The Bridging Study -

comparing results from the 1983, 1985 and 1995 Australian national nutrition surveys

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Abbreviations

ABS	Australian Bureau of Statistics
ADG	Australian Dietary Guidelines
AFNMU	Australian Food and Nutrition Monitoring Unit
AIHW	Australian Institute of Health and Welfare
ANSURS	Australian Nutrition Survey System
ANZFA	Australia New Zealand Food Authority
CDH	Commonwealth Department of Health
CDHAC	Commonwealth Department of Health and Aged Care
COFA	Composition of Foods Australia
CURF	Confidentialised Unit Record File
CATI	Computer assisted telephone interviewing
CAPI	Computer assisted personal interviewing
DCILGP (Queensland)	Department of Communication, Information, Local Government and Planning
DCSH	Department of Community Services and Health
DHFS	Department of Health and Family Services
EI/BMR	Energy intake to basal metabolic rate ratio
FFQ	Food frequency questionnaire
HFS	Health and Family Services
IFIQ	Individual food intake questionnaire
NATSINWP	National Aboriginal and Torres Strait Islander Nutrition Working Party
NDSA	National Dietary Survey of Adults, 1983
NDSSC	National Dietary Survey of Schoolchildren, 1985
NHANES (United States)	National Health and Nutrition Examination Survey
NHF	National Heart Foundation
NHFRFPS	National Heart Foundation Risk Factor Prevalence Surveys
NHMRC	National Health and Medical Research Council
NHS	National Health Survey, 1995 (Australia)
NNS	National Nutrition Survey, 1995 (Australia)
NNS95	National Nutrition Survey, 1995 (Australia)
NNS97	National Nutrition Survey, 1997 (New Zealand)
NSW	New South Wales
NT	Northern Territory

NUTTAB	Nutrient data table for use in Australia
NZMOH	New Zealand Ministry of Health
QLD	Queensland
RDI	Recommended dietary intake
RFPS	Risk Factor Prevalence Study 1983 (Australia)
RPS	Recipe processing system
SA	South Australia
SD	Standard deviation
SIGNAL	Strategic Inter-Governmental Nutrition Alliance
SSDA	Social Sciences Data Archive, Australian National University
SSDA 414	Machine readable data file for 1983 RFPS
SSDA 616	Machine readable data file for 1983 NDSA
SSDA 617	Machine readable data file for 1985 NDSSC
TAS	Tasmania
USDA	United States Department of Agriculture
USDHHS	United States Department of Health and Human Services
VIC	Victoria
WA	Western Australia
1983 survey	National Dietary Survey of Adults, 1983
1985 survey	National Dietary Survey of Schoolchildren, 1985
1995 survey	National Nutrition Survey, 1995 (Australia)

Executive Summary

This report provides guidelines for comparing results from the 1983 National Dietary Survey, the 1985 National Dietary Survey of Schoolchildren and the 1995 National Nutrition Survey. It is based on findings from a bridging study undertaken to assess the impact of key differences between the three surveys.

The objective of the bridging study is to enable the results from these three surveys to be used in dietary monitoring in Australia. The report is part of a program of work being funded by the Commonwealth Department of Health and Aged Care that underpins development of a national food and nutrition monitoring system for Australia.

The target audiences for the report include public health agencies, nutrition researchers, the food industry, students and other groups interested in comparing past and contemporary food and nutrition data for Australia.

Key outcomes

Adjustments have been made to all three sets of survey results to improve data comparability.

- The published 1983 and 1985 results were revised to better reflect the nutrient composition of Australian foods at the time these surveys were conducted. When originally processed, Australian food composition data were not available for a significant proportion of the foods consumed in 1983 and 1985.
- The published 1995 results have been adjusted for sample design differences and changes in the Australian population between 1983 and 1995.

Key conclusions and recommendations

The comments below are restricted to findings relating to methods used to improve comparability between the 1983, 1985 and 1995 surveys. Commentary regarding the resulting apparent trends in the dietary intakes is reserved for the companion publication *Comparable data on food and nutrient intakes and physical measurements from the 1983, 1985 and 1995 national surveys.*

The principal finding of the bridging study is that it is inappropriate to directly compare published results from the 1983 and 1985 surveys with those from the 1995 survey to assess trends in the food and nutrient intake of adults and children.

- Allowances are needed to account for differences in sample design, collection and processing practices, the food composition databases and changes in the demographic composition of the Australian population between these surveys.

Sample design and demographic differences

For adults, four sample design effects were assessed including differences in age range, geographical coverage, season of the year and day of the week. Variations in age and season produced statistically

significant differences in intake estimates for 12 of the 18 nutrients tested. Geographical variations produced significant differences in mean intakes for 10 of the 17 major food groups evaluated. Day of the week produced significant differences for specific foods and nutrients (most notably alcoholic beverages and alcohol).

For children, the overall conclusion was that sample design variations are likely to be important to dietary intakes but these were not reflected in the estimates because of small sample sizes in 1995.

Child data comparisons between 1985 and 1995 were restricted to estimates for a combined 10-15 year age group by sex due to the small sample sizes in 1995. This outcome illustrates the importance of survey design considerations (including sample size) to the development of a national food and nutrition monitoring and surveillance system that is capable of meeting current as well as anticipated data needs.

- It is recommended that future nutrition surveys allow changes in dietary intake to be monitored for selected age groups, ethnicities and regions within the Australian population. Samples will need to be sufficiently large to account for anticipated changes in the composition of the Australian population due to population ageing and existing migration patterns. This may require over-sampling of some subpopulations and consideration of the potential consequences on respondent burden.
- Differences in the age and sex structure of subgroups in the Australian population and across time make it preferable for demographic standardisation techniques to be used with population-based estimates. Use of standardised estimates improves comparability of data across time and between subpopulation groups.

Changes in food intake methodology

Updating the 1983 and 1985 food composition databases with Australian data (NUTTAB 91/92) resulted in significant differences, both increases and decreases, in estimates of nutrient intake for some but not all nutrients.

Differences in the way that the 24-hour recall interviews were conducted in the 1983 and 1995 surveys are unlikely to have had a significant effect on the estimates of food and nutrient intake.

The effect of the difference in the dietary method used in the two child surveys (an interviewer assisted 24hr record in 1985 and a 24hr recall in 1995) could not be assessed quantitatively. Data in the literature suggest that recalls provide lower estimates of intake than records, however, none of the studies compared the specific methods used in 1985 and 1995

Comparison of the classification of foods in 1983/85 and 1995 at the major (2 digit) food group level revealed that some of the major differences are due to changes in the grouping of foods at the major food group level rather than to real changes in food intake.

- Differences in the way that food intake data are collected and processed need careful consideration in the context of food and nutrition monitoring because they can have a major impact on comparisons between surveys.

Other factors

- For the specific purpose of nutrition monitoring in Australia, it is recommended that the effectiveness of a range of indicators of food intake (eg food supply, food expenditure, food habits, nutritional status) be assessed to complement the collection of detailed data on dietary intake.

- The Australian Food and Nutrition Monitoring Unit has evaluated the effectiveness of a number of short-questions for use in monitoring food and nutrient intake. It is recommended that this research be extended to define a set of core diet-related questions that consistently yield high response rates across a range of socio-demographic groups. Collaborative research with the CATI Health Survey Technical Reference Group is expected to be beneficial for health survey development work. Sensitivity issues associated with the collection of data from individuals relating to alcohol, drug and tobacco consumption are also expected to be relevant to the collection of food intake data.

- Further research is recommended to identify the extent of non-response bias in Australian dietary surveys. Initial findings from the 1995 National Health Survey about differences between the socio-economic characteristics of respondents and non-respondents to the 1995 National Nutrition Survey increase the likelihood that health/lifestyle differences also exist. It is recommended that an evaluation of collection methods used to conduct national nutrition surveys in other countries be undertaken to determine if these could be adopted to improve response rates to Australian nutrition surveys.

- The role of biological measurements of nutritional status in population based surveys for nutrition monitoring in Australia also needs to be assessed. Such surveys can be expected to become increasingly important to nutrition monitoring if data quality concerns associated with self-reported dietary data increase in the future.

- The use of national nutrition surveys to monitor trends in dietary intake over time is limited by the extent of non-response associated with these major collections and because they tend to be conducted infrequently and at irregular intervals. National nutrition surveys, as currently conducted, are more appropriately considered as a source of benchmark data against which other more regularly collected data can be evaluated.

Chapter 1

1.0 Introduction

This report provides guidelines for comparing results from the 1983, 1985 and 1995 Australian national nutrition surveys. It is based on findings from a bridging study undertaken to assess the impact of key differences between the three surveys.

The three surveys evaluated in this study are the 1983 National Dietary Survey of Adults, the 1985 National Dietary Survey of School Children and the National Nutrition Survey 1995.

The bridging study findings enable the results from these three surveys to be used in dietary monitoring in Australia. The study underpins work being undertaken by the Australian Food and Nutrition Monitoring Unit for the Commonwealth Department of Health and Aged Care to identify trends in food and nutrient intake in the Australian population.

1.1 Report objectives

The purpose of the bridging study is to identify and, where possible, quantify the impact of sample design and other differences between the 1983, 1985 and 1995 surveys on estimated food and nutrient intakes. The study's scope includes an assessment of major quantifiable and non-quantifiable differences. Details about quantifiable variations allow users of dietary data to appreciate the absolute impact and relative significance of specific components of change on published results. Advice about the nature and likely magnitude of other possible sources of variation, even when these cannot be quantified, is provided to further assist users to understand and interpret the survey results. The importance of these non-quantifiable factors should not be overlooked in terms of future survey design recommendations.

The target audiences for the bridging study report include public health agencies, nutrition researchers, the food industry, students and other groups interested in comparing past and contemporary food and nutrition data for Australia. The report provides a guide to the nature and limitations of data relating to the 1983, 1985 and 1995 surveys. Guidelines for the appropriate comparison of results from the three surveys are presented in this report together with an interpretation of findings from direct comparison of the results.

The bridging study report underpins a companion publication from the Australian Food and Nutrition Monitoring Unit to be entitled *Comparable data on food and nutrient intakes and physical measurements from the 1983, 1985 and 1995 national surveys*.

Dietary data users are also encouraged to refer to *Getting it right – how to use the data from the 1995 National Nutrition Survey* when evaluating data from the 1995 National Nutrition Survey (Rutishauser 2000). Prepared by Ingrid Rutishauser from the Australian Food and Nutrition Monitoring Unit, *Getting it right* provides information on where to find and how to use dietary information available from the 1995 NNS. *Getting it right* is a companion report to the Australian Bureau of Statistics (ABS) publications *National Nutrition Survey Users' Guide* (ABS 1998a) and *Information Paper National Nutrition Survey, Confidentialised Unit Record File 1995* (ABS 1998c).

1.2 Report structure

For ease of reference, the bridging study report is presented in four sections. The first section provides introductory and background material relating to the 1983, 1985 and 1995 surveys. In the second section, the effect of major differences between the 1983 and 1995 surveys are described in relation to the dietary intake of adults aged 25-64 years. Commentary regarding key differences between the 1985 and 1995 surveys for children aged 10-15 years is presented in the third section of this report. The impact of sample design, population change, dietary methodology and other factors is discussed separately within these three main sections. Summarised conclusions from the bridging study and recommendations for future surveys are provided in section 4. The report is prefaced by an executive summary.

1.3 Background

The bridging study report is part of a program of work being funded by the Commonwealth Department of Health and Aged Care that underpins development of a national food and nutrition monitoring system for Australia.

Establishment of a food and nutrition monitoring system for Australia is a priority of the Australian National Food and Nutrition Policy, 1992 (CDHHCS 1992). It is also a listed initiative of Eat Well Australia (SIGNAL 2000) and the National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan (NATSINWP 2000).

Developmental activity has occurred in two stages. Information on food and nutrition monitoring activities was collated during the first stage (Lester 1994), and a plan for a national food and nutrition monitoring program was developed (Coles-Rutishauser and Lester 1995). In December 1998, the Australian Food and Nutrition Monitoring Unit commenced second phase activity. One of the key reports in this work program is the documenting of trends in the dietary intakes of Australians to be identified from existing data sources.

Three national dietary surveys have been conducted in Australia in the last two decades. Details about the 1983 National Dietary Survey of Adults (1983), the 1985 National Dietary Survey of School Children Australia (1985) and the 1995 National Nutrition Survey (1995) are provided in section 1.4 of this report. Major differences between these three surveys arise from:

- sampling and demographic differences between the three surveys: sample frame, survey scope and coverage, collection period, survey days, non-response; and

- the way in which dietary estimates were obtained including method of collection, the approach to food classification and coding and changes in the nutrient composition database.

The bridging study provides guidelines for appropriate comparison and interpretation of results from the 1983, 1985 and 1995 national nutrition surveys despite the differences outlined above. The study's findings will also contribute to recommendations being developed by the Australian Food and Nutrition Monitoring Unit for future dietary data collections in Australia.

Prior to 1983, national dietary surveys were conducted in 1938 and 1944. These two historical surveys were not evaluated as part of the bridging study.

1.4 Key characteristics of the 1983, 1985 and 1995 Australian national nutrition surveys

Many design, collection and data processing differences exist between the 1983, 1985 and 1995 national nutrition surveys. The range of differences between the surveys determined the extent of evaluations required in the bridging study. The nature of the differences also shaped the methods used to evaluate their impact on the published survey results.

The key characteristics of the three surveys are summarised in table 1.1 and the descriptive text below. The details in the summary table relate to the 24-hour dietary component of surveys undertaken in 1983, 1985 and 1995. All details were sourced from publications associated with these surveys (CDH 1986, DCSH 1988, ABS 1998a).

1983 survey

The 1983 National Dietary Survey of Adults (1983) provides dietary intake estimates for adults aged 25-64 years for Australia's state capital cities. Dietary data were collected from a multi-stage quota survey of adults, selected from the Commonwealth electoral roll, for listed residents within a 16-kilometre radius of the National Heart Foundation centre in Australia's six state capital cities. The survey was conducted between May and November 1983 from Monday to Friday (dietary data relate to Sunday to Thursday). The survey was a component of the 1983 Risk Factor Prevalence Study, conducted by the National Heart Foundation of Australia, in collaboration with the (then) Commonwealth Department of Health. Respondents completed a 24-hour dietary recall interview at a survey centre. Dietary data from a sub-sample of 6255 respondents were coded by nutritionist interviewers using a specially developed coding manual and analysed using a survey specific food composition database. The survey response rate is cited at 75.3 per cent of potential respondents (but excludes initial non-contacts and includes partial respondents). The survey results were adjusted by post stratification population weights split by city of residence, age group, sex, and region of birth to minimise the effects of under-coverage and non-response.

1985 survey

The 1985 National Dietary Survey of Schoolchildren (1985) provides national dietary intake estimates for children aged 10 to 15 years. The survey was undertaken by the Department of Community Services and Health in conjunction with the Health and Fitness Survey of the Australian Council for Physical Education and Recreation Incorporated (ACPHER). It was conducted between May and October 1985, across all Australian states and territories on all weekdays (ie Monday to Friday). The survey targeted 7,976 children selected from a two-stage list sample of firstly schools (both primary and secondary) and then classes within schools. Respondents completed a 24-hour dietary record, assisted by trained staff within the selected schools. Commonwealth Department of Health nutritionists coded food and beverage intake data using a purpose designed coding manual. The food intake data were converted to nutrient intakes using a survey specific food composition database. The published results relate to 5,224 students, representing a 65.5 per cent response rate of those invited to participate in the survey. The survey estimates were adjusted by post stratification population weights split by state of residence, age and sex.

Table 1.1 Key characteristics of the 1983, 1985 and 1995 surveys

	1983	1985	1995
Sample size (number)	6,255	5,224	13,858 (day 1) 1,490 (day 2)
Response rate (per cent)	75.3	65.5	61.4 (day 1) 75.4 (day 2)
Survey design	Multistage quota sample from a list	Two stage list sample	Multistage area sample
Sampling unit and geographical coverage	Electoral enrolees in 6 state capital cities within 16km radius of National Heart Foundation centres	School students in 8 states and territories	Householders in private dwellings in 8 states and territories
Collection design	24-hour dietary recall interview	24-hour dietary record, administrator assisted	24-hour dietary recall interview
Collection methodology	Centralised collection, postal advice of selection	School based collection	Household based collection
Age group	25-64 years	10-15 years	2 years and over
Season	May to November 1983	May to October 1985	February 1995 to March 1996
Interview days	Monday to Friday (dietary intake data for Sunday to Thursday)	Monday to Friday (dietary intake data for Monday to Friday)	Monday to Sunday (dietary intake data for Sunday to Saturday)
Weighting factors	Post stratification ratio estimates by age-group, sex, country of birth and geography (capital city)	Post stratification ratio estimates by age, sex and geography (state)	Person specific weights adjusted for regional probability of selection and and non-response (based on a number of geo-demographic characteristics)
Coding procedures	Coded by interviewers using a hardcopy coding manual	Coded by DCSH nutritionists using a hardcopy coding manual	Coded by specially trained staff using a computer-based coding system (ANSURS)
Food composition database	1983 survey nutrient composition database	1985 survey nutrient composition database	1995 NNS nutrient composition database

Source: CDH 1986, DCSH 1988, ABS 1998a, ABS 1998c

1995 survey

Australia's most recent national dietary survey is the 1995 National Nutrition Survey (1995). It 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. The survey was conducted from February 1995 to March 1996 across all Australian states and territories on all days of the week. Detailed food and beverage consumption data were collected via a multistage area sample of private dwellings (houses, flats etc) for persons aged two years and over. Respondents completed a 24-hour recall interview at home, assisted by trained nutritionists. Proxy interviews were conducted for children aged two to four years and incapacitated adults. Food and beverage intake data were coded using the specially developed computerised coding system Australian Nutrition Survey System (ANSURS). The coded data were analysed using a special nutrient

composition database developed by ANZFA in collaboration with HFS in 1996. An updated edition of the 1995 NNS nutrient composition database is available commercially as part of AUSNUT. Approximately 10% of respondents provided 24-hour dietary recall data for a second day. This allowed the estimates of 'usual' nutrient intake to include an adjustment for within person variation. A similar adjustment for 'usual' food intake was not possible, requiring data for periods of more than two-days. Details about 24-hour dietary intake were processed for 13,858 respondents to the 1995 NNS, representing a response rate of 61.4% of those invited to participate. This rate is well below the proportion of NHS respondents who initially agreed to participate in the NNS (76.8%) and considerably lower than ABS household based survey standards.

1.4.1 Key points

- Many design, collection and data processing differences exist between the 1983, 1985 and 1995 national nutrition surveys.

- The key characteristics of each survey are summarised in table 1.1 of this report.

- Direct comparison of published results relating to these three surveys is therefore inappropriate as the impact of the differences between the surveys is not considered.

Chapter 2

2.0 Comparison of 1983 and 1995 surveys (adults)

Comparison of the key sample design characteristics of the 1983 and 1995 surveys (refer section 1.4) reveals important differences between the two surveys. These encompass sample design, collection and coding practices as well as other differences between the surveys. Direct comparison of published results from these two surveys is therefore inappropriate.

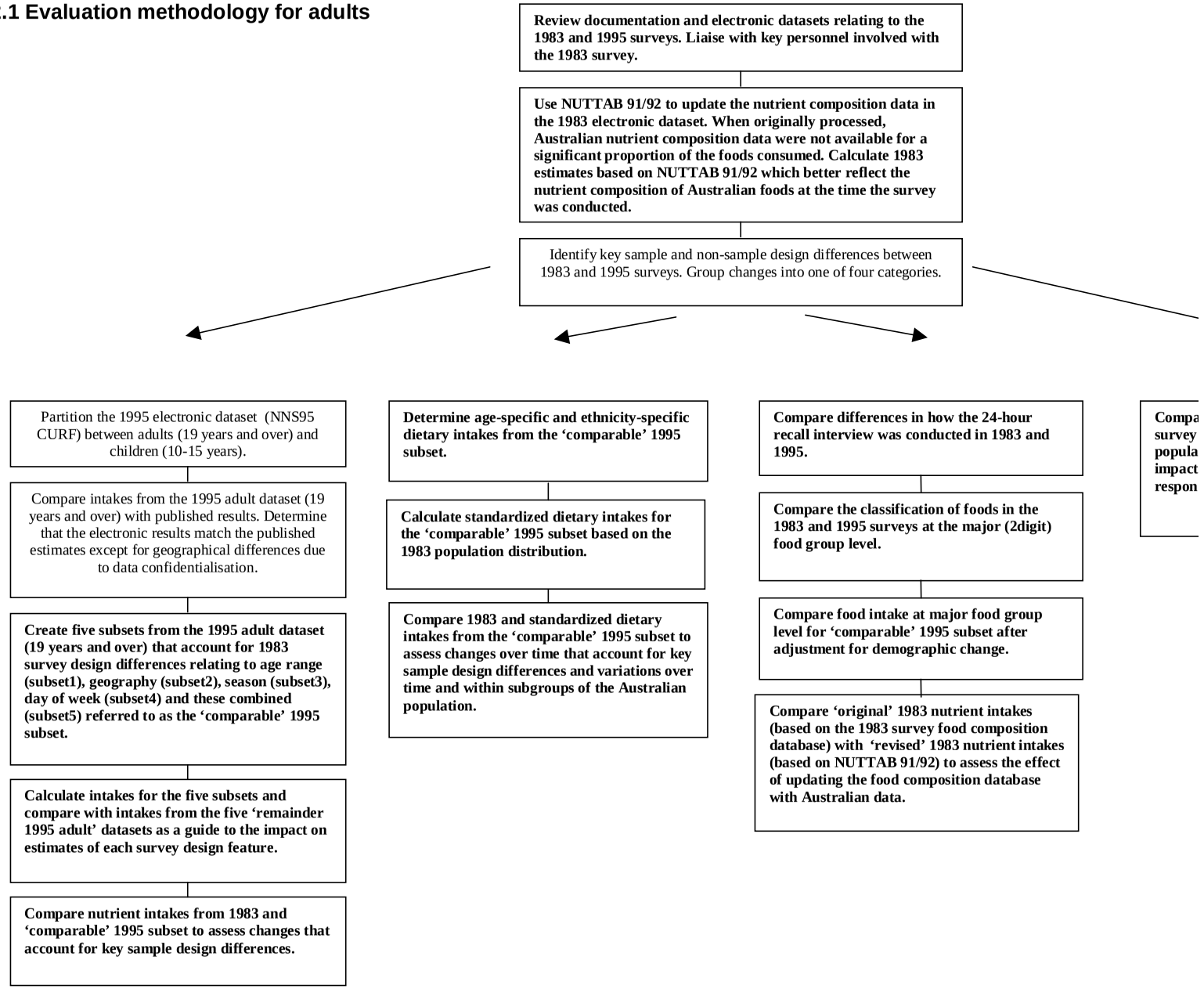
Electronic copies of unit record data relating to the 1983 and 1995 surveys were obtained from the Social Sciences Data Archive and the ABS respectively (SSDA 616 and NNS95 CURF). Following initial evaluation of these datasets and discussions with key personnel involved with the 1983 survey, a decision was made to revise the historical estimates to better reflect the nutrient composition of Australian foods at the time this survey was conducted. When originally processed, Australian nutrient composition data were not available for a significant proportion of the foods consumed in 1983. These foods were originally assigned nutrient composition data largely based on UK, and to a small extent USA, food composition tables.

In contrast, the 1995 survey nutrient composition data were almost entirely derived from Australian analytical data. Nutrient composition data for Australian foods consumed in 1983 were published from 1989 onwards. Data from NUTTAB91/92 were used to update the nutrient composition data for the foods on the unit record file relating to the 1983 survey (SSDA 616). The revised 1983 nutrient estimates are considered the ‘best possible’ benchmark estimates from the 1983 survey and are used throughout this report to compare with the 1995 estimates. Further details about the procedure used to update the nutrient composition data and the results are provided in section 2.3.3.

To further improve data comparability between the 1983 and 1995 surveys, the bridging study reports on separate evaluations that were carried out to assess the impact of sample design differences, demographic differences, changes in food intake methodology and other factors. These are reported in sections 2.1, 2.2, 2.3 and 2.4 respectively.

The steps undertaken to evaluate differences between the 1983 and 1995 surveys are illustrated in figure 2.1 below.

Figure 2.1 Evaluation methodology for adults



2.1 Sample design differences

Following initial evaluations of the datasets, a two-stage approach was adopted to estimate the effect of sample design differences between the 1983 and 1995 surveys.

Firstly a series of subsets was extracted from the 1995 survey that relate to particular aspects of design variations between the 1983 and 1995 surveys. Specifically, the subsets reflect differences in scope associated with age range (age), geographical region (geography), months of the year (season) and days of the week (day). A subset accounting for all four variations was also extracted from the 1995 survey. This fifth subset is the closest possible approximation to recreating the 1983 sample design from the 1995 survey and is termed the 'comparable' 1995 subset.

