NZ Food NZ Children

Key results of the 2002 National Children's Nutrition Survey

Winsome Parnell
Robert Scragg
Noela Wilson
David Schaaf
Eljon Fitzgerald

Cover artwork by:
Jessica Kerr, aged 11 years
Hamish Ford aged 12 years
Ngawai Edwards, aged 11 years
All from Room 2, Raroa Normal Intermediate School, Wellington

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Foreword

The findings of the first national survey of the nutritional status of New Zealand children aged 5–14 years have been eagerly awaited. The results presented in this report provide both reassurances as well as challenges for parents, healthcare professionals, teachers, school boards of trustees, and those responsible for health, education and social policy planning. There is good news. Intakes of most nutrients are adequate and iron deficiency and iron deficiency anaemia are relatively infrequent among New Zealand children except for girls aged 11–14 years, notably among Māori and Pacific. Of particular interest is the fact that nutritional status of the youngest children (5–6-year-olds) is appreciably better than that of the older children. Their nutrient intakes are better as the result of healthier food choices, and they are more likely to have appropriate body size. They are also the most active group of children. The data suggest that while their food intake is controlled by parents (more is home sourced) the situation is appreciably more satisfactory than when exposed to an environment often characterised by a wider range of food choices, peer pressure and advertising. Clearly the challenge is to find ways of continuing the more appropriate earlier practices.

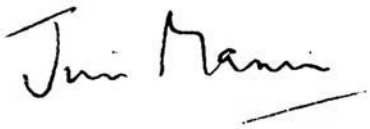
The results relating to overweight and obesity will not come as a surprise. We all know that overweight and obesity and their consequences constitute a constellation of epidemic diseases of the 21st century. There are no directly comparable data from other countries but the fact that about one-fifth and one-tenth of 5–14-year-olds are overweight and obese respectively is of concern. A particular worry is the disparity here with regard to Māori and Pacific children who have appreciably higher rates than New Zealand European and Other children. It is clearly an urgent public health requirement to find ways to increase physical activity and to decrease intake of energy dense foods (particularly those containing saturated fats and sugars such as hot chips and sweet drinks) without compromising intake of essential nutrients.

There has recently been a suggestion that iodine intakes among some New Zealand children may be inadequate. This survey provides firm confirmation that this is indeed the case. Once again public health measures will be required to ensure adequate intakes since a wide range of health consequences may result from low intakes in childhood. For the present, while noting that high intakes of salt are undesirable, it is important to ensure that salt when used should be iodised.

Another research question that arises relates to the potential consequences of the apparently low calcium intake among Pacific children. Is there any evidence that such intakes lead to reduced bone density in later life?

It is clear that while the report raises some issues requiring immediate action and further research, there is a host of further questions to be asked of the data in terms of explaining some of the findings. The calibre of the research underpinning the report is outstanding. It is not an easy task to undertake a nationwide survey of this kind. The research team is to be congratulated and thanked for generating results that will help to shape public policy and confirm the ability of New Zealand to undertake world-class research of its kind.

Hon Annette King
Minister of Health



Jim Mann
Chairman
CNSTAC

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This survey would not have been completed without the dedication of numerous individuals. These individuals included members of the Advisory Board, responsible for the governance of the survey, the regional supervisors and field staff who collected the data and the project office staff who checked and analysed data.

On technical matters, acknowledgement is due the Departments of Human Nutrition and Biochemistry (University of Otago) for advice and technical expertise; to Crop & Food Research Ltd, Palmerston North for assistance with nutrient matching; and to Mary-Louise Hannah, Ministry of Health for her expert advice. The contribution of the individuals who worked on the pilot study for this survey is also acknowledged with thanks. The Manufactured Food Database of Auckland District Health Board is thanked for their assistance. Special thanks are due to Dr Peter Gootjes, Southern Community Laboratories and Dr Patrick Parsons, Wadsworth Institute, New York for their assistance with blood analyses; and Emeritus Professor David Russell for editing this report.

The CNS was managed in the Ministry of Health by Anne Duncan. This report was managed through the publication process by Kerris Paterson and Anne Masoe of the Compass Group.

The support of Principals, Boards of Trustees and the staff of the 172 schools who participated in this survey is acknowledged with grateful appreciation.

However, our most important acknowledgement is reserved for the 3275 New Zealand children and families who permitted their children to participate and allowed us into their homes thus making the 2002 Children's Nutrition Survey possible.

Authors

The authors of this report were Winsome Parnell, University of Otago; Associate Professor Robert Scragg, University of Auckland; Dr Noela Wilson, University of Otago; David Schaaf, University of Auckland; Eljon Fitzgerald, Massey University, Palmerston North.

Authorship of individual sections was as follows:

- Section A: Winsome Parnell; Claire Smith, University of Otago; Christine Cleghorn, University of Otago.
- Section B: Winsome Parnell; Claire Smith; Christine Cleghorn.
- Section C: Robert Scragg; Sue Sharpe, University of Auckland; David Schaaf.
- Section D: Noela Wilson; Winsome Parnell.
- Section E: Noela Wilson, Robert Scragg; Eljon Fitzgerald; Cameron Grant, University of Auckland; Elaine Ferguson, University of Otago; Sheila Skeaff, University of Otago; Christine Thomson, University of Otago; Rosalind Gibson, University of Otago.
- Section F: Eljon Fitzgerald; Mason Durie, Massey University; Winsome Parnell.
- Section G: David Schaaf; Robert Scragg; Winsome Parnell.
- Section H: Winsome Parnell; Noela Wilson.

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Abbreviations

BMI	Body mass index. An indicator of body fatness calculated from the formula weight/height^2 (or kg/m^2).
CBC	complete blood cell count
CNS02	2002 National Children's Nutrition Survey
CNSTAC	Children's Nutrition Survey Technical Advisory Committee, chaired by Professor Jim Mann, advised the Ministry of Health on technical issues. The list of members is in Appendix A.
EAR	estimated average requirement
EDTA	ethylene diamine tetra-acetic acid
ESR	Institute of Environmental Science and Research
FFQ	Food frequency questionnaire. A self-administered questionnaire asking about the frequency of consumption of foods and preparation/cooking practices.
HDL	high density lipoprotein
IANZ	International Accreditation New Zealand
ICCIDD	International Council for Control of Iodine Deficiency Disorders
LINZ®	Life in New Zealand Activity & Health Research Unit (University of Otago)
LINZ24	Life in New Zealand 24-hour diet recall programme
LRNI	Lower reference nutrient intake for protein or a vitamin or mineral. An amount of the nutrient that is enough for only the few people in a group who have low needs. This definition and its values were sourced from the United Kingdom dietary reference values (UK DRVs).
MFD	Manufactured Foods Database
MUFA	monounsaturated fatty acids
NHANES	United States National Health and Nutrition Examination Survey
NNS97	1997 New Zealand National Nutrition Survey
NZDep01	The New Zealand Index of Deprivation is based on individual's residential address (Salmond and Crampton 2002). The index is based on eight dimensions of deprivation: income, access to a car, living space, home ownership, employment, qualifications, support and access to a telephone. The usual NZDep01 consists of a principal components score, scaled to a mean of 1000 with a standard deviation of 100, out of which is broken 10 equal categories. For the purpose of this report these categories have been collapsed into quintiles. Quintile I is defined as children living in the least deprived areas and quintile V as children living in the most deprived areas.
NZEO	New Zealand European and Others
NZFCD	New Zealand Food Composition Database
PAQ-C	Physical Activity Questionnaire for Children

PC-SIDE	The abbreviation for the computer software for intake distribution estimation developed by Iowa State University. This software estimates a population's distribution of usual intakes of nutrients when daily intake observations are repeated at least twice on a subsample of individuals in the population.
PE	physical education
PUFA	polyunsaturated fatty acids
RE	retinol equivalents
RNI	Reference nutrient intake for protein or a vitamin or mineral. An amount of nutrient that is enough, or more than enough, for about 97 percent of people in a group. If the average intake of the group is the same as the RNI, the risk of deficiency in that group is very small. This definition and its values were sourced from the United Kingdom dietary reference values (UK DRVs).
SAFA	saturated fatty acids
SCL	Southern Community Laboratories
SEM	standard error of mean
TIBC	total iron-binding capacity
UK DRVs	United Kingdom dietary reference values resulting from the report of the 1991 Panel on Dietary Reference Values of the Committee on Medical Aspects of Food Policy. These include estimated average requirements (EARs), reference nutrient intakes (RNIs), lower reference nutrient intakes (LRNIs) and 'safe intakes'.
USDA	United States Department of Agriculture
USDRI	United States Dietary Reference Intakes

Participating Schools

School name	Region
Abbotsford School	Otago
Aorangi School	Bay of Plenty
Ashgrove School	Canterbury
Auckland Grammar	Auckland
Awapuni Primary School: Te Kura O Awapuni	Manawatu-Wanganui
Balmoral SDA School	Auckland
Beachlands School	Auckland
Beckenham School	Canterbury
Belmont Intermediate	Auckland
Brightwater School	Tasman
Broadwood Area School: Te Kura Takiwa O Manganuiowae	Northland
Brockville School	Otago
Brooklyn School	Tasman
Cheviot Area School	Canterbury
Chisnallwood Intermediate	Canterbury
Christchurch East School	Canterbury
Clive School	Hawkes Bay
Edendale School	Southland
Edmund Hillary School	Auckland
Finlayson Park School	Auckland
Frankton Primary	Waikato
Freyberg Community School	Auckland
Freyberg High School	Manawatu-Wanganui
Galatea School	Bay of Plenty
Glenbrook School	Auckland
Gleniti School	Canterbury
Grants Braes School	Otago
Grasmere School	Southland
Halsey Drive School	Auckland
Haumoana School	Hawkes Bay
Henderson North School	Auckland
Highlands Intermediate	Taranaki
Hillcrest Normal School	Waikato
Hillneath School	Hawkes Bay
James Street School	Bay of Plenty
Kaitaia College	Northland
Kaiti School	Gisborne
Kapanui School	Wellington
Kereone School	Waikato
Leabank School	Auckland
Lepperton School	Taranaki
Levin East School	Manawatu-Wanganui
Loburn School	Canterbury
Mangere Central School	Auckland
Maniototo Area School	Otago
Mayfield School	Marlborough
Merrin School	Canterbury

School name	Region
Moanataiari School	Waikato
Mosgiel Intermediate	Otago
Mt Somers Springburn School	Canterbury
Musselburgh School	Otago
Newlands College	Wellington
Newlands School	Wellington
Ngati Toa School	Wellington
Normanby School	Taranaki
North Clyde School	Hawkes Bay
Northcote School	Auckland
Oaklands School	Canterbury
Omanu School	Bay of Plenty
Omarama School	Canterbury
Omarumutu School	Bay of Plenty
Opawa School	Canterbury
Opiki School	Manawatu-Wanganui
Otatara School	Southland
Otumoetai Primary School	Bay of Plenty
Our Lady of Lourdes School	Manawatu-Wanganui
Owhata School	Bay of Plenty
Pamapuria School	Northland
Panmure Bridge School	Auckland
Panmure District School	Auckland
Papamoa School	Bay of Plenty
Papatoetoe Central School	Auckland
Papatoetoe West School	Auckland
Paraparaumu College	Wellington
Paraparaumu Primary School	Wellington
Parkside Christian SDA School	Hawkes Bay
Pine Hill School	Otago
Pompallier College	Northland
Pukeatua School	Waikato
Putaruru High School	Waikato
Queenstown School	Otago
Richmond View School	Marlborough
Ridgway School	Wellington
Riverhills School	Auckland
Rosehill Intermediate	Auckland
Rotorua School	Bay of Plenty
Sherenden and Districts School	Hawkes Bay
South Featherston School	Wellington
South Westland Area School	West Coast
Southern Cross Campus	Auckland
Southwell School	Waikato
Springdale School	Waikato
St Bedes College	Canterbury
St Catherines College	Wellington
St Dominic's College	Auckland
St Joseph's School (Takapuna)	Auckland
St Joseph's School (Opunake)	Taranaki

School name	Region
St Joseph's School (Ashburton)	Canterbury
St Joseph's School (Kaikoura)	Canterbury
St Mary's School	Canterbury
St Matthew's School	Manawatu-Wanganui
St Patrick's College (Silverstream)	Wellington
St Patrick's School (Wainuiomata)	Wellington
St Pius X Catholic School	Waikato
Sunset Primary School	Bay of Plenty
Tamahere Model Country School	Waikato
Te Ara Whanui Kura Kaupapa Māori O Nga Kohanga Reo O Te Awa Kairangi	Wellington
Te Kura O Awarua	Northland
Te Puna School	Bay of Plenty
Te Rerenga School	Waikato
Te Tipua School	Southland
Te Wharau School	Gisborne
The Taieri High School	Otago
Tinui School	Wellington
Tokaora School	Taranaki
Valley School	Auckland
Waihi Beach School	Bay of Plenty
Waihopai School	Southland
Wainuiomata High School	Wellington
Wainuiomata Intermediate School	Wellington
Wairakei School	Canterbury
Wairakei School	Waikato
Waitati School	Otago
Wesley Intermediate	Auckland
West End School	Manawatu-Wanganui
West End School	Taranaki
Westport North School	West Coast
Whareama School	Wellington
Wyndham School	Southland

An additional 43 schools preferred not to be identified.

Executive Summary

Introduction

This report overviews the 2002 National Children's Nutrition Survey (CNS02). It describes the methodologies and the data on nutrient intakes and their sources; food security; eating patterns; frequently eaten foods; physical activity patterns; dental health; anthropometric measures and selected nutrition related clinical measures of New Zealand schoolchildren 5–14 years of age.

A nationally representative sample of children was recruited by first, selecting a random sample of schools, and then randomly selecting children for participation within these schools. Sufficient Māori and Pacific children were included so that ethnic-specific analyses could be undertaken. Three thousand two hundred and seventy-five children participated with parental and personal consent. Anthropometric measurements and collection of blood and urine samples occurred at school, while the main interview was normally carried out in the child's home in the presence of a parent/caregiver to optimise the collection of the dietary data and ensure quality responses to all interview questions. The dietary data are unique among national surveys of children in that the 24-hour diet recall included dietary supplements as well as foods and beverages. supplements. The collection of a repeat 24-hour diet recall on a subsample enabled the statistical adjustment of the data to present the 'usual' intake distribution for nutrients by subgroup. The usual frequency of intake of commonly eaten foods was assessed by a qualitative food frequency questionnaire.

This important study provides the first opportunity to examine all aspects of the nutritional status of New Zealand children.

Main findings

In general among New Zealand children, younger children had better food and nutrient intakes than older children and were less likely to be overweight or obese.

Among the three ethnic groups, NZEO children had the lowest levels of prevalence of inadequate intakes compared with Māori and Pacific children. They were also less likely to be overweight or obese than Māori or Pacific children. The data confirm the need to augment the iodine intake of New Zealand children as a matter of priority. Further analyses of this data will form the basis of appropriate nutrition education and guide interventions to improve aspects of nutritional status for all New Zealand children and children of specific genders, ages and ethnicities.

Energy and nutrients

While the energy intakes of males ranged from 7573 kJ (5–6 years) to 10,303 kJ (11–14 years), above the range observed for females [(6703 kJ (5–6 years) to 8323 kJ (11–14 years)], the contributions from different food sources were the same and did not vary across age groups. Bread was the single largest contributor to energy intake.

Protein intake was in excess of requirements for all groups. Carbohydrate contributed 53.7 percent of energy and total fat 33.1 percent.

The mean contribution to daily energy from total fat was lower for the New Zealand European and Others (NZEO) group of children than Māori and Pacific children. The single greatest contributor to total fat in the diet was *Potatoes, kumara & taro*, which included potato chips and crisps. The largest contributor of saturated fat (comprising 14 percent of energy) was *Milk*, which provided 11 percent, followed by *Potatoes, kumara & taro* and *Pies & pasties*. This latter group was a more significant contributor to the diets of Pacific children than NZEO children.

Over one-quarter of the sucrose (the major contributor to total sugars) came from *Beverages* and one-fifth from *Sugar & sweets*. Pacific children obtained a greater proportion (over one-third) of their sucrose from *Beverages* than NZEO children.

While for many children, particularly younger children (5–6 years) and NZEO children, intakes of vitamins and minerals were satisfactory, some subgroups had intakes that were less than satisfactory. This was contributed to by proportionately lower intakes of food sources providing both β-carotene (*Vegetables*) and retinol (*Milk*).

Iron status was satisfactory for most children as assessed by both dietary intake and biochemical indices, with the exception of menstruating females.

Older children (11–14 years) were at a greater risk of having inadequate selenium intakes than younger children. The iodine status of New Zealand children, as assessed by urinary iodine excretion was deemed to be low and indicative of mild iodine deficiency. The intakes of the B vitamins (thiamin, riboflavin and niacin) and vitamin C were adequate for most New Zealand children; the estimated prevalence of inadequate intake of folate was less than 10 percent for New Zealand children and highest among Pacific children.

Eating patterns and food choices

Only about 5 percent of children reported using a dietary supplement in the previous 24 hours, and the majority of children (95.3 percent) consumed an omnivorous diet.

During the school day, younger children were more likely to eat food at home before school and bring most of the food they consumed at school from home than older children.

Parents/caregivers in households with NZEO children reported that they were the most 'food secure', followed by households with Māori and Pacific children. Households with the most children were the least food secure.

About two out of five New Zealand children ate fruit at least twice a day and about three out of five ate vegetables three or more times a day. About 80 percent of children most frequently chose *White bread*. *Noodles* were the most commonly eaten convenience meal/snack, eaten by about one-half of New Zealand children. The most commonly eaten meat was *Chicken* (eaten at least weekly by 80 percent of children).
Forty percent ate *Breakfast cereal* at least daily and about 80 percent ate *Biscuits* and *Potato crisps, corn snacks or chips* at least weekly. Three-quarters most frequently drank *Standard milk*, and *Powdered fruit drink* was the most popular non-milk drink.

Activity patterns and health

On a weekly basis, 73 percent of New Zealand children watched less than two hours of television or videos per day and 60 percent did not play computer or video games either during the week or at weekends.

Walking at least 15 minutes per day was the most frequently reported activity by about 60 percent of children; and about one-half were transported to and from school. Males were more likely than females to fall in the highest activity quartile. About one in five children 7–10 years and one in 10 children 11–14 years reported no physical education class in the previous week. No weekend physical activity was reported by 12.5 percent of children and this was highest among females 11–14 years.

Ninety-three percent of New Zealand children reported attending a school dental clinic or dentist, and 88 percent brushed their teeth at least once in the previous day.

For the majority of New Zealand children (68.9 percent) weight in relation to their height fell within an acceptable range. Using international cut-offs, 21.3 percent were overweight and 9.8 percent obese. Overweight and obesity levels were highest for Pacific children, followed by Māori and NZEO children.

Introduction

Background

The 2002 National Children's Nutrition Survey (CNS02) was a cross-sectional population survey providing information on food and nutrient intakes; eating patterns; food security and frequently eaten foods; physical activity patterns; dental health; anthropometric measures and nutrition-related clinical measures. The sample consisted of 3275 New Zealand children aged 5–14 years. The primary purpose of the survey was to provide information that could be used to improve, promote and protect the health status of New Zealand children.

The CNS02 was a voluntary, school-based survey conducted by three universities (Auckland, Massey (Palmerston North) and Otago) for the Ministry of Health. Auckland UniServices Ltd managed the contract on behalf of the three institutions. Children were selected for participation to ensure a nationally representative sample with sufficient Māori and Pacific children so ethnic-specific analyses could be undertaken. Three thousand two hundred and seventy-five children participated with parental and personal consent. The anthropometric measurements and collection of blood and urine samples occurred at school, while the main interview was normally carried out in the home in the presence of a parent/caregiver to optimise the collection of the dietary data and ensure quality responses to all interview questions. Data from children were collected during the school year, February to December 2002.

This report

This report provides a 'snapshot' of the nutritional status of New Zealand children in 2002. The purpose is to show the range of data available from the CNS02 and to highlight the most significant findings. Only a limited number of independent variables have been selected for analysis, for example age group, sex and ethnicity. No account has been taken of the possible association between these variables, for example, the relationship between ethnicity and New Zealand Index of Deprivation (NZDep01) quintile. It is acknowledged that these associations may exist and may be important for definitive interpretation of the data. This report provides only preliminary results and further analyses may explore these and other more complex issues.

The five sections covered by this report are divided into topics. Each topic is presented as a brief description of major findings for: New Zealand children, including sex and age group comparisons; NZDep01 quintile comparisons; urban-rural comparisons; ethnic group comparisons. All differences reported in the text are statistically significant. A discussion of the subsections NZDep01, urban-rural or ethnic group are not included if no significant differences occurred between groups. Each topic is highlighted by figures that encapsulate the tabulated data on the topic that appear at the end of each section.

The five sections are:

A Nutrients and Dietary Sources
B Eating Patterns
C Frequently Eaten Foods
D Physical Activity
E Health

These sections are followed by three sections summarising the key issues for each of the three ethnic groups – Māori, Pacific, and New Zealand European and Others (NZEO). A brief description of the methodology is in Appendix B, including information to assist the reader to interpret the tabulated data.

Further information

The objectives of this report are to provide an introduction and a systematic overview to the data, answer basic questions and illustrate the potential for exploring more complex questions.

Further analyses will be published in professional and scholarly journals in the fields of dietetics, epidemiology, medicine, human nutrition, physical eduction and public health. The full dataset will be made available to bona fide researchers after 1 July 2004. Enquiries about the data's availability should be made to Anne Duncan, Ministry of Health, PO Box 5013, Wellington or email anne_duncan@moh.govt.nz.

A. Nutrients and Dietary Sources

Introduction

This is the first National Children's Nutrition Survey (CNS02) in New Zealand to include a 24-hour diet recall, and also the first to include dietary intake from both foods (including beverages) and dietary supplements. Relatively few New Zealand children consumed dietary supplements but their intakes increased or skewed the variance of some nutrients in particular age/ethnic subgroups.

Using repeat 24-hour diet recalls on a subsample, nutrient intakes for each subgroup of children were adjusted for intra-individual variability to obtain usual intake distributions.

Energy yielding intakes (protein, carbohydrate and fat) have been compared to the New Zealand Dietary Guidelines (Department of Health 1991). Intakes of vitamins and minerals have been compared to the United Kingdom dietary reference values (UK DRVs) except for selenium. Selenium has been compared with the proposed New Zealand specific recommendation (Thomson and Paterson 2001). For each nutrient the appropriate evaluation of level of intake is made under the heading 'Nutrient Adequacy'.

This is the first national survey in an environment in which many foods are fortified, in particular breakfast cereals and some beverages. Thus comparisons of these CNS02 data with the 1997 New Zealand National Nutrition Survey (NNS97) data may show differences with respect to dietary sources of some nutrients. For example, the main source of folate was bread and breakfast cereals for children, but vegetables for adults (Ministry of Health 1999).

For 20 selected nutrients, detailed information is presented in the text on the proportion of these nutrients obtained from different food groups. In this way, the adequacy of intake of these nutrients can be understood in the context of the foods from which each is sourced. For the other nutrients only a general statement is made on main sources. The tables from which these general statements have been derived are in Appendix C. While the proportion consuming the group *Dietary supplements* was low, the contribution of this group appears disproportionately high because dietary supplements provide levels of intake in excess of the levels found in foods. For this reason differences between subgroups for proportion of nutrients obtained from *Dietary supplements* is not discussed.

Repeat recalls were not completed on sufficient rural children to allow a reliable estimate of usual intake. Urban-rural data are presented only for sources of nutrients.

For explanations on the functions of the nutrients discussed in this study, see Whitney and Rolfes (2002).

Key points

Energy

- Daily median energy intakes for males ranged from 7573 kJ (5–6 years) to 10,303 kJ (11–14 years) and for females from 6703 kJ (5–6 years) to 8323 kJ (11–14 years).
- *Bread* was the largest contributor to New Zealand children's energy intake.
- Contributions to energy intake from different food sources were the same for males and females and were similar for all age groups.

Protein

- The mean contribution of protein to usual daily energy intake was higher for males (14 percent) than for females (13.5 percent).
- *Bread, Milk* and *Poultry* together provided a third of children's protein intake.
- *Fish & seafood* and *Poultry* were higher contributors to protein intake in Pacific children than in Māori and New Zealand European and Other (NZEO) children.

Total fat

- The mean contribution to daily energy intake from total fat was lower for NZEO children (males 32.6 percent; females 32.3 percent) than Māori (34.2 percent; 34 percent) and Pacific children (35 percent; 34.3 percent).
- The main source of total fat in the diets of New Zealand children came from *Potatoes, kumara & taro*, which provided 9 percent (almost one half of this came from potato chips and wedges).
- Pacific children obtained a higher proportion of fat from *Pies & pasties* (males 10 percent; females 9 percent) than NZEO children (5 percent).

Types of fat

- Saturated fat was the main type of dietary fat, contributing 14.5 percent of energy, followed by monounsaturated fat (10.9 percent) and polyunsaturated fat (3.8 percent).

Total carbohydrate

- The mean contribution of carbohydrate to the daily energy intake of New Zealand children was 53.7 percent.
- *Bread* was the greatest source of carbohydrate (20 percent) followed by *Beverages* (11 percent).
- There were few differences across age groups in sources of carbohydrate, and none by New Zealand Index of Deprivation (NZDep01) quintile.

Total sugars

- Sucrose was the major contributor to total sugars intake and the highest intake of sucrose was among Māori children.
- The main sources of sucrose for New Zealand children were *Beverages* (26 percent) and *Sugar & sweets* (21 percent).
- *Fruit* contributed a higher proportion of sucrose to younger males (5–6 years, 13 percent; 7–10 years, 11 percent) than to older males 11–14 years (7 percent).

Dietary fibre

- The median usual daily intake of dietary fibre of 17.9 g for New Zealand children appeared adequate.
- Pacific children had a lower median usual daily intake of dietary fibre than NZEO and Māori children.
- *Bread*, *Potatoes*, *kumara & taro*, *Fruit, Breakfast cereals* and *Vegetables* provided 70 percent of children's dietary fibre intake.
- NZDep01-I males obtained more dietary fibre from *Vegetables* than males in NZDep01-V.

Vitamin A

- Pacific children were estimated to have the highest prevalence of inadequate intakes of vitamin A (males 19.7 percent; females 37.4 percent).

Vitamin C

- The prevalence of inadequate intake of vitamin C was estimated to be very low in New Zealand children (0.1 percent).

Vitamin E

- The median usual daily intake of vitamin E for males ranged from 6.7 mg (5–6 years) to 8.7 mg (11–14 years), and for females from 5.9 mg (5–6 years) to 9.0 mg (11–14 years).

B vitamins

- Pacific children were more at risk of inadequate intake of riboflavin than NZEO and Māori children.
- There was a negligible risk of deficiency of niacin, thiamin, vitamin B6 and B12 among New Zealand children.

Folate

- Pacific children were more at risk of inadequate intakes of folate than NZEO and Māori children.
- *Bread* (22 percent) and *Breakfast cereals* (21 percent) were the main sources of folate for New Zealand children.
- *Potatoes, kumara & taro* contributed more folate to the diets of Māori children than NZEO children.

Calcium

- The prevalence of inadequate intake of calcium in New Zealand children was 12.2 percent for males and 18.2 percent for females.
- New Zealand children obtained one third of their calcium from *Milk*.
- Younger females (5–6 years) obtained more calcium from *Milk* than older females (7–14 years).

Phosphorus and magnesium

- The phosphorus and magnesium intakes of New Zealand children appeared to be adequate.

Iron

- The prevalence of inadequate intake of iron was highest among menstruating females. There were no differences in prevalence of inadequate intake for menstruating females between the three ethnic groups.
- *Breakfast cereals* and *Bread* were the main sources of iron for New Zealand children (males 18 percent; females 12 percent).
- Males obtained more iron from *Breakfast cereals* (20 percent) than females (15 percent).

Zinc

- The estimated prevalence of inadequate zinc intake among males ranged from 0.0 percent (5–6 years) to 5.4 percent (11–14 years), and among females from 9.2 percent (5–6 years) to 16.4 percent (11–14 years).

Potassium, manganese and copper

- Potassium, manganese and copper intakes were adequate among New Zealand children.

Selenium

- The median selenium intake of older children (11–14 years) was below the New Zealand Reference Nutrient Intake (RNI) for children 9–13 years, suggesting that this age group may be at risk of inadequate selenium intake.
- *Fish & seafood* was the most significant source of selenium for New Zealand children.
- Pacific children obtained more selenium from *Fish & seafood* than Māori or NZEO children.

A1 Energy

Tables A1, A8

Nutrient intakes

Males tend to have higher energy intakes than females due to their larger body size and need to consume more to maintain their body mass and meet the requirements for exercise. Similarly, body size increases with age, so older children will tend to have higher energy intakes and nutrient demands than younger children. It follows that males (and older children) will not only have higher energy intakes, but higher intakes of most macronutrients and micronutrients than females (and younger children).

New Zealand children

The median usual daily energy intake for males (9123 kJ) was higher than for females (7781 kJ). Among males energy intake ranged from 7573 kJ (5–6 years) to 10,303 kJ (11–14 years), and in females from 6703 kJ (5–6 years) to 8323 kJ (11–14 years) (Figure A-1).

Ethnic

Māori children had higher median daily usual energy intakes (males 9609 kJ; females 8590 kJ) than NZEO (8974 kJ; 7518 kJ) and Pacific children (8863 kJ; 7871 kJ).

Dietary sources

New Zealand children

Bread was the principal source of energy for New Zealand children contributing 13 percent, with a further 4 percent from *Bread based dishes*. *Potatoes, kumara & taro* contributed 8 percent of energy. *Biscuits*, *Beverages* and *Milk* each contributed 6 percent; *Fruit*, *Sugar & sweets* and *Grains & pasta* each contributed 5 percent (Figure A-2).

NZDep01

Females in NZDep01-I and II obtained a higher proportion of energy from *Cakes & muffins* (7 percent) than those in NZDep01-IV (2 percent).

Ethnic

NZEO males consumed a higher proportion of energy from *Milk* (7 percent) than Pacific males (4 percent).

Figure A-1: Median energy intake (age)

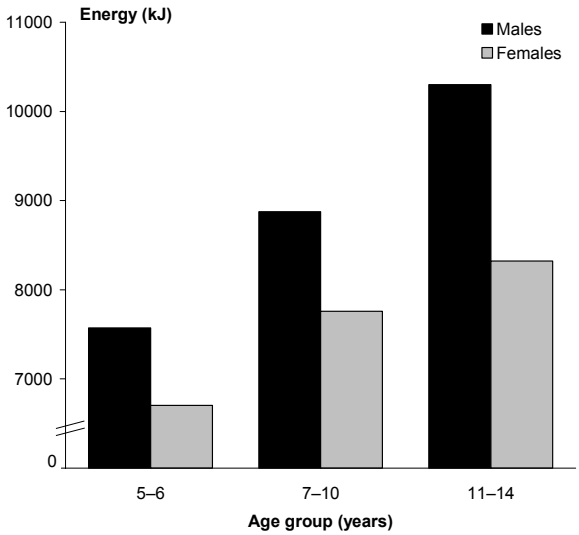
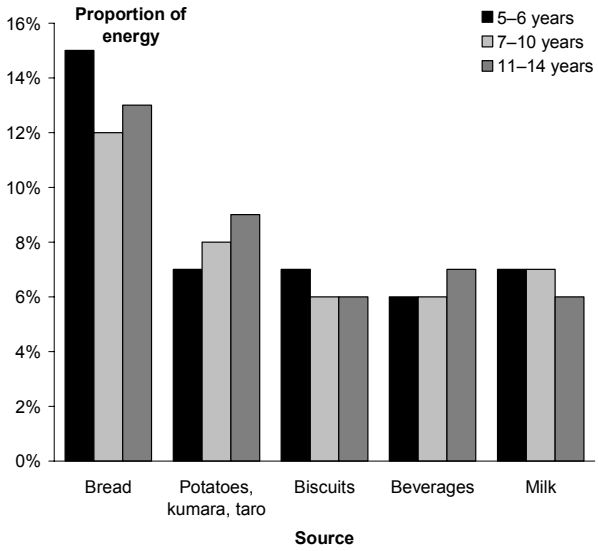


Figure A-2: Major sources of energy (males)



A2 Protein

Tables A1, A9

Nutrient intake

New Zealand children

The median usual daily intake of protein in males ranged from 62 g (5–6 years) to 88 g (11–14 years), and in females from 52 g (5–6 years) to 66 g (11–14 years) (Figure A-3).

The mean contribution to daily energy intake from protein was higher for males (14.0 percent) than females (13.5 percent).

NZDep01

Females in NZDep01-I had a lower median usual daily intake of protein (57 g) than those in NZDep01-V (65 g). The mean percent energy from protein did not vary across NZDep01 quintiles.

Ethnic

NZEO children had the highest mean percent energy from protein (males 14.2 percent; females 13.7 percent), compared with Māori children (13.6 percent; 13.1 percent) (Figure A-4). The lowest mean percent energy from protein was for Māori females 11–14 years (12.7 percent) and the highest was for NZEO males 11–14 years (14.8 percent).

Nutrient adequacy

The RNI in grams per day (g/day) ranged from 19.7 g for the youngest age group (4–6 years) to 42.1 g/day for males 11–14 years. New Zealand children were consuming at least double their age specific RNIs.

Figure A-3: Median protein intake

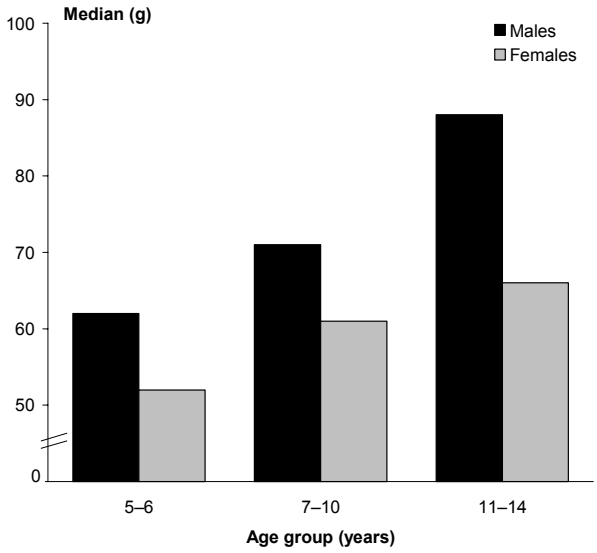
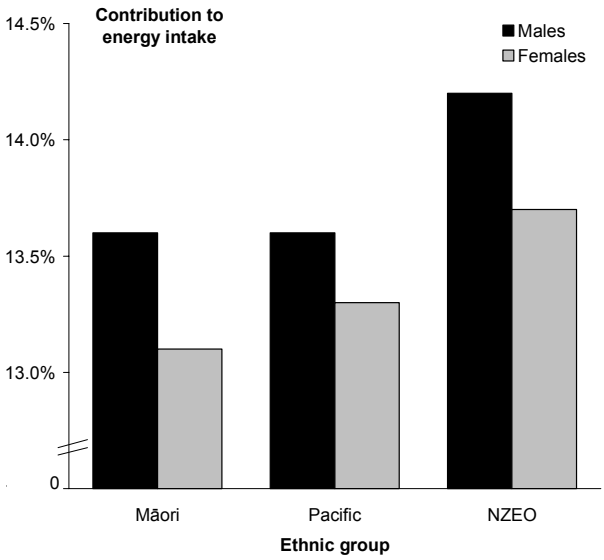


Figure A-4: Percent energy from protein



Dietary sources

New Zealand children

Bread made the largest contribution to the protein intake of New Zealand children (13 percent); *Milk* provided 11 percent, *Poultry* 9 percent and *Beef & veal* 8 percent.

Females aged 7–10 years obtained a higher proportion of their protein from *Poultry* (11 percent) than males of the same age (7 percent). *Poultry* contributed more protein to males 11–14 years (11 percent) than males 7–10 years (7 percent).

NZDep01

Males in NZDep01-I obtained a higher proportion of their protein from *Milk* (15 percent) than those in NZDep01-V (8 percent). *Beef & veal* provided less protein to NZDep01-I females (5 percent) than to those in NZDep01-IV (11 percent).

Ethnic

NZEO children obtained about twice as much protein from *Milk* (males 13 percent; females 12 percent) than Pacific children (6 percent; 7 percent) (Figure A-5). *Poultry* provided a higher proportion of protein to Pacific children (15 percent) than NZEO (9 percent) and Māori children (9 percent). Māori females 5–6 years obtained a higher proportion of protein from *Beef & veal* (10 percent) than Pacific females of the same age (2 percent). *Fish & seafood* contributed twice the proportion of protein to Pacific males (8 percent) than to NZEO males (4 percent) (Figure A-6).

Figure A-5: Major sources of protein (females)

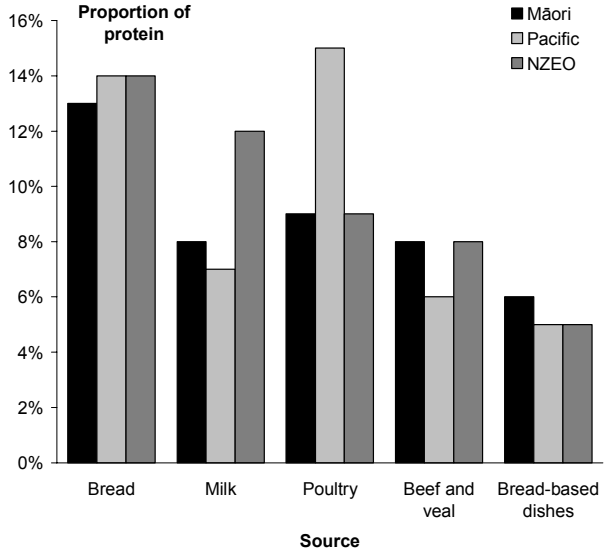
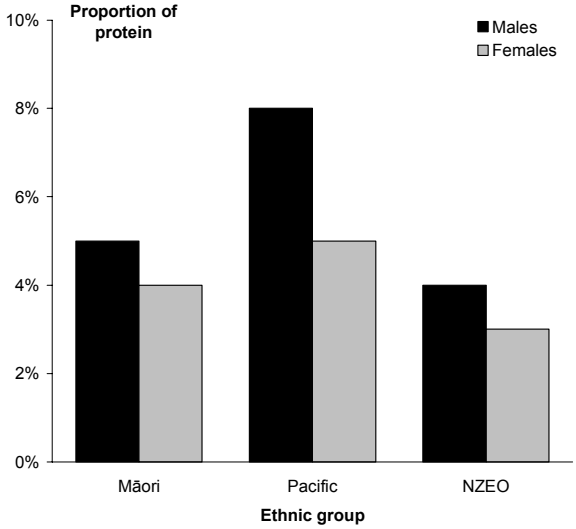


Figure A-6: Protein from fish & seafood



A3 Total fat

Tables A2.1, A10

Nutrient intake

New Zealand children

The usual median daily intake of total fat for males ranged from 65 g (5–6 years) to 93 g (11–14 years), and for females from 56 g (5–6 years) to 74 g (11–14 years). The mean percent contribution to daily energy intake from total fat was similar for males and females (33.2 percent; 32.9 percent).

Younger females (5–6 years) had a lower percent energy from total fat (30.9 percent) than older females 7–10 and 11–14 years (33.1 percent; 33.6 percent). Pacific and Māori males 5–6 years had a lower mean percent energy from total fat (32.5 percent; 33.1 percent) than males 7–10 years (35.2 percent; 34.6 percent).

NZDep01

Females in NZDep01-I consumed a lower proportion of energy from total fat (31.1 percent) than those in NZDep01-IV and V (33.5 percent; 34 percent).

Ethnic

The mean contribution to daily energy from total fat was lower for NZEO children (males 32.6 percent; females 32.3 percent) than for Māori (34.2 percent; 34 percent) and Pacific children (35 percent; 34.3 percent) (Figure A-7).

Nutrient adequacy

More females 5–6 years (68 percent) than males of the same age (56 percent) met the Nutrition Taskforce guideline for contribution of total fat to energy (Department of Health, 1991) (Figure A-8). Younger children (5–6 years) were more likely to meet the guideline (males 56 percent; females 68 percent) than those 7–10 years (48 percent; 50 percent) and 11–14 years (47 percent; 44 percent).

A higher proportion of NZEO children met the Nutrition Taskforce guideline for contribution of total fat to energy (males 52 percent; females 54 percent) than Pacific children (37 percent; 42 percent). Māori males were more likely to meet the guideline (45 percent) than Pacific males (37 percent).

Figure A-7: Percent energy from fat

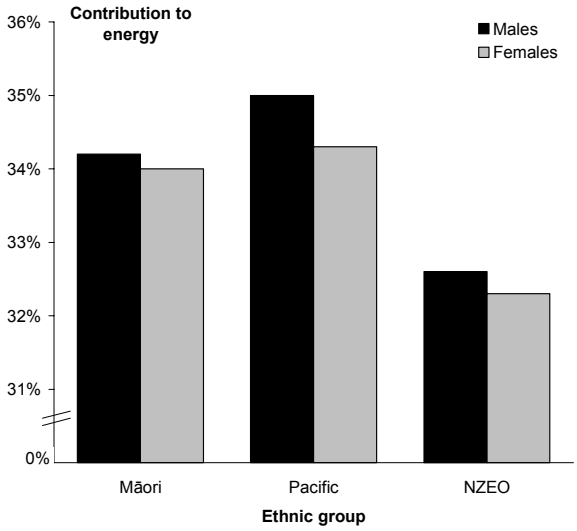
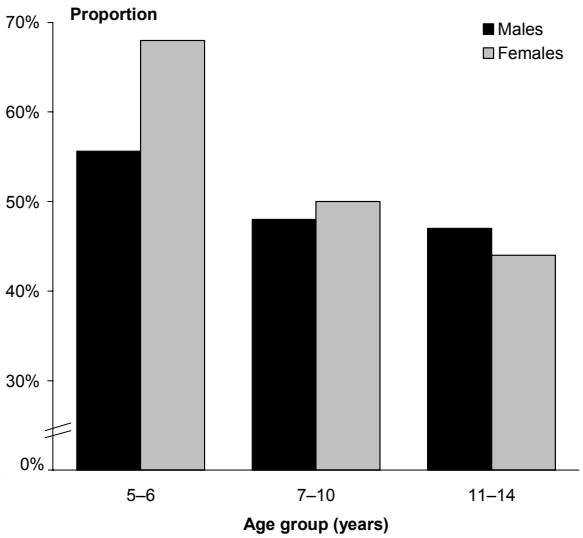


Figure A-8: Meeting guidelines for fat intake



Dietary sources

New Zealand children

Most of the fat in the diets of New Zealand children came from *Potatoes, kumara & taro*, which provided 9 percent (almost half of this came from potato chips and wedges, and just over one third from crisps), *Milk* (8 percent), *Biscuits* (7 percent). *Butter & margarine* and *Pies & pasties* contributed 6 percent, and *Sausages & processed meats* contributed 5 percent (Figure A-9).

There were no differences between males and females for sources of fat across food groups.

Females 11–14 years obtained a lower proportion of fat from *Milk* (6 percent) than females 5–6 years (11 percent) (Figure A-10).

NZDep01

Females in NZDep01-I obtained a higher proportion of fat from *Cakes & muffins* (9 percent) than those in NZDep01-IV and V (3 percent; 4 percent).

Ethnic

Pacific children obtained a higher proportion of fat from *Pies & pasties* (males 10 percent; females 9 percent) than NZEO children (5 percent). Māori males obtained a higher proportion of fat from *Pies & pasties* (8 percent) than NZEO males (5 percent).

Poultry was a greater source of fat for Pacific males (10 percent) compared with Māori (6 percent) and NZEO males (5 percent). Pacific females obtained more fat from *Poultry* (9 percent) than NZEO females (5 percent). Pacific males obtained a lower proportion of fat from *Milk* (5 percent) than NZEO males (9 percent). *Beef & veal* provided a higher proportion of fat to the diets of Pacific males (7 percent) than NZEO males (4 percent).

Figure A-9: Major sources of total fat (males)

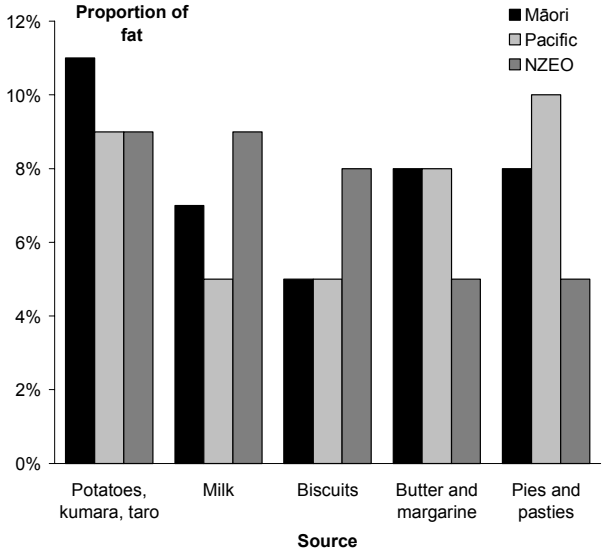
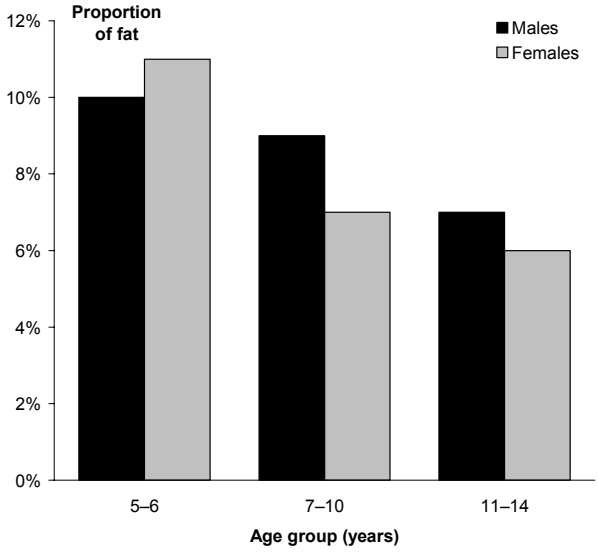


Figure A-10: Proportion of total fat from milk



A4 Types of fat and cholesterol

Tables A2.1, A2.2, A2.3, A11, A12, A13, A14

Among the types of fat examined saturated fat (SAFA) was the major contributor to intake with a median usual daily intake of 32.8 g, followed by monounsaturated fat (MUFA) (24.4 g) and polyunsaturated fat (PUFA) (8.4 g).

Saturated fat (SAFA)

New Zealand children

The mean contribution of SAFA to daily energy intake was similar for males (14.5 percent) and females (14.4 percent). Females 5–6 years had a lower percent energy from SAFA (13.5 percent) than females 7–10 (14.5 percent) and 11–14 years (14.8 percent) (Figure A-11). Pacific males, 5–6 years had a lower mean percent of energy from SAFA (13.6 percent) than those 11–14 years (15.1 percent).

Ethnic

Māori children had a higher median daily intake of SAFA (males 37.9 g; females 34 g) than Pacific (34.5 g; 30.2 g) and NZEO children (35.6 g; 28.6 g). The mean contribution to daily energy from SAFA was higher for Māori females (14.8 percent) than for NZEO females (14.2 percent) (Figure A-12).

Dietary sources of saturated fat

New Zealand children

The main sources of SAFA in the diets of New Zealand children were *Milk* (11 percent), *Potatoes, kumara & taro* and *Biscuits* (9 percent), *Pies & pasties* (7 percent), *Dairy products* (6 percent), *Cheese*, *Cakes & muffins*, *Sausages & processed meats*, *Butter & margarine* (all 5 percent), and *Beef & veal* (4 percent). As with total fat, there were no differences between males and females for sources of SAFA across food groups. Females 5–6 years obtained more of their SAFA from *Milk* (15 percent) than females 7–10 years (10 percent) and 11–14 years (9 percent).

NZDep01

Males in NZDep01-II and females in NZDep01-I obtained less SAFA from *Pies & pasties* (5 percent) than children in NZDep01-V (males 8 percent; females 9 percent).

Ethnic

NZEO males obtained more SAFA from *Milk* (12 percent) than Pacific males (7 percent). NZEO children obtained a lower proportion of their SAFA from *Pies & pasties* (5 percent) than Pacific children (males 12 percent; females 11 percent) and Māori males (9 percent).

Figure A-11: Percent energy from SAFA

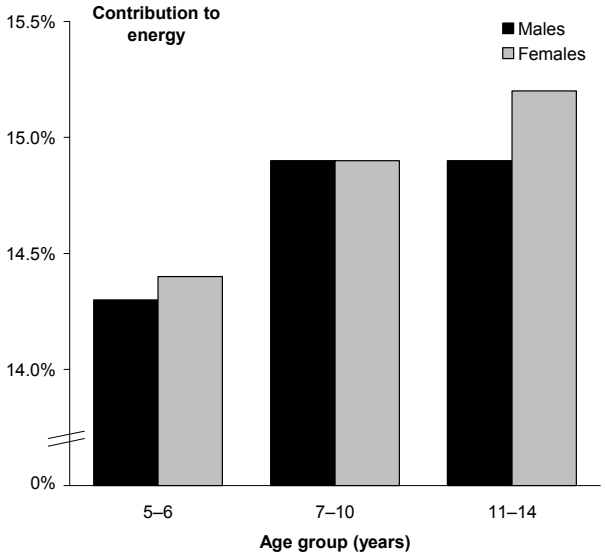
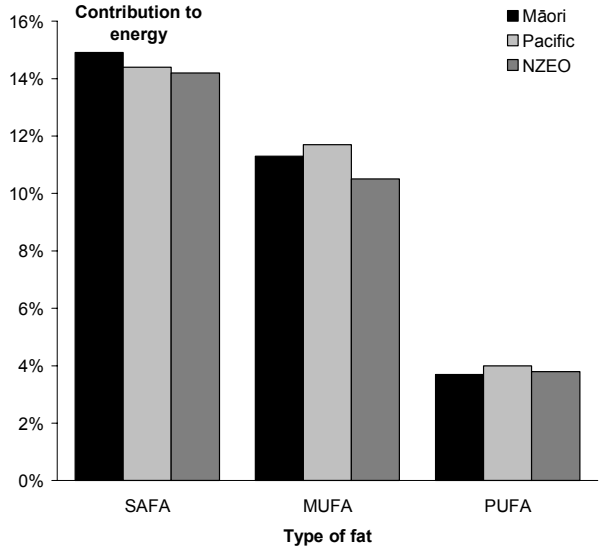


Figure A-12: Percent energy from SAFA, MUFA and PUFA (females)



Monounsaturated fat (MUFA)

New Zealand children

Monounsaturated fat provided a similar mean percent of energy across age groups (males 10.5 percent to 11.2 percent; females 10 percent to 11 percent). The mean contribution to daily energy from MUFA was lower in males and females 5–6 years (10.5 percent; 10 percent) than those 11–14 years (11.2 percent; 11 percent).

NZDep01

The mean contribution to daily energy from MUFA for males and females increased from NZDep01-I (10.2 percent; 10 percent) to NZDep01-V (11.2 percent; 11.3 percent).

Ethnic

NZEO children had a lower daily mean percent energy from MUFA (males 10.6 percent; females 10.5 percent) than Māori (11.5 percent; 11.3 percent) and Pacific children (12.1 percent; 11.7 percent).

Dietary sources of monounsaturated fat

New Zealand children

The main sources of monounsaturated fat in the diets of New Zealand children came from *Potatoes, kumara & taro*, which provided 10 percent, *Poultry* (8 percent), *Biscuits*, *Butter & margarine* (7 percent), *Pies & pasties*, *Sausages & processed meats*, *Milk*, *Beef & veal* (all 6 percent), and *Cakes & muffins* and *Nuts & seeds* (both 5 percent) (Figure A-13).

Males obtained a higher proportion of MUFA from *Sausages & processed meats* (7 percent) than females (5 percent). Females 5–6 years obtained a higher proportion of MUFA from *Milk* (9 percent) than females 11–14 years (5 percent).

NZDep01

Females in NZDep01-I and II obtained a higher proportion of MUFA from *Cakes & muffins* (9 percent; 8 percent) than females in NZDep01-IV (3 percent).

Ethnic

Pacific children obtained a higher proportion of MUFA from *Poultry* (males 13 percent; females 12 percent) than Māori males (8 percent) and NZEO children (7 percent). *Pies & pasties* provided double the proportion of MUFA to the diets of Pacific children (10 percent) than NZEO children (5 percent), and Māori males obtained a greater proportion from *Pies & pasties* (8 percent) than NZEO males (5 percent).

Figure A-13: Major sources of MUFA

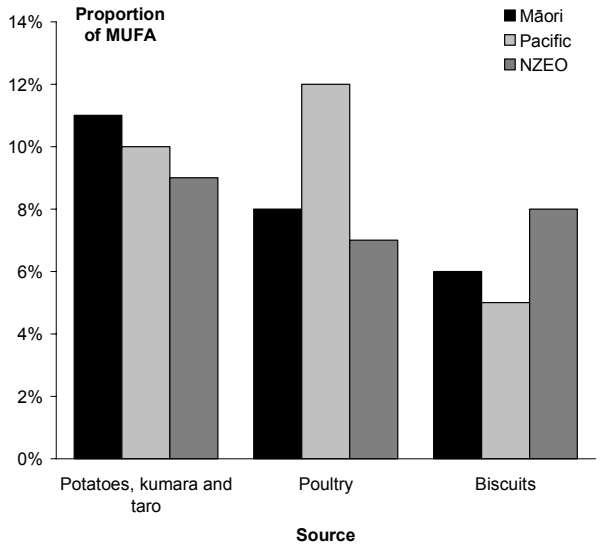
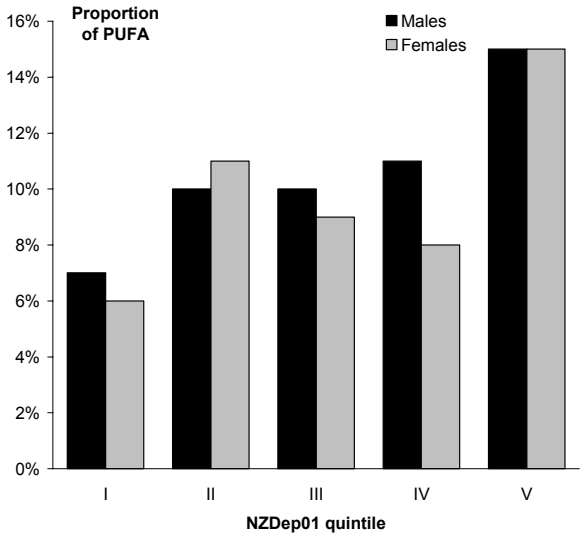


Figure A-14: PUFA from butter



Polyunsaturated fat (PUFA)

New Zealand children

The mean contribution to daily energy from PUFA was similar for males and females across age groups (males 3.8 percent to 3.9 percent; females 3.7 percent to 3.9 percent).

NZDep01

Females in NZDep01-I had a lower mean percent energy from PUFA (3.5 percent) than females in NZDep01-II, IV and V (4 percent; 3.9 percent; 3.9 percent).

Ethnic

Pacific males had a higher mean percent energy from PUFA (4.2 percent) than Māori and NZEO males (both 3.8 percent). The mean contribution to daily energy from PUFA was higher in Pacific females (4 percent) than Māori females (3.7 percent).

Dietary sources of polyunsaturated fat

New Zealand children

The main sources of PUFA in the diets of New Zealand children were *Butter & margarine* which provided 11 percent, *Potatoes, kumara & taro* (8 percent), *Bread* and *Nuts & seeds* (7 percent), *Poultry* (6 percent) and *Bread based dishes*, *Biscuits* and *Cakes & muffins* (5 percent).

There were no differences between males and females for sources of PUFA across food groups. Older children (11–14 years) obtained a higher proportion of their PUFA from *Bread based dishes* (males 7 percent; females 6 percent) than children 7–10 years (5 percent; 4 percent) and males 5–6 years (2 percent).

NZDep01

Children in NZDep01-V obtained a higher proportion of their PUFA from *Butter & margarine* (15 percent) than children in NZDep01-I (males 7 percent; females 6 percent), and females in NZDep01-III (9 percent) and NZDep01-IV (8 percent) (Figure A-14).

Urban-rural

Rural males obtained a greater proportion of their PUFA from *Butter & margarine* (16 percent) than urban males (10 percent). Rural females obtained a higher proportion of their PUFA from *Nuts & seeds* (11 percent) than urban females (6 percent).

Ethnic

Pacific children obtained a greater proportion of their PUFA from *Butter & margarine* (males 14 percent; females 15 percent) than NZEO children (9 percent; 10 percent) and Māori males (15 percent). NZEO children obtained double the proportion of PUFA (8 percent) from *Nuts & seeds* than Pacific children (4 percent) and Māori males (5 percent).

Cholesterol

New Zealand children

The usual median daily intake of cholesterol ranged from 170 mg (5–6 years) to 263 mg (11–14 years) for males and from 147 mg (5–6 years) to 198 mg (11–14 years) for females.

NZDep01

The median daily cholesterol intake of females was lower in NZDep01-I (152 mg) than females in NZDep01-II (200 mg), III (178 mg), IV (180 mg) and V (203 mg).

Ethnic

Māori children had a higher median daily intake of cholesterol (males 244 mg; females 208 mg) than NZEO children (213 mg; 172 mg). Pacific females had a higher intake (207 mg) than NZEO females (172 mg). Pacific males 7–10 years had a higher median intake (229 mg) than NZEO males of the same age (198 mg).

Dietary sources of cholesterol

New Zealand children

The main sources of cholesterol in the diets of New Zealand children were *Eggs & egg dishes* (17 percent), *Poultry* (14 percent), *Milk* (9 percent) and *Beef & veal* (8 percent).

Males obtained a greater proportion of their cholesterol from *Sausages & processed meats* (7 percent) than females (4 percent). *Eggs & egg dishes* were a greater source of cholesterol for males 5–6 years (20 percent) than males 11–14 years (15 percent). Younger females (5–6 years) obtained a greater proportion of their cholesterol from *Milk* (13 percent) than older females (7–10 years, 8 percent; 11–14 years, 7 percent).

NZDep01

Males in NZDep01-I and II (13 percent; 14 percent) and females in NZDep01-I (13 percent) obtained a lower proportion of their cholesterol from *Eggs & egg dishes* than males and females in NZDep01-V (22 percent; 21 percent).

Beef & veal was a greater source of cholesterol for females in NZDep01-IV (11 percent) than females in NZDep01-I (5 percent). Females in NZDep01-I and II (12 percent) obtained a greater proportion of their cholesterol from *Cakes & muffins* than females in NZDep01-III to V (4 percent).

Urban-rural

Urban children obtained more cholesterol from *Eggs & egg dishes* (18 percent) than rural children (11 percent). Rural females obtained more cholesterol from *Beef & veal* (11 percent) than urban females (7 percent). Rural males obtained more cholesterol from *Cakes & muffins* (9 percent) than urban males (5 percent).

Ethnic

NZEO children obtained a lower proportion of their cholesterol from *Eggs & egg dishes* (males 13 percent; females 15 percent) than Pacific children (23 percent; 25 percent) and Māori males (23 percent).

Poultry provided more cholesterol to Pacific children (males 21 percent; females 20 percent) than Māori (12 percent; 14 percent) and NZEO children (13 percent).

Twice the proportion of cholesterol was obtained from *Milk* by NZEO males (10 percent) compared with Pacific males (5 percent).

A5 Total carbohydrate and starch

Tables A3.1, A15

Total carbohydrate

New Zealand children

The median usual daily intake of carbohydrate for New Zealand children ranged from 244 g (5–6 years) to 322 g (11–14 years) for males, and from 225 g (5–6 years) to 265 g (11–14 years) for females.

The mean contribution to daily energy intake from carbohydrate was similar for males (53.3 percent) and females (54.1 percent).

New Zealand children 11–14 years had a lower mean contribution to daily energy from carbohydrate (males 52.4 percent; females 53.4 percent) than children aged 5–6 (54.3 percent; 56.4 percent) (Figure A-15). This trend was seen among NZEO females and Pacific children, but not Māori children.

NZDep01

Among females the mean percent contribution to energy from carbohydrate decreased from NZDep01-I (56 percent) to NZDep01-V (53.1 percent).

Ethnic

Māori males had higher median usual intakes of carbohydrate (305 g) than NZEO (285 g) and Pacific males (272 g).

NZEO children (males 53.7 percent; females 54.5 percent) had a higher mean contribution to daily energy intake from carbohydrate than Pacific children (51.9 percent; 52.9 percent).

Nutrient adequacy

Overall, 66 percent of New Zealand children met the New Zealand Nutrition Taskforce guideline (Department of Health, 1991) for carbohydrate intake (males 65 percent; females 68 percent). Younger children (5–6 years) were more likely to meet the guideline (males 73 percent; females 80 percent) than children 11–14 years (60 percent; 63 percent). This reflected the decrease in mean contribution to daily energy from carbohydrate with increasing age. The group most likely to meet the guideline was NZEO females 5–6 years (87 percent).

Figure A-15: Percent energy from carbohydrate

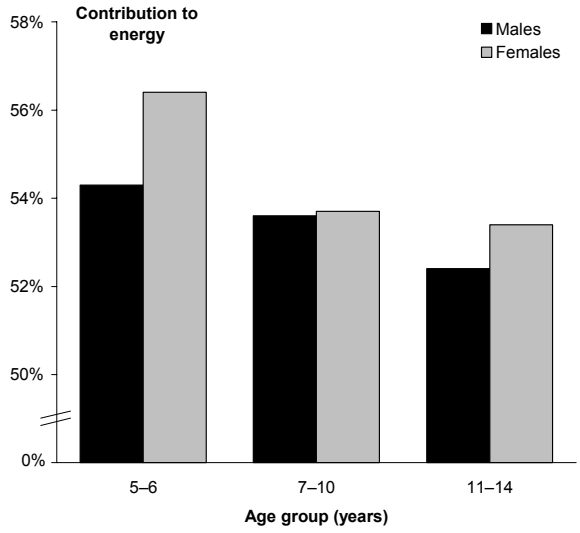
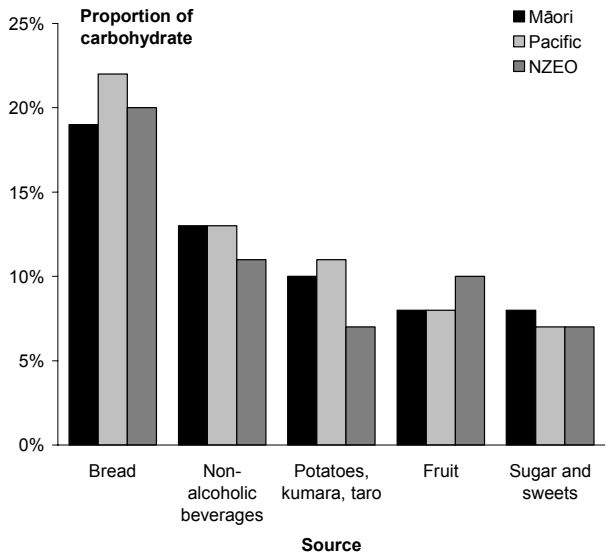


Figure A-16: Major sources of carbohydrate (females)



Dietary sources of carbohydrate

New Zealand children

Bread was the greatest source of carbohydrate for New Zealand children providing 20 percent, followed by *Beverages* (11 percent), *Potatoes, kumara & taro* (9 percent) and *Fruit* (8 percent). Seven percent of carbohydrate was obtained from *Sugar & sweets* and *Biscuits, Breakfast cereals* contributed 6 percent and *Grains & pasta* 5 percent (Figure A-16).

Breakfast cereals provided more carbohydrate to males (7 percent) than to females (5 percent).

Fruit contributed 10 percent of the carbohydrate of males 5–6 years compared with 6 percent for males 11–14 years.

Ethnic

Pacific males obtained a lower proportion of carbohydrate from *Breakfast cereals* (4 percent) than NZEO (7 percent) and Māori males (6 percent).

Starch

New Zealand children

Starch was the largest single contributor to carbohydrate intake contributing 54 percent of the median usual daily intake of New Zealand children. The major source of starch was *Bread* (35 percent), followed by *Potatoes, kumara & taro* (15 percent).

NZDep01

The median usual daily intake of starch was higher for females in NZDep01-V (146 g) than females in NZDep01-I (119 g).

Ethnic

Māori children (males 168 g; females 147 g) had higher median usual daily intakes of starch than NZEO children (155 g; 128 g). Māori males (168 g) had higher intakes of starch than Pacific males (160 g).

A6 Total sugars

Tables A3.2, A3.3, A16, A17

Nutrient intakes

New Zealand children

Total sugars intake from all sources (median usual daily intake) in males ranged from 109 g (5–6 years) to 140 g (11–14 years), and females from 103 g (5–6 years) to 123 g (11–14 years). The majority of total sugars consumed by New Zealand children was sourced from *Beverages, Fruit* and *Sugar & sweets* (Appendix C).

The main type of sugar contributing to the median usual daily intake of total sugars was sucrose (males 67 g; females 61.1 g), followed by fructose (19.6 g; 18.5 g), glucose (17.8 g; 16.5 g), lactose (15.5 g; 13.2 g) and maltose (4.1 g; 3.2 g).

NZDep01

There were no NZDep01 differences for total sugars intake nor for sucrose, fructose, glucose or maltose intakes. However, lactose intake decreased for males from NZDep01-I (18.9 g) to NZDep01-V (12.1 g).

Ethnic

Pacific children (males 107 g; females 101 g) had lower median intakes of total sugars than NZEO (127 g; 113 g) and Māori children (132 g; 124 g).

There were no ethnic differences in median usual daily intakes of glucose, fructose and maltose. Māori children had higher intakes of sucrose (males 72 g; females 69 g) than NZEO (66 g; 58 g) and Pacific children (56 g; 55.2 g) (Figure A-17). The largest difference was between Māori females 11–14 years (77.7 g) and NZEO females 11–14 years (58.5 g).

Pacific children had a lower median daily intake of lactose (males 8.4 g; females 9.5 g) than Māori (15.2 g; 13 g) and NZEO children (17.2 g; 13.1 g) (Figure A-18). The differences in lactose intake between the ethnic groups were greater among older children because lactose intake decreased with increasing age in Pacific children.

Figure A-17: Median sucrose intake

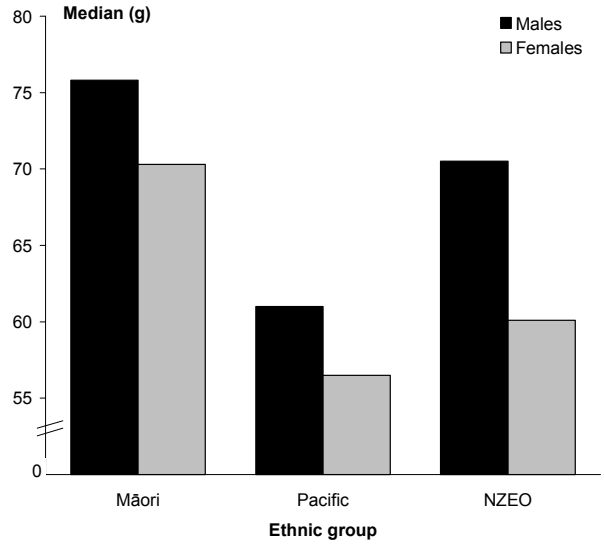
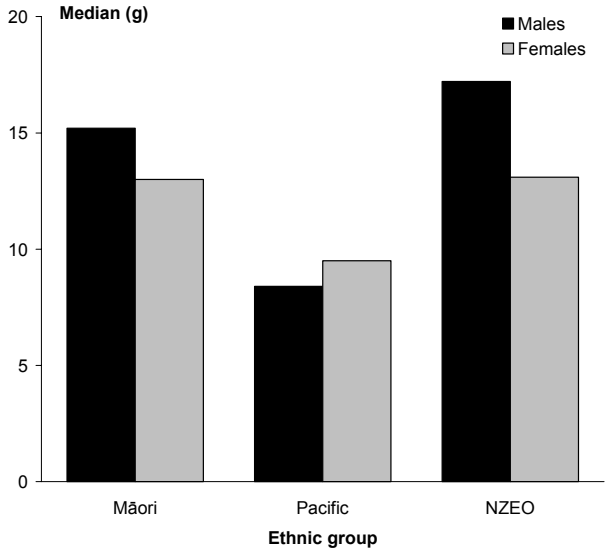


Figure A-18: Median lactose intake



Dietary sources of sucrose

New Zealand children

The main sources of sucrose for New Zealand children were *Beverages* (26 percent) and *Sugar & sweets* (21 percent). *Biscuits* and *Fruit* both contributed 11 percent of sucrose, *Dairy products* 9 percent, and *Cakes & muffins* 7 percent (Figure A-19).

Fruit was a greater source of sucrose for females (12 percent) than males (10 percent), and contributed a higher proportion of sucrose to younger males (5–6 years, 13 percent) compared with older males (11–14 years, 7 percent).

Sugar & sweets were a greater source of sucrose for males 11–14 years (23 percent) than males 5–6 years (18 percent).

New Zealand children 7–10 years obtained a greater proportion of sucrose from *Cakes and muffins* (males 9 percent; females 8 percent) than children 5–6 years (6 percent; 4 percent).

NZDep01

Children in NZDep01-I obtained less sucrose from *Sugar & sweets* (males 18 percent; females 16 percent) than those in NZDep01-V (22 percent; 24 percent).

Females in NZDep01-V obtained less sucrose from *Cakes and muffins* (4 percent) than females in NZDep01-I and II (10 percent; 12 percent).

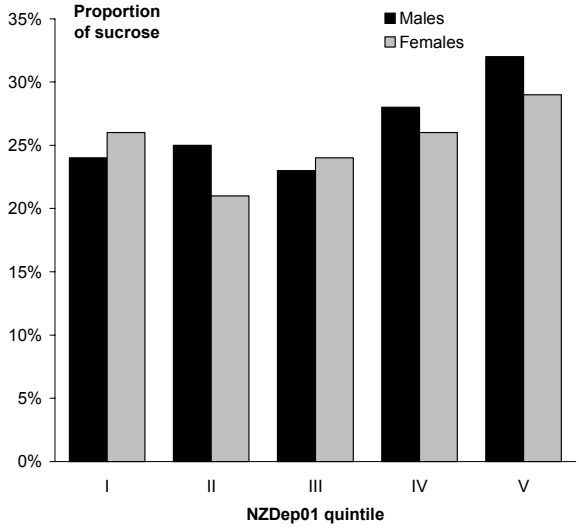
Beverages were a greater source of sucrose for NZDep01-V males (32 percent) than NZDep01-I, II and III males (24 percent; 25 percent; 23 percent) (Figure A-20).

Ethnic

NZEO children obtained less sucrose from *Beverages* (males 25 percent; females 24 percent) than Pacific children (32 percent). Māori males obtained more sucrose from *Sugar & sweets* (26 percent) than NZEO and Pacific males (20 percent).

Figure A-19: Major sources of sucrose

Figure A-20: Sucrose from beverages



Dietary sources of fructose

New Zealand children

The main sources of fructose for New Zealand children were *Fruit* (38 percent), *Beverages* (32 percent), *Sugar & sweets* (6 percent) and *Vegetables* (4 percent). Females obtained a greater proportion of fructose from *Fruit* (40 percent) compared to males (36 percent).

Children 11–14 years obtained a lower proportion of fructose from *Fruit* (males 29 percent; females 35 percent) than children 7–10 years (40 percent; 45 percent) and males 5–6 years (47 percent) (Figure A-21).

Beverages were a greater source of fructose for children 11–14 years (males 38 percent; females 39 percent) compared with children 5–6 years (24 percent; 31 percent) and 7–10 years (28 percent; 27 percent).

NZDep01

Males in NZDep01-IV obtained a lower proportion of their fructose from *Fruit* (30 percent) than those in NZDep01-II (39 percent) and NZDep01-V (38 percent).

Males in NZDep01-IV obtained twice the proportion fructose from *Sugar & sweets* (13 percent) than males in NZDep01-I and III (6 percent) and NZDep01-V (7 percent).

Urban-rural

Fruit was a greater source of fructose for rural males (42 percent) than for urban males (35 percent). *Beverages* were a greater source of fructose for urban males (33 percent) than rural males (25 percent).

Ethnic

NZEO children obtained less fructose from *Beverages* (males 30 percent; females 31 percent) than Pacific children (39 percent; 40 percent) and Māori males (34 percent) (Figure A-22). Pacific males obtained a lower proportion of fructose from *Sugar & Sweets* (4 percent) than both Māori and NZEO males (7 percent; 8 percent).

Figure A-21: Major sources of fructose (females)

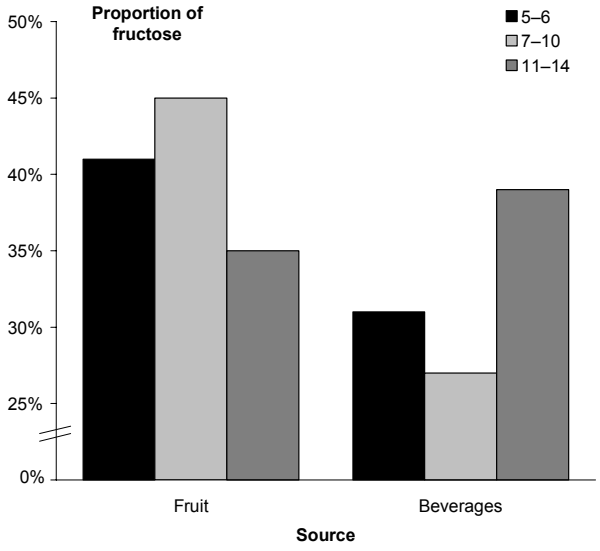
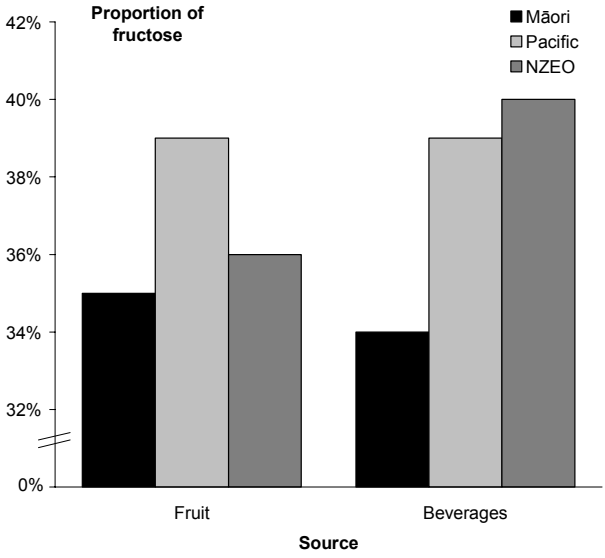


Figure A-22: Major sources of fructose (males)



A7 Dietary fibre

Tables A4, A18

Nutrient intake

New Zealand children

Median usual daily intakes of dietary fibre increased in males from 16.7 g (5–6 years) to 21.4 g (11–14 years), and in females from 14.5 g (5–6 years) to 17.2 g (11–14 years). Approximately half the dietary fibre for New Zealand children (17.9 g) was from insoluble non-starch polysaccharides (9.1 g) and half from soluble non-starch polysaccharides (8.7 g) (Figure A-23).

NZDep01

There were no differences by NZDep01 for median intakes of dietary fibre or for insoluble non-starch polysaccharides. However, NZDep01-V males had higher intakes of soluble non-starch polysaccharides (10.2 g) than those in NZDep01-II, III and IV (9 g, 8.9 g; 8.8 g). Females in NZDep01-V and IV had higher median intakes of soluble non-starch polysaccharides (8.5 g; 8.1 g) than females in NZDep01-I (7.1 g).

Ethnic

Pacific children had lower dietary fibre intakes (males 17.7 g; females 15.6 g) than Māori (20.6 g; 17.5 g) and NZEO children (19.1 g; 16.2 g) (Figure A-24). The same differences were apparent for insoluble non-starch polysaccharides, with Pacific children having lower median intakes (males 8.7 g; females 7.6 g) than Māori (10.2 g; 8.7 g) and NZEO children (10 g; 8.3 g).

The median usual daily intakes of soluble non-starch polysaccharides were higher for Māori (males 10.3 g; females 8.8 g) than Pacific children (8.9 g; 7.9 g).

Nutrient adequacy

It has been proposed in the UK that the diet of the adult population should contain on average 18 g per day of non-starch polysaccharides (UK Department of Health 1991). The panel has suggested that any physiological effects of non-starch polysaccharides are likely to be related to body size, so recommends that children should have proportionally lower intakes. On this basis, the intake of dietary fibre of New Zealand children appeared to be adequate.

Figure A-23: Median non-starch polysaccharide intake

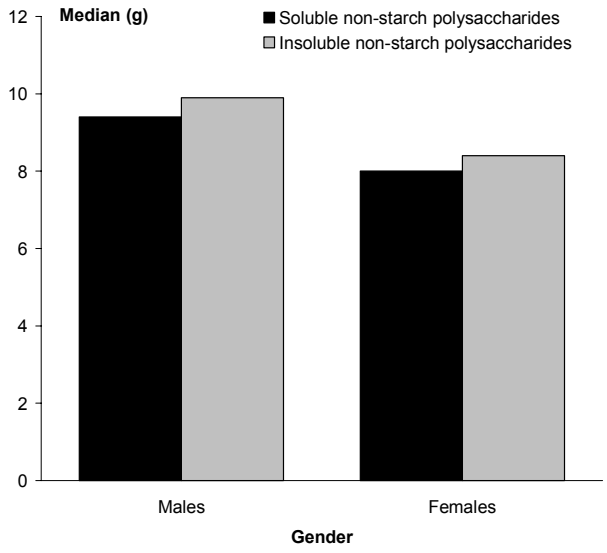
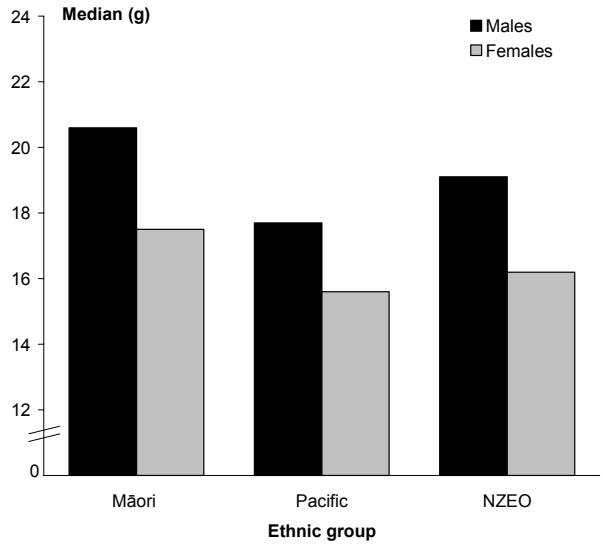


Figure A-24: Median dietary fibre intake



Dietary sources

New Zealand children

Bread was the principal source of dietary fibre (20 percent) for New Zealand children, followed by *Potatoes, kumara & taro* and *Fruit* (both 14 percent), then *Breakfast cereals* and *Vegetables* (both 11 percent).

Males consumed more dietary fibre from *Breakfast cereals* (12 percent) than females (8 percent). Females consumed more dietary fibre from *Fruit* than males (15 percent; 12 percent).

Males 11–14 years obtained a larger proportion of their dietary fibre intake from *Potatoes, kumara & taro* (17 percent) than males 5–6 years (12 percent). In contrast, *Fruit* provided more dietary fibre to males 5–6 and 7–10 years (16 percent; 14 percent) than those 11–14 years (9 percent).

NZDep01

Vegetables contributed more dietary fibre to males in NZDep01-I (16 percent) than NZDep01-V males (7 percent) (Figure A-25). Females in NZDep01-V obtained a larger proportion of dietary fibre from *Pies & pasties* (6 percent) than those in NZDep01-I (2 percent).

Ethnic

Pacific males obtained a lower proportion of dietary fibre from *Breakfast cereals* (7 percent) than Māori (13 percent) and NZEO males (12 percent) (Figure A-26). NZEO children obtained a greater proportion of dietary fibre from *Vegetables* (males 12 percent; females 13 percent) than Pacific (5 percent; 6 percent) and Māori children (8 percent). *Vegetables* contributed more dietary fibre to Māori females 5–6 years (9 percent) than Pacific females of the same age (3 percent).

NZEO children (males 13 percent; females 11 percent) obtained less dietary fibre from *Potatoes, kumara & taro* than Pacific and Māori children (19 percent; 18 percent). *Pies & pasties* provided less dietary fibre to NZEO children (3 percent) than Pacific (8 percent; 7 percent) and Māori children (5 percent).

Figure A-25: Dietary fibre from vegetables

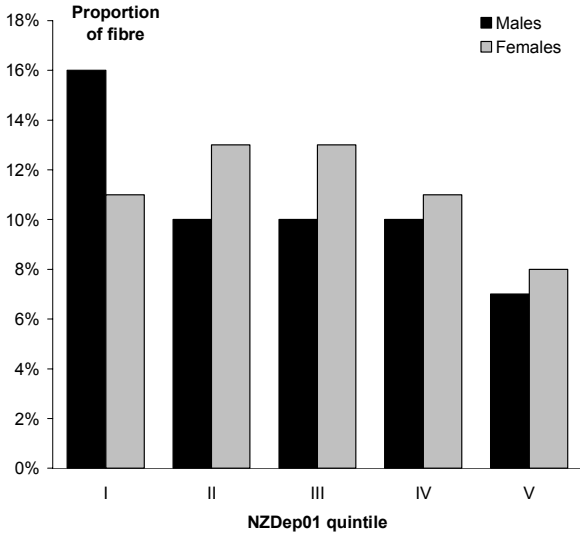
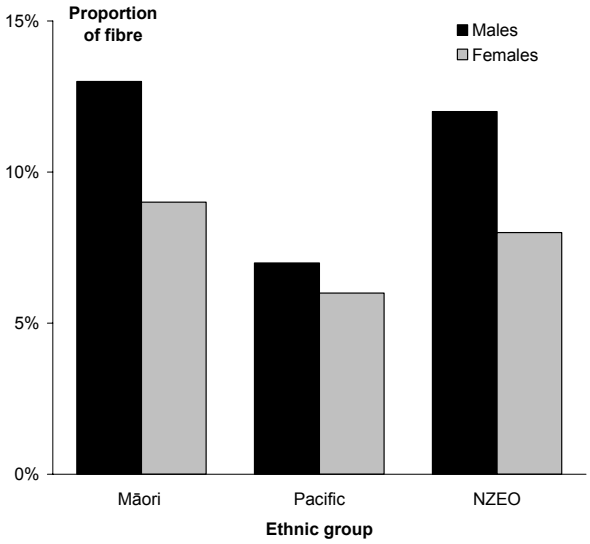


Figure A-26: Dietary fibre from breakfast cereals



A8 Vitamin A

Tables A5.1, A19, A20

Vitamin A

New Zealand children

The median usual daily intake of vitamin A ranged from 527 µg retinol equivalents (RE) for males 5–6 years to 736 µg RE for males 11–14 years. The median intakes of females ranged from 485 µg RE (5–6 years) to 633 µg RE (11–14 years).

Approximately half the vitamin A intake was from retinol (323 µg) and the remainder from carotenoids. The distribution of usual daily intakes is skewed and median intakes tend to be lower than mean intakes.

Ethnic

Pacific children had lower median usual daily intakes of vitamin A equivalents (males 483 µg RE; females 401 µg RE) than Māori (617 µg RE; 588 µg RE) and NZEO children (697 µg RE; 594 µg RE). These ethnic differences were influenced by intakes of both retinol and β-carotene components of vitamin A.

Pacific children had lower usual median daily intakes of retinol (males 285 µg; females 259 µg) than Māori children (369 µg; 309 µg) and NZEO males (362 µg).

NZEO children had the highest intakes of β-carotene. For NZEO females the usual daily median intake (1822 µg) was over twice that of Pacific females (729 µg) (Figure A-27).

Nutrient adequacy

The estimated prevalence for inadequate intakes of vitamin A was highest for Pacific children (males 19.7; females 37.4 percent), compared with Māori (12.9 percent; 4 percent) and NZEO children (3.8 percent; 7.9 percent). NZEO males had a lower estimated prevalence of inadequate intake (3.8 percent) than Māori males (12.9 percent).

The requirements for vitamin A have been set to cover children's growth needs and to maintain liver stores. It is unlikely that vitamin A intakes are a concern for the total population of New Zealand children but a significant proportion of Pacific children and Māori males may be at risk of inadequate intakes.

Figure A-27: Median β-carotene intake

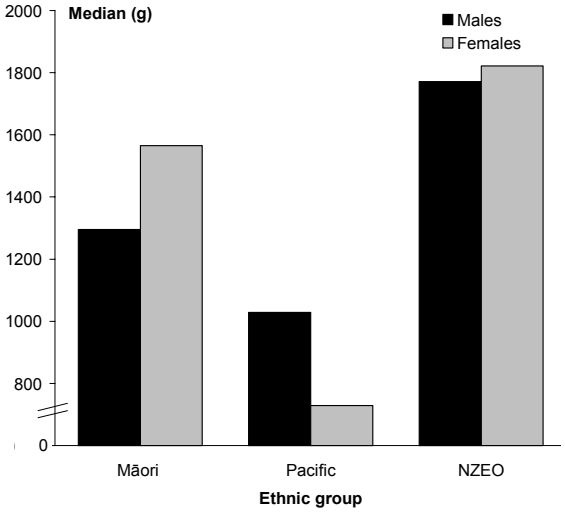
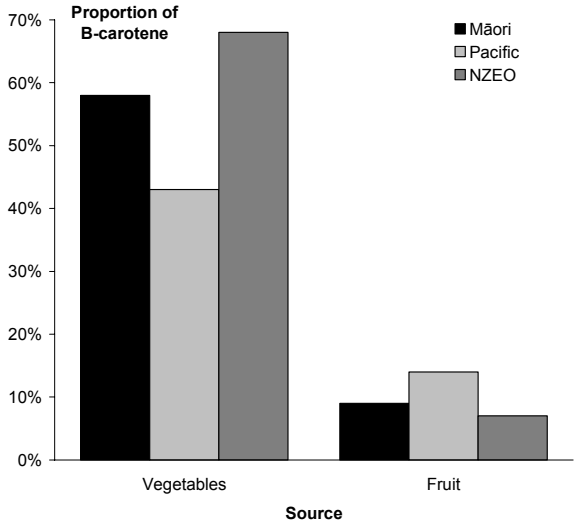


Figure A-28: Major sources of β-carotene (males)



Dietary sources of Vitamin A

β-carotene

New Zealand children

Most of the β-carotene in the diets of New Zealand children was sourced from *Vegetables* (64 percent) and *Fruit* (8 percent). There were no differences between males and females in sources of β-carotene across the food groups.

Younger males 5–6 years obtained a greater proportion of β-carotene from *Fruit* (10 percent) than males 11–14 years (6 percent).

NZDep01

Children in NZDep01-I obtained a higher proportion of their β-carotene from *Vegetables* (males 74 percent; females 71 percent) than those in NZDep01-IV (60 percent; 57 percent) and V (57 percent; 55 percent).

Ethnic

Pacific children obtained a lower proportion of their β-carotene from *Vegetables* (males 43 percent; females 39 percent) than Māori (58 percent; 61 percent) and NZEO children (68 percent; 65 percent) (Figure A-28). *Fruit* was a greater source of β-carotene in the diets of Pacific children (14 percent) than for Māori (9 percent) and NZEO children (males 7 percent; females 8 percent).

Retinol

New Zealand children

Milk (23 percent), *Butter & margarine* (12 percent) and *Dairy products* (9 percent) were the main sources of retinol in the diets of New Zealand children. Sources of retinol were similar for males and females.

Females 5–6 years obtained a greater proportion of their retinol from *Milk* (30 percent) than females 7–10 years (22 percent) and 11–14 years (18 percent). Younger males (5–6 years and 7–10 years) also obtained a higher proportion of their retinol from *Milk* (26 percent) than males 11–14 years (20 percent).

NZDep01

Males in NZDep01-I to IV and females in NZDep01-I, III and IV obtained a lower proportion of their retinol from *Butter & margarine* than those in NZDep01-V.

Cakes & muffins were a greater source of retinol for females in NZDep01-1 and II (9 percent) than females in NZDep01-IV and V (4 percent; 3 percent).

Ethnic

The proportion of retinol obtained from *Milk* was higher for NZEO males (25 percent) than Pacific males (18 percent). NZEO children obtained a lower proportion of their retinol intake from *Butter & margarine* (10 percent) than Māori (males 17 percent; females 14 percent) and Pacific children (17 percent).

Eggs & egg dishes provided a lower proportion of retinol for NZEO males (4 percent) than Māori (9 percent) and Pacific males (12 percent). Māori and NZEO females (6 percent; 5 percent) obtained a lower proportion of their retinol intake from *Eggs & egg dishes* than Pacific females (11 percent).

A9 Vitamin C

Tables A5.2, A21

New Zealand children

The median usual daily intake for males ranged from 98 mg (5–6 years) to 116 mg (7–10 years), and for females from 96 mg (5–6 years) to 108 mg (11–14 years).

Ethnic

Pacific males had a lower median usual daily intake (75 mg) than NZEO and Māori males (111 mg; 106 mg). Pacific females had a lower intake (81 mg) than NZEO females (112 mg) (Figure A-29).

Nutrient adequacy

The prevalence of inadequate intake was very low in New Zealand children (0.1 percent). Pacific males had a higher prevalence of inadequate intake (3.7 percent) than Māori and NZEO males (0.3 percent; 0.4 percent). No appreciable risk of inadequate intake was evident in any group assessed.

Dietary sources of Vitamin C

New Zealand children

The main sources of vitamin C in the diets of New Zealand children were *Beverages* (37 percent), *Fruit* (25 percent) and *Vegetables* (11 percent) (Figure A-30). Males obtained a lower proportion of vitamin C from *Beverages* (35 percent) and *Fruit* (22 percent) than females (*Beverages* 39 percent; *Fruit* 27 percent).

Fruit was a greater source of vitamin C for males 5–6 years and 7–10 years (28 percent; 25 percent) than males 11–14 years (16 percent). Males 11–14 years obtained a greater proportion of their vitamin C from *Vegetables* (14 percent) than males 5–6 years and 7–10 years (10 percent).

NZDep01

Males in NZDep01-I and IV obtained a lower proportion of vitamin C from *Fruit* (18 percent) than those in NZDep01-V (28 percent). *Vegetables* were a greater source of vitamin C for males in NZDep01-III (14 percent) than males in NZDep01-V (9 percent). Females in NZDep01-IV (14 percent) obtained more vitamin C from *Vegetables* than those in NZDep01-I (7 percent). *Potatoes, kumara & taro* were a greater source of vitamin C for females in NZDep01-IV (11 percent) than females in NZDep01-I (6 percent).

