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National Nutrition Survey Users' Guide

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PREFACE

This publication presents detailed information on the 1995 National Nutrition Survey (NNS) which collected information on food and nutrition from the Australian population. It contains information about survey objectives, the development process, content of the survey, methods and procedures used in the collection of data, and derivation of estimates. Also included is information about the products and services available from the 1995 NNS. In addition, questionnaires and other relevant information are included as Appendixes.

The 1995 NNS was a joint project between the Australian Bureau of Statistics (ABS) and the Commonwealth Department of Health and Family Services (HFS). In recognition of the special nature of the data to be collected, expert groups were established to provide advice on appropriate methods for the collection of dietary data and protocols for taking physical measurements such as blood pressure. Qualified nutritionists were recruited and trained jointly by ABS and HFS to assure the quality of the dietary data being recorded. Data entry, processing and review were a joint responsibility of the ABS and HFS.

Our thanks are due to the Agricultural Research Service of the United States' Department of Agriculture for giving permission to use and modify their 24-hour dietary recall methodology and associated materials, the Australia New Zealand Food Authority (ANZFA) for developing a customised nutrient database for use in the NNS, and the UK Ministry of Agriculture, Fisheries and Food for the use of folate values and general nutrient data.

ABS publications draw extensively on information provided freely by individuals, businesses, governments and other organisations. Their continued cooperation is very much appreciated: without it, the wide range of statistics published by the ABS would not be available. Information received by the ABS is treated in strict confidence as required by the *Census and Statistics Act 1905*.

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LIST OF ABBREVIATIONS

ABS	Australian Bureau of Statistics
ACCV	Anti-Cancer Council of Victoria
ACHPER	Australian Council for Health, Physical Education and Recreation
AIHW	Australian Institute of Health and Welfare
ANSURS	Australian Nutrition Survey System
ANZFA	Australia New Zealand Food Authority
AOAC	Association of Official Analytical Chemists
BMI	Body Mass Index
BMR	basal metabolic rate
CD	Collector's District
COFA	Composition of Foods, Australia
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DBP	diastolic blood pressure
EI	Energy intake
ERP	Estimated resident population
FFQ	Food Frequency Questionnaire
FIB	Food Instruction Booklet
GHWB	General Health and Well-being form (also referred to as SF-36)
HFS	Commonwealth Department of Health and Family Services
IFIQ	Individual Food Intake Questionnaire (also referred to as 24-hour recall)
LGA	Local government area
mmHg	millimetres of mercury
NCHS	National Centre for Health Statistics (USA)
NHMRC	National Health and Medical Research Council
NHS	National Health Survey
NNS	National Nutrition Survey
OL	over limit of measuring scales
OMR	Optical Mark Recognition
RDI	Recommended Dietary Intakes
RPS	Recipe Processing System
RSE	relative standard error
SBP	systolic blood pressure
SE	standard error
SEIFA	Social Economic Indexes for Areas
USDA	United States Department of Agriculture
WHR	waist to hip ratio
WHO	World Health Organisation
. .	not applicable

CHAPTER 1 BACKGROUND

INTRODUCTION

The National Nutrition Survey (NNS) has been a joint project between the Commonwealth Department of Health and Family Services (HFS) and the Australian Bureau of Statistics (ABS). The survey was conducted between February 1995 and March 1996. It collected information on food and beverage intake, physical measurements, food-related habits and attitudes, and average food consumption over the last 12 months.

Food and nutrition have long been recognised as important contributors to health. However, food and nutrition affect more than just the physical aspects of our health and wellbeing. The buying, preparing and eating of food is part of everyday life. For many Australians, food is a focus for social interactions with family and friends. For some, it is also an economic concern.

As part of Australia's participation in the World Health Organisation (WHO) initiative 'Health for All by the Year 2000', a Better Health Commission was established to propose priority areas for preventive health programs and actions in Australia. The Commission decided to concentrate on three major areas, namely cardiovascular disease, nutrition and injury (Better Health Commission 1986).

The Commission's Nutrition Taskforce supported the existing Dietary guidelines for Australia and the Recommended Dietary Intakes for use in Australian (RDIs). The taskforce recommended that the dietary guidelines be reviewed regularly by the National Health and Medical Research Council (NHMRC). This has led to the most recent revisions:

- recommended dietary intakes for use in Australia (NHMRC 1991);
- dietary guidelines for Australians (NHMRC 1991); and
- dietary guidelines for children and adolescents (NHMRC 1995).

The need for a national dietary survey was identified in many forums, culminating in the conduct of the NNS in 1995. The overall objective of this survey is the provision of food and nutrient data to assist with the implementation of Australia's '*Food and Nutrition Policy*', future revisions of the RDIs and future revisions of National Health Goals and Targets. More specific objectives are to provide data on food intake for comparison with dietary guidelines and nutrient intake for comparison with RDIs — for Australians in general, and for those population groups at risk of health problems related to diet. The NNS also provides benchmark data against which future surveys can be compared to assess changes over time in the dietary status of Australians.

EXISTING DIETARY INFORMATION

Australian dietary surveys

The first Australian dietary survey took place in 1938 with the second in 1944. The first was a survey of domestic food budgets in 2,565 households in five State capitals conducted by the then National Advisory Council on Nutrition. The second survey was directed by the NHMRC and measured food consumption and dietary levels from 2,730 family households across six States (Commonwealth Department of Health 1986).

There was an interval of several decades between these and subsequent major surveys. In 1983 the National Dietary Survey of Adults was conducted on people aged 25–64 years living in Sydney, Melbourne, Brisbane, Adelaide, Perth and Hobart, using a 24-hour recall methodology. This survey was part of the second National Heart Foundation Risk Factor Prevalence Survey, enabling dietary data to be linked to cardiovascular disease risk factor data.

The 1985 National dietary survey of school children (aged 10–15 years) surveyed children in urban and rural schools Australia wide using a 24-hour food diary (Department of Community Services and Health 1989). This was conducted in conjunction with the Australian Health and Fitness Survey.

In addition, several other surveys were conducted during the 1980s and 1990s, most using Food Frequency Questionnaires (FFQ). These were either on sub-populations (e.g. the 1985 and 1990 Victorian Nutrition Surveys, the 1988 South Australian Nutrition Survey, the 1989 CSIRO Survey of Elderly Australians) or on small national adult samples (e.g. the 1988 Australian Health and Nutrition Survey and the 1993 Australian Food Survey).

Risk Factor Prevalence Study

The Risk Factor Prevalence Study was conducted by the National Heart Foundation over three surveys in 1980, 1983, and 1989. This series of surveys measured the prevalence of risk factors associated with cardiovascular disease in adult Australians aged 25–64 years from all State capital cities. The 1989 survey was extended to 20–69 year olds and also included Canberra and Darwin (Risk Factor Prevalence Study Management Committee 1990).

These surveys collected data on physical, biochemical, behavioural and psychological variables in order to assess the prevalence of cardiovascular disease risk in Australia. The 1983 study included a 24-hour food recall interview that constituted the 1983 Dietary Survey of Adults.

Australian fitness survey

The Australian Health and Fitness Survey conducted in 1985 by the Australian Council for Health, Physical Education and Recreation (ACHPER) was a national survey of school children aged 7–15 years (Australian Council for Health, Physical Education and Recreation 1987).

The ACHPER survey collected data on fitness levels, anthropometric measures, physiological measures and, for children aged 10 years and above, dietary intakes. This dietary record data was collected for the National dietary survey of school children (aged 10–15 years) in 1985 (Department of Community Services and Health 1988).

Apparent consumption of foodstuffs and nutrients

The *Apparent Consumption of Food Stuffs and Nutrients* series, compiled by the ABS with assistance from the Australian Institute of Health and Welfare (AIHW) (1997), brings together data from several sources and provides data on the amount of foods available for consumption by the Australian population.

SURVEY OBJECTIVES AND CONTENT

The objectives of the NNS are to:

- monitor intakes against the Dietary Guidelines for Australians, compare nutrient intakes with the RDIs, and assist in future revisions of the RDIs;
- assess changes in dietary habits and nutritional status since 1983 and 1985 and provide a basis for comparisons to future regular surveys;
- assist with the development of and monitor the impact of Australia's Food and Nutrition Policy; monitor health goals and targets for nutrition and diet-related disease; assist in future revision of National Health Goals and Targets;
- assist with the development of food policy and regulations related to food safety and composition; assist in the provision of information related to food production, manufacture and sales;
- provide information on the interrelationship of health, social, economic and nutrition variables in selected population subgroups for policy development; and
- provide a basis for nutrition promotion strategies.

In line with these objectives, the survey collected the following information:

- food and beverage consumption on the day prior to the interview, from midnight to midnight (24-hour recall), done a second time on a sub-sample of participants;
- physical measurements (height, weight, waist and hip for all respondents and blood pressure for those aged 16 years and over, excluding pregnant women);
- dietary habits and attitudes; and
- frequency with which certain foods were consumed during the previous 12 months (FFQ), for people aged 12 years and over.

Demographic and socioeconomic information were collected as part of the 1995 National Health Survey (NHS). For further information regarding the 1995 NHS, see ABS (1996).

SURVEY DEVELOPMENT

Planning for the second in the series of ABS NHSs commenced in 1993 and included a review of questions asked in the 1989 NHS. Also in 1993, HFS, ABS and AIHW developed a number of options for undertaking a national dietary survey. A workshop was convened to review these options, define the objectives and broad parameters for a national survey and establish priorities for the collection of data.

SURVEY DEVELOPMENT *continued*

Participants included individuals and representatives of governments and organisations with a strong interest or experience in obtaining, analysing and using food and nutrition data. Participants recommended that within budgetary constraints, the major dietary assessment instrument should be a 24-hour dietary recall with a repeat recall, to adjust for eating pattern variation during the initial recall period, undertaken on a sub-sample of respondents. In addition, participants recommended that the survey should include a food frequency questionnaire (FFQ) and some additional questions relating to food habits and attitudes. It was also noted that it would be desirable to link the nutrition survey with the NHS.

The ABS and HFS agreed that the NNS would be undertaken in conjunction with the next NHS to be conducted in 1995. The content and methodology of the nutrition survey were further refined by the ABS and HFS, with advice from the NNS Advisory Committee and the Expert Technical Groups which were established to assist in the development of the survey. The groups advised on dietary methodology, food and nutrient databases, sampling, physical measurements and blood, and data output and analysis. The groups were comprised of a wide range of experts representing State health authorities, the food industry, academia, ANZFA and the AIHW (see Appendix 2 for a list of committees and members).

Pilot tests

An initial test was conducted to examine the feasibility of conducting a dietary survey in conjunction with the 1995 NHS. A field test of the NHS was conducted in Sydney in July 1993 and respondents were asked whether they would attend a centre and participate in a nutrition survey. Results indicated that a reasonable response rate could be achieved provided that the centres offered were not too distant.

Further field tests of the NHS and the NNS were subsequently undertaken in Queensland between October and December 1993. A centre-based approach was tested in Brisbane using six centres operating at different times and on different days of the week. Food and nutrient data were collected by a dietitian and physical measurements and a blood sample by a nurse. The results of the physical measurements and blood analysis were provided to the participants.

Difficulties in maintaining and staffing the required number of centres and the relatively low response rates achieved led to further testing of home-based methodology. Collection of the same data in the home by a dietitian and a nurse was tested in rural and urban Queensland. The same approach was also tested in Brisbane using a dietitian to collect the dietary intake and physical measurement data but without the collection of blood.

Satisfactory results from these tests, and the difficulties associated with staffing centres throughout Australia culminated in the decision to collect the NNS data in the home.

During the development of the scientific methodologies, numerous tests were undertaken using staff from the Department of Human Services and Health as interviewers and volunteers from departmental staff.

A dress rehearsal for the NNS was conducted in the Melbourne metropolitan area in August–September 1994, in conjunction with the NHS dress rehearsal.

SURVEY ARRANGEMENTS

The survey was a joint project between the ABS and HFS, with the ABS providing statistical and survey expertise and HFS providing nutritional expertise. Staff at HFS have had a major role in survey development, training and supervision of interviewers, and supervision of food intake coding. ANZFA (1989) developed a customised nutrient database for the survey. Data from *The Composition for Foods*, 5th Edition and its supplements were reproduced with the permission of The Royal Society of Chemistry and the Controller of Her Majesty's Stationery Office. (Ministry of Agriculture, Fisheries and Food, 1992)

The ABS and HFS conducted the survey as a joint project with financial assistance from the following agencies:

- ANZFA
- AIHW
- New South Wales Health Department
- Victorian Department of Health and Community Services
- Queensland Department of Health
- Health Department of Western Australia
- South Australian Health Commission
- Tasmanian Department of Community and Health Services
- ACT Department of Health and Community Care
- Department of Veteran's Affairs
- National Heart Foundation

ETHICS AND CONFIDENTIALITY

Consultations with the Privacy Commissioner, the Civil Liberties Councils and the Ethics Committee of the AIHW concerning ethical, privacy and confidentiality issues continued throughout the survey development. Approval for the methodology for physical measurements was received from the Ethics Committee of the AIHW.

CHAPTER 2 SURVEY DESIGN

SAMPLE DESIGN

National Health Survey

For the 1995 NHS, a sample of approximately 16,400 private and non-private dwelling units distributed across all States and Territories was initially selected. Allowing for sample loss (e.g. demolished and vacant dwellings or dwellings otherwise out of scope) this approximates to one-third of 1% of the population being initially chosen. This sample size is considered sufficient to provide:

- detailed information for each State, Territory and Australia;
- relatively detailed data for capital city/rest of State areas within each State;
- broad level estimates for regions within the more populous States; and
- estimates for those characteristics which are relatively common and sub-populations which are relatively large and spread fairly evenly geographically.

The base sample was supplemented in Victoria, South Australia, the Northern Territory and the Australian Capital Territory to allow more detailed estimates to be produced for these States and Territories, and a separate supplementary sample of Indigenous people was included, bringing the total active sample for the NHS to 53,800 people.

National Nutrition Survey

The NNS was conducted using a sub-sample of NHS respondents selected from the base NHS sample of private dwellings only. The NNS sub-sample was designed to provide:

- national level estimates by fine age group and sex; and
- capital city estimates by broad age group and sex.

The following estimates were considered desirable:

- State and Territory estimates by broad age group by sex;
- regional estimates (metropolitan/ex-metropolitan) within States or Territories by broad age group by sex;
- regional estimates (capital city, other urban and rural) estimates at the Australian level by broad age group by sex; and
- estimates for large sub-populations by broad age group by sex.

The sample was designed to obtain approximately the following accuracy level in the estimates:

- prevalence statistics of 10% should have a relative standard error of less than 30%; and
- differences of at least 10 absolute percentage points between estimates should be able to be detected with a type 1 error (rejecting the null hypothesis when it is true) of 5% and a type 2 error (failing to reject the null hypothesis when it is false) of 20%. The power of the test is 80%.

SAMPLE SELECTION

National Health Survey

The 1995 NHS was conducted from January 1995 to January 1996. It was conducted on a multistage area sample of private dwellings (houses, flats, etc.) and a list sample of non-private dwellings (hotels, motels, etc.).

The area-based selection of the private dwelling sample ensured that all segments of the population were represented in the sample. Each State and Territory was divided into a number of areas or 'strata', each consisting of a Local Government Area (LGA) or group of LGAs (two LGAs per strata on average) determined to be relatively homogeneous in respect of the socioeconomic characteristics of the households within the stratum. Each stratum in turn contained a number of census Collectors' Districts (CDs) determined for the 1991 Population Census. Each CD contained approximately 250 dwellings. The sample was selected to ensure that each dwelling within the same stratum had the same probability of selection.

In capital cities and other major urban or high population density areas the sample was selected in three stages:

- a sample of CDs was selected from each stratum with probability proportional to the number of dwellings in each CD;
- each selected CD was divided into groups of dwellings or blocks of similar size, and one block was selected from each CD, with probability proportional to the number of dwellings in the block; and
- within each selected block a list of all private dwellings was prepared and a systematic random sample of dwellings was selected. Dwellings selected were not contiguous, with 6–9 dwellings between each one selected.

In strata with low population density each stratum was initially divided into units, usually corresponding to towns or LGAs or combinations of both, and one or two units were selected from each stratum with probability of selection proportional to the number of dwellings in each unit. Within selected units, the sample of dwellings was arrived at in the same manner as outlined for high population density areas. The effect of this approach is that sample was not necessarily selected from each LGA, rather those selected represented neighbouring LGAs of similar geographical characteristics.

The sample of non-private dwellings was selected separately from the sample of private dwellings to ensure they were adequately represented in the sample. For the sample as a whole, all persons within selected dwellings/units were included in the survey, subject to scope and coverage provisions. The selection methods described above ensured a known and equal chance of selection for each person within each Stratum and, an equal chance of selection across strata within each State (except in Victoria where a proportionately higher sample of dwellings in the metropolitan area of Melbourne was drawn, and in the Northern Territory where a higher sample was drawn in Darwin and Alice Springs, and the Australian Capital Territory).

To take account of possible seasonal effects, the sample was allocated equally between quarters of the 12-month collection period. CDs were randomly allocated to ensure an acceptable compromise between an even spread of sample throughout the year and adequate workloads for interviewers.

National Health Survey *continued*

However, no workloads were allocated during the three weeks commencing 18 December 1995. The NNS did not have a similar gap in enumeration.

Some sections of the NHS were administered to half the sample only, while core sections were administered for all respondents as appropriate to their age. Sub-sample selections were made on a block basis, and were undertaken prior to initial interviewer contact with households, to ensure the selection process was unbiased.

National Nutrition Survey

The NNS sample was a systematically selected sub-sample of CDs from the base NHS private dwelling sample (i.e. this excluded non-private dwellings and the portion of the sample resulting from supplementation). Several adjustments to the sub-sample were made in the course of enumeration, in order to obtain the required yield for the NNS.

Unlike the NHS, which involved all people in a household, the NNS was conducted by approaching a maximum of two in-scope people per household in urban areas and three in-scope people in rural areas. These people were randomly selected from the household. To increase the sample in Queensland, three persons were selected in both urban and rural areas. In addition, all people aged 65 years and older, who lived in households selected for the NNS, were invited to participate in the NNS.

At the end of the NHS interview, participants selected for the NNS were asked if they would be willing to take part in the nutrition survey. If they agreed to participate, they were informed that a nutritionist interviewer would call to make an appointment within the next few weeks. The NNS interviewer was instructed to attempt to schedule the interview to a particular day of the week, which was randomly assigned by the ABS (using a random number generator with range 1–7). Interviews were scheduled on another day if the specified day was inconvenient for the participant.

Where children and adolescents aged 17 years or under were selected, their parents/legal guardians were asked to give consent to each selected child being included in the survey.

The 24-hour recall interview was repeated on approximately 10% of participants, to gain an estimate of intra-individual variability. One in eight NNS blocks was systematically assigned to the re-interview sample. The repeat 24-hour recall was scheduled for a different day of the week to that of the first interview and to occur within three to ten days after the initial interview. The ABS randomly assigned a preferred day of week for the repeat interview. Occasionally it was not possible to undertake the repeat interview within the specified 10 days, particularly in country areas.

SCOPE AND COVERAGE

Scope

The NNS covered urban and rural areas across all States and Territories of Australia, and included people aged two years or more who were residents of private dwellings. A private dwelling was defined as a house, flat, home unit, caravan, garage, tent or any other structure being used as a private place of residence at the time of the survey. All households within sampled private dwellings were included in the survey.

Scope *continued*

A household comprises persons residing in a dwelling who considered themselves to be separate from other people in the dwelling and who made regular provision to take meals together.

The following persons living in Australia, but not usually considered part of the Australian resident population, were excluded from the scope of both the NNS and the NHS:

- diplomatic personnel of overseas governments and non-Australian members of their households;
- non-Australian service personnel stationed in Australia and their dependents; and
- overseas visitors whose usual place of residence is outside Australia.

Non-Australians (other than those above) working in Australia, or in Australia as students or settlers, and their dependants, were included in the survey scope.

Coverage rules

Coverage rules were designed to ensure that, as far as possible, persons remaining within the scope of the survey (after the above exclusions were applied) had only one chance of being interviewed. Coverage rules were the same for the NNS and the NHS.

Usual residents of selected private dwellings were included in the survey if they were staying at, or had stayed at, the selected dwelling for any part of the month of interview or any part of the previous month. Usual residents who were absent from the dwelling for the entire two-month period were excluded on coverage grounds.

Visitors to selected private dwellings who did not usually live in a private dwelling were included in the survey. Visitors who usually lived in a private dwelling were included in the survey only if they had not been at their own usual dwelling for any part of the previous month and would not be at their own usual dwelling for any part of the month of interview.

CHAPTER 3 DATA COLLECTION

NATIONAL HEALTH SURVEY

Initial approach

Most households selected for the NHS were initially approached by mail informing them of their selection in the survey and advising them that an interviewer would call to arrange a suitable time to conduct the survey interview. Households included in the supplementary sample of Indigenous people were approached directly by interviewers. A brochure, providing some background to the survey, information concerning the interview process and a guarantee of confidentiality, was included with the initial approach letter. For a small number of households where the ABS did not have an adequate postal address, this was not possible.

At the initial visit by the interviewer, a household form was completed from information provided by a responsible adult member of the household. This form collected details of the number of people in the household, basic demographic characteristics of each person and whether they completed the NHS.

Personal interview

Personal interviews were conducted where possible with each adult member of selected households. Children aged 15–17 years were interviewed with their own consent and the permission of a parent or responsible adult. If permission was not received to allow the child to be interviewed personally a parent or responsible adult was interviewed on their behalf. Children aged 0–14 years were not interviewed: a parent, guardian or close relative was asked to answer on their behalf.

Questionnaires

A Personal Interview Questionnaire was completed for each respondent. This recorded information such as health-related actions, recent and long-term illness conditions experienced and selected lifestyle behaviours.

In addition, adults in households were pre-selected to answer different sets of questions. In particular, those adults who were selected to answer the General Health and Well-Being Form (GHWB, also called the SF–36) were sequenced around questions relating to educational qualifications gained since leaving school, alcohol consumption and health insurance. The Women's Health supplementary Form was provided to female respondents aged 18 years and over who were not selected in the GHWB sample.

At the end of the NHS interview, people selected for the NNS were told that the ABS was also collecting information about the nutritional patterns of Australians and their agreement was sought for a further interview. It was explained that a professional nutritionist would arrange an appointment in the home within the next few weeks to collect some information about what they eat and would take some physical measurements, the results of which would be forwarded to them. A brochure on the NNS was provided. People who agreed to participate were given an appointment card attached to a fridge magnet with the NNS logo, so that when the NNS interviewer called the date and time could be written on the card.

NATIONAL NUTRITION SURVEY

Interview structure

The interview structure incorporated:

- The 24-hour recall questionnaire (also called the Individual Food Intake Questionnaire) — this form collected detailed descriptions on types and quantities of all foods and beverages consumed by respondents over a 24-hour period. A second 24-hour recall was obtained on a sample of approximately 10% of NNS participants.
- Physical measurements — the measurements taken were blood pressure (from respondents aged sixteen years and over), height, weight, and waist and hip circumferences (except pregnant women).
- Questions on food habits and attitudes — this component comprised of a series of food-related questions to provide additional information on eating habits, barriers to dietary change, and food security.
- FFQ — this qualitative questionaire was left with persons aged 12 years to complete and mail back to the ABS. They were given written instructions by the interviewer.

Contact with selected households

Interviews were conducted on seven days a week from February 1995 – March 1996.

The NNS interviewers contacted those people who had agreed to participate in the survey and arranged a suitable day and time for the interview to be conducted in the participant's house. If the household did not have a telephone then the interviewer visited the household to make the appointment.

Proxy interviews

Proxy interviews were conducted for children aged two years up to four years and for adult participants who could not report for themselves because of physical or mental limitations. The preferred proxy was the person responsible for preparing the participant's meals. Interpreters were used for people who could not conduct the interview in English (this could be either another member of the household, if the respondent agreed, or an interpreter arranged by the ABS). Children 5–11 years old were asked to provide their own food intake data with the assistance of an adult household member.

In some cases, permission was sought to contact a third party to obtain missing information from the 24-hour recall questionnaire. This occurred when the third party was someone outside the household who provided care to the participant (e.g. at child care or school).

INTERVIEWER TRAINING AND SUPERVISION

Qualified nutritionists were recruited to work as interviewers on the NNS. They were given two weeks of training covering all aspects of data collection. Training included the taking of physical measurements, and practice interviews were undertaken on volunteer subjects, including children and older people. An extensive manual was provided. Interviewers were tested prior to entering the field.

INTERVIEWER TRAINING AND SUPERVISION *continued*

The interviewers were supervised by nutritionists from HFS. Supervisors also answered queries from interviewers, undertook systematic field checks of interviewers, provided additional training sessions, and reviewed tapes of volunteer interviewers. In addition, the ABS answered interviewers' queries on operational matters not related specifically to nutrition methodology.

Interviewers edited the data collection booklets as soon as possible after the interview to identify and correct errors in recording and to ensure that all data had been collected according to the survey protocols. A checklist was provided to summarise missing data and to determine whether it was necessary to contact a supervisor for a decision on retrieval of missing data.

Interviewers were monitored through a series of reviews conducted on data collected including the regular review by supervisors of the quality of the food intake data. In addition, physical measurements recorded by the interviewers were monitored on a regular basis so that feedback could be provided if any data collection problems emerged as a result of deviation from the established protocols. No major problems were identified by this process.

CHAPTER 4 FOOD AND NUTRIENT INTAKE

This chapter describes the quantitative food and nutrient information collected and derived from the 24-hour recall. In order to meet the objectives of the NNS, it was considered that the 24-hour recall, with a 10% replicate, could provide almost all of the information required. However, for some objectives supplementary information from a non-quantified FFQ was required. The FFQ is discussed in detail in Chapter 6.

PROCEDURES FOR THE 24-HOUR RECALL

The 24-hour food recall questionnaire collected detailed information on all foods and beverages consumed on the day prior to interview, from midnight to midnight. Information collected included the time of consumption, the name of the eating occasion (e.g. breakfast), detailed food descriptions to allow for accurate food coding, the amount eaten, the source of the foods and whether the foods were consumed at home.

The multiple-pass recall method used in the NNS was adapted by HFS from that used in the Continuing Survey of Food Intakes by Individuals 1994–96 of the United States Department of Agriculture (USDA). The methodology was developed by the Agricultural Research Service of the USDA to maximise the ability of respondents to remember what was eaten and drunk (Cypel & Tippett 1997; Guenther, et al. 1995). Permission from the Agricultural Research Service of the USDA to adapt the dietary recall instrument and associated materials is gratefully acknowledged.

Three separate phases were used during the 24-hour recall:

- The completion of a 'quick list' of foods eaten or drunk during the designated 24-hour period.
- The collection of detailed information for each food and drink item listed in the 'quick list'.
- A 'recall review', which provided respondents with the opportunity to report any foods that may have been forgotten.

Phase one: quick list

The recall began with the first phase, called the 'quick list'. Participants were asked to report everything they ate or drank the previous day between midnight and midnight. They used any recall strategy to produce this list and were not interrupted during the listing. On completion, participants were invited to add any other items remembered during the progression of the interview.

Phase two: detailed information

The second phase involved obtaining detailed information for each food and drink item listed in the 'quick list'. Participants were asked to choose the name of the eating occasion from a handcard and to indicate the time the eating occasion commenced.

Phase two: detailed information *continued*

Food Instruction Booklet

Interviewers then used a Food Instruction Booklet (FIB) to obtain a detailed description and the amounts eaten of all food items recalled in the interview, including additional food items that were remembered as a result of the questions asked in describing another food. These specific descriptions of every item and the amounts eaten allowed accurate coding.

The FIB was divided into major food and drink categories within 15 food groupings:

- beverages, milk;
- breads, biscuits, cakes;
- cereals, pasta, rice;
- cheese, eggs;
- confectionery, flavouring, sugar;
- desserts, ice cream, yoghurt, cream;
- fruits, vegetables;
- infant foods, formulas, juices;
- meat, poultry, fish, seafood;
- mixed dishes, frozen and canned meals;
- sandwiches, salads, soups;
- sauces, gravies, dips, sour cream;
- snacks, nuts, seeds;
- spreads, salad dressings; and
- takeaway food, fast foods.

For each category, a specific sequence of neutral questions or probes was asked by the interviewer. For example, in the Meat, Poultry, Fish, Seafood Group, there were separate probes for each of the six categories of red meats, processed meats, organ meats, sausages, poultry, and fish. Examples of probes in the Fish category are 'What kind was it?', 'Was it fresh, frozen, canned, smoked, dried...?', 'If canned, was it regular salt or no added salt?'. When appropriate, questions were asked about the use of fat ('Was any kind of fat or oil used in cooking or preparing the ...?') and salt ('Was salt used in cooking or preparing the ...?'). Additional food or drink items which may have been added to the food items were also probed, ('Did you add anything to the ...?'). The specific sequence of questions for these additional items was then used. In addition to the specific probes for the detailed descriptions, the FIB also specified the types of measures (weight, volume, size, number) to be used for obtaining details of the amount of food eaten or drunk. This ensured consistency with the coding system and enabled accurate coding of the quantity consumed.

Phase two: detailed information *continued*

Combination foods

To provide information on consumption of certain foods that were eaten together, or to facilitate the coding of certain dishes, specified combinations of foods were recorded by interviewers. Combination foods are those where two or more components are combined (usually just prior to consumption) and eaten as a single unit. The following combinations were recorded by the interviewer:

- Additions to beverages and breakfast cereals. Additions to beverages referred to all types of beverages consisting of two or more components and included coffee, tea, milk drinks, cordials and alcohol mixed drinks (e.g. rum and coke). Any additions to a basic breakfast cereal item were recorded as a food combination (e.g. milk, juice, soy beverage, sugar, fruit or fat spread on breakfast biscuits).
- Fat, oils and milk as additions to foods just prior to being eaten. Milk and milk substitutes and all versions of butter, margarine, cream, oils and solid fats were recorded against the foods to which they were added just prior to being eaten. For example, rump steak with herb butter and jacket potato with sour cream.
- Foods comprising many components and named to describe the combination as a whole (e.g. sandwiches, rolls, hamburgers, salads). The bread, spread and filling of a sandwich were recorded separately but linked to show they were eaten together as a sandwich.
- Savoury mixed dishes containing irregular or unusual portions of meat, which were difficult for the respondent to quantify in cup measures (e.g. chops or chicken pieces with gravy or sauce). The amounts of meat and sauces were recorded separately but linked to show they were eaten together.

Measuring guides

Standardised measuring guides were used to assist the respondent to estimate the amount of food actually consumed. These were:

- Metric measuring cups, (1 cup, 1/2 cup, 1/3 cup, 1/4 cup) and metric measuring spoons (1 tablespoon, 1 teaspoon, 1/2 teaspoon, 1/4 teaspoon). These guides were used to assist respondents in reporting the volume of foods consumed. Both spoons and cups could also be used upside down to simulate a mound of food.
- A 30 cm ruler, a set of 8 plastic measuring sticks each 3 mm thick, a laminated card with 7 concentric circles 4 cm to 16 cm diameter, a laminated card with a 16 cm grid. These guides were used to assist respondents in estimating dimensions of foods, including the diameter. The thickness sticks were restricted to measuring the thickness of meat, poultry, and cheese to complement a particular feature of the coding system.
- Diagrams of a square or rectangle, a cylinder, and wedges with two or three dimensions. These were used to assist respondents in estimating the dimensions of various shapes of foods.
- Diagrams of a fish fillet.

Phase two: detailed information *continued*

- Photos of amounts of fat spread on bread, amounts of hot chips spread on a plate, types of chicken pieces, various sizes of soft drink bottles, takeaway food and beverage containers, shapes and sizes of yoghurt containers, and sizes of chocolate bars. These guides were used to assist respondents in remembering the amount or size of the commercial food item consumed.
- A two-cup measuring jug. This was used only by the interviewer to measure the quantity of fluid held by a specific bowl or cup used by the respondent.

Phase three: recall review

The third pass, the 'recall review' provided the respondent with the opportunity to report any foods that they had previously forgotten. The interviewer reviewed all recorded foods in chronological order, probing for additional eating occasions and clarifying the amounts of foods eaten. Detailed information on items remembered during this pass was collected at the completion of the 'recall review'.

For every listed item, the interviewer collected information on where it had been obtained, whether the item was eaten at home, and if not, whether it had ever been in the home prior to being eaten.