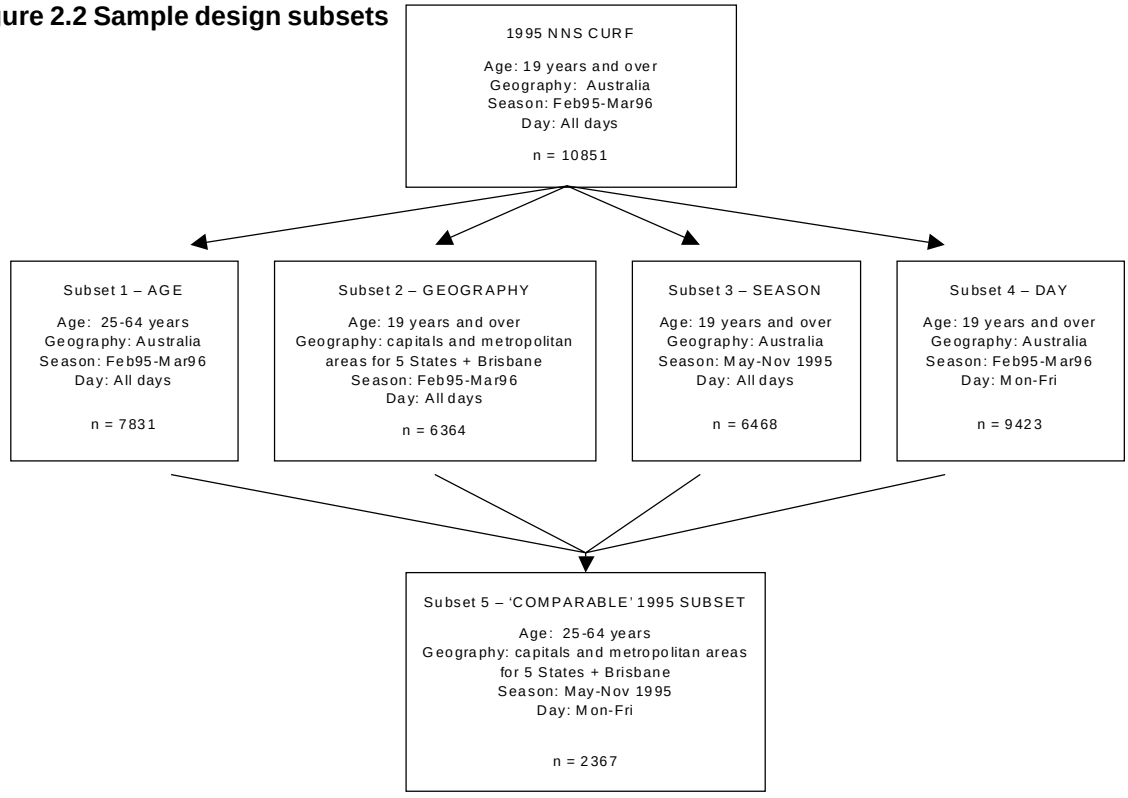
Secondly, estimates from the 'comparable' 1995 subset were compared with the 1983 survey results. The second stage comparisons tested the overall impact of the sample design variations between the surveys.

The principal advantage of this two-stage approach is that it is possible to identify the effect of individual components of survey design on the results obtained. Without access to the stage one results, it would be impossible to identify when the effects of individual survey design components cancel each other out.

2.1.1 Differences between subsets within the 1995 survey

Differences in nutrient intake estimates between subsets of the 1995 survey indicate the impact of specific components of sample design changes between the 1983 and 1995 surveys. Figure 2.2 provides details about the five subsets.

Figure 2.2 Sample design subsets



The geographical subset is the closest approximation of the 1983 survey design (specified areas within 6 capital cities) possible from the NNS95 CURF, but is not completely comparable with the 1983 survey. The geographical subset relates to capital cities and metropolitan areas in NSW, VIC, SA, WA, TAS plus Brisbane capital city (refer Glossary). Published NNS95 data, relating to eight capital cities, suggest that the influence of the metropolitan areas is not statistically significant. Inclusion of the metropolitan areas in the 'comparable' geographical subset definition has produced mean energy intake estimates that are slighter lower than would be expected if they could have been calculated for the six capital cities alone (ABS 1998b, pp32-34).

Estimation method for food and nutrient intakes (means and variances)

Population estimates for 18 nutrients and 17 major food groups were calculated for the 1983 and 1995 surveys using the unit record datasets SSDA 616 and NNS95 CURF respectively.

Revisions were made to the SSDA 616 dataset to allow best possible benchmark estimates for the 1983 survey to be calculated (refer section 2.0 and 2.3.3).

Population estimates from the 1995 survey were prepared for total adults (aged 19 years and over) by multiplying the NNS95 CURF data with the appropriate NNS95 stratified weights. Population estimates for the subsets relating to age, geography, season, day and the comparable subset were produced by prorating the NNS95 stratified weights to boost the derived subpopulation estimates. In a similar manner, population estimates were produced for the five residual subsets relating to not-age, not-geography, not-season, not-day and not-comparable. For example, the not-season subset is composed of respondents who provided survey details in a month other than May to November.

All estimates are based on Day1 records from the NNS95 survey only, in accordance with the single day recall design of the 1983 survey.

The list of nutrients evaluated include:
energy, protein, total carbohydrate, total starch, total sugars, total fat, cholesterol, alcohol, dietary fibre, vitamin A – retinol equivalents, thiamin, riboflavin, niacin equivalents, vitamin C, iron, calcium, zinc and magnesium.

The major food groups include (in alphabetical order):
alcoholic beverages; cereals and cereal products; cereal-based products and dishes; confectionery; egg products and dishes; fats and oils; fish and seafood products and dishes; fruit products and dishes; legumes and pulse products and dishes; meat, poultry and game products and dishes; milk products and dishes; non alcoholic beverages (excluding plain drinking water); seed and nut products and dishes; snack foods; soup; sugar products and dishes; and vegetable products and dishes.

Physical measurements data

Data relating to the height and weight of respondents in the 1983 dietary survey were sourced from the associated 1983 Risk Factor Prevalence Study (SSDA dataset 414). The 1983 dietary survey was conducted as a component of the 1983 RFPS. Permission was sought and obtained from the National Heart Foundation to allow details from the two unit record datasets to be matched to identify the height and weight of participants in the dietary survey. Height and weight details were measured for respondents to the 1995 survey.

Population estimates relating to height, weight, body mass index (BMI) and energy intake over basal metabolic rate (EI/BMR) from the 1983 and 1995 surveys were calculated in accordance with

methods recommended by the World Health Organisation and the National Health and Medical Research Council respectively (refer Glossary).

Statistical tests

Differences in mean intakes for each of the five subgroups were compared with their complementary residual subset. The statistical test comprised a two-tailed heteroscedastic t-test, which allows for potentially significant differences in the variances of the two distributions being tested.

$$t' = \frac{\bar{x} - \bar{y} - \Delta_0}{\sqrt{\frac{S_1^2}{m} + \frac{S_2^2}{n}}}$$

with degrees of freedom approximated by:

$$df = \frac{\left(\frac{S_1^2}{m} + \frac{S_2^2}{n}\right)^2}{\frac{\left(S_1^2/m\right)^2}{m-1} + \frac{\left(S_2^2/n\right)^2}{n-1}}$$

where

$\bar{x}$ = mean of first sample

$\bar{y}$ = mean of second sample

Δ_0 = assumed difference between two sample means (zero)

m = observations in first sample

n = observations in second sample

S_1^2 = variance of first sample

S_2^2 = variance of second sample

Population distributions associated with many food and nutrient intakes are skewed (Rutishauser 2000, pp21-23). Despite this, the subset tests for all food and nutrient intakes were undertaken on means rather than medians for two inter-related reasons. Firstly, many distributions, especially the highly skewed ones, have zero medians limiting the value of testing differences between them. Secondly, comparison of results from testing differences in means and differences in medians (using non-parametric tests) for a range of food groups across a series of 1995 subsets as part of *Evaluation of short dietary questions from the 1995 NNS* revealed no difference in the outcomes. In broad terms, this suggests that testing differences between the means can be considered a reasonable approach to evaluating changes between the subset outputs. Testing could have also been based on differences in proportion consuming.

T-tests were used to test differences in the means in accordance with assumptions about the distribution of sample means based on the central limit theorem. Significance testing occurred at the 5% level to limit the (beta) risk of inadvertently rejecting a significant difference. At this significance level, around 5% of results can be expected to occur through random chance. Therefore, when testing the impact of a particular sample design factor on a series of intakes, significant differences are needed for more than 5% of the data items tested before a general conclusion can be drawn.

Results

Summary findings about the likely effect of specific survey design changes between the 1983 and 1995 surveys are provided below. The findings are drawn from comparisons of intake estimates for each of the five subsets from the NNS95 CURF with the respective complementary residual subset. Detailed results for the 18 nutrients examined are provided in appendix A (tables A.1 to A.18, respectively). Similarly, data illustrating the effect of survey design changes on intake estimates for the 17 major food groups are provided in appendix B.

Subset comparisons reveal that of the four sample design differences examined, age and season routinely produce statistically significant differences in nutrient intakes, especially for females (refer appendix A). In general, differences between mean intakes tested as statistically significant more often for females than for males. In part this is because the standard errors associated with mean nutrient intakes for females tend to be relatively smaller than for male estimates.

Limiting the adult age range to 25-64 years produces statistically significant increases in mean intake estimates for 12 of the 18 nutrients examined for females and 11 nutrients for males. The other sample design factors (season, geography and day of the week) had a significant influence on intake estimates for between 6 and 12 of the nutrients tested. Not surprisingly, estimates of average alcohol consumption decreased significantly when Friday and Saturday were excluded from the calculations. In combination, the four sample design factors produced statistically different estimates of mean intake for 10 nutrients.

Although for nutrient intakes geography was the least significant sample design factor examined, it was the most significant for food and beverage intakes and produced statistically significant differences in mean intakes for 10 of the food groups evaluated (refer appendix B). The other design factors (age, season and day of the week) produced statistically significant differences in mean intakes for between four and eight of the 17 food groups tested. Mean intakes for eight food groups differed significantly when all four sample design factors were varied in combination.

These findings illustrate the need to account for sample design differences before comparing results from the 1983 and 1995 surveys. For example, results from appendix A and B show that age range differences between the 1983 and 1995 surveys are likely to have 'artificially' deflated the published 1995 survey results as older persons consume less, on average, than those aged 25-64 years. Consequently, direct comparison of published results from the 1995 survey could promote misleading conclusions in relation to 'true' intake changes since 1983.

2.1.2 Differences between the 1983 survey and 'comparable' 1995 subset results

Nutrient intakes from the 'comparable' 1995 subset were compared with revised data from the 1983 survey to provide the best estimate of changes in nutrient intake between the two surveys that account both for the survey design differences and for updating of the original food composition database to better reflect the composition of Australian foods in 1983.

The impact of other non-survey design differences (eg demographic changes in Australia's population, differences in how food intake data was collected and classified) remains within these dietary intake estimates.

A description of the method used to prepare population estimates for the 1983 survey and the 'comparable' 1995 subset is provided above (refer page 10).

Statistical tests

The mean value of each food and nutrient was statistically tested for a difference between the total 1983 sample and the 'comparable' 1995 subset for adults aged 25-64 years. The statistical test comprised a two-tailed heteroscedastic t-test, which allows for potentially significant differences in the variances of the two distributions being tested (refer page 11).

In this report, all significance testing was undertaken at the 5% risk level to assist conclusions being drawn across a range of foods and nutrients. The level was reduced to 1 per cent in the companion report *Comparable data on food and nutrient intakes and physical measurements from the 1983, 1985 and 1995 national surveys* to assess differences in specific intakes across time. For standardised data (refer section 2.2), in addition to the reasons provided on page 11, testing of differences between means rather than medians is preferable as non-parametric tests rank raw data units.

Results

The results of comparing the 'best possible' 1983 survey estimates for 24-hour food and nutrient intake based on updated food composition data with the 'comparable' 1995 subset are shown in tables 2.1.1 and 2.1.2 of this report. Population estimates for 18 nutrients and 17 food groups are compared for adult males and adult females, respectively.

In summary, the results of these comparisons reveal that significant differences exist in 24-hour intake estimates between 1983 and 1995 for all 18 nutrients tested with the exception of protein (for both males and females), vitamin A-retinol equivalents (for males) and alcohol for females.

Fifteen of the 17 major food groups tested had significantly different estimated mean intakes. The exceptions include, in abbreviated terms, vegetable dishes (for both males and females), meat and milk dishes (for males) and alcoholic beverages (for females). These results may reflect changes in food group classifications between 1983 and 1995 (refer section 2.3.3).

However, further adjustments are possible to enhance comparability between the 1983 and 1995 survey results. The impact of demographic changes on survey estimates over time and between subgroups of the population are discussed and illustrated in section 2.2 of this report. Section 2.3 provides details about the effect of differences in how food intake data were collected and classified between the two surveys.

Table 2.1.1 Comparison of estimates of nutrient intake between 1983 survey and 'comparable' 1995 subset, males and females aged 25 to 64 years

	Mean 24-hour intake per person			
	Males		Females	
	1983	1995 (a)	1983	1995 (a)
	n = 3,021	n = 1,114	n= 3,233	n= 1,253
Energy (kJ)	10,824	11,222*	7,299	7,634*
Protein (g)	110	112	76.8	75.8
Total carbohydrate (g)	260	304*	184	214*
Total starch (g)	145	174*	94.2	119*
Total sugars (g)	115	129*	89.0	93.9*
Total fat (g)	106	101*	72.4	68.7*
Cholesterol (mg)	412	356*	309	243*
Alcohol (g)	23.8	17.9*	8.7	7.85
Dietary fibre (g)	24.5	27.0*	19.4	20.8*
Vitamin A-retinol equivalent (µg)	1,427	1,405	1,737	1,131*
Thiamine (mg)	1.47	1.94*	1.10	1.35*
Riboflavin (mg)	2.08	2.32*	1.66	1.74*
Niacin equivalent (mg)	47.3	51.6*	33.2	34.8*
Vitamin C (mg)	152	140*	127	118*
Iron (mg)	15.0	16.6*	10.6	12.2*
Calcium (mg)	836	983*	682	760*
Zinc (mg)	14.7	14.6	10.5	9.99*
Magnesium (mg)	362	390*	268	291*

* Difference between the estimated mean for 1983 and the 'comparable' 1995 subset is statistically significant at a level of 0.05

(a) 'comparable' 1995 sample not age standardised

Source: SSDA 616, 1995 NNS CURF, AFNMU

Table 2.1.2 Comparison of estimates of food and beverage intake between 1983 survey and 'comparable' 1995 subset, males and females aged 25 to 64 years

1995 Food Group	Mean 24-hour intake per person (grams)			
	Males		Females	
	1983	1995 (a)	1983	1995 (a)
	n = 3,021	n = 1,114	n= 3,233	n= 1,253
11 Non-alcoholic beverages (ex plain drinking water) (b)	1,108	1,282*	1,067	1,164*
12 Cereals and cereal products	228	273*	151	193*
13 Cereal-based products and dishes (inc 1983 'takeaway' group) (b)	91	165*	58	111*
14 Fats and oils	23	14*	15	9*
15 Fish and seafood products and dishes (b)	22	30*	18	26*
16 Fruit products and dishes (b)	173	138*	181	132*
17 Egg products and dishes	23	14*	17	11*
18 Meat, poultry and game products and dishes (ex 1983 'takeaway' group) (b)	210	207	128	115*
19 Milk products and dishes	317	323	260	243*
20 Soup	75	62*	60	79*
21 Seed and nut products and dishes	7	5*	5	3*
23 Vegetable products and dishes (b)	298	285	239	230
24 Legume and pulse products and dishes (b)	6	15*	4	10*
25 Snack foods	2	4*	1	3*
26 Sugar products and dishes	28	22*	18	15*
27 Confectionery and health bars	7	9*	7	9*
28 Alcoholic beverages	456	367*	100	102

* Difference between the estimated mean for 1983 and the 'comparable' 1995 subset is statistically significant at a = 0.05

(a) 'comparable' 1995 sample not age standardised

(b) These groups may not be directly comparable between 1983 and 1995 because of differences in food classification for which it is not possible to adjust

Source: SSDA 616, 1995 NNS CURF, AFNMU

2.1.3 Key points

- It is inappropriate to directly compare published results from the 1983 and 1995 surveys to assess trends in food and nutrient intake for adults. Allowances are needed for sample design differences between the two surveys and to account for changes in the nutrient composition database to better reflect the composition of Australian foods as consumed in 1983.
- Revised nutrient estimates for the 1983 survey were derived after updating the original survey food composition database with data from NUTTAB91/92. When originally processed, Australian data were not available for a significant proportion of the foods consumed in 1983.

- The impact of specific sample design changes between 1983 and 1995 surveys is illustrated by comparison of intake estimates from subsets of the 1995 survey. Four key sample design differences were examined and relate to age range, geography, season of the year and day of the week.

- Age and season produced statistically significant differences in estimated mean 24-hour intakes for up to 12 of the 18 nutrients evaluated.

- Although geography was the least significant sample design factor examined for nutrient intakes, it was the most significant for food and beverage intakes, producing statistically significant differences in mean intakes for 10 of the 17 major food groups evaluated as part of sample design assessments.

- Comparison of the revised 1983 and 'comparable' 1995 results that are presented in tables 2.1.1 and 2.1.2 show that significant differences exist in the 24-hour intake estimates for all 18 nutrients tested with the exception of protein (for both males and females), vitamin A-retinol equivalents (for males) and alcohol for females. Estimated intakes for 12 of the 17 food groups tested were significantly different between 1983 and 1995, but these results may reflect changes in food group classifications.

- The findings from this section illustrate the importance of taking into account sample design differences before comparing results from the 1983 and 1995 surveys.

- Data evaluations can be further enhanced by accounting for the impact of non-survey design differences (eg demographic changes in Australia's population and differences in how food intake data was collected and classified).

2.2 Demographic differences

The effect on dietary intake estimates of changes in the Australian population between 1983 and 1995 are discussed below.

2.2.1 Age and sex distribution

Data from the 1983 and 1995 national nutrition surveys confirm that dietary intakes are age and sex related (refer table 2.2.1). For example, comparison of mean energy intake estimates by sex in ten-year cohorts from the 1983 survey and the 'comparable' 1995 subset reveals that energy consumption for adults generally declines with age and that males consume more than females at every age.

Table 2.2.1 Age and sex specific mean energy intakes (kJ), 1983 and 1995(a)

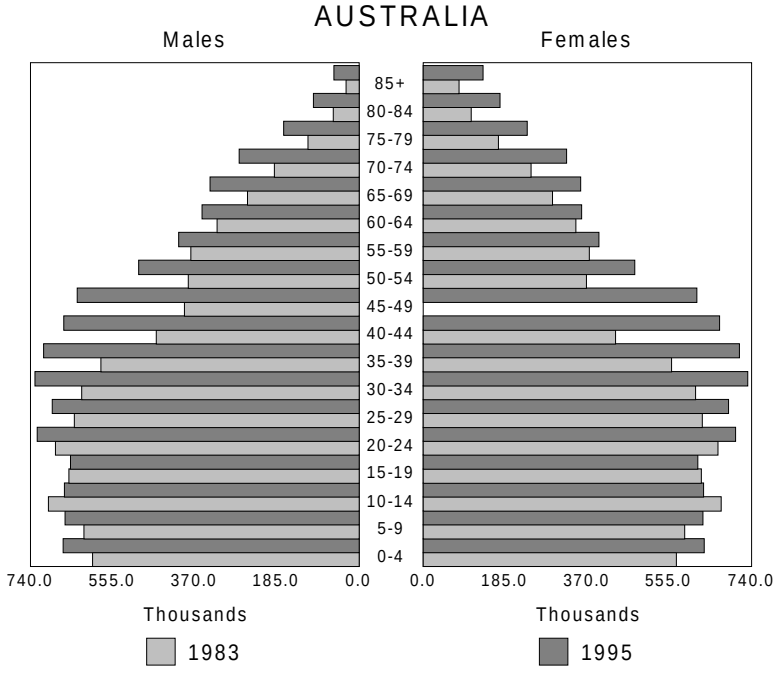
	Males		Females	
	1983	**1995(a)**	**1983**	**1995(a)**
25-34 years	11,739	12,283	7,928	8,326
35-44 years	11,019	11,339	7,162	7,511
45-54 years	10,260	10,922	7,060	7,597
55-64 years	9,539	9,377	6,650	6,577
All ages	10,824	11,222	7,229	7,634

(a) 'comparable' 1995 subset

Source: SSDA 616 and 1995 NNS CURF

Between 1983 and 1995, changes occurred in the age and sex distribution of the Australian population. Figure 2.2.1 illustrates the demographic ageing which the Australian population, like many other western nations, is experiencing.

Figure 2.2.1 Age and sex distribution at 30 June 1983 and 1995, Australia



Source: Australian Bureau of Statistics, Estimated Resident Population

The proportion of the population aged 25-64 years increased from 49% in 1983 to 52% in 1995. Within this forty-year age range, the age distribution shifted from younger adults (25-34 years) to the older adults (35-64 years). In 1995, persons aged 35-64 years accounted for 36% of the Australian population, up from 32% in 1983. In the twelve years between 1983 and 1995, the median age of the Australian population rose from 30 years to 34 years.

As dietary intakes are age and sex related, changes in Australia's population distribution over time affect the comparability of nutrient intake estimates. Adjustments to account for changes in the population distribution between 1983 and 1995 will enhance data comparability.

The dietary intake estimates from the 'comparable' 1995 subset presented in the remainder of this report and in the companion document *Comparable data on food and nutrient intakes and physical measurements from the 1983, 1985 and 1995 national surveys* have been adjusted using the direct standardisation method. The population standard is the population distribution used to weight the 1983 survey results, initially sourced from the Australian Bureau of Statistics.

2.2.2 Ethnicity

Adjustments can also be made for other demographic factors within the population such as ethnic composition. Such adjustments are especially important if the age and sex profile of the subpopulation is significantly different from that of the general population, which is often the case with migrants.

Results from the 1996 Census of Population and Housing (ABS, 1999b) reveal that the age profile of persons born in Europe (including the United Kingdom) is significantly older (median age 51 years) than that of the Australian born population (median age 30 years), reflective of the ageing of post World War II European migrants. The median age of those born in Asia (35 years) was also above that of the Australian born in 1996 but is a result of relatively few children associated with predominantly working-aged migrants from Asia since the 1980's.

Table 2.2.2 compares original and adjusted nutrient intakes from the 'comparable' 1995 subset for selected countries of birth.

Table 2.2.2 Estimated 24-hour intake of selected nutrients, original and adjusted, females by country of birth, 1995(a)

	Original		Adjusted	
	Aust	UK/Ire	Aust	UK/Ire
Energy (kJ)	7,612	7,946	7,594	8,114*
Protein (g)	75	78	75	78
Total starch (g)	114	120	114	120
Total sugars (g)	95	97	95	101
Total fat (g)	70	72	70	74
Cholestrol (mg)	237	234	237	233

* Difference between Aust and UK/Ire estimated mean is statistically significant at the 0.05 level

(a) 'comparable' 1995 subset

Source: NNS95 CURF, AFNMU

Population standardisation produces estimates of energy intake for women born in the United Kingdom or Ireland that are statistically different from those for Australian born women (table 2.2.2).

The effects of population adjustment on nutrient intakes are considerably more marked when intakes for young adults (19-24 years) and older adults (65 years and over) are also included in the evaluations (Cook T 2000, pp7-9). As noted in section 2.1.1, restricting the age range to 25-64 years produced significant differences in mean intakes for the majority of nutrients evaluated (12 of 18). Consequently, the impact of population standardisation has been greatly reduced by the 'comparable' sample being limited to the age range of '25-64' years. Population standardisation is effectively accounting for the residual age related changes between 1983 and 1995.

Even when differences between original and adjusted estimates are not significant, use of standardised estimates improves comparability across time and between subpopulation groups. For these considerations, the United States National Center for Health Statistics recommends and employs population standardisation techniques to compare National Health and Nutrition Examination Survey results (USDHHS 1996, p13).

Standardised country-of-birth estimates have been produced for both 1983 and 1995. These data are presented in the companion document to this report entitled *Comparable data on food and nutrient intakes and physical measurements from the 1983, 1985 and 1995 national surveys*.

Dietary intake estimates for Australia's Indigenous population is not available from either the 1983 survey or the 1995 survey. This significant data gap needs to be addressed in future work programs relating to monitoring of dietary intakes in Australia

2.2.3 Geography

Population standardisation also enhances comparison of regional data. Age and sex profiles can differ markedly between regions and from the general population. Specifically, significant age and sex differences exist between urban and rural Australia that require regional estimates to be standardised (Cook T 2000, p3). Unfortunately, variations in geographical definitions on the 1995 NNS CURF prevent the 1983 and 1995 data being compared by capital city.

This issue is noted for consideration in relation to future monitoring of dietary intakes in Australia. Unless existing internal migration patterns alter dramatically in the future, allowing for differences in regional population distributions will become increasingly important to population based surveys (DCILGP, 1998).

Results

Tables 2.2.3, 2.2.4, 2.2.5 and 2.2.6 provide dietary intake estimates for 1983 and 1995 which have been adjusted to account for sample design differences and changes in the Australian population between the two surveys.

The conclusions presented in section 2.1.2 remain valid following population standardisation. Mean 24-hour intake estimates changed significantly between 1983 and 1995 for all 18 nutrients evaluated with the exception of protein (for both males and females), vitamin A-retinol equivalents (for males) and alcohol (for females). The results are presented in tables 2.2.3 and 2.2.4 for males and females respectively.