Ethnic

NZEO males obtained a lower proportion of vitamin C from *Fruit* (20 percent) than Māori (27 percent) and Pacific males (28 percent).

Figure A-29: Median vitamin C intake

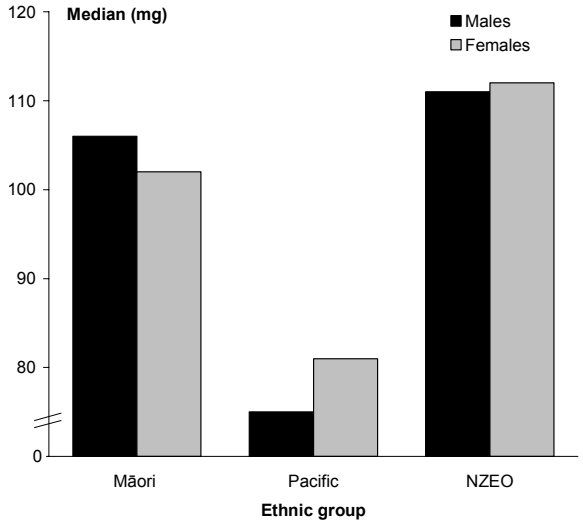
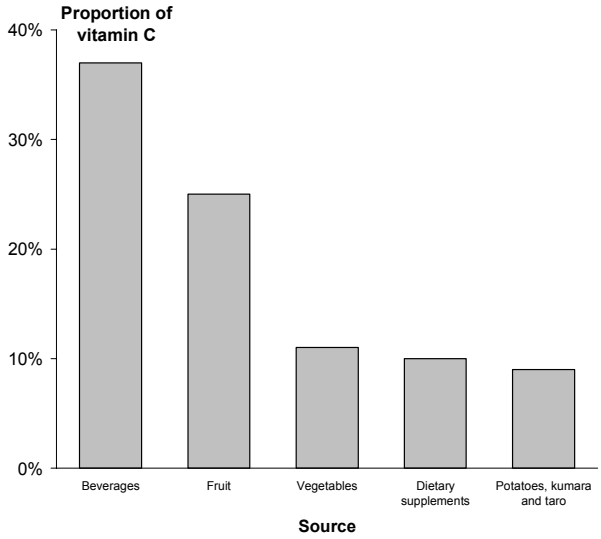


Figure A-30: Major sources of vitamin C



A10 Vitamin E

Table A5.2, A22

New Zealand children

The median usual daily intake of males ranged from 6.7 mg (5–6 years) to 8.7 mg (11–14 years), and from 5.9 mg (5–6 years) to 9 mg (11–14 years) for females (Figure A-31).

Nutrient adequacy

As vitamin E requirements depend on polyunsaturated fatty acid intake, which can vary widely, the UK DRVs do not recommend a specific intake level. The UK DRV panel states 'daily intakes of 4 mg and 3 mg α-tocopherol equivalents can be adequate for men and women respectively' (UK Department of Health 1991 p 129). The 10th percentiles of usual daily intakes in this survey were 5.7 mg for males and 5.2 mg for females; this suggests that New Zealand children's vitamin E intakes were satisfactory.

Dietary sources of Vitamin E

New Zealand children

The main sources of vitamin E for New Zealand children were *Potatoes, kumara & taro* (10 percent), *Butter & margarine* (9 percent), *Fruit* (8 percent) and *Vegetables* (7 percent) (Figure A-32). Younger males 5–6 years obtained a higher proportion of their vitamin E from *Fruit* (10 percent) than males 11–14 years (5 percent). Similarly, females 7–10 years obtained a higher proportion of their vitamin E from *Fruit* (10 percent) than females 11–14 years (7 percent).

NZDep01

Males and females in NZDep01-V obtained a greater proportion of their vitamin E from *Butter & margarine* (males 12 percent; females 11 percent) than males in NZDep01-I (6 percent) and females in NZDep01-I and IV (5 percent; 7 percent). Females in NZDep01-I to III obtained twice the proportion of vitamin E from *Vegetables* (8 percent) than females in NZDep01-V (4 percent).

Ethnic

Pacific children obtained a higher proportion of vitamin E from *Potatoes, kumara & taro* (males 16 percent; females 17 percent) than Māori (11 percent; 10 percent) and NZEO children (9 percent; 8 percent). Pacific children and Māori males obtained 13 percent of their vitamin E from *Butter & margarine* compared with NZEO children (8 percent).

Figure A-31: Median vitamin E intake

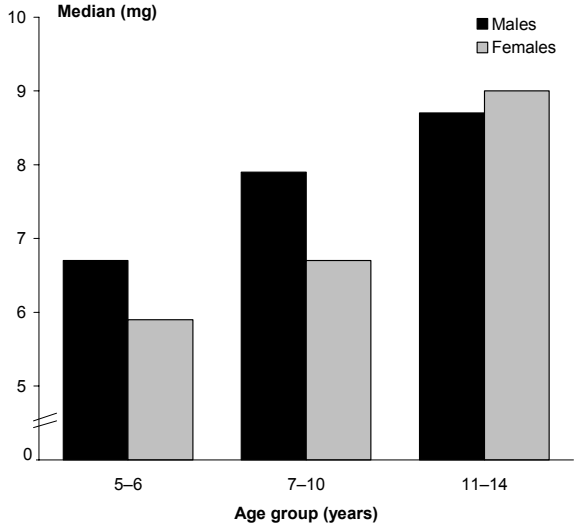
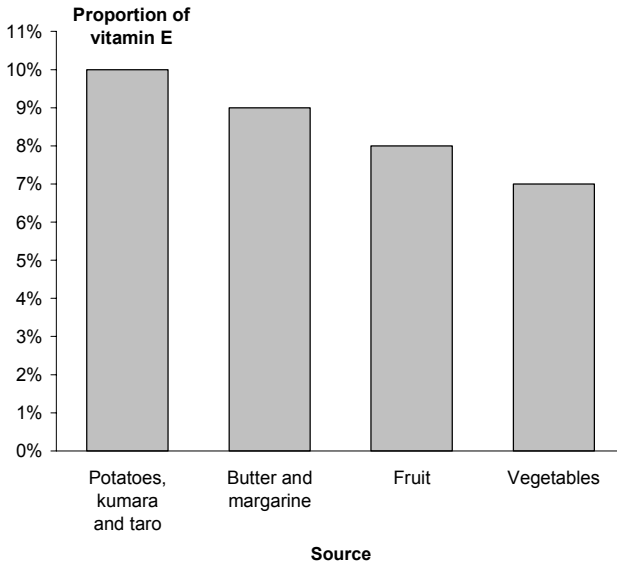


Figure A-32: Major sources of vitamin E



A11 B-vitamins

Tables A6.1, A6.2

Thiamin

New Zealand children

The median usual daily thiamin intake of males ranged from 1.6 mg (5–6 years) to 1.7 mg (11–14 years) and from 1.2 mg (5–6 years) to 1.3 mg (11–14 years) in females (Figure A-33). *Breakfast cereals* and *Bread* were the largest contributors to the thiamin intakes of New Zealand children (Appendix C).

Ethnic

Māori children had the highest median usual daily intakes of thiamin (males 1.8 mg; females 1.3 mg) compared with Pacific children (1.1 mg).

Māori and NZEO males 11–14 years had the highest median intakes of thiamin (2 mg; 1.7 mg) possibly because of the high consumption of *Breakfast cereals* and *Bread*, both of which may be fortified with thiamin.

Nutrient adequacy

Thiamin is related to energy metabolism, so requirements are determined by energy intake. UK DRVs are based on the estimated average requirement (EAR) for energy (UK Department of Health 1991). The UK RNI is 0.7 mg/day for females 4–14 years and males 4–10 years, and 0.9 mg/day for males 11–14 years. Intakes of thiamin at the 10th percentile for New Zealand children were equal to or above these values across all subgroups. Therefore, it is unlikely that thiamin intakes of New Zealand children were inadequate.

Figure A-33: Median thiamin intake

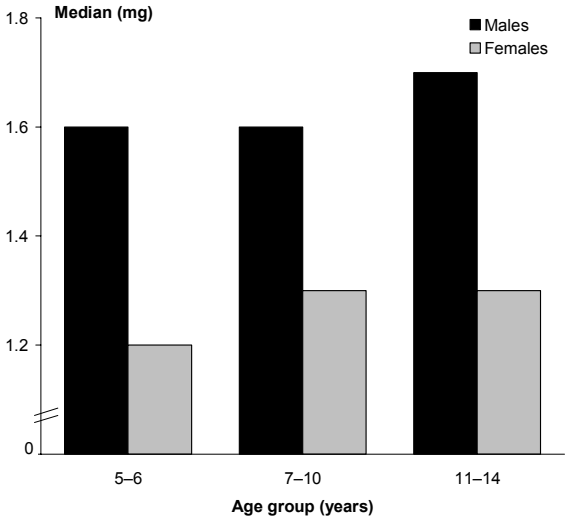
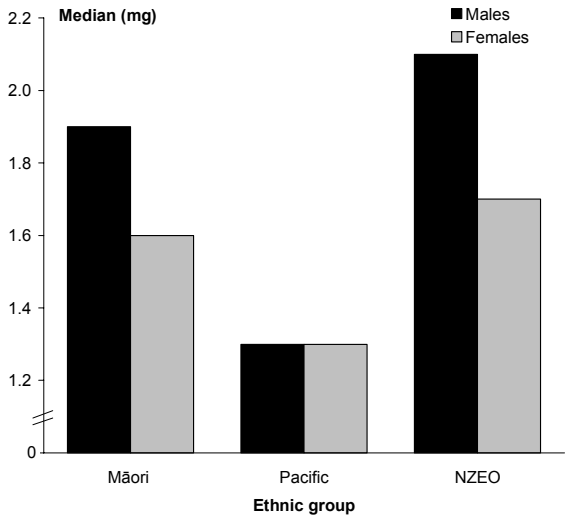


Figure A-34: Median riboflavin intake



Riboflavin

New Zealand children

The median usual daily intake of riboflavin for males 5–6 years was 1.6 mg and increased to 2 mg for 11–14 year males. However, the intake of riboflavin was the same for females 5–6 years and 11–14 years (1.5 mg).

NZDep01

The median usual daily intake of riboflavin among males declined from NZDep01-I (2.2 mg) to NZDep01-V (1.7 mg). This trend was not seen among females.

Ethnic

Pacific children (1.3 mg) had lower median usual daily intakes of riboflavin than Māori (males 1.9 mg; females 1.6 mg) and NZEO children (2.1 mg; 1.7 mg) (Figure A-34).

Nutrient adequacy

Females had a higher estimated prevalence of inadequate intake of riboflavin (4.6 percent) than males (1 percent).

Females (11–14) years were more likely to have inadequate intakes of riboflavin (10.7 percent) than females 5–10 years (1 percent or less). This trend was consistent across ethnic groups. Pacific males 11–14 years had a higher estimated prevalence of inadequate intake (20.3 percent) than younger males (7–10 years 10.5 percent; 5–6 years 1.8 percent).

Pacific children had the highest estimated prevalence of inadequate intakes (males 12.4 percent; females 10.2 percent), compared with NZEO (1.4 percent; 5 percent) and Māori children (1 percent; 2.3 percent).

Note that riboflavin is found in relatively few foods, mainly milk, dairy products and breakfast cereals, foods which Pacific children were less likely to consume. Recommended riboflavin intake is based on that needed to maintain tissue saturation. Intakes below this requirement may not be associated with any functional impairment. Care should, therefore, be exercised in the interpretation of these estimates of inadequate intake.

Niacin equivalents

New Zealand children

The median usual daily intake of niacin equivalents ranged from 25.6 mg (5–6 years) to 36 mg (11–14 years) in males, and from 21 mg (5–6 years) to 27.7 mg (11–14 years) in females. Niacin for New Zealand children came from a wide range of foods including, *Bread*, *Poultry*, *Breakfast cereals* and *Beef & veal* (Appendix C).

Ethnic

Māori children 5–6 years had higher median usual daily intakes of niacin equivalents (males 28.9 mg; females 23.7 mg) than NZEO (23.4 mg; 20.4 mg) and Pacific children (24.6 mg; 21 mg) within the same age group.

Nutrient adequacy

The requirement for niacin is related to energy expenditure, so depends on the level of energy intake. For children, the UK RNIs range from 11 mg (males 4–10 years and females 4–14 years) to 15 mg (males 11–14 years). Intakes at the 10th percentile for New Zealand children and for all subgroups fall above the RNIs. Therefore, it appeared intakes of niacin for New Zealand children were adequate.

Vitamin B6

New Zealand children

Median usual daily intakes of vitamin B6 for males ranged from 1.1 mg (5–6 years) to 1.5 mg (11–14 years), and for females from 1 mg (5–6 years) to 1.2 mg (11–14 years). *Dietary supplements*, *Fruit*, *Potatoes, kumara & taro* and *Breakfast cereals* provided the most vitamin B6 to the diets of New Zealand children (Appendix C).

Nutrient intakes

Vitamin B6 is involved in protein metabolism, so recommended intakes are based on protein intake. The UK DRV (UK Department of Health 1991) calculations were based on protein providing 14.7 percent of the EAR for energy. Median intakes of vitamin B6 for all subgroups of children were above the RNIs that range from 0.9 mg (4–6 years) to 1.2 mg (11–14 years). On this basis the vitamin B6 intake of New Zealand children appeared satisfactory.

Vitamin B12

New Zealand children

The median usual daily intake of vitamin B12 ranged from 3.2 µg (5–6 years) to 4 µg (11–14 years) in males, and from 2.6 µg (5–6 years) to 3.1 µg (11–14 years) in females. Vitamin B12 is concentrated in animal products and New Zealand children sourced most of their vitamin B12 from *Milk*, *Beef & veal*, *Fish & seafood* and *Dietary supplements* (Appendix C).

Nutrient adequacy

The estimated prevalence of inadequate vitamin B12 intakes of New Zealand children was low (males 0.1 percent; females 0 percent). The highest prevalence of inadequate intake was 2.8 percent for NZEO males 11–14 years. The EAR is set to maintain liver stores and to sustain a period of zero intake of vitamin B12. There was negligible risk of deficiency of vitamin B12 among New Zealand children.

A12 Folate

Tables A6.2, A23

Nutrient intake

New Zealand children

Median intakes of folate for New Zealand children ranged from 226 µg (5–6 years) to 283 µg (11–14 years) in males, and from 201 µg (5–6 years) to 216 µg (11–14 years) in females (Figure A-35).

NZDep01

The median intake for males in NZDep01-I was higher (301 µg) than for males in NZDep01-III, IV (240 µg) and V (241 µg).

Ethnic

Pacific children had lower median intakes of folate (males 196 µg; females 172 µg) than NZEO (275 µg; 220 µg) and Māori children (248 µg; 208 µg). NZEO males had higher folate intakes (275 µg) than Māori males (248 µg).

Nutrient adequacy

The estimated prevalence of inadequate intake of folate was higher for females (8.8 percent) than males (0.6 percent).

Females 11–14 years in the three ethnic groups had higher estimated prevalence of inadequate intakes (Māori 22.8 percent; Pacific 30 percent; NZEO 15 percent) than females 5–6 years (0 percent; 4.8 percent; 0 percent) (Figure A-36).

Pacific females (13.9 percent) were more likely than NZEO (6.9 percent) and Māori females (9.3 percent) to have inadequate intakes of folate. The estimated prevalence of inadequate intakes was higher for Pacific males (10 percent) than Māori (3.3 percent) and NZEO males (0.7 percent). Pacific males 11–14 years (25.5 percent) were more likely to have inadequate intakes of folate than NZEO (1.5 percent) and Māori males 11–14 years (0 percent).

The present food composition data do not differentiate between folic acid (synthetic fortificant) and naturally occurring folate. The bioavailability of folic acid is known to be higher than natural folate (Lewis et al 1999). Recommendations for folate intake assume equal bioavailability of natural folate and folic acid. It is also possible that folate intake and the estimated prevalence of inadequate intakes have been over-estimated because the compositional data imputed are based on manufacturers' claims for some fortified foods. Therefore, it is likely that intakes and the estimated prevalence of inadequate intakes have been over-estimated.

Figure A-35: Median folate intake

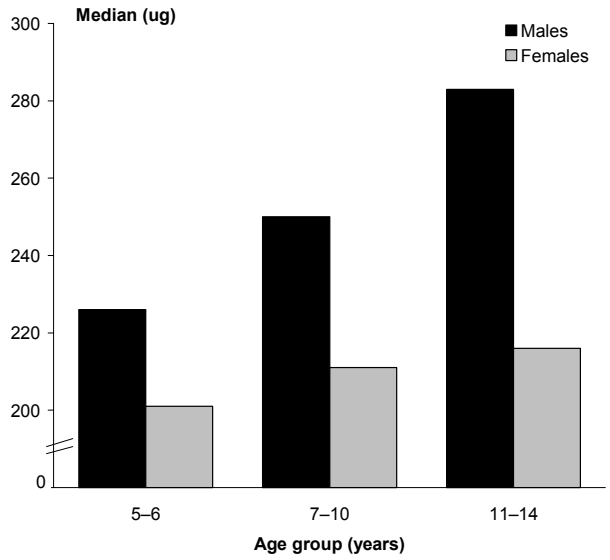
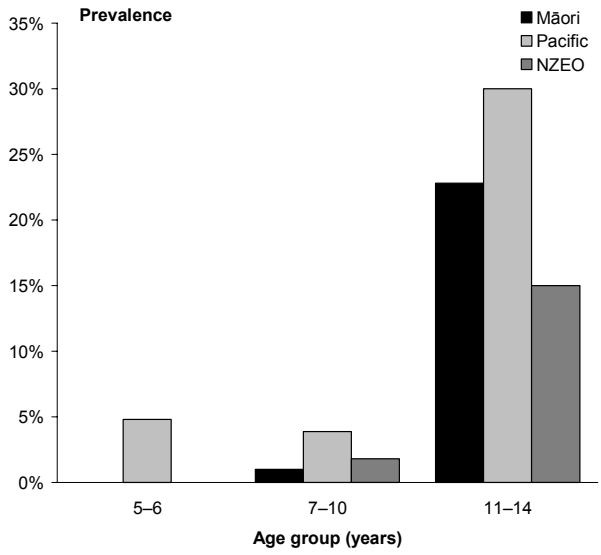


Figure A-36: Prevalence of inadequate folate intake (females)



Dietary sources

New Zealand children

The two main sources of folate for New Zealand children were *Bread* (22 percent) and *Breakfast cereals* (21 percent), both of which can be fortified with folic acid. *Vegetables* provided 9 percent, *Potatoes, kumara & taro*, *Savoury sauces* (including vegemite and marmite) and *Fruit* each provided 6 percent (Figure A-37).

Males obtained a higher proportion of folate from *Breakfast cereals* (25 percent) than females (18 percent). *Fruit* was a greater source of folate for females (7 percent) than males (5 percent).

Among females there were age differences in the proportion of folate obtained from *Bread*. Females 5–6 years obtained a higher proportion from *Bread* (28 percent) than females 7–14 years (21 percent).

Ethnic

Pacific males obtained a lower proportion of folate from *Breakfast cereals* (18 percent) than NZEO (25 percent) and Māori males (26 percent).

Potatoes, kumara & taro contributed more folate to the diets of Pacific children (10 percent) than to NZEO children (males 6 percent; females 5 percent). Pacific females also obtained more folate (10 percent) from *Potatoes*, *kumara & taro* than Māori females (8 percent) (Figure A-38).

NZEO children obtained a higher proportion of folate from *Vegetables* (males 9 percent; females 10 percent) than Pacific children (5 percent; 6 percent).

Figure A-37: Major sources of folate (females)

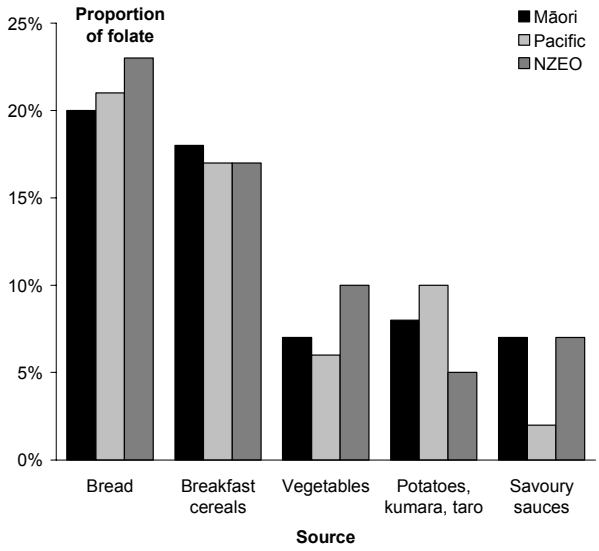
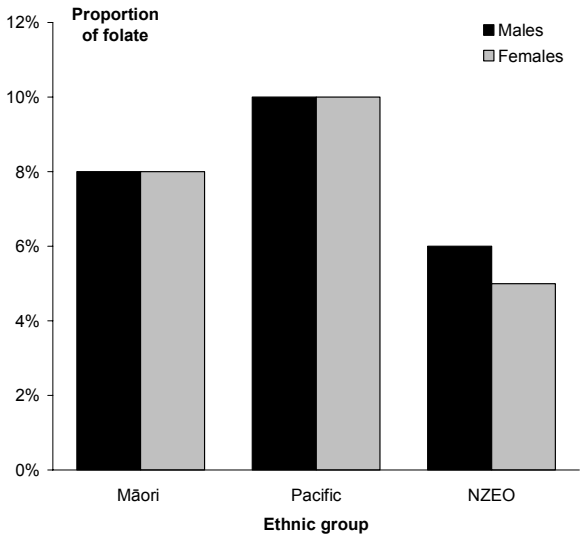


Figure A-38: Folate from potatoes, kumara and taro



A13 Calcium

Tables A7.1, A24

Nutrient intake

New Zealand children

The median usual daily intake for males ranged from 677 mg (5–6 years) to 888 mg (11–14 years), and from 616 mg (5–6 years) to 733 mg (11–14 years) for females.

NZDep01

Males in NZDep01-V had a lower median intake of calcium (675 mg) than in NZDep01-I, III and IV (908 mg; 820 mg; 819 mg).

Ethnic

Pacific children had a lower median intake of calcium (males 551 mg; females 512 mg) than NZEO (866 mg; 677 mg) and Māori children (765 mg; 660 mg). Māori males had a lower median intake of calcium (765 mg) than NZEO males (866 mg) (Figure A-39).

Nutrient adequacy

The prevalence of inadequate intake of calcium among New Zealand children was 15.1 percent and was higher among females (18.2 percent) than males (12.2 percent).

Children 11–14 years had a higher prevalence of inadequate intake of calcium (males 28.7 percent; females 29.6 percent) than those 5–6 years (1.4 percent; 6.6 percent) and 7–10 years (1.4 percent; 12.4 percent) (Figure A-40).

The highest prevalence of inadequate intake was among Pacific children (males 40.5 percent; females 45.2 percent), higher than among NZEO (10.5 percent; 29 percent) and Māori children (13.2 percent; 19.5 percent). NZEO females were more likely to have an inadequate calcium intake (29 percent) than Māori females (19.5 percent). Māori males 7–10 years had a higher prevalence of inadequate intake (7 percent) than NZEO males of the same age (0.6 percent).

Calcium intake reflects consumption of milk and dairy products. The appropriateness of the recommended intakes of calcium for Pacific and Māori children has not yet been established.

Figure A-39: Median calcium intake

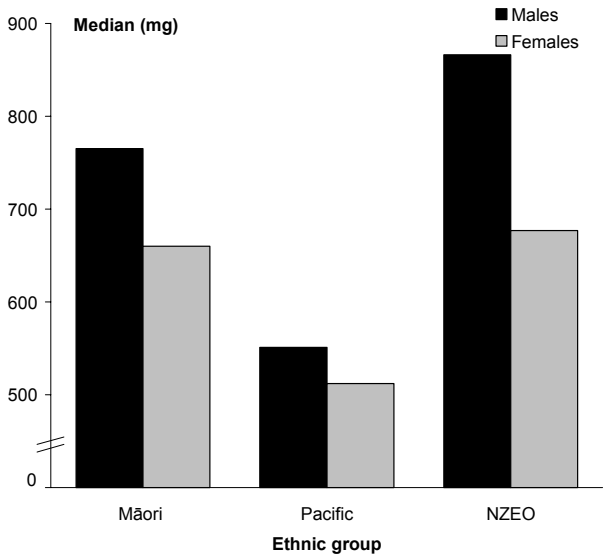
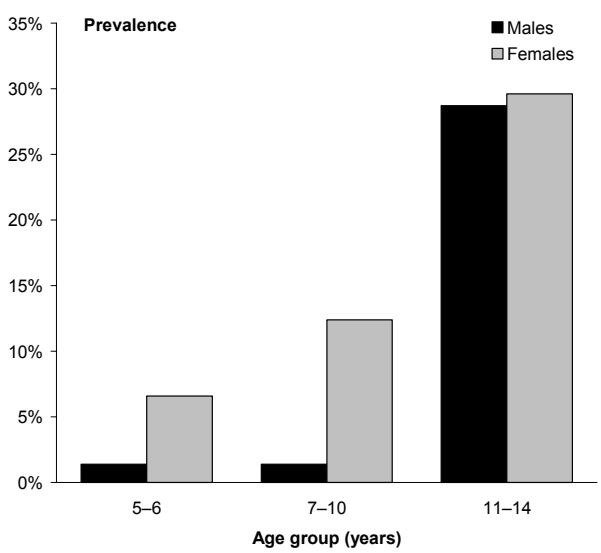


Figure A-40: Prevalence of inadequate calcium intake



Dietary sources

New Zealand children

Milk contributed most to the calcium intake of New Zealand children (34 percent). *Bread* contributed 11 percent, *Dairy products* 9 percent, *Cheese* 8 percent and *Beverages* 5 percent (Figure A-41).

Males 5–6 years obtained more calcium from *Dairy products* (11 percent) than males 11–14 years (7 percent). Younger females (5–6 years) obtained more calcium from *Milk* (39 percent) than older females (7–10 years 32 percent; 11–14 years 31 percent). *Milk* provided more calcium to Pacific children 5–6 years (males 35 percent; females 38 percent) than those 11–14 years (22 percent; 25 percent).

NZDep01

Males in NZDep01-V obtained more calcium from *Bread* (15 percent) than NZDep01-I, III and IV males (8 to 10 percent). Males in NZDep01-V obtained less calcium from *Milk* (30 percent) than NZDep01-I and IV males (42 percent; 37 percent). Females in NZDep01-I obtained more calcium from *Milk* (38 percent) than those in NZDep01-IV (29 percent) (Figure A-42).

Ethnic

Sources of calcium differed across ethnic groups. Pacific children obtained more calcium from *Bread* (17 percent) than NZEO children (10 percent). Pacific females (17 percent) obtained more calcium from *Bread* than Māori females (11 percent). *Milk* provided less calcium to Pacific males (28 percent) than NZEO (37 percent) and Māori males (33 percent). Māori females obtained more calcium from *Dairy products* (12 percent) than Pacific females (8 percent). *Cheese* contributed more calcium to NZEO males (9 percent) than Māori (5 percent) and Pacific males (4 percent). Pacific females obtained less calcium from *Cheese* (4 percent) than Māori (7 percent) and NZEO females (10 percent).

Figure A-41: Major sources of calcium (females)

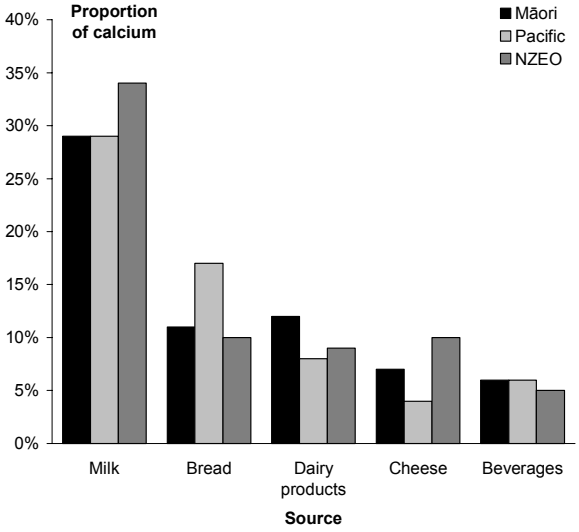
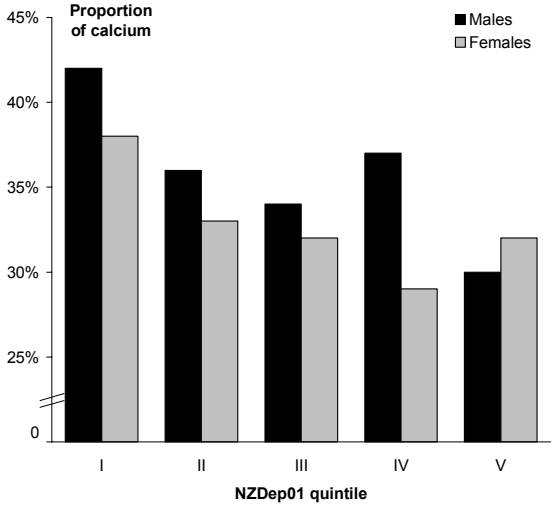


Figure A-42: Calcium from milk



A14 Phosphorus and magnesium

Table A7.1

Phosphorus

New Zealand children

The median usual daily intake for males ranged from 1068 mg (5–6 years) to 1462 mg (11–14 years), and for females from 935 mg (5–6 years) to 1149 mg (11–14 years) (Figure A-43). *Milk* and *Bread* were the main sources of phosphorus in the diet of New Zealand children (Appendix C).

NZDep01

Males in NZDep01-I had a higher median intake of phosphorus (1403 mg) than males in NZDep01-V (1196 mg).

Ethnic

Pacific children had a lower median intake of phosphorus (males 1073 mg; females 970 mg) than Māori (1267 mg; 1107 mg) and NZEO children (1326 mg; 1052 mg).

Nutrient adequacy

The calcium phosphorus ratio (mmol Ca: mmol P) is close to 1:2 in all groups compared with the recommended 1:1. Thus, it is unlikely that phosphorus intakes of New Zealand children were inadequate. Additionally, the observed Ca:P ratio among New Zealand children did not reach the magnitude believed to alter calcium metabolism (1:3).

Magnesium

New Zealand children

The median usual daily intake for New Zealand children ranged from 213 mg (5–6 years) to 286 mg (11–14 years) for males, and from 187 mg (5–6 years) to 224 mg (11–14 years) for females (Figure A-44).

Ethnic

Pacific males had a lower median intake of magnesium (232 mg) than Māori (256 mg) and NZEO males (258 mg). Māori children 5–6 years had a higher median magnesium intake (males 237 mg; females 206 mg) than NZEO children of the same age (206 mg; 179 mg).

Nutrient adequacy

The median usual daily intakes were above the UK RNIs for all age groups except for females 11–14 years (224 mg), which was close to the EAR for this age group (230 mg).

Magnesium is obtained from water as well as from food and as these dietary estimates do not take into consideration the magnesium intake from water it is likely that total magnesium intakes were adequate among New Zealand children.

Figure A-43: Median phosphorous intake

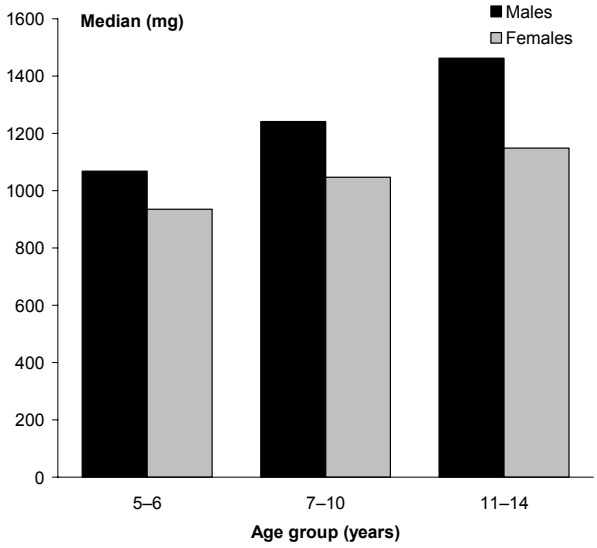
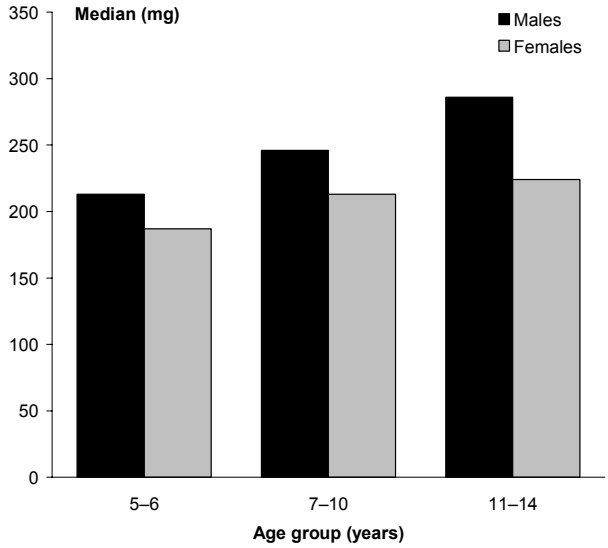


Figure A-44: Median magnesium intake



A15 Iron

Table A7.2, A25

Nutrient intake

New Zealand children

The median usual daily intake for males ranged from 10 mg (5–6 years) to 14.1 mg (11–14 years) and from 8.4 mg (5–6 years) to 9.9 mg (11–14 years) for females.

Ethnic

The median iron intake was higher among Māori females (10.1 mg) than Pacific (9.3 mg) and NZEO females (9.4 mg). Pacific males had a lower median iron intake (10.6 mg) than Māori (13.3 mg) and NZEO males (12.4 mg) (Figure A-45). Māori males 5–6 years had a higher median iron intake (11.4 mg) than NZEO males of the same age (9.4 mg).

Nutrient adequacy

The proportion of New Zealand children with inadequate iron intake was 6.6 percent. The prevalence was higher among females (including menstruating females) (12 percent) than males (1.6 percent). Children 5–6 years had a lower prevalence of inadequate intake of iron (males 0 percent; females 0.1 percent) than children 7–10 years (1.8 percent; 5 percent), males (2.1 percent) and non-menstruating females 11–14 years (4.2 percent).

The prevalence of inadequate intake of iron in Pacific males was higher (12.9 percent) than in NZEO (3.9 percent) and Māori males (2.4 percent). Pacific females (15.4 percent) had a higher prevalence of inadequate intake than NZEO females (10.5 percent).

Menstruating females had a much higher prevalence of inadequate intake of iron (43.9 percent) than non-menstruating females of the same age (4.2 percent).

Among menstruating females there were no differences between the three ethnic groups in the prevalence of inadequate intake of iron (Figure A-46). This difference was supported by the biochemical indicators (Section E: Health).

Figure A-45: Median iron intake

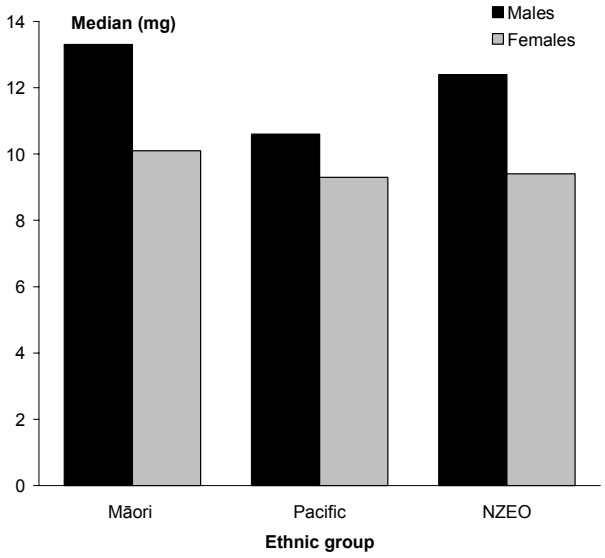
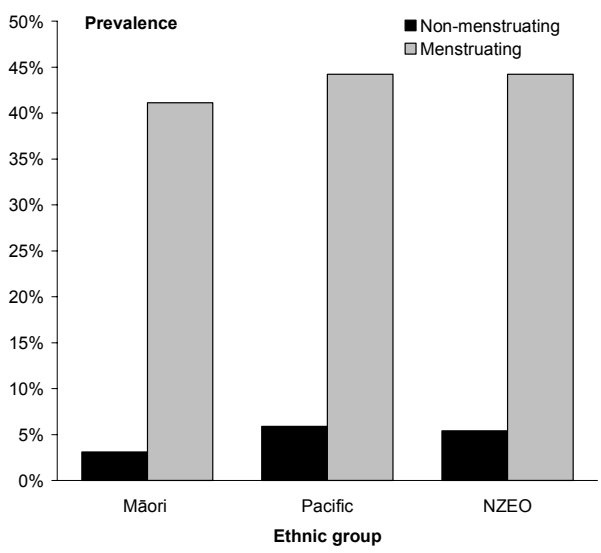


Figure A-46: Prevalence of inadequate iron intake (females 11–14 years)



Dietary sources

New Zealand children

Breakfast cereals provided the greatest proportion of iron to the diet of New Zealand children (18 percent) followed by *Bread* (12 percent). *Beef & veal* and *Potatoes, kumara & taro* each provided 7 percent; *Beverages* 6 percent and *Vegetables*, *Fruit* and *Biscuits* each 4 percent (Figure A-47).

Males obtained more iron from *Breakfast cereals* (20 percent) than females (15 percent).

Males 11–14 years obtained less iron from *Breakfast cereals* (18 percent) than younger males (5–6 years, 23 percent; 7–10 years, 22 percent).

NZDep01

NZDep01-V females obtained more iron from *Pies & pasties* (5 percent) than those in NZDep01-I (2 percent). *Beef & veal* provided more iron to the diets of females in NZDep01-IV (9 percent) than those in NZDep01-I (4 percent).

Ethnic

Pies & pasties provided twice as much iron to Pacific children (males 7 percent; females 6 percent) than NZEO children (2 percent; 3 percent).

Breakfast cereals contributed less iron to the diets of Pacific males (13 percent) than NZEO and Māori males (21 percent) (Figure A-48).

Figure A-47: Major sources of iron (females)

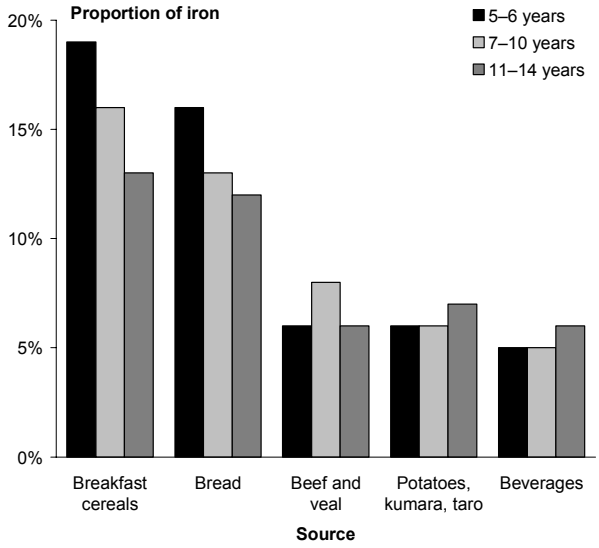
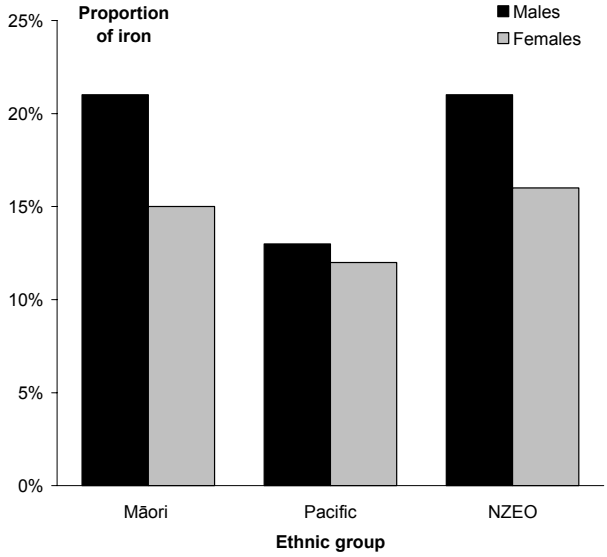


Figure A-48: Iron from breakfast cereals



A16 Zinc

Tables A7.2, A26

Nutrient intake

New Zealand children

The median usual daily intake for New Zealand children ranged from 8.7 mg (5–6 years) to 12 mg (11–14 years) for males, and from 7.2 mg (5–6 years) to 9.1 mg (11–14 years) for females.

NZDep01

Females in NZDep01-I had a lower median zinc intake (7.4 mg) than NZDep01-IV and V females (8.6 mg; 9.1 mg).

Ethnic

Māori males 5–6 years had a higher median intake of zinc (9.9 mg) than Pacific (8 mg) and NZEO males (7.9 mg) of the same age. Māori females 5–6 years had a higher median intake of zinc (8.6 mg) than NZEO females of the same age (6.7 mg).

Nutrient adequacy

The estimated prevalence of inadequate intake of zinc for New Zealand children was 7.3 percent. Males had a lower prevalence of inadequate intake of zinc (2.7 percent) than females (12.1 percent).

Children 11–14 years had a higher prevalence of inadequate intake (males 5.4 percent; females 16.4 percent) than children 7–10 years (1.4 percent; 9.4 percent) and 5–6 years (0 percent; 9.2 percent) (Figure A-50).

NZEO males had a lower prevalence of inadequate intake (2 percent) than Pacific (8.4 percent) and Māori males (5.5 percent). Māori females 5–6 years had a lower prevalence of inadequate intake (0.7 percent) than NZEO (11.4 percent) and Pacific females 5–6 years (9.3 percent). Pacific females 11–14 years had a higher prevalence of inadequate intake (20.4 percent) than NZEO females of the same age (11.8 percent).

Among females, the estimated prevalence of inadequate intake of zinc was reasonably congruent with biochemical status (Table E-4). However, among males, biochemical assessment was indicative of a greater level of risk of inadequacy than dietary assessment. This may be because the serum zinc cut-off points and/or the EAR for males is inappropriate. For both males and females, the age group identified at risk of low zinc status, was not congruent as assessed by biochemical and dietary means. The reasons for these discrepant results require further investigation.

Figure A-49: Median zinc intake

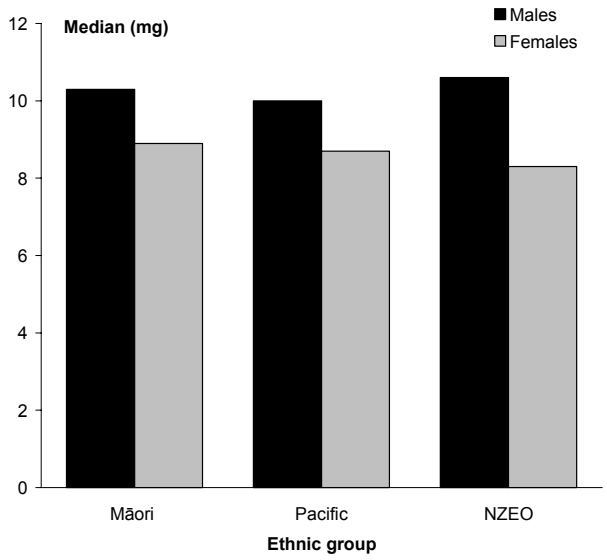
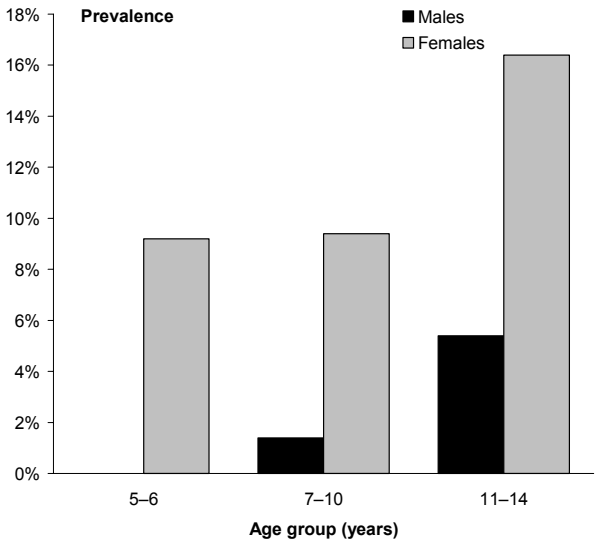


Figure A-50: Prevalence of inadequate zinc intake



Dietary sources of zinc

New Zealand children

New Zealand children obtained zinc from a wide range of sources with the main sources being *Beef & veal* (12 percent), *Bread* (11 percent) and *Milk* (9 percent) (Figure A-51). There were no differences between males and females in sources of zinc across the food groups.

Females 7–10 years obtained a higher proportion of their zinc from *Beef & veal* (14 percent) than females 11–14 years (9 percent).

NZDep01

Females in NZDep01- I (7 percent) obtained a lower proportion of their zinc from *Beef & veal* than females in NZDep01-IV (15 percent) (Figure A-52).

Urban-rural

Urban males obtained a lower proportion of their zinc from *Beef & veal* (12 percent) than rural males (17 percent).

Ethnic

Milk provided nearly double the proportion of zinc to the diets of NZEO children (10 percent) than Pacific children (males 5 percent; females 6 percent).

Pacific children obtained a greater proportion of their zinc from *Poultry* (9 percent) compared with Māori (males 5 percent; females 6 percent) and NZEO children (4 percent; 5 percent).

Figure A-51: Major sources of zinc

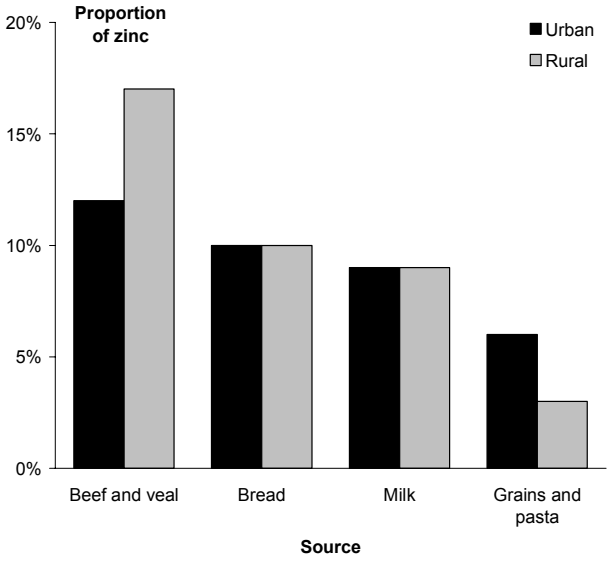
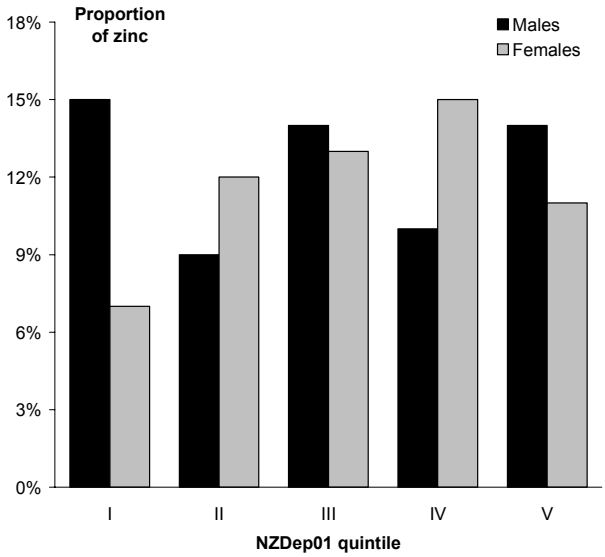


Figure A-52: Zinc from beef and veal



A17 Potassium, manganese and copper

Tables A7.2, A7.3

Potassium

New Zealand children

The median usual daily intake of potassium for New Zealand children ranged from 2274 mg (5–6 years) to 3095 mg (11–14 years) for males, and from 2003 mg (5–6 years) to 2405 mg (11–14 years) for females. New Zealand children obtained potassium primarily from *Potatoes, kumara & taro*, *Milk*, *Fruit* and *Vegetables* (Appendix C).

Ethnic

Pacific males had a lower median potassium intake (2315 mg) than Māori (2737 mg) and NZEO (2754 mg) males. Pacific females had a lower median potassium intake (2088 mg) than Māori females (2383 mg).

Nutrient adequacy

The median usual daily intakes of potassium were above the UK RNI for all groups except females 11–14 years. Median intakes for females 11–14 years (2405 mg) were half way between the Lower RNI (LRNI) (1600 mg) and the RNI for this age group (3100 mg).

Manganese

New Zealand children

The median usual daily intake of manganese for New Zealand children ranged from 2861 µg (5–6 years) to 3775 µg (11–14 years) for males, and from 2495 µg (5–6 years) to 2971 µg (11–14 years) for females. Primary sources of manganese were *Bread*, *Breakfast cereals* and *Grains & pasta* (Appendix C).

NZDep01

Females in NZDep01-I had a lower median intake of manganese (2495 µg) than NZDep01-V females (2930 µg).

Ethnic

Pacific males had a lower median daily intake of manganese (3132 µg) than NZEO males (3452 µg).

Nutrient adequacy

For all age groups, the usual median daily intakes were above the intakes designated for adults by the UK DRV (1.4 mg/d).

Copper

New Zealand children

The median usual daily intake of copper for New Zealand children ranged from 1 mg (5–6 years) to 1.4 mg (11–14 years) for males and from 1 mg (5–6 years) to 1.1 mg (11–14 years) for females. *Bread*, *Potatoes, kumara & taro* and *Vegetables* were the primary sources of copper for New Zealand children (Appendix C).

Ethnic

NZEO males had a higher median intake of copper (1.2 mg) than Pacific males (1.1 mg). Māori females had a higher median intake of copper (1.1 mg) than Pacific females (1 mg).

Nutrient adequacy

The UK RNIs for copper range from 0.6 mg/day (children 4–6 years) to 0.8 mg/day (males 11–14 years). For New Zealand children median usual daily intakes of copper are just under double these age specific recommendations. Furthermore, median intakes of copper for all ethnic subgroups are above these RNIs.

A18 Selenium

Tables A7.3, A27

Nutrient intake

New Zealand children

The usual median daily intake of selenium for New Zealand children ranged from 29.7 µg (5–6 years) to 44 µg (11–14 years) for males, and from 24.6 µg (5–6 years) to 34.9 µg (11–14 years) for females (Figure A-53).

NZDep01

Females in NZDep01-I and II had a lower median intake of selenium (25.4 µg; 29.1 µg) than NZDep01-V females (35.8 µg).

Ethnic

Māori males 7–10 years had a lower median intake of selenium (34.4 µg) than Pacific males of the same age (42 µg). Pacific females had a higher median intake of selenium (36.2 µg) than NZEO females (29.3 µg). Māori females 5–6 years had a higher median selenium intake (28.3 µg) than NZEO females of the same age (20.8 µg).

Nutrient adequacy

Comparisons of New Zealand children's usual daily median intakes of selenium with recommendations are difficult as the age grouping in this survey differs from that used for the recently proposed selenium RNI (Figure A-54). These proposed RNIs have been estimated specifically for the New Zealand population (Thomson and Paterson 2001).

Younger males (5–6 years) had a median selenium intake (29.7 µg) close to the RNI for children 4–8 years (30 µg), while females 5–6 years were below (24.6 µg). Males 7–10 years (35.2 µg) had a median selenium intake higher than the RNI for children 4–8 years (30 µg) but lower than the RNI for males 9–13 years (50 µg). Females 7–10 years had a median intake (30.4 µg) close to the RNI for children 4–8 years (30 µg), but it was 20 µg lower than the RNI for females 9–13 years (50 µg). Children 11–14 years had median intakes (males 44 µg, females 34.9 µg) below the RNI for children 9–13 years (50 µg; 50 µg). These results suggested New Zealand children, especially older children, were at risk of having inadequate selenium intakes.

Figure A-53: Median selenium intake

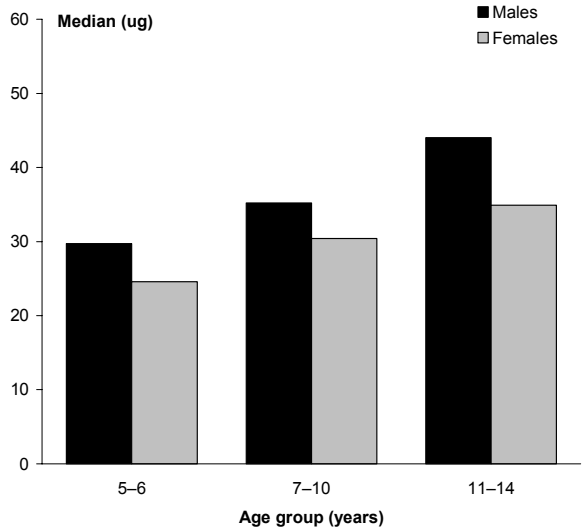
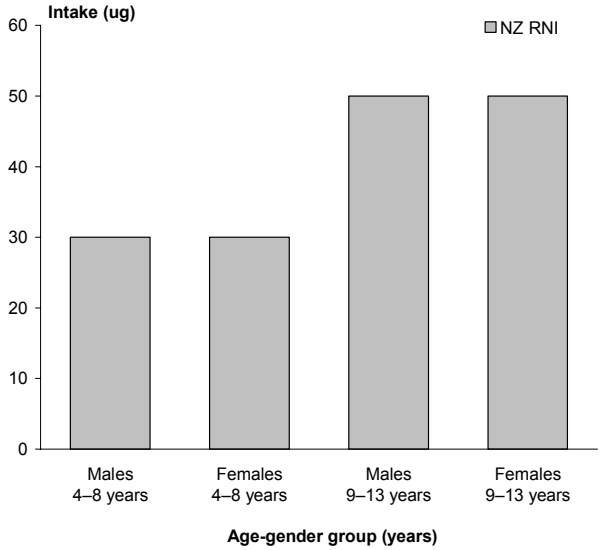


Figure A-54: Recommended selenium intake



Dietary sources

New Zealand children

Fish & seafood contributed over one fifth of the selenium intake of New Zealand children (22 percent), followed by *Poultry* (12 percent), *Bread* (10 percent) and *Grains & pasta* (7 percent) (Figure A-55).

Males obtained more selenium from *Fish & seafood* (23 percent) than females (20 percent). Males 11–14 years obtained 26 percent from *Fish & seafood* compared with 21 percent for males 5–10 years. *Fish & seafood* provided proportionally more selenium to females 7–10 years (21 percent) than females 5–6 years (15 percent). *Poultry* provided more selenium to males 5–6 years (14 percent) than males 7–10 years (10 percent).

NZDep01

Males in NZDep01-I and II obtained a lower proportion of their selenium intake from *Fish & seafood* (16 percent; 19 percent) than NZDep01-IV and V males (26 percent; 32 percent). Males in NZDep01-I obtained a higher proportion of selenium from *Milk* (8 percent) than those in NZDep01-V (3 percent) (Figure A-56).

Urban-rural

Urban males obtained a greater proportion of their selenium intake from *Fish & seafood* (25 percent) than rural males (16 percent).

Ethnic

Pacific children obtained more selenium from *Fish & seafood* (males 35 percent; 29 percent) than Māori (27 percent; 22 percent) and NZEO children (20 percent; 17 percent). Māori children obtained more selenium from *Fish & seafood* (males 27 percent; females 22 percent) than NZEO children (20 percent; 17 percent).

Poultry provided more selenium to Pacific children (males 17 percent; females 18 percent) than Māori (11 percent; 12 percent) and NZEO children (11 percent). NZEO children obtained a higher proportion of their selenium intake from *Milk* (5 percent) than Pacific children (2 percent).

Figure A-55: Major sources of selenium (females) and milk (males)

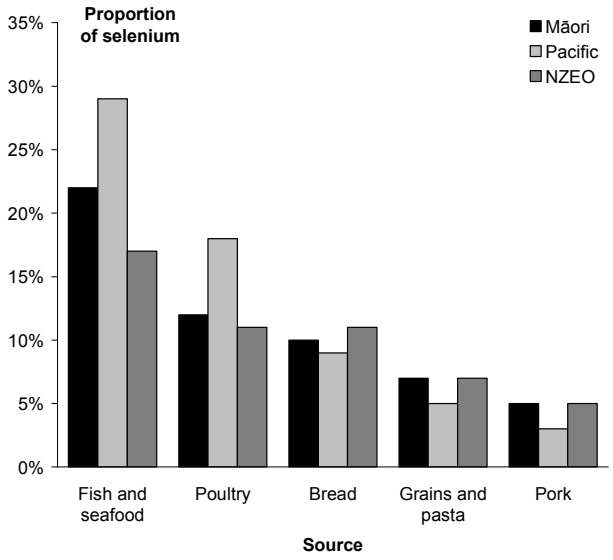
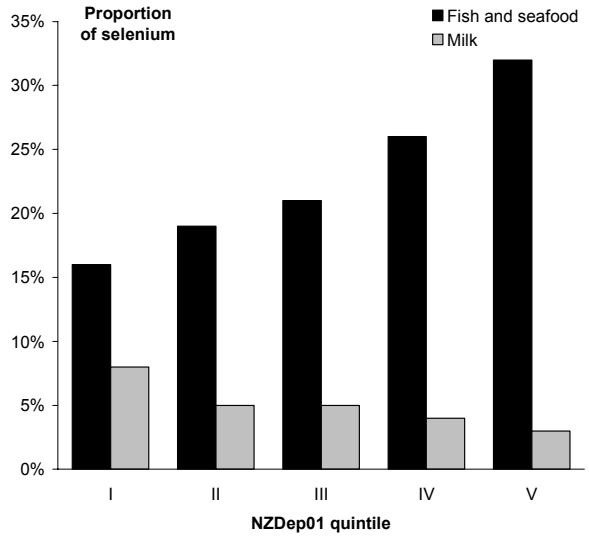


Figure A-56: Selenium from fish and seafood



Tables for Section A

Table A1: Energy and protein

			Energy (kJ)[1]					Protein (g)[1]					Percent energy from protein[2]				
			Mean	SEM	10th*	50th*	90th*	Mean	SEM	10th*	50th*	90th*	Mean	SEM	10th*	50th*	90th*
New Zealand children (5–14 years)			8648	79	6362	8454	11176	71	0.9	47	68	99	13.8	0.12	9.4	13.4	18.7
	Males	5–6	7610	146	6718	7573	8549	63	1.5	47	62	81	13.9	0.28	9.6	13.5	19.1
		7–10	9015	129	6697	8876	11506	73	1.6	50	71	99	13.6	0.20	9.4	13.3	18.1
		11–14	10546	221	7577	10303	13826	91	3.0	60	88	125	14.5	0.32	9.7	14.1	20.4
		Total	9359	108	6852	9123	12181	78	1.4	53	76	108	14.0	0.18	9.6	13.6	19.2
	Females	5–6	6820	171	5284	6703	8505	54	1.8	39	52	72	13.3	0.27	9.5	13.0	17.7
		7–10	7844	131	5946	7757	9848	64	1.4	42	61	88	13.7	0.23	9.2	13.2	18.4
		11–14	8394	205	6789	8323	10087	67	2.1	49	66	87	13.5	0.20	9.0	13.3	17.6
		Total	7877	106	6037	7781	9841	63	1.1	43	61	86	13.5	0.14	9.2	13.2	17.9
NZDep01	Males	I	9550	416	8215	9489	10962	83	4.0	57	81	111	14.6	0.44	9.9	14.0	20.3
		II	8919	347	6637	8742	11430	74	3.4	51	72	99	13.8	0.33	9.4	13.0	19.1
		III	8954	232	7007	8815	11080	75	2.8	52	73	100	14.0	0.41	9.6	13.2	19.3
		IV	9351	242	7126	9141	11832	78	2.1	60	76	97	14.0	0.29	9.6	13.9	18.6
		V	9633	281	6607	9344	13027	79	3.5	46	74	118	13.7	0.31	9.1	13.2	19.0
	Females	I	7307	250	5661	7256	9019	58	2.8	41	57	77	13.4	0.38	8.9	13.4	17.3
		II	7948	324	6627	7897	9334	63	3.3	41	61	89	13.6	0.36	9.5	13.0	18.4
		III	7470	340	5229	7423	9778	60	3.1	44	60	77	13.6	0.42	9.3	13.3	17.5
		IV	7750	241	6820	7720	8719	63	2.3	42	61	86	13.6	0.32	9.3	13.3	18.4
		V	8398	198	6343	8200	10681	67	2.0	48	65	88	13.5	0.28	9.0	12.8	18.5
Māori	Males	5–6	8832	281	6949	8703	10878	72	2.7	42	68	107	13.6	0.34	9.5	13.1	18.8
		7–10	9377	202	6730	9156	12307	74	1.6	47	71	105	13.6	0.21	9.3	13.2	18.0
		11–14	10983	426	7717	10752	14550	90	3.5	56	87	130	13.8	0.25	9.4	13.4	18.6
		Total	9861	187	7068	9609	12962	80	1.6	51	76	114	13.6	0.14	9.3	13.2	18.5
	Females	5–6	7630	270	5962	7507	9456	62	2.5	43	60	83	13.6	0.28	9.5	13.2	18.5
		7–10	8570	214	6703	8455	10584	67	1.8	44	65	94	13.2	0.20	9.0	12.7	17.4
		11–14	9279	318	7342	9188	11335	69	3.1	52	68	89	12.7	0.34	8.3	11.7	17.1
		Total	8631	153	7481	8590	9835	67	1.6	46	65	91	13.1	0.19	8.6	12.6	17.4
Pacific	Males	5–6	7773	294	5661	7571	10133	60	2.7	44	58	79	13.3	0.29	9.0	12.9	18.3
		7–10	8910	202	6095	8759	11919	72	2.1	55	72	90	13.5	0.25	9.2	13.4	17.8
		11–14	10211	622	6303	9784	14671	85	6.1	47	79	131	13.9	0.32	9.1	13.3	19.1
		Total	9129	226	6130	8863	12472	75	2.3	48	72	105	13.6	0.18	9.1	13.2	18.3
	Females	5–6	6659	271	5341	6596	8071	51	2.6	37	50	67	12.7	0.26	8.6	12.6	16.7
		7–10	7723	149	5545	7588	10073	62	2.0	44	61	82	13.7	0.37	9.2	13.1	19.7
		11–14	9131	265	6608	8932	11898	73	3.3	51	71	98	13.2	0.21	8.5	12.7	18.1
		Total	8016	153	5977	7871	10241	64	1.7	45	62	85	13.3	0.19	8.7	12.8	18.4
NZEO	Males	5–6	7130	186	6273	7121	7998	59	1.7	47	59	71	14.2	0.39	9.6	13.8	19.1
		7–10	8910	171	6711	8810	11238	73	2.3	49	71	100	13.6	0.28	9.5	13.3	18.3
		11–14	10499	276	7531	10239	13801	91	4.9	71	91	113	14.8	0.41	9.8	14.5	20.5
		Total	9200	144	6834	8974	11896	78	2.1	56	77	103	14.2	0.25	9.6	13.9	19.4
	Females	5–6	6563	233	4705	6422	8602	51	2.5	38	50	66	13.2	0.40	9.5	12.7	16.8
		7–10	7613	179	5763	7566	9522	62	1.9	38	60	89	13.9	0.34	9.3	13.3	19.2
		11–14	8041	236	6175	8008	9949	66	2.5	45	65	88	13.8	0.24	9.8	13.6	17.6
		Total	7586	133	5598	7518	9663	62	1.4	39	60	87	13.7	0.18	9.4	13.4	18.2

* Percentiles.

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

2 These data were not adjusted for intra-individual variation as 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 A2.1: Total fat and cholesterol

			Total fat (g)[1]					Percent energy from total fat[2]						Cholesterol (mg)[1]				
			Mean	SEM	10th*	50th*	90th*	Mean	SEM	10th*	50th*	90th*	% Meeting guideline[3]	Mean	SEM	10th*	50th*	90th*
New Zealand children (5–14 years)			77	0.8	51	75	107	33.1	0.22	23.5	33.0	42.9	50	215	3.8	120	201	329
	Males	5–6	66	1.7	51	65	83	32.3	0.49	23.2	32.3	43.2	56	186	8.9	106	170	285
		7–10	81	1.5	64	80	99	33.3	0.38	23.6	33.5	42.7	48	223	6.4	134	211	328
		11–14	96	2.2	61	93	135	33.5	0.46	23.5	33.5	43.8	47	273	10.7	173	263	386
		Total	84	1.1	58	82	114	33.2	0.27	23.5	33.1	43.4	49	236	5.3	134	221	358
	Females	5–6	57	2.1	44	56	71	30.9	0.55	22.5	30.1	39.9	68	150	9.3	114	147	191
		7–10	70	1.5	46	68	95	33.1	0.43	24.4	33.0	42.4	50	193	7.5	105	180	299
		11–14	76	2.2	51	74	105	33.6	0.54	23.3	33.8	43.5	44	208	9.7	126	198	301
		Total	70	1.2	47	68	96	32.9	0.32	23.5	32.8	42.4	51	193	4.9	109	181	291
NZDep01	Males	I	82	3.7	63	82	102	32.2	0.67	20.0	33.5	39.9	48	235	15.0	188	233	286
		II	78	3.9	55	76	104	32.5	0.61	22.0	32.3	42.1	56	210	15.6	102	192	340
		III	81	3.7	51	77	114	33.3	0.72	23.4	33.0	44.2	50	225	13.5	134	215	329
		IV	86	3.0	65	84	111	34.2	0.63	24.6	34.1	44.2	46	236	13.0	150	225	337
		V	87	3.4	55	83	123	33.2	0.78	23.6	33.3	43.7	48	254	9.9	126	233	409
	Females	I	61	2.5	45	60	80	31.1	0.78	21.9	31.0	41.7	64	169	11.6	82	152	275
		II	69	3.3	46	67	94	32.6	0.64	24.6	32.1	42.1	54	208	17.2	129	200	297
		III	65	3.5	52	65	79	32.8	0.69	25.3	33.3	40.3	43	181	12.6	134	178	233
		IV	70	2.8	54	69	88	33.5	0.64	24.3	33.0	42.9	50	192	11.8	109	180	289
		V	77	2.4	50	73	109	34.0	0.60	24.1	33.9	44.7	45	216	10.0	123	203	326
Māori	Males	5–6	79	3.3	54	76	107	33.1	0-57	24.1	32.4	43.5	53	236	23.7	116	207	389
		7–10	87	2.3	64	85	112	34.6	0.41	25.0	34.5	43.7	43	254	9.3	133	235	401
		11–14	102	4.8	63	98	147	34.4	0.64	24.9	34.8	43.8	42	291	20.5	163	277	438
		Total	91	2.1	58	88	129	34.2	0.36	24.9	34.0	43.7	45	268	10.0	136	244	429
	Females	5–6	68	3.4	55	67	83	33.5	0.74	25.9	32.5	43.3	51	199	14.4	138	193	268
		7–10	79	2.9	49	75	113	34.1	0.48	24.1	34.4	44.3	43	221	12.3	120	204	341
		11–14	86	3.5	60	83	115	34.1	0.79	23.9	34.1	43.5	45	227	12.5	130	215	341
		Total	80	1.9	54	77	109	34.0	0.38	24.4	33.9	43.5	45	221	8.0	132	208	325
Pacific	Males	5–6	68	2.8	50	67	88	32.5	0.53	23.1	33.4	41.0	46	191	10.8	109	178	289
		7–10	84	2.5	52	81	118	35.2	0.58	25.2	35.3	45.1	38	241	11.3	140	229	359
		11–14	101	4.8	62	96	145	36.2	0.74	24.9	36.4	46.0	30	315	15.8	189	298	464
		Total	86	1.7	54	83	123	35.0	0.55	24.6	35.3	44.9	37	258	7.9	159	246	373
	Females	5–6	61	3.5	46	60	77	33.2	0.78	24.8	32.2	43.0	52	179	23.0	86	165	289
		7–10	70	2.6	45	68	97	33.6	0.81	21.7	33.3	43.3	47	216	11.6	94	195	364
		11–14	88	3.2	50	84	132	35.8	0.42	25.4	35.6	46.4	32	248	13.8	135	230	381
		Total	74	2.1	48	72	105	34.3	0.52	23.6	34.1	44.1	42	223	8.6	118	207	348
NZEO	Males	5–6	62	2.3	50	61	74	32.0	0.66	22.5	32.1	44.0	59	162	11.4	110	157	221
		7–10	77	1.9	58	77	97	32.6	0.50	22.2	33.0	41.9	51	209	8.3	118	198	315
		11–14	93	2.8	63	90	125	33.0	0.48	23.1	32.6	43.6	51	261	14.8	185	257	342
		Total	81	1.5	61	80	103	32.6	0.30	22.6	32.7	42.4	52	222	6.9	139	213	317
	Females	5–6	52	2.4	45	52	61	29.6	0.73	22.1	28.9	37.6	77	126	9.9	85	122	172
		7–10	67	2.0	49	66	86	32.7	0.57	25.1	32.4	41.9	53	180	9.6	106	172	265
		11–14	72	2.4	52	72	93	33.2	0.69	23.0	33.5	42.7	45	198	12.6	127	192	276
		Total	66	1.5	47	65	86	32.3	0.41	23.3	32.1	41.8	54	178	6.7	114	172	251

* Percentiles.

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

2 These data were not adjusted for intra-individual variation, as 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 The New Zealand Nutrition Taskforce (1991) guideline recommends fat provides <= 33.0% of energy intake.

Table A2.2: Fatty acids I

			Saturated fat (g)[1]					Monounsaturated fat (g)[1]					Polyunsaturated fat (g)[1]				
			Mean	**SEM**	**10th***	**50th***	**90th***	**Mean**	**SEM**	**10th***	**50th***	**90th***	**Mean**	**SEM**	**10th***	**50th***	**90th***
New Zealand children (5–14 years)			34.0	0.40	21.9	32.8	47.7	25.5	0.29	16.2	24.4	36.0	8.8	0.13	5.8	8.4	12.3
	Males	5–6	29.1	0.84	22.2	28.6	36.6	21.7	0.63	17.3	21.4	26.4	7.7	0.26	6.3	7.6	9.2
		7–10	35.8	0.74	28.3	35.5	43.7	26.6	0.54	20.4	26.2	33.2	9.0	0.19	7.0	8.9	11.1
		11–14	41.8	0.99	26.8	40.4	58.5	31.9	0.77	19.4	30.6	46.1	11.0	0.43	6.1	10.2	17.1
		Total	36.9	0.61	25.1	36.0	50.0	27.8	0.43	18.6	26.8	38.2	9.6	0.19	6.2	9.1	13.4
	Females	5–6	24.9	0.96	18.5	24.5	31.9	18.5	0.76	13.9	18.0	23.7	6.7	0.36	4.6	6.5	9.1
		7–10	30.5	0.76	20.1	29.9	41.9	23.0	0.56	14.8	22.2	32.3	7.9	0.22	5.5	7.6	10.7
		11–14	33.7	0.97	21.2	32.6	47.7	25.0	0.76	15.9	24.1	35.3	8.7	0.36	6.1	8.4	11.6
		Total	30.8	0.57	19.6	29.9	43.2	23.0	0.42	14.6	22.2	32.5	8.0	0.18	5.5	7.7	10.8
NZDep01	Males	I	37.1	1.99	25.1	36.6	49.7	26.0	1.01	19.7	26.0	32.4	9.5	0.61	6.7	9.1	12.8
		II	34.6	1.69	25.0	33.9	45.3	25.5	1.47	18.8	25.0	32.9	9.1	0.59	5.2	8.4	13.9
		III	35.8	1.67	21.4	34.2	52.4	26.5	1.37	16.4	25.3	38.3	8.8	0.46	5.9	8.4	12.0
		IV	37.7	1.39	31.3	37.4	44.5	29.0	1.13	20.9	28.0	38.3	9.7	0.47	5.6	9.0	14.7
		V	37.1	1.46	23.4	35.7	52.7	29.3	1.29	17.8	28.0	42.6	10.0	0.41	6.6	9.6	13.8
	Females	I	28.0	1.23	18.6	27.3	38.4	19.7	0.85	13.4	19.3	26.6	6.7	0.33	4.9	6.5	8.8
		II	29.7	1.71	18.7	28.7	41.5	22.5	1.14	14.4	21.8	31.4	8.3	0.56	5.8	8.1	11.1
		III	28.6	2.21	23.0	28.2	34.9	21.3	0.97	14.0	21.0	29.0	7.4	0.49	4.8	7.2	10.2
		IV	31.0	1.41	22.4	30.5	40.3	23.2	1.04	17.6	22.8	29.3	8.0	0.39	5.8	7.8	10.4
		V	33.4	1.01	21.0	31.7	48.0	25.9	0.89	16.0	24.4	37.4	8.6	0.43	6.0	8.3	11.7
Māori	Males	5–6	34.2	1.54	24.2	33.1	45.5	26.0	1.30	16.3	24.6	37.5	8.7	0.38	5.3	8.2	12.8
		7–10	37.7	1.08	26.9	36.9	49.6	29.1	0.87	20.8	28.2	38.5	9.4	0.30	7.1	9.2	12.0
		11–14	44.3	2.14	25.6	42.4	65.5	34.6	1.81	19.2	33.0	52.1	11.2	0.68	6.4	10.5	16.9
		Total	39.5	0.92	24.2	37.9	56.9	30.6	0.84	19.0	29.1	44.4	10.0	0.29	6.6	9.6	13.9
	Females	5–6	29.3	1.60	21.4	28.6	38.1	22.7	1.17	16.4	22.0	29.9	7.8	0.43	6.2	7.7	9.5
		7–10	34.6	1.40	21.9	33.4	48.9	26.4	1.05	14.9	24.8	39.9	8.4	0.37	5.1	8.0	12.3
		11–14	38.3	1.61	27.2	37.4	50.4	28.5	1.32	17.7	27.2	40.9	9.1	0.47	6.2	8.8	12.3
		Total	35.1	0.93	23.7	34.0	47.9	26.6	0.71	16.6	25.3	38.1	8.6	0.24	5.9	8.3	11.6
Pacific	Males	5–6	28.2	1.31	20.9	27.8	36.1	22.7	1.06	16.3	22.1	29.9	8.3	0.47	5.2	7.9	12.1
		7–10	33.9	1.18	21.8	32.8	47.4	28.6	0.87	17.4	27.6	41.0	10.1	0.37	5.4	9.4	15.5
		11–14	41.5	1.93	27.7	40.3	56.8	35.1	1.44	19.7	33.6	52.6	11.0	0.49	5.3	10.1	18.0
		Total	35.7	0.76	22.6	34.5	50.4	29.9	0.61	17.6	28.5	43.9	10.1	0.29	5.6	9.5	15.5
	Females	5–6	26.2	1.76	19.6	25.7	33.3	20.3	1.40	15.3	20.0	25.9	6.7	0.31	5.0	6.6	8.5
		7–10	29.4	1.09	20.9	28.8	38.6	23.3	0.95	16.9	22.8	30.3	8.0	0.31	5.8	7.7	10.5
		11–14	36.7	1.45	19.8	34.9	55.8	30.4	1.30	18.7	29.0	43.7	10.1	0.49	7.6	9.9	13.0
		Total	31.4	0.88	19.4	30.2	45.1	25.4	0.88	16.3	24.5	35.8	8.5	0.31	6.2	8.3	11.2
NZEO	Males	5–6	27.0	0.99	18.7	26.6	35.9	19.7	0.88	15.5	19.5	24.1	7.1	0.44	4.8	6.8	9.7
		7–10	35.6	1.02	24.8	35.0	47.0	24.8	0.71	18.3	24.5	31.8	8.5	0.25	6.4	8.4	10.7
		11–14	40.9	1.35	28.2	39.9	54.9	30.5	0.94	22.5	30.0	39.2	11.0	0.57	6.6	10.2	16.4
		Total	36.1	0.71	26.5	35.6	46.5	26.5	0.53	20.9	26.2	32.4	9.3	0.25	6.2	9.0	12.9
	Females	5–6	23.1	1.21	16.5	22.9	30.0	17.1	0.77	14.5	17.0	19.8	6.3	0.48	3.9	5.8	9.4
		7–10	29.2	0.97	18.7	28.8	40.4	21.8	0.77	14.9	21.2	29.4	7.7	0.27	6.1	7.6	9.4
		11–14	31.8	1.39	20.8	31.1	43.7	23.2	0.88	19.3	23.1	27.3	8.3	0.43	5.7	8.1	11.3
		Total	29.2	0.73	19.0	28.6	40.2	21.4	0.53	15.1	21.0	28.3	7.7	0.23	5.2	7.4	10.6

* Percentiles.

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

Table A2.3: Fatty acids II

			Percent energy from saturated fat[1]					Percent energy from monounsaturated fat[1]					Percent energy from polyunsaturated fat[1]				
			Mean	**SEM**	**10th***	**50th***	**90th***	**Mean**	**SEM**	**10th***	**50th***	**90th***	**Mean**	**SEM**	**10th***	**50th***	**90th***
New Zealand children (5–14 years)			14.5	0.11	9.2	14.4	19.7	10.9	0.10	7.0	10.7	14.9	3.8	0.04	2.2	3.5	5.8
	Males	5–6	14.1	0.27	9.2	14.0	19.3	10.5	0.23	6.8	10.0	14.6	3.8	0.12	2.2	3.4	5.8
		7–10	14.7	0.21	9.4	14.7	19.7	10.9	0.15	6.9	10.8	14.8	3.8	0.07	2.1	3.5	5.7
		11–14	14.6	0.24	9.3	14.7	20.1	11.2	0.22	7.3	11.0	15.3	3.9	0.08	2.2	3.7	5.8
		Total	14.5	0.14	9.3	14.5	19.7	10.9	0.13	7.1	10.7	15.0	3.8	0.05	2.2	3.5	5.7
	Females	5–6	13.5	0.29	8.6	13.4	18.0	10.0	0.22	6.7	9.8	13.8	3.7	0.13	2.2	3.2	5.4
		1-10	14.5	0.23	9.6	14.2	19.6	10.9	0.19	7.1	10.8	15.0	3.8	0.08	2.2	3.5	6.0
		11–14	14.8	0.28	8.6	15.2	20.0	11.0	0.22	7.0	10.9	14.9	3.9	0.10	2.3	3.5	6.0
		Total	14.4	0.16	9.0	14.4	19.7	10.8	0.14	7.0	10.6	14.8	3.8	0.06	2.2	3.5	5.8
NZDep01	Males	I	14.4	0.41	7.9	14.8	19.4	10.2	0.25	6.3	10.5	13.4	3.8	0.15	2.1	3.5	5.5
		II	14.3	0.28	9.5	14.3	18.4	10.7	0.30	6.9	10.3	14.5	3.8	0.13	2.2	3.4	5.7
		III	14.8	0.34	9.5	14.8	20.2	10.9	0.31	7.0	10.5	15.5	3.7	0.11	2.2	3.5	5.4
		IV	14.8	0.29	9.3	14.9	20.0	11.5	0.30	7.6	11.5	15.4	4.0	0.15	2.2	3.6	5.9
		V	14.1	0.34	9.0	13.9	19.6	11.2	0.36	7.3	11.1	15.4	3.9	0.08	2.2	3.6	5.9
	Females	I	14.0	0.37	8.7	14.0	19.3	10.0	0.30	6.2	9.5	14.0	3.5	0.12	2.0	3.1	5.6
		II	14.0	0.34	8.9	13.8	18.7	10.7	0.30	7.0	10.3	14.4	4.0	0.19	2.4	3.5	6.1
		III	14.8	0.65	8.9	15.1	19.9	10.5	0.22	7.6	10.6	13.7	3.7	0.17	2.1	3.5	5.3
		IV	14.7	0.32	9.8	14.5	19.6	11.0	0.27	7.6	10.7	14.9	3.9	0.14	2.4	3.5	5.6
		V	14.7	0.25	9.1	14.6	20.2	11.3	0.25	7.0	11.1	15.9	3.9	0.10	2.3	3.6	5.5
Māori	Males	5–6	14-3	0.30	10.2	14.3	19.4	11.0	0.28	7.5	10.5	15.3	3.7	0.10	2.3	3.5	5.4
		7–10	14.9	0.25	9.7	14.8	19.9	11.6	0.17	7.7	11.4	15.3	3.8	0.10	2.3	3.5	5.7
		11–14	14.9	0.28	9.5	14.8	20.2	11.6	0.32	7.5	11.8	15.4	3.8	0.11	2.0	3.5	5.7
		Total	14.8	0.17	9.7	14.6	20.1	11.5	0.17	7.6	11.3	15.3	3.8	0.06	2.2	3.5	5.7
	Females	5–6	14.4	0.42	9.9	14.1	19.2	11.1	0.28	8.2	10.9	14.7	3.8	0.13	2.4	3.5	5.5
		7–10	14.9	0.27	9.3	15.1	19.8	11.4	0.21	7.5	11.2	15.9	3.7	0.08	2.2	3.4	5.4
		11–14	15.2	0.41	10.3	14.9	20.0	11.2	0.28	7.0	11.2	15.1	3.6	0.12	2.0	3.5	5.5
		Total	14.9	0.20	9.7	14.8	19.8	11.3	0.15	7.5	11.1	15.3	3.7	0.07	2.1	3.5	5.5
Pacific	Males	5–6	13.6	0.28	8.1	13.5	19.1	10.9	0.21	7.5	10.9	15.0	4.0	0.16	2.2	3.6	6.0
		7–10	14.4	0.35	9.5	14.2	19.9	12.1	0.25	8.1	12.0	16.4	4.3	0.12	2.4	3.7	6.9
		11–14	15.1	0.36	9.3	15.3	20.6	12.8	0.28	7.9	13.0	17.4	4.1	0.10	2.3	3.7	6.7
		Total	14.5	0.29	8.8	14.6	20.1	12.1	0.23	7.8	12.0	16.5	4.2	0.08	2.3	3.7	6.7
	Females	5–6	14.1	0.40	8.2	13.9	21.2	11.2	0.39	7.0	10.9	15.7	3.8	0.12	2.2	3.5	5.4
		7–10	14.2	0.35	8.1	13.7	20.8	11.3	0.36	6.9	11.0	15.9	3.9	0.14	2.1	3.6	5.7
		11–14	14.8	0.27	9.3	14.8	20.5	12.4	0.18	8.3	12.4	16.7	4.2	0.10	2.3	3.8	6.2
		Total	14.4	0.18	8.5	14.2	20.5	11.7	0.28	7.4	11.4	16.1	4.0	0.08	2.2	3.7	5.8
NZEO	Males	5–6	14.1	0.36	9.2	14.0	19.3	10.3	0.32	6.4	9.9	14.2	3.8	0.17	2.2	3.3	6.1
		7–10	14.6	0.28	9.3	14.7	19.6	10.5	0.19	6.6	10.5	14.4	3.7	0.09	2.1	3.5	5.4
		11–14	14.4	0.28	9.2	14.5	19.8	10.9	0.21	7.1	10.9	15.1	3.9	0.11	2.2	3.7	5.7
		Total	14.4	0.17	9.2	14.5	19.7	10.6	0.14	6.7	10.4	14.5	3.8	0.07	2.2	3.5	5.6
	Females	5–6	13.1	0.38	8.5	13.3	17.0	9.4	0.28	6.5	9.2	12.1	3.6	0.19	2.1	3.2	5.3
		7–10	14.3	0.32	9.7	14.2	19.3	10.7	0.24	7.0	10.4	14.3	3.8	0.11	2.3	3.5	6.3
		11–14	14.6	0.39	8.2	15.2	20.0	10.8	0.27	6.8	10.6	14.5	3.9	0.13	2.4	3.5	6.2
		Total	14.2	0.22	8.9	14.2	19.4	10.5	0.17	6.8	10.3	14.1	3.8	0.08	2.3	3.5	6.1

* Percentiles.

1 These data were not adjusted for intra-individual variation, as 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 total energy intake.

Table A3.1: Total carbohydrate and starch

			Total carbohydrate (g)[1]					Percent energy from carbohydrate[2]						Starch (g)[1]				
			Mean	SEM	10th*	50th*	90th*	Mean	SEM	10th*	50th*	90th*	% Meeting guideline[3]	Mean	SEM	10th*	50th*	90th*
New Zealand children (5–14 years)			275	2.9	216	271	338	53.7	0.25	42.6	53.7	64.8	66	150	1.6	110	147	193
	Males	5–6	246	5.6	204	244	290	54.3	0.53	43.6	54.3	65.2	73	133	3.4	107	131	161
		7–10	286	4.7	215	279	367	53.6	0.44	42.3	53.2	65.3	67	156	3.0	116	152	200
		11–14	327	7.2	251	322	408	52.4	0.45	41.0	52.5	62.9	60	182	4.1	130	179	238
		Total	295	3.8	225	288	373	53.3	0.31	42.1	53.2	64.7	65	162	2.3	121	159	208
	Females	5–6	228	5.6	183	225	276	56.4	0.65	46.5	56.7	65.6	80	122	3.2	95	121	150
		7–10	251	4.9	224	250	278	53.7	0.55	42.7	54.2	63.9	66	135	2.7	106	133	166
		11–14	266	7.1	228	265	305	53.4	0.61	42.6	53.1	64.9	63	143	3.5	116	142	170
		Total	252	3.7	215	251	291	54.1	0.35	43.1	54.3	64.9	68	136	1.9	104	134	170
NZDep01	Males	I	306	13.4	258	303	357	53.8	0.88	44.3	53.1	65.4	65	157	7.8	122	156	195
		II	286	10.4	191	275	393	54.1	0.74	42.1	53.6	66.5	71	156	6.4	102	150	217
		III	281	5.8	234	279	331	53.2	0.74	40.9	54.0	64.1	68	156	4.9	127	155	187
		IV	288	13.4	220	279	369	52.3	0.76	40.7	52.4	63.5	60	157	5.3	111	152	209
		V	304	9.3	224	299	391	53.6	0.84	42.7	53.2	65.3	64	175	5.1	132	173	223
	Females	I	243	8.5	196	242	290	56.0	0.81	44.4	56.9	65.4	75	120	5.0	96	119	146
		II	255	10.7	201	253	311	54.3	0.76	44.0	55.0	65.2	69	135	7.0	108	134	164
		III	241	11.8	165	238	323	54.1	0.79	44.4	53.6	62.3	71	132	6.7	92	129	174
		IV	250	6.7	218	249	285	53.4	0.72	42.1	54.6	63.9	67	135	4.5	99	134	172
		V	264	7.2	228	263	303	53.1	0.71	40.6	53.7	65.3	62	148	4.1	120	146	177
Māori	Males	5–6	275	10.0	199	264	364	53.8	0.71	41.4	54.7	64.3	69	156	6.2	116	150	203
		7–10	294	7.3	210	287	385	52.4	0.46	41.1	52.7	62.9	62	161	4.7	109	156	219
		11–14	338	14.3	259	334	421	52.3	0.64	42.4	51.6	64.5	56	189	8.6	141	187	241
		Total	308	6.1	244	305	377	52.7	0.40	41.4	52.8	64.0	62	171	4.6	132	168	214
	Females	5–6	241	8.3	195	239	290	53.5	0.72	43.5	53.2	62.5	69	135	5.4	108	134	162
		7–10	270	6.0	227	268	315	53.3	0.56	41.8	53.7	64.3	65	146	3.2	118	145	175
		11–14	295	11.0	254	294	337	53.7	0.99	42.6	52.8	65.4	62	156	5.2	129	155	185
		Total	274	5.3	240	273	309	53.5	0.47	42.5	53.3	64.7	65	147	3.0	126	147	170
Pacific	Males	5–6	254	10.0	171	246	346	54.8	0.68	44.2	54.6	66.2	72	144	7.5	106	140	185
		7–10	276	8.0	186	269	375	51.9	0.72	41.7	51.4	63.5	55	163	5.8	112	159	218
		11–14	302	21.9	194	291	422	50.5	0.61	38.1	50.9	62.4	53	178	12.0	109	171	255
		Total	280	9.3	190	272	380	51.9	0.55	41.1	51.9	63.5	58	165	4.7	112	160	224
	Females	5–6	215	6.4	178	214	254	54.6	0.96	43.1	54.3	66.2	64	126	4.2	104	125	150
		7–10	245	6.0	189	242	305	53.3	0.82	41.8	52.9	65.8	66	145	5.3	115	143	177
		11–14	277	6.8	227	274	330	51.6	0.59	38.9	52.0	63.0	57	162	6.1	117	157	212
		Total	250	4.0	199	247	305	52.9	0.54	41.6	52.9	65.4	62	147	4.0	110	144	187
NZEO	Males	5–6	231	6.8	196	231	267	54.4	0.73	44.1	54.3	65.4	74	124	4.5	98	123	151
		7–10	286	5.9	207	278	373	54.3	0.58	42.9	53.5	66.1	71	153	3.7	115	150	195
		11–14	325	9.6	229	316	433	52.7	0.59	41.0	53.0	62.7	61	180	5.6	118	176	247
		Total	292	4.7	212	285	382	53.7	0.39	42.4	53.4	65.1	68	159	2.8	110	155	213
	Females	5–6	224	7.4	165	219	287	57.7	0.87	47.8	58.1	66.9	87	117	4.4	87	115	148
		7–10	245	6.5	211	245	280	54.0	0.74	43.1	54.7	63.9	67	129	3.6	97	127	164
		11–14	254	8.5	200	253	309	53.5	0.77	42.9	53.2	64.6	64	136	4.0	98	135	175
		Total	245	4.6	192	243	301	54.5	0.47	43.4	55.0	64.9	69	130	2.5	91	128	172

* Percentiles.

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

2 These data were not adjusted for intra-individual variation as 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 total energy intake.

