User Guide

2007Australian National Children's Nutrition and Physical Activity Survey

Prepared for DEPARTMENT OF HEALTH AND AGEING

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1. List of Abbreviations

ABS	Australian Bureau of Statistics
ACHPER	Australian Council for Physical Education and Recreation
AFGC	Australian Food and Grocery Council
AI	Adequate Intake
AMDR	Acceptable Macronutrient Distribution Range
ARIA	Accessibility-Remoteness Index of Australia
CAPI	Computer Assisted Personal Interview
CATI	Computer Assisted Telephone Interview
CCD	Census Collector District
CSIRO	Commonwealth Scientific Industrial and Research Organisation
DAFF	Department of Agriculture, Fisheries and Forestry
DAA	Dietitians Association of Australia
DFE	Dietary Folate Equivalents
DTMS	Desktop Marketing System
DoHA	Department of Health and Ageing
ESOMAR	European Society for Opinion and Marketing Research
EAR	Estimated Average Requirements
FSANZ	Food Standards Australia New Zealand
ISAK	International Society for the Advancement of Kinanthropometry
ISO	International Standards Organisation
LINZ24©	Life In New Zealand
MARCA	Multimedia Activity Recall for Children and Adolescents
MET	Metabolic equivalent
MVPA	Moderate to Vigorous Physical Activity
NHMRC	National Health and Medical Research Council
nfs	not further specified
ns	not specified
NNS (1995)	1995 National Nutrition Survey
NRV	Nutrient Reference Values
RDD	Random Digit Dialing
RDI	Recommended Dietary Intakes
SDT	Suggested Dietary Targets
TEM	Technical Error of Measurement
TGA	Therapeutic Goods Association
UniSA	University of South Australia

2. Preface

The scope of the 2007 Australian National Children's Nutrition and Physical Activity Survey was to obtain food, nutrient, physical activity and anthropometric data on a national sample of children aged 2-16 years.

The survey was jointly funded by the Commonwealth Department of Health and Ageing, the Department of Agriculture, Fisheries and Forestry, and the Australian Food and Grocery Council. A representative from each of the three funding agencies made up a Steering Group, which was involved in the management of the survey. The implementation of the survey was a collaborative effort between the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Preventative Health Flagship and the University of South Australia, together with management of the fieldwork by I-view Pty Ltd. A Technical Reference Group was convened to provide expert advice. Food Standards Australia New Zealand (FSANZ), in collaboration with CSIRO, developed the survey specific nutrient database (AUSNUT 2007). The project team acknowledges the contribution of Flinders University in the analysis of the dietary data.

This guide describes the objective of the survey, the development and methodologies used in the survey and data processing techniques employed to assist with appropriate interpretation of the survey results.

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4. Background

Introduction

The most recent National Nutrition Survey (NNS) was conducted in 1995 and the last National Physical Activity Survey was in 1985. The intervening decades have seen substantial changes in the Australian food supply and eating habits, an increase in technologies that facilitate sedentary behaviour (e.g. video games and mobile phones) and changing family life and structure (e.g. increased participation of both primary and secondary care-givers in the workforce). All of these factors are likely to impact on what children eat and what they do. Indeed, the prevalence of overweight and obesity has rapidly increased since the mid-1980s. State-based surveys indicated that currently 5% of Australian children are obese and a further 20% are overweight using internationally agreed criteria. National-level data on children's intake and energy expenditure are needed for monitoring and understanding weight status and to assess the adequacy of children's diets and activity patterns.

The *Dietary Guidelines for Children and Adolescents in Australia* was published by the National Health and Medical Research Council (NHMRC) in 2003. In 2004, the Department of Health and Ageing issued the *National Physical Activity Guidelines for Australians* with recommendations aimed at children aged 5-18 years and included recommendations for limiting screen time (television, computers, and video games). National-level dietary intake and physical activity data are needed to assess progress against these guidelines, for the development of future guidelines and to inform interventions designed to improve nutrition and increase physical activity levels.

The Australian National Children's Nutrition and Physical Activity Survey was conducted between February and August 2007 by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the University of South Australia (UniSA), on behalf of the Commonwealth Department of Health and Ageing (DoHA), the Department of Agriculture, Fisheries and Forestry (DAFF) and the Australian Food and Grocery Council (AFCG). Food, beverage, dietary supplement, nutrient intake, food habits, demography, anthropometry, and objectively and self-reported physical activity were measured in 4,487 children aged 2-16 years.

The information from the survey will enable:

- food, beverage, supplement and nutrient intakes among children to be assessed against the Dietary Guidelines for Children and Adolescents in Australia, the Australian Guide to Healthy Eating and the revised Nutrient Reference Values for Australia and New Zealand; and
- physical activity levels among children to be assessed against the National Physical Activity Guidelines for Children and Young People.

Existing information

National Surveys

This is the first survey to combine nutrition and physical activity in the one survey. The last national survey which collected anthropometric data and quantitative information on children's food and beverage intake was the National Nutrition Survey conducted in 1995, while the last survey to collect data on physical activity was the Australian Health and Fitness Survey in 1985. Since then, many state and regional surveys have collected data on various aspects of children's food intake, dietary habits and/or physical activity patterns. However, these earlier surveys have not

always collected quantitative data, or used comparable data collection or sampling methodologies to the present survey, preventing direct comparisons.

1985 Australian Health and Fitness Survey

The 1985 Australian Health and Fitness Survey surveyed 5,224 children aged 10-15 years in urban and rural schools in all Australian states and territories (Department of Community Services and Health 1988, 1989). Children completed a 24-hour dietary record, assisted by trained physical education staff. The 24-hour recording period commenced immediately after the children had received instructions at school. The survey selected from a two-stage list sample of firstly schools (both primary and secondary) and then classes within schools, achieving a reported 75.3% response rate (excluding initial non-contacts and includes partial participants). This was conducted in conjunction with the Australian Health and Fitness Survey of the Australian Council for Physical Education and Recreation (ACHPER). Data were collected between May and October 1985 across all weekdays (Monday to Friday). The survey estimates were adjusted by post-stratification population weights split by state of residence, age and sex.

The 1985 survey nutrient composition database was used to estimate nutrient intakes, and the matching of foods consumed to appropriate nutrient data was manually performed. A significant proportion of the foods consumed in 1985 did not have Australian nutrient composition data.

1995 National Nutrition Survey

The 1995 NNS was designed and undertaken by the Australian Bureau of Statistics (ABS) in collaboration with the (then) Commonwealth Department of Health and Family Services, as a sub-sample of the 1995 National Health Survey. Data were collected from February 1995 to March 1996 across all Australian states and territories on all days of the week. There were 13,858 participants, of which 2,574 were children aged 2-15 years and another 433 were aged 16-18 years, making a total of 3,007 children aged 2-18 years. Participants completed a '3 phase multiple pass' 24-hour dietary recall. The survey data were collected via a multi-stage area sample of private dwellings (houses, flats etc) for persons aged two years and over, achieving an overall response rate of 65.5% of those invited to participate. Both children and adults undertook a 24-hour recall interview at home, assisted by trained nutritionists and proxy interviews with parents were conducted for children aged two to four years. Children aged 5-11 years were asked to participate in the 24-hour recall interview with the assistance of an adult household member. The 24-hour period was from midnight to midnight. The information was collected using a standard interview approach and a pre-determined set of probing questions (ABS 1998a).

Approximately 10% of the survey participants provided a second 24-hour recall on a different day of the week, generally within ten days of the first recall. This additional data enabled an estimate of the within-person variation in nutrient intake to be obtained. This within-person variation data was used to adjust the one-day intakes from the survey to provide a more accurate approximation of the 'usual' intake for the group (ABS 1998b). The 1995 NNS nutrient composition data-base called AUSNUT 1997 was used. The person-specific weights were adjusted for regional probability of selection and non-response (based on a number of geo-demographic characteristics).

2004-05 National Health Survey

This survey, conducted by the ABS, was designed to obtain national information on the health status of Australians, their use of health services and facilities and health-related aspects of their lifestyle (ABS 2006).
The survey included some short dietary habits questions asking about the usual fruit and vegetable consumption (number of serves) for participants aged 12 years and over and current breastfeeding practices for infants and children ages three and under. Activity was assessed in those aged 15 years and above.

2005 Australian Secondary Students Alcohol and Drug Survey

Secondary students (n = 18,486) aged between 12 and 17 years from all states except Western Australia were asked short dietary questions to measure usual fruit and vegetable intake (number of serves) and frequency of consumption of unhealthy/non-core foods per week (defined as fast food meals, snack foods and high-energy drinks) (Cancer Council of Victoria 2006).

State Surveys

2007 Healthy Kids Queensland

Data were collected in urban and rural and remote Queensland from April to September 2006 (Abbott et al 2007). A total of 3,691 school children aged 5-17 years who were undertaking the grades 1, 5 or 10 at schoolcompleted a 24-hour dietary record and a food-frequency questionnaire (FFQ). Schools (n = 112) were chosen using a random cluster design from all government and non-government primary and secondary schools. Data were weighted to take into account the sampling framework and correct for unequal probability of inclusion.

2004 Schools Physical Activity and Nutrition (SPANS) New South Wales

Overall almost 5,500 school children from 93 urban and rural, primary and secondary, government and non-government schools ranging from kindergarten, Years 2, 4, 6, 8 and 10 (i.e. students aged 5 to 16 years) were surveyed in 2004 (Booth et al 2006). A food habits and eating habits questionnaire was used on children aged 11-16 years regarding consumption of fruits, vegetables, bread, rice and pasta, meat, chicken and fish, milk, fruit juice, soft drinks and confectionery. Nutrient intakes were not estimated. Information on how often students consumed breakfast, lunch, dinner, ate fast food, ate at a fast food outlet, ate dinner in front of the television and what influenced their food choices was collected. Weight status was recorded.

2003 Physical Activity and Nutrition Levels in Western Australian Children and Adolescents Report

A total of 2,274 children from Years 3, 5, 7, 8, 10 and 11 from 17 secondary and 19 primary schools were surveyed from a stratified sample representative of the WA population. Children were asked to complete a 24-hour food record, a FFQ, a physical activity questionnaire and 7 day pedometer diary (Hands et al 2004). Anthropometric data for weight status and waist girth were collected.

Additional physical activity information

In addition to those surveys listed above, some of the more recent major surveys are:

- 2004 Children and Sport (Australian Sports Commission/UniSA)
- 2006 Children's Participation in Cultural and Leisure Activities (ABS)

A number of cohort studies have surveyed children's activity patterns:

- 1973-77 Busselton, WA surveys
- late1980s Raine Study, Telethon Institute for Child Health Research
- 1995- Health of Young Victorians Study
- 2003- Growing Up in Australia: Longitudinal Study of Australian
- Children
- 2005- LOOK: Lifestyle Of Our Kids

Survey development

In September 2005, DoHA announced its intention to establish a National Children's Nutrition and Physical Activity Survey. Prior to the development of the survey, a series of workshops were conducted for the purpose of achieving consensus on the best practice approach and tools for measuring and monitoring physical activity in children and young people in Australia. Workshop participants included invited experts from the academic and non-government sectors, as well as representatives of Health Departments from most of the state and territory governments and from the Australian Government.

The workshops produced a series of recommendations which influenced the development and implementation of the Australian National Children's Nutrition and Physical Activity survey. These recommendations included:

- Age range - Surveillance of physical activity and sedentary behaviours should be undertaken amongst 5-18 year olds, with self-reporting measures alone not recommended for use with children under 10 years of age.
- Concurrent items for the same individuals - Data collection on physical activity behaviours, sedentary behaviours, food and nutrient intakes and anthropometric measures should be collected simultaneously from respondents.
- Objective measurement:
  - When measuring the activity levels of children younger than 10 years of age, objective measures such as pedometry and accelerometry can be useful;
  - the choice of objective measures should be developmentally appropriate for the children participating in surveys;
- Surveillance items for physical activity - It was recommended that the survey measure the minutes of participation in organised and non-organised forms of moderate and vigorous intensity physical activity and the days of the week when that participation occurred, where participation occurred and the key motivators and barriers to participation.
- Surveillance items for sedentary behaviours - The best practice approach involves measuring the minutes spent each day on small screen recreation (TV, DVD, Computer and Internet), distinguishing between these activities and when each activity took place (includes day time activities, week days and weekends). Further, the survey should also assess the number of minutes spent daily on other non-screen based sedentary activities (e.g. reading, listening to music etc).
- Sample size – The following socio-demographic data always be collected: age, date of birth, language spoken at home, parental education level, rurality and Indigenous status.
- Selection criteria – The essential criteria for the selection of the physical activity and sedentary behaviour measurement and monitoring tools were stated to be validity, reliability, sensitivity, comparability with existing state-based data, cost-efficiency, burden of response, flexibility and the sustainability of data.

- Piloting - It was recommended that the instrument as a whole be piloted in the context for which it is to be used.
- Seasonality – Surveillance should take into account the seasonal nature of physical activity behaviours.
- Consultation – Key stakeholders should be consulted from the earliest stages of survey development.

Details of the Physical Activity workshop have been published (National Public Health Partnership, 2006).

Survey objectives and overview

The objective of this survey was to assess food and nutrient intake, physical activity and measure weight, height and waist circumference in a sample of children aged 2-16 years randomly selected from across Australia.

An initial target quota of 1,000 children (50% boys and 50% girls) for each age group (2-3 years, 4-8 years, 9-13 years and 14-16 years) was set. This was supplemented in South Australia to allow more detailed estimates for that state, increasing the final survey sample by 400 equally across the age groups. A total of 4,487 children completed all components of the survey.

The sample was designed to provide:

- national level estimates by gender and four age-groups
- state and territory estimates by broad age-groups

It was not designed to provide a representative sample of smaller sub-populations of children such as Indigenous groups, children from a range of culturally and linguistically diverse backgrounds or children with special disabilities.

Households with children aged 2-16 years were randomly selected using random digit dialing (RDD) from all Australian states and territories in metropolitan, rural and remote areas. The number of children included from each state was proportional to the population of children in that state. A response rate of 40% of eligible households was achieved.

The data were collected at a face-to-face home visit (computer assisted personal interview, CAPI) and a subsequent telephone interview (computer assisted telephone interview, CATI) conducted 7-21 days after the CAPI.

Food, beverage and dietary supplement intakes were collected from all participants using a standardised, computer-based, three-pass 24-hour recall methodology during the CAPI and the CATI (a total of two days dietary recall per child). The food and beverage intake data were translated to daily nutrient intake data using a specifically designed Australian nutrient composition database (AUSNUT 2007).

Each child and/or parent was asked questions relating to food habits during the CAPI, such as usual consumption of fruits, vegetables, type of milk, use of salt and earlier infant feeding practices.

Two consecutive days of physical activity and 'use of time' recall data were collected for children aged 9-16 years using validated 'use-of-time' software during the CAPI and the CATI (a total of four days activity recall per child). Minutes spent in various activities and energy expenditure over 4 days was estimated from these data.

Pedometers were worn over 6 days in 5-16 year old participants to collect objective information on the number of steps each child took and minutes of moderate to vigorous physical activity each day. The stride length of each child was measured

and the pedometers were fitted during the CAPI. This provided an objective estimate of overall activity levels.

Weight, height, waist circumference and recalled birth weight were collected for all participants during the CAPI.

Demographic and socioeconomic data were collected from the primary caregiver during the CAPI, including state/territory of residence, child's country of birth, primary care-giver's education level, household income and Indigenous status.
The data were checked, cleaned and collated into an electronic database. The Department of Health and Ageing will manage and administer these data at the completion of the survey. A summary of the data collected is provided in Table 1.

Table 1: Summary of data collected and target number

Data	Age group (years)	Data collected*	Target	Achieved
Demographic and socioeconomic information	2-16	CAPI	4,400	4,837
Physical measurements	2-16	CAPI	4,400	4,745
Foods habits questionnaire	2-16	CAPI	4,400	4,837
2 x 24 hour dietary recall of foods, beverages and dietary supplements	2-16	CAPI & CATI	4,400	4,437
4 x 24 hour 'use of time' recalls	9-16	CAPI & CATI	2,200	2,246
Objective physical activity measurements (at least 6 days pedometer data).	5-16	Between CAPI & CATI	2,750	2,829

* CAPI = computer assisted personal interview
CATI = computer assisted telephone interview

Survey arrangements

This survey was jointly funded by the Commonwealth Department of Health and Ageing, the Department of Agriculture, Fisheries and Forestry and the Australian Food and Grocery Council. A representative from each of the three funding agencies formed a Steering Group, which was involved in managing the development and implementation of the survey (Section 0).

The Steering Group selected The University of South Australia (UniSA) and the Commonwealth Scientific Industrial and Research Organisation (CSIRO) to undertake the survey by a tender process and together they sub-contracted I-view Pty Ltd to manage the fieldwork. This project team (UniSA, CSIRO and I-view, Section 0) further defined the content and methodology, and implemented the survey. UniSA provided anthropometric measurement and physical activity assessment expertise. CSIRO provided dietary assessment expertise, data management, population weighting factors and overall project management. I-View managed the recruitment, fieldwork and supervised the interviewers. All project team members contributed to survey development and interviewer training. The project team acknowledges Flinders University for contribution towards analysis of the dietary data.

The Technical Reference Group, appointed by the Steering Group, provided advice on a variety of issues relating to conducting and interpreting nutrient intake and physical activity surveys. The Technical Reference Group was comprised of experts in the fields of nutrition, physical activity and survey development.

FSANZ collaborated with CSIRO to develop the nutrient composition database (AUSNUT 2007). Funding for FSANZ was provided by the Department of Health and Ageing. FSANZ also liaised with the Therapeutic Goods Association (TGA) in relation to the nutrient composition of supplements.

Ethics and confidentiality

Ethics approval covering ethical, privacy and confidentiality was obtained from the NHMRC registered Ethics Committees of CSIRO and UniSA for all of the components of the survey, including the pilot study and any subsequent changes to the original protocol. Relevant NHMRC guidelines for research involving children were also adhered to.

The sub-contractor (I-View) complied with the Australian Market and Social Research Organisations Market and Social Research Privacy Principles, the European Society for Opinion and Marketing Research (ESOMAR) World Research Codes, guidelines for interviewing children and young people and the International Chamber of Commerce (ICC)/ESOMAR International Code of Marketing and Social Research Practice.

The project team, I-view supervisors and interviewer team signed a deed of confidentiality with the Commonwealth Department of Health and Ageing.

5. Pilot

A pilot took place in Whyalla, South Australia and in two cluster areas of Brisbane (North and South), Queensland in October 2006. The objectives of the pilot were to:

- test the effectiveness of proposed survey methodology (excluding recruitment)
- refine the interviewer selection and training program
- test the response rate between the CAPI and CATI
- test the survey instruments
- trial data collection, data transfer processes and analysis procedures
- verify the appropriateness of equipment

The interviewer training was conducted in Adelaide and recruitment of participants commenced the following week. Subjects were recruited from the White pages in Whyalla and a client list in Brisbane (i.e. the survey recruitment strategy not piloted). Complete interview data (i.e. all CAPI and CATI data) were obtained for 100 children with an equal number of children from each location. CAPI data collection occurred over the period of one fortnight. CATI was conducted 7-21 days after CAPI. The average lengths of the interviews were within the expected range.

The main outcomes of the pilot survey were:

- The need to refine the selection criteria for interviewers to include tertiary education and a intermediate (or higher) PC and Windows software skills
- To extend the interviewer training program from 4 days to 4.5 days
- To reduce the estimated number of CAPI interviews to achieve the required number of completed CATI (i.e. fewer households needed to be recruited) due to a higher than expected response rate between CAPI and CATI,
- To make minor modifications to the interviewer manuals
- To increase the number of pedometers in circulation to allow for slower than anticipated return by participants
- To include a self-completed daily log sheet for pedometer step counts
- To improve data edit checking, audit and reconciliation of data files procedures.

No major equipment problems were encountered. However, it was originally proposed that 7 days of data stored in the pedometer would be used to determine the average number of steps taken per day by each participant. During the pilot it became apparent that data stored in the pedometers was lost during transit from the participant to the survey team. For the main survey a daily step count diary (log) was added to the survey methodology.

6. Survey design

At the time of the survey, children aged 2-16 years made up just over 21% of the total Australian population and at any given time, approximately one in three Australian households (occupied dwellings) had a child aged 2-16 years (based on ABS 2001 Census data).

The survey was conducted using a quota sampling scheme stratified by state/territory and by capital city statistical division/rest of state. The primary sampling units in each state were postcodes. Postcodes were allocated to a stratum using the ABS postal area to statistical local area concordance.

Households (private dwellings) from selected postcodes were then recruited to the survey using RDD. The telephone number prefix acted as a 'geographic indicator' that corresponded to postcode. Households with children aged 2-16 years (eligible/in-scope) were identified and asked if they would participate. One child within the household was selected as the 'study child' for the purposes of the survey. In some cases recruitment of the study child did not proceed because the age and gender quota for that location was filled.

Sample Design

Postcode exclusion

There were 576 postcodes excluded from selection (Table 2). Areas identified in the 2001 ABS Census as having very few in-scope children and very remote areas were excluded from the survey sampling frame due to budgetary and time restrictions. Additionally this survey was not designed to obtain information from a representative number of Indigenous groups to accurately record their intake and activity patterns. Using the 2001 ABS population data, postcodes covering areas where there were more than 50% of the population identified as Indigenous were excluded.

Table 2 Postcodes excluded from selection

State	Total
ACT	2
NSW	68
NT	11
QLD	94
SA	95
TAS	26
VIC	159
WA	121
Total	**576**

Postcode selection

The number of postcodes selected in each state was proportional to the population by state and metropolitan/non-metropolitan areas. Postcodes had an equal chance of initial selection within strata. An initial selection of 50 postcodes ("locations") was undertaken. Postcodes in close geographical proximity to these locations were then added to expand the cluster sizes to obtain a total of 230 postcodes. This minimised travel time and costs for interviewers undertaking the CAPI.

The steps for postcode selection are summarised below:

1 Exclusion of postcodes with a Very Remote index using Accessibility-Remoteness Index of Australia (ARIA) 2001
2 Exclusion of postcodes with less than 80 households with at least one child aged 2-16 years using 2001 ABS population data
3 Exclusion of postcodes with more than 50% of the children aged 2-16 years in the population identified as Indigenous (2001 ABS data)
4 Postcodes sorted into strata's of state/territory and capital city/rest of state
5 Assign a random number to each postcode (Excel RAND function)
6 Within each stratum the postcodes were sorted into ascending order by their random number
7 The required number of locations (50) was selected to cover each strata from the top of each strata list compiled in step 6
8 4-5 postcodes of geographical proximity to the 50 locations, identified in step 7, were added to meet the required number of postcodes (230)
9 The postcodes identified in step 8 were allocated a code (1-50) to identify each interview location

Table 3 shows the number of postcodes selected and the number of interviewing locations. Note that additional postcodes were added to the numbers described above, for the SA booster sample.

Table 3 Interview postcode and locations selections

	Postcodes			**Locations**		
State/region	**Capital city**	**Rest of state**	**Total**	**Capital city**	**Rest of state**	**Total**
New South Wales	42	28	70	9	6	15
Victoria	35	17	52	7	3	10
Queensland	17	23	40	4	5	9
South Australia	17	9	26	3	2	5
SA Booster	*12*	*4*	*16*	*3*	*1*	*4*
Western Australia	14	9	23	3	2	5
Tasmania	4	5	9	1	1	2
Northern Territory	2	2	4	1	1	2
Australian Capital Territory	6	0	6	2	0	2
Australia	**149**	**97**	**246**	**33**	**21**	**54**

Sample selection

The central issue that faces any sampling selection is the sampling frame. Conceptually, this frame is a listing of all the members of the population to be sampled, but no such complete list exists.

A number of possibilities for the sampling frame were considered in the planning stages. These included using administrative databases such as Medicare Australia, reverse telephone directory CD-ROM, RDD or random door to door interviewing in Census District Areas. After investigation of all options RDD was considered to be within the budget and timeframe parameters, and provided a representative sample of Australian children. RDD has been a commonly used method of sampling for population health studies.

Creation of the sample frame

The following steps were taken to create the sample frame:

- Identify all possible phone number 'prefixes' from charging zones and exchange groupings of prefixes contained in the Telstra Charging Zones classifications. The version of the listing used was the latest available dated 26 May 2006. http://www.telstra.com.au/customerterms/bus_charging.htm
- Based on charging zones or exchange locations, prefixes were allocated to the region which includes all, or the greater part of the exchange. In this way, the RDD generated sample is pre-allocated to a postcode.

Generation of sample items

The sample was generated for each location using prefixes flagged as belonging to the postcodes for that location. For each location, prefixes were randomly selected with equal probability of selection. A randomly generated 2-digit suffix (00-99) was then appended to the prefix to create a complete phone number. The resultant number was checked to ensure it had not been generated in the previous sample. The number was then appended to the bottom of the sample list which remained in order of item generation. The RDD sample generation process is summarised in Figure 1.

The postcodes were grouped as a cluster location for sample selection. The probability of a sample being selected within each postcode was proportional to the list of phone number prefixes for that postcode within the cluster location.

Selection of participants

The sample unit is the 'study child'. Only one child per household was invited to participate.

For younger children (<9 years), the primary care giver (defined as the person who knows the most about the study child's diet and activity patterns) provided demographic information and acted as a proxy for the study child. Where there was more than one child aged 2-16 years in a household, a Kish method of child selection was used to ensure adequate representation of age and gender of children within the sample.