Age adjustments have produced minor changes in the food and beverage intake estimates from those presented in table 2.1.2, relating specifically to soup (for males) and milk products and dishes (for females). In both instances, the difference in estimated intakes between 1983 and 1995 is no longer statistically significant after age-adjustment (refer tables 2.2.5 and 2.2.6).

Comparing food and beverage intakes for 1983 with population adjusted 'comparable' 1995 estimates reveals intake differences that are statistically significant for up to 14 of the 17 major food groups evaluated. The exceptions include, in abbreviated terms, vegetable dishes (for both males and females), meat, milk and soup dishes (for males) and alcoholic beverages and milk dishes (for females). However, these results may reflect changes in food group classifications, which are discussed in detail in section 2.3.3.

Further summary statistics on dietary intakes and physical measurements for 1983 and 1995 are provided in appendix D, E and F of this report. Commentary on these results is reserved for the companion report *Comparable data on food and nutrient intakes and physical measurements from the 1983, 1985 and 1995 national surveys*. The companion report provides age and ethnic specific estimates of dietary intake and physical measurements for 1983 and 1995, together with brief descriptive commentaries on any apparent patterns revealed by the estimates. By necessity, the analysis is concise because it relates to national survey results that are only available for two points in time. Where possible data from aligned surveys such as the Apparent Consumption of Foodstuffs Australia have been used to place the dietary survey results in context.

Table 2.2.3 Comparison of estimates of nutrient intake between the 1983 survey and the standardised 'comparable' 1995 subset, MALES aged 25 to 64 years

	Mean 24-hour intake per person			
	1983 survey n = 3,021		**1995 (a) n = 1,114**	
	Mean	Standard Deviation	Mean	Standard Deviation
Energy (kJ)	10,824	3,898	11,195*	4,070
Protein (g)	110	44.4	112	47.1
Total carbohydrate (g)	260	106	304*	124
Total starch (g)	145	66.6	173*	80.0
Total sugars (g)	115	66.3	129*	75.0
Total fat (g)	106	49.9	100*	48.9
Cholesterol (mg)	412	268	355*	238
Alcohol (g)	23.8	37.4	18.0*	32.4
Dietary fibre (g)	24.5	12.9	26.9*	12.9
Vitamin A-retinol equivalent (µg)	1,427	4,863	1,387	3,515
Thiamin (mg)	1.47	0.85	1.94*	1.20
Riboflavin (mg)	2.08	1.29	2.32*	1.41
Niacin equivalent (mg)	47.3	19.2	51.5*	21.1
Vitamin C (mg)	152	141	140*	119
Iron (mg)	15.0	6.58	16.6*	7.14
Calcium (mg)	836	485	984*	600
Zinc (mg)	14.7	8.84	14.6	7.81
Magnesium (mg)	362	136	390*	151

* Difference between the estimated mean for 1983 and the 'comparable' 1995 subset is statistically significant at a level of 0.05

(a) 'comparable' 1995 sample, standardised to 1983 population

Source: SSDA 616, 1995 NNS CURF, AFNMU

Table 2.2.4 Comparison of estimates of nutrient intake between the 1983 survey and the standardised 'comparable' 1995 subset, FEMALES aged 25 to 64 years

	Mean 24-hour intake per person			
	1983 survey n = 3,233		1995 (a) n = 1,253	
	Mean	Standard Deviation	Mean	Standard Deviation
Energy (kJ)	7,299	2,772	7,624*	2,899
Protein (g)	76.8	31.4	75.6	32.2
Total carbohydrate (g)	184	80.6	214*	85.7
Total starch (g)	94.2	46.7	119*	56.0
Total sugars (g)	89.0	50.9	94.4*	53.7
Total fat (g)	72.4	35.3	68.6*	35.5
Cholesterol (mg)	309	251	241*	179
Alcohol (g)	8.7	17.7	7.63	22.1
Dietary fibre (g)	19.4	10.4	20.8*	9.73
Vitamin A-retinol equivalent (µg)	1,737	7,483	1,118	2,570
Thiamin (mg)	1.10	0.64	1.35*	0.76
Riboflavin (mg)	1.66	1.40	1.74*	1.00
Niacin equivalent (mg)	33.2	14.1	34.7*	14.1
Vitamin C (mg)	127	106	118*	99.5
Iron (mg)	10.6	5.31	12.2*	5.72
Calcium (mg)	682	472	763*	443
Zinc (mg)	10.5	7.53	9.94*	6.67
Magnesium (mg)	268	110	291*	116

* Difference between the estimated mean for 1983 and the 'comparable' 1995 subset is statistically significant at the 0.05 level

(a) 'comparable' 1995 sample, standardised to 1983 population

Source: SSDA 616, 1995 NNS CURF, AFNMU

Table 2.2.5 Comparison of estimates of food and beverage intake between the 1983 survey and the standardised 'comparable' 1995 subset, MALES aged 25 to 64 years

	Mean 24-hour intake per person (grams)			
	1983 survey n = 3,021		1995 (a) n = 1,114	
	Mean	Standard Deviation	Mean	Standard Deviation
11 Non-alcoholic beverages (ex plain drinking water)	1,108	649	1,274*	830
12 Cereals and cereal products	228	188	271*	254
13 Cereal-based products and dishes (inc 1983 'takeaway' group) (b)	91	130	164*	228
14 Fats and oils	23	24	14*	17
15 Fish and seafood products and dishes (b)	22	60	30*	88
16 Fruit products and dishes (b)	173	259	139*	204
17 Egg products and dishes	23	45	14*	44
18 Meat, poultry and game products and dishes (ex 1983 'takeaway' group) (b)	210	171	205	217
19 Milk products and dishes	317	284	324	336
20 Soup	75	197	63	182
21 Seed and nut products and dishes	7	21	5*	20
23 Vegetable products and dishes (b)	298	236	284	244
24 Legume and pulse products and dishes (b)	6	40	15*	64
25 Snack foods	2	9	4*	16
26 Sugar products and dishes	28	34	22*	30
27 Confectionery and health bars	7	23	9*	26
28 Alcoholic beverages	456	799	369*	743

* Difference between the estimated mean for 1983 and the age-adjusted 'comparable' 1995 subset is statistically significant at a level of 0.05

(a) 'comparable' 1995 sample, standardised to 1983 population

(b) These groups may not be directly comparable between 1983 and 1995 because of differences in food classification for which it is not possible to adjust

Source: SSDA 616, 1995 NNS CURF, AFNMUTable 2.2.6 Comparison of estimates of food and beverage intake between 1983 survey and the standardised 'comparable' 1995 subset, FEMALES aged 25 to 64 years

Table 2.2.6 Comparison of estimates of food and beverage intake between the 1983 survey and the standardised 'comparable' 1995 subset, FEMALES aged 25 to 64 years

	Mean 24-hour intake per person (grams)			
	1983 survey n = 3,233		1995 (a) n = 1,253	
	Mean	Standard Deviation	Mean	Standard Deviation
11 Non-alcoholic beverages (ex plain drinking water)	1,067	561	1,159*	669
12 Cereals and cereal products	151	125	192*	181
13 Cereal-based products and dishes (inc 1983 'takeaway' group) (b)	58	77	111*	162
14 Fats and oils	15	15	9*	12
15 Fish and seafood products and dishes (b)	18	49	26*	77
16 Fruit products and dishes (b)	181	215	133*	163
17 Egg products and dishes	17	32	11*	35
18 Meat, poultry and game products and dishes (ex 1983 'takeaway' group) (b)	128	105	115*	132
19 Milk products and dishes	260	219	245	234
20 Soup	60	152	80*	200
21 Seed and nut products and dishes	5	14	3*	13
23 Vegetable products and dishes (b)	239	176	229	190
24 Legume and pulse products and dishes (b)	4	24	10*	42
25 Snack foods	1	7	3*	15
26 Sugar products and dishes	18	26	15*	31
27 Confectionery and health bars	7	21	9*	29
28 Alcoholic beverages	100	220	100	307

* Difference between the estimated mean for 1983 and the age-adjusted 'comparable' 1995 subset is statistically significant at the 0.05 level

(a) 'comparable' 1995 sample, standardised to 1983 population

(b) These groups may not be directly comparable between 1983 and 1995 because of differences in food classification for which it is not possible to adjust

Source: SSDA 616, 1995 NNS CURF, AFNMU

2.2.4 Key points

- Changes in the age and sex structure of the Australian population between 1983 and 1995 make it preferable that population standardisation techniques be used before comparing results from the 1983 national dietary survey and 1995 national nutrition survey relating to adults. Use of standardised estimates improves comparability of data across time and between subpopulation groups.

- Allowing for the impact of population ageing will become increasingly important in the future. Australia's population distribution is forecast to continue to age until at least 2036, which coincides with the last cohort of the 'baby boomers' reaching 75 years of age. Standardisation is also more important when intakes relate to the entire adult population (ie 19 years and over).

- All 1983 and 1995 dietary intake estimates (except age-specific estimates) have been adjusted based on the population distribution used to weight the 1983 survey. These estimates are presented in tables 2.2.3, 2.2.4, 2.2.5 and 2.2.6 of this report. Further summary statistics on dietary intakes and physical measurements for 1983 and 1995 are provided in appendix D, E and F of this report. Commentary on these results is reserved for the companion report *Comparable data on food and nutrient intakes and physical measurements from the 1983, 1985 and 1995 national surveys*.

- Differences in mean intakes between 1983 and 1995 were statistically significant for up to 16 of the 18 nutrients evaluated and 14 of the 17 food groups assessed. However, the food group results may reflect changes in food classifications between 1983 and 1995.

- It is recommended that future nutrition surveys be designed to allow changes in dietary intake to be monitored for selected age groups, ethnicities and regions within the Australian population. Samples will need to be sufficiently large to account for anticipated changes in the composition of the Australian population due to population ageing and existing migration patterns. This may require over-sampling of some subpopulations and consideration of the potential consequences on respondent burden.

2.3 Changes in food intake methodology

The differences in nutrient intake observed between adults in the 1983 National Dietary Survey of Adults and a comparable subset of adults from the 1995 National Nutrition Survey could have arisen either because of real changes in the types and/or amounts of foods consumed in 1983 and 1995 and/ or because of changes in food intake methodology used in the two surveys.

The observed trends could result from differences in the way the information on food intake was collected and processed in 1983 and 1995. They could arise, for example, from differences in the way the 24-hour recall interview was conducted and how the information on food intake was classified and coded.

The observed trends could also result from differences in the food composition databases used in 1983 and 1995. Such differences might reflect real changes in the composition of the foods consumed as a result of mandatory or voluntary fortification of foods or changes in formulation by manufacturers. They could, however, also arise from the use of different data sources, analytical methods or nutrient conversion factors for estimating the nutrient composition of Australian foods.

The purpose of this section is to provide information on the extent to which each of the above factors contributed to the differences in nutrient intake observed between the comparable samples of the Australian population studied in 1983 and 1995 in order to be able to separate real change from differences due solely to changes in survey methods.

This section describes and provides quantitative estimates of the impact of differences in the 24-hour recall interview procedure, in the classification of foods to major food groups and in the food composition database used in the two surveys and their effects.

2.3.1 24-hour recall procedure

It is not possible to quantify the effect of all aspects of differences in dietary methodology between 1983 and 1995. An interviewer administered 24-hour recall was used for both surveys but in 1995 the recall interview used a ‘multiple-pass’ approach adapted from that used in the United States Department of Agriculture (USDA) Continuing Survey of Food Intakes by Individuals 1994-96. This methodology was developed by the Agricultural Research Service of the USDA to maximise the ability of respondents to remember what was eaten and drunk (Johnson et al 1996; Guenther et al 1997). The multiple-pass approach involved three separate phases:

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

A detailed account of the recall procedure used in 1995 is given in the National Nutrition Survey User’s Guide 1995 (ABS Catalogue No 4801.0).

Similarly detailed information on the recall procedure used in 1983 is not available from the 1983 survey publications. In both surveys, however, the 24-hour recall interviews were conducted by interviewers who were dietitians or nutritionists and who had been trained to obtain the information

on food intake using a standard interview approach and a pre-determined set of probing questions. The average length of interview in 1983 was about 25 minutes and 35 minutes in 1995 indicating a significant increase in the length of time taken to obtain the information on intake over the 24-hour recall period.

In the absence of food intake data from a direct comparison of the two techniques it is not possible to comment on the magnitude of any effect arising from differences in the interview procedure. One might expect that the multiple pass approach would 'capture' a greater proportion of the total food intake during the designated 24-hour period. However, the fact that energy intake expressed in relation to estimated basal metabolic rate was higher in 1983 than in 1995 (men: 1.48 v 1.44; women:1.29 v 1.26) suggests that if such an effect occurred, it must have been small.

2.3.2 Food classification

Another possible reason for the observed differences in nutrient intake between 1983 and 1995 is the way in which the food intake data was classified into food categories and assigned to specific food codes. In 1983 coding of the data on food intake was carried out by the interviewers whereas in 1995 all coding was done centrally by personnel specially trained in data entry and coding procedures.

In both surveys a comprehensive coding manual was used for the purpose of coding the food intake data. In 1983 this was done manually while in 1995 an automated coding system, the Australian Nutrition Survey System (ANSURS), was developed for the survey. The ANSURS program is based on a system initially developed by the USDA, in conjunction with the University of Texas, for use in the Continuing Survey of Food Intakes by Individuals 1994-96 (Cypel and Tippett (eds) 1998).

The number of unique food codes used in 1983 was much smaller (~600) than in 1995 (~4000). In part this large difference reflects the much wider range of food products available to the Australian consumer in 1995 than in 1983, but in part it also reflects a different approach to the coding of mixed dishes and manufactured foods.

In 1983, mixed foods were allocated to food sub-groups according to how they were described by respondents, either as ingredients or as the combined food (CDH 1986). A mixed food such as 'plain cake' could have been described and recorded as such, or as quantities of flour, sugar, egg, milk and fat if the participant gave ingredient information for the recipe used. For the purpose of data processing some mixed foods were treated as though a recipe had been given and others were treated according to their major components (eg sponge cake and optional fillings).

In 1995 mixed dishes were assigned a food code based on matching the descriptions available in the Food Codebook Database with those given by the respondent (eg name, major ingredients and/or recipe). If a food could not be coded from the Food Codebook Database it was designated as 'unknown'. Throughout the coding process, information on these 'unknown' foods was obtained and added to the database.

Table 2.3.1 shows the major food groups used in 1995 and in 1983 and the number of individual food codes used for the foods consumed in each of these groups. With three exceptions the major food groups used in 1995 and 1983 were apparently similar. In 1995 the cereals and cereal products group (Group A in 1983) was split into two groups (12 and 13). The first of these groups (12) included only grains, flours and basic cereal products such as rice, pasta and breads while the second group (13) included biscuits, cakes, pastries, batter products and mixed dishes in which cereal is the major ingredient. Similarly in 1995 the vegetable group (Group B in 1983) was split into two groups (23 and 24). The first of these groups (23) included vegetables and vegetable products and the second (24) legumes and pulse products and dishes. Finally the miscellaneous group, condiments, flavourings and

soups (Group O in 1983), was sub-divided in 1995 into soups (20), savoury sauces and condiments (22) and miscellaneous foods (30).

Only four sub-major food groups in 1983 related to mixed dishes. Cake and cake type puddings and desserts containing cereal in the cereals and cereal products group and mixed dishes (including meat substitute dishes) and take-away (excluding fish) in the meat and meat products group. In 1995 mixed dishes were assigned to the food group associated with the major ingredient. For example in 1995 sub-group *135 - Mixed dishes where cereal is the major ingredient* included a number of foods that in 1983 had been coded in the take-away sub-group of the meat and meat-products group (eg pizza, chiko rolls, dim sims, hamburgers). The effect of this re-classification is to increase the observed intake of cereal-based products and dishes in 1995 and to decrease apparent intake of meat, poultry and game. Other mixed dishes allocated to the meat and meat products group in 1983, which were coded to a different group in 1995, included macaroni cheese to the cereal-based products and quiche to the egg products and dishes group. Again this re-classification leads to an apparent decrease in intake of foods from the meat poultry and game group in 1995.

The much larger number of food codes used in the 1995 survey reflects two important differences between 1983 and 1995. Firstly many more manufactured foods and a much wider range of pre-prepared meals and mixed dishes were available for purchase in 1995 than in 1983. Secondly the food composition database available for the conversion of food intake to nutrient intake was considerably larger than in 1983. Because of the limited amount of food composition data available in 1983 the number of codes used for mixed dishes was small and their nutrient composition was mainly based on the ingredient composition of generic recipes. In contrast, in 1995, individual codes were assigned to many manufactured foods (72 codes for sweet biscuits compared with four in 1983) and to a number of variants of generic recipes (11 codes for mashed potatoes compared with one in 1983). This was done in order to retain as much information as possible in the survey database about the foods that had been consumed even when differences in nutrient composition were likely to be small.

Amounts of food consumed from major food groups

In broad terms the major food groups used in 1983 and 1995 appear to be comparable so that it is possible to compare the amounts of food derived from the major food groups in 1983 and in 1995. Direct comparisons, however, will only give a true indication of changes in reported food intake between the two surveys if mixed foods have not been allocated to different major food groups in 1983 and 1995. Differences in the classification of foods need to be taken into account when comparing food intake data, at the major food group level, between 1983 and 1995. Intake from the major food groups, after accounting for the re-allocation of the 1983 ‘take-away’ sub-group of foods from the meat, poultry and game group to the cereal-based products and dishes group in 1995, is shown in table 2.3.2.

Information on plain drinking water was obtained in both 1983 and 1995. In 1983 this information was collected as part of the 24-hour recall interview but not included in the total for non-alcoholic beverages. In 1995 the quantity of plain drinking water was reported in response to a separate question that followed the completion of the 24-hour recall interview and included in the total for non-alcoholic beverages. In this report plain drinking water has been treated separately from non-alcoholic beverages in both surveys. The average quantity of plain drinking water consumed by men and women in 1983 was 227 and 242mL respectively. In 1995 the quantity was much larger 657 and 745mL respectively. Part of the increase is likely to be due to the fact that a greater percentage of the sample reported consuming plain drinking wZater in 1995 than in 1983 (about 75% v 50%) but in part it may also be due to the different way in which the information was obtained in the two surveys.

Table 2.3.1 Major food groups used in the 1983 and the 1995 surveys and the number of individual food codes in each group

Major food groups in 1983			Major food groups in 1995		
Food Group	Name	No of Codes	Food Group	Name	No of Codes
M	Non-alcoholic beverages	19	11	Non-alcoholic beverages	171
A	Cereals:				
	Cereals & products	40	12	Cereals & cereal products	317
	Cereal-based products	52	13	Cereal-based products	610
I	Fats	24	14	Fats	68
E	Fish & seafood & products	36	15	Fish & seafood & dishes	335
C	Fruits	87	16	Fruit products & dishes	232
F	Eggs	5	17	Egg products & dishes	35
D	Meat & meat products	112	18	Meat, poultry, game	743
H	Milk & milk products	34	19	Milk products & dishes	340
O	Miscellaneous:				
	Soups	6	20	Soup	134
	Sauces & condiments	24	22	Sauces & condiments	166
	Miscellaneous	14	30	Miscellaneous	44
G	Nuts & seeds	15	21	Seed & nut products	66
B	Vegetables:				
	Vegetables	72	23	Vegetables & dishes	400
	Legumes & pulses	6	24	Legumes & pulse dishes	71
L	Snack foods	8	25	Snack foods	30
J	Jams, honey & syrups	12	26	Sugar products & dishes	59
K	Confectionery	11	27	Confectionery & health bars	102
N	Alcoholic beverages	21	28	Alcoholic beverages	66
			29	Special dietary foods	10
	Total	598		Total	3,999

Source: SSDA 616 and 1995 NNS CURF

The specific wording of this question in 1995 was:

Now I would like to ask you about all the plain drinking water that you had yesterday, regardless of where you drank it. By plain drinking water I mean tap water or any bottled water that is not carbonated, with nothing added, not even lemon.

How much plain drinking water did you drink yesterday? (Response recorded in ml).

Apart from the difference in plain drinking water between 1983 and 1995 the most obvious difference in food and beverage intake between 1983 and 1995, *after* allowing for the re-allocation of 'take-away' foods from one major food group to another, was the increased intake of cereal-based products and dishes (table 2.3.2) in 1995.

The other main differences in food intake apparent between 1983 and 1995 were the increase in non-alcoholic beverages and in cereals and cereal products and decreases in the intake of fats and oils and fruit. The increases in intake of non-alcoholic beverages and of cereals and cereal products and the decrease in intake of fats and oils are all consistent with trends over the same period in *Apparent Consumption* data (ABS, 1998d). However, the observed decrease in fruit intake is not consistent with the change in the fruit supply over this period.

Table 2.3.2 Amounts derived from selected major food groups in 1983 and 1995 (based on data from 'comparable' subset)

1995 Food Group	Mean 24-hour intake per person (grams)			
	Males		Females	
	1983	1995 (a)	1983	1995 (a)
11 Non-alcoholic beverages (ex plain drinking water)	1,108	1,274*	1,067	1,159*
12 Cereals and cereal products	228	271*	151	192*
13 Cereal-based products and dishes products (inc 1983 'takeaway' group) (b)	91	164*	58	111*
14 Fats and oils	23	14*	15	9*
15 Fish and seafood products and dishes (b)	22	30*	18	26*
16 Fruit products and dishes (b)	173	139*	181	133*
17 Egg products and dishes	23	14*	17	11*
18 Meat, poultry and game products and dishes (ex 1983 'takeaway' group) (b)	210	205	128	115*
19 Milk products and dishes	317	324	260	245
20 Soup	75	63	60	80*
21 Seed and nut products and dishes	7	5*	5	3*
23 Vegetable products and dishes (b)	298	284	239	229
24 Legume and pulse products and dishes (b)	6	15*	4	10*
25 Snack foods	2	4*	1	3*
26 Sugar products and dishes	28	22*	18	15*
27 Confectionery and health bars	7	9*	7	9*
28 Alcoholic beverages	456	369*	100	100
Total food and beverage intake	3,073	3,244	2,329	2,479
Plain drinking water	227	657*	242	745*

* Difference between estimated means is statistically significant at the 0.05 level

(a) 'comparable' 1995 sample, standardised to 1983 population

(b) These groups may not be directly comparable between 1983 and 1995 because of differences in food classification for which it is not possible to adjust

Source: SSDA 616, 1995 NNS CURF, AFNMU

The *Apparent Consumption of Foodstuffs and Nutrients Australia* series of publications indicates that there was an overall increase in the supply of fruit and fruit products in Australia, of about 10kg per head per annum, between 1988-89 and 1995-96. Just over half of this increase related to citrus fruit, most of which is used for the production of fruit juice. Fruit juices were not included in the fruit and fruit products group in either the 1983 or the 1995 surveys. The increase in the supply of non-citrus fruit and fruit products is relatively small (equivalent to an average increase of less 10g of fruit per

head per day) but it might have been expected to result in a small increase rather than a substantial decrease in fruit intake between 1983 and 1995.

The most likely reason for at least part of the observed decrease of about 40g in intake of fruit and fruit products and the increased intake (about 65g) of cereal-based products and dishes is the different approach to food classification between the two surveys. For example all the fruit in cakes, biscuits, pies, pastries and tarts was allocated to the cereal-based products and dishes group in 1995 whereas this was not the case in 1983.

Total food and beverage intake (excluding plain drinking water) was on average 150g (4-6 %) higher in 1995 than in 1983 in both men and women. Over half of this increase (80-90g) resulted from the increase in intake of non-alcoholic beverages and a further 40-50g from the increase in cereals and cereal products. Overall the percentage of total food and beverage intake (excluding plain drinking water) contributed by beverages (alcoholic and non-alcoholic) remained the same in 1983 and 1995 at 51%.

2.3.3 Food composition databases

The purpose of this section is to provide an estimate of the effect of changes in food composition since 1983 due primarily to the use of Australian as opposed to overseas data on food composition.

In 1981 a comprehensive program of analysis of Australian foods was undertaken which had only been partially completed at the time that the 1983 survey data were originally processed. Results from the program were published from 1989 onwards in a series of publications known as Composition of Foods Australia (COFA) and electronic files known as NUTTAB. In this report the data that have been used to update the original 1983 food composition database are those from NUTTAB91/92. These data cover the first six volumes of the Composition of Australian foods series and include Australian values for all the major food groups. They represent the best information currently available on the composition of Australian foods as consumed in 1983.

In order to update the 1983 nutrient estimates a NUTTAB91/92 food description, which matched as closely as possible the description of the food consumed in the 1983 survey, was identified and the NUTTAB nutrient composition data for this food item were used to replace the original 1983 food composition data. Where no matching food description was found in NUTTAB 91/92 advice was sought from ANZFA and from former staff from Commonwealth Department of Health who had worked on the 1983 survey as to the most appropriate alternative. This approach was necessary for a relatively small number (less than 50) of the over 600 foods in the 1983 food composition database.

Table 2.3.3 shows the effect of updating the 1983 food composition database with Australian food composition data from NUTTAB 91/92. Updating had no statistically significant effect on estimates of total energy, cholesterol, alcohol, dietary fibre, vitamin A-retinol equivalents or zinc. However, estimates of all the major energy constituents except alcohol, showed statistically significant differences. Estimates of protein increased by about 4% while estimates of total carbohydrate and fat both decreased by about 4%. For the micronutrients updating of the database increased estimates of thiamin by about 5%, niacin equivalents by about 15% and estimates of vitamin C by 15-20%. As a result of the updating, estimates of riboflavin, calcium, iron and magnesium intake decreased by between 3 and 8%.