3 The New Zealand Nutrition Taskforce (1991) guideline recommends carbohydrate provides >= 50.0% of energy intake.

Table A3.2: Total sugars I

			Total sugars (g)[1]					Glucose (g)[1]					Fructose (g)[1]				
			Mean	**SEM**	**10th***	**50th***	**90th***	**Mean**	**SEM**	**10th***	**50th***	**90th***	**Mean**	**SEM**	**10th***	**50th***	**90th***
New Zealand children (5–14 years)			124	1.9	85	121	168	17.9	0.35	10.8	17.2	26.0	20.1	0.41	11.2	19.1	30.2
	Males	5–6	110	3.2	83	109	139	15.1	0.96	9.9	14.7	20.8	18.0	0.95	10.8	17.3	26.2
		7–10	130	3.0	75	123	192	18.0	0.61	9.2	16.8	28.2	19.9	0.67	9.0	18.2	32.8
		11–14	144	4.0	96	140	197	21.4	0.70	13.0	20.5	30.8	23.3	0.86	13.0	22.1	35.2
		Total	132	2.3	83	127	186	18.8	0.43	10.7	17.8	28.1	20.9	0.49	10.7	19.6	33.0
	Females	5–6	105	3.7	70	103	144	14.8	0.71	8.4	14.2	22.1	16.5	0.99	10.0	16.0	23.7
		7–10	115	3.3	83	113	149	16.6	0.69	12.0	16.4	21.6	18.5	0.79	11.8	18.0	25.7
		11–14	124	3.8	102	123	146	18.2	0.96	10.3	17.5	26.9	20.9	1.22	10.9	19.9	32.1
		Total	116	2.4	88	115	145	17.0	0.48	10.7	16.5	23.9	19.1	0.60	11.3	18.5	27.8
NZDep01	Males	I	145	7.8	92	138	207	21.5	2.24	10.4	19.4	35.4	22.7	2.29	9.5	20.5	38.8
		II	128	5.5	69	121	197	18.7	1.06	8.3	16.9	31.6	21.6	1.17	8.8	19.4	37.1
		III	125	4.2	100	123	151	17.4	0.90	10.5	16.6	25.6	19.3	1.00	11.1	18.3	28.8
		IV	131	6.8	84	127	183	18.4	1.40	11.6	17.7	26.0	20.0	1.72	11.5	18.9	29.8
		V	128	4.9	71	121	192	18.9	0.89	8.5	17.5	30.9	20.4	0.95	9.2	18.8	33.7
	Females	I	121	6.5	85	120	161	17.1	1.02	12.8	16.8	21.7	19.7	1.32	14.8	19.5	25.0
		II	117	5.9	88	115	147	17.1	1.04	10.9	16.6	23.8	19.7	1.75	14.1	19.4	25.8
		III	107	6.2	67	104	151	15.7	1.35	11.3	15.4	20.7	17.4	1.67	10.3	16.8	25.4
		IV	111	5.5	76	107	150	16.9	1.07	8.8	15.8	26.4	17.7	1.20	9.0	16.6	27.6
		V	115	5.1	86	114	147	16.3	0.81	10.1	15.7	23.0	18.0	1.11	9.9	17.1	27.1
Māori	Males	5–6	122	5.1	95	120	150	16.5	1.08	6.4	14.8	28.8	17.9	1.22	8.2	16.6	29.4
		7–10	131	4.9	76	123	193	18.7	0.93	9.2	17.6	29.5	20.9	1.02	9.4	19.4	34.4
		11–14	148	6.6	120	147	178	20.9	1.15	14.7	20.5	27.7	21.8	1.17	13.4	21.1	31.2
		Total	136	3.4	92	132	184	19.1	0.67	10.8	18.2	28.5	20.6	0.69	10.5	19.5	32.3
	Females	5–6	105	4.9	64	101	150	13.6	0.79	8.2	13.1	19.5	15.1	0.95	8.5	14.4	22.4
		7–10	122	4.2	83	119	166	17.4	0.86	11.7	17.0	23.7	19.2	0.98	11.1	18.4	28.4
		11–14	139	7.6	112	138	166	20.7	1.61	13.0	20.3	28.9	22.1	1.92	11.7	21.4	33.2
		Total	125	3.6	100	124	151	17.9	0.70	11.4	17.4	24.9	19.5	0.80	10.8	18.7	29.1
Pacific	Males	5–6	107	6.7	62	103	156	15.0	1.21	7.7	14.1	23.6	18.7	1.69	12.6	18.1	25.4
		7–10	109	5.8	70	106	152	15.7	1.01	6.0	14.1	27.3	18.4	1.00	11.9	17.9	25.4
		11–14	121	9.3	62	114	187	21.6	1.55	8.9	19.8	36.7	23.8	1.96	12.0	22.5	37.2
		Total	114	6.3	60	107	175	18.3	0.97	9.2	17.1	29.0	20.6	0.91	10.7	19.2	32.3
	Females	5–6	91	3.5	64	91	118	13.3	0.92	7.3	12.9	19.9	15.1	1.24	7.9	14.4	23.1
		7–10	99	5.6	72	98	128	15.2	0.75	10.7	15.0	20.0	17.1	0.95	10.4	16.6	24.4
		11–14	112	2.9	84	110	142	18.1	1.55	11.1	17.4	25.9	19.0	1.88	9.9	18.0	29.4
		Total	103	2.7	72	101	136	15.8	0.59	9.1	15.3	23.2	17.5	0.89	9.3	16.8	26.7
NZEO	Males	5–6	106	4.4	83	105	130	14.5	1.02	9.4	14.2	20.0	17.9	1.43	9.7	17.0	27.3
		7–10	131	3.8	74	124	197	17.8	0.82	10.5	16.8	26.3	19.5	0.88	9.4	17.9	31.6
		11–14	144	5.0	94	140	201	21.4	1.00	12.7	20.4	31.4	23.8	1.20	12.7	22.3	36.8
		Total	132	2.8	82	127	189	18.7	0.58	11.1	17.8	27.4	21.1	0.69	10.7	19.6	33.3
	Females	5–6	107	4.8	75	106	140	15.4	0.99	11.0	15.1	20.3	17.9	1.42	12.3	17.5	24.2
		7–10	114	4.5	82	112	148	16.3	0.92	10.1	15.9	23.0	18.1	1.01	12.9	17.8	23.7
		11–14	117	5.3	83	116	152	17.3	1.17	9.3	16.5	26.3	20.6	1.53	10.7	19.5	31.8
		Total	114	3.0	87	113	143	16.7	0.62	10.6	16.3	23.4	19.1	0.77	12.6	18.6	26.2

* Percentiles.

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

Table A3.3: Total sugars II

			Sucrose (g)[1]					Lactose (g)[1]					Maltose (g)[1]				
			Mean	**SEM**	**10th***	**50th***	**90th***	**Mean**	**SEM**	**10th***	**50th***	**90th***	**Mean**	**SEM**	**10th***	**50th***	**90th***
New Zealand children (5–14 years)			66.9	1.18	40.0	64.0	98.0	15.2	0.36	7.1	14.3	24.5	3.8	0.08	2.4	3.6	5.3
	Males	5–6	58.5	2.29	40.2	57.1	78.5	14.8	0.74	6.0	14.0	24.6	3.4	0.20	1.8	3.3	5.4
		7–10	70.8	1.97	35.0	66.0	113.0	16.6	0.61	9.5	16.0	24.3	3.8	0.22	2.7	3.7	5.2
		11–14	76.6	2.76	43.0	73.0	115.0	17.4	0.79	7.3	15.9	29.1	4.9	0.26	3.2	4.7	6.8
		Total	71.0	1.54	38.0	67.0	110.0	16.6	0.45	7.7	15.5	26.8	4.2	0.75	2.8	4.1	5.8
	Females	5–6	55.6	2.30	34.0	54.0	79.0	14.6	1.11	8.2	13.9	22.0	3.3	0.19	2.1	3.2	4.6
		7–10	63.6	2.27	39.0	61.0	91.0	12.8	0.61	6.1	12.2	20.3	3.2	0.11	2.5	3.2	4.0
		11–14	65.2	2.36	51.6	64.7	79.6	14.5	1.00	10.3	14.3	18.9	3.4	0.12	2.4	3.3	4.5
		Total	62.3	1.38	43.8	61.1	82.6	13.9	0.49	7.0	13.2	21.6	3.3	0.08	2.2	3.2	4.5
NZDep01	Males	I	75.2	5.14	53.0	73.0	100.0	20.3	1.45	8.4	18.9	33.9	4.1	0.21	2.7	4.0	5.6
		II	67.5	4.28	31.0	62.0	112.0	15.2	1.89	6.1	13.5	26.2	4.4	0.35	2.8	4.2	6.3
		III	67.7	3.09	46.0	66.0	92.0	16.3	0.96	10.5	15.9	22.6	3.8	0.20	2.8	3.8	4.9
		IV	70.2	4.89	42.0	68.0	102.0	17.2	1.19	9.5	16.4	25.9	4.5	0.47	1.7	4.0	7.8
		V	70.6	3.55	36.0	65.0	112.0	13.3	1.06	5.1	12.1	22.8	4.0	0.31	2.7	3.8	5.4
	Females	I	64.8	4.05	39.0	62.0	94.0	15.6	1.54	5.9	14.4	26.8	3.2	0.17	1.7	2.9	4.9
		II	63.2	4.73	45.0	62.0	84.0	13.9	1.18	5.9	13.2	22.8	3.1	0.19	2.5	3.1	3.8
		III	58.1	4.91	31.0	54.0	90.0	13.1	1.52	8.1	12.7	18.6	3.0	0.21	2.0	2.9	3.9
		IV	59.7	3.72	36.0	57.0	86.0	13.6	0.92	6.0	12.6	22.4	3.1	0.18	1.7	2.9	4.6
		V	64.5	3.19	47.2	63.4	83.4	12.8	0.80	7.8	12.4	18.5	3.5	0.12	2.7	3.5	4.4
Māori	Males	5–6	66.0	3.67	48.3	64.6	85.5	15.2	0.91	8.6	14.7	22.5	3.9	0.26	1.7	3.6	6.5
		7–10	72.5	3.16	36.0	66.0	116.0	14.3	0.69	9.2	13.9	19.7	3.9	0.24	1.7	3.4	6.5
		11–14	82.9	4.34	50.0	79.0	120.0	16.5	1.18	9.2	15.7	24.9	4.9	0.33	3.8	4.8	6.0
		Total	75.8	2.30	44.0	72.0	112.0	15.7	0.80	9.9	15.2	22.0	4.4	0.21	2.6	4.2	6.4
	Females	5–6	59.1	3.49	32.0	56.0	90.0	13.6	1.02	8.6	13.3	19.2	3.1	0.18	2.2	3.1	4.2
		7–10	69.0	2.58	40.0	66.0	102.0	13.0	0.52	6.5	12.4	20.4	3.6	0.12	2.5	3.6	4.8
		11–14	78.1	4.43	58.0	77.0	99.0	14.5	1.04	9.8	14.1	19.4	3.7	0.22	2.5	3.6	5.0
		Total	70.3	2.70	51.0	69.0	91.0	13.4	0.52	8.4	13.0	18.7	3.5	0.10	3.1	3.5	4.0
Pacific	Males	5–6	57.0	4.68	28.0	54.0	89.0	11.7	0.78	2.8	9.8	22.9	3.3	0.19	1.9	3.2	5.0
		7–10	59.9	3.80	33.0	57.0	90.0	10.5	1.20	3.2	9.1	19.5	3.5	0.24	2.6	3.5	4.5
		11–14	63.1	4.82	27.0	58.0	108.0	8.7	1.88	1.7	6.5	17.9	3.8	0.47	1.5	3.5	6.5
		Total	61.0	3.60	27.0	56.0	101.0	9.8	1.07	2.7	8.4	18.5	3.8	0.14	2.4	3.6	5.3
	Females	5–6	47.6	2.58	31.9	47.1	63.7	11.6	1.47	7.3	11.2	16.2	3.1	0.24	1.8	3.0	4.7
		7–10	53.7	3.74	37.1	52.7	71.6	9.9	1.21	4.7	9.3	15.7	3.2	0.21	2.0	3.1	4.6
		11–14	63.2	2.34	48.3	62.4	79.0	8.0	0.45	4.6	7.7	11.9	3.9	0.38	2.7	3.8	5.3
		Total	56.5	2.49	38.6	55.2	76.0	9.6	0.95	6.9	9.5	12.5	3.4	0.23	2.2	3.3	4.9
NZEO	Males	5–6	55.2	3.23	36.0	54.0	76.0	15.1	1.13	8.1	14.6	22.8	3 .2	0.26	2.0	3.1	4.5
		7–10	71.2	2.45	33.0	66.0	117.0	17.8	0.76	12.5	17.5	23.4	3.8	0.16	3.1	3.8	4.6
		11–14	75.0	3.96	45.0	72.0	109.0	18.6	0.88	8.0	17.3	30.8	4.9	0.31	2.6	4.6	7.6
		Total	70.5	1.90	37.0	66.0	109.0	17.7	0.52	10.5	17.2	25.5	4.2	0.17	3.0	4.1	5.5
	Females	5–6	54.8	3.17	37.0	54.0	73.9	15.3	1.69	6.5	14.1	25.7	3.2	0.25	1.8	3.0	4.9
		7–10	62.7	3.20	35.0	59.0	95.0	13.0	0.87	4.2	11.7	23.6	3.2	0.12	2.7	3.2	3.8
		11–14	59.5	3.00	40.3	58.5	80.1	15.5	1.32	6.5	14.5	25.9	3.2	0.14	1.9	3.2	4.7
		Total	60.1	1.80	37.0	58.0	85.0	14.6	0.68	4.8	13.1	26.4	3.2	0.10	1.9	3.1	4.7

* Percentiles.

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

Table A4: Dietary fibre

			Dietary fibre (g)[1]					Insoluble non-starch polysaccharides (g)[1]					Soluble non-starch polysaccharides (g)[1]				
			Mean	**SEM**	**10th***	**50th***	**90th***	**Mean**	**SEM**	**10th***	**50th***	**90th***	**Mean**	**SEM**	**10th***	**50th***	**90th***
New Zealand children (5–14 years)			18.4	0.22	12.6	17.9	24.6	9.4	0.12	6.3	9.1	12.8	9.0	0.11	6.2	8.7	12.0
	Males	5–6	17.1	0.51	12.9	16.7	21.7	8.9	0.29	6.3	8.6	11.7	8.2	0.25	6.1	8.0	10.5
		7–10	19.1	0.41	14.0	18.8	24.7	9.8	0.23	6.8	9.6	13.1	9.3	0.21	7.1	9.2	11.6
		11–14	22.0	0.61	14.6	21.4	29.9	11.1	0.30	7.7	10.9	14.8	10.8	0.33	6.8	10.5	15.3
		Total	19.9	0.32	13.8	19.4	26.7	10.2	0.16	7.0	9.9	13.7	9.7	0.16	6.7	9.4	13.1
	Females	5–6	14.7	0.46	11.0	14.5	18.6	7.6	0.27	5.0	7.4	10.5	7.1	0.18	6.2	7.1	8.1
		7–10	16.8	0.34	12.0	16.5	21.9	8.6	0.17	6.1	8.5	11.2	8.2	0.18	6.0	8.1	10.6
		11–14	17.5	0.55	12.1	17.2	23.3	8.9	0.31	6.1	8.7	11.9	8.6	0.28	6.0	8.5	11.5
		Total	16.7	0.28	11.9	16.4	21.8	8.5	0.16	5.9	8.4	11.4	8.2	0.14	6.0	8.0	10.6
NZDep01	Males	I	19.7	0.94	13.6	19.1	26.8	10.2	0.48	7.3	9.9	13.4	9.5	0.47	6.0	9.1	13.7
		II	19.4	0.76	13.4	19.1	25.9	10.2	0.43	7.6	10.1	12.9	9.2	0.38	6.0	9.0	12.9
		III	18.9	0.54	14.2	18.6	23.8	9.8	0.37	7.6	9.7	12.1	9.1	0.26	6.3	8.9	12.2
		IV	18.7	0.50	12.7	18.1	25.5	9.5	0.25	6.7	9.3	12.6	9.2	0.28	6.0	8.8	12.9
		V	21.0	0.66	14.8	20.5	27.7	10.5	0.36	7.0	10.2	14.4	10.5	0.34	7.5	10.2	13.8
	Females	I	14.9	0.63	11.6	14.8	18.5	7.9	0.37	6.0	7.8	9.9	7.1	0.22	5.8	7.1	8.6
		II	17.2	0.89	11.3	16.7	23.6	9.0	0.50	6.1	8.8	12.4	8.2	0.41	5.6	8.0	11.0
		III	15.5	1.18	10.6	15.2	20.8	8.3	0.50	5.6	8.1	11.1	7.6	0.47	5.8	7.6	9.5
		IV	16.7	0.61	13.8	16.7	19.8	8.5	0.35	6.7	8.4	10.4	8.2	0.29	6.3	8.1	10.2
		V	17.2	0.63	12.3	16.8	22.5	8.5	0.30	6.0	8.3	11.2	8.7	0.36	6.3	8.5	11.3
Māori	Males	5–6	19.6	0.85	14.5	18.9	25.5	9.8	0.46	7.1	9.4	12.8	9.5	0.38	7.4	9.3	11.9
		7–10	19.9	0.60	14.3	19.5	26.0	10.1	0.33	6.9	9.8	13.5	9.8	0.29	7.4	9.6	12.4
		11–14	22.9	0.91	15.6	22.5	30.8	11.1	0.43	7.9	10.9	14.3	11.9	0.51	7.5	11.6	16.7
		Total	21.0	0.46	15.2	20.6	27.4	10.4	0.24	7.4	10.2	13.8	10.6	0.24	7.5	10.3	14.0
	Females	5–6	16.4	0.64	11.7	16.0	21.6	8.1	0.33	5.7	7.9	10.8	8.3	0.35	7.0	8.3	9.7
		7–10	17.8	0.52	13.7	17.5	22.3	8.9	0.25	6.8	8.8	11.1	8.9	0.27	6.6	8.7	11.5
		11–14	18.4	0.67	13.0	18.0	24.2	9.1	0.34	6.2	8.9	12.3	9.3	0.41	7.0	9.2	11.8
		Total	17.8	0.38	13.3	17.5	22.6	8.9	0.19	6.4	8.7	11.5	9.0	0.21	7.0	8.8	11.1
Pacific	Males	5–6	16.8	0.76	10.3	16.1	24.2	8.3	0.41	4.9	7.7	12.5	8.3	0.45	5.2	8.0	11.7
		7–10	18.0	0.70	13.4	17.7	22.9	8.5	0.32	6.7	8.4	10.5	9.0	0.36	6.7	8.9	11.5
		11–14	19.9	1.13	11.6	19.1	29.2	9.7	0.56	6.0	9.3	14.0	10.0	0.48	6.1	9.6	14.3
		Total	18.4	0.49	11.4	17.7	26.3	9.1	0.27	5.6	8.7	13.0	9.3	0.24	5.6	8.9	13.6
	Females	5–6	14.0	0.85	10.8	13.8	17.4	7.0	0.58	4.8	6.7	9.5	7.0	0.30	5.2	7.0	9.0
		7–10	15.9	0.56	11.2	15.5	21.0	7.9	0.31	5.7	7.7	10.3	8.0	0.30	5.6	7.8	10.6
		11–14	17.6	0.92	10.7	16.8	25.7	8.4	0.50	4.8	8.0	12.5	9.1	0.58	5.2	8.6	13.7
		Total	16.1	0.52	10.7	15.6	22.2	7.9	0.26	5.2	7.6	11.0	8.2	0.29	5.5	7.9	11.2
NZEO	Males	5–6	16.3	0.67	12.2	16.1	20.7	8.6	0.38	6.7	8.5	10.8	7.6	0.32	5.0	7.5	10.3
		7–10	19.0	0.51	14.1	18.7	24.4	9.8	0.28	7.0	9.7	12.9	9.1	0.25	7.0	9.0	11.4
		11–14	22.0	0.81	13.6	21.2	31.4	11.3	0.38	7.2	11.0	15.7	10.6	0.45	6.5	10.1	15.3
		Total	19.7	0.41	13.2	19.1	26.8	10.2	0.21	6.9	10.0	13.9	9.4	0.22	6.2	9.1	13.2
	Females	5–6	14.2	0.59	11.6	14.2	16.9	7.4	0.37	4.9	7.3	10.0	6.6	0.30	5.1	6.6	8.2
		7–10	16.5	0.48	10.7	16.2	22.7	8.5	0.24	5.9	8.4	11.3	8.0	0.26	5.4	7.8	10.7
		11–14	17.3	0.74	12.2	17.1	22.5	8.8	0.41	6.2	8.7	11.6	8.3	0.34	6.5	8.3	10.2
		Total	16.4	0.38	11.5	16.2	21.5	8.5	0.22	5.8	8.3	11.4	7.9	0.18	5.6	7.8	10.2

* Percentiles.

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

Table A5.1: Vitamin A

			Vitamin A equivalents (µg RE)[1, 2]						Retinol (µg)[1, 2]					β-carotene (µg)[1, 2]				
			Mean	**SEM**	**10th***	**50th***	**90th***	**Inadequate intake (%)°**	**Mean**	**SEM**	**10th***	**50th***	**90th***	**Mean**	**SEM**	**10th***	**50th***	**90th***
New Zealand children (5–14 years)			655	19.4	368	611	998	7.5	338	6.1	204	323	492	1900	71	711	1615	3458
	Males	5–6	569	33.4	305	527	887	9.4	306	13.9	175	290	458	1541	367	510	1254	2920
		7–10	687	29.7	352	631	1089	9.8	355	9.8	276	351	439	1968	155	594	1587	3829
		11–14	759	36.0	497	736	1051	2.6	399	12.7	259	386	554	2064	167	901	1791	3581
		Total	704	21.2	400	662	1060	6.9	365	6.8	242	354	503	1996	115	657	1641	3798
	Females	5–6	509	31.9	305	485	741	9.2	265	12.2	140	251	407	1439	155	862	1371	2105
		7–10	600	22.0	345	561	901	10.7	296	12.0	167	276	446	1726	110	501	1380	3396
		11–14	655	26.7	445	633	895	4.9	336	17.8	222	326	463	1909	134	1137	1792	2831
		Total	602	14.9	349	565	901	8.1	306	8.9	181	291	445	1784	73	768	1585	3058
NZDep01	Males	I	847	70.8	362	733	1469	#	385	19.1	263	376	520	2787	496	497	1663	6048
		II	627	41.6	373	596	921	#	355	26.3	208	335	527	1638	187	442	1258	3378
		III	682	46.5	450	654	952	#	365	15.4	288	361	447	1906	272	1035	1767	2951
		IV	623	33.8	364	595	917	#	367	21.9	233	355	515	1508	169	533	1249	2794
		V	650	47.8	292	583	1088	#	337	17.4	170	312	533	1848	264	739	1577	3292
	Females	I	620	52.9	274	549	1054	#	284	17.0	119	259	481	2056	349	573	1584	4095
		II	644	53.2	463	628	847	#	304	24.1	178	294	444	2061	248	1146	1904	3168
		III	622	78.3	337	562	984	#	287	19.8	148	263	454	1914	423	860	1695	3236
		IV	565	36.3	382	552	766	#	292	18.8	206	288	385	1604	181	801	1481	2565
		V	564	30.5	312	516	869	#	334	16.5	191	304	504	1349	157	536	1136	2409
Māori	Males	5–6	590	39.3	277	524	984	13.1	339	17.2	190	316	517	1537	220	320	1034	3258
		7–10	639	34.1	309	590	1031	14.7	354	12.0	242	346	476	1708	214	448	1263	3448
		11–14	706	35.7	391	667	1070	11.0	420	25.0	319	413	529	1727	158	422	1268	3646
		Total	660	24.0	361	617	1011	12.9	379	10.3	265	369	504	1697	102	452	1296	3474
	Females	5–6	503	32.9	351	489	673	3.1	269	16.7	155	259	396	1396	219	633	1209	2379
		7–10	623	43.5	406	589	881	3.6	341	36.0	213	322	490	1582	268	404	1145	3277
		11–14	647	39.6	444	627	875	5.0	341	17.8	200	327	501	1493	200	628	1293	2597
		Total	607	26.4	431	588	807	4.0	325	15.8	233	309	438	1646	142	1016	1565	2379
Pacific	Males	5–6	421	17.3	207	396	667	27.8	283	11.8	156	269	429	812	68	271	676	1531
		7–10	475	22.5	242	447	746	29.5	290	11.9	172	280	422	1127	106	514	1005	1890
		11–14	677	37.7	455	656	927	4.3	310	26.7	165	291	480	1712	231	653	1464	3077
		Total	497	34.6	339	483	673	19.7	298	12.2	171	285	440	1149	125	541	1029	1907
	Females	5–6	366	22.0	167	343	594	39.5	269	24.2	120	249	445	594	74	184	467	1150
		7–10	432	18.9	242	403	656	35.6	271	13.2	164	261	390	924	114	288	735	1781
		11–14	497	31.5	250	459	794	38.2	297	24.0	133	261	499	1245	155	339	948	2492
		Total	449	16.0	201	401	755	37.4	281	9.2	132	259	458	999	72	248	729	2051
NZEO	Males	5–6	604	52.9	336	562	926	6.0	293	20.3	166	279	436	1620	240	652	1371	2878
		7–10	722	39.4	492	701	980	0.8	351	13.1	227	341	487	2130	222	749	1805	3922
		11–14	798	53.0	455	759	1193	5.7	403	15.5	280	394	537	2357	295	584	1742	4828
		Total	736	29.8	427	697	1094	3.8	368	8.6	270	362	475	2184	164	654	1771	4263
	Females	5–6	515	43.6	250	477	830	17.3	262	18.0	148	249	392	1487	218	477	1219	2823
		7–10	621	29.8	342	585	947	11.0	281	11.8	134	268	446	1851	154	644	1585	3404
		11–14	671	32.8	515	659	841	0.5	336	17.9	254	332	425	2059	177	1124	1918	3174
		Total	619	20.2	391	594	878	7.9	300	24.1	186	290	427	1926	96	1126	1822	2861

* Percentiles.

° Calculated by probability analysis (Appendix B).

\# NZDep01 quintiles consist of a range of age groups. As the requirements differ for each age group, an overall figure was not calculated.

1 Usual intake. These data were adjusted for intra-individual variation using PC-SIDE. As this nutrient is concentrated in relatively few foods, one day intake distributions are highly skewed. Therefore, these estimates of usual intakes have large standard errors.

2 For conversion factors of retinol and beta-carotene to vitamin A equivalents, see Appendix B, Table IV: Analytical techniques for nutrients.

Table A5.2: Vitamins C and E

			Vitamin C (mg)[1]						Vitamin E (mg)[1]				
			Mean	**SEM**	**10th***	**50th***	**90th***	**Inadequate intake (%)°**	**Mean**	**SEM**	**10th***	**50th***	**90th***
New Zealand children (5–14 years)			115	3.8	62	106	180	0.1	8.1	0.20	5.5	7.7	11.3
	Males	5–6	102	5.6	68	98	140	0.0	7.0	0.29	4.8	6.7	9.4
		7–10	123	11.4	77	116	178	0.0	8.1	0.24	5.8	7.9	10.8
		11–14	120	6.7	49	106	210	0.7	9.5	0.43	5.8	8.7	14.0
		Total	119	5.1	56	105	198	0.3	8.5	0.20	5.7	8.1	11.8
	Females	5–6	106	10.8	54	96	172	0.0	6.2	0.26	4.3	5.9	8.3
		7–10	103	4.5	70	101	139	0.0	6.9	0.20	4.8	6.7	9.3
		11–14	114	6.9	62	108	176	0.0	9.3	1.27	6.9	9.0	12.1
		Total	112	5.2	81	109	147	0.0	7.6	0.31	5.2	7.2	10.6
NZDep01	Males	I	131	14.3	40	100	256	#	9.0	0.75	4.8	7.8	14.2
		II	114	24.7	54	104	184	#	7.9	0.36	4.7	7.5	11.7
		III	108	7.7	51	97	178	#	7.9	0.44	6.0	7.8	10.1
		IV	97	8.0	44	87	162	#	8.2	0.40	5.6	7.9	11.3
		V	105	6.5	60	99	159	#	8.8	0.47	5.8	8.5	12.3
	Females	I	124	14.6	60	110	205	#	6.6	0.47	4.3	6.1	9.5
		II	116	12.4	69	111	170	#	7.7	0.37	5.8	7.6	9.7
		III	95	11.5	43	88	156	#	6.7	0.67	4.0	6.4	9.8
		IV	87	7.2	42	79	142	#	8.2	2.01	4.9	6.7	12.4
		V	96	6.1	63	93	133	#	8.1	0.92	5.7	7.8	11.0
Māori	Males	5–6	114	11.8	52	100	191	0.0	7.7	0.33	5.5	7.6	10.2
		7–10	103	6.4	45	92	174	0.6	8.0	0.25	5.0	7.6	11.4
		11–14	108	9.0	53	98	174	0.2	9.4	0.57	5.8	9.0	13.4
		Total	109	5.7	75	106	147	0.3	8.5	0.27	5.5	8.1	11.9
	Females	5–6	87	8.6	42	80	141	0.6	6.4	0.29	4.5	6.2	8.6
		7–10	102	4.6	70	99	137	0.0	7.0	0.27	5.1	6.9	9.1
		11–14	109	13.4	48	99	182	0.7	9.2	1.28	5.8	8.6	13.4
		Total	105	6.9	72	102	141	0.4	7.6	0.29	5.5	7.3	10.0
Pacific	Males	5–6	90	8.5	33	74	164	2.1	6.7	0.35	4.3	6.5	9.5
		7–10	83	5.8	4.8	79	124	0.0	7.9	0.27	5.6	7.7	10.4
		11–14	82	9.2	24	66	160	8.7	8.9	0.39	5.2	8.5	13.2
		Total	86	6.0	37	75	148	3.7	8.1	0.22	5.2	7.8	11.2
	Females	5–6	92	11.0	56	88	134	0.0	5.6	0.32	4.0	5.5	7.3
		7–10	79	5.7	47	75	116	0.0	6.7	0.23	4.4	6.4	9.3
		11–14	80	7.7	41	73	127	0.5	8.8	0.63	4.6	7.8	14.2
		Total	84	4.1	56	81	116	0.2	7.3	0.36	4.0	6.7	11.3
NZEO	Males	5–6	99	8.0	52	91	155	0.0	6.8	0.42	6.0	6.8	7.7
		7–10	112	10.9	67	106	164	0.0	8.3	0.41	5.4	8.0	11.4
		11–14	127	8.7	46	106	232	1.1	9.4	0.42	5.5	8.5	14.2
		Total	125	9.3	58	111	209	0.4	8.5	0.36	5.4	8.0	12.2
	Females	5–6	114	16.9	39	91	215	1.1	6.1	0.42	4.8	6.0	7.7
		7–10	105	6.7	60	99	156	0.0	7.0	0.29	5.3	6.8	8.9
		11–14	118	8.4	63	111	183	0.0	8.3	0.52	6.7	8.2	10.0
		Total	116	6.2	75	112	162	0.2	7.4	0.33	5.1	7.1	10.2

* Percentiles.

° Calculated by probability analysis (Appendix B).

\# NZDep01 quintiles consist of a range of age groups. As the requirements differ for each age group, an overall figure was not calculated.

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

Table A6.1: B Vitamins I

			Thiamin (mg)[1]					Riboflavin (mg)[1]						Niacin equivalents (mg NE)[1]				
			Mean	SEM	10th*	50th*	90th*	Mean	SEM	10th*	50th*	90th*	Inadequate intake (%)°	Mean	SEM	10th*	50th*	90th*
New Zealand children (5–14 years)			1.6	0.05	0.9	1.5	2.4	1.9	0.07	1.2	1.8	2.6	2.7	29.3	0.43	19.2	27.8	40.8
	Males	5–6	1.6	0.15	1.2	1.6	2.2	1.6	0.06	1.2	1.6	2.1	0.0	26.1	0.67	20.0	25.6	32.8
		7–10	1.7	0.07	1.0	1.6	2.6	1.9	0.08	1.2	1.8	2.7	0.9	30.0	0.75	19.8	28.8	41.6
		11–14	2.0	0.11	1.0	1.7	3.2	2.2	0.18	1.3	2.0	3.3	1.6	37.6	1.25	24.1	36.0	52.9
		Total	1.8	0.07	1.0	1.6	2.8	2.1	0.09	1.3	1.9	2.9	1.0	32.3	0.58	21.0	30.7	45.4
	Females	5–6	1.2	0.07	0.9	1.2	1.6	1.5	0.08	0.9	1.5	2.3	1.0	21.6	0.72	16.2	21.0	27.7
		7–10	1.3	0.06	0.9	1.3	1.8	1.6	0.06	1.1	1.6	2.1	0.3	26.0	0.59	17.8	25.1	35.3
		11–14	1.5	0.26	0.9	1.3	2.3	1.6	0.10	0.9	1.5	2.6	10.7	28.0	1.28	23.0	27.7	33.4
		Total	1.4	0.07	0.9	1.3	2.0	1.7	0.08	1.2	1.6	2.3	4.6	26.0	0.61	18.9	25.3	33.9
NZDep01	Males	I	2.1	0.25	1.0	1.6	3.3	2.5	0.23	1.4	2.2	3.7	#	34.3	1.62	21.6	32.3	49.0
		II	1.8	0.17	1.0	1.6	2.9	2.0	0.17	1.3	1.9	3.0	#	30.3	1.54	21.7	29.6	39.7
		III	1.7	0.14	1.3	1.7	2.3	2.0	0.22	1.4	1.9	2.6	#	30.7	1.12	21.4	30.1	40.9
		IV	1.6	0.08	1.0	1.5	2.3	1.8	0.08	1.3	1.8	2.5	#	31.2	0.93	23.5	30.3	39.9
		V	1.7	0.12	1.0	1.6	2.5	1.7	0.10	1.2	1.7	2.2	#	32.9	1.31	19.5	31.1	48.5
	Females	I	1.3	0.12	0.9	1.2	1.7	1.7	0.16	1.2	1.7	2.3	#	23.8	1.04	19.1	23.6	28.8
		II	1.2	0.09	0.9	1.2	1.7	1.6	0.11	1.3	1.6	2.0	#	25.1	1.19	16.3	24.2	35.1
		III	1.2	0.11	0.7	1.1	1.9	1.5	0.18	1.0	1.4	2.2	#	23.5	1.23	17.6	23.3	29.4
		IV	1.2	0.09	0.8	1.2	1.9	1.5	0.07	1.0	1.5	2.1	#	25.0	0.93	16.6	24.2	34.3
		V	1.5	0.20	1.0	1.4	2.1	1.8	0.25	1.2	1.6	2.5	#	28.9	1.82	23.7	28.5	34.7
Māori	Males	5–6	1.8	0.09	1.2	1.7	2.4	1.7	0.07	1.4	1.7	2.0	0.0	30.8	1.26	18.7	28.9	44.9
		7–10	1.7	0.07	0.9	1.6	2.5	1.7	0.06	1.1	1.7	2.5	2.5	30.4	0.68	19.8	29.7	42.0
		11–14	2.0	0.13	1.4	2.0	2.8	2.1	0.15	1.6	2.1	2.7	0.0	37.5	1.54	22.4	35.5	55.1
		Total	1.8	0.06	1.2	1.8	2.6	1.9	0.06	1.4	1.9	2.5	1.0	33.3	0.72	21.0	31.7	47.4
	Females	5–6	1.3	0.05	1.0	1.3	1.8	1.5	0.06	1.1	1.5	2.0	0.0	24.7	0.97	16.6	23.7	34.0
		7–10	1.3	0.05	0.8	1.3	2.0	1.5	0.05	1.1	1.5	2.0	1.5	27.5	0.76	17.9	26.6	38.2
		11–14	1.4	0.09	0.8	1.3	2.1	1.6	0.10	1.1	1.6	2.2	4.4	28.6	1.29	19.3	27.9	38.9
		Total	1.4	0.04	0.9	1.3	1.9	1.6	0.04	1.3	1.6	1.9	2.3	27.4	0.62	18.5	26.7	37.4
Pacific	Males	5–6	1.2	0.07	0.7	1.2	1.8	1.3	0.06	0.8	1.2	1.8	1.8	25.4	1.25	18.5	24.6	33.3
		7–10	1.3	0.08	0.8	1.2	1.8	1.4	0.06	0.8	1.3	2.2	10.5	30.3	0.88	20.2	29.8	41.2
		11–14	1.2	0.20	0.5	1.1	2.1	1.4	0.13	0.8	1.4	2.1	20.3	36.2	2.09	18.9	33.6	56.7
		Total	1.2	0.12	0.7	1.1	2.0	1.4	0.07	0.8	1.3	2.0	12.4	31.5	0.95	19.7	30.3	45.0
	Females	5–6	1.0	0.08	0.7	1.0	1.4	1.2	0.09	0.7	1.2	1.8	3.8	21.3	0.88	15.7	21.0	27.2
		7–10	1.1	0.08	0.9	1.1	1.4	1.3	0.10	0.8	1.2	1.9	9.1	25.8	0.85	19.7	25.4	32.3
		11–14	1.1	0.05	0.7	1.0	1.6	1.4	0.08	0.8	1.3	2.1	14.8	31.5	1.72	25.7	31.2	37.8
		Total	1.1	0.04	0.9	1.1	1.4	1.3	0.06	0.9	1.3	1.8	10.2	27.0	0.76	21.2	26.6	33.3
NZEO	Males	5–6	1.5	0.17	1.2	1.5	1.9	1.6	0.07	1.2	1.6	2.0	0.0	23.6	0.79	19.2	23.4	28.1
		7–10	1.8	0.09	1.2	1.7	2.5	1.9	0.07	1.7	1.9	2.3	0.0	29.7	0.96	19.1	28.5	41.7
		11–14	2.0	0.13	0.9	1.7	3.5	2.3	0.20	1.3	2 .1	3.7	3.4	37.6	1.82	26.0	36.6	50.4
		Total	1.9	0.11	1.1	1.7	2.9	2.2	0.19	1.5	2.1	3.0	1.4	32.1	0.88	22.2	30.8	43.5
	Females	5–6	1.2	0.11	0.7	1.1	1.7	1.5	0.12	0.9	1.4	2.4	1.1	20.7	1.00	16.9	20.4	24.8
		7–10	1.4	0.10	0.9	1.3	2.0	1.7	0.07	1.1	1.6	2.4	2.2	25.5	0.94	17.5	24.7	34.4
		11–14	1.7	0.44	0.7	1.3	3.0	2.0	0.40	0.9	1.7	3.5	9.5	27.2	1.36	21.4	26.8	33.6
		Total	1.4	0.13	0.8	1.2	2.3	1.8	0.17	1.1	1.7	2.8	5.0	25.4	0.80	19.2	24.8	32.2

* Percentiles.

° Calculated by probability analysis (Appendix B).

\# NZDep01 quintiles consist of a range of age groups. As the requirements differ for each age group, an overall figure was not calculated.

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

Table A6.2: B Vitamins II

			Vitamin B6 (mg)[1]					Vitamin B12 (µg)[1]						Folate (µg)[1]					
			Mean	SEM	10th*	50th*	90th*	Mean	SEM	10th*	50th*	90th*	Inadequate intake (%)°	Mean	SEM	10th*	50th*	90th*	Inadequate intake (%)°
New Zealand children (5–14 years)			1.4	0.05	1.0	1.3	1.8	3.6	0.13	2.1	3.3	5.4	0.0	249	4.1	153	237	359	4.6
	Males	5–6	1.2	0.05	0.8	1.1	1.6	3.4	0.35	2.2	3.2	4.8	0.0	229	11.8	175	226	288	0.0
		7–10	1.4	0.06	0.9	1.3	2.1	3.8	0.19	2.6	3.7	5.3	0.0	261	8.8	164	250	371	0.9
		11–14	1.6	0.12	1.0	1.5	2.4	4.5	0.23	2.3	4.0	7.2	0.2	292	9.2	204	283	393	0.6
		Total	1.5	0.06	1.0	1.4	2.1	4.0	0.16	2.5	3.8	5.9	0.1	270	5.4	183	261	367	0.6
	Females	5–6	1.1	0.06	0.7	1.0	1.5	2.6	0.19	1.8	2.6	3.6	0.0	214	12.4	130	201	314	0.2
		7–10	1.2	0.05	1.0	1.2	1.4	3.1	0.16	2.0	3.0	4.3	0.0	219	7.3	143	211	305	1.7
		11–14	1.3	0.18	0.9	1.2	1.7	3.4	0.25	2.1	3.1	4.9	0.0	234	9.7	124	216	368	20.2
		Total	1.2	0.04	0.7	1.1	1.7	3.1	0.15	2.0	3.0	4.4	0.0	226	5.8	135	213	333	8.8
NZDep01	Males	I	1.9	0.21	1.1	1.7	2.9	4.5	0.43	1.9	3.8	7.8	#	311	14.4	219	301	414	#
		II	1.3	0.10	0.8	1.2	2.1	3.4	0.20	2.4	3.3	4.6	#	276	12.6	200	271	359	#
		III	1.5	0.14	1.1	1.4	1.9	3.8	0.29	2.3	3.6	5.5	#	248	10.5	171	240	334	#
		IV	1.3	0.06	1.0	1.3	1.6	3.6	0.24	2.0	3.3	5.7	#	252	13.6	155	240	363	#
		V	1.4	0.10	0.9	1.3	2.0	3.9	0.35	2.5	3.7	5.7	#	247	12.9	174	241	329	#
	Females	I	1.3	0.16	1.0	1.3	1.8	2.8	0.24	1.9	2.7	3.9	#	216	14.1	129	206	316	#
		II	1.1	0.07	0.7	1.1	1.6	3.2	0.30	1.5	3.0	5.3	#	235	16.8	138	219	352	#
		III	1.1	0.08	0.8	1.0	1.4	2.7	0.29	1.6	2.6	4.0	#	206	13.0	142	202	276	#
		IV	1.1	0.09	0.9	1.1	1.4	2.9	0.19	1.3	2.7	4.9	#	207	10.9	120	195	312	#
		V	1.1	0.06	0.8	1.1	1.5	3.4	0.30	2.3	3.2	4.8	#	210	9.4	132	198	301	#
Māori	Males	5–6	1.2	0.06	0.9	1.2	1.6	3.4	0.23	1.5	3.1	5.7	0.9	233	10.3	187	230	282	0.0
		7–10	1.3	0.05	0.7	1.2	1.9	3.4	0.13	1.7	3.1	5.4	0.6	247	11.2	118	225	404	8.0
		11–14	1.5	0.10	1.0	1.4	2.1	4.5	0.59	3.0	4.3	6.2	0.0	278	13.6	217	275	344	0.0
		Total	1.4	0.04	0.9	1.3	1.9	3.9	0.25	2.7	3.8	5.1	0.4	261	8.2	160	248	378	3.3
	Females	5–6	1.1	0.04	0.8	1.0	1.3	3.0	0.23	1.9	2.9	4.3	0.0	203	9.8	141	196	274	0.0
		7–10	1.1	0.05	0.8	1.1	1.5	3.2	0.18	2.0	3.1	4.6	0.0	219	9.2	148	210	299	1.0
		11–14	1.2	0.05	0.9	1.1	1.5	3.4	0.27	2.2	3.2	4.7	0.0	222	12.4	118	205	346	22.8
		Total	1.1	0.03	0.9	1.1	1.4	3.2	0.10	2.1	3.1	4.5	0.0	218	6.8	139	208	309	9.3
Pacific	Males	5–6	1.0	0.06	0.7	1.0	1.4	2.8	0.18	1.9	2.8	3.8	0.0	194	13.8	107	178	302	1.3
		7–10	1.2	0.05	0.9	1.2	1.7	3.7	0.26	1.9	3.4	5.8	0.5	200	9.4	149	195	257	0.4
		11–14	1.3	0.14	0.8	1.3	1.9	5.0	0.47	2.2	4.4	8.6	0.3	204	23.3	116	193	306	25.5
		Total	1.2	0.05	0.8	1.2	1.7	4.0	0.17	3.0	3.9	5.2	0.3	202	11.1	138	196	274	10.0
	Females	5–6	0.9	0.05	0.6	0.9	1.3	2.5	0.22	1.6	2.4	3.4	0.0	156	8.8	88	146	238	4.8
		7–10	1.1	0.04	0.8	1.1	1.3	2.8	0.11	1.8	2.7	3.9	0.1	177	11.0	124	171	236	3.9
		11–14	1.2	0.10	1.0	1.2	1.5	3.6	0.19	2.0	3.4	5.6	0.4	196	9.9	115	182	293	30.0
		Total	1.1	0.05	0.8	1.1	1.4	3.1	0.13	1.9	2.9	4.4	0.2	179	5.6	123	172	243	13.9
NZEO	Males	5–6	1.2	0.10	0.9	1.2	1.6	3.4	0.59	2.0	3.1	5.1	0.0	233	10.2	195	231	272	0.0
		7–10	1.5	0.09	1.0	1.4	2.1	4.0	0.26	2.5	3.8	5.6	0.0	272	11.0	182	264	372	0.2
		11–14	1.6	0.17	1.0	1.5	2.5	4.5	0.29	1.7	3.8	7.9	2.8	307	12.9	195	290	440	1.5
		Total	1.6	0.13	1.0	1.5	2.2	4.1	0.22	2.2	3.7	6.6	1.2	281	7.2	206	275	363	0.7
	Females	5–6	1.1	0.09	0.8	1.0	1.5	2.5	0.21	1.2	2.4	3.8	1.7	224	20.8	143	212	318	0.0
		7–10	1.3	0.08	1.0	1.2	1.6	3.1	0.19	1.4	2.8	5.0	1.4	225	10.5	143	215	318	1.8
		11–14	1.5	0.33	0.9	1.3	2.4	3.5	0.49	2.1	3.3	5.1	0.0	241	13.1	135	227	364	15.0
		Total	1.3	0.10	0.8	1.2	1.9	3.2	0.23	1.5	2.9	5.1	0.9	234	8.0	136	220	350	6.9

* Percentiles.

° Calculated by probability analysis (Appendix B).

\# NZDep01 quintiles consist of a range of age groups. As the requirements differ for each age group, an overall figure was not calculated.

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

Table A7.1: Minerals I

			Calcium (mg)[1]						Phosphorous (mg)[1]					Magnesium (mg)[1]				
			Mean	**SEM**	**10th***	**50th***	**90th***	**Inadequate intake (%)°**	**Mean**	**SEM**	**10th***	**50th***	**90th***	**Mean**	**SEM**	**10th***	**50th***	**90th***
New Zealand children (5–14 years)			767	13.0	481	736	1092	15.1	1211	15	814	1173	1654	241	2.9	171	234	320
	Males	5–6	698	25.9	466	677	957	1.4	1084	24	825	1068	1362	215	4.8	178	213	255
		7–10	806	21.1	558	788	1078	1.4	1265	25	872	1241	1689	251	4.9	178	246	330
		11–14	921	35.7	601	888	1284	28.7	1510	44	998	1462	2084	296	8.1	204	286	400
		Total	832	17.1	554	806	1143	12.2	1327	20	907	1285	1801	263	4.0	187	255	348
	Females	5–6	651	32.4	382	616	962	6.6	955	35	696	935	1240	192	6.3	142	187	249
		7–10	653	21.1	407	628	932	12.4	1063	21	741	1047	1403	216	4.5	168	213	267
		11–14	757	35.7	496	733	1048	29.6	1168	44	862	1149	1499	231	8.0	164	224	305
		Total	698	18.6	444	672	984	18.2	1086	21	770	1065	1430	218	3.8	161	213	280
NZDep01	Males	I	977	54.5	572	908	1457	#	1450	68	961	1403	1994	274	12.4	208	269	347
		II	808	42.2	506	772	1156	#	1278	52	920	1254	1667	248	9.2	192	245	308
		III	834	32.2	630	820	1057	#	1287	41	950	1263	1656	254	6.9	199	252	313
		IV	840	39.9	604	819	1102	#	1316	39	987	1284	1686	259	7.2	189	251	338
		V	707	33.3	434	675	1018	#	1259	59	777	1196	1829	264	10.3	167	253	373
	Females	I	716	56.1	412	685	1059	#	1047	64	739	1024	1390	205	10.3	157	202	258
		II	722	59.2	477	698	998	#	1100	57	787	1082	1438	213	8.9	155	211	272
		III	662	43.8	403	633	956	#	1065	69	831	1053	1314	205	9.6	140	201	275
		IV	679	39.3	399	652	993	#	1057	38	746	1035	1392	217	10.1	163	212	279
		V	642	26.3	435	624	871	#	1086	30	814	1065	1383	219	5.8	173	216	269
Māori	Males	5–6	710	24.5	490	685	963	0.5	1189	32	872	1164	1540	245	7.2	182	237	316
		7–10	714	26.5	454	688	1007	7.0	1232	29	811	1197	1699	244	5.9	161	239	334
		11–14	846	35.0	666	834	1041	27.1	1436	51	1003	1403	1908	290	10.9	207	284	380
		Total	770	19.2	655	765	892	13.2	1303	24	903	1267	1748	262	5.1	190	256	341
	Females	5–6	639	31.2	489	631	799	0.2	1028	34	799	1010	1278	208	7.1	170	206	248
		7–10	656	17.9	448	636	889	7.2	1108	24	816	1087	1428	223	5.4	174	220	275
		11–14	678	30.6	454	659	927	42.6	1156	44	852	1135	1488	230	7.8	170	227	294
		Total	665	14.3	551	660	786	19.5	1113	20	949	1107	1284	222	4.0	182	221	265
Pacific	Males	5–6	584	22.8	330	558	871	12.5	972	36	665	942	1316	216	8.7	154	209	288
		7–10	607	26.6	370	577	883	18.7	1107	30	759	1082	1486	240	10.2	145	225	352
		11–14	566	81.1	288	517	906	80.1	1213	101	666	1128	1866	273	16.2	146	252	427
		Total	583	35.7	342	551	864	40.5	1122	42	709	1073	1594	247	7.4	150	232	364
	Females	5–6	539	42.3	286	514	824	19.1	877	38	701	870	1062	188	9.2	138	187	240
		7–10	538	33.9	332	512	776	28.9	959	34	679	941	1263	212	6.8	161	207	269
		11–14	524	35.9	350	506	721	77.6	1070	34	742	1044	1432	245	9.3	155	229	353
		Total	529	22.8	348	512	732	45.2	985	22	738	970	1250	219	5.7	158	212	288
NZEO	Males	5–6	718	37.6	543	707	907	0.0	1061	34	829	1052	1305	207	6.1	165	206	250
		7–10	853	27.0	603	837	1123	0.6	1296	34	1031	1286	1574	255	6.0	212	253	299
		11–14	987	45.5	605	941	1428	25.2	1567	62	1057	1516	2143	300	10.9	199	288	418
		Total	885	22.6	632	866	1164	10.5	1361	28	942	1326	1826	265	5.3	189	258	349
	Females	5–6	660	49.5	357	612	1023	9.2	931	49	629	907	1263	186	9.1	127	179	254
		7–10	667	29.2	362	629	1022	17.7	1058	29	709	1046	1424	214	6.1	167	211	263
		11–14	804	49.7	418	757	1251	49.2	1182	59	713	1141	1705	229	10.0	154	221	315
		Total	729	26.0	375	677	1149	29.0	1089	29	665	1052	1560	216	5.3	151	209	288

* Percentiles.

° Calculated by probability analysis (Appendix B).

\# NZDep01 quintile areas consist of a range of age groups. As the requirements differ for each age group, an overall figure was not calculated.

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

Table A7.2: Minerals II

			Iron (mg)[1]						Zinc (mg)[1]						Potassium (mg)[1]				
			Mean	SEM	10th*	50th*	90th*	Inadequate intake (%)°	Mean	SEM	10th*	50th*	90th*	Inadequate intake (%)°	Mean	SEM	10th*	50th*	90th*
New Zealand children (5–14 years)			11.3	0.15	7.8	11.0	15.3	6.6	9.9	0.15	6.3	9.5	14.2	7.3	2565	36	1759	2497	3455
	Males	5–6	10.2	0.25	7.8	10.0	12.8	0.0	8.7	0.27	7.3	8.7	10.3	0.0	2292	59	1879	2274	2728
		7–10	12.2	0.27	8.5	11.9	16.2	1.8	10.4	0.29	7.1	10.0	14.0	1.4	2644	59	1837	2591	3520
		11–14	14.4	0.44	10.4	14.1	18.7	2.1	12.6	0.48	7.8	12.0	18.2	5.4	3173	108	2198	3095	4238
		Total	12.7	0.22	9.3	12.4	16.5	1.6	11.0	0.22	7.1	10.5	15.4	2.7	2788	51	1933	2718	3727
	Females	5–6	8.6	0.31	6.6	8.4	10.7	0.1	7.5	0.29	5.1	7.2	10.3	9.2	2063	71	1461	2003	2739
		7–10	9.9	0.24	7.3	9.7	12.6	5.0	8.9	0.27	5.5	8.4	12.9	9.4	2309	53	1582	2254	3117
		11–14[2]	10.4	0.35	6.7	9.9	14.6	4.2	9.4	0.30	6.4	9.1	12.8	16.4	2457	80	1740	2405	3244
		11–14[3]						43.9											
		Total	9.8	0.18	6.8	9.5	13.2	12.0	8.9	0.18	5.7	8.5	12.5	12.1	2325	42	1625	2272	3095
NZDep01	Males	I	13.2	0.55	9.3	12.8	17.4	#	11.3	0.54	8.3	11.0	14.7	#	3029	121	1938	2944	4233
		II	12.1	0.60	9.5	11.9	14.9	#	10.2	0.55	7.1	9.9	13.9	#	2578	97	1904	2548	3290
		III	12.5	1.07	9.6	12.2	15.8	#	10.8	0.49	6.8	10.3	15.3	#	2739	88	2238	2716	3269
		IV	12.6	0.42	8.9	12.2	16.9	#	11.2	0.41	7.4	10.7	15.6	#	2742	90	2209	2717	3307
		V	12.5	0.58	8.2	12.1	17.3	#	10.6	0.42	6.2	10.0	15.9	#	2741	106	1788	2642	3820
	Females	I	9.0	0.53	7.1	8.9	11.0	#	7.6	0.37	5.2	7.4	10.2	#	2273	116	1736	2247	2842
		II	10.0	0.47	7.5	9.8	12.8	#	8.9	0.49	5.7	8.5	12.6	#	2383	112	1685	2340	3135
		III	9.4	0.45	6.3	9.4	12.5	#	8,6	0.51	5.6	8.3	11.9	#	2202	120	1414	2137	3072
		IV	9.7	0.54	6.2	9.1	13.9	#	8.9	0.34	5.6	8.6	12.5	#	2221	82	1719	2198	2753
		V	10.2	0.27	7.3	9.9	13.5	#	9.5	0.31	6.4	9.1	13.0	#	2287	76	1718	2246	2909
Māori	Males	5–6	11.8	0.44	8.3	11.4	15.9	0.0	10.2	0.49	7.2	9.9	13.7	0.3	2561	74	1934	2501	3264
		7–10	12.2	0.31	7.5	11.8	17.5	5.8	10.1	0.30	6.4	9.7	14.3	3.6	2608	87	1656	2534	3655
		11–14	15.0	0.63	12.0	14.8	18.2	0.1	12.0	0.51	7.0	11.3	17.9	10.3	3148	102	2243	3081	4135
		Total	13.4	0.40	11.2	13.3	15.8	2.4	10.9	0.26	6.7	10.3	15.9	5.5	2807	55	1953	2737	3745
	Females	5–6	9.8	0.35	7.8	9.7	11.9	0.0	8.8	0.37	6.5	8.6	11.3	0.7	2269	96	1739	2220	2861
		7–10	10.4	0.30	7.5	10.3	13.5	4.2	9.1	0.27	5.7	8.7	13.1	7.4	2387	65	1611	2342	3221
		11–14[2]	11.0	0.64	6.9	10.1	16.1	3.1	9.4	0.44	6.5	9.1	12.8	16.2	2535	109	1981	2508	3122
		11–14[3]						41.1											
		Total	10.5	0.27	7.2	10.1	14.3	12.4	9.2	0.22	6.5	8.9	12.3	9.4	2426	55	1740	2383	3169
Pacific	Males	5–6	9.3	0.33	6.3	8.9	12.7	1.5	8.3	0.36	6.1	8.0	10.8	1.0	2098	80	1327	1982	3006
		7–10	11.0	0.31	6.8	10.6	15.6	9.5	10.2	0.35	6.2	9.8	14.7	5.1	2410	65	1600	2338	3312
		11–14	12.3	1.11	6.9	11.6	18.4	23.0	12.4	0.61	6.0	11.3	20.2	16.2	2637	230	1408	2472	4077
		Total	11.1	0.46	7.1	10.6	15.6	12.9	10.7	0.26	6.4	10.0	15.7	8.4	2417	78	1471	2315	3495
	Females	5–6	8.4	0.32	5.8	8.2	11.2	2.2	7.5	0.41	5.1	7.3	10.3	9.3	1904	105	1474	1878	2367
		7–10	9.1	0.35	6.7	9.0	11.8	9.7	8.7	0.25	5.9	8.5	11.9	5.7	2051	79	1500	2013	2650
		11–14[2]	10.4	0.19	6.3	10.0	15.1	5.9	10.7	0.42	5.7	9.8	16.6	20.4	2375	63	1434	2278	3439
		11–14[3]						44.2											
		Total	9.5	0.22	7.2	9.3	12.0	15.4	9.2	0.28	5.7	8.7	13.4	12.0	2131	46	1557	2088	2760
NZEO	Males	5–6	9.4	0.31	7.3	9.4	11.7	0.1	7.9	0.32	6.5	7.9	9.5	0.2	2196	72	1815	2190	2585
		7–10	12.4	0.37	10.6	12.3	14.2	0.0	10.5	0.40	7.9	10.3	13.3	0.3	2684	75	2127	2661	3270
		11–14	14.4	0.67	8.8	13.8	20.8	9.6	12.8	0.71	8.0	12.2	18.3	4.7	3243	155	2086	3117	4552
		Total	12.7	0.31	8.8	12.4	17.0	3.9	11.0	0.34	7.3	10.6	15.2	2.0	2824	69	1968	2754	3766
	Females	5–6	8.2	0.47	5.8	7.8	10.9	1.4	6.9	0.41	4.9	6.7	9.2	11.4	1993	99	1368	1933	2694
		7–10	9.8	0.34	7.8	9.7	11.9	1.8	8.8	0.40	5.3	8.3	13.0	11.0	2311	71	1603	2251	3112
		11–14[2]	10.1	0.41	6.5	10.0	14.0	5.4	9.3	0.38	6.8	9.2	11.9	11.8	2438	107	1631	2387	3306
		11–14[3]						44.2											
		Total	9.6	0.25	6.6	9.4	12.9	10.5	8.7	0.25	5.5	8.3	12.4	11.4	2309	58	1581	2249	3122

* Percentiles.

° Calculated by probability analysis (Appendix B).

\# NZDep01 quintile areas consist of a range of age groups. As the requirements differ for each age group, an overall figure was not calculated.

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

2 Non-menstruating females.

3 Menstruating females. (It was assumed that all females 10 years and under were not menstruating.)

Table A7.3: Minerals III

			Selenium (µg)[1]					Manganese (µg)[1]					Copper (mg)[1]				
			Mean	**SEM**	**10th***	**50th***	**90th***	**Mean**	**SEM**	**10th***	**50th***	**90th***	**Mean**	**SEM**	**10th***	**50th***	**90th***
New Zealand children (5–14 years)			37.1	0.84	21.5	34.2	56.2	3185	66	2263	3099	4213	1.3	0.05	0.8	1.1	1.8
	Males	5–6	31.0	1.70	22.0	29.7	41.5	2904	91	2329	2861	3533	1.1	0.06	0.8	1.0	1.4
		7–10	37.4	1.94	23.2	35.2	54.3	3296	75	2397	3211	4312	1.3	0.04	0.9	1.2	1.7
		11–14	49.3	2.42	25.0	44.0	81.0	3895	137	2851	3775	5087	1.5	0.10	1.0	1.4	2.3
		Total	41.1	1.31	22.6	36.9	64.3	3469	65	2588	3376	4468	1.4	0.05	0.9	1.2	1.9
	Females	5–6	25.5	1.31	18.4	24.6	33.9	2541	95	1737	2495	3408	1.1	0.15	0.7	1.0	1.6
		7–10	33.1	1.24	18.9	30.4	50.9	2840	74	2103	2777	3654	1.3	0.18	0.8	1.1	1.7
		11–14	35.8	1.71	26.9	34.9	45.8	3021	103	2121	2971	3987	1.1	0.03	0.8	1.1	1.5
		Total	32.5	0.99	21.3	30.8	45.8	2866	53	2059	2810	3739	1.2	0.09	0.8	1.0	1.6
NZDep01	Males	I	37.6	3.57	22.3	35.1	56.1	3386	148	2601	3308	4269	1.7	0.32	1.0	1.4	2.6
		II	35.2	2.88	20.6	32.7	52.9	3484	176	2345	3392	4742	1.2	0.05	0.8	1.2	1.7
		III	35.8	2.32	21.2	33.1	53.5	3326	118	2279	3229	4515	1.4	0.17	0.9	1.2	2.0
		IV	41.5	2.86	25.8	39.0	60.2	3358	135	2338	3241	4552	1.3	0.08	0.9	1.2	1.8
		V	48.4	3.80	24.0	43.0	79.0	3481	128	2434	3401	4627	1.3	0.07	0.8	1.2	1.9
	Females	I	28.6	2.34	13.7	25.4	47.0	2602	151	1757	2495	3580	1.1	0.13	0.8	1.0	1.4
		II	30.2	2.31	20.9	29.1	41.0	2903	140	1927	2822	3993	1.2	0.16	0.8	1.1	1.8
		III	28.9	2.45	17.5	27.8	41.8	2759	192	1743	2672	3888	1.7	0.82	0.6	1.0	2.1
		IV	30.4	1.83	21.1	29.4	40.9	2818	178	2113	2769	3594	1.0	0.05	0.8	1.0	1.3
		V	37.5	1.85	25.6	35.8	51.3	2970	79	2352	2930	3636	1.1	0.03	0.9	1.1	1.4
Māori	Males	5–6	35.2	2.32	18.8	31.9	55.5	3206	117	2367	3143	4124	1.2	0.10	0.8	1.1	1.6
		7–10	38.0	1.91	21.2	34.4	58.8	3233	103	1947	3079	4717	1.2	0.05	0.8	1.2	1.8
		11–14	52.0	4.67	25.0	45.0	86.0	3755	183	3048	3730	4494	1.4	0.07	1.0	1.4	1.9
		Total	43.3	2.08	22.0	38.0	70.0	3426	90	2448	3346	4510	1.3	0.06	0.8	1.2	1.9
	Females	5–6	32.1	2.66	16.4	28.3	52.3	2535	96	1889	2493	3233	1.0	0.04	0.8	1.0	1.1
		7–10	34.9	1.82	20.4	32.2	52.8	2859	92	2153	2815	3623	1.1	0.04	0.8	1.1	1.4
		11–14	39.2	2.87	22.5	35.9	59.9	3040	125	2270	2966	3900	1.2	0.05	0.9	1.2	1.5
		Total	35.8	1.46	23.7	33.9	50.1	2885	71	2354	2856	3451	1.1	0.03	1.0	1.1	1.3
Pacific	Males	5–6	33.7	2.51	18.5	31.2	52.1	2986	135	2011	2883	4091	1.0	0.05	0.7	0.9	1.3
		7–10	45.4	2.22	25.0	42.0	69.0	3152	146	1806	3021	4668	1.2	0.04	0.9	1.1	1.5
		11–14	55.8	6.21	26.0	48.0	94.0	3463	279	2039	3314	5080	1.3	0.06	0.8	1.2	1.8
		Total	47.2	3.11	23.0	41.0	78.0	3224	108	2109	3132	4459	1.2	0.03	0.8	1.1	1.6
	Females	5–6	29.8	2.57	19.9	28.7	41.2	2374	126	1553	2287	3307	0.8	0.04	0.7	0.8	1.0
		7–10	36.1	1.80	22.5	34.1	52.3	2834	116	2087	2767	3666	1.0	0.04	0.7	1.0	1.4
		11–14	40.2	3.48	24.6	37.3	59.2	3002	132	2169	2947	3905	1.1	0.05	0.7	1.1	1.7
		Total	38.1	1.90	25.0	36.2	53.4	2792	93	1973	2721	3703	1.0	0.04	0.8	1.0	1.4
NZEO	Males	5–6	28.3	3.21	19.0	26.8	39.3	2879	171	2053	2758	3843	1.0	0.05	0.7	1.0	1.4
		7–10	35.5	2.06	22.6	33.1	51.3	3337	106	2779	3304	3939	1.3	0.06	1.1	1.3	1.6
		11–14	47.5	3.70	25.0	43.0	75.0	3995	175	2592	3851	5582	1.6	0.15	0.9	1.4	2.4
		Total	39.6	1.97	24.5	36.8	57.9	3526	87	2674	3452	4474	1.4	0.07	0.9	1.2	2.0
	Females	5–6	22.6	1.40	13.9	20.8	33.7	2569	135	1604	2502	3621	1.2	0.28	0.6	1.0	1.9
		7–10	31.8	1.62	20.2	30.4	45.3	2821	91	2130	2774	3571	1.6	0.64	0.8	1.1	2.0
		11–14	32.7	2.13	20.7	31.3	46.6	3002	130	1873	2958	4184	1.1	0.04	0.7	1.1	1.6
		Total	30.7	1.27	20.0	29.3	43.2	2856	68	1814	2779	3996	1.3	0.18	0.7	1.0	1.8

* Percentiles.

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

Table A8: Energy sources[1]

			Bread %	Potatoes, kumara and taro %	Biscuits %	Beverage %	Milk %	Fruit %	Sugar and sweets %	Grains and pasta %	Cakes and muffins %	Dairy products %
New Zealand children (5–14 years)			13	8	6	6	6	5	5	5	4	4
	Males	5–6	15	7	7	6	7	6	4	4	3	5
		7–10	12	8	6	6	7	5	5	5	5	4
		11–14	13	9	6	7	6	3	5	4	3	4
		Total	13	8	6	6	6	4	5	5	4	4
	Females	5–6	15	7	7	6	8	6	5	4	3	5
		7–10	13	8	7	6	6	6	5	5	4	4
		11–14	13	9	7	7	5	5	5	5	5	4
		Total	13	8	7	6	6	5	5	5	4	4
NZDep01	Males	I	12	8	7	6	8	5	4	5	4	5
		II	14	7	5	6	6	5	6	5	4	4
		III	13	9	6	6	6	4	5	4	5	4
		IV	12	8	6	6	7	3	6	6	4	3
		V	14	9	5	7	5	5	4	4	4	3
	Females	I	12	7	8	8	7	6	4	5	7	5
		II	14	7	8	6	6	6	4	5	7	4
		III	13	8	7	6	5	5	5	7	3	3
		IV	13	9	6	6	5	5	5	5	2	5
		V	14	8	6	7	5	5	5	4	3	3
School type	Males	Urban	13	8	6	6	6	4	5	5	4	4
		Rural	13	8	6	5	7	5	4	3	5	4
	Females	Urban	13	8	7	7	6	5	5	5	5	4
		Rural	15	9	6	6	6	6	5	4	4	3
Māori	Males	5–6	14	8	5	6	6	5	5	3	3	4
		7–10	13	9	6	6	5	5	5	4	4	4
		11–14	13	11	4	7	5	3	7	3	3	3
		Total	13	10	5	7	5	4	6	4	3	4
	Females	5–6	13	10	7	6	6	5	4	4	3	5
		7–10	13	9	7	7	5	5	5	4	3	5
		11–14	11	10	7	8	4	4	6	4	4	4
		Total	12	10	7	7	5	4	5	4	4	5
Pacific	Males	5–6	17	7	6	7	6	6	5	4	4	3
		7–10	14	9	6	7	4	4	3	5	3	3
		11–14	12	10	4	7	3	4	4	4	4	2
		Total	14	9	5	7	4	5	4	4	3	3
	Females	5–6	14	9	6	7	7	6	3	5	2	3
		7–10	15	9	5	7	4	5	4	4	5	4
		11–14	13	11	5	8	3	4	6	3	3	2
		Total	14	10	5	7	4	4	5	4	4	3
NZEO	Males	5–6	15	7	8	5	8	6	4	4	4	5
		7–10	12	7	6	5	8	5	5	5	6	4
		11–14	13	8	6	7	6	3	5	5	3	4
		Total	13	8	7	6	7	4	5	5	4	4
	Females	5–6	16	5	8	6	9	6	6	4	3	5
		7–10	13	7	8	5	6	7	5	6	5	3
		11–14	13	8	7	7	6	5	4	5	6	5
		Total	14	7	7	6	7	6	5	5	5	4

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table A9: Protein sources[1]

			Bread %	Milk %	Poultry %	Beef and veal %	Bread based dishes %	Grains and pasta %	Potatoes, kumara and taro %	Sausages and processed meats %	Fish and seafood %	Breakfast cereals %
New Zealand children (5–14 years)			13	11	9	8	5	5	4	4	4	4
	Males	5–6	15	12	10	8	3	3	4	4	3	5
		7–10	13	12	7	9	5	5	4	6	4	5
		11–14	12	11	11	9	5	4	5	4	5	4
		Total	13	11	9	9	5	4	4	5	5	4
	Females	5–6	16	14	8	7	4	4	4	3	2	4
		7–10	13	10	11	10	4	5	4	4	4	3
		11–14	13	11	9	7	6	5	5	3	4	3
		Total	14	11	9	8	5	5	4	4	3	3
NZDep01	Males	I	11	15	10	10	3	5	4	4	3	5
		II	14	11	8	6	7	4	4	5	4	5
		III	13	11	8	10	5	4	5	4	4	4
		IV	12	12	9	7	5	7	4	4	5	4
		V	14	8	11	9	5	4	5	5	7	4
	Females	I	12	14	10	5	5	6	4	2	4	3
		II	14	11	9	8	5	5	4	3	3	3
		III	13	10	9	9	7	7	4	5	2	3
		IV	13	9	10	11	4	5	5	3	3	3
		V	14	9	11	8	5	4	4	4	4	3
School type	Males	Urban	13	11	10	8	5	5	4	5	5	4
		Rural	13	12	7	12	3	3	5	6	3	5
	Females	Urban	13	11	10	7	5	5	4	4	3	3
		Rural	15	9	9	11	4	4	5	3	4	3
Māori	Males	5–6	14	10	10	11	3	3	5	5	3	5
		7–10	13	9	9	9	4	4	5	6	4	4
		11–14	13	9	9	10	5	3	6	4	7	4
		Total	13	9	9	10	4	4	5	5	5	4
	Females	5–6	13	10	8	10	4	4	5	4	5	3
		7–10	14	8	10	7	5	4	5	5	3	3
		11–14	12	8	10	7	7	4	6	3	5	2
		Total	13	8	9	8	6	4	5	4	4	3
Pacific	Males	5–6	18	10	15	5	2	3	4	4	6	3
		7–10	14	7	16	8	5	4	5	4	7	2
		11–14	11	4	16	11	5	3	5	3	10	2
		Total	14	6	15	9	4	3	5	3	8	2
	Females	5–6	15	12	14	2	4	3	4	3	4	3
		7–10	15	7	15	7	5	4	5	3	5	2
		11–14	13	5	16	8	6	3	5	2	6	1
		Total	14	7	15	6	5	4	5	3	5	2
NZEO	Males	5–6	15	14	9	7	3	4	4	4	3	5
		7–10	12	13	6	9	6	6	4	6	4	5
		11–14	12	12	11	8	5	4	4	4	5	4
		Total	13	13	9	8	5	5	4	5	4	4
	Females	5–6	17	16	7	7	4	4	3	3	1	4
		7–10	13	10	10	11	4	6	4	4	4	3
		11–14	14	12	8	7	6	5	4	3	3	3
		Total	14	12	9	8	5	5	4	3	3	3

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table A10: Total fat sources[1]

			Potatoes, kumara and taro %	Milk %	Biscuits %	Butter and margarine %	Pies and pasties %	Poultry %	Sausages and processed meats %	Cakes and muffins %	Dairy products %	Beef and veal %
New Zealand children (5–14 years)			9	8	7	6	6	6	5	5	5	5
	Males	5–6	9	10	8	7	6	6	6	4	5	5
		7–10	9	9	7	6	6	5	7	6	4	4
		11–14	10	7	6	6	6	6	5	4	5	5
		Total	9	8	7	6	6	6	6	5	5	5
	Females	5–6	8	11	9	7	6	5	4	4	5	3
		7–10	9	7	8	6	6	6	5	5	4	5
		11–14	10	6	8	6	6	6	4	6	5	4
		Total	9	7	8	6	6	6	5	5	5	4
NZDep01	Males	I	9	10	9	5	4	7	5	5	6	4
		II	8	8	6	6	5	5	8	5	5	4
		III	10	8	8	5	6	6	6	6	5	6
		IV	10	8	7	6	7	5	5	5	3	4
		V	10	6	6	8	7	6	5	4	4	6
	Females	I	8	9	11	4	5	5	3	9	5	3
		II	8	8	9	6	4	5	4	8	4	4
		III	9	6	8	5	5	6	6	4	3	4
		IV	10	7	7	4	6	7	4	3	6	5
		V	9	7	7	8	8	7	4	4	4	5
School type	Males	Urban	9	8	7	6	6	6	6	5	5	5
		Rural	9	9	8	8	6	4	7	5	4	6
	Females	Urban	9	7	8	5	6	6	5	5	5	4
		Rural	10	8	7	7	4	6	4	5	4	4
Māori	Males	5–6	9	8	6	7	11	6	6	3	5	7
		7–10	11	7	6	7	7	6	8	5	5	5
		11–14	12	7	5	9	8	6	6	4	4	6
		Total	11	7	5	8	8	6	7	4	5	6
	Females	5–6	12	8	8	6	6	5	5	3	5	5
		7–10	10	6	7	7	8	7	7	4	6	4
		11–14	11	6	7	6	8	6	4	6	5	3
		Total	11	6	7	7	7	6	5	5	5	4
Pacific	Males	5–6	8	8	6	9	10	8	5	5	4	4
		7–10	9	5	6	8	9	10	4	4	4	7
		11–14	10	3	4	7	10	10	4	4	2	8
		Total	9	5	5	8	10	10	4	4	3	7
	Females	5–6	10	9	7	9	11	9	3	3	3	1
		7–10	10	6	5	8	8	8	4	6	5	5
		11–14	11	4	5	7	10	9	3	4	2	6
		Total	10	6	6	8	9	9	3	5	4	5
NZEO	Males	5–6	8	11	9	7	3	6	6	4	6	4
		7–10	8	10	8	5	5	4	7	7	4	4
		11–14	9	7	7	5	5	6	5	4	5	5
		Total	9	9	8	5	5	5	6	5	5	4
	Females	5–6	6	13	10	6	6	4	4	4	5	3
		7–10	8	8	9	5	4	6	5	6	4	5
		11–14	9	7	8	5	5	5	4	6	5	4
		Total	8	8	9	5	5	5	4	6	4	4

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table IV.

Table A11: Saturated fat sources[1]

			Milk %	Potatoes, kumara and taro %	Biscuits %	Pies and pasties %	Dairy products %	Cheese %	Cakes and muffins %	Sausages and processed meats %	Butter and margarine %	Beef and veal %
New Zealand children (5–14 years)			11	9	9	7	6	5	5	5	5	4
	Males	5–6	13	9	9	7	7	4	4	6	6	5
		7–10	12	9	9	6	6	4	6	7	4	4
		11–14	10	10	8	7	7	6	4	5	5	5
		Total	11	9	9	7	6	5	5	6	5	5
	Females	5–6	15	8	11	7	7	5	4	4	4	3
		7–10	10	9	10	6	6	6	6	5	4	4
		11–14	9	10	9	7	6	6	6	4	4	4
		Total	10	9	10	7	6	6	6	4	4	4
NZDep01	Males	I	13	9	10	5	9	6	5	5	4	3
		II	12	8	7	5	7	7	5	8	4	4
		III	11	10	9	6	6	5	6	5	4	5
		IV	12	10	9	8	4	4	5	5	5	4
		V	9	11	7	8	6	3	5	5	6	6
	Females	I	12	8	13	5	7	5	9	3	3	2
		II	11	8	11	5	6	7	9	4	4	4
		III	9	10	10	6	4	6	4	6	3	4
		IV	9	10	8	7	8	7	3	4	3	5
		V	10	10	8	9	6	5	4	4	6	4
School type	Males	Urban	11	9	8	7	6	5	5	6	5	4
		Rural	13	9	9	6	6	6	6	6	5	6
	Females	Urban	10	9	10	7	7	6	6	5	4	4
		Rural	11	10	9	5	5	6	5	4	6	4
Māori	Males	5–6	11	10	7	12	7	2	4	6	5	7
		7–10	10	11	8	7	7	3	5	8	5	5
		11–14	10	12	6	9	5	3	4	6	6	6
		Total	10	11	7	9	6	3	4	7	5	5
	Females	5–6	12	12	10	7	7	3	3	5	4	5
		7–10	9	10	9	9	8	3	5	6	5	4
		11–14	8	11	9	8	7	6	6	4	6	3
		Total	9	11	9	8	7	4	5	5	5	4
Pacific	Males	5–6	12	8	7	11	6	2	5	5	7	4
		7–10	8	9	7	11	5	3	4	4	6	6
		11–14	5	10	5	12	3	2	5	4	5	8
		Total	7	9	6	12	4	2	5	4	6	7
	Females	5–6	14	11	9	13	5	1	3	4	6	1
		7–10	8	10	7	9	7	3	7	4	6	5
		11–14	5	12	6	11	3	2	4	3	5	5
		Total	8	11	7	11	5	2	5	3	6	4
NZEO	Males	5–6	15	9	11	4	7	6	4	6	6	3
		7–10	14	8	9	5	5	5	7	7	4	4
		11–14	10	9	9	6	7	7	4	5	4	5
		Total	12	9	9	5	6	6	5	6	4	4
	Females	5–6	18	6	12	6	7	6	4	4	4	2
		7–10	11	8	11	4	5	7	6	5	4	5
		11–14	10	10	10	6	7	7	7	4	3	4
		Total	11	8	11	5	6	7	6	4	4	4

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table IV.

Table A12: Polyunsaturated fat sources[1]

			Butter and margarine %	Potatoes, kumara and taro %	Bread %	Nuts and seeds %	Poultry %	Bread based dishes %	Biscuits %	Cakes and muffins %	Grains and pasta %	Snack foods %
New Zealand children (5–14 years)			11	8	7	7	6	5	5	5	4	4
	Males	5–6	11	7	9	7	6	2	6	4	3	4
		7–10	11	8	7	7	5	5	5	6	4	4
		11–14	12	8	7	7	8	6	4	4	3	3
		Total	11	8	7	7	7	5	5	4	4	3
	Females	5–6	12	6	8	9	6	5	7	4	4	5
		7–10	10	7	7	7	7	4	6	5	5	4
		11–14	11	8	7	6	6	7	5	5	5	4
		Total	11	7	7	7	6	6	6	5	5	4
NZDep01	Males	I	7	8	7	7	9	4	5	5	4	2
		II	10	6	8	7	5	7	4	5	4	3
		III	10	8	7	8	6	6	6	5	2	3
		IV	11	8	7	8	6	5	5	4	5	3
		V	15	9	7	6	7	5	4	4	3	5
	Females	I	6	7	7	5	6	7	7	9	5	3
		II	11	6	7	5	6	5	7	7	7	3
		III	9	8	8	5	8	5	6	5	6	3
		IV	8	9	6	8	8	4	5	2	6	6
		V	15	8	7	5	7	6	5	3	3	5
School type	Males	Urban	10	8	7	7	7	6	5	4	4	3
		Rural	16	8	8	6	5	3	5	5	3	3
	Females	Urban	11	7	7	6	7	5	6	5	5	4
		Rural	11	7	8	11	5	6	4	5	4	4
Māori	Males	5–6	14	9	7	6	6	2	4	4	2	4
		7–10	13	9	6	5	7	5	4	5	4	5
		11–14	18	10	7	4	6	6	3	4	3	3
		Total	15	10	7	5	6	5	4	4	3	4
	Females	5–6	14	10	6	5	6	6	6	3	3	6
		7–10	13	9	6	6	7	5	5	3	4	6
		11–14	10	9	6	4	7	9	5	5	4	6
		Total	12	9	6	5	7	6	5	4	4	6
Pacific	Males	5–6	16	7	8	4	7	2	4	4	2	6
		7–10	13	8	6	4	10	5	5	3	3	3
		11–14	13	9	5	3	10	6	3	4	3	5
		Total	14	8	6	4	9	5	4	3	3	5
	Females	5–6	18	7	7	5	10	4	4	3	3	6
		7–10	15	8	6	5	8	5	4	4	3	5
		11–14	13	9	5	2	9	7	4	3	3	6
		Total	15	9	6	4	9	5	4	4	3	6
NZEO	Males	5–6	8	6	10	8	6	2	7	4	3	3
		7–10	9	8	7	9	4	5	6	6	5	3
		11–14	10	7	7	8	8	7	5	3	4	2
		Total	9	7	7	8	6	6	5	5	4	3
	Females	5–6	11	5	9	11	5	5	7	4	4	5
		7–10	8	6	7	7	7	4	7	5	6	4
		11–14	11	7	7	7	5	6	5	5	6	3
		Total	10	6	8	8	6	5	6	5	5	3

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table IV.

Table A13: Monounsaturated fat sources[1]

			Potatoes, kumara and taro %	Poultry %	Biscuits %	Butter and margarine %	Pies and pasties %	Sausages and processed meats %	Milk %	Beef and veal %	Cakes and muffins %	Nuts and seeds %
New Zealand children (5–14 years)			10	8	7	7	6	6	6	6	5	5
	Males	5–6	9	9	7	7	7	7	8	6	4	5
		7–10	9	6	6	6	6	9	7	5	6	5
		11–14	10	9	6	7	6	6	5	6	4	5
		Total	10	8	6	7	6	7	6	6	5	5
	Females	5–6	9	7	8	8	7	5	9	4	4	6
		7–10	9	8	7	6	6	6	6	6	5	4
		11–14	10	8	7	6	7	5	5	5	6	4
		Total	10	8	7	6	7	5	6	5	5	4
NZDep01	Males	I	9	9	8	5	4	6	8	4	5	5
		II	8	6	5	7	5	10	7	5	4	5
		III	10	7	7	6	6	7	6	7	5	5
		IV	10	7	6	7	7	6	6	5	5	5
		V	11	9	5	8	8	6	5	7	5	4
	Females	I	10	7	9	5	5	4	7	3	9	4
		II	8	8	9	6	5	5	6	6	8	4
		III	10	8	8	6	6	7	5	5	4	3
		IV	10	9	6	5	7	5	5	7	3	5
		V	10	9	6	8	9	5	5	5	5	3
School type	Males	Urban	10	8	6	6	6	7	6	6	5	5
		Rural	9	6	7	9	6	8	7	7	5	4
	Females	Urban	9	8	7	6	7	6	6	5	5	4
		Rural	10	8	7	7	5	4	6	6	5	7
Māori	Males	5–6	9	8	5	8	12	7	6	9	3	4
		7–10	11	8	5	7	7	9	5	6	5	3
		11–14	12	7	4	10	8	7	5	7	4	3
		Total	11	8	5	8	8	8	5	7	4	3
	Females	5–6	12	7	7	7	7	5	6	6	3	4
		7–10	11	9	6	7	9	8	5	5	5	3
		11–14	11	9	7	6	8	4	4	4	6	2
		Total	11	8	6	7	8	6	5	4	5	3
Pacific	Males	5–6	7	11	5	10	10	6	6	5	5	3
		7–10	9	14	5	8	10	5	4	8	4	3
		11–14	9	13	3	7	10	4	2	10	4	2
		Total	9	13	4	8	10	5	4	9	4	3
	Females	5–6	10	13	6	9	12	4	7	1	3	3
		7–10	10	11	5	8	9	4	4	6	7	3
		11–14	11	12	4	7	10	3	3	7	4	2
		Total	10	12	5	8	10	4	4	5	5	3
NZEO	Males	5–6	9	9	8	7	4	7	8	4	4	6
		7–10	9	5	7	6	5	9	8	5	7	6
		11–14	10	8	7	6	5	6	6	6	4	6
		Total	9	7	7	6	5	7	7	5	5	6
	Females	5–6	7	6	10	8	7	5	11	3	4	8
		7–10	8	8	8	5	5	6	6	6	5	5
		11–14	10	7	7	6	5	5	6	5	6	5
		Total	9	7	8	6	5	5	7	5	5	5

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table IV.