The method for child selection involved:

- Pre-allocating a Kish Table to be used for the household by rotation. That is, the first household uses Table A, the second Table B1, etc
- Asking the parent/care giver for the name, gender and age in years of each child in the household aged 2-16 years
- Ordering the children by age (oldest to youngest)
- Numbering the children in the sorted listing sequentially from one
- Assigning priority for age group, if applicable (highest priority assigned to children aged 14-16 years then children aged 2-3 years if present in household)
- Looking up the person number corresponding to the total number of children aged 2-16 years in the allocated Kish table (Table 4) and nominate that person as the 'study child'

Figure 1 Sample Generation Flow Chart

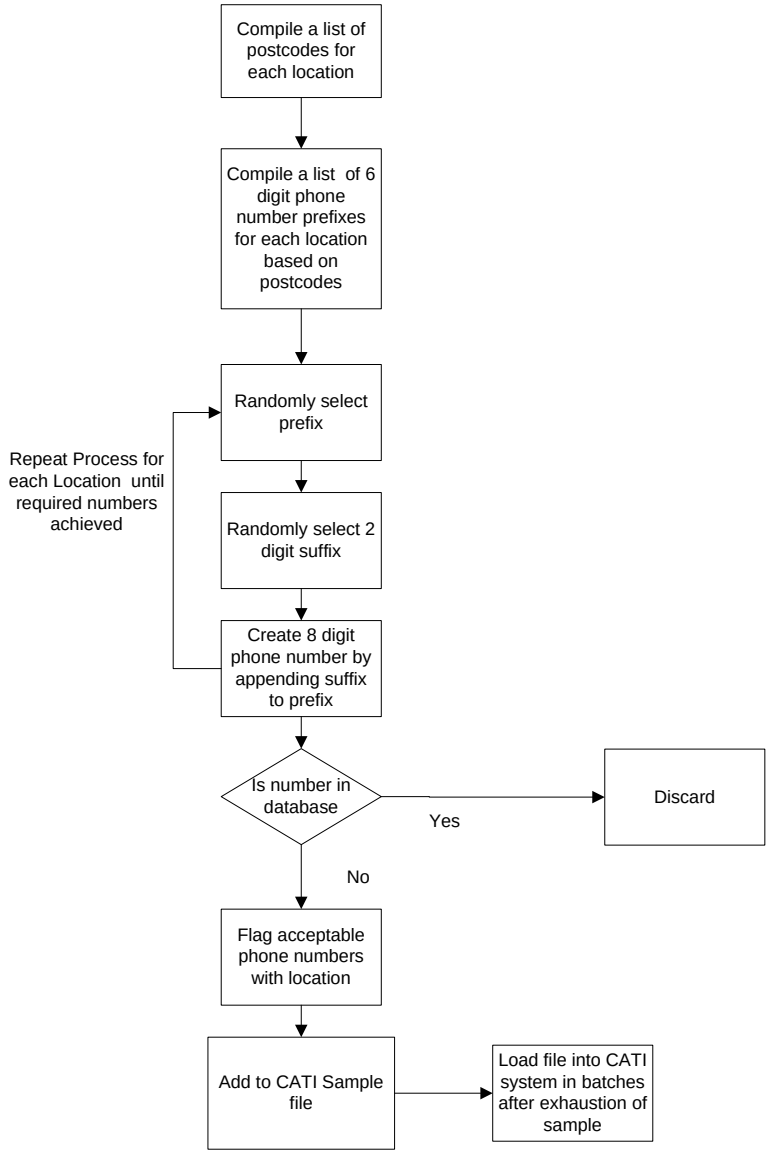


Table 4 Kish Table

Summary of Kish Tables						
	Number of children aged 2-16					
	1	2	3	4	5	6+
Kish Table	Select child numbered					
A	1	1	1	1	1	1
B1	1	1	1	1	2	2
B2	1	1	1	2	2	2
C	1	1	2	2	3	3
D	1	2	2	3	4	4
E1	1	2	3	3	3	5
E2	1	2	3	4	5	5
F	1	2	3	4	5	6

The number of children required in the sample for each of the age cohorts was not proportional to the number of children in each of the age cohorts in the population. Therefore, children aged 2-3 years or 14-16 years had a higher probability of selection than children aged 4 to 13 years in any one household. However, across the whole population, a purely random selection using Kish would produce too many children aged 4 to 13 years than needed for the survey's quota. As such the Kish table was biased to select a child in the following order:

- Child aged 14-16 years, then
- Child aged 2-3 years, and then
- Child 4-13 years.

However, this did not rectify the observed skew towards children aged 4-13 years when recruiting participants. The result was that a number of in-scope households who agreed to participate were not interviewed as the quota of children in their location had been completed (Table 5)

Table 5: Selected child by the number of children in the household

	Age group of the child selected			
Composition of children in the household	**2-3 years**	**4-8 years**	**9-13 years**	**14-16 years**
2-3 years	935	0	0	0
2-8 years	550	84	0	0
2-13 years	101	10	14	0
2-3 and 9-13 years	51	0	30	0
2-3 and 9-16 years	2	0	0	19
2-16 years	17	3	1	10
2-3 and 14-16 years	4	0	0	6
2-8 and 14-16 years	11	1	0	1
4-8 years	0	1133	0	0
4-13 years	0	427	475	0
4-16 years	0	0	0	756
4-8 and 14-16 years	0	46	0	59
9-13 years	0	0	1130	0
9-16 years	0	0	85	586
14-16 years	0	24	18	200
Total	**1671**	**1728**	**1753**	**1637**

In 23 cases, the parent/care giver requested another child participate other than the child initially selected by the KISH table. These requests were respected and details of the substitution have been retained in the data set.

Scope and coverage

Scope

Urban, rural and remote areas across all states and territories of Australia were included. Some postcodes were excluded for a number of reasons mentioned in Section 6 Survey Design. The scope included children aged 2-16 years who were residents of private dwellings. A private dwelling was defined as any household with a fixed land line telephone.

Interviewing was conducted across school and non-school days. The proportion of interviews conducted on weekdays, weekends, public holidays and school holidays was selected to reflect the proportions of these days across the fieldwork period (Table , Table 1, Table).

Coverage

Coverage rules were designed to ensure that, as far as possible, eligible persons had only one chance of being selected for interview. The child was deemed to be a resident of the household if they usually stayed at the selected household on average for 4 or more days per week in the case of shared care. Households with more than one fixed line telephone may have had a greater chance of selection; however, this was identified at the screening interview.

It is difficult to rely fully on telephone prefixes to indicate geographic location, as an increasing number of people elect to take advantage of phone number portability (where they take an existing phone number with them when they move). For this reason, access to a full listing of numbers with an effective geographic tag, such as an address, postcode or Census Collector District (CCD), was limited.

RDD allows for the inclusion of silent, unlisted and recently listed numbers in the sample which would not occur with a sample drawn from listed numbers (i.e. White pages). Further, with the end of Desktop Marketing System's Marketing (DTMS) product, the most recent electronic listing of residential numbers is out-of-date.

There are two situations where RDD does not provide a listing of all the eligible households in a postcode:

- Households where there is no fixed phone line
- Households where the telephone prefix has been ported in from another area and is not a prefix allocated to the postcode they now reside in, or the survey sampling database.

Table 6 ABS reference population estimates, June 2001 and corresponding regional distribution for children aged 2-16 years (SD = statistical division concordance to postal areas)

	Population		Sample Required		Sample Achieved	
	number	%	number	%	number	%
Sydney (SD)	768367	20	700	16	697	16
Rest of NSW	527228	14	400	9	395	9
Melbourne (SD)	638887	16	600	14	593	13
Rest of VIC	294309	8	280	6	292	7
Brisbane (SD)	321616	8	320	7	338	8
Rest of QLD	416547	11	420	10	424	10
Adelaide (SD)*	207792	5	620	14	614	14
Rest of SA*	88961	2	260	6	263	6
Perth (SD)	273450	7	240	5	260	6
Rest of WA	116547	3	160	4	152	3
Greater Hobart (SD)	42685	1	80	2	106	2
Rest of TAS	62772	2	80	2	78	2
Darwin (SD)	19070	0	40	1	55	1
Rest of NT	28725	1	40	1	41	1
Canberra (SD)	68691	2	160	4	179	4
Rest of ACT	160	0	0	0	0	0
Other territories**	914	0	0	0		
Total	3876721		4400		4487	

*Note: Booster sample increases the proportion of South Australia sample in the study.
**e.g. other Australian Islands

7. Interviewer training and supervision

Thirty seven telephone interviewers were trained for recruitment. Training for the telephone recruitment staff took place in Melbourne in February, 2007.

There were 58 CAPI interviewers and 32 CATI interviewers. 36% percent of the CAPI interviewers had a tertiary degree or higher in dietetics or nutrition. The remaining interviewers had a tertiary degree in health science or other relevant disciplines. All of the CATI interviewers had a health science or other relevant tertiary background.

Training for the CAPI and CATI interviewers was separate due to the difference in requirements for the two interview methods. CAPI training took place over four and a half days in Sydney (February, 2007). A modified three-day training program was provided for CATI interviewers, which replicated the CAPI training but excluded anthropometric measurement, pedometer placement and demographic questionnaire instructions. CATI training was conducted in Brisbane (February, 2007).

Training was facilitated by staff from I-view, research dietitians from CSIRO and exercise physiologists from UniSA. Training for Multimedia Activity Recall for Children and Adolescents (MARCA) and anthropometry was conducted by exercise physiologists. Training for LINZ2424® was conducted by research dietitians.

The training involved:

- formal lectures
- familiarisation with the software package
- guided exercises
- interview techniques (identifying gaps in responses, probing, open questions)
- experiential learning

All CAPI interviewers were trained in anthropometric techniques and technical errors of measurement (TEM) were established. Intra-tester TEMs represent precision of measurement, while inter-tester TEMs represent accuracy by comparing measures taken by interviewers with those of an International Society for the Advancement of Kinanthropometry (ISAK) Level 4 (criterion) anthropometrist. For this survey, all interviewers demonstrated inter-tester TEMs of ≤ 2% and intra-tester TEMs of ≤1.5%.

All interviewers practiced interviews with children from all age groups to ensure they were competent in all aspects of the survey. Volunteers were recruited for the practice and were involved in the CAPI and CATI training.

Interviewers were provided with a comprehensive set of manuals covering:

- Interviewer instruction
- Dietary assessment
- Physical activity
- Anthropometry.

Reference summary sheets were provided for use during interviews.

During the data collection phase, five CAPI and CATI interviews for every interviewer were audio recorded for assessment and feedback. Interviews were reviewed by a dietitian for the dietary recall component, exercise physiologist for the physical activity component and a field supervisor for interview administration.

Throughout the data collection phase, interviewers were assisted by dedicated supervisors who were health professionals with survey experience. Supervisors answered queries, provided on-going training, reviewed interview recordings and undertook systematic field checks, validations and observations of the interviewers. Interviewers also had email and telephone access to the MARCA and LINZ24® trainers.

Dietitians from CSIRO checked every interview within a day of being lodged, except interviews on Fridays/Saturdays which were checked on Mondays (Section 14).

8. Data collection

The households that agreed to participate in the survey were posted information, including background information, details of data collection, the address for the survey website and the details of a '1800 hotline'. Interviewers then contacted recruited families to arrange a time for the CAPI. Following completion of the CAPI, participants were provided a randomly generated date for the CATI which was 7-21 days after the CAPI. The date was rescheduled if participants could not undertake the CATI on that date.

The CAPI was conducted in the home of the study child. The primary caregiver or a responsible adult provided consent for children aged less than 14 years. Children aged 14 -16 years provided their own consent along with that of a parent or responsible adult. The CAPI gathered household demographic data, 24-hour dietary recall, food habits, weight, height and waist circumference measurements and physical activity over 48-hours (depending on the age of the child). Pedometers were fitted to children aged 5 years and over.

CATI were conducted to gather a second 24-hour food recall and a second 48-hour physical activity recall. Separate telephone calls were made for the CATI food and activity recalls, minimising respondent fatigue. The measures and details of who provided the information are summarised in Table 7. Equipment is described in Table 8.

Interview length

The average CAPI interview length varied according to the age of the child being interviewed and the number of tasks that needed to be completed. The average CAPI interview length for children aged 2-4 years was 71 minutes, 85 minutes for children aged 5-8 years and 118 minutes for children aged 9 -16 years.

The overall average telephone interview length was 37 minutes for CATI 24-hour dietary recall and 33 minutes for the CATI 48-hour use of time recall.

Table 7 Overview of survey participation

Stage	Task	Whom
1. Participant recruitment	RDD recruitment	Primary care-giver
	Receive "letter about fieldwork"	Primary care-giver
2. CAPI	Consent	Primary care-giver 2-13 years Primary care-giver and child 14-16 years
	Demographics	Primary care-giver
	Dietary recall	Primary care-giver for child aged 2 - 8 years; child 9 years+
	Food habits question	Primary care-giver for child aged 2 - 8 years; child 9 years+
	Use of time	Child 9 years+
	Anthropometric measures	Child
3. Pedometer (6 days)		Child 5 years +
4. CATI	Dietary recall	Primary care-giver for child aged 2 - 8 years, child 9 years+
	Use of time	Child 9 years+

Table 8 Overview of instrumentation

Data collected	Instrument
24hour dietary recall	'Life in New Zealand' LINZ24©, Otago University, with modifications
24hour 'use of time' recall	Multimedia Activity Recall for Children and Adolescents (MARCA) UniSA
Step count	Pedometer: New Lifestyles (NL) 1000
Height	Stadiometer: Invicta Height Measure
Waist circumference	Girth: Lufkin W606PM metal tape
Body weight	Tanita HD332 scales

Table 9: Weekday distribution of CATI and CAPI interview

Day of the Week of CAPI Interview	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	CATI Not Complete	Total
Mon	116	126	93	106	78	102	69	21	**711**
Tues	104	96	106	99	88	95	74	19	**681**
Wed	119	116	134	125	103	106	86	33	**822**
Thurs	98	104	95	127	107	101	77	18	**727**
Fri	103	106	91	112	90	101	72	25	**700**
Sat	98	90	80	128	116	132	94	19	**757**
Sun	57	49	58	63	80	59	66	7	**439**
Total	**695**	**687**	**657**	**760**	**662**	**696**	**538**	**142**	**4837**[1]

[1] From this total of 4837, 4,487 provided complete data sets from both the CAPI and CATI interviews

9. Demographic Questionnaire

The demographic data items relating to each participant and their household was collected at the CAPI. Responses were provided by the parent or care giver of the participant (Section19, Section 20).

Household composition:

- Postcode of residence
- State of residence
- Number of adults in household aged >16 years
- Number of children in household aged <16 years
- Household type

Family Type and Household members
Parent 1 was the primary care giver who knew most about the child's food intake or activity, and Parent 2 was their spouse or significant other care giver in the household.

Parent 1

- Gender
- Age
- Aboriginal and Torres Strait Islander (ATSI)
- Country of Birth
- Language spoken
- School Education
- Higher Education

Parent 2

- Gender
- Relationship to Parent 1
- ATSI
- Country of Birth
- Language spoken
- School Education
- Higher Education

Study Child

- Gender
- Child Age
- Date of Birth
- Relationship to Parent 1
- Relationship to Parent 2
- ATSI
- Country of Birth
- Language Spoken
- Medical Condition

Other Person

- Gender
- Age
- Relationship to Parent 1
- Relationship to Parent 2

Income and Occupation

- Parent 1
- Worked last week
- Unpaid work last week
- Away from work last week
- Number of hours worked on average
- Looking for work
- Start work if found a job
- Last worked if not currently working
- Job description
- Job tasks
- Australian Standard Classification of Occupations (ASCO) Code
- Household annual income

10. Food and Nutrient Intake

This section describes the food and nutrient intake information collected during two 24-hour recalls conducted with each participant on non-consecutive days.

Food Intake

A license was obtained from the University of Otago to use the 24-hour dietary recall software from the Life in New Zealand (LINZ24®) survey (Parnell et al 2003). LINZ24® allowed direct computer-assisted data entry.

LINZ24® employs a three-pass 24-hour dietary recall method to record all foods, beverages and supplements consumed on the day prior to each interview from midnight to midnight. The three-pass methodology included the following stages:

- 1st pass: A 'quick list' of all foods, beverages and dietary supplements consumed from midnight to midnight the day before the interview. Each 'quick list' item has a unique sequence of 'probe questions' which follow in the 2nd pass.
- 2nd pass: The time and place of consumption for each quick list item was entered. Any 'additions' (e.g. the spread on toast) are added to the list. The sequence of 'probe questions' then allowed a detailed description of each quick list item and all additions to be entered, including 'recipes' (and the ingredients), portion size and brand and product name (if applicable).
- 3rd pass: A 'recall review' was used to make corrections or additions. The interviewer read aloud all items, time and place of consumption, brand and product name, recipe details and portion size. All elements of the recall could be edited. Items could be deleted and new items added.

Interviewer variability was minimised by the fixed structure of the interview process and the probe questions. A comprehensive food-list and brand name data-base enabled interviewers to immediately identify the item during the interview, reducing the possibility of errors associated with the subsequent food coding. Foods, brand and product names and portion sizes that were not listed in LINZ24® could be entered as 'free text' description and subsequently coded by CSIRO dietitians.

Permission to modify LINZ24® was given and the adaptations made by CSIRO included:

- Addition of an Australian brand and product names list (provided by FSANZ) for commonly consumed foods under major food group categories (biscuits, bread, butter and margarine, cereal, dietary supplements, energy drinks, ice cream novelty (i.e. stick), ice cream take home (i.e. tub), juice, cordial and powdered beverages, milk, wrapped snack bars, yoghurt and dairy foods)
- Modification of some food names to reflect Australian terminology
- Addition of foods commonly consumed in Australia
- Modifications to the serving sizes where these varied between Australia and New Zealand
- Modifications to the 'probe questions' to reflect the Australian food supply and cooking methods.

For each food entered, time of consumption and information on the place of consumption was obtained, according to whether they were consumed at:

- Home
- Any other residence (e.g. friend or relative)
- Place of purchase (e.g. café or fast food outlet)
- Institution (e.g. school, pre-school, after-school care)
- Leisure activity (sport, music lesson, cinema, park)
- During transport (e.g. bus, car, walking)
- Other

When ingredients were known, 'recipes' for mixed dishes were entered as either the whole recipe with the fraction of the recipe the participant consumed, or the amount of each ingredient consumed by the participant. Cooking methods available in the recall software were:

- Not cooked
- Unknown method
- Baked/roasted
- Stewed/Boiled/simmered/poached
- Steamed
- Grilled/BBQ
- Deep fried (submerged in fat)
- Pan Fried (shallow fat)
- Stir fried (minimal fat)
- Microwaved

The options for entering portion size information were:

- 'Direct entry' where the amount is known e.g. 20 g packet of crisps
- A drop down list of 'measure descriptors' relating to that particular food e.g. one cup of cooked rice
- The 'dimensions' of the food e.g. slice of lasagne can be entered as 10cm x 8cm x 4cm (the food model booklet was used to determine these proportions – see below) and the volume is automatically calculated by LINZ24©. CSIRO dietitians subsequently converted the volume to mass.

Once the portion size was entered, interviewers were prompted to ask "how many of these did you have?" allowing entry of fractions or multiple serves consumed (e.g. "0.5" of a banana or "3" slices of bread).

Food model booklet & measuring aids

To assist with estimation of portion sizes, participants received a 'food model booklet' and interviewers had a set of measuring aids.

The Food Model Booklet was developed based on a booklet used by the United States Department of Agriculture (USDA) with permission. It was modified for Australian foods and adapted for children. Its use in children aged 10 years was validated at the time of the pilot survey. The validation showed moderate to strong correlations between weighed portion and recalled portion for almost all foods and that recall can be considered a reasonable interpretation of actual consumption at the group level. The booklet was used during the CAPI and remained with the participants for reference during the CATI.

The booklet included:

- Life-size drawings of mugs, glasses, other beverage containers, bowls, take-away food containers, cans and pats for different spreads
- Amorphous mounds suitable for measuring foods, e.g. mashed potato, rice or peas
- Life sized photograph of potato chips
- A set of 10 concentric rings, a grid and a moveable wedge to help determine three dimensional sizes of irregular foods, e.g. pizza, lasagna or watermelon
- Photographs of beef, lamb and chicken cuts, chocolate, milk drinks, carbonated drinks, juices, yoghurt and muesli/snack bars were included to assist with correct identification of product (not portion size).

The following measuring aids were available for the CAPI only and included:

- Household spoons – a metal teaspoon and tablespoon
- Measuring cups – labelled ¼, ⅓, ½, and 1 cup
- Measuring spoons – labelled ¼ tsp, ½ tsp, 1 tsp, 1 tbsp
- Ruler – a plastic ruler with fractions
- Measuring container – for measuring fluids.

Caregiver Form

A 'caregiver form' was provided to record intake if the participant was aged less than nine years and had been in the care of others during the recall period. This information was added to the dietary recall during the interview.

Nutrient Intake

The 24-hour food, beverage and supplement intakes were converted into nutrient intakes (Table , Section 14), using a nutrient composition database developed specifically for this survey by FSANZ.

Foods Habits Questions

A series of food-related questions provided additional information on the usual eating habits of participants. All participants were asked the following questions:

- Usual eating habits (i.e. lactose-free, vegetarian)
- Number of serves of fruit usually eaten each day (1 serve = 1 medium piece of fruit)
- Number of serves of vegetables usually eaten each day (1 serve = ½ cup cooked vegetables)
- Type of milk usually consumed (full cream, reduced fat, soy)
- Whether salt is usually added to food after it is cooked
- Whether salt is usually added to food during cooking
- Use of iodised or non-iodised salt.

The primary care-giver was asked about

- Food security (If the household always had sufficient money to buy food)
- Infant feeding habits
- If the child had ever been breastfed and when did weaning occur
- If the child had ever been given infant formula regularly
- What age were solids introduced
- Child's birth weight and the source of that information.

Table 10 Nutrients and food components collected in the survey

Nutrient/food component	Unit
Proximate constituents	
Energy	Kilojoules (kJ)
Energy (including from fermentable fibre)	Kilojoules (kJ)
Moisture (water)	Grams (g)
Protein	Grams (g)
Fat, total	Grams (g)
Saturated fatty acids, total	Grams (g)
Monounsaturated fatty acids, total	Grams (g)
Polyunsaturated fatty acids, total	Grams (g)
- alpha-linolenic fatty acid	Grams (g)
- linoleic acid fatty acid	Grams (g)
- long chain omega-3 fatty acids	Milligrams (mg)
Cholesterol	Milligrams (mg)
Carbohydrate, total	Grams (g)
Sugars, total	Grams (g)
Starch	Grams (g)
Dietary fibre	Grams (g)
Alcohol	Grams (g)
Vitamins	
Vitamin A, expressed as retinol equivalents	Micrograms (µg)
Preformed vitamin A (retinol)	Micrograms (µg)
Provitamin A (beta-carotene)	Micrograms (µg)
Thiamin	Milligrams (mg)
Riboflavin	Milligrams (mg)
Niacin equivalents, total	Milligrams (mg)
Vitamin C	Milligrams (mg)
Vitamin D	Micrograms (µg)
Vitamin E (as alpha-tocopherol)	Milligrams (mg)
Total Folate	Micrograms (µg)
Dietary folate equivalents	Micrograms (µg)
Minerals & electrolytes	
Potassium	Milligrams (mg)
Sodium	Milligrams (mg)
Calcium	Milligrams (mg)
Phosphorus	Milligrams (mg)
Magnesium	Milligrams (mg)
Iron	Milligrams (mg)
Zinc	Milligrams (mg)
Iodine	Micrograms(µg)
Other	
Caffeine	Milligrams (mg)

11. Physical Activity

Physical Activity Recall

Participants aged 9-16 years used the MARCA (Ridley et al 2006) to self-report 'use of time'. The MARCA is a computerised 24-hour recall which asks participants to recall everything they did on the previous day. The MARCA shows moderate to good validity when compared to accelerometry (Ridley et al 2006). It uses a segmented-day format, with meal times and/or school bells as anchor points. Within each time-segment, time-sliders indicate the start and completion times for activities in time slices which can be as fine as 5 minutes. Users choose from about 250 activities listed in a compendium under seven categories (Inactivity, Transport, Sport and Play, School, Self-Care, Chores and Miscellaneous). If the activity required is not available in the activity compendium, the participant can enter the activity as "other" and enter a text description.

Each child recalled a total of four days; two days prior to the CAPI and two days prior to the CATI. During both the CAPI and CATI, the child recalled the two days in either order.

Pedometry

Pedometers were used to collect objective physical activity data for most participants aged 5 – 16 years. The pedometer used in this survey was the New Lifestyles (NL) 1000, which provides the number of steps a day, the distance covered and the number of minutes spent in moderate-to-vigorous physical activity (MVPA, > 3 metabolic equivalents, METs).

The pedometer was worn for 7 consecutive days by attaching to a belt or waistband in a position corresponding to mid-thigh on the right side of the body. A security strap and clip was used to secure the pedometer in place and to prevent loss of the pedometer if it slipped from its position.

At the CAPI, the participant or a parent was instructed on how to retrieve data from the pedometer and how to complete the log sheet. The participant was asked to wear the pedometer from when he or she got out of bed in the morning until going to bed at night. Those occasions when the pedometer was removed (e.g. showering, swimming or playing contact sports) were recorded on the log sheet along with the estimated duration of removal. The pedometer and log sheet were posted back to the survey team using a reply paid envelope. Step counts data were gathered using the following strategies (and various combinations of strategies to cross check data):

- Step count in returned pedometer
- Log sheet
- Data gathered during CATI interview
- Data gathered in follow up phone call (not CATI).

Estimating stride length

Stride length was estimated during the CAPI using the 10 steps method. A linear distance of approximately 10 meters was marked out with a metal tape. The participant was asked to line up the toes of both feet with the zero on the tape, walk normally for 10 steps and stop by bringing both feet together. Two trials were conducted after an initial familiarisation trial. The average distance covered in centimeters was divided by 10 to provide stride length. This distance was programmed into the pedometer so that the daily distance covered was individualised. The default setting in the pedometer of 76 cm is based on adult data and was inappropriate for this survey.

12. Physical Measurements

Height, weight and waist girth were measured on children aged 2 – 16 years, according to the protocols of the International Society for the Advancement of Kinanthropometry (ISAK, Marfell-Jones et al 2006).