Additional questions

Participants were then asked some additional questions about food intake the previous day. These were how much plain drinking water had been drunk and whether it was obtained from the home, whether specified vitamins and mineral supplements had been consumed, and whether the amount of food eaten was usual and if not what was the reason.

Repeat interview

Approximately 10% of the sample completed a second 24-hour recall (including the additional questions about food intake the previous day). At the end of the 24-hour dietary recall, people selected for the repeat interview were asked if they would repeat that component of the interview on another day of the week within the next two weeks. If they agreed, an appointment time was made for a second interview. Day-2 interviews were conducted in the same manner as the Day-1 24-hour recall, including the additional questions. Physical measurements, questions on foods habits and attitudes, and the FFQ were not repeated during the Day two interview.

NUTRIENT INTAKE

ANZFA developed a customised nutrient composition database to enable the 24-hour food records to be converted into nutrient intakes. The database was developed in collaboration with HFS and updated in tandem with the coding of the survey food intakes (see Data Processing on page 37 for more information).

ANZFA was not required to develop nutrient composition data for all foods consumed because the survey food coding system enabled recipe information collected from respondents to be used to calculate the nutrient composition of many mixed dishes.

Nutrient intake has been calculated for the following nutrients.

Component Name	*Unit*
Energy	kilojoules
Proximate constituents	
Moisture (water)	grams
Protein	grams
Fat, total	grams
Saturated fatty acids, total	grams
Monounsaturated fatty acids, total	grams
Polyunsaturated fatty acids, total	grams
Cholesterol	milligrams
Carbohydrate, total	grams
Sugars, total	grams
Starch	grams
Dietary fibre	grams
Alcohol	grams
Vitamin components	
Vitamin A expressed as retinol equivalents	micrograms
Preformed Vitamin A (retinol)	micrograms
Provitamin A (Beta-carotene)	micrograms
Thiamin	milligrams
Riboflavin	milligrams
Niacin equivalents, total	milligrams
Niacin, pre-formed	milligrams
Niacin derived from tryptophan or protein	milligrams
Vitamin C	milligrams
Folate, total	micrograms
Minerals	
Potassium	milligrams
Calcium	milligrams
Phosphorus	milligrams
Magnesium	milligrams
Iron	milligrams
Zinc	milligrams

NUTRIENT INTAKE *continued*

The nutrient composition database was used to calculated the following information:

- amount of each nutrient consumed per food per person;
- amount of each nutrient consumed per person over 24-hours;
- nutrient density per 1,000 kJ energy for each nutrient (except energy) per person. This was calculated as: *total nutrient / total energy * 1,000* (Note the symbol '*' is used in Appendix 6 to denote standard errors between 25% and 50%); and
- percentage contribution to total energy per person per day for protein, total fat, saturated fat, monounsaturated fat, polyunsaturated fat, carbohydrate, total sugars, starch and alcohol. The energy from each of these nutrients was estimated by multiplying each gram of protein, fat, carbohydrate and alcohol by a conversion factor to determine the kilojoules of energy generated. The conversion factors are set out below. The energy from each of the listed nutrients was divided by total energy per day and multiplied by 100.

Protein	17 kJ per gram
Total fat	37 kJ per gram
Saturated fat	37 kJ per gram
Monounsaturated fat	37 kJ per gram
Polyunsaturated fat	37 kJ per gram
Carbohydrate	Starch (A) + Total sugars (B)
Starch (A)	17 kJ per gram
Total sugars (B)	16 kJ per gram
Alcohol	29 kJ per gram

Energy intake to basal metabolic rate ratio

The ratio of energy intake to basal metabolic rate (EI/BMR) expresses a person's energy intake as a multiple of their basal metabolic rate (BMR) over the same period of time. The table below shows the formulae used to predict BMR in megajoules (kJ/1,000) per 24 hours, based on age group, sex and body weight with no adjustment for activity levels (Schofield 1985).

Age group (years)	*Males*	*Females*
10–18	0.074 * personwt (kg) + 2.754	0.056 * personwt (kg) + 2.898
19–30	0.063 * personwt (kg) + 2.896	0.062 * personwt (kg) + 2.036
31–60	0.048 * personwt (kg) + 3.653	0.034 * personwt (kg) + 3.538
over 60	0.049 * personwt (kg) + 2.459	0.038 * personwt (kg) + 2.755

Energy intake to basal metabolic rate ratio *continued*

This ratio, which is based on the principles of energy physiology, was developed by Goldberg et al. (1991) and Black et al. (1991), based on the principles of energy physiology, as a method of establishing cut-off limits for determining those adult persons who report implausibly low energy intakes. Goldberg et al. (1991) reported cut-off levels for EI/BMR for study periods ranging from one day to 28 days at the 95% and 99.7% confidence intervals (cut-off 2) for both measured and estimated BMR. These cut-offs assume that the population under study has a sedentary lifestyle with an average energy expenditure level of 1.55 BMR. The EI/BMR was calculated only for people aged 10 years and over.

CHAPTER 5 PHYSICAL MEASUREMENTS

Protocols for taking physical measurements in the NNS were developed using protocols from other population surveys, including the National Heart Foundation Risk Factor Prevalence Study Survey in 1989 (Risk Factor Prevalence Study Management Committee 1990). In addition, an attempt was made to ensure that the NNS protocols reflected those contained in draft chapters from the WHO Expert Committee on Physical Status: the Use and Interpretation of Anthropometry (1995). Development of physical measures methodology and the choice of instruments were influenced by the requirement to collect data in the respondents' homes and for interviewers to carry all equipment required for data collection in one trip.

All interviewers were qualified nutritionists and were fully trained in the techniques for taking these measurements. While the protocol for taking the measurements was standardised, it was not possible to control other external factors such as the time of day the measurement was made.

Prior to the collection of the measurements, written consent of the respondent (if 18 years and over or 16–17 years old living independently) or their parent/guardian (if under 18 years old and living at home) was obtained.

Participants were sent written results of their physical measurements and standard information which they could use to interpret them.

BLOOD PRESSURE

Data collection

Blood pressure was measured for respondents aged 16 years and over, with the exception of women who identified they were pregnant. Respondents were asked whether they were currently taking any medication to control their blood pressure. Before blood pressure was measured participants were asked whether they had eaten, smoked, drank alcohol or exercised within the past half an hour. If they had, then the blood pressure measurements were delayed until the other physical measurements had been taken. Respondents were requested not to consume food and drink during the preceding component of the interview (the 24-hour recall), to allow accurate blood pressure readings to be taken. Respondents were asked to remain seated (where possible) during the dietary recall to ensure they were adequately rested before their blood pressure was measured.

Two consecutive blood pressure readings were taken from the right arm with the respondent seated. The readings were taken five minutes apart. Systolic and diastolic phase V pressures were measured to the nearest 2 mmHg. A third reading was collected if the systolic readings differed by more than 6 mmHg and/or the diastolic readings differed by more than 4 mmHg. If two blood pressure measurements were not obtained, the reason was recorded (e.g. refused measurements or could not obtain measurements). Interviewers informed each respondent of their blood pressure measurement as an average of both measurements, together with general feedback as to whether and when it would be advisable for them to visit their doctor.

Data collection *continued*

At the commencement of the survey, a desk model mercury sphygmomanometer with a locking mercury column was used together with a Tycos ®Spectrum™ stethoscope and a Tycos® inflation system with three cuff sizes, Child (19.6 cm – 28.7 cm), Adult (27.9 cm – 41.7 cm), and Large Adult (33.0 cm – 50.8 cm). Due to technical problems with the transport of the mercury sphygmomanometers, these were changed to a Tycos® Classic Pocket Aneroid Sphygmomanometer from 1 May 1995. Analysis of readings before and after that date indicated that there was no significant difference between blood pressure measurements taken with the two types of sphygmomanometers.

Each person had a single systolic and diastolic value derived from their readings. If two measurements were taken, then the value was the average of the two measurements. If three measurements were taken, then the value was the average of the two closest measurements. If the interviewer was only able to take one systolic and diastolic measurement, then these single values were used (this happened in a small number of cases only).

Risk group categories

Blood pressure risk group categories were developed for the purpose of giving some feedback to respondents. Interviewers determined the risk group category and informed respondents at the interview. These categories were also described in the letters sent to each respondent on their physical measurement results, so that respondents could interpret their blood pressure readings.

Blood pressure risk groups were calculated using the following criteria:

Risk group	
Normal	Systolic blood pressure (SBP) is less than 140 mmHg
Mild	SBP at least 140 mmHg, but less than 160 mmHg
Moderate	SBP at least 160 mmHg, but less than 180 mmHg
Severe	SBP at least 180 mmHg

Hypertension

Participants aged 16 years or older who had their blood pressure measured were classified into one of the categories of hypertension (high blood pressure) as defined by the WHO Monica Project. These categories are based on systolic and diastolic blood pressure and use of blood pressure medication. Hypertensives are people who have treated or untreated hypertension, whereas normotensives are people who do not have high blood pressure and are not on tablets for blood pressure. The hypertension categories are:

Category	
Hypertensives	On tablets for blood pressure and/or SBP is greater than or equal to 160 mmHg and/or diastolic blood pressure (DBP) is greater than or equal to 95 mmHg.
Controlled hypertensives	On tablets for blood pressure, SBP less than 160 mmHg and diastolic blood pressure (DBP) less than 95 mmHg
Treated, uncontrolled hypertensives	On tablets for blood pressure, SBP greater than or equal to 160 mmHg and/or a DBP greater than or equal to 95 mmHg
Untreated hypertensives	Not on tablets for blood pressure, SBP greater than or equal to 160 mmHg and/or a DBP greater than or equal to 95 mmHg
Normotensives	Not on tablets for blood pressure, with a SBP less than 160 mmHg and a DBP less than 95 mmHg

HEIGHT AND WEIGHT

Height data collection

With the exception of women who identified they were pregnant (for whom no measurements were taken), height was measured on all consenting participants who were able to stand upright and stand still long enough for their height to be measured.

Participants were measured without shoes on a level floor and a masonite board was used if the floor was carpeted. The instrument used was a specially manufactured, portable stadiometer incorporating a metal base plate, an extended head piece with a spirit level attached, and a locking, steel measuring tape graduated in millimetres. Two measurements were taken with the person standing with heels together and head positioned in the Frankfort plane. Measurements were recorded to the nearest 0.1 cm. A third measurement was taken if the first two measurements differed by 0.5 cm or more. A single height value was calculated from the measurements taken in a manner similar to that used for blood pressure measurements.

In some cases, height could not be measured, for example when younger children were uncooperative or people were chairbound or unable to stand unaided. In these cases, the reason was recorded as one of five possible reasons, which are available for output purposes (see page 119).

Weight data collection

As for height, weight was measured for all consenting respondents except women who identified that they were pregnant and respondents unable to stand upright and stand still long enough for their weight to be measured. One weight measurement was taken, to the nearest 0.1 kg. For small children unable to stand still long enough for the measurement to be taken, the weight of an adult was taken followed by the weight of the adult holding the child, and the child's weight calculated from these. If no weight measurement was taken then the reason was recorded as one of four possible reasons (e.g. refused measurement or unable to stand), which are available for output purposes (see page 120).

The instruments used were Tanita™ Model 1597 (System 502) digital platform scales reading to 139.9 kg. All scales were checked by the interviewer once each day using a standardised 5 kg weight. No adjustments were required to the scales throughout the survey. The scales were placed on a hard flat surface, or if this was unavailable, were placed on the masonite board carried by the interviewer. Respondents were measured wearing only a single layer of light indoor clothing and without shoes. One measurement was taken and recorded to the nearest 0.1 kg. The scales showed 'OL' if the person weighed 140.0 kg or more and this was recorded as over the limit of the scales.

Anthropometric indicators

Anthropometric indicators derived from weight and height measurements for different age groups are outlined below.

- Children aged 2–7 years — height for age, weight for age and weight for height.
- Older children, adolescents and young adults aged 8–24 years — height for age and Body Mass Index (BMI) for age (using United States National Centre for Health Statistics (NCHS) reference values).
- Adults aged 25 years or over — BMI.

Body Mass Index — adults

BMI is a measure of weight in relation to height. In adults it is largely independent of height and for this reason is widely used as an indicator of both under- and over-weight. BMI values above the acceptable range are associated with increased risk for conditions such as heart disease, high blood pressure and diabetes, particularly when linked with other lifestyle factors including lack of exercise and smoking. BMI values below the acceptable range are associated with an increased risk of eating disorders, especially in younger women.

BMI, also known as Quetelet's index, is calculated as weight in kilograms divided by the square of height in metres.

BMI can be classified into the following categories based on the WHO definitions (WHO Expert Committee on Physical Status: the Use and Interpretation of Anthropometry 1995).

Category	BMI range (kg/m^2)
Underweight or thinness	
Severe thinness (WHO grade 3)	<16
Moderate thinness (WHO grade 2)	16–<17
Mild thinness (WHO grade 1)	17–<18.5
Normal or acceptable weight(a)	18.5–<20
	20–<25
Overweight	
Overweight (WHO grade 1)	25 –<30
Obesity	
WHO grade 2	30–<40
WHO grade 3	40 +

(a) The acceptable range has been split to enable comparison with NHMRC categories.

Body mass index — children and adolescents

In children and adolescents, age and sex specific reference values are used in place of the BMI categories described above. This is because both weight and height, and therefore BMI, are age and sex dependent during childhood and adolescence. Two sets of reference values have been used in the NNS:

- International reference values (Must & Dallal 1991) for persons aged 6–24 years; and
- Australian reference values (Harvey & Althaus 1993) for persons aged 7–15 years.

Comparisons have been made with each set of reference values, and for each set the following information is available:

Category	
Low BMI for age	If BMI is less than 5th percentile reference value for their age and sex
Acceptable BMI for age	If BMI is greater than or equal to 5th percentile and less than 85th percentile
At risk of overweight	If BMI is greater than or equal to the 85th percentile and less than the 95th percentile
Overweight	If BMI is greater than or equal to the 95th percentile

Height for age, weight for age and weight for height

Height for age, weight for age and weight for height were calculated for NNS participants aged 2–18 years. Height for age indicates whether a child is short or tall relative to others of the same sex and age. Low height for age may be due to stunted growth or, like tallness, may be of genetic origin. Weight for height indicates whether a child is thin/wasted or overweight compared with others of the same sex and age. Both thinness/wasting and overweight are of interest. Weight for age indicates whether a child is light or heavy compared with others of the same sex and age in the reference population irrespective of height (WHO Expert Committee on Physical Status: the Use and Interpretation of Anthropometry 1995).

Z–scores were calculated for each person aged 2–18 years for height for age, weight for age and weight for height, using the individual's measured height and weight and international reference values by sex and age in years and months (WHO 1983), where

$$\text{Z–score} = \frac{\text{Observed value – median reference value}}{\text{Standard deviation of reference population}}$$

The Z–score expresses the anthropometric indicators as a number of standard deviations (or Z–scores) above or below the median reference value. Low height for age is defined as having a Z–score for height for age of less than –2 and high height for age is defined as having a Z–score for height for age of greater than +2. The same cut-off limits of less than –2 standard deviations and more than +2 standard deviations apply to weight for height and weight for age.

WAIST AND HIP

With the exception of women who identified they were pregnant, the waist (abdomen) and hip circumferences were measured for all consenting respondents able to stand upright and stand still long enough for these measurements to be taken. As for weight, waist and hip circumferences were measured over one layer of light indoor clothing only, for example, a cotton, polyester or similar type shirt or t-shirt; or light to medium weight pants or skirt (not heavy cotton jeans or very full skirts). Respondents were notified of these requirements prior to the interview. However, measurements were made even if participants were wearing heavy indoor clothing.

The measurements were taken with the person standing erect with the weight evenly balanced on both feet, the feet approximately 30 cm apart, and the arms hanging loosely at the sides. The waist measurement was taken at the end of normal expiration with the tape passed horizontally around the body, midway between the inferior margin of the last rib and the crest of the ilium in the mid-axillary plane. The hip measurement was taken with the tape passed horizontally around the body at the position of the maximum circumference around the buttocks, when viewed from the side. The instrument used was a Lufkin™ W606PM 2 metre metal tape graduated in millimetres. Two measurements were taken and recorded to the nearest 0.1 cm. The average of the two readings was used for analysis.

Waist to hip ratio

The waist to hip ratio (WHR) was calculate using the following formula:

WHR = Waist circumference (cm) / hip circumference (cm)

A high WHR is generally indicative of excessive abdominal fat which is associated with increased risk for cardiovascular disease in adults. The cut-offs that have been used to indicate increased risk of cardiovascular disease for people aged 19 years and over are:

- WHR > 0.9 for men ; and
- WHR > 0.8 for women (Ball et al. 1993; Alexander & Dugdale 1990).

CHAPTER 6 FOOD HABITS AND THE FOOD FREQUENCY QUESTIONNAIRE

FOOD HABITS AND ATTITUDES

A series of food-related questions were asked to provide additional information on eating habits, barriers to dietary change, and food security.

All participants were asked questions about their :

- usual way of eating;
- usual number of eating occasions in a day;
- number of days per week they usually have something to eat for breakfast;
- frequency of adding salt to food after it is cooked; and
- frequency of using salt during cooking.

People aged 16 years and over were asked further questions about:

- whether their weight had changed compared to the same time last year;
- reasons for any body weight change;
- whether they desired to change the amount eaten of fruits and vegetables, breads and cereals, or food high in fat, the type of change desired and, if appropriate, reasons for not making the changes;
- whether they avoided certain foods because of teeth, mouth or swallowing problems; and
- whether there were times in the past 12 months when they had run out of food and could not afford to buy more food.

FOOD FREQUENCY QUESTIONNAIRE

Rationale and purpose

At the completion of the questions on food habits and attitudes, all participants aged 12 years and older were asked if they would complete the FFQ. The FFQ used in the NNS was a non-quantified, closed-ended questionnaire designed to:

- assess usual patterns of food intake of individuals aged 12 years and over for comparison with public health nutrition recommendations; and
- estimate the frequency of consumption of foods providing specific protective nutrients, such as vitamins A, C and E and calcium.

The FFQ was designed to assess usual intake over the previous 12 months.

Rationale and purpose *continued*

This form of FFQ was selected by the Expert Technical Group on Dietary Methodology to complement the information obtained by the 24-hour dietary recall. It was considered that the 24-hour recall with a 10% replicate sample would provide almost all of the information required to meet the objectives of the NNS. However, some supplementary information from a non-quantified FFQ was required to meet some objectives (particularly the first, third and fourth objectives listed on page 3). A quantified FFQ was not considered to be suitable as this would have considerably increased both cost and respondent burden.

Usual consumption of foods and vitamin/mineral supplements

The FFQ was divided into two sections. Section 1 was a non-quantified instrument consisting of 107 lines of foods and 11 lines of dietary supplements. Each food and supplement line had a choice of 9 frequency categories ranging from 'Never or less than once a month' to 'Six or more times per day'. These categories have been widely used in FFQs, including the Nurses Cohort Study in the United States (Willett 1990).

The first section of the FFQ was a modification of that used by the Anti-Cancer Council of Victoria (ACCV) in their Health 2000 study. This was a non-quantified questionnaire comprising 121 food lines. The ACCV FFQ was developed for use with Australian, Greek and Italian born individuals and the foods specified in the ACCV FFQ were based on the results of a weighed food study (Ireland, et al. 1994).

The FFQ for the NNS differed from the ACCV FFQ in that it included:

- alcoholic beverages and salad dressings;
- detailed information on the use of milk (in drinks, on cereals) and salads (in a sandwich, with a main meal); and
- food lines on vitamin and mineral supplements (e.g. vitamin B and zinc);

and excluded:

- food lines related to butter or margarine; and
- some foods such as olives, figs and fetta cheese.

Questions regarding food habits

Section 2 of the FFQ was designed to obtain more detailed information about specific food habits of interest in relation to the Dietary Guidelines for Australians (e.g. reducing consumption of fats, particularly saturated fats, and eating more fruits and vegetables) (NHMRC 1992).

Section 2 consisted of six questions on:

- the type of milk usually consumed;
- the frequency of use of specified reduced fat products;
- the frequency of trimming fat from meat;
- the number of serves of vegetables usually eaten each day;
- the number of serves of fruit usually eaten each day; and
- the frequency of use of specified fats and oils in cooking.

Data collection

At the conclusion of the additional questions, persons aged 12 years and over were asked to complete the FFQ at a later time and to return the completed booklet in a pre-paid envelope.

As interviewers would often leave more than one FFQ in a household for completion by different respondents, interviewers wrote the first name of each participant in the box at the top of page one to ensure that each FFQ was filled out by the right person. The interviewer provided the respondent with a pencil and eraser and demonstrated how to complete the booklet by explaining the instructions on the first two pages of the booklet. Standard wording in the interviewer's instruction manual was developed to assist interviewers in explaining the FFQ:

> The FFQ is designed to estimate your usual pattern of food intake by providing us with information on how often, on average, you consumed certain foods and beverages during the last 12 months.
> You will need to think about all eating occasions, even special occasions like Christmas, birthdays and holidays.
> Some foods are commonly eaten as mixed foods. You will need to think about the separate ingredients that make up these mixed foods, for example the tomato you may have in a sandwich or in a dish like spaghetti bolognaise.
> For seasonal fruit and vegetables, you should estimate your consumption when the fruit or vegetables are in season.

The interviewers filled in the example on the front page of the booklet to illustrate the importance of completely filling in the appropriate box, only filling in one box per line and completely erasing incorrect choices. Interviewers emphasised that every line must have an answer, even if the person never ate a particular food in the previous 12 months. Interviewers assisted those people who indicated they would have difficulty in completing the forms.

Reminder slips about the FFQ were included in the letters on physical measurement results, which were sent to participants several weeks after their interview.

Food Frequency Questionnaire in Chapter 8 (page 43) discusses procedures for dealing with questionnaires where people selected multiple responses for the one food line. It also discusses cases where an FFQ was defined as 'unusable' and therefore has not been used in any tabulations.

CHAPTER 7 SURVEY RESPONSE

MEASURES TO MAXIMISE RESPONSE

In an ideal situation, interviews would be conducted with all people selected in the sample. The ABS attempts to maximise response to avoid bias and reduce sampling variability. However, some non-response is unavoidable when people choose not to participate or cannot be contacted. The ABS sought the willing cooperation of selected households and participants in the NHS and invited their further participation in the NNS. Measures taken to encourage respondent cooperation and maximise response in both surveys included:

- stressing the importance of selected households participating in the survey. Each selected dwelling (and its residents) represented a number of others in that local area, in that State and in Australia;
- stressing the importance of the survey to the planning and provision of health and nutrition services and facilities to meet Australia's needs;
- stressing the confidentiality of all information collected under the *Census and Statistics Act 1905*. Under provisions of this Act, the ABS is prevented from releasing any identifiable information about individuals or households to any person, organisation or government authority;
- distributing written information about the survey. The NHS sent out advance letters to selected households, which gave notice that an ABS interviewer would call, provided an ABS contact number for more information and included an information brochure. A brochure about the NNS was given to all selected people when they were asked to participate in the NNS. If the person agreed to participate, they were also given a fridge magnet and an appointment card;
- making every effort to contact the occupants of each selected dwelling and to conduct the survey in those dwellings. NHS interviewers made at least three call-backs in rural areas and at least five in urban areas before a dwelling was classified as a non-contact. Respondents who refused to participate in the NHS were usually followed up later by letter and a subsequent visit by an office supervisor. NNS interviewers only approached those people who agreed to participate in the NNS at the health interview. The interviewer generally attempted five telephone calls to make contact and at least two call-backs to the person's dwelling. People who initially agreed to the NNS but declined when contacted by the NNS interviewer were encouraged to participate where possible.

RESPONSE RATES

The NHS interviewed a total of 57,633 persons in scope/coverage and obtained fully completed main questionnaires from 97% of the active sample. A total of 22,562 persons were selected from the NHS to be interviewed for the NNS. Of this sub-sample approximately 13,800 people completed the NNS. There were several stages in the selection process. The first stage was the invitation to participate, with 76.8% of those selected agreeing to do the survey. The second stage was completing the interview at a later date; of those who initially agreed to do the survey, 80% completed it. A total of 10.8% of all participants completed a Day 2 Individual Food Intake Questionnaire (IFIQ) (75.4% of those people selected for the Day 2 IFIQ). Usable FFQs were received from 76.2% of respondents aged 12 years and over.

RESPONSE RATES *continued*

A respondent's FFQ was classified as 'unusable' if more than 20 out of the 107 food lines were completed incorrectly and could not be resolved.

Response status

	People	
	no.	*%*
Selected for the NNS	22 562	100.0
Initially agreed to participate in NNS	17 326	76.8
Participated in NNS	13 858	61.4

The overall response rate is low by ABS standards for household surveys. It is a direct result of the survey methodology where a sub-sample of individuals who had already completed a detailed health survey interview were subsequently invited to participate in the Nutrition Survey. Characteristics of respondents and non-respondents have been compared (see Respondent Characteristics on page 32). Furthermore, adjustments to sample weights have been made during estimation to reduce non-response bias. Notwithstanding, users are cautioned to bear in mind the high non-response rate in their analysis and interpretation of the data.

Response components

	People	
	no.	*%*
Completed IFIQ	**13 858**	**100.0**
Physical measurements		
Full set of measures	13 338	96.2
Partial set of measures	280	2.0
Pregnant	162	1.2
Refused consent	78	0.6
FFQ(a)		
Usable FFQ	9 096	76.2
Unusable FFQ	237	2.0
No FFQ returned	2 604	21.8
Total selected	*11 937*	*100.0*
Day 2 IFIQ(b)		
Completed Day 2 IFIQ	1 490	10.8
Refused Day 2 IFIQ	487	3.5
Total selected	*1 977*	*14.3*

(a) Percentage of people aged 12 years and over.

(b) Percentage of NNS participants.

response rates *continued*

Interviews were conducted on seven days a week throughout the year. The distribution of participants over the days of the week and the seasons was as follows. Note that summer and autumn each had an extra month of interviews because interviews took place over February 1995 to March 1996.

Time period	*People*
	no.
Season	
Summer (Dec–Feb)	3 258
Autumn (Mar–May)	2 901
Winter (Jun–Aug)	4 055
Spring (Sept–Oct)	3 644
Day of week	
Monday–Friday	10 541
Saturday–Sunday	3 317
Total	**13 858**

RESPONDENT CHARACTERISTICS

The following table shows the characteristics of people selected for the NNS at different stages in the response process. Information on those people who were selected for the NNS but did not participate was obtained from the NHS. This analysis excludes people who did not take part in the NHS, but would otherwise have been selected for the NNS. Major characteristics affecting response were:

- Initial invitation for the NNS — Analysis of the characteristics of people who accepted, compared to those who declined, revealed that income and age were major factors in non-response. People with a high income or age greater than 59 were more likely to decline.
- Participation — Marital status and employment status were major factors in non-response. Generally, unmarried people were less likely to participate and unmarried people who were also unemployed were the least likely to participate.
- Completion of the FFQ — The major factors in non-response were marital status and age. For people aged over 20 years, non-response declined with age and non-response was higher for unmarried people than for married people.

Estimation procedures incorporated non-response adjustments based on characteristics found to be related to response.

CHARACTERISTICS OF RESPONDENTS

	INITIAL INVITATION			ACTUAL PARTICIPATION		COMPLETION OF FFQ(a)		
	Selected(b)	*Accepted(b)*	*Proportion selected*	*Participated(c)*	*Proportion initially accepted*	*Selected*	*Completed*	*Completed as proportion of selected*
	no.	no.	%	no.	%	no.	no.	%
Age group (years)								
2–3	565	493	87.3	383	77.7	..	..	..
4–7	1 091	925	84.8	799	86.4	..	..	..
8–11	1 038	871	83.9	739	84.8	..	..	..
12–15	1 021	825	80.8	653	80.4	653	460	70.4
16–18	783	597	76.3	433	72.5	433	304	70.2
19–24	1 977	1 522	77.0	1 060	69.6	1 060	690	65.1
25–44	7 320	5 698	77.8	4 525	79.4	4 525	3 313	73.2
45–64	5 362	4 045	75.4	3 306	81.7	3 306	2 745	83.0
65+	3 405	2 350	69.0	1 960	83.4	1 960	1 584	80.8
Sex								
Male	10 931	8 328	76.2	6 615	79.4	5 645	4 208	74.5
Female	11 631	8 998	77.4	7 243	80.2	6 292	4 888	77.7
State or Territory								
NSW	4 814	3 678	76.4	2 881	78.3	2 496	1 853	74.2
Vic.	4 619	3 446	74.6	2 805	81.4	2 431	1 903	78.3
Qld	4 070	3 111	76.4	2 396	77.0	2 060	1 577	76.6
SA	2 747	1 974	71.9	1 727	87.5	1 498	1 193	79.6
WA	3 087	2 388	77.4	1 852	77.6	1 587	1 214	76.5
Tas.	1 655	1 388	83.9	1 177	84.8	1 000	737	73.7
NT	545	491	90.1	357	72.7	297	177	59.6
ACT	1 025	850	82.9	663	78.0	568	442	77.8
Part of State or Territory								
Capital city	14 010	10 474	74.8	8 339	79.6	7 249	5 441	75.1
Rest of state	8 552	6 852	80.1	5 519	80.6	4 688	3 655	78.0
Employment status(d)								
Not applicable	3 406	2 351	69.0	1 945	82.7	1 945	1 571	80.8
Employed	10 896	8 376	76.9	6 594	78.7	6 594	4 942	75.0
Unemployed	774	616	79.6	445	72.2	445	321	72.1
Not in labour force	3 424	2 597	75.9	2 060	79.3	2 060	1 631	79.2
Total	*18 500*	*13 940*	*75.4*	*11 044*	*79.0*	*11 044*	*8 465*	*76.7*
Marital status								
Married	10 691	8 116	75.9	6 661	82.1	6 661	5 339	80.2
Defacto	1 089	849	78.0	625	73.6	625	401	64.2
Separated	566	437	77.2	329	75.3	329	222	67.5
Divorced	1 003	798	79.6	650	81.5	650	502	77.2
Widowed	1 329	892	67.1	719	80.6	719	543	75.5
Never married	7 884	6 234	79.1	4 874	78.2	2 953	2 089	70.7
Self-assessed health(e)								
Excellent	3 576	2 701	75.5	2 149	79.6	2 149	1 698	79.0
Very good	6 702	5 218	77.9	4 190	80.3	4 190	3 253	77.6
Good	5 429	4 071	75.0	3 198	78.6	3 198	2 393	74.8
Fair	2 556	1 855	72.6	1 437	77.5	1 437	1 082	75.3
Poor	846	566	66.9	434	76.7	434	306	70.5
Total	*19 109*	*14 411*	*75.4*	*11 408*	*79.1*	*11 408*	*8 732*	*76.5*
All persons	**22 562**	**17 326**	**76.8**	**13 858**	**80.0**	**11 937**	**9 096**	**76.2**

(a) People aged 12 years and over.

(b) Based on age at the time of the NHS interview.

(c) Based on age at the time of NNS interview.

(d) People aged 15 years and over who have left school.

(e) People aged 15 years and over.

CHAPTER 8 DATA PROCESSING

OVERVIEW

Interviewers regularly returned completed portions of each NNS workload to their ABS State office contact who recorded the response details on the household form and returned the completed portion of the workload to ABS central office. The data sent for each household consisted of the NNS household form, containing a photocopy of the NHS household form for reference purposes, and the questionnaires completed by the interviewer. Respondents mailed the completed FFQ back to ABS central office.

Data collected in the NNS was entered onto computer using three different input processing systems:

- The IFIQs were coded by ABS officers, under the supervision of nutritionists at HFS. This coding procedure is discussed in more detail below (see IFIQ below);
- The physical measurement and food-related questions were entered by ABS officers using a customised system.
- The FFQs were entered by ABS using Optical Mark Recognition (OMR).

NHS data were entered in a separate processing system.

All data have been scrutinised during data entry, coding and output processing for accuracy and quality. Although the focus was on retaining data as reported by participants, the quality of the data was investigated to ensure responses were meaningful. Food and nutrient data were primarily the responsibility of nutritionists at HFS. Other data were scrutinised by the ABS with expert assistance from nutritionists, initially at HFS, and later from a consultant to the ABS.

24-HOUR RECALL

On a simplistic level, foods and beverages can be consumed in several different forms:

- a single item (e.g. a slice of cheese or an apple);
- a combination with the components added just before eating (e.g. a cheese sandwich or breakfast cereal with milk); or
- a recipe food consisting of several foods mixed/cooked together (e.g. chocolate cake or macaroni cheese).