Table A14: Cholesterol sources[1]

			Eggs and egg dishes %	Poultry %	Milk %	Beef and veal %	Cakes and muffins %	Sausages and processed meats %	Dairy products %	Bread based dishes %	Fish and seafood %	Cheese %
New Zealand children (5–14 years)			17	14	9	8	6	6	5	4	4	4
	Males	5–6	20	15	10	8	4	6	6	2	3	3
		7–10	17	11	10	8	8	7	5	4	5	3
		11–14	15	15	8	8	5	6	4	5	5	4
		Total	16	13	9	8	6	7	5	4	5	4
	Females	5–6	20	13	13	7	4	5	6	4	3	4
		7–10	18	15	8	9	6	5	5	3	4	4
		11–14	15	13	7	6	9	4	5	6	3	5
		Total	17	14	8	8	7	4	5	5	4	5
NZDep01	Males	I	13	16	11	10	6	6	7	2	4	5
		II	14	12	10	6	6	8	5	6	4	6
		III	17	12	9	9	6	6	5	4	3	4
		IV	17	12	9	7	6	6	4	5	5	3
		V	22	14	6	8	5	6	4	4	7	2
	Females	I	13	13	11	5	12	3	6	5	4	4
		II	17	14	8	7	12	4	5	4	3	5
		III	17	15	7	8	4	6	4	6	2	5
		IV	18	14	8	11	4	4	6	3	3	5
		V	21	16	7	7	4	4	4	4	4	4
School type	Males	Urban	18	14	8	8	5	6	5	5	5	4
		Rural	11	12	11	11	9	8	5	3	3	5
	Females	Urban	18	14	8	7	7	5	5	4	3	5
		Rural	11	14	9	11	6	4	4	5	5	5
Māori	Males	5–6	29	14	8	10	3	6	5	1	2	1
		7–10	24	11	7	7	5	7	5	3	5	2
		11–14	19	12	7	9	4	6	4	5	6	3
		Total	23	12	7	8	4	7	4	4	5	2
	Females	5–6	26	11	8	9	4	5	6	3	5	2
		7–10	21	15	7	6	4	6	6	4	4	3
		11–14	13	14	6	6	6	4	5	6	4	5
		Total	19	14	7	7	5	5	6	5	4	3
Pacific	Males	5–6	23	20	9	5	4	6	4	3	6	1
		7–10	24	22	5	7	4	4	3	4	6	2
		11–14	22	20	3	10	4	3	2	4	8	1
		Total	23	21	5	8	4	4	3	4	7	1
	Females	5–6	34	19	9	1	2	3	3	4	3	<1
		7–10	26	20	6	6	5	3	5	3	5	2
		11–14	19	21	4	8	4	2	2	5	5	1
		Total	25	20	5	6	4	3	3	4	5	1
NZEO	Males	5–6	14	16	12	7	6	6	6	2	3	4
		7–10	12	9	11	9	9	8	5	5	4	4
		11–14	13	15	8	8	5	6	5	5	5	5
		Total	13	13	10	8	7	7	5	4	4	5
	Females	5–6	14	13	16	8	4	5	7	5	2	5
		7–10	15	15	9	10	7	5	4	3	4	6
		11–14	16	12	8	7	10	4	6	6	3	6
		Total	15	13	10	8	8	4	5	5	3	6

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table A15: Total carbohydrate sources[1]

			Bread %	Beverage %	Potatoes, kumara and taro %	Fruit %	Sugar and sweets %	Biscuits %	Breakfast cereals %	Grains and pasta %	Cakes and muffins %	Milk %
New Zealand children (5–14 years)			20	11	9	8	7	7	6	5	4	4
	Males	5–6	22	10	7	10	6	7	7	5	3	4
		7–10	19	10	8	8	7	6	7	6	5	4
		11–14	20	12	10	6	8	6	6	5	4	4
		Total	20	11	9	7	7	6	7	5	4	4
	Females	5–6	21	10	7	9	7	7	5	5	3	5
		7–10	20	10	8	10	7	8	5	6	4	3
		11–14	19	13	9	8	7	7	4	5	5	4
		Total	20	11	8	9	7	7	5	5	4	4
NZDep01	Males	I	18	11	9	7	6	7	8	5	4	5
		II	21	10	8	8	9	5	8	6	4	4
		III	20	10	9	7	7	7	6	5	5	4
		IV	18	11	9	6	9	7	6	6	4	4
		V	22	12	10	8	7	5	5	6	4	3
	Females	I	17	13	7	10	6	8	5	5	7	4
		II	20	10	7	10	6	8	4	6	8	4
		III	19	11	8	8	7	7	5	8	3	3
		IV	19	11	9	8	8	7	5	5	3	4
		V	21	12	9	8	8	7	4	5	3	3
School type	Males	Urban	20	11	9	7	8	6	6	6	4	4
		Rural	20	9	9	8	6	7	8	4	6	4
	Females	Urban	19	12	8	9	7	8	5	6	4	4
		Rural	23	10	9	9	8	6	5	4	4	3
Māori	Males	5–6	22	11	9	8	7	5	7	4	3	4
		7–10	19	12	10	8	8	6	7	5	4	3
		11–14	21	13	11	5	11	5	6	3	3	4
		Total	20	12	10	7	9	5	6	4	3	3
	Females	5–6	20	10	10	9	6	7	5	5	3	4
		7–10	20	12	9	9	8	7	6	4	3	3
		11–14	17	15	10	6	10	7	3	4	4	3
		Total	19	13	10	8	8	7	5	4	3	3
Pacific	Males	5–6	25	11	8	10	6	6	5	5	4	3
		7–10	22	13	11	8	5	6	4	6	3	2
		11–14	19	14	12	7	7	5	3	6	4	2
		Total	21	13	11	8	6	6	4	6	3	2
	Females	5–6	22	12	9	9	5	7	5	6	2	4
		7–10	23	12	10	8	6	5	4	6	4	3
		11–14	21	14	13	6	9	6	2	4	4	2
		Total	22	13	11	8	7	6	3	5	3	3
NZEO	Males	5–6	22	9	7	10	6	8	8	5	4	5
		7–10	18	9	7	8	7	6	8	6	6	5
		11–14	20	12	9	6	7	7	6	6	4	4
		Total	19	10	8	7	7	7	7	6	5	4
	Females	5–6	22	10	5	9	8	7	5	5	3	6
		7–10	19	9	7	11	7	8	5	7	5	4
		11–14	20	12	8	9	6	7	5	6	6	4
		Total	20	11	7	10	7	8	5	6	5	4

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table A16: Sucrose sources[1]

			Beverage %	Sugar and sweets %	Biscuits %	Fruit %	Dairy products %	Cakes and muffins %	Puddings and desserts %	Breakfast cereals %	Nuts and seeds %	Milk %
New Zealand children (5–14 years)			26	21	11	11	9	7	2	2	2	2
	Males	5–6	27	18	11	13	11	6	1	3	2	1
		7–10	24	20	10	11	8	9	2	3	3	2
		11–14	29	23	11	7	8	6	2	2	2	2
		Total	27	21	11	10	9	7	2	3	2	2
	Females	5–6	24	20	12	12	11	4	3	2	2	3
		7–10	24	20	12	14	8	8	2	2	2	<1
		11–14	28	20	12	10	10	7	2	<1	1	2
		Total	26	20	12	12	10	7	2	1	2	1
NZDep01	Males	I	24	18	11	9	11	7	3	4	2	3
		II	25	23	9	9	9	9	2	3	2	<1
		III	23	21	12	11	9	9	1	2	3	2
		IV	28	24	12	8	7	6	3	2	2	1
		V	32	22	10	10	8	7	1	1	2	1
	Females	I	26	16	12	14	9	10	2	2	1	<1
		II	21	17	13	15	9	12	2	<1	2	2
		III	24	21	12	12	9	6	6	2	1	1
		IV	26	22	11	10	12	4	2	1	2	2
		V	29	24	11	11	8	4	2	1	2	2
School type	Males	Urban	27	22	11	9	9	7	2	2	2	2
		Rural	24	19	11	11	8	10	3	3	2	<1
	Females	Urban	26	20	12	12	10	7	3	1	2	2
		Rural	24	22	11	13	8	8	2	1	2	<1
Māori	Males	5–6	31	20	10	12	10	5	1	2	2	<1
		7–10	27	23	10	11	9	6	2	2	2	1
		11–14	30	31	9	7	6	6	1	1	1	2
		Total	29	26	9	10	8	6	2	2	2	1
	Females	5–6	26	18	13	13	12	4	1	1	3	2
		7–10	28	22	12	12	11	5	1	2	1	1
		11–14	30	25	11	7	9	4	3	<1	1	2
		Total	29	23	12	10	10	4	2	1	1	2
Pacific	Males	5–6	28	21	10	14	8	6	3	1	3	<1
		7–10	33	17	11	11	7	6	2	2	3	<1
		11–14	33	24	9	8	5	7	3	1	<1	<1
		Total	32	20	10	10	7	7	3	2	2	<1
	Females	5–6	30	19	12	12	8	3	3	2	3	2
		7–10	32	21	9	10	9	7	2	1	2	<1
		11–14	34	27	10	8	4	6	2	<1	1	<1
		Total	32	23	10	10	7	6	2	1	2	1
NZEO	Males	5–6	24	16	13	13	12	6	1	4	3	1
		7–10	22	20	11	11	8	11	2	3	3	2
		11–14	28	21	12	7	9	6	2	3	2	2
		Total	25	20	12	10	9	8	2	3	3	2
	Females	5–6	22	21	12	12	10	4	4	2	2	3
		7–10	22	19	12	15	8	9	3	2	2	<1
		11–14	26	17	12	12	11	8	2	1	1	2
		Total	24	19	12	13	10	8	3	2	2	1

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table A17: Fructose sources[1]

			Fruit %	Beverage %	Sugar and sweets %	Vegetables %	Bread %	Savoury sauces %	Breakfast cereals %	Snack bars %	Dairy products %	Cakes and muffins %
New Zealand children (5–14 years)			38	32	6	4	3	2	2	2	2	1
	Males	5–6	47	24	8	4	3	2	3	2	2	1
		7–10	40	28	7	4	3	3	3	2	2	2
		11–14	29	38	9	5	3	3	3	2	2	1
		Total	36	32	8	4	3	3	3	2	2	1
	Females	5–6	41	31	6	3	3	2	2	3	2	1
		7–10	45	27	5	4	4	2	1	2	2	2
		11–14	35	39	5	4	3	2	2	2	2	2
		Total	40	33	5	4	3	2	2	2	2	1
NZDep01	Males	I	35	33	6	5	3	2	5	2	2	1
		II	39	29	9	4	4	3	4	2	2	<1
		III	36	32	6	5	2	2	3	3	2	2
		IV	30	30	13	4	3	3	4	3	1	2
		V	38	34	7	3	3	3	<1	1	2	1
	Females	I	42	35	3	3	3	2	2	2	1	3
		II	43	28	4	5	3	2	2	2	2	2
		III	35	35	5	5	4	2	2	2	2	<1
		IV	41	32	6	3	4	2	2	2	2	1
		V	39	34	6	3	2	2	1	2	2	1
School type	Males	Urban	35	33	8	4	3	3	3	2	2	1
		Rural	42	25	7	5	3	3	3	2	2	2
	Females	Urban	39	34	5	4	3	2	2	2	2	2
		Rural	41	30	7	4	3	2	2	2	1	1
Māori	Males	5–6	42	28	8	4	3	3	2	2	2	<1
		7–10	41	32	5	3	3	3	2	2	2	1
		11–14	27	39	10	4	2	5	2	1	1	1
		Total	35	34	7	4	3	4	2	2	2	1
	Females	5–6	48	22	6	4	3	3	2	4	1	1
		7–10	40	34	5	3	3	2	2	2	2	1
		11–14	28	45	6	3	2	3	<1	1	2	1
		Total	36	37	6	3	3	3	2	2	2	1
Pacific	Males	5–6	46	34	4	1	3	2	1	1	<1	1
		7–10	41	38	3	3	2	2	<1	<1	<1	1
		11–14	35	43	4	3	2	2	<1	<1	3	2
		Total	39	39	4	2	2	2	<1	<1	2	2
	Females	5–6	49	32	3	2	2	<1	<1	1	2	<1
		7–10	40	38	4	3	2	1	1	<1	1	2
		11–14	30	46	6	3	2	3	<1	<1	<1	1
		Total	38	40	5	3	2	2	<1	<1	1	2
NZEO	Males	5–6	49	21	8	4	2	2	4	2	3	1
		7–10	40	25	8	4	3	3	4	2	2	2
		11–14	29	37	9	5	3	2	3	2	2	1
		Total	36	30	8	4	3	3	4	2	2	1
	Females	5–6	38	34	7	3	3	1	2	3	2	1
		7–10	47	23	5	5	5	2	1	2	2	2
		11–14	38	36	4	4	3	2	3	2	2	2
		Total	41	31	5	4	4	2	2	2	2	2

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table A18: Dietary fibre sources[1]

			Bread %	Potatoes, kumara and taro %	Fruit %	Vegetables %	Breakfast cereals %	Grains and pasta %	Pies and pasties %	Biscuits %	Bread based dishes %	Cakes and muffins %
New Zealand children (5–14 years)			20	14	14	11	11	5	4	4	3	2
	Males	5–6	21	12	16	9	14	4	4	3	1	2
		7–10	19	13	14	10	13	5	3	4	3	3
		11–14	21	17	9	11	11	5	4	3	3	2
		Total	20	15	12	10	12	5	4	3	3	2
	Females	5–6	22	12	16	10	9	5	3	4	3	2
		7–10	19	13	16	11	9	5	3	4	3	2
		11–14	19	15	14	11	8	5	4	4	3	3
		Total	19	13	15	11	8	5	4	4	3	2
NZDep01	Males	I	18	13	12	16	12	5	3	4	2	2
		II	22	12	13	10	14	5	2	3	3	2
		III	20	16	12	10	11	4	3	4	3	3
		IV	19	16	10	10	12	6	4	3	3	2
		V	21	17	13	7	11	4	5	3	3	2
	Females	I	18	11	19	11	8	6	2	5	3	4
		II	20	11	18	13	7	4	3	4	4	3
		III	19	12	14	13	8	6	3	4	3	2
		IV	17	15	13	11	10	5	4	3	3	1
		V	20	15	14	8	9	5	6	3	3	2
School type	Males	Urban	20	15	12	10	12	5	4	3	3	2
		Rural	20	14	13	11	13	3	4	4	2	3
	Females	Urban	19	13	15	11	8	5	4	4	3	2
		Rural	21	15	14	12	9	4	2	3	3	2
Māori	Males	5–6	19	14	13	8	16	4	7	2	2	1
		7–10	19	17	14	8	12	4	4	3	2	2
		11–14	20	20	9	7	13	4	6	3	3	2
		Total	19	18	12	8	13	4	5	3	2	2
	Females	5–6	18	19	15	9	10	4	4	3	2	1
		7–10	19	16	15	9	10	4	6	4	3	2
		11–14	18	19	11	8	8	4	6	4	5	3
		Total	19	18	13	8	9	4	5	4	3	2
Pacific	Males	5–6	25	14	18	3	9	4	7	3	<1	2
		7–10	21	19	14	6	7	5	7	3	3	2
		11–14	19	21	14	6	6	4	9	3	3	2
		Total	21	19	15	5	7	4	8	3	2	2
	Females	5–6	20	15	18	3	9	4	8	4	2	2
		7–10	23	17	15	6	7	5	6	3	2	3
		11–14	20	23	12	6	4	4	8	3	4	2
		Total	21	19	14	6	6	4	7	3	3	2
NZEO	Males	5–6	22	11	17	11	14	4	2	4	1	2
		7–10	18	11	14	11	13	5	3	4	3	3
		11–14	21	15	9	13	11	5	3	3	4	2
		Total	20	13	12	12	12	5	3	4	3	2
	Females	5–6	24	8	16	11	9	5	2	4	3	2
		7–10	18	11	17	12	9	6	2	4	3	2
		11–14	20	12	15	13	8	5	4	4	3	3
		Total	20	11	16	13	8	5	3	4	3	2

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table A19: Retinol sources[1]

			Milk %	Butter and margarine %	Dairy products %	Eggs and egg dishes %	Cheese %	Cakes and muffins %	Beverage %	Biscuits %	Bread based dishes %	Poultry %
New Zealand children (5–14 years)			23	12	9	6	5	5	4	4	4	4
	Males	5–6	26	13	10	7	4	4	4	4	2	4
		7–10	26	11	9	6	4	6	4	5	4	3
		11–14	20	13	9	6	6	5	5	4	5	4
		Total	24	12	9	6	5	5	4	4	4	4
	Females	5–6	30	12	10	6	4	3	5	4	4	2
		7–10	22	11	9	6	6	5	4	4	4	4
		11–14	18	11	10	5	6	6	5	4	5	3
		Total	22	11	9	6	6	5	4	4	4	4
NZDep01	Males	I	25	7	11	5	6	4	4	5	2	4
		II	25	11	10	5	7	5	4	4	5	2
		III	22	10	9	6	5	6	4	4	5	4
		IV	24	13	7	5	4	5	6	5	4	3
		V	20	18	9	9	3	5	4	4	4	4
	Females	I	25	7	10	4	5	9	4	5	4	3
		II	21	11	9	6	7	9	3	6	6	4
		III	18	9	7	6	6	4	4	4	6	5
		IV	21	9	12	7	7	4	4	4	4	4
		V	20	15	8	7	4	3	5	4	3	4
School type	Males	Urban	23	12	9	7	5	4	5	4	4	4
		Rural	26	16	8	3	5	6	3	5	2	2
	Females	Urban	22	10	10	6	6	5	4	4	4	4
		Rural	22	14	8	3	6	4	5	4	5	3
Māori	Males	5–6	24	15	11	10	2	3	5	3	2	3
		7–10	22	15	10	10	3	5	3	4	3	3
		11–14	22	19	8	7	4	4	4	3	4	3
		Total	22	17	10	9	3	4	4	3	3	3
	Females	5–6	25	14	13	9	3	3	4	5	4	3
		7–10	18	13	11	7	3	3	4	4	3	5
		11–14	17	14	11	4	6	4	3	4	5	4
		Total	19	14	11	6	4	4	3	4	4	4
Pacific	Males	5–6	25	17	9	9	2	3	4	3	2	5
		7–10	18	17	8	12	3	3	6	4	4	7
		11–14	14	17	5	13	2	6	3	3	6	8
		Total	18	17	7	12	2	4	4	4	4	7
	Females	5–6	26	18	7	13	<1	1	8	5	2	5
		7–10	20	19	11	12	3	5	4	3	4	6
		11–14	14	15	5	9	2	5	4	4	6	7
		Total	19	17	8	11	2	4	5	4	4	6
NZEO	Males	5–6	27	12	10	5	5	4	3	4	1	4
		7–10	29	10	8	4	5	6	4	5	4	3
		11–14	20	11	10	4	7	4	5	5	6	3
		Total	25	10	9	4	6	5	5	5	4	3
	Females	5–6	33	11	9	3	5	2	4	4	4	2
		7–10	24	10	8	5	7	6	4	5	4	4
		11–14	18	9	10	5	6	7	5	4	4	3
		Total	23	10	9	5	6	6	5	4	4	3

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table A20: β-carotene sources[1]

			Vegetables %	Fruit %	Soups and stocks %	Grains and pasta %	Bread based dishes %	Beverage %	Dairy products %	Milk %	Poultry %	Beef and veal %
New Zealand children (5–14 years)			64	8	4	3	2	2	2	1	1	1
	Males	5–6	65	10	2	2	<1	2	2	2	2	1
		7–10	66	9	3	3	2	2	2	2	1	1
		11–14	63	6	4	2	3	2	2	1	2	2
		Total	65	8	4	3	2	2	2	2	1	2
	Females	5–6	61	9	6	2	2	3	2	2	1	<1
		7–10	64	9	2	4	2	2	2	1	2	1
		11–14	62	7	5	5	3	2	2	1	<1	<1
		Total	63	8	4	4	2	2	2	1	1	1
NZDep01	Males	I	74	6	2	2	1	3	2	1	1	<1
		II	61	10	5	1	3	3	2	2	<1	2
		III	65	7	5	2	3	1	2	1	1	1
		IV	60	8	4	4	3	<1	2	2	2	2
		V	57	9	5	2	2	1	2	1	3	3
	Females	I	71	7	3	2	2	3	1	1	<1	<1
		II	59	9	6	4	4	2	2	1	2	2
		III	64	7	6	5	2	2	<1	<1	2	<1
		IV	57	7	5	9	2	1	2	1	1	<1
		V	55	10	4	2	3	3	2	2	2	2
School type	Males	Urban	62	8	4	3	3	2	2	2	2	2
		Rural	72	7	4	2	1	1	1	1	<1	1
	Females	Urban	62	9	5	4	2	2	2	1	2	1
		Rural	66	7	3	5	2	3	1	1	<1	<1
Māori	Males	5–6	62	10	1	2	1	1	2	2	<1	3
		7–10	60	10	2	2	2	1	2	2	2	4
		11–14	54	8	2	3	4	1	2	2	3	5
		Total	58	9	2	2	3	1	2	2	2	4
	Females	5–6	63	11	5	2	2	<1	2	2	2	1
		7–10	61	11	1	4	2	1	3	1	2	2
		11–14	59	6	3	3	4	3	2	1	2	2
		Total	61	9	3	3	3	2	2	2	2	2
Pacific	Males	5–6	33	17	4	2	2	6	3	3	9	4
		7–10	42	15	3	2	2	1	3	2	10	6
		11–14	47	11	<1	4	4	1	1	1	10	6
		Total	43	14	2	3	3	2	2	2	10	6
	Females	5–6	34	14	6	1	1	7	3	5	5	3
		7–10	37	14	4	1	2	11	3	2	5	2
		11–14	43	14	3	4	6	3	1	1	9	1
		Total	39	14	4	2	4	7	2	2	7	2
NZEO	Males	5–6	67	10	2	3	<1	2	1	2	2	<1
		7–10	69	8	4	3	2	2	1	2	<1	<1
		11–14	67	5	5	2	3	2	2	1	<1	<1
		Total	68	7	4	3	2	2	2	1	<1	<1
	Females	5–6	61	8	7	2	2	3	2	2	1	<1
		7–10	67	9	3	4	2	1	1	1	1	1
		11–14	64	6	6	6	3	2	2	1	<1	<1
		Total	65	8	5	4	2	2	1	1	<1	<1

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table A21: Vitamin C sources[1]

			Beverage %	Fruit %	Vegetables %	Dietary supplements %	Potatoes, kumara and taro %	Milk %	Breakfast cereals %	Bread based dishes %	Savoury sauces %	Poultry %
New Zealand children (5–14 years)			37	25	11	10	9	2	1	<1	<1	<1
	Males	5–6	42	28	10	2	8	2	2	<1	<1	<1
		7–10	28	25	10	19	8	2	2	<1	<1	<1
		11–14	40	16	14	8	11	2	1	1	<1	<1
		Total	35	22	11	12	9	2	2	<1	<1	<1
	Females	5–6	37	25	8	16	6	2	1	<1	<1	<1
		7–10	37	30	11	5	8	2	1	<1	<1	<1
		11–14	40	26	11	7	8	2	<1	1	<1	<1
		Total	39	27	10	8	8	2	<1	<1	<1	<1
NZDep01	Males	I	32	18	11	19	9	2	2	<1	<1	<1
		II	33	23	12	14	9	2	2	<1	<1	<1
		III	36	22	14	8	10	2	2	<1	<1	<1
		IV	38	18	10	13	9	2	2	1	<1	<1
		V	38	28	9	4	10	2	1	<1	1	<1
	Females	I	39	24	7	17	6	2	1	<1	<1	<1
		II	39	29	11	7	6	2	<1	<1	<1	<1
		III	40	25	13	2	9	2	1	<1	1	1
		IV	33	27	14	5	11	2	<1	<1	<1	<1
		V	37	30	9	4	9	2	<1	1	<1	<1
School type	Males	Urban	36	22	11	11	9	2	2	<1	<1	<1
		Rural	31	23	11	16	10	3	2	<1	<1	<1
	Females	Urban	39	27	10	7	8	2	1	<1	<1	<1
		Rural	38	28	9	9	8	2	<1	1	<1	<1
Māori	Males	5–6	42	28	10	<1	9	2	2	<1	<1	<1
		7–10	36	33	9	<1	10	2	2	<1	<1	<1
		11–14	33	20	9	13	11	3	1	<1	<1	<1
		Total	36	27	9	6	10	2	2	<1	<1	<1
	Females	5–6	36	35	10	<1	9	2	2	<1	<1	<1
		7–10	39	32	9	3	8	2	1	<1	<1	<1
		11–14	36	24	9	10	11	2	<1	2	<1	<1
		Total	37	29	9	5	9	2	<1	1	<1	<1
Pacific	Males	5–6	47	30	5	0	7	2	2	<1	<1	1
		7–10	38	28	8	0	13	2	2	<1	<1	1
		11–14	32	27	12	0	17	2	<1	1	<1	2
		Total	38	28	9	0	13	2	1	<1	<1	1
	Females	5–6	51	27	5	0	8	2	1	<1	<1	<1
		7–10	44	27	7	<1	11	2	1	<1	<1	1
		11–14	34	24	15	2	15	2	<1	1	<1	2
		Total	42	26	10	1	12	2	<1	<1	<1	1
NZEO	Males	5–6	41	28	11	4	7	3	2	<1	<1	<1
		7–10	25	23	10	26	7	3	2	<1	<1	<1
		11–14	43	14	15	7	11	2	2	1	<1	<1
		Total	35	20	12	15	9	2	2	<1	<1	<1
	Females	5–6	37	22	7	22	5	2	1	<1	<1	<1
		7–10	36	30	11	6	8	2	1	<1	<1	<1
		11–14	42	26	11	6	7	2	<1	<1	<1	<1
		Total	39	27	10	9	7	2	<1	<1	<1	<1

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table A22: Vitamin E sources[1]

			Potatoes, kumara and taro %	Butter and margarine %	Fruit %	Vegetables %	Dietary supplements %	Biscuits %	Savoury sauces %	Snack foods %	Poultry %	Cakes and muffins %
New Zealand children (5–14 years)			10	9	8	7	7	6	5	4	4	4
	Males	5–6	9	9	10	7	6	7	5	5	5	3
		7–10	10	9	8	7	5	6	6	4	4	5
		11–14	11	10	5	8	4	5	6	4	5	3
		Total	10	10	7	7	4	6	6	4	5	4
	Females	5–6	8	10	9	5	6	8	3	6	4	3
		7–10	9	8	10	7	3	7	4	6	5	4
		11–14	9	8	7	7	16	5	4	4	4	4
		Total	9	9	8	7	9	6	4	5	4	4
NZDep01	Males	I	9	6	8	9	10	6	3	3	6	4
		II	10	9	9	7	3	5	6	5	3	4
		III	9	9	6	10	4	7	4	3	5	4
		IV	11	10	6	6	3	7	7	3	4	4
		V	12	12	7	4	5	5	7	6	5	3
	Females	I	8	5	9	8	11	7	4	3	4	7
		II	7	9	10	8	3	7	4	4	4	6
		III	8	7	8	8	14	6	3	3	5	4
		IV	10	7	7	5	9	6	4	8	4	2
		V	10	11	6	4	13	5	4	6	5	3
School type	Males	Urban	11	9	7	7	4	6	6	4	5	4
		Rural	9	12	8	8	5	6	6	4	3	5
	Females	Urban	9	8	8	7	9	7	4	5	4	4
		Rural	8	9	8	7	11	5	4	5	4	4
Māori	Males	5–6	12	12	7	6	<1	5	6	6	4	3
		7–10	11	11	9	5	2	6	7	6	4	4
		11–14	12	16	5	5	<1	4	9	4	4	3
		Total	11	13	7	5	1	5	8	5	4	4
	Females	5–6	12	13	9	4	<1	7	5	7	4	4
		7–10	11	12	9	6	<1	7	4	7	5	2
		11–14	9	7	5	5	18	5	5	5	4	3
		Total	10	10	7	5	8	6	5	6	4	3
Pacific	Males	5–6	13	15	8	2	0	5	5	7	8	3
		7–10	16	13	7	4	0	6	4	4	8	2
		11–14	17	12	8	4	0	4	6	5	8	3
		Total	16	13	8	4	0	5	5	5	8	3
	Females	5–6	14	16	10	3	0	6	2	7	8	2
		7–10	14	13	8	4	2	5	2	7	6	3
		11–14	20	11	5	5	<1	5	6	7	7	3
		Total	17	13	7	4	<1	5	4	7	7	3
NZEO	Males	5–6	8	7	11	8	8	8	4	4	5	3
		7–10	9	7	8	8	6	6	6	4	3	5
		11–14	10	9	5	9	5	6	4	3	5	3
		Total	9	8	7	8	6	6	5	4	4	4
	Females	5–6	6	9	9	6	9	8	2	5	3	3
		7–10	8	7	10	8	3	7	4	5	5	5
		11–14	7	8	7	8	17	5	4	3	3	4
		Total	8	8	9	7	11	7	4	4	4	4

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table A23: Folate sources[1]

			Bread %	Breakfast cereals %	Vegetables %	Potatoes, kumara and taro %	Savoury sauces %	Fruit %	Milk %	Bread based dishes %	Beverage %	Nuts and seeds %
New Zealand children (5–14 years)			22	21	9	6	6	6	4	3	2	2
	Males	5–6	24	26	7	5	7	5	4	1	2	2
		7–10	21	26	8	6	5	6	4	3	1	2
		11–14	23	22	10	7	4	4	4	3	2	2
		Total	22	25	8	6	5	5	4	3	2	2
	Females	5–6	28	19	7	5	6	6	4	2	3	2
		7–10	21	18	10	6	7	8	4	2	2	2
		11–14	21	16	9	7	6	6	3	5	3	2
		Total	22	18	9	6	6	7	4	3	3	2
NZDep01	Males	I	23	24	11	6	5	5	5	2	2	2
		II	25	28	7	5	6	4	4	3	2	2
		III	21	22	10	7	5	5	4	2	2	2
		IV	22	24	8	6	6	3	4	3	2	2
		V	21	23	7	8	5	6	3	3	2	2
	Females	I	21	17	9	5	6	8	4	3	3	1
		II	24	15	11	5	5	8	4	4	2	1
		III	23	17	10	6	5	7	3	4	3	1
		IV	19	22	9	7	5	5	4	4	1	2
		V	20	17	7	7	7	6	4	3	2	2
School type	Males	Urban	23	24	8	6	5	5	4	3	2	2
		Rural	20	27	9	6	6	5	4	2	1	2
	Females	Urban	21	18	9	6	6	7	4	4	3	2
		Rural	26	16	8	6	9	6	3	3	3	3
Māori	Males	5–6	15	31	7	7	6	4	4	2	2	2
		7–10	20	25	7	7	4	6	3	2	1	1
		11–14	21	25	7	9	4	4	4	3	2	1
		Total	20	26	7	8	4	5	4	2	2	1
	Females	5–6	21	23	7	8	4	7	4	2	1	2
		7–10	20	19	8	7	7	7	3	2	2	2
		11–14	19	15	7	9	9	5	3	5	4	1
		Total	20	18	7	8	7	6	3	3	2	1
Pacific	Males	5–6	27	20	3	6	3	6	4	1	4	2
		7–10	21	21	5	10	3	6	3	3	2	2
		11–14	21	15	7	11	2	6	2	4	2	1
		Total	22	18	5	10	3	6	3	3	3	2
	Females	5–6	18	24	3	8	3	6	5	2	4	2
		7–10	20	21	6	10	1	5	3	2	3	2
		11–14	24	11	7	12	2	5	2	4	2	1
		Total	21	17	6	10	2	5	3	3	3	2
NZEO	Males	5–6	28	25	7	5	8	5	4	1	2	2
		7–10	21	27	8	5	6	6	5	3	1	2
		11–14	24	22	11	7	5	3	4	3	2	2
		Total	23	25	9	6	6	5	4	3	2	2
	Females	5–6	31	18	7	4	7	5	5	2	3	2
		7–10	22	17	11	5	7	9	4	3	2	2
		11–14	21	17	9	5	6	6	4	5	3	2
		Total	23	17	10	5	7	7	4	3	3	2

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table A24: Calcium sources[1]

			Milk %	Bread %	Dairy products %	Cheese %	Beverage %	Bread based dishes %	Vegetables %	Fruit %	Grains and pasta %	Cakes and muffins %
New Zealand children (5–14 years)			34	11	9	8	5	3	3	3	2	2
	Males	5–6	37	12	11	7	5	2	2	3	1	2
		7–10	36	10	9	7	5	4	2	3	3	3
		11–14	35	10	7	9	5	4	3	2	3	2
		Total	36	11	9	8	5	3	3	2	2	2
	Females	5–6	39	12	11	6	5	3	2	3	1	1
		7–10	32	11	9	9	5	3	3	4	2	2
		11–14	31	10	10	9	5	4	3	3	3	3
		Total	33	11	10	9	5	3	3	3	2	3
NZDep01	Males	I	42	8	10	8	4	2	4	2	3	2
		II	36	11	9	12	4	5	2	2	2	2
		III	34	10	9	8	5	3	3	2	1	2
		IV	37	10	7	6	6	4	2	2	5	2
		V	30	15	9	5	6	3	3	3	1	2
	Females	I	38	9	10	7	6	3	2	3	3	3
		II	33	10	10	10	4	4	3	4	2	5
		III	32	10	9	9	5	5	4	3	3	2
		IV	29	11	11	10	5	4	3	2	3	1
		V	32	14	9	7	6	4	2	3	2	2
School type	Males	Urban	36	11	9	7	5	3	3	2	3	2
		Rural	36	10	9	9	4	3	3	2	2	3
	Females	Urban	33	11	10	9	5	3	3	3	2	3
		Rural	31	12	9	9	5	4	3	3	2	2
Māori	Males	5–6	35	13	12	3	5	2	2	3	1	1
		7–10	32	13	11	5	5	3	2	4	3	2
		11–14	33	13	7	6	6	3	2	2	2	2
		Total	33	13	9	5	5	3	2	3	2	2
	Females	5–6	34	12	14	4	6	3	3	4	<1	2
		7–10	29	13	12	6	6	3	2	4	1	2
		11–14	27	10	12	9	5	5	2	3	2	3
		Total	29	11	12	7	6	4	2	3	1	2
Pacific	Males	5–6	35	18	9	3	5	2	1	4	<1	1
		7–10	29	17	8	5	6	4	2	3	1	1
		11–14	22	16	6	4	5	4	3	3	2	3
		Total	28	17	8	4	6	3	2	3	1	2
	Females	5–6	38	15	8	2	9	3	<1	3	<1	1
		7–10	29	17	10	5	5	3	3	3	2	3
		11–14	25	17	5	4	6	5	3	3	1	3
		Total	29	17	8	4	6	4	3	3	1	2
NZEO	Males	5–6	39	11	11	8	5	1	2	3	1	2
		7–10	38	9	9	8	5	4	2	3	3	3
		11–14	36	9	7	10	5	4	4	1	3	2
		Total	37	10	8	9	5	3	3	2	3	2
	Females	5–6	41	12	11	7	5	3	3	3	2	1
		7–10	33	10	9	11	5	3	3	4	3	3
		11–14	33	10	9	10	5	3	3	3	3	3
		Total	34	10	9	10	5	3	3	3	3	3

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table A25: Iron sources[1]

			Breakfast cereals %	Bread %	Beef and veal %	Potatoes, kumara and taro %	Beverage %	Vegetables %	Fruit %	Biscuits %	Pies and pastries %	Bread based dishes %
New Zealand children (5–14 years)			18	12	7	7	6	4	4	4	3	3
	Males	5–6	23	13	6	6	6	4	4	3	3	2
		7–10	22	11	7	6	5	4	4	3	3	4
		11–14	18	12	8	7	6	5	2	3	3	3
		Total	20	12	7	7	5	4	3	3	3	3
	Females	5–6	19	16	6	6	5	4	4	4	3	3
		7–10	16	13	8	6	5	4	5	4	3	3
		11–14	13	12	6	7	6	5	4	4	4	5
		Total	15	13	7	7	6	4	4	4	4	4
NZDep01	Males	I	21	11	8	6	6	7	3	3	2	2
		II	24	14	5	6	5	3	3	3	2	4
		III	18	12	8	7	5	5	3	3	3	3
		IV	19	11	6	7	8	4	2	3	4	3
		V	19	12	8	7	5	3	3	3	5	4
	Females	I	16	13	4	6	6	4	6	5	2	4
		II	13	14	7	6	6	6	5	4	3	4
		III	15	13	7	7	6	5	4	4	3	5
		IV	16	11	9	7	5	4	4	3	4	3
		V	14	13	7	7	6	3	4	4	5	4
School type	Males	Urban	20	12	7	7	6	4	3	3	3	3
		Rural	22	12	9	7	5	4	4	4	3	2
	Females	Urban	15	13	6	7	6	4	4	4	4	4
		Rural	15	14	8	7	5	4	5	3	2	3
Māori	Males	5–6	26	11	9	6	6	3	3	2	6	2
		7–10	22	11	7	7	5	3	4	3	4	3
		11–14	19	11	8	8	6	2	2	2	5	3
		Total	21	11	8	7	5	3	3	3	5	3
	Females	5–6	19	11	8	8	5	3	4	4	3	3
		7–10	17	12	6	8	5	3	4	4	6	4
		11–14	12	11	6	9	4	3	3	4	5	5
		Total	15	12	6	8	5	3	4	4	5	4
Pacific	Males	5–6	17	16	4	7	7	1	5	3	6	2
		7–10	14	13	7	8	7	2	3	3	7	4
		11–14	9	11	10	9	4	2	3	3	8	4
		Total	13	13	8	8	6	2	4	3	7	4
	Females	5–6	17	12	2	8	13	1	4	3	7	3
		7–10	15	15	6	8	6	3	4	3	6	4
		11–14	7	14	6	10	6	3	3	3	7	5
		Total	12	14	5	9	7	3	3	3	6	4
NZEO	Males	5–6	23	14	5	5	6	5	4	3	2	2
		7–10	23	11	7	6	5	4	4	3	2	4
		11–14	18	13	7	7	6	6	2	3	3	3
		Total	21	12	7	6	6	5	3	3	2	3
	Females	5–6	19	18	5	5	4	4	4	4	3	3
		7–10	16	13	9	6	5	5	6	4	2	3
		11–14	14	13	6	6	7	5	4	4	3	4
		Total	16	13	7	6	6	5	5	4	3	3

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table A26: Zinc sources[1]

			Beef and veal %	Bread %	Milk %	Grains and pasta %	Breakfast cereals %	Poultry %	Sausages and processed meats %	Potatoes, kumara and taro %	Bread based dishes %	Beverage %
New Zealand children (5–14 years)			12	11	9	6	6	5	5	5	5	5
	Males	5–6	12	12	10	5	8	6	5	5	3	5
		7–10	13	10	9	6	7	4	7	5	5	4
		11–14	13	10	8	6	6	5	5	5	4	5
		Total	13	10	9	6	6	5	6	5	4	5
	Females	5–6	10	13	11	5	6	5	4	5	4	4
		7–10	14	11	8	6	5	6	5	5	4	4
		11–14	9	11	9	6	3	5	4	5	6	5
		Total	11	11	9	6	5	5	4	5	5	4
NZDep01	Males	I	15	9	11	5	7	5	5	4	2	5
		II	9	13	9	5	7	4	6	4	6	4
		III	14	10	9	5	5	4	5	5	5	5
		IV	10	9	9	9	6	4	6	5	4	6
		V	14	11	6	5	6	6	5	7	5	4
	Females	I	7	11	12	6	5	5	3	4	6	5
		II	12	12	9	7	4	5	4	4	5	4
		III	13	10	8	9	5	5	4	4	6	4
		IV	15	10	7	6	5	5	5	5	4	4
		V	11	11	7	5	4	7	3	6	5	5
School type	Males	Urban	12	10	9	6	6	5	6	5	5	5
		Rural	17	10	9	3	8	4	5	5	3	4
	Females	Urban	11	11	9	6	5	5	4	5	5	5
		Rural	14	12	8	4	4	5	4	5	4	4
Māori	Males	5–6	16	10	8	3	8	5	6	5	3	5
		7–10	12	10	7	4	7	5	7	5	4	4
		11–14	15	10	8	4	7	5	5	6	4	5
		Total	14	10	8	4	7	5	6	5	4	5
	Females	5–6	14	10	8	4	6	4	6	6	5	4
		7–10	11	10	7	4	6	6	6	5	6	4
		11–14	10	10	6	4	4	6	4	6	6	4
		Total	11	10	7	4	5	6	5	6	6	4
Pacific	Males	5–6	9	14	8	5	6	9	4	8	3	6
		7–10	11	11	6	6	5	9	4	9	5	5
		11–14	16	8	3	5	3	9	3	11	5	3
		Total	13	10	5	5	4	9	4	10	5	5
	Females	5–6	3	11	9	5	5	9	3	9	4	10
		7–10	10	12	6	5	4	8	3	10	5	5
		11–14	11	10	4	5	2	9	2	13	6	4
		Total	9	11	6	5	3	9	3	11	5	5
NZEO	Males	5–6	10	13	11	5	7	5	4	4	3	4
		7–10	13	10	10	6	7	3	7	4	5	4
		11–14	12	11	9	7	6	5	5	4	4	5
		Total	12	10	10	6	6	4	6	4	4	5
	Females	5–6	9	14	13	5	6	4	3	3	4	3
		7–10	16	10	8	7	5	5	5	4	3	4
		11–14	9	11	10	7	4	4	4	4	6	5
		Total	12	11	10	7	5	5	4	4	4	4

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table A27: Selenium sources[1]

			Fish and seafood %	Poultry %	Bread %	Grains and pasta %	Pork %	Milk %	Bread based dishes %	Beef and veal %	Sausages and processed meats %	Eggs and egg dishes %
New Zealand children (5–14 years)			22	12	10	7	5	5	4	3	3	3
	Males	5–6	21	14	12	6	3	5	2	3	4	4
		7–10	21	10	10	9	4	5	6	4	5	3
		11–14	26	13	10	5	6	4	4	3	3	3
		Total	23	12	10	7	5	5	4	4	4	3
	Females	5–6	15	11	14	8	4	6	5	3	3	5
		7–10	21	14	10	7	5	4	4	4	3	4
		11–14	20	12	10	7	5	4	5	3	2	3
		Total	20	12	11	7	5	4	4	3	3	3
NZDep01	Males	I	16	15	11	7	7	8	2	5	3	2
		II	19	11	13	5	5	5	9	3	4	3
		III	21	11	11	5	6	5	4	4	4	4
		IV	26	11	9	11	4	4	4	3	3	3
		V	32	11	9	7	4	3	3	3	4	4
	Females	I	19	13	10	9	5	6	5	2	2	3
		II	19	13	11	6	5	5	5	3	3	4
		III	9	12	13	8	4	5	5	4	4	4
		IV	19	13	11	7	5	4	5	4	2	3
		V	22	13	10	8	5	3	4	3	3	4
School type	Males	Urban	25	12	10	7	5	4	4	3	3	3
		Rural	16	11	11	5	4	5	3	5	6	3
	Females	Urban	19	13	10	8	5	5	5	3	3	4
		Rural	23	11	12	5	5	4	4	4	2	2
Māori	Males	5–6	18	13	10	8	3	4	2	5	5	7
		7–10	24	11	9	8	7	3	3	3	6	5
		11–14	33	10	9	5	5	3	4	4	3	3
		Total	27	11	9	7	5	3	3	4	4	5
	Females	5–6	26	9	9	8	4	4	3	4	3	6
		7–10	19	14	11	7	5	3	4	3	4	5
		11–14	24	11	9	7	6	3	5	2	3	3
		Total	22	12	10	7	5	3	4	3	3	4
Pacific	Males	5–6	28	19	11	4	3	3	1	2	4	4
		7–10	32	17	8	6	4	2	3	2	3	4
		11–14	39	16	6	3	4	1	3	3	2	4
		Total	35	17	8	4	4	2	2	2	3	4
	Females	5–6	21	19	9	6	4	4	4	<1	3	8
		7–10	28	18	9	7	2	2	3	2	2	5
		11–14	33	19	8	4	3	2	4	1	2	4
		Total	29	18	9	5	3	2	4	1	2	5
NZEO	Males	5–6	21	14	13	6	3	6	3	3	4	3
		7–10	18	8	11	10	3	6	7	4	5	2
		11–14	22	13	11	5	6	5	4	4	3	2
		Total	20	11	11	7	5	5	5	4	4	2
	Females	5–6	8	10	18	8	4	8	6	3	4	3
		7–10	20	13	10	7	5	4	5	4	3	3
		11–14	17	11	11	7	5	6	4	3	2	3
		Total	17	11	11	7	5	5	5	3	3	3

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

B. Eating Patterns

Introduction

This section provides an insight into selected eating patterns of New Zealand children. It includes the proportion of children avoiding certain food types, the prevalence of dietary supplement use and the addition of salt to meals during preparation and at the table.

Also described in this section is the issue where children obtain the food they eat during the school day. Children spend a significant amount of time within the school environment, so understanding the factors that influence food choice within this environment will provide important information for public health initiatives.

The issue of whether households feel they can obtain all the food they want for a healthy diet has been captured in responses by parents/caregivers to eight food security statements.

Key points

Dietary choices

- Most New Zealand children (95.3 percent) consumed an omnivorous diet.

Dietary supplement use

- Approximately 5 percent of New Zealand children reported using a dietary supplement in the previous 24 hours.
- Dietary supplement use was negligible among Māori and Pacific children.

School day food consumption patterns

- Older children were less likely to *Usually* eat food at home before school but more likely to eat food on the way to school.
- NZEO children were the most likely to eat food at home before school, followed by Māori and then Pacific children.

Food consumed at school

- The majority of New Zealand school children brought *Most* of their food from home; younger children were more likely to bring *Most* of their food from home than older children.
- Children living in NZDep01-I and II were more likely to bring most of their food from home than those in NZDep01-IV and V.

- Older children were less likely to *Usually* consume food at lunchtime and morning break than younger children.
- NZEO children were more likely to *Usually* consume food at lunchtime and morning break than Māori and Pacific children.

Salt additions

- One half of New Zealand children *Never* added salt to their meals at the table.
- NZEO children were less likely to add salt to meals at the table or to have salt added to meals during preparation than Māori and Pacific children.

Food security

- Households in NZDep01-V were the least likely to *Always* be able to afford to eat properly compared to those living in NZDep01-I to IV quintiles.
- Households with NZEO children were the most food 'secure', followed by households with Māori and then Pacific children.
- Food 'secure' households were most likely to have the least number of children.

B1 Dietary choices

Table B1

Type of diet

New Zealand children

The majority of New Zealand children (95.3 percent) consumed an omnivorous diet (Figure B-1). Only 3.6 percent of children *Avoided red meat* and 0.7 percent *Avoided all meat*. Females 7–10 years were more likely to consume an omnivorous diet (96.1 percent) than females 11–14 years (93.5 percent). Females 11–14 years (5.6 percent) were more likely to have *Avoided red meat* than males of the same age (2.7 percent).

NZDep01

Males in NZDep01-II were more likely to consume an omnivorous diet (98.3 percent) than males in NZDep01-IV and V (93.8 percent; 93.6 percent). The proportion of males who *Avoided red meat* was highest in NZDep01-III and IV (4.3 percent; 6.2 percent). A higher proportion of males in NZDep01-V *Avoided all meat* (4 percent) than in all NZDep01-I to IV quintiles (0 percent to 0.6 percent).

Urban-rural

Rural children were more likely to consume an omnivorous diet (males 99.8 percent; females 98.4 percent) than urban children (94.7 percent; 94 percent). Urban children were more likely to have *Avoided red meat* (males 3.7 percent; females 4.8 percent) than rural children (0 percent; 1.6 percent).

Ethnic

Pacific males were more likely to consume an omnivorous diet (97.7 percent) than NZEO males (95.1 percent).

Avoidance of dairy products and eggs

New Zealand children

Among New Zealand children, 5.2 percent avoided *Eggs* and 1.5 percent avoided *Dairy products*. Māori males 5–6 years were more likely to avoid *Eggs* (8.7 percent) than those 11–14 years (3.1 percent). Pacific males 5–6 years were more likely to avoid *Dairy products* (5.5 percent) than those 11–14 years (0.6 percent).

NZDep01

Males in NZDep01-I were more likely to avoid *Dairy products* (5.4 percent) than males in NZDep01-II to V (≤ 1 percent).

Ethnic

Pacific males were less likely to avoid *Eggs* (2.2 percent) than Māori or NZEO males (5.2 percent; 6.5 percent). Māori females were more likely to avoid *Eggs* or *Dairy products* (6.1 percent; 2.1 percent) than Pacific females (2.3 percent; 0.6 percent) (Figure B-2).

Figure B-1: Eating omnivorous diet

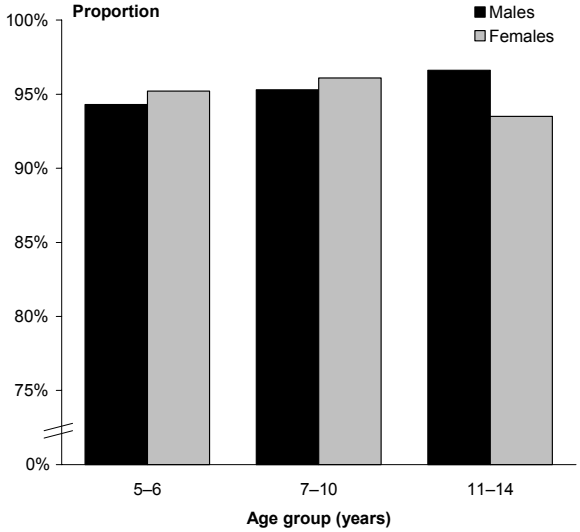
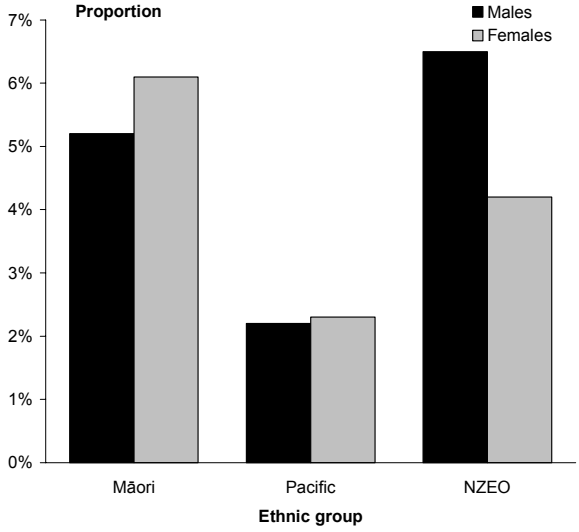


Figure B-2: Avoiding eggs



B2 Dietary supplement use

Table B2

These data are derived from the 24-hour diet recall.

New Zealand children

About 5 percent of New Zealand children reported using a dietary supplement in the previous 24 hours (males 6 percent; females 4.7 percent). The most frequently reported supplements were *Multivitamins & minerals* (2.1 percent), *Vitamin C* (2 percent) and *Meal replacements* (0.8 percent). There were no differences between males and females in the types of supplement consumed except that males were more likely than females to consume *Meal replacements* (males 1.2 percent; females 0.3 percent) (Figure B-3).

Females 5–6 years were more likely to consume *Any* dietary supplements (7.7 percent), than females 7–10 years (3.1 percent). Males 5–6 years and 7–10 years were more likely to consume *Multivitamins & minerals* (2.6 percent; 2.5 percent) than males 11–14 years (0.7 percent). Frequency of consumption of *Multivitamins & minerals* among females 7–10 years (0.9 percent) was lower than among females 5–6 years and 11–14 years (4.1 percent; 2.8 percent).

NZDep01

The prevalence of *Any* supplement use was lower for males in NZDep01-V (2.1 percent) than in NZDep01-I and II (14.6 percent; 6.6 percent). Females in NZDep01-V reported a lower use of *Any* supplement (2.8 percent) than those in NZDep01-III (7.3 percent).

Urban-rural

Rural females were more likely to consume *Any* supplement or *Multivitamin & minerals* (8.2 percent; 4.6 percent) than urban females (3.9 percent; 1.7 percent).

Ethnic

NZEO children were the most likely to consume dietary supplements. A lower proportion of Pacific children reported the use of *Any* supplement (males 0 percent; females 0.9 percent) than Māori (1.6 percent; 2.5 percent) and NZEO children (8.2 percent; 6 percent) (Figure B-4). This trend was repeated with the use of *Multivitamins & minerals* and *Vitamin C* supplements.

Figure B-3: Type of dietary supplements used

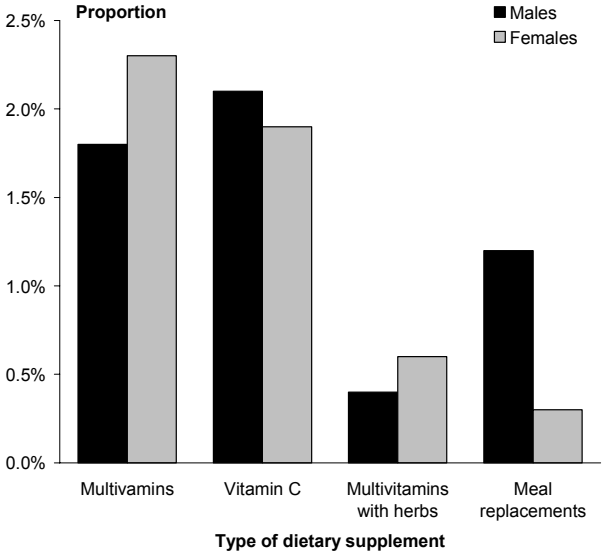
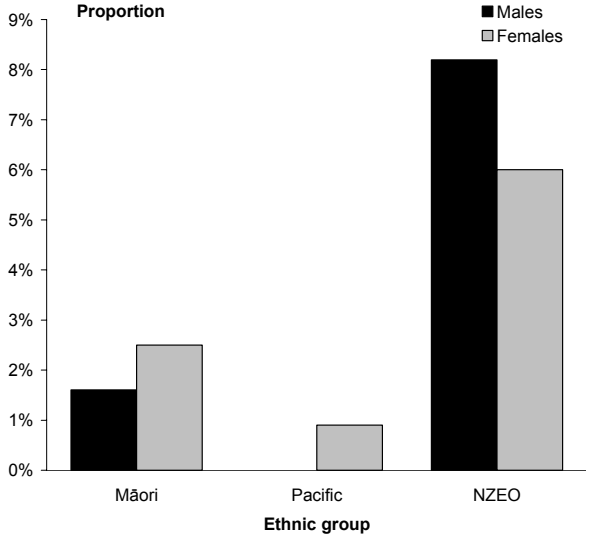


Figure B-4: Dietary supplement use



B3 School day food consumption patterns

Table B3

New Zealand children

Males were more likely to *Usually* eat or drink at home before school (86.2 percent) than females (79.2 percent). The proportion of males and females who (*Sometimes* or *Usually)* ate or drank on the way to school was similar (15.6 percent; 15.7 percent). New Zealand children *Usually* (5.6 percent) or *Sometimes* (31.4 percent) ate or drank on their way home after school.

Children 11–14 years were less likely to *Usually* eat or drink at home before school than younger children. Children 11–14 years were more likely to eat or drink on the way to school than children 5–6 years.

Urban-rural

Rural females were more likely to *Usually* eat or drink at home before school (84.3 percent) than urban females (78.2 percent).

Urban males were more likely to *Sometimes* or *Usually* eat on the way to school (16.8 percent) than rural males (10.3 percent).

NZDep01

The proportion of children who *Usually* ate or drank at home before school decreased consistently from NZDep01-I to V. NZDep01-V children were the most likely to eat and drink on the way to school.

Ethnic

NZEO children were more likely to *Usually* eat or drink at home before school (males 94.4 percent; females 87.7 percent) than Māori (74.7 percent; 66 percent) and Pacific children (53.3 percent; 50.3 percent). NZEO children were less likely to *Usually* or *Sometimes* eat or drink on the way to school than Māori and Pacific children (Figure B-6).

Figure B-5: *Usually* ate or drank before school

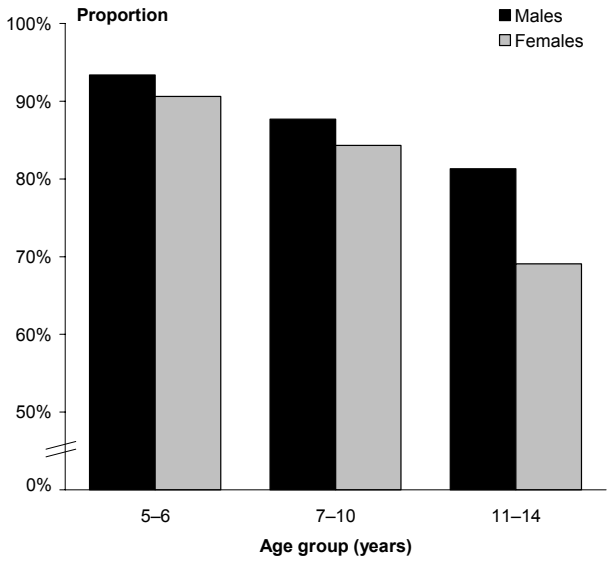
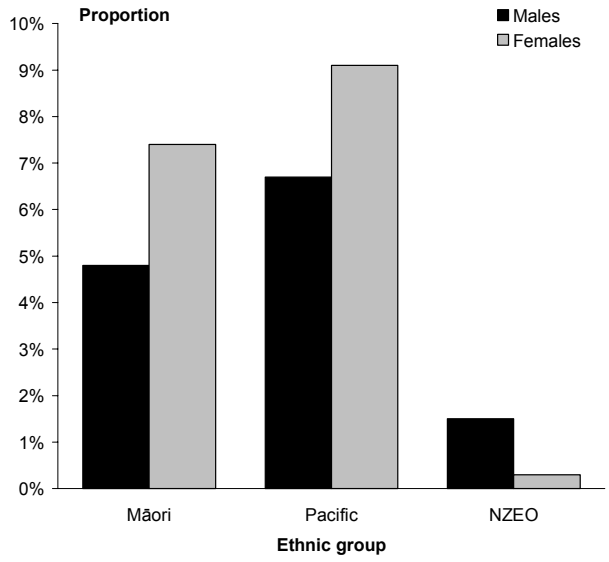


Figure B-6: *Usually* ate or drank on way to school



B4 Food consumed at school

Table B4

New Zealand children

The majority of New Zealand children brought *Most* of their food from home (84.4 percent); and 4.5 percent brought *None* of their food from home. About three-quarters of New Zealand children did not buy any of their food (over the past week) from a shop/takeaway. Approximately half of New Zealand children bought *Some* of the food they consumed at school from a canteen/tuckshop.

Males 11–14 years were more likely to buy *Some* of their food from a shop/takeaway (27.3 percent) than females of the same age (21.7 percent). A higher proportion of females 5–6 years bought *Some* food from a canteen/tuckshop (49.3 percent) than males of the same age (38 percent).

Younger children were more likely to bring *Most* of their food from home than older children. However, older children (11–14 years) were more likely to buy *some* food from a canteen/tuckshop than younger children (5–10 years).

NZDep01

A lower proportion of males in NZDep01-V brought *Most* of their food from home than those in NZDep01-I to IV. This trend was also seen in females (Figure B-7). Children in NZDep01-IV and V were more likely to buy *Some* of their food from a shop/takeaway or a canteen/tuckshop than those in NZDep01-I and II.

Urban-rural

Rural children were more likely to bring *Most* of their food from home (males 92.9 percent; females 90.1 percent) than urban children (82.6 percent; 82.8 percent). However, urban children were more likely to buy *Some* of their food from a canteen/tuckshop (males 54.2 percent; females 56.6 percent) than rural children (36.1 percent; 37.3 percent).

Ethnic

NZEO children were more likely to bring *Most* of their food from home (males 91.6 percent; females 90.9 percent) than Māori (76.6 percent; 74.5 percent) and Pacific children (49.5 percent; 56.7 percent). Consequently, NZEO children were less likely to buy *Some* of their food from a shop/takeaway or a canteen/tuckshop than Māori and Pacific children (Figure B-8).

Figure B-7: *Most* of food consumed at school brought from home

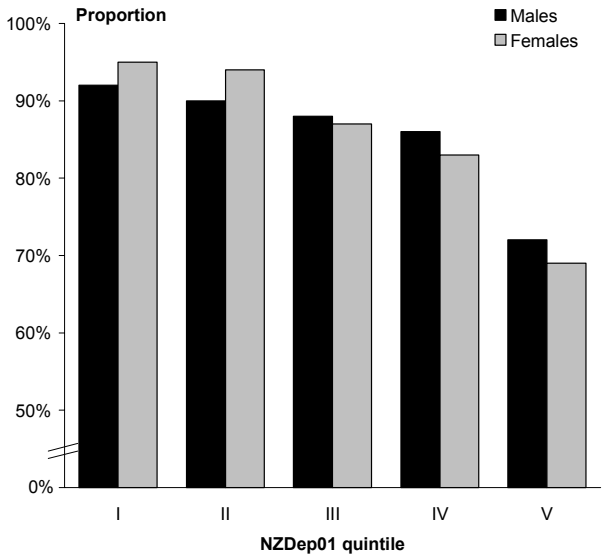
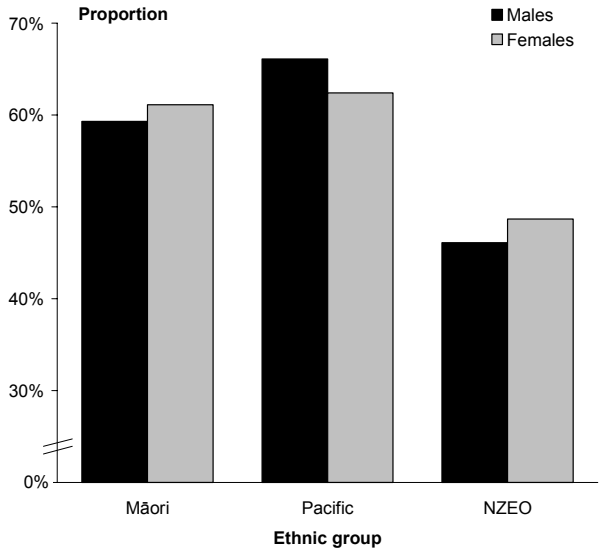


Figure B-8: *Some* of food consumed at school bought from canteen/tuckshop



When food consumed

New Zealand children

The majority of New Zealand children *Usually* consumed food at lunchtime (94.3 percent) and morning break (86.9 percent). Children 11–14 years were less likely to *Usually* consume food at lunch time and at morning break than younger children (Figure B-9). A higher proportion of Pacific females *Usually* consumed food at lunchtime (92.4 percent) than Pacific males (87.6 percent).

NZDep01

Males in NZDep01-V were less likely to *Usually* consume food at lunchtime than males in NZDep01-I to III. Children in NZDep01-V were less likely to *Usually* consume food at morning break than children in NZDep01-I.

Urban-rural

Rural females (91.6 percent) were more likely to *Usually* consume food at morning break than urban females (86.5 percent).

Ethnic

NZEO children were more likely to *Usually* consume food at lunchtime and morning break than Māori and Pacific children (Figure B-10).

Figure B-9: *Usually* consumed food (females)

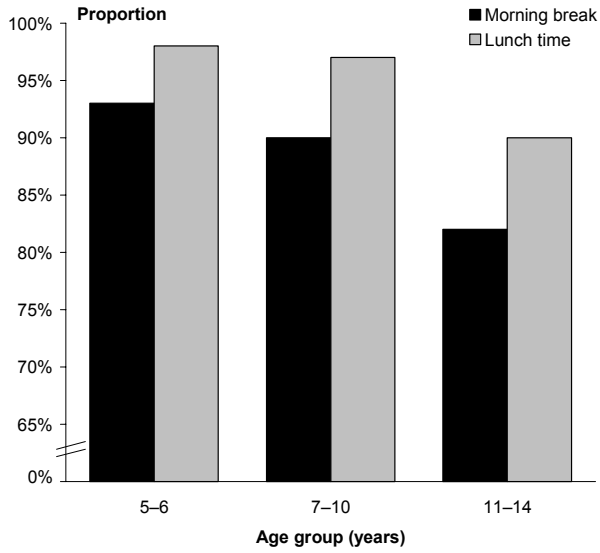
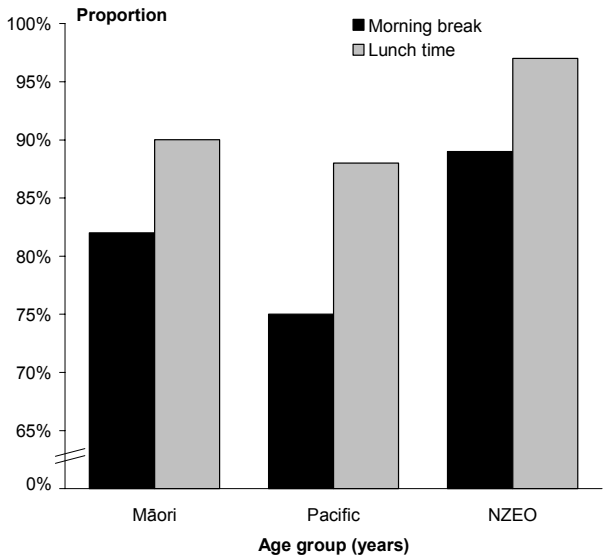


Figure B-10: *Usually* consumed food (males)



B5 Salt additions

Table B5

Salt added to meals during preparation

New Zealand children

Salt was *Not* added to the meals prepared for about one third of New Zealand children (32 percent); over one third (37.2 percent) had salt added *Usually*. Patterns were similar for males and females.

NZDep01

Children in NZDep01-I were less likely to have salt *Usually* added to meals during preparation than those in all other NZDep01 quintiles.

Ethnic

NZEO children were least likely to *Usually* have salt added during food preparation (males 35.1 percent; females 32.6 percent) compared with Pacific children (53.5 percent; 54 percent) and Māori females (40.8 percent) (Figure B-11).

Salt added to meals at the table

New Zealand children

About one half (51.7 percent) of New Zealand children did *Not* add salt to meals at the table. Over one third (35.5 percent) *Sometimes* added salt and 12.9 percent *Usually* added salt (Figure B-12).

NZDep01

Females in NZDep01-V were more likely than those in NZDep01-I to IV to *Usually* add salt to meals at the table and males in NZDep01-V more likely than those in NZDep01-II and III.

Ethnic

NZEO children were the least likely to *Usually* add salt to meals at the table (males 10.3 percent; females 10.1 percent) compared with Pacific (14.5 percent; 16.7 percent) and Māori children (20.9 percent; 18.5 percent).

Figure B-11: Salt *Usually* added during meal preparation

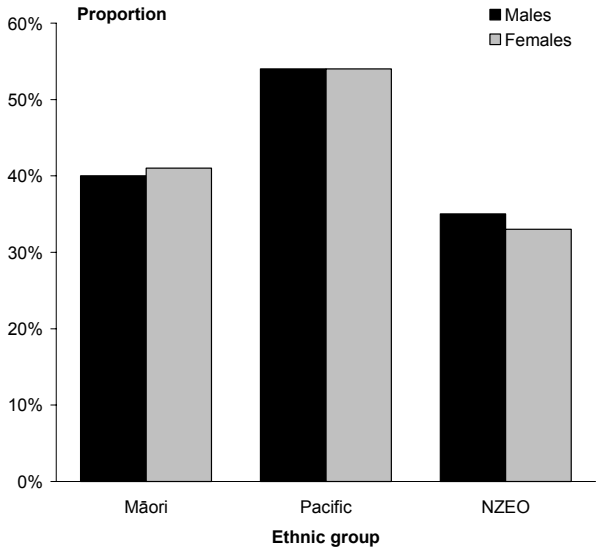
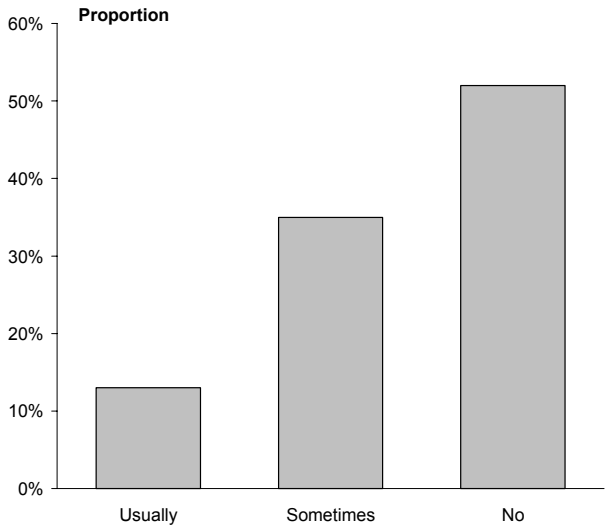


Figure B-12: Addition of salt at the table



B6 Household food security

Table B6

'Food security' is an internationally recognised term that encompasses the ready availability of nutritionally adequate and safe foods and the assumed ability of people to acquire personally acceptable foods in a socially acceptable way. Whenever adult members of the households of the children who participated in the survey were available they were asked to respond to eight statements on behalf of the child's household. Each of these statements about food related to affordability, that is, the response was made in light of whether the respondent felt their household had enough money.

We can afford to eat properly

New Zealand households

About 78 percent of households reported that they could always afford to eat properly, but 20.1 percent said they could only *Sometimes* afford to do so.

The largest households (those with seven or more members) and those with at least five children were more likely than smaller households to report that they could afford to eat properly only *Sometimes*.

NZDep01

Households in NZDep01-V were less likely to *Always* be able to afford to eat properly (59.5 percent) than those in NZDep01-I to IV (94 percent to 72 percent) (Figure B-13).

Ethnic

Households with NZEO children were most likely to state they *Always* 'can afford to eat properly' (86.1 percent), compared with households with Māori (64.3 percent), and Pacific children (46.6 percent) (Figure B-14).

Māori, Pacific and NZEO households with one or two children more frequently said they could *Always* and *Sometimes* afford to eat properly than households with five or more children. Across all ethnic groups, households with seven or more members were less likely to say they could *Always* afford to eat properly than those with less than five members.

Figure B-13: Can *Always* afford to eat properly

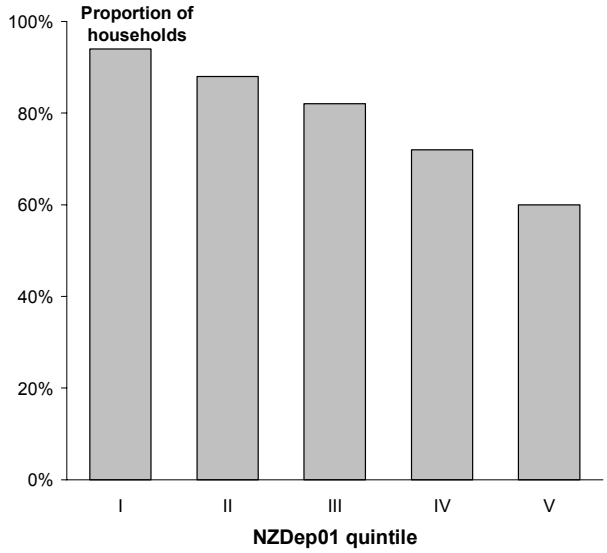
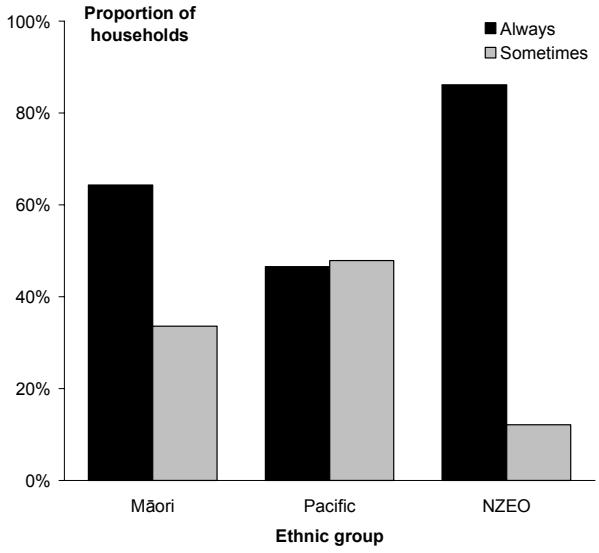


Figure B-14: Can *Always* and *Sometimes* afford to eat properly



Food runs out in our household due to lack of money

New Zealand households

Over 22 percent of households reported that 'food runs out because of lack of money' *Sometimes* (18.5 percent) and *Often* (3.6 percent). Around 40 percent of households with at least seven members or at least five children reported that 'food runs out in their household because of lack of money' *Often or Sometimes*, and they were more likely' report this than smaller households (Figure B-15).

NZDep01

Households in NZDep01-V were most likely to 'run out of food due to lack of money' *Sometimes* (36.3 percent) and *Often* (8.9 percent) than those in NZDep01-I to IV (Figure B-16).

Ethnic

Households with Pacific children (53.9 percent) were more likely to say food runs out in their household *Often* or *Sometimes* than those with Māori (37.5 percent) and NZEO children (13 percent). Māori, Pacific and NZEO households with five or more children were more likely to report that food runs out in their household due to lack of money *Often* or *Sometimes* than those with one or two children.

We eat less because of lack of money

New Zealand households

About 18 percent of households said they 'eat less because of lack of money' *Sometimes* (15.3 percent) and *Often* (2.8 percent). This was again a greater issue for the largest households (more than seven members) than those with fewer members, with about one third eating less *Sometimes* and *Often*.

NZDep01

Households in NZDep01-V were more likely than households in all other NZDep01 households to 'eat less because of lack of money' *Sometimes* (29.1 percent) and *Often* (5.6 percent).

Ethnic

Eating less because of lack of money was experienced *Often* or *Sometimes* most frequently by households with Pacific children (47.7 percent), compared with those with Māori (30.7 percent) and NZEO children (10.2 percent). A higher proportion of Māori, Pacific and NZEO households with five or more children reported that they ate less *Often* or *Sometimes* because of lack of money than households with one or two children.

Figure B-15: Food runs out *Sometimes* (number of children)

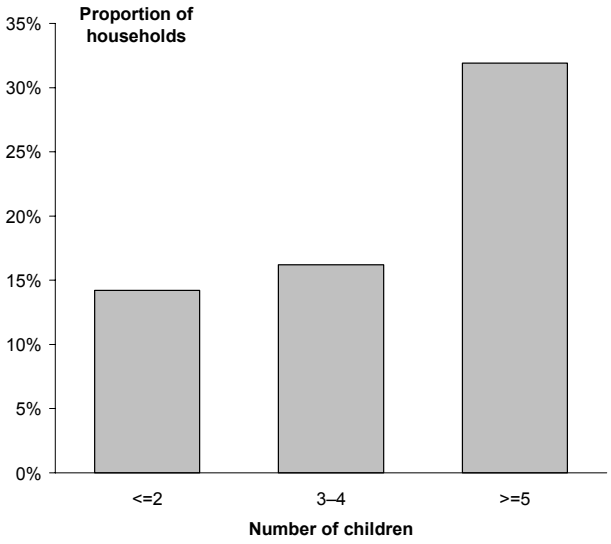
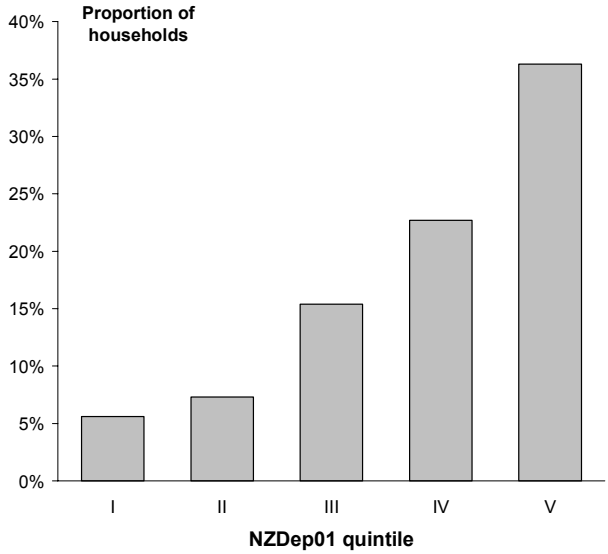


Figure B-16: Food runs out *Sometimes* (NZDep01 quintile)



The variety of foods we are able to eat is limited by lack of money

New Zealand households

Over one third (34.6 percent) of households reported that the variety of foods they were able to eat was limited by a lack of money *Sometimes* (25.6 percent) or *Often* (9 percent). Limiting the variety of foods because of a lack of money was reported *Often* or *Sometimes* most frequently by households with seven or more members or at least five children.

NZDep01

Households in NZDep01-V were most likely to 'limit the variety of food they were able to eat because of a lack of money' *Often* (14.4 percent) and *Sometimes* (38.8 percent) compared with households in all other NZDep01 quintiles.

Ethnic

Māori, Pacific and NZEO households with five or more children were more likely to 'limit the variety of food they were able to eat because of lack of money' *Often* or *Sometimes* than households with one or two children. Households with Pacific children (60.4 percent) were more likely to report this *Often* or *Sometimes* than households with Māori (45.2 percent) and NZEO children (27.8 percent) (Figure B-17).

We rely on others to provide food and/or money for food for our household when we don't have enough money

New Zealand households

Having to rely on others for food and/or money for food was an issue *Often* for only 1.5 percent of households, but 10.3 percent had had to do this *Sometimes* over the previous year. The largest households (23.3 percent) and those with the most children (24.6 percent) were more likely to *Often* or *Sometimes* 'rely on others' to provide food and/or money for food for their household than smaller households and those with fewer children.

NZDep01

Households in NZDep01-I and II were less likely to 'rely on others' to provide food and/or money for food than households in NZDep01-III, IV and V. Households in NZDep01-V (23.9 percent) were most likely to experience this *Often* or *Sometimes*.

Figure B-17: Variety of foods limited *Often* or *Sometimes*

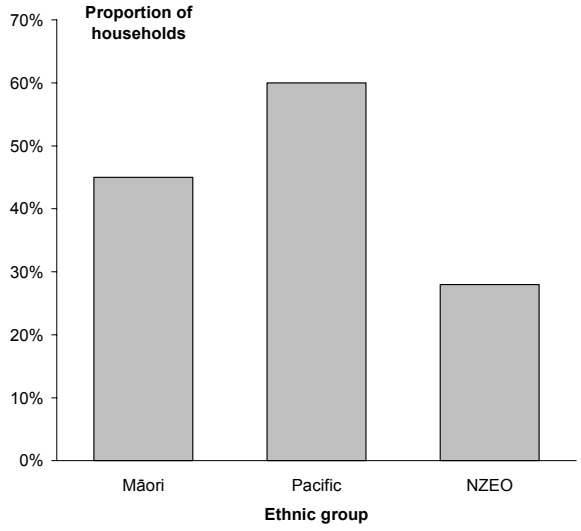
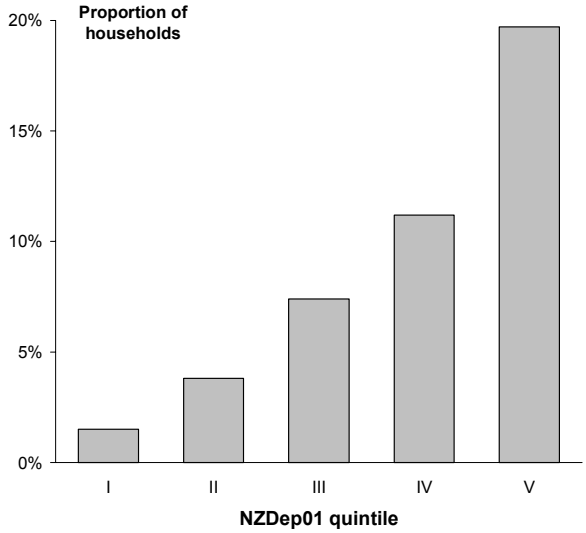


Figure B-18: Use of food grants/banks *Often* or *Sometimes*



Ethnic

Households with Pacific children (29.1 percent) were most likely to 'rely on others' to provide food and/or money for food when they did not have enough money *Often* or *Sometimes* compared with those with Māori (23.4 percent) and NZEO children (5.8 percent).

Māori and Pacific households with five or more children were more likely to 'rely on others to provide food and/or money for food for their household' than households with fewer children.

We make use of special food grants or foodbanks when we do not have enough money for food

New Zealand households

While less than 1 percent of households made use of special food grants or food banks *Often*, 8.6 percent did this *Sometimes* during the previous year. This was also more frequently an issue *Often* or *Sometimes* among households with seven or more members (17.5 percent) and at least five children (20.7 percent) than households with fewer members and fewer children.

NZDep01

Households in NZDep01-IV and V (11.2 percent; 19.7 percent) were more likely to 'use special food grants or foodbanks' *Often* or *Sometimes* when they did not have enough money for food than households in other NZDep01 quintiles (Figure B-18).

Ethnic

Households with Māori (20 percent) and Pacific children (19.3 percent) *Often* or *Sometimes* made use of special food grants or foodbank more frequently than households with NZEO children (4.5 percent).

Māori, Pacific and NZEO households with five or more children were more likely to use special food grants or foodbanks *Often* or *Sometimes* than households with one or two children.

We feel stressed because of not having enough money for food

New Zealand households

Over 18 percent of households experienced stress because they did not have enough money for food *Sometimes*, and 6.4 percent experienced this *Often*. Close to 40 percent of households with seven or more members and 44 percent of those with five or more children were stressed about lack of money for food *Often* or *Sometimes* over the previous year.

NZDep01

Households in NZDep01-I and II (7.7 percent; 10.3 percent) were less likely to be 'stressed about not having enough money for food' *Often* or *Sometimes* than households in NZDep01-III, IV and V (27.4 percent; 29.3 percent; 43.8 percent).

Ethnic

Feeling 'stressed because of not having enough money for food' was most frequently experienced *Often* or *Sometimes* by households with Pacific children (46.6 percent), followed by those with Māori (40 percent) and NZEO children (16.5 percent). Across all ethnic groups, households with five or more children were more likely to experience this stress *Often and Sometimes* than households with one or two children (Figure B-19).

We feel stressed because we can't provide the food we want for social occasions

New Zealand households

Just over 20 percent of households experienced stress because they could not provide the food they wanted to provide for social occasions *Often* or *Sometimes* (20.2 percent). The largest households, those with seven or more members (29.7 percent) and those with five or more children (32.4 percent), were the most likely to feel 'stressed because they could not provide the food they wanted for social occasions' *Often* or S*ometimes* compared with smaller households and households with fewer children.

NZDep01

Households in NZDep01-I and II were less likely to feel 'stressed because they could not provide the food they wanted for social occasions' *Often* and *Sometimes* than households in other NZDep01 quintiles. More than one third (33.5 percent) of NZDep01-V households experienced this stress *Often* or *Sometimes*, compared with NZDep01-I to IV households (8.8 percent to 26.7 percent).

Ethnic

Feeling 'stressed because they could not provide the food they wanted for social occasions' was experienced less by households with NZEO children (*Often* 2 percent; *Sometimes* 12.8 percent) than households with Māori (6.5 percent; 21.5 percent) and Pacific children (5 percent; 37.4 percent) (Figure B-20). This issue was not related to the number of children in NZEO households. It was experienced more frequently by households with Māori and Pacific children with the greatest number of members, and by households with the most children.

Figure B-19: Stressed about lack of money for food *Often* or *Sometimes*

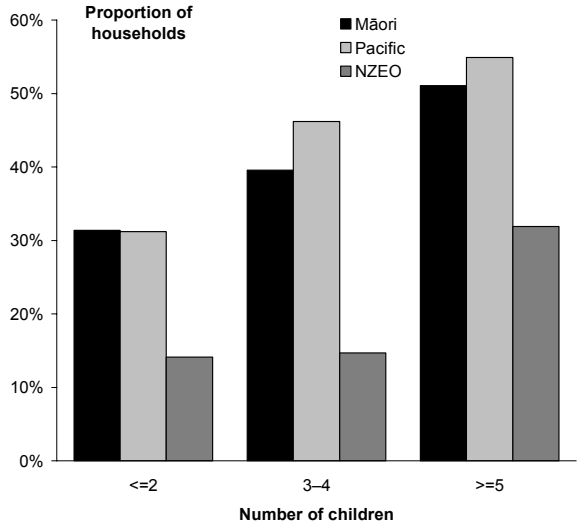


Figure B-20: Stressed when no food for social occasions *Often*

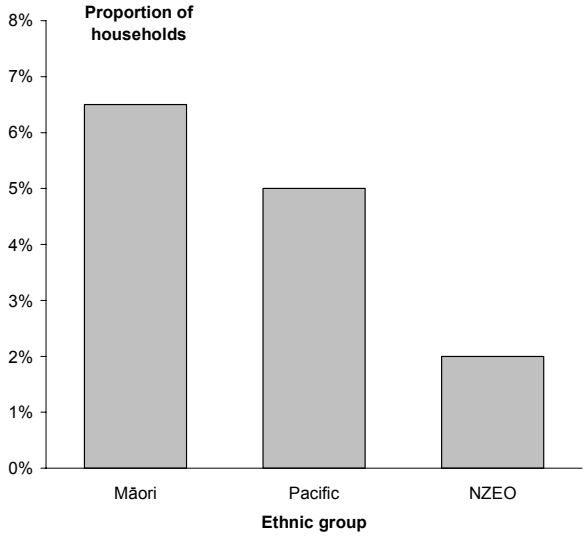


Table B1: Dietary choices

			Type of diet						Avoided	
			Omnivore[1] %	Avoided red meat %	Avoided all meat %	Avoided all meat and dairy %	Avoided all meat and eggs %	Avoided all meat, eggs and dairy %	Dairy products %	Eggs %
New Zealand children (5–14 years)			95.3	3.6	0.7	0.1	0.3	0.1	1.5	5.2
	Males	5–6	94.3	4.0	0.7	0.0	1.0	0.0	2.8	5.1
		7–10	95.3	2.9	1.2	0.3	0.3	0.0	0.8	6.3
		11–14	96.6	2.7	0.5	0.0	0.0	0.3	1.6	5.8
		Total	95.6	3.0	0.8	0.1	0.3	0.1	1.5	5.9
	Females	5–6	95.2	3.7	1.1	0.0	0.0	0.0	0.4	2.6
		7–10	96.1	2.8	0.2	0.0	0.9	0.0	2.2	5.5
		11–14	93.5	5.6	0.8	0.0	0.0	0.0	1.6	4.3
		Total	94.9	4.1	0.7	0.0	0.4	0.0	1.6	4.5
NZDep01	Males	I	96.4	2.3	0.0	0.6	0.2	0.6	5.4	4.6
		II	98.3	0.9	0.0	0.0	0.8	0.0	0.4	9.8
		III	95.0	4.3	0.6	0,0	0.0	0.0	1.0	5.9
		IV	93.8	6.2	0.0	0.0	0.0	0.0	0.5	5.6
		V	93.6	2.5	4.0	0.0	0.0	0.0	0.7	4.2
	Females	I	96.2	2.6	1.2	0.0	0.0	0.0	1.0	7.3
		II	94.8	3.4	1.9	0.0	0.0	0.0	2.0	2.3
		III	95.0	4.9	0.1	0.0	0.0	0.0	3.9	2.1
		IV	94.1	5.4	0.3	0.0	0.2	0.0	2.0	3.9
		V	93.3	5.2	0.3	0.0	1.2	0.0	1.0	5.4
School type	Males	Urban	94.7	3.7	1.0	0.1	0.3	0.1	1.5	6.0
		Rural	99.8	0.0	0.0	0.0	0.2	0.0	1.6	5.4
	Females	Urban	94.0	4.8	0.8	0.0	0.4	0.0	1.4	4.7
		Rural	98.4	1.6	0.0	0.0	0.0	0.0	2.3	3.6
Māori	Males	5–6	96.4	2.8	0.0	0.0	0.8	0.0	1.4	8.7
		7–10	95.8	3.0	1.2	0.0	0.0	0.0	0.4	5.4
		11–14	97.0	2.6	0.5	0.0	0.0	0.0	1.0	3.1
		Total	96.4	2.8	0.7	0.0	0.2	0.0	0.8	5.2
	Females	5–6	95.2	3.2	1.6	0.0	0.0	0.0	1.4	5.4
		7–10	94.5	4.3	0.8	0.0	0.4	0.0	1.7	6.9
		11–14	93.1	6.9	0.0	0.0	0.0	0.0	2.9	5.5
		Total	94.1	5.1	0.7	0.0	0.2	0.0	2.1	6.1
Pacific	Males	5–6	95.5	3.9	0.7	0.0	0.0	0.0	5.5	0.7
		7–10	97.6	2.0	0.5	0.0	0.0	0.0	1.4	4.4
		11–14	99.0	0.5	0.5	0.0	0.0	0.0	0.6	0.6
		Total	97.7	1.8	0.5	0.0	0.0	0.0	2.0	2.2
	Females	5–6	94.6	5.5	0.0	0.0	0.0	0.0	0.8	3.9
		7–10	96.4	3.1	0.5	0.0	0.0	0.0	0.4	2.3
		11–14	96.9	2.7	0.4	0.0	0.0	0.0	0.6	1.3
		Total	96.2	3.4	0.4	0.0	0.0	0.0	0.6	2.3
NZEO	Males	5–6	93.4	4.5	1.0	0.0	1.2	0.0	3.0	4.3
		7–10	94.9	3.0	1.3	0.4	0.4	0.0	0.9	6.8
		11–14	96.2	2.9	0.5	0.0	0.0	0.4	1.9	7.2
		Total	95.1	3.3	0.9	0.2	0.4	0.2	1.7	6.5
	Females	5–6	95.2	3.7	1.1	0.0	0.0	0.0	0.0	1.3
		7–10	96.6	2.3	0.0	0.0	1.2	0.0	2.5	5.5
		11–14	93.3	5.5	1.2	0.0	0.0	0.0	1.2	4.2
		Total	95.0	3.9	0.7	0.0	0.5	0.0	1.5	4.2

1 Defined as not avoiding red meat or all meat (includes those just avoiding dairy/eggs).

Table B2: Dietary supplement use

			Any	Supplement type[1]									
				Multi-vitamins and minerals[2]	Vitamin C	Meal replacements[3]	Multi-vitamins with herbs	Vitamin B complex	Fats and oils	Anti-oxidant[4]	Iron	Miscellaneous[5]	Zinc
			%	%	%	%	%	%	%	%	%	%	%
New Zealand children (5–14 years)			5.4	2.1	2.0	0.8	0.5	0.3	0.2	0.1	0.1	0.1	0.1
	Males	5–6	5.6	2.6	1.8	0.6	0.5	0.0	1.2	0.0	0.0	0.5	0.0
		7–10	6.9	2.5	2.3	0.9	0.4	0.6	0.4	0.0	0.0	0.0	0.0
		11–14	5.2	0.7	2.0	1.9	0.3	0.6	0.0	0.0	0.0	0.0	0.0
		Total	6.0	1.8	2.1	1.2	0.4	0.5	0.4	0.0	0.0	0.1	0.0
	Females	5–6	7.7	4.1	2.9	1.2	1.5	0.0	0.0	0.0	0.0	0.0	0.0
		7–10	3.1	0.9	2.2	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0
		11–14	4.9	2.8	0.9	0.1	0.4	0.0	0.0	0.4	0.4	0.0	0.4
		Total	4.7	2.3	1.9	0.3	0.6	0.1	0.0	0.2	0.2	0.0	0.2
NZDep01	Males	I	14.6	2.3	4.4	3.6	2.8	2.0	0.8	0.0	0.0	0.0	0.0
		II	6.6	0.7	3.3	1.1	0.7	0.0	0.7	0.0	0.0	0.7	0.0
		III	4.7	2.6	0.7	0.7	0.2	0.6	0.0	0.0	0.0	0.0	0.0
		IV	6.4	3.2	3.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		V	2.1	0.9	0.0	0.4	0.0	0.2	0.8	0.0	0.0	0.0	0.0
	Females	I	5.5	3.6	1.8	0.0	0.6	0.5	0.0	0.0	0.0	0.0	0.0
		II	6.3	2.5	3.6	0.1	1.0	0.0	0.0	0.1	0.7	0.0	0.9
		III	7.3	3.1	0.5	2.5	1.2	0.0	0.0	0.0	0.0	0.0	0.0
		IV	3.2	1.0	2.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		V	2.8	0.3	0.8	0.3	0.5	0.0	0.0	0.9	0.0	0.0	0.0
School type	Males	Urban	5.9	1.6	2.1	1.4	0.4	0.6	0.3	0.0	0.0	0.0	0.0
		Rural	6.2	2.7	2.1	0.6	0.2	0.0	0.7	0.0	0.0	0.6	0.0
	Females	Urban	3.9	1.7	1.5	0.3	0.2	0.2	0.0	0.2	0.2	0.0	0.2
		Rural	8.2	4.6	3.4	0.2	2.2	0.0	0.0	0.0	0.0	0.0	0.0
Māori	Males	5–6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		7–10	1.0	0.7	0.0	0.0	0.3	0.0	0.4	0.0	0.0	0.0	0.0
		11–14	2.9	0.7	0.5	0.5	0.0	1.3	0.0	0.0	0.0	0.0	0.0
		Total	1.6	0.7	0.2	0.2	0.1	0.5	0.2	0.0	0.0	0.0	0.0
	Females	5–6	0.8	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		7–10	1.4	1.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		11–14	4.6	2.4	2.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	2.5	1.4	1.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific	Males	5–6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		7–10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		11–14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Females	5–6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		7–10	1.7	0.5	0.6	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0
		11–14	0.6	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	0.9	0.2	0.4	0.3	0.0	0.0	0.0	0.2	0.0	0.0	0.0
NZEO	Males	5–6	8.4	3.8	2.8	0.9	0.8	0.0	1.8	0.0	0.0	0.8	0.0
		7–10	9,8	3.4	3.4	1.3	0.4	0.9	0.4	0.0	0.0	0.0	0.0
		11–14	6.6	0.8	2.7	2.6	0.5	0.5	0.0	0.0	0.0	0.0	0.0
		Total	8.2	2.4	3.0	1.8	0.5	0.5	0.5	0.0	0.0	0.2	0.0
	Females	5–6	11.4	6.2	4.4	1.5	2.3	0.0	0.0	0.0	0.0	0.0	0.0
		7–10	3.9	1.0	3.0	0.0	0.5	0.4	0.0	0.0	0.0	0.0	0.0
		11–14	5.6	3.2	0.6	0.0	0.5	0.0	0.0	0.6	0.5	0.0	0.6
		Total	6.0	2.9	2.3	0.3	0.8	0.2	0.0	0.2	0.2	0.0	0.2

1 Includes the nine most frequently reported supplements.

2 Includes a combination of two or more vitamins or minerals.

3 Includes meal replacement drinks and bars.

4 Includes multiple nutrients marketed for antioxidant properties and not called a multivitamin or mineral.

5 Includes supplements not able to be categorised; have biologically active components, eg, acidophilus.

Table B3: School day food consumption patterns

			Children who ate or drank something over the past week ...											
			At home before school			On way to school			During school hours			After school on way home		
			Not	Some-times	Usually	Not	Some-times	Usually	Not	Some-times	Usually	Not	Some-times	Usually
			%	%	%	%	%	%	%	%	%	%	%	%
New Zealand children (5–14 years)			3.9	13.2	82.9	84.2	12.9	2.7	1.4	3.1	95.5	62.7	31.4	5.6
	Males	5–6	0.8	5.7	93.4	87.7	9.1	3.0	2.5	2.0	95.6	64.2	27.3	8.3
		7–10	2.2	10.1	87.7	84.2	13.7	2.1	1.9	1.8	96.0	62.0	34.5	2.7
		11–14	3.7	15.1	81.3	82.5	14.0	3.2	1.2	4.3	94.5	63.7	29.5	6.8
		Total	2.5	11.2	86.2	84.2	12.9	2.7	1.7	2.8	95.3	63.1	31.1	5.4
	Females	5–6	2.1	7.1	90.6	88.8	9.6	1.1	1.0	0.8	98.2	58.4	32.4	9.0
		7–10	3.3	12.4	84.3	83.5	14.0	2.5	1.6	2.5	95.8	60.9	34.3	4.9
		11–14	8.7	22.2	69.1	82.6	13.6	3.7	0.6	5.3	94.1	65.7	28.8	5.2
		Total	5.3	15.3	79.4	84.2	13.0	2.7	1.1	3.3	95.6	62.3	31.7	5.8
NZDep01	Males	I	0.7	4.9	94.5	92.9	5.5	1.6	0.0	1.1	98.9	64.6	30.0	5.4
		II	1.0	4.2	94.8	91.3	7.3	1.4	0.0	2.0	98.0	72.0	25.0	2.9
		III	2.8	7.1	90.1	89.6	8.2	1.9	0.6	1.0	98.3	64.7	30.8	4.5
		IV	2.1	11.7	86.2	84.9	12.4	2.7	4.3	1.7	94.1	61.8	32.2	5.7
		V	5.4	25.4	69.1	70.1	25.3	4.5	2.4	5.6	91.1	54.1	37.4	7.0
	Females	I	3.3	6.5	90.3	96.1	3.9	0.0	1.7	0.2	98.1	67.0	29.6	3.4
		II	4.2	10.4	85.5	92.8	7.0	0.2	0.0	2.7	97.3	70.3	24.9	4.8
		III	3.0	14.3	82.7	86.9	11.5	1.7	0.0	4.4	95.6	72.4	25.3	2.3
		IV	7.6	19.0	73.3	81.4	15.5	2.8	1.2	4.5	94.3	65.1	30.9	4.0
		V	8.6	24.9	66.3	67.8	25.1	6.7	2.8	5.9	91.3	49.5	41.6	8.6
School type	Males	Urban	2.8	11.7	85.5	83.0	14.1	2.7	2.0	3.0	94.8	61.5	32.5	5.7
		Rural	1.3	9.1	89.6	89.7	7.7	2.6	0.3	2.0	97.8	70.1	24.8	4.4
	Females	Urban	5.8	16.0	78.2	83.2	13.8	2.7	1.3	3.5	95.2	63.2	31.3	5.3
		Rural	3.2	12.4	84.3	87.9	9.4	2.7	0.0	2.6	97.5	58.7	33.5	7.8
Māori	Males	5–6	1.3	11.2	87.5	81.3	13.8	4.2	1.3	1.9	96.8	47.5	36.3	15.6
		7–10	3.4	15.7	80.9	74.6	21.5	3.9	1.1	2.0	97.0	52.8	39.4	7.0
		11–14	5.2	33.9	60.8	69.1	24.8	6.1	0.5	8.7	90.7	52.3	36.5	11.2
		Total	3.6	21.7	74.7	74.0	21.1	4.8	0.9	4.5	94.6	51.5	37.6	10.4
	Females	5–6	3.2	8.2	87.8	77.3	19.7	1.5	1.5	1.5	97.0	50.2	34.4	14.7
		7–10	7.0	22.6	70.4	73.8	20.9	5.3	1.0	2.8	96.2	51.8	42.1	6.2
		11–14	16.4	33.7	49.9	65.8	20.8	12.8	0.0	10.4	89.6	47.2	43.5	8.0
		Total	9.9	24.0	66.0	71.4	20.6	7.4	0.7	5.5	93.8	49.7	41.0	8.6
Pacific	Males	5–6	5.5	23.8	70.7	63.9	28.4	7.8	6.4	7.5	86.1	47.6	38.4	14.0
		7–10	10.0	36.1	53.9	60.8	32.0	6.3	5.2	8.7	85.2	52.1	42.6	5.3
		11–14	11.9	45.1	43.0	52.5	41.0	6.5	2.3	7.4	90.4	44.6	45.6	9.3
		Total	9.8	36.9	53.3	58.3	34.6	6.7	4.3	8.0	87.4	48.4	42.8	8.6
	Females	5–6	5.1	29.5	65.5	73.5	17.6	8.1	6.8	4.8	88.4	48.6	46.0	5.4
		7–10	9.0	36.2	54.8	58.6	31.9	9.0	4.8	5.7	89.2	47.5	43.4	9.1
		11–14	21.8	41.4	36.8	53.7	35.9	9.8	1.2	10.6	88.2	49.2	39.3	11.6
		Total	13.0	36.7	50.3	59.8	30.4	9.1	3.8	7.3	88.7	48.4	42.4	9.3
NZEO	Males	5–6	0.0	1.1	98.9	93.5	4.7	1.9	2.4	1.2	96.4	73.1	22.2	4.7
		7–10	0.9	4.8	94.4	90.6	8.6	0.9	1.7	0.9	97.0	66.6	31.7	0.9
		11–14	2.2	5.5	92.2	90.2	7.4	2.0	1.2	2.5	96.3	69.5	25.4	5.1
		Total	1.3	4.4	94.4	91.0	7.3	1.5	1.7	1.6	96.6	69.0	27.4	3.3
	Females	5–6	1.3	3.6	95.2	95.4	4.6	0.0	0.0	0.0	100	63.0	29.7	7.3
		7–10	1.4	5.8	92.8	90.0	9.3	0.7	1.4	2.0	96.6	65.7	30.4	3.9
		11–14	4.6	16.2	79.2	91.4	8.6	0.0	0.7	3.0	96.3	73.8	22.7	3.6
		Total	2.7	9.6	87.7	91.6	8.1	0.3	0.9	2.0	97.1	68.5	27.1	4.4