Choice of measurement instruments was influenced by the need for interviewers to collect data in participants' homes and therefore conveniently transport equipment.

A minimum of two measurements were taken for each anthropometric variable. A third measure was taken where the second measure was not within 5 mm for height, 0.1 kg for weight, and 10 mm for waist girth. The mean value was used as the final score if two measurements were taken. The median value was used as the final measure if three measurements were taken.

Height

Height was measured on all consenting participants who were able to stand upright and stand still enough while height was measured. Height was measured without shoes or thick socks. The stadiometer was checked before each use against a steel girth tape to ensure correct assemblage. The participant stood with the heels together and the heels, buttocks and upper part of the back touching the upright of the stadiometer. The head was kept in the Frankfort plane while the participant held a deep breath during the measurement. In a few cases, particularly among the very young children, the interviewer was unable to take a measure due to a restless or uncooperative participant. Reasons for missing data were recorded by the interviewer.
A loss of ~1% in height is common over the course of the day. The time of measurement was automatically recorded by the interview software.

Weight

Weight was measured in light indoor clothing, with shoes, coats and jumpers removed using Tanita HD332 portable electronic scales. The scale was placed on a hard, even surface (not carpet). The participant stood still on the centre of the scales without support and with the weight distributed evenly on both feet.

Body Mass Index

Body Mass index was calculated as weight in kilograms divided by height in metres squared. Age- and sex-specific BMI cutoffs for normal weight, overweight and obese among children and adolescents were applied to the data (Cole et al, 2000). For underweight, Grade 3 thinness (corresponding to an adult BMI of 18.5 kg/m^2) was used as a cut-off (Cole et al, 2007).

Waist girth

Waist was measured on all consenting participants who were able to stand upright and stand still enough while waist was measured. Using the cross-over technique, the measurement tape was positioned mid-way between the lower costal (10th rib) border and the top of the iliac crest, in the mid-axillary line, perpendicular to the long axis of the trunk. Measurements were taken against the skin, or over light clothing, such as a T shirt. If measured over clothing, a coloured sticker was used to temporarily identify the level at which the measurement was taken. The subject assumed a relaxed standing position with the arms folded across the chest. The subject breathed normally and the measurement was taken at the end of a normal expiration (end-tidal). The Lufkin W606PM metal tape was used to measure waist girth.

Waist-to-height ratio

Waist-to-height ratio was calculated by dividing waist in centimetres by height in centimetres.

13. Survey response

Measures to maximise response

The project team attempted to maximise response however some non-response is unavoidable when people choose not to participate or cannot be contacted.

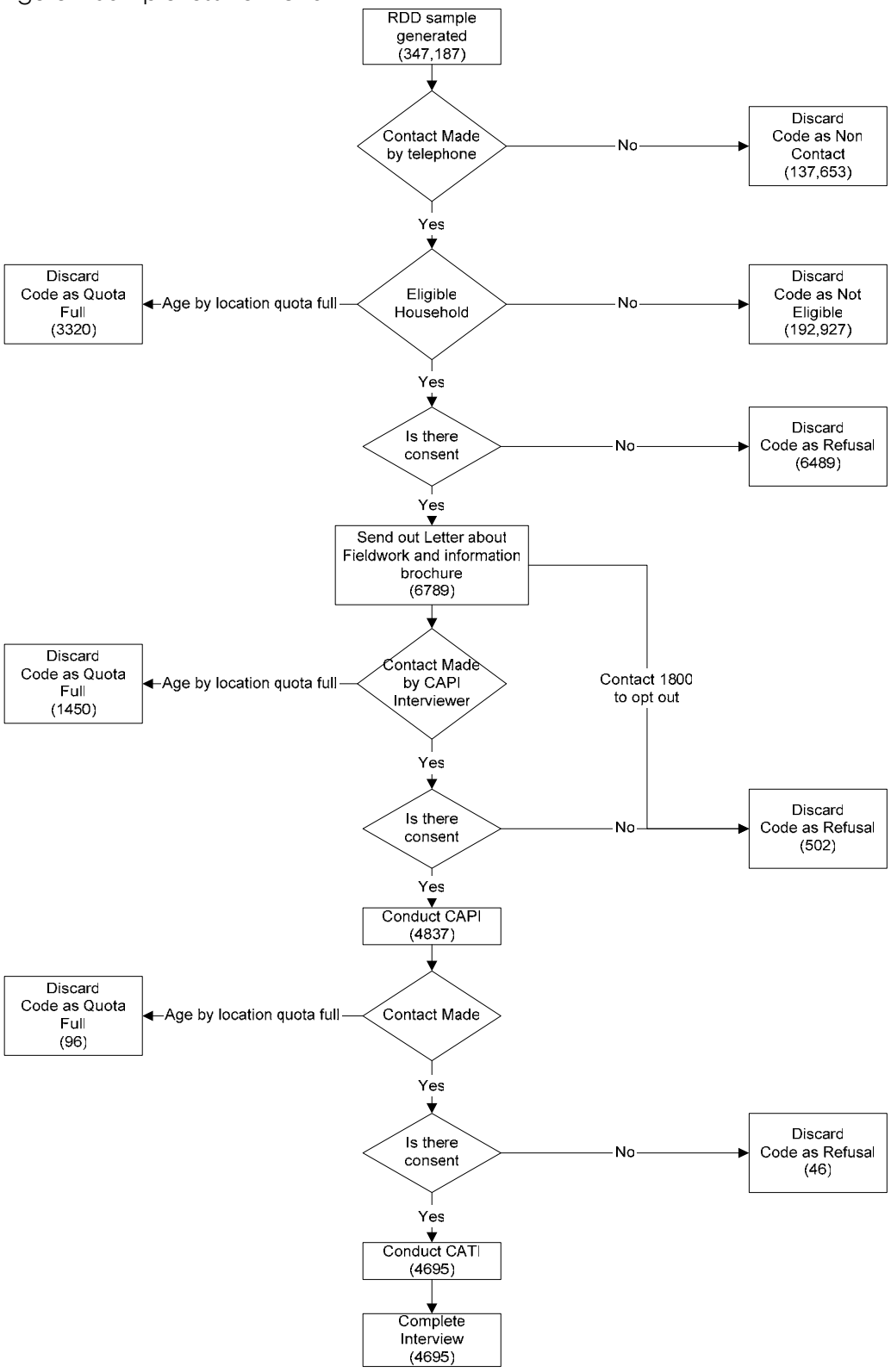
Strategies to maximise participation through all stages were:

- Stressing the importance of selected households participating in the survey to represent others in their local area
- Stressing the importance of participation for planning and policy for child health
- Stressing the confidentiality of all information under the Privacy Legislation and ESOMAR code of conduct
- Provision of written information in the form of a letter about fieldwork, information brochure and website
- Provision of a Freecall Hotline for information regarding the survey
- Fieldwork procedures that made every effort to contact and recruit each phone number selected
- Minimum of 6 call attempts at various times of the day, on weekdays and weekends before classifying as a non-contact
- Minimum of 3 call attempts to honour an appointment, and where on the third attempt there is a positive indication that the family will participate additional calls were made
- Appointment management, through flexible approach and targeted approach procedures
- Interviewing skills for refusal avoidance
- Careful monitoring of interviewer performance and overall adherence to survey procedures
- Use of interpreters for households that did not speak English
- Public awareness and publicity of the survey.

Response rates

There are several places where sample may be lost. Figure 2 shows the sample loss through various stages of the study.

Figure 2 Sample loss flow chart



Of the 16,598 eligible households that were contacted 10,109 agreed to participate in the study, which equalled a response rate of 61%. Of these 10,109 households, 3,320 were subsequently not required to participate as the quota for children in their age group had already been filled. Out of the 6,789 households recruited, 502 then refused and 4,837 completed the CAPI. The CATI was completed by 4,695 participants. The final response rate for completed CAPI and CATI was 40% when calculated as a proportion of eligible households (Table 16).

Table 9 Overall Response Rates

	Sample	Target
Eligible Households	*16,598*	
RECRUITMENT		
Quota full	3,320	
Recruited	6,789	5,720
Refused	6,489	
Recruit Response Rate[1]	*51%*	*50%*
CAPI (in home interview)		
Quota Full	1,450	
CAPI Interview	4,837	5,200
Refused	502	400
CAPI Completion Rate[2]	*91%*	*92%*
CATI (follow up telephone interview)		
Quota Full	96	
CATI Interview	4,695	4,400
Refused	46	800
CATI Completion Rate[3]	*99%*	*83%*
FINAL RESPONSE		
Completed CAPI and CATI	4,695	4,400
Eligible less quota full[4]	11,732	11,440
Final Response Rate[5]	***40%***	*38%*

[1] Recruitment Response Rate = Recruits / Eligible less quota full
[2] CAPI Completion Rate = complete CAPI interview / Recruits less quota full
[3] CATI Completion Rate = complete CATI interview / CAPI Interviews less quota full
[4] Eligible less quota full = quota full at recruitment + quota full at CAPI + quota full at CATI
[5]Final Response Rate = completed CAPI and CATI interview / Eligible less quota full

The final data set for analysis includes only those records with all of the following components completed.

- Demographic questions
- Food habits
- 2 x 24 hour recall food intake (CAPI and CATI)
- 4 x 24 hour recall activity in 9-16 years only (CAPI and CATI)
- Weight, waist, height measures.

Of the 4695 households who participated in both the CAPI and CATI, 4487 had all of the above data items (Table 10).

Table 10 Response components to tasks*

Age of Study Child	2-4 years	5-8 years	9-13 years	14-16 years	Total	%	Target	%
Edited and Coded Food Habits and Demographic data	1,499	956	1,219	1,163	4,837	100	5,200	100
Anthropometric Measures x 3	1,433	950	1,206	1,156	4,745	98	4,400	83
24 hour activity recall 1[1]	n/a	n/a	1,218	1,160	2,378	99	2,200	83
24 hour activity recall 2 [1]	n/a	n/a	1,212	1,159	2,371	100	2,200	83
24 hour activity recall 3[1]	n/a	n/a	1,154	1,118	2,272	96.	2,200	83
24 hour activity recall 4 [1]	n/a	n/a	1,138	1,108	2,246	95	2,200	83
24 hour diet recall 1[1] (CAPI)	1,494	953	1,217	1,162	4,826	100	4,400	83
24 hour diet recall 2[1] (CATI)	1,429	934	1,171	1,132	4,666	96	4,400	83
6 days Pedometer Data	n/a	833	1,017	979	2,829	85	2,750	69
Data sets for analysis	1,359	928	1,109	1,091	4,487	93	N/A	N/A
All tasks completed Record[2]	1,359	815	948	942	4,064	84	N/A	N/A

* note that age groups for tasks are different to the age groups for sample quota.
[1] Includes 'cullable' records
[2] A record with all tasks completed includes:

- 2-4 years of age= Waist, Height, Mass, 2 days diet recall, demography
- 5-8 years of age = Waist, Height, Mass, 2 days diet recall, demography, 6 days pedometer
- 9-16 years of age = Waist, Height, Mass, 2 days diet recall, demography, 6 days pedometer, 4 days physical activity recall (including 'cullable' records).

Interviews were conducted seven days a week during the fieldwork period (22 February 2007 to 30 August 2007). The participation over the days of the week and the seasons are shown in Table 11 and Table 1. People generally did not want to schedule interviews on Sundays, and Mother's Day and Easter Sunday were during this field period which further reduced the opportunity to survey households on Sundays.

Table 11 comparison of days of the week for CATI and CAPI

	Day of the Week of CATI								
Day of the Week of CAPI	**Mon**	**Tues**	**Wed**	**Thurs**	**Fri**	**Sat**	**Sun**	**CATI Not Completed**	**Total**
Mon	116	126	93	106	78	102	69	21	**711**
Tues	104	96	106	99	88	95	74	19	**681**
Wed	119	116	134	125	103	106	86	33	**822**
Thurs	98	104	95	127	107	101	77	18	**727**
Fri	103	106	91	112	90	101	72	25	**700**
Sat	98	90	80	128	116	132	94	19	**757**
Sun	57	49	58	63	80	59	66	7	**439**
Total	**695**	**687**	**657**	**760**	**662**	**696**	**538**	**142**	**4,837**

Table 12 Seasonality of Dietary Recall

		CAPI	CATI	Total	%
Summer	Feb	71	2	73	<1
	Mar	683	508		
	Apr	757	673	4,519	48
Autumn	May	1,091	807		
	Jun	1,286	1,137		
	Jul	715	1,148	4,900	52
Winter	Aug	223	391		
	Total	4,826	4,666	9,492	100

More than half of the activity recall days were collected in winter (58%); many were collected in autumn (40%) and a small number at the end of summer (1%)(Table).

Table 13 Seasonality of Activity Recall

		CAPI day 1	CAPI day 2	CATI day 1	CATI day 2	Total	%
Summer	Feb	40	32			72	<1
	Mar	284	278	205	194		
	Apr	339	334	277	268		
Autumn	May	489	459	314	281	3,722	40
	Jun	611	614	492	456		
	Jul	442	468	611	595		
Winter	Aug	173	186	373	452	5,473	59
	Total	2,378	2,371	2,272	2,246	9,267	100

Participant characteristics

Table 14 shows the sample characteristics of the study children at the different response stages; completed CAPI, completed CATI and all response components completed (i.e. CAPI, CATI and pedometer).

Note: Tables 14-17 are based on demographic characteristics of the participants at the time of recruitment. These demographic characteristics may vary with the characteristics of participants at the time of the CAPI (i.e. participants may have had a birthday and entered a new age-range between recruitment and CAPI). The demographic results at the time of CAPI are presented in the database of results managed by the Australian Social Science Data Archive (ASSDA). For access to the data refer to the ASSDA website at http://assda.anu.edu.au/.

Table 15, Table 16, and Table 17, show the characteristics of participants' parents/ caregivers and households at different stages in the response process. Information on those households who completed the CAPI but did not participate in the CATI or complete all components was obtained from the CAPI. This analysis excludes households who did not participate in the CAPI. Characteristics with a significant difference at 95% confidence level between the sample that completed the CAPI (n=4837) and the sample who did not complete all components (n=350) were:

- parent or care giver speaks a language other than English at home
- parent or care giver not working
- five or more people in the household
- income less than $20,799 per annum

Table 14 Study child characteristic

Study Child Characteristic	Completed CAPI		Completed CATI		Completed all components	
	#	%	#	%	#	%
Study Child						
Male	2,439	50	2,360	50	2,249	50
Female	2,398	50	2,335	50	2,238	50
	4,837		4,695		4,487	
Age						
2-3 years	1,236	26	1,181	25	1,112	25
4-8 years	1,244	26	1,213	26	1,194	27
9-13 years	1,234	26	1,198	26	1,124	25
14-16 years	1,123	23	1,103	24	1,057	24
	4,837		4,695		4,487	
BMI						
<20	3,461	72	3,357	72	3,249	72
20-24	996	21	972	21	932	21
25+	332	7	319	7	305	7
Refused	48	1	47	1	1	0
	4,837		4,695		4,487	
Medical Conditions						
None	3,839	79	3,722	79	3,567	80
At least one	998	21	973	21	920	21
	4,837		4,695		4,487	
ATSI						
No	4,683	97	4,548	97	4,349	97
Aboriginal and/or Torres Strait	150	3	143	3	134	3
Refused	4	0	4	0	4	0
	4,837		4,695		4,487	
Language spoken at home						
English only	4,504	93	4,380	93	4,189	93
Other	331	7	313	7	297	7
Refused	2	0	2	0	1	0
	4,837		4,695		4,487	
Country Born						
Australia	4,528	94	4,401	94	4,198	94
Other	309	6	294	6	289	6
	4,837		4,695		4,487	

Table 15 Parent/caregiver characteristic

Primary Parent / Care Giver Characteristic	Completed In Home		Completed Telephone		Completed all components	
	#	%	#	%	#	%
Parent Care giver - Primary						
Male	484	10	469	10	449	10
Female	4,353	90	4,226	90	4,038	90
	4,837		4,695		4,487	
ATSI						
No	4,752	98	4,614	98	4,411	98
Aboriginal and/or Torres Strait	81	2	77	2	72	2
Refused	4	0	4	0	4	0
	4,837		4,695		4,487	
Education						
Tertiary Education	2,161	45	2,113	45	2,020	45
No Tertiary Education	2,661	55	2,567	55	2,452	55
Refused	15	0	15	0	15	0
	4,837		4,695		4,487	
Language spoken at home						
English only	4,420	91	4,304	92	4,122	92
Other	416	9	390	8	364	8
Refused	1	0	1	0	1	0
	4,837		4,695		4,487	
Country Born						
Australia	3,820	79	3,717	79	3,547	79
Other	1,017	21	978	21	940	21
	4,837		4,695		4,487	
Work Status						
Working	3,448	71	3,359	72	3,221	72
Not Working	1,389	29	1,336	29	1,266	28
	4,837		4,695		4,487	

Table 16 Second parent/caregiver characteristic

Second Parent / Care Giver Characteristic	Completed In Home		Completed Telephone		Completed all components	
	#	%	#	%	#	%
Parent Care giver - Second						
Male	3,711	77	3,613	77	3,467	77
Female	424	9	414	9	398	9
No 2nd Parent	702	15	668	14	622	14
	4,837		4,695		4,487	
ATSI						
No	4,068	84	3,964	84	3,805	85
Aboriginal and/or Torres Strait	63	1	59	1	56	1
Refused	4	0	4	0	4	0
No 2nd Parent	702	15	668	14	622	14
	4,837		4,695		4,487	
Education						
Tertiary Education	1,584	33	1,541	33	1,483	33
No Tertiary Education	2,492	52	2,429	52	2,326	52
Refused	59	1	57	1	56	1
No 2nd Parent	702	15	668	14	622	14
	4,837		4,695		4,487	
Language spoken at home						
English only	3,758	78	3,667	78	3,528	79
Other	376	8	359	8	336	8
Refused	1	0	1	0	1	0
No 2nd Parent	702	15	668	14	622	14
	4,837		4,695		4,487	
Country Born						
Australia	3,180	66	3,105	66	2,973	66
Other	955	20	922	20	892	20
No 2nd Parent	702	15	668	14	622	14
	4,837		4,695		4,487	
Work Status						
Working	3,838	79	3,738	80	3,595	80
Not Working	290	6	289	6	270	6
No 2nd Parent	709	15	668	14	622	14
	4,837		4,695		4,487	

Table 17 Household characteristic

Household Characteristic	Completed In Home		Completed Telephone		Completed all components	
	#	%	#	%	#	%
Family						
Couple	4,075	84	3,969	85	3,811	85
Lone Parent	761	16	725	15	675	15
Refused	1	0	1	0	1	0
Number in household						
2	232	5	219	5	199	4
3	866	18	840	18	792	18
4	2,168	45	2,104	45	2,021	45
5	1,101	23	1,082	23	1,047	23
6	312	7	298	6	282	6
7	101	2	96	2	92	2
8	41	1	40	1	39	1
9	7	0	7	0	7	0
10	5	0	5	0	5	0
11	3	0	3	0	2	0
12	1	0	1	0	1	0
Income						
$2,400 + /wk ($124,800 + /yr)	725	15	709	15	683	15
$2,200-$2,399/wk($114,400- $124,799 /yr)	208	4	202	4	192	4
$2,000-$2,199/wk($104,000 -$113,999/yr)	313	7	302	6	294	7
$1,500 - $1,999/wk ($78,000-$103,999/yr)	913	19	897	19	854	19
$1,000 - $1,499 /wk ($52,000-$77,999 /yr)	1,060	22	1,033	22	996	22
$800 - $999 /wk ($42,000 - $51,999 /yr)	388	8	376	8	365	8
$700 - $799 /wk ($36,400 - $41,999 /yr)	212	4	208	4	191	4
$600 - $699 /wk ($31,200 - $36, 399 /yr)	187	4	181	4	176	4
$500 - $599 /wk ($26,000 - $31,199 /yr)	180	4	174	4	164	4
$400 - $499 /wk ($20,800 - $25,999 /yr)	162	3	154	3	146	3
$300 - $399 /wk ($15,600 - $20,799 /yr)	115	2	105	2	94	2
$200 - $299 /wk ($10,400 - $15,599 /yr)	67	1	65	1	60	1
$100 - $199 /wk ($5,200 - $10,399 /yr)	12	0	12	0	12	0
$50 - $99 /wk ($2,600 - $5,199 /yr)	5	0	5	0	4	0
$1 - $49 /wk ($1 - $2,599 /yr)	1	0	1	0	1	0
Nil income	9	0	8	0	8	0
Negative income (loss)	11	0	11	0	11	0
Don't Know	164	3	151	3	138	3
Refused	105	2	101	2	98	2
Mean	**$70,238**		**$70,559**		**$70,838**	

14. Data Processing

Demographics

Interviewers submitted interviews to the secure web server on a daily basis. I-view downloaded all new interviews daily for editing. Interviews were reviewed and data were checked for:

- Logic and consistency across each demographic variable
- Valid ranges
- Typing errors
- Completeness of survey data.

Clarification was obtained by telephoning interviewers or respondents where discrepancies existed. General feedback was provided to all interviewers via weekly newsletters.

Dietary recall

Interviewers submitted interviews to the secure web server on a daily basis. CSIRO dietitians downloaded all new interviews daily for editing. Interviews were reviewed and data were checked for:

- Unrealistic portion sizes and overall food intake
- Inadequate detail
- Typing errors
- Completeness of "recipe"

Clarification was obtained by telephoning CAPI interviewers and via the supervisors of CATI interviewers. General feedback was provided to all interviewers via weekly newsletters.

Nutrient analysis

The 24-hour food, beverage and supplement intakes were converted into nutrient intakes, using a food and nutrient composition database developed specifically for this survey by FSANZ. Each item consumed was matched to an 8-digit food code, which in turn referred to a set of nutrient data. The 8-digit food code was derived from 5-digit food group codes which were used to categorise foods and beverages.

Three files are produced from the dietary analysis:
1) Nutrient intake per unique food item recalled by each child for each interview. This table contains the total nutrient composition for the total amount of each unique food item recalled by each child for each interview.

Variable name	Short Description
RespondentId	Unique identifier for each respondent
InterviewId	LINZ24® software code for interview number
RandomId	Unique identifier for day of interview
FoodName	100 character long name of food
Amount	Amount consumed throughout the day
FSANZ food code	FSANZ database food code (8-digit)
Food Group	FSANZ food group number5 (5 digit)
nut1 to nutxx	Nutrient analysis per amount of food consumed throughout the day

2) Total Nutrient intake for each child.
This table contains the summed nutrient composition of all items recalled for each child for each interview, including nutrients from dietary supplements.

Variable name	Short Description
RespondentId	Unique identifier for each respondent
InterviewId	LINZ24® software code for interview number
RandomId	Unique identifier for day of interview
nut1 to nutxx	Nutrient analysis per day

3) Nutrient intakes from foods and beverages for each child
This table contains the summed nutrient composition of all items recalled for each child for each interview, excluding nutrients from dietary supplements.

Variable name	Short Description
RespondentId	Unique identifier
InterviewId	LINZ24® software code for interview number
nut1 to nutxx	Nutrient analysis per day

Nutrient database

FSANZ developed a nutrient database, AUSNUT 2007, which contains data for 37 nutrients that are expressed per 100g edible portion (food) or per 100 dosage units[1] (supplements). AUSNUT 2007 contains data only for those foods and supplements consumed during the survey.

Sources of nutrient data

AUSNUT 2007 incorporates food and nutrient composition data from a range of sources. These include:

- Food and nutrient composition data published in NUTTAB 2006 (FSANZ, 2007)
- Unpublished food and nutrient composition data commissioned by FSANZ for the purpose of this survey
- Food and nutrient composition data borrowed from international food composition tables and databases including:
    - British food tables (Food Standards Agency, 2002)
    - New Zealand food tables (Athar et al, 2006)
    - Danish food tables (Møller et al, 2005)
    - United States Department of Agriculture (USDA, 2006)
- Australian food and supplement label data
- Recipes
- Supplement data provided by the TGA
- Other - imputed, calculated or taken from the 1995 NNS database, AUSNUT 1997

Development of the nutrient database

A subset of NUTTAB 2006 was used as a basis for developing the survey specific database AUSNUT 2007. The subset was developed by reproducing foods published in NUTTAB 2006 that were likely to be relevant to the survey, and ensuring full coverage of all nutrients to be reported as part of the survey. This involved incorporating:

- unpublished nutrient data from an analytical program which collected analytical data for approximately 40 foods that form the major nutrient sources for children aged 2 to 15 years
- imputed, borrowed, estimated, and calculated nutrient data

[1] 'Dosage unit', in this Survey, refers to one tablet or capsule, or to 1ml or 1 g for those supplements supplied in liquid or powder form respectively.

The nutrient composition data developed for survey foods during the collection period were derived using a range of methods. These include:

Matching a single NUTTAB 2006 food to a single survey food

Where the description of a food published in NUTTAB 2006 matched that of a survey food, the NUTTAB 2006 nutrient data were used without amendment.

Combining several NUTTAB 2006 foods to produce a single survey food

Where a description of a survey food was less specific than a NUTTAB 2006 food, nutrient data from several NUTTAB 2006 foods were combined to produce a representative nutrient profile for the survey food. This approach was used for most of the fruits and vegetables consumed during the survey where the cultivars were not reported. For example, the different cultivars of peeled potatoes including coliban, sebago, desiree and pontiac were weighted according to their approximate market share to produce a representative nutrient profile of 'Potato, unspecified variety & skin, peeled, raw'.

Modification of a NUTTAB 2006 food to produce a new survey food

Where the description of a NUTTAB 2006 food was similar to a survey food, except for a particular characteristic, the NUTTAB 2006 food was modified to account for that characteristic. This approach was used for many of the low or reduced fat, reduced salt, fortified, or intense sweetened varieties of products consumed during the survey.