The processing system used for the food intake data from the NNS was designed to cope with these different ways of eating foods, although the coding was not always done on such a simplistic level (coding of food intakes is discussed in more detail later in this chapter).

Food and beverage intake data from the 24-hour recall was entered using an automated food coding system, the Australian Nutrition Survey System (ANSURS). ANSURS is an Australian version of Survey Net, which was developed by the USDA in conjunction with the University of Texas for use in the Continuing Survey of Food Intakes by Individuals 1994–96. With the permission of the USDA, HFS contracted the University of Texas to modify Survey Net specifically for use in the NNS. Experts from the United States of America came to Australia to demonstrate ANSURS and coders received extensive training in its use.

24-HOUR RECALL *continued*

ANSURS incorporated a set of three central technical databases:

- the Food Codebook Database — this was used to code foods/beverages and amounts consumed;
- the Nutrient Database — this contains the nutrient composition information used to calculate the nutrient value of foods and beverages consumed; and
- the Recipe Database — this stores information about the ingredients of a recipe food and was used to calculate nutrient values for recipe foods, taking into account changes in moisture, fat, vitamins and minerals as a result of cooking.

These databases with their related files were developed by staff and contractors in HFS and ANZFA.

Primary food coding

First, coders matched the description of the foods recorded in the IFIQ to a food with the same descriptions in the Food Codebook Database. Once an item was selected, ANSURS provided a list of quantity measures appropriate for that food and the coder selected the measure corresponding to the recorded description of the amount eaten. For example, quantity measures for fluid milk include cup, millilitres, litres, teaspoon, tablespoon, weight in grams, and some standard amounts for milk added to beverages, hot cereals and cold cereals. Edit checks built into ANSURS provided warning messages for high amounts of foods.

ANSURS incorporated a 'pop-up' window facility (called Notepad) which enabled coders and supervisors to record information on decisions they had made or queries to be checked. This feature served as a computerised routing of information from coder to supervisor to higher management and was used through all coding and editing processes.

If a food or food quantity could not be coded from the Food Codebook Database, it was designated an 'unknown'. Throughout the coding process, information on unknown foods and quantities were investigated and resolved, and the Food Codebook Database amended accordingly. New codes were added if:

- no code existed for a food similar to the food reported;
- the reported food contained considerably different nutrients;
- the form or type of food was considerably different; and
- the unknown food was reported a considerable number of times.

Food code numbering system

Each description in the Food Codebook had a unique eight-digit code. This code can be used to classify food and beverages into groups of different levels of detail (see Appendix 1). Food codes also indicate whether the food/beverage is:

- a food with a modifiable recipe (e.g. homemade bread and cake, pizza, pork casserole and mashed potato) which consists of other foods in the Food Codebook Database. Nutrient composition was derived from the ingredients, with adjustment for vitamin and mineral loss, and fat and moisture changes during cooking (see Recipe Processing System on page 36 for more information). Food codes for these items end in a '2'; and
- a single food, ingredient or non-modifiable recipe (e.g. commercial bread and cake, tinned spaghetti, fresh apple, fish sauce and grilled steak). Food codes for these items end in '1'.

Food code numbering system *continued*

Through the recipe option of ANSURS, coders were able to both view the ingredients in a recipe and to modify these recipes by ingredient substitution so that food descriptions could be matched to the reported food, or tailored to the reported ingredients. Modified recipes have a reference number and are part of the Recipe Database. Further detail on recipe modifications are provided in the section on the Recipe Processing System.

Combination foods

Foods which were combined just before eating and consumed as a single item were designated 'combinations' and given a combination code. A combination differs from a recipe in that the foods are placed together just prior to consumption, rather than during the food preparation process. Examples of foods coded separately but linked with a combination code are a bowl of cereal served with milk, butter added to baked potato prior to eating, and the various foods in a particular salad or sandwich. There were 19 combination types (see page 111 for an explanation of the codes), which fall into the following categories:

- additions to beverages and breakfast cereals — combination codes 01 and 02;
- fats, oils and milks added to foods just prior to being eaten — combination codes 03 and 12 to 18;
- sandwiches, rolls, hamburgers and salads — combination codes 04 and 05;
- savoury mixed dishes and homemade soups — combination codes 06 to 11.

Recipe Processing System

Food codes in the Food Codebook ending with a '2' consist of two or more ingredients and are termed 'recipes'. These food codes could be modified by ingredient substitution so that food descriptions could be matched to the reported food, or tailored to the reported ingredients. All ingredients are foods in the Food Codebook. Modifiable recipes have a food code ending in '2'. and can be modified using the Recipe Processing System (RPS).

For example, food code number 17111902, *Egg, whole, fried* is a recipe consisting of two ingredients, food code 17111001 *Egg, whole, raw* and food code 14532001 *Fat, not specified as to fat/oil/spread, domestic, used in cooking.* The second ingredient could be modified to reflect the type of fat used in frying the egg and this version of the recipe then became a recipe modification with its own food code: 200034 *Egg, whole, fried made with oil, olive*. The ingredients for this modification consist of 17111001 *Egg, whole, raw* and 14337001 *Oil, olive*.

The RPS of ANSURS also enabled nutrient retention factors to be applied to the vitamin and mineral values of each recipe ingredient (at the ready-to-cook stage), and adjustment for fat and moisture changes which occur during cooking, to derive yields and nutrient values for the cooked product.

Nutrient Retention Factors were applied to recipe ingredients, according to the type of cooking method used. For example, when cooking rice, vitamin and mineral losses occur. The retention factors for cooked rice assume that 60% of folate, 90% of riboflavin, and 75% of thiamin are retained when rice is cooked. These percentages were applied to the original nutrient values for raw rice when this food was used as an ingredient in a recipe, to represent the nutrient values of the cooked product.

Recipe Processing System *continued*

The RPS also adjusted for moisture and fat changes that occur during cooking. These moisture and fat changes are expressed as a percentage of the total gram weight of the recipe at the ready-to-cook stage.

Quality assurance procedures

Food coders received intensive training in coding of reported food intakes prior to the coding of the survey data. Coders were regularly assessed for coding proficiency as considerable practice with feedback to ensure accuracy. Initially, all the coder's work was recoded by a more experienced coder with resolution of any differences. As a coder's proficiency increased, the percentage of recoding was reduced. When a coder's error rate was confirmed to be less than 5%, 10% of their work continued to be routinely verified. Regular training sessions and meetings were held between coding and review staff.

Comprehensive edit checks built into all data entry systems provided for efficiency and accuracy of coding. Control points were used to monitor both interviewer and coder performance. Warning messages were generated by ANSURS when coders entered high or incomplete food information.

Food and nutrient intake data were checked at several stages. The first stage took place during data entry and included review and resolution of queries about foods and quantities of foods unable to be coded; approval of all recipe modifications; review of all foods which exceeded specified limits; review of and response to all Notepad enquires; and explanation of coding decisions.

A further check of data quality took place after all food and beverage data had been coded and nutrient data from ANZFA had been applied. Checks at this stage included verifying food records which reported foods consumed at midnight, people with less than six food lines coded or food lines with unknown amounts. Technical data files (that is the files associated with the Food Codebook, the Nutrient Database and the Recipe Processing Database) were reviewed for completeness and accuracy. Checks at this stage also included the scrutiny of food and nutrient intakes which showed high values when compared with the intake of other individuals of the same age and sex. Because the focus was on retaining data as reported by participants, amendments were made in only a small number of cases. Consequently, some food intakes contain implausible data (e.g. half a cup of butter on one slice of bread) which were left on the data file.

NUTRIENT ANALYSIS

The 24-hour food intakes recorded in the NNS were converted into nutrient intakes, using a nutrient composition database developed by ANZFA in 1996. ANZFA is responsible for the ongoing development of reference data on the nutrient composition of Australian foods from which the official food tables series, *Composition of Foods, Australia* (ANZFA 1989) is published. The database development occurred in collaboration with HFS and in tandem with the coding of the survey food intakes.

NUTRIENT ANALYSIS *continued*

ANZFA was not required to develop nutrient composition data for all foods consumed because the survey food coding system enabled recipe information collected from respondents to be used to calculate the nutrient composition of many mixed dishes. ANZFA thus compiled an intermediate database of single foods (food identifiers ending in '1') comprising raw and cooked, commercial products, recipe ingredients and some simple recipe foods. This database was subsequently incorporated into the Department's coding system to generate the nutrient composition of the recipe foods (food identifiers ending in '2') (see Recipe processing system on page 36).

The Nutrient Composition Database contains 29 nutrient components comprising energy, 12 proximate constituents, 10 vitamin components and 6 minerals. Details of the nutrients are given in Chapter 4 (page 17). Nutrient data are expressed per 100 g edible portion. The consistent use of the 100 g reference quantity for all foods including fluids, differs from that used in the Australian food tables where data for many fluids are expressed per 100 mL.

Sources of nutrient data

Many reference sources were consulted to obtain nutrient composition information. These sources are listed below in order of data contribution:

- Data from Composition of Foods, Australia (COFA)
- Unpublished food composition data commissioned by ANZFA
- Australian scientific literature
- Food industry data
- British food tables
- United States food tables and standard reference database (United States Department of Agriculture 1976, 1993)
- New Zealand tables and database (New Zealand Institute for Crop and Food Research 1995a, 1995b)
- Other data.

Development of the nutrient database

Nutrient composition data for the survey foods were derived by a range of methods which are described below:

Matching a single COFA food to a single survey food

Where the description of a food published in COFA matched that of a survey food, the COFA nutrient data were used without amendment.

Combining several COFA foods to produce a single survey food

Where the description of the survey food was less specific than for COFA foods, nutrient data from several COFA foods were combined to produce a representative nutrient profile for the survey food. Market production or consumption data were generally used to provide the weighting factors. For example, the different cultivars of peeled pear were weighted according to the relative market share to produce the representative nutrient composition of 'Pear, Not Specified as to Type, Raw, Peeled'.

Unpublished laboratory data

Unpublished laboratory data commissioned by ANZFA's food composition program were used for several foods particularly cereals and meats.

Development of the nutrient database *continued*

Modification of COFA data

Where the description of a food published in COFA was similar to that of a survey food except for a particular characteristic such as low fat, the appropriate nutrient data of the COFA food were modified to account for that characteristic. For example, the nutrient composition of low fat plain yoghurt was derived by applying the difference in nutrient composition between full fat fruit yoghurt and low fat fruit yoghurt to full fat plain yoghurt.

Food industry data

Nutrient composition data for commercial products were available from some manufacturers. Generally, the range of provided data fell into two categories — comprehensive analytical or calculated data, and a more limited range of data used in nutrition labelling. The data were used in one of two ways depending on the amount of data available:

- comprehensive nutrient data were used directly, providing they satisfied data quality criteria; and
- nutrition label data were used primarily as a guide in recipe calculation.

For fortified foods containing added vitamins and minerals such as breakfast cereals, label values were used rather than other available data because it was considered more likely that such data were more representative of the likely variability in content from batch to batch.

Recipe calculation

Nutrient data for many commercial products and simple cooked foods were obtained through recipe calculation. The method selected for recipe calculation was the retention factor method (Powers & Hoover 1989), which involves the following steps:

- applying appropriate vitamin and mineral retention factors to the individual ingredients;
- summing the values to the uncooked recipe stage;
- applying moisture gains or losses, as appropriate, to the uncooked recipe; and
- expressing the results per 100 g cooked recipe.

The retention factors and weight changes used in these calculations were taken from official United States references.

Recipes for commercial products were developed using the labelled ingredients in the order they were listed. The amount of each ingredient was adjusted to derive nutrient values which approximated the label information or food industry data.

These recipe calculations were distinct from those made by the Recipe Processing System, which calculated the nutrient composition of home cooked recipes as part of the Department's food intake coding system.

Substitution of nutrients

Data for specific nutrients such as fatty acids were adjusted to take account of the composition of the cooking medium. For example, the fatty acid content of eggs fried in different fats was adjusted to account for the fatty acid profile of the frying fat.

Development of the nutrient database *continued*

Overseas data

Where Australian nutrient data were not available, data from overseas references, mainly the official food tables of the United Kingdom and the United States were used. Because of British copyright requirements, official permission was obtained for the use of up to 4,000 total folate values and general nutrient data for up to 1,000 foods from the 5th edition of McCance and Widdowson's *The Composition of Foods* and its supplements. The mode of expression in the overseas references for nutrients such as carbohydrates were adjusted to conform to the mode of expression used in the Australian food tables. In using this data the following acknowledgment should be provided 'Data from the *The Composition of Foods,* 5th Edition and its supplements as produced with the permission of the Royal Society of Chemistry and the Controller of Her Majesty's Stationary Office.'

Food descriptions with characteristics not specified

Two types of food descriptions were devised to facilitate coding of foods that could not be fully described:

- where one or two relevant nutrient or physical characteristics could not be specified by the respondent (uses Not Specified as to [characteristic] notation); and
- where only the most general characteristics could be specified (uses Not Further Specified notation).

The derivation of the nutrient data for these types of descriptions used a probability approach to ensure that the data were representative of all survey foods that had the same core description, but varied with respect to the characteristic of interest. The approach is outlined as follows.

For food descriptions containing one or two unspecified characteristics, the nutrient composition calculations consisted of:

- identifying fully described foods which matched the core food description, but which varied according to the characteristic of interest; and
- aggregating in proportion to market availability or to other indicators of relative consumption.

Generally, the less detailed the food description, the greater the number of appropriate fully described foods that contributed to the ultimate nutrient composition. For example, the nutrient composition of the survey food 'Milk, Not Specified as to Fat Content' was developed by weighting the data of milks of different fat contents, according to their individual market share. The survey food 'Milk, Not Further Specified' was derived by combining the data of milks used for the more specific 'Milk, Not Specified as to Fat Content' in addition to all other milks in the database that were classified according to other criteria such as calcium content or lactose content.

The weighting factors used to generate representative nutrient data relied on indicators of usual consumption. If possible, market share information was obtained. However, this was often not available. A secondary source of information was the survey itself. The relative consumption of the foods coded part way through the survey coding process was used to derive some weighting factors, on the assumption that their relative consumption would remain unchanged throughout the survey.

Meat — a special case

The nutrient composition of unprocessed beef, trim lamb, and pork cuts were derived primarily from new analyses of individual lean and separable fat components, and new information on physical composition. Data for veal and conventional lamb cuts, however, were taken from COFA. The survey database food descriptions for meat were less detailed than in COFA, and often required nutrient data to be compiled for groups of similar cuts rather than for individual cuts. For these foods, data for individual cuts were weighted according to their carcase proportions. Foods cooked in similar ways were also grouped together.

The nutrient compositions of beef cuts were generally compiled by adjusting COFA data for lean, and separable fat components to new water and fat analyses (Australian Government Analytical Laboratory 1992) and combining the resultant data for the two components according to new data on physical composition (Lewis, Sadler & Buick 1993; Australian Government Analytical Laboratory 1992). New analyses of carotene in lean and separable fat, and B-group vitamins in separable fat were incorporated also.

Comprehensive analysis of trim lamb (Sadler, Lewis & Buick 1993) and new-fashioned pork (Barnes, Lewis & Buick 1996) conducted in the early 1990s were used as the respective data sources for these cuts.

Trimming

Meat data in COFA are given at two levels of trimming — 50% and 75% trimmed, based on a mathematical adjustment of the physical composition of untrimmed retail cuts. This approach was uniformly applied in COFA irrespective of the amount of separable fat present in the untrimmed cuts, except for untrimmed cuts that contained less than 6% separable fat, in which case, no data for trimmed cuts were published. The survey database contains only one description for fat-trimmed versions of meat cuts. Rather than adopting the same approach to trimming as in COFA, a new approach was devised in which the proportion of trimming was determined on the basis of the relative proportions of lean and of fat in untrimmed cuts such that:

- 0–4% separable fat — No trimming
- 5–10% separable fat — 50% trim
- 11–20% separable fat — 75% trim
- >20% separable fat — 90% trim

Notes on nutrient data

Estimation of energy content

The energy factors used to calculate the energy content of foods in the database are listed in the table on the following page.

Calculation of energy content by applying conversion factors to only the protein, fat, and total carbohydrate content will not necessarily reproduce energy values given in the database for some food groups. The reasons for this discrepancy are related to the use of different factors for the individual carbohydrate components, and the possible presence of other energy yielding components.

Notes on nutrient data *continued*

Specifically, the energy contribution of carbohydrate was calculated from the starch, disaccharide and monosaccharide contents of foods using different factors. Also, the energy contributions of organic acids and/or sugar alcohols in fruit, vegetables and dairy foods were included in the energy content of those foods. The use of unrounded values in the energy calculation instead of the rounded values given in the database is of minor significance.

Component	*Energy conversion factor (kJ/g)*
Protein	17.0
Fat	37.0
Starch and dextrin	17.0
Maltodextrin	17.0
Disaccharide	16.0
Monosaccharide	16.0
Alcohol	29.0
Sorbitol	16.0
Mannitol	16.0
Citric acid	10.0
Lactic acid	15.0
Malic acid	10.0
Quinic acid	10.0
Acetic acid	15.0

Carbohydrate

All carbohydrate values are expressed as grams of nutrient as analysed.

For some foods, data for total carbohydrates includes a contribution from sugar alcohols and oligosaccharides where this is known. For these foods, the sum of total sugars and starch will not equal the total carbohydrate value. It should be noted that values for starch may also include dextrin content. For beers and some confectionery items, the 'starch' content is present as dextrins.

Dietary fibre

Total dietary fibre values have been analysed by the Association of Official Analytical Chemists (AOAC) enzymatic–gravimetric method (AOAC 1990).

Fatty acids

The sum of the three fatty acid subtotals given in the database is always less than the total fat value. The difference is due to the contribution of the non-fatty acid components in the triglyceride unit such as the 'glycerol backbone' and possible phosphate groups.

Folate, total

The total folate values in the database were derived from overseas data, primarily from the British food tables, with the permission of the United Kingdom Ministry of Agriculture, Fisheries and Food.

PHYSICAL MEASUREMENTS AND FOOD-RELATED QUESTIONS

Responses to physical measurement and food-related questions were progressively entered using a customised input processing system. This system incorporated a comprehensive range of computer edits to check that logical sequences had been followed in the questionnaires, that all necessary items were present and that responses to selected questions were valid.

During data entry of physical measurement data, computer edits checked individual values against ranges based on previous Australian and overseas studies to focus investigation on very extreme values. Guidelines were established to ensure consistent treatment of the cases identified and of any necessary amendments. In most cases, physical measurements were left as recorded, particularly if other measurements for the individual were consistent with the extreme value. In a small number of cases, there was a very obvious error which was corrected (e.g. measurements of people within the household had been recorded on the wrong person's form). In other cases, the value was clearly incorrect but there was no information on which an amendment could be based: in these cases the measurement was changed to 'not measured'.

At a later stage, the distributions of physical measurements and anthropometric indicators were studied. In one age groups a systematic error due to incorrect reading of the height equipment was identified and the relevant records amended appropriately.

FOOD FREQUENCY QUESTIONNAIRE

Data from the FFQ were progressively entered onto a computer file via an Optical Mark Recognition (OMR) system. Guidelines were developed for manually editing questionnaires which did not have exactly one box marked on each line. These guidelines are in the table below.

Error	*Treatment*
Completely blank line	Record as zero ('0')
Line with two marks and more than one food	Record the higher frequency category
Line with two marks and exactly one food	If the responses are adjacent, record the higher frequency category
	If the responses are separated by an odd number of categories, record the middle category
	Otherwise, record the category to the right of the middle
Line with more than two marks and at least the same number of foods	Record the highest frequency category
Line with multiple marks, clearly not connected to the number of foods	Record as zero ('0')

The table above shows that completely blank lines or lines with unresolvable errors were give a value of '0'. In cases where a person's FFQ had more than 20 out of the 107 foodlines with a '0', then the person's record was classified as unusable. These unusable records have not been included in any population estimates based on the FFQ.

CHAPTER 9 INTERPRETATION OF RESULTS

DATA QUALITY

Although care was taken to ensure that the results of this survey are as accurate as possible, there are certain factors which affect the reliability of the results and for which no adequate adjustments can be made. One such factor is known as sampling variability. Other factors are collectively referred to as non-sampling errors. These factors, which are discussed below, should be kept in mind when interpreting results of the survey.

Sampling error

Sampling error refers to the difference between an estimate derived from a sample survey and the 'true value' that would be obtained if the whole population was enumerated. Factors which affect the sampling error include:

- Sample size — larger populations generally decrease the sample error, but it is not directly proportional.
- Sample design — there are many different methods which could have been used to obtain a sample. The final design attempted to make survey results as accurate as possible within cost and operational constraints. (See Sample design on page 6.)
- Population variability — this refers to the extent to which people differ on the particular characteristic being measured. The smaller the population variability of a particular characteristic, the more likely it is that the population will be well represented by the sample, and therefore the smaller the sampling error. Conversely, the more variable the characteristic, the greater the sampling error.

Standard error

One measure of sampling variability is SE. There are about two chances in three that a sample estimate will differ by less than one SE from the figure that would have been obtained if all dwellings had been included in the survey, and about 19 chances in 20 that the difference will be less than two SEs.

The relative standard error (RSE) is the SE expressed as a percentage of the estimate to which it relates. Very small estimates generally have a high RSE and this makes them unsuitable for most uses. Only estimates with RSE less than 25% are considered sufficiently reliable for most purposes. However, estimates with an RSE between 25% and 50% are included in ABS publications of results from this survey, preceded by the symbol * as a caution to indicate that they are subject to high RSEs. Estimates with a RSE greater than 50% are preceded by the symbols ** as a caution to indicate that they are subject to high RSEs and should not be regarded as reliable.

Non-sampling error

Non-sampling errors are not due to sampling variability, but to other inaccuracies (e.g. errors in response and recording errors). These errors happen in both completely enumerated collections and sample surveys.

The main sources of non-sampling error are:

- errors related to scope and coverage;
- response errors such as incorrect interpretation of the wording of questions and inability to recall the required information;
- non-response bias, because dietary habits and other characteristics of non-responding people may differ from responding people; and
- processing errors such as mistakes in the recording or coding of the data obtained.

Each of these sources of error is discussed in the following paragraphs.

Errors related to scope and coverage

Some dwellings may have been inadvertently included or excluded from the NHS for reasons such as the distinctions between whether they were private or non-private dwellings may have been unclear. All efforts were made to overcome such situations by constant updating of lists both before and during the survey.

Some persons may have been inadvertently included or excluded because of difficulties in applying the coverage rules concerning household visitors or scope rules concerning persons excluded from the survey. Particular attention was paid to questionnaire design and interviewer training to ensure that such cases were kept to a minimum.

Since response to the NHS was a prerequisite for inclusion in the NNS, these factors will have had some effect on NNS data.

Response errors

In this survey response errors may have arisen from three main sources: deficiencies in questionnaire design and methodology; deficiencies in interviewing technique; and inaccurate reporting by the respondent.

Errors may be caused by misleading or ambiguous questions, inadequate or inconsistent definitions of terminology used, or by poor overall layout of the questionnaire causing questions to be missed. In order to overcome problems of this kind, individual questions and the overall questionnaire were thoroughly tested before being finalised for use in the survey.

Lack of uniformity in interviewing standards will result in non-sampling errors. Thorough training and retraining programs, regular supervision and checking of interviewers' work were used to achieve and maintain uniform interviewing practices and a high level of accuracy in recording answers on the survey questionnaire (see Interviewer training and supervision on page 11).

Non-uniformity of the interviewers themselves is a potential source of error in that the impression made upon respondents by personal characteristics of individual interviewers may influence the answers obtained. These issues are regularly addressed in Interviewer training.

Response errors *continued*

In addition, inaccurate reporting by the respondent may occur due to misunderstanding of questions, inability to recall the required information or unwillingness of respondents to reveal all details. There is a tendency in dietary surveys for people to under-report food intake. Response errors specific to the methodology used are discussed later in the chapter (see Methodological issues on page 47).

Non-response bias

Non-response may occur when people cannot or will not cooperate, or cannot be contacted.

Non-response can introduce a bias to the results obtained in that non-respondents may have different characteristics and behaviour patterns in relation to their health than those persons who responded to the survey. The magnitude of the bias depends on the extent of the differences and the level of non-response.

As it was not possible to accurately quantify the nature and extent of the differences between respondents and non-respondents in this survey, every effort was made to reduce the level of non-response. Individuals for whom a partial response was obtained were treated as fully responding for estimation purposes if the person had sufficient health survey information and the respondent had completed the IFIQ.

The estimation procedures used make some adjustment for non-response (see Estimation procedures on page 52).

Processing errors

Processing errors may occur at any stage between initial collection of the data and final compilation of statistics. Specifically, in this survey, processing errors may have occurred at the following stages in the processing system:

- clerical checking and coding — errors may have occurred during checking of questionnaires for completeness and during coding of various items by office processors;
- data transfer — errors may have occurred during the OMR transfer of data from the original questionnaires to computer files;
- editing — computer editing programs may have failed to detect errors which could reasonably have been corrected; and
- manipulation of data — errors may have occurred during various stages of computer processing involving the manipulation of raw data to produce the final survey data files (e.g. during the estimation procedure or weighting of the data file or in the course of deriving new data items from raw survey data).

Processing errors *continued*

A number of steps were taken to minimise errors at various stages of processing (see chapter 8 for more details):

- Coding — detailed coding instructions were developed and staff engaged in coding were trained in the various classifications and procedures used. Office coding of the 24-hour recall was constantly checked throughout the 12 months of the survey to ensure consistency and adherence to procedures.
- Computer editing — edits were devised to ensure that logical sequences were followed in the questionnaires, that necessary items were present and that specific values lay between certain ranges. These edits were designed to detect reporting errors, errors that may have occurred when the data were entered onto computer files, incorrect relationships between data items or missing data items.
- Data file checks — at various stages during processing (such as after computer editing and subsequent amendments, weighting of the file and after derivation of new data items) tabulations were obtained from the data file showing the distribution of persons for different characteristics. These were used as checks on the contents of the data file, to identify unusual values which may have significantly affected estimates and illogical relationships not previously picked up by edits.

METHODOLOGICAL ISSUES

24-hour recall

Dietary information recorded in this survey is essentially 'as reported' by respondents. One problem commonly associated with dietary surveys is under-reporting of consumption, either because of recall problems or deliberate misreporting. The 24-hour recall method relies on respondents' ability to recall the details of all foods and beverages consumed during a specific period of time (in this case midnight to midnight). In recognition of possible recall problems, the level of probing from the interviewers was very intense and followed a detailed FIB to ensure that a consistent level of detail was collected from each interview. For example, respondents were requested to estimate the quantity consumed by comparing their intake of each food against standard measures (such as cups, spoons and other visual aids) carried by the interviewers. Quantitative data relied on respondents' ability to relate the amount eaten to the standard measures used by interviewers.

Another issue associated with the 24-hour recall is that it does not represent the usual intake of the individual as many people have considerable variation in their day-to-day food intake. However, this approach can be used to indicate the usual food and nutrient intake of a group of people. In addition, adjustment factors to remove within-person variation have been calculated for all nutrients, based on data from those people who participated in the second 24-hour recall.

24-hour recall *continued*

The number of food lines reported by each person has no meaning in terms of the number of meals or the number of dishes eaten, as many drinks/foods eaten as one dish (e.g. cup of tea with milk and sugar and a cheese sandwich) were coded as multiple foods eaten in combination with each other. When insufficient detail about a food was provided by the respondent or it was a commercial product, it was coded as a single item (e.g. cheese sandwich) rather than as multiple items eaten in combination with each other (e.g. wholemeal bread, margarine and cheese). The combination code (sequence number) and the time reported can be used to give information on the number of meals and snacks consumed by an individual.

Foods and beverages reported in the 24-hour recall can be categorised to varying levels of detail based on the 8-digit food code entered into ANSURS. The first 2, 3 or 4 digits of the food code can be used to classify foods into hierarchical groups (see Appendix 1). This classification was based on that used in the 1983 National Dietary Survey of Adults, with modifications done in consultation with experts. Some issues associated with the food classification system are:

- Most food groups include mixed dishes and, consequently, foods from other categories. For example, dishes such as pizza and commercial hamburgers have been coded as cereal-based products and dishes. In these cases, a judgement was made about which food was the major ingredient.
- There are some beverages which are not classified as non-alcoholic or alcoholic beverages, because they logically belong with another food group. These beverages are: milk and soy drink (classified as milk and milk products); liquid meal replacements and oral supplements (classified as special dietary foods); and infant fruit drinks (classified as infant formulae and foods).
- All food and beverage intakes were collected as part of the 24-hour recall, except plain drinking water without any additions, even lemon. Plain drinking water without any additions was collected separately and has generally been added into non-alcoholic beverages in ABS publications on survey results.

Physical measurements

Protocols were established to minimise response errors in the physical measurements. They were designed to ensure that measurements were taken under consistent conditions. Interviewers were instructed to take measurements in a specific order beginning with two consecutive readings of blood pressure for those aged 16 years or more. Physical measurements were taken after the 24-hour recall was completed to maximise the likelihood that participants had not consumed alcohol or exercised within 30 minutes of the blood pressure readings being taken. Interviewers were instructed to check the digital scales daily and to request a replacement if the scales gave an inaccurate reading. Interviewers took a third reading for blood pressure and height if the initial readings differed by more than a specific amount. This was to ensure two consistent readings were available for the calculation of an average measurement.

Physical measurements *continued*

Measurement of weight, and waist and hip circumferences were intended to be taken over one layer of light clothing and the participants were notified in advance of this requirement. Notwithstanding, there may be some variation in the measurements taken due to the type of clothing worn by participants. In general, it is more likely that participants would be wearing more than light clothing rather than less light clothing. As a result, there is likely to be a tendency to overestimate weight, waist and hip measurements with a consequent increase in an individual's BMI and other anthropometric indicators which assume a light layer of clothing. This could have led to a slight overestimation of the proportion of people assessed as being overweight or obese (according to BMI) and the proportion of children assessed to be in the high weight-for-age and hight weight-for-height categories. However, this would have little impact on comparisons between sub-populations such as people of different ages.

Food Frequency Questionnaire

The FFQ provides non-quantitative information on how often, on average, people have eaten selected foods during the last 12 months. This FFQ was designed to assess usual patterns of intakes. Factors to be taken into account when interpreting the FFQ include:

- the questionnaire does not include standard serving size or reference portions for all foods (only for bread and some fruit) and therefore no conclusions can be drawn about the amounts eaten;
- some people may have had problems in recalling their usual intake and averaging it over days/weeks/months. It is also possible that people's recall has been biased by their current diet; and
- the results cannot be interpreted as the average number of occasions on which people consumed the selected foods. The written instructions for the FFQ stated that a person should tick '4–5 times per day' if they usually eat two slices of toast and one sandwich with two slices of bread per day;
- it is difficult to draw conclusions about usual intake of seasonal foods because written instructions on the questionnaire instruct participants to fill in 'Once per week' for either of the following cases:
  - if you eat fresh plums once a week during summer, and eat no plums for the rest of the year; and
  - if you eat fresh plums once a week during summer and tinned plums once a week for the rest of the year.

Use of National Health Survey and National Nutrition Survey combined data

A wealth of information can be obtained through combining datasets from the NNS and the NHS. The range of information collected in the NHS included health-related actions, recent and long-term illness conditions, selected lifestyle behaviours (e.g. smoking and exercise) and sociodemographic information.

The combined datasets will be valuable for exploring associations between health status and dietary/physical measurements. One issue to be considered is that the NNS interview took place several weeks after the NHS interview. Most information collected in the NHS would be expected still to be current at the time of the NNS interview (e.g. long-term health conditions, self-reported height and weight, and screening for breast and cervical cancers). However, some information related to a relatively short time prior to the NHS interview (e.g. recent health conditions and exercise related to the two weeks prior to interview and alcohol consumption related to the week prior to interview) may not be current at the time of the NNS interview.

Furthermore, it should be noted that a person's 24-hour recall does not necessarily reflect their 'usual' diet. Even if it does reflect the current usual diet, analysis at the level of individuals will not reveal direct links (either causal or consequential) between diet and health status.

