groups (Figure 3.9).

Figure 3.9: Median SAFA intake (g), by age group and sex



The mean contribution of SAFA to daily energy intake was 13.1% for both males and females (Table 3.7). Older males and females (71+ years; 12.1% and 12.3%, respectively) had a lower mean percent energy from SAFA than those aged 15–18 years (14.3% and 13.8%) (Figure 3.10).

Figure 3.10: Percent energy from SAFA,[1] by age group and sex



1 Recommended intake for saturated and trans fats together is no more than 10% of energy (NHMRC 2006).

The mean contribution of SAFA to daily energy intake was 14.5% for Māori males and 14.2% for Māori females. The mean contribution of SAFA to daily energy intake was 13.3% for Pacific males and 13.5% for Pacific females.

There were no differences in amounts or percent contribution of SAFA to energy between NZDep2006 quintiles for males or females. Overall, there was no gradient across NZDep2006 quintiles for amounts or percent contribution of SAFA to energy, after adjusting for age, sex and ethnic group.

Dietary sources of saturated fat

The main sources of SAFA in the diets of New Zealanders were *Butter and margarine* and *Milk* (each 8%); *Bread-based dishes*, *Cheese* and *Potatoes, kumara and taro* (each 6%); *Cakes and muffins*, *Poultry*, *Beef and veal* and *Dairy products* (each 5%); and *Sausages and processed meats* (4%) (Table 3.8).

Differences in sources of SAFA across age groups were:

- older people (71+ years) obtained more SAFA from *Butter and margarine* than all younger age groups
- younger males (15–30 years) obtained more SAFA from *Bread-based dishes* than those aged 51+ years and younger females aged 15–18 years, and more SAFA from *Bread-based dishes* than all older females
- *Potatoes, kumara and taro* provided more SAFA to the diets of younger males and females (15–18 years) compared to those aged 31+ years (Figure 3.11).

Figure 3.11: Percent SAFA from *Potatoes, kumara and taro*, by age group and sex

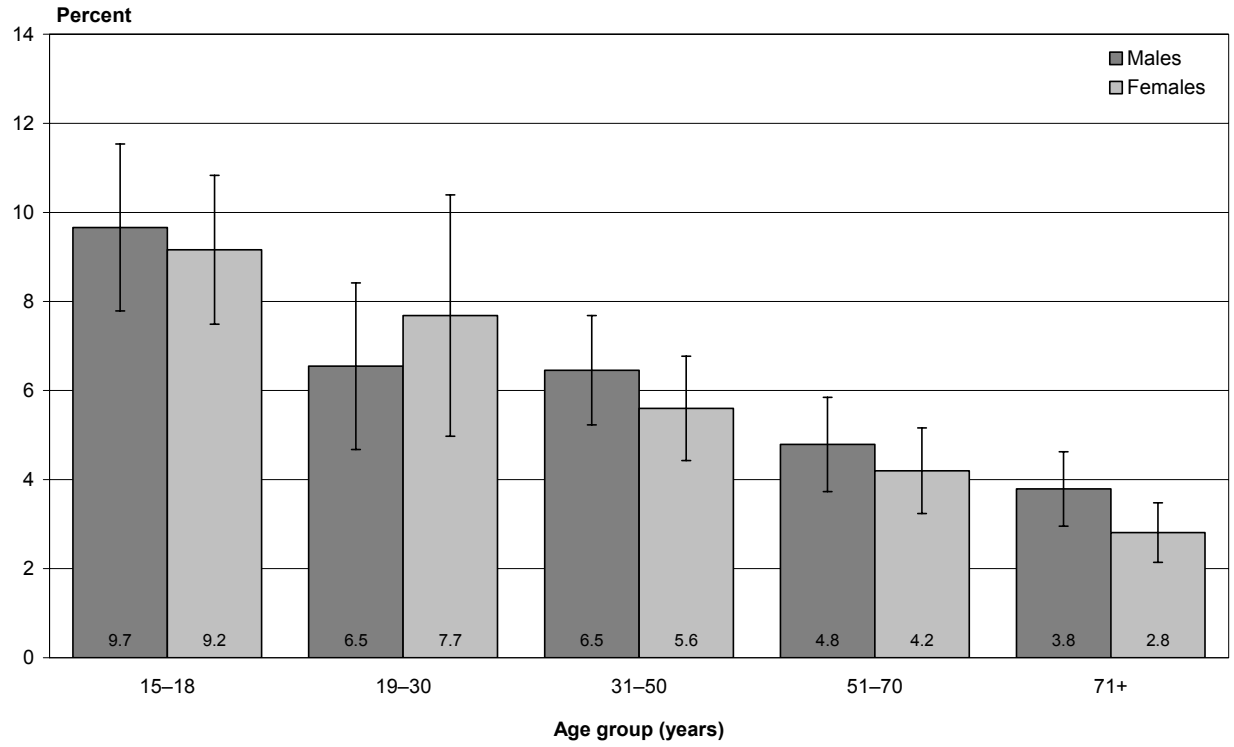


Table 3.7: Saturated fat intake, by age group, ethnic group, NZDep2006 and sex

		Saturated fat (g)[1]				Percent energy from saturated fat[2]			
		Mean (95% CI)	10th[3]	Median (50th)[3]	90th[3]	Mean (95% CI)	10th[3]	Median (50th)[3]	90th[3]
Total population		32.4	18.6	30.7 (29.8–31.6)	48.5	13.1 (12.9–13.3)	7	13	20
By age group (years)									
Males	15–18	42.5	34.6	42.1 (37.6–46.6)	50.8	14.3 (13.6–14.9)	8	14	20
	19–30	41.7	31.0	40.7 (36.7–44.7)	53.6	13.1 (12.5–13.8)	8	14	20
	31–50	41.2	29.8	40.3 (38.1–42.5)	53.7	13.3 (12.8–13.8)	7	13	20
	51–70	32.9	17.1	31.0 (28.6–33.4)	51.3	12.9 (12.2–13.5)	7	12	19
	71+	26.5	16.1	25.2 (23.3–27.1)	38.4	12.1 (11.6–12.6)	7	12	18
	Total	38.0	23.6	36.5 (35.0–38.0)	54.4	13.1 (12.8–13.4)	7	13	19
Females	15–18	29.1	18.8	28.1 (26.0–30.2	40.6	13.8 (13.2–14.3)	8	14	20
	19–30	29.6	15.6	27.9 (25.4–30.4)	45.8	12.9 (12.2–13.6)	8	13	20
	31–50	29.2	22.0	28.8 (25.7–31.9)	36.9	13.6 (13.0–14.1)	7	13	20
	51–70	24.6	13.4	23.2 (21.6–24.8)	37.6	12.6 (12.1–13.2)	7	13	20
	71+	20.4	12.3	19.5 (18.3–20.7)	29.7	12.3 (11.9–12.8)	7	12	19
	Total	27.2	16.0	25.8 (24.8–26.8)	40.1	13.1 (12.8–13.4)	7	13	20
Māori									
Males	15–18	44.1	27.3	41.5 (32.6–50.4)	65.1	13.9 (12.7–15.0)	8	15	20
	19–30	47.4	30.6	44.5 (38.5–50.5)	67.4	13.9 (12.8–15.0)	10	14	20
	31–50	46.8	30.4	45.9 (40.7–51.1)	64.5	15.1 (14.2–16.0)	9	15	20
	51+	35.5	21.0	34.4 (30.0–38.8)	51.7	14.3 (13.2–15.5)	8	14	20
	Total	45.1	33.9	44.2 (40.5–47.9)	57.3	14.5 (13.9–15.0)	8	14	20
Females	15–18	29.8	18.9	28.4 (20.8–36.0)	42.6	14.8 (13.4–16.2)	8	14	21
	19–30	33.0	20.4	32.0 (28.2–35.8)	46.8	14.0 (13.2–14.7)	8	14	21
	31–50	29.7	18.5	28.5 (25.3–31.7)	42.4	14.1 (13.3–14.8)	9	14	20
	51+	25.9	15.3	24.7 (21.9–27.5)	38.1	14.5 (13.7–15.4)	9	14	21
	Total	30.3	17.9	28.7 (26.7–30.7)	44.7	14.2 (13.7–14.7)	8	14	21
Pacific									
Males	15–18	42.1	28.8	41.4 (31.2–51.6)	56.3	13.9 (12.3–15.5)	8	14	20
	19–30	46.5	21.0	43.0 (31.4–54.6)	77.0	14.5 (13.0–16.0)	7	15	21
	31–50	39.4	18.0	34.0 (26.7–41.3)	67.0	13.1 (11.4–14.7)	6	13	24
	51+	26.8	11.0	23.3 (15.8–30.8)	47.0	11.3 (10.0–12.6)	5	11	18
	Total	40.2	22.4	37.9 (33.1–42.7)	60.9	13.3 (12.4–14.1)	6	13	21
Females	15–18	27.2	15.0	25.9 (20.5–31.3)	41.3	13.3 (11.8–14.8)	7	13	20
	19–30	31.7	13.9	29.1 (23.8–34.4)	52.8	13.1 (12.1–14.0)	8	13	18
	31–50	33.0	16.5	30.4 (26.7–34.1)	52.7	14.0 (13.0–15.0)	7	13	21
	51+	24.8	13.4	22.5 (18.7–26.3)	38.6	13.3 (12.2–14.4)	7	12	20
	Total	30.8	16.9	28.7 (25.9–31.5)	47.1	13.5 (12.9–14.0)	7	13	20

		Saturated fat (g)[1]				Percent energy from saturated fat[2]			
		Mean (95% CI)	10th[3]	Median (50th)[3]	90th[3]	Mean (95% CI)	10th[3]	Median (50th)[3]	90th[3]
NZEO									
Males	15–18	42.3	29.7	41.5 (36.6–46.4)	56.1	14.3 (13.5–15.1)	8	14	20
	19–30	39.7	23.2	38.3 (33.7–42.9)	58.0	12.9 (12.1–13.6)	8	13	19
	31–50	40.9	29.2	40.1 (37.0–43.2)	53.5	13.2 (12.6–13.8)	8	13	19
	51+	31.3	17.0	29.5 (27.6–31.4)	47.8	12.6 (12.1–13.1)	7	12	18
	Total	37.2	24.1	36.0 (34.6–37.4)	52.0	13.0 (12.6–13.3)	7	13	19
Females	15–18	29.2	20.0	28.4 (26.0–30.8)	39.4	13.9 (13.2–14.5)	8	14	20
	19–30	29.1	14.9	27.4 (24.4–30.4)	45.4	12.8 (12.0–13.7)	8	13	20
	31–50	28.9	23.1	28.6 (26.3–30.9)	35.2	13.5 (12.9–14.2)	7	13	20
	51+	23.2	13.2	22.1 (21.1–23.1)	34.6	12.4 (12.0–12.9)	7	12	19
	Total	26.8	16.0	25.6 (24.5–26.7)	39.1	13.0 (12.7–13.3)	7	13	19
By NZDep2006 quintile									
Males	1	36.7	20.5	34.9 (30.9–38.9)	55.3	12.9 (12.3–13.6)	8	13	18
	2	40.0	27.8	39.0 (35.4–42.6)	53.6	13.2 (12.6–13.9)	9	13	19
	3	36.7	26.3	35.9 (31.4–40.4)	48.0	12.9 (12.1–13.6)	7	13	20
	4	36.5	24.6	35.1 (31.8–38.4	50.2	13.3 (12.6–13.9)	7	13	19
	5	39.0	22.1	36.8 (33.2–40.4)	58.2	13.4 (12.7–14.0)	7	13	21
Females	1	26.1	15.9	25.0 (22.8–27.2)	37.7	12.9 (12.2–13.5)	7	12	19
	2	27.1	16.3	25.8 (23.2–28.4)	39.6	13.0 (12.3–13.8)	7	13	19
	3	26.6	17.1	25.6 (23.3–27.9)	37.2	12.6 (11.9–13.3)	8	13	19
	4	27.2	15.7	25.6 (23.4–27.8)	40.7	13.4 (12.8–14.0)	8	13	19
	5	28.1	16.5	26.8 (25.0–28.6)	41.4	13.6 (12.9–14.2)	7	14	21

1 These data were not adjusted for intra-individual variation because the only methods that have been developed for ratios use multiple day repeats.

2 These data were not adjusted for intra-individual variation because the only methods that have been developed for ratios use multiple day repeats. Percent energy from fat for each participant was calculated as the energy from fat (conversion factor = 37.7 kJ/g) divided by the total energy intake.

3 Percentiles.

Table 3.8: SAFA sources, percent (95% CI),[1] by age group, sex and food group

Food group	Total population	Male						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Butter and margarine	8.5 (8.0–9.0)	5.1 (3.5–6.7)	5.0 (3.9–6.0)	8.4 (7.1–9.7)	10.7 (8.9–12.6)	14.6 (13.0–16.1)	8.6 (7.9–9.4)	4.9 (3.8–5.9)	6.3 (4.7–8.0)	7.8 (6.4–9.1)	9.6 (8.2–11.0)	13.3 (11.8–14.7)	8.3 (7.6–9.1)
Milk	7.6 (7.1–8.1)	7.6 (6.3–8.9)	7.2 (5.3–9.2)	7.8 (6.6–9.0)	7.7 (6.4–8.9)	8.6 (7.4–9.9)	7.7 (7.0–8.4)	6.3 (5.1–7.6)	6.9 (5.4–8.3)	8.0 (6.8–9.3)	7.0 (5.7–8.3)	9.0 (8.0–10.1)	7.5 (6.9–8.2)
Bread-based dishes	6.4 (5.7–7.1)	12.5 (9.9–15.1)	11.9 (8.1–15.7)	7.0 (5.2–8.7)	6.1 (4.1–8.1)	2.1 (1.4–2.8)	7.7 (6.5–8.9)	11.3 (8.8–13.8)	6.1 (4.2–8.0)	5.7 (4.4–7.1)	3.1 (2.2–4.0)	2.1 (1.3–2.9)	5.1 (4.4–5.8)
Cheese	6.3 (5.8–6.9)	4.6 (3.2–6.0)	6.4 (4.5–8.2)	6.9 (5.3–8.4)	5.4 (3.9–7.0)	5.1 (4.0–6.1)	6.0 (5.2–6.8)	5.5 (4.1–6.8)	4.5 (2.9–6.1)	8.1 (6.6–9.7)	6.4 (4.8–7.9)	6.8 (5.3–8.3)	6.6 (5.9–7.4)
Potatoes, kumara and taro	5.8 (5.3–6.3)	9.7 (7.8–11.5)	6.5 (4.7–8.4)	6.5 (5.2–7.7)	4.8 (3.7–5.8)	3.8 (3.0–4.6)	6.0 (5.4–6.7)	9.2 (7.5–10.8)	7.7 (5.0–10.4)	5.6 (4.4–6.8)	4.2 (3.2–5.2)	2.8 (2.1–3.5)	5.6 (4.8–6.3)
Cakes and muffins	5.1 (4.6–5.7)	2.5 (1.6–3.4)	3.4 (1.6–5.2)	4.8 (3.5–6.2)	5.4 (3.8–7.0)	4.9 (3.8–6.1)	4.5 (3.8–5.3)	5.7 (4.4–7.1)	5.4 (3.3–7.5)	4.7 (3.6–5.7)	6.8 (5.1–8.5)	6.6 (4.9–8.3)	5.6 (4.9–6.4)
Poultry	5.0 (4.5–5.5)	5.7 (4.3–7.1)	6.0 (3.9–8.1)	5.7 (4.3–7.1)	4.6 (3.1–6.2)	2.4 (1.8–3.1)	5.2 (4.4–6.0)	5.3 (3.7–6.9)	6.7 (5.1–8.3)	5.0 (4.0–6.0)	3.9 (2.8–4.9)	3.5 (2.5–4.5)	4.9 (4.3–5.5)
Beef and veal	5.0 (4.5–5.5)	4.7 (3.1–6.3)	4.5 (2.8–6.2)	5.3 (3.8–6.7)	5.2 (3.7–6.7)	6.6 (5.1–8.0)	5.2 (4.4–5.9)	3.6 (2.3–4.9)	3.1 (1.9–4.4)	5.1 (3.9–6.3)	5.6 (4.2–7.0)	6.1 (4.8–7.4)	4.9 (4.2–5.5)
Dairy products	4.7 (4.2–5.3)	4.6 (3.3–5.8)	2.9 (1.6–4.2)	3.9 (2.6–5.1)	5.8 (4.0–7.6)	6.1 (4.5–7.8)	4.5 (3.7–5.2)	5.7 (4.3–7.0)	5.0 (3.1–6.8)	4.0 (2.8–5.3)	5.7 (4.2–7.2)	6.1 (5.1–7.1)	5.0 (4.3–5.7)
Sausages and processed meats	4.4 (3.9–4.9)	4.4 (2.6–6.3)	5.1 (3.2–7.0)	4.9 (3.6–6.2)	4.1 (2.6–5.6)	4.4 (3.2–5.6)	4.6 (3.9–5.4)	4.9 (3.0–6.7)	4.5 (2.8–6.3)	4.2 (3.0–5.5)	4.0 (2.7–5.2)	3.8 (2.7–4.9)	4.2 (3.5–4.9)
Pies and pasties	4.0	6.4	7.0	4.9	3.2	2.7	4.8	4.1	4.4	3.1	2.8	2.4	3.2
Biscuits	4.0	4.1	1.6	3.3	3.7	6.3	3.4	5.5	3.7	4.4	4.4	5.9	4.5
Grains and pasta	3.6	4.9	5.7	3.2	3.2	2.0	3.7	5.4	5.4	3.9	1.6	2.1	3.5
Sugar and sweets	2.8	1.7	3.8	2.6	1.5	1.3	2.4	4.0	3.1	4.2	2.5	1.3	3.2
Fish and seafood	2.7	1.4	1.6	2.8	3.0	3.2	2.5	0.9	2.3	2.9	3.4	3.0	2.8
Pork	2.5	2.6	3.3	2.3	3.7	3.3	3.0	1.4	1.7	2.1	2.4	2.5	2.1
Vegetables	2.5	1.3	1.5	1.9	2.4	2.9	2.0	1.9	2.2	2.5	4.4	3.1	3.0
Bread	2.3	2.5	2.8	2.8	2.1	2.5	2.6	2.3	1.8	1.9	2.1	2.5	2.0
Lamb and mutton	2.3	1.1	2.1	2.0	3.4	2.1	2.3	1.0	2.6	1.4	3.3	2.4	2.2
Eggs and egg dishes	2.2	2.3	1.3	1.9	2.3	3.0	2.0	1.3	3.0	1.8	2.6	3.4	2.4

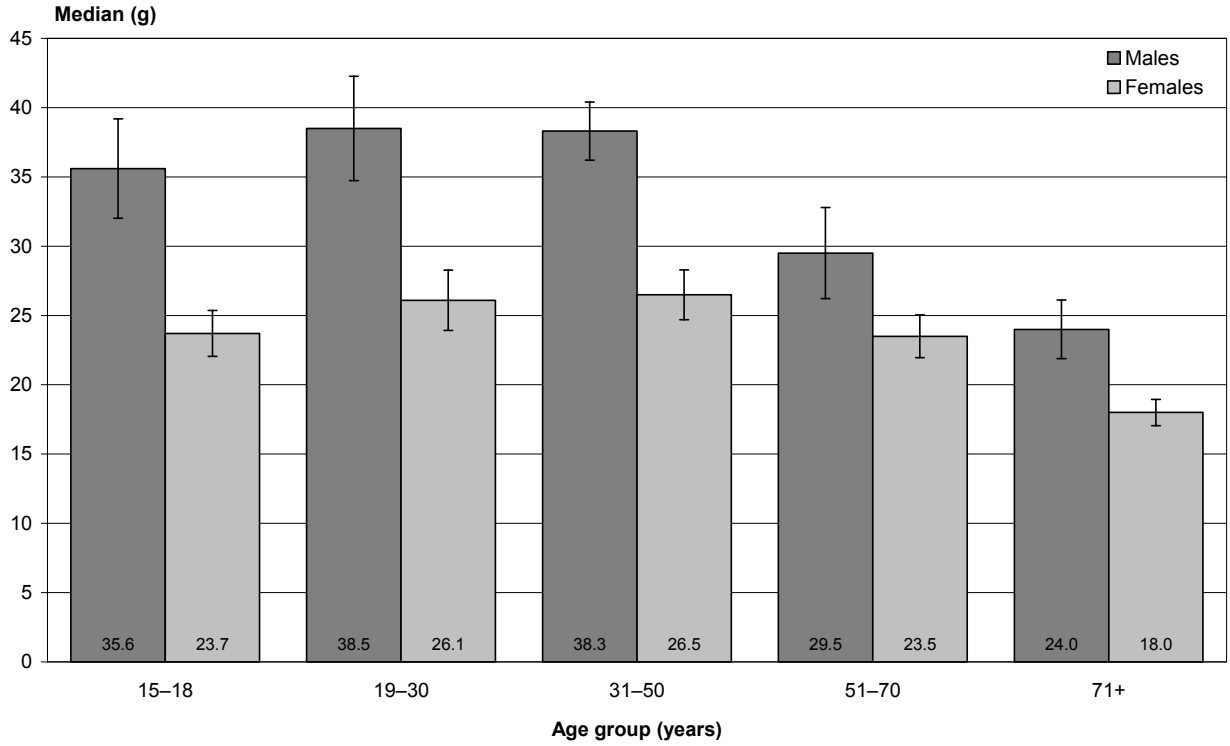
Food group	Total population	Male						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Non-alcoholic beverages	1.7	0.4	2.1	1.9	1.5	0.8	1.6	1.2	1.9	2.0	1.7	1.1	1.7
Nuts and seeds	1.6	1.4	1.1	1.4	1.8	1.2	1.4	0.8	1.0	2.4	2.3	1.0	1.9
Savoury sauces and condiments	1.4	2.3	0.8	1.3	1.3	0.9	1.2	0.9	1.6	1.7	1.5	1.1	1.5
Fruit	1.3	0.5	0.9	1.1	0.8	1.4	1.0	0.8	1.1	1.5	2.3	1.8	1.6
Puddings and desserts	1.3	1.1	0.6	1.1	1.3	3.4	1.3	1.1	1.5	1.0	1.5	1.9	1.3
Breakfast cereals	1.3	0.6	0.5	1.3	2.4	1.5	1.4	0.6	0.7	1.4	1.3	1.6	1.2
Snack bars	0.9	1.9	0.9	1.3	0.5	0.2	0.9	1.7	0.5	0.7	1.0	0.4	0.8
Soups and stocks	0.8	0.3	0.7	0.3	0.8	1.6	0.6	0.4	0.9	1.0	1.2	1.4	1.0
Snack foods	0.8	1.1	1.3	0.6	0.2	0.1	0.6	2.0	2.3	0.9	0.4	0.0	1.0
Fats and oils	0.4	0.1	0.8	0.3	0.1	0.4	0.3	0.1	0.8	0.4	0.5	0.3	0.5
Other meat	0.3	0.1	0.2	0.1	0.7	0.6	0.3	0.1	0.1	0.1	0.4	0.4	0.2
Supplements providing energy	0.2	0.3	0.4	0.2	0.0	0.0	0.2	0.1	0.4	0.3	0.1	0.2	0.2
Alcoholic beverages	0.1	0.4	0.0	0.0	0.0	0.1	0.0	0.1	0.7	0.2	0.0	0.0	0.2

1 Proportion of total nutrient intake obtained from each food group. Results for Māori, Pacific, NZEO and NZDep2006 are in the online data tables. For full food group definitions, see Table 2.2. 95% confidence intervals are presented only for the top 10 food groups.

Monounsaturated fat intake

The median usual daily intake of monounsaturated fatty acids (MUFA) was 35.1 g for males and 24.3 g for females (Table 3.9). The median usual intake of MUFA was lower for males aged 51+ years than for those aged 19–50 years, and for females aged 71+ years than for those aged 15–70 years (Figure 3.12).

Figure 3.12: Median MUFA intake (g), by age group and sex



The mean contribution of MUFA to daily energy intake was 12.4% for males and 12.3% for females (Table 3.9). The mean contribution of MUFA to daily energy was lower for males aged 71+ years than for those aged 15–50 years, and for females aged 71+ years than for those aged 19–70 years.

The mean contribution of MUFA to daily energy intake was 13.6% for Māori males and 13.0% for Māori females. The mean contribution of MUFA to daily energy intake was 12.9% for Pacific males and 12.9% for Pacific females.

There were no differences in amounts or percent contribution of MUFA to energy between NZDep2006 quintiles for males or females. Overall, there was no gradient across NZDep2006 quintiles for amounts or percent contribution of MUFA to energy, after adjusting for age, sex and ethnic group.

Dietary sources of monounsaturated fat

The *Butter and margarine* group provided 10% of MUFA, *Poultry* and *Potatoes, kumara and taro* each provided 7%, *Bread-based dishes* and *Beef and veal* each provided 6%, and *Sausages and processed meats*, *Fish and seafood*, *Vegetables, Grains and pasta* and *Cakes and muffins* each provided 4%.

Butter and margarine provided more MUFA for males aged 51+ years compared to all younger males, and for females aged 51+ years compared to females aged 15–30 years (Figure 3.13). In contrast, *Potatoes, kumara and taro* and *Bread-based dishes* provided more MUFA for people aged 15–18 years compared to most older age groups.