Table B4: Food consumed at school[1]

			Sources of food consumed									When food consumed					
			Home			Shop/dairy/takeaway			Canteen or tuckshop			At morning break			At lunch time		
			None	Some	Most	None	Some	Most	None	Some	Most	No	Some-times	Usually	No	Some-times	Usually
			%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
New Zealand children (5–14 years)			4.5	11.1	84.4	74.1	23.7	2.2	43.2	51.8	4.9	2.4	10.6	86.9	0.4	5.3	94.3
	Males	5–6	0.4	11.6	88.0	75.6	21.9	2.6	60.7	38.0	0.7	2.0	10.2	87.2	0.6	1.8	97.6
		7–10	1.0	8.4	90.6	74.9	23.5	1.5	49.6	48.9	1.5	1.9	10.4	87.7	0.1	3.5	96.4
		11–14	10.4	12.8	76.8	70.2	27.3	2.5	30.1	59.1	10.8	3.8	11.6	84.4	0.8	8.5	90.4
		Total	4.7	10.8	84.5	73.1	24.7	2.1	43.9	50.9	5.1	2.7	10.8	86.3	0.5	5.2	94.3
	Females	5–6	1.0	6.9	92.0	75.7	23.2	1.1	49.9	49.3	0.8	1.1	5.7	93.2	0.4	1.4	98.2
		7–10	2.2	10.4	87.4	74.3	23.5	2.3	47.4	50.5	2.0	1.2	8.4	90.3	0.0	3.4	96.6
		11–14	8.1	14.5	77.4	75.6	21.7	2.7	33.8	56.7	9.4	3.7	14.3	82.0	0.6	9.4	90.0
		Total	4.4	11.4	84.2	75.1	22.7	2.2	42.4	52.8	4.8	2.2	10.3	87.5	0.3	5.4	94.2
NZDep01	Males	I	2.6	4.9	92.4	79.7	17.8	2.6	52.7	44.5	2.8	3.1	8.0	88.3	0.8	2.2	96.4
		II	5.1	4.8	90.1	80.6	19.4	0.1	46.9	48.5	3.8	2.2	9.7	88.1	0.9	2.5	96.6
		III	3.6	8.6	87.8	78.1	20.9	1.0	49.0	46.8	4.2	1.7	12.4	86.0	0.1	4.1	95.8
		IV	1.6	12.5	85.9	73.1	25.4	1.3	31.9	63.6	4.3	2.3	8.6	89.1	0.4	7.4	92.1
		V	8.4	20.2	71.5	59.3	36.9	3.8	35.3	57.0	7.7	3.7	15.7	80.6	0.7	7.9	91.4
	Females	I	0.0	5.1	94.9	82.0	16.4	1.6	53.0	45.4	1.6	0.0	7.6	92.4	0.2	4.1	95.7
		II	0.7	5.3	94.0	82.9	16.2	1.0	46.5	51.7	1.8	0.4	11.4	88.2	0.4	5.0	94.6
		III	3.7	9.4	87.0	83.8	15.8	0.5	32.5	64.6	2.9	2.1	10.2	87.7	0.0	5.5	94.5
		IV	4.3	12.7	83.1	73.4	25.9	0.7	34.5	60.3	5.1	2.4	7.9	89.6	0.3	6.2	93.5
		V	8.3	22.7	69.0	64.7	31.6	3.7	29.8	61.2	8.9	5.1	13.0	81.9	0.3	7.1	92.6
School type	Males	Urban	5.1	12.3	82.6	73.1	24.5	2.4	40.0	54.2	5.6	3.0	11.1	85.8	0.5	5.4	93.9
		Rural	2.8	4.3	92.9	73.3	25.6	0.8	61.0	36.1	2.6	1.4	9.8	88.2	0.2	4.0	95.8
	Females	Urban	4.9	12.3	82.8	75.9	21.5	2.5	37.8	56.6	5.4	2.2	11.2	86.5	0.3	5.3	94.4
		Rural	2.1	7.8	90.1	71.6	27.5	0.9	60.7	37.3	2.1	2.0	6.5	91.6	0.6	5.8	93.7
Māori	Males	5–6	0.7	19.3	80.0	63.9	33.4	2.7	39.1	60.2	0.7	1.4	9.2	89.4	0.0	4.5	95.5
		7–10	1.9	12.2	85.9	61.6	36.3	1.7	41.0	55.9	2.7	3.6	10.7	85.8	0.5	5.2	94.4
		11–14	15.4	20.1	64.6	50.9	45.6	3.6	21.8	62.4	15.9	7.1	18.1	74.8	1.0	16.2	82.8
		Total	6.8	16.7	76.6	58.0	39.2	2.6	33.2	59.3	7.3	4.5	13.2	82.4	0.6	9.2	90.2
	Females	5–6	2.4	11.5	86.2	59.2	37.7	3.1	45.2	54.8	0.0	2.4	6.9	90.7	1.5	4.5	94.0
		7–10	1.7	15.8	82.5	59.2	38.2	2.6	35.2	62.7	1.8	1.0	8.8	89.9	0.0	5.4	94.6
		11–14	12.0	27.8	60.2	57.4	36.8	5.8	23.3	62.7	13.5	6.1	15.9	78.0	2.6	12.5	84.9
		Total	5.9	19.6	74.5	58.5	37.6	4.0	32.5	61.1	6.0	3.3	11.2	85.4	1.3	8.0	90.7
Pacific	Males	5–6	2.9	37.1	60.1	51.8	44.6	3.6	27.5	66.1	5.4	2.6	20.4	77.0	0.7	7.0	92.3
		7–10	6.3	37.9	55.8	44.9	45.7	8.9	24.5	69.3	6.1	1.9	23.1	75.0	0.0	9.0	91.0
		11–14	27.3	35.5	37.2	39.3	53.0	7.7	12.8	62.7	24.5	4.0	22.4	73.7	2.7	15.9	81.4
		Total	13.7	36.8	49.5	44.1	48.3	7.4	20.6	66.1	13.1	2.8	22.2	74.9	1.2	11.2	87.6
	Females	5–6	5.2	26.8	68.0	56.8	39.1	4.2	29.5	61.5	9.0	5.6	11.7	82.7	0.0	3.3	96.7
		7–10	3.3	29.1	67.5	58.1	39.3	2.6	27.5	65.1	6.7	3.6	19.7	76.8	0.4	4.5	95.1
		11–14	25.0	35.7	39.3	45.2	43.6	11.1	16.2	59.9	23.9	4.2	21.2	74.6	0.0	12.7	87.3
		Total	12.1	31.2	56.7	52.8	41.0	6.2	23.5	62.4	13.8	4.2	18.7	77.1	0.2	7.5	92.4
NZEO	Males	5–6	0.0	5.2	94.8	83.4	14.2	2.4	73.6	25.5	0.0	2.2	9.2	87.7	0.9	0.0	99.1
		7–10	0.0	3.4	96.6	83.4	16.2	0.5	55.7	43.9	0.4	1.3	8.8	89.9	0.0	2.2	97.8
		11–14	6.9	7.9	85.2	80.0	18.5	1.5	34.8	57.6	7.6	2.6	8.3	88.7	0.5	5.2	94.0
		Total	2.8	5.6	91.6	82.0	16.8	1.3	50.5	46.1	3.3	2.0	8.7	89.0	0.4	3.0	96.5
	Females	5–6	0.0	2.7	97.4	84.4	15.6	0.0	54.4	45.7	0.0	0.0	4.5	95.5	0.0	0.0	100
		7–10	2.3	6.3	91.5	81.5	16.4	2.1	54.1	44.4	1.5	1.0	6.8	92.2	0.0	2.6	97.4
		11–14	4.9	7.6	87.4	85.2	14.1	0.7	39.2	54.3	6.4	2.8	13.0	84.2	0.0	8.0	92.0
		Total	2.9	6.2	90.9	83.5	15.3	1.1	48.1	48.7	3.2	1.6	8.9	89.5	0.0	4.3	95.7

1 Over the past week.

Table B5: Salt additions

			Salt added to meals during preparation[1]			Salt added to meals at table		
			Usually %	Sometimes %	No %	Usually %	Sometimes %	No %
New Zealand children (5–14 years)			37.2	28.1	32.0	12.9	35.3	51.7
	Males	5–6	37.6	21.5	39.5	12.3	25.2	62.5
		7–10	38.2	25.9	34.1	8.7	37.2	53.9
		11–14	37.8	27.9	28.5	18.2	37.2	44.6
		Total	37.9	25.8	32.9	13.2	34.9	51.8
	Females	5–6	29.2	28.4	41.9	5.4	36.0	58.0
		7–10	37.5	28.7	31.7	11.1	34.7	54.2
		11–14	38.6	33.1	25.0	17.8	36.5	45.7
		Total	36.4	30.4	31.0	12.7	35.7	51.5
NZDep01	Males	I	23.0	24.5	49.8	11.7	31.0	57.4
		II	36.7	19.2	40.7	8.9	31.3	59.0
		III	44.2	26.2	27.9	11.2	36.1	52.7
		IV	41.9	21.6	34.8	13.3	39.5	47.2
		V	45.9	25.3	25.8	17.3	34.3	48.4
	Females	I	20.7	32.1	44.2	12.1	35.1	52.8
		II	40.3	30.5	25.2	8.6	38.9	52.5
		III	36.1	26.3	34.0	5.8	44.3	49.9
		IV	34.4	27.8	35.7	10.9	33.6	55.5
		V	48.4	25.8	24.6	20.0	35.2	44.4
School type	Males	Urban	37.9	25.8	33.3	12.3	34.5	53.0
		Rural	37.9	25.8	31.3	17.0	36.4	46.6
	Females	Urban	36.9	30.3	31.1	11.8	34.8	53.3
		Rural	34.1	31.0	30.3	16.3	39.2	44.3
Māori	Males	5–6	39.2	24.2	35.3	16.7	29.2	54.2
		7–10	40.6	25.7	31.1	17.7	32.9	49.4
		11–14	40.7	29.4	25.4	26.6	34.0	39.4
		Total	40.3	26.8	29.8	20.9	32.5	46.6
	Females	5–6	37.4	23.0	38.1	9.9	30.1	58.3
		7–10	39.5	29.5	29.4	12.7	40.3	47.1
		11–14	43.9	27.2	25.3	29.2	33.9	36.9
		Total	40.8	27.3	29.6	18.5	35.7	45.4
Pacific	Males	5–6	55.6	30.5	13.9	17.9	27.2	55.0
		7–10	52.6	26.5	17.4	10.6	44.9	44.6
		11–14	53.4	29.7	12.7	17.1	44.7	38.2
		Total	53.5	28.5	14.9	14.5	41.2	44.3
	Females	5–6	55.9	19.8	22.8	8.3	20.5	70.3
		7–10	54.6	27.7	17.2	14.0	44.0	42.0
		11–14	52.4	29.8	15.7	24.2	37.5	37.9
		Total	54.0	26.8	17.8	16.7	36.7	46.3
NZEO	Males	5–6	34.5	19.2	44.7	9.8	23.4	66.8
		7–10	35.5	25.8	37.3	5.2	37.7	56.7
		11–14	35.0	27.2	31.3	15.6	37.4	47.0
		Total	35.1	25.1	36.3	10.3	34.9	54.6
	Females	5–6	22.4	31.7	46.0	3.3	40.5	56.2
		7–10	34.7	28.5	34.3	10.2	31.6	58.3
		11–14	35.3	35.5	26.0	13.2	37.3	49.5
		Total	32.6	31.9	33.1	10.1	35.6	54.3

1 Does the person who prepares your meal add salt when they are cooking?

Table B6: Household food security over the last year

			Valid n	The household:[1]		Because of lack of money, the household:[1]										The household:[1]			
				Can afford to eat properly		Food runs out		Eat less		Variety of foods limited		Rely on others		Use food grants/banks		Stressed about lack of money for food		Stressed when no food for social occasions	
				Always	Some-times	Often	Some-times	Often	Some-times	Often	Some-times	Often	Some-times	Often	Some-times	Often	Some-times	Often	Some-times
				%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
New Zealand households			2771	77.8	20.1	3.6	18.5	2.8	15.3	9.0	25.6	1.5	10.3	0.8	8.6	6.4	18.1	3.3	16.9
	# members	≤4	1040	82.8	15.6	2.5	14.9	2.1	11.7	7.9	22.0	1.5	7.8	0.5	7.1	5.3	14.4	2.8	14.3
		5–6	1082	78.6	19.3	3.5	18.7	2.7	15.6	9.2	27.2	1.3	9.3	1.0	7.4	6.2	18.4	3.1	17.2
		≥7	649	59.1	36.7	7.5	29.9	5.2	26.0	12.0	32.4	2.3	21.0	0.8	16.7	10.7	29.0	5.3	24.4
	# children	≤2	1196	83.4	15.1	2.4	14.4	2.0	10.7	6.7	21.9	1.2	6.9	0.4	6.4	4.9	13.4	2.7	13.4
		3–4	737	81.5	16.7	1.8	16.2	1.5	13.8	7.4	26.1	1.1	8.0	0.3	5.6	4.4	17.0	2.7	16.0
		≥5	838	58.7	37.3	9.1	31.9	6.5	28.5	16.7	33.6	3.0	21.6	2.3	18.4	13.0	31.0	5.7	26.7
NZDep01	I		273	94.0	5.5	0.6	5.6	0.5	5.3	3.3	14.9	0.0	1.7	0.4	1.1	0.5	7.2	0.4	8.4
	II		319	88.2	9.8	2.5	7.3	1.8	6.7	8.4	16.9	0.6	1.8	0.2	3.6	3.5	6.8	1.6	8.9
	III		344	82.2	14.9	5.4	15.4	2.4	13.1	8.9	27.1	2.4	9.6	0.3	7.1	7.1	20.3	2.3	17.7
	IV		474	72.0	24.3	1.5	22.7	2.6	17.4	10.9	30.3	1.0	13.5	0.9	10.3	8.6	20.7	4.9	21.8
	V		1108	59.5	37.5	8.9	36.3	5.6	29.1	14.4	38.8	2.4	21.5	2.1	17.6	11.6	32.2	8.2	25.3
School type	Urban		2366	77.1	20.7	4.0	18.9	2.8	16.0	8.5	27.2	1.6	10.7	0.8	9.1	6.5	18.1	3.4	17.0
	Rural		405	80.9	17.3	1.9	16.8	2.6	12.2	11.2	18.2	1.4	8.4	0.8	6.4	5.9	18.0	2.8	16.5
Māori	# members	≤4	398	68.2	30.5	5.5	27.6	5.7	22.1	13.3	30.6	4.5	15.1	2.4	16.1	11.4	24.7	5.5	17.7
		5–6	418	63.1	34.0	6.5	31.6	5.5	26.3	14.8	31.1	3.0	20.3	3.4	14.9	12.3	27.6	7.3	22.0
		≥7	241	60.0	37.9	9.8	33.5	8.0	25.3	14.2	32.1	3.2	26.4	1.6	23.6	12.8	33.5	6.8	26.7
	# children	≤2	450	71.2	27.5	5.1	23.0	5.0	18.4	10.6	27.0	2.9	13.0	1.9	12.9	9.4	22.0	5.2	15.5
		3–4	266	65.7	32.1	4.1	32.7	4.4	24.1	12.0	33.4	3.2	18.8	0.9	13.1	9.9	29.7	7.3	20.7
		≥5	341	54.5	42.4	11.2	38.4	9.0	32.4	20.2	34.7	4.9	29.0	4.7	26.2	17.1	34.0	7.5	29.7
		Total	1057	64.3	33.6	6.9	30.6	6.2	24.5	14.1	31.1	3.6	19.8	2.6	17.4	12.1	27.9	6.5	21.5
Pacific	# members	≤4	172	59.0	37.1	3.5	33.7	4.6	29.1	11.9	33.6	0.9	21.1	2.1	13.1	5.5	23.4	4.9	21.5
		5–6	293	46.7	48.4	5.8	50.7	4.1	47.5	11.1	51.3	1.7	26.7	1.3	20.9	6.8	41.2	7.9	38.2
		≥7	341	41.2	52.1	7.6	51.3	2.5	48.1	6.4	58.9	1.1	31.5	0.8	18.2	7.2	45.9	2.9	43.7
	# children	≤2	243	56.6	37.7	5.1	36.2	4.5	30.2	9.2	37.6	1.0	22.4	1.1	13.2	5.3	25.9	4.4	26.7
		3–4	179	51.2	45.8	4.4	43.3	2.1	44.3	11.0	47.2	1.0	19.9	2.0	15.3	5.2	41.0	4.6	37.1
		≥5	384	39.6	54.1	7.5	55.4	3.5	51.5	8.4	60.0	1.5	33.7	1.0	21.8	8.1	46.8	5.6	43.2
		Total	806	46.6	47.9	6.2	47.7	3.5	44.2	9.1	51.3	1.3	27.8	1.2	18.1	6.7	39.9	5.0	37.4
NZEO	# members	≤4	470	87.5	11.0	1.7	10.9	1.0	8.4	6.3	19.4	0.8	5.4	0.0	4.7	3.8	11.4	2.1	13.2
		5–6	371	87.0	11.5	2.2	11.1	1.7	8.8	7.1	23.4	0.6	3.8	0.2	3.5	4.1	13.0	1.2	13.4
		≥7	67	71.4	23.9	5.0	10.2	4.0	10.4	13.5	13.3	2.2	7.4	0.0	8.1	10.8	11.6	5.4	7.6
	# children	≤2	503	88.1	10.5	1.5	10.9	1.1	7.6	5.6	19.7	0.8	4.5	0.0	4.2	3.6	10.5	2.0	12.0
		3–4	292	88.0	10.4	1.0	9.9	0.6	8.8	6.0	22.6	0.5	4.3	0.0	2.9	2.9	11.8	1.3	13.2
		≥5	113	72.3	24.0	8.0	13.9	5.7	13.2	17.6	19.3	2.1	8.6	0.8	9.3	11.7	20.2	4.0	15.6
		Total	908	86.1	12.1	2.1	10.9	1.5	8.7	7.2	20.6	0.9	4.9	0.1	4.4	4.4	12.1	2.0	12.8

1 Options ‘Never’ and ‘Don't know’ are not reported.

C. Frequently Eaten Foods

Introduction

Data on usual frequency of intake of commonly eaten foods over the four-week period before interview were derived from a qualitative food frequency questionnaire (FFQ). Foods were grouped in the FFQ as follows: Fruit; Vegetables; Mixed dishes; Eggs, meat, poultry and fish; Pies, burgers, sausage-meats; Bread and cereals; Spreads, sauces; Convenience meals/snacks; Dairy (excluding milk); Biscuits/cakes; Snacks and sweets; Milks; and Other (non-milk) drinks.

In this section, weekly consumption of a food or group of foods applies to children who ate that food weekly or more often; that is all who ate the food *1–2 times a week*, *3–4 times a week*, *5–6 times a week, once a day* and *2 or more times a day*.

Key points

Fruit

- About two out of five New Zealand children ate fruit at least twice a day.
- Older children (11–14 years) ate fruit less frequently than younger children (5–6 years).

Vegetables

- About three out of five New Zealand children ate vegetables three or more times a day.
- Compared with other groups NZEO children were most likely to eat *Carrots* and *Broccoli* at least once a week; Māori children, *Silverbeet, spinach, puha or watercress*; and Pacific children, *Taro*, *Cooked green banana*, *Cassava* and *Tomatoes*.

Meat, fish, poultry and eggs

- *Chicken* was the most commonly eaten among these foods.
- Children in NZDep01-V had a higher frequency of consumption of meat, fish, poultry and eggs than NZDep01-I children.

Mixed dishes and convenience meals/snacks

- Mixed dishes most commonly eaten were *Pasta with meat and tomato sauce* and *Chinese type dishes*, both eaten weekly by about half of New Zealand children.
- *Noodles* were the most commonly eaten convenience meal/snack, eaten weekly by about half of New Zealand children.

Bread

- *White bread* was the most common bread type eaten by New Zealand children (79 percent).
- *Margarine or margarine blend* was more frequently spread on bread by New Zealand children (about half) than *Butter* (one in five).

Breakfast cereal and rice

- Forty percent of New Zealand children ate breakfast cereal at least once a day. Daily consumption of breakfast cereal was higher among Māori and NZEO children than among Pacific children.
- The most frequently eaten breakfast cereal, chosen weekly, was *Weetbix type* (62 percent) followed by *Cornflakes type* (50 percent).
- Pacific children were more likely to eat *Rice* weekly than Māori and NZEO children.

Spreads and sauces

- About half of New Zealand children used *Jam or honey*, *Marmite or vegemite* and *Peanut butter* weekly. Eighty percent of New Zealand children consumed *Tomato sauce or ketchup* weekly.
- Weekly consumption of sweet spreads (*Jam or honey* and *Nutella*) declined with increasing age, but weekly consumption of *Mayonnaise or salad dressing* increased with age.

Biscuits/cakes

- *Biscuits* (plain, chocolate chip, semi-sweet, gingernut, shortbread) were eaten by about 80 percent of New Zealand children weekly.

Snacks, sweets and dairy (excluding milk)

- *Chocolate* (eg, Moro bar) was eaten weekly by a higher proportion of children 11–14 years than by younger children.
- Dairy items eaten weekly, were *Cheese* (68 percent), *Ice-cream* (64 percent) and *Yoghurt or dairy food* (64 percent).
- *Potato crisps, corn snacks or chips* were consumed weekly by 83 percent of New Zealand children.

Milks

- Thirty-eight percent of New Zealand children reported drinking *Milk* (not flavoured) daily, 34 percent weekly, and 17 percent drank *Milk* less than monthly or never.
- The type of milk most frequently consumed by New Zealand children was *Standard milk* (74 percent); the least frequently consumed was *Soy* (2 percent).
- The proportion of NZEO and Māori children drinking *Milk* was higher than Pacific children.

Other drinks

- *Powdered fruit drink* (eg, Raro and Refresh) was the most popular non-milk drink among New Zealand children.
- Pacific and Māori children were more likely than NZEO children to drink, weekly, *Powdered fruit drink*, *Coca Cola or other cola drinks*, *Mountain Dew*, *'New Age' drinks*, *Soft drinks*, *Tea* and Coffee.

Fats put on cooked vegetables and fats used to cook meat, poultry or fish

- Thirty-five percent of New Zealand children added *Butter or margarine* to their cooked vegetables weekly.
- Māori and Pacific children were more likely than NZEO children to use *Margarine* to cook meat, poultry or fish, but less likely to use *Olive oil*.

C1 Fruit

Table C1

New Zealand children

Forty-three percent of New Zealand children ate fruit at least twice a day. *Apples or pears* were the most commonly consumed fruit group, eaten weekly by 83 percent of New Zealand children. The next most frequently consumed fruits eaten weekly were *Oranges or mandarins* (67 percent) and *Bananas* (63 percent).

With one exception, the consumption of fruit by males and females was similar. A lower proportion of males (64 percent) consumed *Oranges or mandarins* weekly than females (71 percent).

Older children ate fruit less frequently than younger children (Figure C-1). Children 11–14 years consumed fruit at least twice a day (males 39 percent; females 36 percent) compared with children 5–6 years (46 percent; 55 percent). Older children ate *Bananas, Apples or pears and Dried fruit* less frequently.

Urban-rural

A higher proportion of rural children (males 48 percent; females 45 percent) than urban (37 percent; 38 percent) ate *Canned or cooked fruit* weekly.

Ethnic

A higher proportion of Pacific children (males 51 percent; females 50 percent) ate fruit at least twice a day than Māori (40 percent; 43 percent) and NZEO children (41 percent; 44 percent). The proportion eating *Bananas* weekly was higher for Pacific than for Māori and NZEO females. A higher proportion of Pacific and Māori males ate *Bananas* weekly than NZEO males (Figure C-2). A higher proportion of NZEO females ate *Kiwifruit* weekly than Māori females. Similarly, a higher proportion of Pacific and NZEO males ate *Kiwifruit* weekly than Māori males. A higher proportion of Māori children ate *Canned or cooked fruit* weekly than NZEO children.

Figure C-1: Fruit serves ≥ two serves/day

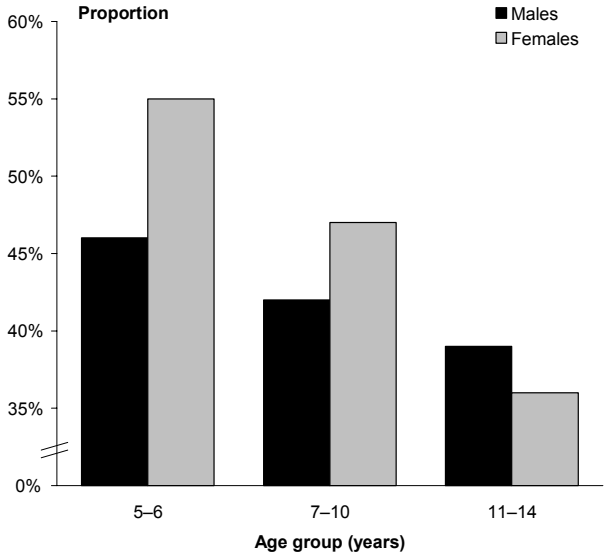
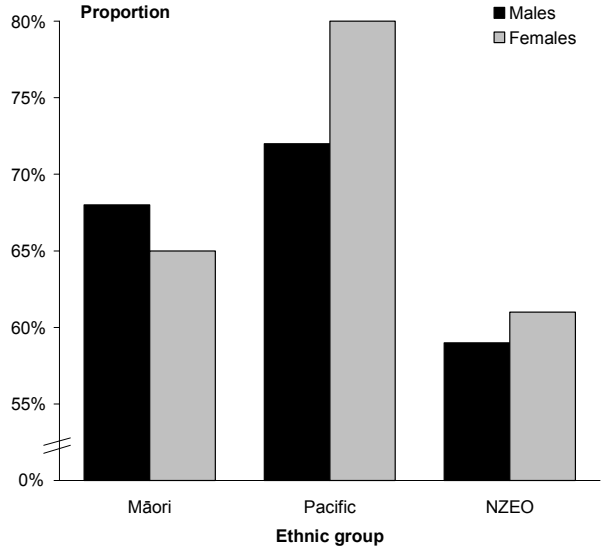


Figure C-2: Bananas eaten ≥ once/week



C2 Vegetables

Tables C2.1, C2.2

New Zealand children

Fifty-seven percent of New Zealand children ate vegetables three or more times a day. The vegetable group most likely to be eaten weekly was *Other potatoes eg boiled, mashed, baked or roasted* (87 percent). *Fried potatoes eg hot potato chips, kumara chips, french fries, wedges or hash browns* were eaten by 65 percent. Other vegetables eaten weekly were *Carrots* (79 percent), *Broccoli* (60 percent), *Peas* (59 percent), *Mixed vegetables* (58 percent), *Lettuce, green salad* (56 percent), *Cauliflower or cabbage* (55 percent), *Tomatoes (raw or cooked)* (53 percent) and *Corn* (48 percent).

The frequency of weekly consumption of individual vegetables was similar for males and females and did not show any consistent variation with age.

NZDep01

The vegetables eaten frequently by Māori or Pacific children were eaten weekly by a higher proportion of children in NZDep01-V compared with children in other NZDep01 quintiles.

Urban-rural

A higher proportion of urban children consumed *Taro*, *Cassava* and *Cooked green banana* weekly; whereas a higher proportion of rural children consumed *Other potatoes* weekly.

Ethnic

A higher proportion of NZEO children ate *Carrots* and *Broccoli* weekly, and a lower proportion ate *Kumara* and *Mixed vegetables* weekly, than Māori or Pacific children. A higher proportion of Māori children ate *Corn* weekly than Pacific children, and a higher proportion ate *Silverbeet, spinach, puha or watercress* weekly than Pacific and NZEO children (Figure C-3). However, a higher proportion of Pacific children ate *Taro*, *Cooked green banana*, *Cassava* and *Tomatoes (raw or cooked)* weekly, and a lower proportion ate *Other potatoes* and *Peas* weekly than Māori or NZEO children (Figure C-4).

Figure C-3: Silverbeet, spinach, puha, or watercress eaten ≥ once/week

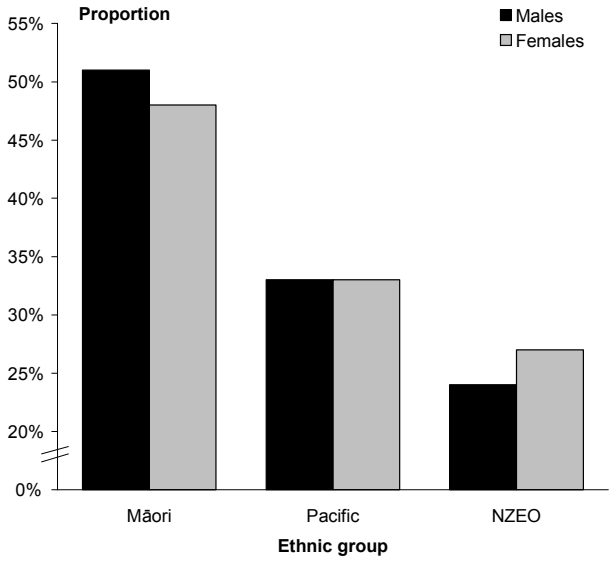
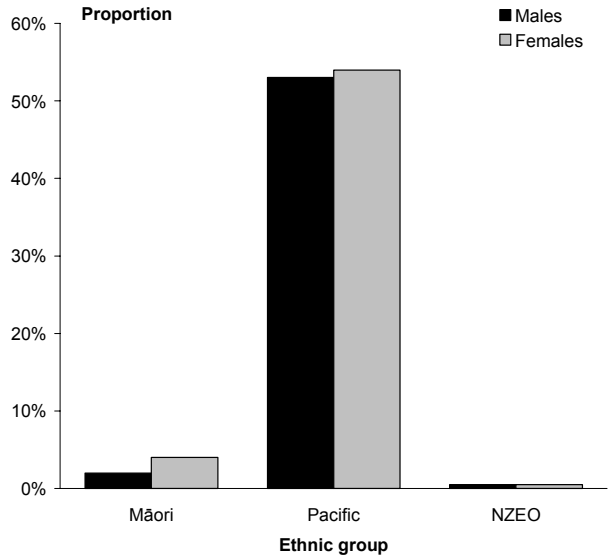


Figure C-4: Taro eaten ≥ once/week



C3 Meat, fish, poultry and eggs

Tables C3.1, C3.2

This section describes foods eaten in two FFQ sections: Eggs, meat, poultry and fish and Pies, burgers, sausage-meats.

New Zealand children

Chicken (83 percent), *Eggs* (62 percent), *Mince* (54 percent) *Luncheon, ham and chicken* (48 percent), *Sausages* (45 percent), *Bacon or ham* (43 percent), *Fish* (37 percent), *Roast beef, lamb or pork* (36 percent), *Meat pie* (36 percent), *Steak* (34 percent), and *Lamb or mutton chop*s (26 percent) were the most common foods in this group consumed weekly by New Zealand children.

There were no consistent differences in the proportions of males and females that ate foods in the meat, fish, poultry and eggs group weekly. The proportion of New Zealand children consuming these foods weekly did not vary with age in any consistent pattern.

NZDep01

A higher proportion of children in NZDep01-V consumed foods from this group two or more times a day (males 68 percent; females 68 percent) than NZDep01-I children (44 percent; 36 percent) (Figure C-5). Compared with NZDep01-I to IV, a higher proportion of children in NZDep01-V consumed the following foods weekly: *Lamb or mutton chops*, *Canned corned beef*, *Fish cake, fish fingers or fish pie*, *Shell fish* (eg mussel, paua or crabmeat), *Meat pie*, *Burgers*, *Sausages (all types)* and *Sausage rolls*.

Urban-rural

A higher proportion of urban children ate *Burgers* at least weekly (males 22 percent; females 22 percent) than rural children (13 percent; 9 percent).

Ethnic

A higher proportion of Pacific children ate foods in this group two or more times a day (males 81 percent; females 79 percent) than Māori (64 percent; 61 percent) and NZEO children (48 percent; 39 percent) (Figure C-6). All items in this group, except *Steak*, were more likely to be eaten weekly by Pacific and Māori children than NZEO children.

Figure C-5: Meat, fish, poultry or eggs eaten ≥ twice/day (NZDep01)

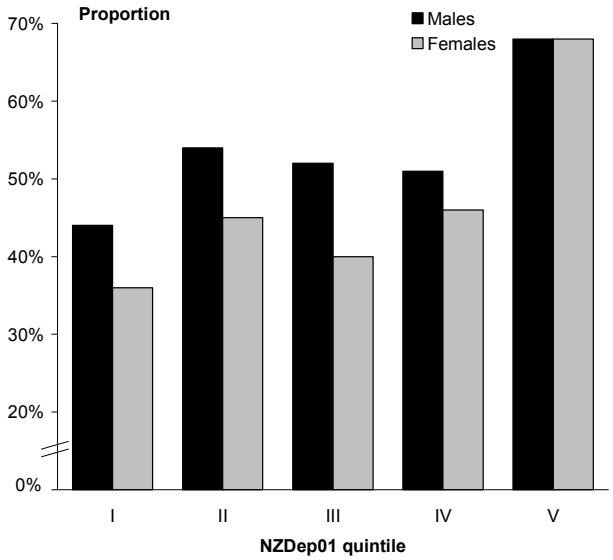
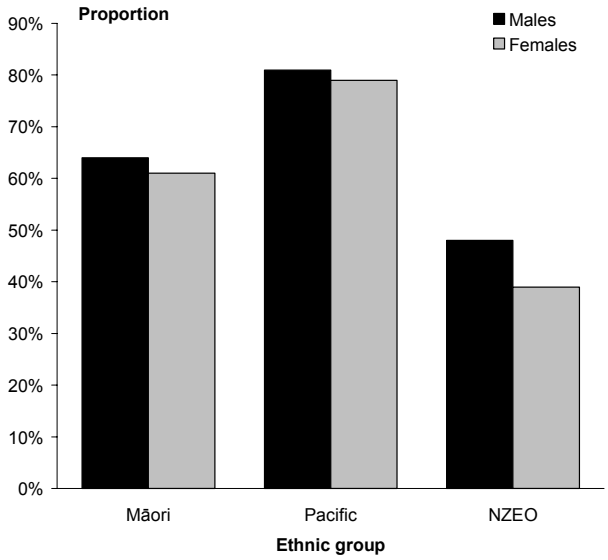


Figure C-6: Meat, fish, poultry or eggs eaten ≥ twice/day (ethnic)



C4 Mixed dishes and convenience meals/snacks

Table C4

This section describes foods eaten in two FFQ sections: Mixed dishes and Convenience meals/snacks.

New Zealand children

Pasta with meat and tomato sauce (45 percent), *Chinese type dishes, stir-fry meat or chicken and vegetables* (44 percent), and *Meat stew or casserole with vegetables* (34 percent) were the most common foods in the mixed dishes group consumed by New Zealand children. *Noodles* (55 percent) and *Canned spaghetti with tomato sauce* (32 percent) were the most common foods in the convenience meals/snacks group consumed by New Zealand children.

There were no differences in the proportions of males and females, or of age groups, that consumed weekly any of the mixed dishes or convenience meals/snacks.

NZDep01

A higher proportion of children in NZDep01-V ate, weekly, *Meat and vegetable 'boil-up*', *Noodles* and *Canned spaghetti with tomato sauce,* than children in NZDep01-I to IV (Figure C-7).

Ethnic

A higher proportion of Pacific and Māori children ate *Meat and vegetable 'boil-up'* and *Meat stew or casserole with vegetables* weekly than NZEO children (Figure C-8). A higher proportion of Māori children ate *Pasta with cream, white sauce or cheese sauce* weekly than Pacific children; while a higher proportion of both Māori and NZEO children ate *Pasta with meat and tomato sauce* weekly than Pacific children.

A higher proportion of Pacific children ate *Pizza*, *Soup*, *Noodles* and *Canned spaghetti with tomato sauce* weekly than NZEO and Māori children. Similarly, a higher proportion of Māori children ate *Noodles* and *Canned spaghetti with tomato sauce* weekly than NZEO children.

Figure C-7: Canned spaghetti with tomato sauce eaten ≥ once/week

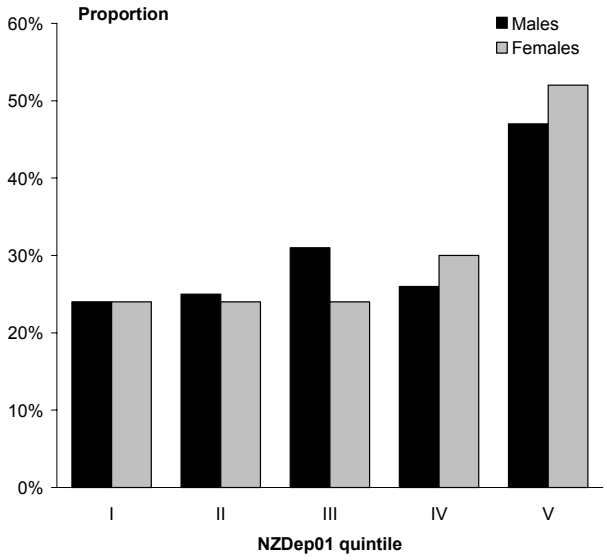
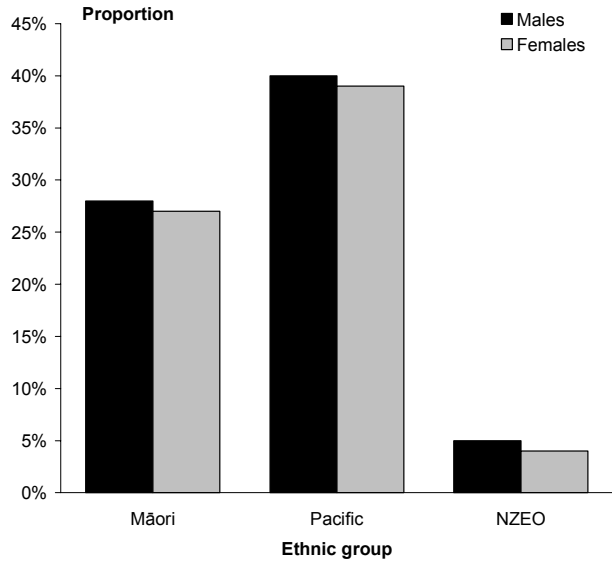


Figure C-8: Meat and vegetable boil-up eaten ≥ once/week



C5 Bread

Table C5

Frequency of bread intake

Forty-three percent of New Zealand children reported eating bread two or more times a day, 28 percent once per day, and 29 percent less than once a day. The frequency of bread consumption was the same for males and females and did not vary by age. A higher proportion of Māori and NZEO children ate bread daily or more often than Pacific children.

Type of bread usually eaten

White was the type of bread usually eaten by New Zealand children (79 percent), while 15 percent ate *Whole-meal* and 13 percent *Mixed-grain*. The type of bread usually eaten did not vary between males and females, or consistently by age. *White* bread was most likely to be usually eaten by Pacific children, and least likely to be usually eaten by NZEO children. On the other hand, *Mixed grain* was most likely to be usually eaten by NZEO children and least likely to be usually eaten by Pacific children (Figure C-9).

Use of butter and margarine or margarine blend on bread

Margarine or margarine blend was the most common spread on bread (used most of the time) by 52 percent of New Zealand children. *Butter* was used most of the time by 21 percent. Fourteen percent reported they rarely or never used either *Butter* or *Margarine or margarine blend*. Females were more likely than males to use (most of the time) *Margarine or margarine blend*, but their use of *Butter* was the same. Use of *Butter* and *Margarine or margarine blend* was similar for all age groups. Children in NZDep01-V were more likely to use *Butter* than NZDep01-I children (Figure C-10). A higher proportion of Māori and Pacific children mostly used *Butter* than NZEO children. The proportion using mostly *Margarine or margarine blend* did not vary by ethnicity.

Type of margarine

Polyunsaturated margarine was the most common type of margarine usually used by New Zealand children (58 percent). Eleven percent reported usually using *Canola* margarine, *Olive oil* margarine (22 percent) and *Blend* of butter and margarine (7 percent). There were no differences in the type of margarine used by males and females and across age groups. Children in NZDep01-I were less likely to use *Polyunsaturated* margarine, and more likely to use *Olive oil* margarine than NZDep01-V children. NZEO children were more likely to report use of *Olive oil* margarine than Māori or Pacific children.

Figure C-9: Type of bread (males)

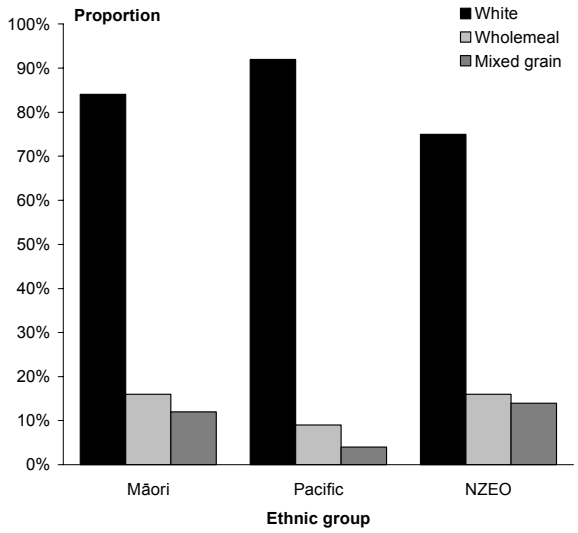
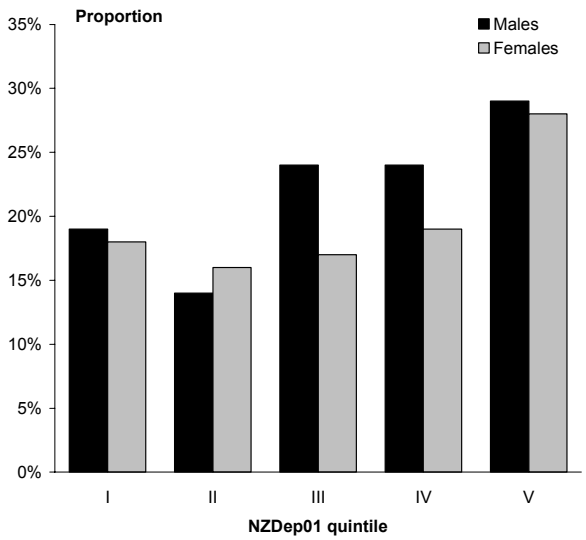


Figure C-10: Butter on bread most of the time



C6 Breakfast cereal and rice

Table C6

Frequency of consumption

Forty percent of New Zealand children reported eating *Breakfast cereal* at least once a day, 45 percent weekly, and 15 percent less often. Males were more likely to eat *Breakfast cereal* daily than females (Figure C-11). Frequency of consumption declined with age, such that children 11–14 years were more likely to eat *Breakfast cereal* less than weekly than children 5–6 years and 7–10 years. Daily consumption of *Breakfast cereal* was higher in Māori and NZEO children than Pacific children.

Type of breakfast cereal

The *Breakfast cereal* eaten by the highest proportion of New Zealand children weekly was *Weetbix type* (62 percent). *Cornflakes type* was eaten weekly by 50 percent, *Rice bubbles* (36 percent), C*ocopops* (25 percent), *Porridge* (25 percent), *Multigrain type* (9 percent) and *Muesli* (8 percent). Fourteen percent of children ate *Other breakfast cereals* weekly: Nutrigrain was the most frequently eaten of these (5 percent). The proportion of children consuming these types of breakfast cereals weekly was the same for both sexes, and did not vary between age groups. A lower proportion of children in NZDep01-I ate *Weetbix type* and *Cornflakes type* cereal weekly than NZDep01-V children. A higher proportion of Māori and Pacific children ate *Cornflakes type* cereal and *Porridge* weekly than NZEO children. A higher proportion of Māori children ate *Weetbix type* cereal weekly than NZEO children.

Sweetener added to cereal

Sixty-seven percent of children usually *Add sugar, honey or syrup to cereal*. The proportion of children adding sweetener to cereal was the same for males and females, and did not vary between age groups. The proportion that added sweetener to breakfast cereal was lowest in NZDep01-I (males 55 percent; females 42 percent) and highest in NZDep01-V (85 percent; 80 percent) (Figure C-12). Māori and Pacific children were more likely to add sweetener to their cereal than NZEO children.

Rice

Rice was eaten weekly by 59 percent of children. A higher proportion of Pacific children (males 82 percent; females 83 percent) ate rice weekly than Māori (60 percent; 55 percent) and NZEO children (58 percent; 57 percent).

Figure C-11: Breakfast cereal eaten ≥ once/day

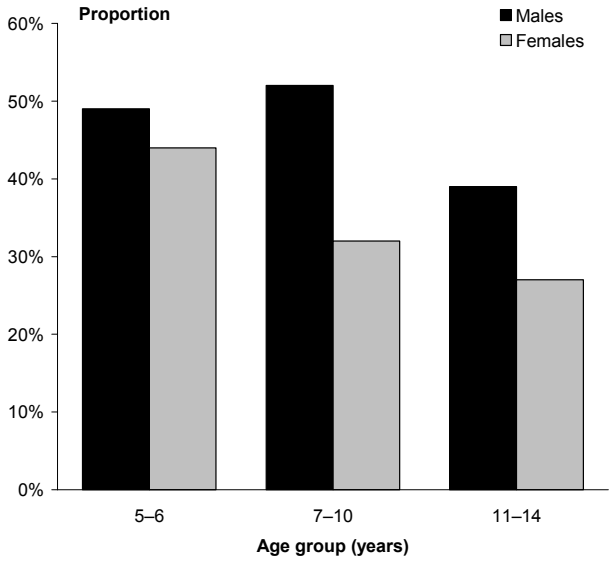
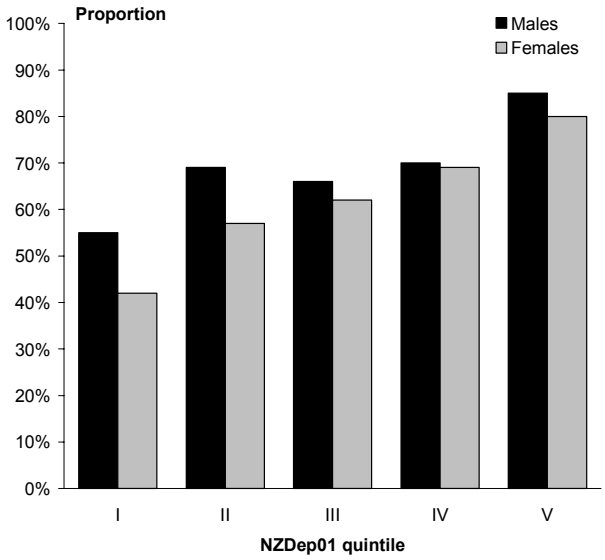


Figure C-12: Add sugar, honey or syrup to cereal



C7 Spreads, sauces

Table C7

New Zealand children

The main spreads and sauces consumed weekly by New Zealand children were *Jam or honey* (53 percent), *Peanut butter* (49 percent), *Marmite or vegemite* (47 percent), *Nutella* (30 percent), *Mayonnaise or salad dressing* (29 percent), *Tomato sauce or ketchup* (80 percent) and *Gravy* (37 percent) (Figures C-13, C-14). The proportion of children consuming spreads or sauces weekly was the same for both sexes with one exception: a higher proportion of females than males consumed *Marmite or vegemite*. The proportion consuming *Jam or honey* and *Nutella* weekly declined with age, whereas weekly consumption of *Mayonnaise or salad dressing* was higher in older age groups.

Ethnic

A higher proportion of Māori children ate *Jam or honey* and *Peanut butter* weekly than NZEO children. Similarly, a higher proportion of Pacific children, than Māori or NZEO children, reported eating *Nutella* weekly. A higher proportion of Pacific children reported eating *Mayonnaise or salad dressing* weekly than NZEO children. A higher proportion of NZEO females ate *Marmite or vegemite* than other sex or ethnic categories.

Figure C-13: Spreads eaten ≥ once/week

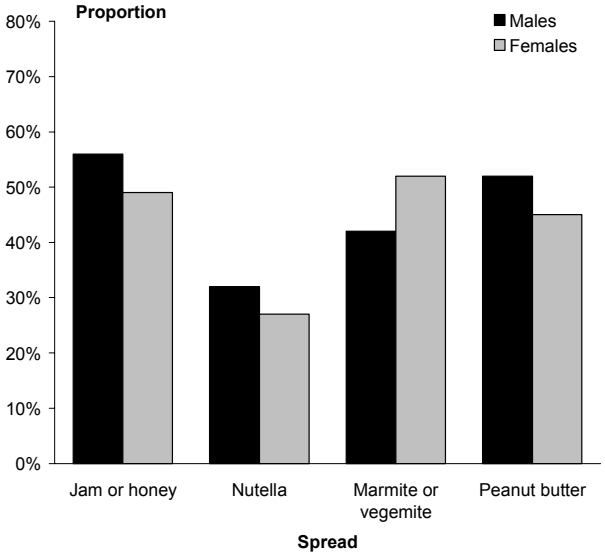
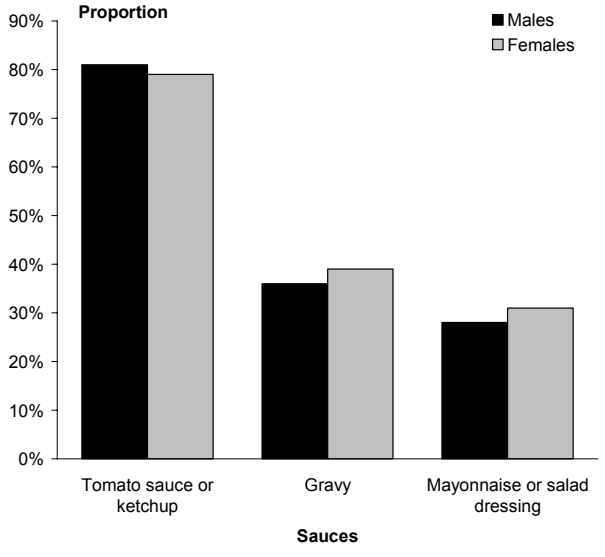


Figure C-14: Sauces eaten ≥ once/week



C8 Biscuits/cakes

Table C8

New Zealand children

Biscuits (plain, chocolate chip, semi-sweet, gingernut, shortbread) were consumed weekly by 78 percent of New Zealand children. Other foods commonly eaten weekly in this group were *Crackers or crispbreads* (52 percent), *Bars* (51 percent), *Chocolate-coated or cream filled biscuits* (46 percent), *Cake or slice* (37 percent), *Scones, muffins or sweet buns* (27 percent), and *Pancake or pikelets* (15 percent).

For all biscuits/cakes there were no differences between the proportions of males and females who consumed them weekly. The only group of foods for which weekly consumption was consistently related to age in both males and females was *Crackers or crispbreads*, with the proportion consuming these weekly being lower in older age groups (Figure C-15).

NZDep01

A higher proportion of children in NZDep01-I consumed *Crackers or crispbreads*, and a lower proportion consumed *Doughnuts or croissants* weekly than NZDep01-V children.

Ethnic

A higher proportion of Pacific children consumed, weekly, *Chocolate coated or cream filled biscuits*, *Doughnuts or croissants*, *Scones, muffins or sweet buns* and *Pancake or pikelets* than NZEO children (Figure C-16). A higher proportion of NZEO children consumed *Bars* weekly than Pacific children. A lower proportion of Māori children consumed *Crackers or crispbreads* weekly than Pacific and NZEO children.

Figure C-15: Crackers or crispbreads ≥ once/week

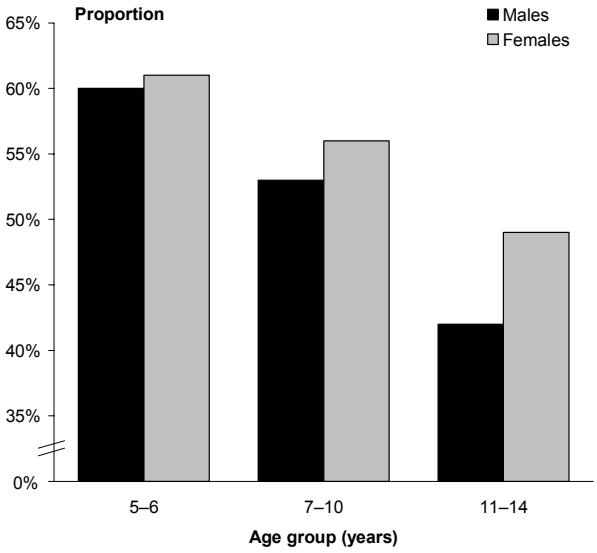
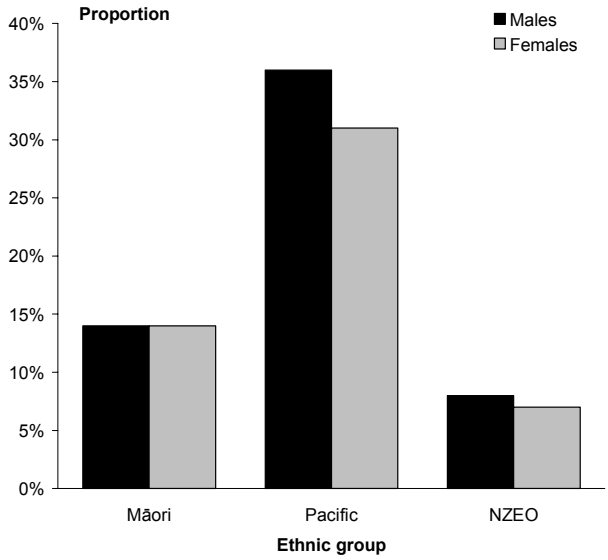


Figure C-16: Doughnuts or croissants ≥ once/week



C9 Snacks and sweets, and dairy (excluding milk)

Table C9

This section describes foods eaten in two FFQ sections: Snacks and sweets, and Dairy.

Snacks and sweets

New Zealand children

Potato crisps, corn snacks or chips were consumed weekly by 83 percent of New Zealand children, *Chocolate*, for example, Moro bar (40 percent), *Candy coated chocolate*, for example, Pebbles (25 percent), *Popcorn* (17 percent) and *Other sweets* (48 percent). The proportion of children eating snacks and sweets weekly was the same for males and females. A higher proportion of children 11–14 years consumed *Chocolate* weekly than children aged 5–6 years and 7–10 years (Figure C-17).

NZDep01

The proportion of children eating *Candy coated chocolate* weekly increased from NZDep01-I (males 17 percent; females 17 percent) to NZDep01-V (33 percent; 37 percent).

Ethnic

A higher proportion of Māori and Pacific children ate *Chocolate* and *Candy coated chocolate* weekly than NZEO children.

Dairy (excluding milk)

New Zealand children

The dairy items most frequently consumed weekly by New Zealand children were: *Cheese* (68 percent), *Ice-cream* (64 percent) and *Yoghurt or dairy food* (64 percent). *Cream* and *Custard or custard puddings* were eaten weekly by 10 percent or less.

The proportion of children eating dairy items at least weekly was the same for males and females. The proportion eating *Yoghurt or dairy food* weekly declined with age.

Ethnic

A higher proportion of Māori and NZEO children ate *Cheese* weekly than Pacific children; while Māori and Pacific children were more likely to consume *Cream* weekly than NZEO children (Figure C-18).

Figure C-17: Chocolate eaten ≥ once/week

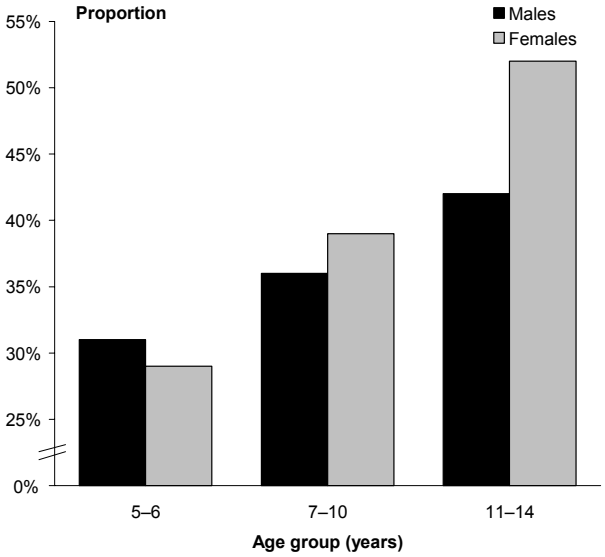
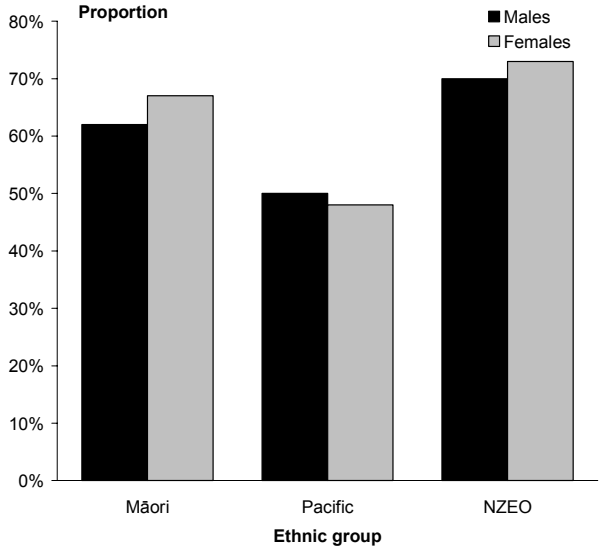


Figure C-18: Cheese eaten ≥ once/week



C10 Milks

Table C10

Milk (not flavoured)

Thirty-eight percent of New Zealand children reported drinking milk (not flavoured) every day, 34 percent weekly, 10 percent monthly and 17 percent less than monthly or never. Frequency of milk consumption was unrelated to sex or age. The proportion consuming milk daily was higher for NZEO (males 41 percent; females 39 percent) and Māori (39 percent; 33 percent) children than for Pacific children (32 percent; 23 percent) (Figure C-19).

Types of milk

Standard milk was the kind of milk usually drunk by New Zealand children (74 percent). *Low-fat* milk was usually consumed by 13 percent, *Trim* (7 percent), *Extra-calcium* (4 percent) and *Soy* (2 percent). The type of milk drunk was the same for males and females.

The 11–14 year females were less likely to usually drink *Standard* milk (64 percent) than females 5–6 years (79 percent). Conversely, the proportion of females who usually drank *Low-fat* and *Trim* milk was highest for those 11–14 years (Figure C-20).

Māori (males 84 percent; females 83 percent) and Pacific (82 percent; 79 percent) children were more likely to usually drink *Standard* milk than NZEO children (72 percent; 67 percent).

Flavoured milk, milk shake, food drink

Fifty-nine percent of New Zealand children consumed a *Food drink* (eg, Milo, Nesquik) weekly, while drinking *Flavoured milk* weekly was reported by 22 percent and *Milk shake* by 13 percent. Weekly consumption of these milk drinks was unrelated to sex and age, except for *Flavoured milk,* where weekly consumption increased with age, particularly in males. A higher proportion of Pacific children consumed *Flavoured milk* or *Milk shake* weekly than Māori or NZEO children.

Figure C-19: Milk consumed ≥ once/day

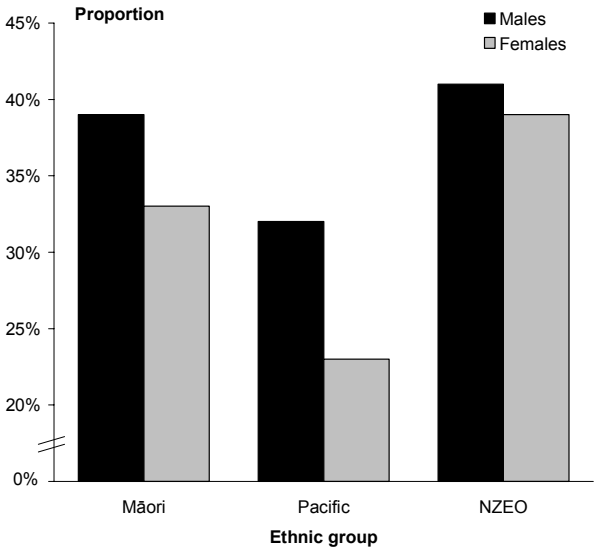
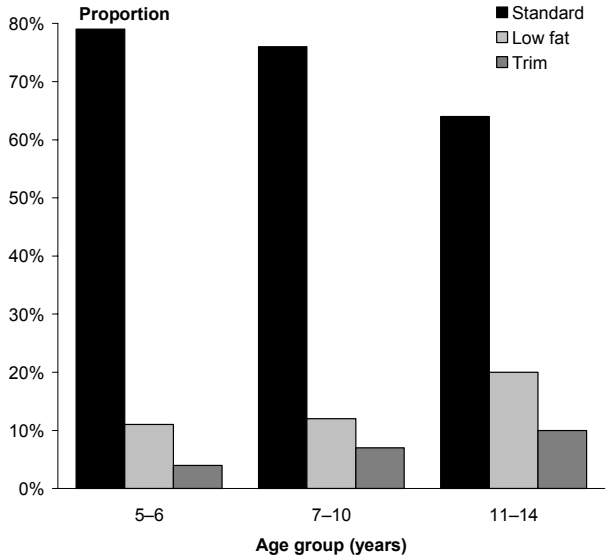


Figure C-20: Type of milk consumed ≥ once/week (females)



C11 Other drinks

Table C11

New Zealand children

Children consumed carbonated drinks weekly in the following proportions: *Soft drinks* 45 percent, *Coca Cola or other cola drinks* 43 percent, and *Mountain Dew* 9 percent. *Powdered fruit drink* and *Fruit drink from concentrate or cordial* were drunk weekly by 54 percent and 32 percent of children respectively.

A higher proportion of New Zealand children drank *Tea* weekly (21 percent) than *Coffee* (6 percent).

Sports drinks were consumed weekly by 8 percent of New Zealand children and *'New Age' drinks* by 6 percent. Forty-three percent of New Zealand children reported that they consumed *Juice* weekly.

There were no differences between males and females in the proportions consuming these types of drinks weekly. However, the proportions of children 11–14 years who drank *Coca Cola or other cola drinks*, *Tea*, *Sports drinks*, *'New Age' drinks* and *Coffee* weekly were higher compared with those 5–6 years.

NZDep01

Weekly consumption of most drinks was higher by NZDep01-V children than NZDep01-I, but particularly for *Powdered fruit drink* (Figure C-21), *Coca Cola or other cola drinks*, *Mountain Dew*, *Tea* and *Coffee*.

Ethnic

Higher proportions of Pacific and Māori children than NZEO children consumed the following drinks weekly: *Powdered fruit drink*, *Coca Cola or other cola drinks*, *Mountain Dew*, *'New Age' drinks*, *Coffee* and *Tea* (Figure C-22).

Figure C-21: Powdered fruit drink consumed ≥ once/week

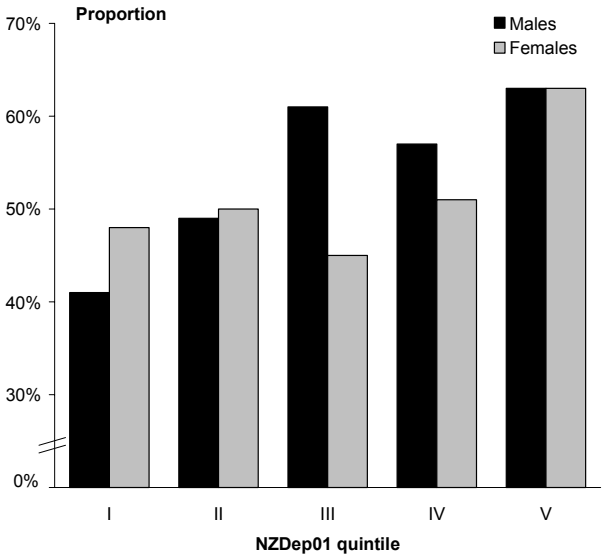
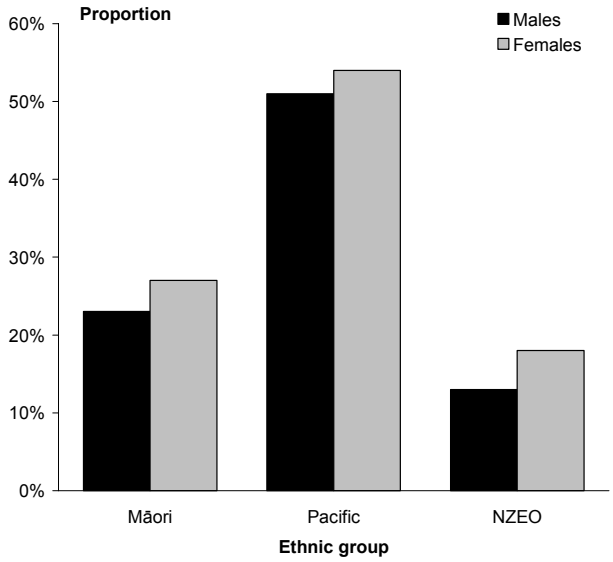


Figure C-22: Tea consumed ≥ once/week



C12 Fats put on cooked vegetables and fats used to cook meat, poultry or fish

Table C12

Fats put on cooked vegetables

Thirty-five percent of New Zealand children *Add butter/margarine* weekly to their cooked vegetables. There were no consistent differences between males and females or by age group. A higher proportion of NZDep01-V children reported that they *Add butter/margarine* to cooked vegetables weekly than those in NZDep01-I and II (Figure C-23). Māori and Pacific children were more likely to *Add butter/margarine* weekly to cooked vegetables than NZEO children.

The following types of fat spread were usually added to vegetables: *Butter* (25 percent), *Margarine* (22 percent), *Low-fat spread* (6 percent), and *Blend* (margarine and butter*)* (3 percent). The type of fat spread usually added was similar between males and females and across age groups. Children in NZDep01-V were more likely to add *Margarine* to vegetables (males 26 percent; females 29 percent) than NZDep01-I (10 percent; 13 percent). Māori children were more likely to add *Butter* to vegetables than Pacific and NZEO children, and more likely to add *Margarine* than NZEO children.

Fats regularly used to cook meat, poultry or fish

The types of fat reported to be used regularly to cook meat, poultry or fish by New Zealand children were: *Olive oil* (46 percent), *Canola oil* (24 percent), *Other vegetable oil* (22 percent), *Butter* (16 percent), *Sunflower oil* (13 percent), *Margarine* (10 percent), *Lard or dripping* (5 percent), *Corn oil* (1 percent) and *Safflower oil* (1 percent). The type of fat used was similar for males and females and across age groups.

Olive oil used in this way was reported to be highest in NZDep01-I children (males 65 percent; females 65 percent) and lowest in NZDep01-V children (26 percent; 24 percent) (Figure C-24).

Māori and Pacific children were more likely to use *Margarine*, and less likely to use *Olive oil*, than NZEO children. Māori children were more likely to use *Butter* than NZEO children, and to use *Lard or dripping* than Pacific and NZEO children.

Figure C-23: Fat added to vegetables ≥ once/week

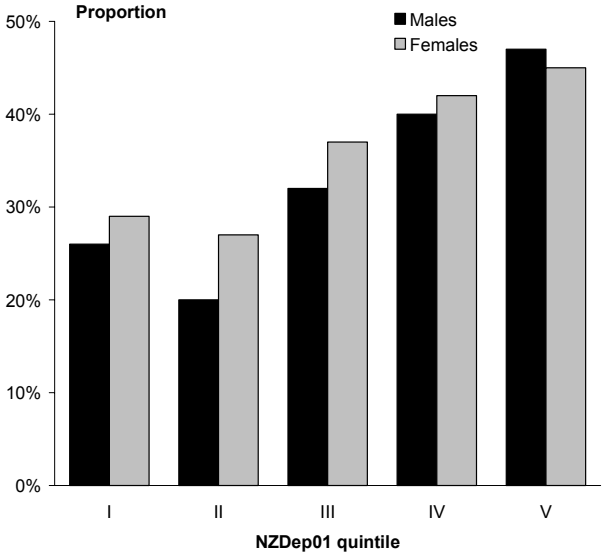


Figure C-24: Fat used for cooking meat, poultry or fish (males)

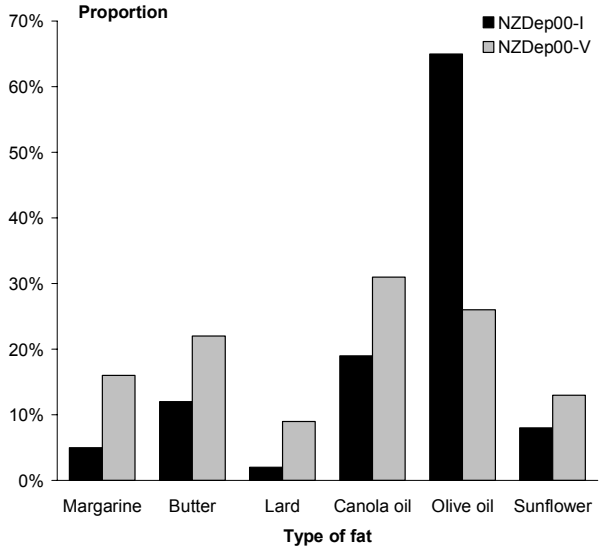


Table C1: Fruit*

			Servings[1]		Percent consuming at least once per week								
			Fruit < 1/day[2]	Fruit 2+/day[3]	Banana, raw	Apples or pears	Oranges or mandarins	Kiwifruit	Nectarines, peaches, plums or apricots	Strawberries or other berries	Canned or cooked fruit[4]	Dried fruit[5]	Other fruit
			%	%	%	%	%	%	%	%	%	%	%
New Zealand children (5–14 years)			23	43	63	83	67	24	22	18	39	24	14
	Males	5–6	21	46	66	87	63	26	17	16	40	31	16
		7–10	23	42	67	85	65	22	20	17	39	23	12
		11–14	30	39	56	74	64	17	24	16	39	17	13
		Total	26	41	62	81	64	21	21	16	39	22	13
	Females	5–6	10	55	76	91	80	36	25	24	37	34	16
		7–10	20	47	64	88	69	24	24	22	39	26	15
		11–14	26	36	56	79	69	24	21	16	41	20	16
		Total	21	44	63	85	71	26	23	20	39	25	16
NZDep01	Males	I	32	34	58	79	56	23	25	14	25	20	13
		II	17	51	66	87	60	24	22	28	44	25	16
		III	30	43	58	78	64	23	26	20	39	22	11
		IV	28	34	58	81	65	20	15	9	40	20	13
		V	22	46	70	85	74	18	22	11	38	22	12
	Females	I	24	47	59	86	68	34	25	18	32	19	16
		II	17	42	63	82	68	28	34	24	37	31	18
		III	19	42	63	90	65	25	22	16	36	31	17
		IV	24	42	60	82	68	23	24	21	46	24	16
		V	23	43	67	84	73	20	17	17	41	19	14
School type	Males	Urban	26	40	62	81	64	21	21	17	37	22	14
		Rural	24	46	62	80	65	23	20	13	48	23	8
	Females	Urban	22	45	63	85	70	27	23	21	38	25	16
		Rural	15	42	63	85	75	23	22	15	45	26	16
Māori	Males	5–6	23	40	76	90	71	15	19	14	47	23	12
		7–10	24	38	67	87	66	16	18	12	44	21	12
		11–14	30	43	64	74	69	15	22	12	45	16	10
		Total	26	40	68	83	68	16	20	12	45	19	11
	Females	5–6	16	42	77	89	80	23	11	12	38	26	19
		7–10	18	47	67	88	74	22	23	17	46	22	14
		11–14	27	38	57	86	70	11	20	19	49	17	14
		Total	21	43	65	87	74	18	19	17	46	21	15
Pacific	Males	5–6	19	58	84	94	81	24	28	17	48	19	17
		7–10	21	53	74	87	76	26	28	22	48	19	15
		11–14	28	43	62	79	72	26	20	12	43	15	14
		Total	23	51	72	86	75	26	25	17	46	18	15
	Females	5–6	11	44	88	97	80	21	18	26	37	16	17
		7–10	15	55	83	90	74	28	29	21	44	17	12
		11–14	23	47	72	87	77	23	20	19	45	10	15
		Total	17	50	80	90	76	24	23	21	43	14	14
NZEO	Males	5–6	21	47	59	85	57	30	15	16	36	36	17
		7–10	23	41	66	84	63	24	20	19	37	23	12
		11–14	31	37	53	73	62	17	25	17	37	18	13
		Total	26	41	59	80	61	23	21	18	37	24	13
	Females	5–6	8	61	74	90	80	42	31	29	37	39	15
		7–10	21	47	61	88	66	25	24	23	35	28	16
		11–14	27	34	54	77	68	28	21	15	38	22	17
		Total	21	44	61	84	70	29	24	21	37	28	16

* Qualitative food frequency questionnaire, questions 1–10.

1 Mid-point of each frequency option in food frequency questions 1 to 10 converted to serves per day and combined.

2 Percent of children eating less than one serving of fruit per day, or no fruit at all.

3 Percent of children eating two servings or more of fruit per day.

4 For example, canned peaches.

5 For example, raisins.

Table C2.1: Vegetables I*

			Servings[1]			Percent consuming at least once per week								
			All vegetable 3+/day[2] %	Root staples 1+/day[3] %	Other vegetable 2+/day[4] %	Fried potatoes[5] %	Other potatoes[6] %	Taro %	Kumara %	Carrots (raw or cooked) %	Cassava %	Cooked green banana %	Pumpkin %	Mixed vegetable %
New Zealand children (5–14 years)			57	32	65	65	87	5	18	79	2	4	29	58
	Males	5–6	52	26	61	68	88	6	19	76	2	6	27	51
		7–10	53	31	60	65	86	5	18	79	2	4	27	56
		11–14	59	37	67	66	88	5	18	77	2	4	26	58
		Total	55	33	63	66	87	5	18	78	2	4	27	56
	Females	5–6	60	35	67	65	89	5	21	85	1	3	32	52
		7–10	56	28	68	62	87	6	14	86	2	4	28	57
		11–14	60	34	65	64	87	6	20	75	2	4	33	65
		Total	58	32	67	63	88	6	17	81	2	4	31	59
NZDep01	Males	I	56	21	68	60	88	<1	11	86	<1	<1	16	45
		II	56	30	64	66	90	<1	19	82	<1	<1	24	57
		III	53	33	63	71	85	2	17	77	1	3	24	52
		IV	51	33	60	69	89	4	17	73	2	3	30	59
		V	57	38	62	61	80	16	22	70	8	12	35	72
	Females	I	58	27	65	62	89	1	14	89	<1	<1	38	47
		II	59	24	72	60	88	1	12	82	<1	1	28	58
		III	61	23	75	60	84	1	12	83	<1	1	25	61
		IV	57	27	64	60	89	5	16	80	2	3	21	67
		V	56	39	61	70	83	16	24	71	5	11	34	64
School type	Males	Urban	54	29	62	66	85	6	17	77	2	5	25	56
		Rural	63	48	67	63	96	1	25	83	<1	<1	34	55
	Females	Urban	57	29	66	65	86	7	15	80	2	5	29	58
		Rural	64	43	68	57	94	<1	26	87	0	<1	38	64
Māori	Males	5–6	50	33	60	67	94	2	33	68	1	1	41	72
		7–10	48	36	54	66	91	1	25	71	1	1	39	66
		11–14	62	49	66	71	89	4	30	71	1	<1	40	74
		Total	54	40	60	68	91	2	29	70	1	1	40	70
	Females	5–6	46	28	55	68	93	2	19	73	1	1	32	62
		7–10	57	40	63	64	91	5	32	75	<1	1	38	72
		11–14	52	37	58	74	88	4	33	65	1	2	30	72
		Total	53	36	59	69	90	4	30	71	<1	2	34	70
Pacific	Males	5–6	61	45	59	70	77	57	25	75	17	48	36	76
		7–10	57	36	60	66	70	48	23	70	15	37	30	65
		11–14	61	57	61	79	65	57	30	55	22	49	25	59
		Total	59	46	60	71	70	53	26	65	18	44	29	65
	Females	5–6	58	42	54	76	71	46	14	59	9	35	24	59
		7–10	68	33	73	65	70	49	18	79	17	39	34	75
		11–14	65	49	68	75	67	63	23	70	23	46	28	71
		Total	65	41	67	71	69	54	19	71	18	41	29	70
NZEO	Males	5–6	52	21	61	68	88	0	12	79	0	2	20	40
		7–10	54	29	62	64	87	<1	16	84	1	<1	23	51
		11–14	58	31	68	63	90	0	13	81	<1	<1	22	53
		Total	55	28	64	64	88	<1	14	82	1	1	22	50
	Females	5–6	65	37	73	62	90	0	22	93	0	0	33	47
		7–10	55	23	69	60	89	<1	7	91	1	1	24	50
		11–14	62	31	67	60	89	1	15	78	0	0	34	62
		Total	60	29	69	60	89	<1	13	86	<1	<1	30	54

* Qualitative food frequency questionnaire, questions 11–32.

1 Percent of children eating these numbers of servings per day; calculated by converting mid-point of each frequency option for relevant foods to serves per day and combining.

2 All vegetable = root staples plus other vegetables.

3 Root staples = fried potato, other potato, taro, kumara.

4 Other vegetable = vegetables other than potato, taro or kumara.

5 For example, hot potato chips, kumara chips, French fries, wedges or hash browns.

6 For example, boiled, mashed, baked or roasted.

Table C2.2: Vegetables II*

			Percent consuming at least once per week										
			Corn %	Peas %	Silverbeet spinach, puha or watercress %	Green beans %	Broccoli %	Cauliflower or cabbage %	Lettuce or green salad %	Tomatoes (raw or cooked) %	Capsicum %	Avocado %	Other vegetable %
New Zealand children (5–14 years)			48	59	31	30	60	55	56	53	18	11	18
	Males	5–6	49	49	32	26	55	53	38	48	19	10	17
		7–10	50	60	29	27	56	55	51	49	15	11	17
		11–14	42	60	32	30	61	56	62	53	18	10	15
		Total	47	58	31	28	57	55	53	50	17	11	16
	Females	5–6	49	59	37	31	67	53	52	52	14	14	25
		7–10	47	58	30	30	61	56	58	53	21	9	20
		11–14	50	62	33	33	62	57	63	58	20	13	16
		Total	48	60	32	31	62	56	59	55	20	11	19
NZDep01	Males	I	46	53	24	28	67	46	58	50	13	17	24
		II	45	61	21	30	66	60	55	45	17	11	22
		III	50	63	36	28	57	56	54	53	19	8	16
		IV	41	55	28	29	50	51	47	47	16	8	12
		V	50	58	45	27	48	61	51	57	17	14	8
	Females	I	42	60	24	29	61	49	59	48	25	15	23
		II	60	69	27	33	62	52	64	59	24	11	26
		III	47	60	30	31	58	50	67	56	23	13	27
		IV	49	60	29	28	61	54	54	55	13	8	20
		V	49	48	42	29	55	64	56	55	18	13	14
School type	Males	Urban	45	56	30	28	57	53	53	51	18	11	17
		Rural	57	66	34	26	59	62	54	45	13	9	13
	Females	Urban	48	58	31	30	61	54	58	56	20	12	20
		Rural	50	67	36	35	68	62	63	52	18	8	17
Māori	Males	5–6	51	47	52	25	50	59	44	54	17	11	13
		7–10	44	60	51	23	48	54	45	47	16	10	11
		11–14	53	60	49	25	52	59	57	61	16	14	11
		Total	49	58	51	24	50	57	49	54	16	12	11
	Females	5–6	53	56	53	23	57	50	45	45	12	10	11
		7–10	53	59	53	25	54	63	52	51	21	17	10
		11–14	57	55	40	28	53	58	60	54	17	17	8
		Total	55	57	48	26	54	59	54	51	17	16	9
Pacific	Males	5–6	39	46	36	27	41	55	51	60	16	14	7
		7–10	39	40	30	28	43	58	56	66	16	17	10
		11–14	36	41	35	28	48	58	60	59	20	19	9
		Total	38	42	33	28	44	57	56	62	18	17	9
	Females	5–6	48	32	29	27	38	50	49	58	18	15	13
		7–10	46	49	36	33	50	64	67	67	26	20	12
		11–14	37	40	31	31	51	59	62	70	27	22	13
		Total	43	42	33	31	48	59	62	66	24	19	13
NZEO	Males	5–6	50	50	23	26	58	50	35	44	20	9	20
		7–10	54	63	21	28	60	55	52	47	15	11	20
		11–14	40	62	27	32	65	55	64	50	19	8	17
		Total	47	60	24	29	62	54	54	47	17	9	19
	Females	5–6	48	64	32	34	75	54	55	54	14	15	32
		7–10	45	59	21	31	64	53	59	52	21	4	24
		11–14	49	67	30	35	66	56	65	59	21	11	19
		Total	47	63	27	33	67	54	61	55	20	9	24

* Qualitative food frequency questionnaire, questions 11–32.

Table C3.1: Meat, fish, poultry and eggs I*

			Total servings[1]		Percent consuming at least once per week								
			< 1/day	2+/day	Eggs[2]	Roast beef, lamb or pork	Steak	Lamb or mutton chops	Pork chop (or other pork small cuts)	Boiled corned beef/ silverside	Canned corn beef	Mince, including rissoles, patties, shepherd's pie etc	Liver or liver paté
			%	%	%	%	%	%	%	%	%	%	%
New Zealand children (5–14 years)			9	51	62	36	34	26	17	10	8	54	2
	Males	5–6	10	52	61	30	28	28	15	11	8	58	1
		7–10	7	51	60	37	35	31	20	10	7	58	2
		11–14	7	58	61	45	38	26	19	11	9	51	3
		Total	8	54	61	39	35	28	19	11	8	55	2
	Females	5–6	9	53	70	36	39	27	17	8	6	55	1
		7–10	11	44	61	31	30	24	16	10	7	53	2
		11–14	9	48	61	34	32	23	17	9	8	50	1
		Total	10	47	63	34	33	24	16	9	7	52	1
NZDep01	Males	I	8	44	55	33	32	21	14	6	1	54	1
		II	7	54	61	38	33	25	14	10	1	55	2
		III	7	52	63	41	36	28	18	10	6	54	3
		IV	9	51	56	35	29	27	16	6	7	56	<1
		V	7	68	68	39	39	38	24	14	20	56	3
	Females	I	11	36	61	30	33	17	10	4	1	48	1
		II	14	45	59	28	28	14	13	2	3	47	<1
		III	15	40	51	30	37	27	16	11	1	56	2
		IV	8	46	68	28	24	17	13	11	6	51	1
		V	6	68	71	42	33	38	25	13	22	56	2
School type	Males	Urban	8	54	62	36	34	26	18	10	9	53	2
		Rural	5	55	58	49	39	36	21	14	5	63	1
	Females	Urban	10	49	63	32	32	24	17	9	8	50	1
		Rural	11	41	64	40	35	25	14	11	4	60	1
Māori	Males	5–6	5	70	67	37	39	35	21	14	12	68	1
		7–10	6	58	65	40	36	33	22	10	9	63	1
		11–14	5	66	69	51	50	40	27	17	13	58	3
		Total	5	64	67	43	42	36	24	13	11	62	2
	Females	5–6	4	59	71	42	35	35	19	13	8	68	2
		7–10	8	64	66	39	35	37	19	15	11	64	2
		11–14	3	60	65	47	39	37	26	13	13	59	1
		Total	5	61	67	43	37	36	22	14	11	62	1
Pacific	Males	5–6	3	81	72	54	40	52	35	23	45	49	2
		7–10	5	78	73	47	36	49	29	21	46	47	4
		11–14	4	84	77	51	45	40	28	22	55	54	5
		Total	4	81	74	50	40	47	30	22	49	50	4
	Females	5–6	1	79	78	40	32	54	26	18	36	42	2
		7–10	5	74	78	44	39	46	25	15	38	50	4
		11–14	3	83	75	49	45	43	34	20	47	46	4
		Total	4	79	77	45	40	47	29	18	41	47	3
NZEO	Males	5–6	13	41	58	24	22	22	10	8	1	56	1
		7–10	8	46	58	34	34	27	18	8	1	58	2
		11–14	9	53	57	43	34	20	16	9	3	48	2
		Total	9	48	57	36	32	23	15	8	2	53	2
	Females	5–6	12	48	69	34	41	20	15	4	1	52	1
		7–10	13	34	58	27	27	17	13	7	2	50	1
		11–14	12	39	59	29	29	16	12	6	2	47	1
		Total	12	39	60	29	30	17	13	6	2	49	1

* Qualitative food frequency questionnaire, questions 39–61.

1 Percent of children eating these numbers of servings of meat, fish, poultry and egg each day; calculated by converting mid-point of each frequency option for food frequency questions 39–61 to serves per day and combining.

2 Boiled, poached, fried or scrambled etc.

Table C3.2: Meat, fish, poultry and eggs II*

			Percent consuming at least once per week										
			Bacon or ham %	Chicken %	Fish %	Fish cake, fish fingers or fish pie %	Canned fish[1] %	Shellfish[2] %	Meat pie %	Burgers %	Sausages (all types) %	Luncheon, ham and chicken %	Sausage rolls %
New Zealand children (5–14 years)			43	83	37	13	15	9	36	20	45	48	12
	Males	5–6	41	80	42	18	18	7	33	14	50	50	10
		7–10	43	87	33	14	15	9	35	20	50	48	11
		11–14	50	81	42	11	14	9	45	25	46	49	17
		Total	45	83	38	14	15	9	39	21	48	49	13
	Females	5–6	39	81	39	15	12	6	30	18	47	56	10
		7–10	42	86	38	10	17	10	30	16	43	43	11
		11–14	42	79	31	13	14	10	36	23	40	45	12
		Total	41	82	35	13	15	9	32	19	42	46	11
NZDep01	Males	I	47	83	31	7	9	3	31	15	44	37	3
		II	52	89	40	9	18	3	31	14	52	50	7
		III	44	84	39	11	12	8	36	21	42	45	12
		IV	45	83	36	16	20	7	39	25	42	56	12
		V	35	83	42	23	20	16	54	28	61	54	25
	Females	I	43	87	34	8	10	4	15	10	25	33	3
		II	48	82	40	8	14	5	24	20	37	46	7
		III	45	89	22	5	10	4	22	19	38	47	11
		IV	40	78	29	18	20	7	30	16	44	48	10
		V	33	85	40	20	19	20	55	31	56	57	23
School type	Males	Urban	45	84	39	14	15	8	40	22	46	49	14
		Rural	47	81	35	12	15	9	36	13	58	48	8
	Females	Urban	41	84	36	14	16	9	33	22	43	49	12
		Rural	45	76	32	8	10	10	31	9	40	36	6
Māori	Males	5–6	45	79	43	22	16	18	54	24	59	68	15
		7–10	40	87	35	18	13	12	50	22	53	62	15
		11–14	52	84	41	20	12	17	60	39	54	54	25
		Total	45	84	39	19	13	15	55	29	55	60	19
	Females	5–6	36	87	33	17	11	11	47	20	49	60	15
		7–10	40	86	38	18	16	20	46	26	52	57	19
		11–14	46	84	37	15	11	19	54	31	50	51	23
		Total	42	85	36	17	13	18	49	27	51	56	20
Pacific	Males	5–6	33	90	63	26	44	25	68	42	58	53	35
		7–10	37	90	60	24	40	28	65	39	59	54	36
		11–14	33	88	49	29	34	24	74	53	57	53	46
		Total	35	89	56	26	39	26	69	45	58	53	40
	Females	5–6	28	92	59	37	24	21	64	40	54	55	36
		7–10	34	89	59	27	35	25	59	33	48	55	30
		11–14	40	88	51	28	40	23	72	52	50	53	49
		Total	35	89	56	29	35	23	65	42	50	54	38
NZEO	Males	5–6	40	79	38	16	15	1	21	6	46	43	5
		7–10	45	86	29	12	13	5	26	17	48	43	7
		11–14	52	80	41	6	12	5	38	17	42	46	11
		Total	47	82	36	10	13	4	30	15	45	45	8
	Females	5–6	41	78	38	11	11	2	19	15	44	54	4
		7–10	44	86	35	6	14	5	21	10	39	37	7
		11–14	41	76	26	11	13	6	26	17	36	42	3
		Total	42	81	32	9	13	5	23	14	39	42	5

* Qualitative food frequency questionnaire, questions 39–61.