Another issue for consideration is that some participants had a birthday in between their NHS and NNS interviews and were therefore recorded as one year older at the NNS interview. Age at the time of the NNS has been used to present population estimates from the survey. However, this means that some people will not have been sequenced as expected to some NHS data items. For example, self-reported height and weight were collected from people aged 15 years and over. However, a person who became 15 years old between their NHS and NNS interview would not have this information.

Comparison with previous surveys

Dietary information recorded in this survey may differ from that which might be obtained using a different method to assess food and nutrient intake, such as a weighed record or a semi-quantitative FFQ, or using a different food composition database.

In terms of methodologies used, data from this survey are broadly comparable with data from the National Heart Foundation's Risk Factor Prevalence Studies, the 1983 National Dietary Survey of Adults and the 1985 National Dietary Survey of Schoolchildren (aged 10–15 years). However, comparisons should be made with care and take into account factors such as procedures for collecting physical measurements, the dietary assessment method, food classifications and the food composition database used to derive nutrient intake. As well as non-response and sampling errors, other methodological issues such as the scope of each survey, will also have an impact on the comparability of the results.

Comparisons with dietary recommendations

One of the aims of the survey is to monitor intakes against dietary recommendations. However, there are some factors that need to be taken into account.

The NHMRC has produced RDIs which are the levels of intake of essential nutrients that are considered to be adequate to meet the known nutritional needs of most healthy individuals (NHMRC 1991 — see Appendix 5). They are based on estimates of requirements for age and sex groups and therefore apply to group needs. As they incorporate factors to allow for variations in metabolism, absorption and individual needs, RDIs exceed the actual nutrient requirements for most healthy people and are not synonymous with the requirements of individuals.

RDIs relate to habitual intake and comparisons with the RDIs are only valid for habitual intake. In addition, comparison to the RDIs should take into account the tendency to under-report food and nutrient intakes in dietary surveys. Previous Australian studies which have compared intakes with the RDIs have provided data on:

- mean/median nutrient intake of population groups as a percentage of the RDI;
- percentage of the population with an intake less than the RDI or a percentage of the RDI (e.g. 70%); and
- distribution of population groups' intakes compared to the RDI.

For a given population, the distribution of one-day intake data has a greater spread than the distribution of habitual intake data. Therefore, one-day intake data need to be adjusted for within person variation before estimates are derived of the proportion of the population is at varying levels of the RDI.

There have been various Australian recommendations on healthy food choices. Some of these are very broad recommendations without specific amounts recommended (e.g the Dietary Guidelines for Australians (NHMRC 1992) and the Dietary guidelines for children and adolescents (NHMRC 1995a). To determine whether Australians are meeting these guidelines, for example, the guideline 'Eat plenty of breads, cereals, vegetables (including legumes) and fruits', information such as the number of people consuming these foods, the distribution of intakes and intake patterns of different population groups can be used.

The Core Food Groups (NHMRC 1995b) recommends quantities of cereals, fruits, vegetables, meat and alternatives, and dairy products which meet 70% of the RDIs of all nutrients except energy. Direct comparisons between the amounts recommended in the Core Food Groups and the NNS are not possible without redefining the food groupings used in the NNS or converting quantities of some foods (e.g cereals are expressed as weight of bread in the core food groups).

There are other Australian food selection guides, such as the Commonwealth Scientific and Industrial Research Organisation (CSIRO) 12345+ plan, which make recommendations on the number of serves that should be eaten of different food groups. As information from the NNS is available in gram consumption, recommended amounts would need to be converted from serves into grams for comparison to survey results.

OTHER FACTORS AFFECTING ESTIMATES

In addition to data quality and methodological issues, a number of other factors which should be considered when interpreting the results of this survey.

Sampling variability

It is important to bear in mind that survey estimates are derived from a sample of the population and are, therefore, subject to sampling variability. Consideration should be given to whether estimates are sufficiently reliable for proposed uses. Sampling variability and its implications for data reliability are discussed in Data Quality, page 44.

Scope and coverage

The scope and coverage of the survey (See Scope and Coverage, page 8) defines the boundaries of the population to which the estimates relate. The most important aspect of scope and coverage affecting the interpretation of estimates from this survey is that people in non-private dwellings were excluded from the survey. As a result, survey estimates should be seen as relating to the private dwelling population of Australia.

Concepts and definitions

The scope of each topic and the concepts and definitions associated with individual pieces of information should be considered when interpreting survey results.

Wording of questions

To enable accurate interpretation of survey results it is essential to bear in mind the precise wording of questions used to collect individual items of data, and particularly in those cases where the question involved a series of 'running prompts' or where a prompt card was used.

Collection period

It is important to bear in mind the survey collection period (February 1995 to March 1996) when considering the results, or when comparing them with data from other sources collected at different times.

ESTIMATION PROCEDURES

The survey was conducted over a 14-month period from February 1995 to March 1996. The estimation procedures developed for this survey ensure that survey estimates of the Australian population conform to independent estimates of the Australian population for the third quarter of 1995. Specifically, the survey estimates conform to Australian age by sex estimates and Australian State by part of State estimates.

The estimation procedures also used response information collected in the course of the survey to counter known biases in target variables resulting from partial response. This information, in the form of models, was used to adjust data for differential response by class, and also to specify weighting classes for applying benchmarks. Target variables for which adjustments were made include household size, income, age, State, marital status and employment status. The method was adapted to the multiphase nature of the survey design, allowing a more efficient use of auxiliary information (reducing both bias and variance) than if a straight post-stratification method were used. Nevertheless, benchmark conformity as before has been retained.

Benchmarks

The benchmarks used in the survey were quarterly population estimates of persons, adjusted to exclude persons living in non-private dwellings. The benchmarks used for the IFIQ were Australian age by sex estimates and Australian State or Territory by part of State estimates. The age groups for the benchmarks were single year age groups for 2–24 year olds, 5 year age groups for 25–69 year olds and all people aged 70 years and over.

The benchmarks used for the FFQ were Australian age by sex estimates and Australian State/Territory by part of State estimates. The age groups for the benchmarks were single year age groups for 12–14 year olds, 5-year age groups up to 65 years old and all people aged 66 years and over.

Weights

To obtain person-based estimates, expansion factors or 'weights' were inserted into responding persons' records to enable the data provided by these persons to be expanded to provide estimates relating to the whole population within the scope of the survey.

Separate estimates were calculated for the main survey and FFQ sub-sample, as participation in the FFQ was voluntary. The weighting of the NNS consisted of the progressive derivation of three sets of weights. These were: the initial weights based on weights calculated for the NHS, and corrected for NNS design selection; weights for the main schedule which all participants completed; and FFQ weights. Estimates for variables collected in the FFQ have been obtained using the corresponding FFQ weight.

The estimation procedure developed for the survey uses information on the patterns of response to counter known biases in target variables resulting from partial or non-response. This information, in the form of models, was used to adjust data for differential response by class, and also to specify weighting classes for applying benchmarks. Adjustments were made for household size, income, age, State, marital status and employment status.

CHAPTER 10 DATA OUTPUT AND DISSEMINATION

DATA AVAILABILITY

Results from the 1995 NNS will be available in the form of:

- publications;
- confidentialised unit record files, available on magnetic tape, computer disk or CD-ROM;
- unpublished table sets; and
- tables produced on request to meet specific information requirements from the survey.

This section outlines the products and services it is proposed to make available. The program of publications and other releases quoted in this publication are subject to change.

Unpublished data can be made available by sending a request to the Director, Health Section at ABS Canberra.

PUBLICATIONS AND OTHER STANDARD RELEASES

Selected results of the 1995 NNS will be presented in the following:

- Australian Bureau of Statistics (1997), *National Nutrition Survey: Selected Highlights, Australia, 1995*, Cat. no. 4802.0, ABS, Canberra.
- Australian Bureau of Statistics (forthcoming), *National Nutrition Survey: Foods Eaten in Australia, 1995*, Cat. no. 4804.0, ABS, Canberra. Expected release date is April 1998.
- Australian Bureau of Statistics (forthcoming), *National Nutrition Survey: Nutrient Intake in Australia, 1995*, Cat. no. 4805.0, ABS Canberra. Expected release date is June 1998.

SPECIAL DATA SERVICES

Subject to confidentiality and sampling variability constraints, tabulations can be produced from the survey incorporating data items, populations and geographic areas selected to meet individual requirements.

Listings of output data items from the survey which can be used in specifications of tables are available from Appendix 4 of this publication.

All requests for special tabulations attract a service charge in addition to the charges arising from the table production. Special tabulations are available in the following formats:

- Printed tables sent by post or facsimile.
- Electronic data files on floppy disk or email attachments.
- Confidentialised unit record data on magnetic tape, CD-ROM or floppy disk.

UNIT RECORD DATA

For users who wish to produce their own tabulations and to conduct manipulations of survey data, a computer file containing unidentified records from the survey can be purchased, subject to the signing of an undertaking and the approval of the Australian Statistician. People wishing to cross analyse data collected in both the NNS and NHS will need to purchase the unit record file for each survey.

To protect the confidentiality of individual persons and families some data items have been removed from particular records and the level of detail for some items has been reduced.

An information paper describing the data content of the file and conditions relating to the use of the unit record data will be issued in conjunction with the release of the files. Copies of this information paper can be obtained from any office of the ABS from 1998.

CONSULTANCY SERVICES

In addition to those products and services whereby the ABS can make survey data available to users, the ABS can undertake to analyse and report on particular health and/or nutrition issues for clients on a consultancy basis. This service is of particular use to those clients who may not have resources or facilities to undertake analysis of survey data. Inquiries about consultancy services can be made by contacting ABS offices located in each State or Territory (see the last page of this publication).

APPENDIX 1 FOOD GROUPINGS

11 NON-ALCOHOLIC BEVERAGES

111 Tea

- 1111 Tea
- 1112 Herbal tea

112 Coffee and coffee substitutes

- 1121 Coffee beverage
- 1122 Dry coffee powder
- 1123 Decaffeinated coffee, beverage
- 1124 Dry decaffeinated coffee powder
- 1125 Coffee substitutes, beverage
- 1126 Dry coffee substitutes
- 1127 Coffee-based mixes, beverage
- 1128 Dry or concentrate coffee-based mixes

113 Fruit and vegetable juices and drinks

- 1131 Single fruit juices
- 1132 Vegetable juices
- 1133 Fruit drinks
- 1134 Fruit-based or flavoured cordials and drinks
- 1135 Fruit-flavoured drink base and cordial base
- 1136 Mixed fruit juices

114 Soft drinks, flavoured mineral waters and electrolyte drinks

- 1141 Soft drinks, non-cola
- 1142 Soft drinks, cola
- 1143 Flavoured mineral waters
- 1144 Electrolyte drinks
- 1145 Soft drinks, non-cola, artificially sweetened
- 1146 Soft drinks, cola, artificially sweetened
- 1147 Electrolyte drink bases
- 1148 Non-fruit flavoured drink bases

115 Mineral waters and water

- 1151 Mineral water, soda water
- 1152 Domestic water
- 1153 Purchased non-domestic water
- 7777 Plain drinking water (not collected during the 24-hour recall)

116 Water with other additions as a beverage

- 1161 Water with other fluids as beverage
- 1162 Beverage flavourings made up, unspecified strength

12 CEREALS AND CEREAL PRODUCTS

121 Flours and other cereal grains and starches

1211 Grains (other than rice)

1212 Cereal flours, dry starch powders

122 Regular breads, and rolls

1221 Breads, rolls, white

1222 Breads, rolls, mixed grain

1223 Breads, rolls, wholemeal

1224 Breads, rolls, rye

1225 Breads, rolls, white, fibre-increased

1226 Breads, rolls, not stated as to major flour

123 Breakfast cereals, plain, single source

1231 Breakfast cereal, bran, unprocessed

1232 Breakfast cereal, bran, processed

1233 Breakfast cereal, low added sugar, puffed, flakes, extruded etc. single cereal—corn, rice

1234 Breakfast cereal, wheat-based biscuits and shredded wheat

1235 Breakfast cereal, wheat, low added sugar, puffed, flakes

124 Fancy breads, flat breads, English-style muffins and crumpets

1241 English-style muffins

1242 Crumpets

1243 Flat breads

1244 Fancy breads (e.g. focaccia, with cheese, vegetables, or fruit)

1245 Tortilla, taco shells, and corn bread

125 Pasta and pasta products

1251 Pasta and egg noodles

1252 Filled pasta, ravioli

1253 Noodles, Asian style

126 Rice and rice products

1261 Rice

1262 Rice products

1263 Flavoured rice

127 Breakfast cereals, mixed source

1271 Breakfast cereal, muesli, untoasted

1272 Breakfast cereal, muesli, toasted

1273 Breakfast cereal, wheat, with added fruit or nuts

1274 Breakfast cereal, grain mixtures

1275 Breakfast cereal, grain and fruit/nut mixtures

1276 Breakfast cereal, other sweetened

1277 Breakfast cereal, breakfast bars

128 Breakfast cereal, hot porridge type

1281 Breakfast cereal, hot porridge type

13 CEREAL-BASED PRODUCTS AND DISHES

131 **Sweet biscuits**
- 1311 Sweet biscuits, plain or flavoured
- 1312 Sweet biscuits, plain with fruit or nuts
- 1313 Sweet biscuits, fruit-filled or fancy
- 1314 Sweet biscuits, cream-filled
- 1315 Sweet biscuits, chocolate-coated, chocolate chip

132 **Savoury biscuits**
- 1321 Savoury biscuits, plain, low to moderate fat
- 1322 Savoury biscuits, plain, high fat
- 1323 Savoury biscuits, fibre-increased or bran
- 1324 Savoury biscuits, flavoured

133 **Cakes, buns, muffins, scones, cake-type desserts**
- 1331 Cakes, cake mixes
- 1332 Buns, and yeast-based products
- 1333 Cake-type muffins and mixes
- 1334 Cake-type desserts
- 1335 Slices, biscuit and cake-type
- 1336 Scones and rock cakes
- 1337 Savoury dumplings

134 **Pastries**
- 1341 Pastry, croissant
- 1342 Sweet pastry products, single crust — tarts and flans
- 1343 Sweet pastry products, double crust — pies, slices and danishes
- 1344 Savoury pastry products, single crust — tarts and flans
- 1345 Savoury pastry products, double crust — pies, rolls and envelopes

135 **Mixed dishes where cereal is the major ingredient**
- 1351 Other desserts containing cereal
- 1352 Pizza
- 1353 Sandwiches
- 1354 Filled rolls and hamburgers
- 1355 Taco and tortilla-based dishes
- 1356 'Chiko-type' rolls, dim sims and spring rolls
- 1357 Savoury pasta and sauce dishes
- 1358 Savoury rice-based dishes

136 **Batter-based products**
- 1361 Pancakes, crepes and dishes
- 1362 Drop scones, pikelets
- 1363 Waffles
- 1364 Batters and batter puddings
- 1365 Doughnuts

14 FATS AND OILS

141 Dairy fats

1411 Butter
1412 Butter, reduced fat
1413 Dairy blend
1414 Dairy blend, reduced fat
1415 Unspecified dairy-based fat

142 Margarine

1421 Polyunsaturated margarine, and spreads (approximately 70% fat)
1422 Cooking margarine
1423 Monounsaturated margarine, and spreads (approximately 70% fat)
1424 Table margarines, and spreads (approximately 70% fat)
1425 Reduced fat margarine spreads (maximum 60% fat)
1426 Unspecified margarine or margarine spread

143 Vegetable oil

1431 Vegetable oil blends
1432 Polyunsaturated oils
1433 Monounsaturated oils, canola
1434 Unspecified vegetable oils

144 Other fats

1441 Animal-based solid fats
1442 Vegetable-based solid fats
1443 Other fats
1444 Unspecified other fats

145 Unspecified fats

1451 Unspecified dairy-based fat or margarine used as a spread
1452 Unspecified solid fats or oil used in cooking
1453 Unspecified spread, cooking oil or fat used in cooking

15 FISH AND SEAFOOD PRODUCTS AND DISHES

151 Fin fish (excluding canned)

1511 Fin fish, fresh, frozen
1512 Smoked fish

152 Crustacea and molluscs (excluding canned)

1521 Crustacea, fresh, frozen
1522 Molluscs

153 Other sea and freshwater foods

1531 Fish roe
1532 Eel

154 Packed (canned and bottled) fish and seafood

1541 Packed fin fish
1542 Packed crustacea and molluscs
1543 Packed other sea and freshwater foods

155 **Fish and seafood products**

1551 Fin fish, battered or crumbed

1552 Crustacea and molluscs, battered or crumbed

1553 Fish and seafood products

156 **Mixed dishes with fish or seafood as the major component**

1561 Mixed dishes with fish as the major component, plus sauce

1562 Mixed dishes with fish as the major component, no sauce

1563 Mixed dishes with fish as the major component, with cereal products

1564 Mixed seafood dishes with crustacea, molluscs or other seafood products as the major component, plus sauce

1565 Mixed seafood dishes with crustacea, molluscs or other seafood products as the major component, no sauce

1566 Mixed seafood dishes with crustacea, molluscs or other seafood products as the major component, with cereal products

16 FRUIT PRODUCTS AND DISHES

161 **Pome fruit**

1611 Apples

1612 Pears

1613 Other pome fruit

162 **Berry fruit**

1621 Berry fruit

163 **Citrus fruit**

1631 Oranges

1632 Other citrus fruit

164 **Stone fruit**

1641 Stone fruit

165 **Tropical fruit**

1651 Bananas

1652 Pineapples

1653 Other tropical fruit

166 **Other fruit**

1661 Other fruit

167 **Mixtures of two or more groups of fruit**

1671 Mixtures of two or more groups of fruit

168 **Dried fruit, preserved fruit**

1681 Dried vine fruit

1682 Other dried fruit and mixes

1683 Preserved fruit (e.g .glacé)

169 **Mixed dishes where fruit is the major component**

1691 Mixed dishes where fruit is the major component

17 EGG PRODUCTS AND DISHES

171 **Eggs**
- 1711 Eggs, chicken
- 1712 Eggs, other

172 **Dishes where egg is the major ingredient**
- 1721 Egg dishes, savoury
- 1722 Egg dishes, sweet

173 **Egg substitutes and dishes**
- 1731 Egg substitute, powdered mix
- 1732 Egg substitute, frozen mix
- 1733 Egg substitute dishes

18 MEAT, POULTRY AND GAME PRODUCTS AND DISHES

181 **Muscle meat**
- 1811 Beef
- 1812 Lamb
- 1813 Pork
- 1814 Bacon
- 1815 Ham
- 1816 Veal

182 **Game and other carcase meats**
- 1821 Game and other carcase meats

183 **Poultry and feathered game**
- 1831 Chicken
- 1832 Other poultry
- 1833 Feathered game

184 **Organ meats and offal, products and dishes**
- 1841 Liver
- 1842 Other organ meats and offal
- 1843 Liver paste and pate
- 1844 Liver dishes
- 1845 Other organ meat and offal dishes

185 **Sausages, frankfurts and saveloys**
- 1851 Sausage
- 1852 Frankfurts, and saveloys

186 **Processed meat**
- 1861 Processed delicatessen meat
- 1862 Meat paste
- 1863 Canned processed meat

187 Mixed dishes where beef or veal is the major component

1871 Beef or veal stew, casserole, stir fry with gravy or sauce only
1872 Beef or veal stew, casserole, stir fry with cereal products
1873 Meat stew, casserole, stir fry with gravy or sauce only
1874 Meat stew, casserole, stir fry with cereal products
1875 Beef or veal, crumbed, battered, meatloaf or patty type with cereal
1876 Beef or veal, crumbed, battered, meatloaf or patty type with vegetable
1877 Beef or veal, crumbed, battered, meatloaf or patty type with cereal and vegetable
1878 Beef or veal sausage dish

188 Mixed dishes where lamb or pork, bacon, ham is the major component

1881 Lamb stew, casserole, stir fry with gravy or sauce only
1882 Lamb stew, casserole, stir fry with cereal products
1883 Pork, bacon, ham stew, casserole, stir fry with gravy or sauce only
1884 Pork, bacon, ham stew, casserole, stir fry with cereal products
1885 Lamb crumbed, battered, meatloaf or patty type with either cereal and/or vegetable
1886 Pork, bacon, ham, crumbed, battered, meatloaf or patty type with either cereal and/or vegetable
1887 Lamb sausage dishes
1888 Pork sausage dishes

189 Mixed dishes where poultry or game is the major component

1891 Poultry or game stew, casserole, stir fry with gravy or sauce only
1892 Poultry or game stew, casserole, stir fry with cereal products
1893 Poultry or game crumbed, battered, meatloaf or patty type with cereal
1894 Poultry or game crumbed, battered, meatloaf or patty type with vegetable

19 MILK PRODUCTS AND DISHES

191 Dairy milk

1911 Milk, fluid, fat-increased
1912 Milk, fluid, regular whole, full fat
1913 Milk, fluid, reduced fat, < 2%
1914 Milk, fluid, low fat,< 1%
1915 Milk, fluid, skim, non-fat
1916 Milk, evaporated, undiluted
1917 Milk, condensed, undiluted
1918 Milk, powder, dry
1919 Milk, fluid, unspecified

192 Yoghurt

1921 Yoghurt, natural and yoghurt dips, full fat
1922 Yoghurt, natural and yoghurt dips, reduced fat, skim and non-fat
1923 Yoghurt, flavoured, full fat
1924 Yoghurt, flavoured, reduced fat
1925 Yoghurt, flavoured, low fat, skim or non-fat, sugar-sweetened
1926 Yoghurt, flavoured, low fat, skim, or non-fat, artificially sweetened
1927 Yoghurt, drinks, buttermilk

193 Cream
- 1931 Cream, thickened cream, rich cream
- 1932 Cream, sour and sour cream-based dips
- 1933 Cream substitute, artificial cream
- 1934 Cream, reduced fat, light, extra light
- 1935 Cream, sour, reduced fat, light, extra light
- 1936 Cream, unspecified fat level
- 1937 Cream, sour, unspecified fat level

194 Cheese
- 1941 Cheese, natural, traditional
- 1942 Cheese, natural, reduced fat and fat-modified
- 1943 Cheese, cottage and cheese, cottage, low fat
- 1944 Cheese, cream and cheese, cream, reduced fat, cream cheese-based dips, fruit cheese
- 1945 Cheese, processed
- 1946 Cheese, processed, reduced fat
- 1947 Cheese, Camembert, Brie
- 1948 Dishes with cheese as the major component

195 Frozen milk products
- 1951 Ice cream, tub varieties
- 1952 Ice cream, individual bar, stick and cone varieties
- 1953 Ice confection (milk-based), tub varieties
- 1954 Ice confection, (milk-based), individual bar, stick and cone varieties, thickshakes
- 1955 Frozen yoghurts, all types
- 1956 Frozen dairy desserts

196 Other dishes where milk or a milk product is the major component
- 1961 Custards, and sweet sauces, milk-based
- 1962 Dairy desserts, smooth or gelatin-based dairy desserts
- 1963 Other milk-, cheese- or cream-based desserts

197 Milk substitutes
- 1971 Soy-based beverage
- 1972 Soy-based ice confection
- 1973 Cheese, substitute, non-dairy

198 Flavoured milks
- 1981 Milk, flavoured and milk-based drinks, full fat
- 1982 Milk, flavoured and milk-based drinks, reduced fat
- 1983 Milk, flavoured and milk-based drinks, low fat, skim or non-fat
- 1984 Milk flavoured and milk-based drinks, not stated as to fat

20 SOUP

201 Soup
- 2011 Soup containing meat
- 2012 Soup containing chicken
- 2013 Soup containing fish or seafood
- 2014 Tomato-based soup
- 2015 Other vegetable-based soup

202 **Dry soup mix**

2021 Dry soup mix containing meat
2022 Dry soup mix containing chicken
2023 Dry soup mix containing fish or seafood
2024 Tomato-based dry soup mix
2025 Other vegetable-based dry soup mix

203 **Canned condensed soup**

2031 Canned condensed soup

21 SEED AND NUT PRODUCTS AND DISHES

211 **Seeds and seed products**

2111 Seeds and seed products

212 **Nuts and nut products**

2121 Peanuts and peanut products
2122 Coconut and coconut products
2123 Other nuts and nut products and dishes

22 SAVOURY SAUCES AND CONDIMENTS

221 **Gravies and savoury sauces**

2211 Gravies
2212 Dry gravy mixes
2213 Savoury sauces
2214 Dry savoury sauce mixes
2215 Simmer sauces
2216 Casserole bases and dry mixes
2217 Pasta sauces, tomato-based (no meat)
2218 Pasta sauces, oil- or cream-based
2219 Sauce (with onion), from meat-based stews and casseroles

222 **Pickles, chutneys and relishes**

2221 Fruit-based pickles, chutneys, relishes and mustard
2222 Vegetable-based pickles, chutneys and relishes

224 **Salad dressings**

2241 Mayonnaise and cream-style dressings, full fat
2242 Italian- and French-style dressings, full fat
2243 Mayonnaise and cream-style dressings, reduced or non-fat
2244 Italian- and French-style dressings, reduced or non-fat, vinegar

225 **Stuffings**

2251 Bread-based stuffings
2252 Other stuffings

23 VEGETABLE PRODUCTS AND DISHES

231 **Potatoes**

2311 Potatoes
2312 Potato products
2313 Potato dishes

232 **Cabbage, cauliflower and similar brassica vegetables**
2321 Cabbage, cauliflower and similar brassica vegetables

233 **Carrot and similar root vegetables**
2331 Carrot and similar root vegetables

234 **Leaf and stalk vegetables**
2341 Leaf and stalk vegetables

235 **Peas and beans**
2351 Peas and edible-podded peas
2352 Beans

236 **Tomato and tomato products**
2361 Tomato
2362 Tomato products

237 **Other fruiting vegetables**
2371 Pumpkin
2372 Squash and zucchini
2373 Other fruiting vegetables

238 **Other vegetables and vegetable combinations**
2381 Other vegetables
2382 Onion, leek and garlic
2383 Mixtures of two or more vegetables

239 **Dishes where vegetable is the major component**
2391 Vegetables and sauce
2392 Stuffed vegetables and vegetable dishes
2393 Vegetables and sauce only, from meat-based stews and casseroles

24 LEGUME AND PULSE PRODUCTS AND DISHES

241 **Mature legumes and pulses**
2411 Mature legumes and pulses

242 **Mature legume and pulse products and dishes**
2421 Legume and pulse products
2422 Dishes where mature legumes are the major component
2423 Meat substitutes
2424 Dishes where meat substitutes are the major component

25 SNACK FOODS

251 **Potato snacks**
2511 Potato crisps

252 **Corn snacks**
2521 Corn chips
2522 Popcorn

253 **Extruded snacks**
2531 Extruded snacks

254 **Pretzels and other snacks**
- 2541 Pretzels
- 2542 Other snacks

26 SUGAR PRODUCTS AND DISHES

261 **Sugar, honey and syrups**
- 2611 Sugar
- 2612 Honey and sugar syrups
- 2613 Toppings

262 **Jam and lemon spreads, chocolate spreads**
- 2621 Jams and conserves
- 2622 Sweet spreads

263 **Dishes and products other than confectionery where sugar is the major component**
- 2631 Sugar-based desserts
- 2632 Water ice confection, gelato
- 2633 Frostings and icing with added fat
- 2634 Other icing

27 CONFECTIONERY AND HEALTH BARS

271 **Chocolate and chocolate-based confectionery**
- 2711 Chocolate
- 2712 Chocolate-based confectionery
- 2713 Carob and carob-based confectionery

272 **Cereal-, fruit-, nut- and seed-bars**
- 2721 Muesli bars, non-chocolate
- 2722 Muesli bars, chocolate
- 2723 Fruit bar and fruit-based confectionery
- 2724 Nut- and seed-based confectionery

273 **Other confectionery**
- 2731 Lollies and other confectionery
- 2732 Chewing gum

28 ALCOHOLIC BEVERAGES

281 **Beers**
- 2811 Beers, > 3.5% alcohol
- 2812 Beers, 1.15– 3.5% alcohol, reduced alcohol / light
- 2813 Beers, <1.15% alcohol, ultra / special / extra light

282 **Wines**
- 2821 Wines, red
- 2822 Wines, white
- 2823 Fortified wines
- 2824 Reduced alcohol wines
- 2825 De-alcoholised and non-alcoholic wine

283 Spirits
- 2831 Spirits

284 Other alcoholic beverages
- 2841 Liqueurs
- 2842 Cocktails and other mixed drinks
- 2843 Other alcoholic beverages
- 2844 Wine coolers

29 SPECIAL DIETARY FOODS

291 Formula dietary foods
- 2911 Biscuit and bar meal replacement
- 2912 Milk-based liquid meal replacements
- 2913 Milk-based powder meal replacements
- 2914 Oral supplement liquids
- 2915 Oral supplement powders

292 Enteral formula
- 2921 Enteral formula

30 MISCELLANEOUS

301 Beverage flavourings
- 3011 Fortified dry beverage flavourings
- 3012 Other dry beverage flavourings

302 Yeast; yeast, vegetable and meat extracts
- 3021 Yeast
- 3022 Yeast, vegetable and meat extracts

303 Artificial sweetening agents
- 3031 Artificial sweetener, spoon for spoon
- 3032 Artificial sweetener, tablet
- 3033 Artificial sweetener, liquid

304 Herbs, spices, seasonings and stock cubes
- 3041 Herbs and spices
- 3042 Stock cubes and seasonings

305 Essences
- 3051 Essences

306 Chemical raising agents and cooking ingredients
- 3061 Chemical raising agents and cooking ingredients
- 3062 Gelatine

31 INFANT FORMULAE AND FOODS

311 Infant formulae and human breast milk

- 3111 Infant formulae
- 3112 Human breast milk

312 Infant cereal products

- 3121 Infant cereals
- 3122 Infant rusks
- 3123 Infant pasta and rice dishes

313 Infant foods

- 3131 Infant fruit and fruit-based dinners
- 3132 Infant vegetables and vegetable-based dinners
- 3133 Infant egg-, fish-, poultry- and meat-based dinners
- 3134 Infant custards
- 3135 Infant yoghurts
- 3136 Infant gels
- 3137 Other infant desserts

314 Infant drinks

- 3141 Infant fruit juices

APPENDIX 2 LIST OF COMMITTEES AND COMMITTEE MEMBERS

A Survey Advisory Committee and several expert technical advisory groups were established to make recommendations on the survey. The contribution of the people who participated is gratefully acknowledged. The following lists are generally based on membership at the time the committee was established.

SURVEY ADVISORY COMMITTEE

Commonwealth agencies:

ABS (Mr Glenn Cocking, Mr Geoff Sims, Mr Mel Butler, Mr Paul Fairweather (secretary))

AIHW (Dr Stan Bennett, Ms Ingrid Coles-Rutishauser, Dr Colin Mathers)

ANZFA (Mr Gordon Burch, Ms Janine Lewis)

HFS (Ms Liz Furler (chair), Ms Barbara Brown)

State agencies

ACT Department of Health and Community Care (Dr Bruce Shadbolt)

Health Department of Western Australia (Ms Cathy Campbell)

Victorian Department of Health and Community Services (Mr Geoff Lavendar)

New South Wales Health Department (Ms Edwina Macoun)

South Australian Health Commission (Ms Jackie Rakowski)

Queensland Department of Health (Dr Ian Ring)

Tasmanian Department of Community and Health Services (Ms Judy Seal)

Other organisations

ACCV (Dr Graham Giles)

Australian Food Council (Mr Harris Boulton)

Australian Quarantine and Inspection Service (Mr Laurie Erwin)

Curtin University (Professor Colin Binns)

Deakin University (Ms Keryn O'Dea)

Dietitians Association of Australia (Dr Karen Webb-Cullen)

National Heart Foundation (Dr Paul Magnus)

University of Sydney (Professor Stewart Truswell)

EXPERT TECHNICAL GROUP ON DATA ANALYSIS AND OUTPUT

Function: To provide advice on aspects of data analysis and output including electronic files and publications.

Ms Barbara Brown (Chair), HFS

Dr Stan Bennett, AIHW

Professor Colin Binns, Curtin University

Dr Karen Cashel, University of Canberra

Ms Ingrid Coles-Rutishauser, AIHW

Mr Stephen Crowley, National Centre for Health Program Evaluation

Mr Geoff Davis, ABS

Ms Indra Gajanayake, HFS

Dr Phil Harvey, University of Queensland

Mr Stephen Horn, ABS

Ms Janine Lewis, ANZFA

Dr Paul Magnus, National Heart Foundation

Ms Wendy Morgan, Food Industry Council of Australia

Ms Marelle Rawson, ABS

Mr Ian Rouse, Health Department of Western Australia

Dr Neil Thomson, Health Department of Western Australia

Professor Mark Wahlqvist, Monash Medical Centre

Secretary: Ms Fiona Bloom/ Ms Pamela Jupp, HFS

EXPERT TECHNICAL GROUP ON DIETARY METHODOLOGY

Function: To provide advice on aspects of dietary intake methodology for 24-hour dietary recall, food frequency, and food-related questions.