Figure 3.13: Percent MUFA from *Butter and margarine*, by age group and sex

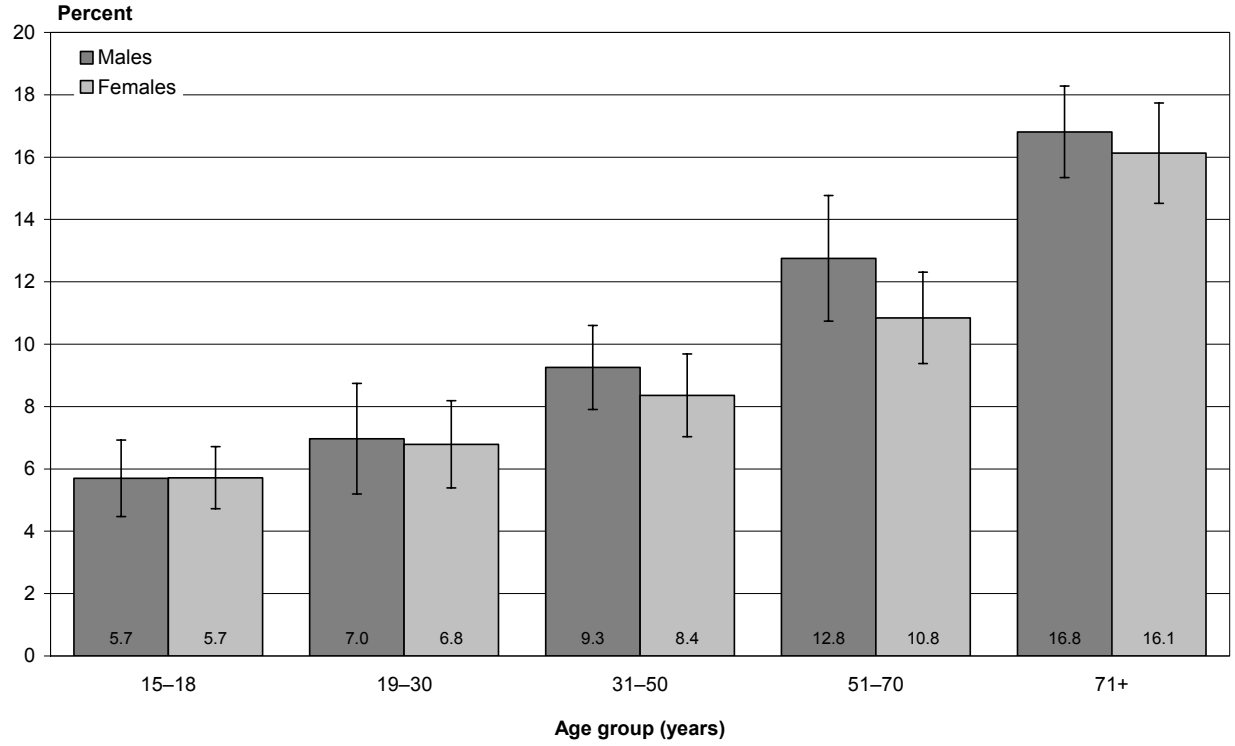


Table 3.9: Monounsaturated fat intake, by age group, ethnic group, NZDep2006 and sex

		Monounsaturated fat (g)[1]				Percent energy from monounsaturated fat[2]			
		Mean	10th[3]	Median (50th), (95% CI)[3]	90th[3]	Mean (95% CI)	10th[3]	Median (50th)[3]	90th[3]
Total population		30.5	18.6	29.2 (28.4–30.0)	44.1	12.4 (12.2–12.6)	7	12	18
By age group (years)									
Males	15–18	37.4	22.1	35.6 (32.0–39.2)	54.9	12.7 (12.2–13.2)	8	12	18
	19–30	41.1	23.1	38.5 (34.7–42.3)	62.1	12.8 (12.1–13.6)	8	13	18
	31–50	38.6	30.9	38.3 (36.2–40.4)	46.8	12.6 (12.2–13.0)	8	13	19
	51–70	31.1	18.9	29.5 (26.2–32.8)	45.4	12.1 (11.6–12.7)	7	12	18
	71+	24.7	16.7	24.0 (21.9–26.1)	33.6	11.4 (10.9–12.0)	7	12	18
	Total	36.0	25.1	35.1 (33.7–36.5)	47.8	12.4 (12.2–12.7)	8	12	18
Females	15–18	25.1	15.2	23.7 (22.0–25.4)	36.7	11.9 (11.4–12.4)	7	12	17
	19–30	27.5	15.4	26.1 (23.9–28.3)	41.6	12.3 (11.7–12.8)	7	13	19
	31–50	26.8	21.7	26.5 (24.7–28.3)	32.3	12.4 (12.0–12.9)	8	13	18
	51–70	24.8	14.2	23.5 (22.0–25.0)	36.9	12.7 (12.2–13.1)	7	13	19
	71+	18.6	11.9	18.0 (17.1–18.9)	26.0	11.2 (10.9–11.6)	7	11	17
	Total	25.5	15.6	24.3 (23.5–25.1)	36.7	12.3 (12.1–12.5)	7	12	18
Māori									
Males	15–18	40.2	25.3	37.6 (30.7–44.5)	58.2	12.7 (11.5–13.9)	9	13	18
	19–30	45.4	27.7	42.8 (37.6–48.0)	66.0	13.1 (12.0–14.3)	8	13	19
	31–50	44.3	36.6	44.0 (39.9–48.1)	52.4	14.2 (13.5–14.9)	9	14	20
	51+	35.2	22.1	34.4 (29.1–39.7)	49.2	13.9 (12.8–15.0)	8	14	19
	Total	42.6	33.7	42.1 (38.5–45.7)	52.0	13.6 (13.1–14.2)	8	14	19
Females	15–18	25.9	15.6	24.2 (18.9–29.5)	38.3	12.9 (11.7–14.0)	6	12	17
	19–30	29.8	19.1	28.8 (25.3–32.3)	41.9	12.7 (11.8–13.6)	7	13	19
	31–50	28.1	17.4	27.0 (23.4–30.6)	40.3	13.1 (12.3–14.0)	9	13	19
	51+	22.8	17.4	22.4 (19.4–25.4)	28.7	13.0 (12.2–13.9)	8	13	19
	Total	27.7	17.8	26.6 (24.7–28.5)	39.1	13.0 (12.5–13.4)	8	13	19
Pacific									
Males	15–18	40.4	26.6	39.5 (24.9–54.1)	55.5	13.4 (11.5–15.3)	5	13	21
	19–30	45.2	22.0	42.0 (28.5–55.5)	73.0	14.0 (12.4–15.6)	8	14	19
	31–50	37.2	18.8	34.0 (26.7–41.3)	60.0	12.6 (11.1–14.1)	7	13	20
	51+	27.3	19.4	26.6 (17.3–35.9)	36.2	11.4 (9.9–12.8)	5	12	18
	Total	39.0	27.3	38.1 (33.2–43.0)	51.7	12.9 (12.1–13.7)	6	13	19
Females	15–18	24.2	13.6	22.8 (17.6–28.0)	36.5	11.9 (10.5–13.3)	7	12	17
	19–30	30.8	14.0	28.4 (24.3–32.5)	50.5	12.9 (12.0–13.8)	7	13	19
	31–50	31.2	16.1	28.2 (24.6–31.8)	50.0	13.2 (12.4–14.0)	8	13	18
	51+	24.3	13.8	22.7 (10.4–35.0)	36.5	13.0 (11.9–14.0)	7	13	19
	Total	29.1	17.1	27.4 (25.0–29.8)	43.2	12.9 (12.4–13.4)	7	13	18

		Monounsaturated fat (g)[1]				Percent energy from monounsaturated fat[2]			
		Mean	10th[3]	Median (50th), (95% CI)[3]	90th[3]	Mean (95% CI)	10th[3]	Median (50th)[3]	90th[3]
NZEO									
Males	15–18	36.5	22.0	35.0 (31.2–38.8)	52.9	12.6 (12.0–13.1)	8	12	18
	19–30	39.3	23.0	37.6 (33.2–42.0)	57.8	12.7 (11.8–13.5)	8	12	18
	31–50	38.4	26.9	37.7 (35.4–40.0)	50.7	12.5 (12.0–12.9)	8	12	18
	51+	29.4	19.9	28.5 (26.4–30.6)	39.9	11.9 (11.4–12.4)	7	12	17
	Total	35.1	25.0	34.4 (32.4–36.4)	46.3	12.3 (12.0–12.6)	7	12	18
Females	15–18	24.9	15.7	23.7 (22.0–25.4)	35.6	11.9 (11.4–12.4)	8	12	17
	19–30	27.2	16.0	25.9 (23.2–28.6)	39.9	12.2 (11.5–12.9)	7	13	19
	31–50	26.4	21.2	26.2 (24.3–28.1)	32.1	12.3 (11.9–12.8)	8	12	18
	51+	22.9	13.6	21.8 (20.7–22.9)	33.5	12.2 (11.8–12.5)	7	11	18
	Total	25.1	15.7	24.1 (23.2–25.0)	35.8	12.2 (11.9–12.5)	7	12	18
By NZDep quintile									
Males	1	35.0	20.0	32.9 (29.7–36.1)	53.2	12.3 (11.7–13.0)	8	12	18
	2	37.5	21.9	35.5 (32.2–38.8)	55.7	12.4 (11.9–13.0)	8	12	18
	3	35.1	19.4	33.5 (30.1–36.9)	52.8	12.5 (11.8–13.1)	7	12	18
	4	33.6	26.2	33.1 (28.9–37.3)	41.6	12.3 (11.6–13.0)	8	12	18
	5	37.2	23.7	36.0 (32.7–39.3)	52.0	12.7 (12.2–13.2)	7	13	19
Females	1	24.6	15.7	23.8 (21.8–25.8)	34.6	12.2 (11.5–13.0)	7	12	18
	2	24.7	15.4	23.7 (21.8–25.6)	35.1	11.9 (11.4–12.3)	7	11	17
	3	25.6	17.7	24.8 (22.5–27.1)	34.5	12.1 (11.6–12.7)	7	12	18
	4	26.1	14.2	24.2 (22.1–26.3)	40.3	12.8 (12.3–13.4)	7	12	18
	5	25.8	16.4	24.8 (23.3–26.3)	36.6	12.5 (12.0–12.9)	7	13	19

1 Usual daily intake. These data were adjusted for intra-individual variation using PC-SIDE.

2 These data were not adjusted for intra-individual variation because the only methods that have been developed for ratios use multiple day repeats. Percent energy from fat for each participant was calculated as the energy from fat (conversion factor = 37.7 kJ/g) divided by the total energy intake.

3 Percentiles.

Table 3.10: Monounsaturated fat sources, percent (95% CI),[1] by age group, sex and food group

Food group	Total population	Male						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Butter and margarine	9.7 (9.2–10.3)	5.7 (4.5–6.9)	7.0 (5.2–8.7)	9.3 (7.9–10.6)	12.8 (10.7–14.8)	16.8 (15.3–18.3)	10.1 (9.3–11.0)	5.7 (4.7–6.7)	6.8 (5.4–8.2)	8.4 (7.0–9.7)	10.8 (9.4–12.3)	16.1 (14.5–17.7)	9.3 (8.6–10.1)
Poultry	7.2 (6.5–7.8)	8.7 (6.5–10.9)	8.0 (5.5–10.5)	8.3 (6.3–10.4)	6.4 (4.4–8.4)	3.8 (2.7–4.8)	7.4 (6.3–8.4)	7.9 (5.9–9.9)	9.5 (7.3–11.7)	7.2 (5.9–8.6)	5.3 (3.9–6.8)	5.0 (3.7–6.3)	7.0 (6.2–7.8)
Potatoes, kumara and taro	7.0 (6.4–7.6)	11.0 (9.0–13.1)	8.9 (6.3–11.5)	7.1 (5.9–8.3)	6.0 (4.6–7.4)	4.5 (3.4–5.5)	7.2 (6.4–8.1)	11.9 (9.8–14.0)	9.2 (6.0–12.4)	6.9 (5.5–8.2)	4.7 (3.7–5.8)	3.6 (2.7–4.5)	6.8 (5.9–7.6)
Bread-based dishes	6.3 (5.7–7.0)	12.5 (10.0–15.0)	11.6 (8.1–15.1)	6.8 (5.1–8.4)	6.0 (4.1–7.9)	2.2 (1.4–3.0)	7.6 (6.4–8.7)	11.4 (8.9–13.9)	6.7 (4.6–8.8)	5.8 (4.4–7.2)	2.9 (2.0–3.8)	2.2 (1.4–3.0)	5.2 (4.4–6.0)
Beef and veal	5.8 (5.2–6.4)	6.0 (3.9–8.0)	5.5 (3.4–7.6)	6.3 (4.6–7.9)	6.3 (4.5–8.1)	7.7 (5.9–9.4)	6.2 (5.3–7.1)	4.3 (2.9–5.8)	3.8 (2.3–5.3)	5.7 (4.5–7.0)	5.8 (4.3–7.3)	6.9 (5.5–8.4)	5.4 (4.7–6.1)
Sausages and processed meats	4.4 (3.9–4.9)	4.5 (2.7–6.4)	5.0 (3.1–7.0)	5.0 (3.7–6.4)	4.2 (2.7–5.6)	4.3 (3.1–5.4)	4.7 (3.9–5.5)	5.1 (3.2–6.9)	4.3 (2.6–5.9)	4.2 (3.0–5.4)	3.9 (2.7–5.1)	3.9 (2.9–5.0)	4.2 (3.5–4.8)
Fish and seafood	4.3 (3.8–4.8)	2.3 (1.2–3.4)	2.5 (1.1–3.9)	5.1 (3.6–6.5)	4.7 (3.0–6.4)	5.3 (3.9–6.6)	4.2 (3.5–5.0)	1.7 (1.0–2.4)	3.3 (1.7–4.8)	4.8 (3.4–6.2)	5.2 (3.8–6.6)	4.6 (3.5–5.7)	4.4 (3.6–5.1)
Vegetables	4.2 (3.7–4.6)	2.3 (1.5–3.2)	2.7 (1.7–3.8)	3.0 (2.2–3.7)	4.5 (3.1–5.8)	5.0 (4.1–5.8)	3.5 (2.9–4.0)	3.0 (1.9–4.0)	3.4 (1.8–4.9)	4.2 (3.3–5.0)	7.2 (5.5–8.8)	5.0 (4.2–5.9)	4.8 (4.2–5.4)
Grains and pasta	4.0 (3.5–4.5)	5.0 (3.3–6.6)	6.0. (4.0–8.0)	3.8 (2.7–4.9)	3.6 (2.2–4.9)	2.1 (1.3–3.0)	4.1 (3.4–4.9)	5.6 (4.2–6.9)	5.7 (3.5–7.9)	4.3 (3.1–5.6)	2.0 (1.3–2.6)	2.2 (1.5–2.9)	3.8 (3.2–4.5)
Cakes and muffins	3.8 (3.4–4.2)	2.0 (1.2–2.7)	2.5 (1.1–4.0)	4.0 (2.8–5.1)	3.9 (2.7–5.0)	3.8 (2.8–4.8)	3.5 (2.9–4.1)	4.6 (3.5–5.7)	4.7 (2.7–6.7)	3.2 (2.5–3.8)	4.6 (3.5–5.7)	5.0 (3.8–6.3)	4.1 (3.5–4.7)
Milk	3.7	3.7	3.0	3.5	3.6	4.0	3.5	3.5	3.2	4.4	3.5	4.4	3.9
Pies and pasties	3.5	5.5	5.9	4.3	2.8	2.4	4.1	3.7	4.0	2.7	2.3	2.0	2.9
Bread	3.3	3.1	3.4	3.8	3.3	4.2	3.6	3.5	2.5	2.9	3.0	4.5	3.1
Eggs and egg dishes	3.2	3.3	2.2	3.2	3.4	4.0	3.1	1.8	4.0	2.5	3.5	4.2	3.2
Nuts and seeds	2.9	2.8	1.9	2.8	2.6	2.8	2.6	1.8	1.9	3.9	4.4	2.2	3.3
Pork	2.9	3.0	3.7	2.7	4.1	3.7	3.4	1.7	2.1	2.3	2.9	3.0	2.4
Cheese	2.8	2.2	2.5	2.9	2.4	2.1	2.6	2.7	2.1	3.4	2.8	3.1	2.9
Biscuits	2.5	2.6	1.0	2.2	2.3	3.9	2.2	3.6	2.4	3.0	2.5	3.7	2.9
Dairy products	2.5	2.4	1.4	2.0	3.2	3.1	2.4	3.1	2.6	2.2	3.0	3.2	2.7
Fruit	2.3	0.6	1.7	1.9	1.4	2.4	1.7	1.1	1.5	3.1	4.1	3.0	2.9
Lamb and mutton	2.1	1.0	1.9	1.9	3.1	2.0	2.2	0.9	2.6	1.2	3.1	2.3	2.1
Savoury sauces and condiments	2.0	2.2	1.4	1.9	1.6	1.1	1.7	1.5	2.5	2.7	2.4	1.4	2.4
Sugar and sweets	1.9	1.3	3.0	1.6	0.9	0.8	1.6	2.8	2.1	2.8	1.7	1.0	2.2

Food group	Total population	Male						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Breakfast cereals	1.6	0.6	0.7	1.4	2.4	1.7	1.5	0.7	0.9	2.0	1.8	2.1	1.7
Fats and oils	1.3	0.2	2.3	1.1	0.4	1.2	1.1	0.5	2.5	1.3	1.9	1.1	1.6
Puddings and desserts	0.9	0.9	0.4	0.9	1.1	2.4	1.0	0.9	0.9	0.6	1.0	1.4	0.9
Non-alcoholic beverages	0.8	0.3	0.9	0.9	0.8	0.4	0.8	0.7	1.0	1.1	0.8	0.5	0.9
Snack foods	0.8	1.3	1.1	0.6	0.3	0.1	0.6	2.1	2.1	1.0	0.4	0.0	1.0
Soups and stocks	0.8	0.2	0.5	0.3	0.9	1.4	0.6	0.6	0.8	1.0	1.4	1.2	1.0
Snack bars	0.8	2.3	0.5	1.2	0.5	0.2	0.9	1.4	0.5	0.9	0.6	0.3	0.7
Other meat	0.3	0.1	0.3	0.2	0.6	0.6	0.3	0.2	0.1	0.1	0.4	0.5	0.2
Supplements providing energy	0.2	0.4	0.4	0.1	0.1	0.0	0.2	0.1	0.3	0.2	0.1	0.4	0.2
Alcoholic beverages	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.1

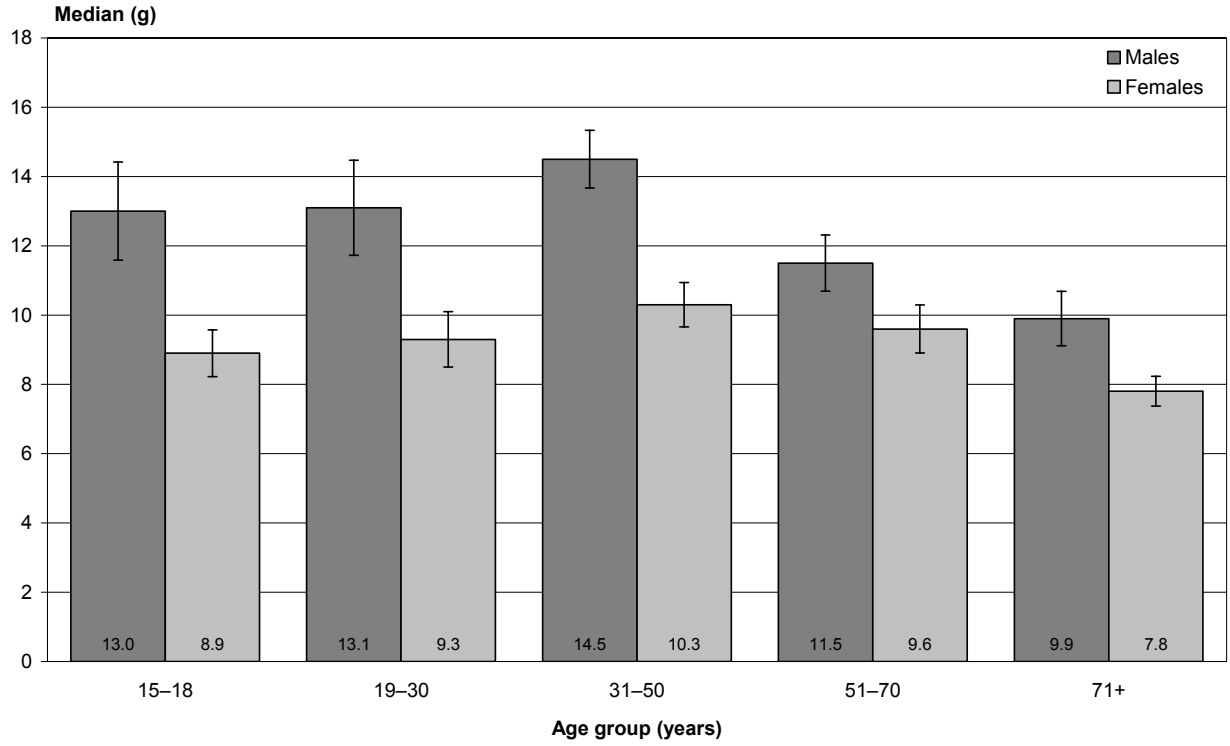
1 Proportion of total nutrient intake obtained from each food group. Results for Māori, Pacific, NZEO and NZDep2006 are in the online data tables. For full food group definitions, see Table 2.2. 95% confidence intervals are presented only for the top 10 food groups.

Polyunsaturated fat intake

The median usual daily intake of polyunsaturated fatty acids (PUFA) was 13.1 g for males and 9.6 g for females Table 3.11. The median usual daily intake of PUFA for males and females aged 31–50 years was higher than for males and females aged 71+ years respectively (Figure 3.14).

PUFA provided 4.8% and 4.9% of energy for males and females, respectively.

Figure 3.14: Median PUFA intake (g), by age group and sex



The mean contribution of PUFA to daily energy intake was 4.9% for Māori males and 4.7% for Māori females. The mean contribution of PUFA to daily energy intake was 4.6% for Pacific males and 4.8% for Pacific females.

There were no differences in amounts or percent contribution of PUFA to energy between NZDep2006 quintiles for males or females. Overall, there was no gradient across NZDep2006 quintiles for amounts or percent contribution of PUFA to energy, after adjusting for age, sex and ethnic group.

Dietary sources of polyunsaturated fat

The *Butter and margarine* group provided 12% of PUFA, *Bread* 9%, *Bread-based dishes* and *Potatoes, kumara and taro* each 7%, *Vegetables* and *Poultry* each 6%, *Fish and seafood* and *Grains and pasta* each 5%, and *Breakfast* cereals and *Cakes and muffins* each 4% (Table 3.12).

Males obtained more PUFA from *Bread-based dishes* than females (8% versus 6%) but less PUFA from *Vegetables* (5% versus 7%). Older males and females (71+ years) obtained more PUFA from *Butter and margarine* than all younger age groups (Figure 3.15). *Bread-based dishes* provided more PUFA for 15–18-year-old males and females than for males aged 31+ years and females aged 19+ years. *Vegetables* provided more PUFA for older males (71+ years) than for males aged 15–50 years, and more PUFA for females aged 51–70 years than for all younger counterparts.

Figure 3.15: Percent PUFA from *Butter and margarine*, by age group and sex

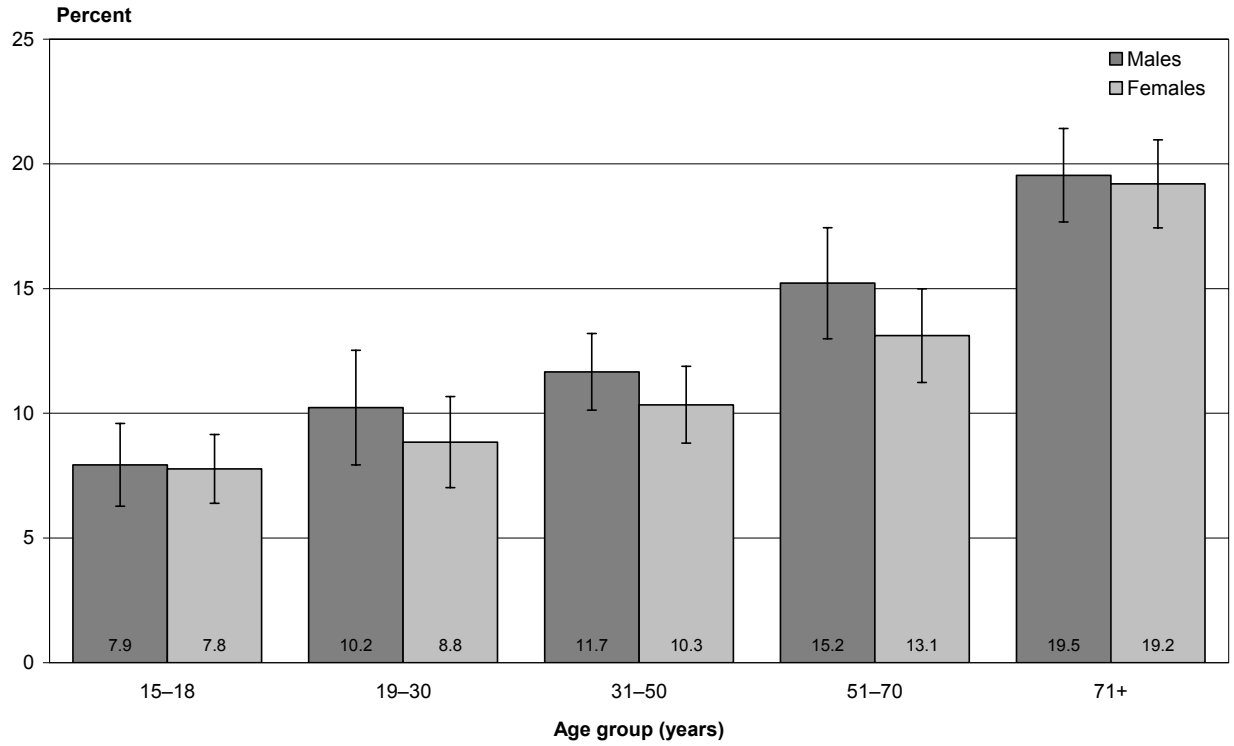


Table 3.11: Polyunsaturated fat intake, by age group, ethnic group, NZDep2006 and sex

		Polyunsaturated fat (g)[1]				Percent energy from polyunsaturated fat[2]			
		Mean	10th[3]	Median (50th),[3] (95% CI)	90th[3]	Mean (95% CI)	10th[3]	Median (50th)[3]	90th[3]
Total population		11.7	7.3	11.1 (10.7–11.5)	17.1	4.9 (4.8–4.9)	3	5	7
By age group (years)									
Males	15–18	13.3	9.8	13.0 (11.6–14.4)	17.2	4.5 (4.3–4.7)	2	4	7
	19–30	14.3	7.7	13.1 (11.7–14.5)	22.1	4.4 (4.1–4.7)	2	4	7
	31–50	14.8	11.0	14.5 (13.7–15.3)	19.0	4.9 (4.7–5.1)	2	5	7
	51–70	12.3	7.3	11.5 (10.7–12.3)	18.3	4.9 (4.6–5.2)	3	5	7
	71+	10.4	6.7	9.9 (9.1–10.7)	14.6	4.8 (4.5–5.0)	3	5	7
	Total	13.6	9.1	13.1 (12.6–13.6)	18.7	4.8 (4.6–4.9)	3	4	7
Females	15–18	9.2	6.0	8.9 (8.2–9.6)	12.9	4.5 (4.2–4.7)	2	4	7
	19–30	9.9	5.9	9.3 (8.5–10.1)	14.4	4.6 (4.3–4.8)	2	4	7
	31–50	10.5	7.7	10.3 (9.7–10.9)	13.6	5.0 (4.8–5.2)	3	5	8
	51–70	10.3	6.0	9.6 (8.9–10.3)	15.4	5.3 (5.0–5.6)	3	5	8
	71+	8.0	5.4	7.8 (7.4–8.2)	10.8	4.9 (4.7–5.1)	3	5	7
	Total	10.0	6.4	9.6 (9.2–10.0)	14.1	4.9 (4.8–5.1)	3	5	8
Māori									
Males	15–18	14.6	8.5	13.8 (11.6–16.0)	21.9	4.6 (4.2–5.0)	2	4	7
	19–30	16.0	8.5	15.1 (11.7–18.5)	24.3	4.6 (4.1–5.1)	2	4	7
	31–50	15.4	11.4	15.1 (13.4–16.8)	19.6	5.0 (4.5–5.4)	2	4	8
	51+	12.8	7.6	12.2 (10.6–13.8)	18.6	5.2 (4.7–5.7)	3	5	8
	Total	14.9	11.0	14.7 (13.6–15.8)	19.2	4.9 (4.6–5.1)	3	5	8
Females	15–18	8.7	4.8	8.2 (6.4–10.0)	13.3	4.4 (4.0–4.9)	2	4	7
	19–30	10.7	6.1	10.3 (9.2–11.4)	15.7	4.6 (4.3–4.9)	2	4	7
	31–50	10.2	5.9	9.5 (8.1–10.9)	15.3	4.8 (4.5–5.2)	3	4	8
	51+	8.4	5.9	8.2 (7.3–9.1)	11.2	4.9 (4.5–5.3)	3	5	7
	Total	9.9	6.6	9.6 (8.9–10.3)	13.6	4.7 (4.5–4.9)	2	4	7
Pacific									
Males	15–18	12.6	8.3	12.0[#]	17.7	4.4 (3.9–5.0)	3	4	7
	19–30	15.0	9.9	14.3 (8.7–19.9)	20.9	4.7 (3.9–5.6)	3	4	7
	31–50	13.0	6.7	12.0 (9.2–14.8)	20.6	4.6 (3.8–5.4)	2	4	7
	51+	10.0	5.0	9.5 (7.1–11.9)	15.8	4.4 (3.9–4.9)	2	4	7
	Total	13.6	6.3	12.2 (10.4–14.0)	22.6	4.6 (4.1–5.0)	2	4	7
Females	15–18	8.0	4.8	7.6 (5.8–9.4)	11.7	4.0 (3.6–4.5)	2	4	6
	19–30	10.7	5.9	10.0 (8.7–11.3)	16.3	4.8 (4.4–5.2)	3	4	8
	31–50	11.0	6.1	10.2 (9.0–11.4)	17.0	4.9 (4.5–5.2)	3	4	8
	51+	9.0	5.0	8.5 (7.4–9.6)	13.8	5.2 (4.7–5.7)	3	5	8
	Total	10.3	6.4	9.8 (8.7–10.9)	14.7	4.8 (4.6–5.0)	3	4	8