1 For example, tuna or salmon.

2 For example, mussels, paua or crabmeat.

Table C4: Mixed dishes and convenience meals/snacks*

			Percent consuming at least once per week										
			Mixed dishes					Convenience meals and snacks					
			Meat and vegetable 'boil up'[1] %	Meat stew, or casserole with vegetables %	Pasta with meat and tomato sauce[2] %	Pasta with cream, white sauce or cheese sauce %	Chinese type dishes, stir-fry meat or chicken and vegetables %	Pizza %	Soup %	Noodles %	Canned spaghetti with tomato sauce %	Baked beans %
New Zealand children (5–14 years)			13	34	45	24	44	18	20	55	32	19
	Males	5–6	16	35	45	23	43	16	20	61	36	20
		7–10	12	41	49	25	40	15	18	58	32	19
		11–14	14	32	42	17	45	21	21	52	30	21
		Total	13	36	45	21	43	18	20	57	32	20
	Females	5–6	14	30	48	25	51	16	22	55	38	18
		7–10	12	34	46	27	49	13	20	56	30	17
		11–14	12	32	43	25	40	25	21	52	33	18
		Total	12	32	45	26	46	19	21	54	33	17
NZDep01	Males	I	5	23	49	24	44	17	14	45	24	16
		II	3	31	48	20	46	9	18	47	25	14
		III	10	33	45	19	42	17	18	57	31	17
		IV	11	35	37	23	38	17	18	58	26	22
		V	32	50	40	25	48	21	28	74	47	26
	Females	I	4	29	45	24	50	20	22	47	24	14
		II	6	27	46	23	41	23	22	47	24	21
		III	5	31	53	28	39	11	9	41	24	13
		IV	12	29	46	32	47	16	20	64	30	14
		V	30	40	40	27	49	21	25	66	52	22
School type	Males	Urban	14	34	44	21	44	18	21	57	32	20
		Rural	10	46	50	24	37	17	16	55	32	20
	Females	Urban	13	34	46	27	46	18	21	55	33	17
		Rural	11	28	42	21	42	24	21	49	29	19
Māori	Males	5–6	31	54	52	32	49	18	19	74	62	23
		7–10	26	50	47	24	49	14	20	67	39	17
		11–14	28	44	47	31	44	19	17	61	50	25
		Total	28	49	48	28	47	17	18	66	48	21
	Females	5–6	20	43	50	30	49	14	16	69	51	22
		7–10	31	46	47	38	46	16	20	62	43	17
		11–14	25	32	40	31	49	30	17	58	48	22
		Total	27	39	45	33	47	22	18	62	47	20
Pacific	Males	5–6	45	45	28	11	45	32	52	82	63	25
		7–10	41	44	34	16	41	27	45	83	64	26
		11–14	36	36	24	15	45	35	41	74	57	35
		Total	40	41	29	15	44	31	45	79	61	29
	Females	5–6	49	36	24	18	46	31	39	79	68	23
		7–10	32	40	30	14	54	20	39	77	60	25
		11–14	42	39	27	15	45	33	47	75	58	21
		Total	39	39	27	15	49	28	42	77	61	23
NZEO	Males	5–6	6	27	45	21	40	13	15	54	22	17
		7–10	4	38	51	27	37	13	15	52	25	18
		11–14	7	27	42	13	46	20	20	47	21	19
		Total	5	32	46	20	41	16	17	51	23	18
	Females	5–6	7	24	51	24	53	15	22	46	29	15
		7–10	3	29	47	25	49	12	17	52	22	16
		11–14	4	31	46	24	36	23	20	47	24	16
		Total	4	29	47	25	44	17	19	49	24	16

* Qualitative food frequency questionnaire, questions 33–38, 74–79.

1 For example, puha, povi, masima, brisket, mutton flaps, pork bones.

2 For example, lasagne, spaghetti bolognaise.

Table C5: Breads*

			Breads – frequency of intake[1]			Type of bread[2]			Use of butter or margarine[3]			Type of margarine used			
			< Daily	Daily	> Daily	White	Whole-meal	Mixed grain	Butter[4]	Margarine[4]	Rarely use either	Poly-unsatur-ated	Canola	Olive oil	Blend[5]
			%	%	%	%	%	%	%	%	%	%	%	%	%
New Zealand children (5–14 years)			29	28	43	79	15	13	21	52	14	58	11	22	7
	Males	5–6	29	23	48	75	16	13	23	48	14	58	13	20	8
		7–10	24	31	45	80	16	13	20	48	15	59	9	20	8
		11–14	30	27	43	79	15	12	20	45	16	52	14	22	5
		Total	27	28	45	79	16	12	21	47	15	56	12	21	7
	Females	5–6	30	25	46	78	18	12	23	61	10	63	9	25	7
		7–10	29	29	42	81	15	12	18	59	13	64	11	20	8
		11–14	32	30	38	80	14	14	23	53	12	54	8	23	5
		Total	30	29	41	80	15	13	21	57	12	60	10	22	7
NZDep01	Males	I	23	33	44	70	17	19	19	38	23	41	10	36	7
		II	17	30	52	74	15	19	14	48	21	48	13	32	3
		III	31	28	40	78	19	11	24	49	15	62	11	15	14
		IV	29	33	38	76	18	11	24	47	10	65	9	16	6
		V	34	23	43	87	13	7	29	51	8	60	15	12	7
	Females	I	24	31	44	80	10	14	18	57	17	52	7	28	9
		II	25	26	49	76	18	10	16	58	10	56	11	30	6
		III	31	39	31	81	13	17	17	59	16	61	9	24	5
		IV	33	33	34	85	14	9	19	58	10	62	14	22	7
		V	37	23	40	84	14	10	28	59	7	67	11	11	7
School type	Males	Urban	30	27	44	79	15	12	21	45	15	55	12	21	7
		Rural	17	33	50	77	16	16	21	52	15	61	10	21	5
	Females	Urban	31	29	40	81	15	13	20	57	12	60	10	23	7
		Rural	26	29	46	76	15	14	23	57	10	59	7	21	6
Māori	Males	5–6	19	24	57	88	11	10	33	49	8	67	15	9	11
		7–10	27	25	47	81	20	14	29	49	10	68	13	11	8
		11–14	30	23	47	84	14	12	28	50	11	62	10	14	6
		Total	27	24	49	84	16	12	29	49	10	66	12	12	8
	Females	5–6	27	25	47	85	13	8	29	60	7	67	10	17	13
		7–10	30	30	40	84	17	12	28	54	11	65	15	13	8
		11–14	36	25	39	87	12	12	42	52	3	59	8	13	11
		Total	32	27	41	85	14	11	34	54	7	63	11	14	10
Pacific	Males	5–6	47	9	44	89	13	3	33	53	7	69	8	8	13
		7–10	40	16	44	94	9	2	39	55	5	65	12	8	14
		11–14	45	19	37	92	8	5	37	53	5	59	12	10	6
		Total	43	16	41	92	9	4	37	54	5	64	11	8	11
	Females	5–6	45	9	46	90	15	4	28	62	5	76	10	12	11
		7–10	44	19	36	88	15	6	34	52	8	68	17	13	8
		11–14	43	20	37	93	8	2	37	52	6	65	19	6	7
		Total	44	17	39	90	12	4	34	54	6	69	16	10	8
NZEO	Males	5–6	31	25	45	68	18	15	19	46	17	52	13	26	6
		7–10	20	35	45	78	16	13	14	47	18	55	7	25	8
		11–14	28	29	43	75	16	13	16	42	19	47	16	27	4
		Total	25	31	44	75	16	14	16	45	18	51	12	26	6
	Females	5–6	28	27	45	73	20	14	19	61	13	60	9	31	4
		7–10	27	29	44	79	14	13	12	62	14	62	9	23	8
		11–14	29	33	38	76	16	16	15	53	15	52	7	29	3
		Total	28	30	42	77	16	14	15	58	14	57	8	27	5

* Qualitative food frequency questionnaire, questions 62–62d.

1 Bread, including toast and bread rolls.

2 More than one choice.

3 Margarine or margarine blend.

4 Most of the time.

5 Blend of butter and margarine.

Table C6: Breakfast cereal and rice*

			Breakfast cereal – frequency of intake			Percent consuming at least once per week[1]								Add sugar, honey or syrup to cereal	Rice – percent consuming at least once per week
			< Weekly	Weekly	Daily	Weetbix type	Cornflakes type	Rice bubbles	Cocopops	Muesli	Multigrain type	Porridge	Other breakfast cereal		
			%	%	%	%	%	%	%	%	%	%	%	%	%
New Zealand children (5–14 years)			15	45	40	62	50	36	25	8	9	25	14	67	59
	Males	5–6	10	40	49	71	49	41	23	5	11	25	14	70	60
		7–10	9	39	52	71	55	40	27	7	10	29	13	71	60
		11–14	22	39	39	56	49	28	26	12	9	20	10	70	61
		Total	14	39	47	65	52	35	26	8	10	25	12	70	60
	Females	5–6	8	48	44	65	50	44	29	4	9	29	18	65	61
		7–10	12	56	32	67	50	39	26	6	9	24	16	64	58
		11–14	24	49	27	50	48	31	21	10	7	23	15	61	59
		Total	16	52	32	60	49	37	25	7	8	24	16	63	59
NZDep01	Males	I	15	38	47	55	41	39	26	12	11	18	18	55	60
		II	14	36	50	58	47	26	29	10	12	28	16	69	67
		III	19	32	49	64	52	34	26	7	9	22	14	66	50
		IV	14	47	39	69	57	34	34	7	10	22	11	70	57
		V	12	48	40	72	59	38	19	4	8	29	7	85	66
	Females	I	13	54	33	47	47	32	26	10	9	19	20	42	58
		II	18	57	26	54	41	34	29	7	11	14	17	57	55
		III	22	54	25	58	43	41	30	10	15	23	17	62	56
		IV	16	45	39	58	59	36	26	5	8	27	16	69	63
		V	15	50	34	73	60	42	20	4	4	31	11	80	62
School type	Males	Urban	15	40	45	63	52	34	26	8	10	24	12	69	62
		Rural	9	35	55	75	49	40	27	12	7	26	13	74	51
	Females	Urban	18	50	33	60	50	36	26	6	9	24	15	62	61
		Rural	8	61	31	58	45	42	21	10	7	26	19	68	50
Māori	Males	5–6	3	32	64	89	64	45	23	6	6	35	9	90	65
		7–10	7	45	48	81	55	45	20	4	8	36	8	85	59
		11–14	18	40	42	74	60	30	17	10	8	29	7	83	59
		Total	11	40	49	80	59	39	20	6	8	33	8	85	60
	Females	5–6	4	44	52	83	58	51	20	4	1	38	10	87	59
		7–10	11	43	45	73	60	39	24	7	6	38	13	79	55
		11–14	29	43	28	59	54	40	18	6	4	34	13	76	54
		Total	17	43	39	69	57	42	21	6	4	36	13	80	55
Pacific	Males	5–6	13	62	25	75	71	41	25	3	4	43	11	75	87
		7–10	13	55	32	76	73	41	30	4	5	36	9	83	80
		11–14	30	44	26	61	59	30	24	4	4	23	10	80	82
		Total	19	52	29	70	68	37	27	4	4	33	9	80	82
	Females	5–6	21	59	20	74	71	40	30	1	4	26	9	74	86
		7–10	11	67	21	72	71	42	28	3	6	32	7	79	82
		11–14	25	56	19	55	59	39	24	2	2	29	8	83	81
		Total	18	61	20	66	67	41	27	2	4	30	8	79	83
NZEO	Males	5–6	12	41	47	64	41	39	23	5	14	19	17	61	54
		7–10	9	35	56	67	52	38	28	8	12	26	15	65	57
		11–14	22	38	40	50	45	27	29	13	9	16	11	64	59
		Total	15	37	48	59	47	34	28	10	11	21	14	64	58
	Females	5–6	7	48	45	57	44	42	32	5	13	26	22	55	59
		7–10	12	59	29	64	44	38	27	5	11	18	18	57	56
		11–14	22	51	28	46	45	28	22	13	9	19	16	53	58
		Total	15	54	31	56	44	35	26	8	10	20	18	55	57

* Qualitative food frequency questionnaire, questions 63, 63a, 63c, 64.

1 More than one choice.

Table C7: Spreads, sauces*

			Percent consuming at least once per week							
			Jam or honey %	Nutella %	Marmite or vegemite %	Peanut butter %	Mayonnaise or salad dressing %	Tomato sauce or ketchup %	Gravy %	Other spreads or sauces %
New Zealand children (5–14 years)			53	30	47	49	29	80	37	10
	Males	5–6	63	38	49	55	20	82	32	8
		7–10	57	36	42	54	28	84	40	7
		11–14	51	26	40	48	32	77	34	10
		Total	56	32	42	52	28	81	36	9
	Females	5–6	58	34	58	53	24	86	38	12
		7–10	50	29	53	42	28	78	39	9
		11–14	45	21	47	44	37	78	38	12
		Total	49	27	52	45	31	79	39	11
NZDep01	Males	I	50	30	38	46	24	77	23	8
		II	51	28	43	46	28	82	40	9
		III	49	34	43	45	27	76	35	8
		IV	53	37	43	56	34	83	39	15
		V	63	36	42	63	33	86	38	3
	Females	I	44	20	57	40	28	86	36	11
		II	45	27	57	38	27	74	36	14
		III	39	31	53	37	40	66	30	11
		IV	46	32	44	46	32	77	36	12
		V	56	33	43	53	33	83	47	8
School type	Males	Urban	55	33	41	52	28	79	35	9
		Rural	60	30	50	52	32	88	44	5
	Females	Urban	46	28	50	45	29	79	37	10
		Rural	62	22	60	42	38	81	45	12
Māori	Males	5–6	70	33	47	74	22	83	41	8
		7–10	64	28	38	61	27	83	46	7
		11–14	58	26	39	56	42	83	43	10
		Total	63	28	40	62	31	83	44	9
	Females	5–6	72	39	47	61	19	83	44	10
		7–10	60	32	51	56	35	82	44	7
		11–14	48	20	41	45	43	81	40	10
		Total	57	29	46	52	35	82	42	9
Pacific	Males	5–6	64	44	42	55	38	84	49	5
		7–10	60	54	37	57	46	84	49	5
		11–14	51	39	26	55	43	75	42	3
		Total	58	46	34	56	43	81	47	4
	Females	5–6	50	46	23	51	28	78	39	4
		7–10	58	48	33	51	38	76	45	7
		11–14	52	36	24	42	44	72	38	5
		Total	54	43	28	48	38	75	41	6
NZEO	Males	5–6	60	38	50	47	16	82	27	8
		7–10	54	37	44	52	27	85	37	8
		11–14	49	24	41	45	28	75	31	11
		Total	53	32	44	48	25	80	33	9
	Females	5–6	55	30	67	50	25	88	36	14
		7–10	46	25	56	37	24	77	37	10
		11–14	43	20	52	44	34	77	37	13
		Total	46	24	57	42	28	79	37	12

* Qualitative food frequency questionnaire, questions 66–73.

Table C8: Biscuits/cakes*

			Percent consuming at least once per week									
			Chocolate coated or cream-filled biscuits %	Biscuits[1] %	Bars[2] %	Crackers or crispbreads %	Cake or slice %	Doughnuts or croissants %	Scones, muffins or sweet buns %	Pancakes or pikelets %	Fruit pie, fruit crumble or tart %	Pudding[3] %
New Zealand children (5–14 years)			46	78	51	52	37	11	27	15	5	10
	Males	5–6	45	84	55	60	40	11	33	19	1	9
		7–10	44	81	55	53	38	10	28	15	5	7
		11–14	50	75	46	42	38	15	26	14	8	12
		Total	47	79	52	50	38	12	28	15	5	9
	Females	5–6	37	80	53	61	38	9	29	14	5	6
		7–10	40	76	51	56	32	10	26	14	4	8
		11–14	56	75	50	49	38	11	23	14	4	14
		Total	46	77	51	54	36	10	25	14	4	10
NZDep01	Males	I	47	77	52	58	38	8	30	10	5	5
		II	41	84	56	63	44	6	31	12	2	4
		III	42	81	56	40	33	9	23	15	6	10
		IV	46	79	49	44	38	10	31	13	3	9
		V	51	76	46	43	39	25	32	21	6	15
	Females	I	42	82	51	59	39	3	27	8	6	8
		II	45	80	55	65	40	11	28	17	4	8
		III	45	76	52	50	30	12	22	12	2	6
		IV	44	73	48	46	40	11	28	14	4	13
		V	54	77	46	43	33	18	24	21	5	13
School type	Males	Urban	47	79	50	48	37	13	28	15	5	10
		Rural	47	81	57	57	45	7	31	17	8	8
	Females	Urban	47	76	51	54	36	12	27	14	4	9
		Rural	41	81	52	54	37	5	20	13	4	13
Māori	Males	5–6	49	80	54	42	35	14	21	23	1	12
		7–10	43	78	49	44	34	11	20	13	4	13
		11–14	59	72	44	31	37	18	23	16	9	15
		Total	50	76	48	39	35	14	21	16	5	13
	Females	5–6	41	75	60	43	32	10	18	11	4	7
		7–10	49	76	51	44	34	13	21	17	5	12
		11–14	69	76	48	36	41	18	24	19	9	25
		Total	55	76	52	41	37	14	22	16	6	16
Pacific	Males	5–6	49	75	36	63	43	31	44	36	7	17
		7–10	59	76	47	55	40	34	34	39	6	8
		11–14	57	65	39	45	42	42	40	42	13	17
		Total	56	72	42	53	41	36	38	40	9	13
	Females	5–6	46	76	43	60	36	32	44	31	8	7
		7–10	50	65	43	60	29	28	34	29	9	13
		11–14	65	72	44	57	38	33	38	40	9	15
		Total	55	70	43	59	34	31	38	33	9	12
NZEO	Males	5–6	42	86	59	67	42	7	36	15	1	6
		7–10	43	82	59	56	40	7	30	12	5	4
		11–14	46	77	48	45	37	10	25	10	7	11
		Total	44	81	54	53	39	8	29	12	5	7
	Females	5–6	34	83	53	68	40	6	31	12	5	6
		7–10	35	78	51	60	32	7	27	11	4	6
		11–14	50	75	51	52	37	6	21	9	2	11
		Total	41	78	51	58	36	7	25	11	3	8

* Qualitative food frequency questionnaire, questions 85–94.

1 For example, plain, chocolate-chip, semi-sweet, gingernut, shortbread.

2 For example, muesli.

3 For example, sponge pudding or steamed pudding.

Table C9: Snacks and sweets, and dairy items (excluding milk)*

			Percent consuming at least once per week									
			Snacks and sweets					Dairy items				
			Potato crisps, corn snacks or chips[1] %	Popcorn %	Chocolate[2] %	Candy coated chocolate[3] %	Other sweets %	Ice cream %	Cheese[4] %	Yoghurt, or dairy food (all types) %	Custard or custard puddings %	Cream %
New Zealand children (5–14 years)			83	17	40	25	48	64	68	64	8	10
	Males	5–6	82	20	31	25	41	69	74	72	6	9
		7–10	85	18	36	24	47	64	66	66	6	11
		11–14	76	15	42	24	51	62	63	51	10	10
		Total	81	17	37	24	48	64	67	61	8	10
	Females	5–6	83	12	29	26	48	62	76	79	5	8
		7–10	84	17	39	23	45	63	67	66	7	9
		11–14	85	17	52	29	53	66	69	61	10	13
		Total	84	16	42	26	49	64	70	66	8	11
NZDep01	Males	I	74	15	33	17	40	64	72	59	3	10
		II	81	18	30	15	42	65	70	62	2	3
		III	83	14	34	22	44	62	67	61	6	10
		IV	87	21	39	29	51	63	62	54	11	8
		V	83	19	45	33	51	63	60	63	12	14
	Females	I	82	14	42	17	43	72	71	68	5	7
		II	84	15	38	22	46	63	70	64	4	9
		III	86	12	37	22	39	56	71	62	3	6
		IV	82	16	42	27	52	65	71	69	11	11
		V	88	25	46	37	58	61	60	62	12	15
School type	Males	Urban	80	18	39	25	47	63	65	60	8	9
		Rural	84	14	32	22	50	68	74	67	9	14
	Females	Urban	83	17	44	27	50	64	69	67	7	11
		Rural	87	13	35	23	45	65	72	64	10	11
Māori	Males	5–6	87	20	45	40	54	69	68	74	13	14
		7–10	85	19	39	32	55	60	59	63	8	13
		11–14	82	16	55	38	58	62	63	52	13	25
		Total	84	18	46	36	56	62	62	61	11	18
	Females	5–6	93	8	35	32	56	59	71	82	8	9
		7–10	84	21	42	31	55	60	65	69	10	18
		11–14	89	19	65	46	63	66	66	64	19	26
		Total	88	18	50	37	58	62	67	70	14	19
Pacific	Males	5–6	82	24	48	38	48	68	52	67	12	14
		7–10	90	21	55	39	45	70	50	65	9	11
		11–14	86	23	59	53	52	69	50	52	16	20
		Total	87	23	55	44	48	69	50	61	12	15
	Females	5–6	86	25	42	38	53	71	48	71	7	11
		7–10	83	24	48	35	53	65	50	62	13	16
		11–14	87	28	66	62	63	70	48	58	14	20
		Total	85	25	54	46	57	68	48	62	12	17
NZEO	Males	5–6	80	19	24	18	35	68	79	72	3	6
		7–10	84	17	32	20	45	65	71	67	5	11
		11–14	74	14	35	17	49	61	65	50	8	4
		Total	79	16	32	18	45	64	70	61	6	7
	Females	5–6	79	11	24	23	45	61	82	79	4	7
		7–10	84	16	37	19	41	64	70	65	5	6
		11–14	84	15	46	20	49	65	73	61	7	8
		Total	83	15	38	20	45	64	73	66	5	7

* Qualitative food frequency questionnaire, questions 97–101, 80–83, 95.

1 For example, Burger rings, rashuns, etc.

2 For example, Moro bar.

3 For example, Pebbles.

4 For example, Cheddar, Colby, etc.

Table C10: Milk drinks*

			Frequency of drinking milk[1]				Type of milk[1]						Percent consuming at least once per week		
			Never or < monthly	Monthly	Weekly	Daily	Standard (dark blue)	Low fat (light blue)	Trim (green)	Extra calcium	Soy milk	Other milk	Flavoured milk	Milk shake	Food drink[2]
			%	%	%	%	%	%	%	%	%	%	%	%	%
New Zealand children (5–14 years)			17	10	34	38	74	13	7	4	2	4	22	13	59
	Males	5–6	14	11	33	41	80	9	5	4	<1	5	16	11	55
		7–10	15	11	34	40	80	11	6	4	2	4	20	12	61
		11–14	17	9	34	39	69	15	8	6	2	5	28	15	56
		Total	16	10	34	40	75	12	7	5	2	4	22	13	58
	Females	5–6	13	7	34	46	79	11	4	4	3	3	18	10	55
		7–10	21	12	36	32	76	12	7	3	3	3	19	11	60
		11–14	21	11	32	36	64	20	10	3	2	4	25	15	61
		Total	19	11	34	36	72	15	8	3	2	3	21	13	59
NZDep01	Males	I	14	11	28	47	69	15	11	3	3	5	25	12	60
		II	22	12	29	37	60	19	11	10	<1	2	17	8	52
		III	12	9	33	47	79	12	6	3	<1	1	24	12	55
		IV	14	9	42	34	78	10	7	4	2	5	23	11	61
		V	15	10	43	32	83	8	3	5	3	5	26	18	60
	Females	I	20	11	32	37	62	17	17	3	3	3	22	10	67
		II	24	7	26	43	77	10	9	3	1	1	20	9	66
		III	22	14	28	37	55	22	19	4	2	1	18	6	44
		IV	20	13	28	39	75	14	5	4	1	4	18	10	57
		V	16	12	41	31	79	14	3	1	2	4	24	21	57
School type	Males	Urban	16	11	34	39	74	13	7	5	2	3	23	13	57
		Rural	12	9	34	44	81	6	5	4	2	8	21	13	63
	Females	Urban	19	11	33	37	71	17	8	4	2	3	21	13	59
		Rural	20	9	36	35	75	6	8	3	5	6	24	12	61
Māori	Males	5–6	8	16	40	36	89	7	2	3	0	3	21	12	67
		7–10	16	9	35	40	86	7	4	3	2	3	18	15	63
		11–14	15	7	40	39	79	13	4	5	1	4	30	22	55
		Total	14	10	38	39	84	9	3	4	1	3	23	17	61
	Females	5–6	12	10	44	33	88	9	2	2	3	3	15	9	60
		7–10	15	11	42	31	82	10	3	2	1	5	19	15	57
		11–14	16	16	32	36	82	11	5	2	1	2	28	27	55
		Total	15	13	38	33	83	10	4	2	2	3	22	18	57
Pacific	Males	5–6	14	15	45	26	86	9	7	0	1	5	20	23	66
		7–10	13	8	47	32	82	16	4	2	<1	2	29	23	65
		11–14	20	12	33	35	81	10	5	3	1	3	37	40	53
		Total	16	11	41	32	82	12	5	2	1	3	30	29	61
	Females	5–6	13	10	49	28	82	19	2	1	0	1	26	26	70
		7–10	20	8	51	21	77	16	4	3	2	2	23	23	63
		11–14	20	13	43	23	79	14	4	1	2	2	31	37	65
		Total	19	10	48	23	79	16	3	2	2	2	27	29	65
NZEO	Males	5–6	16	9	29	45	76	10	6	4	0	5	14	9	49
		7–10	15	12	32	41	77	11	7	5	3	4	20	9	61
		11–14	17	10	33	40	64	16	10	7	2	5	26	10	56
		Total	16	11	32	41	72	13	8	5	2	5	21	9	57
	Females	5–6	13	6	29	53	75	11	5	5	3	3	18	8	52
		7–10	23	12	32	33	73	12	9	4	3	2	19	9	60
		11–14	23	9	30	38	56	23	13	4	2	5	24	9	62
		Total	21	10	31	39	67	16	10	4	3	4	21	9	60

* Qualitative food frequency questionnaire, questions 102–105.

1 Not flavoured.

2 For example, Milo powder, Nesquik.

Table C11: Other drinks*

			Percent consuming at least once per week											
			Juice[1] %	Powdered fruit drink[2] %	Fruit drink from concentrate or cordial[3] %	Coca Cola or other cola drinks %	Mountain Dew %	'New Age' drinks[4] %	Soft drinks[5] %	Sports drinks[6] %	Ice blocks %	Tea %	Coffee %	Other drinks %
New Zealand children (5–14 years)			43	54	32	43	9	6	45	8	33	21	6	14
	Males	5–6	41	60	31	32	7	3	38	2	32	9	2	12
		7–10	37	58	29	37	10	3	39	6	33	16	4	14
		11–14	46	49	36	57	11	12	48	16	30	26	9	10
		Total	41	55	32	44	10	7	42	9	32	19	5	12
	Females	5–6	43	51	40	31	6	1	43	3	40	12	3	18
		7–10	44	59	28	36	8	4	46	7	35	18	4	18
		11–14	49	50	31	51	10	8	50	10	34	33	12	11
		Total	46	54	31	41	8	5	47	8	36	23	7	15
NZDep01	Males	I	46	41	28	38	3	4	33	6	26	6	2	13
		II	41	49	26	33	5	4	37	6	32	14	2	20
		III	43	61	33	47	7	8	47	12	28	19	5	14
		IV	41	57	33	44	10	10	39	10	26	19	5	12
		V	44	63	41	58	24	7	54	16	39	32	10	6
	Females	I	46	48	29	30	1	3	47	4	32	14	3	19
		II	55	50	27	47	2	2	38	3	28	24	2	14
		III	53	45	26	37	5	9	46	7	39	25	2	11
		IV	40	51	33	37	7	5	44	11	28	18	6	18
		V	39	63	39	53	20	6	53	12	46	32	16	9
School type	Males	Urban	42	54	32	47	11	7	44	10	33	20	6	11
		Rural	38	60	31	33	7	5	34	4	26	10	3	19
	Females	Urban	47	54	33	43	9	6	47	8	36	23	6	14
		Rural	38	54	24	34	6	4	46	7	32	22	10	17
Māori	Males	5–6	39 %	69	33	47	12	3	57	2	42	12	3	10
		7–10	32	64	32	50	14	3	48	5	35	19	6	8
		11–14	39	63	40	64	18	16	53	16	35	34	13	8
		Total	37	65	35	55	15	8	52	9	37	23	8	8
	Females	5–6	40	61	27	51	12	0	49	3	44	10	1	9
		7–10	42	65	33	50	14	4	59	9	45	20	5	9
		11–14	44	58	45	69	22	19	70	19	52	44	24	8
		Total	42	61	36	58	17	9	61	12	48	27	12	9
Pacific	Males	5–6	61	77	44	46	27	8	56	19	47	40	14	3
		7–10	55	68	43	57	35	12	60	26	50	51	17	6
		11–14	53	60	46	77	45	20	68	41	53	58	29	6
		Total	55	67	44	62	37	14	62	30	51	51	21	5
	Females	5–6	48	65	43	50	30	14	57	11	49	47	14	5
		7–10	56	68	45	54	26	7	62	22	42	49	12	5
		11–14	54	60	41	71	43	8	69	30	55	64	30	5
		Total	54	64	43	59	34	9	64	23	48	54	19	5
NZEO	Males	5–6	38	54	28	25	2	2	28	0	27	4	0	14
		7–10	36	55	26	31	6	2	34	4	30	10	1	17
		11–14	47	43	33	53	6	10	44	12	26	20	5	12
		Total	41	50	29	39	5	5	37	7	27	13	3	14
	Females	5–6	43	45	44	21	1	0	38	2	36	8	2	23
		7–10	43	56	24	29	3	4	40	4	31	14	2	22
		11–14	49	46	25	43	2	4	41	5	26	26	6	12
		Total	46	50	28	33	2	3	40	4	30	18	4	18

* Qualitative food frequency questionnaire, questions 106–117.

1 For example, fresh orange juice, juices such as McCoys, Robinson's, Keri.

2 For example, Refresh, Raro.

3 For example, Just Juice, Ribena.

4 For example, V, E2, Red Bull.

5 For example, lemonade, orange.

6 For example, Gatorade, Powerade.

Table C12: Type of fat added or used for cooking*

			Fat spread added to cooked vegetables					Fat used to cook meat, fish, poultry[1]								
			Add butter or margarine weekly	Type of fat				Margarine	Butter	Lard, dripping	Canola oil	Corn oil	Olive oil	Safflower oil	Sunflower oil	Other vegetable oil
				Butter	Low fat spread	Margarine	Blend[2]									
			%	%	%	%	%	%	%	%	%	%	%	%	%	%
New Zealand children (5–14 years)			35	25	6	22	3	10	16	5	24	1	46	1	13	22
	Males	5–6	32	27	3	23	3	11	17	7	25	2	42	1	10	27
		7–10	33	26	6	18	3	11	17	6	25	1	46	1	12	22
		11–14	34	23	9	21	2	10	17	4	24	<1	48	1	13	19
		Total	33	25	6	20	3	10	17	5	25	1	46	1	12	22
	Females	5–6	33	24	4	17	3	9	19	8	27	1	50	2	12	22
		7–10	33	25	5	21	5	9	16	4	26	2	47	1	12	25
		11–14	40	26	5	28	3	10	14	4	20	<1	45	2	16	21
		Total	36	25	5	23	4	9	16	5	24	1	47	2	14	23
NZDep01	Males	I	26	24	10	10	4	5	12	2	19	0	65	0	8	12
		II	20	19	9	16	<1	7	13	1	18	1	60	<1	7	23
		III	32	21	4	20	2	9	15	7	29	<1	44	<1	17	18
		IV	40	28	6	25	3	15	21	4	30	1	34	2	16	25
		V	47	33	5	26	3	16	22	9	31	2	26	2	13	33
	Females	I	29	22	9	13	2	10	20	3	21	0	65	3	14	7
		II	27	26	5	24	2	4	4	2	20	0	52	1	17	20
		III	37	25	<1	30	1	10	21	4	23	4	53	3	15	21
		IV	42	25	3	27	2	9	17	6	25	2	41	2	16	25
		V	45	29	4	29	7	17	21	8	27	2	24	1	14	33
School type	Males	Urban	31	24	7	20	3	11	17	4	25	1	45	1	13	22
		Rural	41	32	6	19	3	8	16	10	23	1	48	1	9	23
	Females	Urban	35	23	5	24	4	9	16	4	24	1	46	2	14	23
		Rural	39	32	4	20	3	11	14	6	22	<1	50	0	15	22
Māori	Males	5–6	56	41	4	32	5	18	32	12	28	2	34	1	12	24
		7–10	44	34	3	25	4	18	23	11	26	1	30	2	18	24
		11–14	51	37	4	26	3	14	24	6	20	0	29	1	18	19
		Total	49	37	4	27	4	17	25	9	24	1	30	1	17	22
	Females	5–6	48	34	2	33	4	18	20	8	24	1	35	0	13	25
		7–10	47	33	5	31	5	13	25	11	22	2	33	1	13	26
		11–14	53	38	2	34	5	13	26	11	23	0	33	2	15	23
		Total	50	36	3	33	5	14	25	10	23	1	33	1	14	25
Pacific	Males	5–6	37	19	3	31	3	18	21	7	31	4	25	2	14	36
		7–10	48	26	6	24	8	16	20	4	34	3	22	1	19	34
		11–14	45	23	6	27	3	21	19	1	23	1	29	1	11	35
		Total	44	23	5	27	5	18	20	3	29	3	26	1	15	35
	Females	5–6	39	23	3	16	5	17	17	7	40	2	21	0	20	40
		7–10	34	22	5	26	5	20	21	4	32	3	26	1	23	33
		11–14	45	22	5	24	4	13	21	7	26	4	23	2	12	35
		Total	39	22	5	23	5	17	20	6	31	3	24	1	18	35
NZEO	Males	5–6	22	23	3	18	2	8	11	5	22	1	48	1	9	27
		7–10	28	24	6	15	3	7	15	4	24	1	54	1	9	20
		11–14	27	19	11	19	1	7	14	3	26	<1	55	<1	11	17
		Total	26	22	8	17	2	7	14	4	25	1	54	1	10	20
	Females	5–6	27	20	5	11	3	4	20	7	26	1	59	3	11	19
		7–10	28	23	4	17	5	7	12	2	26	2	54	1	10	24
		11–14	36	22	6	26	2	8	9	2	19	0	51	3	17	19
		Total	31	22	5	20	3	7	12	3	23	1	54	2	13	21

* Qualitative food frequency questionnaire, questions 26b–26c, 55.

1 More than one choice of cooking fat.

2 Blend of butter and margarine.

D. Physical Activity

Introduction

Participants were questioned about the time spent in the previous seven days watching television or videos or playing computer or video games. The questions also provided data on the reported amount of time spent on these activities on the weekend days and the 'normal' time spent on weekdays.

The physical activity questions were based on the Physical Activity Questionnaire for Children (PAQ-C) (Crocker et al 1997). The questions provided data on the reported frequency of participation in several activities and a profile of the times of day when children were most active in the previous seven days. An overall activity score was calculated for each child (see Appendix B).

Key points

Television or video watching

- Seventy-three percent of New Zealand children did not watch or watched less than two hours of television or videos per weekday, and 60 percent per weekend day.
- A higher proportion of Māori and Pacific children watched television or videos at least four hours per day than NZEO children, both during the week and weekends.

Computer or video games

- About 60 percent of New Zealand children did not play computer or video games during the weekend or the week.
- Males were more likely than females to have reported playing computer or video games.
- Pacific children were less likely than Māori or NZEO children to have played computer or video games.

Overall physical activity

- Males (29 percent) were more likely than females (15.6 percent) to be in the highest activity quartile.
- Children in NZDep01-V were more likely to be in the highest activity quartile than NZDep01-I children.
- NZEO females (12.9 percent) were less likely than Pacific (20.4 percent) and Māori (21.8 percent) females to be represented in the highest activity quartile.

Physical activities

- Walking at least 15 minutes per day was the most frequently reported activity by both males (61.2 percent) and females (66.3 percent).
- Pacific males were more likely to play rugby than Māori and NZEO males.
- Pacific females were more likely to participate in ‘dancing’ than Māori and NZEO females.

Travel to/from school

- Almost 50 percent of New Zealand children were transported to and from school. The proportion declined with increasing age.
- Children in NZDep01-I and II were most likely to report they were transported to school compared with children in NZDep01-V.
- Pacific children were least likely to be transported to school compared with Māori and NZEO children.

Physical activity time profile

- Approximately one in five children 5–6 years and 7–10 years reported no physical education (PE) class compared with one in ten children 11–14 years.
- Activity levels at morning and lunch breaks were higher for males than females, with the lowest activity levels reported by NZEO females.
- Children in NZDep01-I were more likely to report they were active at least four days a week after school than children in NZDep01-V.
- The proportion of children reporting no active behaviour during weekends was highest in females 11–14 years (22.8 percent).
- Māori females 11–14 years were the most likely age and sex group to report no physical activity during the weekend (27.9 percent).

D1 Physical inactivity

Table D1

Television or video watching

New Zealand children

About 9 percent of New Zealand children reported they did not watch television or videos during the week and 8.6 percent did not watch during the weekend. About 64 percent of New Zealand children watched television or videos less than 10 hours during the week, while 51.3 percent watched television or videos less than four hours per weekend. Television or video viewing of more than 20 hours during the week was lowest in children 5–6 years (males 2.9 percent; females 1.6 percent) and highest in children 11–14 years (7.4 percent; 7.1 percent) (Figure D-1). The proportion of children who watched more than eight hours of television or videos during the weekend was highest in the oldest age group. The proportion of males who watched television or videos for more than eight hours per weekend was the lowest in NZDep01-I (2.8 percent) and highest in NZDep01-V (10.9 percent).

Ethnic

A higher proportion of Māori and Pacific males (11.1 percent; 10.6 percent) watched television or videos for more than eight hours than NZEO males (5.4 percent). A higher proportion of Māori females (10 percent) watched television or videos for more than eight hours than NZEO females (5 percent). Māori and Pacific children were more likely than NZEO children to watch more than 20 hours of television or videos during the week.

Computer or video games

New Zealand children

Approximately six out of ten New Zealand children did not play computer or video games during the weekend or week. Males were more likely than females to play computer or video games during the weekend (49.4 percent; 28 percent) or week (43 percent; 30.8 percent). Males (8.1 percent) were more likely than females (1.4 percent) to play computer or video games for four to eight hours during the weekend.

NZDep01

Children in NZDep01-V (males 59.6 percent; females 77.7 percent) were more likely than NZDep01-I children to *not* play computer or video games during the weekend (43.5 percent; 65.1 percent).

Ethnic

Pacific children (males 70.1 percent; females 82.5 percent) were more likely than Māori (58.1 percent; 75.4 percent) or NZEO children (47.1 percent; 69.5 percent) *not* to play computer or video games during the weekend (Figure D-2).

Figure D-1: Television or video > 20 hours during school days

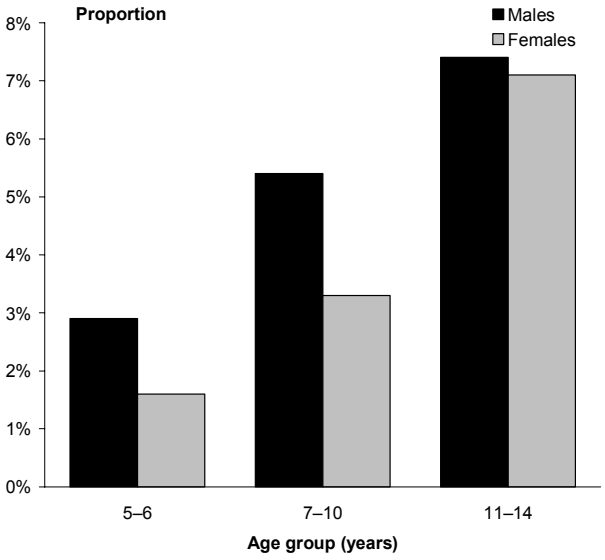
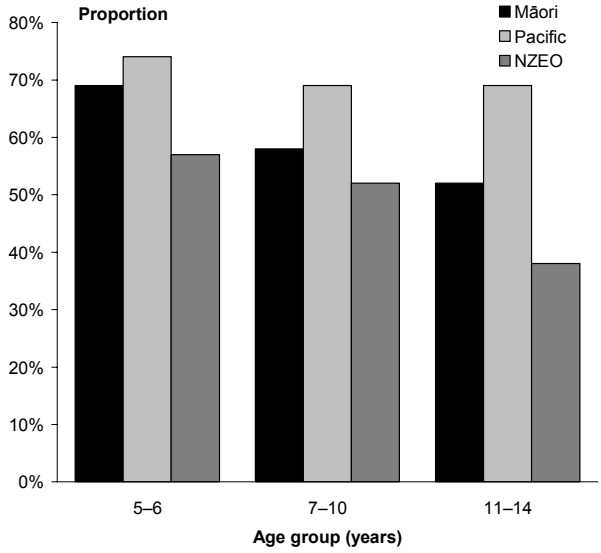


Figure D-2: No weekend computer or video games (males)



D2 Physical activity participation

Table D2

Overall physical activity

New Zealand children

Children were assigned to one of four activity quartiles based on their reported overall activity in the previous seven days. Children in quartile I were the least active and those in quartile IV the most active. Females (all age groups) were more likely than males to be in the least active group. Males (29 percent) were more likely than females (15.6 percent) to be in the highest activity quartile (Figure D-3).

NZDep01

NZDep01-V children (males 31.4 percent; females 20.8 percent) were more likely to be in the most active group than NZDep01-I children (males 20.7 percent; females 13.1 percent).

Ethnic

NZEO children were more likely to be in the least active group (males 23.1 percent; females 37.7 percent) and least likely to be in the most active group (27.7 percent; 12.9 percent) than Māori or Pacific children. Pacific children had the lowest proportion in the least active group (males 17 percent; females 30.6 percent) and Māori children the highest proportion in the most active group (33 percent; 21.8 percent).

Physical activities

New Zealand children

Walking at least 15 minutes per day was the most frequently reported activity by New Zealand children (63.7 percent). The youngest children (5–6 years) were less likely to participate in this activity (males 54.3 percent; females 57.7 percent) than children 11–14 years (65.2 percent; 74.2 percent). On the other hand, the youngest children were more likely to participate in active games (males 74.2 percent; females 76 percent) than children 11–14 years (46 percent; 43 percent).

NZDep01

Children in NZDep01-I were least likely to participate in active games (for example, tag, bull rush or skipping) than children in NZDep01-V. NZDep01-I males were more likely to report cycling than NZDep01-V males (51.4 percent; 38.3 percent).

Figure D-3: Highest activity quartile

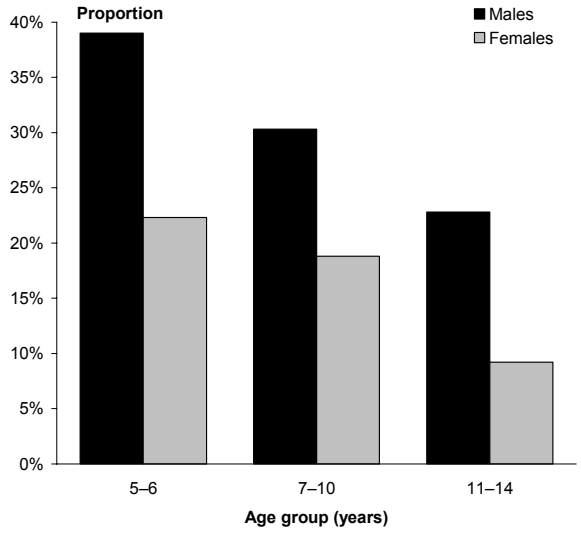
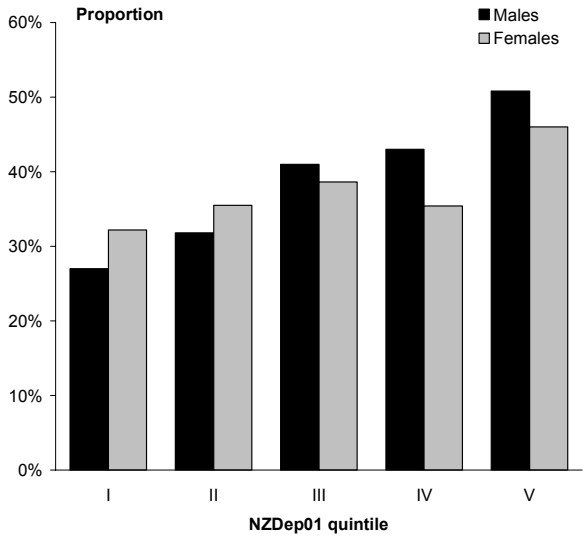


Figure D-4: Active travel to/from school



Ethnic

Cycling was reported least by Pacific children (males 29.6 percent; females 21.5 percent) compared with Māori (45.1 percent; 38.7 percent) and NZEO children (53.8 percent; 39.6 percent). Pacific males were more likely to play rugby union, rugby league or touch rugby (65.7 percent) than Māori (49.2 percent) or NZEO males (30 percent). Pacific females were more likely to participate in dancing (50.5 percent) than Māori (41.9 percent) or NZEO females (32 percent).

Travel to/from school

New Zealand children

The proportion of children who walked, biked, skated or scootered to or from school on at least six occasions during the week increased with age (males: 5–6 years 34.2 percent; 11–14 years 43.8 percent; females: 5–6 years 25 percent; 11–14 years 40.2 percent).

NZDep01

Children in NZDep01-I (males 27 percent; females 32.2 percent) were less likely to travel to or from school by active means than children in NZDep01-V (50.8 percent; 46 percent) (Figure D-4).

Ethnic

Pacific children were least likely to be transported to/from school (males 26.2 percent; females 32.3 percent), followed by Māori children (40.8 percent; 48.2 percent), with NZEO children most likely (48.3 percent; 51.6 percent).

D3 Physical activity time profile

Table D.3

Physical education (PE) class

Approximately one in five children 5–6 years and 7–10 years reported having no PE class, compared with one in ten children 11–14 years. Males more often reported that they were very active during PE (67.4 percent) than females (61.6 percent). NZDep01-I females (71.7 percent) were more likely to be very active during PE than NZDep01-V females (58.9 percent).

Pacific children were most likely to report having a PE class in the previous seven days.

Morning break

In all age groups, males were more likely than females to report being very active during morning break (males: 5–6 years 92.5 percent, 7–10 years 86.3 percent, 11–14 years 57.4 percent; females: 86.9 percent, 76.8 percent, 33.6 percent). There was a sharp drop in activity levels in children 11–14 years compared with children in the two younger groups. Pacific children 5–6 years (males 83.7 percent; females 76.9 percent) were the least likely to report being very active compared with Māori (95.3 percent; 88 percent) and NZEO children (92.6 percent; 87.8 percent).

Lunch break

The pattern during lunch break was similar to that during morning break. Males in all three age groups were more likely than females to be very active during lunchtime (males: 5–6 years 96.2 percent, 7–10 years 93 percent, 11–14 years 71.9 percent; females: 90.7 percent, 86.6 percent, 46.5 percent) (Figure D-5). Rural children (males 89.2 percent; females 77.5 percent) were more likely to be very active than urban children (84.4 percent; 70 percent). Pacific males (89.1 percent) were more likely to be very active during lunch break than Māori (84.7 percent) or NZEO males (84.9 percent). Pacific females (78.7 percent) were more likely than NZEO females to be more active during the lunch break (69.4 percent).

Figure D-5: Active during lunch

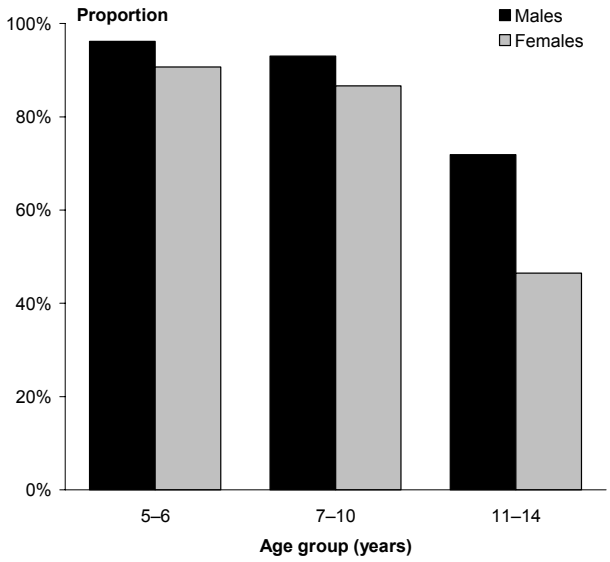
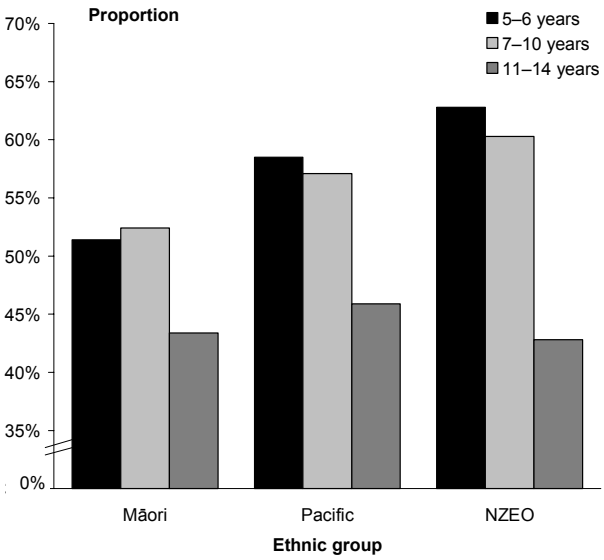


Figure D-6: Weekend activity (4+ occasions) (females)



After school

Females 5–6 years (44.1 percent) and 7–10 years (46 percent) were more likely to be active at least four days a week after school than males (30.1 percent; 33 percent). NZDep01-I children (males 41.2 percent; females 52.8 percent) were more likely to be active at least four days a week after school than NZDep01-V children (30.8 percent; 34.9 percent). NZEO females (46.3 percent) were more likely to report activity after school than Pacific (34.8 percent) or Māori females (38.6 percent).

Evenings

Less than 20 percent of children were active on four or more evenings – after the evening meal. The exceptions were Māori and Pacific males 5–6 years (20.7 percent; 26 percent).

Weekends

The proportion of children reporting no active behaviour on weekends was highest in children 11–14 years (males 14.3 percent; females 22.8 percent) both overall and in all ethnic groups. Māori females 11–14 years were the most likely group to report no physical activity during the weekend (27.9 percent). The group with the highest proportion of active children on weekends was NZEO females 5–6 years (62.8 percent) (Figure D-6).

Table D1: Inactivity[1]

			Watched TV or videos at weekend				Watched TV or videos during week				Played computer or video games at weekend				Played computer or video games during week			
			Didn't watch %	<4 hours %	4–8 hours %	>8 hours %	Didn't watch %	<10 hours %	10–20 hours %	>20 hours %	Didn't play %	<4 hours %	4–8 hours %	>8 hours %	Didn't play %	<10 hours %	10–20 hours %	>20 hours %
New Zealand children (5–14 years)			8.6	51.3	33.3	6.8	9.1	63.9	21.9	5.1	61.5	32.6	4.8	1.0	62.9	36.0	0.9	0.3
	Males	5–6	12.6	51.8	31.6	4.0	7.8	74.6	14.7	2.9	61.5	33.5	4.6	0.4	68.3	31.0	0.6	0.1
		7–10	8.8	52.5	31.4	7.4	8.8	64.2	21.7	5.4	55.1	36.4	6.8	1.8	59.9	38.4	1.1	0.7
		11–14	7.0	45.5	39.0	8.5	8.9	60.4	23.2	7.4	43.3	43.4	11.1	2.2	48.4	50.0	1.4	0.2
		Total	8.8	49.6	34.5	7.2	8.6	64.7	20.9	5.7	51.6	38.6	8.1	1.7	57.0	41.6	1.1	0.4
	Females	5–6	10.6	59.1	25.0	5.3	13.4	68.2	16.8	1.6	79.5	20.1	0.4	0.1	77.8	22.0	0.2	0.0
		7–10	8.1	55.6	30.5	5.8	7.6	68.1	21.0	3.3	71.5	28.0	0.1	0.4	72.3	27.2	0.3	0.3
		11–14	7.5	48.0	37.0	7.5	9.5	55.7	27.7	7.1	68.9	27.7	3.0	0.4	62.1	36.6	1.2	0.2
		Total	8.4	53.2	32.1	6.4	9.5	63.1	22.9	4.5	72.0	26.4	1.4	0.3	69.2	30.0	0.6	0.2
NZDep01	Males	I	7.1	56.0	34.1	2.8	9.7	72.4	17.4	0.6	43.5	48.4	7.4	0.7	50.5	48.7	0.9	0.0
		II	11.3	51.1	32.2	5.4	5.4	70.6	18.6	5.4	47.6	44.0	7.3	1.2	53.3	46.1	0.6	0.0
		III	4.1	48.0	41.6	6.4	9.1	65.7	19.4	5.9	52.3	38.3	7.8	1.6	59.1	40.8	0.1	0.0
		IV	9.6	44.6	36.5	9.3	6.8	59.5	23.2	10.5	48.7	40.7	8.1	2.4	56.4	42.3	0.7	0.6
		V	9.3	45.2	34.6	10.9	8.4	55.1	28.6	7.8	59.6	26.5	11.3	2.7	61.6	34.6	2.7	1.2
	Females	I	6.4	61.1	30.3	2.3	16.9	59.3	20.7	3.1	65.1	31.9	3.0	0.0	63.5	35.8	0.7	0.0
		II	7.2	54.4	30.7	7.7	11.9	64.5	21.4	2.3	74.2	25.8	0.0	0.0	74.4	25.7	0.0	0.0
		III	12.7	37.0	43.0	7.3	2.2	65.8	28.0	4.0	73.7	24.8	1.2	0.3	73.5	26.1	0.0	0.3
		IV	6.5	54.6	31.7	7.3	8.8	66.2	21.0	4.0	72.7	25.4	1.8	0.2	68.3	29.9	1.2	0.6
		V	9.7	50.3	32.0	7.9	8.4	57.1	28.0	6.5	77.7	20.8	1.0	0.6	71.7	27.2	1.1	0.0
School type	Males	Urban	7.9	50.1	34.5	7.5	8.3	64.2	21.1	6.4	51.2	39.1	8.1	1.7	57.7	40.9	0.9	0.4
		Rural	13.0	47.2	34.2	5.6	10.1	66.9	20.2	2.9	53.6	36.5	8.2	1.7	53.5	44.5	1.9	0.2
	Females	Urban	8.1	51.8	33.8	6.3	9.7	62.7	23.5	4.1	70.6	27.9	1.3	0.2	67.9	31.5	0.5	0.1
		Rural	9.3	59.2	24.7	6.8	8.7	64.9	20.3	6.2	77.6	20.1	1.7	0.6	74.7	23.8	1.1	0.3
Māori	Males	5–6	5.9	55.0	35.0	4.2	4.0	70.7	21.9	3.4	69.2	26.0	3.5	1.2	66.3	33.7	0.0	0.0
		7–10	6.8	48.1	33.7	11.5	3.2	62.8	26.4	7.7	57.9	34.4	5.7	2.1	63.7	34.3	1.6	0.5
		11–14	10.9	38.5	36.3	14.5	7.9	49.6	28.9	13.6	52.2	36.0	8.2	3.6	58.4	37.8	3.0	0.9
		Total	8.1	45.9	34.9	11.1	5.1	59.5	26.4	9.0	58.1	33.2	6.2	2.5	62.2	35.5	1.8	0.5
	Females	5–6	9.4	51.1	31.0	8.5	6.1	66.7	22.5	4.7	78.4	20.1	1.5	0.0	78.1	21.1	0.8	0.0
		7–10	8.3	51.1	33.1	7.6	3.5	62.7	26.5	7.3	78.8	19.0	0.6	1.6	71.3	26.8	0.8	1.1
		11–14	8.3	44.0	34.4	13.3	5.7	47.7	29.0	17.6	70.2	26.2	2.3	1.3	63.6	34.3	1.5	0.7
		Total	8.5	48.3	33.2	10.0	4.9	57.7	26.7	10.8	75.4	22.0	1.4	1.2	69.7	28.6	1.0	0.7
Pacific	Males	5–6	2.9	62.0	25.3	9.8	8.5	64.6	20.8	6.1	73.7	22.6	2.4	1.4	74.1	25.0	0.0	0.9
		7–10	6.1	54.2	29.4	10.3	9.7	54.7	27.4	8.2	69.4	26.2	3.2	1.3	73.0	25.8	0.8	0.4
		11–14	9.9	39.4	39.5	11.2	10.6	53.7	26.1	9.6	69.0	23.8	5.1	2.2	65.3	33.2	1.5	0.0
		Total	6.9	50.2	32.3	10.6	9.8	56.4	25.6	8.3	70.1	24.5	3.7	1.6	70.3	28.4	0.9	0.4
	Females	5–6	12.1	57.1	26.3	4.6	10.5	61.6	24.1	3.8	81.9	17.2	0.0	0.8	74.6	25.4	0.0	0.0
		7–10	8.1	57.9	27.8	6.2	8.7	66.9	17.5	7.0	81.6	18.4	0.0	0.0	72.7	26.3	1.1	0.0
		11–14	11.6	41.7	36.1	10.7	15.6	54.7	20.9	8.7	83.7	15.2	0.3	0.8	76.7	22.7	0.6	0.0
		Total	10.3	51.6	30.6	7.6	11.7	61.2	20.2	7.0	82.5	17.0	0.1	0.5	74.6	24.7	0.7	0.0
NZEO	Males	5–6	16.5	49.1	31.2	3.2	9.2	77.5	11.1	2.3	56.8	37.9	5.3	0.0	68.3	30.8	1.0	0.0
		7–10	9.8	53.8	30.9	5.5	10.6	65.9	19.3	4.3	52.2	38.4	7.7	1.7	56.8	41.4	0.9	0.9
		11–14	5.4	48.5	39.8	6.3	9.0	64.7	21.1	5.2	37.5	48.1	12.7	1.8	43.3	55.9	0.8	0.0
		Total	9.3	50.8	34.6	5.4	9.7	67.6	18.5	4.3	47.1	42.2	9.3	1.4	53.5	45.3	0.9	0.4
	Females	5–6	10.9	62.5	22.4	4.2	16.7	69.7	13.6	0.0	79.5	20.5	0.0	0.0	78.1	21.9	0.0	0.0
		7–10	8.1	56.9	30.0	5.1	9.0	70.2	19.5	1.4	67.7	32.3	0.0	0.0	72.5	27.5	0.0	0.0
		11–14	6.8	50.1	37.9	5.2	10.1	58.5	28.0	3.4	66.8	29.7	3.6	0.0	59.9	39.0	1.1	0.0
		Total	8.1	55.1	31.8	5.0	10.9	65.3	21.9	2.0	69.5	29.0	1.5	0.0	68.4	31.2	0.5	0.0

1 Those children who indicated that they had watched/played on a certain day but did not know how long, were placed in the minimum time category, ie, <4/10 hours.

Table D2: Physical activity participation

			Activity quartiles[1]				Actively travel to/from school[6]		Participated in activity at least once in last seven days							
			Quartile 1[2] %	Quartile 2[3] %	Quartile 3[4] %	Quartile 4[5] %	Didn't %	At least six times %	Active games %	Walking %	Running %	Cycling %	Rugby %	Skating %	Tramping/ climbing %	Dancing %
New Zealand children (5–14 years)			28.4	26.0	23.1	22.5	46.9	37.2	59.9	63.7	46.8	43.9	26.3	34.9	36.5	23.7
	Males	5–6	16.5	20.1	24.5	39.0	51.2	34.2	74.2	54.3	42.9	57.9	27.9	44.1	42.9	19.5
		7–10	18.2	26.9	24.6	30.3	47.4	35.3	62.2	60.7	48.8	55.2	38.7	44.4	41.0	11.6
		11–14	28.0	27.0	22.3	22.8	38.8	43.8	46.0	65.2	53.4	40.0	41.3	31.7	20.9	9.3
		Total	21.7	25.6	23.7	29.0	44.7	38.4	58.1	61.2	49.5	49.7	37.6	39.3	33.4	12.2
	Females	5–6	28.2	29.6	20.0	22.3	65.2	25.0	76.0	57.7	33.4	46.4	6.6	38.1	50.1	46.5
		7–10	24.0	28.5	28.7	18.8	46.3	36.9	73.9	62.5	45.7	45.8	11.9	34.9	49.1	36.6
		11–14	50.5	22.8	17.4	9.2	44.6	40.2	43.0	74.2	47.3	25.8	20.7	21.9	25.5	30.1
		Total	35.4	26.5	22.5	15.6	49.2	36.0	61.9	66.3	44.0	37.9	14.4	30.3	39.8	35.9
NZDep01	Males	I	21.4	31.7	26.2	20.7	53.2	27.0	48.3	58.2	44.4	51.4	27.2	37.9	33.9	6.7
		II	21.6	24.0	23.2	31.3	51.1	31.8	46.6	56.7	43.1	63.8	26.4	38.5	34.4	7.9
		III	24.3	24.2	22.1	29.5	38.8	41.0	63.2	63.7	49.9	48.3	33.5	43.2	33.8	10.9
		IV	17.5	26.3	28.8	27.4	37.3	43.0	60.5	66.6	41.6	52.2	36.1	38.9	25.8	10.2
		V	23.5	24.1	21.0	31.4	34.6	50.8	60.8	63.5	57.1	38.3	48.9	38.5	30.0	23.0
	Females	I	33.0	25.5	28.4	13.1	49.8	32.2	50.5	67.9	32.6	39.2	2.4	34.2	37.7	34.2
		II	33.8	35.0	19.9	11.3	54.4	35.5	58.3	72.6	43.3	42.7	6.3	35.3	38.8	32.8
		III	36.7	30.1	22.3	10.9	47.4	38.6	69.5	60.3	39.0	39.3	13.9	25.5	46.4	35.7
		IV	41.1	23.7	19.4	15.8	42.6	35.4	65.1	66.6	41.0	32.8	14.3	31.0	37.1	29.3
		V	31.7	23.0	24.5	20.8	40.5	46.0	68.6	68.7	56.5	34.4	26.8	28.0	36.2	43.1
School type	Males	Urban	21.9	25.3	24.4	28.4	42.7	40.7	57.5	63.0	48.9	48.8	36.9	40.1	32.2	12.5
		Rural	20.9	26.9	20.5	31.7	53.7	28.5	60.7	53.2	52.2	53.4	40.9	35.7	38.7	11.0
	Females	Urban	36.4	25.9	22.4	15.4	46.7	37.8	62.4	66.4	43.9	36.1	13.3	29.7	41.0	35.1
		Rural	31.6	28.8	23.0	16.6	59.6	28.4	59.6	66.0	44.4	45.2	19.2	32.6	35.0	38.9
Māori	Males	5–6	12.3	21.6	18.8	47.3	42.6	38.7	74.0	51.7	61.4	54.5	42.1	50.9	45.2	28.5
		7–10	15.5	23.2	27.0	34.3	40.0	44.6	65.5	56.0	55.4	47.7	54.0	44.7	40.2	23.3
		11–14	28.1	26.2	22.2	23.5	40.7	47.2	42.1	62.5	53.8	36.9	48.1	41.2	19.1	17.1
		Total	19.6	24.0	23.4	33.0	40.8	44.4	58.5	57.5	56.1	45.1	49.2	44.7	33.3	22.1
	Females	5–6	19.4	31.8	22.3	26.6	59.7	27.4	79.1	53.7	43.8	48.6	6.8	37.7	39.1	49.1
		7–10	20.8	26.7	25.9	26.6	42.3	43.4	72.1	55.8	50.9	46.2	20.9	41.6	42.8	38.2
		11–14	47.1	25.5	13.1	14.4	48.4	35.9	40.1	71.4	53.5	25.6	34.0	23.7	21.7	41.9
		Total	30.8	27.3	20.2	21.8	48.2	37.2	61.0	61.5	50.5	38.7	23.1	33.8	33.8	41.9
Pacific	Males	5–6	16.9	18.1	32.5	32.5	35.3	44.9	86.2	67.1	48.6	40.0	45.0	36.6	29.7	32.9
		7–10	13.4	26.2	31.2	29.3	26.5	48.5	75.1	71.5	63.7	32.9	66.8	39.5	38.8	26.1
		11–14	21.1	28.5	26.3	24.0	20.9	60.3	56.8	78.6	59.8	20.3	75.8	23.5	16.9	24.1
		Total	17.0	25.4	29.6	28.0	26.2	52.2	70.5	73.3	59.1	29.6	65.7	32.8	28.7	26.7
	Females	5–6	28.0	24.2	27.6	20.2	38.3	33.2	86.9	60.9	50.3	34.6	7.9	34.1	41.4	53.1
		7–10	24.4	26.1	26.5	22.9	29.3	48.7	82.7	69.4	56.0	26.5	27.0	33.0	38.5	46.0
		11–14	38.7	21.4	22.2	17.7	32.3	50.2	61.8	75.5	59.2	8.7	47.2	14.6	15.5	54.0
		Total	30.6	23.9	25.1	20.4	32.3	46.0	75.7	70.0	56.0	21.5	30.6	26.3	30.4	50.5
NZEO	Males	5–6	18.0	19.8	25.6	36.6	56.7	31.0	72.7	53.5	34.8	61.6	20.0	42.5	43.8	14.1
		7–10	19.7	28.3	23.0	29.0	52.7	30.2	59.3	61.0	44.6	60.7	29.6	44.9	41.5	5.6
		11–14	28.7	27.1	21.8	22.4	40.2	40.8	46.1	64.5	52.5	43.2	35.1	29.5	21.9	5.1
		Total	23.1	26.2	23.0	27.7	48.3	34.7	56.5	61.0	46.0	53.8	30.0	38.2	34.0	7.0
	Females	5–6	31.6	29.6	18.0	20.9	71.1	23.0	73.3	58.8	27.1	47.2	6.3	38.8	55.5	44.5
		7–10	25.0	29.5	30.0	15.6	49.8	33.1	73.5	64.0	42.6	48.1	6.9	32.8	52.7	34.8
		11–14	53.0	22.1	18.3	6.6	44.7	40.5	41.8	75.0	43.9	27.8	13.2	22.1	28.0	23.5
		Total	37.7	26.5	23.0	12.9	51.6	34.3	60.5	67.6	40.3	39.6	9.4	29.5	43.1	32.0

1 The method of determining the mean activity rating for each child is described in Appendix B. Children who had at least four days of sickness or injury in the last seven days were excluded from the analysis (n=103).

2 Mean activity rating less than 2.6.

3 Mean activity rating between 2.6 and 3.03.

4 Mean activity rating between 3.03 and 3.42.

5 Mean activity rating greater than 3.42.

6 In the last seven days.

Table D3: Physical activity time profile

			PE class		Morning break		Lunch break		After school		Evenings		Weekends	
			Didn't do %	High activity[1] %	Sat down %	Very active[2] %	Sat down %	Very active[2] %	No activity %	Active[3] %	No activity %	Active[4] %	No activity %	Active[5] %
New Zealand children (5–14 years)			17.5	64.6	7.0	69.0	5.4	78.5	19.7	39.3	65.3	16.5	12.5	52.2
	Males	5–6	21. 0	63.1	3.1	92.5	0.6	96.2	17.9	30.1	58.4	19.8	8.7	48.9
		7–10	21.8	60.6	2.9	86.3	1.3	93.0	16.4	33.0	62.9	18.4	8.0	54.9
		11–14	8.9	76.5	7.5	57.4	5.3	71.9	20.8	40.5	64.7	17.3	14.3	50.4
		Total	16.5	67.4	4.8	76.0	2.7	85.2	18.4	35.4	62.7	18.3	10.6	52.0
	Females	5–6	29.2	52.2	3.4	86.9	0.5	90.7	14.4	44.1	68.0	14.4	8.8	59.5
		7–10	20.9	58.5	4.4	76.8	3.3	86.6	15.4	46.0	64.8	15.8	8.9	58.2
		11–14	11.2	69.3	17.4	33.6	16.9	46.5	30.1	40.8	71.3	13.8	22.8	43.2
		Total	18.6	61.6	9.4	61.6	8.2	71.5	21.1	43.5	68.0	14.7	14.4	52.4
NZDep01	Males	I	18.4	68.4	3.8	79.1	2.1	82.5	11.0	41.2	66.1	16.2	10.4	62.0
		II	17.2	64.1	4.6	76.9	0.8	89.0	14.2	44.3	58.0	26.0	6.5	58.3
		III	14.5	71.5	4.7	70.9	1.5	85.0	18.6	32.1	64.0	19.5	11.2	49.9
		IV	12.1	72.0	5.5	80.5	3.8	87.2	20.2	38.9	63.2	12.9	7.5	44.3
		V	16.3	65.2	7.0	73.9	5.3	84.0	28.4	30.8	60.5	19.7	16.8	51.7
	Females	I	13.9	71.7	9.3	54.1	10.4	66.1	14.8	52.8	69.5	16.4	11.4	56.7
		II	16.2	61.8	13.1	63.3	9.4	73.8	16.7	43.7	75.1	9.7	14.1	55.0
		III	15.4	59.4	6.0	63.3	5.8	76.1	17.2	49.9	67.2	17.5	15.4	55.6
		IV	21.2	60.0	10.6	60.7	11.1	66.0	27.6	44.9	71.9	10.3	16.9	51.9
		V	17.8	58.9	10.8	64.9	7.2	74.0	28.7	34.9	64.8	17.9	13.5	48.7
School type	Males	Urban	15.7	68.6	4.5	75.1	2.6	84.4	19.6	36.5	63.2	17.6	11.5	51.5
		Rural	20.3	62.1	6.0	80,2	3.5	89.2	13.4	30.3	60.5	21.2	6.6	54.1
	Females	Urban	18.0	61.9	9.6	61.5	8.7	70.0	22.2	44.1	69.1	13.2	14.2	51.0
		Rural	20.8	60.1	8.7	61.8	6.2	77.5	16.5	41.0	63.6	20.9	15.1	58.1
Māori	Males	5–6	23.4	59.5	0.8	95.3	0.8	95.9	14.5	21.2	48.9	20.7	8.9	43.5
		7–10	23.3	63.7	1.4	86.6	1.6	90.7	13.4	33.7	61.2	16.0	8.3	50.4
		11–14	7.7	76.4	5.2	62.4	2.7	71.9	31.8	37.8	65.8	12.9	19.5	52.3
		Total	17.4	67.6	2.7	79.4	1.8	84.7	20.5	32.6	60.3	15.8	12.7	49.6
	Females	5–6	26.0	49.9	3.2	88.0	1.6	89.6	15.2	31.2	59.8	16.0	9.0	51.4
		7–10	20.9	53.1	5.0	79.2	2.9	87.7	15.9	39.3	63.7	17.3	8.5	52.4
		11–14	11.2	68.0	14.7	43.9	12.2	53.4	29.4	41.8	72.2	12.4	27.9	43.4
		Total	18.2	58.2	8.3	67.4	6.2	74.9	21.0	38.6	66.2	15.1	16.0	48.7
Pacific	Males	5–6	12.3	67.9	8.1	83.7	4.7	92.4	30.1	27.3	53.4	26.0	13.3	56.9
		7–10	13. 8	68.6	6.0	80.5	0.5	92.0	26.0	32.9	63.5	19.6	10.9	52.6
		11–14	4.2	82.0	7.6	60.2	1.7	84.1	26.0	44.6	74.1	13.7	15.2	55.3
		Total	9.9	73.5	7.0	73.6	1.8	89.1	26.8	36.1	65.4	18.7	13.0	54.5
	Females	5–6	15.1	57.3	12.5	76.9	1.4	87.4	30.1	40.4	68.2	14.2	15.2	58.5
		7–10	11.6	62.5	7.4	75.1	5.8	88.3	33.1	29.3	63.3	18.7	17.1	57.1
		11–14	9.2	73.6	14.3	46.1	14.2	63.0	32.4	38.1	70.2	14.6	19.6	45.9
		Total	11.4	65.5	11.0	64.7	8.0	78.7	32.2	34.8	66.9	16.3	17.7	53.1
NZEO	Males	5–6	21.3	64.0	3.3	92.6	0.0	96.8	17.6	34.1	63.0	18.7	8.0	49.9
		7–10	22.3	58.5	3.0	86.9	1.3	93.9	16.2	32.7	63.4	19.1	7.5	56.9
		11–14	9.9	75.9	8.3	55.4	6.5	70.5	16.7	40.8	63.2	19.1	12.4	49.2
		Total	17.1	66.6	5.2	75.2	3.2	84.9	16.7	36.3	63.3	19.0	9.6	52.4
	Females	5–6	32.5	52.4	2.4	87.8	0.0	91.5	12.0	49.4	71.1	13.8	7.8	62.8
		7–10	22.0	59.9	3.9	76.2	3.1	86.1	13.1	50.4	65.3	14.9	8.1	60.3
		11–14	11.4	69.2	18.6	28.9	18.8	42.5	30.1	40.8	71.2	14.1	21.5	42.8
		Total	19.6	62.3	9.6	59.2	8.9	69.4	19.8	46.3	68.8	14.4	13.5	53.6

1 Those children who were very active for most of or all the time during the PE class.

2 Those children who 'ran around' or 'ran and played hard'.

3 Those children who participated in activities after school and before having a meal, which involved the child being very active for four or more days.

4 Those children who participated in activities in the evening, after having a meal, which involved the child being very active for four or more evenings.

5 Those children who participated in activities in the weekend, for four or more times, which involved the child being very active.

E. Health

Introduction

These findings are based on questionnaire data (dental and health questions), anthropometric data, and blood and urine measurements.

Key points

Dental

- About 93 percent of New Zealand children have attended a school dental clinic or dentist.
- About 88 percent of New Zealand children brushed their teeth at least once the previous day (males 85.7 percent; females 89.6 percent).
- Fewer Māori children reported brushing their teeth at least once the previous day than Pacific and NZEO children.

Body size

- For the majority of New Zealand children (68.9 percent) their weight in relation to height fell within an acceptable range. Using international cut-offs, 21.3 percent were overweight and 9.8 percent obese.
- Pacific children had a higher mean body mass index (BMI) than NZEO children in all age and sex groups, and Māori children 7–10 years and 11–14 years.
- Using international cut-offs, overweight and obesity levels were highest for Pacific males (33.9 percent; 26.1 percent) and females (32.9 percent; 31 percent), followed by Māori males (19.6 percent; 15.7 percent) and females (30.6 percent; 16.7 percent), and NZEO males (18.4 percent; 4.7 percent) and females (18.8 percent; 6 percent).

Iron status

- Prevalence of iron deficiency (1.6 percent) was low in New Zealand children.
- Among females 11–14 years, prevalence of iron deficiency was higher for Māori (11.2 percent) and Pacific (9.6 percent) females than NZEO females (3.2 percent).

Serum zinc

- Prevalence of low serum zinc concentration was 16 percent in New Zealand children (males 21 percent; females 10 percent).
- The highest prevalence of low serum zinc concentration was in children 5–6 years (males 33 percent; females 16 percent).

Serum cholesterol

- For New Zealand children mean serum total cholesterol was 4.38mmol/L and HDL-cholesterol was 1.43mmol/L.
- NZEO and Māori children had higher mean serum total cholesterol levels than Pacific children.

Urinary iodine

- While the International Council for Control of Iodine Deficiency Disorders (ICCIDD) recommends no more than 20 percent of children should have a urinary iodine concentration less than 5 µg/dL, 28 percent of New Zealand children were below this level (males 25 percent; females 31 percent).
- NZEO females (33 percent) had the highest proportion with low iodine levels compared with Māori (29 percent) and Pacific females (24 percent).

Menstruation

- Māori and Pacific females experienced the onset of menstruation at an earlier age than NZEO females.

E1 Dental health

Table E1

Dental

About 93 percent of New Zealand children attended a school dental clinic or dentist. Children 11–14 years were least likely to have attended (males 87.5 percent; females 89.3 percent) and children 7–10 years the most likely (97.5 percent; 96.8 percent). The proportion of children who attended a dental clinic or dentist was highest in NZDep01-I (males 95.6 percent; females 96 percent) and lowest in NZDep01-V (89 percent; 91.1 percent). The group reporting the lowest attendance at a dental clinic or dentist was Pacific males 11–14 years (76.4 percent).

About 88 percent of New Zealand children brushed their teeth at least once the previous day (males 85.7 percent; females 89.6 percent).

The proportion of children who brushed their teeth at least once the previous day was highest in NZDep01-I (males 91.5 percent; females 94.5 percent) and this proportion progressively decreased to children in NZDep01-V (76.7 percent; 82.9 percent).

Fewer Māori children brushed their teeth at least once the previous day (males 71.8 percent; females 77.9 percent) than Pacific (86.9 percent; 89.9 percent) and NZEO children (90.4 percent; 93.7 percent) (Figure E-1).

About 64 percent of New Zealand children had had a tooth filled or dressed (males 62.6 percent; females 65.9 percent). Pacific (males 60.8 percent; females 57.4 percent) and NZEO children (59.2 percent; 63.8 percent) were less likely to have had a tooth filled or dressed than Māori children (73 percent; 75 percent) (Figure E-2).

Figure E-1: Brushed teeth on previous day

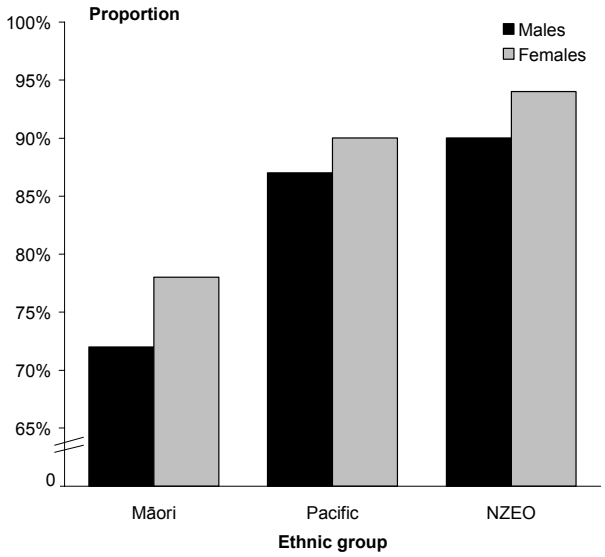
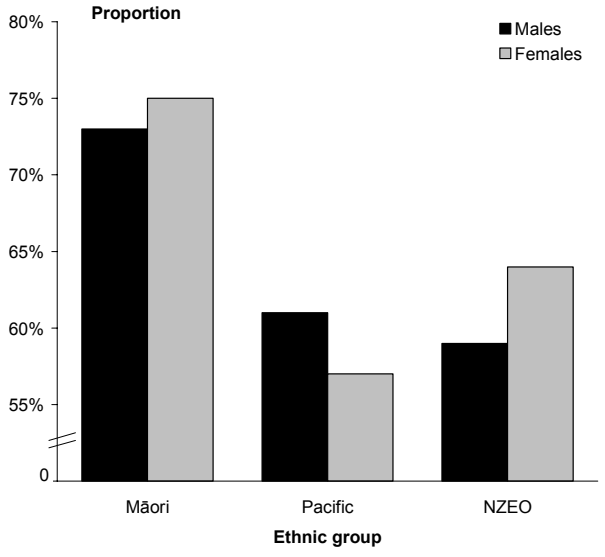


Figure E-2: Had tooth filled or dressed



E2 Body size

Table E2

Anthropometric measurements (height, weight, circumferences and skinfolds) were included as indicators of health status and to provide a description of the size and shape of New Zealand children. The earlier onset of puberty in Māori and Pacific females compared with NZEO females (Section E5) will affect these data. The Cole et al (2000) reference cut-off values for determining the prevalence of obesity and overweight have been used as recommended by CNSTAC on the basis of independent expert advice. We note that Cole et al's recommendations were designed for population groups, based on large international datasets, and provide internationally comparable data. The limitations of using these internationally recognised cut-off values include: lack of evidence that they are associated with increased metabolic risk; inappropriateness for individual children; and possible inappropriateness for the different ethnic groups in New Zealand (Rush et al, in press).

Height

Similar increases in height were seen for both males and females from 5–6 years (males 117.8 cm; females 118.7 cm) to 11–14 years (158.9 cm; 157.8 cm). Pacific females were taller than NZEO females in all age groups, and taller than Māori females 7–10 years. Māori females were taller than NZEO females 7–10 years and 11–14 years. Māori and Pacific males 7–10 years (136.3 cm, 138 cm) were taller than NZEO males (134.5 cm).

Weight

NZEO females were lighter than Pacific females in all age groups and lighter than Māori females 7–10 years and 11–14 years. Māori females 7–10 years and 11–14 years were lighter than Pacific females. NZEO males were lighter than both Pacific and Māori males in all age groups. Pacific males 7–10 years and 11–14 years were heavier than Māori males.

Body mass index (BMI)

Consistent with the height and weight data, Pacific children had a higher BMI than NZEO children in all age and sex groups. Pacific children 7–10 years and 11–14 years had a higher BMI than Māori children.

Figure E-3: Overweight using international cut-off values

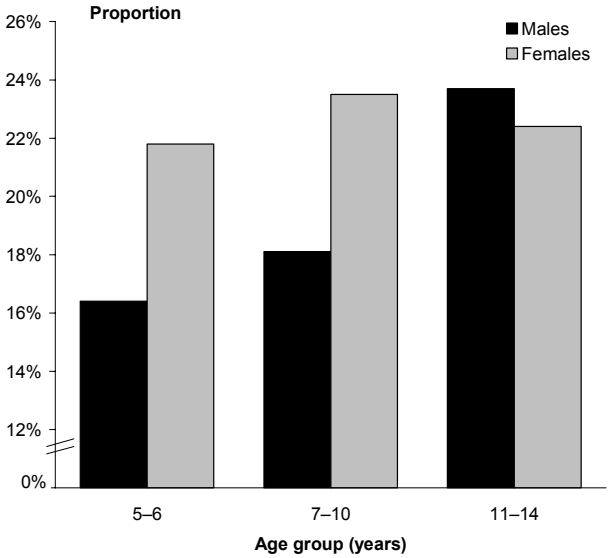
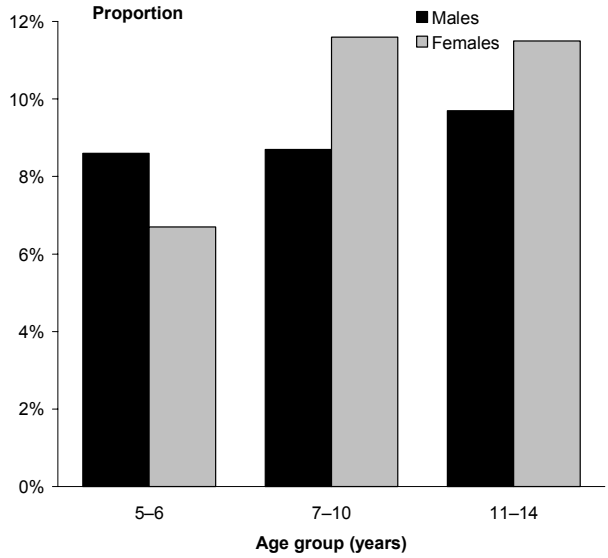


Figure E-4: Obesity using international cut-off values



About 69 percent of New Zealand children were not overweight or obese; while 21.3 percent were classified as overweight and 9.8 percent obese. The proportion of males who were overweight increased from 16.4 percent (5–6 years) to 23.7 percent (11–14 years) (Figure E-3).

While obesity levels for males were similar in the three age groups (8.6 percent; 8.7 percent; 9.6 percent), the levels for females increased from 6.7 percent (5–6 years) to 11.6 percent (7–10 years) and 11.5 percent (11–14 years) (Figure E-4).

Using the Cole et al (2000) cut-offs, overweight and obesity levels were highest for Pacific males (33.9 percent; 26.1 percent) and females (32.9 percent; 31 percent), followed by Māori males (19.6 percent; 15.7 percent) and females (30.6 percent; 16.7 percent), and then NZEO males (18.4 percent; 4.7 percent) and females (18.8 percent; 6 percent).

Girths

Consistent with the other anthropometric indices NZEO children had smaller upper arm and waist girths than Māori and Pacific children in all age groups. Māori children had smaller girths than Pacific children in all age groups.

Waist circumference was highest in Pacific children (males 70.4 cm; females 72.4 cm), followed by Māori (66.7 cm; 69 cm) and NZEO children (64.3 cm; 65 cm).

Skinfolds

Females had larger skinfolds (both triceps and subscapular) than males in all age groups.

Pacific males had larger subscapular skinfolds in all age groups than NZEO males. This was also true for triceps skinfolds in children 7–10 years and 11–14 years. Māori males 7–10 years and 11–14 years had smaller subscapular and triceps skinfolds than Pacific males. NZEO males 7–10 years had smaller subscapular and triceps skinfolds than Māori males. Pacific females 7–10 years and 11–14 years had larger subscapular and triceps skinfolds than Māori and NZEO females.

E3 Iron status

Table E3

New Zealand children

The prevalence of iron deficiency was low in New Zealand children (1.6 percent). Anaemia (low haemoglobin) was found in 5.6 percent of New Zealand children, but only 0.3 percent of New Zealand children had iron deficiency anaemia.

The prevalence of iron deficiency was the same for males and females 5–6 years and 7–10 years, but higher in females 11–14 years (5.5 percent) than males (0.7 percent) (Figure E-5).

Iron deficiency was higher in females 11–14 years than females in the two younger groups.

Ethnic

The prevalence of iron deficiency was higher in Pacific (males 2.3 percent; females 4.8 percent) and Māori children (1.8 percent; 4.7 percent) than in NZEO children (0 percent; 1.6 percent). The highest prevalence of iron deficiency occurred in Māori and Pacific females 11–14 years (11.2 percent; 9.6 percent) compared with NZEO females (3.2 percent) (Figure E-6).

Figure E-5: Prevalence of iron deficiency (age)

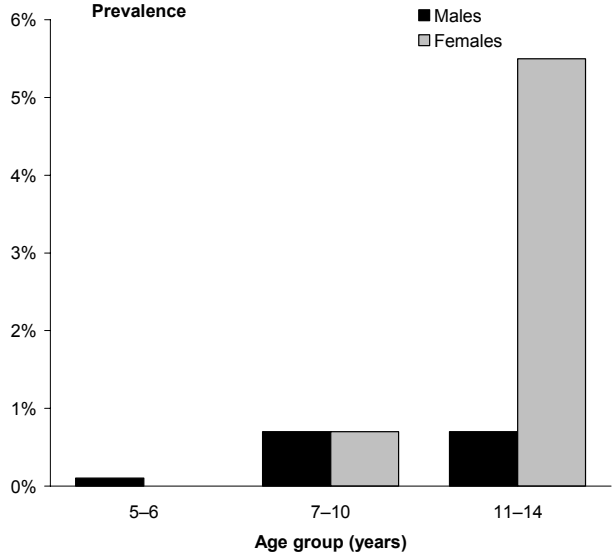
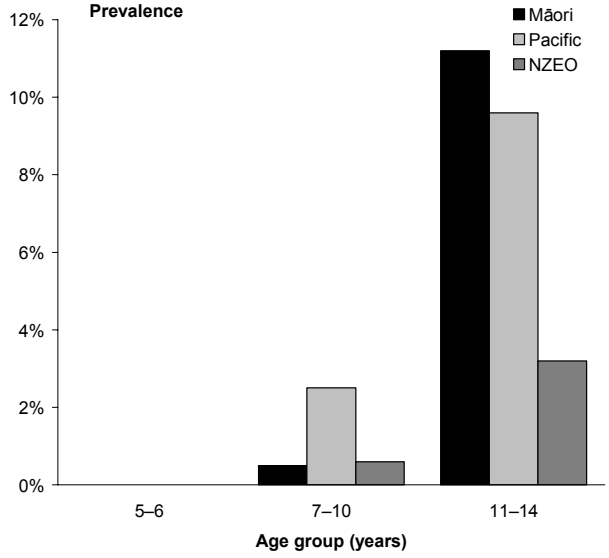


Figure E-6: Prevalence of iron deficiency (females)



E4 Serum zinc, serum cholesterol and urinary iodine

Table E4

Serum zinc

The average serum zinc concentration for New Zealand children was 11.9 µmol/L. Females had higher average serum zinc concentrations than males (12.1 µmol/L; 11.7 µmol/L). The average serum zinc levels increased with age, ranging from 10.8 µmol/L in males 5–6 years to 12.7 µmol/L in females 11–14 years.

The proportion of New Zealand children with low serum zinc concentrations was 16 percent. Overall, 21 percent of males compared with 10 percent of females had low serum zinc concentrations. This sex difference was similar across ethnic groups, except for Pacific females whose prevalence of low serum zinc levels was higher (16 percent) (Figure E-7). A higher proportion of younger children than older children, had low serum zinc concentrations. Close to one third of males 5–6 years had low serum zinc levels compared with 8 percent of females 11–14 years. Males in NZDep01-I were more likely to have low serum zinc levels compared with those in NZDep01-III to V; whereas the proportion of females with low serum zinc concentrations was similar across NZDep01 quintiles.

Serum cholesterol

New Zealand children had a mean serum total cholesterol of 4.38 mmol/L. There were no differences between males and females, or between age groups. NZEO (males 4.43 mmol/L; females 4.42 mmol/L) and Māori children (4.33 mmol/L; 4.35 mmol/L) had higher total cholesterol levels than Pacific children (4.16 mmol/L; 4.17 mmol/L) (Figure E-8).

The mean serum HDL-cholesterol of New Zealand children was 1.43 mmol/L. There were no differences between males and females, or between age groups. NZEO children (males 1.48 mmol/L; females 1.46 mmol/L) had higher HDL-cholesterol levels than Māori (1.37 mmol/L; 1.32 mmol/L) and Pacific children (1.29 mmol/L; 1.25 mmol/L).

The mean ratio of total cholesterol to HDL-cholesterol was 3.21. This mean ratio was similar for males and females, and did not vary by age or ethnic group.