Unless these differences are taken into account in a comparison of the 1983 and the 1995 data, estimates of real changes in protein, thiamin, niacin and vitamin C will be overestimated while changes in carbohydrate, fat, riboflavin, iron, calcium and magnesium intake will be underestimated.

Table 2.3.3 Comparison of nutrient estimates from the 1983 survey derived from the original food composition database and from NUTTAB91/92

Nutrient	Mean 24-hour intake per person			
	Males		Females	
	1983 database	NUTTAB 91/92	1983 database	NUTTAB 91/92
Energy (kJ)	10,994	10,824	7,403	7,299
Protein (g)	106	110*	74	77*
Total carbohydrate (g)	274	260*	192	184*
Total starch (g)	150	145*	100	94*
Total sugars (g)	124	115*	92	89*
Total fat (g)	110	106*	76	72*
Cholesterol (mg)	416	412	309	309
Alcohol (g)	24.7	23.8	8.9	8.7
Dietary fibre (g)	24.1	24.5	19.5	19.4
Vitamin A-retinol equivalent (mg)	1430	1427	1715	1737
Thiamin (mg)	1.38	1.47*	1.04	1.10*
Riboflavin (mg)	2.27	2.08*	1.75	1.66*
Niacin equivalent (mg)	41.2	47.3*	28.6	33.2*
Vitamin C (mg)	126	152*	112	127*
Iron (mg)	15.9	15.0*	11.5	10.6*
Calcium (mg)	874	836*	710	682*
Zinc (mg)	14.7	14.7*	10.5	10.5
Magnesium (mg)	373	362*	272	268

* Difference between estimated means is statistically significant at the 0.05 level

Source: SSDA 616, 1995 NNS CURF, AFNMU

2.3.4 Key points

- This section considered the extent to which differences in food intake methodology between the two surveys affected the observed differences in intake between 1983 and 1995. The differences assessed were: the way the 24-hour recall interview was conducted, differences in food classification and coding, and the impact of updating the 1983 food composition database with Australian analytical data.

- Differences in the way that the 24-hour recall interviews were conducted between the 1983 and 1995 surveys are unlikely to have had a significant effect on the estimates of food and nutrient intake.

- Comparison of the classification of foods in the two surveys at the major (2 digit) food group level between 1983 and 1995 revealed that some of the major differences are due to changes in the grouping of foods at the major food group level rather than to real changes in food intake.

- Updating of the 1983 food composition database with Australian data (NUTTAB 91/92) resulted in significant differences, both increases and decreases, in estimates of nutrient intake for some but not all nutrients.

- Differences in the way that food intake data are processed need careful consideration in the context of food and nutrition monitoring because they can have a major impact on comparisons between surveys.

2.4 Other factors

The impact of survey and non-survey related differences additional to those presented in sections 2.1, 2.2 and 2.3 are discussed below. The impact of these additional factors cannot be quantified in dietary intake terms but are worth mentioning, especially in terms of future survey design recommendations.

2.4.1 Coverage and non-response

Adjustments have been made to both the 1983 and 1995 surveys to account for under-coverage and non-response. Such adjustments may not account for non-response bias. Non-response bias occurs when the dietary characteristics of non-respondents differ significantly from those of respondents. These problems are best avoided by strategies that aim to minimise survey non-response.

Comparisons between the age and sex characteristics of survey respondents and their associated populations are provided as indications of the possible impact of under-coverage and non-response in the 1983 and 1995 surveys. This was necessary because the cited response rates to the 1983 and 1995 surveys are not entirely comparable.

1983 survey

The cited response rate to 1983 survey is 75.3 %. When unusable responses are excluded, the effective response rate becomes 74.8 % (CDH 1986, p11). In other words, dietary details are not available for a quarter of all persons contacted. Additionally, this response rate masks substantial non-contact as a result of the electoral roll being incomplete.

Of the 11,396 persons initially selected from the electoral roll, 11.0 % (1,248 persons) were excluded from the subsequent sample because they no longer lived at the address, were away from the area for the duration of the survey, or had died. Furthermore, new arrivals into the sample areas had no chance of being selected.

The extent of non-contact associated with the 1983 survey illustrates a principal limitation of list surveys. Specifically, lists must be current, accurate and comprehensive if sampling bias is to be minimised.

The electoral roll is a notoriously difficult list to maintain because of Australia's high internal migration rates, involving on average 40 % of the population in any five-year period (Bell and Hugo 2000, p23). For this reason, the Australian Bureau of Statistics, like most other national statistical agencies, uses area based household surveys for population related collections. Coverage issues associated with out-of-date lists are avoided as population lists relating to persons within households are only compiled as part of collection activity.

Comparisons between the population distribution and the distribution of survey respondents illustrate the extent of under-coverage and non-response in the 1983 survey (table 2.4.1).

Table 2.4.1 Population distribution and distribution of 1983 survey respondents

	Males		Females	
	Population (%)	Survey (%)	Population (%)	Survey (%)
25-34 years	16.5	13.2	17.0	13.9
35-44 years	13.5	13.2	13.3	14.3
45-54 years	10.6	11.2	10.3	11.6
55-64 years	9.2	10.7	9.8	11.9
Total	49.7	48.3	50.3	51.7

Source: CDH 1986 (includes ABS unpublished resident population estimates)

In every age group, female participation exceeded male participation. Under-participation, by both males and females, was most marked in the younger adult age group (25-34 years). In part, this result will reflect under-coverage resulting from an incomplete sample-frame, as young adults have the highest migration rates (Bell and Hugo 2000, p36).

Conversely, persons aged between 45-64 years were over-represented in the 1983 survey. The distribution of response, favouring older women especially, is indicative of the collection method adopted in the 1983 survey. Surveys that require participants to attend centralised locations are most suitable to people who are available during a centre's operating hours. Conversely, surveys that allow respondents to be interviewed at home offer the greatest opportunity to reduce this source of survey bias. For this reason, official population collections are usually household based (including population censuses).

Post stratification weights split by age, sex, country-of-birth and city of residence were applied to reduce the impact of under-coverage and non-response. If left un-weighted, the 1983 survey results would have been unduly influenced by the dietary intakes of females and respondents aged 45-64 years. The extent of non-response bias associated with the 1983 survey cannot be readily estimated.

1995 NNS

The 61.4 % response rate for the 1995 NNS (ABS 1998a, p31) compares poorly with the cited 75.3 % response rate for the 1983 survey (but is closer to the 1983 rate adjusted for initial non-contacts and partial respondents). It is also compares unfavourably with response rates to the United States Continuing Survey of Food Intakes by Individuals 1994-96 (80.0%, Day 1 response rate) (Tippett and Yasmin eds 1997, p73). It is higher than the response rate to the New Zealand 1997 National Nutrition Survey, at 50.3 % of those invited to participate (NZMOH 1999, p197).

While the 1995 NNS response rate is not especially low when compared with other nutrition surveys, it is low by ABS household survey standards. Surveys conducted as part of the ABS's Special Supplementary Survey program generally have response rates averaging around 85 % (personal communication July 2000).

Unlike other ABS household surveys, the 1995 NNS was administered as a non-compulsory collection. Respondent fatigue is also considered a key contributor to the low 1995 NNS response rate. The 1995 NNS sample was a sub-sample of the 1995 National Health Survey, which is a detailed survey in its own right. Of the 76.8% of 1995 NHS respondents who initially agreed to participate in the 1995 NNS, only 61.4 % completed a Day 1 individual food intake questionnaire.

Details from the 1995 National Health Survey about non-respondents to the 1995 NNS allowed the ABS to minimise the impact of non-response bias by appropriately adjusting the sample weights for particular socio-demographic characteristics.

Comparisons between the 1995 population distribution and the distribution of NNS95 survey respondents are provided below (refer table 2.4.2).

Table 2.4.2 Population distribution and distribution of 'comparable' 1995 subset respondents

	Males		Females	
	Population (%)	Survey (%)	Population (%)	Survey (%)
25-34 years	15.6	13.5	15.3	16.0
35-44 years	14.7	13.1	14.7	13.6
45-54 years	12.1	11.3	11.7	12.8
55-64 years	7.9	9.2	7.9	10.6
Total	50.3	47.1	49.7	52.9

Source: ABS unpublished resident population estimates and 1995 NNS CURF

Relatively speaking, the age distribution of response rates is less skewed in 1995 than 1983, but the skew in the sex distribution is more pronounced. As in 1983, female participation rates exceeded male rates at every age in 1995. The use of an area based household survey is likely to have minimised the possibility of survey under-coverage. However, with a non-response rate of nearly 40 % (38.6%), the effects of non-response bias and response bias (refer 2.4.2) must be considered when analysing and interpreting all results associated with the 1995 NNS.

2.4.2 Response bias

Biased estimates can also result from respondents providing inaccurate or incomplete information. Response biases may be random or systematic and may affect subgroups more than the whole sample (Moser and Kalton 1971, pp378-380). Underreporting of intakes is considered a common problem in self-reported dietary surveys (Rutishauser 2000, p27).

The impact of response bias can be minimised through careful questionnaire design, interviewer selection and training, and the use of well developed coding and processing systems both during and following data capture. Response bias (as opposed to non-response bias) is an inherent sampling problem that can seldom be eliminated and requires survey results to always be considered with care.

Highly effective collection practices (that encourage participation, account for respondent fatigue, involve well trained staff and intensive follow-up procedures) are required to minimise non-response rates, thereby reducing non-response bias and lessening the impact of response bias (Cochran 1977).

2.4.3 Coverage and non-response implications

Interpretation of the 1983 and 1995 results is complicated by the extent of non-participation in both surveys. Despite adjustments for non-response, estimates from both surveys are likely to be biased due to non-response rates of around 25% and 40% respectively. Although unable to be quantified, the effects of non-response bias and response bias must be considered when analysing and interpreting all results from the 1983 and 1995 surveys. The use of national nutrition surveys to monitor dietary intakes is limited by the extent of non-response associated with these major collections and because they tend to be conducted infrequently

and at irregular intervals. National nutrition surveys, as currently conducted, are more appropriately considered as a source of benchmark data against which other more regularly collected data can be evaluated.

For the specific purpose of nutrition monitoring in Australia, it is recommended that the effectiveness of a range of indicators of food intake (eg food supply, food expenditure, food habits, nutritional status) be assessed to complement the collection of detailed data on dietary intake.

If list surveys are to be used, appropriate sampling frames that are regularly maintained and which comprehensively cover the target population, are needed to limit sampling bias resulting from under-coverage.

The Australian Food and Nutrition Monitoring Unit has evaluated short-questions for use in monitoring food and nutrition intake. It is recommended that this research be extended to define a set of core diet-related questions that consistently yield high response rates across a range of socio-demographic groups. Collaborative research with the CATI Health Survey Technical Reference Group is expected to be mutually beneficial for health survey development work. Sensitivity issues associated with the collection of data from individuals relating to alcohol, drug and tobacco consumption are also expected to be relevant to the collection of food intake data.

Further research is also needed to assess the effectiveness of a range of self-reported dietary surveys to future nutrition monitoring in Australia (eg short questions, food frequency and food intake questions).

Data accuracy concerns associated with self-reported dietary surveys may also increase in the future if the range and number of manufactured foods and pre-prepared meals continues to rise. Data quality concerns may also rise if future food composition databases are unable to keep pace with innovations in the supply of new or modified food products.

The role of biological measurements of nutritional status in population based surveys for nutrition monitoring in Australia also needs to be assessed. Such surveys can be expected to become increasingly important to nutrition monitoring if data quality concerns associated with self-reported dietary data increase in the future.

It is recommended that an evaluation of collection methods used to conduct national nutrition surveys in other countries be undertaken to determine if these could be adopted to improve response rates to Australian nutrition surveys. Data quality issues cannot be remedied if a relatively high level of non-response can always be anticipated.

European research suggests respondents to dietary surveys are more health conscious than non-respondents (Brussard et al 1997; Berg et al 1998). Further research is needed into the impact of non-response bias in Australian dietary surveys but the initial findings by the ABS about differences in the socio-economic characteristics of respondents and non-respondents to the 1995 NNS increase the likelihood that health/lifestyle differences also exist.

2.4.4 Key findings

- Interpretation of the 1983 and 1995 results is further complicated by the extent of non-participation in both surveys. Despite adjustments for non-response, estimates from both surveys are likely to be biased due to non-response rates around 25% and 40% respectively. Although not quantifiable, the effects of non-response bias and response bias must be considered when interpreting all results from the 1983 and 1995 surveys.

- For the specific purpose of nutrition monitoring in Australia, it is recommended that the effectiveness of a range of indicators of food intake (eg food supply, food expenditure, food habits, nutritional status) be assessed to complement the collection of detailed data on dietary intake.

- The role of biological measurements of nutritional status in population based surveys for nutrition monitoring in Australia also needs to be assessed. Such surveys can be expected to become increasingly important to nutrition monitoring if data quality concerns associated with self-reported dietary data increase in the future.

- The Australian Food and Nutrition Monitoring Unit has evaluated the effectiveness of a number of short-questions for use in monitoring food and nutrient intake. It is recommended this research be extended to define a set of core diet-related questions that consistently yield high response rates across a range of socio-demographic groups. Collaborative research with the CATI Health Survey Technical Reference Group is expected to be mutually beneficial for health survey development work. Sensitivity issues associated with the collection of data from individuals relating to alcohol, drug and tobacco consumption are also expected to be relevant to the collection of food intake data.

- Further research is recommended to identify the extent of non-response bias in Australian dietary surveys. Initial findings from the 1995 National Health Survey about differences between the socio-economic characteristics of respondents and non-respondents to the 1995 National Nutrition Survey increase the likelihood that health/lifestyle differences also exist.
- It is recommended that an evaluation of collection methods used to conduct national nutrition surveys in other countries be undertaken to determine if these could be adopted to improve response rates to Australian nutrition surveys.

- The use of national nutrition surveys to monitor trends in dietary intake over time is limited by the extent of non-response associated with these major collections and because they tend to be conducted infrequently and at irregular intervals. National nutrition surveys, as currently conducted, are more appropriately considered as a source of benchmark data against which other more regularly collected data can be evaluated.

Chapter 3

3.0 Comparison of 1985 and 1995 surveys (children)

Summary details in table 1.1 (refer page 4) highlight the extent of design, collection and coding differences between surveys conducted in 1985 and 1995 to measure the food and nutrient intake of children in Australia. As a consequence of these differences, direct comparison of the published results from these two surveys is not recommended.

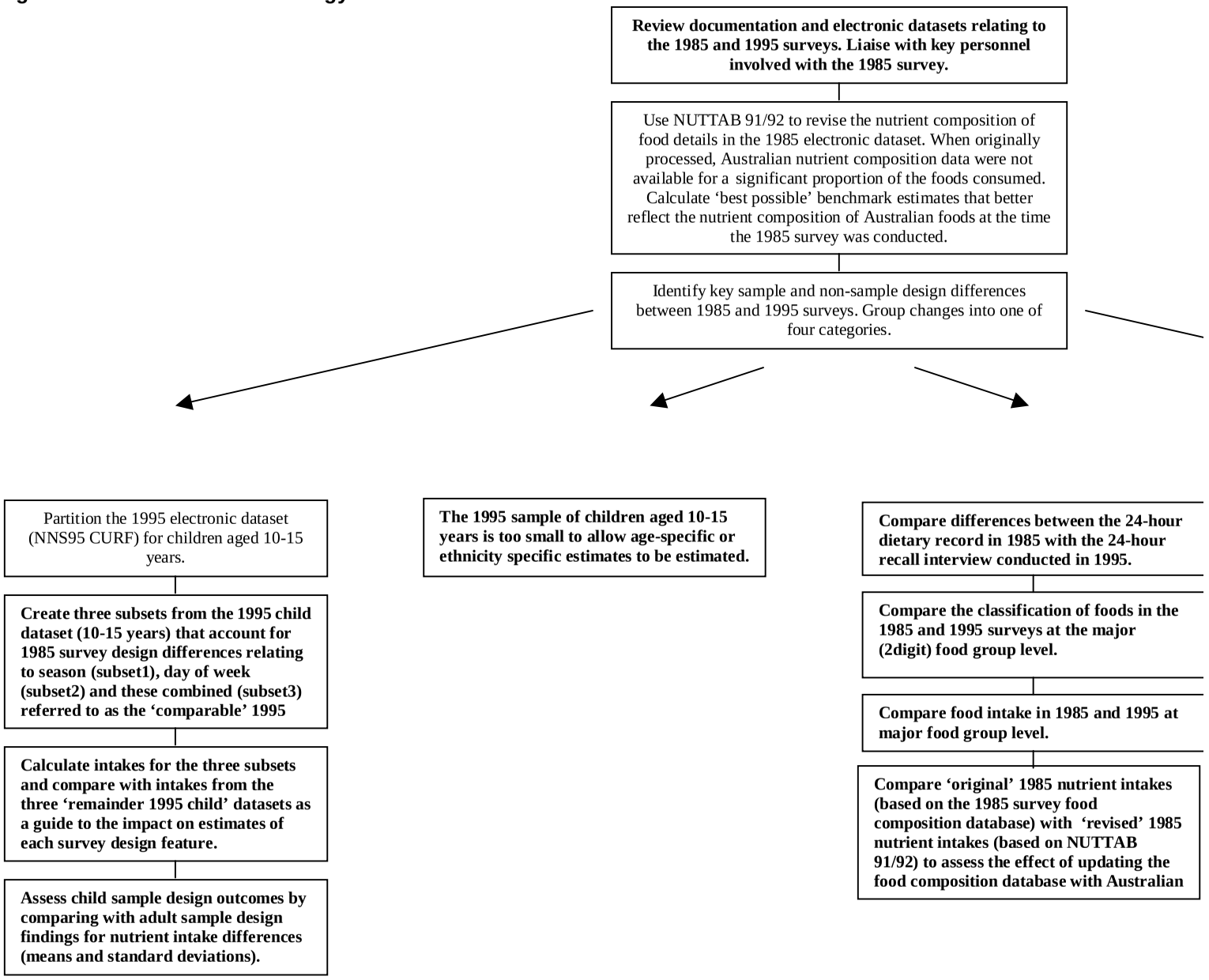
Discussions with key personnel involved with the 1985 survey revealed that when originally processed Australian nutrient composition data were not available for a significant proportion of the foods consumed in 1985. Based on this advice, a decision was made to revise the historical estimates to better reflect the nutrient composition of Australian foods at the time this survey was conducted.

Electronic copies of the unit record files relating to the 1985 and 1995 surveys were obtained from the SSDA and ABS (SSDA 617 and NNS95 CURF, respectively). Data from NUTTAB91/92 were used to update the nutrient composition data of foods on the 1985 survey unit record file. Unlike the adult dataset (SSDA 616), a complete update of the child dataset (SSDA 617) was not possible because of the greater number of mixed dishes in the dataset for which there was no equivalent NUTTAB91/92 food description. Nevertheless it was possible to update 83% of foods consumed in 1985, representing 94% of the total gram weight of food and beverages consumed by respondents to that survey. Further details about the procedure used to update the nutrient composition data and the results are provided in section 3.2.3.

The revised 1985 nutrient estimates are considered the ‘best possible’ estimates from the 1985 survey and are used throughout this report to compare with estimates from the 1995 survey.

All steps undertaken to evaluate differences between the results from the 1985 and 1995 surveys are illustrated in figure 3.1 below. The impact of sample design differences, changes in food intake methodology and other factors are reported in sections 3.1, 3.2 and 3.3 of this report respectively.

Figure 3.1 Evaluation methodology for children



3.1 Sample design differences

A three-stage approach was adopted to estimate the effect of sample design differences between the 1985 and 1995 surveys.

Firstly, subsets relating to particular aspects of design variations between the 1985 and 1995 surveys were extracted from the 1995 survey. The subsets reflect differences in scope associated with months of the year (season) and days of the week (day). A subset accounting for both these variations was also extracted from the 1995 survey. This third subset is the closest possible approximation to recreating the 1985 sample design from the 1995 survey and is termed the 'comparable' 1995 subset. Child intake estimates from the different subsets were compared to assess the impact of sample design variations between the 1985 and 1995 surveys.

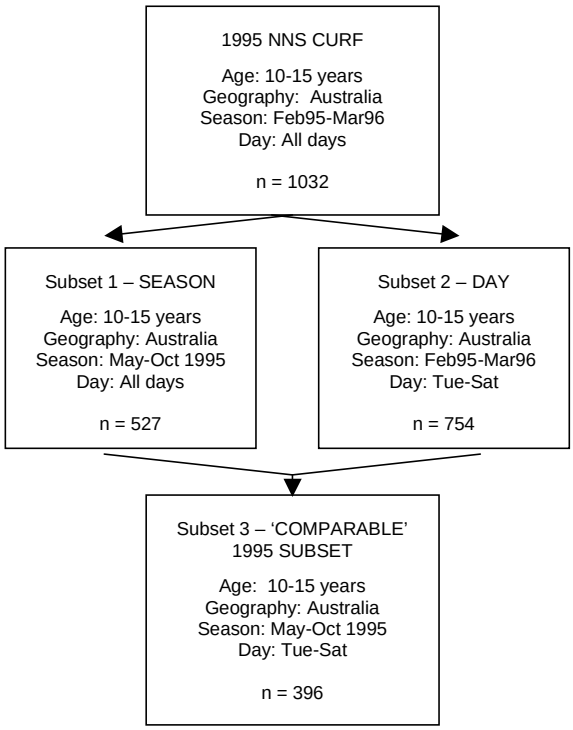
Secondly, the child sample design outcomes were compared with the adult sample design findings. This step was necessary because it was not possible to draw definitive conclusions about the impact of sample design variations from the child data because of the small sample numbers for children aged 10-15 years in the 1995 survey.

Thirdly, the standard deviations associated with the nutrient intakes were compared for the adult and child subsets relating to season. This comparison was undertaken to assess whether sample design variations might have been observed if the child sample had been larger.

3.1.1 Differences between subsets within the 1995 survey

Differences in intake estimates between subsets of the 1995 survey indicate the impact of specific components of sample design changes between the 1985 and 1995 surveys. Figure 3.2 provides details about the three subsets.

Figure 3.2 Sample design subsets



The small child sample (1,032) in 1995 compared with the sample size in 1985 (5,210), required the 1995 results to be evaluated as a combined 10-15 year age group rather than split between the two age groups 10-11 years and 12-15 years (as published in 1985). For comparability purposes, therefore, the revised 1985 dietary intake estimates also relate to children aged 10 to 15 years inclusively.

The interview days of Tuesday to Saturday in 1995 (providing dietary data for the period Monday to Friday) are the closest approximation possible of the 24-hour record collection period (Monday to Friday) in the 1985 survey (refer section 3.2.1 for further details).

Estimation method for food and nutrient intakes data (means and variances)

Population estimates for 17 nutrients and 16 major food groups were calculated for the 1985 and 1995 surveys relating to children aged 10 to 15 years using the unit record datasets SSDA 617 and NNS95 CURF, respectively. Data relating to alcohol and alcoholic beverages were excluded from the analysis because intakes were reported by only a very small number of children.

Revisions were made to the SSDA 617 to allow best possible benchmark estimates for the 1985 survey to be calculated (refer section 3.0 and 3.2.3).

Population estimates from the 1995 survey were prepared for children aged 10-15 years by multiplying the NNS95 CURF data with the appropriate NNS95 stratified weights. Population estimates for the subsets relating to season, day and the comparable subset were produced by prorating the NNS95 stratified weights to boost the derived subpopulation estimates. In a similar manner, population estimates were produced for the three residual subsets relating to not-season, not-day and not-comparable. For example, the not-season subset is composed of respondents who provided survey details in a month other than May to October.

All estimates are based on Day1 records from the NNS95 survey only, in accordance with the single day record design of the 1985 survey.

The list of nutrients evaluated include:
energy, protein, total carbohydrate, total starch, total sugars, total fat, cholesterol, dietary fibre, vitamin A – retinol equivalents, thiamin, riboflavin, niacin equivalents, vitamin C, iron, calcium, zinc and magnesium.

The major food groups include (in alphabetical order):
cereals and cereal products; cereal-based products and dishes; confectionery; egg products and dishes; fats and oils; fish and seafood products and dishes; fruit products and dishes; legumes and pulse products and dishes; meat, poultry and game products and dishes; milk products and dishes; non alcoholic beverages (excluding plain drinking water); seed and nut products and dishes; snack foods; soup; sugar products and dishes; and vegetable products and dishes.

Physical measurements data

Height and weight details were measured for respondents to the 1985 and 1995 surveys. Population estimates relating to height, weight, body mass index (BMI) and energy intake over basal metabolic rate (EI/BMR) from the 1985 and 1995 surveys were calculated in accordance with methods recommended by the World Health Organisation and the National Health and Medical Research Council respectively (refer Glossary).