These characteristics were modified by:

- Imputing nutrient data from a similar NUTTAB 2006 food, for example if a respondent reported consuming 'Milk, flavoured, banana, reduced fat' the NUTTAB 2006 food 'Milk, flavoured, banana, regular fat' would be used as a basis for developing a new record and the fat content would be modified based on the fat content of the NUTTAB 2006 food 'Milk, flavoured, strawberry, reduced fat'. Other nutrient modifications may also have been necessary, for example changing the cholesterol value when the fat content is reduced.
- Using nutrient data from product labels. For example, if a respondent reported consuming 'Juice, orange, no added sugar, added vitamin C' the NUTTAB 2006 food 'Juice, orange, unsweetened, unfortified' would be used as a basis for developing a new food, and the vitamin C value would be modified to reflect the vitamin C value presented on the nutrition information panel of commonly consumed brands of orange juice fortified with vitamin C.

Recipe calculation

Recipe calculations were used to generate nutrient data for mixed dishes prepared at home or purchased commercially where the respondent was unable to identify the individual ingredients or their amounts.

The general approach involved:

- consulting current, popular recipe books, Australian food magazines and websites to identify appropriate recipes for home prepared foods
- combining individual ingredients and their relative proportions
- applying an appropriate nutrient retention factor to each individual ingredient if necessary
- applying an appropriate weight change factor to the uncooked recipe if necessary.

The retention and weight change factors used in these calculations were taken from published literature (e.g. USDA, 2006).

Recipes for commercial products were developed using labelled ingredients. The amount of each ingredient was modified so that the final nutrient data were similar to the nutrient data presented on the product's nutrition information panel.

Developing a new survey food

Where the methods outlined above were not appropriate new survey foods were developed by:

- borrowing nutrient data from international food tables and databases such as the USDA, UK, NZ and Danish food tables
- using industry or label data
- imputing nutrient data from similar foods or from levels permitted in the Food Standards Code
- reproducing nutrient data published in AUSNUT 1997.

Where data from international food composition tables were used, care was taken to ensure that the units and mode of expression matched those used in the survey (USDA, 2006; Food Standards Agency, 2002; Athar et al. 2006; Møller, et al, 2005).

Food descriptions with characteristics not specified

'Unspecified' survey foods were developed where a respondent was unable to identify the exact food or cooking method of the food they consumed.

Nutrient data for unspecified foods were derived using two approaches:

- Ensuring the nutrient data are representative of all survey foods that had a similar description, but varied with respect to the characteristic of interest. For example, a nutrient line for 'bread, white, not further specified' drew on nutrient data for all white, fresh or toasted, fortified or unfortified, breads weighted according to consumption patterns observed in the survey.
- Assigning an unspecified food a nutrient profile of the most frequently consumed product from the relevant category. For example 'Chicken, ns[2] as to part, cooked nfs[3], ns[2] as to skin' could be assigned the nutrient line for 'Chicken, breast, baked, without skin' as this might have been the most frequently consumed type of chicken and cooking method reported during the survey.

The nutrient composition data developed for survey dietary supplements were derived using formulation data provided by the TGA. Data provided by TGA included information on the product's name, AUST-L number, maximum daily dose, and formulation with the name and amount of each active, excipient and proprietary ingredient provided on a per dose basis. In a small number of cases, label or web information was used to develop nutrient data. Where necessary data provided by TGA were converted into the units and the modes of expression used that were in this survey.

Notes on nutrient data

Energy

The AUSNUT 2007 energy data are determined using the following equation:

[2] Not specified
[3] Not further specific

Energy (kJ) = Protein (g)*17 + total sugars (g)*16 + total fat (g)*37 + starch (g)*17 + dextrin (g) * 17 + maltodextrin (g)*17 + sorbitol (g)*16 + lactic/acetic acids (g)*15 + malic/quinic/citric (g)*10 + alcohol (g)*29

The energy factors were the same as those used in the 1995 NNS. In addition, AUSNUT 2007 reports energy including contribution from fibre (8kJ/g).

Carbohydrate

For some foods, data for total carbohydrates includes a contribution from glycogen, sugar alcohols and oligosaccharides where the level of these carbohydrates is known. For these foods, the sum of the total sugars and starch will not equal the total carbohydrate value.

Dietary fibre

Total dietary fibre values have been analysed by the Association of Official Analytical Chemists (AOAC) enzymic-gravimetric method (Section 985.29 AOAC, 2000). This includes soluble, insoluble fibre, some resistant starch and lignan.

Fatty acids

FSANZ has updated a significant proportion of fatty acid data (including omega-3 fatty acids) since AUSNUT 1997. These values are the basis for further imputation and estimation for the AUSNUT 2007 database.

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, possible phosphate groups and sterols.

The total long chain omega 3 fatty acid values were calculated by summing all omega 3 polyunsaturated fatty acids containing at least 20 carbon atoms.

Linoleic acid values include conjugated linoleic acid, where this has been measured separately to other isomers.

Vitamin D

NUTTAB 2006 included few analytical values for vitamin D. Most of the data on this nutrient have been obtained from a limited range of unpublished analytical data, label data, overseas food composition databases including the USDA, Danish and British food composition tables, or by imputation. They should be considered as indicative values only and users should be aware that reported values are likely to be revised in subsequent FSANZ publications. Total vitamin D activity has been calculated as:

> Vitamin D (µg) = Cholecalciferol (µg) + ergocalciferol (µg) + 5*25-hydroxy cholecalciferol (µg) +5*25-hydroxy ergocalciferol (µg)

There does not appear to be international consensus on the most appropriate factors to use when reporting total vitamin D activity based on individual vitamins. Recent advice (Jakobsen, pers comm. 2008) suggests that total vitamin D values reported in AUSNUT 2007 may significantly overestimate total vitamin D activity.

Exposure to sunlight is the primary source of vitamin D for humans. For most healthy individuals, diet does not form a significant source of vitamin D, unless supplements are taken. The 1995 NNS did not include nutrient intake data on vitamin D.

Folate, total

In AUSNUT 1997 the majority of total folate data were derived from overseas food composition tables, primarily the British food tables, and generated using superseded methods of analysis that may underestimate naturally occurring folate.

Since 1995 FSANZ has undertaken a number of analytical programs involving folate and folic acid analysis. These more recent data form the basis of folate data published in AUSNUT 2007. Folate values are presented as both total folates (including naturally occurring folate and added folic acid), as in AUSNUT 1997, and as dietary folate equivalents (DFEs). The following equation was used to calculate DFEs:

DFE (µg) = Food Folate (µg) + 1.67*Folic Acid (µg)

Iodine

Iodine was not reported in the 1995 NNS or included in AUSNUT 1997. Since 2001 FSANZ has undertaken a number of analytical programs involving iodine analysis which were published in NUTTAB 2006. These data formed the basis for further imputation and estimation for the AUSNUT 2007 database.

Caffeine

Caffeine was not reported in the 1995 NNS or included in AUSNUT 1997. Since 1995 FSANZ has undertaken an analytical program involving caffeine analysis, the results of which were published in NUTTAB 2006. These data formed the basis for further imputation and estimation for the AUSNUT 2007 database.

Sodium

FSANZ has updated a significant proportion of sodium analytical values in foods and included these in the reference database NUTTAB2006. These values are the basis for further imputation and estimation for the AUSNUT2007 database. Sodium was not reported in the 1995 NNS or included in AUSNUT 1997.

Food Group coding

A revised, dual food coding system was developed in collaboration with FSANZ, CSIRO and the Technical Reference Group (section 21). It reflects the current food supply, but also maintains comparability with the food groups used in the 1995 NNS. Subcategories were added to separate foods on the following basis:

- Caffeinated or decaffeinated
- Sugar sweetened or intense sweetened
- Fortified product or unfortified product

Additional food groups were added to reflect infant foods and formulae and dietary supplements.

There are a set of codes that are the same as the 1995 NNS and a second set that reflect the changes described above.

Quality assurance of nutrient database

Quality assurance required detailed scrutiny of nutrient data by trained staff as well as manual checking of some individual intakes and assessment of unusual values. Quality assurance on nutrient data is detailed in the AUSNUT 2007 Users Guide.

Physical activity recall

Each activity in the MARCA has a unique ID code and an associated child-appropriate energy cost in METs, or default adult value (Ridley et al 2006). The MARCA's analytical engine allows data to be extracted from MARCA "profiles." A profile is one 24 hour recall by one child. It derives the estimated number of minutes spent on an activity and the amount of energy expended in individual activities or in activity sets (such as active transport, organised sport/play or moderate-to-vigorous physical activity). Activity sets are defined as lists of MARCA codes (Section 23).

Data format

Four types of files contain MARCA data (Table):

- Raw profiles: (a profile is one 24 hour recall by one child). Profiles are saved to a text file when a MARCA recall is complete. Researchers will rarely want to access these files, but they have been retained as part of the audit trail.
- Cleaned profiles: Profiles that have been manually checked for anomalies. Researchers may choose to access these files if they want to extract data which have not been extracted as part of the process described below.
- Extracted data: Data that have been obtained when the MARCA profiles have been analysed by the MARCA's programmable analytical engine (e.g. minutes of screen time). Researchers will often wish to access these files for detailed analysis.
- Summary data: Means, standard deviations and percentiles for extracted data for demographic slices (e.g. age and sex groups). These are the "headline" data which will be most frequently referenced.

Table 18 MARCA Data formats

Data type	Contents	Filename	Format
Raw	raw MARCA profiles	M-<participant ID>-<date recalled>.txt	.txt files, item separated by commas, one file per profile
Cleaned	cleaned MARCA profiles	MARCA_<date>.txt	.txt file, items separated by commas, records by returns, single file
Extracted	extracted data such as moderate to vigorous physical activity (MVPA), screen time	MARCA_FoursBy Profile.xls	.xls file, rows represent subjects, columns represent variables
Summary	means, SDs and percentiles by age, sex and day type (school vs non-school days)	Tables 90 to 143 in main report.	pdf

Raw profiles

Raw profiles are .txt files, one for each 24 hour recall. The filenames obey the following convention:
M-<participant ID>-<date recalled>.txt
for example: M-110006-14Mar07.txt

MARCA profiles consist of a single line of data, with items separated by commas. Here is an example:
110006,14 March 2007,18 February 1994,Girl,999 999 13.07 ,Summer Heights High School,,ABE006,01,,,,07:00 am,09:00 am,11:00 am,01:00 pm,03:00 pm,08:30 pm,07:00 am,07:05 am,005,02.7,533020,dressing & undressing,07:05 am,07:10

am,005,02.0,531010,brushing teeth,07:10 am,07:35
am,025,02.5,430140,packing/unpacking bag,07:35 am,07:40
am,005,01.5,522030,eating - sitting,07:40 am,08:00 am,020,01.2,121050,watching TV - sitting,08:00 am,08:05 am,005,04.2,240092,walking carrying a load - medium,08:05 am,08:30 am,025,03.8,341901,playground equipment (eg monkey bars) - light,08:30 am,08:45 am,015,01.3,221120,riding in a bus,08:45 am,08:55
am,010,02.9,240051,walking - light,08:55 am,09:00 am,005,05.0,341990,mucking around - outdoors,09:00 am,10:00 am,060,01.4,420060,writing - sitting,10:00 am,11:00 am,060,01.2,121050,watching TV - sitting,11:00 am,11:25 am,025,01.5,124090,sitting - talking,11:25 am,12:25 pm,060,01.4,420040,taking notes/class discussion,12:25 pm,01:00 pm,035,01.4,420110,sitting quietly (eg assembly/listening to teacher),01:00 pm,01:05 pm,005,02.0,532140,drinking while standing,01:05 pm,01:30
pm,025,05.0,341990,mucking around - outdoors,01:30 pm,02:00
pm,030,01.5,124090,sitting - talking,02:00 pm,02:25 pm,025,03.8,331991,totem tennis - light,02:25 pm,03:00 pm,035,03.8,342241,hand tennis (four-square) - light,03:00 pm,03:05 pm,005,01.3,221000,riding in/driving a car,03:05 pm,03:10
pm,005,02.5,430140,packing/unpacking bag,03:10 pm,03:20
pm,010,02.7,533020,dressing & undressing,03:20 pm,03:25 pm,005,01.5,522130,drinking - sitting,03:25 pm,05:30 pm,125,01.2,121050,watching TV - sitting,05:30 pm,05:55
pm,025,01.4,521080,sitting in bath,05:55 pm,06:00 pm,005,02.7,533020,dressing & undressing,06:00 pm,06:20 pm,020,01.5,522030,eating - sitting,06:20 pm,06:50
pm,030,02.3,630270,washing or clearing dishes,06:50 pm,08:00
pm,070,01.1,111030,watching TV - lying quietly,08:00 pm,08:30
pm,030,02.7,533050,getting ready for bed,08:30 pm,07:00
am,630,00.9,100010,sleeping,

The data format for MARCA profiles is:

Item #	Item name	Example
1	participant ID	123456
2	date of test	7 March 2007
3	date of birth	31 July 1995
4	sex	"boy" or "girl"
5	height weight age	999 999 13.07 (separated by space, 999 = missing)
6	school	Glenelg South Primary School
7	comments	text string, user-entered
8	random ID	ABC123
9	interviewer ID	08
10	empty	
11	empty	
12	used if bedtime is after midnight	12:45 AM
13	wake-up time	7:00 AM
14	school's in time (school day) or breakfast time (non-school day)	8:00 AM
15	start of recess (school day) or lunch time (non-school day)	12:30 PM
16	start of lunch (school day) or dinner time (non-school day)	7:00 PM
17	school's out time (school day) or bed time (non-school day)	10:35 PM
18	bed time (school day) or empty (non-school day)	9:30 PM
19	start time of first activity	07:00 AM
20	end time of first activity	07:05 AM
21	duration of first activity (minutes)	005
22	MET value of first activity	02.7

23	ID of first activity	533020
24	name of first activity	dressing & undressing

Items 19-24 are then repeated until all activities have been listed.

Cleaned data

Raw MARCA profiles were "cleaned" using manual checks. Cleaning involved:

- Checking participant IDs, dates, random IDs, and school names for consistency with other files from the same child
- Replacing any activity listed as "other" (MARCA code 000000) with the best compendium equivalent

Cleaned MARCA profiles were then combined periodically into a single file, with each profile separated by a return. These were named according to the following convention:

MARCA_<date><CAPI or CATI>.txt
for example: MARCA_26Mar07CAPI.txt

The final file (containing all cleaned MARCA profiles) is named:

MARCA_Final.txt

Extracted data

The cleaned profiles were analysed to calculate values for a number of activity sets. Values for activity sets were calculated by summing the total number of minutes in the profile devoted to each activity in the activity set. For example, Table 19 shows the codes that constitute the activity set "screen time":

Table 19 Screen time codes

Code	Activity
111030	watching TV - lying quietly
121050	watching TV - sitting
420050	computer work (e.g. typing/internet)
722190	computer/playstation games

The MARCA's analytical engine searches the profile for any occurrence of each of these codes and adds together the durations for each occurrence. The variables were extracted from the MARCA cleaned data (Table).

The extracted data were collated in a single long file. The rows of this file represent individual profiles. The columns include the activity sets. A wide file was generated, where each row represented an individual child and the columns the activity sets for each recall day, plus summary data across all four days.

Summary data

Summary data were calculated for each child using the following procedure:

- The average value for a given activity set was obtained across all school days (which could be from one to three days). For example, if sleep times on three recalled school days were 600, 550 and 530 minutes, the school days average would be 560 minutes.
- The average value for each activity set was calculated for all non-school days (from one to three recalled days). If one non-school day was recalled, with a sleep time of 660 minutes, then that value was retained as the non-school day average.

The overall average was obtained by averaging the averages of the school and non-school days (in this case, the average of 560 and 660 minutes, or 610 minutes). The rationale for this procedure is that across a year children spend about one day in two at school, when accounting for holidays, days off, teacher-free days, etc. In some cases, four days were recalled but none were school days (for example, due to illness or unusual timetables) or none were non-school days (for example, there was school on Saturday). In these cases, average values for activity sets were calculated across all four days.

Table 20 Variables extracted from the cleaned MARCA data

no	item	format	definition	example
1	participant ID	string		123456
2	random ID	string		ABC123
3	date of birth	date		11-Oct-94
4	date of test	date		2-Jul-07
5	day type	category (school day/non-school day)		school day
6	PAL	real 2 decimal places	Physical Activity Level in METs	1.69
7	MPA	real 0 decimal places	minutes of moderate PA (>=3 to <6 METs)	140
8	VPA	real 0 decimal places	minutes of vigorous PA (>=6 METs)	30
9	active transport	real 0 decimal places	minutes of active transport [MARCA codes 24005x, 24009x, 24007x, 241080, 34124x, 34125x, 34127x, 34131x, 34146x]	30
10	PT work	real 0 decimal places	minutes spent in part-time work [codes 7230x0, 7330x0, 7430x0]	40
11	chores	real 0 decimal places	minutes spent doing chores [code 6xxxxx]	0
12	TV	real 0 decimal places	minutes spent watching TV [codes 111030, 121050]	400
13	computer	real 0 decimal places	minutes spent at the computer (e.g. typing/internet) [code 420050]	25
14	videogames	real 0 decimal places	minutes spent playing video or computer games [code 722190]	150
15	phone	real 0 decimal places	minutes spent talking on the phone [codes 114070, 124100, 134170]	25
16	texting	real 0 decimal places	minutes spent texting [codes 114190,124170, 134180]	20
17	passive transport	real 0 decimal places	minutes of passive transport [codes 221000, 221110, 221120]	60
18	inactivity	real 0 decimal places	minutes spent in activities requiring ≥1 to <2 METs	450
19	light activity	real 0 decimal places	minutes spent in activities requiring ≥2 to <3 METs	60
20	other sedentary	real 0 decimal places	minutes spent sitting <3 METs [code x2xxxxx]	200
21	lying awake	real 0 decimal places	minutes spent lying down excluding sleep [code x1xxxx]	10
22	sleep	real 0 decimal places	minutes of sleep [code 100010]	620
23	wake-up time	time		06:30 am
24	bed time	time		1:15 PM
25	cull status	category (OK/low PAL /high PAL/activities)	Profile is a candidate for culling for low activity (PAL < 1.1), high activity (PAL > 3.0), or too few activities (<10)	OK

The summary data are in the form of a series of tables in the main report. They are derived from the extracted data, weighted to reflect the Australian population. The summary data consist of descriptive (means, standard deviations and percentiles) for the following groups of variables:

- physical activity
- sedentary behaviour
- miscellaneous activity sets and
- prevalence of compliance with activity and screen time recommendations

Physical activity variables

The variables used to describe physical activity were:

- Physical Activity Level (PAL): The average rate of energy expenditure over the course of a day. It is expressed in multiples of child-specific resting metabolic rate (or metabolic equivalents, METs). For example, a PAL of 1.7 would mean that a child uses, on average, 1.7 times the amount of energy required to sit still all day. In this survey, PAL was estimated from MARCA data. PAL is calculated by multiplying the estimates of activity-specific energy expenditure by the number of minutes reported for each activity, and averaging across the 1440 minutes of each day.
- Moderate-to-vigorous physical activity (MVPA): The number of minutes spent performing activities which require at least 3 METs, based on the MARCA Compendium (Section 23), or three times resting metabolic rate.
- Vigorous physical activity (VPA): The number of minutes spent performing activities which require at least 6 METs, or six times resting metabolic rate.
- Organised sport and play: Active recreation which is structured and rule-governed, typically requiring specialised equipment, a special play area and time. It is often supervised. For example: games such as football and basketball, activities such as horse riding (Section 23).
- Free play: Active recreation which is essentially unstructured. For example, playground games, riding bikes and scooters and "mucking about". Typically, free play requires no special playing area, few rules and minimal supervision (Section 23).
- Active transport: Locomotion where the subject provides most of the energy. For example: walking, cycling, skateboarding and rollerblading (Section 23).

Data analysis

Activity variables have been described using means, standard deviations and percentiles, by age and sex subsets. However, it is important to note that some activity variables, such as minutes of MVPA show very strong positive skews, so median values provide more appropriate estimates of typical activity patterns.

Where data were analysed on per-child basis (i.e. across all four recall days for an individual child), average values were determined by calculating the average for all school days (n = 4,207), and then for all non-school days (n = 4,593), and then taking the average of the averages. The rationale for this approach is that children spend about one day in two in school over the course of a year.

Quality assurance of physical activity data

There are two main quality assurance mechanisms:

- Process evaluation, which involves training interviewers and verifying interviewing technique (Section 7)
- Outcome evaluation, which involves an automated assessment of profile quality

The outcome evaluation involved checking each profile for:

- Number of different activities recalled
- Average estimated daily energy expenditure (Physical Activity Level, or PAL)

Fewer than 10 activities recalled usually signals a poor effort at recall, and PALs <1.1 or >3.0 (multiples of estimated resting metabolic rate) are considered suspicious. Profiles meeting any of these criteria were examined on an individual basis. In some cases the interviewer had noted a plausible reason, e.g. that the child was sick or engaged in a sports competition. In these cases, the profiles were retained.

Pedometry

Quality assurance of pedometer data

Eighty-three percent of participants who wore a pedometer returned a log sheet. In most cases the pedometer logs were able to be validated by 3-5 days of data stored in the pedometer.

To be retained for analysis, a participant's pedometer data met the following criteria:

- Minimum of 6 days of data provided
- On each of these days there was a minimum of 1000 reported steps
- On each of these days, the pedometer was not removed for more than 4 hours (240 minutes)

Each day of data was sorted by number of steps, distance, MVPA, and also a ratio of steps: distance to find those that were at the extremes. Outliers were then looked at on a case by case basis to see if data needed to be culled or not.

Physical Measures

Each measurement (height, weight, waist girth) and BMI were sorted by each age group to find those at the extremes. Also ratios of height: weight, waist girth: height, and weight: waist girth were sorted in the same manner. Outliers were examined for plausibility. Where one of the three measurements was clearly incompatible with the other two, it was excluded from the calculation of the mean.

15. Interpretation of results

Survey and Sample Design

There are limitations to the use of postcodes as the primary sampling unit as postcodes can cover a wide geographic area (one postcode can include urban, rural and remote areas). However, postcodes do offer a degree of clustering to enable cost-effective face-to-face interviews to be conducted and allow a reasonable geographic distribution of the sample across Australia.

A potential sample design effect is the loss in statistical precision resulting from a clustered sample that does not fully cover the diversity of specific response variables evident in the entire population. The extent of loss in statistical precision largely depends on whether, and how much, the specific response variables have underlying geographic variations.

The potential design effect on the precision of estimates derived from a clustered sample is essentially related to the heterogeneity of the stratum (metropolitan or rural) population for their state. If the members of a cluster (postcode) are effectively no more like each other than they are to others within their state (rural or metropolitan area) population, then the intra-cluster correlation is zero and there is no design effect. However, where regional clusters result in cluster members being more like each other and less like other members of their regional population, then even where the intra-cluster correlation is quite small, there will be a design effect, the size of which is then dependent upon the size of the cluster.

Cluster Sample Size

The target sample size was achieved for each region. There was no set quota by cluster of postcodes. Some clusters were skewed with either more postcodes or postcodes with higher populations of children 2-16 years. There were some postcodes where no children were selected as all numbers were exhausted with no recruitment (high industrial/commercial areas), and there were other postcodes included that were not part of the initial selection ("phone number transportability") but the family was still recruited.

Random digit dialling

The majority of households in Australia have a fixed land line. It is estimated that at least 96% of eligible households in an area will be covered by using RDD although over the past few years there has been an increase in households (particularly high density urban) with mobile only and no land line. Australian Communications and Media Authority estimates that the number of basic fixed line services at 30 June 2005 was 11.46 million, a 1.7 per cent decrease compared to 11.66 million services 12 months earlier.

RDD as a recruitment strategy is limited by the lack of information about non-respondents. Population weightings were applied to assist with overcoming differences in the probability of selection amongst the study children.

Seasonality

The survey collection period (February to August) should be considered when interpreting the results.

Dietary recall

The 24-hour recall methodology relies on the participant's ability to recall the details of all foods, beverages and supplements consumed over a 24-hour period. This method is associated with under/mis/non-reporting of foods and beverages consumed, along with inaccuracies in portion size estimation and level of detail to describe the items. Interviewers were trained in various techniques to minimise this source of error, but it remains unavoidable.

In recognition of the varying age groups of the participants, the interviews were conducted with the primary care-giver for all children below the age of nine years and with the study child for children aged 9 years and over. Primary care-givers were encouraged to be present for all interviews.

To assist with quantifying the recall during the CAPI, measuring aids and a food model booklet were used. During the CATI, only the food model booklet was available to assist with the estimation of portion size.

One 24-hour recall is considered appropriate to estimate the usual mean and median intake of a group. It is not suitable for assessing the usual intake of individuals because of the considerable day-to-day variability in food, beverage and supplement intake within individuals. For this reason, the present survey obtained a second 24-hour recall of intake by CATI for all participants, with 99% of these completed on a non-consecutive day. Provided there are no systematic differences between the CAPI and CATI data, the two days of intake data for each individual can be used to obtain an estimate of usual intakes.

Analyses were undertaken to determine the extent of any systematic bias between the two methodologies (CAPI vs. CATI). A repeated measures analysis of variance was undertaken to determine if there was any statistical significance in nutrient intakes between the two measures. Cohen's generally accepted criteria of size of the effect were used in the evaluation of the within-individual variance (Cohen 1988). While some of the differences in nutrient intakes collected through the two different methods were statistically significant ($p<0.01$), the effects were small, accounting only for up to 4% of the total variance in nutrient intakes. The older age groups (9-13 years and 14-16 years) showed greater variation in nutrient intakes between the two interviews than the younger age groups.

Following the analysis described above, estimates of usual nutrient intake were calculated. Estimates of usual intakes should be utilised when comparing intakes to recommended Nutrient Reference Values and when trying to estimate the prevalence of potentially inadequate intakes in the population. On any one day, children may report very high or very low intakes that are not representative of their usual intake. Nutrient requirements are recommended amounts to be consumed over the longer term and so relate to usual nutrient intakes, therefore the effects of daily variation within-individuals needs to be minimised for the purposes of comparing population intakes to the Nutrient Reference Values.