Figure E-7: Low serum zinc

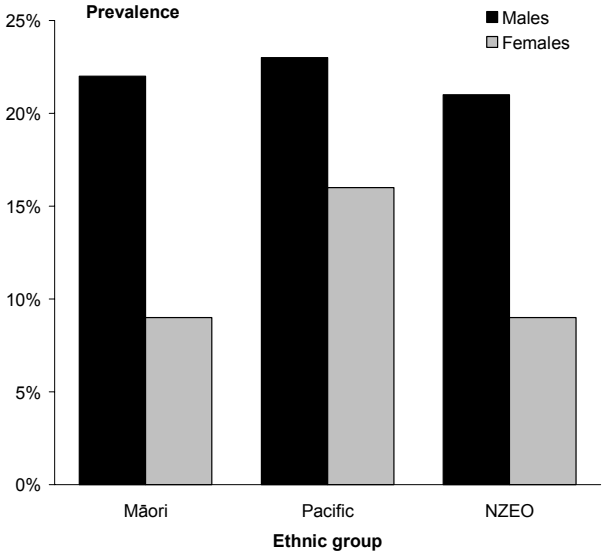
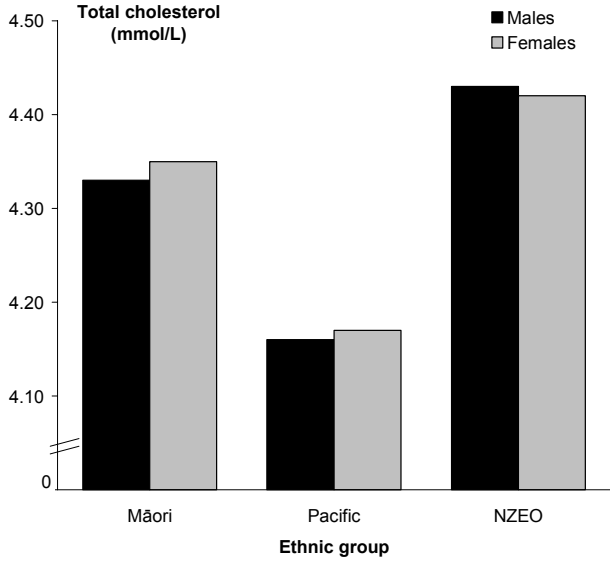


Figure E-8: Total cholesterol



Urinary iodine

Urinary iodine concentration is widely used to assess iodine status and data are presented by age (Figure E-9) and ethnic group (Figure E-10). Since urinary iodine concentrations in a population are skewed, the median urinary iodine concentration of the group is used to assess iodine status. However, statistical tests to determine group differences on these skewed distributions have been carried out between geometric means.

New Zealand children had a median urinary iodine concentration of 6.6 µg/dL (males 6.8 µg/dL; females 6.2 µg/dL). According to the ICCIDD the overall median for New Zealand children is indicative of mild iodine deficiency. Furthermore the ICCIDD suggests that no more than 20 percent of children should have a urinary iodine concentration less than 5 µg/dL, whereas 28 percent of New Zealand children had a urinary iodine concentration below this level.

Urinary iodine concentration did not differ across the three age groups. Females had a lower mean urinary iodine concentration than males, and 31 percent of females had a urinary iodine concentration less than 5 µg/dL; while 25 percent of males had a value below this level.

Māori children had a lower mean urinary iodine concentration than NZEO or Pacific children.

Children in NZDep01-I had a lower mean urinary iodine concentration than children in NZDep01-IV.

Figure E-9: Median urinary iodine concentration (age)

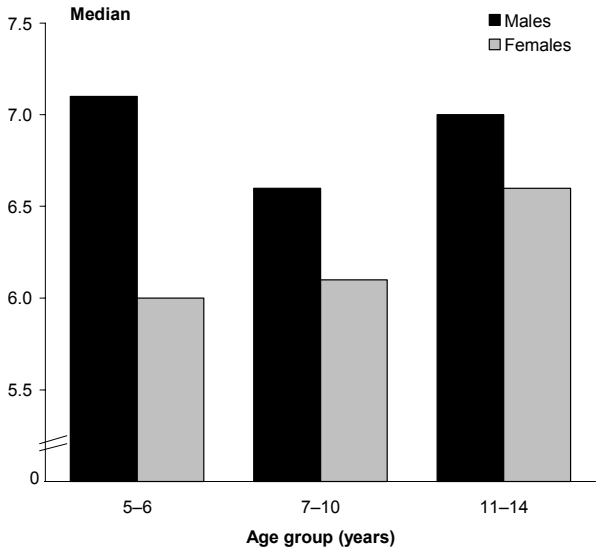
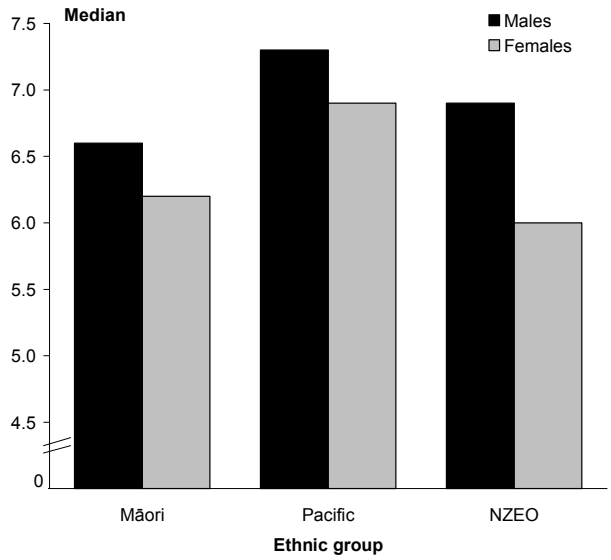


Figure E-10: Median urinary iodine concentration (ethnic)



E5 Menstruation

The onset of puberty can affect a number of health issues including body fat and iron status. Māori and Pacific females experienced the onset of menstruation at an earlier age than NZEO females. These differences are summarised below.

Table E5.1: Age at onset of menstruation

	Menstruation[1]
New Zealand	
8–10 years	1
11 years	13
12 years	42
13 years	68
14 years	79
11–14 years	**50**
Māori	
8–10 years	3
11 years	20
12 years	53
13 years	79
14 years	100
11–14 years	**63**
Pacific	
8–10 years	1
11 years	29
12 years	49
13 years	81
14 years	92
11–14 years	**61**
NZEO	
8–10 years	0
11 years	8
12 years	38
13 years	62
14 years	72
11–14 years	**44**

1 The percent of females who reported they had reached menarche.

Table E1: Dental

			Visits clinic or dentist[1]	Occasions teeth brushed yesterday		Tooth filled or dressed		Pain in teeth or mouth[2]		Tooth removed due to decay[3]		Hospital dental treatment[4]	
				None	Once or more	Yes	No	Yes	No	Yes	No	Yes	No
			%	%	%	%	%	%	%	%	%	%	%
New Zealand children (5–14 years)			92.9	11.7	87.6	64.2	35.3	16.8	82.8	14.9	84.5	5.2	94.2
	Males	5–6	93.2	15.4	83.6	41.8	57.8	12.8	86.9	15.0	84.7	6.1	93.8
		7–10	97.5	14.9	84.5	63.2	35.9	17.8	81.8	17.6	82.2	6.1	93.4
		11–14	87.5	12.0	88.0	72.3	27.4	16.4	83.4	13.8	85.3	4.3	95.1
		Total	92.7	13.8	85.7	62.6	36.8	16.2	83.4	15.6	83.9	5.4	94.1
	Females	5–6	93.6	9.7	89.3	43.4	55.9	11.0	87.1	9.5	90.5	3.4	96.6
		7–10	96.8	11.5	86.9	65.9	33.4	20.9	78.5	15.8	83.3	5.3	94.1
		11–14	89.3	7.3	92.5	76.7	23.2	16.8	83.2	14.7	84.6	5.6	93.5
		Total	93.2	9.4	89.6	65.9	33.6	17.3	82.0	14.1	85.2	5.1	94.3
NZDep01	Males	I	95.6	8.5	91.5	57.1	42.1	13.6	86.4	13.6	85.9	5.4	94.1
		II	95.6	9.7	90.1	63.3	36.6	12.6	86.6	12.1	87.8	3.3	96.2
		III	90.7	12.0	87.9	64.5	35.4	12.3	87.6	17.2	82.5	3.3	95.9
		IV	90.7	14.0	85.2	63.2	36.6	21.8	77.6	15.2	84.3	5.1	94.8
		V	89.0	21.9	76.7	65.8	33.3	18.7	80.8	19.2	80.4	8.8	90.4
	Females	I	96.0	4.4	94.5	66.0	33.9	13.6	85.2	12.4	84.8	4.7	93.6
		II	94.0	5.0	93.4	60.7	39.0	17.3	82.7	14.0	86.0	7.9	92.1
		III	94.3	10.0	88.8	59.5	40.5	12.8	84.0	12.3	87.7	5.1	94.9
		IV	90.7	10.4	89.2	65.6	33.3	18.2	81.8	12.2	87.4	4.9	95.1
		V	91.1	16.2	82.9	66.4	32.7	18.0	81.1	18.5	81.2	5.8	93.2
School type	Males	Urban	91.5	13.1	86.3	61.2	38.2	15.8	83.8	15.5	84.1	4.7	94.7
		Rural	98.1	16.9	83.1	69.1	30.6	18.1	81.7	16.1	83.2	8.4	91.6
	Females	Urban	93.4	9.5	89.3	65.4	34.1	16.3	82.9	14.1	85.5	4.9	94.6
		Rural	92.5	9.0	91.0	68.0	31.6	21.7	78.3	14.2	84.1	5.8	93.2
Māori	Males	5–6	93.6	27.9	72.1	48.6	50.1	16.7	82.1	16.3	82.5	6.9	93.1
		7–10	96.0	27.1	72.2	76.1	23.2	22.0	77.7	19.6	80.1	5.8	93.6
		11–14	83.1	28.8	71.2	83.2	16.4	19.5	80.1	14.7	82.7	5.9	93.7
		Total	90.7	27.9	71.8	73.0	26.3	20.0	79.5	17.0	81.6	6.1	93.5
	Females	5–6	95.4	21.8	76.6	49.6	48.3	16.6	79.0	11.4	88.6	6.3	93.7
		7–10	96.5	24.7	73.6	78.3	21.0	23.4	76.2	21.5	77.7	5.9	93.3
		11–14	84.7	16.4	83.2	85.0	15.0	19.9	80.1	13.7	85.6	4.9	95.1
		Total	91.7	20.9	77.9	75.0	24.3	20.6	78.3	16.4	83.0	5.6	94.1
Pacific	Males	5–6	91.2	12.5	85.0	37.9	60.3	17.4	81.8	14.7	85.3	3.1	96.2
		7–10	95.7	14.2	83.7	62.5	35.4	18.2	80.4	23.2	75.3	5.3	93.9
		11–14	76.4	8.0	91.5	71.6	26.2	17.8	80.9	17.8	82.2	6.2	93.8
		Total	87.5	11.5	86.9	60.8	37.1	17.9	80.8	19.4	80.0	5.2	94.3
	Females	5–6	91.0	11.6	88.4	46.5	52.1	15.0	85.0	17.3	82.7	5.6	94.4
		7–10	94.7	10.5	87.5	57.6	39.4	18.6	80.0	25.6	74.5	6.3	93.7
		11–14	80.1	5.7	93.2	63.3	35.4	12.6	86.5	19.8	79.6	1.5	98.5
		Total	88.4	8.9	89.9	57.4	40.6	15.6	83.5	21.7	78.1	4.3	95.7
NZEO	Males	5–6	93.3	11.0	87.9	39.6	60.4	10.6	89.4	14.6	85.5	6.2	93.8
		7–10	98.3	10.6	88.9	58.7	40.4	16.2	83.4	16.2	83.9	6.4	93.2
		11–14	90.1	6.9	93.1	68.8	31.2	15.2	84.8	13.1	86.5	3.6	95.7
		Total	94.0	9.2	90.4	59.2	40.4	14.7	85.1	14.6	85.2	5.2	94.3
	Females	5–6	93.3	4.7	94.3	40.6	59.4	8.3	90.5	7.7	92.3	2.1	97.9
		7–10	97.2	6.9	91.6	62.6	36.9	20.3	79.1	12.5	86.3	4.9	94.4
		11–14	91.9	4.4	95.6	75.5	24.5	16.2	83.8	14.4	84.9	6.4	92.5
		Total	94.3	5.5	93.7	63.8	36.0	16.4	83.2	12.4	86.8	5.0	94.3

1 Do you go to the school dental clinic or a dentist?

2 Has pain in your teeth or mouth ever kept you awake at night?

3 Have you ever had a tooth taken out early because of a hole (decay) or 'gum boil' (abscess) or infection?

4 Have you ever been put to sleep in hospital to have dental treatment?

Table E2: Body size

			Height (cm)		Weight (kg)		BMI (kg/m^2)		Over-weight[1]	Obese[1]	Waist (cm)		Upper arm girth (cm)		Triceps skinfold (mm)		Subscapular skinfold[2] (mm)	
			Mean	SEM	Mean	SEM	Mean	SEM	%	%	Mean	SEM	Mean	SEM	Mean	SEM	Mean	SEM
New Zealand children (5–14 years)			141.3	1.4	40.0	1.2	19.2	0.2	21.3	9.8	65.9	0.7	22.4	0.3	13.3	0.2	10.1	0.3
	Males	5–6	117.8	0.5	23.1	0.3	16.7	0.2	16.4	8.6	55.3	0.3	18.2	0.2	10.1	0.3	6.5	0.3
		7–10	135.2	0.4	33.6	0.5	18.1	0.2	18.1	8.7	62.0	0.4	20.9	0.2	11.7	0.2	8.0	0.2
		11–14	158.9	1.8	53.8	1.6	21.0	0.3	23.7	9.7	73.6	0.8	25.4	0.3	13.4	0.3	10.9	0.5
		Total	141.4	1.9	39.6	1.6	19.0	0.2	20.0	9.0	65.4	0.8	22.2	0.3	12.1	0.2	8.9	0.3
	Females	5–6	118.7	0.5	23.4	0.4	16.5	0.2	21.8	6.7	55.6	0.6	18.8	0.2	11.4	0.3	7.5	0.3
		7–10	135.0	0.5	34.3	0.5	18.5	0.2	23.5	11.6	63.3	0.5	21.5	0.2	14.1	0.2	11.3	0.9
		11–14	157.8	0.5	54.6	1.0	21.7	0.3	22.4	11.5	75.0	0.8	25.6	0.3	16.7	0.4	13.0	0.5
		Total	141.3	1.4	40.4	1.3	19.4	0.3	22.8	10.7	66.5	0.8	22.6	0.3	14.7	0.3	11.3	0.5
NZDep01	Males	I	141.5	3.1	37.8	2.3	18.2	0.4	14.2	5.1	64.0	1.4	21.6	0.5	11.3	0.4	7.8	0.4
		II	141.0	2.5	37.3	1.8	18.1	0.3	16.4	4.3	63.5	1.0	21.4	0.4	11.6	0.4	7.4	0.4
		III	141.5	2.7	39.4	2.4	18.9	0.4	21.7	6.7	65.0	1.4	22.2	0.6	12.2	0.4	8.7	0.4
		IV	141.4	2.4	39.5	1.9	18.9	0.4	20.7	9.5	65.6	1.3	22.2	0.4	12.2	0.5	9.1	0.5
		V	142.0	2.5	42.7	2.2	20.2	0.4	24.0	16.1	67.7	1.2	23.0	0.5	12.9	0.3	10.6	0.5
	Females	I	140.1	2.4	38.3	2.0	18.7	0.4	22.9	4.3	65.1	1.3	22.1	0.5	14.8	0.4	9.7	0.5
		II	141.9	2.4	38.4	1.8	18.4	0.3	19.4	3.6	64.6	1.2	21.9	0.4	14.3	0.5	9.4	0.5
		III	139.6	2.6	38.3	2.0	19.0	0.4	24.2	8.5	65.1	1.4	22.5	0.5	15.2	0.8	11.3	0.8
		IV	140.6	2.4	40.4	2.6	19.5	0.6	23.6	11.5	65.9	1.4	22.4	0.5	14.1	0.5	13.0	1.9
		V	142.1	1.9	43.3	2.1	20.5	0.5	27.2	19.5	69.5	1.3	23.5	0.5	14.9	0.4	12.8	0.6
School type	Males	Urban	141.7	2.3	39.7	1.8	19.0	0.3	19.9	9.5	65.6	1.0	22.2	0.4	12.2	0.2	8.9	0.3
		Rural	140.4	2.7	38.9	2.3	18.9	0.4	20.6	7.2	64.4	1.3	21.9	0.5	11.6	0.4	8.6	0.5
	Females	Urban	141.2	1.6	40.3	1.5	19.4	0.3	24.4	10.5	66.7	0.9	22.6	0.3	14.6	0.3	11.3	0.5
		Rural	141.5	2.5	41.0	2.6	19.5	0.6	16.1	11.4	66.0	1.7	22.8	0.6	14.8	0.7	11.1	1.0
Māori	Males	5–6	117.2	0.8	23.9	0.4	17.4	0.2	16.8	18.3	56.0	0.5	18.6	0.2	10.1	0.3	7.2	0.3
		7–10	136.3	0.5	36.5	0.7	19.2	0.3	19.2	16.1	64.5	0.6	21.8	0.2	12.7	0.4	10.1	0.4
		11–14	160.7	1.3	57.0	1.8	21.7	0.4	21.5	14.0	75.1	1.1	26.0	0.3	13.1	0.6	12.3	0.8
		Total	141.6	1.8	41.5	1.7	19.8	0.3	19.6	15.7	66.7	1.0	22.7	0.4	12.3	0.3	10.3	0.5
	Females	5–6	118.5	1.0	25.0	0.8	17.6	0.3	33.2	14.7	57.4	0.8	19.4	0.3	11.7	0.4	9.1	0.5
		7–10	136.3	0.5	36.8	0.6	19.5	0.2	30.3	16.3	66.0	0.6	22.3	0.2	14.1	0.3	17.2	3.7
		11–14	159.2	0.7	58.8	1.5	23.0	0.5	29.5	18.2	77.9	1.1	26.4	0.4	16.5	0.6	15.4	0.8
		Total	142.0	1.7	43.1	1.7	20.5	0.3	30.6	16.7	69.0	1.0	23.3	0.4	14.6	0.3	14.9	1.5
Pacific	Males	5–6	118.9	0.7	25.8	0.6	18.1	0.3	31.0	21.3	57.8	0.7	19.5	0.3	9.9	0.4	7.8	0.5
		7–10	138.0	0.7	40.1	0.8	20.7	0.3	35.8	26.0	67.7	0.7	23.5	0.2	13.7	0.3	11.4	0.3
		11–14	161.2	1.6	63.9	2.0	24.1	0.4	33.5	28.8	80.4	1.0	28.2	0.4	15.1	0.4	14.9	0.5
		Total	143.2	2.6	46.1	2.7	21.5	0.4	33.9	26.1	70.4	1.4	24.4	0.5	13.4	0.3	12.0	0.5
	Females	5–6	121.2	1.0	26.3	0.6	17.8	0.3	33.0	23.4	59.8	0.9	20.3	0.4	12.2	0.4	9.6	0.4
		7–10	138.5	0.6	40.8	0.8	20.9	0.3	30.0	30.8	68.8	0.6	23.6	0.2	15.0	0.3	13.4	0.4
		11–14	159.8	1.1	66.2	2.1	25.7	0.5	36.1	35.0	83.0	1.0	28.8	0.4	19.4	0.6	18.7	0.6
		Total	143.3	2.1	47.5	2.7	22.1	0.5	32.9	31.0	72.4	1.4	24.9	0.5	16.1	0.5	14.6	0.6
NZEO	Males	5–6	117.9	0.6	22.5	0.4	16.2	0.3	14.3	3.2	54.7	0.4	17.9	0.2	10.1	0.4	6.1	0.3
		7–10	134.5	0.6	31.8	0.5	17.4	0.2	15.5	4.0	60.4	0.4	20.2	0.2	11.1	0.3	6.9	0.2
		11–14	158.0	2.4	51.6	1.9	20.4	0.2	23 .2	6.1	72.4	0.8	24.9	0.3	13.3	0.4	10.0	0.4
		Total	141.1	2.4	38.1	1.9	18.4	0.3	18.4	4.7	64.3	1.0	21.7	0.4	11.8	0.2	8.0	0.3
	Females	5–6	118.4	0.7	22.5	0.4	16.0	0.2	15.9	1.3	54.4	0.8	18.4	0.2	11.3	0.4	6.7	0.2
		7–10	134.2	0.6	32.6	0.6	17.9	0.2	20.4	7.7	61.6	0.6	21.0	0.2	14.0	0.3	9.1	0.4
		11–14	157.1	0.7	51.9	1.0	20.8	0.3	18.4	6.5	73.0	0.9	24.9	0.3	16.4	0.5	11.5	0.5
		Total	140.8	1.7	38.6	1.4	18.7	0.3	18.8	6.0	65.0	0.9	22.1	0.3	14.5	0.3	9.6	0.3

1 BMI>cut off values defined by Cole et al (2002).

2 102 (3.28%) missing values imputed using best subset regression the resulting standard errors may be low.

Table E3: Blood measures of iron deficiency and anaemia

			Haemoglobin (g/L)			Ferritin (μg/L)			Red cell distribution width (%)			Transferrin saturation (%)			Prevalence of iron deficiency (%)[1]		
			Mean	SEM	% Low[2]	Mean[3]	SEM[4]	% Low[5]	Mean	SEM	% High[6]	Mean	SEM	% Low[7]	Without anaemia	With anaemia[8]	Total
New Zealand children (5–14 years)			130	0.6	5.6	29	1.1	4.2	12.5	0.04	2.1	26	0.4	9.7	1.3	0.3	1.6
	Males	5–6	124	0.9	12.8	26	1.1	3.9	12.7	0.10	8.1	24	0.9	10.0	0.1	0.0	0.1
		7–10	129	0.7	4.1	28	1.1	3.4	12.6	0.06	1.4	27	0.6	8.0	0.6	0.2	0.7
		11–14	136	1.1	6.5	31	1.2	1.8	12.6	0.07	1.6	27	0.7	6.9	0.6	0.1	0.7
		Total	131	1.0	6.6	29	1.1	2.8	12.6	0.05	2.7	27	0.5	7.9	0.5	0.1	0.6
	Females	5–6	125	0.8	5.2	26	1.1	3.8	12.4	0.07	0.4	25	1.2	8.6	0.0	0.0	0.0
		7–10	128	0.6	6.8	32	1.1	2.8	12.3	0.06	1.5	25	0.6	11.1	0.6	0.1	0.7
		11–14	132	0.8	2.2	26	1.1	9.0	12.4	0.09	2.3	27	1.2	13.2	4.3	1.2	5.5
		Total	129	0.6	4.6	28	1.1	5.5	12.4	0.05	1.6	26	0.6	11.5	2.0	0.5	2.5
NZDep01	Males	I	131	1.8	6.2	28	1.1	0.1	12.7	0.09	1.2	28	0.1	8.7	0.0	0.1	0.1
		II	130	1.9	12.5	31	1.1	0.8	12.5	0.10	1.7	28	1.1	5.8	0.8	0.0	0.8
		III	131	1.4	6.1	28	1.1	6.2	12.6	0.08	3.5	28	1.1	7.4	0.0	0.0	0.0
		IV	131	0.9	1.1	27	1.1	5.5	12.7	0.08	4.5	27	1.1	4.3	1.1	0.0	1.1
		V	131	1.0	6.2	32	1.1	1.6	12.7	0.07	2.0	24	0.7	10.8	0.7	0.3	1.0
	Females	I	130	1.5	7.1	27	1.1	4.5	12.1	0.07	0.0	26	1.5	11.9	0.0	0.0	0.0
		II	129	1.0	3.2	27	1.2	10.8	12.3	0.11	2.0	27	1.6	12.8	6.2	0.0	6.2
		III	130	0.8	1.0	31	1.2	2.8	12.4	0.11	2.3	27	1.5	10.4	0.5	0.1	0.6
		IV	129	1.2	5.5	27	1.1	1.6	12.4	0.10	1.2	26	0.7	9.1	1.3	0.0	1.3
		V	128	0.7	8.1	29	1.1	4.4	12.6	0.06	2.0	23	1.2	14.6	2.5	0.8	3.3
Māori	Males	5–6	125	1.0	4.3	27	1.2	4.6	12.9	0.15	15.0	22	1.2	15.8	0.0	0.0	0.0
		7–10	129	0.7	4.9	31	1.1	1.7	12.8	0.06	2.9	24	0.6	9.1	1.7	0.5	2.2
		11–14	134	1.2	7.2	30	1.2	3.9	13.0	0.10	6.5	26	1.2	16.6	2.4	0.0	2.4
		Total	130	0.8	5.7	30	1.1	3.1	12.9	0.07	6.8	24	0.6	13.4	1.6	0.2	1.8
	Females	5–6	125	1.1	7.8	30	1.1	0.0	12.5	0.13	1.3	23	1.8	14.8	0.0	0.0	0.0
		7–10	128	0.8	9.1	34	1.1	2.7	12.6	0.07	2.3	24	0.6	13.2	0.5	0.0	0.5
		11–14	131	1.3	6.2	23	1.3	16.0	12.6	0.12	5.8	21	1.0	23.2	7.3	4.0	11.2
		Total	128	0.8	7.7	28	1.1	7.4	12.6	0.06	3.5	23	0.6	17.5	3.1	1.6	4.7
Pacific	Males	5–6	124	1.1	11.6	31	1.1	2.9	12.7	0.08	4.0	25	1.0	8.4	1.0	0.0	1.0
		7–10	127	0.8	4.8	37	1.1	0.0	12.6	0.08	3.7	23	0.6	10.6	2.0	0.5	2.5
		11–14	134	1.1	13.6	41	1.1	3.4	12.8	0.08	2.2	23	0.6	14.1	1.6	1.1	2.7
		Total	129	0.7	9.5	37	1.1	1.9	12.7	0.06	3.2	24	0.5	11.5	1.6	0.7	2.3
	Females	5–6	122	0.8	11.6	37	1.1	0.0	12.6	0.09	1.2	21	0.9	9.2	0.0	0.0	0.0
		7–10	126	0.9	18.0	34	1.1	2.4	12.5	0.08	2.3	22	0.6	14.6	1.2	1.3	2.5
		11–14	128	0.4	9.6	27	1.1	16.0	12.8	0.09	5.1	21	0.6	21.6	5.7	3.9	9.6
		Total	126	0.5	13.5	31	1.1	7.2	12.6	0.06	3.2	21	0.5	16.4	2.7	2.1	4.8
NZEO	Males	5–6	123	1.3	16.6	25	1.1	3.8	12.6	0.13	5.8	25	1.2	7.7	0.0	0.0	0.0
		7–10	129	0.9	3.8	27	1.1	4.4	12.5	0.07	0.6	29	0.8	7.3	0.0	0.0	0.0
		11–14	136	1.3	5.5	31	1.1	0.9	12.5	0.07	0.0	28	0.7	3.1	0.0	0.0	0.0
		Total	131	1.2	6.6	28	1.1	2.8	12.5	0.05	1.2	28	0.5	5.6	0.0	0.0	0.0
	Females	5–6	125	1.0	3.4	23	1.2	5.7	12.4	0.09	0.0	26	1.5	6.2	0.0	0.0	0.0
		7–10	129	0.8	4.6	31	1.1	3.0	12.2	0.08	1.2	26	0.9	10.0	0.6	0.0	0.6
		11–14	133	0.8	0.0	27	1.1	5.9	12.3	0.12	0.8	30	1.3	9.0	3.2	0.0	3.2
		Total	130	0.7	2.5	27	1.1	4.7	12.3	0.06	0.8	28	0.8	8.9	1.5	0.0	1.5

1 Iron deficiency present if at least two out of three of serum ferritin, red cell distribution width and transferrin saturation are abnormal.

2 Serum haemoglobin concentration < 115 if age 5–7 years, < 119 if age 8–11 years and if age 12–14 years, < 125 if male and < 118 if female.

3 Geometric mean.

4 Tolerance factor. A standard error equivalent obtained by multiplying the standard error of Ln Ferritin by 1.96 and taking the antilog of this value.

5 Serum ferritin concentration < 10 if age 5 years, < 12 if age 6–15 years.

6 Red cell distribution width > 14%.

7 Transferrin saturation < 12% if aged 5 years, < 14% if aged 6–15 years.

8 Anaemia present if serum haemoglobin concentration low.

Table E4: Zinc, cholesterol and iodine

			Serum zinc (μmol/L)			Total cholesterol (mmol/L)		Total cholesterol: HDL ratio[1]	HDL cholesterol (mmol/L)		Urinary iodine (μg/dL)			
			Mean	SEM	% Low[2]	Mean	SEM		Mean	SEM	Mean	SEM	% Low[3]	Median
NZ children (5–14 years)			11.9	0.15	16	4.38	0.03	3.21	1.43	0.02	8.09	0.32	28	6.6
	Males	5–6	10.8	0.22	33	4.34	0.07	3.27	1.38	0.03	9.07	1.03	28	7.1
		7–10	11.6	0.21	23	4.43	0.05	3.08	1.49	0.03	7.96	0.38	27	6.6
		11–14	12.2	0.21	15	4.35	0.07	3.25	1.42	0.04	9.03	0.68	22	7.0
		Total	11.7	0.17	21	4.38	0.04	3.18	1.44	0.02	8.60	0.43	25	6.8
	Females	5–6	11.4	0.27	16	4.33	0.07	3.24	1.39	0.04	7.54	0.69	33	6.0
		7–10	11.9	0.18	8	4.39	0.06	3.24	1.41	0.03	7.24	0.26	30	6.1
		11–14	12.7	0.39	8	4.40	0.05	3.23	1.42	0.04	7.73	0.75	33	6.6
		Total	12.1	0.21	10	4.39	0.04	3.24	1.41	0.02	7.48	0.35	31	6.2
NZDep01	Males	I	11.8	0.34	28	4.34	0.12	2.97	1.51	0.06	7.80	0.64	35	5.9
		II	11.5	0.28	24	4.30	0.09	3.11	1.45	0.04	7.70	0.55	26	7.5
		III	12.0	0.30	17	4.51	0.07	3.22	1.46	0.04	7.85	1.03	35	6.7
		IV	11.7	0.21	20	4.41	0.07	3.18	1.46	0.04	9.94	1.11	19	7.7
		V	11.6	0.18	20	4.30	0.07	3.28	1.37	0.03	10.36	2.37	26	6.9
	Females	I	12.3	0.39	8	4.44	0.12	3.19	1.45	0.05	7.20	0.64	39	6.1
		II	12.2	0.53	10	4.34	0.11	3.26	1.38	0.05	8.15	1.01	28	6.6
		III	12.1	0.33	6	4.31	0.07	3.12	1.43	0.03	7.05	0.52	25	6.0
		IV	11.9	0.25	10	4.44	0.06	3.19	1.44	0.04	7.35	0.72	35	6.4
		V	11.6	0.16	13	4.32	0.05	3.43	1.32	0.04	7.74	0.33	25	6.7
Māori	Males	5–6	10.8	0.26	23	4.09	0.09	3.40	1.26	0.03	7.24	0.43	27	7.0
		7–10	11.8	0.23	17	4.48	0.05	3.24	1.45	0.04	7.23	0.24	20	6.6
		11–14	11.9	0.30	27	4.29	0.04	3.31	1.35	0.04	7.36	0.88	29	6.2
		Total	11.6	0.18	22	4.33	0.04	3.30	1.37	0.02	7.28	0.35	24	6.6
	Females	5–6	11.3	0.20	22	4.21	0.09	3.60	1.23	0.04	6.56	0.51	32	6.2
		7–10	11.9	0.15	8	4.40	0.07	3.42	1.34	0.03	7.64	0.52	30	6.1
		11–14	12.2	0.40	5	4.38	0.10	3.38	1.36	0.05	6.67	0.38	26	6.5
		Total	11.9	0.20	9	4.35	0.05	3.44	1.32	0.03	7.08	0.30	29	6.2
Pacific	Males	5–6	11.1	0.26	29	4.00	0.05	3.24	1.29	0.03	7.35	0.50	34	6.3
		7–10	11.2	0.13	21	4.18	0.06	3.30	1.34	0.03	8.85	0.47	19	7.1
		11–14	12.0	0.26	23	4.22	0.05	3.57	1.22	0.04	10.24	0.76	18	7.8
		Total	11.5	0.15	23	4.16	0.04	3.40	1.29	0.03	9.06	0.40	22	7.3
	Females	5–6	11.1	0.33	18	3.87	0.10	3.31	1.24	0.05	8.12	0.68	24	6.9
		7–10	11.6	0.21	16	4.22	0.05	3.57	1.26	0.03	7.59	0.49	29	6.7
		11–14	11.3	0.16	15	4.25	0.05	3.58	1.24	0.06	9.29	0.51	17	7.5
		Total	11.4	0.15	16	4.17	0.05	3.52	1.25	0.04	8.29	0.37	24	6.9
NZEO	Males	5–6	10.8	0.33	36	4.50	0.10	3.21	1.45	0.04	9.99	1.55	27	7.5
		7–10	11.6	0.29	26	4.44	0.06	3.00	1.52	0.03	8.11	0.54	30	6.7
		11–14	12.4	0.24	11	4.39	0.09	3.19	1.46	0.05	9.42	0.73	20	7.4
		Total	11.8	0.23	21	4.43	0.05	3.12	1.48	0.03	9.00	0.55	26	6.9
	Females	5–6	11.5	0.38	13	4.43	0.09	3.09	1.48	0.05	7.85	1.06	34	5.9
		7–10	11.9	0.23	7	4.41	0.08	3.14	1.46	0.03	7.06	0.34	29	6.0
		11–14	13.0	0.45	8	4.43	0.06	3.14	1.47	0.04	7.87	1.05	37	6.0
		Total	12.3	0.26	9	4.42	0.05	3.13	1.46	0.02	7.51	0.50	33	6.0

1 Mean of individual participant ratios.

2 % Low – the percent of children with low serum zinc concentrations, as defined by Hotz et al (2003), see Appendix B for further details.

3 % Low – the percent of children with iodine levels < 5 μg/dL.

F. Māori Issues

A total of 1224 Māori children (631 males; 593 females) took part in the survey.

The overall nutritional status of Māori children as assessed by many indices (nutrient intake, anthropometric and biochemical) falls between NZEO children and Pacific children. Some areas are entirely satisfactory:

- Vitamin C, riboflavin and vitamin B12 intakes are adequate.
- Calcium and zinc intakes are satisfactory up to the age of 10, and iron intakes are satisfactory except for menstruating females. Folate intakes are only an issue among females 11–14 years.
- About one half of Māori children consumed *Silverbeet, spinach, puha or watercress* at least once per week.
- Māori children had the greatest proportion in the highest activity quartile.

The results listed below suggest areas where there might be improvements:

- The mean contribution of fat to energy increased with age.
- Māori children had high median usual daily intakes of sugar and fat.
- The proportion of females who were overweight was 30.6 percent, and 16.7 percent were obese.
- Over one fifth of children (males 27.9 percent; females 20.9 percent) did not report brushing their teeth the previous day.
- Twenty-nine percent of females and 24 percent of males had low urinary iodine levels when it is recommended that only 20 percent of a population should have levels less than 5 µg/dL.
- Close to 11 percent of females and 9 percent of males watched more than 20 hours of television or videos per week.
- Sixteen percent of females and 12.7 percent of males did not take part in physical activity during the weekends.
- About 16 percent of females 11–14 years did not consume any food before leaving home for school in the morning.
- The more people and children in a household, the less likely it was that households *Could always afford to eat properly*.

Younger Māori children, compared with older, were more likely to follow healthier practices with respect to food intake, to have higher levels of physical activity and to be more active within and outside school hours. Consequently these younger children have a lower prevalence of overweight and obesity.

Overall it appears that if older children emulated the breakfast eating habits (as evidenced by breakfast cereal and milk consumption), snack choices (as evidenced by fruit, sugar and sweets consumption) and activity patterns of younger Māori children their nutritional health status could be improved. This conclusion is very similar to that reached for Pacific and NZEO children.

G. Pacific Issues

The Pacific group of children included the following ethnic groups: Samoan (52 percent), Tongan (21 percent), Cook Island Māori (14 percent), Niuean (7 percent), Tokelauan (2 percent), Fijian (2 percent) and Other (2 percent).

The following issues illustrate or are likely to influence the nutritional health of Pacific children:

- Over one fifth of children were obese and the prevalence rose with age, so that over one third of females 11–14 years were classified as obese.
- The percent energy from fat rose with age and less than one third of 11–14 year children met the dietary guideline for proportion of energy from fat.
- A major source of total fat was *Pies & pasties*.
- More Pacific households reported that they experienced food insecurity than households in the other ethnic groups but as was the case for all ethnic groups, households with the most children were the most affected.
- Almost half of Pacific children did not *Usually* eat or drink at home before school and about one third ate or drank on the way to school.
- Females 11–14 years were less active than males, during the weekend and after school, and fewer females than males were in quartile IV (the most active of the activity quartiles).
- Hours spent watching television or videos during the week and weekend doubled from the youngest to the oldest groups of children.
- Pacific children had low intakes of dietary fibre, vitamin A (retinol and β carotene), riboflavin, folate and calcium.
- Pacific females had the highest intakes of selenium (reflecting fish intake), and Pacific children had a lower intake of total sugars, than all other children.

The food patterns and food choices of Pacific children showed some distinctive features compared with the other children in this study. In particular, the lower consumption of breakfast cereals, dairy products and many vegetables, and the higher consumption of foods such as taro, fish and some meats reflect their ethnic backgrounds.

As in other ethnic groups, the quality of food choices of Pacific children declined with age. Younger Pacific children who consumed a lower proportion of their intake from meat and more from milk, bread, fruit and breakfast cereals than older children had better macro and micronutrient intakes.

Older Pacific children sourced a greater proportion of their food from outside the home (shop, dairies, takeaways, tuckshops and canteens) than younger Pacific children. Attention must be paid to assisting children to make wiser choices at all times and influencing them by ensuring healthier choices are available and encouraged within the school environment.

H. New Zealand European and Others Issues

The NZEO group of children represented a diverse ethnic mix: New Zealand European (82 percent), Asian (6 percent), Other European (4 percent), Indian (4 percent) and other (5 percent). Although NZEO children had a relatively good outcome in terms of nutritional status including anthropometric and biochemical assessments, there are areas that require attention.

The nutrients of some concern, mostly among older NZEO children, were vitamin A and calcium. The prevalence of low urinary iodine status also needs to be addressed. Of particular note is the fact that the younger children studied (5–6 years) had the lowest prevalence of overweight and obesity, and better food choices and nutrient intakes compared with the older groups. It appears that as levels of social independence increase throughout childhood this may adversely influence food choices and hence food and nutrient intake. These issues paralleled an increase in the prevalence of overweight and obesity with age.

Compared with older children, younger children:

- ate fruit more frequently, and females ate vegetables more frequently
- consumed less sugar and sweets
- had a lower prevalence of overweight and obesity
- had a higher proportion meet the recommended guidelines for percent energy from fat
- were most likely to consume food at school that came from home
- were most likely not to have watched television or videos during the weekend
- were most likely to have been transported to school
- were most likely to be in the highest activity quartile
- were least likely to have an inadequate intake of riboflavin, folate, calcium and iron.

For all NZEO children:

- the estimated prevalence of inadequate intakes of vitamin C, riboflavin, vitamin B12, vitamin A (males), zinc (males), and iron (males) ranged from 0 percent to 5 percent
- the prevalence of iron deficiency was 0 percent for males and 1.5 percent for females
- 26 percent of males and 33 percent of females had low urinary iodine levels when it is recommended that only 20 percent of a population should have levels less than 5 µg/dL.

Appendix A: Survey Objectives

The objectives of the CNS02, determined by the Ministry of Health, were:

1. To collect baseline data on food and nutrient intakes, which are suitable for:
   - use in dietary modelling and risk assessment
   - using in the development of food policy and regulations related to food composition, labelling and safety
   - assisting the ongoing development and impact monitoring of New Zealand's nutrition policy
   - assisting in the future development of health goals and targets
   - providing a basis for nutrition education and other strategies to improve nutrition, and providing a means of measurement from existing nutrition programmes
   - comparing the intakes of food and nutrients with the recommendations in the Food and Nutrition Guidelines and recommended dietary intakes (RDIs) and taking the results into account in any further development of these recommendations.
2. To measure baseline intake of dietary supplements in order to assess the level of use and contribution to total nutrient intake.
3. To examine patterns of dietary intake and key food habits, providing a basis for comparisons with future periodic surveys.
4. To provide baseline data on physical activity and time use that can be used for comparison with the recommendations in the Food and Nutrition Guidelines and targets of other agencies, such as the Hillary Commission (SPARC).
5. To provide baseline data on food security, barriers to dietery change and nutritional status that can be used for intersectoral policy work.
6. To collect data on height, weight and other physical measures for children of different ages and ethnic groups.
7. To collect data on dental health that can be used in the monitoring and setting of dental health policy goals and targets.
8. To ensure the number of Māori in the survey is proportional to the number of Māori in New Zealand, both iwi and non-iwi based, to achieve reliable ethnic-specific rates.
9. To ensure the survey collects data on Pacific peoples that are sufficient to achieve reliable ethnic-specific rates.
10. To ensure sufficient numbers of children in urban and rural areas are included, particularly Māori, to achieve reliable rates for comparison.

11. To ensure participation of Māori at all levels through appropriate consultation, resource allocation and the development of culturally appropriate practices for collecting and disseminating data.

13. To ensure all information collected respects and protects the rights of children and families participating in the survey.

14. To facilitate the development of nutritional status and dietary intake indicators that could be used for more regular surveillance.

15. To collect socioeconomic and family support information that helps with the interpretation of the survey data.

16. To provide much needed information to external users such as dietitians, nutritionists, the food industry, health promoters, Māori and Pacific health providers, children, young people and their families.

Personnel

Principal investigators

Eljon Fitzgerald	School of Māori Studies, Massey University
Winsome Parnell	Human Nutrition, University of Otago
David Schaaf	Division of Māori & Pacific Health, University of Auckland
Associate Professor Robert Scragg	School of Population Health, University of Auckland
Dr Noela Wilson	LINZ® Activity & Health Research Unit, University of Otago

Co-investigators

Dr Elaine Ferguson	Human Nutrition, University of Otago
Associate Professor Cameron Grant	Paediatrics, University of Auckland
Peter Herbison	Preventive & Social Medicine, University of Otago
Susan Sharpe	School of Population Health, University of Auckland
Alistair Stewart	School of Population Health, University of Auckland

Consultants

Associate Professor John Broughton	Ngai Tahu Māori Health Research Unit, University of Otago
Dr Bernadette Drummond	Dentistry, University of Otago
Professor Rosalind Gibson	Human Nutrition, University of Otago
Dr Craig Marshall	Biochemistry, University of Otago
Dr Ian Morison	Biochemistry, University of Otago, and Southern Community Laboratories
Sheila Skeaff	Human Nutrition, University of Otago
Associate Professor Christine Thomson	Human Nutrition, University of Otago
Associate Professor Murray Thomson	Dentistry, University of Otago

Ministry of Health

Elizabeth Aitken	Technical Advisor, Senior Advisor Nutrition
Anne Duncan	Project Manager, Senior Advisor Survey Management
Mary-Louise Hannah	Technical Advisor, Senior Advisor Nutrition/Survey
Anne Masoe	Support Manager, The Compass Group
Kerris Paterson	Publication, The Compass Group
Kiri Simonsen	Technical Advisor, Māori Health Directorate
Colin Tukuitonga	Technical Advisor, Director of Public Health

Project offices

University of Auckland	Persees Antia James Chal Pervin Suntoke
Massey University	Rangihaanu Rolls
University of Otago	Charles Blakey, Software Developer Rachel Bolch, Nutritionist Christine Cleghorn, Nutritionist Maureen Foster, Secretary Sarah McLachlan, Research Assistant Tony Mottershead, Research Assistant Claire Smith, Nutritionist Stephanie Thurlow, Research Assistant Paul Williams, Research Assistant Mark Wohlers, Biostatistician

Field staff

University of Auckland	Debbie Waayer, Regional Manager Katie Clemens Catherine George Yvonne Learmonth Taani Lavulavu Margaret McCormack Patricia Meagher-Lundberg Fina Palaetago Debbie Raroa Henrietta Tinetali
Massey University	Hana Karatea, Regional Manager Charlotte Adank Ani Johnson Kawarau Ngaia Sharon Pihema Theresa Waiwiri
University of Otago	Anna Davidson Aroha Miller

Advisory groups

CNSTAC

Dr John Birkbeck	Massey University
Dr Alison Blaiklock	Auckland District Health Board
Ms Maraea Craft	Tairawhiti Health Authority
Mrs Karen Fukofuka	Lower Hutt District Health Board
Professor Rosalind Gibson	University of Otago
Ms Judith Ka'ai	Te Hotu Manawa Māori
Professor Jim Mann	University of Otago
Professor Ed Mitchell	University of Auckland
Kiri Simonsen	Ministry of Health
Robert Templeton	Statistics New Zealand
Dr Colin Tukuitonga	Ministry of Health
Dr Clare Wall	Massey University

Board

James Chal	Auckland UniServices Ltd
Professor Mason Durie	Massey University
Dr Sitaleki Finau	University of Auckland
Professor Rod Jackson	University of Auckland
Judith Ka'ai	Te Hotu Manawa Māori
Dr Allen Liang	Pediatrician, Auckland
Professor Jim Mann	Chair of CNSTAC, University of Otago
Roger McClay (Chair)	Commissioner for Children
Emeritus Professor David Russell	University of Otago

Kaitiaki

Maraea Craft	Tairawhiti Health Authority
Tere Gravenor	Te Ringa Atawhai
Carnation Hetaraka-Bervang	Te Whānau o Waipareira
Judith Ka'ai	Te Hotu Manawa Māori
Inez Kingi	Tunohopu Health
Cyril Mako	Statistics New Zealand
Eruera Maxted	Northland Health
Ben McCrae	Te Puni Kōkiri
Makuini McKerchar	Te Waka Hauora
Hiki Pihema	Te Runanga o Ngāti Porou Iwi Social Services
Mavis Roberts	University of Auckland
Binki Taua	University of Auckland
Laurie Wharemate	Te Hotu Manawa Māori

Pacific

Moera Douthett	Pacific Community
Stephanie Erick-Peleti	Auckland University of Technology
'Eseta Finau	University of Auckland
Mafi Funaki-Tahifote	Massey University
Vaine Joseph	Pacific Community
Ta'i Matanga-Smith	Auckland Regional Public Health Services, Auckland District Health Board
Soana Muimuiheata	Southseas Pacific Health Provider
Malakai 'Ofanoa	University of Auckland
Kasalanaita Puniani	Auckland Regional Public Health Services, Auckland District Health Board
Associate Professor Elaine Rush	Auckland University of Technology
Iutita Rusk	Pacific Heart Beat, National Heart Foundation
Laurel Taufauata	Pacific Community
Sione Fifita Tupou	Community Child Health and Disability Services, Auckland District Health Board
Heather Wright	Ministry of Foreign Affairs and Trade

Appendix B: Methodology

Sampling strategy

The primary aim in the sampling strategy was to ensure a nationally representative sample, including sufficient numbers of children in the Māori and Pacific groups to enable ethnic-specific analyses. A two-stage sampling frame was used to recruit children aged 5–14 from schools throughout New Zealand.

The first stage involved sampling 160 schools with equal probability from the Ministry of Education list of schools after excluding some schools for reasons of cost: schools on the Chatham Islands, correspondence schools, and schools with less than 50 students. Te Kura Kaupapa schools were included regardless of size. The second stage involved randomly sampling students from the rolls of selected schools in proportion to the number of students on the school roll. Fee-paying foreign students or foreign students on Ministry of Foreign Affairs and Trade scholarships were excluded. Different sampling proportions from the school roll were used for Māori, Pacific and NZEO children to ensure approximately equal numbers of children in each ethnic group in the final survey sample.

For administrative purposes schools were assigned to three regions: Northern: upper North Island (Hamilton and above); Central: lower North Island (south of Hamilton); Southern: South Island.

Sample size

Once a school was selected and approval given to recruit children, the register of students aged 5–14 was divided into the three ethnic groups (Māori, Pacific, NZEO). Children within each ethnic group were selected according to the following sampling proportions based on the latest available (July 2001) Ministry of Education school rolls: Pacific 0.410, Māori 0.161 and NZEO 0.050. To ensure the final sample included approximately 1000 children in each of the three ethnic groups sampling proportions included an inflation factor to allow for a 70 percent response rate. Allowing for a design effect of 1.7 from weighting caused by differential ethnic sampling proportions and of 1.5 from school-based clustering (estimated from previous New Zealand school-based surveys) a sample of 1000 was recruited under the study design. This is approximately equivalent to 400 recruited by simple random sampling so that the standard error around a proportion of 50 percent was predicted to be 2.5 percent.

From the original sample of 160 selected schools, 16 schools declined to participate in the survey. The number of children who would have been selected for the survey, at schools that declined to participate, was estimated to be 472, based on the July 2001 Ministry of Education school rolls. A further sample of 30 schools was selected with two schools declining. Thus, the final sample was selected from 172 schools.

Response rate

First stage. The overall response rate for schools was 91 percent, with a response rate in the south of 100 percent (54 schools); northern region 90 percent (53 schools participated); central region 84 percent (65 schools participated).

Second stage. A participant in the survey was defined as a child who completed a 24-hour diet recall. The total number of children recruited from the 172 schools was 4728, and 3275 of these children participated (response rate 69.3 percent). The response rate was similar for males (70.4 percent) and females (68.1 percent) and did not vary with age (5–6 years 70.4 percent, 7–10 years 69 percent, 11–14 years 68.9 percent). However, the response rate varied with ethnicity, from 74 percent in Pacific children, to 69.8 percent in NZEO children, to 65.3 percent in Māori children; and was higher for children at rural schools (74.5 percent) than those at urban schools (68.4 percent).

Ethical approval

Ethical approval was sought and received from all 13 regional health ethics committees to seek permission from schools for access to their student rolls and from parents/caregivers to interview their children. The consent form sought separate approval from parents (or guardians) for each of the following: to take part in the survey, to collect a blood sample, to collect a urine sample, to store the blood sample long term for later nutrition related tests, to store the urine sample long term for later nutrition related tests, and consent for (anonymous) information about the child to be given to the Ministry of Health.

Māori

Participation

The Māori community participated in all aspects of the survey. Professor Mason Durie (Massey University) was a member of the Advisory Board and Eljon Fitzgerald (Massey University), a principal investigator. The research team welcomed the advice and guidance of a Kaitiaki Group throughout the survey. The research fieldwork team included a significant Māori component – a regional supervisor, Hana Karatea, and six of 15 interviewers (one Northern, four Central and one Southern).

The initial training of fieldworkers and the regular update sessions included a focus on Māori cultural considerations. Considerable effort was made to ensure the 24-hour diet recall food database included appropriate Māori foods. The information sheet about the survey was translated into Māori.

Consultation and publicity

There was extensive consultation with Māori groups throughout the country over the course of the survey, particularly in the Central region where the response rate was the lowest. This included: a series of consultation hui, meetings and presentations at the Annual Conference of Māori Dietitians and Nutritionists (Gisborne); Māori community health and nutrition workers from Waikato, Bay of Plenty and King Country region; Tanenuiarangi Manawatu Inc, Iwi Authority, Palmerston North; Te Waka Huia Health, Palmerston North; Ngati Raukawa Iwi Health Services, Palmerston North; Māori Women's Welfare League, Napier/Hastings, Wellington; Te Kura Kaupapa schools; Meetings and discussions took place with principals at all schools selected for the survey. In addition consultation was undertaken with the following Māori organisations in the Northland region: Te Ringa Atawhai – Māori Community Health Workers Network (Okaihau, Kaitaia, Coopers Beach, Kaikohe, Broadwood, Hokianga, Bay of Islands); Te Hauora o te Hiku o Te Ika (Māori Health and Nutrition Unit, Kaitaia Hospital); Te Hauora o te Taitokerau (Iwi Health Authority, Whangarei); Hokianga Health Trust (District School Health Nurses and Clinic, Pawarenga).

A number of Māori radio interviews were undertaken to promote the survey to Māori families and communities. For example, principal investigator Eljon Fitzgerald appeared on a one-hour health segment at Kia Ora FM broadcasting to the central North Island and the Marlborough/ Nelson regions.

Cultural safety of blood and urine samples

The following processes were carried out in an effort to be responsive to tikanga Māori in consultation with the Kaitiaki group. Members of the Kaitiaki group visited the laboratories to bless areas where the analyses, storage and disposal of specimens were carried out. A Māori member of the research team was designated to take responsibility for the collection, signing for and disposal of any specimens from the laboratories where the testing of the blood samples was carried out. Parents (or guardians) were offered an opportunity to request the return of blood and urine samples to their home address.

Pacific

Participation

The Pacific community participated at all levels of the survey. Professor Sitaleki Finau (University of Auckland) represented Pacific people on the Advisory Board. An Advisory Group to the principal investigators was set up consisting of members of the PIFNAG (Pacific Island Food, Nutrition and Physical Activity Action Group), health professionals and Pacific community representatives. David Schaaf (University of Auckland) was a principal investigator. Three of the 13 interviewers were of Samoan, Tongan and Cook Islands descent.

The 24-hour diet recall food database included all appropriate Pacific foods. The information sheet about the survey was translated into Pacific languages (Samoan, Cook Islands, Tongan and Niuean). Interviewers were educated about cultural issues that may have had an influence on data collection in the homes both during the initial training period and in the update sessions conducted throughout the survey. Communication was maintained throughout the survey with the Advisory Group to ensure processes and protocols were consistent with contemporary Pacific cultural practices and to discuss relevant survey developments.

Consultation and publicity

A considerable effort was made at two levels. The first involved consulting with Pacific health workers and professionals working in non-governmental organisations (NGOs). This included Pacific Heart Beat (National Heart Foundation), Pacific Health and Welfare (a collection of Pacific health workers from NGOs, Pacific health providers and government organisations). Pacific health workers were also consulted at conferences including the Annual Pasifika Medical Association Conference. The purpose of these consultations was to inform Pacific health workers about the survey and solicit their support. Members of the research team used their networks to recruit Pacific interviewers. Consultation with Pacific health workers was an important step before the field researchers approached the community because it was anticipated that families of selected Pacific children would seek their advice before allowing their child to participate in the survey.

The second level of consultation was with the community. David Schaaf appeared on Pacific programmes run by local radio stations, including 531 PI in Auckland and Capital Coast Radio Station in Wellington. These call-back programmes gave the community the opportunity to voice its opinions. These programmes were repeated midway through the survey. The research team worked together with local newspaper journalists. The team also visited parents' evenings organised by the schools to answer any questions about their children participating in the survey.

Interviewing

The first interviews were undertaken in the last week of February 2002 and the last interviews in the second week of December 2002. A summary of the proportion of interviews collected each month is included in Table I.

Table I: Proportion of interviews conducted each month

	Feb %	Mar %	Apr %	May %	Jun %	Jul %	Aug %	Sept %	Oct %	Nov %	Dec %
Interview	<1	9	5	12	11	11	11	11	12	13	4
Repeat 24-hour recall	0	2	3	8	6	8	11	15	18	18	12

Interviewing process

Following a school's agreement to participate, students were randomly selected from the school roll. An information sheet was then mailed to the parent/caregiver at the selected child's home address. An interviewer then contacted the parent/caregiver) by phone or, if there was no phone, visited the home to answer any queries, gain consent and make an appointment to conduct the interview.

Most of the interviews were carried out at the child's home in the presence of the parent/caregiver. However, some interviews were at school. An interview was undertaken with children 5–9 years only if a parent/caregiver was present. Parents/ caregivers were encouraged to agree to a home interview to maximise the accuracy in the detail of specific foods consumed, portion estimation and dietary supplement identification (see below). Interviews were carried out to ensure all days of the week were represented (Table II).

Table II: Proportion of interviews conducted on each day (percent)

	Sunday %	Monday %	Tuesday %	Wednesday %	Thursday %	Friday %	Saturday %
Interview	7	16	19	19	17	12	10
Repeat 24-hour recall	7	12	18	19	18	14	11

After written consent was obtained, information from the child or parent/caregiver was entered directly into laptop computers. The interview consisted of the following information: demography, 24-hour diet recall (including dietary supplements), eating patterns, household food security, physical activity and dental health. The qualitative food frequency questionnaire (FFQ) was usually completed by the child and parent/caregiver at the interview and then checked by the interviewer. Information on household food security was only collected when a parent/caregiver was present.

Anthropometry measurements and blood and urine samples were taken at school. Due to budget constraints, blood and urine samples were only collected from children in urban schools.

24-hour diet recall

Development of methodology

A pilot study conducted on 92 New Zealand children (5–14 years) comparing intake by the 24-hour diet recall and the 24-hour record assisted recall with energy expenditure assessed by doubly labelled water, concluded that there was little difference between the two methods (Watson et al, 2001). The methodology chosen for assessing dietary intake in the CNS02 was the 24-hour diet recall, also used for the National Nutrition Survey of adults aged 15 and over conducted in 1997 (Ministry of Health 1999). While the NNS97 recalled intake from the previous day (midnight to midnight) the CNS02 asked for recall of intake from the 24-hour period immediately prior to the time of data collection. This process used a direct computer data entry system LINZ24, a Windows-based program developed by Charles Blakey, that utilised the world wide web to deliver completed interviews back to the project office.

The methodology used for NNS97 was modified and developed by the LINZ® Research Unit to be more appropriate for the sample population (children 5–14 years). All children under 10 years were interviewed in the presence of a parent or adult caregiver. The questioning used in NNS97 was modified to reflect foods likely to be consumed by children and to reflect the increased availability of fortified foods, greater variety of packaged foods and drinks, expansion in the variety of serving sizes for packaged products, and proliferation of fast food outlets.

The computer assisted, multiple pass 24-hour diet recall interview was structured into three steps (passes) to maximise the child's recall of foods eaten. The first pass, the 'quick list', involved supplying a broad description of all foods, beverages and dietary supplements consumed in the previous 24 hours.

In the next stage, a detailed description of each food, beverage or dietary supplement on the quick list was ascertained through a series of programme-controlled questions and prompts specific to each item. Questions for each item included: time of consumption, amount eaten, any additions made before consumption (ie, eaten in combination with other foods, for example, bread with butter), the cooking method and recipes for mixed dishes (excluding baked goods) where they were known.

Brand and product names were requested for foods from categories where fortification is legally permitted and for some food categories with a large variety of different products of differing nutrient composition (eg, ice creams, snack bars). When the packaging was available, a bar code scanner was applied to the package to record information directly. The amount of foods or beverages consumed was described by volume using cups, spoons, food photographs and shape dimensions. Alternatively, a *measure descriptors* file was accessible containing weights of common servings specified items (eg, one slice of bread) and where appropriate the conversions from the raw to cooked weight. This was necessary as recipe ingredients were listed by weight of the component in cooked form. When the child (or parent) supplied a recipe, the amount of each ingredient was obtained and the portion of the whole dish eaten was indicated.

As with fortified foods, brand and product names were requested for all dietary supplements. If the brand and product name was unknown, a series of questions was asked to obtain as much information about the dietary supplement as possible. Interviewers also recorded the volume amount of a supplement or number of tablets taken.

The third and final pass was a review of the recall. The interviewer read aloud the foods eaten in chronological order and verified the descriptions and amounts consumed. A final question checked whether anything had been omitted from the recall. Any information that was forgotten or incorrectly entered was added or edited at this stage. Entry errors with respect to amounts were minimised by warning messages seeking confirmation of unusually large volumes or amounts of a food or beverage consumed.

A comprehensive food list, which comprised all the known foods and beverages available for consumption in New Zealand, was contained within the programme. This list was updated throughout the survey. Foods eaten were entered in a format consistent with the names used in this list to produce standardised descriptions. The series of item specific questions in the second pass of the recall, ensured food items were described in sufficient detail to enable accurate matching with food composition data. This also minimised possible variation between interviewers as all questions were read aloud from the computer screen to the children. A notepad function allowed interviewers to record any additional or unusual information about foods eaten by the children.

A demonstration of the LINZ24 Diet Recall programme is available on www.otago.ac.nz/LINZ.

The day-to-day variation in nutrient intake was estimated by repeating the 24-hour diet recall on a subsample (505 children) and adjusting the nutrient intakes reported (using the PC-SIDE programme) to estimate the distribution of *'usual'* intakes in the population.

Dietary analysis

Nutrient analysis

Foods and beverages from the 24-hour diet recall were electronically matched to food composition data to calculate nutrient intake. The primary source of food composition information was the New Zealand Food Composition Database (NZFCD), which contains the composition of approximately 2000 foods. It is compiled and regularly updated by Crop and Food Research Ltd working in conjunction with the manufactured food database (New Zealand Institute for Crop & Food Research Ltd (CFR) 2002; Manufactured Food Database (MFD) 2002). Detailed food composition analytical techniques for nutrients included in the NZFCD are described in Athar et al (2001). Table III provides an outline of the analytical techniques. If a direct match with information in the NZFCD was not available and the frequency of use was high relative to other foods, additional nutrient composition data were sought either from overseas databases (Australian, US and British) if applicable, or the food item was recommended for analysis in New Zealand.

When a food or beverage could not be completely described by the child or parent (for example the child had milk but did not know the type) it was matched for nutrient composition to a composite, weighted to reflect use in the survey sample.

Foods that were fortified at the commencement of data collection (February 2002), and new fortified products coming onto the market during the survey, were identified by the MFD and from careful monitoring of supermarket foods. The levels of fortified nutrients were based on information obtained from the manufacturer. CFR then incorporated these levels into existing nutrient information for the corresponding food, to create brand and product name specific nutrient composition. Analytical nutrient composition data were also available from CFR for a number of fortified foods. Existing products that became fortified during the survey period or changes in fortificant levels could not be taken into account due to an unknown and variable time lag, between a change in manufacturing procedure and product consumption.

If a recipe could not be supplied by the child (or parent/caregiver) for a mixed food item it was matched to a standard recipe. Standard recipes used in NNS97 were modified and recalculated to utilise the most up to date New Zealand nutrient composition data. Recipes were also created from composites of recipes supplied in this survey and obtained from commonly used recipes from top selling New Zealand cook books, internet sites and information from fast food outlets. The nutrient composition of these recipes, allowing for weight and nutrient loss or gain in cooking, was calculated by CFR.

Dietary supplement matching

A dietary supplement was defined as any product intended for ingestion as a supplement to the diet. To enable nutrient matching of dietary supplements, an updated dietary supplement database including all children's dietary supplements on the market at the time was supplied by CFR to LINZ® (Lake et al 2001). For supplements that were not on the list supplied by ESR, LINZ® purchased the supplement and calculated its nutrient composition from label information. All nutrient information about dietary supplements used in CNS02 was based on information supplied by the manufacturer. If the brand and product name of a dietary supplement was unknown, it was nutrient matched to a composite of its type, weighted to reflect use in the survey. As the use of dietary supplements with solely herbal ingredients was minimal, and because nutrient breakdowns were not available, they were excluded from the nutrient analyses.

Dietary sources

In order to calculate sources of nutrients by 'food type', food items reported in the 24-hour diet recall have been allocated to food groups. Table III describes the groups and illustrates the designation of food items within them. The following issues require explanation.

1. *Grouping of components of mixed dishes:* Children who consumed a mixed dish, such as macaroni cheese, may or may not have known the recipe. If the recipe was supplied by the child/parent the ingredients were entered individually, ie, each ingredient was separately allocated to the appropriate group. When the exact recipe was unknown, information regarding content was sought from the child/parent, for example, whether meat was added to the macaroni cheese, in order to identify which recipe provided the best nutrient match. In this situation where there was nutrient composition information only for the dish as a whole, it was assigned to the most appropriate group. For example, macaroni cheese would be assigned to *Grains and pasta* since pasta is the main ingredient.

2. *Comparisons of dietary sources of nutrients with the 1997 National Nutrition Survey:* While many of the groups are essentially the same as those used in the NNS97 survey, food consumption patterns are different in children compared with adults and some new food group classification was required. Consequently, some food items may fall into different groups under the current scheme and direct comparison of results warrants caution. Asterisks (*) in Table III indicate that this group is not directly comparable to that used in NNS97.

Table III: Food groups

Food group	Examples of food items included
Grains and pasta	Rice (fried/risotto), flour, pasta, bran, cereal based products and dishes (lasagne)
Bread	All types bread (rolls, pita, foccacia, garlic), bagels, crumpets, sweet buns
Biscuits*	Sweet biscuits (plain, chocolate coated, fruit filled, cream filled), crackers (low fat <5%, medium and high fat >5%)
Cakes and muffins*	All cakes and muffins, slices, scones, pancakes, doughnuts, pastry, cake bars
Bread based dishes	Sandwiches, filled rolls, hamburgers, hotdogs, pizza, nachos, doner kebabs, wontons, spring roll, stuffings
Puddings and desserts	Milk puddings, cheesecake, fruit crumbles, mousse, steamed sponges, sweet pies
Milk	Cow, soy, flavoured milk, milkshakes, milk powder
Dairy products	Cream, sour cream, yoghurt, dairy food, ice-cream, dairy based dips
Cheese	Cheddar, edam, speciality (blue, brie, feta, etc), ricotta, cream cheese, cottage cheese, processed cheese
Butter and margarine	Butter, margarine, butter/margarine blends, reduced fat spreads
Fats and oils	Dripping, lard, canola, olive, sunflower and vegetable oils
Eggs and egg dishes	Poached, boiled, scrambled and fried eggs, omelettes, self-crusting quiches
Beef and veal	All muscle meats (steak, mince, corned beef, roast etc), stews, stir-fries
Lamb and mutton	All muscle meats (chops, mince, roast etc), stews, curries, stir-fries
Pork	All muscle meats (roast, chop, schnitzel etc), bacon, ham, stews, stir-fries
Poultry	All chicken, duck, turkey and muttonbird muscle meats (breast, leg, wing etc) and processed meat, stews and stir-fries
Other meat	Venison, liver (lambs fry), pate (liver), haggis
Sausages and processed meats	Sausages, luncheon, frankfurters, saveloy/cheerios, salami, meatloaf and patties
Pies and pasties	All pies including potato top, pasties, savouries, sausage rolls, quiche with pastry
Fish and seafood	All fish (canned, battered, fingers etc), shellfish, squid, crab, fish/seafood dishes (pies, casseroles and fritters) fish/seafood products
Vegetables	All vegetables including mixes, coleslaw, tomatoes, green salads, legumes and pulses, legume products and dishes, vegetable dishes
Potatoes, kumara and taro	Mashed, boiled, baked, scalloped potatoes and kumara, hot chips, crisps, hash browns, taro roots and stalks
Snack foods	Corn chips, popcorn, extruded snacks (burger rings etc), grain crisps
Fruit	All fruit, fresh, canned, cooked & dried
Nuts and seeds	Peanuts, almonds, sesame seeds, peanut butter, nutella, coconut milk and cream
Sugar and sweets	Sugars, syrups, confectionery, chocolate, jam, honey, jelly, sweet toppings and icing, ice blocks, artificial sweeteners
Soups and stocks	All instant and homemade soups, stocks and stock powder
Savoury sauces and condiments	Gravy, tomato and cream based sauces, soy and tomato sauce, cheese sauces, mayonnaise, oil and vinegar dressings, chutney, marmite
Non-alcoholic beverages	All teas, coffee and substitutes, Milo, juices, cordial, soft drinks, water, powdered drinks, sports and energy drinks
Alcoholic beverages	Wine, spirits
Dietary supplements*	Multi vitamin and minerals, B-complex, single vitamin and minerals, meal replacements
Breakfast cereals	All types (muesli, wheat biscuits, porridge, puffed/flakes/extruded cereals)
Snack bars*	Muesli bars, wholemeal fruit bars, puffed cereal bars, nut and seed bars

* Not comparable with 1997 National Nutrition Survey.

PC-SIDE – software for intake distribution estimation

It is important to assess the distribution of a population's usual intake for a particular dietary component (for example protein intake), where usual intake of that nutrient for an individual is defined as the long-run average for that individual. The distribution of a dietary component based on an individual's one day intake is wider than that of their usual intake, since the individual's day-to-day diet is likely to be highly variable.

The software package PC-SIDE (developed by Iowa State University) was used to estimate the distribution of usual intakes of dietary components. This software can be used when daily intake observations are repeated at least once on a subsample of the individuals in the population.

To estimate the distribution of usual intakes of a dietary component an assumption that the data are normally distributed is required. Nutrient data are generally non-normal, and can be particularly extreme in some naturally occurring nutrients (for example retinol, a form of vitamin A) or where foods are fortified. To remedy this problem PC-SIDE uses a combination of a power and grafted polynomial transformation.

Table IV: Analytical techniques for nutrients*

Nutrient	INFOODS tagname[1]	Units	Description/synonym/method
Energy	ENERC	kJ	Energy, calculated (protein = 16.7 kJ/g; total fat = 37.7 kJ/g; available carbohydrate = 16.7 kJ/g; alcohol = 29.3 kJ/g).
Protein	PROCNT	g	Protein, calculated from total nitrogen; generally FAO/WHO conversions factors.
Total fat	FAT	g	Total fat/total lipid; several methods depending on food matrix.
Saturated fat	FASAT	g	Sum of individual saturated fatty acids; GC of methyl esters.
Monounsaturated fat	FAMS	g	Sum of individual monounsaturated fatty acids; GC of methyl esters.
Polyunsaturated fat	FAPU	g	Sum of individual polyunsaturated fatty acids; GC of methyl esters.
Cholesterol	CHOLE	mg	Cholesterol, GC.
Carbohydrate	CHOAVL	g	Available carbohydrate; sum on mono-, di- and oligo-saccharides, starch and glycogen; or enzymic digestion and colorimetry.
Dietary fibre	PSACNS	g	Non-starch polysaccharides/fibre; Englyst method.
Insoluble non-starch polysaccharides	PSACNSI	g	Insoluble non-starch polysaccharides; Englyst method.
Soluble non-starch polysaccharides	PSACNSS	g	Soluble non-starch polysaccharides; Englyst method.
Total sugars	SUGAR	g	Total available sugars, sum of individual mono- and di-saccharides; GC or HPLC.
Glucose	GLUS	g	available glucose, sum of individual d-glucose monosaccharides; GC or HPLC.
Fructose	FRUS	g	available fructose, sum of individual d-fructose monosaccharides; GC or HPLC.
Sucrose	SUCS	g	available sucrose, sum of individual sucrose disaccharides; GC or HPLC.
Lactose	LACS	g	available lactose, sum of individual lactose disaccharides; GC or HPLC.
Maltose	MALS	g	available maltose, sum of individual maltose disaccharides; GC or HPLC.
Starch	STARCH	g	Starch; enzymic digestion and colorimetry.
Alcohol	ALC	g	alcohol/ethyl alcohol, hydrometer or GC.
Vitamin A equivalents	VITA	µg	Total vitamin A equivalents/retinol equivalents; equals (µg retinol) + (0.166 x µg β-carotene equivalents); HPLC. Conversion factors used for vitamin A equivalents were 6 for β-carotene and 12 for other carotenoids.

Nutrient	INFOODS tagname[1]	Units	Description/synonym/method
Retinol	RETNOL	µg	All trans retinol only, HPLC.
β-carotene	CARTBEQ	µg	Beta-carotene equivalents; equals (µg β-carotene) + (0.5 x µg other provitamin A carotenoids); HPLC.
Vitamin C	VITC	mg	Vitamin C; HPLC and titration.
Vitamin E	VITE	mg	Vitamin E/α-tocopherol equivalents; equals (mg α-tocopherol) + (0.4 x mg β-tocopherol) + (0.1 x mg gamma-tocopherol) + (0.01 x mg delta-tocopherol) + (0.3 x mg alpha-tocotrienol) + (0.05 x mg β-tocotrienol) + (0.01 x mg gamma-tocotrienol); HPLC.
Thiamin	THIA	mg	Thiamin; HPLC, fluorescence detection of thiochrome.
Riboflavin	RIBF	mg	Riboflavin; HPLC, fluorescence detection.
Niacin equivalents	NIAEQ	mg	Total niacin equivalents; equals (mg pre-formed niacin (HPLC, UV detection)) + (1/60 x mg tryptophan (HPLC)).
Vitamin B_6	VITB6C	mg	Vitamin B_6; HPLC, fluorescence detection.
Vitamin B_{12}	VITB12	µg	Vitamin B_{12}; microbiological.
Folate	FOL	µg	Folate, total (a combination of synthetic and naturally occurring folate); radioassay or microbiological.
Calcium	CA	mg	Calcium, wet ashing, ICAPS-AES.
Phosphorus	P	mg	Phosphorus, wet ashing, ICAPS-AES.
Magnesium	MG	mg	Magnesium, wet ashing, ICAPS-AES.
Iron	FE	mg	Iron, wet ashing, ICAPS-AES or dry ashing, AAS.
Zinc	ZN	mg	Zinc, wet ashing, ICAPS-AES or dry ashing, AAS.
Potassium	K	mg	Potassium; wet ashing, ICAPS-AES.
Selenium	SE	µg	Selenium; fluorometry or wet ashing ICP-AES.
Manganese	MN	mg	Manganese; wet ashing, ICAPS-AES.
Copper	CU	mg	Copper; wet ashing, ICAPS-AES.

1 Klensin et al 1989. The up-to-date listing can be found on the world wide web: http://www.fao.org/infoods/.

* This table was adapted from Ministry of Health 1999.

The method used by PC-SIDE to estimate usual intake distributions consists of the four major tasks: preliminary data adjustments, semiparametric transformation to normality, estimation of within and between individual variances for intakes, and finally back transformation into the original scale. These tasks, described below, are summaries of those found in the PC-SIDE User's Guide. Detailed information describing the PC-SIDE methodology can be found in Nusser et al (1996), Dodd (1996) and Carriquiry (2003).

a. **Preliminary data adjustments:** Preliminary data adjustments include shifting observed intake data by a small amount away from zero, incorporating survey weights by creating an equal weights sample, and correcting for the effect of sample day (first versus all the rest) on the mean and variance of the distribution of observed intakes.

b. **Semiparametric transformation to normality:** Observed intake data (whether adjusted or not) generally have non-normal distributions. For nutrients such as vitamins and some micronutrients, skewness is quite extreme. Most statistical procedures rely on the assumption of normality. The PC-SIDE procedure transforms adjusted dietary intake data into normality as part of obtaining estimates of usual intake distributions. The transformation into normality in PC-SIDE is done in two steps. In the first step, data are transformed so that their distribution is as close to normal as possible by using a power transformation. However, power transformed data are not necessarily normal. Thus, a second transformation that takes the power transformed intakes into the normal scale is

employed. This second step in the transformation is nonparametric and is based on a grafted polynomial model. The power transformation plus the grafted polynomial function make up the semiparametric transformation into normality.

c. **Estimation of within and between individual variances in intakes:** PC-SIDE uses a measurement error model for observed daily intakes, similar to the model proposed by the National Research Council Subcommittee on Criteria for Dietary Evaluation (1986). The model states that the observed intake for an individual on any day is equal to that individual's usual intake plus a measurement error. The variance of the usual intakes is the between individual variance. The variance of the measurement errors is the within individual variance, and reflects the day-to-day variation in intakes for an individual. Estimates for both the within (intra) and the between (inter) individual variances are obtained under the measurement error model under the assumption of normality. The variances are used to estimate the distribution of usual intakes in the normal scale.

d. **Back-transformation into the original scale:** The final step in the methodology is to transform the estimated usual intake distribution from the normal scale into the original scale. As the original transformation is nonlinear the transformation into normality by applying the inverse transformation is required. The inverse transformation makes an adjustment for the fact that the mean of a nonlinear function of a random variable is not the nonlinear function of the mean. The inverse transformation is based on an approximation to the mean function. This back transformation is called mean transformation since it brings the distribution of usual intakes (true individual means) back into the original scale. The programme estimates the statistics of interest from the estimated usual intake distribution. For example, estimates for the mean and the variance of the usual intake distribution for a nutrient, for a set of percentiles, or for the proportion of the population below (or above), a given threshold is available.

Adequacy of nutrient intake (probability analysis)

The adequacy of vitamin A, riboflavin, folate, vitamin B12, vitamin C, iron, calcium and zinc intakes were evaluated by probability analysis (National Research Council Subcommittee on Criteria for Dietary Evaluation 1986). Comparison with the mean requirement (shortcut probability approach) was used to evaluate the intake of these nutrients except iron intakes in menstruating females that were evaluated using full probability analysis (see below). Nutrient requirements formulated by the United Kingdom Panel on Dietary Reference Values (UK Department of Health 1991) were used in the analyses (Table V). Vitamin E, copper, manganese, selenium, phosphorus and potassium intakes could not be evaluated by probability analysis, as there were no suitable mean requirement estimates. Niacin, thiamin and vitamin B6 could not be evaluated by probability analysis, because the mean requirement estimates are based on a ratio, for example vitamin B6 is 13 µg/g protein. The current PC-SIDE programme does not allow for ratios to be adjusted for intra-individual variation.

Probability analysis compares nutrient intakes with the corresponding requirement distribution and calculates the likelihood (probability) that a particular nutrient intake would fail to meet requirement. Lower nutrient intakes are associated with a higher

probability of inadequacy as they are less likely to meet requirement, while higher nutrient intakes have a low probability of inadequacy.

To perform full probability analysis it is necessary to know the distribution of requirements (symmetry, mean and standard deviation) or to be able to make a reasonable assumption about the distribution. It is reasonable to assume that the distribution of requirements for most nutrients is normal. The only nutrient for which there is evidence to the contrary is iron where requirements in menstruating females are positively skewed. Each nutrient intake is compared to the requirement distribution and the area under the requirement distribution to the right of the intake value is the probability that intake is inadequate to meet requirement. The probabilities are then averaged to obtain the percent of the population with inadequate intakes.

The probability approach has been criticised because the variation in requirement (standard deviation) is not known for many nutrients. However, it has been demonstrated that when the requirement distribution is symmetrical (not necessarily normal) the probability approach is relatively insensitive to the variance of requirement (National Research Council 1986). Provided the intake distribution is wider than the requirement distribution, the mean requirement is known, and a symmetrical (not necessarily normal) distribution can be reasonably assumed; the percent of the population with intakes below the mean requirement will approximate the prevalence of inadequate intakes determined by full probability analysis (Beaton 1994). In other words, for those whose intake is below the mean requirement, the prevalence of inadequacy is over-estimated, and for those whose intake is above the mean requirement the prevalence is under-estimated, as the requirement distribution is symmetrical and the errors of over- and under-estimation tend to cancel each other out.

The requirement estimates from the UK Dietary Reference Values (UK Department of Health 1991) were chosen as they had been formulated more recently than the Australian Recommended Nutrient Intakes. The recent US requirement estimates (USDRIs) are not suitable, as the age bands do not fit well with the CNS02 sample of 5–14 year children. As the UK diet is similar to the New Zealand diet in factors affecting requirement estimates (eg, intake of animal products), the UK nutrient requirements may be applied to the New Zealand population. The mean requirements and the criteria the requirements are intended to satisfy are presented in Table V.

The probability of intake being inadequate was calculated using nutrient intakes first adjusted to remove the effects of day-to-day (intra-individual) variation. Details of this methodology are included in the previous section on PC-SIDE. This is important because on any given day a number of people will have unusually low or high intakes, which are not reflective of their ‘usual’ intake. Nutrient requirements, however, represent the required long-term average (usual) intakes, not amounts that must be consumed each day. Without adjusting for intra-individual variation the prevalence of inadequate intakes would be over- or under-estimated depending on where the intake distribution lies in relation to the requirement distribution.

Evaluating nutrient intakes by probability analysis is preferable to making direct comparisons with recommended intakes as the variation in requirement between individuals is taken into account (National Research Council 1986). Directly comparing

nutrient intakes with recommended intakes fails to recognise that the recommended intakes are devised to be sufficient to meet the needs of almost all healthy individuals. Consequently, an individual may still meet their own requirement although not consuming the recommended intake.

When interpreting the prevalence of inadequate intakes it is important to note:

- **The prevalence of inadequate intakes reflects the criterion on which requirement is based.** For example, if the requirement for nutrient X is based on maintaining body stores (assuming normal losses) and it is estimated 15 percent of the population have inadequate intakes; this indicates 15 percent 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.
- **Accurate assessment of whether dietary intakes are adequate requires a combination of biochemical, anthropometric and dietary measurements.** The estimates of the prevalence of inadequate intakes serve to highlight areas which *may* be of concern. However, the body is highly adaptable and enhances the absorption and/or decreases the obligatory losses of many nutrients if dietary intake is inadequate. Conversely, it is possible that dietary intake appears adequate but due to a high content of absorption inhibitors in the diet and/or high nutrient losses (due to physiological or pathological factors), a deficiency results. In addition, errors in the nutrient intake data (from over or under-reporting and the translation of food into nutrient intakes) introduce error into the estimates of the prevalence of inadequate intakes. Therefore, biochemical and anthropometric measurements are required to accurately determine nutritional status as the net effect of dietary intake and the body's response must be taken into account (Gibson 1990).

Food security

Full food security is defined as 'access by all people at all times to enough food for an active healthy life; food which is personally acceptable and safe' (Hamilton et al 1997). Some people in developed countries experience food insecurity due to lack of money, despite a plentiful food supply.

To document the food security status of New Zealand households 'indicators' were developed for the NNS97. After reviewing the food security indicators currently used in developed countries it was decided to identify the key issues surrounding access to food for New Zealanders by conducting focus groups among groups of New Zealanders on low incomes. The groups included Māori and Pacific participants who were responsible for food buying and preparation in their households.

From this information eight questions were developed to encompass the range of issues that might affect New Zealand households. These were pre-tested prior to the NNS97 and re-formatted into eight statements, each preceded by a verbal explanation. Participants were given 'options' to choose in response to these statements (for example, 'often', 'sometimes', 'never'), which reflected the situation for themselves (if they were a single person household), or for their household. Further details of the methodology and the results for the New Zealand population from the NNS97 have been published (Parnell et al 2001a; Parnell et al 2001b).

The same indicator statements used in the NNS97 were presented to adult members of the households of children in the CNS02. Data were not collected from households where the child was interviewed without an adult present. If more than one child from a household participated in the study, the responses were used from the interview that took place with the first child. The data collected thus include a sample of New Zealand households with children 5–14 years.

The computer-based statements and responses are included in Appendix D.

Table V: Estimated average requirements (EAR) per day used in the probability analysis

Nutrient	Age (years)	EAR[1]	Basis of requirement
Vitamin A	5–6	300 µg RE	Supports all vitamin A dependent functions and maintains liver stores
Retinol equivalents (RE)	7–10 11–14 females 11–14 males	350 µg RE 400 µg RE 400 µg RE	
Riboflavin	5–6 7–10 11–14 females 11–14 males	0.6 mg 0.8 mg 0.9 mg 1 mg	Saturation of tissues with riboflavin
Folate	5–6 7–10 11–14 females 11–14 males	75 µg 110 µg 150 µg 150 µg	Adequate red blood cell folate and liver storage levels (NOT the requirement to prevent neural tube defects)
Vitamin B12	5–6 7–10 11–14 females 11–14 males	0.7 µg 0.8 µg 1 µg 1 µg	Maintains liver stores
Vitamin C	5–6 7–10 11–14 females 11–14 males	20 mg 20 mg 22 mg 22 mg	Mid-point between requirement to prevent scurvy and intake which produces measurable plasma concentrations
Iron	5–6 7–10 11–14, females, non-menstruating 11–14, females, menstruating 11–14 males	4.7 mg 6.7 mg 5.7 mg[2,3] Menstruating females:[4] Iron intakes were converted to absorbed iron (assuming 15% absorption). Basal losses of 0.86 mg/d were subtracted from the absorbed iron intakes. These values were log transformed (Rn) and compared with the log (Rn) normalised distribution of menstrual iron losses (-0.734 mean, 0.777 SD, log units). 8.7 mg	Maintains normal clinical function and supply of iron to tissues (includes menstrual loss in women of child-bearing age)
Calcium	5–6 7–10 11–14 females 11–14 males	350 mg 425 mg 625 mg 750 mg	Support growth and match any obligatory losses
Zinc	5–6 7–10 11–14 females 11–14 males	5 mg 5.4 mg 7 mg 7 mg	Match losses

1 The EARs are from the UK Dietary Reference Values (1991).

2 The requirement of 5.7 mg differs from the published UK value (6.7 mg) as the UK had incorrectly assigned the same basal loss to men and women over 50 years (G Beaton, personal communication).

3 It is acknowledge that this assessment does not take account of the increment for growth, for this age group.

4 Females were asked whether they were menstruating.

Physical activity

The decision on the type of physical activity questions used in CNS02 included the following considerations.

1. *Length of recall*. Consensus is that previous-day recall physical activity instruments offer the most promise for use with children (Welk et al 2000), but the limitation of this format is that data must be obtained on multiple days in order to take into account the normal intra-individual variability in activity patterns. Longer recall periods for children, eg, four weeks, will tend to be associated with more errors of omission than with adults. A seven-day recall can be used to assess 'typical' level of physical activity and appeared to be the best compromise.

2. *Memory cues*. Children are most likely to provide accurate information with the use of memory cues (Baranowski 1988). Baranowski recommended using a segmented day approach (eg, before school, playtime, lunch etc) as well as separating weekday and weekend activities. Another memory cue he recommended was listing common physical activities to use as a checklist.

Following a review of the international literature the Physical Activity Questionnaire for Children (PAQ-C) was chosen. This questionnaire was developed by Crocker et al (1997) and uses a series of questions about general activity patterns to calculate an overall score. The activity list included in question one (see Appendix D) was modified to include the most popular activities identified during the CNS pilot study. In diverse samples of children the scale has consistently demonstrated acceptable internal consistency and validity (Kowalski et al 1997a; Kowalski et al 1997b). External validity has also been examined with moderate relationships (Crocker et al 1997).

Limitations of this particular questionnaire include: no estimate of total energy expenditure; while an estimate of frequency of participation in particular activities is provided it does not estimate intensity or duration; the focus is on activities during the school year.

These questions covered activity patterns during the most recent school week. The mean activity rating for each child was calculated in the following manner: Each activity in Physical Activity Question 5 was scored on a five-point scale, from 1 for 'none' to 5 for '7+' times per week. The score for question 5 was the mean of these activities. The remaining seven physical activity questions were each scored on a five-point scale, with a value of 1 for the least active to 5 for the most active category. The overall mean activity rating was the average of the eight questions, with scores ranging from a minimum of one to a maximum of five.

Inactivity questions were based on the pilot study and included questions on time spent watching television or videos and time spent playing computer or video games. These computer-based questions are included in Appendix D.

Dental

This section was based on questions pre-tested by researchers involved in the CNS pilot study (Watson et al 2000). A report covering the procedures and results of this pretesting was presented to the Ministry of Health (Thomson and Drummond 2001) and has been validated with clinical data (Jamieson et al, in press). These computer-based questions are included in Appendix D.

Eating patterns

The questions in this section were based on those asked in the CNS Pilot Study (Watson et al 2000). The questions explore the type of diet a child has, eating patterns in a school day, and salt use. These computer-based questions are included in Appendix D.

Food frequency questionnaire

Prior to the CNS02, there was no food frequency questionnaire (FFQ) suitable for New Zealand children. A qualitative food frequency questionnaire was developed in the pilot survey. The pilot survey involved collecting diet records from 428 children (224 females, 204 males; 137 Māori, 143 Pacific and 148 NZEO) aged 1–14 years across the North Island (Watson et al 2000). All 24-hour diet records were converted to nutrient intakes using the New Zealand Food Composition Database (New Zealand Institute for Crop & Food Research Ltd 2000). A list of foods that provided more than 95 percent of nutrient intake was developed for energy and other important nutrients (eg, fat, saturated fat, protein, iron and calcium) for each ethnic, age and gender subgroup surveyed in the pilot study. Identification of foods was facilitated by the use of colour photographs. The FFQ was designed for children and/or their parents/ caregivers, but interviewers assisted in its completion when necessary. The FFQ has similar or better repeatability in New Zealand children compared to child or adolescent FFQs from other countries (Metcalf et al, in press).

With the change in age of recruitment from 1–14 years in the pilot survey, to school-based recruitment of children aged 5–14 years in the CNS02 minor changes to the wording of some of the food items were made and questions on infant milks were excluded. In addition, some adjustments of descriptions of foods and beverages were made so that they were more consistent with the 24-hour diet recall categories and dietary supplements were excluded as they were part of the 24-hour diet recall methodology.

Unlike the 24-hour diet recall method which is designed to collect the quantities of foods and beverages consumed, the FFQ used in this study describes how often foods or beverages are consumed in the previous four weeks. Some of the 'food categories' used in the FFQ (ie, ways in which foods were grouped together) differ from the ways in which foods were grouped in order to describe 'dietary sources' of nutrients from the 24-hour recall data. It is not intended that direct comparisons of data collected by these two different instruments should be made. However, in most instances a consistent picture of food and beverage intake is provided by these two methods.

The FFQ is included in Appendix E.

Anthropometry

Anthropometric measurements were taken during the second interview at school: height, weight, mid-upper arm circumference, waist circumference, triceps and subscapular skinfold measurements. For all anthropometric measurements the children wore light clothing and no shoes and the data were entered directly into the computer.

- ***Weight.*** This was measured to the nearest 0.1 kg. Scales were calibrated with a standard weight each day. Two measurements were taken and if these differed by more than 0.5 kg a third measurement was taken. The weight measurement for each child was the mean of the two closest measurements.
- ***Height.*** Measurements were made with a portable stadiometer. Two measurements were made to the nearest 0.1 cm. If these differed by more than 0.5 cm a third measurement was taken. The height measurement for each child was the mean of the two closest measurements.
- ***Circumferences.*** Waist circumference was measured at the highest point of the iliac crest and made at minimal respiration. The mid-upper arm circumference was taken at the midpoint in the length of the horizontal line between the acromion process and the tip of the olecranon. Two measurements were made to the nearest 0.1 cm at each site. If these differed by more than 0.5 cm a third measurement was taken. The measurement for each site was the mean of the two closest measurements.
- ***Skinfolds.*** Subcutaneous skinfolds were measured with Holtain skinfold callipers at two sites: triceps and subscapular. The triceps site was the midpoint in the length of the horizontal line between the acromion process and the tip of the olecranon. The subscapular site was on the inferior angle of the scapula. Two measurements were made to the nearest 0.1 mm at each site. If these differed by more than 0.5 mm a third measurement was taken. The measurement for each site was the mean of the two closest measurements.

Blood

Blood samples were collected at school by trained phlebotomists. After application of topical anaesthetic spray, venous blood was withdrawn from the antecubital fossa into a standard 4.5 ml EDTA vacutainer and a 7 ml trace element free vacutainer for plasma and serum samples, respectively. Samples were couriered overnight to Southern Community Laboratories (SCL), Dunedin, where samples were centrifuged and aliquoted within 24 hours of collection. SCL carried out all analyses except for serum zinc and free-erythrocyte protoporphyrin, which were or will be carried out by research staff in the research laboratories of the Departments of Human Nutrition and Biochemistry, University of Otago.