Statistical tests

Differences in mean intakes for each of the five subgroups were compared with their complementary residual subset. The statistical test comprised a two-tailed heteroscedastic t-test, which allows for potentially significant differences in the variances of the two distributions being tested.

$$t' = \frac{\bar{x} - \bar{y} - \Delta_0}{\sqrt{\frac{S_1^2}{m} + \frac{S_2^2}{n}}}$$

with degrees of freedom approximated by:

$$df = \frac{\left(\frac{S_1^2}{m} + \frac{S_2^2}{n}\right)^2}{\frac{\left(S_1^2/m\right)^2}{m-1} + \frac{\left(S_2^2/n\right)^2}{n-1}}$$

where
$\bar{x}$ = mean of first sample
$\bar{y}$ = mean of second sample
$_0$ = assumed difference between two sample means (zero)
m = observations in first sample
n = observations in second sample
S_1^2 = variance of first sample
S_2^2 = variance of second sample

Population distributions associated with many food and nutrient intakes are skewed (Rutishauser 2000, pp21-23). Despite this, the subset tests for all food and nutrient intakes were undertaken on means rather than medians (refer page 11 for the rationale).

Significance testing occurred at the 5% level to limit the (beta) risk of inadvertently rejecting a significant difference. At this significance level, around 5% of results can be expected to occur through random chance. Therefore, when testing the impact of a particular sample design factor on a series of intakes, significant differences are needed for more than 5% of the data items tested before a general conclusion can be drawn with confidence.

Results

Summary findings about the likely effect of specific survey design changes between 1985 and 1995 surveys are provided below in table 3.1. The findings are drawn from comparison of intake estimates for each of the three subsets from the NNS95 CURF (10-15 years) with their respective complementary residual subset. Detailed results for the 17 nutrients examined are provided in appendix G (tables G.1 to G.17 respectively). Similarly, data illustrating the effect of survey design changes on intake estimates for the 16 major food groups is provided in appendix H.

Table 3.1.1 provides summary details on child and adult sample design comparisons for 17 and 18 nutrients respectively. Estimates of intake of alcohol (and alcoholic beverages) are excluded from all child data evaluations because of the very small number of children aged 10-15 years who reported consumption in either the 1985 or 1995 survey. The data in table 3.1.1 are limited to nutrient intakes because, unlike food intakes, variations around the mean (or median) are less likely to reflect possible variations in the proportion of respondents who consumed specific foods on the survey day.

Table 3.1.1 Comparison of the effect of sample design variations on nutrient intakes from the 1995 NNS survey for adults and children

	Number of nutrients effected by sample design variations (a)			
	Children (10-15years)		Adults (19 years and over)	
	n = 1,032		n = 10,851	
	Boys	Girls	Men	Women
Season	1	2	7	12
Day of the week	3	4	7	10
Comparable sample	0	3	9	10
Nutrients tested	17	17	18	18

(a) Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Tests on differences in mean intakes resulting from sample design variations were conducted at the 5% level of significance. Therefore, significant differences are needed for more than 5% of the data items tested before a general conclusion can be drawn with confidence.

Unlike the adult data, it is difficult not to conclude from the results in table 3.1.1 that the child results may have occurred through random chance because so few nutrients are effected. At face value the results suggest that child consumption patterns may be less variable throughout the year and across day of the week than adult intakes. A third explanation is that the 1995 child survey sample sizes are too small to be able to accurately reflect sample design differences.

Comparison of standard deviations associated with nutrient intakes for child and adult subsets relating to season are provided in table 3.1.2. This comparison was undertaken to assess whether sample design variations might have been observed if the child sample had been larger. The evaluation focuses on season as seasonal variations have been observed in other child data (Hackett et al 1985, De Castro 1991). The season data in table 3.1.2 (and table 3.1.1) relate to the months of May to October for children (10-15 years) and May to November for adults (19 years and over).

Difficulties were encountered in evaluating the day-of-the-week results because the child and adult data relate to different time intervals. Specifically, the weekday definitions relate to Tuesday to Saturday and Monday to Friday respectively.

Table 3.1.2 Comparison of standard deviations for nutrient intakes of child and adult subsets relating to season

	Standard deviations associated with mean 24-hour intake			
	Boys	**Men**	**Girls**	**Women**
	n=290	**n=3,043**	**n=237**	**n=3,425**
Energy (kJ)	3,581	4,225	2,486	2,947
Protein (g)	36.4	48.6	28.9	32.5
Total carbohydrate (g)	124	128	78.8	86.9
Total starch (g)	68.0	80.7	44.2	53.7
Total sugars (g)	91.1	77.4	61.9	54.9
Total fat (g)	42.4	49.3	31.2	36.0
Cholesterol (mg)	188	245	150	185
Dietary fibre (g)	11.6	12.6	7.1	9.8
Vitamin A-retinol equivalent (µg)	848	3,375	3,648	2,227
Thiamin (mg)	1.41	1.18	0.98	0.94
Riboflavin (mg)	1.89	1.41	1.35	1.22
Niacin equivalent (mg)	17.3	21.8	14.1	14.8
Vitamin C (mg)	148	119	122	99.1
Iron (mg)	7.72	7.56	5.01	5.54
Calcium (mg)	627	569	441	429
Zinc (mg)	5.58	10.0	4.06	6.11
Magnesium (mg)	126	151	87	113

With the exception of Vitamin A, a nutrient with a definitively wide intake distribution, the child and adult standard deviations presented in table 3.1.2 broadly follow a similar pattern. They suggest similarities in the spread of nutrient intakes from adult and child respondents. This general observation is confirmed by the imputed child sample size (of 6,400 on average) equalling the adult subset size that produces standard errors of the same magnitude.

Based on these findings, the most likely conclusion relating to the results presented in table 3.1.1 is that the 1995 child survey sample sizes are too small to be able to accurately reflect sample design differences. As a consequence, further comparison of child data from the 1995 survey will be restricted to estimates based on the total sample for 10-15 year olds. This does not imply that sample design variations are unimportant to child dietary intakes. Rather, this outcome is based on concerns that small sample numbers compromise the accuracy of the 'comparable' 1995 subset estimates.

The total NNS95 child sample (1,032) is too small to allow age-specific, country of birth or regional data comparisons. Consequently, comparison of dietary intakes for the 1985 and 1995 surveys has been limited to the combined 10-15 year age group by sex.

3.1.2 Differences between the 1985 and 1995 surveys

Nutrient intakes from the 1995 survey compared with revised data from the 1985 survey provide the best estimate of changes in nutrient intake between the two surveys. They **a**ccount for updating of the original food composition database to better reflect the composition of Australian foods in 1985 but do not account for survey design differences due to sample size concerns (refer above).

The impact of other non-survey design differences (eg differences in how food intake data was collected and classified) remains within these dietary intake estimates (refer section 3.2).

A description of the method used to prepare population estimates for the 1985 and 1995 surveys are provided above (refer page 42).

Statistical tests

The mean value of each food and nutrient was statistically tested for a difference between the 1985 and 1995 survey result for children aged 10-15 years. The statistical test comprised a two-tailed heteroscedastic t-test, which allows for potentially significant differences in the variances of the two distributions being tested (refer page 11).

In this report, all significance testing was undertaken at the 5% risk level to assist conclusions being drawn across a range of foods and nutrients. The level was reduced to 1% in the companion report *Comparable data on food and nutrient intakes and physical measurements from the 1983, 1985 and 1995 national surveys* to assess differences in specific intakes across time.

Results

The results of comparing 1995 dietary intakes with 'best possible' 1985 survey estimates based on updated food composition data, are shown in tables 3.1.3 and 3.1.4. Population estimates for 17 nutrients and 16 food groups are compared for boys and girls aged 10-15 years.

In summary, the results of these comparisons reveal that significant differences exist in 24-hour intake estimates between 1985 and 1995 for 13 of the 17 nutrients tested. The exceptions include cholesterol, vitamin A-retinol equivalents and calcium (for both boys and girls), and fats for girls.

Just over half the 16 major food groups tested had significantly different estimated mean intakes. The exceptions include, in abbreviated terms: meat, vegetable, fruit and legume dishes as well as snack products (for both boys and girls), egg dishes and soups (for boys), and milk dishes (for girls). These results may reflect changes in food group classifications between 1985 and 1995, which are discussed in detail in section 3.2.3. A brief assessment of the food group results is also provided in section 3.2.3.

Further summary statistics on dietary intakes and physical measurements for 1985 and 1995 are provided in appendix J, K and L of this report. Commentary on these results is reserved for the companion report *Comparable data on food and nutrient intakes and physical measurements from the 1983, 1985 and 1995 national surveys*. By necessity, the commentary in the companion report is concise because it relates to national survey results that are only available for two points in time. Where possible data from other sources such as the Apparent Consumption of Foodstuffs Australia have been used to place the dietary survey results in context.

Table 3.1.3 Comparison of estimates of nutrient intake between the 1985 and 1995 surveys, boys and girls aged 10 to 15 years

	Mean 24-hour intake per person			
	Boys 10-15		Girls 10-15	
	1985	1995	1985	1995
	n = 2,619	n = 544	n= 2,591	n= 488
Energy (kJ)	9,670	11,088*	7,586	8,488*
Protein (g)	83.8	95.8*	64.5	72.8*
Total carbohydrate (g)	283	345*	224	264*
Total starch (g)	142	170*	109	126*
Total sugars (g)	142	174*	115	137*
Total fat (g)	95.8	100.9*	75.0	77.3
Cholesterol (mg)	289	295	226	230
Dietary fibre (g)	20.6	23.2*	16.8	18.2*
Vitamin A-retinol equivalent (µg)	1,103	1,199	861	1,074
Thiamin (mg)	1.75	2.26*	1.40	1.56*
Riboflavin (mg)	2.47	2.88*	1.86	2.01*
Niacin equivalent (mg)	34.2	43.6*	26.9	32.8*
Vitamin C (mg)	136	121*	129	116*
Iron (mg)	13.3	15.4*	9.9	11.0*
Calcium (mg)	1,007	1,054	753	794
Zinc (mg)	11.0	12.1*	8.4	9.1*
Magnesium (mg)	276	311*	215	240*

* Difference between the estimated mean for 1985 and 1995 is statistically significant at the 0.05 level

Source: SSDA 617, 1995 NNS CURF, AFNMU

Table 3.1.4 Comparison of estimates of food and beverage intake between the 1985 and 1995 surveys, boys and girls aged 10 to 15 years

1995 Food Group	Mean 24-hour intake per person (grams)			
	Boys 10-15		Girls 10-15	
	1985	1995	1985	1995
	n = 2,619	n = 544	n= 2,591	n= 488
11 Non-alcoholic beverages (ex plain drinking water)	490	724*	459	592*
12 Cereals and cereal products	214	237*	159	176*
13 Cereal-based products and dishes (inc 1985 'takeaway' group) (a)	110	161*	85	124*
14 Fats and oils	19	12*	15	9*
15 Fish and seafood products and dishes (a)	9	17*	8	15*
16 Fruit products and dishes (a)	126	125	123	128
17 Egg products and dishes	13	11	11	8*
18 Meat, poultry and game products and dishes (ex 1983 'takeaway' group) (a)	138	139	106	107
19 Milk products and dishes (a)	542	484*	372	349
20 Soup	36	30	35	20*
21 Seed and nut products and dishes	3	3	3	3
23 Vegetable products and dishes (a)	194	203*	161	181*
24 Legume and pulse products and dishes (a)	7	11	3	6
25 Snack foods	12	12	12	12
26 Sugar products and dishes	17	27*	11	26*
27 Confectionery and health bars	16	25*	15	21*

* Difference between the estimated mean for 1985 and 1995 is statistically significant at the 0.05 level

(a) These groups may not be directly comparable between 1985 and 1995 because of differences in food classification for which it is not possible to adjust

Source: SSDA 617, 1995 NNS CURF, AFNMU

3.1.3 Key points

- Comparison of data for children aged 10-15 years from the 1995 survey with revised 1985 survey data provide the best estimate of changes in dietary intake for the age group during the ten year interval. The comparison accounts for updating of the original food composition database to better reflect the composition of Australian foods in 1985 but does not account for survey design differences between 1985 and 1995.

- This does not imply that survey design variations are unimportant to child dietary intakes. Rather, findings in section 3.1.1 suggest that the 1995 child sample sizes are too small to accurately reflect sample design differences.

- For data quality considerations, the 1995 dietary intakes for children have been estimated using the total NNS95 sample rather than the 'comparable' 1995 subset. Age-specific, country of birth or

regional data comparisons are not possible because of small sample numbers, even with the total NNS95 sample for children. Consequently, child data comparisons are restricted to a combined 10-15 year age group by sex.

- Comparison of the revised 1985 and 1995 results that are presented in tables 3.1.3 and 3.1.4 show that significant differences exist in 24-hour intake estimates between 1985 and 1995 for 13 of the 17 nutrients tested. The exceptions include cholesterol, vitamin A-retinol equivalents and calcium (for both boys and girls), and fats for girls.

- Just over half the 16 major food groups tested had significantly different estimated mean intakes between 1985 and 1995, but these results may reflect changes in food group classifications.

- Further summary statistics on dietary intakes and physical measurements for 1985 and 1995 are provided in appendix J, K and L of this report. Commentary on these results is reserved for the companion report *Comparable data on food and nutrient intakes and physical measurements from the 1983, 1985 and 1995 national surveys*.

- The findings in this section illustrate the importance of survey design considerations (including sample size) to the development of a national food and nutrition monitoring and surveillance system that is capable of meeting current as well as anticipated data needs.

3.2 Changes in food intake methodology

The differences in nutrient intake observed between children in the 1985 National Dietary Survey of Schoolchildren and children of the same age from the 1995 National Nutrition Survey could have arisen either because of real changes in the types and/or amounts of foods consumed in 1985 and 1995 and/or because of changes in food intake methodology used in the two surveys.

The observed trends could result from differences in the way the information on food intake was collected and processed in 1985 and 1995. They could arise, for example, from differences in the way the dietary data were obtained in 1985 and 1995 and how the information on food intake was classified and coded.

The observed trends could also result from differences in the food composition databases used in 1985 and 1995. Such differences might reflect real changes in the composition of the foods consumed as a result of mandatory or voluntary fortification of foods or changes in formulation by manufacturers. They could, however, also arise from the use of different data sources, analytical methods or nutrient conversion factors for estimating the nutrient composition of Australian foods.

The purpose of this section is to provide information on the extent to which each of the above factors contributed to the differences in nutrient intake observed between Australian children of the same age studied in 1985 and 1995 in order to be able to separate real change from differences due solely to changes in survey methods.

This section describes differences, and where possible provides quantitative estimates of the impact of differences in the dietary survey procedure, in the classification of foods to major food groups and in the food composition database used in the two surveys and their effects.

3.2.1 Dietary survey method

In 1985, 24-hour intake data were obtained by means of an interviewer assisted dietary record while in 1995 the data were obtained using a face-to-face 24-hour recall interview.

The recall interviews conducted in 1995 used a ‘multiple-pass’ approach adapted from that used in the United States Department of Agriculture (USDA) Continuing Survey of Food Intakes by Individuals 1994-96 (see section 2.3.1 for details). This methodology was developed by the Agricultural Research Service of the USDA to maximise the ability of respondents to remember what was eaten and drunk (Johnson et al 1996; Guenther et al 1997). A detailed account of the recall procedure used in 1995 is given in the National Nutrition Survey User’s Guide 1995 (ABS 1988a).

All interviews in 1995 were conducted by dietitians or nutritionists who had been trained to obtain the information on food intake using a standard interview approach and a pre-determined set of probing questions. Children aged 10 years and over provided their own food intake data, with assistance when necessary, from an adult household member.

In 1985, the method used for collection of the dietary data was a 24-hour dietary record. With this method the respondent records the types and amount of all food and beverages consumed over a 24-hour period. A diet record was selected as the method of choice for schoolchildren aged 10-15 years because:

- data collectors were able to speak with the children before and after the collection of the data;

- use of a food record meant that the children did not have to rely on memory in reporting food intake; and

- quantities could be measured directly with the standard measures provided (DCSH 1988).

The data collectors for the 1985 survey, who were physical educators, received formal training in providing instructions for recording food intake and checking of the completed records. They were also provided with an Interviewers Handbook that set out these procedures in detail.

The procedure used was to show students, in groups of four or five, how to record their food intake and how to measure amounts of food with the measures and visual aids provided. The students then recorded the breakfast they had eaten that morning as a practical exercise and this record was checked for the detail required for coding and conversion to nutrient intake.

The 24-hour recording period started at the end of this briefing session and at least 24 hours later, each student was interviewed individually and the record book checked. This enabled each student to confirm that all food and drink consumed had been recorded and the interviewer to clarify incomplete or illegible information. The completed records were then labelled with an identification number and sent to the Commonwealth Department of Health.

In the absence of food intake data from a direct comparison of the two methods it is not possible to comment on the magnitude of any effect arising from differences between the 1985 and the 1995 surveys. Literature reports of comparisons between records and recalls for children aged 10-15 years are few and none involve records kept by the children themselves. The data that are available indicate that recalls tend to provide lower mean estimates of intake than recorded data for the same individuals (Bransby et al 1948; Samuelson 1970; Mullenbach et al 1992; Watson et al 2001).

3.2.2 Food classification

Another possible reason for the observed differences in nutrient intake between 1985 and 1995 is the way in which the food intake data were classified into food categories and assigned to specific food codes. For both surveys the data on food intake were coded centrally, by personnel trained in data entry and coding procedures, aided by a comprehensive coding manual developed for the survey.

In 1985, coding was done manually while in 1995 an automated coding system, the Australian Nutrition Survey System (ANSURS), was developed for the survey. The ANSURS program is based on a system initially developed by the USDA, in conjunction with the University of Texas, for use in the Continuing Survey of Food Intakes by Individuals 1994-96 (Cypel and Tippett (eds) 1998).

The number of unique food codes used in 1985 was less than half (~800) the number used in 1995 (~1800). In part the large difference reflects the much wider range of food products available to the Australian consumer in 1995 than in 1985, but in part it also reflects a different approach to the coding of mixed dishes and manufactured foods.

In 1985, a small number of mixed foods were separated into their major components and recorded under their respective food groups. For example, cream and jam filled sponge was recorded as quantities of sponge cake, jam and cream.

In 1995, mixed dishes were assigned a food code based on matching the descriptions available in the Food Codebook Database with those given by the respondent (eg name, major ingredients and/or recipe). If a food could not be coded from the Food Codebook Database it was designated as

'unknown'. Throughout the coding process, information on these 'unknown' foods was obtained and added to the database.

Table 3.2.1 shows the major food groups used in 1985 and 1995 and the number of individual food codes used for the foods consumed in each of these groups. With three exceptions the major food groups used in 1985 and 1995 were apparently similar. In 1995, the cereals and cereal products group (Group A in 1985) was split into two groups (12 and 13). The first of these groups (12) included only grains, flours and basic cereal products such as rice, pasta and breads while the second group (13) included biscuits, cakes, pastries, batter products and mixed dishes in which cereal is the major ingredient. Similarly in 1995, the vegetable group (Group B in 1985) was split into two groups (23 and 24). The first of these groups (23) included vegetables and vegetable products and the second (24) legumes and pulse products and dishes. Finally the miscellaneous group (Group O in 1985 and including condiments, flavourings and soups was sub-divided in 1995 into soups (20), savoury sauces and condiments (22) and miscellaneous foods (30).

Only five sub-major food groups in 1985 related to mixed dishes, specifically: cake and cake type puddings; desserts containing cereal and other desserts in the cereals and cereal products group; and mixed dishes (including meat substitutes and casserole bases) and take-away (excluding fish) in the meat and meat products group. In 1995, mixed dishes were assigned to the food group associated with the major ingredient. For example in 1995 the sub-group *135 - Mixed dishes where cereal is the major ingredient* includes a number of foods that in 1985 had been coded in the take-away sub-group of the meat and meat-products group (eg pizza, chiko rolls, dim sims, hamburgers). The effect of this re-classification is to increase the observed intake of cereal-based products and dishes in 1995 and to decrease apparent intake of meat, poultry and game. Other mixed dishes allocated to the meat and meat products group in 1985 which were coded to a different group in 1995 include macaroni cheese to the cereal-based products and quiche to the egg products and dishes group. Again this re-classification leads to an apparent decrease in intake of foods from the meat, poultry and game group in 1995.

The larger number of food codes used in the 1995 survey reflects two important differences between 1985 and 1995. Firstly more manufactured foods and a much wider range of pre-prepared meals and mixed dishes were available for purchase in 1995 than in 1985. Secondly the food composition database available for the conversion of food intake to nutrient intake was considerably larger than in 1985. Because of the limited amount of food composition data available in 1985 the number of codes used for mixed dishes was small and their nutrient composition was mainly based on the ingredient composition of generic recipes. In contrast, in 1995 individual codes were assigned to many more manufactured foods (over 70 codes for sweet biscuits compared with 24 in 1985) and to a number of variants of generic recipes (11 codes for mashed potatoes compared with six in 1985). This was done in order to retain as much information as possible in the survey database about the foods that had been consumed even when differences in nutrient composition were likely to be small.

Table 3.2.1 Major food groups used in the 1985 and the 1995 surveys (a) and the number of individual food codes in each group

Major food groups in 1985			Major food groups in 1995		
Food Group	**Name**	**No of Codes**	**Food Group**	**Name**	**No of Codes**
M	Non-alcoholic beverages	42	11	Non-alcoholic beverages	112
A	Cereals:				
	Cereals & products	52	12	Cereals & cereal products	153
	Cereals-based products	108	13	Cereal-based products	311
I	Fats	21	14	Fats & oils	43
E	Fish & seafood &products	34	15	Fish & seafood & dishes	69
C	Fruits	80	16	Fruit products & dishes	90
F	Eggs	8	17	Egg products & dishes	14
D	Meat & meat products	175	18	Meat, poultry, game	322
H	Milk & milk products	58	19	Milk products & dishes	173
O	Miscellaneous:				
	Soups	6	20	Soup	40
	Sauces & condiments	25	22	Sauces & condiments	87
	Miscellaneous	15	30	Miscellaneous	20
G	Nuts & seeds	15	21	Seed & nut products	22
B	Vegetables:				
	Vegetables	82	23	Vegetables & dishes	210
	Legumes & pulses	11	24	Legumes & pulse dishes	24
L	Snack foods	6	25	Snack foods	19
J	Jams, honey & syrups	8	26	Sugar products & dishes	37
K	Confectionery	18	27	Confectionery & health bars	65
	Total	764		Total	1,811

(a) excludes food codes relating to alcoholic beverages. Intake of alcoholic beverages was excluded from calculations in both 1985 and 1995, as data were obtained from only a very small number of children aged 10-15 years.

Source: SSDA 617 and 1995 NNS CURF

Amounts of food consumed from major food groups

In broad terms the major food groups used in 1985 and 1995 were comparable so that it is possible to compare the amounts of food derived from the major food groups in 1985 and in 1995. Direct comparisons, however, will only give a true indication of changes in reported food intake between the two surveys if mixed foods have not been allocated to different major food groups in 1985 and 1995. Differences in the classification of foods need to be taken into account when comparing food intake data, at the major food group level, between 1985 and 1995. Intake from the major food groups, after accounting for the re-allocation of the 1985 ‘take-away’ sub-group of foods from the meat, poultry and game group to the cereal-based products and dishes group in 1995, is shown in table 3.2.2.

Information on plain drinking water was obtained in both 1985 and 1995. In 1985, this information was collected as part of the 24-hour record but not included in the total reported for non-alcoholic

beverages. In 1995, the quantity of plain drinking water was reported in response to a separate question that followed the completion of the 24-hour recall interview and included in the total for non-alcoholic beverages. In this report plain drinking water has been treated separately from non-alcoholic beverages in both surveys. The average quantity of plain drinking water recorded in 1985 was 278mL and 260mL for boys and girls, respectively. In 1995 the quantity was much larger at 715mL and 727mL, respectively. Part of the increase is likely to be due to the fact that a greater percentage of the sample reported consuming plain drinking water in 1995 than in 1985 (~55% to ~85%) but in part it may also be due to the different way in which the information was obtained in the two surveys (refer section 2.3.2).

Apart from the difference in plain drinking water, the greatest difference in food and beverage intake between 1985 and 1995 for children aged 10-15 years was the increase in non-alcoholic beverages. Other food groups in which intake increased significantly between 1985 and 1995, were cereal-based products and dishes (*after* allowing for the re-classification of 'take-away' foods), cereals and cereal products, sugar products and confectionery and fish and fish products. The only food groups in which intake decreased significantly between 1985 and 1995 were milk and milk products and fats and oils.

Total food and beverage intake (excluding plain drinking water) was more than 200g (12-14%) higher in 1995 than in 1985 both for boys and girls. Most of this increase resulted from the increased intake of non-alcoholic beverages. The percentage of total food and beverage intake (excluding plain drinking water) contributed by beverages (milk and non-alcoholic beverages) increased from 53% to 54% for boys but remained at 53% for girls.

3.2.3 Food composition databases

The purpose of this section is to provide an estimate of the effect of changes in food composition since 1985 due to the use of Australian as opposed to overseas data on food composition.

A comprehensive program of analysis of Australian foods was undertaken in 1981 and had only been partially completed at the time that the 1985 survey data were originally processed. Results from the program were published from 1989 onwards in a series of publications known as Composition of Foods Australia (COFA) and electronic files known as NUTTAB. In this report, the data used to update the original 1985 food composition database are those from NUTTAB91/92. These data cover the first six volumes of the Composition of Australian foods series and include Australian values for all the major food groups. They represent the best information currently available on the composition of Australian foods as consumed in 1985.