The C-side software package (Software for intake distribution estimation) developed by Iowa State University was utilised to obtain estimates of usual nutrient intake distributions. This analysis entailed the following:

- preliminary data adjustment to incorporate the population weightings
- transformation of data to normal distributions
- estimation of within and between individual variances. These variances are used to determine the distributions of usual nutrient intakes
- reversion of the data to the original scale, providing:

- population nutrient usual intake means and standard deviations, medians and percentiles. This effectively removes the effects of within-individual variability.
- percentage consuming comparison less than the EAR (or AI where appropriate).

The C-side software includes the same capacity for determining usual intakes for foods.

Data were not collected in a way that groups foods into meals, although 'time of consumption' may be used to indicate mealtimes.

Physical activity recall

The 24-hour recall methodology imposes the discipline of fitting all activities into a 24 hour time-frame, and exploits innate chronological narrative data storage and retrieval methods. However, all recalls are subject to the limitations of memory, social desirability effects, and mis-estimation of time - all of which vary with age, sex and individual characteristics. Children aged less than 9 years are not able to accurately recall what they did the day before and place events into a temporal frame. Therefore, the MARCA was administered only to children aged 9 years and over.

To assist with recall, interviewers were trained to use aids such as television guides and school diaries. Parents were also invited to assist with recalling events such as meal times and outside-of-the-home commitments.

There is substantial random within-individual day-to-day variability in the activity patterns of children and systematic differences, such as school vs. non-school days. For this reason, activity patterns should be sampled over a number of days. In this survey, activity patterns were sampled on four days, including wherever possible one school day and one non-school day. There is no "gold standard" for how many days should be sampled. The number of days required for an "accurate" snapshot of "typical" activity varies according to

- the type of activity being measured
- the purpose of the survey (e.g. estimating population means, estimating prevalence of compliance with physical activity guidelines)
- the methods of data treatment (e.g. normalising data via transformations).

There were no differences in data quality or average values for major outcome variables (MVPA, screen time, sleep) between CAPI and CATI recalls, when corrected for age and day type (i.e. school vs. non-school day).

Pedometry

The data are based on 'complete' days, defined by at least 1,000 steps and the pedometer was removed for no more than 240 minutes. Assuming that the sleep duration for most respondents in this survey is between 8 and 10 hours, allowing 4 hours of pedometer removal still gives at least 10 to 12 hours in which data were collected. This is in line with recent accelerometer studies that include measurement days on which at least 10 hours of data are recorded.

Several studies discard days on which the pedometer was removed for more than 60 minutes. This is an issue, as disregarding days when subjects participated in long periods of swimming or contact sports will lead to spurious estimates of daily physical activity. In the survey, seasonal differences in activity choices will impact on the measurement periods, with aquatic activities more likely in the summer. The vast

majority of reasons for pedometer removal during the waking hours, as recorded on the log sheets, related to unavoidable circumstances such as exposure to water and engagement in contact sports. Relatively few were due to forgetting or refusing to wear the pedometer.

As pedometers are most sensitive to activities involving running and walking, and are removed for aquatic activities and contact sports, caution is advised when using pedometer data to assess compliance with physical activity guidelines. It is recommended that engagement in 'sufficient' physical activity also be assessed using criterion-referenced step counts (currently 11,000-12,000 and 13,000-15,000 per day, for girls and boys respectively). Having these cut-off points, established in accordance with weight categories (normal vs. overweight/obese), avoids the issue associated with inferring 'daily' MVPA from pedometer data.

It should also be noted that Day Type (weekday vs. weekend), in the pedometer data tables, should not be interpreted as 'school day' and 'weekend'. The weekdays in these tables include school holidays, long weekends and pupil-free schools days.

Physical Measures

The methodology of performing physical measurements on participants was designed to minimise errors and be consistent. Normally, measurements should not be taken after training or competition, sauna, swimming or showering, since exercise, warm water and heat can produce dehydration and/or increased blood flow. Measurements taken under those circumstances have the potential to affect body mass and girth measurements. To counter this potential issue, physical measurements were taken part way through the interview, when the participant had been sitting for at least 30 minutes.
Measurement of weight was taken with light clothing on, possibly slightly inflating the weight and BMI results. Waist girth was occasionally taken over light clothing, when requested by the subject, and this could also increase the waist girth results. The difference associated with wearing the light clothing would be small in each of these measurements.

Comparison with previous surveys

Comparison with previous dietary surveys

Dietary information recorded in this survey may differ from data obtained using a different method to assess food and nutrient intake (such as a food record or a semi-quantitative food frequency questionnaire), a different food composition database, or if different age groups were assessed.

The methodology used in this survey is broadly comparable to that used in the 1995 NNS. Differences between the two surveys include:

- Sampling frame
- The age groups used for reporting differ between the two surveys. The 1995 NNS reported intakes for 2-3 years, 4-7 years, 8-11 years, 12-15 years and 16-18 years
- Repeat 24-hour recalls were collected on all participants for this survey whereas the 1995 NNS collected repeat 24-hour recalls on only 10% of the sample and adjusted for within person variation based on this small sub-sample
- The repeat 24 hour recall in this survey was conducted with the use of CATI, whereas the 1995 NNS repeat 24-hour recall also took place in the form of a personal interview

- Food/nutrient composition database – this survey utilised the 2007 AUSNUT database and the 1995 NNS utilised the AUSNUT 1995 database. Both of these food composition databases reflect the composition of foods at the time the survey was completed
- The number of major food groups used to report food intake has been increased to include categories for dairy substitutes and supplements. Some additional sub-groups have also been created to better reflect the current food supply

Comparison with recommendations

Comparisons with dietary recommendations

The NHMRC has recently released the *Nutrient Reference Values for Australia and New Zealand* (NHMRC 2006). Nutrient Reference Values (NRV) include a range of values for comparison, including the estimated average requirements (EAR), recommended dietary intakes (RDI) and adequate intakes (AI) for 2-3 years, 4-8 years, 9-13 years and 14-16 years. For those aged 14 years and above, the acceptable macronutrient distribution range (AMDR) and suggested dietary targets (SDT) are set for certain nutrients that may help in prevention of chronic disease.

The *Core Food Groups* (NHMRC 1995) recommends quantities of cereals, fruits, vegetables, meat and meat alternatives, and dairy products which were designed to meet 70% of the RDIs for all nutrients except energy (NHMRC 1991). The Core Food Groups were under review (to account for the NRVs) at the time of this publication. Direct comparisons of intakes of foods with the recommended core food groups should wait until the review has been completed.

The *Dietary Guidelines for Children and Adolescents in Australia* (NHMRC 2003) provides general recommendations without specifying the amounts recommended for consumption. Information on the number of children consuming these foods can be examined. These dietary guidelines are also being reviewed by NHMRC.

The *Australian Guide to Healthy Eating* provides consumers with information about the amounts and kinds of food that need to be eaten each day to get enough of the nutrients essential for good health and well-being. The Guide aims to encourage the consumption of a variety of foods from each of the five food groups every day in proportions that are consistent with the Dietary Guidelines for Australians. The Guide also provides information on the number of serves required from the five food groups and offers practical examples.

Comparisons with physical activity recommendations

The National Physical Activity Guidelines, issued by DoHA in 2005, recommended levels of physical activity and sedentary behaviour for children aged 5-18 years. These guidelines recommended that children get at least 60 minutes of moderate-to-vigorous physical activity and accumulate no more than 120 minutes of screen time (television, videogames and computer) each day, especially during daylight hours.

The definition of "compliance" is unclear in the guidelines (Olds et al 2007). Compliance can be defined as:

- the child satisfies the guidelines on all days of the survey period (the "all days" method)
- the child satisfies the guidelines on most days of the survey period (the "most days" method)
- the child satisfied the guidelines when MVPA and screen time are averaged across the survey period (the "average" method)

- the level of compliance can be understood as the probability that a randomly chosen child on a randomly chosen day will satisfy the guidelines (the "child x day" method).

In this report, all four definitions of compliance are analysed. For each age x sex x day type (school vs. non-school) slice, the percentage of children who are compliant on 0, 1, 2, 3 and all 4 sampled days are shown, as well as the percentage of children who are compliant when MVPA and screen time are averaged across all four days. The probability that a randomly chosen child on a randomly chosen day meets the guidelines is also displayed.

16. Estimation procedures

The survey collected data on nutrition and physical activity for 4,837 children aged 2-16 years across Australia. Because stratified sampling with non-proportional samples was used, the results must be weighted for appropriate analysis. The weight assigned to an individual child is chosen to adjust the stratum averages by the proportion of children in that stratum in the population. This derivation of the appropriate weights for non proportionate sampling is described below.

It must be noted that it is not possible to allow for non-response bias by such weighting. If the likelihood of responding is related to the nutrition and activity status in some way independent of the weighting variables used here, the weighting will not provide any correction.

Non-Proportionate Sampling

The sampling for the survey used randomly selected clusters of postcodes chosen to give an approximately equal number of respondents in each age group 2-3, 4-8, 9-13, 14-16, from each of the metro and non-metro areas within each State. Parents were then contacted using random digit dialling. Thus, apart from families with no phone, assumed here to be a negligible number, the selection within the chosen postcode clusters was by household. Thus, a given child had probability proportional to 1/(number of children in household) of being selected, so that children in small households were proportionately over-represented.

The data was classified by State/Territory and separately by Capital City and "Rest of State" within each State/Territory. There was no "Rest of State" data for ACT and no Capital City data for Tasmania or the Northern Territory. This gave 13 "Regions" which were used in deriving the weights.

Further, in order to achieve the required equal representation of age groups, in families with more than one child, preference was given to children in the 2-3 and 14-16 age groups. Thus children in larger families in age groups 4-8 and 9-13 were proportionally under-represented in the sample.

In addition, the gender balance in the sample was not controlled. Given that it is likely that there will be differences between boys and girls in the outcome variables, it is appropriate to post-stratify by gender to correct for any bias resulting from chance differences in gender balance.

Ideally the weightings to correct for non-proportionate sampling would be based on:

- Age
- Gender
- Household size
- "Family Structure" – the number of children of each age in the family
- Region, as defined above

However, this proved to give many cells with no data in the sample or very small sample numbers. This would give very high weight to some individuals and result in very inaccurate results. Family size and structure were unlikely to be major influences on nutritional variables and so it was decided to weight only on Age, Gender and Region. This leaves potential biases due to family size and structure, which can be assessed with other potential biases in the non-response bias study.

Data from the ABS, based on the 2006 Census, on household size by Postal Area by State by Capital/Rest-of-State were used to estimate the population numbers.

Data from the survey were used to estimate the sample numbers and hence the weights for each individual child. The ABS data obtained for determining the weights consisted of a table of number of households by number of children of each sex.

The ABS family data was used to construct a table of the number of children in each Region by Age. The sex ratio for each Region was calculated from the ABS Household data and the proportions of boys and girls applied as a multiplier to each cell in the table to give estimated numbers by sex. This gave a table of the estimated total number of children in each Region by Age by Sex class, a total of 104 Classes. The corresponding sample counts were calculated from the Sample data by tabulation. The weight to be applied in computing estimated population means from the data is the ratio of the Population counts to the Sample counts for the Class to which the child belongs.

Results

Tables of weights

File WeightTable.csv gives the weights for each of the 104 Classes, together with the estimated population count and the sample count for each Class.

File Weights.csv gives the weight assigned to each child in the survey, identified by the Unit Record number and Respondent ID.

Use of weighted data

The weights allow calculation of the estimated population mean levels of a variable as

$$\frac{\text{Sum of (Sample value} \times \text{weight)}}{\text{Sum of weights}} \tag{1}$$

Or in mathematical terms

$$\frac{\sum_{i=1}^{N} w_i y_i}{\sum_{i=1}^{N} w_i} \tag{2}$$

where N = 4,837 is the number of children in the Survey, y_i is the value of the variable for the i^{th} child in the survey and w_i is the weight assigned to that child.

The calculation of standard errors requires calculation of an estimated variance within each Class for each variable being studied. This cannot be done separately from the analysis of the variables and so values cannot be given here.
If the sample numbers were larger, these variances could be calculated from the within-class sample variances, but this is not feasible here, since many of the Classes have very small sample numbers. Instead, a model-based approach to estimating the variance will be required.

It is not possible to prescribe in advance what model will be appropriate for each variable, since this will emerge from the analysis. However, the general approach is likely to be similar.

The model will assume that the variance is constant within some larger grouping of the data, such as Region by Age, and the variance within each cell of that grouping estimated by the residual variance from fitting a regression model within the cell.
For example, consider a hypothetical variable "Nutritional Value" which is assumed to have constant variance within each Region by Age group.

If we believe from prior information that Family Size will have little effect on the variable, but it may differ by sex then we would fit a simple regression model Nutritional Value = a + b*Sex to the data for each Region by Age grouping. The residual variance from this model for a particular Region by Age grouping would be our variance estimate for all Regions by Family Structure by Age by Sex Classes having that Region and Age.
It may be that the variance will not vary much between Classes so that a single variance estimate will be appropriate for all Classes.

When the variance estimate appropriate to each Class has been obtained, the standard error of the estimate (2) is

$$\sqrt{\frac{\sum_{i=1}^{N} w_i^2 s_i^2}{\left(\sum_{i=1}^{N} w_i\right)^2}} \qquad (3)$$

If the quantity to be estimated is a proportion of children with a particular attribute, such as the proportion of children in families with family income >$2,000 per week, rather than a mean of a quantitative variable, the Class standard deviation is estimated from the estimated proportions in each Class. The estimated proportion for the population is

$$\frac{\sum_{i=1}^{N} w_i I_i}{\sum_{i=1}^{N} w_i} \quad \text{where } I_i = 1 \text{ for children who have the attribute, } I_i = 0 \text{ for other children} \qquad (4)$$

Let g be the Class containing child i and suppose there are ng children in Class g of whom mg have the attribute, so that the proportion of children in Class g with the attribute is $\hat{p}_i = m_g / n_g$ .The estimated standard deviation of the indicator variable Ii is then $\sqrt{\hat{p}_i\left(1-\hat{p}_i\right)}$. Thus the standard deviation of the estimate (4) is

$$\sqrt{\frac{\sum_{i=1}^{N} w_i^2 \hat{p}_i\left(1-\hat{p}_i\right)}{\left(\sum_{i=1}^{N} w_i\right)^2}} \qquad (5)$$

Note that the sums in equations (4) and (5) run over all children in the survey and not just over Classes. They can be rewritten as sums over Classes if required. Note that $\hat{p}_i$ and w_i are the same for all children in Class g, so can be denoted by $\hat{p}_g$ and w_g.

$$\text{Estimated population proportion} = \frac{\sum_{g=1}^{G} w_g n_g \hat{p}_g}{\sum_{g=1}^{G} w_g n_g} \qquad (4g)$$

With standard deviation

$$\sqrt{\frac{\sum_{g=1}^{G} w_g^2 n_g \hat{p}_g \left(1-\hat{p}_g\right)}{\left(\sum_{g=1}^{G} w_g n_g\right)^2}} \qquad (5g)$$

where G is the number of Classes.

Analysis code

The calculations for the weights were carried out using the R statistical package version 2.5.0[4]. The R code used in the calculations is given in the Section 24.

[4] R Development Core Team (2007). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, URL http://www.R-project.org.

17. Data output and Dissemination

In 2008, the key findings from the survey are to be released to stakeholders and the general public in the form of a media launch jointly presented by the Ministers for Health and Ageing and for Agriculture, Fisheries and Forestry and the Chairman of the AFGC.

Following the official launch of the survey results, interested and expert parties will have the opportunity to conduct independent analysis and interpretation of the data from the survey via the "results database". Access to the results database is likely to be controlled by the Department of Health and Ageing. However, access can be made available to individuals and groups through an application process. This comprehensive database will contain all of the data generated through the implementation of this survey. For confidentiality purposes the database will contain no personal information on the respondents, with respondents names replaced with a unique identification number. The results database will be linked to the dietary analysis software and food database developed by Food Standards Australia New Zealand.

18. Issues arising

Delays in data collection arose due to:

- The original proposition that the sample would be drawn from the Medicare administrative data-base but this was not achievable in the timeframe. A decision was made to change to RDD to recruit participants. This resulted in a 2.5 week delay to the start of field work.
- A delay in pedometers being returned at the beginning of fieldwork. Pedometers were not returned at the same rate as the pilot. This resulted in insufficient pedometers available for reissue at subsequent interviews. To maintain progress interviewers targeted children aged less than 5 years during this shortage (pedometers were only fitted to children aged 5 years and over). This resulted in a higher proportion of younger children being interviewed in the earlier phase of the fieldwork. Additional pedometers were purchased to address this.
- The difficulty in recruiting 14-16 year old participants compared to other age groups, resulting in more data from these participants at the end of the survey period.
- Natural disasters occurring in four locations (Tasmania, Maitland, Sale, Katherine) which delayed interviewing for several weeks.
- Delayed fieldwork meant that some field interviewers had to resign before the data collection was completed due to prior commitments.

19. CAPI survey Script

SECTION A - START SCREEN

A1.	**Enter the RESPONDENT ID number from the Family Contact Form:**	<6 digit number>
A2.	**Enter the Random ID from the Family Contact Form:**	<aaa123>
A3.	**Enter the DOB of the child from the Family Contact Form:**	__ __ / __ __ / __ __
A6.	**Enter the postcode:**	**<add in a code list>**
A6a.	**Enter the State:**	Drop down list – retains last state selected. NSW VIC QLD SA WA TAS NT ACT
A7.	**Select Interviewer ID:**	<insert list when interviewers confirmed>
A8.	**Date of Interview**	Record Automatically
A9.	**Day of Interview:**	Record Automatically 1 Monday 2 Tuesday 3 Wednesday 4 Thursday 5 Friday 6 Saturday 7 Sunday
A10.	**Day Type:**	Record Automatically 1 Weekday 2 Weekend 3 Public Holiday 4 School Holiday

SECTION B - INTRODUCTION SCREEN

Introduction: child aged 2 to 4 years

Address the Parent/Care Giver

Thanks for agreeing to take part in the Kids Eat, Kids Play study.

First of all I want to assure you that all information that you give me will be kept confidential and we have strict processes to ensure the security of your information. I will start by asking a few questions about the household, how many people live here and a little bit about each person. I also will ask about (study child)'s general family background such as your (and your partner's) work and educational background. This will give us a general idea of the home environment (study child) grows up in. Then I will ask you some questions about their food intake. I am also going to ask if I can take some measurements of your child, such as his/her weight, height and waist circumference. There will be a few questions on general food habits and finally, I will ask you some questions about your work and finance.

Once I have finished asking you questions I have a short form that I will ask you to fill in by yourself.

Before we start, I will need to obtain your formal consent for this study. I will read you a statement and you will need to provide your signed agreement to take part in the study.

So that's generally what we are going to be doing, do you have any questions at this point? Do I have your agreement for you and (study child) to be part of this study? I will now get you to formally sign your consent. Let's get started then.

Introduction: child aged 5 to 9 years

Address the Parent/Care Giver

Thanks for agreeing to take part in the Kids Eat, Kids Play study.

First of all I want to assure you that all information that you give me will be kept confidential and we have strict processes to ensure the security of your information.

I will start by asking a few questions about the household, how many people live here and a little bit about each person. I also will ask about (study child)'s general family background such as your (and your partner's) work and educational background. This will give us a general idea of the home environment (study child) grows up in. Then I will ask you some questions about their food intake and what they have done over the last 48 hours. I am also going to ask if I can take some measurements of your child, such as his/her weight, height and waist circumference. I will then ask the child to conduct a stride test and show you how to wear the pedometer, which we ask they do over the next 7 days. There will be a few questions on general food habits and finally, I will ask you some questions about your work and finance.

Once I have finished asking you questions I have a short form that I will ask you to fill in by yourself and return with the pedometer in the envelope supplied.

Before we start, I will need to obtain your formal consent for this study. I will read you a statement and you will need to provide your signed agreement to take part in the study.

So that's generally what we are going to be doing, do you have any questions at this point? Do I have your agreement for you to be part of this study? I will now get you to formally sign your consent. Let's get started then.

Introduction: child aged 9 to 13 years
Address the Parent/Care Giver

Thanks for agreeing to take part in the Kids Eat, Kids Play study.

First of all I want to assure you that all information that you give me will be kept confidential and we have strict processes to ensure the security of your information.

I will start by asking a few questions about the household, how many people live here and a little bit about each person. I also will ask about (study child)'s general family background such as your (and your partner's) work and educational background. This will give us a general idea of the home environment (study child) grows up in. Then I will ask the child some questions about their food intake and what they have done over the last 48 hours. I am also going to ask if I can take some measurements of your child, such as his/her weight, height and waist circumference. I will then ask the child to conduct a stride test and show you how to wear the pedometer, which we ask they do over the next 7 days. There will be a few questions on general food habits and finally, I will ask you some questions about your housing and income.

Once I have finished asking you questions I have a short form that I will ask you to fill in by yourself and return with the pedometer in the envelope supplied.

Before we start, I will need to obtain your formal consent for this study. I will read you a statement and you will need to provide your signed agreement to take part in the study.

So that's generally what we are going to be doing, do you have any questions at this point? Do I have your agreement for you to be part of this study? I will now get you to formally sign your consent. Let's get started then.

Introduction: child aged 14 to 16 years
Address the Parent and Child

Thanks for agreeing to take part in the Kids Eat, Kids Play study.

First of all I want to assure you both that all information that you give me will be kept confidential and we have strict processes to ensure the security of your information.

I will start by asking a few questions to (parent/care giver) about the household, how many people live here and a little bit about each person. I also will ask about (study child)'s general family background such as (Parent and your partner's) work and educational background. This will give us a general idea of the home environment (child) grows up in. Then I will ask (study child) some questions about their food intake and what they have done over the last 48 hours. I am also going to ask if I can take some measurements of (study child), such as his/her weight, height and waist circumference. I will then ask (study child) to conduct a stride test and show you how

to wear the pedometer, which we ask they do over the next 7 days. There will be a few questions on general food habits and finally, I will ask (parent/care giver) some questions about your housing and income.

Once I have finished asking you both questions I have a short form that I will ask (parent/care giver) to fill in by yourself and return with the pedometer in the envelope supplied.

Before we start, I will need to obtain formal consent for this study from the (parent/care giver) and (study child). I will now read a statement and will need you to provide your signed agreement to take part in the study.

So that's generally what we are going to be doing, do you have any questions at this point? Do I have both your agreement to be part of this study? I will now get you both to formally sign your consent. Let's get started then.

SECTION C - CONSENT SCREEN

I now have to obtain your formal consent for this study, and I have to read to you the following statement:

"You and your family are being asked to take part in the Australian National Children's Nutrition and Physical Activity Survey Kids Eat, Kids Play in conjunction with the CSIRO and the University of South Australia. The study will measure the physical activity, nutrition habits and body size and shape of a large group of children, aged two to sixteen years. The Kids Eat, Kids Play is being conducted on behalf of the Australian Government, by the CSIRO and the University of South Australia, who have contracted I-view to collect the data on their behalf.

All the information collected will be kept strictly confidential (except where it is required to be reported by law and/or there is a risk of harm to yourself or others). Information that identifies you will only be disclosed to research consultants for the purposes of administering the Kids Eat, Kids Play. Identifying material is removed from the study data before it is made available for evaluation and research. Only combined results from the study will be discussed and published.

Participation in this study is voluntary. You may choose not to answer some of the questions and you are free to withdraw from the study at any time. You should understand that you will not benefit personally from this research, although the information gathered will be of use in deciding better nutrition and physical activity policies for children.

If you require further information or if you have any problems concerning this project or the way that it is being conducted, please contact the Project Director, Professor Tim Olds (phone 0423 147 955; email **tim.olds@unisa.edu.au**). You may also contact the Chair of UniSA's Human Research Ethics Committee, Ms Vicki Allen (0883023118) and mention Kids Eat, Kids Play or visit the website www.kidseatkidsplay.com.au if you have any queries or if you wish to notify us of change of address details."

Interviewer Note: Go to consent form

C1. Interviewer Note: Confirm that Parent has signed consent form.	Yes	No
	☐1	☐2
		Terminate Interview

If No– terminate interview Enter reason for Refusing

C2. Interviewer Note: Is study child 14 or over?	Yes	No
	☐1	☐2
		Go to C4

C3. Interviewer Note: Confirm that Study Child has signed consent form.	Yes	No
	☐1	☐2
	Go to Section D	**Terminate Interview**

If No– terminate interview Enter reason for Refusing

C4. May I record this interview for training purposes and quality control procedures?	Yes	No
	☐1	☐2
	Record	**Do not record**

SECTION D – ABOUT THE HOUSEHOLD

Address the parent/care giver

Now I'd like to take a few details about yourself and other members of your household. Some of these may seem a bit detailed, but if we sort this information out now the rest of the interview will be quicker. We are interested in family members who usually live here, even if they are away at present.

Interviewer note: 'usually' refers to family members who, when not working, spend at least 50% of their time residing at the household.