Professor Colin Binns (Chair), Curtin University

Dr Katrine Baghurst, CSIRO Division of Human Nutrition

Dr Stan Bennett, AIHW

Ms Fiona Bloom, HFS

Ms Barbara Brown, HFS

Mr Mel Butler, ABS

Dr Karen Cashel, University of Canberra

Ms Ingrid Coles-Rutishauser, AIHW

Dr Efi Farmakalidis, Food Industry Council of Australia

Dr Graham Giles, ACCV

Ms Sue Jeffreson, HFS

Mr Mark Lawrence, ANZFA

Mr Peter Luhse, ABS

Dr Dorothy Mackerras, The University of Queensland

Secretary: Ms Libby Jennings/ Ms Fiona Bloom, HFS

EXPERT TECHNICAL GROUP ON PHYSICAL MEASUREMENTS & BLOOD

Function: To provide advice on aspects of the collection of anthropometric and biochemical measures in the NNS.

Professor Stewart Truswell (Chair), The University of Sydney

Ms Barbara Brown, HFS

Ms Fiona Bloom, HFS

Mr Mel Butler, ABS

Professor Ian Caterson, Royal Prince Alfred Hospital

Ms Ingrid Coles-Rutishauser, AIHW

Dr George Fishman, Macquarie Laboratories

Dr Dorothy Mackerras, The University of Queensland

Secretary: Ms Sue Jeffreson, HFS

EXPERT TECHNICAL WORKING GROUP ON FOOD AND NUTRIENT DATA BASES

Function: To provide advice on aspects of food coding data base structures.

Ms Janine Lewis, ANZFA (Chair)

Ms Barbara Brown, HFS

Dr Karen Cashel, University of Canberra

Ms Ingrid Coles-Rutishauser, AIHW

Mr Paul Fairweather, ABS

Dr Efi Farmakalidis, Food Industry Council of Australia

Ms Sally Record, CSIRO Division of Human Nutrition

Mr Roger Winzenberg, HFS

Secretary: Mrs Sue Jeffreson/Ms Fiona Bloom, HFS

EXPERT TECHNICAL WORKING GROUP ON SAMPLING

Function: To provide advice on aspects of sample definition.

Mr Mel Butler, ABS

Dr Stan Bennett, AIHW

Mr Joe Christensen, HFS

Mr Ian Ring, Queensland Health Department

Mr Stephen Horn, ABS

Mr Bruce Fraser, ABS

Mr Edward Szoldra, ABS

COMMONWEALTH DEPARTMENT OF HUMAN SERVICES AND HEALTH

Australian Bureau of Statistics

In Confidence

Workload N
PSU
Block
Dwelling
Household
Person Number

National Nutrition Survey 1995

(a part of the National Health and Nutrition Survey)

Data Collection Booklet

Section A - Day 1 Individual Food Intake Questionnaire

Section A - Day 1 Individual Food Intake Questionnaire

Time Started ☐☐ : ☐☐
Time Finished ☐☐ : ☐☐

Interviewer ID ☐☐☐

Date of Interview ☐☐ ☐☐ ☐☐
Day Month Year

Day of Interview ☐

Given Name of Sample Person ☐

Date of Birth ☐☐ ☐☐ ☐☐
Day Month Year

Age ☐☐☐

Sex M ☐ 1 F ☐ 2

Office Use Only
Date Received ☐☐☐☐☐☐
Coder ID ☐☐☐☐
Batch ☐☐☐☐

The Individual Food Intake instrument is based on material developed by the Agricultural Research Service of the United States Department of Agriculture. Their permission is gratefully acknowledged.

DAY 1

1. HAND CARD 1 — I'd like you to tell me everything (you/NAME) had to eat and drink all day yesterday, (DAY), from midnight to midnight. Include everything (you/NAME) ate and drank at home and away - even snacks, coffee, and alcoholic beverages. [DO NOT INTERRUPT RESPONDENT. USE HANDCARD 1 IF NECESSARY.]

[IF CHILD SP:] I'd like you to tell me everything (NAME) had to eat and drink all day yesterday, (DAY), from midnight to midnight. Include everything (he/she) ate and drank at home and away, including snacks and drinks (and bottles or breast milk).

[WHEN RESPONDENT STOPS, ASK: Anything else?]

Now I'm going to ask you specific questions about the foods and beverages we just listed. I will be using this notebook to find the specific questions I need to ask. When you remember anything else you ate or drank as we go along, please tell me.

When I ask about amounts, you can use these measuring guides: the cups and spoons for volume of foods; the ruler and grid for length, width and height of foods; the sticks for thickness of meat, poultry, and cheese; the circles on the card for the diameter of round foods and the photos for commercial foods.

WHEN ASKING ABOUT FIRST FOOD RECORDED ON QUICK LIST, GO TO 2b

2a. Did (you/NAME) have (NEXT QUICK LIST ITEM) at (TIME) with (your/his/her) (OCCASION) or was that at another time? [CONFIRM IF OBVIOUS OR IF RECORDED ON QUICK LIST. IF SAME TIME AND OCCASION, SKIP TO BOX 1; IF AT ANOTHER TIME, ASK Q2b]

2b. About what time did (you/NAME) begin to (eat/drink) the (FOOD)? [OR CONFIRM IF RECORDED ON QUICK LIST]

3. Looking at this card, please tell me what (you/NAME) would call this occasion? [OR CONFIRM IF RECORDED ON QUICK LIST]

HAND CARD 2

01	BREAKFAST	04	LUNCH
02	BRUNCH	05	DINNER
03	FOOD AND /OR BEVERAGE BREAK, SUCH AS MORNING TEA, AFTERNOON TEA SNACK ALCOHOLIC BEVERAGE OTHER BEVERAGE	06	SUPPER
		07	OTHER (SPECIFY)

BOX 1

Step 1: TRANSFER QUICK LIST FOOD TO FOOD/DRINK AND ADDITIONS COLUMN. CHECK OFF FOOD IN QUICK LIST AS IT IS TRANSFERRED.

Step 2: GO TO FIB COLUMN Q4 FOR FOOD PROBES. BE SURE TO REQUEST FOOD LABELS IF SP CANNOT ANSWER PROBES IN COLUMN Q4

Step 3: GO TO FIB COLUMN Q5 HEADING FOR AMOUNT QUESTION.

Step 4: RETURN TO Q2a FOR NEXT FOOD RECORDED IN QUICK LIST.

REVIEW

6. Now let's see if I have everything. I'd like you to try to remember anything else (you/NAME) ate or drank yesterday, that you haven't already told me about, including anything (you/he/she) ate or drank while preparing a meal or while waiting to eat.

6a. Did (you/he/she) have anything to eat or drink between midnight yesterday and (your/NAME) (TIME) (FIRST OCCASION)?

6b. Now at (TIME) for (THIS OCCASION) (you/NAME) had (FOODS), did (you/NAME) have anything else?

6c. Did (youNAME) have anything to eat or drink between (your/NAME's) (TIME) (THIS OCCASION) and (TIME) when you/NAME had (NEXT OCCASION)?

REPEAT 6b AND 6c FOR EACH OCCASION EXCEPT LAST OCCASION, FOR LAST OCCASION, GO TO 6d

6d. Now at (TIME) for (OCCASION) (you/NAME) had (FOODS), did (you/NAME) have anything else.

6e. Did (you/NAME) have anything to eat or drink after (your/NAME's) (TIME) (LAST OCCASION) but before midnight last night?

Now let's go back to the beginning of the day and find out where (you/NAME), or other people who live here, obtained the food (you/NAME) ate and where (you/NAME) ate it.

7. (Looking at this card) Where did (you/he/she) obtain this (FOOD/MOST OF THE INGREDIENTS FOR THIS FOOD)?

HAND CARD 3

01 SHOP, SUCH AS
- SUPERMARKET, CORNER SHOP, CHEMIST SHOP
- SPECIALTY SHOP, SUCH AS DELICATESSEN,
- FOOD STALL OR PRODUCE MARKET

02 RESTAURANT, CAFE, CAFETERIA, TAKEAWAY/PIZZA/FASTFOOD PLACE,
03 BAR, TAVERN, HOTEL, CLUB, PUB
04 SCHOOL CANTEEN
05 VENDING MACHINE
06 CHILD CARE CENTRE, FAMILY DAY CARE HOME, ADULT DAY CARE
07 SOUP KITCHEN, REFUGE, COMMUNITY SERVICE ORGANISATION
08 MEALS ON WHEELS
09 GROWN OR CAUGHT BY YOU OR SOMEONE YOU KNOW
10 SOMEONE ELSE, GIFT
11 MAIL ORDER PURCHASE
12 WORKPLACE TEA TROLLEY, TEA CLUB
13 RESIDENTIAL DINING FACILITY
14 OTHER (SPECIFY)
15 DON'T KNOW

8. Did (you/NAME) (eat/drink) this (FOOD) at your home?

IF YES, GO BACK TO Q7 FOR NEXT FOOD. IF NO, GO TO Q9

9. Before (you/NAME) (ate/drank) this particular (FOOD), was it ever at your home?

REPEAT Q7-9 FOR EACH FOOD

Individual Intake Form

Q1 Quick List of Food Items	✓	Q2 Time	Q3 Occasion Hand Card 2	Food/Drink and Additions	Q4 Description of Food/Drink and Ingredient Amount
A.		a p		1.	
B.		a p		2.	
C.		a p		3.	
D.		a p		4.	
E.		a p		5.	
F.		a p		6.	
G.		a p		7.	
H.		a p		8.	
I.		a p		9.	
J.		a p		10.	
K.		a p		11.	
L.		a p		12.	
M.		a p		13.	
N.		a p		14.	
O.		a p		15.	
P.		a p		16.	
Q.					
R.					
S.					
T.					
U.					
V.					
W.					
X.					

Q5 How much of this (FOOD) did you actually (eat/drink)?	Q7 Where obtained Hand Card 3	Q8 Eaten at Home?	Q9 Ever at Home?
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2

A10. Now I'd like you to think about all the plain drinking water that (you/NAME) had yesterday, regardless of where (you/NAME) drank it. By plain drinking water, I mean tap water or any bottled water that is not carbonated, with nothing added, not even lemon.

How much plain drinking water did (you/NAME) drink yesterday?

HAND CARD 4

☐☐☐☐ (millilitres)

None ... ... *(Go to A12)* ☐ 000

A11. How much of this plain drinking water came from your home? Would you say all, most, some, or none?

All ... ... ☐ 1
Most ... ... ☐ 2
Some ... ... ☐ 3
None ... ... ☐ 4

A12. Looking at this card, yesterday (did you/did NAME) take any of these vitamin or mineral supplements in tablet, capsule or drop form?

HAND CARD 5

Multivitamin	(a)	☐ 1
Multivitamin with iron	(b)	☐ 2
Vitamin A	(c)	☐ 3
Vitamin B	(d)	☐ 4
Vitamin C	(e)	☐ 5
Vitamin E	(f)	☐ 6
β Carotene	(g)	☐ 7
Calcium	(h)	☐ 8
Folic acid/Folate	(i)	☐ 9
Iron	(j)	☐ 10
Zinc	(k)	☐ 11
None of the above	(l)	☐ 12

A13. Was the amount of food that (you/NAME) ate yesterday about usual, less than usual, or more than usual?

Usual ... ... *(Go to A17)* ☐ 1
Less than usual ... ... *(Go to A14)* ☐ 2
More than usual ... ... *(Go to A16)* ☐ 3
Don't know ... ... *(Go to A17)* ☐ 4

A14. What is the main reason the amount (you/NAME) ate yesterday was less than usual?

Interviewer:

- *Do not read out response categories.*

Sickness	1
Short of money	2
Travelling	3
At a social occasion or on holiday	4
On a special day	5
Too busy	6
Not hungry	7
Dieting	8
Fasting	9
Bored or stressed	10
Some other reason	11

A15. *Sequence Guide:*

Go to A17

A16. What is the main reason the amount (you/NAME) ate yesterday was more than usual?

Interviewer:

- *Do not read out response categories.*

Just got some money	1
Travelling	2
At a social occasion or on holiday	3
On a special day	4
Very hungry	5
Bored or stressed	6
Some other reason	7

A17. Record time IFIQ finished ☐☐:☐☐

A18. *Sequence Guide:*

Data Retrieval necessary	*(Go to A19)*	1
Data Retrieval not necessary	*(Go to A21)*	2

A19. Would the person/s who cared for (NAME) yesterday be able to provide me with the extra information on what (NAME) ate and drank yesterday?

Yes	*(Go to A20)*	1
No	*(Go to A21)*	2

A20. Would you give me permission to telephone this person to obtain details of the types and amounts of food and drink (NAME) ate yesterday?

Yes ... ... ☐ 1
No ... ... *(Go to A21)* ☐ 2

Permission received from: _____ Relationship to SP: _____

Contact person: _____ Telephone Number: _____

Address (if no phone number): _____

Meals to retrieve (include line number): _____

Comments: _____

Attempt Number	Day of week	Date	Time am/pm	Result of Contact		Remarks
				Success	Not Successful	

A21. *Sequence Guide:*

Sample Person selected for a Day 2 interview ... ... *(Go to A22)* ☐ 1

Sample Person not selected for a Day 2 interview ... ... *(Go to A23)* ☐ 2

A22. We need to obtain information from some people about their food intake on another day of the week as people often eat quite differently on different days. If you are prepared to provide me with this kind of information again within the next 2 weeks, I can make an appointment with you now.

Accepted *(complete appointment details)* ☐ 1
Refused ... ... ☐ 2

APPOINTMENT: DAY _____ DATE _____ TIME _____

A23. *Sequence Guide:*

Go to Section B - Physical Measurements

INTERVIEWER OBSERVATION FORM

[DO NOT READ THESE QUESTIONS TO THE SAMPLE PERSON]

A. Who was the main respondent for this interview?

Sample person	1
Mother of sample person	2
Father of sample person	3
Wife/Female spouse of sample person	4
Husband/Male spouse of sample person	5
Daughter of sample person	6
Son of sample person	7
Sister of sample person	8
Brother of sample person	9
Grandparent of sample person	10
Someone else	11

B. Who helped in responding for this interview?

No one	(a)	1
Sample person	(b)	2
Mother of sample person	(c)	3
Father of sample person	(d)	4
Wife/Female spouse of sample person	(e)	5
Husband/Male spouse of sample person	(f)	6
Daughter of sample person	(g)	7
Son of sample person	(h)	8
Sister of sample person	(i)	9
Brother of sample person	(j)	10
Grandparent of sample person	(k)	11
Someone else – other than interviewer	(l)	12

C. Did you or the sample person have difficulty with the intake interview?

Yes	1
No	2

D. What was the reason for this difficulty?

COMMONWEALTH DEPARTMENT OF HUMAN SERVICES AND HEALTH

Australian Bureau of Statistics

In Confidence

Workload N

PSU

Block

Dwelling

Household

Person Number

National Nutrition Survey 1995

(a part of the National Health and Nutrition Survey)

Data Collection Booklet

Section B - Physical Measurements
Section C - Food Related Questions

Interviewer ID ☐☐☐

Date of Interview ☐☐ ☐☐ ☐☐
Day Month Year

Day of Interview ☐

Given Name of Sample Person ☐

Date of Birth ☐☐ ☐☐ ☐☐
Day Month Year

Age ☐☐☐

Sex M ☐ 1 F ☐ 2

SECTION B – Physical Measurements

B1. *Sequence Guide:*

Sample person male ... (Go to B3) ☐ 1

Sample person aged 15 or less ... (Go to B3) ☐ 2

Sample person aged 55 or more ... (Go to B3) ☐ 3

Otherwise ... (Go to B2) ☐ 4

B2. **Because pregnancy alters a woman's physical measurements and blood pressure, I need to ask if you are pregnant.**

Are you pregnant?

Yes ... *(Go to Section C)* ☐ 1

No ... ☐ 2

Don't know ... ☐ 3

B3. **Consent**

- *Obtain signed consent form for sample person.*

Consent form signed for sample person aged 15 years or less ... (Go to B9) ☐ 1

Consent form signed for sample person aged 16 years or more ... (Go to B4) ☐ 2

Otherwise (Go to Section C) ... ☐ 3

B4. **In the past half hour, have you:**

eaten anything? ... (a) ☐ 1

smoked? ... (b) ☐ 2

had an alcoholic drink? ... (c) ☐ 3

exercised? ... (d) ☐ 4

None of the above ... (e) ☐ 5

B5. **Are you currently taking any medications to control your blood pressure?**

Yes ... ☐ 1

No ... ☐ 2

National Nutrition Survey

(a part of the National Health and Nutrition Survey)

Consent for Physical Measurements Form

Given name of Sample Person _____ Family name _____

As part of (my/my child's) participation in the National Nutrition Survey, I agree to allow measurements to be taken of (my/ _____ 's)

height
weight
waist circumference
hip circumference
blood pressure* *(*16 years of age and over only)*

I understand that the results of (my/my child's) physical measurements will be sent to me later.

I am (the sample person / _____ 's parent / guardian).

Given name _____ Family name _____

Signature _____

Date _____

To which address would you like the results forwarded?

Postal ... ... ☐

Residential ... ... ☐

Postal address

Unit No. _____ Street No./PO Box No. _____

Street _____

Suburb _____

State _____ Postcode _____

B6. **Blood Pressure**

Reading 1

Systolic ☐☐☐

Diastolic ☐☐☐

Reading 2

Systolic ☐☐☐

Diastolic ☐☐☐

- *Take a third reading if systolic 1 differs from systolic 2 by more than 6 mmHg, and/or diastolic 1 differs from diastolic 2 by more than 4 mmHg.*

Reading 3

Systolic ☐☐☐

Diastolic ☐☐☐

B7. *Interviewer:*

- *If more than two measurements obtained, average the two closest blood pressure measurements.*
- *Inform respondent about risk group status*
- *Record risk group of respondent below*

Normal ... ☐ 1

Mild ... ☐ 2

Moderate ... ☐ 3

Severe ... ☐ 4

B8. *Interviewer:* *Mark reason if two blood pressure measurements were not obtained.*

Refused all measurements ... ☐ 1

Refused second measurement ... ☐ 2

Could not obtain any measurement ☐ 3

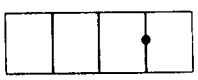
Could not obtain second measurement ... ☐ 4

Other ... ☐ 5

B9. **Height**

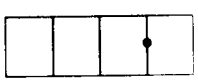
Height 1 (cm)

Height 2 (cm)



- *If height 1 differs from height 2 by 0.5 cm or more take third height measurement.*

Height 3 (cm)



B10. *Interviewer: Mark reason for not obtaining height measurements.*

- *Refused measurement* ... 1
- *Could not stand unaided or upright* ... 2
- *Could not stand still* ... 3
- *Headwear/hair interferes* ... 4
- *Other* ... 5

B11. **Weight**

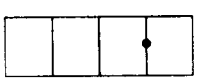
• *If sample person able to stand on scales*

Weight (Kg)

• *If small child and unable to stand on scales:*

Weights

Adult (Kg)



Adult with child (Kg)

B12. *Interviewer: Mark reason for not obtaining measurement*

Refused measurement	1
Unable to stand on scales	2
Amputee wearing prosthesis	3
Other	4

B13. **Waist and Hip**

Measure 1

Waist 1 (cm) **Hip 1** (cm)

Measure 2

Waist 2 (cm) **Hip 2** (cm)

B14. *Interviewer: Mark reason for not obtaining waist and hip measurements.*

Refused measurement ..... ☐ 1

Measurement could not be obtained for any other reason ..... ☐ 2

SECTION C - Food Related Questions

C1. I would now like to ask you some additional questions about (your/.....'s) food intake to help us learn more about what people eat and why they eat it.

Which one of the following best describes (your/.....'s) usual way of eating?

HAND CARD 6

- No special way of eating ... 1
- Vegetarian ... 2
- Weight reduction diet ... 3
- Diabetic diet ... 4
- Fat modified diet to lower blood fat (cholesterol) ... 5
- Other ... 6

C2. Including snacks, how many times (do you/does .....) usually have something to eat in a day including evenings?

Interviewer:

- *Do not read out response categories*

- Once ... 1
- 2 to 4 times ... 2
- 5 to 6 times ... 3
- 7 or more times ... 4
- Don't know/varies/depends ... 5

C3. How many days per week (do you/does .....) usually have something to eat for breakfast?

Interviewer:

- *Do not read out response categories*

- Rarely or never ... 1
- 1 to 2 days ... 2
- 3 to 4 days ... 3
- 5 or more days ... 4
- Don't know/varies/depends ... 5

C4. How often (do you/does .....) add salt to (your/.....'s) food after it is cooked. Is it never, rarely, sometimes or usually?

- Never / rarely ... 1
- Sometimes ... 2
- Usually ... 3

C5. How often is salt added to (your/.....'s) food during cooking. Is it never, rarely, sometimes or usually?

- Never / rarely ... 1
- Sometimes ... 2
- Usually ... 3
- Don't know ... 4

C6. *Sequence Guide:*

- *Child aged 11 years or less* ... *(Go to C22)* 1
- *Child aged 12 - 15 years* ... *(Go to C21)* 2
- *Proxy interview* ... *(Go to C21)* 3
- *Otherwise* ... *(Go to C7)* 4

C7. Compared to the same time last year, has (your/.....'s) weight increased, decreased, or stayed the same?

- Increased ... ☐ 1
- Decreased ... ☐ 2
- Stayed the same ... *(Go to C9)* ☐ 3
- Don't know ... *(Go to C9)* ☐ 4

C8. What do you think were the reasons for this weight change?

Interviewer:

- *Do not read out response categories*
- *Mark all applicable response categories.*

- Change in kind of food/drink consumed ... (a) ☐ 1
- Change in amount of food/drink consumed ... (b) ☐ 2
- Ageing or physical growth ... (c) ☐ 3
- Change in physical activity levels ... (d) ☐ 4
- A medical condition ... (e) ☐ 5
- No special reason ... (f) ☐ 6
- Other ... (g) ☐ 7

C9. Would you like to change the amount you eat of any of these foods?

HAND CARD 7

- Fruit and vegetables ... (a) ☐ 1
- Breads and cereals ... (b) ☐ 2
- Food high in fat ... (c) ☐ 3
- No/None of these *(Go to C19)* (d) ☐ 4

C10. *Sequence Guide:*

Fruit and vegetables marked in C9 ... (Go to C11) ... ☐ 1

Otherwise ... (Go to C13) ☐ 2

C11. About fruit and vegetables, would you like to eat more or less of this group?

- More ... ☐ 1
- Less ... ☐ 2

C12. What is stopping you from making this change?

Interviewer:

- *Do not read out response categories*
- *Mark all applicable response categories.*

- Cost too much ... (a) ☐ 1
- Not enough time ... (b) ☐ 2
- Storage ... (c) ☐ 3
- Availability ... (d) ☐ 4
- Quality ... (e) ☐ 5
- Do not like ... (f) ☐ 6
- Like too much ... (g) ☐ 7
- Other ... (h) ☐ 8

C13. *Sequence Guide:*

Bread and cereals marked in C9 ... (Go to C14) ☐ 1

Otherwise ... (Go to C16) ☐ 2

C14. About breads, breakfast cereals, rice and pasta, would you like to eat more or less of this group?

- More ... ☐ 1
- Less ... ☐ 2

C15. What is stopping you from making this change?

Interviewer:

- *Do not read out response categories*
- *Mark all applicable response categories.*

Cost too much	(a)	☐ 1
Cheap	(b)	☐ 2
Storage	(c)	☐ 3
Availability	(d)	☐ 4
Quality	(e)	☐ 5
Do not like	(f)	☐ 6
Like too much	(g)	☐ 7
Fattening	(h)	☐ 8
Other	(i)	☐ 9

C16. *Sequence Guide:*

Foods high in fat marked in C9	*(Go to C17)*	☐ 1
Otherwise	*(Go to C19)*	☐ 2

C17. About fats and fatty foods, would you like to eat more or less of this group?

More	☐ 1
Less	☐ 2

C18. What is stopping you from making this change?

Interviewer:

- *Do not read out response categories*
- *Mark all applicable response categories.*

Cost too much	(a)	☐ 01
Cheap	(b)	☐ 02
Availability	(c)	☐ 03
Quality	(d)	☐ 04
Like the taste	(e)	☐ 05
Do not like	(f)	☐ 06
Fattening / Unhealthy	(g)	☐ 07
Cooking skills	(h)	☐ 08
Convenient	(i)	☐ 09
Other	(j)	☐ 10

C19. (Do you/ does.....) have teeth, mouth or swallowing problems that cause you to avoid certain foods?

Yes	☐ 1
No	☐ 2

C20. In the last 12 months, were there any times that you ran out of food and you couldn't afford to buy more?

Yes	☐ 1
No	☐ 2

C21. In addition to the information you have already provided, I would like you to complete this food frequency questionnaire. It is designed to estimate (your/.....'s) average pattern of intake of certain foods over the past 12 months. It will take about 15 minutes to fill in. Please use this pencil to complete it, and return it in the prepaid envelope.

Interviewer:

- *Demonstrate how to complete the answers using the example on the front page only.*
- *Record if FFQ accepted by respondent.*

Accepted ... ... ☐ 1

Refused ... ... ☐ 2

C22. *Interviewer:*

- *Conclude interview and thank respondent.*
- *Record interview finish time.*

☐☐ : ☐☐

COMMONWEALTH DEPARTMENT OF HUMAN SERVICES AND HEALTH

In Confidence

Australian Bureau of Statistics

Name

SID	S	S	S	1	9	F
PSU						
Block						
Dwelling						
Household						
Person Number						

PSU	Block	Dwelling	HH	Person
0 0 0 0 1 1 1 1 1 2 2 2 2 2 3 3 3 3 3 4 4 4 4 4 5 5 5 5 5 6 6 6 6 7 7 7 7 8 8 8 8 9 9 9	0 0 A 1 1 1 C 2 2 2 E 3 3 3 J 4 4 4 K 5 5 5 L 6 6 6 R 7 7 7 T 8 8 8 V 9 9 W X	0 0 0 1 1 1 2 2 2 3 3 3 4 4 4 5 5 5 6 6 6 7 7 7 8 8 8 9 9 9	1 2 3 4 5 6 7 8 9	0 0 1 1 2 2 3 3 4 4 5 5 6 6 7 7 8 8 9 9

Office Use Only

National Nutrition Survey 1995

(a part of the National Health and Nutrition Survey)

Food Frequency Questionnaire

Background

This questionnaire is designed to estimate your **usual** pattern of food intake by providing us with information on how often, **on average**, you consumed certain foods and beverages during the last 12 months.

Confidentiality

All the information provided in this questionnaire will be treated in the **strictest confidence.**

How to fill in the questionnaire

Use the ordinary HB pencil provided to answer all questions. Fill in the boxes as you have been shown, do not mark them with a tick or a cross. Please avoid making any stray marks on the form. Should you need to change an answer, please erase the incorrect mark completely. **Please mark one box for every food listed.** If you never eat a particular food, fill in the box for 'Never, or less than once a month'.

Example	Average number of times consumed in the last 12 months								
Please answer the following questions by **shading in** the box in the column that applies to you for that item. Please fill in **only** one box per row.	Never, or less than once a month	1-3 times per month	Once per week	2-4 times per week	5-6 times per week	Once per day	2-3 times per day	4-5 times per day	6+ times per day
Pineapple									

Completion of this questionnaire is voluntary.

Please read this page before completing the questionnaire

For each food item listed, fill in the box that **best** represents your average pattern of consumption of that food over the previous 12 months. For example:

- If you usually eat two slices of wholemeal toast at breakfast, a sandwich using two slices of wholemeal bread at lunch, and a white roll at dinner time and you usually eat no other bread during the day, fill in the box '4-5 times per day' for wholemeal/mixed grain bread etc and the 'Once per day' box for white bread etc.

- If you usually eat a banana at breakfast seven times a week and an apple at lunch three times a week, and you usually eat no other bananas or apples during the week, fill in the box for 'Once per day' for banana and the '2-4 times per week' box for apple.

Think about all eating occasions

When reading through the list of foods, please think back over the previous 12 months. Think carefully about foods and beverages consumed away from home and when on holidays as well as those foods prepared and consumed at home. Also think about foods and beverages consumed on special occasions such as Christmas, Easter and birthdays as well as those you eat more often.

Mixed foods

Some commonly consumed mixed foods, such as salads, stir-fried vegetables etc, have been listed as distinct items.

Other foods, such as sandwiches, are not listed as distinct items as their composition varies depending on how they are made up. Think about separate ingredients that make up these foods and answer accordingly. For example:

- If you usually eat a ham and mixed salad sandwich once a week, and you usually eat no other ham or mixed salad during the week, fill in the 'Once per week' box for ham and the 'Once per week' box for green/mixed salad in a sandwich.

Seasonal foods

There may be some foods that you eat only when in season. For very seasonal fresh fruits, such as stone fruits, melons, etc, you should estimate your average consumption when the fruits are in season. For example:

- If you eat fresh plums once a week during summer, and eat no plums for the rest of the year you should fill in the box for 'Once per week'.

- If you eat fresh plums once a week during summer and tinned plums once a week for the rest of the year you should also fill in the box for 'Once per week'.