		Polyunsaturated fat (g)[1]				Percent energy from polyunsaturated fat[2]			
		Mean	10th[3]	Median (50th),[3] (95% CI)	90th[3]	Mean (95% CI)	10th[3]	Median (50th)[3]	90th[3]
NZEO									
Males	15–18	13.1	8.7	12.4 (10.9–13.9)	18.4	4.5 (4.3–4.7)	3	4	7
	19–30	13.9	7.7	13.0 (11.5–14.5)	21.2	4.4 (4.1–4.7)	2	4	6
	31–50	14.9	10.2	14.4 (13.5–15.3)	20.2	4.9 (4.7–5.2)	3	5	7
	51+	11.8	7.4	11.2 (10.5–11.9)	17.0	4.8 (4.6–5.1)	3	5	7
	Total	13.5	9.1	13.0 (12.3–13.7)	18.6	4.8 (4.6–4.9)	3	5	7
Females	15–18	9.3	6.4	9.0 (8.3–9.7)	12.7	4.6 (4.3–4.8)	2	4	7
	19–30	9.7	5.6	9.1 (8.1–10.1)	14.6	4.6 (4.3–4.9)	3	4	7
	31–50	10.5	8.5	10.4 (9.7–11.1)	12.7	5.0 (4.8–5.3)	3	5	7
	51+	9.7	5.8	9.1 (8.6–9.6)	14.3	5.2 (4.9–5.4)	3	5	8
	Total	10.0	6.5	9.6 (9.2–10.0)	14.0	5.0 (4.8–5.1)	3	5	8
By NZDep2006 quintile									
Males	1	14.1	8.2	13.1 (11.6–14.6)	21.3	4.9 (4.6–5.3)	3	4	7
	2	13.7	9.2	13.2 (12.0–14.4)	18.6	4.6 (4.4–4.8)	3	4	7
	3	13.3	7.5	12.7 (11.6–13.8)	19.8	4.9 (4.6–5.2)	3	4	7
	4	12.4	10.0	12.2 (11.0–13.4)	15.2	4.6 (4.3–4.9)	3	5	7
	5	13.6	8.3	12.9 (11.6–14.2)	19.7	4.7 (4.4–5.0)	2	4	7
Females	1	10.2	7.2	9.9 (9.0–10.8)	13.7	5.0 (4.7–5.4)	3	5	8
	2	10.0	6.2	9.6 (8.5–10.7)	14.4	4.8 (4.6–5.1)	3	4	8
	3	10.1	6.3	9.6 (8.8–10.4)	14.5	5.0 (4.6–5.3)	3	5	7
	4	9.7	5.8	9.2 (8.5–9.9)	14.2	4.9 (4.7–5.2)	2	5	8
	5	9.8	7.1	9.5 (8.9–10.1)	12.7	4.9 (4.7–5.2)	2	4	8

1 Usual daily intake. These data were adjusted for intra-individual variation using PC-SIDE.

2 These data were not adjusted for intra-individual variation because the only methods that have been developed for ratios use multiple day repeats. Percent energy from fat for each participant was calculated as the energy from fat (conversion factor = 37.7 kJ/g) divided by the total energy intake.

3 Percentiles.

Confidence interval could not be calculated. Estimate should be interpreted with caution.

Table 3.12: Polyunsaturated fat sources, percent (95% CI),[1] by age group, sex and food group

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Butter and margarine	12.1 (11.4–12.8)	7.9 (6.3–9.6)	10.2 (7.9–12.5)	11.7 (10.1–13.2)	15.2 (13.0–17.4)	19.5 (17.7–21.4)	12.8 (11.8–13.7)	7.8 (6.4–9.2)	8.8 (7.0–10.7)	10.3 (8.8–11.9)	13.1 (11.2–15.0)	19.2 (17.4–21.0)	11.5 (10.6–12.4)
Bread	8.6 (8.1–9.0)	7.4 (6.2–8.6)	8.1 (6.2–9.9)	9.5 (8.1–10.9)	8.8 (7.5–10.0)	10.6 (9.0–12.1)	9.0 (8.2–9.7)	8.9 (7.5–10.3)	7.0 (5.6–8.4)	8.0 (6.9–9.1)	8.2 (7.2–9.2)	11.3 (10.1–12.5)	8.3 (7.7–8.8)
Bread-based dishes	6.6 (5.9–7.3)	12.5 (9.9–15.1)	11.5 (7.8–15.1)	6.8 (5.2–8.3)	6.6 (4.5–8.8)	2.4 (1.5–3.2)	7.7 (6.6–8.9)	12.3 (9.5–15.0)	7.0 (4.8–9.3)	6.1 (4.5–7.7)	3.0 (2.1–4.0)	2.4 (1.6–3.2)	5.5 (4.7–6.4)
Potatoes, kumara and taro	6.5 (6.0–7.1)	9.7 (7.9–11.5)	7.7 (5.5–9.8)	6.2 (5.0–7.4)	6.5 (5.0–7.9)	5.3 (4.3–6.2)	6.8 (6.0–7.5)	9.8 (8.1–11.5)	8.2 (5.5–10.8)	6.6 (5.3–8.0)	4.4 (3.6–5.3)	4.3 (3.4–5.1)	6.3 (5.5–7.1)
Vegetables	6.4 (5.8–6.9)	3.7 (2.5–4.9)	4.2 (2.9–5.6)	5.0 (4.1–6.0)	6.6 (5.1–8.1)	7.2 (6.3–8.2)	5.4 (4.8–6.0)	5.0 (3.5–6.5)	5.6 (4.2–7.0)	6.6 (5.6–7.7)	9.7 (8.0–11.5)	7.8 (6.8–8.7)	7.2 (6.5–8.0)
Poultry	5.5 (5.0–6.0)	7.8 (5.6–10.0)	7.3 (5.0–9.7)	6.6 (4.9–8.3)	4.1 (2.8–5.3)	2.8 (1.9–3.6)	5.8 (5.0–6.7)	6.5 (4.8–8.3)	6.9 (5.4–8.5)	5.7 (4.6–6.8)	3.6 (2.6–4.7)	3.3 (2.3–4.3)	5.2 (4.6–5.8)
Fish and seafood	5.2 (4.6–5.7)	3.3 (1.8–4.7)	3.3 (1.9–4.7)	6.2 (4.4–8.0)	5.2 (3.6–6.8)	5.7 (4.3–7.1)	5.1 (4.2–5.9)	2.3 (1.4–3.2)	4.5 (2.7–6.3)	6.0 (4.4–7.6)	5.6 (4.3–6.9)	5.2 (4.0–6.4)	5.3 (4.5–6.0)
Grains and pasta	5.0 (4.5–5.5)	5.2 (3.8–6.6)	6.9 (4.7–9.0)	4.7 (3.6–5.9)	4.9 (3.4–6.4)	4.9 (3.5–6.3)	5.3 (4.5–6.1)	6.1 (4.8–7.5)	6.5 (4.5–8.6)	4.9 (3.8–6.0)	3.4 (2.6–4.3)	3.6 (2.9–4.3)	4.8 (4.1–5.4)
Breakfast cereals	3.9 (3.5–4.4)	2.5 (1.8–3.1)	2.2 (1.4–3.0)	3.3 (2.2–4.4)	5.5 (3.7–7.3)	4.4 (3.5–5.2)	3.7 (3.1–4.3)	2.1 (1.5–2.7)	2.7 (1.4–3.9)	4.4 (3.2–5.6)	4.8 (3.6–5.9)	5.3 (4.3–6.4)	4.1 (3.5–4.7)
Cakes and muffins	3.8 (3.3–4.3)	1.9 (1.2–2.6)	2.4 (1.1–3.7)	4.4 (3.1–5.6)	4.1 (2.8–5.4)	3.9 (3.1–4.7)	3.7 (3.0–4.3)	4.5 (3.4–5.5)	4.5 (2.6–6.4)	3.0 (2.3–3.6)	4.3 (3.3–5.3)	5.1 (3.9–6.4)	3.9 (3.4–4.5)
Nuts and seeds	3.5	3.5	2.1	3.3	3.2	3.3	3.0	2.0	2.1	4.7	5.4	2.9	4.0
Savoury sauces and condiments	3.3	2.9	2.3	3.0	2.5	2.0	2.6	2.4	4.4	4.3	4.3	2.3	4.0
Fruit	3.3	2.0	2.8	2.6	2.3	3.2	2.6	3.1	3.2	3.8	4.9	4.5	4.0
Beef and veal	2.7	3.4	3.1	3.3	3.2	2.9	3.2	2.3	1.5	2.5	2.2	2.6	2.2
Eggs and egg dishes	2.4	2.8	1.8	2.7	2.5	2.7	2.5	1.4	2.9	1.9	2.5	2.9	2.3
Sausages and processed meats	2.3	2.5	3.2	2.7	2.0	2.0	2.5	2.8	2.1	2.2	2.0	1.8	2.1
Biscuits	2.2	2.3	0.8	1.9	2.0	2.8	1.8	2.9	2.4	2.6	2.1	2.8	2.5
Pies and pasties	2.1	3.0	3.6	2.6	1.6	1.3	2.5	2.1	2.6	1.7	1.5	1.1	1.8
Pork	1.9	2.3	2.8	1.9	2.7	2.5	2.4	1.1	1.5	1.4	1.8	1.7	1.5
Milk	1.8	1.6	1.3	1.5	1.6	1.6	1.5	2.0	1.8	2.4	1.9	1.8	2.0
Sugar and sweets	1.4	1.1	2.6	1.4	0.6	0.7	1.3	2.5	1.4	1.6	1.4	0.5	1.5
Fats and oils	1.3	0.3	2.0	1.1	0.5	1.4	1.1	0.5	2.3	1.5	1.7	0.8	1.6

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Snack bars	1.2	3.7	0.9	1.8	0.8	0.3	1.3	1.9	0.8	1.4	1.0	0.4	1.1
Cheese	1.1	0.9	1.2	1.1	0.9	0.8	1.0	1.2	0.8	1.3	1.1	1.0	1.1
Snack foods	1.0	1.6	1.6	0.7	0.2	0.1	0.8	2.3	2.3	1.2	0.4	0.0	1.2
Dairy products	1.0	0.9	0.5	0.9	1.3	1.0	0.9	1.0	1.1	1.0	1.0	1.0	1.0
Lamb and mutton	1.0	0.5	1.0	0.9	1.6	0.8	1.1	0.4	1.4	0.5	1.2	0.7	0.9
Soups and stocks	0.8	0.2	0.4	0.4	0.6	1.4	0.5	0.7	1.4	0.9	1.3	1.1	1.1
Non alcoholic beverages	0.8	0.4	0.8	0.6	0.9	0.4	0.7	0.8	0.9	1.1	0.8	0.4	0.9
Puddings and desserts	0.7	0.8	0.3	0.7	1.0	1.5	0.7	0.8	0.8	0.5	0.7	1.0	0.7
Supplements providing energy	0.3	1.5	1.1	0.3	0.1	0.0	0.5	0.6	0.1	0.0	0.0	0.5	0.1
Other meat	0.2	0.0	0.2	0.2	0.5	0.6	0.3	0.1	0.1	0.1	0.3	0.4	0.2

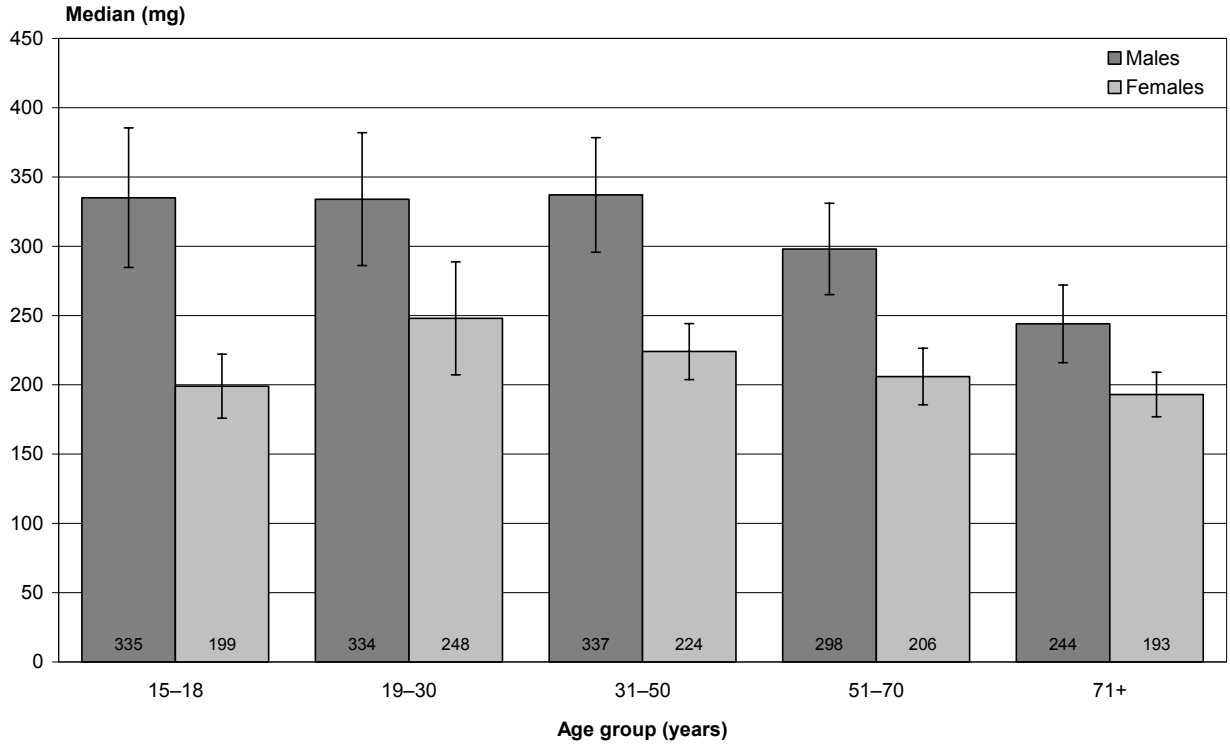
1 Proportion of total nutrient intake obtained from each food group. Results for Māori, Pacific, NZEO and NZDep2006 are in the online data tables. For full food group definitions, see Table 2.2. 95% confidence intervals are presented only for the top 10 food groups.

Cholesterol intake

Dietary cholesterol is only an important determinant of total and LDL cholesterol if saturated fatty acids are a high proportion of dietary fats (> 15% energy) and cholesterol intake is greater than 300 mg/day. The effect of dietary cholesterol on blood lipids is less clear when intakes of cholesterol and saturated fat are lower (Mann and Truswell 2007).

The usual median daily intake of cholesterol was 316 mg for males and 219 mg for females (Table 3.13). Older males (71+ years) consumed less cholesterol than those aged 15–50 years (Figure 3.16).

Figure 3.16: Median cholesterol intake (mg), by age group and sex



The usual median daily intake of cholesterol was 410 mg for Māori males and 262 mg for Māori females. The usual median daily intake of cholesterol was 363 mg for Pacific males and 262 mg for Pacific females.

For males and for females there were no differences in cholesterol intake between NZDep2006 quintiles. Overall, there was no gradient across NZDep2006 quintiles for cholesterol intake, after adjusting for age, sex and ethnic group.

Dietary sources of cholesterol

Eggs and egg dishes contributed 13% of cholesterol, *Poultry* 12%, and *Beef and veal* 9%. *Milk* and *Fish and seafood* each contributed 8%, *Bread-based dishes* 7% and *Pork* 5%. *Cakes and muffins*, *Sausages and processed meats* and *Grains and pasta* each contributed 4% (Table 3.14).

Among females, those aged 15–18 years obtained less cholesterol from *Eggs and egg dishes* (8%) than those aged 19–30 years and 71+ years (each 16%) (Figure 3.17). *Poultry* provided less cholesterol for older males (71+ years) than for younger males aged 15–50 years, and less for females aged 51+ years than for those aged 19–30 years. Younger females aged 19–30 years obtained less cholesterol from *Beef and veal* than all older females, and those aged 15–18 years obtained less cholesterol from *Fish and seafood* than those aged 31+ years. Older males and females (71+ years) obtained less cholesterol from *Bread-based dishes* than those aged 15–50 years.

Figure 3.17: Percent cholesterol from *Eggs and egg dishes*, by age group and sex

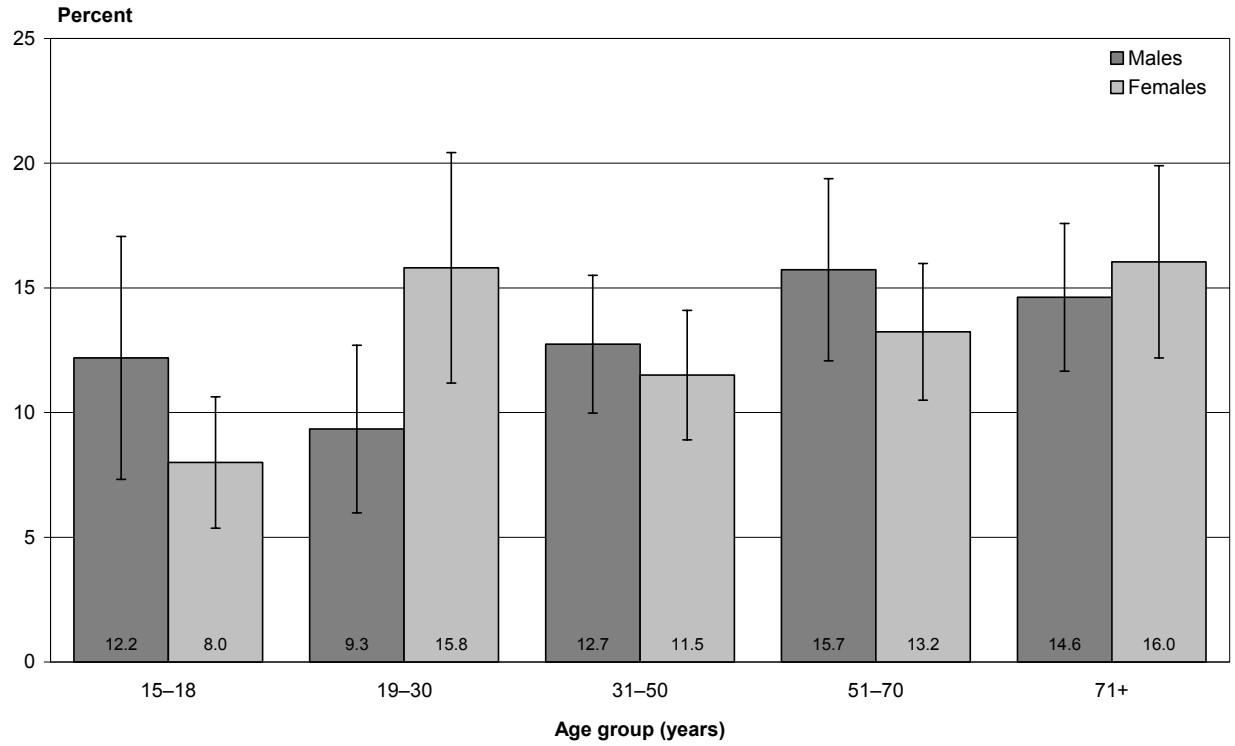


Table 3.13: Cholesterol intake, by age group, ethnic group, NZDep2006 and sex

		Cholesterol (mg)[1]			
		Mean	**10th[2]**	**Median (50th),[2] (95% CI)**	**90th[2]**
Total population		281	155	262 (252–272)	430
By age group (years)					
Males	15–18	337	285	335 (285–385)	391
	19–30	340	253	334 (286–382)	435
	31–50	359	202	337 (296–378)	547
	51–70	314	175	298 (265–331)	473
	71+	253	168	244 (216–272)	351
	Total	333	199	316 (299–333)	489
Females	15–18	215	119	199 (176–222)	331
	19–30	261	161	248 (207–289)	378
	31–50	235	145	224 (204–244)	339
	51–70	222	107	206 (186–226)	358
	71+	198	137	193 (177–209)	266
	Total	232	134	219 (206–232)	348
Māori					
Males	15–18	373	205	351 (270–432)	568
	19–30	425	215	388 (303–473)	678
	31–50	428	309	419 (346–492)	560
	51+	418	245	406 (307–505)	605
	Total	426	266	410 (365–455)	607
Females	15–18	242	87	185 (115–255)	438
	19–30	282	219	278 (227–329)	349
	31–50	274	157	258 (221–295)	410
	51+	268	151	256 (227–285)	401
	Total	277	163	262 (238–286)	412
Pacific					
Males	15–18	374	252	370 (249–491)	501
	19–30	451	209	409 (298–520)	747
	31–50	362	237	347 (243–451)	504
	51+	296	122	263 (190–336)	513
	Total	384	210	363 (315–411)	585
Females	15–18	243	104	217 (130–304)	416
	19–30	306	180	290 (200–380)	454
	31–50	291	218	286 (232–340)	371
	51+	202	85	175 (135–215)	351
	Total	277	165	262 (223–301)	407

Cholesterol (mg)[1]					
		Mean	**10th[2]**	**Median (50th),[2] (95% CI)**	**90th[2]**
NZEO					
Males	15–18	322	255	318 (261–375)	393
	19–30	313	144	287 (239–335)	516
	31–50	351	187	330 (296–364)	545
	51+	293	189	283 (255–311)	411
	Total	322	209	311 (293–329)	449
Females	15–18	204	114	189 (166–212)	312
	19–30	249	127	227 (197–257)	397
	31–50	227	146	218 (197–239)	318
	51+	212	128	204 (187–221)	308
	Total	225	134	214 (199–229)	330
By NZDep2006 quintile					
Males	1	289	167	274 (237–311)	429
	2	341	206	327 (293–361)	495
	3	329	140	294 (243–345)	561
	4	349	232	339 (300–378)	477
	5	350	188	328 (294–362)	540
Females	1	225	158	221 (193–249)	297
	2	211	157	207 (184–230)	271
	3	227	120	209 (179–239)	355
	4	234	117	215 (195–235)	378
	5	258	158	247 (223–271)	373

1 Usual daily intake. These data were adjusted for intra-individual variation using PC-SIDE.

2 Percentiles.

Table 3.14: Cholesterol sources, percent (95% CI),[1] by age group, sex and food group

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Eggs and egg dishes	13.0 (11.8–14.2)	12.2 (7.3–17.1)	9.3 (6.0–12.7)	12.7 (10.0–15.5)	15.7 (12.1–19.4)	14.6 (11.7–17.6)	13.0 (11.3–14.6)	8.0 (5.4–10.6)	15.8 (11.2–20.4)	11.5 (8.9–14.1)	13.2 (10.5–16.0)	16.0 (12.2–19.9)	13.0 (11.4–14.6)
Poultry	12.3 (11.2–13.3)	14.9 (11.4–18.5)	13.4 (9.3–17.6)	13.3 (10.6–16.0)	11.5 (8.2–14.7)	7.3 (5.4–9.3)	12.4 (10.9–14.0)	14.1 (10.9–17.3)	15.8 (12.4–19.2)	12.7 (10.3–15.2)	9.3 (6.9–11.7)	9.0 (6.9–11.2)	12.1 (10.8–13.5)
Beef and veal	9.0 (8.1–9.8)	7.8 (5.5–10.1)	7.2 (4.5–10.0)	9.6 (7.3–11.9)	8.5 (6.2–10.9)	12.3 (9.8–14.9)	8.9 (7.7–10.2)	6.6 (4.5–8.7)	4.6 (2.9–6.3)	9.5 (7.5–11.4)	10.9 (8.0–13.8)	12.5 (9.6–15.5)	9.0 (7.9–10.1)
Milk	8.0 (7.4–8.6)	6.9 (5.8–8.1)	7.2 (4.8–9.6)	7.5 (6.1–8.9)	9.0 (7.2–10.9)	8.9 (7.7–10.0)	7.9 (7.1–8.8)	6.9 (5.4–8.3)	7.0 (5.3–8.7)	8.5 (7.1–9.9)	8.2 (6.3–10.0)	9.5 (8.3–10.7)	8.1 (7.3–8.9)
Fish and seafood	7.9 (7.1–8.7)	4.4 (2.6–6.3)	4.2 (2.1–6.3)	8.3 (6.1–10.4)	7.9 (5.5–10.3)	8.1 (6.2–10.0)	7.0 (5.9–8.1)	3.5 (2.2–4.8)	6.7 (4.1–9.3)	9.2 (7.0–11.5)	11.2 (8.8–13.6)	7.7 (6.0–9.4)	8.7 (7.5–9.9)
Bread-based dishes	7.0 (6.2–7.8)	13.6 (10.8–16.3)	15.3 (10.9–19.8)	7.1 (5.2–9.1)	4.7 (3.2–6.3)	2.5 (1.6–3.3)	8.2 (6.9–9.6)	13.0 (9.9–16.2)	7.3 (4.7–10.0)	6.4 (4.8–8.1)	3.7 (2.5–4.8)	2.0 (1.2–2.7)	5.9 (5.0–6.8)
Pork	5.1 (4.5–5.6)	5.0 (3.2–6.7)	6.7 (4.0–9.4)	4.2 (3.1–5.3)	6.4 (4.1–8.7)	8.2 (5.6–10.8)	5.7 (4.7–6.7)	4.0 (2.6–5.5)	2.9 (1.4–4.3)	4.4 (3.3–5.5)	5.4 (3.9–7.0)	5.4 (3.8–7.0)	4.4 (3.8–5.1)
Cakes and muffins	4.3 (3.8–4.8)	2.2 (1.4–3.0)	2.4 (1.0–3.8)	4.6 (3.1–6.1)	4.0 (2.8–5.2)	5.1 (3.4–6.8)	3.8 (3.1–4.6)	6.2 (4.7–7.8)	4.3 (2.6–6.1)	4.1 (3.2–5.0)	5.1 (3.8–6.3)	6.0 (4.5–7.5)	4.7 (4.1–5.4)
Sausages and processed meats	3.9 (3.4–4.4)	4.1 (2.3–6.0)	4.4 (2.3–6.6)	4.3 (3.0–5.5)	4.1 (2.3–5.9)	4.4 (3.1–5.6)	4.3 (3.4–5.1)	4.5 (2.7–6.3)	4.3 (2.5–6.0)	3.4 (2.3–4.4)	3.2 (2.2–4.2)	3.8 (2.6–5.1)	3.6 (3.0–4.2)
Grains and pasta	3.8 (3.2–4.5)	5.0 (3.2–6.8)	6.0 (3.6–8.5)	3.5 (2.1–4.9)	3.7 (1.9–5.4)	1.8 (0.8–2.9)	4.0 (3.1–4.9)	6.1 (4.1–8.0)	5.8 (3.1–8.4)	4.0 (2.5–5.5)	1.5 (0.7–2.3)	2.1 (1.2–2.9)	3.6 (2.8–4.5)
Dairy products	3.5	3.2	2.0	2.8	3.8	4.0	3.0	4.6	3.8	3.6	4.0	4.5	3.9
Pies and pasties	3.3	4.4	5.4	4.1	2.9	2.5	3.9	3.7	2.8	2.3	2.8	2.4	2.6
Lamb and mutton	2.9	1.7	2.2	2.4	3.5	2.6	2.6	1.3	3.3	2.1	4.3	3.8	3.1
Cheese	2.8	2.0	2.1	2.9	2.7	1.9	2.5	2.1	2.3	3.3	3.8	2.8	3.1
Butter and margarine	2.5	1.5	1.3	2.6	2.1	3.9	2.2	1.8	2.4	3.1	2.9	3.3	2.8
Potatoes, kumara and taro	1.4	2.3	1.8	1.4	0.9	0.9	1.4	3.0	2.1	1.6	0.9	0.6	1.5
Puddings and desserts	1.2	0.9	0.5	1.2	1.5	3.3	1.3	1.1	0.8	0.9	1.6	1.7	1.2
Non-alcoholic beverages	1.2	0.4	1.7	1.1	1.1	0.5	1.1	1.2	1.1	1.5	1.4	0.8	1.3
Biscuits	1.2	1.3	0.5	1.2	1.0	1.6	1.0	1.7	1.0	1.3	1.3	1.7	1.3
Soups and stocks	1.1	0.3	1.2	0.7	0.9	1.7	0.9	0.8	0.7	1.3	1.6	1.1	1.2

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Vegetables	1.0	1.1	0.7	1.0	0.4	0.6	0.8	1.3	1.1	1.1	1.2	0.8	1.1
Bread	0.7	1.0	2.0	0.6	0.5	0.5	0.9	1.0	0.5	0.9	0.5	0.3	0.6
Other meat	0.7	0.4	0.2	0.7	1.6	1.6	0.9	0.2	0.4	0.5	0.7	1.2	0.6
Sugar and sweets	0.7	0.6	1.0	0.7	0.3	0.2	0.6	1.7	0.6	0.9	0.6	0.3	0.8
Savoury sauces and condiments	0.7	1.4	0.3	0.5	0.9	0.4	0.6	0.5	0.8	0.9	0.5	0.4	0.7
Supplements providing energy	0.3	0.3	0.6	0.4	0.0	0.0	0.3	0.1	0.9	0.5	0.1	0.0	0.4
Snack foods	0.1	0.2	0.1	0.2	0.0	0.0	0.1	0.3	0.4	0.2	0.0	0.0	0.2
Snack bars	0.1	0.7	0.1	0.2	0.0	0.0	0.2	0.3	0.1	0.0	0.1	0.0	0.1
Breakfast cereals	0.1	0.0	0.0	0.0	0.3	0.4	0.1	0.1	0.1	0.1	0.0	0.1	0.1
Alcoholic beverages	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.1
Nuts and seeds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fats and oils	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fruit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1 Proportion of total nutrient intake obtained from each food group. Results for Māori, Pacific, NZEO and NZDep2006 are in the online data tables. For full food group definitions, see Table 2.2. 95% confidence intervals are presented only for the top 10 food groups.