Firstly I am going to ask about the people who normally live in your household

	Adults	Children
D1 How many adults and children live in the household?		
	If Don't Know enter 999	**If Refused enter 999**

Family Details	**Parent 1** **Let's start with you…** **(Enter Parent 1 first name.)**	**Parent 2/Partner** **Is there another parent of [child] living here (or your partner)?**	**Study Child** **Next the study child…** **(Enter [child]'s first name.)**	**Person 4** **Who else lives here?**
D2 What is their first name?				
D3 Is … male or female?	☐1 male ☐2 female	☐1 male ☐2 female ☐3 No person	☐1 male ☐2 female	☐1 male ☐2 female ☐3 No person
D4 What was … age last birthday?	☐☐ Years	☐☐ Years	☐☐ Years	☐☐ Years
D5 What is … date of birth?			☐☐☐☐☐☐ D D M M Y Y	
D6 How is … related to parent 1?		☐1 legal spouse ☐2 de-facto partner ☐3 other relative/in-law ☐4 boarder/ housemate ☐5 unrelated adult	☐6 biological child ☐7 adopted child ☐8 step child ☐9 foster child ☐10 grandchild ☐11 niece / nephew ☐12 cousin ☐3 other relative/in-law ☐13 unrelated child	☐6 biological child ☐7 adopted child ☐8 step child ☐9 foster child ☐10 grandchild ☐11 niece / nephew ☐12 cousin ☐3 other relative/in-law ☐13 unrelated child ☐ 14 sibling ☐ 15 parent ☐ 16 grandparent ☐ 17 aunt / uncle ☐4 boarder / housemate ☐ 5 unrelated adult

Family Details	**Parent 1**	**Parent 2/Partner**	**Study Child**	**Person 4**

D7 How is … related to parent 2/partner?			☐6 biological child ☐7 adopted child ☐8 step child ☐9 foster child ☐10 grandchild ☐11 niece / nephew ☐12 cousin ☐3 other relative/ in-law ☐13 unrelated child	☐6 biological child ☐7 adopted child ☐8 step child ☐9 foster child ☐10 grandchild ☐11 niece / nephew ☐12 cousin ☐3 other relative / in-law ☐13 unrelated child ☐ 14 sibling ☐ 15 parent ☐ 16 grandparent ☐ 17 aunt / uncle ☐4 boarder/ housemate ☐5 unrelated adult
D8 Is … of Aboriginal or Torres Strait Islander origin?	☐1 No ☐2 Yes, Aboriginal ☐3 Yes, T/Strait Islander ☐4 Yes, both	☐1 No ☐2 Yes, Aboriginal ☐3 Yes, T/Strait Islander ☐4 Yes, both	☐1 No ☐2 Yes, Aboriginal ☐3 Yes, T/Strait Islander ☐4 Yes, both	
D9 In which country was … born?	Insert SACC codes for all countries	Insert SACC codes for all countries	Insert SACC codes for all countries	
D10 Does … speak a language other than English at home?	Insert ASCL codes for all languages	Insert ASCL codes for all languages	Insert ASCL codes for all languages	

Family Details	**Parent 1**	**Parent 2/Partner**	**Study Child**	**Person 4**
D11 What is the highest year of primary or secondary school that ….have completed?	☐1 School year 12 or equivalent ☐2 School year 11 or equivalent ☐3 School year 10 or equivalent ☐4 School year 9 or equivalent ☐5 School year 8 or below ☐6 Never attended school ☐7 Still at school	☐1 School year 12 or equivalent ☐2 School year 11 or equivalent ☐3 School year 10 or equivalent ☐4 School year 9 or equivalent ☐5 School year 8 or below ☐6 Never attended school ☐7 Still at school		
D12 What is the level of highest qualification that….has ever completed?	☐1 A postgraduate diploma, or higher ☐2 Graduate diploma / Graduate certificate ☐3 A bachelor degree (with or without honours) ☐4 Advanced diploma / diploma ☐5 Certificate III/IV (including trade certificate) ☐6 Other	☐1 A postgraduate diploma, or higher ☐2 Graduate diploma / Graduate certificate ☐3 A bachelor degree (with or without honours) ☐4 Advanced diploma / diploma ☐5 Certificate III/IV (including trade certificate) ☐6 Other		

D13 Does <study child> have any medical conditions and/or disabilities that have lasted or are likely to last for 6 months or more? **MAY SELECT MORE THAN ONE.**		Sight problems (not corrected by glasses or contact lenses) Hearing problems Speech problems Blackouts, fits or loss of consciousness Difficulty learning or understanding things Limited use of arms or fingers Difficulty gripping things Limited use of legs or feet Nerves or emotional conditions that need treatment Any disfigurement or deformity Chronic or recurring pain Any condition that restricts physical activity or physical work (e.g. back problems, migraines) Shortness of breath or difficulty breathing Any mental illness for which help or supervision is required Long term effects as a result of a head injury, stroke or other brain damage Any other long term condition such as arthritis, asthma, heart disease, Alzheimer's disease, dementia etc. Any other long term condition that requires treatment or medication 99 NONE

Family Details	**Person 5** **Who else lives here?**	**Person 6** **Who else lives here?**	**Person 7** **Who else lives here?**	**Person 8…12** **Who else lives here?**
D2 What is their first name?				
D3 Is … male or female?	☐1 male ☐2 female ☐3 no person	☐1 male ☐2 female ☐3 no person	☐1 male ☐2 female ☐3 no person	☐1 male ☐2 female ☐3 no person
D4 What was … age last birthday?	☐ Years	☐ Years	☐ Years	☐ Years
D5 How is … related to parent 1?	☐6 biological child ☐7 adopted child ☐8 step child ☐9 foster child ☐10 grandchild	☐6 biological child ☐7 adopted child ☐8 step child ☐9 foster child ☐10 grandchild	☐6 biological child ☐7 adopted child ☐8 step child ☐9 foster child ☐10 grandchild	☐6 biological child ☐7 adopted child ☐8 step child ☐9 foster child ☐10 grandchild

	☐11 niece / nephew	☐11 niece / nephew	☐11 niece / nephew	☐11 niece / nephew
	☐12 cousin	☐12 cousin	☐12 cousin	☐12 cousin
	☐3 other relative / in-law	☐3 other relative/ in-law	☐3 other relative/ in-law	☐3 other relative/ in-law
	☐13 unrelated child	☐13 unrelated child	☐13 unrelated child	☐13 unrelated child
	☐ 14 sibling	☐ 14 sibling	☐ 14 sibling	☐ 14 sibling
	☐ 15 parent	☐ 15 parent	☐ 15 parent	☐ 15 parent
	☐ 16 grandparent	☐ 16 grandparent	☐ 16 grandparent	☐ 16 grandparent
	☐ 17 aunt / uncle	☐ 17 aunt / uncle	☐ 17 aunt / uncle	☐ 17 aunt / uncle
	☐ 4 boarder / housemate	☐ 4 boarder / housemate	☐ 4 boarder / housemate	☐ 4 boarder / housemate
	☐ 5 unrelated adult	☐ 5 unrelated adult	☐ 5 unrelated adult	☐ 5 unrelated adult
D6 How is … related to parent 2/partner?	☐6 biological child	☐6 biological child	☐6 biological child	☐6 biological child
	☐7 adopted child	☐7 adopted child	☐7 adopted child	☐7 adopted child
	☐8 step child	☐8 step child	☐8 step child	☐8 step child
	☐9 foster child	☐9 foster child	☐9 foster child	☐9 foster child
	☐10 grandchild	☐10 grandchild	☐10 grandchild	☐10 grandchild
	☐11 niece / nephew	☐11 niece / nephew	☐11 niece / nephew	☐11 niece / nephew
	☐12 cousin	☐12 cousin	☐12 cousin	☐12 cousin
	☐3 other relative/ in-law	☐3 other relative/ in-law	☐3 other relative/ in-law	☐3 other relative/ in-law
	☐13 unrelated child	☐13 unrelated child	☐13 unrelated child	☐13 unrelated child
	☐ 14 sibling	☐ 14 sibling	☐ 14 sibling	☐ 14 sibling
	☐ 15 parent	☐ 15 parent	☐ 15 parent	☐ 15 parent
	☐ 16 grandparent	☐ 16 grandparent	☐ 16 grandparent	☐ 16 grandparent
	☐ 17 aunt / uncle	☐ 17 aunt / uncle	☐ 17 aunt / uncle	☐ 17 aunt / uncle
	☐ 4 boarder / housemate	☐ 4 boarder / housemate	☐ 4 boarder / housemate	☐ 4 boarder / housemate
	☐ 5 unrelated adult	☐ 5 unrelated adult	☐ 5 unrelated adult	☐ 5 unrelated adult

D14. Interviewer Note: Record household type?	
Family Household with only family members present:	
One family household	☐1
Two family household	☐2
Three or more family household	☐3
Family Household with non-family members present:	
One family household with non-family members present?	☐4
Two family household with non-family members present?	☐5
Three or more family household with non-family members present?	☐6
Other (Please specify)	☐7

D15. Interviewer Note: Record family type?	
Couple family with:	
Children under 15 years only	☐1
Children under 15 years and dependent students	☐2
Children under 15 years and other people	☐3
Children over 15 only	☐4
Children over 15 years and dependent students	☐5
Children over 15 years and other people	☐6

One parent family:	
Children under 15 years only	☐7
Children under 15 years and dependent students	☐8
Children under 15 years and other people	☐9
Children over 15 only	☐10
Children over 15 years and dependent students	☐11
Children over 15 years and other people	☐12
Other (Please specify)	☐13

SECTION E – Rotate between LINZ24® and MARCA

Address Parent if under 9 otherwise Address the child

Interviewer Note: If child is 9 years and older only rotate between LINZ24® and MARCA. If child is under 9 years do the LINZ

E1. MARCA Completed →Only if 9 years or older	Yes	Day One ONLY	No
	☐	☐	☐
E2. ONLY DAY ONE OF MARCA COMPLETED- specify reason:			
E3. MARCA NOT COMPLETED- specify reason:			
E4. LINZ24® Completed → If 2 -8 years only → If 9 years or older	Yes	No	
	☐	☐	
E5. LINZ24® NOT COMPLETED- specify reason:			
E6. CARER FORM USED	1 Yes – data included 2 To be edited later upon return 3 No		

SECTION F – Anthrop Measures and Placement of Pedometer

Interviewer Note: Only if child is 5 years or older.
If child is under 5 years skip to SECTION Anthrop (Physical Measures)

Pedometer instructions and interviewer script:

Here is the pedometer that we want you to wear for 6 days straight, starting tomorrow morning. Once I have measured your stride length, I will put a plastic tie around it to stop it from opening. Please do not remove the tie; it is there to make sure that we don't lose the information that the pedometer is collecting. When you get dressed tomorrow morning, I would like you to fit the pedometer by placing it half way between your belly button and your hip, the right way up.

Interviewer demonstrates position, and shows what to do for different types of clothing

Please clip the security strap to a belt loop, belt or pocket opening- this is to make sure that the pedometer is not lost if it slips off. After a while you will forget that you are wearing the pedometer, it is so small and light. The idea is to do the things that you usually do, and not to change what you do just because you are wearing the pedometer.

Each night, when the pedometer is removed, I would like you to open the pedometer to write the stored information on the pedometer log sheet.

Interviewer shows child/parent the Pedometer Log Sheet

First, write the day and the date in the Pedometer Log Sheet, here.

Interviewer shows study child/parent care giver the Pedometer Log Sheet

All you need to do then is press the MODE button until the black marker is under 'STEPS' on the display, and write the number in steps column on the Pedometer Log Sheet.

Interviewer shows study child/parent care giver the procedure

Press the MODE button again, and the little black marker should be under 'DIST' – please write this in the DIST column on the Pedometer Log Sheet.

Interviewer shows study child/parent care giver the procedure

Press the MODE button again and the little black marker should be under 'ACT MIN' – please write this in the ACT column on the Pedometer Log Sheet.

Interviewer shows study child/parent care giver the procedure

You then close the pedometer and place it where it will be easily found in the morning .Please remember to do this each night for the next 7 days.

Please remove the pedometer only when you have to. This will be when you go to bed each night, and when the pedometer would get wet, such as when you swim or have a shower or bath. Each night I would like you to write down on the pedometer log sheet how long it was not worn that day (except for sleeping at night.)

Interviewer shows study child/parent care giver the example on the Pedometer Log Sheet

All you need to do is put the pedometer on each morning from tomorrow until (insert day).

After you have recorded the information on the last night, please put the pedometer into this envelope, and post it back to us the following morning. It is very important that the pedometer is in the post as soon as possible after the 7 days. I will leave with you these sticky reminder notes, if you think it will be hard to remember to put the pedometer on each morning.

Interviewer discusses strategic places to stick the labels

We will also send text messages during the coming week to remind you to put the pedometer on each day and write down the numbers each night.

If you do forget to put the pedometer on one day, don't give up all together – please put the pedometer on the following day, and try to remember from then on until…….(insert day)

I just need to measure your stride length so I can enter this information into the pedometer. This will only take a couple of minutes

I need to find an area where you can walk in a line for 10 steps.

Negotiate a suitable location, inside or outside. Open out measuring tape in a straight line.

Please place the tips of your shoes alongside the zero on the tape. Now take 10 normal steps, and I will measure the distance. Now, we need to do that one more time, so that I can get an average. Thanks – that's it.

Interviewer calculates and enters stride length

Let's leave the pedometer in a place that you will definitely find it tomorrow morning!

F1. Stride Test Completed	Yes	No
	☐	☐
F2. NOT COMPLETED- specify reason:		

Record first measure:	
F3. Stride data 1	
Record second measure:	
F4. Stride data 2	

Calculate Average:	
F5. Stride data 3	
Record Pedometer ID	
F6. Pedometer ID	:6 digit number

Record first measure:	
F6. Height data 1 **If smaller than 90cm or greater than 200 cm alert the interviewer to "CHECK HEIGHT MEASURE". But allow to override**	
Record second measure:	
F7. Height data 2	
Record third measure:	
F8. Height data 3 **ASK IF difference between height 1 and height 2 is 5mm or greater.**	

Record first measure:	
F9. Weight data 1	
Record Second measure:	
F10. Weight data 2	
Record Second measure:	
F11. Weight data 3 ASK IF difference between weight 1 and weight 2 is 0.1kg or greater.	

Record first measure:	
F12. Waist girth 1	
Record Second measure:	
F13. Waist girth 2	
Record third measure:	
F14. Waist girth data 3 ASK IF difference between waist girth 1 and waist girth 2 is 10mm or greater.	

F15. Waist girth measured over	skin	clothing
	☐	☐

F15a Comments	

Automatically recorded measure:

F16. Final Height (cm)	

Automatically recorded measure:	
F17. Final Mass (kg)	

Automatically recorded measure:	
F18. Final Waist Girth (cm)	

Automatically recorded measure:	
F18. BMI (kg/m2)	

F20. Date of measurement:

Day	**Month**	**Year**
DATE STAMP AUTOMATICALLY	**DATE STAMP AUTOMATICALLY**	**DATE STAMP AUTOMATICALLY**

F21.Time of measurement:

TIME STAMP AUTOMATICALLY

Interviewer Alert: Please write down height & weight on a notepad- needed this later for MARCA

F22. ANTHRO completed	Yes	No
	☐	☐
F23. NOT COMPLETED- specify reason:		

If child is under 9 – Thank you very much for your help today, you have done very well at the measurement activities. That is all I need to ask you today, I now have some questions for your (mum/dad/other).

SECTION G – Rotate between LINZ24® and MARCA

Address the child (over 9 years)

Interviewer Note: If child is 9 years and older only (conduct either the LINZ24® or MARCA that was not completed in SECTION E)

G1. MARCA Completed **→Only if 9 years or older**	Yes	Day One ONLY	No
	☐	☐	☐
G2. ONLY DAY ONE OF MARCA COMPLETED- specify reason:			
G3. MARCA NOT COMPLETED- specify reason:			
G4. LINZ24® Completed **→ If 9 years or older**	Yes	No	
	☐	☐	
G5. LINZ24® NOT COMPLETED- specify reason:			
G6. CARER FORM USED	1 Yes – data included 2 To be edited later upon return 3 No		

SECTION H – FOOD HABITS SURVEY

Address the child if over 9 years otherwise address the parent/care giver

Interviewer Note: Please give parent Food Habits Survey questions if not already completed during ANTHRO.

	Parent 1	**Study Child (if 9+ years only)**
H1. What is the main type of milk that you usually use?	☐1 Whole/full cream ☐2 Low/reduced fat ☐3 Skim ☐4 Evaporated or sweetened condensed ☐5 Soy milk ☐6 None of the above ☐7 Does not drink milk, or ☐8 Don't know	☐1 Whole/full cream ☐2 Low/reduced fat ☐3 Skim ☐4 Evaporated or sweetened condensed ☐5 Soy milk ☐6 None of the above ☐7 Does not drink milk, or ☐8 Don't know
H2. How many serves of vegetables do you usually eat each day? One serve is equal to half a cup. INTERVIEWER NOTE: Show food prompt if necessary.	☐1 Less than one serve ☐2 One serve ☐3 Two serves ☐4 Three serves ☐5 Four serves ☐6 Five serves ☐7 Six or more serves, or ☐8 Don't eat vegetables	☐1 Less than one serve ☐2 One serve ☐3 Two serves ☐4 Three serves ☐5 Four serves ☐6 Five serves ☐7 Six or more serves, or ☐8 Don't eat vegetables
H3. How many serves of fruit do you usually eat each day? One serve is equal to half a cup. INTERVIEWER NOTE: Show food prompt if necessary.	☐1 Less than one serve ☐2 One serve ☐3 Two serves ☐4 Three serves ☐5 Four serves ☐6 Five serves ☐7 Six or more serves, or ☐8 Don't eat fruit	☐1 Less than one serve ☐2 One serve ☐3 Two serves ☐4 Three serves ☐5 Four serves ☐6 Five serves ☐7 Six or more serves, or ☐8 Don't eat fruit
H4. Does the person who prepares your meal add salt when they are cooking?	☐1 Yes usually ☐2 Yes sometimes ☐3 No ☐4 Don't know	☐1 Yes usually ☐2 Yes sometimes ☐3 No ☐4 Don't know
H5. Is it iodised (i.e. contains iodine)?	☐1 Yes usually ☐2 No ☐3 Don't know	☐1 Yes usually ☐2 No ☐3 Don't know
H6. Do you add salt to your meal at the table?	☐1 Yes usually ☐2 Yes sometimes ☐3 No ☐4 Don't know	☐1 Yes usually ☐2 Yes sometimes ☐3 No ☐4 Don't know
H7. Is it iodised (i.e. contains iodine)?	☐1 Yes usually ☐2 No ☐3 Don't know	☐1 Yes usually ☐2 No ☐3 Don't know

H8 In the past 12 months have you always had sufficient money to buy food?

☐ 1 Yes – go to H10

☐ 2 No
☐ 3 Refused – go to H10

H9 If no, did you go without food?
☐ 1 Yes
☐ 2 No
☐ 3 Refused

H10 Has [child's name] ever been breastfed?
☐ 1 Yes
☐ 2 No - go to H12
☐ 3 Don't Know – go to H12

H11 If yes, including times of weaning, what is the total time your child was breastfed?
_____ Weeks
_____ Months
☐ Currently breastfeeding
☐ Don't know

H12 Has [child's name] ever been given infant formula regularly?
☐ 1 Yes
☐ 2 No - go to H13
☐ 3 Don't Know – go to H13

H12b If yes, at what age was your child first given infant formula regularly?
_____ Weeks
_____ Months
☐ Don't know

H13 At what age was [child's name] first given solid food regularly?
_____ Weeks
_____ Months
☐ Don't know

H14 How much did [child's name] weigh at birth
_____ kilograms _____ grams
OR
_____ pounds _____ ounces

H14f Was a written record used to recall the birth weight?
☐ 1 Yes
☐ 2 No

H15 Which one of the following best describes [child's name]'s usual way of eating?

☐ 1 No special way of eating
☐ 2 Vegetarian diet
☐ 3 Weight reduction diet
☐ 4 Diabetic diet
☐ 5 Fat modified diet to lower blood fat (cholesterol)
☐ 6 Other Specify _____
☐ 7 Refused

If child is over 9 – Thank you very much for your help today, you have done very well at the all the activities and tasks. I now have some questions for your (mum/dad/other) but I will talk to you again before I leave about the follow up survey over the telephone.

SECTION I – RECALL DAYS

Address the child if over 9 years otherwise address the parent/care giver

I1. Was there anything unusual about yesterday that should be noted for the researchers analysing the food intake or activity data for this child?	☐1 Yes – record comment ☐2 No – Skip to I3
I2 Comments:	
I3. Was there anything unusual about the day before yesterday that should be noted for the researchers analysing the activity data for this child?	☐1 Yes – record comment ☐2 No – Skip to Section J
I2 Comments:	

SECTION J – DEMOGRAPHICS

Address the Parent/care giver

Now I am going to ask a few questions about your job and finances. Once again your answers are totally confidential and individual responses will not be provided to government agencies. We need to have a broad range of Australian families included in our study.

Family Details	Parent 1	Parent 2
J1. Last week, did you do any work at all in a job, business or farm?	☐1 Yes → Go to J4. ☐2 No ☐3 Permanently unable to work → Go to J7. ☐4 Permanently not intending to work (if aged 65+ only) → Go to J7.	☐1 Yes → Go to J4. ☐2 No ☐3 Permanently unable to work → Go to J7. ☐4 Permanently not intending to work (if aged 65+ only)→Go to J7.
J2. Last week, did you do any work without pay in a family business?	☐1 Yes → Go to J4. ☐2 No ☐3 Permanently not intending to work (if aged 65+ only) →Go to J7.	☐1 Yes → Go to I7. ☐2 No ☐3 Permanently not intending to work (if aged 65+ only) →Go to J7.
J3. Did you have a job, business or farm that you were away from because of holidays, sickness or any other reason? (include casual, on-call or agency work)	☐1 Yes ☐2 No → Go to J5. ☐3 Permanently not intending to work (if aged 65+ only) →Go to J7.	☐1 Yes ☐2 No → Go to J5. ☐3 Permanently not intending to work (if aged 65+ only) →Go to J7.
J4. How many hours do you usually work each week in (that job/that business/all businesses)? (If irregular hours, average over last 4 weeks. Do not include travel time)	☐1 hour or more → Write number ☐☐☐ Hours → go to J8. ☐ Less than 1 → hour go to J5.	☐1 hour or more → Write number ☐☐☐ Hours → go to J8. ☐ Less than 1 → hour go to J5.
J5. At any time during the last 4 weeks, have you been looking for full-time or part-time work? (Mark all that apply)	☐1 Yes, full-time work ☐2 Yes, part-time work ☐3 Yes, casual work ☐4 No → Go to J7. ☐5 Don't know → Go to J7.	☐1 Yes, full-time work ☐2 Yes, part-time work ☐3 Yes, casual work ☐4 No → Go to J7. ☐5 Don't know → Go to J7.
J6. If you had found a job, could you have started work last week?	☐1 Yes→ Go to J10 (if no parent 2). ☐2 No→ Go to J10. (if no parent 2).	☐1 Yes→ Go to J10. (if no parent 2). ☐2 No→ Go to J10. (if no parent 2).
J7. When did you last work for two weeks or more?	☐1 Within the last three months ☐2 3 up to 6 months ago ☐3 6 up to 12 months ago ☐4 1 up to 2 years ago ☐5 2 up to 5 years ago ☐6 More than 5 years ago ☐7 Has never worked for 2 weeks or more	☐1 Within the last three months ☐2 3 up to 6 months ago ☐3 6 up to 12 months ago ☐4 1 up to 2 years ago ☐5 2 up to 5 years ago ☐6 More than 5 years ago ☐7 Has never worked for 2 weeks or more

Family Details	Parent 1	Parent 2
J8. In the main job held last week what was……'s occupation? GET FULL TITLE		
J9. What are the main tasks that …usually perform(s) in that occupation GET FULL DETAILS		

J10. Before income tax is taken out, what is your present yearly income (for you and your partner combined)?

INCLUDE PENSIONS AND ALLOWANCES
BEFORE TAX, SUPERANNUATION OR HEALTH INSURANCE

$2400 or more per week ($124,800 or more per year)	☐1
$2200 - $2399 per week ($114,400 - $124,799 per year)	☐2
$2000 - $2199 per week ($140,000 -$103,999 per year)	☐3
$1500 - $1999 per week ($78,000 - $103,999 per year)	☐4
$1000 - $1499 per week ($52,000 - $77,999 per year)	☐5
$800 - $999 per week ($41,600 - $51,999 per year)	☐6
$700 - $799 per week ($36,400 - $41,999 per year)	☐7
$600 - $699 per week ($31,200 - $36, 399 per year)	☐8
$500 - $599 per week ($26,000 - $31,199 per year)	☐9
$400 - $499 per week ($20,800 - $25,999 per year)	☐10
$300 - $399 per week ($15,600 - $20,799 per year)	☐11
$200 - $299 per week ($10,400 - $15,599 per year)	☐12
$100 - $199 per week ($5,200 - $10,399 per year)	☐13
$50 - $99 per week ($2,600 - $5,19 per year)	☐14
$1 - $49 per week ($1 - $2,599 per year)	☐15
Nil income	☐16
Negative income (loss)	☐17
Don't Know	☐18
Refused	☐19

SECTION K – KEEPING IN TOUCH

Address the parent/care giver and child (if 9 years and over)
If 9-16 years old

We will be in touch by telephone in a fortnight on two occasions. Firstly, to complete a second nutrition survey and then again to complete another activity survey. If under 9 we will be in touch over the next week.

K1.	**Can I please have your Home Phone Number:**	( )
K2.	**What is the best number to contact you/study child on:**	( )
K3.	**What is the best time of day to call?**	
K4.	**What is the best day to call?**	☐1 Monday ☐2 Tuesday ☐3 Wednesday ☐4 Thursday ☐5 Friday ☐6 Saturday ☐7 Sunday

NOTE: INSERT ROTATION OF SURVEY DAY DEPENDANT ON YESTERDAY'S DATE AND LOOK UP TABLE INSTRUCTION.