The 1985 nutrient estimates were updated by firstly identifying a NUTTAB91/92 food description that matched as closely as possible the description of the food consumed in the 1985 survey. The original 1985 food composition data for this food item were then replaced by the NUTTAB nutrient composition data. A match was found for 637 of the 764 foods consumed in the 1985 survey (excluding codes relating to alcoholic beverages). Most of the 127 foods that could not be matched with a NUTTAB91/92 food description were recipe foods from the cereal-based or the meat and meat products group. The food codes that could not be matched with a NUTTAB91/92 food description accounted for only 6% of the total weight of food and beverages consumed in 1985.

Table 3.2.2 Amounts derived from selected major food groups in 1985 and 1995 (a)

1995 Food Group	Mean 24-hour intake per person (grams)			
	Boys 10-15		Girls 10-15	
	1985	1995	1985	1995
11 Non-alcoholic beverages (ex plain drinking water)	490	724*	459	592*
12 Cereals and cereal products	214	237*	159	176*
13 Cereal-based products and dishes (inc 1985 'takeaway' group) (b)	110	161*	85	124*
14 Fats and oils	19	12*	15	9*
15 Fish and seafood products and dishes (b)	9	17*	8	15*
16 Fruit products and dishes (b)	126	125	123	128
17 Egg products and dishes	13	11	11	8*
18 Meat, poultry and game products and dishes (ex 1985 'takeaway' group) (b)	138	139	106	107
19 Milk products and dishes (b)	542	484*	372	349
20 Soup	36	30	35	20*
21 Seed and nut products and dishes	3	3	3	3
23 Vegetable products and dishes (b)	194	203*	161	181*
24 Legume and pulse products and dishes (b)	7	11	3	6
25 Snack foods	12	12	12	12
26 Sugar products and dishes	17	27*	11	26*
27 Confectionery and health bars	16	25*	15	21*
Total food and beverage intake	**1,946**	**2,221**	**1,579**	**1,776**
Plain drinking water	278	715*	260	727*

* Difference between estimated means is statistically significant at the 0.05 level

(a) Intake of alcoholic beverages was excluded from calculations in both 1985 and 1995, as data were obtained from only a very small number of children aged 10-15 years.

(b) These groups may not be directly comparable between 1985 and 1995 because of differences in food classification for which it is not possible to adjust

Source: SSDA 617, 1995 NNS CURF, AFNMU

Table 3.2.3 shows the effect of updating the 1985 food composition database with Australian food composition data from NUTTAB 91/92. Updating had no statistically significant effect on estimates of total energy, protein, sugars, fat, cholesterol, alcohol or dietary fibre. The only energy constituent that differed significantly after updating was starch. Estimates of both total carbohydrate and starch decreased by 3% to 4%.

In contrast, all micronutrient estimates, except for vitamin A (expressed in terms of retinol equivalents) and calcium, differed significantly after updating. For micronutrients updating of the database increased estimates of thiamine and niacin by 8% to 10%. All other micronutrients (riboflavin, vitamin C, iron, zinc and magnesium) decreased as a result of the updating by between 3% and 9%.

Unless these differences are taken into account in a comparison of the 1985 and the 1995 data, estimates of real changes in intake of thiamin and niacin will be overestimated while changes in carbohydrate, starch, riboflavin, vitamin C, iron, zinc and magnesium intake will be underestimated.

Table 3.2.3 Comparison of nutrient estimates from the 1985 survey derived from the original food composition database and from NUTTAB91/92

Nutrient	24-hour intake per person			
	Boys 10-15		Girls 10-15	
	1985 database	NUTTAB 91/92	1985 database	NUTTAB 91/92
Energy (kJ)	9,656	9,670	7,556	7,586
Protein (g)	83	84	64	65
Total carbohydrate (g)	292	283*	230	224*
Total starch (g)	148	142*	112	109*
Total sugars(g)	145	142	118	115
Total fat (g)	96	96	75	75
Cholesterol (mg)	294	289	230	226
Dietary fibre (g)	20.5	20.6	16.5	16.8
Vitamin A-retinol equivalent (mg)	1,075	1,103	829	861
Thiamin (mg)	1.58	1.75*	1.25	1.40*
Riboflavin (mg)	2.69	2.47*	2.00	1.86*
Niacin equivalent (mg)	31.8	34.2*	24.8	26.9*
Vitamin C (mg)	146	136*	141	129*
Iron (mg)	13.9	13.3*	10.6	9.9*
Calcium (mg)	1,026	1,007	765	753
Zinc (mg)	11.3	11.0*	8.8	8.4*
Magnesium (mg)	303	276*	236	215*

* Difference between estimated means is statistically significant at the 0.05 level

Source: SSDA 617, 1995 NNS CURF, AFNMU

3.2.4 Key points

- This section considered the extent to which differences in food intake methodology between the two surveys affected the observed differences in intake between 1985 and 1995. The differences assessed were: the way the dietary data were collected,; differences in food classification and coding, and the impact of updating the 1985 food composition database with Australian analytical data.

- The effect of the difference in the dietary method used in the two surveys (an interviewer assisted 24hr record in 1985 and a 24hr recall in 1995) could not be assessed quantitatively. Data in the literature suggest that recalls provide lower estimates of intake than records, however, none of the studies compared the specific methods used in 1985 and 1995.

- Comparison of the classification of foods in the two surveys at the major (2 digit) food group level between 1985 and 1995 revealed that at least one of the major differences between 1985 and 1995 (intake of cereal-based foods) was due to changes in the grouping of foods at the major food group level rather than to real changes in food intake.

- Updating of the 1985 food composition database with Australian data (NUTTAB 91/92) resulted in significant differences in estimates of nutrient intake for nine of the 17 nutrients evaluated for children aged 10-15 years. Most of the significant differences were decreases in estimates for micronutrients.

- Differences in the way that food intake data are collected and processed need careful consideration in the context of food and nutrition monitoring because they can have a major impact on comparisons between surveys.

3.3 Other factors

The impact of survey and non-survey related differences additional to those presented in sections 3.1 and 3.2 are discussed below. The impact of these additional factors cannot be quantified in dietary intake terms but are worth mentioning, especially in terms of future survey design recommendations.

3.3.1 Coverage and non-response

Adjustments have been made to both the 1985 and 1995 surveys to account for under-coverage and non-response. Such adjustments may not account for non-response bias. Non-response bias occurs when the dietary characteristics of non-respondents differ significantly from those of respondents. These problems are best avoided by strategies that aim to minimise survey non-response.

Comparisons between the age and sex characteristics of survey respondents and their associated populations are provided as indications of the possible impact of under-coverage and non-response in the 1985 and 1995 surveys.

1985 survey

The response rate to the 1985 survey was 65.5% (DCSH 1988, p18). The survey was conducted as a two-stage list sample based on school enrolment records. With school records being maintained at least annually, problems often associated with list samples relating to currency and coverage of the population were minimised.

Comparisons between the population distribution and the distribution of survey respondents illustrate the extent of under-coverage and non-response in the 1985 survey (table 3.3.1). The data confirm that response rates tended to be lower for older students and were particularly problematic for 13 and 14 year olds.

Table 3.3.1 Population distribution and distribution of 1985 survey respondents

	Boys 10-15		Girls 10-15	
	Population (%)	Survey (%)	Population (%)	Survey (%)
10 years	8.1	8.7	7.3	8.9
11 years	8.4	8.8	7.9	8.8
12 years	8.7	8.7	8.3	9.2
13 years	9.0	8.2	8.7	7.9
14 years	9.2	8.2	8.9	7.3
15 years	7.9	7.7	7.6	7.6
Total	51.4	50.4	48.6	49.6

Source: ABS unpublished resident population estimates, DCSH 1988

Post stratification weights split by age, sex and state of residence were applied to reduce the impact of under-coverage and non-response. If left unweighted, the 1985 survey results would have been unduly influenced by the dietary intakes of girls and primary school students.

1995 NNS

The overall response rate to the 1995 NNS was 61.4% (ABS 1998a, p31). The 1995 NNS response rate of 67.6% (for children aged 8-15 years) is comparable with the response rate for the 1985 survey (children aged 10-15 years).

While the 1995 NNS response rate is not especially low when compared with other nutrition surveys, it is low by ABS household survey standards. Surveys conducted as part of the ABS's Special Supplementary Survey program generally have response rates averaging around 85% (personal communication July 2000).

Unlike other ABS household surveys, the 1995 NNS was administered as a non-compulsory collection. Respondent fatigue is also considered a key contributor to the low 1995 NNS response rate. The 1995 NNS sample was a sub-sample of the 1995 National Health Survey, which is a detailed survey in its own right. Details from the 1995 National Health Survey about non-respondents to the 1995 NNS allowed the ABS to minimise the impact of non-response bias by appropriately adjusting the sample weights for particular socio-demographic characteristics.

Comparisons between the 1995 population distribution and the distribution of NNS95 survey respondents (10-15 years) are provided below (refer table 3.3.2).

Table 3.3.2 Population distribution and distribution of 1995 survey respondents

	Boys 10-15		Girls 10-15	
	Population (%)	Survey (%)	Population (%)	Survey (%)
10 years	8.6	10.3	8.2	7.8
11 years	8.7	8.6	8.2	10.0
12 years	8.6	7.1	8.2	8.2
13 years	8.6	10.9	8.2	7.8
14 years	8.5	7.4	8.0	7.6
15 years	8.4	8.4	7.9	5.8
Total	51.3	52.7	48.7	47.3

Source: ABS unpublished resident population estimates, 1995 NNS CURF

Relatively speaking, the age distribution of response rates is more skewed in 1995 than 1985 and the skew in the sex distribution is more pronounced. Overall participation rates for boys exceeded girls, reflecting particularly marked non-response rates for teenage girls.

3.3.2 Coverage and non-response implications

Interpretation of the 1985 and 1995 results is complicated by the extent of non-participation in both surveys. Despite adjustments for non-response, estimates from both surveys are likely to be biased due to non-response rates of around 40%. Although not quantifiable, the effects of non-response bias and response bias must be considered when analysing and interpreting all results from the 1983 and 1995 surveys.

The success of strategies being developed to maximise response rates to the 2001 Children's Nutrition Survey in New Zealand will be able to be assessed following data collection. The target response rate for the pilot test was to exceed 70% (Scragg R and Watson P 2001, p7). Successful design features may be able to be adopted or adapted to meet Australian nutrition monitoring needs.

The series of conclusions and recommendations described in section 2.3.4 are relevant to monitoring of dietary intakes in children across time and between population subgroups.

3.3.3 Key points

- Interpretation of the 1985 and 1995 results is further complicated by the extent of non-participation in both surveys. Despite adjustments for non-response, estimates from both surveys are likely to be biased due to non-response rates of around 40%. Although not quantifiable, the effects of non-response bias and response bias must be considered when interpreting all results from the 1985 and 1995 surveys.

- The success of strategies being developed to maximize response rates to the 2001 Children's Nutrition Survey in New Zealand will be able to be assessed following data collection. Successful design features may be able to be adopted or adapted to meet Australian nutrition monitoring needs.

- Refer to additional key findings in section 2.4 as these are also relevant to the monitoring of dietary intakes in children across time and between population subgroups.

Chapter 4

The following conclusions and recommendations are based on an assessment of the impact of key differences between the 1983 National Dietary Survey, the 1985 National Dietary Survey of Schoolchildren and the 1995 National Nutrition Survey.

The comments are restricted to findings relating to the methods used to improve comparability between the 1983, 1985 and 1995 surveys. Commentary regarding the resulting apparent trends in dietary intakes is reserved for the companion publication *Comparable data on food and nutrient intakes and physical measurements from the 1983, 1985 and 1995 national surveys.*

4.0 Conclusions and recommendations

The principal finding of the bridging study is that it is inappropriate to directly compare published results from the 1983 and 1985 surveys with the 1995 survey to assess trends in the food and nutrient intake of adults and children. Allowances are needed to account for differences in the food composition databases, sample design, collection, coding and classification practices and demographic changes in the Australian population between these surveys.

Food composition database differences

The published 1983 and 1985 results have been revised to better reflect the nutrient composition of Australian foods at the time these surveys were conducted. When originally processed, Australian food composition data were not available for a significant proportion of the foods consumed in 1983 and 1985.

Updating the 1983 and 1985 food composition databases with Australian data (NUTTAB 91/92) resulted in significant differences, both increases and decreases, in estimates of nutrient intake for some but not all nutrients.

Sample design differences

The impact of specific sample design changes in adult and child dietary intakes was assessed by comparing intake estimates from subsets of the 1995 survey.

For adults, four sample design effects were assessed including differences in age range, geographical coverage, season of the year and day of the week. Variations in age and season produced statistically significant differences in intake estimates for 12 of the 18 nutrients tested. Geographical variations produced significant differences in mean intakes for 10 of the 17 major food groups evaluated. Day of the week produced significant differences for specific foods and nutrients (most notably alcoholic beverages and alcohol).

The adult findings illustrate the importance of accounting for sample design differences before comparing results from the 1983 and 1995 surveys. ‘Comparable’ 1995 estimates were derived from a subset of the 1995 survey that accounted for all four of the sample design variations in combination.

For children, the overall conclusion was that sample design variations are likely to be important to dietary intakes but these were not reflected in the estimates because of small sample sizes in 1995. As a consequence, it is recommended that the 1995 dietary intakes for children be estimated using the total NNS95 sample rather than the ‘comparable’ 1995 subset.

Demographic differences

Differences in the age and sex structure of subgroups in the Australian population and across time make it preferable for demographic standardisation techniques to be used with population-based estimates. Use of standardised estimates improve comparability of data across time and between subpopulation groups with confidence.

All 1983 and 1995 dietary intake estimates (except age specific estimates) have been age adjusted based on the population distribution used to weight the 1983 survey.

Child data comparisons between 1985 and 1995 were restricted to estimates for a combined 10-15 year age group by sex due to the small sample sizes in 1995. This outcome illustrates the importance of survey design considerations (including sample size) to the development of a national food and nutrition monitoring and surveillance system that is capable of meeting current as well as anticipated data needs.

The impact of changes in Australia's population will become increasingly important to monitoring dietary habits in the future.

It is recommended that future nutrition surveys allow changes in dietary intake to be monitored for selected age groups and ethnicities and regions within the Australian population. Samples will need to be sufficiently large to account for anticipated changes in the composition of the Australian population due to population ageing and existing migration patterns. This may require over-sampling of some subpopulations and consideration of the potential consequences on respondent burden.

Changes in food intake methodology

Differences in mean intakes between the 1983, 1985 and 1995 surveys could have arisen either because of real changes in the types and/or amounts of foods consumed or because of differences associated with the food intake methodology used in the surveys. Specifically, differences could reflect the way the dietary data were collected and or differences in food classification and coding.

Differences in the way that the 24-hour recall interviews were conducted between the 1983 and 1995 surveys are unlikely to have had a significant effect on the estimates of food and nutrient intake.

The effect of the difference in the dietary method used in the two child surveys (an interviewer assisted 24hr record in 1985 and a 24hr recall in 1995) could not be assessed quantitatively. Data in the literature suggest that recalls provide lower estimates of intake than records, however, none of the studies compared the specific methods used in 1985 and 1995

Comparison of the classification of foods in 1983/85 and 1995 at the major (2 digit) food group level revealed that some of the major differences are due to changes in the grouping of foods at the major food group level rather than to real changes in food intake.

Differences in the way that food intake data are collected and processed need careful consideration in the context of food and nutrition monitoring because they can have a major impact on comparisons between surveys.

Other factors

Interpretation of the 1983, 1985 and 1995 results is further complicated by the extent of non-participation in both surveys. Despite adjustments for non-response, estimates from these surveys are likely to be biased due to non-response rates of up to 40%. Although not quantifiable, the effects of non-response bias and response bias must be considered when interpreting all results from the surveys.

For the specific purpose of nutrition monitoring in Australia, it is recommended that the effectiveness of a range of indicators of food intake (eg food supply, food expenditure, food habits, nutritional status) be assessed to complement the collection of detailed data on dietary intake.

The role of biological measurements of nutritional status in population based surveys for nutrition monitoring in Australia also needs to be assessed. Such surveys can be expected to become increasingly important to nutrition monitoring if data quality concerns associated with self-reported dietary data increase in the future.

The Australian Food and Nutrition Monitoring Unit has evaluated the effectiveness of a number of short-questions for use in monitoring food and nutrient intake. It is recommended that this research be extended to define a set of core diet-related questions that consistently yield high response rates across a range of socio-demographic groups. Collaborative research with the CATI Health Survey Technical Reference Group is expected to be mutually beneficial for health survey development work. Sensitivity issues associated with the collection of data from individuals relating to alcohol, drug and tobacco consumption are also expected to be relevant to the collection of food intake data.

Further research is recommended to identify the extent of non-response bias in Australian dietary surveys. Initial findings from the 1995 National Health Survey about differences between the socio-economic characteristics of respondents and non-respondents to the 1995 National Nutrition Survey increase the likelihood that health/lifestyle differences also exist.

It is recommended that an evaluation of collection methods used to conduct national nutrition surveys in other countries be undertaken to determine if these could be adopted to improve response rates to Australian nutrition surveys.

The use of national nutrition surveys to monitor trends in dietary intake over time is limited by the extent of non-response associated with these major collections and because they tend to be conducted infrequently and at irregular intervals. National nutrition surveys, as currently conducted, are more appropriately considered as a source of benchmark data against which other more regularly collected data can be evaluated.

Appendix A – Comparison of subsets of the 1995 NNS survey (adults) for each nutrient

Energy

Table A.1 Comparison of estimated 24-hour intake of ENERGY for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake Energy (kJ)	Standard deviation	Sample size	Mean intake Energy (kJ)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**11,050**	**4,278**	**5,770**	**7,481**	**2,917**
Subset 1 – Age	3,694	11,147*	4,157	4,137	7,614*	2,910
Subset 2 – Geography	2,977	11,033	4,302	3,387	7,536*	2,943
Subset 3 – Season	3,043	11,094	4,225	3,425	7,548*	2,947
Subset 4 – Day	4,381	10,994*	4,250	5,042	7,394*	2,859
Subset 5 – 'Comparable' sample	**1,114**	**11,222***	**4,070**	**1,253**	**7,634***	**2,899**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Protein

Table A.2 Comparison of estimated 24-hour intake of PROTEIN for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake Energy (kJ)	Standard deviation	Sample size	Mean intake Energy (kJ)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**109**	**49.3**	**5,770**	**73.9**	**31.9**
Subset 1 – Age	3,694	111*	49.0	4,137	75.6*	31.9
Subset 2 – Geography	2,977	109	49.0	3,387	74.2	32.0
Subset 3 – Season	3,043	110	48.6	3,425	74.9*	32.5
Subset 4 – Day	4,381	109	48.9	5,042	73.6	31.6
Subset 5 – 'Comparable' sample	**1,114**	**112***	**47.1**	**1,253**	**75.8***	**32.2**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Total carbohydrate

Table A.3 Comparison of estimated 24-hour intake of TOTAL CARBOHYDRATE for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake Total carbo-hydrate (g)	Standard deviation	Sample size	Mean intake Total carbo-hydrate (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**301**	**129**	**5,770**	**211**	**86.9**
Subset 1 – Age	3,694	300	124	4,137	212*	86.3
Subset 2 – Geography	2,977	303	130	3,387	213*	88.9
Subset 3 – Season	3,043	301	128	3,425	211	86.9
Subset 4 – Day	4,381	300	129	5,042	208*	85.6
Subset 5 – 'Comparable' sample	**1,114**	**304**	**124**	**1,253**	**214***	**85.7**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Total starch

Table A.4 Comparison of estimated 24-hour intake of TOTAL STARCH for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake Starch (g)	Standard deviation	Sample size	Mean intake Starch (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**165**	**80.1**	**5,770**	**112**	**53.6**
Subset 1 – Age	3,694	167*	78.5	4,137	115*	53.9
Subset 2 – Geography	2,977	169*	83.1	3,387	115*	56.3
Subset 3 – Season	3,043	168*	80.7	3,425	114*	53.7
Subset 4 – Day	4,381	165	80.4	5,042	111*	52.9
Subset 5 – 'Comparable' sample	**1,114**	**174***	**80.0**	**1,253**	**119***	**56.0**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Total sugars

Table A.5 Comparison of estimated 24-hour intake of TOTAL SUGARS for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake Sugars (g)	Standard deviation	Sample size	Mean intake Sugars (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**134**	**79.8**	**5,770**	**97.0**	**55.7**
Subset 1 – Age	3,694	130*	77.9	4,137	96.1	55.2
Subset 2 – Geography	2,977	132*	78.9	3,387	96.8	55.9
Subset 3 – Season	3,043	131*	77.4	3,425	95.7*	54.9
Subset 4 – Day	4,381	134	80.1	5,042	96.1*	55.1
Subset 5 – 'Comparable' sample	**1,114**	**129***	**75.0**	**1,253**	**93.9***	**53.7**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Total fat

Table A.6 Comparison of estimated 24-hour intake of TOTAL FAT for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake Total fat (g)	Standard deviation	Sample size	Mean intake Total fat (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**98.5**	**49.8**	**5,770**	**67.6**	**35.6**
Subset 1 – Age	3,694	99.6*	49.4	4,137	69.0*	35.9
Subset 2 – Geography	2,977	97.5*	49.6	3,387	67.7	35.8
Subset 3 – Season	3,043	99.4	49.3	3,425	68.8*	36.0
Subset 4 – Day	4,381	98.3	49.8	5,042	66.9*	35.2
Subset 5 – 'Comparable' sample	**1,114**	**100.6***	**48.9**	**1,253**	**68.7***	**35.5**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Cholesterol

Table A.7 Comparison of estimated 24-hour intake of CHOLESTEROL for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake Cholesterol (mg)	Standard deviation	Sample size	Mean intake Cholesterol (mg)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**358**	**248**	**5,770**	**240**	**186**
Subset 1 – Age	3,694	364*	246	4,137	248*	187.5
Subset 2 – Geography	2,977	352*	247	3,387	239	183.4
Subset 3 – Season	3,043	357	245	3,425	242	185.1
Subset 4 – Day	4,381	355*	248	5,042	236*	175.9
Subset 5 – 'Comparable' sample	**1,114**	**356**	**238**	**1,253**	**243**	**179**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Alcohol

Table A.8 Comparison of estimated 24-hour intake of ALCOHOL for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake Alcohol (g)	Standard deviation	Sample size	Mean intake Alcohol (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**18.5**	**33.4**	**5,770**	**7.31**	**19.1**
Subset 1 – Age	3,694	19.9*	34.2	4,137	8.15*	19.9
Subset 2 – Geography	2,977	17.9*	32.1	3,387	7.24	19.2
Subset 3 – Season	3,043	18.1	32.3	3,425	7.23	19.1
Subset 4 – Day	4,381	17.0*	31.3	5,042	6.63*	17.8
Subset 5 – 'Comparable' sample	**1,114**	**17.9**	**32.4**	**1,253**	**7.85**	**22.1**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Dietary fibre

Table A.9 Comparison of estimated 24-hour intake of DIETARY FIBRE for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake Dietary fibre (g)	Standard deviation	Sample size	Mean intake Dietary fibre (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**25.9**	**12.7**	**5,770**	**20.3**	**9.6**
Subset 1 – Age	3,694	26.2*	12.9	4,137	20.6*	9.8
Subset 2 – Geography	2,977	26.1	12.6	3,387	20.6*	9.8
Subset 3 – Season	3,043	26.3*	12.6	3,425	20.5	9.8
Subset 4 – Day	4,381	26.2*	12.7	5,042	20.4	9.6
Subset 5 – 'Comparable' sample	**1,114**	**27.0***	**12.9**	**1,253**	**20.8***	**9.7**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Vitamin A – retinol equivalent

Table A.10 Comparison of estimated 24-hour intake of VITAMIN A-RETINOL EQUIVALENT for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake Vit A-retinol equiv (µg)	Standard deviation	Sample size	Mean intake Vit A-retinol equiv (µg)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**1,312**	**2,987**	**5,770**	**1,047**	**1,904**
Subset 1 – Age	3,694	1,328	3,249	4,137	1,073	2,008
Subset 2 – Geography	2,977	1,284	2,909	3,387	1,065	2,025
Subset 3 – Season	3,043	1,369*	3,375	3,425	1,094*	2,227
Subset 4 – Day	4,381	1,350*	3,192	5,042	1,055	2,000
Subset 5 – 'Comparable' sample	**1,114**	**1,405**	**3,515**	**1,253**	**1,131**	**2,570**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Thiamin

Table A.11 Comparison of estimated 24-hour intake of THIAMIN for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake Thiamin(mg)	Standard deviation	Sample size	Mean intake Thiamin(mg)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**1.95**	**1.30**	**5,770**	**1.35**	**0.87**
Subset 1 – Age	3,694	1.95	1.35	4,137	1.36	0.77
Subset 2 – Geography	2,977	1.95	1.36	3,387	1.33*	0.76
Subset 3 – Season	3,043	1.93	1.18	3,425	1.37*	0.94
Subset 4 – Day	4,381	1.95	1.22	5,042	1.35*	0.88
Subset 5 – 'Comparable' sample	**1,114**	**1.94**	**1.20**	**1,253**	**1.35**	**0.76**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Riboflavin