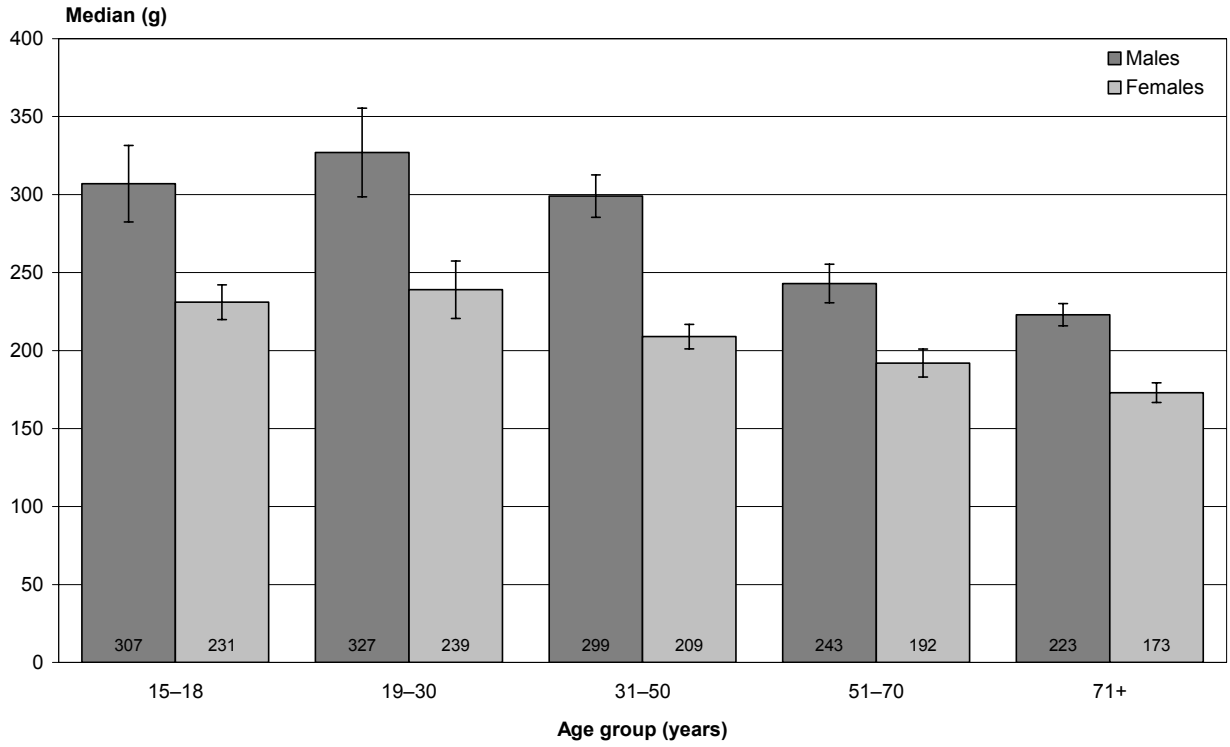
3.6 Total carbohydrate

Metabolism of carbohydrate is the most efficient source of energy for cells, particularly the brain, which requires glucose to function. Carbohydrates are a diverse group of substances with varied chemical and physiological properties with varying importance to health (Mann and Truswell 2007). They include the sugars, starches and fibres. The acceptable macronutrient distribution range for carbohydrate is 45–65% of energy (NHMRC 2006).

Total carbohydrate intake

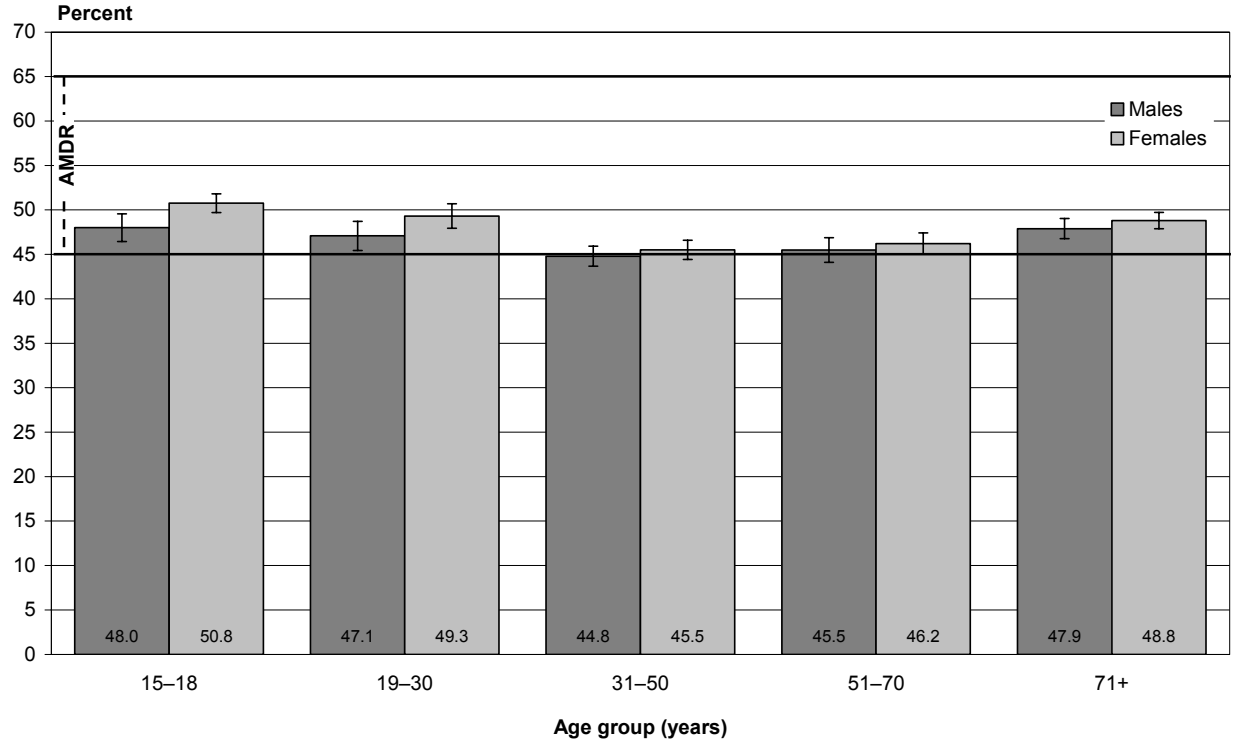
The median usual daily intake of carbohydrate was 278 g for males and 207 g for females (Table 3.15). Males aged 15–50 years had a higher median usual daily intake of carbohydrate compared to males aged 51+ years. Females aged 15–30 years had a higher median usual intake of carbohydrate than older females with intake decreasing for those 31+ years (Figure 3.18).

Figure 3.18: Median carbohydrate intake (g), by age group and sex



The mean contribution to daily energy intake was 46.0% for males and 47.1% for females, which fell just within the AMDR of 45–65% of total energy from carbohydrate (Table 3.15). Males aged 71+ years had a higher percent energy from carbohydrate (47.9%) than those aged 31–50 years (44.8%). Females aged 31–50 years had a lower percent energy intake than those aged 15–30 and 71+ years (Figure 3.19).

Figure 3.19: Percent energy from carbohydrate,[1] by age group and sex



1 Acceptable macronutrient distribution range for carbohydrate is 45–65% of energy (NHMRC 2006).

Median usual daily intakes of carbohydrate in older Māori males and females (51+ years) were lower than in all male younger age groups and in females aged 19–50 years. Median usual daily intakes of carbohydrate in Pacific females aged 51+ years were lower than in those aged 19–50 years.

For both males and females there were no differences in the amount of carbohydrate or contribution to energy between NZDep2006 quintiles. Overall, there was no gradient across NZDep2006 quintiles for amount or contribution of carbohydrate to energy, after adjusting for age, sex and ethnic group.

Dietary sources of carbohydrate

The *Bread* group was the single largest contributor of carbohydrate to the diet (17%), followed by *Grains and pasta*, *Fruit* and *Non-alcoholic beverages* (each 9%), *Potatoes, kumara and taro* (8%), *Sugar and sweets* (7%), *Breakfast cereals* (5%) and *Cakes and muffins*, *Milk* and *Bread-based dishes* (each 4%) (Table 3.16).

The differences in the contributions of carbohydrate to energy across food sources varied by age and sex. Older males and females (71+ years) obtained more from *Bread* than younger males aged 15–30 years and all younger females. In contrast, *Grains and pasta* provided less carbohydrate to males and females aged 71+ years than younger males aged 19–50 years and younger females aged 15–50 years. *Fruit* provided more carbohydrate for older males and females (71+ years) than for younger males and females aged 15–50 years. *Non-alcoholic beverages* provided a higher proportion of energy for males and females aged 15–30 years than for all older age groups (Figure 3.20).

Figure 3.20: Percent carbohydrate from non-alcoholic beverages, by age group and sex

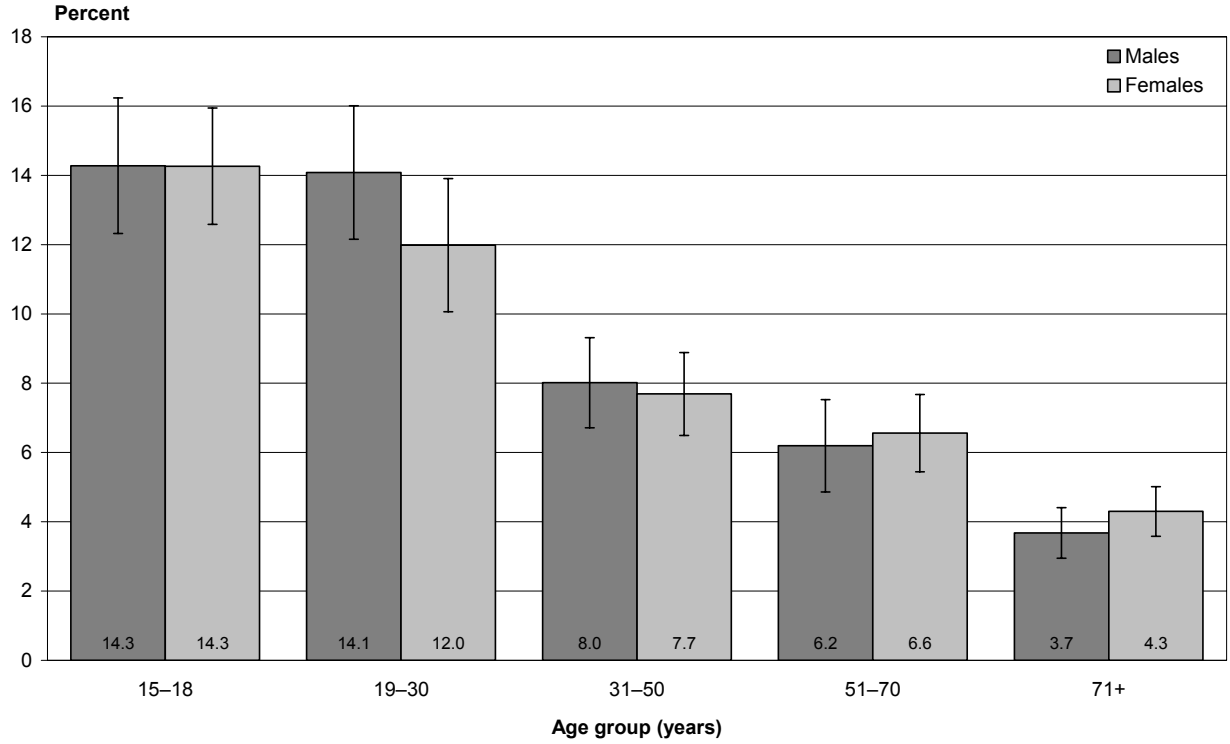


Table 3.15: Carbohydrate intake, by age group, ethnic group, NZDep2006 and sex

		Carbohydrate (g)[1]				Percent energy from carbohydrate[2]			
		Mean	10th[3]	Median (50th),[3] (95% CI)	90th[3]	Mean (95% CI)	10th[3]	Median (50th)[3]	90th[3]
Total population		250	158	239 (234–244)	354	46.6 (46.1–47.0)	34	47	60
By age group (years)									
Males	15–18	318	213	307 (283–332)	439	48.0 (46.4–49.6)	36	49	60
	19–30	329	277	327 (299–355)	384	47.1 (45.4–48.7)	32	45	58
	31–50	305	211	299 (285–313)	407	44.8 (43.7–45.9)	31	45	57
	51–70	249	168	243 (231–255)	337	45.5 (44.1–46.9)	32	46	61
	71+	227	159	223 (216–230)	301	47.9 (46.8–49.0)	34	47	60
	Total	289	192	278 (270–286)	399	46.0 (45.3–46.6)	33	46	59
Females	15–18	237	165	231 (220–242)	315	50.8 (49.7–51.8)	37	51	63
	19–30	246	165	239 (221–257)	335	49.3 (47.9–50.7)	36	48	61
	31–50	213	156	209 (201–217)	274	45.5 (44.4–46.6)	33	46	58
	51–70	197	137	192 (183–201)	262	46.2 (45.0–47.4)	32	46	58
	71+	177	130	173 (167–179)	228	48.8 (47.9–49.7)	37	49	60
	Total	213	144	207 (202–212)	290	47.1 (46.6–47.7)	35	48	60
Māori									
Males	15–18	337	233	323 (277–369)	464	48.2 (45.8–50.7)	37	49	59
	19–30	341	221	326 (282–370)	481	44.6 (41.8–47.4)	31	44	58
	31–50	300	204	293 (261–325)	406	42.5 (40.7–44.4)	30	42	54
	51+	217	136	212 (190–234)	304	42.8 (40.1–45.5)	29	43	58
	Total	301	199	290 (272–308)	419	43.9 (42.7–45.2)	31	44	57
Females	15–18	223	146	212 (168–256)	314	48.6 (45.8–51.3)	34	50	64
	19–30	254	166	247 (219–275)	351	47.8 (46.0–49.6)	36	46	59
	31–50	217	145	209 (190–228)	299	46.2 (44.2–48.2)	33	45	57
	51+	176	121	172 (155–189)	235	44.7 (42.7–46.7)	32	44	56
	Total	220	140	212 (201–223)	312	46.6 (45.5–47.7)	34	46	58
Pacific									
Males	15–18	309	249	306[#]	374	47.4 (42.4–52.4)	33	46	68
	19–30	317	198	308 (262–354)	446	45.8 (42.1–49.5)	30	45	58
	31–50	299	184	293 (263–323)	417	45.2 (43.2–47.1)	30	45	59
	51+	269	164	260 (217–303)	385	51.0 (47.7–54.4)	35	49	67
	Total	304	195	297 (269–325)	421	46.8 (45.2–48.5)	31	46	61
Females	15–18	228	184	224 (190–258)	277	51.3 (46.8–55.9)	38	52	67
	19–30	258	143	242 (214–270)	394	49.3 (46.9–51.8)	35	49	65
	31–50	236	203	235 (216–254)	271	46.5 (44.8–48.1)	33	47	61
	51+	193	109	180 (158–202)	295	47.1 (44.6–49.6)	30	48	60
	Total	236	150	225 (213–237)	334	48.1 (46.9–49.3)	34	48	62

		Carbohydrate (g)[1]				Percent energy from carbohydrate[2]			
		Mean	10th[3]	Median (50th),[3] (95% CI)	90th[3]	Mean (95% CI)	10th[3]	Median (50th)[3]	90th[3]
NZEO									
Males	15–18	316	201	302 (275–329)	448	48.0 (46.2–49.7)	36	49	60
	19–30	324	218	315 (289–341)	441	47.5 (45.7–49.3)	35	47	58
	31–50	307	218	302 (287–317)	404	45.0 (43.8–46.3)	33	45	58
	51+	244	169	238 (227–249)	327	46.2 (45.0–47.4)	34	47	60
	Total	288	192	278 (268–288)	397	46.2 (45.4–46.9)	34	47	59
Females	15–18	237	163	230 (218–242)	317	50.7 (49.6–51.8)	37	51	62
	19–30	244	172	240 (220–260)	320	49.5 (47.8–51.1)	36	49	61
	31–50	211	150	208 (200–216)	276	45.3 (44.1–46.5)	33	46	57
	51+	192	136	188 (181–195)	252	47.1 (46.2–48.0)	35	48	60
	Total	211	144	206 (200–212)	285	47.1 (46.5–47.8)	35	48	60
By NZDep2006 quintile									
Males	1	287	176	282 (263–301)	405	46.2 (44.8–47.5)	34	47	59
	2	297	206	293 (277–309)	392	45.1 (43.7–46.5)	35	46	57
	3	280	209	274 (253–295)	359	46.0 (44.6–47.5)	34	47	60
	4	280	203	275 (255–295)	362	46.4 (44.6–48.2)	33	47	59
	5	294	193	282 (261–303)	412	46.2 (44.9–47.5)	31	46	61
Females	1	206	137	201 (189–213)	281	46.2 (44.4–48.0)	35	48	60
	2	214	168	212 (201–223)	262	47.3 (46.2–48.4)	36	49	60
	3	223	170	219 (208–230)	278	48.0 (46.6–49.4)	35	49	60
	4	207	142	200 (189–211)	279	46.8 (45.6–47.9)	35	47	60
	5	212	137	204 (192–216)	297	47.2 (46.0–48.4)	34	47	61

1 Usual daily intake. These data were adjusted for intra-individual variation using PC-SIDE.

2 These data were not adjusted for intra-individual variation because the only methods that have been developed for ratios use multiple day repeats. Percent energy from carbohydrate for each participant was calculated as the energy from carbohydrate (conversion factor = 16.7 kJ/g) divided by the total energy intake.

3 Percentiles.

Confidence interval could not be calculated. Estimate should be interpreted with caution.

Table 3.16: Carbohydrate sources, percent (95% CI),[1] by age group, sex and food group

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Bread	17.2 (16.5–17.8)	15.2 (13.1–17.4)	14.4 (12.0–16.9)	18.9 (17.0–20.7)	18.7 (16.4–21.1)	21.1 (19.6–22.7)	17.8 (16.8–18.8)	14.0 (12.4–15.7)	13.0 (11.1–14.8)	17.0 (15.3–18.7)	17.1 (15.5–18.7)	21.7 (19.1–24.3)	16.5 (15.6–17.4)
Grains and pasta	9.3 (8.6–9.9)	8.3 (6.4–10.2)	12.1 (9.3–14.8)	9.8 (8.4–11.3)	9.1 (6.8–11.3)	6.2 (4.9–7.6)	9.6 (8.6–10.7)	9.4 (7.8–10.9)	11.3 (9.0–13.7)	9.6 (8.1–11.0)	7.5 (6.0–9.1)	5.3 (4.4–6.2)	8.9 (8.1–9.7)
Fruit	8.9 (8.5–9.4)	6.0 (4.7–7.3)	5.7 (4.4–7.0)	6.8 (5.8–7.8)	8.3 (7.2–9.5)	11.7 (10.5–12.8)	7.4 (6.8–8.0)	6.9 (5.9–8.0)	7.8 (6.5–9.1)	9.4 (8.3–10.5)	12.9 (11.7–14.2)	14.5 (13.5–15.5)	10.4 (9.7–11.0)
Non-alcoholic beverages	8.6 (8.1–9.1)	14.3 (12.3–16.2)	14.1 (12.2–16.0)	8.0 (6.7–9.3)	6.2 (4.9–7.5)	3.7 (3.0–4.4)	8.9 (8.1–9.6)	14.3 (12.6–15.9)	12.0 (10.1–13.9)	7.7 (6.5–8.9)	6.6 (5.4–7.7)	4.3 (3.6–5.0)	8.3 (7.7–9.0)
Potatoes, kumara and taro	8.4 (7.9–8.9)	10.8 (8.5–13.0)	7.8 (5.8–9.9)	8.0 (6.8–9.2)	9.2 (7.8–10.7)	9.4 (8.4–10.4)	8.6 (7.9–9.4)	8.5 (7.2–9.8)	8.7 (6.9–10.4)	8.0 (6.8–9.1)	7.9 (6.7–9.0)	8.5 (7.5–9.4)	8.2 (7.5–8.8)
Sugar and sweets	7.1 (6.6–7.5)	4.7 (3.6–5.9)	6.5 (5.0–8.1)	8.0 (6.8–9.1)	7.3 (6.3–8.3)	8.3 (7.4–9.1)	7.3 (6.7–7.9)	6.8 (5.5–8.2)	7.6 (6.0–9.2)	7.7 (6.7–8.7)	5.9 (5.0–6.8)	5.5 (4.9–6.2)	6.9 (6.3–7.5)
Breakfast cereals	5.2 (4.8–5.6)	5.0 (4.0–6.1)	3.9 (2.7–5.0)	4.2 (3.4–5.1)	7.3 (5.8–8.7)	6.2 (5.5–6.9)	5.2 (4.6–5.8)	3.5 (2.8–4.3)	3.8 (2.7–5.0)	5.1 (4.2–6.0)	6.1 (5.0–7.2)	6.4 (5.6–7.1)	5.1 (4.6–5.7)
Cakes and muffins	4.4 (4.0–4.9)	1.9 (1.3–2.6)	2.7 (1.4–4.1)	4.6 (3.4–5.8)	4.7 (3.5–6.0)	4.4 (3.6–5.3)	4.0 (3.4–4.7)	4.9 (3.9–5.9)	4.4 (2.9–5.9)	4.2 (3.3–5.0)	5.6 (4.3–6.9)	5.9 (4.6–7.2)	4.8 (4.2–5.4)
Milk	4.2 (4.0–4.5)	3.6 (3.0–4.2)	3.0 (2.3–3.7)	4.1 (3.6–4.6)	4.5 (3.9–5.1)	4.9 (4.4–5.3)	4.0 (3.7–4.3)	3.1 (2.6–3.7)	3.3 (2.7–3.8)	5.1 (4.5–5.7)	4.6 (4.1–5.2)	5.1 (4.7–5.6)	4.5 (4.2–4.8)
Bread-based dishes	4.2 (3.8–4.7)	9.5 (7.1–11.9)	7.4 (5.2–9.6)	4.5 (3.5–5.5)	4.3 (2.8–5.9)	1.5 (1.0–2.0)	5.2 (4.4–5.9)	7.0 (5.5–8.5)	4.1 (2.9–5.3)	3.9 (2.9–4.8)	2.0 (1.3–2.6)	1.5 (1.0–2.0)	3.4 (2.9–3.9)
Vegetables	4.0	1.8	2.5	3.5	3.8	4.3	3.3	2.1	3.8	4.6	5.8	4.9	4.6
Biscuits	3.3	3.0	1.1	3.1	3.2	4.6	2.8	4.5	2.9	3.9	3.9	4.4	3.8
Alcoholic beverages	2.4	1.4	3.8	3.0	2.5	2.0	2.8	2.0	3.7	2.2	1.2	0.7	2.0
Dairy products	2.2	2.5	1.8	2.0	1.7	2.0	1.9	2.8	2.9	1.8	2.5	2.6	2.3
Pies and pasties	2.0	3.0	3.9	2.5	1.4	1.2	2.4	1.8	2.4	1.5	1.3	1.0	1.6
Savoury sauces and condiments	1.3	1.3	1.4	1.3	1.2	1.2	1.3	1.3	1.3	1.5	1.2	1.1	1.3
Puddings and desserts	1.1	1.1	0.4	1.0	1.3	2.4	1.1	0.9	1.3	1.0	1.4	1.5	1.2
Fish and seafood	0.9	0.6	0.9	1.2	1.1	1.0	1.1	0.2	0.9	0.8	1.1	0.8	0.8
Soups and stocks	0.9	0.1	0.7	0.4	0.6	1.3	0.6	0.4	0.9	1.0	1.4	1.9	1.1
Snack bars	0.8	1.3	0.7	1.3	0.5	0.2	0.9	1.4	0.4	0.7	1.0	0.3	0.7
Sausages and processed meats	0.7	0.7	0.9	0.8	0.6	0.6	0.7	0.7	0.5	0.7	0.6	0.5	0.6

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Poultry	0.7	0.7	1.1	0.8	0.5	0.3	0.7	1.0	0.6	0.8	0.4	0.2	0.6
Snack foods	0.7	1.1	0.9	0.6	0.2	0.1	0.5	1.2	1.3	0.8	0.5	0.0	0.8
Beef and veal	0.5	0.5	0.8	0.8	0.5	0.6	0.7	0.5	0.3	0.4	0.5	0.4	0.4
Nuts and seeds	0.3	0.3	0.2	0.3	0.5	0.3	0.3	0.2	0.2	0.5	0.4	0.1	0.3
Supplements providing energy	0.2	0.5	0.6	0.1	0.1	0.0	0.2	0.2	0.3	0.2	0.1	0.3	0.2
Pork	0.2	0.3	0.5	0.1	0.3	0.2	0.3	0.1	0.2	0.1	0.1	0.1	0.1
Eggs and egg dishes	0.1	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1
Lamb and mutton	0.1	0.1	0.2	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.2	0.0	0.1
Other meat	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Cheese	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butter and margarine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fats and oils	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1 Proportion of total nutrient intake obtained from each food group. Results for Māori, Pacific, NZEO and NZDep2006 are in the online data tables. For full food group definitions, see Table 2.2. 95% confidence intervals are presented only for the top 10 food groups.