K5. **So that we can send you a short reminder messages could I please have:**	Parent Mobile	Parent Email
	99 do not have/ refused	99 do not have/ refused
	Study Child Mobile:	Study Child Email:
	99 do not have/ refused	99 do not have/ refused

Interviewer to check off instructions:

Place copies of all material to be left behind in the folder and hand it to them, as their reference for the study. The material includes:	☐
Summary consent form;	☐
Permission to contact form for carer/teacher (if applicable);	☐
Medicare Australia data release form (if agreed);	☐
Change of address form;	☐
Service agency listing;	☐
Respondent brochure (if they do not already have one).	☐
Food Habits Survey	☐
Pedometer and instruction sheet	☐
Nutrition and Meal Serving Size Guide Card	☐
Reply paid Envelope	☐
Invite them to visit the respondent website www.kidseatkidsplay.com.au to keep in touch with what is happening with the study.	☐
Let them know that you will ring back in a two weeks time to do the follow up survey or so to see how they have gone with the self-complete(s), and the pedometer.	☐
Explain that it is possible that someone from the Office may be in touch to verify that you have conducted the interview.	☐
Thank them sincerely for their time and cooperation and check if there are any outstanding queries. It is very important that you take the time to talk with the respondent about any questions they have about the study.	☐
Take care packing up your equipment – check against the list of materials that you have everything.	☐
Repeat your full name and the 1800 10 80 12 phone number for the respondent to contact your supervisor if they have any queries or would like to verify the validity of the study.	☐
Sign and date a PR Card and hand to respondent. This card is to be left with respondents so they have your name and I-View contact details, and this is part of our IQCA requirements.	☐

20. Data Item list

FOOD AND NUTRIENT INTAKE THE PREVIOUS DAY

(detailed information per food/beverage consumed for each person for each day)

Data Items	Descriptors	Population
Food code	(unique code for each for each food/beverage)	All
Food group	See Section **Error! Reference source not found.**	All
Portion size (grams/tablets)	Amount consumed in grams for foods/beverages or tablets for dietary supplements	All
Time eaten	Hours:minutes	All
Place of consumption	The location at which the food was consumed.	All
Portion size (estimated) for each nutrient	Proximates	All
	Energy (kilojoules)	
	Energy (including from fermentable fibre) (kilojoules)	
	Moisture (water) (grams)	
	Protein (grams)	
	Fat, total (grams)	
	Saturated fatty acids, total (grams)	
	Monounsaturated fatty acids, total (grams)	
	Polyunsaturated fatty acids, total (grams)	
	- alpha-linolenic fatty acid (grams)	
	- linoleic acid fatty acid (grams)	
	- long chain omega-3 fatty acids (milligrams)	
	Cholesterol (milligrams)	
	Carbohydrate, total (grams)	
	Sugars, total (grams)	
	Starch (grams)	
	Dietary fibre (grams)	
	Alcohol (grams)	
	Vitamins	
	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)	
	Vitamin C (milligrams)	
	Vitamin D (micrograms)	
	Vitamin E (as alpha-tocopherol) (milligrams)	
	Total Folate (micrograms)	
	Dietary folate equivalents (micrograms)	
	Minerals & electrolytes	
	Potassium (milligrams)	
	Sodium (milligrams)	
	Calcium (milligrams)	
	Phosphorus (milligrams)	
	Magnesium (milligrams)	
	Iron (milligrams)	
	Zinc (milligrams)	
	Iodine (micrograms)	
	Other	
	Caffeine (milligrams)	

FOOD AND NUTRIENT INTAKE THE PREVIOUS DAY

(summary information available per person per day, –excluding intake from dietary supplements)

Data Items	Descriptors	Population
Day of week of intake	Monday Tuesday Wednesday Thursday Friday Saturday Sunday	All
Type of Day	Weekday Weekend Day School Holiday Public Holiday	All
Season of intake	Summer Autumn Winter Spring	All
Total amount of each nutrient per person per day	Proximates	All
	Energy (kilojoules)	
	Energy (including from fermentable fibre) (kilojoules)	
	Moisture (water) (grams)	
	Protein (grams)	
	Fat, total (grams)	
	Saturated fatty acids, total (grams)	
	Monounsaturated fatty acids, total (grams)	
	Polyunsaturated fatty acids, total (grams)	
	- alpha-linolenic fatty acid (grams)	
	- linoleic acid fatty acid (grams)	
	- long chain omega-3 fatty acids (milligrams)	
	Cholesterol (milligrams)	
	Carbohydrate, total (grams)	
	Sugars, total (grams)	
	Starch (grams)	
	Dietary fibre (grams)	
	Alcohol (grams)	
	Vitamins	
	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)	
	Vitamin C (milligrams)	
	Vitamin D (micrograms)	
	Vitamin E (as alpha-tocopherol) (milligrams)	
	Total Folate (micrograms)	
	Dietary folate equivalents (micrograms)	
	Minerals & electrolytes	
	Potassium (milligrams)	
	Sodium (milligrams)	
	Calcium (milligrams)	
	Phosphorus (milligrams)	
	Magnesium (milligrams)	
	Iron (milligrams)	
	Zinc (milligrams)	
	Iodine (micrograms)	
	Other	
	Caffeine (milligrams)	

Amount of each nutrient per 1000 kJ of energy consumed (per person per day)	As listed above	All
Percentage contribution of macronutrient to energy intake (per person per day)	Protein	All
	Fat, total	
	Saturated fatty acids, total	
	Monounsaturated fatty acids, total	
	Polyunsaturated fatty acids, total	
	Carbohydrate, total	
	Sugars, total	
	Starch	
	Alcohol	
Food intake the previous day compared to usual intake		All
	Was the recalled day unusual?	
		All who reported unusual recall day
	Comments about why recalled day was unusual	

FOOD AND NUTRIENT INTAKE THE PREVIOUS DAY

(summary information available per person per day, –including intake from dietary supplements)

Data Items	Descriptors	Population
All as above		

PHYSICAL MEASUREMENTS

Data Items	Descriptors	Population
Height measurements (cm)	The first, second and third (optional) height measurements (in cm)	All
Height (cm)	Height (in cm). This is an average of all measurements taken.	All
Weight measurements (kg)	The first, second and third (optional) weight measurements (in kg)	All
Weight (kg)	Weight (in kg). This is an average of all measurements taken.	All
Waist girth measurements (cm)	The first, second and third (optional) waist girth measurements (in cm)	All
Waist girth (cm)	Waist girth (in cm). This is an average of all measurements taken.	All
Method used for measuring waist girth	Waist girth measurement taken over skin or clothing	All
BMI	The calculated Body Mass Index	All
Reason for non completion of anthropomtery component	Interviewer comments on why the anthro measurements were not completed.	All who did not complete anthropometry
Reason for non completion of stride test component	Interviewer comments on why the stride test was not completed.	All eligible for pedometry
Stride length measurements (cm)	The first and second stride measurements (in cm) of the respondent.	All eligible for pedometry
Stride length (cm)	Stride length (in cm). This is an average of the taken measurements.	All eligible for pedometry

FOOD HABITS

Data Items	Descriptors		Population
Main type of milk that you usually used	1	Whole/full cream	All
	2	Low/reduced fat	
	3	Skim	
	4	Evaporated or sweetened condensed	
	5	Soy milk	
	6	None of the above	
	7	Does not drink milk, or	
	8	Don't know	
Number of serves of vegetables usually eaten each day	1	Less than one serve	All
	2	One serve	
	3	Two serves	
	4	Three serves	
	5	Four serves	
	6	Five serves	
	7	Six or more serves, or	
	8	Don't eat vegetables	
Number of serves of fruit usually eaten each day	1	Less than one serve	All
	2	One serve	
	3	Two serves	
	4	Three serves	
	5	Four serves	
	6	Five serves	
	7	Six or more serves, or	
	8	Don't eat fruit	
Is salt added by food preparer to meals during cooking	1	Yes usually	All
	2	Yes sometimes	
	3	No	
	4	Don't know	
Is salt used in cooking iodised	1	Yes usually	If answered 1 or 2 above
	2	No	
	3	Don't know	
Is salt added to meals at the table	1	Yes usually	All
	2	Yes sometimes	
	3	No	
	4	Don't know	
Is salt used at table iodised	1	Yes usually	If answered 1 or 2 above
	2	No	
	3	Don't know	
In the past 12 months have you always had sufficient money to buy food?	1	Yes	All
	2	No	
	3	Refused	
If no, did you go without food?	1	Yes	If answered 2 above
	2	No	
	3	Refused	
Has child ever been breastfed?	1	Yes	All
	2	No	
	3	Don't know	
Number of weeks breastfed			If ever breastfed
Number of months breastfed			If ever breastfed
Has child ever been given infant formula regularly	1	Yes	All
	2	No	
	3	Don't know	
Number of weeks formula fed			If ever formula fed
Number of months formula fed			If ever formula fed
Age in weeks child was first given solid food regularly			All
Age in child respondent was first given solid food regularly			All
Birth weight (pounds)	Birth weight of child (portion in pounds)		All

Birth weight (ounces)	Birth weight of child (portion in ounces)	All
Birth weight (kg)	Birth weight of child (portion in kilograms)	All
Birth weight (g)	Birth weight of child (portion in grams)	All
Was a written record used to recall the birth weight	Yes or no	All
Usual way of eating	1 No special way of eating 2 Vegetarian diet 3 Weight reduction diet 4 Diabetic diet 5 Fat modified diet to lower cholesterol 6 Other 7 Refused	All
Other usual way of eating not described above	Text description on other usual way of eating	If answered 6 above

MARCA EXTRACTED DATA – for eligible respondents

Data Items	Population
Date of test	All
Type of day	All
Physical Activity Level (PAL) in METs	All
MPA - minutes of moderate PA (>=3 to <6 METs)	All
VPA - minutes of vigorous PA (>=6 METs)	All
Total minutes of active transport	All
Total minutes spent in part-time work	All
Total minutes spent doing chores	All
Total minutes spent watching TV	All
Total minutes spent at the computer (e.g. typing/internet)	All
Total minutes spent playing video or computer games	All
Total minutes spent talking on the phone	All
Total minutes spent texting	All
Total minutes of passive transport	All
Total minutes spent in inactivity (activities requiring ≥1 to <2 METs)	All
Total minutes spent in light activity (activities requiring ≥2 to <3 METs)	All
Total minutes spent sitting/other sedentary activity (activities requiring <3 METs)	All
Total minutes spent lying down excluding sleep	All
Total minutes of sleep	All
Wake-up time	All
Bed time	All

PEDOMETER DATA – for eligible respondents

Data Items	Population
Day Number (sequential)	All
Date of recording	All
The number of steps made during the 24 hours	All
The distance traveled (in km)	All
The number of minutes of physical activity	All
The number of minutes in which the pedometer was not worn.	All
The date on which the pedometer was sent back.	All

Main Interview Demography	Population
postcode of residence	All
state of residence	All
Number of adults in Household (aged ≥18 years)	All
Number of children in Household (aged <18 years)	All
Parent 1 Gender	All
Parent 1 Age	All
Parent 1 ATSI	All
Parent 1 Country Born	All
Parent 1 language spoken	All
Parent 1 School Ed	All
Parent 1 Higher Ed	All
Parent 2 Gender	All who have 2nd Parent
Parent 2 Age	All who have 2nd Parent
Parent 2 Relationship to Parent 1	All who have 2nd Parent
Parent 2 ATSI	All who have 2nd Parent
Parent 2 Country Born	All who have 2nd Parent
Parent 2 language spoken	All who have 2nd Parent
Parent 2 School Ed	All who have 2nd Parent
Parent 2 Higher Ed	All who have 2nd Parent
Study Child Gender	All
Study Child Age	All
Study Child Date of Birth	All
Study Child Relationship to Parent 1	All
Study Child Relationship to Parent 2	All
Study Child ATSI	All
Study Child Country Born	All
Study Child Language Spoken	All
Study Child Medical Condition	All
Person 4 to 12 Gender	All who have Person 4-12 in household
Person 4 to 12 Age	All who have Person 4-12 in household
Person 4 to 12 Relationship to Parent 1	All who have Person 4-12 in household
Person 4 to 12 Relationship to Parent 2	All who have Person 4-12 in household
Household Type	All
Family Type	All
Worked last week	Parent 1 and Parent 2 (where applicable)
Unpaid Work	All Parent 1 and Parent 2 (where applicable) not working in last week
Away from Work	All Parent 1 and Parent 2 (where applicable) not working in last week
Worked hours	All working Parent 1 and Parent 2 (where applicable)
Number of hours worked	All working Parent 1 and Parent 2 (where applicable)
Looking for work - Full time	All not working / excluding permanently not in workforce Parent 1 and Parent 2 (where applicable)
Looking for work - Part time	All not working / excluding permanently not in workforce Parent 1 and Parent 2 (where applicable)
Looking for work - Casual	All not working / excluding permanently not in workforce Parent 1 and Parent 2 (where applicable)
Looking for work - No	All not working / excluding permanently not in workforce Parent 1 and Parent 2 (where applicable)
Looking for work - Don't Know	All not working / excluding permanently not in workforce Parent 1 and Parent 2 (where applicable)
Start Work	All not working / excluding permanently not in workforce Parent 1 and Parent 2 (where applicable)
Last Work	All not working / excluding permanently not in workforce Parent 1 and Parent 2 (where applicable)

Job Description	All working Parent 1 and Parent 2 (where applicable)
Job Tasks	All working Parent 1 and Parent 2 (where applicable)
ASCO CODE	All working Parent 1 and Parent 2 (where applicable)
Annual Income	All

21. Food groups

1995 Food Code	Food Group Name	2007 Revised Food Code	Revised Food Group Name
11	**NON-ALCOHOLIC BEVERAGES**	**11**	**NON-ALCOHOLIC BEVERAGES**
111	Tea	111	Tea
112	Coffee And Coffee Substitutes	112	Coffee And Coffee Substitutes
113	Fruit And Vegetable Juices And Drinks	113	Fruit And Vegetable Juices, And Drinks
		114	Cordials
114	Soft Drinks, Flavoured Mineral Waters And Electrolyte Drinks	115	Soft Drinks, And Flavoured Mineral Waters
		116	Electrolyte, Energy and Fortified Drinks
115	Mineral Waters And Water	117	Mineral Waters And Water
116	Water With Other Additions As A Beverage	118	Other Beverage Flavourings and Prepared Beverages
12	**CEREALS AND CEREAL PRODUCTS**	**12**	**CEREALS AND CEREAL PRODUCTS**
121	Flours And Other Cereal Grains And Starches	121	Flours And Other Cereal Grains And Starches
122	Regular Breads, And Rolls	122	Regular Breads, And Bread Rolls (Plain/Unfilled/Untopped Varieties)
123	Breakfast Cereals, Plain, Single Source		
124	Fancy Breads, Flat Breads, English-Style Muffins And Crumpets	123	English-Style Muffins, Flat Breads, And Savoury and Sweet Breads
125	Pasta And Pasta Products	124	Pasta And Pasta Products
126	Rice And Rice Products		
127	Breakfast Cereals, Mixed Source	125	Breakfast Cereals and Bars, Unfortified and Fortified Varieties
128	Breakfast Cereal, Hot Porridge Type	126	Breakfast Cereal, Hot Porridge Type
13	**CEREAL-BASED PRODUCTS AND DISHES**	**13**	**CEREAL-BASED PRODUCTS AND DISHES**
131	Sweet Biscuits	131	Sweet Biscuits
132	Savoury Biscuits	132	Savoury Biscuits
133	Cakes, Buns, Muffins, Scones, Cake-Type Desserts	133	Cakes, Buns, Muffins, Scones, Cake-Type Desserts
134	Pastries	134	Pastries
135	Mixed Dishes Where Cereal Is The Major Ingredient	135	Mixed Dishes Where Cereal Is The Major Ingredient
136	Batter-Based Products	136	Batter-Based Products
14	**FATS AND OILS**	**14**	**FATS AND OILS**
141	Dairy Fats	141	Butters
		142	Dairy Blends
142	Margarine	143	Margarine and Table Spreads
143	Vegetable Oil	144	Vegetable/Nut Oil
144	Other Fats	145	Other Fats
145	Unspecified Fats	146	Unspecified Fats
15	**FISH and SEAFOOD PRODUCTS AND DISHES**	**15**	**FISH and SEAFOOD PRODUCTS AND DISHES**
151	Fin Fish (Excluding Canned)	151	Fin Fish (Excluding Commercially Sterile)
152	Crustacea And Molluscs (Excluding Canned)	152	Crustacea And Molluscs (Excluding Commercially Sterile)
153	Other Sea And Freshwater Foods	153	Other Sea And Freshwater Foods
154	Packed (Canned And Bottled) Fish	154	Packed (Commercially Sterile) Fish And Seafood

1995 Food Code	Food Group Name	2007 Revised Food Code	Revised Food Group Name
	And Seafood		
155	Fish And Seafood Products	155	Fish And Seafood Products (Homemade and Takeaway)
156	Mixed Dishes With Fish Or Seafood As The Major Component	156	Mixed Dishes With Fish Or Seafood As The Major Component
16	**FRUIT PRODUCTS AND DISHES**	**16**	**FRUIT PRODUCTS AND DISHES**
161	Pome Fruit	161	Pome Fruit
162	Berry Fruit	162	Berry Fruit
163	Citrus Fruit	163	Citrus Fruit
164	Stone Fruit	164	Stone Fruit
165	Tropical Fruit	165	Tropical Fruit
166	Other Fruit	166	Other Fruit
167	Mixtures Of Two Or More Groups Of Fruit	167	Mixtures Of Two Or More Groups Of Fruit
168	Dried Fruit, Preserved Fruit	168	Dried Fruit, Preserved Fruit
169	Mixed Dishes Where Fruit Is The Major Component	169	Mixed Dishes Where Fruit Is The Major Component
17	**EGG PRODUCTS AND DISHES**	**17**	**EGG PRODUCTS AND DISHES**
171	Eggs	171	Eggs
172	Dishes Where Egg Is The Major Ingredient	172	Dishes Where Egg Is The Major Ingredient
173	Egg Substitutes and Dishes	173	Egg Substitutes and Dishes
18	**MEAT, POULTRY and GAME PRODUCTS and DISHES**	**18**	**MEAT, POULTRY and GAME PRODUCTS and DISHES**
181	Muscle Meat	181	Muscle Meat
182	Game And Other Carcase Meats	182	Game And Other Carcase Meats
183	Poultry And Feathered Game	183	Poultry And Feathered Game
184	Organ Meats And Offal, Products And Dishes	184	Organ Meats And Offal, Products And Dishes
185	Sausages, Frankfurts And Saveloys	185	Sausages, Frankfurts And Saveloys
186	Processed Meat	186	Processed Meat
187	Mixed Dishes Where Beef Or Veal Is The Major Component	187	Mixed Dishes Where Beef, Veal Or Lamb Is The Major Component
188	Mixed Dishes Where Lamb Or Pork, Bacon, Ham Is The Major Component	188	Mixed Dishes Where Pork, Bacon, Ham Is The Major Component
189	Mixed Dishes Where Poultry Or Game Is The Major Component	189	Mixed Dishes Where Poultry Or Game Is The Major Component
191	**Dairy Milk**	**19**	**MILK PRODUCTS AND DISHES**
1911	Milk, Fluid, Fat-Increased	191	Dairy Milk (cow, sheep and goat)
192	Yoghurt	192	Yoghurt
193	Cream	193	Cream
194	Cheese	194	Cheese
195	Frozen Milk Products	195	Frozen Milk Products
196	Other Dishes Where Milk Or A Milk Product Is The Major Component	197	Other Dishes Where Milk Or A Milk Product Is The Major Component
197	Milk Substitutes		
198	Flavoured Milks	198	Flavoured Milks
		20	Dairy Substitutes
		201	Dairy Milk Substitutes, Unflavoured
		202	Dairy Milk Substitutes, Flavoured
		203	Cheese Substitute
		204	Soy-Based Ice Confection
		205	Soy-Based Yoghurts
20	**SOUP**	**21**	**SOUP**
201	Soup	211	Soup (Prepared, Ready to Eat)
202	Dry Soup Mix	212	Dry Soup Mix

1995 Food Code	Food Group Name	2007 Revised Food Code	Revised Food Group Name
203	Canned Condensed Soup	213	Canned Condensed Soup (Unprepared)
21	**SEED and NUT PRODUCTS AND DISHES**	**22**	**SEED and NUT PRODUCTS AND DISHES**
211	Seeds And Seed Products	221	Seeds And Seed Products
212	Nuts And Nut Products	222	Nuts And Nut Products
22	**SAVOURY SAUCES AND CONDIMENTS**	**23**	**SAVOURY SAUCES AND CONDIMENTS**
221	Gravies And Savoury Sauces	231	Gravies And Savoury Sauces
222	Pickles, Chutneys And Relishes	232	Pickles, Chutneys And Relishes
224	Salad Dressings	233	Salad Dressings
225	Stuffings	234	Stuffings
23	**VEGETABLE PRODUCTS AND DISHES**	**24**	**VEGETABLE PRODUCTS AND DISHES**
231	Potatoes	241	Potatoes
232	Cabbage, Cauliflower And Similar Brassica Vegetables	242	Cabbage, Cauliflower And Similar Brassica Vegetables
233	Carrot And Similar Root Vegetables	243	Carrot And Similar Root Vegetables
234	Leaf And Stalk Vegetables	244	Leaf And Stalk Vegetables
235	Peas And Beans	245	Peas And Beans
236	Tomato And Tomato Products	246	Tomato And Tomato Products
237	Other Fruiting Vegetables	247	Other Fruiting Vegetables
238	Other Vegetables And Vegetable Combinations	248	Other Vegetables And Vegetable Combinations
239	Dishes Where Vegetable Is The Major Component	249	Dishes Where Vegetable Is The Major Component
24	**LEGUME AND PULSE PRODUCTS AND DISHES**	**25**	**LEGUME AND PULSE PRODUCTS AND DISHES**
241	Mature Legumes And Pulses	251	Mature Legumes And Pulses
242	Mature Legume And Pulse Products And Dishes	252	Mature Legume And Pulse Products And Dishes
25	**SNACK FOODS**	**26**	**SNACK FOODS**
251	Potato Snacks	261	Potato Snacks
252	Corn Snacks	262	Corn Snacks
253	Extruded Snacks	263	Extruded Or Reformed Snacks
254	Pretzels And Other Snacks	264	Pretzels
2542	Other Snacks	265	Other Snacks
26	**SUGAR PRODUCTS AND DISHES**	**27**	**SUGAR PRODUCTS AND DISHES**
261	Sugar, Honey And Syrups	271	Sugar, Honey And Syrups
262	Jam And Lemon Spreads, Chocolate Spreads	272	Jam And Lemon Spreads, Chocolate Spreads, Sauces
263	Dishes & Products Other Than Confectionery Where Sugar Is Major Component	273	Dishes & Products Other Than Confectionery Where Sugar Is Major Component
27	**CONFECTIONERY AND HEALTH BARS**	**28**	**CONFECTIONERY AND CEREAL/NUT/FRUIT/SEED BARS**
271	Chocolate And Chocolate-Based Confectionery	281	Chocolate And Chocolate-Based Confectionery
272	Cereal-, Fruit-, Nut- And Seed-Bars	282	Cereal-, Fruit-, Nut- And Seed-Bars
273	Other Confectionery	283	Other Confectionery
28	**ALCOHOLIC BEVERAGES**	**29**	**ALCOHOLIC BEVERAGES**
281	Beers	291	Beers
282	Wines	292	Wines
283	Spirits	293	Spirits
284	Other Alcoholic Beverages	294	Other Alcoholic Beverages
		295	Pre-mixed drinks
29	**SPECIAL DIETARY FOODS**	**30**	**SPECIAL DIETARY FOODS**

1995 Food Code	Food Group Name	2007 Revised Food Code	Revised Food Group Name
291	Formula Dietary Foods	301	Formula Dietary Foods
192	Enteral formula	302	Enteral formula
30	**MISCELLANEOUS**	**31**	**MISCELLANEOUS**
301	Beverage Flavourings		
302	Yeast, Yeast, Vegetable And Meat Extracts	311	Yeast, Yeast, Vegetable And Meat Extracts
303	Artificial Sweetening Agents	312	Intense Sweetening Agents
304	Herbs, Spices, Seasonings And Stock Cubes	313	Herbs, Spices, Seasonings And Stock Cubes
305	Essences	314	Essences
306	Chemical Raising Agents And Cooking Ingredients	315	Chemical Raising Agents And Cooking Ingredients
31	**INFANT FORMULAE AND FOODS**	**32**	**INFANT FORMULAE AND FOODS**
311	Infant Formulae And Human Breast Milk	321	Infant Formulae And Human Breast Milk
312	Infant Cereal Products	322	Infant Cereal Products
313	Infant Foods	323	Infant Foods
314	Infant Drinks	324	Infant Drinks
		33	**DIETARY SUPPLEMENTS**
		331	Multivitamin and Mineral
		332	Single mineral
		333	Single vitamin
		334	Herbal And Homeopathic Supplements
		335	Oil Supplement
		336	Protein Supplement
		337	Sports Supplement
		338	Fibre Supplement
		339	Probiotics and Prebiotics

22. LINZ24® output files

Four types of files are exported from the LINZ24® software ready for nutrient analysis.