Iron status

The following methods were used to determine iron status:

- A complete blood cell count (CBC) was carried out, within 24 hours of collection, to provide values for *haemoglobin* and *red cell distribution width.* The CBC was analysed using an automated Coulter STKS (until July 2002) and a Sysmex XE 2100 cell counter (after July 2002). In house laboratory comparisons showed that the *haemoglobin*, *red cell distribution width* (RDW), and other red cell parameters measured, were highly correlated between the machines.
- *Serum ferritin* was measured using an immunoturbidometric (Roche Diagnostics) method on a Hitachi 917.
- *Iron transferrin saturation* was derived from serum iron and unsaturated iron binding capacity. *Serum iron* was analysed using the Ferrozine method without deproteinisation. The TIBC was measured using a modification of the Goodwin method (Goodwin et al, Clin Chem., 1966) on the Hitachi 917 (Roche Diagnostics).
- C-reactive protein was measured using an immunoturbidometric (Roche Diagnostics) method on a Hitachi #917 automated analyser.

Definition of iron deficiency

There are three main iron 'pools' in the body: 'storage' iron, measured by serum ferritin; 'transport' iron, measured by serum transferrin saturation; and 'red cell' iron measured, in NHANES III, by free-erythrocyte protoporphyrin, and in the CNS by red cell distribution width. The basis for the use of multiple tests to define iron deficiency was that NHANES II found that populations with only one abnormal test of iron status had a prevalence of anaemia similar to those with normal values for all three tests. The prevalence of anaemia was significantly elevated only in those with two or three abnormal measures of iron status (Cook et al 1976).

Alternative measures of red cell iron include free-erythrocyte protoporphyrin, red cell distribution width and mean cell volume. Due to the high prevalence of the alpha-thalassaemia trait in Polynesian New Zealanders which results in a decreased mean cell volume, mean cell volume is an inappropriate measure of iron status for the CNS. The selection of red cell distribution width as the alternative measure was supported by the observation in NHANES III that it was a promising test for detecting iron deficiency in women and young children (Dallman et al 1996).

Age and gender specific cut-offs, described in previous US surveys, including NHANES III, were used to determine abnormal values for haemoglobin, ferritin, transferrin saturation and red cell distribution width (Looker et al 1997; Recommendations to prevent and control iron deficiency 1998). Iron deficiency was defined by the presence of an abnormal value for two of the following three measures of iron status: ferritin, transferrin saturation, and red cell distribution width. This definition is based on that used in NHANES II and NHANES III.

Total cholesterol and HDL-cholesterol

Blood lipids were measured using an enzymatic method for total cholesterol (Roche Diagnostics, on an Hitachi 917), and PEG modified enzymes (cholesterol esterase and cholesterol oxidase) linked to a peroxidase colorimetric reaction (Roche Diagnostics) for high density lipoprotein (HDL) cholesterol.

Zinc

Serum zinc was analysed via atomic absorption spectrophotometric procedures (Perkin Elmer AA800) in the trace element laboratory of the Department of Human Nutrition, University of Otago.

Definition of zinc deficiency

The following age and gender cut-off values, as defined by Hotz et al (2003) were used to determine the proportion of children with low serum zinc concentrations: for samples collected in the morning – <9.94 µmol/L for 3–9-year-old boys, <9.85 µmol/L for 3–9-year-old girls, <10.70 µmol/L for 10–14-year-old boys, and <10.09 µmol/L for 10–14-year-old girls. For serum samples collected in the afternoon they were <8.56 µmol/L for 3–9-year-old boys, <8.72 µmol/L for 3–9-year-old girls, <9.33 µmol/L for 10–14-year-old boys and <9.02 µmol/L for 10–14-year-old girls.

Feedback of blood results to participants

Each parent/caregiver of a child who provided a blood sample received a letter with the results of the haemoglobin concentration (test for anaemia) and other measures of iron status within two weeks of collection. This letter explained the results of their blood tests, in relation to cut-offs for abnormality used in US studies, including NHANES III (described above). For children with iron deficiency and/or anaemia their parents were advised to take their child to see a general practitioner.

Urine

The urine samples were collected by the phlebotomist and/or interviewers during the second interview at school. The samples were couriered to SCL in Dunedin in chilly bins with the blood samples, where they were aliquoted into storage tubes and frozen at –20^{o}C. Associate Professor Christine Thomson, Department of Human Nutrition, University of Otago, was responsible for the measurement of urinary iodine and used a modification of the Sandell-Kolthoff reaction (1937) as discussed by Bourdoux (1988).

Iodine status

The International Council for Control of Iodine Deficiency Disorders (2001) suggest that not more than 20 percent of children should have a urinary iodine level of less than 5 µg/dL.

Explanatory notes for tables

1. All data have been weighted[1] to compensate for sampling bias in a three-step process:
    i. Determination of each participant's probability of selection into the survey sample.
    ii. Adjustment to the response rate to correct for differences occurring between regions, gender, age and ethnic groups.
    iii. Post-stratification by age, sex and ethnic group to the New Zealand population as at the 2001 Census. In addition, NZDep01 quintile data were post-stratified by age, sex and ethnic groups to the NZDep01 quintile as provided by Statistics New Zealand based on the 2001 Census. Further adjustment was needed because ethnicity and the index are not independent.
2. Cell sizes are included in Table VI for the different sections of the survey. For the nutrient data analysis an adequate number of repeat 24-hour diet recalls is needed to estimate the within individual variation. For subgroups where the number of repeats was less than 30 caution should be exercised in the interpretation of the results.

[1] Weighting is based on participation in the 24-hour diet recall. Although individuals did not necessarily participate in all sections of the survey, only one set of weights were used for all sections apart from Blood and Urine and Food Security. As only children from urban areas were sampled for blood and urine a separate weight was required. A separate household weight was required for the food security data. The weight for each household was calculated as the sum of the weights of the children within the household.

3. Sampling error: The CNS02 used a complex sampling design, which involved clustering. It is therefore not appropriate to calculate the standard errors using formulas that assume simple random sampling. To assist readers a guide to the level of sampling error present in population proportions has been prepared (Table VII). These sampling errors have been calculated as:

$$sampling\ error = 1.96\sqrt{\frac{deff \times p(1-p)}{n}}$$

where *deff* is the ratio of the variance calculated from the actual survey estimate, to the variance on the estimate had it been calculated assuming a simple random sample of the same size. Since *deff* varies for health characteristics and sub populations (age, sex, ethnic groups) within characteristics an average *deff* value calculated over several subpopulations over a wide selection of variables was used in the sampling error equation.

4. Age of the child was determined on the day of the interview. Nineteen children (11 males, eight females) had their 15th birthday between the date of registration and the date of the interview. The data from these children have been included in the 11–14 age group.

5. Derivation of ethnic group: Where only one ethnic group was given, that category was coded. In cases where the child stated that they belonged to more than one ethnic group, a single ethnic category was assigned to that child using a system of priority recording of ethnicity. The following hierarchical rules were applied:

   i. If **Māori** was one of the groups reported, the participant was assigned to Māori.

   ii. If any of the **Pacific groups** was one of the groups reported, the participant was assigned to Pacific.

   iii. All remaining participants were assigned to New Zealand European and Others.

6. NZDep01: This is an index based on the individual's residential address. The scale has been divided into quintiles, from quintile I to quintile V, where quintile I represents the least 'deprived' areas and quintile V the most. Nine percent of children were unable to be allocated a quintile rating because of insufficient information about their home address. Therefore, their data could not be included.

7. Urban/rural: The school type of an individual was classified as being Urban if the school was located in either a main urban or secondary urban area. All other schools located in either rural or minor urban areas were classified as Rural.

8. SEM: This is the abbreviation of the standard error of the mean. The estimates of the SEM obtained through PC-SIDE used a jackknife replication method. The general form for the variance estimator, $v(\hat{\theta})$, is:

$$v(\hat{\theta}) = c\sum_{g=1}^{G}\left(\hat{\theta}_{(g)} - \hat{\theta}\right)^2$$

where:

$\hat{\theta}_{(g)}$ is the estimate of θ based on the observations included in the g-th replicate

G is the total number of replicates formed, and

c is a constant determined by the replication method used.

PC-SIDE assumes a specific sample design, where there are exactly two clusters per stratum. This simplifies the variance estimation process as c is set to one, and the number of replicates needed is greatly reduced. The design used in the CNS02, however, is unstratified and has multiple clusters. The appropriate jackknife replication method here involves calculating a replicate by setting the survey weights to 0 for a particular cluster (school), and recalculating the weights for the remaining clusters in the same way as the original survey weight calculation, this is repeated until each cluster has had its weights set to 0 once and only once. This is sometimes referred to as the JK(1) method, where as PC-SIDE uses the JK(2) method. For the JK(1) method the variance estimator, the value of c is equal to $\frac{G-1}{G}$. In the CNS02 the number of schools was 172, so 172 replicates were formed, ie, *G* =172. The SEM reported by PC-SIDE is:

$\sqrt{v(\hat{\theta})} = \sqrt{\sum_{g=1}^{G}\left(\hat{\theta}_{(g)} - \hat{\theta}\right)^2}$ where θ is the population mean in this case.

Obviously this does not incorporate the appropriate value of c, so all SEM obtained from PC-SIDE had to be multiplied by $\sqrt{\frac{171}{172}}$ to correct for this.

Explanatory notes for text

Only statistically significant differences among various groups (eg, age, gender, ethnic group) have been discussed in the text. In not all instances was it possible to carry out an appropriate statistical test usually because of the complex sampling design.

Differences in nutrient medians were calculated using the following pivotal quantity:

$$Q = \frac{T_1 - T_2}{\sqrt{S_{T_1}^2 + S_{T_2}^2}}$$

where T_1 and T_2 are the estimates of the medians from the subgroup 1 and subgroup 2 respectively, and S_1 and S_2 are the standard errors for these estimates. These pivotal quantities were then statistically tested for a significant difference by comparing the observed quantity with that of the two-tailed normal critical value at the 95 percent level of significance.

Differences in proportions between subgroups (eg, percent overweight) were considered to be significant if the 95th percentile confidence limit of the difference in proportions did not include zero. Differences in means (eg, height) were also assessed using confidence limits. Again the difference was considered significant if the confidence limit for the difference in mean excluded zero.

Table VI: Number of children

			New Zealand population (000s)	Registered	24-hour diet recall		Food habits	Physical activity	Health	FFQ	Anthro-pometry	Blood	Urine
					Initial	Repeat							
New Zealand children (5–14 years)			596	4728	3275	505	3271	3269	3272	3094	3151	1927	1796
	Males	5–6	60	535	383	49	382	382	383	364	367	211	224
		7–10	125	1058	738	94	735	736	737	695	710	448	443
		11–14	122	818	576	112	576	576	575	539	551	329	305
		Total	306	2411	1697	255	1693	1694	1695	1598	1628	988	972
	Females	5–6	56	448	309	50	309	307	309	291	288	169	158
		7–10	118	1006	687	97	687	686	687	647	667	428	397
		11–14	116	863	582	103	582	582	581	558	568	342	269
		Total	290	2317	1578	250	1578	1575	1577	1496	1523	939	824
NZDep01	Males	I	60	200	148	17	148	148	148	146	144	82	87
		II	57	266	198	30	197	198	198	186	194	110	106
		III	54	336	232	39	232	232	231	218	223	130	118
		IV	55	410	287	48	287	287	287	269	273	175	178
		V	69	945	677	103	677	677	677	631	650	443	431
	Females	I	58	215	152	28	152	152	152	147	148	74	65
		II	54	239	169	26	169	169	169	160	164	96	87
		III	52	256	160	22	160	160	160	150	154	92	81
		IV	52	383	266	49	266	265	266	247	256	171	150
		V	65	993	693	113	693	691	693	663	670	468	409
School type	Males	Urban	#	2083	1445	240	1444	1444	1444	1360	1389	988	972
		Rural	#	328	252	15	249	250	251	238	239	0	0
	Females	Urban	#	1997	1347	235	1347	1346	1347	1281	1303	939	824
		Rural	#	320	231	15	231	229	230	215	220	0	0
Māori	Males	5–6	15	220	149	13	149	149	149	136	141	74	77
		7–10	30	459	286	43	286	286	286	261	273	148	153
		11–14	27	286	196	42	196	196	196	182	182	77	74
		Total	73	965	631	98	631	631	631	579	596	299	304
	Females	5–6	14	200	131	16	131	130	131	120	119	61	53
		7–10	28	438	289	37	289	289	289	262	276	150	139
		11–14	27	273	173	33	173	173	172	165	169	68	52
		Total	69	911	593	86	593	592	592	547	564	279	244
Pacific	Males	5–6	5	169	131	20	131	130	131	129	129	87	90
		7–10	11	284	216	25	216	216	216	208	209	167	160
		11–14	10	222	167	25	167	167	167	154	165	126	116
		Total	26	675	514	70	514	513	514	491	503	380	366
	Females	5–6	5	133	95	17	95	95	95	92	90	61	64
		7–10	10	280	204	30	204	203	204	199	201	166	153
		11–14	9	341	245	37	245	245	245	234	241	199	153
		Total	24	754	544	84	544	543	544	525	532	426	370
NZEO	Males	5–6	39	146	103	16	102	103	103	99	97	50	57
		7–10	85	315	236	26	233	234	235	226	228	133	130
		11–14	84	310	213	45	213	213	212	203	204	126	115
		Total	208	771	552	87	548	550	550	528	529	309	302
	Females	5–6	37	115	83	17	83	82	83	79	79	47	41
		7–10	80	288	194	30	194	194	194	186	190	112	105
		11–14	80	249	164	33	164	164	164	159	158	75	64
		Total	197	652	441	80	441	440	441	424	427	234	210

Table VII: Effect of sample size on accuracy of estimated proportions[1,4]

Sample size	Proportion[2]									
	5%	**10%**	**15%**	**20%**	**25%**	**30%**	**35%**	**40%**	**45%**	**50%**
25	12%[3]	16%[3]	19%[3]	22%[3]	24%	25%	26%	27%	27%	27%
50	8%[3]	12%[3]	14%	15%	17%	18%	18%	19%	19%	19%
75	7%[3]	9%	11%	13%	14%	14%	15%	15%	16%	16%
100	6%[3]	8%	10%	11%	12%	12%	13%	13%	14%	14%
150	5%	7%	8%	9%	10%	10%	11%	11%	11%	11%
200	4%	6%	7%	8%	8%	9%	9%	9%	10%	10%
250	4%	5%	6%	7%	7%	8%	8%	8%	9%	9%
300	3%	5%	6%	6%	7%	7%	7%	8%	8%	8%
350	3%	4%	5%	6%	6%	7%	7%	7%	7%	7%
400	3%	4%	5%	5%	6%	6%	6%	7%	7%	7%
450	3%	4%	5%	5%	6%	6%	6%	6%	6%	6%
500	3%	4%	4%	5%	5%	6%	6%	6%	6%	6%
1000	2%	3%	3%	3%	4%	4%	4%	4%	4%	4%
1500	2%	2%	3%	3%	3%	3%	3%	3%	3%	4%
2500	1%	2%	2%	2%	2%	2%	3%	3%	3%	3%
3500	1%	1%	2%	2%	2%	2%	2%	2%	2%	2%

1 The values in the table are 1.96 x SE, therefore p +/- the value are the 95% confidence limits. For example, if 30% of the sample choose a particular response (sample size = 100) we can be 95% confident that the correct percentage lies between 18 and 42% (30% ± 12%).

2 Note that the sample error on a proportion estimate p (where p > 50%) is the same as that of a proportion estimate 1–p produced using the same sized sample.

3 The lower limit of these confidence intervals are zero.

4 The sampling errors have been calculated as $SE = \sqrt{\frac{deff \times p(1-p)}{n}}$

Where *deff* is the ratio of the variance calculated from the actual survey estimate, to the variance on the estimate had it been calculated assuming a simple random sample of the same size. Since *deff* varies over a wide range of health characteristics and subpopulations an average *deff* value (calculated over several subpopulations and a wide selection of variables) was used in the SE calculation.

Appendix C: Additional Dietary Source Tables

Table I: Starch sources[1]

			Bread %	Potatoes, kumara and taro %	Grains and pasta %	Breakfast cereals %	Biscuits %	Bread based dishes %	Cakes and muffins %	Pies and pasties %	Snack foods %	Snack bars %
New Zealand children (5–14 years)			34	15	9	9	7	4	4	4	3	2
	Males	5–6	38	13	8	11	7	2	3	4	3	2
		7–10	32	15	10	11	6	4	5	4	3	1
		11–14	34	17	9	9	6	5	3	4	2	1
		Total	34	15	9	10	6	4	4	4	2	1
	Females	5–6	37	13	9	9	7	4	3	3	4	3
		7–10	34	14	10	8	8	4	4	3	4	2
		11–14	33	16	9	6	7	5	5	4	3	2
		Total	34	15	9	7	7	5	4	4	3	2
NZDep01	Males	I	32	16	9	12	8	3	4	3	2	1
		II	35	13	10	12	6	5	4	3	3	2
		III	35	17	9	9	7	5	5	3	2	2
		IV	32	15	10	10	6	4	4	5	2	2
		V	36	16	9	8	5	4	3	5	3	1
	Females	I	31	14	9	8	10	5	7	2	2	3
		II	35	13	10	6	8	5	8	3	3	2
		III	33	14	14	8	7	5	3	3	2	2
		IV	32	16	9	8	7	4	2	4	5	2
		V	35	15	9	7	6	4	3	6	4	1
School type	Males	Urban	34	15	10	10	6	4	4	4	2	1
		Rural	35	16	6	12	7	3	5	4	2	2
	Females	Urban	33	14	10	7	8	5	5	4	3	2
		Rural	39	16	6	8	6	4	4	2	3	2
Māori	Males	5–6	36	15	7	12	5	2	3	7	3	2
		7–10	33	17	8	10	6	4	3	4	3	1
		11–14	36	19	5	9	4	5	3	6	2	<1
		Total	35	18	7	10	5	4	3	6	3	1
	Females	5–6	33	18	8	9	6	4	2	4	4	2
		7–10	36	16	7	9	7	4	3	5	4	1
		11–14	30	19	6	6	7	7	5	6	4	<1
		Total	33	18	7	7	7	5	4	5	4	1
Pacific	Males	5–6	42	13	8	7	6	2	3	6	4	1
		7–10	35	17	10	6	6	4	2	7	3	<1
		11–14	31	19	9	5	5	4	3	8	3	<1
		Total	35	17	9	6	6	4	3	7	3	<1
	Females	5–6	36	15	10	7	7	3	2	7	4	1
		7–10	38	16	9	6	5	4	4	5	4	<1
		11–14	33	21	7	3	6	5	3	7	4	<1
		Total	36	18	8	5	6	4	3	6	4	<1
NZEO	Males	5–6	39	12	8	12	9	2	4	2	3	2
		7–10	31	13	11	12	7	5	6	3	3	2
		11–14	34	16	10	9	6	5	4	3	2	2
		Total	33	14	10	11	7	4	5	3	2	2
	Females	5–6	39	10	9	9	8	4	3	3	3	4
		7–10	33	13	12	8	8	4	4	2	3	2
		11–14	34	14	10	7	7	5	6	4	2	2
		Total	34	13	11	8	8	4	5	3	3	2

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table II: Total sugars sources[1]

			Beverage %	Fruit %	Sugar and sweets %	Milk %	Dairy products %	Biscuits %	Cakes and muffins %	Bread %	Vegetables %	Breakfast cereals %
New Zealand children (5–14 years)			24	17	15	9	8	7	5	3	2	2
	Males	5–6	22	20	13	9	9	7	4	3	2	2
		7–10	22	17	15	9	7	6	6	2	2	2
		11–14	28	12	17	9	7	7	4	2	2	2
		Total	24	15	15	9	8	7	5	2	2	2
	Females	5–6	22	18	14	11	9	7	3	3	2	1
		7–10	22	21	14	7	8	8	5	3	2	2
		11–14	28	16	14	8	9	7	5	2	2	1
		Total	24	18	14	8	8	7	4	3	2	1
NZDep01	Males	I	23	15	12	11	10	7	4	2	3	4
		II	22	16	17	9	8	5	5	3	2	3
		III	22	16	15	9	8	7	6	2	2	2
		IV	24	13	19	9	6	7	4	2	2	2
		V	29	17	15	7	7	6	4	2	2	1
	Females	I	25	19	11	9	8	7	7	2	2	2
		II	21	21	12	9	8	8	7	3	3	1
		III	24	17	14	8	7	7	4	3	3	2
		IV	24	17	15	8	10	6	3	3	2	2
		V	27	17	17	8	7	7	3	2	1	1
School type	Males	Urban	25	15	16	9	8	6	4	2	2	2
		Rural	21	17	13	9	7	7	7	3	2	3
	Females	Urban	25	18	13	8	8	7	4	3	2	1
		Rural	22	19	15	8	7	7	5	3	2	1
Māori	Males	5–6	26	18	15	8	9	6	3	2	2	1
		7–10	25	18	16	7	8	6	4	3	2	2
		11–14	29	11	22	8	6	6	4	2	2	2
		Total	27	15	18	8	7	6	4	2	2	2
	Females	5–6	22	20	13	9	11	8	3	2	2	1
		7–10	26	18	16	6	9	8	3	2	2	2
		11–14	31	12	18	6	8	7	3	2	1	<1
		Total	28	16	16	7	9	8	3	2	2	1
Pacific	Males	5–6	26	22	13	8	7	6	4	3	<1	1
		7–10	31	18	11	6	6	7	4	2	1	1
		11–14	34	16	16	4	5	5	5	3	1	1
		Total	31	18	13	6	6	6	4	3	1	1
	Females	5–6	27	21	12	10	7	7	2	2	<1	1
		7–10	30	18	14	6	8	5	5	3	1	1
		11–14	34	14	19	5	4	6	4	2	2	<1
		Total	31	17	15	6	6	6	4	2	1	<1
NZEO	Males	5–6	20	21	12	10	10	7	4	3	2	3
		7–10	20	17	15	10	7	6	7	2	2	3
		11–14	27	12	15	9	8	7	4	3	2	3
		Total	23	15	14	10	8	7	5	3	2	3
	Females	5–6	21	17	15	12	9	7	3	3	2	2
		7–10	19	22	13	7	7	8	6	3	2	2
		11–14	26	18	11	9	9	7	5	3	3	2
		Total	22	19	13	9	8	7	5	3	2	2

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table III: Glucose sources[1]

			Fruit	Beverage	Sugar and sweets	Vegetables	Dairy products	Savoury sauces	Snack bars	Breakfast cereals	Cakes and muffins	Bread
			%	%	%	%	%	%	%	%	%	%
New Zealand children (5–14 years)			32	30	10	5	4	3	2	2	2	1
	Males	5–6	40	23	11	5	4	3	3	2	2	<1
		7–10	35	26	11	5	4	3	2	2	2	1
		11–14	24	35	12	5	4	3	3	2	1	1
		Total	31	30	12	5	4	3	2	2	2	1
	Females	5–6	37	27	10	4	4	2	4	2	1	1
		7–10	40	24	9	5	4	2	2	1	2	2
		11–14	28	37	8	5	4	2	2	2	2	1
		Total	35	30	9	5	4	2	2	2	2	2
NZDep01	Males	I	29	32	9	6	6	2	2	4	1	1
		II	33	25	14	5	4	3	3	3	<1	2
		III	31	29	10	6	4	2	3	2	2	<1
		IV	25	27	17	5	3	3	3	3	2	1
		V	33	33	10	4	4	3	2	<1	2	<1
	Females	I	36	31	6	5	4	2	4	1	3	2
		II	37	28	7	6	4	2	2	2	2	2
		III	31	31	9	6	3	2	3	2	1	2
		IV	34	30	9	4	6	3	3	2	1	2
		V	33	33	10	4	3	2	2	1	1	<1
School type	Males	Urban	30	30	12	5	4	3	2	2	1	1
		Rural	35	26	10	6	4	3	3	3	2	2
	Females	Urban	34	31	8	5	4	2	2	2	2	2
		Rural	36	28	11	5	3	2	3	2	1	2
Māori	Males	5–6	37	26	11	5	4	3	3	1	1	<1
		7–10	34	31	9	4	5	3	2	1	1	2
		11–14	21	38	16	4	4	4	1	2	1	<1
		Total	29	33	12	4	4	4	2	1	1	<1
	Females	5–6	42	22	9	5	4	3	3	1	1	1
		7–10	34	31	10	4	5	2	2	2	2	<1
		11–14	22	44	11	3	4	3	1	<1	1	<1
		Total	29	36	10	4	5	2	2	1	1	<1
Pacific	Males	5–6	40	33	7	2	3	2	2	1	2	<1
		7–10	35	37	5	3	4	2	<1	<1	1	<1
		11–14	28	42	7	3	4	3	<1	1	2	<1
		Total	33	39	6	3	4	2	1	<1	2	<1
	Females	5–6	45	29	6	2	4	1	2	<1	<1	<1
		7–10	34	38	7	3	4	1	1	<1	2	<1
		11–14	26	45	10	4	2	3	<1	<1	2	<1
		Total	32	40	8	3	3	2	1	<1	2	<1
NZEO	Males	5–6	42	19	11	5	4	3	3	3	2	<1
		7–10	35	23	12	5	4	4	2	3	2	2
		11–14	24	34	12	6	4	2	3	3	1	1
		Total	31	27	12	6	4	3	3	3	2	1
	Females	5–6	35	29	10	4	4	1	4	2	1	1
		7–10	43	20	9	6	3	2	3	1	2	3
		11–14	32	34	7	6	5	2	3	3	2	2
		Total	37	27	8	5	4	2	3	2	2	2

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table IV: Lactose sources[1]

			Milk %	Dairy products %	Beverage %	Sugar and sweets %	Biscuits %	Cakes and muffins %	Potatoes, kumara and taro %	Puddings and desserts %	Grains and pasta %	Savoury sauces %
New Zealand children (5–14 years)			62	17	4	3	2	2	2	2	1	<1
	Males	5–6	64	19	3	2	2	1	2	2	<1	<1
		7–10	63	16	4	2	2	2	2	2	1	<1
		11–14	63	15	4	3	2	2	2	1	1	<1
		Total	63	16	4	3	2	2	2	2	1	<1
	Females	5–6	65	18	3	2	2	1	1	1	<1	<1
		7–10	60	18	4	4	3	2	2	1	1	<1
		11–14	57	18	3	4	3	3	2	2	2	<1
		Total	60	18	3	3	3	2	2	1	1	<1
NZDep01	Males	I	65	17	3	2	2	1	2	1	2	<1
		II	66	17	2	3	2	2	2	<1	1	<1
		III	60	16	4	3	2	2	2	3	<1	1
		IV	65	14	5	2	2	2	2	1	2	<1
		V	60	18	4	3	2	2	3	1	<1	<1
	Females	I	62	16	5	3	3	3	1	1	2	<1
		II	63	18	1	3	2	4	1	<1	<1	<1
		III	59	17	3	3	3	2	2	<1	1	<1
		IV	56	21	3	5	2	1	3	2	2	<1
		V	59	17	5	3	3	2	2	2	<1	<1
School type	Males	Urban	63	16	4	3	2	2	2	1	1	<1
		Rural	63	14	2	1	2	3	3	3	1	1
	Females	Urban	60	18	4	3	3	2	2	1	1	<1
		Rural	60	17	3	3	3	2	2	3	2	<1
Māori	Males	5–6	60	19	3	3	2	1	3	4	<1	1
		7–10	59	20	2	2	3	2	3	<1	1	<1
		11–14	62	14	4	4	2	1	3	2	1	<1
		Total	61	17	3	3	2	2	3	2	1	<1
	Females	5–6	58	23	4	2	3	1	1	2	<1	<1
		7–10	53	23	4	3	3	1	2	3	<1	<1
		11–14	54	22	2	4	4	3	3	2	<1	<1
		Total	54	23	3	3	3	2	2	2	<1	<1
Pacific	Males	5–6	65	18	2	3	3	<1	<1	3	<1	0
		7–10	60	19	4	3	3	1	1	3	<1	0
		11–14	58	16	3	4	3	4	2	3	1	<1
		Total	61	18	3	3	3	2	1	3	<1	<1
	Females	5–6	66	14	7	<1	3	<1	<1	4	<1	<1
		7–10	60	21	2	4	3	2	1	<1	<1	<1
		11–14	57	13	3	8	4	3	2	2	<1	<1
		Total	61	17	4	4	3	2	1	2	<1	<1
NZEO	Males	5–6	66	18	3	1	2	2	2	2	<1	<1
		7–10	64	15	4	2	2	3	2	2	1	<1
		11–14	64	15	4	3	2	2	2	1	2	1
		Total	64	16	4	2	2	2	2	2	1	<1
	Females	5–6	68	17	3	2	2	1	1	<1	<1	<1
		7–10	62	16	4	3	3	2	2	<1	1	1
		11–14	58	18	4	3	2	3	2	2	2	<1
		Total	62	17	3	3	3	2	2	1	2	<1

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table V: Maltose sources[1]

			Bread	Sugar and sweets	Beverage	Snack bars	Pies and pasties	Bread based dishes	Potatoes, kumara and taro	Grains and pasta	Biscuits	Breakfast cereals
			%	%	%	%	%	%	%	%	%	%
New Zealand children (5–14 years)			46	18	8	5	4	3	3	2	2	2
	Males	5–6	53	13	8	6	4	1	3	1	2	2
		7–10	44	18	8	5	5	3	3	3	2	2
		11–14	44	19	8	3	4	4	5	2	1	2
		Total	46	18	8	4	5	3	4	2	2	2
	Females	5–6	49	18	6	8	3	2	3	2	2	1
		7–10	47	18	8	5	3	3	2	3	3	1
		11–14	46	16	9	4	4	5	2	3	2	1
		Total	47	17	8	5	4	4	2	3	3	1
NZDep01	Males	I	44	16	11	3	4	2	3	3	2	4
		II	44	22	6	4	4	4	7	1	1	2
		III	46	19	7	4	6	4	1	2	2	2
		IV	40	21	11	6	5	2	4	3	2	2
		V	53	14	7	4	5	3	3	2	2	<1
	Females	I	44	14	9	6	2	4	4	4	4	2
		II	52	12	8	5	4	5	<1	2	3	1
		III	45	19	8	7	3	4	<1	3	2	1
		IV	46	19	7	6	3	3	2	3	2	1
		V	47	19	9	4	4	4	2	2	2	<1
School type	Males	Urban	45	19	8	4	5	3	4	2	2	2
		Rural	51	13	8	5	5	3	3	2	2	2
	Females	Urban	46	17	8	5	4	4	2	3	3	1
		Rural	53	18	6	5	2	3	2	2	2	1
Māori	Males	5–6	47	15	9	5	7	2	5	<1	2	1
		7–10	49	17	8	4	5	3	2	2	2	1
		11–14	45	25	8	2	4	5	2	2	<1	1
		Total	47	20	8	3	5	3	3	2	2	1
	Females	5–6	48	14	8	8	5	4	1	2	3	1
		7–10	47	20	7	4	5	3	1	2	2	2
		11–14	42	26	6	2	4	7	2	1	2	<1
		Total	45	21	6	4	5	4	2	2	2	1
Pacific	Males	5–6	58	8	9	3	6	1	4	1	3	<1
		7–10	52	7	10	2	5	3	8	2	3	<1
		11–14	47	17	6	2	8	5	5	1	2	<1
		Total	52	11	9	2	6	3	6	2	3	<1
	Females	5–6	47	10	18	4	8	2	<1	1	2	<1
		7–10	56	13	9	3	5	3	<1	1	3	<1
		11–14	46	17	8	<1	7	4	6	1	3	<1
		Total	50	14	10	2	6	3	3	1	3	<1
NZEO	Males	5–6	55	13	7	6	3	1	3	1	2	3
		7–10	42	20	7	6	5	3	2	3	2	2
		11–14	44	18	9	4	4	4	6	2	1	2
		Total	44	18	8	5	4	3	4	2	2	2
	Females	5–6	50	21	3	9	1	2	3	2	2	1
		7–10	46	18	8	5	3	3	2	3	4	1
		11–14	48	12	10	5	3	5	<1	4	2	2
		Total	48	16	8	6	3	3	2	3	3	2

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table VI: Insoluble non-starch polysaccharides sources[1]

			Bread %	Fruit %	Vegetables %	Potatoes, kumara and taro %	Breakfast cereals %	Grains and pasta %	Biscuits %	Pies and pasties %	Bread based dishes %	Nuts and seeds %
New Zealand children (5–14 years)			19	15	12	11	10	6	4	3	3	2
	Males	5–6	21	19	10	9	14	5	3	3	1	2
		7–10	18	15	11	11	12	6	4	3	3	3
		11–14	20	11	12	14	11	5	4	3	3	2
		Total	20	14	11	12	12	5	4	3	3	3
	Females	5–6	21	18	11	10	9	5	4	3	2	3
		7–10	18	18	12	10	9	6	4	3	3	2
		11–14	19	16	12	12	8	5	5	3	3	2
		Total	19	17	12	11	8	6	4	3	3	2
NZDep01	Males	I	18	13	16	11	12	6	4	2	2	2
		II	22	15	10	10	13	6	4	2	3	2
		III	20	13	11	13	11	5	4	3	3	3
		IV	19	11	11	13	12	6	3	4	3	4
		V	20	15	8	14	11	5	3	4	3	2
	Females	I	18	20	13	9	8	6	5	2	3	2
		II	19	20	13	9	7	5	5	2	4	2
		III	19	14	14	10	7	7	5	3	4	2
		IV	16	16	12	13	10	6	4	3	3	3
		V	19	16	8	13	9	6	4	5	3	2
School type	Males	Urban	20	14	11	12	12	6	4	3	3	3
		Rural	19	15	12	11	13	4	4	3	2	2
	Females	Urban	18	17	12	11	8	6	5	3	3	2
		Rural	21	16	13	12	9	4	4	2	3	4
Māori	Males	5–6	18	16	9	11	16	4	3	6	2	2
		7–10	19	16	10	14	12	5	3	3	2	2
		11–14	19	11	8	17	13	4	3	5	3	2
		Total	19	14	9	15	13	5	3	4	2	2
	Females	5–6	18	18	10	15	11	5	4	3	2	2
		7–10	19	17	10	13	10	5	4	5	3	2
		11–14	17	13	9	16	8	5	4	5	5	1
		Total	18	15	9	15	9	5	4	4	4	2
Pacific	Males	5–6	24	22	3	11	9	4	3	5	<1	1
		7–10	20	16	7	16	7	6	4	6	3	2
		11–14	19	17	7	17	6	5	3	7	3	2
		Total	20	17	6	16	7	5	3	6	2	2
	Females	5–6	19	22	3	12	9	5	4	7	1	2
		7–10	21	18	7	14	8	6	3	5	2	2
		11–14	21	14	7	19	4	4	3	6	4	1
		Total	20	17	6	16	7	5	3	6	3	1
NZEO	Males	5–6	21	20	11	8	14	5	4	1	<1	3
		7–10	18	15	12	9	13	6	5	2	3	3
		11–14	21	10	14	12	11	5	4	3	4	3
		Total	20	14	13	10	12	6	4	2	3	3
	Females	5–6	23	18	12	7	9	5	5	2	3	3
		7–10	17	18	14	9	9	7	5	2	3	2
		11–14	19	17	14	10	8	5	5	3	3	3
		Total	19	18	13	9	8	6	5	2	3	3

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table VII: Soluble non-starch polysaccharides sources[1]

			Bread %	Potatoes, kumara and taro %	Fruit %	Breakfast cereals %	Vegetables %	Pies and pasties %	Grains and pasta %	Biscuits %	Bread based dishes %	Snack foods %
New Zealand children (5–14 years)			20	17	12	11	10	4	4	3	3	2
	Males	5–6	22	14	13	14	9	4	3	3	1	2
		7–10	19	16	12	13	9	4	4	3	3	2
		11–14	21	20	8	11	10	5	4	3	3	2
		Total	20	17	10	12	10	4	4	3	3	2
	Females	5–6	23	14	14	9	9	4	4	4	3	3
		7–10	19	15	15	9	10	4	4	4	3	3
		11–14	20	17	12	8	11	5	4	3	3	2
		Total	20	16	13	9	10	4	4	3	3	3
NZDep01	Males	I	18	15	11	12	15	3	4	3	2	1
		II	22	15	12	14	9	3	3	3	3	3
		III	21	19	10	11	9	4	3	3	3	2
		IV	19	19	8	11	9	5	6	3	3	2
		V	21	20	11	12	6	6	4	3	3	3
	Females	I	19	14	17	8	10	2	6	4	3	2
		II	20	13	16	7	12	3	4	3	4	2
		III	20	15	13	8	12	4	5	3	3	2
		IV	18	18	11	10	10	5	4	3	3	5
		V	21	18	12	9	7	7	4	3	3	3
School type	Males	Urban	20	18	10	12	10	4	4	3	3	2
		Rural	21	16	11	13	10	5	3	3	2	2
	Females	Urban	20	16	14	9	10	5	5	4	3	3
		Rural	22	18	13	9	11	2	3	3	3	2
Māori	Males	5–6	21	16	10	16	7	9	3	2	1	2
		7–10	19	20	12	13	7	5	4	3	2	2
		11–14	20	23	7	12	6	7	3	2	3	2
		Total	20	20	10	13	7	7	3	3	2	2
	Females	5–6	19	22	12	10	7	4	4	3	2	4
		7–10	20	19	13	10	8	6	3	3	2	3
		11–14	18	22	9	8	8	7	3	3	4	4
		Total	19	21	11	9	8	6	3	3	3	3
Pacific	Males	5–6	26	16	14	9	2	8	3	3	1	3
		7–10	22	21	11	7	6	9	4	3	3	2
		11–14	19	25	11	6	5	11	4	2	3	3
		Total	22	22	12	7	5	9	4	3	2	3
	Females	5–6	22	18	14	10	2	8	4	3	2	4
		7–10	24	20	11	7	5	7	4	3	2	3
		11–14	20	27	10	4	5	9	3	2	4	3
		Total	22	22	11	6	5	8	3	3	3	3
NZEO	Males	5–6	22	13	15	14	11	2	3	4	1	2
		7–10	19	14	12	14	10	3	4	3	3	2
		11–14	21	18	8	11	12	4	4	3	4	2
		Total	20	16	11	13	11	3	4	3	3	2
	Females	5–6	24	9	15	9	10	3	4	4	3	3
		7–10	18	14	17	9	11	2	5	4	3	3
		11–14	21	14	13	8	13	5	5	3	3	2
		Total	20	13	15	9	12	3	5	4	3	3

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table VIII: Vitamin A sources[1]

			Vegetables %	Milk %	Butter and margarine %	Dairy products %	Fruit %	Bread based dishes %	Beverage %	Eggs and egg dishes %	Grains and pasta %	Cheese %
New Zealand children (5–14 years)			31	12	7	6	4	3	3	3	3	3
	Males	5–6	31	15	7	6	5	1	3	4	2	2
		7–10	33	14	6	5	4	3	3	3	3	2
		11–14	30	11	7	6	3	4	3	3	3	3
		Total	31	13	7	6	4	3	3	3	3	3
	Females	5–6	29	17	7	6	4	3	4	3	2	2
		7–10	32	12	6	5	5	3	3	3	3	3
		11–14	31	10	6	6	3	4	3	3	4	4
		Total	31	12	6	6	4	3	3	3	3	3
NZDep01	Males	I	41	12	4	6	3	2	3	2	3	3
		II	29	14	6	6	5	4	3	3	2	5
		III	32	12	6	5	3	4	3	3	2	3
		IV	25	15	8	5	3	4	4	3	5	2
		V	27	11	10	6	4	3	3	5	2	2
	Females	I	40	12	3	5	4	3	3	2	2	3
		II	30	11	6	5	5	5	3	3	3	4
		III	36	9	5	4	4	3	3	3	4	3
		IV	28	12	5	7	4	3	3	4	6	4
		V	23	13	10	5	4	3	4	4	3	3
School type	Males	Urban	29	13	7	6	4	4	3	4	3	3
		Rural	39	13	8	4	4	2	2	2	2	3
	Females	Urban	30	12	6	6	4	3	3	3	3	3
		Rural	34	11	7	4	4	3	4	2	4	3
Māori	Males	5–6	28	14	9	7	4	1	3	6	2	1
		7–10	27	13	9	7	5	3	2	6	3	2
		11–14	23	13	12	6	3	4	3	4	3	2
		Total	25	13	10	6	4	3	3	5	3	2
	Females	5–6	30	15	8	8	5	3	3	5	2	2
		7–10	27	11	8	7	5	3	3	4	3	2
		11–14	27	10	8	7	3	5	3	2	2	4
		Total	28	11	8	7	4	4	3	4	2	3
Pacific	Males	5–6	11	18	12	7	6	2	5	7	1	2
		7–10	16	12	11	6	6	3	4	8	2	2
		11–14	21	8	11	4	5	5	2	8	3	2
		Total	17	12	11	5	5	4	3	8	2	2
	Females	5–6	9	20	14	6	4	2	8	10	2	<1
		7–10	15	13	12	8	5	3	6	8	2	2
		11–14	18	9	9	4	6	6	4	6	2	1
		Total	15	12	11	6	5	4	5	7	2	2
NZEO	Males	5–6	34	15	6	6	5	1	3	2	2	3
		7–10	36	15	5	4	4	3	3	2	3	3
		11–14	33	11	6	6	3	4	3	2	3	4
		Total	34	13	6	5	4	3	3	2	3	3
	Females	5–6	31	18	6	5	4	3	4	2	2	3
		7–10	36	12	5	4	5	3	3	2	4	4
		11–14	33	10	5	6	3	3	4	2	5	4
		Total	34	12	5	5	4	3	3	2	4	4

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table IX: Thiamin sources[1]

			Breakfast cereals %	Bread %	Dietary supplements %	Potatoes, kumara and taro %	Savoury sauces %	Milk %	Beverage %	Vegetables %	Grains and pasta %	Fruit %
New Zealand children (5–14 years)			28	16	12	5	5	4	3	3	3	3
	Males	5–6	34	16	9	4	5	4	3	2	2	2
		7–10	35	15	6	5	4	4	3	3	3	3
		11–14	29	18	10	6	4	4	4	3	2	2
		Total	32	16	8	6	4	4	3	3	3	2
	Females	5–6	28	18	6	5	6	6	3	3	3	3
		7–10	26	18	5	6	6	4	3	3	4	4
		11–14	17	14	28	5	4	3	3	3	2	2
		Total	22	16	16	5	5	4	3	3	3	3
NZDep01	Males	I	27	12	22	5	5	5	3	3	2	2
		II	36	18	7	5	5	4	2	3	2	2
		III	30	17	10	6	4	4	3	3	2	2
		IV	33	16	3	6	5	5	5	3	3	2
		V	34	19	3	6	3	3	3	2	3	3
	Females	I	22	15	13	5	6	5	4	3	4	4
		II	25	19	3	6	4	5	4	4	2	4
		III	21	18	10	6	5	4	4	4	4	4
		IV	27	16	5	6	5	5	3	3	4	3
		V	17	13	35	4	4	3	3	1	3	2
School type	Males	Urban	32	16	10	5	4	4	4	3	3	2
		Rural	34	18	2	6	5	5	3	4	2	3
	Females	Urban	22	15	18	5	4	4	3	3	3	3
		Rural	24	18	10	6	9	4	3	3	2	3
Māori	Males	5–6	44	16	<1	5	4	4	3	2	2	2
		7–10	37	16	<1	6	3	4	3	2	3	3
		11–14	33	16	10	7	3	4	4	1	2	2
		Total	37	16	5	6	3	4	3	2	3	2
	Females	5–6	33	17	<1	7	3	6	3	2	4	3
		7–10	28	19	<1	7	6	4	3	3	4	3
		11–14	22	17	5	8	7	4	3	2	3	3
		Total	26	18	2	7	6	4	3	2	3	3
Pacific	Males	5–6	28	26	0	6	3	5	5	<1	2	3
		7–10	26	22	0	8	2	3	5	1	5	3
		11–14	21	23	0	10	2	3	3	2	2	4
		Total	25	23	0	8	2	3	4	2	3	4
	Females	5–6	32	19	0	6	2	6	9	<1	3	3
		7–10	26	25	<1	7	1	4	4	2	3	3
		11–14	16	26	<1	11	2	3	4	2	3	3
		Total	24	24	<1	8	2	4	5	2	3	3
NZEO	Males	5–6	31	15	13	4	6	5	3	3	2	3
		7–10	35	14	9	5	5	5	3	3	3	3
		11–14	28	18	11	6	4	4	4	3	2	2
		Total	31	16	11	5	5	4	3	3	3	2
	Females	5–6	26	18	9	4	7	7	3	3	3	3
		7–10	25	17	7	5	6	4	3	4	4	5
		11–14	16	12	36	4	4	3	3	3	2	2
		Total	21	15	22	5	5	4	3	3	3	3

1 Proportion of total nutrient intake obtained from each food group; Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table X: Riboflavin sources[1]

			Milk	Breakfast cereals	Dietary supplements	Dairy products	Bread	Savoury sauces	Grains and pasta	Potatoes, kumara and taro	Beef and veal	Poultry
			%	%	%	%	%	%	%	%	%	%
New Zealand children (5–14 years)			23	13	10	8	7	4	3	3	3	3
	Males	5–6	25	17	3	11	8	4	3	3	3	3
		7–10	25	17	5	9	4	3	4	3	3	2
		11–14	22	14	9	7	9	3	3	3	3	3
		Total	24	15	7	8	7	3	3	3	3	3
	Females	5–6	28	12	3	11	8	4	3	2	2	2
		7–10	22	12	4	9	9	4	3	3	3	3
		11–14	18	7	25	8	6	3	3	3	2	2
		Total	21	10	14	9	7	4	3	3	3	3
NZDep01	Males	I	24	14	18	8	4	3	3	2	2	2
		II	22	17	7	7	13	4	2	2	2	2
		III	23	14	5	8	9	3	2	3	4	2
		IV	28	16	2	8	4	4	5	3	2	3
		V	20	16	4	8	5	3	4	4	4	4
	Females	I	25	10	9	9	9	4	4	2	2	2
		II	24	10	3	10	13	3	3	2	3	3
		III	23	10	11	9	6	4	4	3	3	3
		IV	22	12	5	11	5	4	5	4	5	3
		V	16	7	32	6	5	3	3	2	2	3
School type	Males	Urban	23	15	8	8	7	3	3	3	3	3
		Rural	26	18	2	9	5	5	2	4	4	2
	Females	Urban	21	10	14	9	7	3	3	2	2	3
		Rural	21	10	10	9	7	7	3	3	4	3
Māori	Males	5–6	23	20	<1	11	4	4	3	3	3	3
		7–10	22	18	<1	10	4	3	4	4	3	3
		11–14	22	16	10	6	4	3	3	4	4	3
		Total	22	17	4	9	4	3	4	4	4	3
	Females	5–6	24	14	<1	14	4	3	4	3	3	2
		7–10	21	13	<1	12	5	5	3	4	3	4
		11–14	19	9	6	11	7	6	5	4	2	3
		Total	21	11	3	12	6	5	4	4	3	3
Pacific	Males	5–6	26	14	0	10	6	2	3	3	2	6
		7–10	20	13	0	8	7	2	5	4	3	7
		11–14	15	9	0	6	7	1	4	5	6	8
		Total	19	12	0	8	7	2	4	4	4	7
	Females	5–6	28	14	0	9	5	2	4	3	<1	5
		7–10	20	12	<1	10	11	<1	5	3	3	6
		11–14	15	6	<1	4	16	2	4	4	3	7
		Total	20	10	<1	8	12	1	4	4	3	6
NZEO	Males	5–6	26	16	4	11	9	5	3	2	3	3
		7–10	26	17	7	8	4	4	3	2	3	2
		11–14	23	13	10	7	10	3	3	3	2	3
		Total	25	15	8	8	8	4	3	3	3	2
	Females	5–6	30	12	5	10	10	5	3	2	2	2
		7–10	22	11	6	8	10	5	3	2	4	3
		11–14	18	7	31	7	5	3	3	2	2	2
		Total	21	9	18	8	7	4	3	2	3	2

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table XI: Niacin equivalents sources[1]

			Bread %	Poultry %	Breakfast cereals %	Beef and veal %	Potatoes, kumara and taro %	Milk %	Pies and pasties %	Bread based dishes %	Fish and seafood %	Sausages and processed meats %
New Zealand children (5–14 years)			11	11	8	8	7	6	4	4	3	3
	Males	5–6	13	12	11	8	6	7	4	2	3	3
		7–10	11	9	11	8	7	7	4	4	3	4
		11–14	11	13	8	8	7	6	5	4	4	4
		Total	11	11	9	8	7	6	4	4	4	4
	Females	5–6	13	10	9	7	6	8	4	4	2	3
		7–10	11	12	7	9	7	6	4	4	3	3
		11–14	11	10	6	6	7	6	5	5	3	3
		Total	11	11	7	7	7	6	5	4	3	3
NZDep01	Males	I	9	12	10	9	6	8	3	2	2	4
		II	12	10	11	6	6	6	3	5	4	4
		III	11	10	9	9	7	6	4	4	3	3
		IV	10	11	9	7	7	7	5	4	4	4
		V	12	12	8	9	7	4	6	4	6	4
	Females	I	10	12	7	4	6	8	2	5	3	2
		II	12	11	6	8	6	7	4	4	3	3
		III	12	12	6	8	6	6	4	6	2	4
		IV	10	11	8	10	7	5	5	4	3	2
		V	11	12	6	7	7	5	7	4	3	3
School type	Males	Urban	11	12	9	8	7	6	4	4	4	4
		Rural	12	9	11	11	7	7	5	3	2	4
	Females	Urban	11	11	7	7	7	6	5	5	3	3
		Rural	13	10	7	9	7	5	3	4	4	2
Māori	Males	5–6	11	11	12	10	6	5	8	2	2	4
		7–10	11	10	10	8	8	5	5	3	3	5
		11–14	11	10	9	9	9	5	7	4	5	3
		Total	11	10	10	9	8	5	6	4	4	4
	Females	5–6	11	10	8	9	9	6	4	4	4	3
		7–10	12	12	7	7	8	5	7	4	3	4
		11–14	10	11	5	6	10	4	7	6	4	3
		Total	11	11	7	7	9	5	6	5	3	3
Pacific	Males	5–6	14	16	7	5	6	5	8	2	6	3
		7–10	11	17	6	8	7	4	8	4	6	3
		11–14	9	18	4	11	8	2	9	4	8	3
		Total	11	17	5	9	7	3	8	4	7	3
	Females	5–6	12	16	8	2	7	7	9	3	3	2
		7–10	13	17	6	6	7	4	7	4	5	2
		11–14	10	17	3	8	9	3	8	5	6	2
		Total	12	17	5	6	8	4	8	4	5	2
NZEO	Males	5–6	13	11	11	7	6	8	2	2	3	3
		7–10	10	7	12	9	6	8	3	4	3	4
		11–14	11	13	8	8	7	6	3	4	4	4
		Total	11	10	10	8	7	7	3	4	3	4
	Females	5–6	13	9	9	6	5	10	3	4	1	3
		7–10	11	12	7	10	6	6	3	3	3	3
		11–14	11	9	6	6	6	6	5	5	3	3
		Total	11	10	7	8	6	7	4	4	3	3

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table XII: Vitamin B6 sources[1]

			Dietary supplements %	Fruit %	Potatoes, kumara and taro %	Breakfast cereals %	Poultry %	Milk %	Beverage %	Vegetables %	Bread %	Beef and veal %
New Zealand children (5–14 years)			13	11	10	9	7	6	6	4	4	4
	Males	5–6	8	12	9	14	7	7	4	4	5	3
		7–10	9	12	11	12	5	7	5	4	4	4
		11–14	10	8	11	9	9	6	4	6	5	4
		Total	10	10	11	11	7	6	5	5	4	4
	Females	5–6	6	17	9	9	6	8	6	4	6	3
		7–10	4	15	10	8	8	6	8	5	5	4
		11–14	29	7	9	4	5	5	7	4	3	2
		Total	16	12	9	6	6	6	7	4	4	3
NZDep01	Males	I	20	8	8	13	6	6	7	5	3	4
		II	8	12	10	14	6	7	3	5	6	2
		III	9	12	11	10	6	6	3	5	5	5
		IV	3	10	12	12	8	8	4	5	4	3
		V	9	12	12	7	8	5	5	4	4	4
	Females	I	11	12	8	8	6	7	15	4	5	2
		II	4	13	10	6	8	7	7	6	6	4
		III	7	13	11	8	8	6	3	5	5	4
		IV	5	15	12	9	7	6	2	5	4	6
		V	38	8	8	4	5	4	5	2	3	2
School type	Males	Urban	11	10	11	10	7	6	5	5	4	4
		Rural	3	11	12	16	6	8	3	4	4	6
	Females	Urban	18	11	9	6	6	6	7	4	4	3
		Rural	11	13	11	6	7	6	6	4	5	5
Māori	Males	5–6	<1	15	11	11	8	7	5	4	4	4
		7–10	1	12	13	11	7	6	5	4	4	5
		11–14	9	8	14	8	8	6	4	4	4	5
		Total	4	11	13	10	8	6	5	4	4	5
	Females	5–6	0	16	14	9	7	7	2	4	4	5
		7–10	<1	14	13	9	8	5	5	4	5	4
		11–14	5	9	14	5	9	5	4	4	5	3
		Total	2	12	14	8	8	6	4	4	4	4
Pacific	Males	5–6	0	18	9	9	11	7	4	2	6	3
		7–10	0	14	12	8	13	4	6	3	5	3
		11–14	0	11	14	4	15	3	2	5	4	5
		Total	0	13	12	7	13	4	4	3	5	4
	Females	5–6	0	19	12	7	11	7	5	2	5	1
		7–10	1	13	12	6	13	5	5	3	6	3
		11–14	<1	11	15	2	12	3	7	6	6	4
		Total	<1	13	14	5	12	5	6	4	6	3
NZEO	Males	5–6	12	11	9	15	6	7	3	4	5	3
		7–10	12	11	10	13	4	7	5	4	3	4
		11–14	12	8	10	10	8	6	4	6	5	3
		Total	12	10	10	12	6	7	4	5	4	4
	Females	5–6	9	18	7	10	5	9	7	4	6	3
		7–10	6	16	9	8	7	6	9	5	5	5
		11–14	37	6	7	4	4	5	7	4	3	2
		Total	22	11	8	6	5	6	8	4	4	3

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table XIII: Vitamin B12 sources[1]

			Milk %	Beef and veal %	Fish and seafood %	Dietary supplements %	Sausages and processed meats %	Pies and pasties %	Breakfast cereals %	Poultry %	Bread based dishes %	Dairy products %
New Zealand children (5–14 years)			18	13	8	8	7	6	6	5	4	4
	Males	5–6	20	12	7	13	6	6	6	5	2	5
		7–10	19	14	5	8	7	5	7	3	5	4
		11–14	15	13	14	4	11	5	5	5	4	3
		Total	18	13	9	7	9	5	6	4	4	4
	Females	5–6	25	11	3	4	5	8	7	5	4	6
		7–10	18	16	7	3	7	7	5	5	4	4
		11–14	15	10	7	14	5	6	4	5	5	4
		Total	18	12	7	8	5	7	5	5	4	5
NZDep01	Males	I	18	14	3	16	12	2	8	3	2	4
		II	20	10	8	6	6	4	9	4	7	5
		III	17	15	10	8	7	3	6	5	5	4
		IV	21	11	7	2	10	6	6	4	4	4
		V	13	14	19	5	6	9	4	5	5	3
	Females	I	23	7	6	7	3	4	7	6	4	5
		II	20	14	8	3	6	8	4	6	4	5
		III	18	16	2	5	7	8	6	4	6	4
		IV	17	17	6	3	5	8	5	5	4	6
		V	14	11	7	18	4	8	3	6	5	3
School type	Males	Urban	17	12	9	8	9	5	6	5	5	4
		Rural	18	17	11	3	10	6	7	4	2	4
	Females	Urban	18	11	6	8	6	7	5	5	5	5
		Rural	18	16	9	8	4	5	5	6	3	4
Māori	Males	5–6	19	17	8	<1	5	12	5	5	3	4
		7–10	17	14	7	<1	7	8	7	5	5	5
		11–14	15	14	22	3	5	8	4	4	4	3
		Total	17	14	14	2	6	9	5	5	4	4
	Females	5–6	18	15	6	<1	6	8	5	4	7	6
		7–10	15	11	6	<1	8	11	6	6	6	5
		11–14	15	11	10	3	5	11	3	6	6	5
		Total	16	12	7	1	6	11	4	6	6	5
Pacific	Males	5–6	18	10	21	0	5	11	5	7	3	4
		7–10	11	12	20	0	3	13	5	9	5	3
		11–14	7	17	24	0	4	11	2	9	5	2
		Total	11	14	22	0	4	12	4	9	5	2
	Females	5–6	21	4	7	0	3	16	4	9	6	4
		7–10	15	11	11	<1	3	11	5	9	7	4
		11–14	9	14	17	<1	3	9	2	8	6	2
		Total	13	11	13	<1	3	11	3	9	7	3
NZEO	Males	5–6	20	11	5	20	7	3	7	4	2	5
		7–10	21	14	3	12	8	3	8	2	6	4
		11–14	17	13	9	5	14	4	6	5	3	4
		Total	19	13	6	10	10	3	7	4	4	4
	Females	5–6	29	10	1	6	4	7	8	5	3	6
		7–10	19	18	7	4	7	5	5	5	3	4
		11–14	16	9	6	19	5	4	4	5	5	5
		Total	19	13	6	11	5	5	5	5	4	5

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table XIV: Phosphorus sources[1]

			Milk %	Bread %	Potatoes. kumara and taro %	Poultry %	Dairy products %	Breakfast cereals %	Grains and pasta %	Beef and veal %	Bread based dishes %	Biscuits %
New Zealand children (5–14 years)			18	10	6	5	5	4	4	4	4	4
	Males	5–6	20	11	6	6	6	6	3	4	2	3
		7–10	19	9	6	4	5	5	5	4	4	4
		11–14	17	10	7	6	4	5	4	4	4	3
		Total	18	10	6	5	4	5	4	4	3	3
	Females	5–6	22	11	5	4	6	4	3	3	3	4
		7–10	16	10	6	6	5	4	4	4	3	4
		11–14	17	10	6	5	5	4	4	3	4	4
		Total	17	10	6	5	5	4	4	4	4	4
NZDep01	Males	I	23	8	5	6	5	5	4	4	2	3
		II	18	11	6	5	4	5	4	3	5	3
		III	18	10	7	5	5	4	3	5	4	4
		IV	19	9	6	5	4	5	7	3	4	3
		V	14	11	8	6	4	5	3	5	4	3
	Females	I	22	8	5	5	6	4	5	2	4	5
		II	18	10	5	5	5	3	4	4	4	4
		III	16	10	6	5	5	4	5	4	5	4
		IV	15	9	7	5	6	4	4	5	4	4
		V	15	11	7	6	4	3	4	4	4	4
School type	Males	Urban	18	10	6	6	4	5	4	4	4	3
		Rural	18	10	6	4	4	6	3	6	3	4
	Females	Urban	18	10	6	5	5	4	4	3	4	4
		Rural	16	12	7	5	5	4	3	5	3	3
Māori	Males	5–6	17	10	6	6	6	6	3	6	2	3
		7–10	15	10	8	5	5	5	4	4	3	4
		11–14	16	10	9	5	3	5	3	5	4	3
		Total	16	10	8	5	4	5	3	5	3	3
	Females	5–6	17	9	8	5	7	4	3	5	3	4
		7–10	14	10	8	6	6	4	3	4	4	4
		11–14	13	9	9	5	6	3	3	3	5	4
		Total	14	9	8	5	6	4	3	4	4	4
Pacific	Males	5–6	17	13	6	8	4	4	2	2	2	3
		7–10	13	11	8	9	4	3	3	4	4	4
		11–14	8	10	9	10	2	2	3	6	4	3
		Total	12	11	8	10	3	3	3	5	4	3
	Females	5–6	19	10	7	8	5	3	3	1	3	4
		7–10	13	12	8	9	4	3	4	3	4	3
		11–14	10	10	10	10	2	2	3	4	5	3
		Total	13	11	9	9	4	2	3	3	4	4
NZEO	Males	5–6	21	11	5	5	6	6	3	4	2	4
		7–10	21	9	5	3	5	5	5	4	4	4
		11–14	19	9	6	6	4	4	4	4	4	3
		Total	20	10	6	5	4	5	4	4	4	3
	Females	5–6	24	12	4	4	6	4	3	3	4	4
		7–10	17	10	5	6	4	4	5	5	3	4
		11–14	18	10	5	4	5	4	5	3	4	3
		Total	19	10	5	5	5	4	4	4	4	4

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table XV: Magnesium sources[1]

			Bread %	Potatoes, kumara and taro %	Milk %	Fruit %	Breakfast cereals %	Beverage %	Vegetables %	Grains and pasta %	Biscuits %	Nuts and seeds %
New Zealand children (5–14 years)			13	11	9	8	8	5	5	4	3	3
	Males	5–6	15	10	10	9	10	5	4	3	3	3
		7–10	13	11	10	8	9	4	4	5	3	3
		11–14	13	12	9	5	8	5	5	4	3	3
		Total	13	11	10	7	9	5	5	4	3	3
	Females	5–6	15	9	11	10	6	5	4	3	4	4
		7–10	13	10	8	11	7	4	5	4	4	3
		11–14	13	12	9	7	7	6	5	4	4	3
		Total	13	11	9	9	6	5	5	4	4	3
NZDep01	Males	I	12	10	13	7	9	5	7	4	3	3
		II	15	10	10	7	9	4	4	5	3	3
		III	13	12	9	7	7	5	5	3	4	3
		IV	12	11	10	6	9	6	4	6	3	4
		V	14	14	7	8	7	5	3	4	3	2
	Females	I	11	9	11	10	6	6	5	5	5	2
		II	14	9	10	10	5	5	6	4	4	3
		III	13	10	9	8	6	5	5	7	4	2
		IV	12	11	8	8	10	4	4	4	3	4
		V	14	13	8	8	6	5	3	3	4	3
School type	Males	Urban	13	11	10	7	9	5	5	4	3	3
		Rural	14	11	10	7	10	4	4	3	4	3
	Females	Urban	13	11	9	9	7	5	5	4	4	3
		Rural	15	11	8	9	6	4	5	3	3	5
Māori	Males	5–6	14	11	9	9	11	5	3	3	3	2
		7–10	14	13	8	9	8	4	4	4	3	2
		11–14	14	14	8	5	10	5	3	3	2	2
		Total	14	13	8	7	9	5	3	3	3	2
	Females	5–6	13	13	9	10	6	4	3	3	4	3
		7–10	14	12	7	9	8	4	4	3	4	2
		11–14	12	14	7	6	5	5	3	3	4	2
		Total	13	13	7	8	7	5	3	3	4	2
Pacific	Males	5–6	17	13	8	10	6	5	2	2	3	2
		7–10	14	18	6	8	4	5	3	4	3	3
		11–14	12	22	4	7	5	4	3	3	2	2
		Total	14	19	6	8	5	5	3	3	3	2
	Females	5–6	13	16	9	10	5	7	1	3	3	2
		7–10	15	18	6	8	4	5	3	3	3	3
		11–14	13	23	4	7	3	5	4	3	3	2
		Total	14	20	6	8	4	5	3	3	3	2
NZEO	Males	5–6	15	9	11	8	10	5	5	4	4	4
		7–10	12	9	11	8	9	4	4	5	3	4
		11–14	13	11	10	5	8	5	6	4	3	4
		Total	13	10	11	7	9	5	5	4	3	4
	Females	5–6	15	7	13	11	6	5	4	3	4	5
		7–10	12	9	9	12	6	4	5	5	4	3
		11–14	13	9	10	8	8	6	5	5	4	3
		Total	13	9	10	10	7	5	5	5	4	4

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table XVI: Potassium sources[1]

			Potatoes. kumara and taro %	Milk %	Fruit %	Vegetables %	Bread %	Dairy products %	Beverage %	Beef and veal %	Poultry %	Breakfast cereals %
New Zealand children (5–14 years)			19	15	11	7	6	4	4	3	3	3
	Males	5–6	17	17	12	7	7	5	4	3	4	3
		7–10	19	16	11	7	6	4	3	4	3	3
		11–14	22	15	7	8	6	3	4	4	4	3
		Total	20	15	9	7	6	4	4	4	3	3
	Females	5–6	16	18	13	6	7	5	5	3	3	2
		7–10	18	13	14	8	6	4	4	4	4	2
		11–14	19	14	10	8	6	4	5	3	3	2
		Total	18	14	12	8	6	4	4	3	3	2
NZDep01	Males	I	18	20	9	9	6	5	4	4	4	3
		II	19	16	10	7	7	4	3	3	3	3
		III	20	14	9	9	6	4	4	4	3	3
		IV	20	17	8	6	6	3	4	3	3	3
		V	22	11	11	5	7	3	4	4	4	3
	Females	I	15	18	13	8	5	5	5	2	3	2
		II	15	15	14	9	6	5	4	3	3	2
		III	18	14	11	9	7	4	4	3	4	2
		IV	21	13	11	7	6	5	3	4	3	3
		V	20	13	11	5	7	4	4	4	4	2
School type	Males	Urban	20	15	9	7	6	4	4	3	3	3
		Rural	20	16	10	8	7	4	3	5	2	4
	Females	Urban	18	15	12	8	6	5	4	3	3	2
		Rural	20	13	12	8	8	4	4	4	3	2
Māori	Males	5–6	20	14	11	6	7	5	4	5	3	4
		7–10	22	13	12	5	6	4	3	4	3	3
		11–14	25	13	7	5	6	3	4	4	3	3
		Total	23	13	9	5	6	4	3	4	3	3
	Females	5–6	22	14	13	5	6	6	3	4	3	2
		7–10	21	11	12	6	7	5	4	3	4	2
		11–14	25	11	8	5	6	5	4	3	4	2
		Total	23	12	11	5	6	5	4	3	3	2
Pacific	Males	5–6	18	14	14	3	9	4	5	2	6	2
		7–10	23	11	11	4	7	3	4	5	6	2
		11–14	26	7	9	5	6	2	3	5	7	1
		Total	23	10	11	4	7	3	4	4	6	2
	Females	5–6	20	16	13	2	6	4	7	1	5	2
		7–10	22	11	11	5	8	4	4	3	6	2
		11–14	26	8	9	6	7	2	4	3	7	<1
		Total	24	11	10	5	7	3	4	3	6	1
NZEO	Males	5–6	15	18	12	8	7	5	4	3	3	3
		7–10	17	17	11	8	6	4	3	4	2	3
		11–14	20	16	7	9	6	3	4	3	4	3
		Total	18	17	9	8	6	4	4	3	3	3
	Females	5–6	13	20	13	7	8	5	6	2	3	2
		7–10	16	14	15	9	6	4	4	4	3	2
		11–14	17	16	11	9	6	5	5	3	2	2
		Total	16	16	13	9	7	4	5	3	3	2

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table XVII: Manganese sources[1]

			Bread %	Breakfast cereals %	Grains and pasta %	Biscuits %	Potatoes, kumara and taro %	Vegetables %	Fruit %	Bread based dishes %	Cakes and muffins %	Beverage %
New Zealand children (5–14 years)			29	14	9	6	6	5	4	4	4	3
	Males	5–6	32	18	8	5	5	5	4	1	3	3
		7–10	28	15	10	6	5	4	4	3	4	2
		11–14	30	14	9	5	7	6	2	4	3	3
		Total	29	15	9	5	6	5	3	3	3	3
	Females	5–6	33	11	9	6	5	4	5	3	2	2
		7–10	28	12	10	7	5	5	7	3	3	3
		11–14	28	11	8	6	6	5	3	5	4	4
		Total	29	11	9	6	5	5	5	4	4	3
NZDep01	Males	I	28	16	8	6	6	8	4	2	3	1
		II	32	16	9	5	5	4	3	4	3	2
		III	30	13	9	6	6	6	4	4	4	2
		IV	28	14	11	5	6	4	3	3	3	4
		V	32	14	9	5	7	3	3	3	3	3
	Females	I	26	11	9	7	5	5	8	5	6	3
		II	30	9	9	7	4	6	5	4	6	4
		III	27	13	11	7	5	6	4	5	2	3
		IV	27	13	9	6	6	4	6	4	2	2
		V	30	11	9	6	6	4	3	4	3	4
School type	Males	Urban	29	15	10	5	6	5	3	3	3	3
		Rural	31	17	5	6	6	5	4	3	5	2
	Females	Urban	28	11	10	7	5	5	5	4	4	3
		Rural	33	12	6	5	5	5	4	4	3	3
Māori	Males	5–6	29	21	6	5	6	4	3	2	2	2
		7–10	30	16	8	5	6	4	3	3	3	2
		11–14	31	16	6	4	8	4	2	4	3	4
		Total	30	17	7	5	7	4	3	3	3	3
	Females	5–6	30	13	8	6	7	3	6	3	2	2
		7–10	31	14	7	6	6	4	4	3	3	2
		11–14	27	10	7	7	8	4	3	6	5	5
		Total	29	12	7	6	7	4	4	4	3	3
Pacific	Males	5–6	36	11	9	5	6	1	4	1	2	6
		7–10	31	8	11	5	8	3	4	3	2	6
		11–14	28	7	11	4	9	3	4	4	3	6
		Total	31	8	11	5	8	3	4	3	2	6
	Females	5–6	31	10	10	6	7	2	6	2	2	4
		7–10	31	8	11	5	7	4	4	3	4	5
		11–14	30	5	9	5	10	3	4	4	3	7
		Total	31	7	10	5	8	3	4	3	3	6
NZEO	Males	5–6	32	19	8	6	4	5	4	<1	3	3
		7–10	27	16	10	6	5	4	4	3	5	2
		11–14	30	15	10	5	6	7	2	4	3	3
		Total	29	16	10	6	5	6	3	3	4	2
	Females	5–6	34	11	9	6	4	5	4	3	2	3
		7–10	26	12	10	7	4	5	8	4	4	2
		11–14	29	11	9	6	5	6	3	4	5	3
		Total	29	11	9	6	4	6	5	4	4	3

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Table XVIII: Copper sources[1]

			Bread %	Potatoes, kumara and taro %	Dietary supplements %	Vegetables %	Grains and pasta %	Fruit %	Breakfast cereals %	Beverage %	Biscuits %	Bread based dishes %
New Zealand children (5–14 years)			12	12	9	9	7	7	5	5	4	3
	Males	5–6	14	11	5	10	7	8	7	4	4	2
		7–10	12	12	5	7	9	7	7	5	4	4
		11–14	12	14	7	10	7	5	5	6	4	4
		Total	13	13	6	9	8	6	6	5	4	3
	Females	5–6	13	9	21	7	6	7	4	4	4	3
		7–10	11	10	18	8	7	8	4	4	4	2
		11–14	13	13	2	10	7	7	4	7	4	5
		Total	12	11	13	8	7	7	4	5	4	3
NZDep01	Males	I	10	10	17	9	6	6	6	5	4	2
		II	14	12	<1	8	8	7	8	6	3	4
		III	12	13	6	13	6	6	5	5	4	3
		IV	12	13	5	8	9	5	6	5	4	4
		V	14	15	4	4	8	7	5	6	3	4
	Females	I	10	9	21	6	7	8	4	5	5	4
		II	11	9	19	12	6	8	3	4	4	2
		III	9	8	33	7	7	5	3	4	3	3
		IV	14	15	<1	8	8	7	6	5	4	3
		V	14	14	<1	6	9	7	5	6	4	5
School type	Males	Urban	13	13	6	8	8	6	6	5	4	3
		Rural	13	13	7	11	5	7	7	4	4	2
	Females	Urban	13	12	3	9	9	8	4	6	5	4
		Rural	9	9	36	8	4	5	3	3	2	3
Māori	Males	5–6	13	13	12	6	6	7	7	4	3	2
		7–10	13	15	6	5	7	7	6	5	4	3
		11–14	13	18	<1	7	6	5	6	7	3	3
		Total	13	16	5	6	7	6	6	6	3	3
	Females	5–6	13	17	<1	5	8	9	5	4	5	3
		7–10	13	15	1	7	7	8	6	5	5	3
		11–14	12	17	<1	7	6	5	4	8	5	7
		Total	13	16	<1	7	7	7	5	6	5	4
Pacific	Males	5–6	18	13	0	1	7	9	5	5	4	2
		7–10	14	17	0	6	9	7	4	7	4	4
		11–14	12	19	0	3	7	7	3	8	3	4
		Total	14	17	0	4	7	7	4	7	4	3
	Females	5–6	15	16	0	2	8	10	5	6	4	2
		7–10	14	16	2	6	9	7	4	6	3	3
		11–14	13	20	<1	4	6	6	2	9	4	5
		Total	14	17	1	5	7	7	3	7	4	4
NZEO	Males	5–6	15	10	3	14	7	8	8	4	4	1
		7–10	12	10	5	7	9	7	7	4	4	4
		11–14	12	12	9	11	7	4	5	6	4	4
		Total	12	11	7	10	8	6	6	5	4	3
	Females	5–6	12	6	29	8	6	6	4	3	3	3
		7–10	10	8	24	8	7	8	3	3	4	2
		11–14	14	11	3	11	8	7	5	6	5	4
		Total	12	9	17	9	7	7	4	4	4	3

1 Proportion of total nutrient intake obtained from each food group. Results are presented for the 10 highest contributing food groups. For full food group definitions see Appendix B, Table III.

Appendix D: Computer-based Questions

General information

1. Has consent for the interview been given?
   - Yes
   - No

2. Is this a repeat interview?
   - Yes
   - No

3. Child is known as?

4. Date of birth?

5. Gender?
   - Male
   - Female

6. Which ethnic group do you belong to?
   (Repeated up to three times as necessary)
   (Green show card 1.1)
   - New Zealand Māori
   - Cook Island Māori
   - Fijian
   - Niuean
   - Samoan
   - Tokelauan
   - Tongan
   - Other Pacific Island
   - New Zealand European/Pakeha
   - Other European
   - Chinese
   - Other Asian
   - Indian
   - South East Asian
   - Other

7. Do you have a Māori birth parent, grandparent or great-grandparent etc?
   - Yes
   - No
   - Don't know

8. How long have you lived in New Zealand?
   (Green show card 1.2)
   - Always lived in New Zealand
   - Less than one year
   - 2–3 years
   - 4 or more years
   - Don't know

9. Would you be willing to complete a repeat interview?
   Yes
   No

Socio-economic

1. What type of place do you <<Name>> live in most of the time?
   Green Show Card 1.3
   House / townhouse
   Flat / unit
   Hostel
   Garage
   Caravan
   Sleepout
   Other
   Don't know

1_. We are now going to ask you some questions about where you (<<name>>) live most of the time.

2. Is this place rented or owned?
   Green Show Card 1.4
   Rented privately
   Rented (Housing New Zealand / Council)
   Owned
   Living with relatives
   Other
   Don't know

3. How many rooms are used for sleeping?
   (Count all spaces used for sleeping including lounge, sleep-out, garage, caravan, tent).
   1
   2
   3
   4
   5
   6
   7+
   Don't know

4_. In the last four weeks, we are interested to know how many people usually lived in your dwelling, including yourself?

4a. How many adults (those who have left school) lived in your dwelling?
   Enter 99 for don't know
   99

4b. How many school-age people (5+ years), including yourself, lived in your dwelling?

4c. How many under 5s lived in your dwelling?

5. What is the combined yearly income before tax from all sources (including wages, benefits, accommodation supplement), of all your household members?
Green Show Card 1.5
Loss
$0–$5,000
$5,001–$10,000
$10,000–$20,000
$20,001–$30,000
$30,001–$40,000
$40,001–$50,000
$50,001 or more
Don't know

6. How much money does your household usually spend each week on food and beverages (ie, at supermarket, dairy, takeaways, petrol station)?
Green Show Card 1.6
$1–$50
$51–$100
$101–$150
$151–$200
$201+
Don't know

24-hour diet recall – adult present

0. We need to ask you a few questions about who you are and whether you are the main food preparer for the child as we may need to ask for some further information later on.

1. Your name, first and last.

2. Sex
Male
Female

3. Your relationship to <<Name>>
Orange Showcard 2.1
Parent
Brother/sister
Grandparent
Uncle/auntie
Other

4. Do you usually live at the same address as <<Name>>?
Yes
No

5a. Your home phone number with area code.

5b. And your work phone number with area code.

6. Are you mainly responsible for preparing <<Name>> food?
   Yes
   No

7. What is the name of the main food preparer

8. What is the relationship of the main food preparer to <<Name>>?
   Orange Showcard 2.1
   Parent
   Brother/sister
   Grandparent
   Uncle/auntie
   Other

9a. What is the home phone number of the main food preparer including area code?

9b. What is the work phone number of the main food preparer including area code?

Food habits

0. We are now going to ask you some questions about your food habits.

1. Are there any sorts of foods you do not eat?
   Yes
   No
   Don't know

2. Which of the following foods do you not eat?
   Pink Showcard 3.1
   All meats
   Red meat
   Chicken
   Fish
   Dairy products
   Eggs
   Other

3_. We are now going to ask you some questions about when you ate over the past week.
   Pink Showcard 3.2

3a. Over the past week did you eat or drink something before you left home for school in the morning?
   Yes usually
   Yes sometimes
   No
   Don't know

3b. Over the past week did you eat or drink something on your way to school?
   Yes usually
   Yes sometimes
   No
   Don't know

3c. Over the past week did you eat or drink something while you were at school?
Yes usually
Yes sometimes
No
Don't know

3d. Over the past week did you eat or drink something on your way home from school?
Yes usually
Yes sometimes
No
Don't know

4_. These next few questions are about when you ate or drank at school over the past week.

4a. While at school over the past week did you eat or drink before school?
Yes usually
Yes sometimes
No
Don't know

4b. While at school over the past week did you eat or drink at morning break?
Yes usually
Yes sometimes
No
Don't know

4c. While at school over the past week did you eat or drink at lunchtime?
Yes usually
Yes sometimes
No
Don't know

4d. While at school over the past week did you eat or drink at afternoon break?
Yes usually
Yes sometimes
No
Don't know

4e. While at school over the past week did you eat or drink after school?
Yes usually
Yes sometimes
No
Don't know

5_. We would like to ask you now about the food or drink you have at school.

5a. Is the food or drink you have while you are at school brought from home?
Yes most of it
Yes some of it
None of it
Don't know

5b. Is the food or drink you have while you are at school bought from a local shop/dairy/takeaway?
- Yes most of it
- Yes some of it
- None of it
- Don't know

5c. Is the food or drink you have while you are at school bought from the school canteen or tuckshop?
- Yes most of it
- Yes some of it
- None of it
- Don't know

6_. Finally, in this section we are going to ask you some questions about adding salt to your food.

6a. Does the person who prepares your meals add salt when they are cooking?
- Yes usually
- Yes sometimes
- No
- Don't know

6b. Is it iodised (ie, contains iodine)?
- Yes
- No
- Don't know

7a. Do you add salt to your meals at the table?
- Yes usually
- Yes sometimes
- No
- Don't know

7b. Is it iodised (ie, contains iodine)?
- Yes
- No
- Don't know

Physical activity

0. We are first going to ask you questions about how often you watch tv or videos or play on a computer when you are not at school.

1. Have you watched TV or videos in the last seven days?
- Yes
- No

2a. Did you watch TV or videos last Saturday?
- Yes
- No

2b. How many hours did you watch TV or videos last Saturday?
- Less than one hour
- 1–2 hours
- 2–4 hours
- 4+ hours
- Don't know

2c. Did you watch TV or videos last Sunday?
- Yes
- No

2d. How many hours did you watch TV or videos last Sunday?
- Less than one hour
- 1–2 hours
- 2–4 hours
- 4+ hours
- Don't know

2e. Did you watch TV or videos on school days in the last week?
- Yes
- No

2f. On how many school days did you watch TV or videos?
- 5 days
- 4 days
- 3 days
- 2 days
- 1 day
- Don't know

2g. How much time do you normally spend each day watching TV or videos on school days?
- Less than one hour
- 1–2 hours
- 2–4 hours
- 4+ hours
- Don't know

3. Have you played computer or video games in the last seven days?
- Yes
- No

4a. Did you play computer or video games last Saturday?
- Yes
- No

4b. How many hours did you play computer or video games last Saturday?
- Less than one hour
- 1–2 hours
- 2–4 hours
- 4+ hours
- Don't know

4c. Did you play computer or video games last Sunday?
- Yes
- No

4d. How many hours did you play computer or video games last Sunday?
- Less than one hour
- 1–2 hours
- 2–4 hours
- 4+ hours
- Don't know

4e. Did you play computer or video games on school days?
- Yes
- No

4f. On how many school days did you play computer or video games?
- 5 days
- 4 days
- 3 days
- 2 days
- 1 day
- Don't know

4g. How much time do you normally spend playing computer or video games on a school day?
- Less than one hour
- 1–2 hours
- 2–4 hours
- 4+ hours
- Don't know

5_. We are now going to ask you questions about the physical activities you do in your spare time. Physical activity is described as 'sports, games, gym, dance or other activities that make you breathe harder, make your legs feel tired or make you sweat'. We are going to ask you how many times in the last seven days you have done each of the activities on the showcard. We will ask about each activity in turn.

5a. How many times have you played active games, eg, tag, bullrush or skipping in the last seven days?
- None
- 1–2 times
- 3–4 times
- 5–6 times
- 7+ times

5b. How many times have you done athletics in the last seven days?
- None
- 1–2 times
- 3–4 times
- 5–6 times
- 7+ times

5c. How many times have you played basketball or volleyball in the last seven days?

None
1–2 times
3–4 times
5–6 times
7+ times

5d. How many times have you gone biking or cycling in the last seven days?

None
1–2 times
3–4 times
5–6 times
7+ times

5e. How many times have you been climbing or tramping in the last seven days?

None
1–2 times
3–4 times
5–6 times
7+ times

5f. How many times have you played cricket in the last seven days?

None
1–2 times
3–4 times
5–6 times
7+ times

5g. How many times have you done dancing or ballet in the last seven days?

None
1–2 times
3–4 times
5–6 times
7+ times

5h. How many times have you played golf in the last seven days?

None
1–2 times
3–4 times
5–6 times
7+ times

5i. How many times have you done gymnastics or trampoline in the last seven days?

None
1–2 times
3–4 times
5–6 times
7+ times

5j. How many times have you played hockey in the last seven days?

None
1–2 times
3–4 times
5–6 times
7+ times

5k. How many times have you been jogging or running or doing cross country in the last seven days?

None
1–2 times
3–4 times
5–6 times
7+ times

5l. How many times have you done martial arts in the last seven days?

None
1–2 times
3–4 times
5–6 times
7+ times

5m. How many times have you played netball in the last seven days?

None
1–2 times
3–4 times
5–6 times
7+ times

5n. How many times have you played racquet sport, eg, tennis, badminton, squash in the last seven days?

None
1–2 times
3–4 times
5–6 times
7+ times

5o. How many times have you played rugby (union or league or touch) in the last seven days?

None
1–2 times
3–4 times
5–6 times
7+ times

5p. How many times have you been skate boarding or roller blading or speed skating or riding a scooter in the last seven days?

None
1–2 times
3–4 times
5–6 times
7+ times

5q. How many times have you played soccer in the last seven days?

None
1–2 times
3–4 times
5–6 times
7+ times

5r. How many times have you played softball or t-ball in the last seven days?

None
1–2 times
3–4 times
5–6 times
7+ times

5s. How many times have you been swimming or surfing in the last seven days?

None
1–2 times
3–4 times
5–6 times
7+ times

5t. How many times have you walked for at least a 15-minute period in the last seven days?

None
1–2 times
3–4 times
5–6 times
7+ times

5u. How many times have you been involved in a cultural group practice or performance in the last seven days?

None
1–2 times
3–4 times
5–6 times
7+ times

5v. Have you done any other physical activity in your spare time in the last seven days that we have not mentioned?

Yes
No

5w. How many times have you done this activity in the last seven days?

1–2 times
3–4 times
5–6 times
7+ times

6. How many times in the past week did you walk, bike, skate or scooter to or from school? Yellow Showcard 4.4
   - None
   - 1–2 times
   - 3–5 times
   - 6–8 times
   - 9–10 times
   - Don't know

7a. Over the last week did you go to a PE class?
   - Yes
   - No

7b. How much of the time were you very active during your physical education class or classes (eg, playing hard, running, jumping, throwing)?
   - A little
   - Quite a bit
   - Most of the time
   - All the time
   - Don't know

8. Over the last week what did you do most of the time at morning break on school days?
   - Sat down (talking, reading, doing school work)
   - Stood around
   - Walked around a little
   - Ran around and played quite a bit
   - Ran and played hard most of the time

9. Over the last week, what did you normally do at lunchtime (apart from eating lunch) on school days?
   - Sat down (talking, reading, doing school work)
   - Stood around
   - Walked around a little
   - Ran around and played quite a bit
   - Ran and played hard most of the time

10. In the last week, on how many days after school and before having a meal did you do sports, dance or play games in which you were very active?
   - None
   - 1 day
   - 2–3 days
   - 4 days
   - 5 days
   - Don't know

11. In the last seven days, how many evenings (after a meal) did you play sports, dance or play games in which you were very active?
    None
    1 evening
    2–3 evenings
    4 evenings
    5+ evenings
    Don't know

12. Last Saturday and Sunday, how many times in total did you play sports or games or other activities during the day in which you were very active?
    None
    1 time
    2–3 times
    4–5 times
    6 or more times
    Don't know

13a. In the last seven days did sickness or injury prevent you from doing your normal physical activity?
    Yes
    No

13b. How many days did sickness or injury stop you doing your normal activity?
    1 day
    2–3 days
    4–5 days
    6–7 days
    Don't know

Health

1. Do you go to the school dental clinic or a dentist?
    Yes
    No
    Can't remember
    Don't know

2. <<Name>>, how many times did you brush your teeth yesterday?
(If <<Name>> and caregiver disagree please record the child's first response.)
    None
    One time
    Two times
    Three or more times
    Don't know

3. Have your teeth ever had a filling or dressing?
    Yes
    No
    Can't remember
    Don't know

4. Has pain in your teeth or mouth ever kept you awake at night?
   - Yes
   - No
   - Can't remember
   - Don't know

5. Have you ever had a tooth taken out early because of a hole (decay) or 'gum boil' (abscess) or infection?
   - Yes
   - No
   - Can't remember
   - Don't know

6. Have you ever been put to sleep in hospital to have dental treatment?
   - Yes
   - No
   - Can't remember
   - Don't know

7a. Do you currently have a long-term (more than six months) medical condition or disability?
   - Yes
   - No
   - Don't know

7b. Which of the following conditions do you have?
   - Asthma
   - Eczema
   - Hay fever
   - Coeliac disease
   - Other

7c. Please specify other conditions.

8a. Have you been admitted to hospital in the last 12 months?
   - Yes
   - No
   - Don't know

8b. How often have you been admitted in the last 12 months?
   - One time
   - 2–5 times
   - 6 or more times
   - Don't know

9a. Have your periods started yet?
   - Yes
   - No
   - Don't know

9b. How old were you when they started?
(Enter years and months, ie, 9.08 = 9 years and 8 months OR 99.99 for "Don't know")

Food security

0. We would now like to ask you (the adult present) some questions if you live with <<Name>>.

1. Does <<Name>> live in your household most of the time?
   Yes
   No

2. First of all, we know that some people can't afford to eat properly and we are interested in whether you think your household has enough money to eat properly. It's what you think eating properly is – not what I think or anyone else thinks.
   We can afford to eat properly.
   How often has this been true for your household over the past year?
   Always
   Sometimes
   Never
   Don't know

2_. I now want to ask you some questions about particular foods you choose and the buying of food or gifting of food. We are interested in whether you feel you always have sufficient resources to have the food you need for the people you live with. We are not concerned with your budget, or how you spend your money, but are more interested in finding out about how people get the food that they need for their household to eat and to share.

3. We are now interested in whether you run out of basics, like bread, potatoes, etc because you do not have enough money. We are NOT referring to treats or special foods. Food runs out in our household due to lack of money. How often has this been true for your household over the past year?
   Often
   Sometimes
   Never
   Don't know

4. Now we are interested in whether a lack of money leads you to sometimes have smaller meals than you would like or whether there isn't enough food for seconds or you sometimes skip meals? We eat less because of lack of money. How often has this been true for your household over the past year?
   Often
   Sometimes
   Never
   Don't know

5. Now we are going to talk about the variety of foods you eat. By variety, we mean the number of different kinds of food you have. The variety of foods we are able to eat is limited by lack of money. How often has this been true for your household over the past year?
   Often
   Sometimes
   Never
   Don't know

6. Some people rely on support and assistance from others for supplying their regular food and we are interested in finding out how many people fall into this group. We rely on others to provide food and/or money for food for our household, when we don't have enough money. How often has this been true for your household over the past year?
   Often
   Sometimes
   Never
   Don't know

7. Also, some people have to rely on other sources of help such as food grants or food banks. We make use of special food grants or food banks when we don't have enough money for food. How often has this been true for your household over the past year?
   Often
   Sometimes
   Never
   Don't know

8. We know that some people get quite stressed and worried about providing enough food even though they don't actually go without food. We feel stressed because of not having enough money for food. How often has this been true for your household over the past year?
   Often
   Sometimes
   Never
   Don't know

9. We recognise that for some people food and sharing with others is important, to the point that they don't have enough food for themselves. In this question we are only interested in social situations that are gatherings within, or outside, the household. As a result people may find themselves stressed/whakama (embarrassed) about their koha (gift) when providing food for others. It is stressful because we can't provide the food we want, for social occasions. How often has this been true for your household over the past year?
   Often
   Sometimes
   Never
   Don't know

Appendix E: Food Frequency Questionnaire

The food questionnaire section of the CNS uses a 'qualitative food frequency questionnaire' or FFQ. It is used to gather information on eating patterns. It contains a long list of foods (including illustrations) and respondents are asked to indicate how often they have consumed eat of these foods in the past four weeks.

For each item of food (ie bananas, raw) the respondent is asked to indicate the levels of consumption in the last four weeks by ticking one of the following boxes:

- never or less than once a month
- 1–3 times a month
- 1–2 times a week
- 3–4 times a week
- 5–6 times a week
- 2 or more times a day.

Foods were grouped in the FFQ as follows:

- fruit
- vegetables
- mixed dishes
- eggs, meat, poultry, and fish
- pies, burgers, sausage meats
- bread and cereals
- spreads and sauces
- convenience meals/snacks
- dairy (excluding milk)
- biscuits/cakes
- snacks and sweets
- milks
- other (non-milk) drinks.

From this questionnaire information has been extrapolated on weekly consumption of food.

The full FFQ is available at the Ministry of Health website www.moh.govt.nz/phi

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