3.7 Sugars

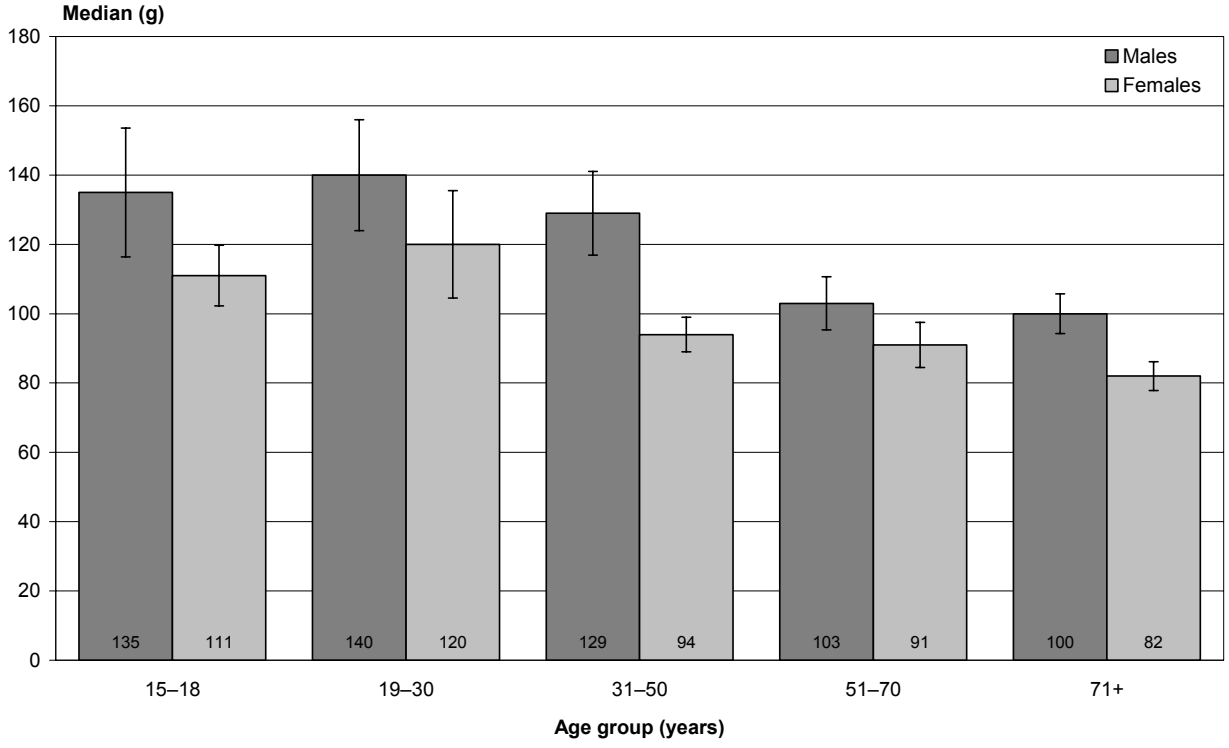
The term ‘sugars’ is a chemical classification used to describe the monosaccharides, disaccharides and oligosaccharides in food. Sugars are naturally present in a wide range of foods, including vegetables, fruit, cereals and milk. Sugars are added to foods in the form of sugar (white, brown, raw), syrups and extracts.

The principal monosaccharides are glucose, fructose and galactose. The principal disaccharides are sucrose and lactose (Mann and Truswell 2007). Results for sucrose, fructose and lactose are presented in this report, and results for glucose and maltose are available in the online data tables www.moh.govt.nz.

Total sugars intake

Median usual daily intake of total sugars from all sources was 120 g for males and 96 g for females (Table 3.17). Males aged 51+ years and females aged 31+ years had lower total sugars intakes than younger age groups (Figure 3.21).

Figure 3.21: Median intake of total sugars (g), by age group and sex



The most significant sugar contributing to the median usual daily intake of total sugars was sucrose (males 55 g; females 42 g), followed by fructose (22 g; 18 g), glucose (21 g; 18 g), lactose (14 g; 12 g) and maltose (5 g; 3 g).

Older Māori males and females (51+ years) consumed smaller amounts of total sugars than younger males aged 15–30 years and females aged 19–50 years. Older Pacific females (51+ years) consumed smaller amounts of total sugars than those aged 19–50 years.

For both males and females there were no differences in intake of total sugars between NZDep2006 quintiles. Overall, there was no gradient across NZDep2006 quintiles for intake of total sugars, after adjusting for age, sex and ethnic group.

The major contributors of total sugars in the diet were *Fruit* (18%), *Non-alcoholic beverages* (17%), *Sugar and sweets* (15%) and *Milk* (10%). Males and females aged 15–30 years obtained more total sugars from *Non-alcoholic beverages* than those aged 31+ years (Figure 3.22).

Figure 3.22: Percent total sugars from *Non-alcoholic beverages*, by age group and sex

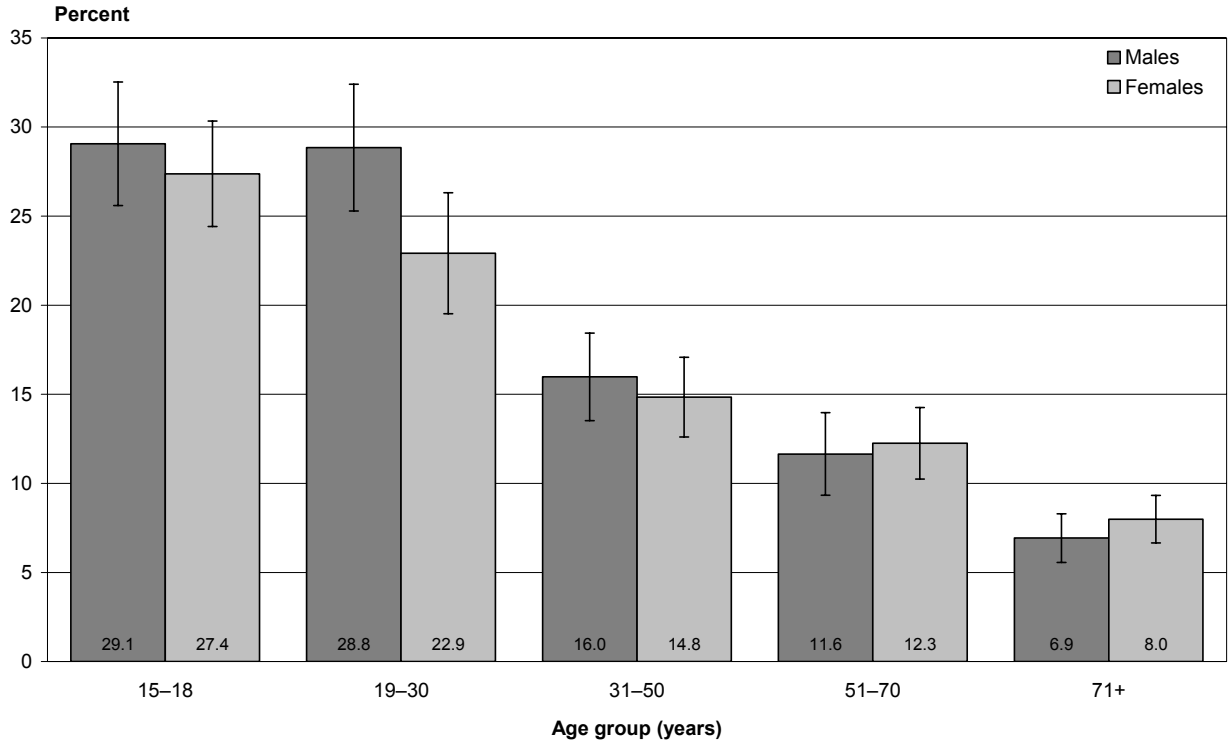


Table 3.17: Total sugars intake, by age group, ethnic group, NZDep2006 and sex

		Total sugars (g)[1]			
		Mean	**10th[2]**	**Median (50th),[2] (95% CI)**	**90th[2]**
Total population		115	63	107 (104–110)	175
By age group (years)					
Males	15–18	143	83	135 (116–154)	213
	19–30	147	90	140 (124–156)	212
	31–50	133	73	129 (117–141)	197
	51–70	108	63	103 (95–111)	158
	71+	105	63	100 (94–106)	153
	Total	128	71	120 (115–125)	194
Females	15–18	118	68	111 (102–120)	176
	19–30	123	84	120 (104–136)	166
	31–50	98	59	94 (89–99)	142
	51–70	95	57	91 (84–98)	138
	71+	84	51	82 (78–86)	120
	Total	103	59	96 (91–101)	153
Māori					
Males	15–18	149	82	141 (101–181)	224
	19–30	161	78	148 (120–176)	260
	31–50	122	65	114 (96–132)	189
	51+	89	46	83 (69–97)	141
	Total	131	76	124 (111–137)	195
Females	15–18	111	61	102 (78–127)	170
	19–30	128	81	123 (105–141)	180
	31–50	110	57	102 (90–114)	174
	51+	83	43	78 (67–89)	130
	Total	110	58	103 (96–110)	172
Pacific					
Males	15–18	126	77	122[#]	180
	19–30	145	87	139 (97–181)	208
	31–50	108	39	95 (79–111)	195
	51+	101	63	98 (68–128)	142
	Total	125	53	113 (100–126)	213
Females	15–18	114	76	111 (83–139)	156
	19–30	121	71	115 (86–144)	179
	31–50	101	67	99 (89–109)	139
	51+	77	30	65 (47–83)	138
	Total	106	54	98 (90–106)	165

		Total sugars (g)[1]			
		Mean	**10th[2]**	**Median (50th),[2] (95% CI)**	**90th[2]**
NZEO					
Males	15–18	143	71	132 (115–149)	230
	19–30	144	86	137 (119–155)	209
	31–50	137	92	135 (120–150)	181
	51+	108	61	102 (96–108)	161
	Total	128	72	121 (115–127)	194
Females	15–18	117	71	111 (101–121)	169
	19–30	121	77	118 (105–131)	170
	31–50	97	58	93 (88–98)	140
	51+	93	56	89 (85–93)	136
	Total	101	59	96 (92–100)	149
By NZDep2006 quintile					
Males	1	124	75	119 (110–128)	178
	2	132	69	125 (114–136)	205
	3	127	75	120 (104–136)	187
	4	127	76	122 (110–134)	184
	5	124	74	117 (106–128)	182
Females	1	99	61	94 (86–102)	144
	2	102	67	98 (90–106)	141
	3	108	67	103 (94–112)	154
	4	99	58	93 (86–100)	145
	5	101	53	94 (87–101)	156

1 Usual daily intake. These data were adjusted for intra-individual variation using PC-SIDE.

2 Percentiles.

Confidence interval could not be calculated. Estimate should be interpreted with caution.

Table 3.18: Total sugars sources, percent (95% CI),[1] by age group, sex and food group

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Fruit	17.8 (16.9–18.6)	12.9 (10.0–15.8)	12.2 (9.5–14.8)	14.0 (12.1–15.9)	17.2 (14.7–19.6)	22.9 (20.7–25.1)	15.2 (14.0–16.4)	13.6 (11.6–15.6)	15.0 (12.6–17.4)	18.9 (16.8–21.0)	24.3 (22.0–26.5)	28.5 (26.6–30.4)	20.2 (19.0–21.4)
Non-alcoholic beverages	16.7 (15.8–17.7)	29.1 (25.6–32.5)	28.8 (25.3–32.4)	16.0 (13.5–18.4)	11.6 (9.3–14.0)	6.9 (5.6–8.3)	17.6 (16.2–19.1)	27.4 (24.4–30.3)	22.9 (19.5–26.3)	14.8 (12.6–17.1)	12.3 (10.2–14.3)	8.0 (6.7–9.3)	15.9 (14.7–17.1)
Sugar and sweets	14.6 (13.8–15.4)	9.9 (8.0–11.8)	13.3 (10.7–16.0)	17.5 (15.4–19.7)	16.8 (14.5–19.0)	17.6 (15.8–19.5)	15.9 (14.7–17.1)	12.5 (10.3–14.7)	14.2 (11.6–16.8)	15.1 (13.4–16.8)	11.5 (9.8–13.2)	11.3 (10.1–12.5)	13.4 (12.4–14.4)
Milk	9.7 (9.2–10.2)	9.2 (7.4–10.9)	7.8 (5.8–9.9)	9.9 (8.7–11.1)	10.9 (9.5–12.4)	10.9 (9.9–11.9)	9.8 (9.1–10.5)	6.8 (5.6–7.9)	6.9 (5.7–8.1)	10.8 (9.7–12.0)	10.0 (8.8–11.1)	11.0 (10.1–11.9)	9.6 (9.0–10.2)
Vegetables	6.0 (5.6–6.3)	2.5 (1.8–3.2)	3.8 (2.7–4.9)	5.2 (4.4–5.9)	6.7 (5.5–7.9)	6.5 (5.9–7.2)	5.2 (4.7–5.7)	3.3 (2.6–4.0)	5.5 (3.8–7.3)	6.2 (5.4–7.0)	8.5 (7.5–9.6)	7.6 (6.9–8.3)	6.6 (6.1–7.2)
Cakes and muffins	4.7 (4.2–5.1)	2.1 (1.3–2.8)	2.6 (1.2–3.9)	5.1 (3.8–6.4)	4.7 (3.3–6.2)	4.8 (3.7–5.9)	4.2 (3.5–4.9)	5.4 (4.1–6.6)	4.0 (2.5–5.5)	4.8 (3.7–5.8)	5.9 (4.5–7.3)	6.2 (4.8–7.6)	5.1 (4.5–5.7)
Bread	4.4 (4.1–4.7)	4.3 (3.5–5.0)	3.5 (2.8–4.3)	5.5 (4.6–6.5)	5.1 (4.2–6.0)	5.4 (4.8–6.0)	4.9 (4.4–5.3)	3.4 (2.8–4.0)	3.2 (2.5–3.9)	4.0 (3.4–4.7)	4.1 (3.5–4.7)	5.0 (3.8–6.3)	4.0 (3.6–4.3)
Dairy products	4.2 (3.8–4.6)	4.9 (3.6–6.2)	3.5 (1.8–5.2)	4.0 (3.0–5.0)	3.6 (2.7–4.5)	3.9 (3.1–4.8)	3.9 (3.3–4.4)	4.9 (3.8–6.0)	5.4 (3.6–7.3)	3.6 (2.8–4.4)	4.6 (3.7–5.5)	4.9 (4.1–5.7)	4.4 (3.9–5.0)
Alcoholic beverages	3.5 (3.0–4.1)	2.1 (0.7–3.5)	5.1 (2.9–7.3)	3.9 (2.5–5.2)	3.6 (2.4–4.9)	2.5 (1.8–3.1)	3.8 (3.0–4.6)	2.8 (1.4–4.3)	5.7 (2.5–8.9)	3.5 (2.3–4.8)	1.9 (1.2–2.6)	1.3 (0.9–1.7)	3.3 (2.5–4.0)
Breakfast cereals	2.7 (2.4–3.0)	2.1 (1.5–2.7)	1.8 (0.8–2.8)	2.1 (1.4–2.7)	3.7 (2.6–4.8)	2.4 (2.0–2.8)	2.5 (2.0–2.9)	1.7 (1.2–2.1)	2.3 (1.5–3.2)	3.2 (2.5–4.0)	3.0 (2.3–3.7)	3.1 (2.5–3.6)	2.9 (2.5–3.3)
Biscuits	2.7	2.6	1.2	2.6	2.7	4.1	2.5	4.4	2.6	2.7	2.8	3.3	2.9
Savoury sauces and condiments	2.3	2.9	2.9	2.6	2.1	1.9	2.5	2.5	2.5	2.4	1.8	1.5	2.2
Puddings and desserts	1.6	1.7	0.5	1.3	1.7	3.2	1.5	1.3	1.6	1.5	1.9	1.8	1.6
Bread-based dishes	1.4	3.7	2.8	1.5	1.6	0.5	1.9	2.4	1.2	1.1	0.5	0.4	1.0
Potatoes, kumara and taro	1.4	1.3	1.0	1.3	1.7	2.1	1.4	0.8	1.2	1.3	1.6	1.8	1.4
Grains and pasta	1.4	2.0	2.3	1.5	1.6	0.6	1.7	1.7	1.3	1.3	0.6	0.6	1.1
Snack bars	0.9	2.1	0.9	1.5	0.5	0.2	1.0	1.5	0.5	0.8	1.2	0.4	0.9
Soups and stocks	0.6	0.2	0.7	0.4	0.3	1.1	0.5	0.4	0.5	0.8	0.9	0.9	0.8
Poultry	0.6	0.5	0.9	0.9	0.7	0.2	0.7	0.7	0.4	0.7	0.3	0.2	0.5
Beef and veal	0.5	0.6	0.7	0.6	0.5	0.6	0.6	0.4	0.3	0.3	0.4	0.2	0.3
Nuts and seeds	0.4	0.6	0.3	0.4	0.6	0.4	0.5	0.3	0.5	0.5	0.4	0.2	0.4
Pies and pasties	0.4	0.5	0.4	0.4	0.4	0.2	0.4	0.5	0.6	0.3	0.3	0.4	0.4

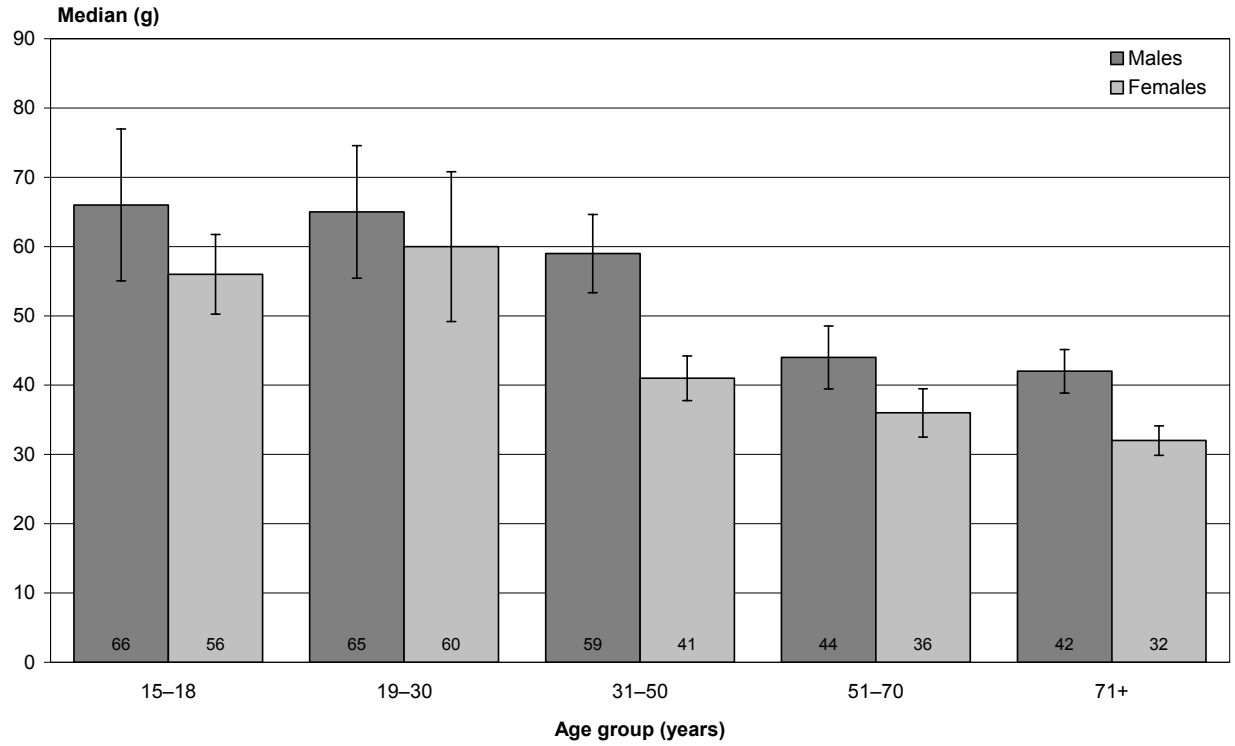
Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Fish and seafood	0.4	0.2	0.3	0.5	0.5	0.3	0.4	0.1	0.2	0.2	0.4	0.4	0.3
Supplements providing energy	0.3	0.7	1.0	0.2	0.1	0.0	0.4	0.3	0.3	0.2	0.1	0.3	0.2
Snack foods	0.2	0.3	0.2	0.1	0.1	0.0	0.1	0.3	0.4	0.4	0.2	0.0	0.3
Pork	0.2	0.4	0.7	0.1	0.4	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1
Eggs and egg dishes	0.2	0.3	0.1	0.2	0.2	0.2	0.2	0.1	0.3	0.1	0.2	0.2	0.2
Sausages and processed meats	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.0	0.1	0.1	0.2	0.1
Lamb and mutton	0.1	0.1	0.1	0.1	0.2	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1
Cheese	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1
Butter and margarine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other meat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Fats and oils	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1 Proportion of total nutrient intake obtained from each food group. Results for Māori, Pacific, NZEO and NZDep2006 are in the online data tables. For full food group definitions, see Table 2.2. 95% confidence intervals are presented only for the top 10 food groups.

Sucrose intake and dietary sources

Median usual daily sucrose intake was 55 g for males and 42 g for females (Table 3.19). Sucrose intakes by age group and sex are shown in Figure 3.23.

Figure 3.23: Median sucrose intake (g), by age group and sex



The main sources of sucrose were: *Sugar and sweets* (23%), *Non-alcoholic beverages* and *Fruit* (each 16%), *Cakes and muffins* (7%), *Dairy products* (6%) and *Biscuits* (5%) (Table 3.20).

Differences in sources of sucrose across age groups included the following.

- Among males, those aged 15–18 years consumed proportionately less sucrose from *Sugar and sweets* than those aged 31–71+ years, but females aged 31–50 years consumed more sucrose from *Sugar and sweets* than those aged 15–18 years and 51+ years.
- *Non-alcoholic beverages* provided a lower proportion of sucrose to males aged 71+ years compared to all younger males, and to females aged 71+ years compared to those aged 15–50 years (Figure 3.24).
- In contrast, *Fruit* provided more sucrose for males aged 71+ years and females aged 51+ years compared to males and females aged 15–50 years.