Section One

For each food listed, fill in the box indicating how often **on average** you consumed that food in the **past 12 months.** Please fill in a box for each food listed, even if you never eat it.	Average number of times consumed in the last 12 months								
	a Never, or less than once a month	*b* 1-3 times per month	*c* Once per week	*d* 2-4 times per week	*e* 5-6 times per week	*f* Once per day	*g* 2-3 times per day	*h* 4-5 times per day	*i* 6+ times per day
Dairy Foods									
Flavoured milk drink (eg milkshake, iced coffee, hot chocolate)									
Milk as a drink									
Milk on breakfast cereals									
Milk in hot beverages (eg in coffee, tea)									
Cream or sour cream									
Ice-cream									
Yoghurt, plain or flavoured (including fromage frais)									
Cottage or ricotta cheese									
Cheddar and other cheeses									
Bread and Cereal Foods									
White bread, toast or rolls									
Wholemeal / mixed grain bread, toast or rolls									
English muffin, bagel or crumpet									
Dry or savoury biscuits, crispbread, crackers									
Muesli									
Cooked porridge									
Breakfast cereal									
Rice (including white or brown)									
Pasta (including filled), noodles									
Meat, Fish, Eggs									
Mince dishes (eg rissoles, meatloaf)									
Mixed dishes with beef, veal (eg casserole, stir-fry)									
Beef, veal - roast, chop or steak									
Mixed dishes with lamb (eg casserole, stir-fry)									
Lamb - roast, chop or steak									
Mixed dishes with pork (eg casserole, stir-fry)									
Pork - roast, chop or steak									
Sausage, frankfurter									
Bacon									
Ham									
Luncheon meats, salami									
Liver (including pate)									

For each food listed, fill in the box indicating how often **on average** you consumed that food in the **past 12 months.** Please fill in a box for each food listed, even if you never eat it.	Average number of times consumed in the last 12 months								
	a Never, or less than once a month	*b* 1-3 times per month	*c* Once per week	*d* 2-4 times per week	*e* 5-6 times per week	*f* Once per day	*g* 2-3 times per day	*h* 4-5 times per day	*i* 6+ times per day
Other offal (eg kidneys)									
Mixed dishes with chicken, turkey, duck (eg casserole, stir-fry)									
Chicken, turkey, duck - roast, steamed, BBQ									
Canned tuna, salmon, sardines									
Fish, steamed, baked, grilled									
Fish, fried									
Other seafood (eg prawns)									
Egg									
Sweets, Baked Goods and Snacks									
Cakes, sweet muffins, scones or pikelets									
Sweet pies or sweet pastries									
Other puddings or desserts									
Plain sweet biscuits									
Cream, chocolate biscuits									
Meat pie, sausage roll or other savoury pastries									
Pizza									
Hamburger									
Chocolate (including chocolate bars eg Mars bars™)									
Other confectionery									
Jam, marmalade, syrup or honey									
Peanut butter, other nut spreads									
Vegemite™, Marmite™, Promite™									
Nuts									
Potato chips, corn chips, Twisties™, etc									
Dressings									
Oil and vinegar dressing									
Mayonnaise or other creamy dressing									
Non-dairy Beverages									
Fruit juice									
Vegetable, tomato juices									
Fruit juice drink or fruit drink									
Low-joule cordial									
Cordial									

For each food listed, fill in the box indicating how often **on average** you consumed that food in the **past 12 months.** Please fill in a box for each food listed, even if you never eat it.	Average number of times consumed in the last 12 months								
	a Never, or less than once a month	*b* 1-3 times per month	*c* Once per week	*d* 2-4 times per week	*e* 5-6 times per week	*f* Once per day	*g* 2-3 times per day	*h* 4-5 times per day	*i* 6+ times per day
Low-joule soft drink									
Soft drinks (including flavoured mineral water)									
Water (including unflavoured mineral water, soda water, tap water)									
Coffee									
Tea									
Soy beverages									
Beer - low alcohol									
Beer - ordinary									
Red wine									
White wine or champagne/sparkling wine									
Wine cooler									
Sherry or port									
Spirits, liqueurs									
Vegetables (including frozen and tinned) Green/mixed salad (including lettuce, tomato, etc) In a sandwich									
As a side salad/with a main meal									
Stir-fried or mixed vegetables									
Vegetable casserole									
Excluding their use in the above mixed dishes, please indicate how often you eat the following vegetables. Potato, boiled, mashed, baked									
Hot chips									
Pumpkin									
Sweet potato									
Peas									
Green beans									
Silverbeet, spinach									
Broccoli									
Cauliflower									
Brussel sprouts, cabbage, coleslaw									
Carrots									

For each food listed, fill in the box indicating how often **on average** you consumed that food in the **past 12 months.** Please fill in a box for each food listed, even if you never eat it.	Average number of times consumed in the last 12 months								
	a Never, or less than once a month	*b* 1-3 times per month	*c* Once per week	*d* 2-4 times per week	*e* 5-6 times per week	*f* Once per day	*g* 2-3 times per day	*h* 4-5 times per day	*i* 6+ times per day
Zucchini, eggplant, squash									
Capsicum									
Sweetcorn, corn on the cob									
Mushrooms									
Tomatoes									
Lettuce									
Celery, cucumber									
Onion or leeks									
Soybeans, tofu									
Baked beans									
Other beans, lentils									
Fruits (including dried, frozen and tinned)									
Apple or pear									
Orange, mandarin or grapefruit									
Banana									
Peach, nectarine, plum or apricot									
Mango or paw-paw									
Pineapple									
Grapes or berries									
Melon (eg watermelon, rockmelon, honeydew melon)									
Vitamin and Mineral Supplements (including tablets, capsules or drops)									
Multivitamin with iron or other minerals									
Multivitamin									
Vitamin A									
Vitamin B									
Vitamin C									
Vitamin E									
B-carotene									
Calcium									
Folic Acid / Folate									
Iron									
Zinc									

Section Two

1. What type of milk do you usually consume?

- Whole ... ... = 1
- Low / reduced fat ... ... = 2
- Skim ... ... = 3
- Evaporated or sweetened condensed... = 4
- None of the above... ... = 5
- Don't know... ... ... = 6

2. How often do you use any of the following products?

	Never / Rarely	Sometimes	Usually
a Light cream...	= 1	= 2	= 3
b Sour light cream	= 1	= 2	= 3
c Low / reduced fat ice-cream	= 1	= 2	= 3
d Low / reduced fat cheddar-type cheese ...	= 1	= 2	= 3
e Low / reduced oil salad dressing	= 1	= 2	= 3
f Low / reduced fat spreads	= 1	= 2	= 3

3. How often is the meat you eat trimmed of fat either before or after cooking?

- Never / Rarely ... ... = 1
- Sometimes ... ... = 2
- Usually ... ... = 3
- Don't eat meat ... ... = 4

4. How many serves of vegetables do you usually eat each day? (a 'serve' = 1/2 cup cooked vegetables or 1 cup of salad vegetables).

- 1 serve or less ... ... = 1
- 2-3 serves ... ... = 2
- 4-5 serves ... ... = 3
- 6 serves or more ... ... = 4
- Don't eat vegetables ... = 5

5. How many serves of fruit do you usually eat each day?
(a 'serve' = 1 medium piece or 2 small pieces of fruit or 1 cup of diced pieces).

1 serve or less	1
2-3 serves	2
4-5 serves	3
6 serves or more	4
Don't eat fruit	5

6. When cooking how often do you or the person who cooks your food, use the following?

	Never / Rarely	Sometimes	Usually	Don't Know
a Olive oil	1	2	3	4
b Canola oil	1	2	3	4
c Vegetable oil	1	2	3	4
d Butter	1	2	3	4
e Margarine	1	2	3	4
f Dairy blend	1	2	3	4
g Lard or dripping	1	2	3	4

Please enclose this questionnaire in the folder and reply-paid, self-addressed envelope provided.

Thank you for your co-operation.

The nutrition component of the National Health and Nutrition Survey is a joint project between the Commonwealth Department of Human Services and Health and the Australian Bureau of Statistics.

COMMONWEALTH DEPARTMENT OF HUMAN SERVICES AND HEALTH

In Confidence

Australian Bureau of Statistics

Workload N
PSU
Block
Dwelling
Household
Person Number

National Nutrition Survey 1995

(a part of the National Health and Nutrition Survey)

Data Collection Booklet

Individual Food Intake Questionnaire Day 2

Time Started :
Time Finished :

Interviewer ID

Date of Interview
Day Month Year

Day of Interview

Given Name of Sample Person

Date of Birth
Day Month Year

Age

Sex M 1 F 2

Office Use Only
Date Received
Coder ID
Batch

The Individual Food Intake instrument is based on material developed by the Agricultural Research Service of the United States Department of Agriculture. Their permission is gratefully acknowledged.

TIME STARTED ☐☐ : ☐☐

DAY 2

1. HAND CARD 1

I'd like you to tell me everything (you/NAME) had to eat and drink all day yesterday, (DAY), from midnight to midnight. Include everything (you/NAME) ate and drank at home and away – even snacks, coffee and alcoholic beverages. [DO NOT INTERRUPT RESPONDENT. USE HANDCARD 1 IF NECESSARY]

[IF CHILD SP:] I'd like you to tell me everything (NAME) had to eat and drink all day yesterday, (DAY), from midnight to midnight. Include everything (he/she) ate and drank at home and away, including snacks and drinks (and bottles or breast milk).

[WHEN RESPONDENT STOPS, ASK: Anything else?]

Now I'm going to ask you specific questions about the foods and beverages we just listed. When you remember anything else you ate or drank as we go along, please tell me.

2. About what time did (you/NAME) begin to (eat/drink) the (FOOD)? [OR CONFIRM IF RECORDED ON QUICK LIST]

3. Looking at this card, please tell me what (you/NAME) would call this occasion? [OR CONFIRM IF RECORDED ON QUICK LIST]

HAND CARD 2

01 BREAKFAST
02 BRUNCH
03 FOOD AND/OR BEVERAGE BREAK, SUCH AS
MORNING TEA, AFTERNOON TEA
SNACK
ALCOHOLIC BEVERAGE
OTHER BEVERAGE
04 LUNCH
05 DINNER, TEA
06 SUPPER
07 OTHER (SPECIFY)

BOX 1

TRANSFER QUICK LIST FOOD TO FOOD/DRINK AND ADDITIONS COLUMN.
CHECK OFF FOOD IN QUICK LIST AS IT IS TRANSFERRED.

4. [SEE FIB COLUMN Q4 FOR FOOD PROBES]

5. [SEE FIB COLUMN Q5 FOR AMOUNT SPECIFICATIONS] How much of this (FOOD) did (you/NAME) actually eat/drink?

6. [ASK IF NOT OBVIOUS:] Did (you/NAME) have (NEXT QUICK LIST ITEM) with your (OCCASION) at (TIME) or was that at another time?
[IF SAME OCCASION, GO BACK TO FOOD/DRINK AND ADDITIONS column. IF ANOTHER TIME, GO BACK TO Q2]

REVIEW: Now let's see if I have everything. I'd like you to try to remember anything else (you/NAME) ate or drank yesterday, that you haven't already told me about, including anything (you/he/she) ate or drank while preparing a meal or while waiting to eat.

a. At (EARLIEST TIME) (you/NAME) had (FOODS) for (EARLIEST OCCASION). . .
Did (you/he/she) have anything to eat or drink before that, starting at midnight?

b. Next, at (TIME) (you/he/she) had (FOODS) for (OCCASION). . .
Did (you/he/she) have anything to eat or drink between (LAST OCCASION) at (LAST TIME) and (THIS OCCASION) at (THIS TIME)?
[REPEAT b FOR EACH OCCASION]

c. Did (you/he/she) have anything to eat or drink yesterday after (LAST TIME) but before midnight?

Now let's go back to the beginning of the day and find out where (you/NAME), or other people who live here, obtained the food (you/he/she) ate and where (you/he/she) ate it.

7. (Looking at this card) Where did (you/he/she) obtain this (FOOD/MOST OF THE INGREDIENTS FOR THIS FOOD)?

HAND CARD 3

01 SHOP, SUCH AS
- SUPERMARKET, CORNER SHOP, CHEMIST SHOP
- SPECIALTY SHOP, SUCH AS DELICATESSEN
- FOOD STALL OR PRODUCE MARKET

02 RESTAURANT, CAFE, CAFETERIA, TAKEAWAY/PIZZA/FAST FOOD PLACE
03 BAR, TAVERN, HOTEL, CLUB, PUB
04 SCHOOL CANTEEN
05 VENDING MACHINE
06 CHILD CARE CENTRE, FAMILY DAY CARE HOME, ADULT DAY CARE
07 SOUP KITCHEN, REFUGE, COMMUNITY SERVICE ORGANISATION
08 MEALS ON WHEELS
09 GROWN OR CAUGHT BY YOU OR SOMEONE YOU KNOW
10 SOMEONE ELSE, GIFT
11 MAIL ORDER PURCHASE
12 WORKPLACE TEA TROLLEY, TEA CLUB
13 RESIDENTIAL DINING FACILITY
14 OTHER (SPECIFY)
15 DON'T KNOW

8. Did (you/NAME) (eat/drink) this (FOOD) at your home?

IF YES, GO BACK TO Q7 FOR NEXT FOOD.
IF NO, GO TO Q9.

9. Before (you/NAME) (ate/drank) this particular (FOOD), was it ever at your home?

REPEAT Q7–Q9 FOR EACH FOOD.

Individual Intake Form

Q1 Quick List of Food Items	✓	Q2 Time	Q3 Occasion Hand Card 2	Food/Drink and Additions	Q4 Description of Food/Drink and Ingredient Amount
A.		a p		1.	
B.		a p		2.	
C.		a p		3.	
D.		a p		4.	
E.		a p		5.	
F.		a p		6.	
G.		a p		7.	
H.		a p		8.	
I.		a p		9.	
J.		a p		10.	
K.		a p		11.	
L.		a p		12.	
M.		a p		13.	
N.		a p		14.	
O.		a p		15.	
P.		a p		16.	
Q.					
R.					
S.					
T.					
U.					
V.					
W.					
X.					

Q5 How much of this (FOOD) did you actually (eat/drink)?	Q7 Where obtained Hand Card 3	Q8 Eaten at Home?	Q9 Ever at Home?
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2
		Yes ☐ 1 (Q7) No ☐ 2	Yes ☐ 1 No ☐ 2

A10. Now I'd like you to think about all the plain drinking water that (you/NAME) had yesterday, regardless of where (you/NAME) drank it. By plain drinking water, I mean tap water or any bottled water that is not carbonated, with nothing added, not even lemon.

How much plain drinking water did (you/NAME) drink yesterday?

HAND CARD 4

☐☐☐☐ (millilitres)

None ... ... *(Go to A12)* ☐ 000

A11. How much of this plain drinking water came from your home? Would you say all, most, some, or none?

All ... ... ☐ 1

Most ... ... ☐ 2

Some ... ... ☐ 3

None ... ... ☐ 4

A12. Looking at this card, yesterday (did you/did NAME) take any of these vitamin or mineral supplements in tablet, capsule or drop form?

HAND CARD 5

Multivitamin	(a)	☐ 1
Multivitamin with iron	(b)	☐ 2
Vitamin A	(c)	☐ 3
Vitamin B	(d)	☐ 4
Vitamin C	(e)	☐ 5
Vitamin E	(f)	☐ 6
β Carotene	(g)	☐ 7
Calcium	(h)	☐ 8
Folic acid/Folate	(i)	☐ 9
Iron	(j)	☐ 10
Zinc	(k)	☐ 11
None of the above	(l)	☐ 12

A13. Was the amount of food that (you/NAME) ate yesterday about usual, less than usual, or more than usual?

Usual	*(Go to A17)*	☐ 1
Less than usual	*(Go to A14)*	☐ 2
More than usual	*(Go to A16)*	☐ 3
Don't know	*(Go to A17)*	☐ 4

A14. What is the main reason the amount (you/NAME) ate yesterday was less than usual?

Interviewer:

- *Do not read out response categories.*

Sickness	1
Short of money	2
Travelling	3
At a social occasion or on holiday	4
On a special day	5
Too busy	6
Not hungry	7
Dieting	8
Fasting	9
Bored or stressed	10
Some other reason	11

A15. *Sequence Guide:*

Go to A17

A16. What is the main reason the amount (you/NAME) ate yesterday was more than usual?

Interviewer:

- *Do not read out response categories.*

Just got some money	1
Travelling	2
At a social occasion or on holiday	3
On a special day	4
Very hungry	5
Bored or stressed	6
Some other reason	7

A17. Record time IFIQ finished ☐☐:☐☐

A18. *Sequence Guide:*

Data Retrieval necessary ...	*(Go to A19)*	1
Data Retrieval not necessary	*(Go to A21)*	2

A19. Would the person/s who cared for (NAME) yesterday be able to provide me with the extra information on what (NAME) ate and drank yesterday?

Yes	*(Go to A20)*	1
No	*(Go to A21)*	2

A20. Would you give me permission to telephone this person to obtain details of the types and amounts of food and drink (NAME) ate yesterday?

Yes ... ... ☐ 1
No ... ... *(Go to A21)* ☐ 2

Permission received from: _____ Relationship to SP: _____

Contact person: _____ Telephone Number: _____

Address (if no phone number): _____

Meals to retrieve (include line number): _____

Comments: _____

Attempt Number	Day of week	Date	Time am/pm	Result of Contact		Remarks
				Success	Not Successful	

A21. *Interviewer*

- *Conclude interview and thank respondent*

INTERVIEWER OBSERVATION FORM

[DO NOT READ THESE QUESTIONS TO THE SAMPLE PERSON]

A. Who was the main respondent for this interview?

Sample person	1
Mother of sample person	2
Father of sample person	3
Wife/Female spouse of sample person	4
Husband/Male spouse of sample person	5
Daughter of sample person	6
Son of sample person	7
Sister of sample person	8
Brother of sample person	9
Grandparent of sample person	10
Someone else	11

B. Who helped in responding for this interview?

No one	(a)	1
Sample person	(b)	2
Mother of sample person	(c)	3
Father of sample person	(d)	4
Wife/Female spouse of sample person	(e)	5
Husband/Male spouse of sample person	(f)	6
Daughter of sample person	(g)	7
Son of sample person	(h)	8
Sister of sample person	(i)	9
Brother of sample person	(j)	10
Grandparent of sample person	(k)	11
Someone else – other than interviewer	(l)	12

C. Did you or the sample person have difficulty with the intake interview?

Yes	1
No	2

D. What was the reason for this difficulty?

APPENDIX 4 DATA ITEM LIST

DATA ITEM	CATEGORIES	POPULATION
FOOD AND NUTRIENT INTAKE THE PREVIOUS DAY		
Detailed information per food/beverage consumed by each person(a)		
Food code (unique code for each food/beverage)	Groupings as outlined in Appendix 1	All
Portion size (grams) — amount of food/beverage consumed	■ Mean ■ Median	All
Portion size (estimated) for each of the 29 selected nutrients	Energy (kilojoules) Moisture (grams) Macronutrients: ■ Protein (grams) ■ Total fat (grams) ■ Saturated fat (grams) ■ Monosaturated fat (grams) ■ Polyunsaturated fat (grams) ■ Cholesterol (grams) ■ Carbohydrate (grams) ■ Sugars (grams) ■ Starch (grams) ■ Dietary fibre (grams) ■ Alcohol (grams) Vitamins: ■ Vitamin A — retinol equivalents (micrograms) ■ Preformed Vitamin A (micrograms) ■ Provitamin A (micrograms) ■ Thiamin (milligrams) ■ Riboflavin (milligrams) ■ Niacin equivalent (milligrams) ■ Niacin preformed (milligrams) ■ Niacin derived (milligrams) ■ Folate (micrograms) ■ Vitamin C (milligrams) Minerals: ■ Calcium (milligrams) ■ Phosphorus (milligrams) ■ Magnesium (milligrams) ■ Iron (milligrams) ■ Zinc (milligrams) ■ Potassium (milligrams)	All

(a) The only information available for plain drinking water is food code, portion size(grams) and moisture.

DATA ITEM	CATEGORIES	POPULATION
Eating occasion	0 Not applicable	All
	1 Breakfast	
	2 Brunch	
	3 Food and/or beverage snack	
	4 Lunch	
	5 Dinner, tea	
	6 Supper	
	7 Other	
	97 Extended consumption	
	98 No answer	
	99 Don't know	
Time eaten	■ Hours	All
	■ Minutes	
Combination code	0 Not applicable	All
	1 Beverage with additions	
	2 Breakfast cereal with additions	
	3 Bread, savoury baked product or pancake with additions	
	4 Sandwich, roll, hamburger	
	5 Salad	
	6 Savoury mixed dishes with meat or poultry as major item	
	7 Savoury mixed dishes with fish or seafood as major item	
	8 Hot vegetable mixed dishes	
	9 Homemade soups with additions	
	10 Savoury mixed dishes with eggs or major item	
	11 Savoury mixed dishes with rice or pasta as major item	
	12 Non-dairy food with additions	
	13 Ice cream, dairy based food (as major item) with additions	
	14 Meat, poultry, fish with additions	
	15 Eggs with additions	
	16 Rice, pasta with additions	
	17 Vegetables with additions	
	18 Soup with additions	
	19 Frozen meals	
	20 Other combinations	

DATA ITEM	CATEGORIES	POPULATION
Place where food obtained	0 Not applicable	All
	1 Shop	
	2 Restaurant, cafe, cafeteria, takeaway	
	3 Bar, tavern, hotel, club, pub	
	4 School canteen	
	5 Vending machine	
	6 Child care centre, family day care	
	7 Soup kitchen	
	8 meals on wheels	
	9 Grown or caught by person or someone known	
	10 Someone else, gift	
	11 Mail order purchase	
	12 Workplace tea trolley, tea club	
	13 residential dining facility	
	14 Other	
	15 Don't know	
	99 No answer	
Whether the food was eaten in the home	0 Not applicable	All
	1 Yes	
	2 No	
	8 Don't know	
	9 Not answered	
Whether the food was ever in home	0 Not applicable	All who did not eat food at home
	1 Yes	
	2 No	
	8 Don't know	
	9 Not answered	
Whether salt was used in cooking or preparing food	0 Not applicable	All
	1 Yes	
	2 No	
	3 Salt substitute	
	8 Don't know	
	9 Not answered	

DATA ITEM	CATEGORIES	POPULATION
FOOD AND NUTRIENT INTAKE THE PREVIOUS DAY		
Summary information available per person per day		
Whether reported eating breakfast	0 Did not have breakfast 1 Reported having breakfast	All
Day of week of intake	■ Weekday ■ Weekend	All
Day of season of intake	■ Summer ■ Autumn ■ Winter ■ Spring	All
Total amount of each nutrient per person per day	Energy (kilojoules) Moisture (grams) Macronutrients: ■ Protein (grams) ■ Total fat (grams) ■ Saturated fat (grams) ■ Monosaturated fat (grams) ■ Polyunsaturated fat (grams) ■ Cholesterol (grams) ■ Carbohydrate (grams) ■ Sugars (grams) ■ Starch (grams) ■ Dietary fibre (grams) ■ Alcohol (grams) Vitamins: ■ Vitamin A — retinol equivalents (micrograms) ■ Preformed Vitamin A (micrograms) ■ Provitamin A (micrograms) ■ Thiamin (milligrams) ■ Riboflavin (milligrams) ■ Niacin equivalent (milligrams) ■ Niacin preformed (milligrams) ■ Niacin derived (milligrams) ■ Folate (micrograms) ■ Vitamin C (milligrams) Minerals: ■ Calcium (milligrams) ■ Phosphorus (milligrams) ■ Magnesium (milligrams)	All
Amount of each nutrient per 1 000 kJ of energy consumed per person per day	As listed above	All

DATA ITEM	CATEGORIES	POPULATION
Percentage contribution of macronutrient to energy intake (per person per day)	Protein Total fat Saturated fat Monosaturated fat Polyunsaturated fat Carbohydrate Sugars Starch Alcohol	All
Total amount (grams) per person per day of each food group (2-digit)	As defined in Appendix 1 (2-digit food groups only)	All
Basal metabolic rate (BMR)	Calculated value	All aged 10 years and older who had weight measurements taken
Energy intake to BMR ratio	1 Less than 0.96 2 Greater than 0.96 9 Not applicable/weight not measured	All aged 10 years and older who had weight measurements taken

DATA ITEM	CATEGORIES	POPULATION
FOOD AND NUTRIENT INTAKE THE PREVIOUS DAY - SUPPLEMENTARY INFORMATION		
Plain drinking water		
Amount of plain drinking water (millilitres) drank the previous day	1 Zero 2 Less than 1,000 ml 3 1000–1999 ml 4 2000–2999 ml 5 3000–3999 ml 6 4000–4999 ml 7 5000–5999 ml 8 5000 ml or more 9 Not answered	All
Amount of plain drinking water at home	0 Not applicable 1 All from home 2 Most from home 3 Some from home 4 None from home 9 Not answered	All who drank water yesterday
Food intake the previous day compared to usual		
Amount of food eaten the previous day compared to usual	0 Not applicable 1 Usual 2 Less than usual 3 More than usual 4 Don't know 9 Not answered	All
Main reason for eating less than usual yesterday	0 Not applicable 1 Sickness 2 Short of money 3 Travelling 4 At a social occasion/on holiday 5 On a special day 6 Too busy 7 Not hungry 8 Dieting 9 Fasting 10 Bored or stressed 11 Some other reason 99 Not answered	All who reported eating less than usual

DATA ITEM	CATEGORIES	POPULATION
Main reason for eating more than usual yesterday	0 Not applicable 1 Just got some money 2 Travelling 3 At a social occasion/on holiday 4 On a special day 5 Very hungry 6 Bored or stressed 7 Some other reason 9 Not answered	All who reported eating more than usual
Use of vitamin and mineral supplements the previous day		
Whether took any vitamins yesterday	0 Not applicable 1 Took vitamins yesterday 2 Did not take any vitamins yesterday 9 Not answered	All
Which vitamin and mineral supplements were taken the previous day	0 Did not take vitamin/mineral supplements 1 Multivitamins 2 Multivitamins with iron 3 Vitamin A 4 Vitamin B 5 Took vitamin C 6 Vitamin E 7 B carotene 8 Calcium 9 Took folic acid/folate 10 Iron 11 Zinc 12 None of the selected supplements 99 Not stated	

DATA ITEM	CATEGORIES	POPULATION
PHYSICAL MEASUREMENTS		
Preliminary information		
Pregnancy status	0 Not applicable 1 Pregnant 2 Not pregnant 3 Don't know 9 Not stated	Females aged 16–54 years
Whether gave consent to physical measures	0 Not applicable 1 Consent form obtained for sample person aged 15 years or less 2 Consent form obtained for sample person aged 16 years or more 3 Otherwise 9 Not Stated	All
Blood pressure		
Systolic blood pressure (mmHg)	■ Less than 100 mmHg ■ 100–109 mmHg ■ 110–119 mmHg ■ 120–129 mmHg ■ 130–139 mmHg ■ 140–149 mmHg ■ 150–159 mmHg ■ 160–169 mmHg ■ 170 mmHg or more ■ Not applicable/measured Mean Median	All aged 16 years or over
Diastolic blood pressure (mmHg)	■ Less than 60 mmHg ■ 60–64 mmHg ■ 65–69 mmHg ■ 70–74 mmHg ■ 75–79 mmHg ■ 80–84 mmHg ■ 85–89 mmHg ■ 90–94 mmHg ■ 95–99 mmHg ■ 100–104 mmHg ■ 105–109 mmHg ■ 110 mmHg or more ■ Not applicable/measured Mean Median	All aged 16 years or over

DATA ITEM	CATEGORIES	POPULATION
Reason for not taking second blood pressure reading	1 Refused all measurements 2 Refused second measurements 3 Could not obtain any measurement 4 Could not obtain second measurement 5 Other reason 9 Not stated	All aged 16 years or over
Blood pressure risk group status	0 Not applicable 1 Normal 2 Mild 3 Moderate 4 Severe 9 Not measured	All aged 16 years or over
Blood pressure risk group status (as recorded by the interviewer)	1 Normal 2 Mild 3 Moderate 4 Severe 9 Not applicable/measured	All aged 16 years or over
Hypertension	0 Not applicable 1 Controlled hypertensive 2 Treated, uncontrolled hypertensives 3 Untreated hypertensives 4 Normotensives 9 Not measured	All aged 16 years or over
Whether had done selected activities in 1/2 hour before blood pressure measurement	0 No/not applicable 1 Ate something 2 Smoked 3 Drank alcohol 4 Exercised 5 None of the selected activities 9 Not stated	All aged 16 years or over
Whether taking medication to control blood pressure	0 Not applicable 1 Taking medication 2 Not taking medication 9 Not stated	All aged 16 years or over

DATA ITEM	CATEGORIES	POPULATION
Height		
Height (cm)	■ Less than 80 cm ■ 80–89 cm ■ 90–99 cm ■ 100–109 cm ■ 110–119 cm ■ 120–129 cm ■ 130–139 cm ■ 140–149 cm ■ 150–159 cm ■ 160–169 cm ■ 170–179 cm ■ 180–189 cm ■ 190 cm or more ■ Not applicable/measured Mean Median	All
Reason for not obtaining height measurement	0 Not applicable 1 Refused measurement 2 Could not stand unaided or upright 3 Could not stand still 4 Headwear/hair interferes 5 Other 9 Not measured	All people that did not have a height measurement taken
Weight		
Weight (kg)	■ Less than 10 kg ■ 10–14 kg ■ 15–19 kg ■ 20–24 kg ■ 25–29 kg ■ 30–34 kg ■ 35–39 kg ■ 40–44 kg ■ 45–49 kg ■ 50–59 kg ■ 60–69 kg ■ 70–79 kg ■ 80–89 kg ■ 90–99 kg ■ 100–109 kg ■ 110–119 kg ■ 120–129 kg ■ 130–139 kg ■ Over 140 kg ■ Not applicable/measured Mean Median	All

DATA ITEM	CATEGORIES	POPULATION
Reason for not obtaining weight measurement	0 Not applicable 1 Refuse measurement 2 Unable to stand on scales 3 Amputee wearing prosthesis 4 Other 9 Not stated	All people that did not have a weight measurement taken
Height for weight indicators		
Body mass index	1 Underweight or thinness 2 Normal or acceptable weight range 3 Overweight 4 Obese 9 Not apllicable/measured ■ Mean ■ Median	All people that had a height and weight measurement
BMI for age (American reference values)	1 Low BMI for age 2 Acceptable BMI for age 3 At risk of overweight 4 Overweight 9 Not applicable/measured	All 6–24 years
BMI for age (Australian reference values)	1 Low BMI for age 2 Acceptable BMI for age 3 At risk of overweight 4 Overweight 9 Not applicable/measured	All 7–15 years
Height for age (Z score)	■ Low height for age ■ Normal height for age ■ High height for age ■ Not applicable/measured	2–18 years
Weight for age (Z score)	■ Low weight for age ■ Normal weight for age ■ High weight for age ■ Not applicable/measured	2–18 years
Weight for height (Z score)	■ Low weight for height ■ Normal weight for height ■ High weight for height ■ Not applicable/measured	Girls 55–137 cm and Boys 55–145 cm

DATA ITEM	CATEGORIES	POPULATION
Waist and hip		
Waist/abdominal circumference (cm)	■ Less than 40 cm ■ 40–49 cm ■ 50–59 cm ■ 60–69 cm ■ 70–79 cm ■ 80–89 cm ■ 90–99 cm ■ 100–109 cm ■ 110 cm or more ■ Not applicable/measured Mean Median	All
Hip circumference (cm)	■ Less than 40 cm ■ 40–49 cm ■ 50–59 cm ■ 60–69 cm ■ 70–79 cm ■ 80–89 cm ■ 90–99 cm ■ 100–109 cm ■ 110–119 cm ■ 120 cm or more ■ Not applicable/measured Mean Median	All
Reason for not obtaining waist and hip measurements	0 Not applicable 1 Refused measurement 2 Other reasons 9 Not stated	All who did not have waist and hip measurements taken
Waist to hip ratio	Males ■ Less than or equal to 0.9 ■ Greater than 0.9 ■ Not applicable/measured Females ■ Less than or equal to 0.8 ■ Greater than 0.8 ■ Not applicable/measured	All

DATA ITEM	CATEGORIES	POPULATION
EATING HABITS AND ATTITUDES		
Usual way of eating	1 No special way of eating 2 Vegetarian 3 Weight reduction diet 4 Diabetic diet 5 Fat modified diet to lower blood fat 6 Other 9 Not applicable/stated	All
How many times usually have something to eat per day	1 Once 2 Two to four times 3 Five to six times 4 Seven or more times 5 Don't know/varies/depends 9 Not applicable/stated	All
How many times per week usually have something to eat for breakfast	1 Rarely or never 2 One to two days 3 Three to four days 4 Five or more days 5 Don't know/varies/depends 9 Not applicable/stated	All
How often add salt to food after it is cooked	1 Never/rarely 2 Sometimes 3 Usually 4 Don't know 9 Not applicable/stated	All
How often add salt to food during cooking	1 Never/rarely 2 Sometimes 3 Usually 4 Don't know 9 Not applicable/stated	All
Change in weight		
Compared to same time last year, has weight increased, decreased or stayed the same	1 Increased 2 Decreased 3 Stayed the same 4 Don't know 9 Not applicable/stated	All 16 years and over
Reasons for weight change	1 Change in kind of food/drink 2 Change in amount of food/drink consumed 3 Ageing or physical growth 4 Change in physical activity level 5 Medical condition 6 No special reason 7 Other reason 9 Not stated	All 16 years and over

DATA ITEM	CATEGORIES	POPULATION
Changes desired in selected foods		
Whether desires any change in the amount of selected food types	1 Fruit and vegetables 2 Breads and cereals 3 Foods high in fat 4 No/none of these 9 Not stated	All 16 years and over
Whether want to eat more or less of fruit and vegetables	0 Not applicable 1 More 2 Less 9 Not stated	All desiring fruit and vegetables change
Barriers to changing amounts of fruit and vegetable	0 Not applicable 1 Costs too much 2 Not enough time 3 Storage 4 Availability 5 Quality 6 Do not like 7 Like too much 8 Other 9 Not stated	All desiring fruit and vegetables change
Whether want to eat more or less breads and cereals	0 Not applicable 1 More 2 Less 9 Not stated	All desiring breads and cereals change
Barriers to changing amount of breads and cereals	0 Not applicable 1 Costs too much 2 Cheap 3 Storage 4 Availability 5 Quality 6 Do not like 7 Like too much 8 Fattening 8 Other 9 Not stated	All desiring breads and cereals change
Whether want to eat more or less of foods high in fat	0 Not applicable 1 More 2 Less 9 Not stated	All desiring foods higher in fat change

DATA ITEM	CATEGORIES	POPULATION
Barriers to changing foods high in fat	0 Not applicable 1 Costs too much 2 Cheap 3 Availability 4 Quality 5 Like the taste 6 Do not like 7 Fattening/unhealthy 8 Cooking skills 9 Convenient 10 Other 99 Not answered	All desiring foods higher in fat change
Factors restricting foods eaten		
Whether have teeth, mouth or swallowing problems that cause avoidance of certain foods	1 Yes 2 No 9 Not applicable/stated	All 16 years and over
Whether in the last 12 months ran out of food and could not afford to buy more	1 Yes 2 No 9 Not applicable/stated	All 16 years and over