Table A.12 Comparison of estimated 24-hour intake of RIBOFLAVIN for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake Riboflavin (mg)	Standard deviation	Sample size	Mean intake Riboflavin (mg)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**2.34**	**1.57**	**5,770**	**1.77**	**1.15**
Subset 1 – Age	3,694	2.34	1.62	4,137	1.78	1.03
Subset 2 – Geography	2,977	2.33	1.64	3,387	1.74*	1.01
Subset 3 – Season	3,043	2.32	1.41	3,425	1.80*	1.22
Subset 4 – Day	4,381	2.34	1.46	5,042	1.76	1.14
Subset 5 – 'Comparable' sample	**1,114**	**2.32**	**1.41**	**1,253**	**1.74**	**1.00**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Niacin equivalent

Table A.13 Comparison of estimated 24-hour intake of NIACIN EQUIVALENT for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake Niacin equiv (mg)	Standard deviation	Sample size	Mean intake Niacin equiv (mg)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**50.7**	**22.3**	**5,770**	**34.1**	**14.5**
Subset 1 – Age	3,694	51.8*	22.4	4,137	34.9*	14.1
Subset 2 – Geography	2,977	50.6	22.3	3,387	34.1	14.3
Subset 3 – Season	3,043	50.7	21.8	3,425	34.4*	14.8
Subset 4 – Day	4,381	50.5	21.9	5,042	34.0	14.4
Subset 5 – 'Comparable' sample	**1,114**	**51.7***	**21.1**	**1,253**	**34.8***	**14.1**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Vitamin C

Table A.14 Comparison of estimated 24-hour intake of VITAMIN C for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake Vit C (mg)	Standard deviation	Sample size	Mean intake Vit C (mg)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**136**	**121**	**5,770**	**113**	**102**
Subset 1 – Age	3,694	135	120	4,137	112	100
Subset 2 – Geography	2,977	139*	123	3,387	115	103
Subset 3 – Season	3,043	136	119	3,425	114	99.1
Subset 4 – Day	4,381	137*	121	5,042	114	103
Subset 5 – 'Comparable' sample	**1,114**	**140**	**119**	**1,253**	**118**	**99.5**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Iron

Table A.15 Comparison of estimated 24-hour intake of IRON for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake Iron (mg)	Standard deviation	Sample size	Mean intake Iron (mg)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**16.4**	**7.59**	**5,770**	**11.9**	**5.37**
Subset 1 – Age	3,694	16.5*	7.68	4,137	12.1*	5.48
Subset 2 – Geography	2,977	16.4	7.61	3,387	12.0	5.47
Subset 3 – Season	3,043	16.5*	7.56	3,425	12.1*	5.54
Subset 4 – Day	4,381	16.4	7.57	5,042	11.9*	5.32
Subset 5 – 'Comparable' sample	**1,114**	**16.6**	**7.14**	**1,253**	**12.2***	**5.72**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Calcium

Table A.16 Comparison of estimated 24-hour intake of CALCIUM for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake Calcium (mg)	Standard deviation	Sample size	Mean intake Calcium (mg)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**946**	**571**	**5,770**	**749**	**425**
Subset 1 – Age	3,694	947	572	4,137	765*	435
Subset 2 – Geography	2,977	951	582	3,387	751	425
Subset 3 – Season	3,043	960*	569	3,425	753	429
Subset 4 – Day	4,381	944	572	5,042	747	424
Subset 5 – 'Comparable' sample	**1,114**	**983***	**600**	**1,253**	**760**	**443**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Zinc

Table A.17 Comparison of estimated 24-hour intake of ZINC for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake Zinc (mg)	Standard deviation	Sample size	Mean intake Zinc (mg)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**14.4**	**10.1**	**5,770**	**9.74**	**6.15**
Subset 1 – Age	3,694	14.5	9.02	4,137	9.86	5.76
Subset 2 – Geography	2,977	14.4	11.1	3,387	9.76	6.24
Subset 3 – Season	3,043	14.6	9.97	3,425	9.88*	6.11
Subset 4 – Day	4,381	14.3*	8.92	5,042	9.71	6.00
Subset 5 – 'Comparable' sample	**1,114**	**14.6**	**7.81**	**1,253**	**9.99**	**6.67**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Magnesium

Table A.18 Comparison of estimated 24-hour intake of MAGNESIUM for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake Magnesium (mg)	Standard deviation	Sample size	Mean intake Magnesium (mg)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**381**	**154**	**5,770**	**283**	**114**
Subset 1 – Age	3,694	389*	157	4,137	289*	115
Subset 2 – Geography	2,977	381	153	3,387	286*	117
Subset 3 – Season	3,043	384*	151	3,425	286*	113
Subset 4 – Day	4,381	380	151	5,042	281*	113
Subset 5 – 'Comparable' sample	**1,114**	**390***	**151**	**1,253**	**291***	**116**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Appendix B – Comparison of subsets of the 1995 NNS survey (adults) for selected major food groups

The food group listing is presented in alphabetical order.

Alcoholic beverages

Table B.1 Comparison of estimated 24-hour intake of ALCOHOLIC BEVERAGES for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**410**	**794**	**5,770**	**102**	**304**
Subset 1 – Age	3,694	446*	830	4,137	111*	304
Subset 2 – Geography	2,977	378*	738	3,387	96*	287
Subset 3 – Season	3,043	392*	769	3,425	99	299
Subset 4 – Day	4,381	374*	741	5,042	90*	271
Subset 5 – 'Comparable' sample	**1,114**	**367**	**743**	**1,253**	**102**	**308**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Cereals and cereal products

Table B.2 Comparison of estimated 24-hour intake of CEREAL AND CEREAL PRODUCTS for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**250**	**233**	**5,770**	**181**	**171**
Subset 1 – Age	3,694	254	236	4,137	184*	172
Subset 2 – Geography	2,977	262*	246	3,387	190*	182
Subset 3 – Season	3,043	260*	239	3,425	184	170
Subset 4 – Day	4,381	251	231	5,042	177*	167
Subset 5 – 'Comparable' sample	**1,114**	**273***	**254**	**1,253**	**193***	**181**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Cereal-based products and dishes

Table B.3 Comparison of estimated 24-hour intake of CEREAL-BASED PRODUCTS AND DISHES for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**154**	**222**	**5,770**	**100**	**146**
Subset 1 – Age	3,694	155	223	4,137	105*	150
Subset 2 – Geography	2,977	164*	235	3,387	102	150
Subset 3 – Season	3,043	159	226	3,425	104*	147
Subset 4 – Day	4,381	152	222	5,042	101	148
Subset 5 – 'Comparable' sample	**1,114**	**165**	**228**	**1,253**	**112***	**162**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Confectionery

Table B.4 Comparison of estimated 24-hour intake of CONFECTIONERY for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**9**	**27**	**5,770**	**8**	**26**
Subset 1 – Age	3,694	9	26	4,137	9	26
Subset 2 – Geography	2,977	9	25	3,387	9	26
Subset 3 – Season	3,043	9	28	3,425	8	25
Subset 4 – Day	4,381	9	27	5,042	8	26
Subset 5 – 'Comparable' sample	**1,114**	**9**	**26**	**1,253**	**9**	**29**

Source: 1995 NNS CURF, AFNMU

Egg products and dishes

Table B.5 Comparison of estimated 24-hour intake of EGG PRODUCTS AND DISHES for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**16**	**49**	**5,770**	**11**	**38**
Subset 1 – Age	3,694	17	48	4,137	12	39
Subset 2 – Geography	2,977	15*	50	3,387	11	38
Subset 3 – Season	3,043	15	48	3,425	11	38
Subset 4 – Day	4,381	16	49	5,042	11	36
Subset 5 – 'Comparable' sample	**1,114**	**14**	**44**	**1,253**	**11**	**35**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Fats and oils

Table B.6 Comparison of estimated 24-hour intake of FATS AND OILS for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**15**	**17**	**5,770**	**10**	**12**
Subset 1 – Age	3,694	14*	16	4,137	9*	12
Subset 2 – Geography	2,977	14*	16	3,387	9*	12
Subset 3 – Season	3,043	15	17	3,425	10	12
Subset 4 – Day	4,381	15	17	5,042	10*	12
Subset 5 – 'Comparable' sample	**1,114**	**14**	**17**	**1,253**	**9***	**12**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Fish and seafood products and dishes

Table B.7 Comparison of estimated 24-hour intake of FISH AND SEAFOOD PRODUCTS AND DISHES for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**29**	**87**	**5,770**	**23**	**72**
Subset 1 – Age	3,694	30	90	4,137	23	71
Subset 2 – Geography	2,977	31*	91	3,387	25*	75
Subset 3 – Season	3,043	30	87	3,425	25*	76
Subset 4 – Day	4,381	27*	82	5,042	22	73
Subset 5 – 'Comparable' sample	**1,114**	**30**	**88**	**1,253**	**26**	**77**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Fruit products and dishes

Table B.8 Comparison of estimated 24-hour intake of FRUIT PRODUCTS AND DISHES for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**141**	**219**	**5,770**	**146**	**202**
Subset 1 – Age	3,694	144	221	4,137	147	206
Subset 2 – Geography	2,977	143	224	3,387	144	184
Subset 3 – Season	3,043	127*	191	3,425	135*	197
Subset 4 – Day	4,381	144*	222	5,042	147	205
Subset 5 – 'Comparable' sample	**1,114**	**138**	**204**	**1,253**	**132***	**163**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Legumes and pulse products and dishes

Table B.9 Comparison of estimated 24-hour intake of LEGUMES AND PULSE PRODUCTS AND DISHES for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**12**	**57**	**5,770**	**7**	**36**
Subset 1 – Age	3,694	13	59	4,137	8*	39
Subset 2 – Geography	2,977	13	56	3,387	9*	39
Subset 3 – Season	3,043	13	59	3,425	8	38
Subset 4 – Day	4,381	12	58	5,042	7	35
Subset 5 – 'Comparable' sample	**1,114**	**15***	**64**	**1,253**	**10***	**42**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Meat, poultry and game products and dishes

Table B.10 Comparison of estimated 24-hour intake of MEAT, POULTRY AND GAME PRODUCTS AND DISHES for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**200**	**203**	**5,770**	**116**	**130**
Subset 1 – Age	3,694	206*	209	4,137	119*	130
Subset 2 – Geography	2,977	195*	200	3,387	114	128
Subset 3 – Season	3,043	200	207	3,425	118	136
Subset 4 – Day	4,381	200	202	5,042	116	129
Subset 5 – 'Comparable' sample	**1,114**	**207**	**217**	**1,253**	**115**	**132**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Milk products and dishes

Table B.11 Comparison of estimated 24-hour intake of MILK PRODUCTS AND DISHES for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**322**	**333**	**5,770**	**258**	**243**
Subset 1 – Age	3,694	315*	328	4,137	258	245
Subset 2 – Geography	2,977	317	332	3,387	254	239
Subset 3 – Season	3,043	325	333	3,425	255	238
Subset 4 – Day	4,381	325	336	5,042	257	240
Subset 5 – 'Comparable' sample	**1,114**	**323**	**336**	**1,253**	**243***	**234**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Non alcoholic beverages (excluding plain drinking water)

Table B.12 Comparison of estimated 24-hour intake of NON ALCOHOLIC BEVERAGES (excluding plain drinking water) for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**1,279**	**832**	**5,770**	**1,140**	**660**
Subset 1 – Age	3,694	1,320*	872	4,137	1,192*	692
Subset 2 – Geography	2,977	1,243*	788	3,387	1,124*	660
Subset 3 – Season	3,043	1,281	840	3,425	1,145	638
Subset 4 – Day	4,381	1,278	838	5,042	1,141	662
Subset 5 – 'Comparable' sample	**1,114**	**1,282**	**830**	**1,253**	**1,164***	**669**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Seed and nut products and dishes

Table B.13 Comparison of estimated 24-hour intake of SEED AND NUT PRODUCTS AND DISHES for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**5**	**23**	**5,770**	**4**	**16**
Subset 1 – Age	3,694	6*	25	4,137	4*	16
Subset 2 – Geography	2,977	5	23	3,387	4*	17
Subset 3 – Season	3,043	5	20	3,425	4	15
Subset 4 – Day	4,381	5	21	5,042	3*	14
Subset 5 – 'Comparable' sample	**1,114**	**5**	**20**	**1,253**	**3**	**13**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Snack foods

Table B.14 Comparison of estimated 24-hour intake of SNACK FOODS for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**4**	**16**	**5,770**	**3**	**15**
Subset 1 – Age	3,694	3*	16	4,137	3	14
Subset 2 – Geography	2,977	4	17	3,387	4*	15
Subset 3 – Season	3,043	4	16	3,425	3	14
Subset 4 – Day	4,381	4	17	5,042	3*	14
Subset 5 – 'Comparable' sample	**1,114**	**4**	**16**	**1,253**	**3**	**15**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Soup

Table B.15 Comparison of estimated 24-hour intake of SOUP for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**52**	**173**	**5,770**	**58**	**168**
Subset 1 – Age	3,694	49	167	4,137	57	170
Subset 2 – Geography	2,977	54	178	3,387	63*	178
Subset 3 – Season	3,043	57*	174	3,425	69*	183
Subset 4 – Day	4,381	54*	177	5,042	59	171
Subset 5 – 'Comparable' sample	**1,114**	**62***	**182**	**1,253**	**79***	**200**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Sugar products and dishes

Table B.16 Comparison of estimated 24-hour intake of SUGAR PRODUCTS AND DISHES for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**23**	**39**	**5,770**	**15**	**31**
Subset 1 – Age	3,694	23	38	4,137	15	32
Subset 2 – Geography	2,977	22*	39	3,387	14*	30
Subset 3 – Season	3,043	24	39	3,425	15	30
Subset 4 – Day	4,381	23	37	5,042	15	31
Subset 5 – 'Comparable' sample	**1,114**	**22**	**30**	**1,253**	**15**	**31**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Vegetable products and dishes

Table B.17 Comparison of estimated 24-hour intake of VEGETABLE PRODUCTS AND DISHES for subsets of the 1995 NNS survey (adults)

	Males			Females		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 (19 years & over)	**5,081**	**283**	**243**	**5,770**	**235**	**192**
Subset 1 – Age	3,694	286	249	4,137	234	194
Subset 2 – Geography	2,977	278*	234	3,387	234	191
Subset 3 – Season	3,043	282	245	3,425	233	190
Subset 4 – Day	4,381	290*	249	5,042	238*	193
Subset 5 – 'Comparable' sample	**1,114**	**285**	**244**	**1,253**	**230**	**190**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Appendix C – Foods consumed in 1983 survey mapped to NUTTAB 91/92 food codes

Table C.1 Foods consumed in 1983 survey mapped to NUTTAB 91/92 food codes

No	1983 Code	1983 Survey Name	NUTTAB 91/92 Code
1	A	Fats, hard, butter	04A1-002
2	B	Fats, margarine, polyunsaturated	04B1-006
3	C	Fats, margarine, table	04B2-001
4	D	Fats, margarine, cooking, retail	04B2-002
5	E	Fats, domestic spread, unknown type	04B2-003
6	F	Fats, hard, domestic solid	04D1-004
7	G	Fats, hard, commercial, cooking	04D1-006
8	H	Fats, commercial spread, catering	04C1-012
9	L	Fats, margarine, domestic, unknown type	04B2-004
10	N	Oil, cotton seed	04C1-010
11	P	Oil, olive	04C1-003
12	R	Oil, peanut	04C1-001
13	S	Oil, safflower seed	04C1-006
14	T 018	Lecithin	13B2-003
15	U	Oil, sunflower	04C1-007
16	V	Oil, unknown type	04C1-011
17	W	Oil, blended, polyunsaturated	04C1-002
18	X	Oil, maize	04C1-004
19	1	Barley, pearl, boiled	02A1-014
20	2	Bran, unprocessed, wheat	02A1-021
21	3	Cornflour	02A2-007
22	4	Flour, soya, low fat	13A2-023
23	5	Flour, soya, full fat	13A2-024
24	6	Flour, white, plain	02A2-001
25	7	Flour, white, self raising	02A2-010
26	8	Flour, wholemeal, plain	02A2-002
27	9	Flour, wholemeal, self-raising	02A2-011
28	10	Oatmeal/oats, rolled, boiled	02D2-002
29	11	Oatmeal/oats, rolled, raw	02A1-008
30	12	Pasta, boiled	02A1-009
31	13	Pasta, spaghetti, canned	02F4-004
32	14	Rice, brown, boiled	02A1-002
33	15	Rice, white, boiled	02A1-006
34	16	Semolina, polenta, raw	02A1-023

No	1983 Code	1983 Survey Name	NUTTAB 91/92 Code
35	17	Wheatgerm, wheathearts	02A1-011
36	35	Malt bread, malt loaf	02B1-027
37	36	Bread, white	02B1-006
38	37	Bread, wholemeal	02B1-008
39	38	Bread, brown	02B1-001
40	39	Bread, Lebanese	02B1-005
41	40	Rolls, white	02B1-022
42	41	Rolls, brown	02B1-024
43	42	Breadcrumbs, dried	02B1-025
44	43	Muffins, all types	02B2-008C
45	44	Crumpets	02B2-005C
46	45	Bread, fruit	02E2-001
47	46	Buns, fruit	02E2-003
48	47	Chapatis, made without fat	02B1-028
49	60	Breakfast cereals, grapenuts	02D1-014
50	61	Breakfast cereals, All Bran	02D1-006
51	62	Breakfast cereals, Corn Flakes	02D1-004
52	63	Breakfast cereals, Special K	02D1-011
53	64	Breakfast cereals, muesli, untoasted	02D1-008
54	65	Breakfast cereals, muesli, toasted	02D1-009
55	66	Breakfast cereals, Muesli Flake	02D1-015
56	67	Breakfast cereals, Sugar Puffs	02D1-010
57	68	Breakfast cereals, Weetbix	02D1-003
58	69	Breakfast cereals, Puffed Wheat	02D1-012
59	81	Biscuit, chocolate, fancy	02C2-008
60	82	Biscuit, cracker, high fat	02C1-004
61	83	Biscuit, plain, dry, scone	02C1-011
62	84	Biscuit, shortbread style	02C2-028
63	85	Biscuit, sweet, fancy	02C2-019
64	86	Biscuit, sweet, plain	02C2-026
65	87	Biscuit, limits	02C2-031
66	88	Biscuit, homemade	02C2-032
67	89	Pudding, sponge, steam, homemade	02E1-014
68	90	Pudding, sponge, steamed, commercial	02E1-015
69	91	Cake, fruit, commercial/unknown	02E1-006
70	92	Cake, fruit, homemade	02E1-008
71	95	Cake, plain, commercial/unknown	02E1-009
72	96	Cake, plain, homemade	02E1-011

No	1983 Code	1983 Survey Name	NUTTAB 91/92 Code
73	98	Cake, sponge, Victoria	02E1-016
74	99	Cake, sponge, Swiss roll variety	02E1-003
75	100	Cake, sponge, plain, unfilled	02E1-017
76	103	Cake, packet mix, no additions	02E1-018
77	104	Cakes, rock, commercial	02E2-007
78	105	Cakes, rock, homemade	02E2-008
79	106	Pastry, flaky/puff, homemade	02E4-012
80	107	Pastry, flaky/puff, commercial	02E4-003
81	108	Pastry, shortcrust, homemade	02E4-013
82	109	Pastry, shortcrust, commercial	02E4-001
83	110	Pastry, choux, homemade	02E4-014
84	111	Pastry, choux, commercial	02E4-015
85	115	Pancake, commercial or unknown	02E3-005
86	116	Pancake, homemade	02E3-002
87	117	Pikelet/dropscone, commercial	02E3-001
88	118	Pikelet/dropscone, homemade	02E3-001
89	119	Scone, commercial	02E2-005
90	120	Scone, homemade	02E2-006
91	121	Doughnuts, commercial, waffles	02E3-004
92	122	Dumplings	02E2-009
93	123	Pastry, filo-no added fat, cooked	02E4-009
94	124	Doughnuts, homemade, fried	02E3-003
95	141	Bread & butter, pudding, homemade	09D2-003
96	142	Bread & butter pudding, commercial	09D2-003
97	143	Cheesecake, commercial	09D2-001
98	144	Custard, commercial-no egg	09D2-002
99	145	Custard, egg or baked, homemade	09D2-004
100	146	Custard, egg or baked, commercial	09D2-004
101	147	Custard tart, homemade	02E5-013
102	148	Custard tart, commercial	02E5-014
103	149	Fruit crumble, homemade	06E1-010
104	150	Fruit crumble, commercial	06E1-011
105	151	Jelly	12D1-004
106	152	Pie, lemon meringue, homemade	02E5-015
107	153	Pie, lemon meringue, commercial	02E5-016
108	154	Trifle, commercial/restaurant	09D2-005
109	155	Pie, fruit, double crust	02E5-005
110	156	Pie, apple, McDonalds	02E5-001

No	1983 Code	1983 Survey Name	NUTTAB 91/92 Code
111	171	Cheese, camembert	09B1-003
112	172	Cheese, cheddar	09B1-004
113	173	Cheese, cottage/bakers, creamed	09B2-013
114	174	Cheese, cottage/bakers, low fat	09B2-004
115	175	Cheese, cream	09B1-010
116	176	Cheese, Danish blue type	09B1-001
117	177	Cheese, edam type	09B1-011
118	178	Cheese, parmesan	09B1-030
119	179	Cheese, processed	09B1-005
120	180	Cheese, spread	09B1-029
121	181	Cheese, stilton	09B1-034
122	185	Cream, imitation	04A2-010
123	186	Cream, light, light sour	04A2-002
124	187	Cream, scalded or rich	04A2-011
125	188	Cream, thickened, sour	04A2-006
126	189	Cream, canned	04A2-007
127	190	Milk, evaporated, skimmed, unsweetened	09A2-002
128	191	Milk, condensed, whole, sweetened	09A2-005
129	192	Milk, condensed, skimmed, sweetened	09A2-004
130	193	Milk, evaporated, whole, unsweetened	09A2-003
131	194	Milk, whole	09A1-001
132	195	Milk, skimmed	09A1-004
133	196	Milk, 2%fat	09A1-003
134	197	Milk, goats	09A1-005
135	198	Milk powder, whole	09A3-003
136	199	Milk powder, skim, instant	09A3-002
137	200	Thickshake	09A4-001
138	201	Yoghurt, plain	09C1-001
139	202	Yoghurt, flavoured fruit	09C1-002
140	203	Yoghurt, flavoured fruit low fat	09C2-002
141	204	Yoghurt, plain, non-fat	09C2-001
142	205	Ice cream	09D1-002
143	206	Milk, evaporated, unsweetened, 2% fat	09A2-001
144	207	Milk powder, skim, fortified	09A3-002
145	220	Eggs, duck, whole, cooked, no added fat	03A1-009
146	221	Eggs, whole, cooked, no added fat	03A1-006
147	222	Eggs, white, raw	03A1-002
148	223	Eggs, yolk	03A1-001

No	1983 Code	1983 Survey Name	NUTTAB 91/92 Code
149	224	Scotch egg	08F1-009
150	231	Almonds, pistachio nuts	11B1-006
151	232	Brazil nuts	11B1-011
152	233	Chestnuts	11B1-023
153	234	Coconut, desiccated	11B1-018
154	235	Coconut, meat-fresh	11B1-017
155	236	Coconut water, cavity fluid	11B1-024
156	237	Hazelnuts	11B1-008
157	238	Nuts roasted, salted	11B1-001
158	239	Peanut paste, peanut butter	11B1-016
159	240	Walnuts	11B1-005
160	241	Macadamias	11B1-012
161	244	Sunflower seeds	11A1-002
162	245	Poppy seeds	11A1-001
163	246	Pine nuts	11B1-013
164	247	Pumpkin seeds	11A1-002
165	295	Fish burger, McDonalds	02F3-006
166	296	Fish paste	05D1-036
167	297	Anchovy	05A1-015
168	298	Crab, boiled	05C1-013
169	299	Crab, canned	05C1-004C
170	300	Fish cakes, fried	05D1-003
171	301	Fish fingers, fried	05D1-009
172	302	Fish, coated & fried	05D1-001
173	303	Fish, crumbed, fried, homemade	05D1-038
174	304	Fish, steamed	05A1-038
175	305	Herring, grilled	05A1-039
176	306	Kipper, baked	05A1-040
177	307	Lobster, boiled or canned	05C1-007
178	308	Mussels, boiled	05C1-009
179	309	Oysters, raw	05C1-010
180	310	Pilchards, canned in tomato	05D1-039
181	311	Prawns, boiled	05C1-005
182	312	Salmon, canned	05A1-007
183	313	Salmon, smoked	05A1-012
184	315	Sardines, canned in oil	05A1-010
185	316	Sardines, canned in sauce	05D1-040
186	317	Scallops, steamed	05C1-009