Figure 3.24: Percent sucrose from non-alcoholic beverages, by age group and sex

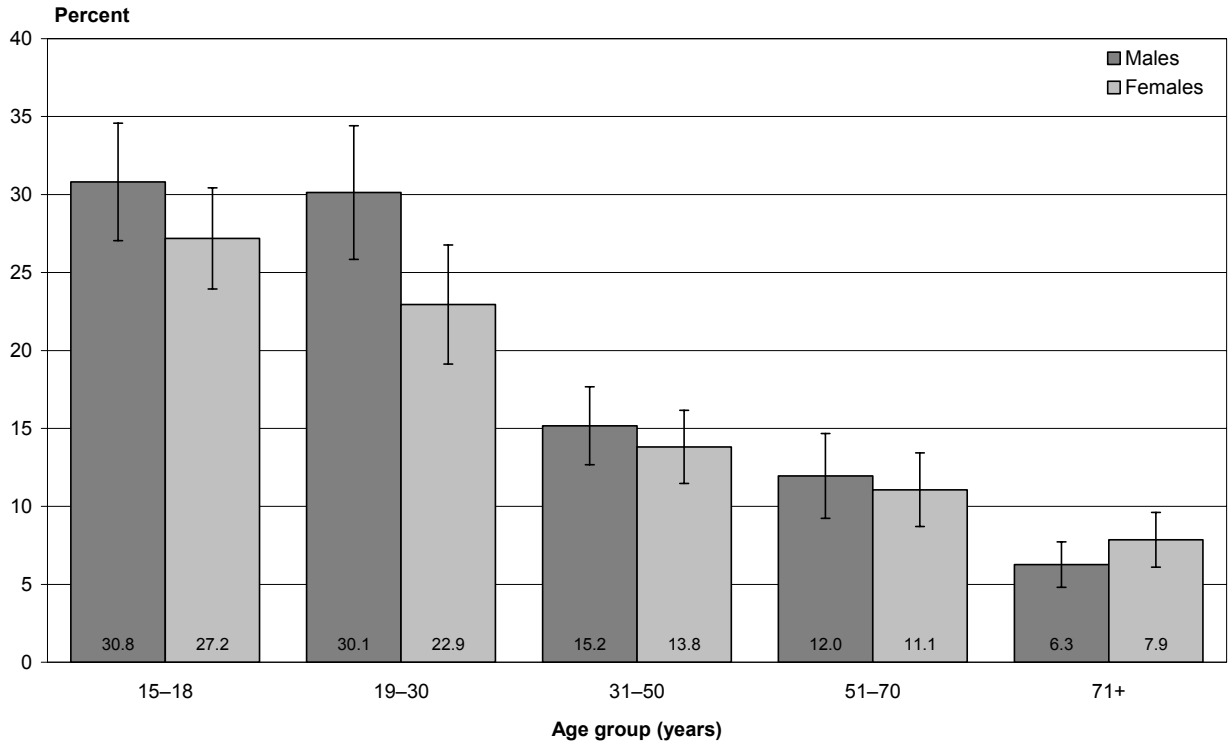


Table 3.19: Sucrose intake, by age group, ethnic group, NZDep2006 and sex

		Sucrose (g)[1]			
		Mean	**10th[2]**	**Median (50th),[2] (95% CI)**	**90th[2]**
Total population		54.2	24.0	48.0 (43.8–52.2)	92.0
By age group (years)					
Males	15–18	71.8	33.0	66.0 (55.0–77.0)	117.0
	19–30	73.2	34.0	65.0 (55.4–74.6)	122.0
	31–50	64.5	31.0	59.0 (53.4–64.6)	105.0
	51–70	49.0	21.0	44.0 (39.5–48.5)	83.0
	71+	45.9	22.0	42.0 (38.9–45.1)	75.0
	Total	61.0	27.0	55.0 (51.2–58.8)	103.0
Females	15–18	62.7	28.0	56.0 (50.3–61.7)	105.0
	19–30	65.8	34.0	60.0 (49.2–70.8)	105.0
	31–50	45.3	21.0	41.0 (37.8–44.2)	74.0
	51–70	40.4	19.0	36.0 (32.5–39.5)	66.0
	71+	33.5	17.7	32.0 (29.9–34.1)	51.4
	Total	48.1	22.0	42.0 (40.1–43.9)	81.0
Māori					
Males	15–18	75.2	36.0	68.0 (46.0–90.0)	124.0
	19–30	86.5	35.0	75.0 (59.1–90.9)	151.0
	31–50	61.9	28.0	56.0 (46.5–65.5)	103.0
	51+	40.3	16.0	35.0 (26.8–43.2)	71.0
	Total	67.4	29.0	60.0 (52.4–67.6)	114.0
Females	15–18	64.3	25.0	54.0 (35.9–72.1)	115.0
	19–30	65.9	39.0	63.0 (51.2–74.8)	96.0
	31–50	54.0	22.0	46.0 (38.9–53.1)	95.0
	51+	38.0	16.0	34.0 (25.7–42.3)	65.0
	Total	55.8	23.0	49.0 (44.8–53.2)	97.0
Pacific					
Males	15–18	51.6	29.0	50.0[#]	76.0
	19–30	74.5	31.0	68.0 (49.1–86.9)	125.0
	31–50	53.1	16.0	45.0 (36.7–53.3)	101.0
	51+	59.3	26.0	54.0 (31.7–76.3)	100.0
	Total	64.4	21.0	55.0 (46.8–63.2)	120.0
Females	15–18	60.5	26.0	53.0 (33.4–72.6)	104.0
	19–30	60.9	24.0	52.0 (43.4–60.6)	108.0
	31–50	49.8	33.8	48.6 (42.1–55.1)	67.6
	51+	40.7	12.0	32.0 (22.8–41.2)	80.0
	Total	54.3	29.0	51.0 (40.8–61.2)	84.0

		Sucrose (g)[1]			
		Mean	**10th[2]**	**Median (50th),[2] (95% CI)**	**90th[2]**
NZEO					
Males	15–18	71.2	29.0	62.0 (51.7–72.3)	124.0
	19–30	67.9	30.0	61.0 (50.6–71.4)	114.0
	31–50	65.1	41.0	63.0 (55.6–70.4)	93.0
	51+	47.3	22.0	43.0 (39.4–46.6)	77.0
	Total	59.7	27.0	54.0 (49.0–59.0)	99.0
Females	15–18	60.7	33.0	56.0 (49.1–62.9)	94.0
	19–30	61.6	33.0	57.0 (48.7–65.3)	96.0
	31–50	43.6	22.0	40.0 (36.5–43.5)	69.0
	51+	38.4	19.2	35.4 (32.7–38.1)	61.0
	Total	46.3	21.0	41.0 (38.9–43.1)	77.0
By NZDep2006 quintile					
Males	1	54.8	27.0	51.0 (44.6–57.4)	87.0
	2	64.0	21.0	53.0 (46.6–59.4)	119.0
	3	60.6	26.0	54.0 (45.4–62.6)	103.0
	4	63.6	37.0	61.0 (53.7–68.4)	94.0
	5	62.3	25.0	55.0 (49.4–60.6)	107.0
Females	1	42.7	20.0	39.0 (35.0–43.0)	70.0
	2	45.1	20.0	41.0 (36.1–45.9)	76.0
	3	52.9	24.0	46.0 (41.3–50.7)	89.0
	4	46.5	23.0	42.0 (37.9–46.1)	76.0
	5	49.8	21.0	45.0 (37.9–52.1)	85.0

1 Usual daily intake. These data were adjusted for intra-individual variation using PC-SIDE.

2 Percentiles.

Confidence interval could not be calculated. Estimate should be interpreted with caution.

Table 3.20: Sucrose sources, percent (95% CI),[1] by age group, sex and food group

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Sugar and sweets	23.2 (21.9–24.4)	15.6 (12.7–18.5)	21.9 (17.8–26.0)	27.3 (24.0–30.7)	26.7 (23.0–30.4)	27.2 (24.5–29.9)	25.1 (23.3–27.0)	18.1 (15.0–21.2)	22.6 (18.8–26.4)	25.1 (22.4–27.8)	17.3 (14.9–19.7)	18.0 (16.0–20.0)	21.3 (19.8–22.9)
Non-alcoholic beverages	16.4 (15.3–17.6)	30.8 (27.0–34.6)	30.1 (25.8–34.4)	15.2 (12.7–17.7)	12.0 (9.2–14.7)	6.3 (4.8–7.7)	17.8 (16.1–19.4)	27.2 (23.9–30.4)	22.9 (19.1–26.8)	13.8 (11.5–16.2)	11.1 (8.7–13.4)	7.9 (6.1–9.6)	15.2 (13.8–16.6)
Fruit	16.4 (15.5–17.3)	12.4 (8.7–16.1)	11.8 (8.9–14.7)	12.3 (10.3–14.2)	16.6 (13.9–19.3)	20.6 (18.5–22.7)	14.1 (12.9–15.3)	11.3 (9.2–13.4)	11.8 (9.5–14.0)	17.4 (15.2–19.7)	23.3 (20.8–25.9)	27.7 (25.3–30.0)	18.5 (17.3–19.8)
Cakes and muffins	7.1 (6.3–7.8)	3.2 (2.0–4.4)	3.4 (1.6–5.3)	7.8 (5.8–9.8)	6.6 (4.4–8.7)	7.2 (5.5–8.9)	6.2 (5.1–7.2)	7.7 (5.8–9.6)	5.6 (3.4–7.7)	7.7 (6.0–9.5)	9.2 (7.1–11.3)	9.6 (7.4–11.7)	7.9 (6.9–8.9)
Dairy products	5.6 (5.0–6.2)	6.1 (4.5–7.8)	4.5 (2.3–6.7)	5.4 (3.9–6.9)	4.9 (3.3–6.6)	5.7 (4.4–7.0)	5.2 (4.4–6.0)	6.0 (4.6–7.5)	7.3 (4.9–9.6)	4.7 (3.5–6.0)	6.8 (5.3–8.3)	6.6 (5.4–7.8)	6.0 (5.3–6.8)
Biscuits	5.0 (4.5–5.5)	4.5 (3.3–5.7)	2.0 (0.9–3.1)	4.4 (3.2–5.7)	5.5 (3.8–7.1)	8.3 (6.0–10.7)	4.6 (3.9–5.3)	7.1 (4.4–9.7)	4.5 (2.8–6.3)	4.8 (3.7–6.0)	5.7 (4.2–7.1)	7.0 (5.7–8.3)	5.4 (4.7–6.1)
Vegetables	4.3 (3.9–4.8)	1.9 (1.2–2.6)	2.6 (1.5–3.8)	3.8 (2.7–4.9)	5.0 (3.4–6.6)	4.8 (4.1–5.6)	3.8 (3.2–4.4)	2.2 (1.5–2.9)	3.5 (2.1–4.9)	4.6 (3.5–5.6)	6.3 (5.2–7.3)	5.9 (5.1–6.8)	4.8 (4.2–5.4)
Breakfast cereals	3.2 (2.7–3.6)	2.9 (1.9–3.8)	1.9 (0.5–3.3)	2.2 (1.4–3.0)	3.9 (2.4–5.4)	3.1 (2.4–3.8)	2.7 (2.1–3.3)	2.6 (1.7–3.6)	2.5 (1.6–3.4)	4.0 (2.9–5.2)	3.8 (2.8–4.9)	3.7 (3.0–4.5)	3.5 (3.0–4.1)
Savoury sauces and condiments	2.8 (2.5–3.2)	3.7 (2.3–5.2)	3.4 (2.3–4.6)	3.3 (2.4–4.2)	3.0 (1.8–4.1)	2.5 (1.4–3.5)	3.2 (2.7–3.7)	3.0 (2.0–4.1)	2.7 (1.7–3.6)	2.6 (1.9–3.3)	2.4 (1.6–3.2)	2.0 (1.5–2.5)	2.5 (2.1–2.9)
Alcoholic beverages	2.6 (2.0–3.1)	1.8 (0.4–3.2)	4.3 (2.0–6.6)	2.5 (1.2–3.7)	1.8 (0.6–3.0)	1.4 (0.9–2.0)	2.5 (1.8–3.3)	2.9 (1.4–4.5)	5.6 (2.2–9.0)	2.5 (1.1–3.8)	1.2 (0.4–2.1)	0.6 (0.3–0.9)	2.6 (1.7–3.5)
Puddings and desserts	2.3	2.4	0.9	2.1	2.5	4.6	2.2	1.8	2.4	2.2	2.7	2.8	2.4
Potatoes, kumara and taro	1.5	1.3	1.1	1.6	1.6	1.9	1.5	0.8	1.1	1.3	2.0	2.0	1.5
Bread	1.2	1.2	1.0	2.4	1.1	1.4	1.6	0.5	0.7	1.0	1.0	1.0	0.9
Grains and pasta	1.2	1.8	1.7	1.4	1.9	0.6	1.5	1 .0	0.9	1.1	0.6	0.4	0.8
Snack bars	1.0	1.9	1.0	1.8	0.6	0.3	1.2	1.5	0.5	0.9	1.4	0.4	0.9
Milk	1.0	2.0	1.9	1.3	0.2	0.5	1.1	1.6	1.0	1.2	0.5	0.3	0.9
Nuts and seeds	1.0	1.2	0.5	0.8	1.4	0.8	1.0	0.5	1.0	1.2	0.9	0.4	1.0
Bread-based dishes	0.7	1.7	1.1	0.8	1.4	0.2	1.1	1.2	0.5	0.5	0.3	0.3	0.5
Soups and stocks	0.7	0.2	0.6	0.5	0.2	1.1	0.5	0.4	0.6	1.0	1.3	1.2	1.0
Poultry	0.7	0.6	1.0	1.1	0.9	0.2	0.9	0.8	0.5	0.7	0.3	0.2	0.5
Beef and veal	0.5	0.7	0.7	0.5	0.3	0.7	0.5	0.4	0.3	0.3	0.7	0.3	0.4
Snack foods	0.4	0.4	0.2	0.3	0.1	0.0	0.2	0.4	0.7	0.7	0.3	0.0	0.5

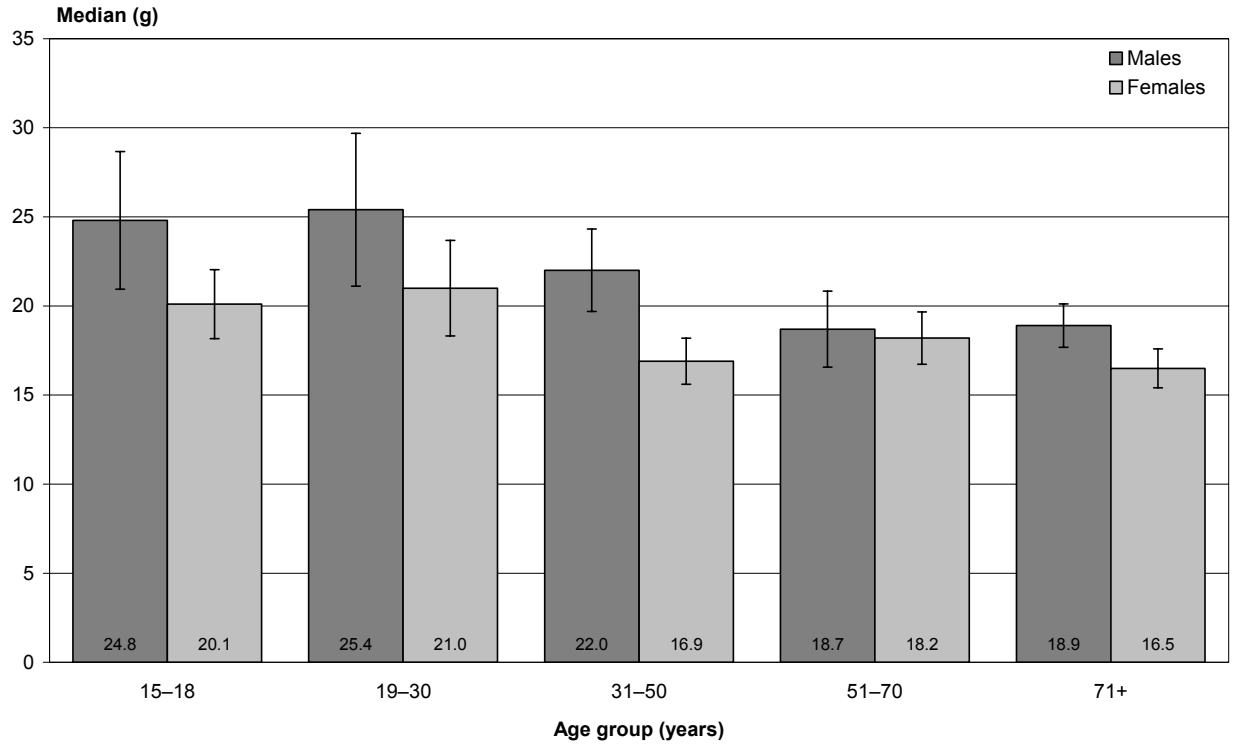
Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Fish and seafood	0.2	0.1	0.2	0.1	0.6	0.1	0.3	0.0	0.1	0.1	0.3	0.8	0.2
Supplements providing energy	0.2	0.7	1.0	0.2	0.1	0.0	0.4	0.4	0.2	0.0	0.0	0.3	0.1
Pies and pasties	0.2	0.1	0.1	0.2	0.3	0.1	0.2	0.1	0.5	0.2	0.1	0.2	0.2
Pork	0.2	0.4	0.7	0.1	0.4	0.3	0.3	0.1	0.1	0.1	0.1	0.0	0.1
Sausages and processed meats	0.2	0.3	0.2	0.2	0.1	0.1	0.2	0.1	0.0	0.1	0.2	0.2	0.1
Lamb and mutton	0.1	0.1	0.1	0.1	0.2	0.0	0.1	0.1	0.0	0.1	0.2	0.0	0.1
Eggs and egg dishes	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.1
Other meat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cheese	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butter and margarine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fats and oils	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1 Proportion of total nutrient intake obtained from each food group. Results for Māori, Pacific, NZEO and NZDep2006 are in the online data tables. For full food group definitions, see Table 2.2. 95% confidence intervals are presented only for the top 10 food groups.

Fructose intake and dietary sources

Median usual daily fructose intake was 21.6 g for males and 18.3 g for females (Table 3.21). Fructose intakes by age group and sex are shown in Figure 3.25.

Figure 3.25: Median fructose intake (g), by age group and sex



The *Fruit* group provided 29% of fructose (males 25%; females 33%), followed by *Non-alcoholic beverages* (18%), *Vegetables* (13%), *Sugar and sweets* (7%) and *Alcoholic beverages* (5%) (Table 3.22).

Older males and females (71+ years) obtained proportionately more fructose from *Fruit* than all younger age groups (Figure 3.26). In contrast, younger males aged 15–30 years and females aged 15–18 years obtained more fructose from *Non-alcoholic beverages* than all older males and females. Fructose intake from *Vegetables* was lower for males and females aged 15–18 years than for those aged 31+ years.

Figure 3.26: Percent fructose from *Fruit*, by age group and sex

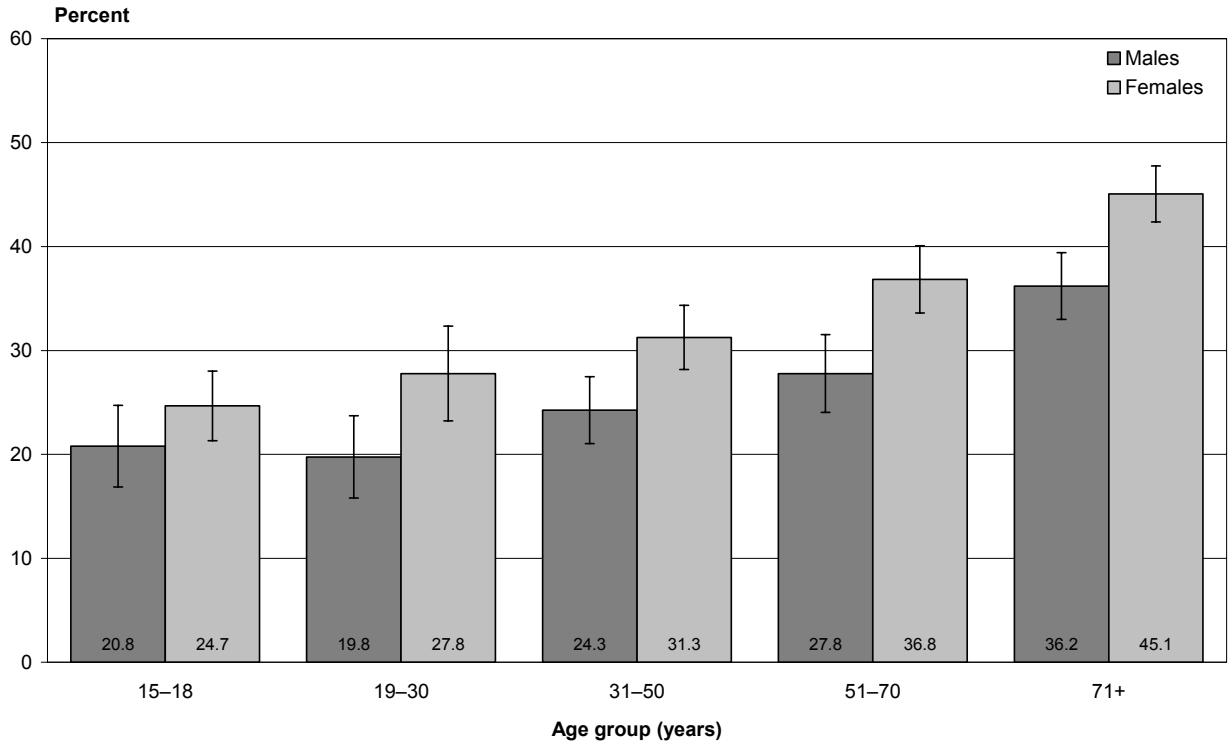


Table 3.21: Fructose intake, by age group, ethnic group, NZDep2006 and sex

		Fructose (g)[1]			
		Mean	**10th[2]**	**Median (50th),[2] (95% CI)**	**90th[2]**
Total population		21.4	10.1	19.8 (19.1–20.5)	34.6
By age group (years)					
Males	15–18	26.1	14.2	24.8 (20.9–28.7)	39.5
	19–30	26.8	14.0	25.4 (21.1–29.7)	41.0
	31–50	23.4	11.1	22.0 (19.7–24.3)	37.8
	51–70	20.1	9.0	18.7 (16.6–20.8)	33.0
	71+	20.2	9.9	18.9 (17.7–20.1)	31.8
	Total	23.4	10.6	21.6 (20.4–22.8)	38.2
Females	15–18	21.2	11.2	20.1 (18.2–22.0)	32.4
	19–30	21.9	13.2	21.0 (18.3–23.7)	31.7
	31–50	17.9	8.7	16.9 (15.6–18.2)	28.5
	51–70	19.7	9.7	18.2 (16.7–19.7)	31.5
	71+	17.6	9.1	16.5 (15.4–17.6)	27.3
	Total	19.6	9.9	18.3 (17.4–19.2)	30.7
Māori					
Males	15–18	28.2	11.6	24.8 (16.1–33.5)	47.5
	19–30	26.9	10.5	25.1 (18.5–31.7)	45.1
	31–50	19.0	7.4	17.0 (12.6–21.4)	32.6
	51+	14.9	6.0	13.2 (9.3–17.1)	25.8
	Total	21.8	9.7	20.0 (17.4–22.6)	36.1
Females	15–18	18.9	7.0	17.1 (12.3–21.9)	32.7
	19–30	21.3	14.4	20.6 (15.3–25.9)	29.0
	31–50	19.2	6.8	16.9 (12.8–21.0)	34.0
	51+	15.1	5.9	13.5 (11.1–15.9)	26.4
	Total	19.0	8.5	17.5 (15.4–19.6)	31.5
Pacific					
Males	15–18	29.7	14.3	27.6 (15.0–40.2)	47.9
	19–30	25.5	10.9	23.3 (15.4–31.2)	43.0
	31–50	18.9	7.8	17.0 (12.9–21.1)	32.6
	51+	12.6	6.4	11.8 (8.3–15.3)	19.7
	Total	21.7	11.1	20.3 (16.9–23.7)	34.3
Females	15–18	20.9	13.3	20.5 (15.7–25.3)	29.0
	19–30	22.8	8.0	20.0 (16.2–23.8)	41.3
	31–50	18.0	11.9	17.6 (15.2–20.0)	24.7
	51+	13.7	4.4	11.3 (8.7–13.9)	25.9
	Total	19.3	9.5	18.0 (16.2–19.8)	30.6

		Fructose (g)[1]			
		Mean	**10th[2]**	**Median (50th),[2] (95% CI)**	**90th[2]**
NZEO					
Males	15–18	25.7	10.8	23.4 (20.0–26.8)	43.4
	19–30	26.6	14.6	25.3 (21.0–29.6)	40.2
	31–50	24.3	13.2	23.3 (20.8–25.8)	36.7
	51+	20.6	9.6	19.2 (17.7–20.7)	33.4
	Total	23.7	11.0	21.9 (20.6–23.2)	38.7
Females	15–18	21.2	11.9	20.3 (18.2–22.4)	31.6
	19–30	21.4	12.7	20.6 (17.9–23.3)	31.0
	31–50	17.7	8.6	16.8 (15.6–18.0)	27.9
	51+	19.6	9.8	18.2 (17.0–19.4)	31.3
	Total	19.5	10.0	18.3 (17.4–19.2)	30.6
By NZDep2006 quintile					
Males	1	24.2	11.6	22.9 (20.9–24.9)	38.4
	2	24.9	10.8	23.0 (20.5–25.5)	41.4
	3	23.4	10.2	21.0 (17.3–24.7)	39.4
	4	21.9	8.0	20.1 (16.9–23.3)	38.1
	5	21.8	12.0	20.7 (18.2–23.2)	33.0
Females	1	21.0	10.1	19.5 (17.6–21.4)	34.0
	2	20.8	11.1	19.6 (17.6–21.6)	31.9
	3	20.5	10.4	19.2 (17.0–21.4)	32.3
	4	18.3	9.9	17.1 (15.0–19.2)	28.3
	5	17.6	8.2	16.2 (14.8–17.6)	28.5

1 Usual daily intake. These data were adjusted for intra-individual variation using PC-SIDE.

2 Percentiles.

Table 3.22: Fructose sources, percent (95% CI),[1] by age group, sex and food group

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Fruit	29.2 (27.8–30.6)	20.8 (16.9–24.7)	19.8 (15.8–23.7)	24.3 (21.0–27.5)	27.8 (24.0–31.5)	36.2 (33.0–39.4)	25.1 (23.2–27.0)	24.7 (21.3–28.0)	27.8 (23.2–32.3)	31.3 (28.2–34.3)	36.8 (33.6–40.1)	45.1 (42.4–47.8)	33.0 (31.1–34.9)
Non-alcoholic beverages	17.7 (16.4–19.0)	32.0 (27.8–36.2)	32.2 (27.4–36.9)	17.1 (14.0–20.2)	12.2 (9.1–15.2)	8.2 (6.4–10.0)	19.2 (17.3–21.1)	31.7 (27.9–35.4)	23.4 (19.1–27.7)	14.9 (12.0–17.7)	12.0 (9.3–14.8)	8.6 (7.0–10.2)	16.3 (14.8–17.8)
Vegetables	12.5 (11.7–13.3)	5.9 (4.1–7.8)	8.5 (6.2–10.8)	12.9 (10.7–15.0)	14.0 (11.6–16.3)	12.9 (11.5–14.4)	11.7 (10.6–12.9)	8.3 (6.5–10.1)	10.5 (7.6–13.4)	13.5 (11.7–15.3)	16.1 (14.0–18.1)	13.5 (12.2–14.7)	13.2 (12.2–14.3)
Sugar and sweets	6.7 (6.1–7.4)	4.0 (2.6–5.4)	3.2 (1.8–4.5)	7.5 (5.7–9.4)	9.3 (7.1–11.5)	12.5 (10.4–14.6)	7.3 (6.3–8.3)	5.4 (4.0–6.8)	5.6 (3.1–8.1)	5.5 (4.4–6.6)	7.4 (5.7–9.1)	7.8 (6.6–9.0)	6.2 (5.4–7.1)
Alcoholic beverages	4.9 (4.3–5.6)	2.3 (0.8–3.8)	5.9 (3.4–8.4)	5.8 (3.9–7.7)	5.3 (3.5–7.1)	4.0 (2.9–5.0)	5.3 (4.3–6.3)	2.8 (1.4–4.2)	6.5 (3.3–9.6)	5.7 (4.0–7.4)	3.1 (2.1–4.0)	2.5 (1.8–3.1)	4.6 (3.7–5.5)
Savoury sauces and condiments	4.0 (3.5–4.5)	5.9 (4.0–7.9)	5.0 (3.3–6.7)	5.4 (3.8–6.9)	3.4 (1.6–5.2)	2.5 (1.9–3.2)	4.6 (3.7–5.4)	4.1 (2.5–5.6)	4.8 (3.4–6.2)	4.1 (3.1–5.1)	2.3 (1.7–3.0)	1.6 (1.2–2.1)	3.5 (3.0–4.0)
Breakfast cereals	3.9 (3.4–4.4)	3.3 (2.1–4.6)	3.0 (1.3–4.7)	3.3 (2.3–4.4)	5.2 (3.5–7.0)	3.2 (2.4–4.0)	3.8 (3.1–4.5)	2.0 (1.3–2.6)	3.5 (1.8–5.3)	4.8 (3.5–6.2)	4.0 (3.0–4.9)	3.8 (3.0–4.6)	4.0 (3.4–4.7)
Bread	3.4 (3.0–3.8)	3.3 (2.3–4.4)	2.9 (1.6–4.2)	5.0 (3.7–6.4)	3.3 (2.5–4.1)	3.8 (3.0–4.6)	3.9 (3.3–4.5)	2.7 (1.8–3.5)	2.7 (1.9–3.5)	3.3 (2.3–4.3)	2.8 (2.0–3.6)	2.7 (2.2–3.3)	3.0 (2.5–3.4)
Bread-based dishes	2.6 (2.2–2.9)	5.4 (3.6–7.3)	5.0 (3.1–7.0)	3.0 (2.1–3.8)	2.6 (1.4–3.9)	0.7 (0.4–1.1)	3.3 (2.7–3.9)	4.4 (3.0–5.7)	2.1 (1.4–2.7)	2.4 (1.3–3.5)	0.8 (0.4–1.2)	0.6 (0.3–1.0)	1.9 (1.4–2.3)
Cakes and muffins	2.4 (2.1–2.7)	0.8 (0.3–1.4)	1.5 (0.6–2.4)	1.9 (1.1–2.7)	3.3 (2.1–4.6)	3.8 (2.6–4.9)	2.3 (1.8–2.8)	1.8 (0.9–2.6)	1.5 (0.6–2.4)	2.3 (1.5–3.0)	3.1 (2.2–4.1)	3.9 (2.7–5.1)	2.5 (2.0–2.9)
Potatoes, kumara and taro	2.3	1.9	1.6	2.1	2.9	3.7	2.3	1.4	2.2	2.5	2.5	2.5	2.4
Grains and pasta	2.0	2.9	3.2	2.1	2.4	0.7	2.3	2.5	2.7	2.0	1.0	0.5	1.7
Dairy products	1.3	2.3	1.1	1.3	1.0	1.0	1.2	1.3	1.3	1.3	1.5	1.4	1.4
Snack bars	1.1	3.0	1.7	1.6	0.6	0.3	1.3	1.7	0.7	0.9	1.1	0.4	0.9
Beef and veal	0.9	1.1	1.3	1.2	1.2	1.0	1.2	0.8	1.0	0.5	0.7	0.3	0.6
Poultry	0.9	0.7	0.7	1.4	0.9	0.3	1.0	0.9	0.7	1.1	0.4	0.3	0.8
Soups and stocks	0.8	0.2	0.7	0.6	0.4	1.5	0.6	0.9	0.6	1.0	1.2	1.0	0.9
Biscuits	0.8	1.0	0.2	0.7	1.0	1.2	0.7	0.7	0.6	0.7	0.9	1.5	0.8
Puddings and desserts	0.7	0.7	0.2	0.4	1.1	1.2	0.6	0.4	0.5	0.7	0.9	0.7	0.7
Pork	0.4	0.9	1.0	0.3	0.6	0.3	0.5	0.1	0.3	0.2	0.2	0.2	0.2
Pies and pasties	0.3	0.4	0.1	0.4	0.2	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.3
Fish and seafood	0.2	0.2	0.2	0.3	0.5	0.1	0.3	0.0	0.1	0.1	0.2	0.3	0.1