DATA ITEM	CATEGORIES	POPULATION
FOOD FREQUENCY QUESTIONNAIRE		
Food Frequency Questionnaire flag	1 Not expected, not received 2 Expected, not received 3 Expected, received and usable 4 Expected, received and unusable	All
Section 1		
Average number of times selected foods and mineral supplements were consumed in the past 12 months. This information is available for the following groups of items: ■ Dairy foods e.g. milk as a drink ■ Bread and cereal foods e.g. muesli ■ Meat, fish, eggs e.g. bacon ■ Sweets, baked goods and snakes e.g. pizza ■ Dressings e.g. oil and vinegar dressing ■ Non-dairy beverages e.g. fruit juice ■ Vegetables e.g. stir-fried or mixed vegetables ■ Fruits e.g. apple or pear ■ Vitamin and mineral supplements e.g. calcium	0 Not applicable/stated or unusable response 1 Never, or less than once a month 2 1–3 times per month 3 Once per week 4 2–4 times per week 5 5–6 times per week 6 Once per day 7 2–3 times per day 8 4–5 times per day 9 6 or more times per day	All 12 years and over
Section 2		
Type of milk usually consumed	0 Not applicable/stated or unusable response 1 Whole 2 Low/fat reduced 3 Skim 4 Evaporated or sweetened milk 5 None of the above 6 Don't know 7 Both whole and low/fat reduced 8 Both whole and skim 9 Both low/fat reduced and skim	All 12 years and over
How often is meat trimmed of fat before or after cooking	0 Not applicable/stated 1 Never/rarely 2 Sometimes 3 Usually 4 Don't eat meat 9 Unusable response	All 12 years and over
How many serves of vegetables are usually eaten each day	0 Not applicable/stated 1 1 serve or less 2 2–3 serves 3 4–5 serves 4 6 serves or more 5 Don't eat vegetables 9 Unusable response	All 12 years and over

DATA ITEM	CATEGORIES	POPULATION
How many serves of fruit are usually eaten each day	0 Not applicable/stated 1 1 serve or less 2 2–3 serves 3 4–5 serves 4 6 serves or more 5 Don't eat fruit 9 Unusable response	All 12 years and over
How often low fat products are used	0 Not applicable/stated 1 Never/rarely 2 Sometimes 3 Usually 9 Unusable response	All 12 years and over
How often selected fats and oils are used for cooking	0 Not answered/not applicable 1 Never/rarely 2 Sometimes 3 Usually 4 Don't know 9 Unusable response	All 12 years and over

DATA ITEM	CATEGORIES	POPULATION
INTERVIEWER OBSERVATIONS		
Main respondent for interviewer	1 Sample person	All
	2 Mother of sample person	
	3 Father of sample person	
	4 Wife/female spouse	
	5 Husband/male spouse	
	6 Daughter	
	7 Son	
	8 Sister	
	9 Brother	
	10 Grandparent	
	11 Someone else	
	99 Not stated	
Person(s) who helped respond to interview	1 No one	All
	2 Sample person	
	3 Mother of sample person	
	4 Father of sample person	
	5 Wife/female spouse	
	6 Husband/male spouse	
	7 Daughter	
	8 Son	
	9 Sister	
	10 Brother	
	11 Grandparent	
	12 Someone else	
	99 Not stated	
Whether there were any problems with the intake interview	1 Yes	All
	2 No	
	3 Not stated	

DATA ITEM	CATEGORIES	POPULATION
HEALTH RISK FACTORS		
Smoking		
Whether currently smoke	0 Not applicable 1 Yes 2 No	All aged 18 years and over
Whether currently smoke regularly	0 Not applicable 1 Yes 2 No	All aged 18 years and over
Whether have ever smoked regularly	0 Not applicable 1 Yes 2 No	All aged 18 years and over
Exercise		
Exercise level	0 Not applicable 1 Did no exercise 2 Low exercise level 3 Medium exercise level 4 High exercise level	All aged 15 years and over
Self-reported height and weight		
Self-reported height	■ < 150 cm ■ 150–159 cm ■ 160–169 cm ■ 170–179 cm ■ 180–189 cm ■ 190 + cm ■ Not applicable/known ■ Mean height ■ Median height	All aged 15 years and over
Self-reported weight	■ < 50 kg ■ 50–59 kg ■ 60–69 kg ■ 70–79 kg ■ 80–89 kg ■ 90–99 kg ■ 100 kg + ■ Not applicable/known ■ Mean weight ■ Median weight	All aged 15 years and over
Body mass index (calculated from self-reported measurements)	1 Severe thinness 2 Moderate thinness 3 Mild thinness 4 Normal range 5 Overweight 6 Obesity 9 Not applicable/known	All aged 15 years and over

DATA ITEM	CATEGORIES	POPULATION
Self-perceived body mass	0 Not applicable 1 Acceptable weight 2 Under weight 3 Over weight	All aged 15 years and over
Breastfeeding		
Whether currently breastfeeding a child	0 Not applicable 1 Currently breastfeeding 2 Has breastfed a child aged 0–3 years 3 Has not breastfed less than 4 year old 9 Not stated	Women in income unit with child aged 0–3 years
Whether child has ever been breastfed	0 Not applicable 1 Currently breastfed 2 Not currently being breastfed	Children aged 2–3 years
Whether child currently breastfed	0 Not applicable 1 Yes 2 No	Children aged 2–3 years who have been breastfed
Whether breastfed at time of first discharge from hospital	0 Not applicable 1 Yes 2 No 3 No hospital	Children aged 2–3 years who have been breastfed
Total length of time breastfed	■ Not applicable ■ Less than 1 week ■ 1–2 weeks ■ 3–4 weeks ■ 5–6 weeks ■ 7–8 weeks ■ 9–12 weeks ■ 13–16 weeks ■ 17–20 weeks ■ 21–24 weeks ■ 25–28 weeks ■ 29–32 weeks ■ 33–36 weeks ■ 37–40 weeks ■ 41–44 weeks ■ 45–48 weeks ■ 49–52 weeks ■ More than 53 weeks ■ Don't know	Children aged 2–3 years who have been breastfed

DATA ITEM	CATEGORIES	POPULATION
Total length of time exclusively breastfed	■ Not applicable ■ Less than 1 week ■ 1–2 weeks ■ 3–4 weeks ■ 5–6 weeks ■ 7–8 weeks ■ 9–12 weeks ■ 13–16 weeks ■ 17–20 weeks ■ 21–24 weeks ■ 25–28 weeks ■ 29–32 weeks ■ 33–36 weeks ■ 37–40 weeks ■ 41–44 weeks ■ 45–48 weeks ■ 49–52 weeks ■ More than 53 weeks ■ Never or not yet given solids ■ Don't know ■ Not ever breastfed	Children aged 2–3 years who have been breastfed
Main reason for stopping breastfeeding	0 Not applicable 1 Teething 2 Child bored 3 Felt it was time to stop 4 Resumed work 5 Pregnant 6 Not producing any/adequate milk 7 Other	Children aged 2–3 years who have been breastfed
Whether ever given infant formula	0 Not applicable 1 Yes 2 No	Children aged 2–3 years

DATA ITEM	CATEGORIES	POPULATION
Age child first regularly given infant formula	■ Not applicable ■ Less than 1 week ■ 1–2 weeks ■ 3–4 weeks ■ 5–6 weeks ■ 7–8 weeks ■ 9–12 weeks ■ 13–16 weeks ■ 17–20 weeks ■ 21–24 weeks ■ 25–28 weeks ■ 29–32 weeks ■ 33–36 weeks ■ 37–40 weeks ■ 41–44 weeks ■ 45–48 weeks ■ 49–52 weeks ■ More than 53 weeks ■ Don't know age given infant formula ■ Never given anything other than breastmilk	Children aged 2–3 years
Whether ever given cow's milk	0 Not applicable 1 Yes 2 No	Children aged 2–3 years
Age child first regularly given cow's milk	■ Not applicable ■ Less than 1 week ■ 1–2 weeks ■ 3–4 weeks ■ 5–6 weeks ■ 7–8 weeks ■ 9–12 weeks ■ 13–16 weeks ■ 17–20 weeks ■ 21–24 weeks ■ 25–28 weeks ■ 29–32 weeks ■ 33–36 weeks ■ 37–40 weeks ■ 41–44 weeks ■ 45–48 weeks ■ 49–52 weeks ■ More than 53 weeks ■ Don't know age given cow's milk ■ Never given anything other than breastmilk	Children aged 2–3 years
Whether ever given other breastmilk substitute	0 Not applicable 1 Yes 2 No	Children aged 2–3 years

DATA ITEM	CATEGORIES	POPULATION
Type(s) of breastmilk substitutes	0 Not applicable 1 Infant formula 2 Cow's milk 3 Soya bean milk 4 Goat's milk 5 Evaporated milk 6 Solid food 7 Other	Children aged 2–3 years
Whether ever given solid food	0 Not applicable 1 Given solid food 2 Not given any solid food	
Age child first regularly given solid food	■ Not applicable ■ Less than 1 week ■ 1–2 weeks ■ 3–4 weeks ■ 5–6 weeks ■ 7–8 weeks ■ 9–12 weeks ■ 13–16 weeks ■ 17–20 weeks ■ 21–24 weeks ■ 25–28 weeks ■ 29–32 weeks ■ 33–36 weeks ■ 37–40 weeks ■ 41–44 weeks ■ 45–48 weeks ■ 49–52 weeks ■ More than 53 weeks ■ Don't know age given solid food ■ Never given anything other than breastmilk	Children aged 2–3 years

DATA ITEM	CATEGORIES	POPULATION
HEALTH STATUS		
Self-assessed health status	0 Not applicable 1 Excellent 2 Very good 3 Good 4 Fair 5 Poor	All aged 15 years and over
Medications used	0 Not applicable 1 Medications for diabetes 2 Asthma medication 3 Medications for arthritis 4 Medications for coughing/colds 5 Skin ointments/creams 6 Stomach medications 7 Laxatives 8 Medications for allergies 9 Fluid tables/diuretics 10 Medications for heart problems/blood pressure 11 Medications to lower cholesterol/triglycerides 12 Pain relievers 13 Sleeping medications 14 Medications for anxiety/nervous tension/depression 15 Tranquillisers or sedatives not included in 13 or 14	All who have used medications in the last 2 weeks prior to the NHS interview

DATA ITEM	CATEGORIES	POPULATION
POPULATION CHARACTERISTICS		
Demographics		
Sex	1 Male 2 Female	All
Age	0 2–3 years 1 4–7 years 2 8–11 years 3 12–15 years 4 16–18 years 5 19–24 years 6 25–44 years 7 45–64 years 8 65 years and over Other aged groupings available on request (subject to confidentiality restrictions).	All
Marital status	1 Married 2 De facto 3 Separated 4 Divorced 5 Widowed 6 Never married 0 Not applicable/stated	All
Indigenous status	1 Non-Indigenous 2 Aboriginal 3 Torres Strait Islander 4 Aboriginal and Torres Strait Islander	All
Country of birth	Born in Australia Born outside Australia ■ Oceania and Antarctica (excluding Australia) ■ Europe and the former USSR ■ Middle East and North Africa ■ Southeast Asia ■ Northeast Asia ■ Southern Asia ■ Northern America ■ South America, Central America and the Caribbean ■ Africa (excluding North Africa) ■ Not stated/inadequately described	

DATA ITEM	CATEGORIES	POPULATION
Year of arrival	■ Arrived before 1976 ■ Arrived 1976–1980 ■ Arrived 1981–1985 ■ Arrived 1986–1990 ■ Arrived 1990 ■ Arrived 1991 ■ Arrived 1992 ■ Arrived 1993 ■ Arrived 1994 ■ Arrived 1995 ■ Born in Australia	All
Period of residence in Australia	■ 0 years of residence ■ 1 year of residence ■ 2 years of residence ■ 3 years of residence ■ 4 years of residence ■ 5–9 years of residence ■ 10–14 years of residence ■ 15–19 years of residence ■ 20 years or more of residence ■ Born in Australia	All
Usual language other than English spoken at home	■ Northern European languages ■ Southern European languages ■ Eastern European languages ■ Southwest Asian and North African languages ■ Southwest Asian and North African languages ■ Southern Asian languages ■ Southeast Asian languages ■ Eastern Asian languages ■ Australian Indigenous languages ■ Other languages Other language groupings available on request (subject to confidentiality restrictions)	All
Whether has veteran's concession card	0 Not applicable 1 Yes 2 No 3 Don't know	All aged 15 years and over
Education		
Whether attending school	0 Not applicable 1 Still attending 2 Left school	All aged 15–20 years

DATA ITEM	CATEGORIES	POPULATION
Age left school	1 Never went to school 2 Under 14 years 3 14 years 4 15 years 5 16 years 6 17 years 7 18 years or more	All aged 21 years and over, and those aged 15–20 years who are no longer attending school
Whether completed secondary school	0 Not applicable 1 Completed secondary school 2 Did not complete secondary school	All who left school at age 16 years and over
Whether currently studying	0 Not applicable 1 Not currently studying 2 Currently studying full-time 3 Currently studying part-time	All who left school at age 16 years and over
Employment		
Labour force status	1 Employed 2 Unemployed (looking for work) 3 Not in labour force 9 Not applicable/stated	All aged 15 years and over who have left school
Occupation (main job)	■ Managers and administrators ■ Professionals ■ Para-professionals ■ Tradespersons ■ Clerks ■ Salesperson and personal service workers ■ Plant and machine operators and drivers ■ Labourer and related workers	All aged 15 years and over who left school and worked in a job, business or farm in the week before the NHS interview
Hours usually worked per week	■ 0 hours ■ 1–15 hours ■ 16–24 hours ■ 25–34 hours ■ 40 hours ■ 41–48 hours ■ 49 hours and over	All aged 15 years and over who left school and worked in a job, business or farm in the week before the NHS interview
Usual major activity	1 Full-time student 2 Part-time student 3 Employed 4 Unemployed 0 Not applicable	All aged 15 years and over who left school

DATA ITEM	CATEGORIES	POPULATION
Duration of employment	■ Under 2 weeks ■ 2–3 weeks ■ 4–7 weeks ■ 8–12 weeks ■ 13–25 weeks ■ 26–38 weeks ■ 39–51 weeks ■ 52–64 weeks ■ 65–77 weeks ■ 78–90 weeks ■ 91–103 weeks ■ 104 weeks and over	All aged 15 years and over who have left school and have been looking for full-time or part-time work in the 4 weeks before the NHS interview
Number of full-time employed people in the household	■ 0 ■ 1 ■ 2 ■ 3 ■ 4 or more	All
Income		
Main source of income	1 Profit or loss from own business 2 Profit or loss from rental investment properties 3 Dividends 4 Interest 5 A wage or salary from an employer 6 A wage or salary from own limited liability company 7 Family payment 8 Any other government pension or cash benefit 9 Maintenance/child support 10 Superannuation/annuity 11 Worker's compensation/accident or sickness i insurance 12 Other source of income 99 Not state/applicable	All who currently receive income or who received income in the last financial year

DATA ITEM	CATEGORIES		POPULATION
Gross annual household income	■ $1–39 p.w.	($1–2 079 p.a.)	All
	■ $40–79 p.w.	($2 080–4 159 p.a.)	
	■ $80–119 p.w.	($4 160–6 239 p.a.)	
	■ $120–159 p.w.	($6 240–8 319 p.a.)	
	■ $160–199 p.w.	($8 320–10 399 p.a.)	
	■ $200–299 p.w.	($10 400–15 599 p.a.)	
	■ $300–399 p.w.	($15 600–20 799 p.a.)	
	■ $400–499 p.w.	($20 800–25 999 p.a.)	
	■ $500–599 p.w.	($26 000–31 199 p.a.)	
	■ $600–699 p.w.	($31 200–36 399 p.a.)	
	■ $700–799 p.w.	($36 400–41 599 p.a.)	
	■ $800–999 p.w.	($41 600–51 999 p.a.)	
	■ $1 000–1 499 p.w.	($52 000–77 999 p.a.)	
	■ $1 500+ p.w.	($78 000+ p.a.)	
	■ No income		
	■ Negative income		
Total income for the income unit	■ $1–39 p.w.	($1–2 079 p.a.)	All
	■ $40–79 p.w.	($2 080–4 159 p.a.)	
	■ $80–119 p.w.	($4 160–6 239 p.a.)	
	■ $120–159 p.w.	($6 240–8 319 p.a.)	
	■ $160–199 p.w.	($8 320–10 399 p.a.)	
	■ $200–299 p.w.	($10 400–15 599 p.a.)	
	■ $300–399 p.w.	($15 600–20 799 p.a.)	
	■ $400–499 p.w.	($20 800–25 999 p.a.)	
	■ $500–599 p.w.	($26 000–31 199 p.a.)	
	■ $600–699 p.w.	($31 200–36 399 p.a.)	
	■ $700–799 p.w.	($36 400–41 599 p.a.)	
	■ $800–999 p.w.	($41 600–51 999 p.a.)	
	■ $1 000–1 499 p.w.	($52 000–77 999 p.a.)	
	■ $1 500+ p.w.	($78 000+ p.a.)	
	■ No income		
	■ Negative income		
Equivalent income	■ $1–39 p.w.	($1–2 079 p.a.)	All
	■ $40–79 p.w.	($2 080–4 159 p.a.)	
	■ $80–119 p.w.	($4 160–6 239 p.a.)	
	■ $120–159 p.w.	($6 240–8 319 p.a.)	
	■ $160–199 p.w.	($8 320–10 399 p.a.)	
	■ $200–299 p.w.	($10 400–15 599 p.a.)	
	■ $300–399 p.w.	($15 600–20 799 p.a.)	
	■ $400–499 p.w.	($20 800–25 999 p.a.)	
	■ $500–599 p.w.	($26 000–31 199 p.a.)	
	■ $600–699 p.w.	($31 200–36 399 p.a.)	
	■ $700–799 p.w.	($36 400–41 599 p.a.)	
	■ $800–999 p.w.	($41 600–51 999 p.a.)	
	■ $1 000–1 499 p.w.	($52 000–77 999 p.a.)	
	■ $1 500+ p.w.	($78 000+ p.a.)	
	■ No income		
	■ Negative income		

DATA ITEM	CATEGORIES	POPULATION
Housing		
Type of tenure	1 Paying rent or board to reside in the dwelling 2 Paying off the dwelling 3 Outright owner of the dwelling 4 Living in dwelling rent or board free 5 Other	All aged 15 years and over who did not live in a special dwelling and response was for either the head of the unit or their spouse/partner
Household details		
Household type	0 Visitor to private dwelling or resident in special dwelling 1 Person living alone 2 Husband/wife with no other usual residents 3 Husband/wife with dependent children aged 15 years and over 4 Husband/wife with dependent children aged under than 15 years 5 Husband/wife with dependent children aged under 15 years and dependent children aged 15 years and over 6 Single parent with dependent children aged 15 years and over 7 Single parent with dependent children aged under than 15 years 8 Single parent with dependent children aged under 15 years and dependent children aged 15 years and over 9 Mixed families in household	All
Relationship in household	1 Husband with dependent child(ren) 2 Wife with dependent child(ren) 3 Husband without dependent child(ren) 4 Wife without dependent child(ren) 5 Single parent with dependent child(ren) 6 Single parent with non-dependent child(ren) 7 Eldest of 2 or more related persons 8 Child(ren) aged < 15 or child(ren) aged 15–20 who are full time students 9 Other relatives aged < 15 or aged 15–20 and are full time students 10 Other son/daughter of any age 11 Other relatives of family head 12 Single person with non-relatives 13 Person living alone 14 Visitor to private dwelling 15 Resident in special dwelling	

DATA ITEM	CATEGORIES	POPULATION
Geography		
State	1 New South Wales 2 Victoria 3 Queensland 4 South Australia 5 Western Australia 6 Tasmania 7 Northern Territory 8 Australian Capital Territory	All
Rural, remote and metropolitan areas	0 Not applicable 1 Capital city 2 Other metropolitan centre 3 Large rural centre 4 Small rural centre 5 Other rural area 6 Remote centre 7 Other remote area	All
Part of State	1 Capital city 2 Rest of State	All
Health region	As defined by each State Health Authority	All
Social Economic Indexes for Areas (SEIFA)— index of relative social disadvantage	■ 1st quintile ■ 2nd quintile ■ 3rd quintile ■ 4th quintile ■ 5th quintile	All
SEIFA index of relative social advantage—urban areas	As above	All who live in urban areas
SEIFA index of relative social advantage—rural areas	As above	All who live in rural areas
SEIFA index of economic resources	As above	All
SEIFA index of education and occupation	As above	All

APPENDIX 5 SELECTED FOOD AND NUTRIENT GUIDELINES

Recommended dietary intakes for use in Australia

Nutrients	AGE GROUP (YEARS) 2–3	4–7	8–11	12–15	16–18	19–64	65 and over	19–54	55 and over
				MALES					
Vitamin A (retinol equivalents) (mcg)	300.0	350.0	500.0	725.0	750.0	750.0	750.0	. .	. .
Vitamin C (mg)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	. .	. .
Thiamin (mg)	0.5	0.7	0.9	1.2	1.2	1.1	0.9	. .	. .
Riboflavin (mg)	0.8	1.1	1.4	1.8	1.9	1.7	1.3	. .	. .
Niacin (niacin equivalents) (mg)	10.0	12.0	15.0	20.0	21.0	19.0	16.0	. .	. .
Folate (mcg)	100.0	100.0	150.0	200.0	200.0	200.0	200.0	. .	. .
Protein (g)	14–18	18–24	27–38	42–60	64–70	55.0	55.0	. .	. .
Calcium (mg)	700.0	800.0	800.0	1 200.0	1 000.0	800.0	800.0	. .	. .
Phosphorus (mg)	500.0	700.0	800.0	1 200.0	1 100.0	1 000.0	1 000.0	. .	. .
Magnesium (mg)	80.0	110.0	180.0	260.0	320.0	320.0	320.0	. .	. .
Iron (mg)	6–8	6–8	6–8	10–13	10–13	7.0	7.0	. .	. .
Zinc (mg)	4.5	6.0	9.0	12.0	12.0	12.0	12.0	. .	. .
Potassium (mg)	980–2730	1560–3900	1950–5460	1950–5460	1950–5460	1950–5460	1950–5460	. .	. .
				FEMALES					
Vitamin A (retinol equivalents) (mcg)	300.0	350.0	500.0	725.0	750.0	. .	. .	750.0	750.0
Vitamin C (mg)	30.0	30.0	30.0	30.0	30.0	. .	. .	30.0	30.0
Thiamin (mg)	0.5	0.7	0.8	1.0	0.9	. .	. .	0.8	0.7
Riboflavin (mg)	0.8	1.1	1.3	1.6	1.4	. .	. .	1.2	1.0
Niacin (niacin equivalents) (mg)	10.0	12.0	15.0	18.0	16.0	. .	. .	13.0	11.0
Folate (mcg)	100.0	100.0	150.0	200.0	200.0	. .	. .	200.0	200.0
Protein (g)	14–18	18–24	27–39	44–55	57.0	. .	. .	45.0	45.0
Calcium (mg)	700.0	800.0	900.0	1 000.0	800.0	. .	. .	800.0	1 000.0
Phosphorus (mg)	500.0	700.0	800.0	1 200.0	1 100.0	. .	. .	1 000.0	1 000.0
Magnesium (mg)	80.0	110.0	160.0	240.0	270.0	. .	. .	270.0	270.0
Iron (mg)	6–8	6–8	6–8	10–13	10–13	. .	. .	12–16	5–7
Zinc (mg)	4.5	6.0	9.0	12.0	12.0	. .	. .	12.0	12.0
Potassium (mg)	980–2730	1560–3900	1950–5460	1950–5460	1950–5460	. .	. .	1950–5460	1950–5460

Source: NHMRC 1991

DIETARY GUIDELINES FOR AUSTRALIANS (NHMRC 1992)

1. Enjoy a wide variety of nutritious foods.
2. Eat plenty of breads and cereals (preferably wholegrain), vegetables (including legumes) and fruits.
3. Eat a diet low in fat and, in particular, low in saturated fat.
4. Maintain a healthy body weight by balancing physical activity and food intake.
5. If you drink alcohol, limit your intake.
6. Eat only a moderate amount of sugars and foods containing added sugars.
7. Choose low salt foods and use salts sparingly.
8. Encourage and support breastfeeding.

Guidelines on specific nutrients:

1. Eat foods containing calcium. This is particularly important for girls and women.
2. Eat foods containing iron. This applies particularly to girls, women, vegetarians and athletes.

DIETARY GUIDELINES FOR CHILDREN AND ADOLESCENTS (NHMRC 1995a)

1. Encourage and support breastfeeding.
2. Children need appropriate food and physical activity to grow and develop normally. Growth should be checked regularly.
3. Eat plenty of breads, cereals, vegetables (including legumes) and fruits.
4. Low fat diets are not suitable for young children. For older children, a diet low in fat and in particular, low in saturated fat, is appropriate.
5. Encourage water as a drink. Alcohol is not recommended for children.
6. Eat only a moderate amount of sugars and foods containing sugars.
7. Choose low salt foods.

Guidelines on specific nutrients:

1. Eat foods containing calcium.
2. Eat foods containing iron.

APPENDIX 6 STANDARD ERRORS

ESTIMATION PROCEDURE

Estimates from the survey are derived using a procedure which combines information collected in the course of the survey (in responses to the survey, and concerning propensity of selected sample units to respond), with independently available information concerning the underlying populations. As a result, survey estimates of population conform to the published population estimates at the Australian age-sex level and at State and Territory by part of State level.

RELIABILITY OF THE ESTIMATES

Since the estimates in this publication are based on information obtained from occupants of a sample of dwellings they are subject to sampling variability; that is they may differ from the figures that would have been produced if all dwellings had been included in the survey. One measure of the likely difference is given by the standard error (SE), which indicates the extent to which an estimate might have varied by chance because only a sample of dwellings was included. There are about two chances in three that a sample estimate will differ by less than one SE from the figure that would have been obtained if all dwellings had been included, and about 19 chances in 20 that the difference will be less than two SEs. Another measure of the likely difference is the relative standard error (RSE), which is obtained by expressing the SE as a percentage of the estimate.

Space does not allow for the separate indication of the SEs of all estimates contained within publications. A table of SEs and RSEs for estimates of numbers of persons who completed the IFIQ is given in table A6.1 and table A6.2. A table of SEs and RSEs for estimates of numbers of persons who completed the FFQ is given in table A6.3 and table A6.4. These figures will not give a precise measure of the SE for a particular estimate but will provide an indication of its magnitude. Due to recent methodological investigations the SEs and RSEs contained within table A6.1 have been revised from what was initially published in the Selected Highlights publication. An example of the calculation and use of SEs follows.

CALCULATION OF STANDARD ERRORS

If a national estimate is 250,000, then using table A6.1 the SE is calculated as follows:

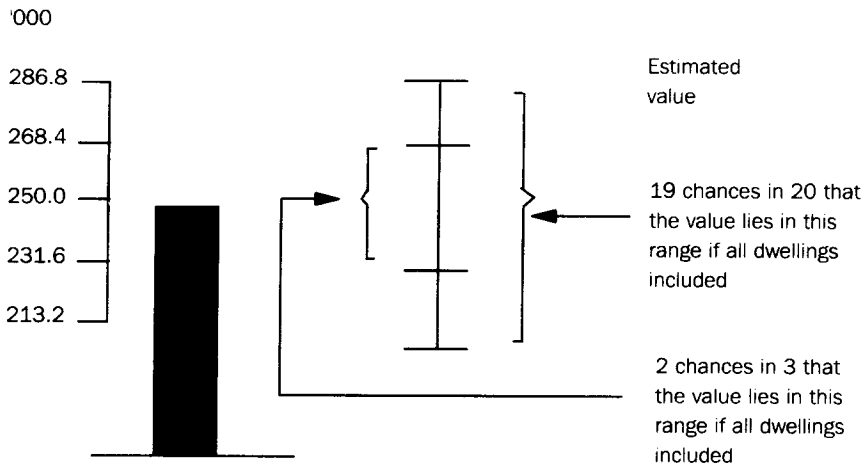
- The size of the estimate lies between 200,000 and 300,000. The corresponding SEs for these two numbers in table A6.1 are 16,950 and 19,850.
- The SE for 250,000 is calculated by interpolation using the following formula:

  SE= lower SE + ((size of estimate – lower size)/(upper size– lower size)) * (upper SE – lower SE)

  = 16,950 + ((250,000 – 200,000)/(300,000 -200,000)) * (19,850 – 16,950)

  = 18,400

Therefore, there are about two chances in three that the value that would have been produced if all dwellings had been included in the survey will fall in the range of 231,600 to 268,400 and about 19 chances in 20 that the value will fall within the range 213,200 to 286,800. This example is illustrated in the following diagram.



As can be seen from the SE table (see table A6.1), the smaller the estimate the higher the RSE. Very small estimates are thus subject to such high SEs (relative to the size of the estimate) as to detract seriously from their value for most reasonable uses. In tables in the ABS publications on the NNS these estimates are marked * or **.

STANDARD ERRORS OF RATES AND PERCENTAGES

Proportions and percentages formed from the ratio of two estimates are also subject to sampling errors. The size of the error depends on the accuracy of both the numerator and the denominator. A formula to approximate the RSE of a proportion is given below:

$$RSE\ (x/y) = \sqrt{([RSE(x)]^2 - [RSE(y)]^2)}$$

There were 13.1% of males aged 19 years and over reported being on a fat-modified diet to lower blood cholesterol. Using Table A6.5, it can be calculated that the numerator is approximately 851,700 and the denominator is 6,501,616. From Table A6.1, the SE of 6,501,616 is approximately 48,677, so the RSE is 0.7%. The SE of 851,700 is approximately 28,261, so the RSE is 3.3%. Applying the above formula, the RSE is $\sqrt{[(3.3)]^2 - (0.7)^2}$ or 3.2%, giving a SE for the proportion (13.1%) of 0.4 percentage points. Therefore, there are about two chances in three that the percentage of men aged 19 years and over on a fat-modified diet to lower blood cholesterol is between 12.7% and 13.5% and 19 chances in 20 that the proportion is within the range 12.3% and 13.9%.

The SE of an estimated percentage or rate computed by using sample data for both numerator and denominator depends the size of each of these. However, the RSE of the estimated percentage or rate will generally be lower than the RSE of the estimate of the numerator.

Approximate SEs of rates or percentages may be derived by first obtaining the number of persons corresponding to the numerator of the rate or percentage and then applying this figure to the estimated rate or percentage.

Published figures may also be used to estimate the difference between survey estimates (of numbers or percentages). Such a figure is itself an estimate and is subject to sampling error. The sampling error of the difference between two estimates depends on their SEs and the relationship (correlation) between them.

STANDARD ERRORS OF RATES AND PERCENTAGES *continued*

An approximate SE of the difference between two estimates (x–y) may be calculated by the following formula:

$$SE\ (x-y) = \sqrt{([SE(x)]^2 + [SE(y)]^2)}$$

While this formula will only be exact for differences between separate and uncorrelated characteristics or sub-populations it is likely to be of interest in this publication. The imprecision due to sampling variability, which is measured by the SE, should not be confused with inaccuracies that may occur because of imperfections in reporting by interviewers and respondents, and errors made in coding and processing of data. Inaccuracies of this kind are referred to as the non-sampling error, and they may occur in any enumeration, whether it be in a full count or only a sample.

STANDARD ERRORS OF NON-PERSON ESTIMATES

The above discussion relates to person estimates (i.e. the number or percentage of people with particular characteristics). However, a substantial amount of information from the survey is available as non-person estimates. Non-person estimates include means, medians and percentages based on counts other than the number of people (e.g. percentage of energy from different food groups).

RSEs for non-person estimates were calculated and used to asterisk estimates with high RSEs in all survey outputs. Such estimates should be used with caution. The actual SE values for non-person estimates have not been released in this publication.