Respondent information
(Called participantdetails.txt)

VARIABLE NAME	Short Description
RespondentId	Unique identifier
RandomId	Unique identifier for day of interview
DateOfBirth	Date of birth

Food Item
(called unitrecord_sub_list.txt) contains data relating to the quick list items including time of consumption

VARIABLE NAME	Short Description
RespondentId	Unique identifier
InterviewId	LINZ24® software code for interview number
ItemNum	Unique quick list item number
FoodName	50 character long name of food
Time	Time of consumption

Food Component
(called unitrecord_com_list.txt) contains data relating to each "addition" item of the quick list item including foodcode and amount

VARIABLE NAME	Short Description
RespondentId	Unique identifier
InterviewId	LINZ24® software code for interview number
ItemNum	Unique quick list item number
CompNum	Unique "addition" number
Component	Text description of "addition"
CodeNum	LINZ24® foodlist code number
RecipeNum	Unique recipe number within InterviewId
Amount	Amount consumed
Unit	Units for measuring amount
UnitAmount	Description of unknown amount
NumMeasure	Number of reference measure/shape consumed
Measure	Measure description code as defined in OFLM
Shape	Shape used for volume calculation
Dimension1	Dimension 1 of shape
Dimension2	Dimension 2 of shape
Dimension3	Dimension 3 of shape
Prodnum	Product code number
Prodname	Product description, if not found in list
Notepad	Unknown item description

Ingredients list
(called unitrecord_ing_list.txt) - contains data relating to each ingredient of any home or uncooked recipes incl food code and amount

VARIABLE NAME	Short Description
RespondentId	Unique identifier
InterviewId	LINZ24® software code for interview number
RecipeNum	Unique recipe number within InterviewId
IngredientNum	Unique ingredient number within RecipeNum
Ingredient	Ingredient description
CodeNum	LINZ24® foodlist code number
Amount	Amount consumed
Unit	Units for measuring amount
UnitAmount	Description of unknown amount
NumMeasure	Number of reference measure/shape consumed
Measure	Shape used for volume calculation
Shape	Dimension 1 of shape
Dimension1	Dimension 2 of shape
Dimension2	Dimension 3 of shape

Dimension3	Shape used for volume calculation
Prodnum	Product code number
Prodname	Product description, if not found in list
Notepad	Unknown item description

23. Activity sets

Free Play

MARCA codes and activity names for activities included under the "free play" category:

code	activity
342853	chasey - hard
342851	chasey - light
342852	chasey - medium
341840	climbing trees
341133	dancing (general) - hard
341131	dancing (general) - light
341132	dancing (general) - medium
342913	dodge ball/poison ball/brandy/speed ball - hard
342913	dodge ball/poison ball/brandy/speed ball - hard
342911	dodge ball/poison ball/brandy/speed ball - light
342911	dodge ball/poison ball/brandy/speed ball - light
342912	dodge ball/poison ball/brandy/speed ball - medium
342912	dodge ball/poison ball/brandy/speed ball - medium
342193	frisbee (general) - hard
342191	frisbee (general) - light
342192	frisbee (general) - medium
342203	frisbee (ultimate) - hard
342201	frisbee (ultimate) - light
342202	frisbee (ultimate) - medium
341233	hacky sack - hard
341231	hacky sack - light
341232	hacky sack - medium
342243	hand tennis (four-square) - hard
342241	hand tennis (four-square) - light
342242	hand tennis (four-square) - medium
342830	hide and seek
341283	hopscotch - hard
341281	hopscotch - light
341282	hopscotch - medium
331330	juggling
342353	kickball - hard
342351	kickball - light
342352	kickball - medium
341970	mini golf or putt putt
341980	mucking around - indoors walk/run
341990	mucking around - outdoors
321960	mucking around inside - sitting
341903	playground equipment (eg monkey bars) - hard
341901	playground equipment (eg monkey bars) - light
341902	playground equipment (eg monkey bars) - medium
342773	playing catch - hard
342771	playing catch - light
342772	playing catch - medium
342763	playing with young children - hard
342761	playing with young children - light
342762	playing with young children - medium
341823	pogo stick - hard
341821	pogo stick - light
341822	pogo stick - medium
331420	quoits
342443	red rover - hard
342441	red rover - light
342442	red rover - medium
341243	riding a bicycle/bike - hard
341241	riding a bicycle/bike - light
341242	riding a bicycle/bike - medium
341253	riding a scooter - hard
341251	riding a scooter - light
341252	riding a scooter - medium
341273	riding a skateboard - hard
341271	riding a skateboard - light
341272	riding a skateboard - medium
341313	rollerblading (in-line skating) - hard
341311	rollerblading (in-line skating) - light
341312	rollerblading (in-line skating) - medium
341463	rollerskating - hard
341461	rollerskating - light
341462	rollerskating - medium
341483	running around - hard
341481	running around - light
341482	running around - medium
341473	skipping/rope jumping - hard
341471	skipping/rope jumping - light
341472	skipping/rope jumping - medium
341553	snorkeling - hard
341551	snorkeling - light
341552	snorkeling - medium
331590	stretching exercises
341603	surfing (body or board) - hard
341601	surfing (body or board) - light
341602	surfing (body or board) - medium
341933	swimming (playing in pool) - hard
341931	swimming (playing in pool) - light
341932	swimming (playing in pool) - medium
331630	tai chi/yoga
331993	totem tennis - hard

code	activity	code	activity
321880	playing in sandpit	331991	totem tennis - light
321950	playing with animals - sitting	331992	totem tennis - medium
341293	playing with animals - walk/run - hard	341683	trampoline - hard
341291	playing with animals - walk/run - light	341681	trampoline - light
341292	playing with animals - walk/run - medium	341682	trampoline - medium
321920	playing with toys/lego/dolls/action figures	342860	wrestling with mates

Sport

MARCA codes and activity names for activities included under the "organised sport and play" category:

code	activity	code	activity
341753	aerobics/health hustle - hard	342382	netball - medium
341751	aerobics/health hustle - light	341393	orienteering - hard
341752	aerobics/health hustle - medium	341391	orienteering - light
331000	archery	341392	orienteering - medium
341663	athletics (track and field): hurdles steeplechase - hard	342403	paddleball - hard
341661	athletics (track and field): hurdles steeplechase - light	342401	paddleball - light
341662	athletics (track and field): hurdles steeplechase - medium	342402	paddleball - medium
341653	athletics (track and field): jumping - hard	332040	pool/billiards/snooker
341651	athletics (track and field): jumping - light	341893	race walking - hard
341652	athletics (track and field): jumping - medium	341891	race walking - light
341673	athletics (track and field): throwing - hard	341892	race walking - medium
341671	athletics (track and field): throwing - light	342433	racketball - hard
341672	athletics (track and field): throwing - medium	342431	racketball - light
342013	badminton - hard	342432	racketball - medium
342011	badminton - light	341453	rockclimbing - hard
342012	badminton - medium	341451	rockclimbing - light
341793	ballet - hard	341452	rockclimbing - medium
341791	ballet - light	342163	rugby league - hard
341792	ballet - medium	342161	rugby league - light
342023	baseball - hard	342162	rugby league - medium
342021	baseball - light	342173	rugby union - hard
342022	baseball - medium	342171	rugby union - light
342033	basketball - hard	342172	rugby union - medium
342031	basketball - light	331493	sailboard/windsurfing - hard
342032	basketball - medium	331491	sailboard/windsurfing - light
342053	bobsled toboggan luge - hard	331492	sailboard/windsurfing - medium
342051	bobsled toboggan luge - light	321943	sailing/boating - hard
342052	bobsled toboggan luge - medium	321941	sailing/boating - light
342073	broomball - hard	321942	sailing/boating - medium
342071	broomball - light	341503	shuffleboard - hard
342072	broomball - medium	341501	shuffleboard - light
341083	calisthenics - hard	341502	shuffleboard - medium
341081	calisthenics - light	341523	skiing (cross-country) - hard
341082	calisthenics - medium	341521	skiing (cross-country) - light
341093	canoeing/rowing - hard	341522	skiing (cross-country) - medium
341091	canoeing/rowing - light	341533	skiing (downhill) - hard
341092	canoeing/rowing - medium	341531	skiing (downhill) - light
342103	cricket - hard	341532	skiing (downhill) - medium
342101	cricket - light	341543	skindiving (SCUBA) - hard
342102	cricket - medium	341541	skindiving (SCUBA) - light
341110	croquet	341542	skindiving (SCUBA) - medium

code	activity	code	activity
342123	curling - hard	342183	soccer (field/indoor) - hard
342121	curling - light	342181	soccer (field/indoor) - light
342122	curling - medium	342182	soccer (field/indoor) - medium
342253	European handball (team) - hard	342563	softball or t-ball - hard
342251	European handball (team) - light	342561	softball or t-ball - light
342252	European handball (team) - medium	342562	softball or t-ball - medium
321870	fishing	341573	speed skating (competitive) - hard
342153	football (Australian) - hard	341571	speed skating (competitive) - light
342151	football (Australian) - light	341572	speed skating (competitive) - medium
342152	football (Australian) - medium	342583	squash - hard
341213	golf - hard	342581	squash - light
341211	golf - light	342582	squash - medium
341212	golf - medium	341613	swimming laps - hard
341223	gymnastics - hard	341611	swimming laps - light
341221	gymnastics - light	341612	swimming laps - medium
341222	gymnastics - medium	342623	table tennis - hard
342263	hockey (field) - hard	342621	table tennis - light
342261	hockey (field) - light	342622	table tennis - medium
342262	hockey (field) - medium	341803	tap dancing - hard
342273	hockey (ice) - hard	341801	tap dancing - light
342271	hockey (ice) - light	341802	tap dancing - medium
342272	hockey (ice) - medium	342643	tennis (court) - hard
321293	horseback riding - hard	342641	tennis (court) - light
321291	horseback riding - light	342642	tennis (court) - medium
321292	horseback riding - medium	342060	tenpin bowling
341303	ice skating - hard	342813	touch football - hard
341301	ice skating - light	342811	touch football - light
341302	ice skating - medium	342812	touch football - medium
341322	karate/martial arts/judo /kick boxing - medium	342703	volleyball (beach) - hard
341323	karate/martial arts/judo/kick boxing - hard	342701	volleyball (beach) - light
341321	karate/martial arts/judo/kick boxing - light	342702	volleyball (beach) - medium
341343	kayaking - hard	342693	volleyball (court) - hard
341341	kayaking - light	342691	volleyball (court) - light
341342	kayaking - medium	342692	volleyball (court) - medium
342363	lacrosse - hard	342713	wallyball - hard
342361	lacrosse - light	342711	wallyball - light
342362	lacrosse - medium	342712	wallyball - medium
342370	lawn bowls	331733	water skiing - hard
331963	lifting weights - hard	331731	water skiing - light
331961	lifting weights - light	331732	water skiing - medium
331962	lifting weights - medium	341743	whitewater rafting - hard
342383	netball - hard	341741	whitewater rafting - light
342381	netball - light	341742	whitewater rafting - medium

Active Transport

MARCA codes and activity names for activities included under the "active transport" category:

code	activity
240051	walking - light
240052	walking - medium
240053	walking - hard
240071	climbing stairs - light
240072	climbing stairs - medium
240073	climbing stairs - hard
240091	walking carrying a load - light
240092	walking carrying a load - medium
240093	walking carrying a load - hard
241080	walking using crutches
341241	riding a bicycle/bike - light
341242	riding a bicycle/bike - medium
341243	riding a bicycle/bike - hard
341251	riding a scooter - light
341252	riding a scooter - medium
341253	riding a scooter - hard
341271	riding a skateboard - light
341272	riding a skateboard - medium
341273	riding a skateboard - hard
341311	rollerblading (in-line skating) - light
341312	rollerblading (in-line skating) - medium
341313	rollerblading (in-line skating) - hard
341461	rollerskating - light
341462	rollerskating - medium
341463	rollerskating - hard

Screen Time

MARCA codes and activity names for activities included under the "screen time" category.

code	activity
111030	watching TV - lying quietly
121050	watching TV - sitting
420050	computer work (e.g. typing/internet)
722190	computer/playstation games

Note that the following activities are excluded from screen time:

code	activity
114190	sending text messages (SMS) - lying down
124170	sending text messages (SMS) - sitting
134180	sending text messages (SMS) - standing
121130	sitting at the movies/cinema/theatre
732201	playing video centre (e.g. Intencity/Timezone) games - light
732202	playing video centre (e.g. Intencity/Timezone) games - medium
732203	playing video centre (e.g. Intencity/Timezone) games - hard

24. R code for non-proportionate sampling weights

Read and process ABS data files

```
# Read in data from files provided by ABS.

# Read Postcodes with State and Region ("Capital" vs "Rest of State")
# Note "Postcodes" and ABS "Postal Areas" are taken to be the same
#    postcodes1.csv is from the CURF which shows the excluded postcodes
allpostcodes<-read.csv("postcodes1.csv",sep=",")
names(allpostcodes)[2] <- "Region"

# Remove postcodes excluded from the survey
IncludedPostcodes <- allpostcodes[is.na(allpostcodes$Excluded),]

# Table 1 contains household data which is used only to determine the sex
ratios for each Region
# Table1.csv is a simplified version of the ABS file
#   2006 Census - Table 1 - No. of occupied private dwellings by no. of
males aged 2-16 by females aged 2-16.xls

# Count of Dwellings by number of males & females aged 2-16
# One row for each postcode
table1<-read.csv("Table1.csv",sep=",")

# Remove excluded postcodes
table1 <- table1[table1$postcode %in% IncludedPostcodes$Postcode,]
table1$Region <-
IncludedPostcodes$Region[match(table1$postcode,IncludedPostcodes$Postcode)]
table1$State <-
IncludedPostcodes$State[match(table1$postcode,IncludedPostcodes$Postcode)]

#First digit in X.. fields is female, second is male
# Calculate the number of Boys and Girls in each Postcode
Boys<-table1$X01+table1$X11+table1$X21+table1$X31+2*table1$X02+2*table1$X12+
       2*table1$X22+2*table1$X32+3*table1$X03+3*table1$X13+3*table1$X23+3*tab
le1$X33

Girls<-
table1$X10+table1$X11+2*table1$X21+3*table1$X31+2*table1$X20+table1$X12+
       2*table1$X22+3*table1$X32+3*table1$X30+table1$X13+2*table1$X23+3*table
1$X33
# Aggregate postcode values to State x Region

Boys.aggr <- aggregate(Boys,
       by=list(Region=table1$Region,State=table1$State),
       sum)
names(Boys.aggr)[3] <- "Count"
Girls.aggr <- aggregate(Girls,
       by=list(Region=table1$Region,State=table1$State),
       sum)
names(Girls.aggr)[3] <- "Count"

# Calculate proportions of Boys and Girls for each Region
Sex.ratio <- cbind(Boys.aggr, Girls.aggr$Count)
names(Sex.ratio)[3:4] <- c("Boys","Girls")
Sex.ratio$Total <- Sex.ratio$Boys+Sex.ratio$Girls
Sex.ratio$Pr.Boy <-Sex.ratio$Boys/Sex.ratio$Total
Sex.ratio$Pr.Girl <-Sex.ratio$Girls/Sex.ratio$Total

# Table 2 contains counts of families by family structure
# Table2.csv is a simplified version of the ABS file
#   "2006 Census - Table 2  - No. of families by No. of children aged 2-3 by
No. aged 4-8 by No. aged 9-13 by No. aged 14-16 - Po.csv"
# in particular with the various "Total" columns omitted
# The column headers are Xwxyz where w = no of 2-3yos, x=no of 4-8yos, y=no
of 9-13yos, z=no of 14-16yos
```

```
# Count of number of families with family structure(i)
table2<-read.csv("Table2.csv",sep=",")
# Reorder to have one row for each postcode and family structure
Table2.long <- reshape(table2, varying=list(names(table2)[-1]),
      direction="long",times=substr(names(table2)[-
1],2,5),timevar="FS",idvar="postcode")
# Omit excluded postcodes
Table2.long<- Table2.long[Table2.long$postcode %in%
IncludedPostcodes$Postcode,]
# Append Region information based on postcode
Table2.long <- cbind(Table2.long,
IncludedPostcodes[match(Table2.long$postcode,IncludedPostcodes$Postcode),c(3
,2)])

# Aggregate postcode values to State x Region
Table2.aggr <- aggregate(Table2.long$X0000,
      by=list(FS=Table2.long$FS,
Region=Table2.long$Region,State=Table2.long$State),
      sum)
names(Table2.aggr)[4] <- "Count"

# Replace the FS strings by the equivalent numerical values
Table2.aggr$FS <- rep(0:80,13)
```

Read and process Nutrition Survey data

```
# Code to set up sample data ready for weighting calculations
# Since Household and Family size data from ABS seem to be inconsistent
# this analysis will neglect the small number of multifamily households
# and calculate weights purely on the basis of family structure.

# Thus the only calculation needed here is the identification of the
# family structure for each study child.

# NOTE: the term "child" always means a person aged from 2 to 16 according
to the CURF age data
# a "child of Parent x" means a child with relationship code 6 to 12 for
Parent x

# There is some apparent inconsistency in the identification of
relationships
# in the data. For simplicity, any relationship from 6 to 12 with the
Parent(s) will
# be taken to indicate a child in the same family as the study child.

# tidy up from past runs
while( "wgtdata" %in% search() ) detach(wgtdata)
while(sink.number() > 0 ) sink()

# Read survey data
curf<-read.csv("CURF_201007.csv",sep=",",header=TRUE,strip.white=TRUE)

# Read file containing short names
new.names<-read.csv("VarNames.csv",sep=",",header=FALSE)

# Apply short names
names(curf)<-new.names[,2]

# Include only those children recruited and interviewed
wgtdata<-curf[(curf$Rec=="Recruited" & curf$CAPSt=="INTERVIEW"),]

attach(wgtdata)

# Create Family Structure identifiers for each study child
# Identify other children in the household with the same parents
# Get the age of Person 4 to Person 12
PersonAge <- wgtdata[,paste("P",4:12,"A",sep="")]
```

```
# Relationship code to Parent 1 of Person 4 to Person 12
RelP1 <-(wgtdata[,paste("P",4:12,"RelP1",sep="")])
# Is Person 4 to 12 a child of parent 1?
ChildofP1 <- RelP1>=6 & RelP1<=12 & PersonAge >=2 & PersonAge <= 16

# Relationship code to Parent 2 of Person 4 to Person 12
RelP2 <-(wgtdata[,paste("P",4:12,"RelP2",sep="")])
# Is Person 4 to 12 a child of parent 2 or in a 1-parent family?
ChildofP2 <- ((RelP2>=6&RelP2<=12) |RelP2==0) & PersonAge >=2 & PersonAge <=
16

InFamily <- ChildofP1 & ChildofP2

# set ages of persons not in family to 0 so they are not counted in the
family structure
# (These are persons outside the age range or not in the same nuclear
family)
PersonAge[!InFamily] <- 0

# function to convert ages of children to a family structure
make.fs <- function (x) {
x <- unlist(x)
grps <- cut(x,breaks=(c(1,3,8,13,16)),labels=1:4)
return(table(grps))
}

# Get the family structure for each study child
FS <- t(apply(cbind(SCA,PersonAge), 1, make.fs))
# Convert counts >2 to 2
FS[FS>2] <- 2
# Numerical value of FS as ternary number
FS.num <- apply(FS,1,function(x)3*(3*(3*x[1]+x[2])+x[3])+x[4])
# FS as string
FS.str <- apply(FS,1,paste,collapse="")

# Code to reorder family structures in ascending order of family size if
needed later
# This is not needed for the current analysis which does not use household
data.
fs.age <- NULL
for ( i in 1:4 ) {
fs.age <- cbind(fs.age, rep(rep(0:2,each=3^(4-i)),3^(i-1)))
}
fs.tot <- apply(fs.age,1,sum)
sizeorder <- order(fs.tot,fs.age[,1],fs.age[,2],fs.age[,3],fs.age[,4])
fs.age.sizeorder <- fs.age[sizeorder,]
fs.sizeorder <- order(sizeorder)-1
FS.sizeorder <- fs.sizeorder[FS.num+1]

# Find State and Region for each study child from postcode
Sample.Region <-
factor(IncludedPostcodes$Region[match(wgtdata$PC,IncludedPostcodes$Postcode)
])
Sample.State <-
factor(IncludedPostcodes$State[match(wgtdata$PC,IncludedPostcodes$Postcode)]
)

# Study Child Sex as numerical value male=1 female=2
Sample.Sex <- as.numeric(factor(StChGen, levels=c("Male","Female")))

# Study Child age and age group calculated from age (Some recorded age
groups are inconsistent)
Sample.Age <- as.numeric(as.character(wgtdata$SCA))
Sample.AgeGrp <- cut(Sample.Age,breaks=(c(1,3,8,13,16)),labels=1:4)
```

Calculation of weights

```
# Read in Sample and ABS data and determine family structure counts for each
cat(".");flush.console()
source("../data/ABSAnalysis.r")
cat(".");flush.console()
source("CURFAnalysis.txt")
cat(".");flush.console()

# Set up table of population counts, sample counts and weights
States <- sort(unique(Boys.aggr$State))
nStates <- length(States)
Regions <- unique(Boys.aggr$Region)
nRegions <- length(Regions)
# Empty table to hold counts
wt.table <- data.frame(matrix(nrow=nStates*nRegions*80*4*2,ncol=9))
names(wt.table) <-
c("State","Region","FS","Size","AgeGrp","Sex","Popn","Sample","Weight")
# Classification factor levels
wt.table[,1] <- factor(rep(States, each=nRegions*80*4*2),levels=States)
wt.table[,2] <- factor(rep(rep(Regions,each=80*4*2),nStates),levels=Regions)
wt.table[,3] <- rep(rep(1:80,each=4*2),nStates*nRegions)
wt.table[,4] <- rep(rep(fs.tot[-1],each=4*2),nStates*nRegions)
wt.table[,5] <- rep(rep(1:4,each=2),nStates*nRegions*80)
wt.table[,6] <- rep(1:2,nStates*nRegions*80*4)
cat("\n")

# population counts for each row of the table
ChildrenPerFamily <- fs.age[cbind(wt.table[,3]+1,wt.table[,5])] # number of
children of this agegroup in this FS
Pr.Sex <-
as.numeric(Sex.ratio[cbind(match(paste(wt.table$State,wt.table$Region),

       paste(Sex.ratio$State,Sex.ratio$Region)),wt.table$Sex+5)])
nFam <-
Table2.aggr$Count[match(paste(wt.table$State,wt.table$Region,wt.table$FS),

       paste(Table2.aggr$State,Table2.aggr$Region,Table2.aggr$FS))]
wt.table$Popn <- nFam * ChildrenPerFamily * Pr.Sex

# Sample counts for each row of the table
# Five-way array of counts with dimensions defined so that the counts are
stored in the correct order
temp.tab <-
table(Sample.Sex,Sample.AgeGrp,factor(FS.num,levels=1:80),Sample.Region,Samp
le.State)
# Copy into wt.table
dim(temp.tab)<-NULL
wt.table$Sample <- temp.tab

# Calculate weights for each set of factors
wt.table$Weight <- wt.table$Popn/wt.table$Sample
Wts <- wt.table$Weight
# Weights for non-empty population classes and non-empty sample classes
Wts <- Wts[wt.table$Popn>0 & wt.table$Sample>0]

#Create weight table but without family structure

attach(wt.table)
wt.table3<-
aggregate(wt.table[,7:8],by=list(Sex=Sex,AgeGrp=AgeGrp,Region=Region,State=S
tate),sum,na.rm=T)
detach(wt.table)
wt.table3$Weight<-wt.table3$Popn/wt.table3$Sample
```

```
# Look up weights for each study child
Sample.Weight3<-
wt.table3$Weight[match(paste(Sample.State,Sample.Region,Sample.AgeGrp,Sample
.Sex),

paste(wt.table3$State,wt.table3$Region,wt.table3$AgeGrp,wt.table3$Sex))]

# Weights may be missing if the postcode is in the excluded range. Set
missing weights to zero.

Sample.Weight3[is.na(Sample.Weight3)]<-0

curf2<-curf[(curf$Recruited=="Recruited" & curf$CAPI.Status=="INTERVIEW"),]
Weights<-data.frame(curf2,Sample.Weight3)

write.table(Weights,file="Weights4.csv",sep=",",row.names=T,col.names=T,eol=
"\n")
```

25. Glossary

AUSNUT A survey-specific database generated from a reference data base such as NUTTAB 2006 but providing nutrient data on a larger number of foods consumed that are relevant for a consumer intake survey. Includes a subset of nutrients included in the reference data base which is based mainly on analytical data. AUSNUT 2006 is the survey database specific to Kids Eat Kids Play.

BMI Body mass index. An indicator of weight status calculated from the formula weight/height^2 or kg/m^2

EAR Estimated average requirement – the average daily nutrient intake level estimated to meet the requirement of half of the healthy individuals in a particular life stage and gender groups. It is used to estimate the prevalence of potentially inadequate intakes in a population group.

Energy The chemical energy that is available to the body from metabolism of carbohydrates, protein, fat and alcohol after digestion and absorption. Energy intakes are reported in kilojoules (kJ). One Calorie is equivalent to approximately 4.186 kJ

Energy (including from fermentable fibre) The chemical energy that is available to the body from metabolism of carbohydrates, dietary fibre, protein, fat and alcohol after digestion and absorption. Energy intakes 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, carries fat-soluble vitamins and is the source of essential fatty acids. Three fatty acid subtotals (poly, mono and saturated fatty acids) do not add up to total fat because total fat includes a contribution from the non-fatty acid components (e.g. glycerol).

Fine age groups 2-3 years, 4-8 years, 9-13 years, 14-16 years

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

Height The perpendicular distance between the transverse plane of the vertex and the inferior aspects of the feet. The subject should not be wearing shoes, and the head should be in the Frankfort plane. No stretch is applied.

Major food groups Foods are categorised according to major groups of foods of similar description or usage.

NUTTAB 2006 A reference nutrient database produced by FSANZ based mainly on analytical data for Australian foods. Used as the basis for developing the survey-specific data base generated for this survey.

Percentage contribution to energy intake

Scope	Refers to the target population covered by a data collection. The scope of this survey was children aged between 2-16 years inclusive who were residents of private dwellings in Australia
Stadiometer	Device used for measuring height
24-hour dietary recall	Individuals recall of everything eaten and drunk, including water and supplements over a 24-hour period. In this survey it was taken from midnight to midnight
Waist girth	The circumference of the abdomen at its narrowest point, when viewed from the front, between the lower costal (10^{th} rib) border and the top of the iliac crest in the mid-axial line. When there is no visible narrowing, the circumference is measured half-way between the lower costal border and the top of the iliac crest. Measurements are taken end-tidally.
Waist to height ratio	The ratio of the waist circumference to height
Weight	The force the body exerts in a standard gravitational field. Body mass is measured with the subject in light indoor clothing.

26. Units of measurement

g	grams
kJ	kilojoule
mg	milligram
μ	microgram
MET	metabolic equivalent

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