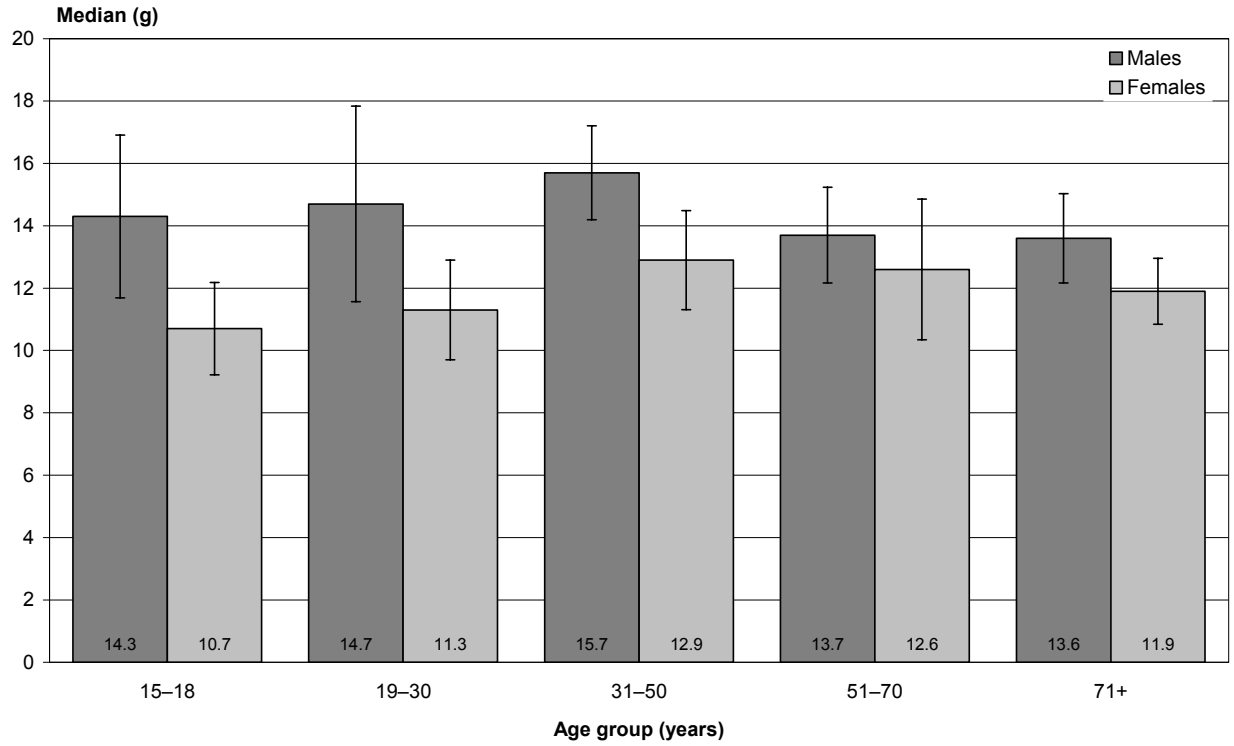
Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Sausages and processed meats	0.2	0.2	0.2	0.4	0.1	0.2	0.2	0.3	0.0	0.1	0.1	0.1	0.1
Milk	0.2	0.1	0.0	0.3	0.0	0.0	0.1	0.4	0.2	0.3	0.1	0.0	0.2
Eggs and egg dishes	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.1
Snack foods	0.1	0.1	0.2	0.0	0.1	0.0	0.1	0.1	0.1	0.3	0.2	0.0	0.2
Nuts and seeds	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.1	0.0	0.1	0.1	0.0	0.1
Lamb and mutton	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.2	0.0	0.1
Other meat	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.0
Cheese	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Supplements providing energy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butter and margarine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fats and oils	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1 Proportion of total nutrient intake obtained from each food group. Results for Māori, Pacific, NZEO and NZDep2006 are in the online data tables. For full food group definitions, see Table 2.2. 95% confidence intervals are presented only for the top 10 food groups.

Lactose intake and dietary sources

Median usual daily lactose intake was 14.3 g for males and 12.2 g for females (Table 3.23). Lactose intakes by age group and sex are shown in Figure 3.27.

Figure 3.27: Median lactose intake (g), by age group and sex



Milk was the major source of lactose, providing 52%, followed by *Dairy products* (11%), *Non-alcoholic beverages* (8%) and *Bread* (5%) (Table 3.24).

Males aged 31+ years and females aged 71+ years obtained more lactose from *Milk* than those aged 15–30 years (Figure 3.28). Females aged 31–50 years obtained less lactose from *Dairy products* than females aged 71+ years (9% versus 14%). Males aged 19–30 years obtained more lactose from *Non-alcoholic beverages* than all other males; females aged 71+ years obtained less lactose from *Non-alcoholic beverages* than females aged 19–70 years.

Figure 3.28: Percent lactose from *Milk*, by age group and sex

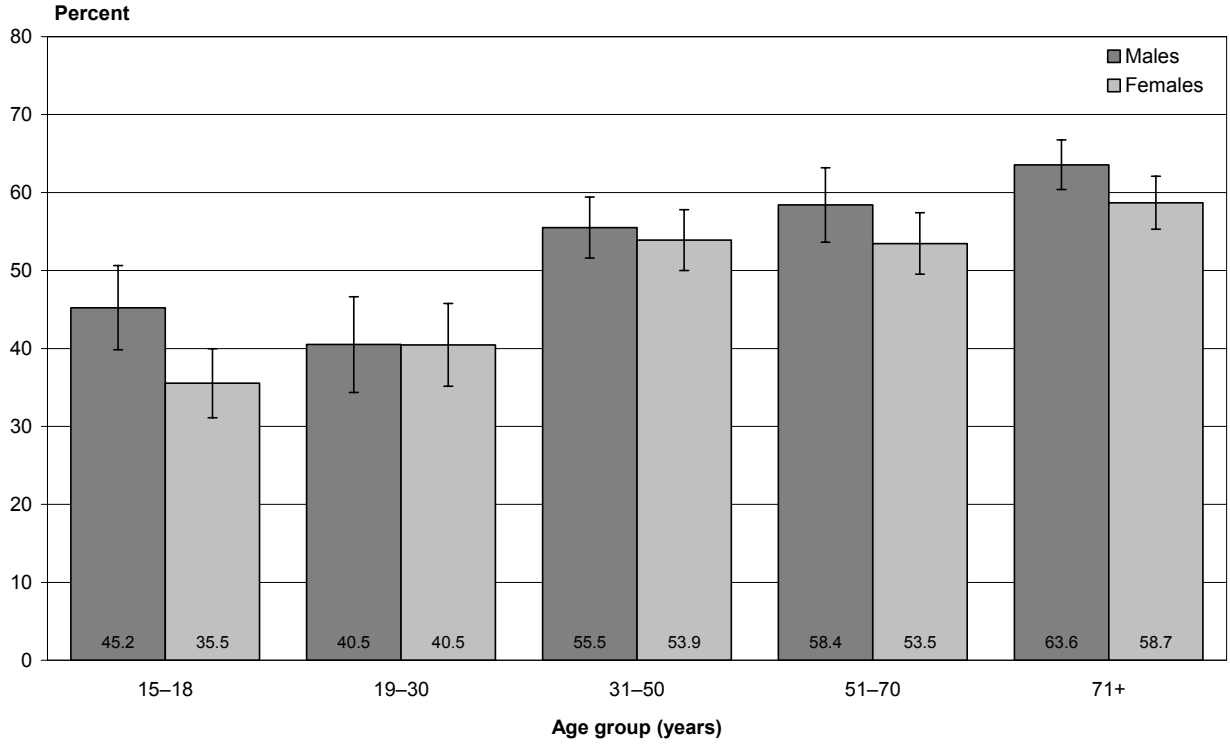


Table 3.23: Lactose intake, by age group, ethnic group, NZDep2006 and sex

		Lactose (g)[1]			
		Mean	**10th[2]**	**Median (50th),[2] (95% CI)**	**90th[2]**
Total population		14.6	5.3	13.2 (12.7–13.7)	25.6
By age group (years)					
Males	15–18	15.9	6.6	14.3 (11.7–16.9)	26.9
	19–30	15.5	7.6	14.7 (11.6–17.8)	24.6
	31–50	17.0	7.6	15.7 (14.2–17.2)	28.1
	51–70	15.0	5.8	13.7 (12.2–15.2)	26.1
	71+	14.7	6.3	13.6 (12.2–15.0)	24.6
	Total	15.9	5.9	14.3 (13.5–15.1)	27.8
Females	15–18	11.3	5.7	10.7 (9.2–12.2)	17.6
	19–30	12.7	4.0	11.3 (9.7–12.9)	22.8
	31–50	14.3	5.4	12.9 (11.3–14.5)	24.8
	51–70	13.3	6.9	12.6 (10.3–14.9)	20.8
	71+	13.0	5.3	11.9 (10.8–13.0)	21.7
	Total	13.4	4.9	12.2 (11.6–12.8)	23.2
Māori					
Males	15–18	17.1	7.1	15.5 (13.6–17.4)	29.0
	19–30	14.6	7.5	13.6 (9.5–17.7)	23.0
	31–50	14.1	5.8	12.5 (10.1–14.9)	24.4
	51+	13.8	5.5	12.6 (8.8–16.4)	23.5
	Total	14.0	6.2	12.9 (11.3–14.5)	23.4
Females	15–18	8.8	2.9	7.5 (4.0–11.0)	16.4
	19–30	14.7	6.9	13.5 (10.2–16.8)	23.7
	31–50	14.5	5.6	13.3 (11.3–15.3)	24.9
	51+	11.9	4.9	10.9 (8.7–13.1)	19.6
	Total	13.5	5.1	12.4 (11.1–13.7)	23.1
Pacific					
Males	15–18	6.0	1.7	4.9 (0.2–9.6)	11.7
	19–30	14.6	5.0	12.7 (7.9–17.5)	26.5
	31–50	11.2	2.0	8.3 (5.7–10.9)	23.9
	51+	8.5	1.9	7.0 (4.2–9.8)	17.1
	Total	11.9	1.9	9.0 (6.9–11.1)	25.4
Females	15–18	9.4	3.5	8.6 (5.1–12.1)	16.3
	19–30	11.1	5.1	10.3 (7.1–13.5)	18.3
	31–50	11.9	3.6	10.6 (8.8–12.4)	21.5
	51+	9.0	4.8	8.5 (6.3–10.7)	13.8
	Total	11.1	4.0	10.0 (8.7–11.3)	19.6

		Lactose (g)[1]			
		Mean	10th[2]	Median (50th),[2] (95% CI)	90th[2]
NZEO					
Males	15–18	16.8	6.1	14.7 (12.2–17.2)	30.2
	19–30	15.7	8.3	14.9 (11.8–18.0)	24.1
	31–50	17.6	10.4	17.0 (15.2–18.8)	25.7
	51+	15.2	6.2	14.0 (12.5–15.5)	25.7
	Total	16.3	7.5	15.1 (14.0–16.2)	26.8
Females	15–18	11.7	6.0	11.1 (9.5–12.7)	18.2
	19–30	12.7	3.7	11.3 (8.3–14.3)	23.1
	31–50	14.4	6.3	13.2 (11.6–14.8)	23.9
	51+	13.5	6.2	12.6 (11.7–13.5)	21.8
	Total	13.6	5.9	12.6 (11.2–14.0)	22.6
By NZDep2006 quintile					
Males	1	17.0	6.6	15.2 (13.3–17.1)	29.5
	2	16.4	8.2	15.4 (13.5–17.3)	25.7
	3	15.3	7.2	14.6 (11.5–17.7)	24.2
	4	15.6	6.5	14.5 (11.2–17.8)	26.0
	5	14.4	5.8	13.1 (10.3–15.9)	24.8
Females	1	13.2	7.7	12.9 (11.0–14.8)	19.1
	2	14.4	6.5	13.5 (11.7–15.3)	23.2
	3	12.7	4.6	11.1 (9.7–12.5)	22.8
	4	13.1	5.7	12.4 (10.8–14.0)	21.5
	5	13.4	5.0	12.3 (10.8–13.8)	23.1

1 Usual daily intake. These data were adjusted for intra-individual variation using PC-SIDE.

2 Percentiles.

Table 3.24: Lactose sources, percent (95% CI),[1] by age group, sex and food group

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Milk	51.7 (50.1–53.3)	45.2 (39.8–50.6)	40.5 (34.4–46.6)	55.5 (51.6–59.4)	58.4 (53.6–63.2)	63.6 (60.4–66.7)	53.1 (50.8–55.5)	35.5 (31.1–40.0)	40.5 (35.2–45.8)	53.9 (50.0–57.8)	53.5 (49.5–57.4)	58.7 (55.3–62.1)	50.4 (48.2–52.6)
Dairy products	10.6 (9.7–11.6)	10.4 (7.5–13.3)	8.5 (5.3–11.7)	10.2 (7.9–12.5)	9.3 (6.9–11.7)	9.4 (7.8–11.1)	9.6 (8.3–10.8)	13.5 (10.7–16.4)	13.4 (9.4–17.5)	8.9 (7.1–10.8)	12.8 (10.2–15.3)	13.6 (11.4–15.9)	11.6 (10.3–12.9)
Non-alcoholic beverages	8.1 (7.2–9.0)	4.2 (2.7–5.7)	13.9 (9.7–18.2)	7.0 (5.1–9.0)	5.5 (3.2–7.8)	2.3 (1.5–3.2)	7.4 (6.1–8.6)	7.2 (4.8–9.5)	9.3 (6.3–12.3)	9.6 (7.0–12.1)	9.2 (6.8–11.5)	4.7 (3.2–6.3)	8.7 (7.4–10.0)
Bread	5.2 (4.6–5.8)	6.1 (4.2–8.0)	4.4 (2.6–6.1)	5.6 (4.1–7.1)	6.0 (4.1–8.0)	4.5 (3.4–5.5)	5.4 (4.6–6.3)	5.9 (4.3–7.5)	5.5 (2.9–8.2)	3.5 (2.7–4.3)	6.1 (4.2–8.0)	5.7 (3.4–8.0)	5.0 (4.1–5.8)
Sugar and sweets	3.3 (2.7–3.9)	2.4 (0.8–3.9)	5.8 (2.7–8.8)	3.4 (2.0–4.9)	1.8 (0.5–3.1)	0.9 (0.3–1.6)	3.2 (2.3–4.1)	6.0 (4.1–7.8)	4.5 (2.2–6.7)	4.2 (2.7–5.7)	1.7 (0.9–2.4)	1.4 (0.6–2.1)	3.4 (2.6–4.2)
Cakes and muffins	3.1 (2.7–3.6)	2.1 (1.1–3.2)	2.5 (0.8–4.1)	3.7 (2.5–4.9)	3.1 (1.5–4.8)	2.0 (1.4–2.6)	3.0 (2.3–3.7)	5.5 (3.8–7.1)	3.7 (1.8–5.6)	2.5 (1.7–3.3)	3.7 (2.2–5.2)	2.9 (2.1–3.7)	3.3 (2.7–3.9)
Biscuits	1.6 (1.3–1.9)	2.4 (0.9–4.0)	1.4 (0.3–2.5)	1.0 (0.5–1.5)	1.6 (0.7–2.4)	2.3 (1.5–3.1)	1.5 (1.1–1.9)	4.3 (2.3–6.4)	2.0 (0.9–3.1)	1.6 (0.8–2.3)	1.4 (0.8–1.9)	1.1 (0.7–1.5)	1.7 (1.3–2.2)
Grains and pasta	1.6 (1.2–2.0)	3.2 (0.8–5.5)	4.2 (1.7–6.7)	0.9 (0.5–1.4)	1.3 (0.3–3.7)	0.6 (0.1–1.1)	1.8 (1.1–2.6)	3.3 (1.9–4.8)	2.3 (0.3–4.3)	1.4 (0.6–2.3)	0.2 (0.1–0.4)	1.1 (0.3–1.9)	1.4 (0.9–1.9)
Potatoes, kumara and taro	1.5 (1.2–1.8)	2.2 (0.8–3.6)	0.7 (0.3–1.1)	1.1 (0.5–1.8)	1.6 (1.0–2.3)	1.9 (1.1–2.7)	1.3 (1.0–1.7)	1.4 (0.4–2.5)	1.4 (0.7–2.2)	2.0 (0.8–3.2)	1.3 (0.5–2.1)	1.6 (0.9–2.4)	1.6 (1.1–2.1)
Puddings and desserts	1.5 (1.1–1.8)	0.9 (0.2–1.6)	0.5 (0.1–1.5)	1.5 (0.6–2.3)	0.6 (0.2–1.1)	3.4 (2.0–4.9)	1.2 (0.8–1.5)	1.6 (0.7–2.6)	2.6 (0.4–4.7)	1.6 (0.4–2.8)	1.3 (0.6–2.0)	1.6 (1.1–2.2)	1.7 (1.1–2.3)
Bread-based dishes	1.4	3.1	4.2	1.2	1.0	0.2	1.8	2.6	1.6	1.1	0.3	0.2	1.0
Eggs and egg dishes	1.1	2.0	1.0	1.1	1.2	1.1	1.2	0.9	1.9	1.0	0.7	0.7	1.1
Alcoholic beverages	1.0	1.7	2.6	1.2	1.5	1.7	1.6	0.2	0.5	0.5	0.3	0.2	0.4
Savoury sauces and condiments	1.0	1.6	0.5	0.7	1.4	1.1	0.9	1.5	0.8	1.0	1.1	1.0	1.0
Fish and seafood	0.9	1.5	1.1	1.2	1.0	0.9	1.1	0.6	0.8	0.5	1.2	0.6	0.8
Supplements providing energy	0.9	2.7	3.1	0.5	0.1	0.1	1.0	1.1	1.2	0.8	0.2	0.7	0.7
Pies and pasties	0.9	1.8	1.1	0.6	0.7	0.5	0.8	1.1	0.7	1.1	0.8	0.9	0.9
Snack bars	0.6	1.7	0.5	0.9	0.3	0.1	0.7	1.6	0.3	0.2	1.1	0.2	0.6
Breakfast cereals	0.6	0.3	0.2	0.3	1.5	1.2	0.7	0.3	0.3	0.6	0.2	0.8	0.5

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Soups and stocks	0.5	0.5	0.6	0.2	0.4	0.8	0.4	0.7	0.2	1.0	0.4	0.4	0.6
Cheese	0.5	0.1	0.1	0.3	0.1	0.2	0.2	0.7	0.8	0.5	0.9	0.6	0.7
Butter and margarine	0.5	0.5	0.2	0.5	0.5	0.7	0.5	0.2	0.4	0.6	0.4	0.5	0.4
Snack foods	0.3	0.4	1.0	0.2	0.1	0.0	0.3	1.7	0.6	0.3	0.0	0.0	0.4
Poultry	0.3	0.6	0.5	0.4	0.1	0.1	0.3	0.8	0.6	0.2	0.1	0.1	0.3
Vegetables	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.4	0.5	0.3	0.3	0.0	0.3
Nuts and seeds	0.2	0.5	0.0	0.1	0.0	0.0	0.1	0.6	1.0	0.0	0.0	0.2	0.3
Lamb and mutton	0.1	0.0	0.3	0.0	0.1	0.0	0.1	0.0	0.7	0.0	0.1	0.0	0.2
Sausages and processed meats	0.1	0.5	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0
Beef and veal	0.1	0.2	0.0	0.1	0.1	0.1	0.1	0.3	0.0	0.0	0.0	0.0	0.0
Pork	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Other meat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Fruit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fats and oils	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1 Proportion of total nutrient intake obtained from each food group. Results for Māori, Pacific, NZEO and NZDep2006 are in the online data tables. For full food group definitions, see Table 2.2. 95% confidence intervals are presented only for the top 10 food groups.

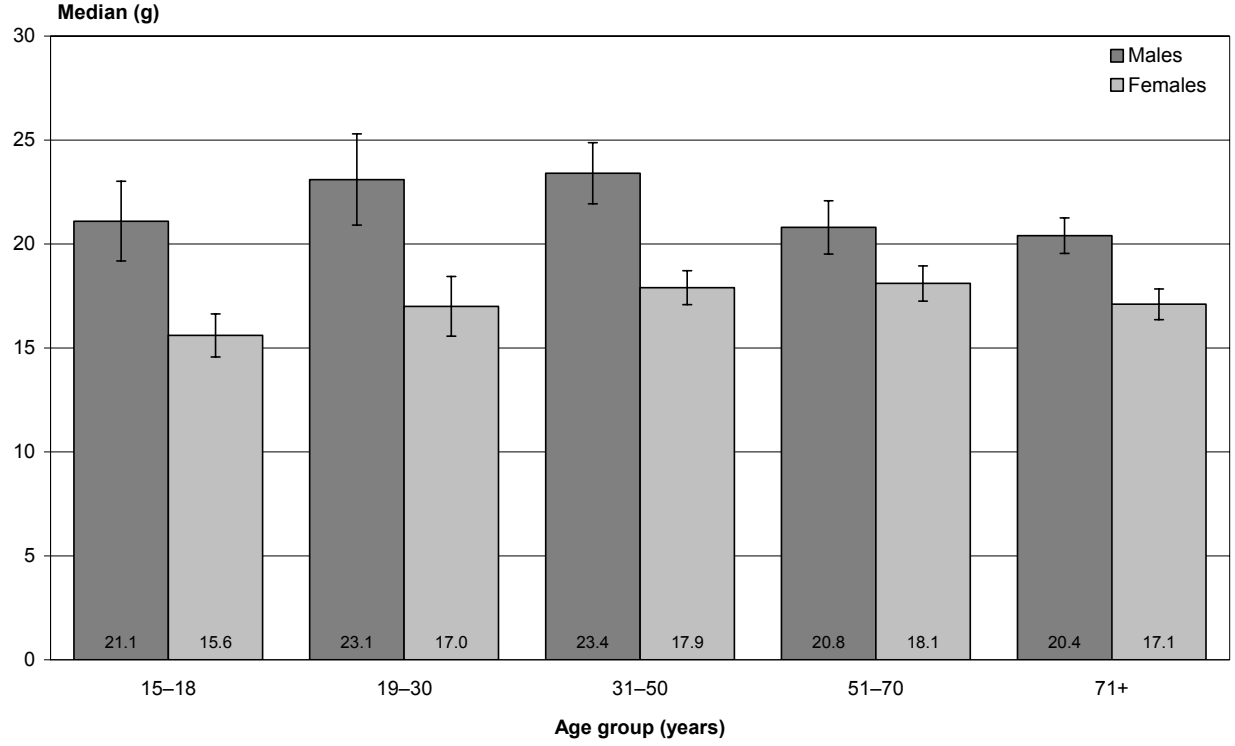
3.8 Dietary fibre

Dietary fibre is required for healthy bowel function. Dietary fibre also reduces the risk of cardiovascular disease and diabetes by improving blood lipid and blood glucose levels and reducing indicators of inflammation. Foods high in dietary fibre may help to maintain a healthy body weight and prevent obesity (American Dietetic Association 2008).

Dietary fibre intake

The median usual daily intake of dietary fibre was 19.6 g (males 22.1 g; females 17.5 g) (Table 3.25). Dietary fibre intakes were higher for males than for females across all age groups (Figure 3.29). Males aged 71+ years had lower dietary fibre intakes than males aged 31–50 years, and females aged 15–18 years had lower intakes than females aged 31–70 years.

Figure 3.29: Median dietary fibre intake (g), by age group and sex



The usual median daily intake of dietary fibre was 21.5 g for Māori males and 16.2 g for Māori females. The usual median daily intake of dietary fibre was 21.4 g for Pacific males and 17.5 g for Pacific females.

Females living in NZDep2006 quintile 5 consumed less dietary fibre than females living in NZDep2006 quintile 3 (16.4 g versus 18.6 g). Overall, dietary fibre intake decreased with increasing neighbourhood deprivation, but this association did not remain after adjusting for age, sex and ethnic group.

Dietary sources of dietary fibre

The *Bread* group was the largest single contributor of dietary fibre (17%), followed by *Vegetables* (16%), *Potatoes, kumara and taro* and *Fruit* (each 12%), *Grains and pasta* (8%) and *Breakfast cereals* (7%), and *Bread-based dishes* (5%) (Table 3.26).

Older females (71+ years) obtained more dietary fibre from *Bread* than younger females aged 19–30 years and 51–70 years (20%; 14%; 15%). *Vegetables* provided more dietary fibre for older males (71+ years) than males in younger age groups, but females aged 15–18 years obtained less dietary fibre from *Vegetables* than females in older age groups (Figure 3.30). In contrast, males and females aged 15–18 years obtained more dietary fibre from *Potatoes, kumara and taro* than males aged 71+ years and females aged 31+ years, respectively.

Older males (71+ years) and females aged 51+ years obtained more dietary fibre from *Fruit* than younger age groups. Males aged 19–30 years obtained more dietary fibre from *Grains and pasta* (11%) than those aged 71+ years (7%), and females aged 71+ years obtained less than those aged 15–50 years. *Breakfast cereals* provided more dietary fibre for males aged 51–70 years than for those aged 19–50 years, and for females aged 71+ years than for those aged 15–30 years. Males aged 15–18 years obtained more dietary fibre from *Bread-based dishes* than males aged 31+ years, and females aged 71+ years obtained less from *Bread-based dishes* than females aged 15–50 years.