A6.1 Standard errors for IFIQ person estimates(a)

	STATES AND TERRITORIES								
Size of estimate	*NSW*	*Vic.*	*Qld.*	*SA*	*WA*	*Tas.*	*NT*	*ACT*	*Aust.*
2 000	1 480	1 510	1 500	1 120	1 240	920	1 280	970	1 530
2 100	1 530	1 560	1 550	1 160	1 280	950	1 330	1 000	1 570
2 200	1 590	1 610	1 600	1 200	1 320	980	1 380	1 030	1 620
2 300	1 640	1 660	1 640	1 240	1 360	1 000	1 420	1 060	1 670
2 400	1 690	1 710	1 680	1 280	1 400	1 030	1 460	1 100	1 710
2 500	1 740	1 750	1 730	1 310	1 430	1 060	1 510	1 130	1 760
3 000	1 990	1 970	1 930	1 490	1 620	1 180	1 710	1 270	1 970
3 500	2 230	2 170	2 120	1 650	1 790	1 280	1 890	1 400	2 170
4 000	2 450	2 360	2 300	1 800	1 940	1 380	2 060	1 520	2 360
4 500	2 650	2 540	2 460	1 940	2 090	1 480	2 220	1 630	2 530
5 000	2 850	2 700	2 600	2 100	2 250	1 550	2 350	1 750	2 700
6 000	3 250	3 050	2 900	2 350	2 500	1 750	2 650	1 950	3 000
8 000	3 900	3 600	3 400	2 800	2 950	2 000	3 100	2 250	3 550
10 000	4 500	4 100	3 850	3 200	3 350	2 250	3 450	2 500	4 050
20 000	6 800	6 000	5 550	4 750	4 850	3 100	4 700	3 400	5 850
30 000	8 550	7 450	6 800	5 850	5 950	3 700	5 450	4 000	7 200
40 000	9 950	8 600	7 800	6 800	6 850	4 150	5 950	4 350	8 300
50 000	11 150	9 600	8 650	7 550	7 550	4 550	6 300	4 650	9 250
100 000	15 450	13 300	11 750	10 350	10 150	5 850	7 250	5 500	12 700
200 000	20 650	17 900	15 500	13 750	13 100	7 200	7 750	6 050	16 950
300 000	24 050	21 050	18 050	15 950	15 000	8 050		6 250	19 850
400 000	26 550	23 450	19 950	17 600	16 400	8 650			22 100
500 000	28 550	25 450	21 500	18 950	17 500	9 100			23 900
1 000 000	34 900	32 250	26 750	23 200	20 950				30 100
2 000 000	41 100	39 800	32 400	27 500	24 200				36 950
5 000 000	48 050	50 450	40 100						46 500
10 000 000	51 750								53 750
20 000 000									60 500

(a) The SEs shown relate to person estimates for those items collected from the IFIQ for the main survey sample.

A6.2 Relative standard errors for IFIQ person estimates(a)

	STATES AND TERRITORIES								
Size of estimate	*NSW*	*Vic.*	*Qld.*	*SA*	*WA*	*Tas.*	*NT*	*ACT*	*Aust.*
2 000	73.8	75.7	75.1	56.1	61.8	46.2	64.1	48.4	76.3
2 100	72.9	74.4	73.8	55.3	60.8	45.3	63.3	47.6	74.9
2 200	72.1	73.3	72.5	54.6	59.9	44.5	62.5	47.0	73.7
2 300	71.3	72.1	71.3	53.8	59.0	43.7	61.7	46.3	72.5
2 400	70.5	71.1	70.2	53.1	58.2	42.9	61.0	45.7	71.4
2 500	69.7	70.1	69.1	52.5	57.4	42.2	60.2	45.1	70.4
3 000	66.4	65.7	64.4	49.5	53.9	39.2	56.9	42.3	65.8
3 500	63.6	62.1	60.6	47.1	51.0	36.7	54.1	40.0	62.0
4 000	61.1	59.1	57.4	45.0	48.6	34.6	51.5	38.0	58.9
4 500	59.0	56.5	54.7	43.2	46.5	32.9	49.3	36.3	56.2
5 000	57.1	54.3	52.4	41.6	44.6	31.3	47.3	34.7	53.9
6 000	53.8	50.5	48.5	38.9	41.5	28.8	43.8	32.1	50.1
8 000	48.7	45.0	42.8	34.9	36.9	25.1	38.5	28.1	44.4
10 000	44.9	40.9	38.7	31.9	33.5	22.5	34.5	25.2	40.3
20 000	34.1	30.1	27.9	23.6	24.3	15.6	23.5	17.1	29.3
30 000	28.5	24.8	22.7	19.5	19.9	12.4	18.1	13.3	24.1
40 000	24.9	21.5	19.5	16.9	17.1	10.4	14.8	10.9	20.8
50 000	22.3	19.2	17.3	15.1	15.1	9.1	12.6	9.3	18.5
100 000	15.5	13.3	11.7	10.4	10.1	5.8	7.2	5.5	12.7
200 000	10.3	8.9	7.8	6.9	6.6	3.6	3.9	3.0	8.5
300 000	8.0	7.0	6.0	5.3	5.0	2.7		2.1	6.6
400 000	6.6	5.9	5.0	4.4	4.1	2.2			5.5
500 000	5.7	5.1	4.3	3.8	3.5	1.8			4.8
1 000 000	3.5	3.2	2.7	2.3	2.1				3.0
2 000 000	2.1	2.0	1.6	1.4	1.2				1.8
5 000 000	1.0	1.0	0.8						0.9
10 000 000	0.5								0.5
20 000 000									

(a) Shows the SE for Australia as a percentage of the estimate.

A6.3 Standard errors for FFQ person estimates(a)

	STATES AND TERRITORIES								
Size of estimate	*NSW*	*Vic.*	*Qld.*	*SA*	*WA*	*Tas.*	*NT*	*ACT*	*Aus.*
2 000	1 790	1 600	1 820	1 240	1 340	1 070	1 330	1 050	1 680
2 100	1 850	1 650	1 870	1 290	1 380	1 110	1 380	1 090	1 730
2 200	1 920	1 700	1 920	1 330	1 430	1 140	1 430	1 120	1 790
2 300	1 980	1 750	1 970	1 370	1 480	1 170	1 490	1 150	1 840
2 400	2 040	1 800	2 020	1 410	1 520	1 200	1 540	1 190	1 890
2 500	2 100	1 850	2 070	1 450	1 570	1 230	1 590	1 220	1 940
3 000	2 390	2 090	2 310	1 640	1 780	1 380	1 830	1 370	2 180
3 500	2 660	2 310	2 520	1 820	1 970	1 510	2 050	1 500	2 400
4 000	2 910	2 520	2 720	1 990	2 150	1 630	2 250	1 630	2 610
4 500	3 150	2 710	2 910	2 150	2 320	1 740	2 440	1 740	2 800
5 000	3 350	2 900	3 100	2 300	2 500	1 850	2 600	1 850	3 000
6 000	3 800	3 250	3 400	2 600	2 800	2 050	2 950	2 050	3 350
8 000	4 550	3 850	4 000	3 050	3 300	2 350	3 450	2 400	3 950
10 000	5 250	4 400	4 500	3 500	3 800	2 650	3 900	2 650	4 500
20 000	7 850	6 500	6 400	5 150	5 500	3 700	5 300	3 650	6 550
30 000	9 800	8 100	7 800	6 300	6 750	4 350	6 050	4 250	8 100
40 000	11 400	9 400	8 900	7 250	7 700	4 900	6 500	4 700	9 300
50 000	12 750	10 500	9 850	8 050	8 550	5 300	6 850	5 050	10 400
100 000	17 700	14 600	13 300	10 800	11 250	6 700	7 400	6 100	14 250
200 000	23 700	19 750	17 500	13 950	14 300	8 150	7 750	6 950	19 100
300 000	27 700	23 250	20 350	15 950	16 100	8 950		7 350	22 350
400 000	30 750	25 950	22 550	17 600	17 350	9 500			24 850
500 000	33 150	28 200	24 350	18 950	18 300	9 900			26 900
1 000 000	41 100	35 850	30 450	23 200	21 000				33 850
2 000 000	49 200	44 300	37 200	27 500	23 100				41 400
5 000 000	59 300	56 200	46 800						51 950
10 000 000	65 600								59 800
20 000 000									67 000

(a) The SEs and RSEs shown relate to person estimates for those items collected for the main survey sample.

A6.4 Relative standard errors for FFQ person estimates(a)

	STATES AND TERRITORIES								
Size of estimate	*NSW*	*Vic.*	*Qld.*	*SA*	*WA*	*Tas.*	*NT*	*ACT*	*Aust.*
2 000	89.5	79.8	90.8	62.1	66.9	53.7	66.3	52.6	83.9
2 100	88.3	78.5	89.0	61.2	65.9	52.7	65.7	51.8	82.5
2 200	87.2	77.3	87.4	60.4	65.1	51.8	65.2	51.0	81.1
2 300	86.1	76.2	85.8	59.6	64.2	51.0	64.6	50.2	79.9
2 400	85.0	75.1	84.3	58.8	63.4	50.1	64.1	49.4	78.7
2 500	84.0	74.1	82.9	58.1	62.6	49.3	63.5	48.7	77.6
3 000	79.6	69.6	76.9	54.8	59.2	45.9	60.9	45.5	72.6
3 500	75.9	66.0	72.1	52.1	56.3	43.1	58.5	42.9	68.6
4 000	72.7	62.9	68.1	49.8	53.8	40.7	56.2	40.6	65.2
4 500	69.9	60.2	64.7	47.8	51.7	38.7	54.2	38.7	62.3
5 000	67.5	57.9	61.8	46.0	49.7	36.9	52.3	37.0	59.8
6 000	63.3	54.0	57.0	43.0	46.5	34.0	48.9	34.1	55.6
8 000	57.0	48.2	49.9	38.4	41.5	29.7	39.0	29.7	49.3
10 000	52.4	44.0	45.0	35.0	37.9	26.6	26.5	26.6	44.8
20 000	39.3	32.6	32.0	25.7	27.6	18.4	20.2	18.1	32.8
30 000	32.7	27.0	25.9	21.1	22.5	14.6	16.3	14.2	26.9
40 000	28.5	23.5	22.2	18.1	19.3	12.2	13.7	11.7	23.3
50 000	25.5	21.0	19.7	16.1	17.1	10.6	7.4	10.1	20.8
100 000	17.7	14.6	13.3	10.8	11.3	6.7	3.9	6.1	14.3
200 000	11.9	9.9	8.8	7.0	7.1	4.1		3.5	9.5
300 000	9.2	7.7	6.8	5.3	5.4	3.0		2.4	7.4
400 000	7.7	6.5	5.6	4.4	4.3	2.4			6.2
500 000	6.6	5.6	4.9	3.8	3.7	2.0			5.4
1 000 000	4.1	3.6	3.0	2.3	2.1				3.4
2 000 000	2.5	2.2	1.9	1.4	1.2				2.1
5 000 000	1.2	1.1	0.9						1.0
10 000 000	0.7								0.6
20 000 000									

(a) Shows the SE for Australia as a percentage of the estimate.

A6.5 ERP(a) estimates used to calculate means and percentages

	AGE GROUP (YEARS)									
	2–3	*4–7*	*8–11*	*12–15*	*16–18*	*19–24*	*25–44*	*45–64*	*65 and over*	*Total 19 years and over*
Males	265 414	530 647	529 201	524 138	389 479	866 651	2 795 003	1 900 669	939 293	6 501 616
Females	252 122	503 697	503 481	495 758	368 469	832 697	2 797 187	1 852 311	1 221 445	6 703 640
Persons	517 536	1 034 614	1 032 682	1 019 896	757 948	1 699 348	5 592 190	3 752 980	2 160 738	13 205 256

(a) These estimates correspond to the population benchmarks for the National Nutrition Survey and were derived from the third quarter population estimates for 1995.

GLOSSARY

Alcohol There are two ways in which alcohol is referred to in the NNS. The first way is to refer to beverages containing alcohol (e.g. whisky, reduced alcohol beer and mixed drinks such as vodka and orange). The second way alcohol is used is to refer to the proximate constituent of food, ethanol alcohol, which contributes to nutrient intake.

Amino acids The building blocks of proteins.

ANSURS The Australian Nutrition Survey System is an automated food coding system used for entering food and beverage intake data from the 24-hour recall.

Anthropometry The measurement of the size and shape of the human body. Examples of anthropometric indicators include BMI, height and waist-to-hip ratio.

Blood pressure The pressure of the blood on the walls of the arteries. Blood pressure can vary from day to day and throughout the day for individuals. Blood pressure readings were only taken from people aged 16 years and over, excluding pregnant women.

Blood pressure risk groups These were used to provide feedback to respondents about their blood pressure measurements. The risk group categories were:

- Normal — Systolic blood pressure (SBP) less than 140 mmHg;
- Mild— SBP at least 140 mmHg, but less than 160 mmHg;
- Moderate — SBP at least 160 mmHg, but less than 180 mmHg; and
- Severe — SBP at least 180 mmHg.

Body Mass Index — adults BMI, also known as Quetelet's index, is body weight in kilograms divided by the square of height in metres. Height and weight were measured by the interviewers. The groups used are those recognised by the WHO Expert Committee on Physical Status: The Use and Interpretation of Anthropometry (1995).

Category	*BMI range*
Underweight	
Mild thinness (WHO grade 1)	17 to less than 18.5
Moderate thinness (WHO grade 2)	16 to less than 7
Severe thinness (WHO grade 3)	Less than 16
Acceptable weight(a)	18.5 to less than 20
	20 to less than 25
Overweight	
Overweight (WHO grade 1)	25 to less than 30
Obese	
WHO grade 2	30 to less than 40
WHO grade 3	40 and over

(a) The acceptable range has been split to enable comparison with NHMRC categories.

The measuring scales used only measured weights up to 140 kg. People over this weight have been classified as obese.

Body mass index — children and adolescents

In children and adolescents age and sex specific reference values are used in place of the BMI categories described above. This is because weight and height, and therefore BMI, are age and sex dependent during childhood and adolescence.

Category	
Low BMI for age	If BMI is less than 5th percentile reference value for their age and sex
Acceptable BMI for age	If BMI is greater than or equal to 5th percentile and less than 85th percentile
At risk of overweight	If BMI is greater than or equal to the 85th percentile and less than the 95th percentile
Overweight	If BMI is greater than or equal to the 95th percentile

Breakfast Breakfast is the meal generally eaten in the morning after waking. However, daily routines including sleep may vary and therefore breakfast was determined by participants. There were two measures of breakfast consumption collected in the survey.

The first measure was collected by the interviewer in the 24-hour recall. It was based on eating occasion specified by the respondent for each food and beverage consumed.

A second measure was collected as part of eating habits and this indicates how many days per week something is usually eaten for breakfast. An occasion was not counted as breakfast for this item if a respondent volunteered that their breakfast was beverages only.

Broad age groups These have been defined in the following way for the NNS: less than 25 years; 25–44 years; 45–64 years; and 65 years and over.

Carbohydrate Carbohydrates usually provide the major part of energy in human diets. Carbohydrates are comprised of the elements carbon, hydrogen and oxygen. Data for total carbohydrates include starch, sugars and related substances (sugar alcohols and oligosaccharides). Sugar alcohols and oligosaccharides are included in 'Total carbohydrates' but not in starch and sugar sub-totals. Therefore, total carbohydrate does not always equal the sum of sugars and starch.

Combination foods These are foods consisting of two or more components which are combined (usually just prior to consumption) and eaten as a single unit.

Coverage Coverage refers to the extent to which the desired scope of a collection has been achieved. Coverage rules for the survey tried to ensure that each person within the target population only had one chance of being interviewed.

Diastolic blood pressure Minimum blood pressure, which occurs late in ventricular diastole, which is the period or dilation of the heart, especially of the ventricles.

Eating occasion Each food or beverage reported in the 24-hour recall is assigned to an eating occasion. This information is not available for plain drinking water. Participants selected the name of the eating occasion from a list provided by the interviewer. The list contained the following options:

- breakfast;
- brunch;
- food and/or beverage break;
- lunch;
- dinner, tea;
- supper; and
- other.

Energy The chemical energy in foods that is available to the body from metabolism of carbohydrates, protein, fat and alcohol after digestion and absorption. Energy from food provides the 'fuel' for growth, movement, metabolism and physical activity. Energy intakes from the survey are reported in kilojoules (kJ). One calorie is equivalent to approximately 4.186 kJ.

Fat Fat provides a large part of energy in the human diet, is a carrier for fat-soluble vitamins and is the source of essential fatty acids. The three fatty acid subtotals do not add up to total fat because total fat includes a contribution from the non-fatty acid components.

Fatty acids Units of carbon, hydrogen and oxygen which combine with glycerine to form fat. Most foods comtain a mixture of monounsaturated, polyunsaturated and saturated fatty acids.

Fine age groups These have been defined in the following way for the NNS: 2–3years; 4–7 years; 8–11 years; 12–15 years; 16–18 years; 19–24 years; 25–44 years; 45–64 years; and 65 years and over.

Food Codebook Database This database was part of ANSURS. The Food Codebook Database contained information which was used to code the type and amount of each food/beverage that was reported in the 24-hour recall.

Food Frequency Questionnaire This was used to collect information on usual intake of selected foods and vitamin/mineral supplements. Respondents aged 12 years and over were asked to complete this qualitative questionnaire, which collected usual frequency of consumption of 107 food items and 11 vitamin and mineral supplements over the past 12 months.

Frankfort plane Positioning of head so that the line of vision is perpendicular to the body. Participants positioned their head in this way for height measurements.

Height Height (in cm) was measured without shoes on a level floor using a portable stadiometer. The person stood with heels together and head positioned in the Frankfort horizontal plane.

Height for age This indicates whether a child is short or tall relative to others of the same sex and age. Low height for age may be due to stunted growth or, like tallness, maygenetic origin. Height for age was calculated for children aged 2–18 years by comparing their measured height to age and sex-specific values from a reference population.

Hip circumference The hip circumference (in cm) was taken with the tape passed horizontally around the body at the position of maximum circumference around the buttocks, when viewed from the side.

Hypertension Hypertension (high blood pressure) is a major risk factor for cardiovascular disease. Hypertension and its categories were calculated from blood pressure medication use, systolic blood pressure (SBP) and diastolic blood pressure (DBP). Hypertensives are people who have either treated or untreated hypertension whereas normotensives are people who do not have high blood pressure and are not on tablets for blood pressure.

Category	
Hypertensives	On tablets for blood pressure and/or SBP is greater than or equal to 160 mmHg and/or diastolic blood pressure (DBP) is greater than or equal to 95 mmHg.
Controlled hypertensives	On tablets for blood pressure, SBP less than 160 mmHg and diastolic blood pressure (DBP) less than 95 mmHg
Treated, uncontrolled hypertensives	On tablets for blood pressure, SBP greater than or equal to 160 mmHg and/or a DBP greater than or equal to 95 mmHg
Untreated hypertensives	Not on tablets for blood pressure, SBP greater than or equal to 160 mmHg and/or a DBP greater than or equal to 95 mmHg
Normotensives	Not on tablets for blood pressure, with a SBP less than 160 mmHg and a DBP less than 95 mmHg

IFIQ Individual Food Intake Questionnaire, also referred to as the 24-hour recall. See 24-hour recall.

Intake day This is the day of the week that participants consumed the foods and beverages that they reported in their 24-hour recall. Weekday has been defined as Monday–Friday and the weekend as Saturday and Sunday.

Minerals Minerals are the inorganic chemical elements in the diet and body. Examples include calcium (which assists in building and maintaining strong bones and teeth), potassium (which is crucial to controlling water balance in body tissue and cells) and iron (which is needed for the formation of haemoglobin in red blood cells and myoglobin in muscles).

Non-private dwellings This includes dwellings such as hotels, boarding houses, gaols, hospitals and other institutions.

Nutrient Database This database was part of ANSURS. It contained the nutrient composition information used to calculate the nutrient value of foods and beverages consumed in the 24-hour recall.

Part of State Capital city is the capital city Statistical Division for each State or Territory. Rest of State is the remaining areas in each State and Territory.

Percentage contribution to energy intake

The proportion of energy coming from protein, fats (monounsaturated, saturated and polyunsaturated), carbohydrates (starch and sugar) and alcohol. The energy from each of these nutrients was estimated by multiplying each gram of protein, fat, carbohydrates and alcohol by a conversion factor to determine the kilojoules (kJ) of energy generated. These conversion factors are set out below:

Energy from protein	17 kJ per gram
Energy from fats	37 kJ per gram
Energy from carbohydrates	17 kJ per gram of starch and 16 kJ per gram
Energy from alcohol	29 kJ per gram

The sum of energy values from protein, fats, carbohydrates and alcohol is not exactly equal to total energy. This is partly due to rounding and, in some cases, to other energy yielding components in the food or beverage. The sum of the energy from saturated, monounsaturated and polyunsaturated fats is not equal to the energy from total fats.

Plain drinking water

Tap water or any uncarbonated bottled water, with nothing added, not even lemon. Only amount drunk the previous day and how much came from home was collected. Plain drinking water has been included in most tables that report on food or nutrient intake for this survey, except in cases where it is cross-tabulated against information not collected for plain drinking water (e.g. eating occasion and where consumed). Plain drinking water has been classified as a non-alcoholic beverage in tables on food intake. In nutrient intake tables, the only constituent that has been included is the moisture content.

Private dwellings

These include houses, flats and other similar dwellings.

Protein

Protein supplies essential amino acids and is also a source of energy. Protein can be supplied from animal or vegetable matter, though individual vegetable proteins do not contain all the essential amino acids required by the body. They may be limited in one of these essential amino acids.

Recipe Database

This database was part of ANSURS. It stored information about the ingredients of a recipe food and was used to calculate nutrient values for recipe foods, taking into account changes in moisture, fat, vitamins and minerals as a result of cooking.

Recipe foods

Recipe foods consist of several ingredients mixed/cooked together (e.g. chocolate cake or macaroni cheese). Within ANSURS, the term 'recipe' refers specifically to foods which consist of other foods in the Food Codebook Database and which consequently can have their recipe modified during coding to take account of specific types of ingredients, such as the kind of fat used.

Scope

The term 'scope' refers to the target population covered by a data collection. The scope of the NNS was people aged two years or more who were residents of private dwellings in Australia. People living in Australia but not usually considered part of the Australian resident population were excluded from the scope of the survey (e.g. non-Australian diplomatic personnel, people from overseas holidaying in Australia and members of non-Australian defence forces).

SEIFA indexes The SEIFA indexes were derived from the 1991 Census. They describe the characteristics of the area in which a person lives, rather than the characteristics of the person. The SEIFA index of relative social disadvantage, for example, assigns an index to geographic areas based on socio-economic variables such as economic resources, education and occupation.

Sphygmomanometer Equipment used to measure blood pressure. The sphygmomanometer used for the survey was initially a mercury instrument but due to technical problems was changed to an aneroid sphygmomanometer.

Stadiometer Height measuring equipment. The stadiometer used for the NNS consisted of a metal base plate, an extended head piece with a spirit level attached and a locking, steel measuring tape graduated in millimetres.

Systolic blood pressure Maximum blood pressure which occurs near the end of the stroke output of the left ventricle of the heart (when the oxygenated blood is pushed out into the body).

24-hour dietary recall This was the methodology used to collect detailed information on food and nutrient intake. The 24-hour dietary recall collected a list of all foods and beverages consumed the previous day from midnight to midnight, the amount consumed, the time of consumption, the name of the eating occasion, the source of the foods and beverages, whether they were consumed in the home and whether they were ever in the home.

Usual type of diet Usual type of diet selected by participants from a list provided at the interview. The categories are: no special way of eating; vegetarian; weight reduction diet; diabetic diet; fat-modified diet to lower blood fat (cholesterol); and other.

Vitamins Vitamins are organic compounds found naturally in foods and are either fat or water soluble. They are required in small amounts. Vitamins enable the human body to function efficiently by regulating biochemical processes such as growth metabolism, cell reproduction, digestion and oxidation of the blood.

Waist circumference The waist circumference (in cm) was taken at the end of normal expiration with the tape passed horizontally around the body, midway between the inferior margin of the last rib and the crest of the illium in the mid-axillary plane.

Waist to hip ratio The waist circumference divided by the hip circumference. A high waist to hip ratio (WHR) is generally indicative of excessive abdominal fat, which is associated with increased risk for cardiovascular disease. The WHR can be used in people aged 19 years and over as an indicator of increased risk of cardiovascular disease.

Weight for age This indicates whether a child is light or heavy compared with others of the same sex and age. irrespective of height Weight for age was calculated for children aged 2–18 years by comparing their measured weight to age and sex specific values from a reference population.

Weight for height This indicates whether a child is thin/wasted or overweight compared with others of the same sex and age. Weight for height was calculated for girls of height 55–137 cm and boys of height 55–145 cm by comparing their measured weight to height and sex-specific weight values from a reference population.

Where foods/beverages consumed Foods and beverages that were consumed at home include both home prepared meals and takeaway foods brought home to eat. Foods and beverages consumed away from home are further classified into:

- Brought from home — This can include pre-prepared or takeaway foods as well as home prepared foods and beverages.
- Not brought from home — It is assumed that most of these are pre-prepared foods (e.g. takeaway foods, restaurant meals, foods from vending machines).

This information is not available for plain drinking water.

LIST OF REFERENCES

Alexander, H. & Dugdale, A. E. 1990, 'Which waist-hip ratio ?' *Medical Journal of Australia,* vol. 153, no. 6, pp. 153–367.

AOAC 1990, *AOAC manual, Number 985.29*, 15th edition, AOAC, Arlington Virginia, U.S.A.

Australian Bureau of Statistics 1996, *National Health Survey: Users' Guide, Australia, 1995*, Cat. no. 4363.0, ABS, Canberra.

Australian Bureau of Statistics 1997, *Apparent consumption of foodstuffs and nutrients*, ABS Catalogue no. 4306.0, ABS, Canberra.

Australian Council for Health, Physical Education and Recreation 1987, *Australian Health and Fitness Survey 1985*, ACPHER Publications, Parkside, South Australia.

Australian Government Analytical Laboratory, *Beef Analytical Program*, Unpublished, commissioned laboratory report to Australia New Zealand Food Authority.

Australia New Zealand Food Authority 1989, *Composition of Foods Australia,* Volumes 1–7, AGPS, Canberra.

Ball, M. J., Wilson, B. D., Robertson, I. K. & Russell, D. G. 1993, 'Obesity and body fat distribution in New Zealanders: a pattern of coronary heart disease risk,' *New Zealand Medical Journal,* vol. 106, pp. 69–72.

Barnes, J. A., Lewis, J. L., & Buick, D. R., 1996, 'Composition of New Fashioned Pork 1994', *Food Australia*, vol. 48, no. 2, pp. S3–S15.

Better Health Commission 1986, *Looking forward to better health: Volume 2*, AGPS, Canberra.

Black A. E., Goldberg, G. R., Jebb, S. A., Livingstone, M.B.E., Cole, T.J., Prentice, S.A., 1991, 'Critical evaluation of energy intake data using fundamental principles of energy physiology; 2. Evaluating the results of published surveys', *European Journal of Clinical Nutrition,* vol. 45, no. 12, pp. 583–599.

Commonwealth Department of Health, Housing and Community Services 1992, *Food and nutrition policy*, AGPS, Canberra.

Commonwealth Department of Health 1986, *National dietary survey of adults: 1983 no. 1 Foods consumed*, AGPS, Canberra.

Cypel, Y.S. & Tippett, K.S (eds) 1998, *Design and operation: The Continuing Survey of Food Intakes by Individuals and the Diet and Health Knowledge Survey 1994–96*, U.S. Department of Agriculture, Agricultural Research Service, The Continuing Survey of Food Intakes by Individuals 1994–96, Nationwide Food Surveys Report, 1998.

Department of Community Services and Health 1987, *National dietary survey of adults: 1983 no. 2 Nutrient intakes*, Commonwealth Government Printer, Canberra.

Department of Community Services and Health 1988a, *National dietary survey of schoolchildren (10–15 years): 1985 no. 1 — Foods consumed*, AGPS, Canberra.

Department of Community Services and Health 1989b, *National dietary survey of schoolchildren (aged 10–15 years): 1985 No 2 Nutrient intakes*, AGPS, Canberra.

Goldberg, G. R., Black, A. E., Jebb, S. A., Cole, T.J., Murgatroyd, P.R., Coward, W.A., and Prentice, A.M., 1991, 'Critical evaluation of energy intake data using fundamental principles of energy physiology; 1 derivation of cut-off limits to identify under recording', *European Journal of Clinical Nutrition*, vol. 45, no. 12, pp. 569–581.

Guenther, P.M., DeMaio, T.J., Ingwersen, L.A., 1995, *The multiple-pass approach for the 24-hour recall in The Continuing Survey of Food Intakes by Individuals (CSFII) 1994–96*, International Conference on Dietary Assessment Methods, Boston, January 23.

Harvey, W. J. & Althaus, M. M., 1993, 'The distribution of body mass index in Australian children aged 7–15 years', *American Journal of Nutrition and Dietetics*, vol. 50, no. 4, pp. 151–153.

Ireland, P., Jolley, D., O'Dea, K., Powles, J., Rutishauser, I., Wahlqvist, M. and Williams, J., 1994, 'Development of the Melbourne FFQ: A food frequency questionnaire for use in an Australian prospective study involving an ethnically-diverse cohort', *Asia Pacific Journal of Clinical Nutrition*, vol. 3, pp. 19–31.

Keil, U. & Kutilasmaa, K., 1989, 'WHO MONICA project: risk factors', *International Journal of epidemiology*, vol. 18, no. 3, Suppl. 1, pp. S46–S55.

Lewis, J. L., Sadler, M. F. & Buick, D. R., 1993, 'Estimation of the nutritional value of retail fat-trimmed beef cuts from new gross composition data', *Food Australia*, vol. 45, no. 11, pp. S13–S19.

Ministry of Agriculture, Fisheries and Food (MAFF)1992, McCance and Widdowson's *The composition of foods*, 5th revised edition and supplements, Royal Society of Chemistry/MAFF, Cambridge.

Must, A. & Dallal, G. E., 1991, 'Reference data for obesity: 85th and 95th percentiles of body mass index Z(wt/ht^2) and triceps skinfold thickness', *American Journal of Clinical Nutrition*, vol. 53, no. 4, pp. 839–46.

National Health and Medical Research Council 1991, *Recommended dietary intakes for use in Australia*, AGPS, Canberra.

National Health and Medical Research Council 1992, *Dietary guidelines for Australians*, AGPS, Canberra.

National Health and Medical Research Council 1995a, *Dietary guidelines for children and adolescents*, AGPS, Canberra.

National Health and Medical Research Council 1995b, *The core food groups: the scientific basis for developing nutrition education tools*, AGPS, Canberra.

New Zealand Institute for Crop and Food Research 1995a, *Composition of New Zealand Foods 4, Poultry*, New Zealand Institute for Crop and Food Research, Palmerston North.

New Zealand Institute for Crop and Food Research 1995b, *FOODfiles, 1995*, New Zealand Institute for Crop and Food Research, Palmerston North.

Nutbeam, D., Wise, M., Bauman, A., Harris, E., Leeder, S., 1993, *Goals and targets for Australia's health in the year 2000 and beyond*, AGPS, Canberra.

Powers, M. & Hoover, L., 1989. 'Calculating the nutrient composition of recipes with computers', *Journal of the American Dietitics Association*, vol. 89, no. 2, pp. 224–232.

Risk Factor Prevalence Study Management Committee 1990, *Risk factor prevalence study: Survey no. 3, 1989*, National Heart Foundation of Australia and Australian Institute of Health, Canberra.

Sadler, M. F., Lewis, J. L. & Buick, D. R., 1993, 'Composition of Trim Lamb', *Food Australia*, vol. 45, no. 11, pp. Sl–S12.

Schofield, W. N. 1985, 'Predicting basal metabolic rate, new standards and review of previous work', *Human Nutrition: Clinical Nutrition*, vol. 39C, no. Suppl. 1, pp. 5–41.

United States Department of Agriculture 1976, *Composition of food*, Agriculture Handbook no. 8 (8.1–8.21 plus supplements).

United States Department of Agriculture 1993, *Nutrient Data Base for Standard Reference*, release 10, NTIS, Springfield.

WHO 1983, *Measuring change in nutritional status: Guidelines for assessing the nutritional impact of supplementary feeding programs for vulnerable groups*, WHO, Geneva.

WHO Expert Committee on Physical Status: the Use and Interpretation of Anthropometry 1995, *Physical status: the use and interpretation of anthropometry: report of a WHO expert committee*, WHO technical report series 854, WHO, Geneva.

Willett, W. 1990, *Nutritional epidemiology (Monographs in epidemiology and biostatistics volume 15)*, Oxford University Press, New York.

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