Figure 3.30: Percent dietary fibre from *Vegetable*s, by age group and sex

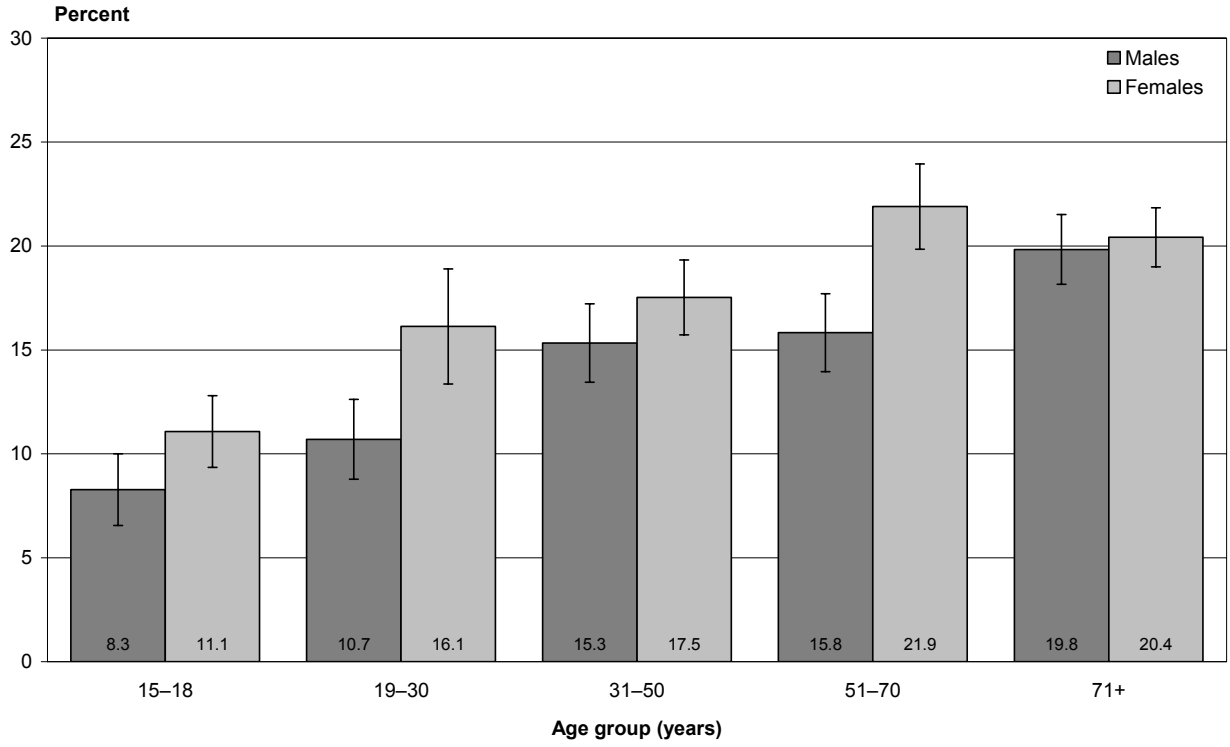


Table 3.25: Total dietary fibre intake, by age group, ethnic group, NZDep2006 and sex

		Dietary fibre (g)[1] [2]			
		Mean	**10th[3]**	**Median (50th),[3] (95%CI)**	**90th[3]**
Total population		20.3	12.8	19.6 (19.0–20.2)	28.5
By age group (years)					
Males	15–18	21.9	14.1	21.1 (19.2–23.0)	30.7
	19–30	23.4	18.1	23.1 (20.9–25.3)	29.0
	31–50	24.1	15.3	23.4 (21.9–24.9)	34.0
	51–70	21.5	13.6	20.8 (19.5–22.1)	30.2
	71+	21.0	13.7	20.4 (19.5–21.3)	28.9
	Total	22.8	15.0	22.1 (21.4–22.8)	31.5
Females	15–18	16.0	10.5	15.6 (14.6–16.6)	22.1
	19–30	17.3	11.8	17.0 (15.6–18.4)	23.2
	31–50	18.1	12.8	17.9 (17.1–18.7)	23.9
	51–70	18.7	12.0	18.1 (17.2–19.0)	26.0
	71+	17.6	12.1	17.1 (16.4–17.8)	23.8
	Total	17.9	11.9	17.5 (17.1–17.9)	24.5
Māori					
Males	15–18	20.7	16.9	20.4 (17.4–23.4)	25.0
	19–30	23.8	14.6	22.4 (19.1–25.7)	34.5
	31–50	22.8	14.3	22.4 (20.3–24.5)	31.8
	51+	19.2	10.9	18.3 (15.8–20.8)	28.4
	Total	22.2	14.1	21.5 (20.3–22.7)	31.1
Females	15–18	14.3	8.4	13.4 (10.5–16.3)	21.2
	19–30	17.4	9.7	17.0 (14.1–19.9)	25.5
	31–50	16.6	11.4	16.3 (14.8–17.8)	22.1
	51+	16.0	9.8	15.2 (13.8–16.6)	23.2
	Total	16.6	11.2	16.2 (15.0–17.4)	22.4
Pacific					
Males	15–18	22.3	15.1	22.1[#]	29.8
	19–30	20.9	13.5	20.2 (16.2–24.2)	29.2
	31–50	21.9	17.2	21.6 (18.8–24.4)	27.0
	51+	20.4	9.8	19.4 (15.7–23.1)	32.4
	Total	21.8	14.9	21.4 (19.6–23.2)	29.3
Females	15–18	14.1	9.6	14.0 (11.9–16.1)	18.7
	19–30	17.9	10.2	17.3 (15.5–19.1)	26.5
	31–50	18.6	15.1	18.4 (16.6–20.2)	22.3
	51+	16.6	10.8	16.2 (14.3–18.1)	22.9
	Total	17.6	14.2	17.5 (16.3–18.7)	21.2

		Dietary fibre (g)[1 2]			
		Mean	10th[3]	Median (50th),[3] (95%CI)	90th[3]
NZEO					
Males	15–18	21.7	13.6	20.8 (18.8–22.8)	30.8
	19–30	23.2	17.8	22.8 (20.3–25.3)	28.9
	31–50	24.5	15.4	23.7 (22.1–25.3)	34.8
	51+	21.5	14.7	21.0 (20.1–21.9)	29.0
	Total	22.9	15.3	22.3 (21.5–23.1)	31.4
Females	15–18	16.2	10.0	15.6 (14.4–16.8)	23.2
	19–30	17.4	10.3	16.8 (15.2–18.4)	25.1
	31–50	18.3	12.1	17.9 (17.1–18.7)	24.8
	51+	18.5	12.4	17.9 (17.2–18.6)	25.4
	Total	18.0	11.6	17.6 (17.1–18.1)	25.0
By NZDep2006 quintile					
Males	1	24.2	13.5	22.9 (20.9–24.9)	36.9
	2	23.8	16.3	23.4 (21.9–24.9)	31.9
	3	22.0	16.7	21.7 (20.0–23.4)	27.6
	4	21.4	15.0	21.0 (19.1–22.9)	28.5
	5	22.3	13.8	21.2 (19.4–23.0)	32.1
Females	1	18.0	12.6	17.8 (16.7–18.9)	23.7
	2	18.4	11.8	17.8 (16.8–18.8)	26.0
	3	18.8	13.5	18.6 (17.6–19.6)	24.6
	4	17.0	10.7	16.5 (15.3–17.7)	23.9
	5	16.8	11.8	16.4 (15.4–17.4)	22.2

1 Usual daily intake. These data were adjusted for intra-individual variation using PC-SIDE.

2 Dietary fibre is estimated using the Englyst method, which measures non-starch polysaccharides and does not include resistant starch.

3 Percentiles.

Confidence interval could not be calculated. Estimate should be interpreted with caution.

Table 3.26: Total dietary fibre sources, percent (95% CI),[1] by age group, sex and food group

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Bread	17.1 (16.4–17.8)	16.4 (13.7–19.1)	16.2 (13.5–19.0)	19.3 (17.2–21.5)	18.6 (16.1–21.0)	20.2 (18.2–22.2)	18.3 (17.2–19.5)	15.7 (13.8–17.6)	14.4 (11.9–16.9)	16.3 (14.6–17.9)	15.3 (13.8–16.7)	19.8 (17.5–22.2)	16.0 (15.1–16.9)
Vegetables	16.4 (15.6–17.2)	8.3 (6.6–10.0)	10.7 (8.8–12.6)	15.3 (13.4–17.2)	15.8 (14.0–17.7)	19.8 (18.2–21.5)	14.4 (13.4–15.3)	11.1 (9.3–12.8)	16.1 (13.4–18.9)	17.5 (15.7–19.3)	21.9 (19.8–24.0)	20.4 (19.0–21.8)	18.2 (17.2–19.3)
Potatoes, kumara and taro	11.7 (11.0–12.4)	15.6 (12.9–18.4)	12.7 (9.8–15.6)	12.2 (10.3–14.1)	11.6 (9.7–13.4)	11.2 (10.0–12.3)	12.3 (11.3–13.4)	14.9 (12.5–17.2)	13.7 (10.9–16.5)	10.8 (9.2–12.4)	9.1 (7.6–10.5)	9.4 (8.3–10.4)	11.1 (10.1–12.0)
Fruit	11.5 (11.0–12.1)	9.0 (7.2–10.8)	8.3 (6.4–10.1)	8.8 (7.5–10.2)	10.2 (8.9–11.6)	13.7 (12.4–15.0)	9.5 (8.8–10.3)	10.8 (9.3–12.3)	11.7 (9.8–13.5)	12.1 (10.9–13.4)	15.4 (13.9–16.9)	17.7 (16.5–18.9)	13.4 (12.6–14.2)
Grains and pasta	8.3 (7.7–8.9)	8.4 (6.5–10.3)	11.1 (8.5–13.6)	8.6 (7.2–10.1)	8.0 (5.9–10.1)	6.9 (5.4–8.5)	8.8 (7.8–9.8)	8.9 (7.3–10.5)	10.6 (8.2–13.0)	8.1 (6.8–9.3)	6.2 (5.1–7.4)	5.3 (4.4–6.3)	7.8 (7.1–8.6)
Breakfast cereals	7.2 (6.6–7.8)	7.2 (5.6–8.8)	6.1 (4.1– 8.0)	6.7 (5.3–8.1)	10.3 (8.2–12.5)	8.4 (7.2–9.6)	7.7 (6.9–8.6)	5.5 (4.1–6.8)	4.7 (3.2–6.2)	6.7 (5.5–7.9)	7.8 (6.4–9.3)	8.1 (7.0–9.2)	6.7 (5.9–7.4)
Bread-based dishes	5.1 (4.5–5.7)	11.9 (9.2–14.6)	8.9 (5.8–11.9)	5.2 (4.0–6.5)	5.1 (3.2–7.0)	1.6 (1.0–2.2)	6.1 (5.1–7.1)	8.7 (6.7–10.7)	5.4 (3.7–7.1)	4.4 (3.1–5.8)	2.3 (1.5–3.1)	1.6 (1.0–2.2)	4.1 (3.4–4.7)
Non-alcoholic beverages	3.7 (3.4–3.9)	1.2 (0.9–1.5)	3.3 (2.3–4.4)	4.0 (3.4–4.6)	4.2 (3.4–4.9)	2.6 (2.2–2.9)	3.6 (3.2–3.9)	1.8 (1.4–2.2)	3.3 (2.6–4.0)	5.1 (4.4–5.8)	3.3 (2.7–3.9)	2.7 (2.3–3.1)	3.8 (3.4–4.2)
Cakes and muffins	2.3 (2.0–2.6)	1.1 (0.7–1.5)	1.6 (0.8–2.5)	2.2 (1.5–3.0)	2.9 (1.7–4.0)	2.0 (1.6–2.5)	2.2 (1.7–2.6)	2.7 (2.0–3.3)	3.1 (1.8–4.4)	1.8 (1.4–2.2)	2.7 (1.9–3.5)	2.7 (2.0–3.5)	2.4 (2.1–2.8)
Pies and pasties	2.1 (1.8–2.4)	3.6 (2.4–4.9)	4.4 (2.6–6.1)	2.6 (1.8–3.4)	1.4 (0.8–2.0)	1.3 (0.8–1.8)	2.6 (2.1–3.1)	2.3 (1.6–3.1)	2.4 (1.2–3.6)	1.7 (1.0–2.5)	1.3 (0.7–1.8)	0.9 (0.5–1.3)	1.7 (1.3–2.1)
Biscuits	1.9	1.9	0.7	1.6	1.9	2.1	1.6	3.0	1.5	2.3	2.3	2.2	2.2
Sausages and processed meats	1.8	1.9	2.6	2.1	1.4	1.4	1.9	2.3	1.3	2.0	1.5	1.3	1.6
Soups and stocks	1.6	0.6	1.6	0.9	0.7	2.3	1.1	1.2	1.7	1.8	2.4	2.7	2.0
Nuts and seeds	1.3	1.2	0.7	1.1	1.4	1.0	1.1	0.7	0.9	1.9	1.7	0.7	1.4
Poultry	1.1	1.9	1.7	1.6	0.7	0.3	1.3	1.9	1.1	1.2	0.5	0.3	1.0
Sugar and sweets	1.1	0.9	1.4	1.0	0.6	0.6	0.9	1.6	1.6	1.4	0.8	0.5	1.2
Savoury sauces and condiments	1.0	1.4	1.4	1.3	0.7	0.6	1.1	1.0	1.3	0.9	0.7	0.7	0.9
Beef and veal	0.9	1.1	1.9	1.2	0.8	1.1	1.2	0.9	0.6	0.5	1.0	0.6	0.7
Snack foods	0.9	1.8	1.4	0.7	0.4	0.1	0.8	1.6	1.4	1.0	0.6	0.0	0.9
Snack bars	0.7	1.9	0.5	1.3	0.4	0.2	0.8	1.4	0.5	0.6	0.8	0.3	0.7
Puddings and desserts	0.6	0.7	0.2	0.4	0.8	0.9	0.5	0.5	0.6	0.5	0.7	0.6	0.6
Dairy products	0.5	0.6	0.8	0.5	0.3	0.5	0.5	0.7	0.8	0.4	0.6	0.6	0.6
Fish and seafood	0.5	0.5	0.5	0.7	0.6	0.4	0.6	0.1	0.6	0.4	0.5	0.5	0.4

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Pork	0.2	0.4	0.6	0.1	0.3	0.2	0.3	0.0	0.3	0.1	0.1	0.1	0.1
Lamb and mutton	0.2	0.2	0.3	0.1	0.3	0.2	0.2	0.1	0.2	0.1	0.3	0.1	0.2
Milk	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.4	0.3	0.2	0.2	0.1	0.2
Eggs and egg dishes	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.1
Supplements providing energy	0.1	0.3	0.3	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.1	0.0
Alcoholic beverages	0.1	0.1	0.1	0.0	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Other meat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Cheese	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butter and margarine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fats and oils	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1 Proportion of total nutrient intake obtained from each food group. Results for Māori, Pacific, NZEO and NZDep2006 are in the online data tables. For full food group definitions, see Table 2.2. 95% confidence intervals are presented only for the top 10 food groups.

3.9 Alcohol

Alcohol is a concentrated source of energy, providing 29 kJ per gram (Mann and Truswell 2007). Alcohol has both a direct and an indirect effect on energy intake: it contributes to energy intake and can also affect food intake (Mann and Truswell 2007; Foster and Harriott 2006).

Alcohol intake

Alcohol was not consumed by all individuals on the day of the 24-hour diet recall. Therefore the median intakes of alcohol (0.0 g) do not provide meaningful information, but the levels of 90th percentiles of intake and mean intakes do provide useful information on the alcohol intakes of the New Zealand population.

Unlike data for energy and nutrients, alcohol intake data are not adjusted for intra-individual variation since on any particular day zero intake would not be uncommon. Because the data are extremely skewed, no statistical comparisons can be undertaken.

The mean daily intake of alcohol was 14.0 g (males 18.4 g; females 9.9 g) (Table 3.27).

Dietary sources of alcohol

The largest contributors of alcohol to the diet among those who were consumers were *Wine* (42%) and *Beer* (37%), followed by *Spirits* (11%), and *Other alcoholic beverages*, which were primarily ready-to-drink beverages (RTDs) (8%) (Table 3.28).

For all categories of alcoholic beverages there was marked variation among the age groups and between sexes. There were some differences, however. Females consuming alcohol obtained much more of their alcohol from *Wine* than males (66% versus 24%). Younger males aged 15–30 years and females aged 15–18 years obtained 11% or less of their alcohol from *Wine,* much lower than the proportions of alcohol from *Wine* among older males and females.

In contrast, males obtained much more of their alcohol from *Beer* than females (56% versus 11%). Within all ethnic groups, males obtained more of their alcohol from *Beer* than females.

The category *Other alcoholic beverages* (predominantly RTDs) was the single largest source of alcohol for females aged 15–18 years (55%). Females aged 15–30 years obtained more alcohol from this category than females aged 51+ years.

Table 3.27: Alcohol intake, by age group, ethnic group, NZDep2006 and sex

		Alcohol (g)[1]				Percent energy from alcohol[2]			
		Mean (95% CI)	**10th[3]**	**Median (50th)[3]**	**90th[3]**	**Mean (95% CI)**	**10th[3]**	**Median (50th)[3]**	**90th[3]**
Total population		14.0 (12.4–15.6)	0.0	0.0	35.1	3.8 (3.4–4.2)	0.0	0.0	11.3
By age group (years)									
Males	15–18	8.7 (3.9–3.5)	0.0	0.0	13.4	1.8 (0.9–2.6)	0.0	0.0	3.3
	19–30	19.3 (12.6–26.1)	0.0	0.0	80.2	4.1 (2.8–5.3)	0.0	0.0	15.7
	31–50	20.0.6 (15.9–25.4)	0.0	0.0	53.7	4.7 (3.7–5.7)	0.0	0.0	13.9
	51–70	19.3 (14.6–24.0)	0.0	0.0	47.6	5.1 (4.0–6.1)	0.0	0.0	15.3
	71+	13.4 (10.6–16.2)	0.0	0.0	40.7	4.4 (3.4–5.4)	0.0	0.0	13.2
	Total	18.4 (15.8–21.0	0.0	0.0	45.9	4.4 (3.9–4.9)	0.0	0.0	13.4
Females	15–18	4.7 (2.3–7.1)	0.0	0.0	0.0	1.2 (0.6–1.8)	0.0	0.0	0.0
	19–30	11.9 (6.2–17.7)	0.0	0.0	19.7	2.9 (1.7–4.2)	0.0	0.0	6.8
	31–50	10.7 (7.7–13.8)	0.0	0.0	35.5	3.7 (2.8–4.5)	0.0	0.0	11.9
	51–70	10.1 (7.4–12.9)	0.0	0.0	29.6	3.6 (2.7–4.4)	0.0	0.0	11.0
	71+	6.0 (4.3–7.8)	0.0	0.0	18.4	2.7 (1.9–3.5)	0.0	0.0	9.2
	Total	9.9 (8.2–1.6)	0.0	0.0	23.7	3.2 (2.8–3.7)	0.0	0.0	9.4
Māori									
Male	15–18	15.4[#]	0.0	0.0	26.9	3.0[#]	0.0	0.0	4.5
	19–30	22.4 (10.0–34.8)	0.0	0.0	88.9	4.3 (1.9–6.6)	0.0	0.0	20.6
	31–50	17.2 (8.2–26.1)	0.0	0.0	53.1	3.2 (1.7–4.7)	0.0	0.0	11.1
	51+	9.9 (4.5–15.2)	0.0	0.0	29.6	2.7 (1.3–4.1)	0.0	0.0	10.3
	Total	16.8 (11.5–22.1)	0.0	0.0	53.7	3.4 (2.4–4.3)	0.0	0.0	12.3
Female	15–18	4.5 (0.0–9.0)	0.0	0.0	0	1.3 (0.1–2.5)	0.0	0.0	0.0
	19–30	8.1 (3.9–12.4)	0.0	0.0	29.8	2.3 (1.0–3.6)	0.0	0.0	6.8
	31–50	7.4 (4.4–10.5)	0.0	0.0	38.8	2.6 (1.4–3.8)	0.0	0.0	11.4
	51+	4.9 (1.8–7.9)	0.0	0.0	14.8	1.9 (0.7–3.0)	0.0	0.0	7.2
	Total	6.7 (4.9–8.6)	0.0	0.0	24.3	2.2 (1.6–2.9)	0.0	0.0	8.3

		Alcohol (g)[1]				Percent energy from alcohol[2]			
		Mean (95% CI)	10th[3]	Median (50th)[3]	90th[3]	Mean (95% CI)	10th[3]	Median (50th)[3]	90th[3]
Pacific									
Males	15–18	5.5[#]	0.0	0.0	40.3	1.7[#]	0.0	0.0	14.5
	19–30	10.9 (3.3–18.5)	0.0	0.0	44.0	1.8 (0.7–2.9)	0.0	0.0	7.1
	31–50	16.8 (2.0–31.6)	0.0	0.0	35.7	4.3 (0.2–8.5)	0.0	0.0	6.7
	51+	6.4[#]	0.0	0.0	13.4	2.1 (0.1–4.1)	0.0	0.0	3.6
	Total	11.4 (5.1–17.8)	0.0	0.0	29.6	2.8 (1.1–4.5)	0.0	0.0	7.1
Females	15–18	4.4[#]	0.0	0.0	0.0	0.9[#]	0.0	0.0	0.0
	19–30	8.4 (0.3–16.5)	0.0	0.0	0.1	1.1 (0.3–2.0)	0.0	0.0	0.0
	31–50	4.1 (1.7–6.5)	0.0	0.0	10.9	1.3 (0.5–2.1)	0.0	0.0	3.3
	51+	1.5[#]	0.0	0.0	0.0	0.5[#]	0.0	0.0	0.0
	Total	4.9 (2.3–7.4)	0.0	0.0	0.1	1.0 (0.6–1.4)	0.0	0.0	0.0
NZEO									
Males	15–18	10.2 (4.3–16.0)	0.0	0.0	14.8	2.0 (1.0–3.0)	0.0	0.0	3.6
	19–30	19.4 (11.7–27.1)	0.0	0.0	80.2	4.2 (2.8–5.5)	0.0	0.0	15.9
	31–50	21.0 (15.8–26.2)	0.0	0.0	63.5	4.8 (3.7–5.9)	0.0	0.0	16.1
	51+	18.6 (14.7–22.4)	0.0	0.0	44.9	5.1 (4.2–6.0)	0.0	0.0	14.4
	Total	19.0 (16.2–21.8)	0.0	0.0	49.0	4.6 (4.0–5.2)	0.0	0.0	14.4
Females	15–18	4.4 (1.8–7.0)	0.0	0.0	0.0	1.1 (0.4–1.8)	0.0	0.0	0.0
	19–30	12.6 (5.8–19.5)	0.0	0.0	37.6	3.1 (1.7–4.6)	0.0	0.0	9.2
	31–50	11.6 (8.1–15.1)	0.0	0.0	40.8	4.0 (3.0–4.9)	0.0	0.0	14.9
	51+	9.5 (7.3–11.6)	0.0	0.0	25.7	3.5 (2.8–4.2)	0.0	0.0	10.7
	Total	10.5 (8.6–12.4)	0.0	0.0	27.6	3.5 (2.9–4.0)	0.0	0.0	10.7

		Alcohol (g)[1]				Percent energy from alcohol[2]			
		Mean (95% CI)	10th[3]	Median (50th)[3]	90th[3]	Mean (95% CI)	10th[3]	Median (50th)[3]	90th[3]
By NZDep2006 quintile									
Males	1	16.9 (13.4–20.4)	0.0	0.0	44.4	4.6 (3.7–5.5)	0.0	0.0	12.6
	2	24.1 (17.6–30.6)	0.0	0.0	61.5	5.6 (4.2–6.9)	0.0	0.0	15.3
	3	17.1 (10.7–23.4)	0.0	0.0	44.0	4.1 (2.9–5.4)	0.0	0.0	15.0
	4	18.6 (11.3–25.8)	0.0	0.0	40.3	4.3 (2.9–5.6)	0.0	0.0	12.7
	5	15.3 (10.7–19.9)	0.0	0.0	45.8	3.3 (2.4–4.2)	0.0	0.0	11.5
Females	1	12.8 (7.4–18.3)	0.0	0.0	35.5	4.5 (3.1–5.9)	0.0	0.0	14.1
	2	10.9 (7.4–14.4)	0.0	0.0	27.6	3.5 (2.6–4.4)	0.0	0.0	10.7
	3	10.6 (5.9–15.3)	0.0	0.0	26.1	3.1 (2.0–4.2)	0.0	0.0	9.1
	4	7.6 (5.2–10.0)	0.0	0.0	21.1	2.6 (1.8–3.3)	0.0	0.0	9.0
	5	7.7 (5.4–9.9)	0.0	0.0	14.8	2.6 (1.8–3.4)	0.0	0.0	6.0

1 These data were not adjusted for intra-individual variation because intake clusters at zero.

2 These data were not adjusted for intra-individual variation because the only methods that have been developed for ratios use multiple day repeats. Percent energy from alcohol for each participant was calculated as the energy from alcohol (conversion factor = 29.3kJ/g) divided by the total energy intake.

3 Percentiles.

Confidence interval could not be calculated. Estimate should be interpreted with caution.

Table 3.28: Alcohol sources, percent (95% CI),[1] by age group, sex and food group

Food group	Total population	Males						Females					
		15–18	19–30	31–50	51–70	71+	Total	15–18	19–30	31–50	51–70	71+	Total
Wine	42.0 (37.9–46.2)	7.3 (1.5-19.3)	1.9 (0.4–5.5)	26.3 (17.8–34.8)	33.2 (23.3–43.2)	35.1 (27.6–42.5)	24.2 (19.4–29.1)	10.9 (0.6–21.3)	51.2 (33.6–68.8)	64.4 (55.0–73.8)	78.1 (69.9–86.3)	66.5 (57.5–75.5)	65.9 (60.4–71.4)
Beer	36.9 (33.1–40.7)	69.4 (51.0–87.8)	68.5 (56.6–80.4)	58.0 (48.7–67.2)	48.9 (39.1–58.7)	42.9 (33.5–52.3)	55.9 (50.5–61.3)	13.9 (3.0–24.8)	9.1 (2.3–15.9)	18.6 (11.3–25.8)	4.1 (1.1–7.2)	9.0 (4.3–13.8)	11.4 (8.0–14.8)
Spirits	10.6 (8.1–13.1)	6.8 (1.2-19.4)	12.8 (4.2–21.4)	8.9 (3.6–14.1)	15.0 (7.8–22.2)	16.9 (10.7–23.0)	12.3 (8.8–15.8)	19.3 (7.2–31.3)	4.2 (0.9–7.4)	5.8 (1.4–10.2)	9.3 (3.5–15.1)	19.5 (12.3–26.7)	8.5 (5.7–11.3)
Other, eg, RTDs	7.5 (5.3–9.7)	9.8 (2.1–25.2)	14.7 (4.7–24.7)	5.8 (1.3–10.2)	1.6 (0.3–4.9)	2.3 (0.5–4.0)	5.9 (3.3–8.6)	54.5 (36.2–72.9)	26.7 (10.0–43.3)	7.8 (1.8–13.7)	3.4 (0.4–6.4)	2.5 (0.4–4.7)	9.6 (5.8–13.4)
Liqueurs and cocktails	1.6 (0.6–2.5)	6.6 (0.2-30.8)	0.3 (0.0–1.4)	0.2 (0.0-0.8)	0.1 (0.0–0.3)	0.6 (0.1–2.0)	0.4 (0.0–0.8)	1.4 (0.0–6.4)	7.8 (0.4–15.3)	2.8 (0.6–7.7)	2.2 (0.1–11.5)	1.1 (0.1–4.1)	3.1 (1.0–5.3)

1 Proportion of total nutrient intake obtained from each food sub-group of *Alcoholic beverages* for consumers of alcohol only.