No	1983 Code	1983 Survey Name	NUTTAB 91/92 Code
187	318	Shrimp, boiled	05C1-014
188	319	Shrimp, canned	05C1-015
189	320	Tuna, canned in water or brine	05A1-004
190	321	Tuna, canned in oil	05A1-001
191	322	Sardines, canned in oil, drained	05A1-011
192	323	Fish, raw	05A1-041
193	324	Roe, herring, soft, raw	05D1-041
194	325	Abalone, steamed	05C1-016
195	326	Caviar	05D1-006
196	327	Roe, cod, boiled	05D1-042
197	328	Eel, stewed	05B1-002
198	329	Trout, steamed, fresh water	05A1-042
199	330	Fish, oven fried, coated	05D1-012
200	331	Prawns, crumbed or battered	05D2-004
201	332	Caraway seed	11A1-001
202	333	Chicory, raw	13A1-032
203	334	Garlic, garlic powder	13A1-047
204	335	Peas, dried, split, cooked	13A2-016
205	336	Artichokes, globe, boiled	13A1-127C
206	337	Asparagus, cooked	13A1-129C
207	338	Baked beans, canned in sauce	13B2-001
208	339	Beans, butter, boiled	13A1-131C
209	340	Beans, green, raw	13A1-007
210	341	Beans, green, boiled	13A1-008
211	342	Beans, broad, boiled	13A1-130C
212	343	Beans, haricot, cooked	13A2-001
213	346	Beans, mung, as dahl	13A2-025
214	347	Chickpeas, raw	13A2-026
215	348	Beans, red kidney, raw	13A2-002
216	349	Bean sprouts, canned	13A2-027
217	350	Beetroot, boiled	13A1-135C
218	351	Broccoli boiled, fennel, raw	13A1-136C
219	352	Brussels sprouts, boiled	13A1-137C
220	353	Cabbage, all types, raw	13A1-023
221	354	Cabbage, all types, boiled	13A1-139C
222	355	Capsicum, raw	13A1-026
223	356	Capsicum, cooked	13A1-142C
224	357	Carrots, raw	13A1-027

No	1983 Code	1983 Survey Name	NUTTAB 91/92 Code
225	358	Carrots, cooked	13A1-147C
226	359	Carrots, canned	13A1-211
227	360	Cauliflower, raw	13A1-029
228	361	Cauliflower, boiled	13A1-149C
229	362	Cauliflower cheese, homemade	13B1-012
230	363	Cauliflower cheese, commercial	13B1-012
231	364	Celery, raw	13A1-031
232	365	Celery, boiled	13A1-151C
233	366	Corn, boiled	13A1-085
234	367	Cucumber	13A1-040
235	368	Eggplant/aubergine, cooked, nonfat	13A1-158C
236	369	Endive, curly, raw	13A1-045
237	370	Leeks, boiled	13A1-163C
238	371	Lentils, boiled	13A2-018
239	372	Lentils, as masur dahl	13B2-006
240	373	Lettuce	13A1-053
241	374	Marrow, raw	13A1-056
242	375	Marrow, boiled	13A1-164C
243	376	Mushrooms, raw	13A1-059
244	377	Mushrooms, boiled or canned	13A1-214
245	379	Onions, raw	13A1-062
246	380	Onions, boiled	13A1-168C
247	381	Parsley	13A1-064
248	382	Parsnips, boiled	13A1-169C
249	383	Peas, raw, snow peas, raw	13A1-066
250	384	Peas, boiled	13A1-067
251	385	Potato, baked	13A1-113
252	386	Potato, boiled	13A1-110
253	387	Potato, canned	13A1-108
254	388	Potato chips/French fries, commercial	13A1-124
255	389	Potato chips, homemade	13A1-126
256	390	Potato chips, oven fries/grilled	13A1-218
257	391	Potato, instant	13A1-125
258	392	Pumpkin, boiled	13A1-174C
259	393	Radishes	13A1-075
260	394	Peas, canned, processed	13A1-069
261	395	Spinach, boiled	13A1-177C
262	396	Swede, boiled	13A1-181C

No	1983 Code	1983 Survey Name	NUTTAB 91/92 Code
263	397	Sweet potato, cooked, yellow	13A1-182C
264	398	Yam, kumara, cooked	13A1-183C
265	399	Tomato, canned	13A1-226
266	400	Tomato, fried	13A1-231
267	401	Tomato, raw	13A1-090
268	403	Tomato paste	13A1-228
269	404	Turnips, boiled	13A1-186C
270	405	Watercress, raw	13A1-092
271	406	Coleslaw, KFC	13B1-002
272	407	Ratatouille	13B1-013
273	408	Onions, fried,	13A1-232
274	410	Potato, KFC, mashed	13A1-111
275	411	Turnip, raw	13A1-091
276	412	Beetroot, raw	13A1-016
277	413	Celeriac, boiled	13A1-150C
278	414	Mushrooms, canned in sauce	13A1-216
279	415	Mustard and cress, raw	13A1-233
280	418	Guava, canned	06D1-067
281	419	Kiwi fruit, raw	06D1-039
282	420	Apricots, fresh, raw	06C1-002
283	421	Apricots dried	06C1-023
284	422	Apricots, canned sweetened	06C1-013
285	423	Apricots dried, stewed, sweetened	06C1-029
286	424	Apricots, fresh, canned, unsweetened	06C1-009
287	425	Apricots, fresh, stewed, sweetened	06C1-030
288	426	Avocado	13A1-004
289	427	Bananas	06D1-033
290	429	Blackberries, stewed sweetened	06A1-010
291	430	Cherries, raw	06C1-001
292	431	Cherries, stewed/canned, unsweetened	06C1-031
293	432	Currants, dried	06D1-062
294	434	Dates, dried	06C1-021
295	435	Figs dried	06D1-064
296	436	Figs, fresh, raw	06D1-001
297	438	Fruit mince, sweetened	06E1-012
298	439	Fruit pie filling, canned	06D1-068
299	440	Fruit salad, canned, sweetened	06E1-003
300	441	Fruit salad, fresh	06E1-013

No	1983 Code	1983 Survey Name	NUTTAB 91/92 Code
301	443	Gooseberries, stewed, unsweetened	06A1-011
302	445	Fruit salad, canned, in juice	06E1-001
303	446	Grapefruit, canned, sweetened	06B1-012
304	447	Grapefruit, raw	06B1-001
305	448	Lemons, fresh	06B1-002
306	449	Lemon juice, fresh	01B3-018
307	454	Cherries, stewed/canned, sweetened	06C1-028
308	455	Figs, dried, stewed, unsweetened	06D1-069
309	456	Mango, canned, sweetened	06D1-070
310	457	Mango, raw	06D1-004
311	458	Melon, cantaloupe/rockmelon, raw	06D1-040
312	459	Melon, honeydew, raw	06D1-022
313	460	Melon, watermelon, raw	06D1-045
314	461	Nectarines, raw	06C1-003
315	462	Olives	10B1-004
316	463	Oranges, raw	06B1-006
317	464	Passionfruit	06D1-005
318	465	Pawpaw, raw	06D1-006
319	466	Peaches, raw	06C1-004
320	467	Peaches, dried	06C1-032
321	468	Peaches, stewed/canned, sweetened	06C1-019
322	469	Peaches, stewed/canned, unsweetened	06C1-015
323	470	Pears, raw	06D1-044
324	471	Pears canned without sugar	06D1-046
325	472	Pears, canned, sweetened	06D1-050
326	473	Pineapple, canned, sweetened	06D1-052
327	474	Pineapple, raw	06D1-007
328	475	Plums, raw	06C1-005
329	476	Plums, stewed/canned, unsweetened	06C1-033
330	477	Plums, stewed/canned, sweetened	06C1-025
331	479	Prunes, dried	06C1-022
332	480	Prunes, cooked, unsweetened	06C1-034
333	481	Prunes, cooked, sweetened	06C1-035
334	482	Mulberries, raw	06A1-001
335	483	Raisins	06D1-058
336	484	Raspberries, raw	06A1-012
337	485	Raspberries, stewed/canned, sweetened	06A1-005
338	486	Raspberries, stewed, unsweetened	06A1-013

No	1983 Code	1983 Survey Name	NUTTAB 91/92 Code
339	487	Rhubarb, cooked, unsweetened	06D1-071
340	488	Rhubarb, cooked, sweetened	06D1-072
341	489	Strawberries, canned in syrup	06A1-007
342	490	Strawberries, raw	06A1-002
343	491	Sultanas	06D1-063
344	492	Tangerines, raw	06B1-013
345	493	Grapes	06D1-003
346	494	Mandarin oranges, canned	06B1-011
347	495	Quince, stewed, unsweetened	06D1-073
348	496	Apples, raw	06D1-015
349	497	Apples, baked without sugar	06D1-074
350	498	Apples, stewed/canned, unsweetened	06D1-060
351	499	Apples, stewed/canned, sweetened	06D1-075
352	500	Blueberries, raw	06A1-014
353	501	Nectarines, stewed/canned, sweetened	06C1-036
354	502	Nectarines, stewed/canned, unsweetened	06C1-037
355	503	Nectarines, dried	06C1-038
356	505	Red or white currants, raw	06D1-076
357	508	Greengages, stewed, unsweetened	06C1-039
358	510	Pawpaw, canned	06D1-077
359	511	Orange peel, raw	06B1-014
360	512	Cranberries, raw	06A1-015
361	513	Blackcurrants, raw	06D1-078
362	514	Quince, stewed, sweetened	06D1-079
363	515	Lychees, canned	06D1-066
364	517	Cherries, glace, maraschino	12B1-007
365	519	Pears, stewed, sweetened	06D1-080
366	540	Snacks, crackers, rice/prawn	02C1-013
367	541	Snacks, pretzels	10D1-005
368	542	Snacks, crackling	10D1-016
369	543	Snacks, potato crisps, straws	10D1-006
370	544	Snacks, extruded, non-cheese	10D1-003
371	545	Snacks, extruded, cheese flavour	10D1-002
372	546	Snacks, corn chips	10D1-013
373	553	Ice block, sugar only	12A1-001
374	554	Sweetener, artificial, no kjoule	
375	555	Sweetener, lite & low type	
376	556	Honey	12A1-004

No	1983 Code	1983 Survey Name	NUTTAB 91/92 Code
377	557	Marmalade	12B1-001
378	558	Jams	12B1-002
379	559	Sugar	12A1-001
380	560	Glucose, liquid, glucose, powder	12A1-006
381	561	Syrup, golden	12A1-005
382	562	Lemon flavoured spread, commercial	12B1-008
383	563	Lemon curd, homemade	12B1-009
384	564	Marmalade, diabetic	14A1-001
385	565	Jams, diabetic	14A1-002
386	567	Meringue	12D1-001
387	575	Confectionery, milk chocolate	12C1-002
388	576	Confectionery, chocolate, dark	12C1-001
389	577	Confectionery, chocolate, filled	12C1-004
390	578	Confectionery, Mars Bar	12C1-006
391	579	Confectionery, sweets	12C1-017
392	580	Confectionery, Bounty Bar	12C1-007
393	581	Confectionery, bars, carob	12C1-019
394	582	Confectionery, bars, oilseed/nut	12C1-014
395	583	Confectionery, bars, fruit	12C1-020
396	584	Confectionery, liquorice	12C1-009
397	585	Confectionery, toffees, mixed	12C1-010
398	588	Popcorn, plain	10D1-018
399	595	Beverage flavouring, drinking chocolate	01B1-006
400	596	Beverage flavouring, cocoa powder	01B1-002
401	597	Beverage flavouring, horlicks	01B1-003
402	598	Beverage flavouring, ovaltine	01B1-005
403	599	Beverage flavouring, complan	01B1-003
404	600	Cider, non alcoholic	01B3-004
405	601	Coffee, instant, dry	01B1-001
406	602	Coffee, instant, made up, black	01B1-009
407	603	Coffee & chickory, concentrate	01B1-010
408	604	Cordial concentrate, lime, other	01B2-004
409	605	Cordial concentrate, ribena	01B2-002
410	606	Cordial concentrate, rosehip	01B2-020
411	607	Fruit juice drinks	01B3-010
412	608	Fruit juice, apple juice	01B3-005
413	609	Fruit juice, apricot nectar	01B3-009
414	610	Fruit juice, grape, pear	01B3-007

No	1983 Code	1983 Survey Name	NUTTAB 91/92 Code
415	611	Fruit juice, grapefruit, unsweetened	01B3-006
416	612	Fruit juice, grapefruit, sweetened	01B3-019
417	613	Fruit juice, orange juice	01B3-003
418	614	Fruit juice, pineapple juice	01B3-013
419	615	Vegetable juice, tomato juice	01B3-014
420	616	Vegetable juice	01B3-015
421	617	Cola based drinks	01B2-015
422	618	Lemonade	01B2-016
423	619	Mineral water with fruit juice	01B2-014
424	620	Tea, herbal, made up	01B1-011
425	621	Tea, made up	01B1-012
426	622	Water	01B1-013
427	623	Bovril	10F4-004
428	624	Soft drinks, tonic water	01B2-021
429	625	Coffee, made up, decaffeinated	01B1-014
430	626	Coffee substitute, made up	01B1-015
431	627	Beverage flavouring, carob powder	01B1-016
432	628	Coffee substitute, dry powder	01B1-001
433	629	Mineral water	01B2-013
434	630	Soft drinks, low energy	14A1-003
435	631	Cordial concentrate, low energy	14A1-004
436	632	Soda water	01B2-022
437	633	Jelly, low energy	14A1-005
438	634	Mineral water, low energy	14A1-006
439	640	Beer, de-alcoholized	01A1-008
440	641	Beer, extra stout; stout, unknown	01A1-005
441	642	Beer, medium alcohol	01A1-001
442	643	Beer, medium alcohol diet ales	01A1-003
443	644	Beer, common type; unknown type	01A1-002
444	645	Beer, low alcohol	01A1-007
445	646	Beer, very low alcohol	01A1-008
446	647	Beer, very strong stout	01A1-005
447	648	Spirits	01A3-002
448	649	Cider, dry, alcoholic	01A3-008
449	650	Cider, sweet	01A3-009
450	652	Liqueurs	01A3-003
451	653	Port	01A2-007
452	654	Sherry	01A2-009

No	1983 Code	1983 Survey Name	NUTTAB 91/92 Code
453	655	Vermouth, dry	01A3-010
454	656	Vermouth, sweet	01A3-011
455	657	Wine, red	01A2-005
456	658	Wine, rose	01A2-006
457	659	Wine, white dry	01A2-002
458	660	Wine, white sparkling	01A2-001
459	661	Wine, white sweet	01A2-004
460	664	Dressing, mayonnaise, rich, commercial	10F2-001
461	665	Sauce, chilli	10A1-013
462	666	Curry powder	10E1-003
463	667	Sauce, soy	10A1-005
464	668	Horseradish, raw	13A1-230
465	669	Sauce, oyster	10A1-012
466	671	Pickles in brine	10B1-003
467	672	Pickles in brine, sweetened	10B1-005
468	673	Chutney, vegetable; relish	10B1-001
469	674	Chutney, fruit	10B1-002
470	675	Sauce, white sweet	10A2-002
471	676	Sauce, tomato, commercial	10A1-003
472	677	Sauce, tomato	10A1-006
473	678	Sauce, white savoury	10A1-008
474	679	Dressing, commercial, French	10F2-005
475	680	Dressing, French, homemade	10F2-005
476	681	Dressing, commercial, Italian	10F2-007
477	682	Dressing, homemade, Italian	10F2-007
478	683	Dressing, coleslaw	10F2-003
479	684	Dressing, mayonnaise, light	10F2-002
480	685	Dressing, mayonnaise, homemade	10F2-002
481	686	Soup, canned/homemade, broth	10C1-016
482	687	Soup, light or vegetable style	10C1-024
483	688	Soup, medium	10C1-010
484	689	Soup, tomato, canned/homemade	10C1-002
485	690	Soup, pea/bean or lentil, homemade	10C1-006
486	691	Stock, vegetable	10C1-020
487	692	Sauce, hp	10A1-009
488	693	Sauce, cheese	10A1-010
489	694	Sauce, onion	10A1-011
490	696	Gelatin, dry powder	10F6-004

No	1983 Code	1983 Survey Name	NUTTAB 91/92 Code
491	697	Marmite/promite	10F4-003
492	698	Vegemite	10F4-001
493	700	Stock cubes	10F6-003
494	701	Yeast, compressed, bakers	10F3-001
495	702	Yeast, dried	10F3-002
496	703	Dessert topping, cream based	04A2-012
497	704	Coffee whitener	10F6-009
498	705	Kelp	13A2-023
499	706	Gelatin as protein source	10F6-004
500	709	Chiko/spring roll, homemade, fried	02E6-001
501	710	Pizza, homemade	02F1-009
502	711	Pie, meat, individual	02E6-008
503	712	Pie, meat, party	02E6-009
504	713	Pasty, individual	02E6-006
505	714	Chiko/spring roll, commercial	02E6-004
506	715	Pie, pork	02E6-014
507	716	Sausage roll, individual	02E6-005
508	717	Sausage roll, party	02E6-003
509	718	Pizza, non-Pizza Hut	02F1-010
510	719	Pizza, Pizza Hut	02F1-006
511	720	Chicken, KFC barbecue	08C1-015
512	721	Chicken croquette	08F1-001
513	722	Chicken, KFC fried	08E1-005
514	723	Chicken, KFC fried, thigh, wing	08E1-005
515	725	Hamburgers, McDonalds, Big Mac	02F3-003
516	726	Hamburgers, McDonalds, cheese	02F3-004
517	727	Hamburgers, McDonalds, junior	02F3-007
518	728	Hamburgers, McDonalds, Mcfeast	02F3-008
519	729	Hamburgers, plain	02F3-009
520	730	Hamburgers, cheese, cheeseburger	02F3-012
521	800	Chilli con carne	08F1-013
522	801	Beef, stewed, (onion, carrot)	08F1-012
523	802	Pie, meat, family, commercial	02E6-007
524	803	Moussaka	08F1-015
525	804	Meat, curried	08F1-011
526	805	Lamb, stew, mutton stew	08F1-014
527	806	Quiche, homemade	02E6-013
528	807	Quiche, commercial	02E6-010

No	1983 Code	1983 Survey Name	NUTTAB 91/92 Code
529	808	Beef & gravy, stewed, canned	08F1-011
530	809	Cheese soufflé, homemade	03B1-002
531	812	Macaroni cheese, homemade	09D2-006
532	813	Macaroni cheese, commercial	09D2-006
533	814	Pie, spinach	02E6-011
534	815	Sauce, bolognese	08F1-016
535	816	Beef, stewed (onion, carrot, potato)	08F1-012
536	895	Shepherd's pie	08F1-017
537	904	Polony	08E3-009
538	905	Brawn	08E3-015
539	906	Bacon, breakfast/pressed, grilled	08E3-046
540	908	Bacon, rashers, grilled, untrimmed	08E3-040
541	909	Bacon, rashers, grilled, trimmed	08E3-037
542	910	Bacon, rashers, fried, untrimmed	08E3-041
543	911	Bacon, rashers, fried, trimmed	08E3-043
544	912	Beef burger, beef rissole, fried	08F1-006
545	913	Chuck steak, trimmed, stewed	08A1-013
546	914	Chuck steak, untrimmed, stewed	08A1-014
547	915	Beef, mince, stewed	08A1-071
548	916	Beef, sirloin, roast, untrimmed	08A1-053
549	917	Beef, sirloin, roast, trimmed	08A1-054
550	918	Beef, topside, roast, untrimmed	08A1-058
551	919	Beef, topside, roast, trimmed	08A1-059
552	920	Beef, silverside, corned, untrimmed, boiled	08A1-039
553	921	Beef, silverside, corned, trimmed, boiled	08A1-040
554	922	Beef, steak, grilled, untrimmed	08A1-118
555	923	Beef, steak, grilled, trimmed	08A1-119
556	924	Beef, steak, fried, untrimmed	08A1-116
557	925	Beef, steak, fried, trimmed	08A1-117
558	926	Black pudding	08E2-005
559	927	Beef, mince, raw	08A1-070
560	928	Chicken, meat only, roast	08C1-013
561	929	Chicken, meat & skin, roast	08C1-012
562	930	Chicken, light meat, only, roast	08C1-002
563	931	Chicken, dark meat only, roast	08C1-006
564	932	Duck, roast, meat only	08C1-019
565	933	Duck, roast, meat & skin	08C1-018
566	934	Frankfurter, not canned	08E2-004

No	1983 Code	1983 Survey Name	NUTTAB 91/92 Code
567	936	Ham steak, grilled	08E3-024
568	937	Cured ham	08E3-007
569	938	Luncheon meat	08E3-011
570	939	Corned beef, canned	08E3-017
571	941	Heart, roasted	08D1-016
572	942	Kidney, cooked	08D1-006
573	943	Lamb, chops, loin, untrimmed, grilled	08A2-016
574	944	Lamb, chops, loin, trimmed, grilled	08A2-017
575	945	Lamb, chops, forequarter, untrimmed, stewed	08A2-072
576	946	Lamb, chops, forequarter, trimmed, stewed	08A2-071
577	947	Lamb, leg, roast, untrimmed	08A2-011
578	948	Lamb, leg, roast, trimmed	08A2-012
579	949	Lamb, shoulder, roast, untrimmed	08A2-031
580	950	Lamb, shoulder, roast, trimmed	08A2-032
581	951	Liver, cooked, coated in flour	08D1-020
582	952	Liver, chicken, flour coated	08D1-030
583	953	Liver sausage	08E4-001
584	954	Meat paste	08E4-003
585	955	Oxtail, stewed	08D1-008
586	956	Pigeon, roast, meat only	08C2-001
587	957	Pork, belly rashers, untrimmed, grilled	08A3-058
588	958	Pork, chops, midloin, untrimmed, grilled	08A3-029
589	959	Pork, chops, midloin, trimmed, grilled	08A3-030
590	960	Pork, leg, untrimmed	08A3-014
591	961	Pork, leg, trimmed	08A3-015
592	962	Rabbit, stewed	08B1-003
593	963	Hare, stewed	08B1-002
594	964	Salami	08E3-048
595	965	Sausage, beef	08E2-008
596	966	Sausage, pork	08E2-014
597	967	Tongue, stewed	08D1-022
598	968	Tongue, pickled, canned, lamb	08D1-029
599	969	Turkey, roast, meat only	08C1-023
600	970	Turkey, roast, meat & skin	08C1-022
601	971	Turkey, roast, light meat only	08C1-021
602	972	Turkey, roast, dark meat only	08C1-020
603	973	Veal, crumbed & fried	08E1-008
604	974	Veal, roast	08A4-008

No	1983 Code	1983 Survey Name	NUTTAB 91/92 Code
605	975	Venison, roast	08B1-001
606	976	Tripe, stewed	08F1-010
607	977	Pork, crackling	10D1-016
608	979	Liver, cooked, not flour coated	08D1-004
609	980	Brains, lamb, boiled	08D1-014
610	981	Liver, cooked, chicken, not flour coated	08D1-031
611	982	Sweetbreads, boiled	08D1-032

Source: SSDA 616, NUTTAB 91/92, private documentation on 1983 survey codes

Appendix D – Estimated 24-hour intake of nutrients for adults, 1983 and 1995

Energy

Table D.1 Comparison of estimated 24-hour intake of ENERGY for adults aged 25-64 years, 1983 and 1995

				95% CI mean		
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake Energy (kJ)
Males						
1983	3,021	10,824	3,898	10,685	10,963	10,459
1995 comparable	1,114	11,195	4,070	10,956	11,434	10,625
Females						
1983	3,233	7,299	2,772	7,204	7,395	6,983
1995 comparable	1,253	7,624	2,899	7,464	7,785	7,341

Source: SSDA 616, 1995 NNS and AFNMU

Protein

Table D.2 Comparison of estimated 24-hour intake of PROTEIN for adults aged 25-64 years, 1983 and 1995

				95% CI mean		
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake Protein (g)
Males						
1983	3,021	110	44.4	108	111	104
1995 comparable	1,114	112	47.1	109	114	105
Females						
1983	3,233	76.8	31.4	75.8	77.9	73.1
1995 comparable	1,253	75.6	32.2	73.8	77.4	72.3

Source: SSDA 616, 1995 NNS and AFNMU

Total carbohydrates

Table D.3 Comparison of estimated 24-hour intake of TOTAL CARBOHYDRATES for adults aged 25-64 years, 1983 and 1995

	Sample size	Mean intake Total carbo-hydrates (g)	Standard deviation	95% CI mean Lower	95% CI mean Upper	Median intake Total carbo-hydrates (g)
Males						
1983	3,021	260	106	256	264	247
1995 comparable	1,114	304	124	296	311	289
Females						
1983	3,233	184	81	181	186	176
1995 comparable	1,253	214	86	210	219	203

Source: SSDA 616, 1995 NNS and AFNMU

Total starch

Table D.4 Comparison of estimated 24-hour intake of TOTAL STARCH for adults aged 25-64 years, 1983 and 1995

	Sample size	Mean intake Total starch (g)	Standard deviation	95% CI mean Lower	95% CI mean Upper	Median intake Total starch (g)
Males						
1983	3,021	145	66.6	143	148	135
1995 comparable	1,114	173	80.0	168	178	161
Females						
1983	3,233	94.2	46.7	92.6	95.8	86.8
1995 comparable	1,253	119	56.0	115	122	111

Source: SSDA 616, 1995 NNS and AFNMU

Total sugars

Table D.5 Comparison of estimated 24-hour intake of TOTAL SUGARS for adults aged 25-64 years, 1983 and 1995

	Sample size	Mean intake Total sugars (g)	Standard deviation	95% CI mean Lower	95% CI mean Upper	Median intake Total sugars (g)
Males						
1983	3,021	115	66.3	112	117	102
1995 comparable	1,114	129	75.0	124	133	116
Females						
1983	3,233	89.0	50.9	87.2	90.8	80.2
1995 comparable	1,253	94.4	53.7	91.4	97.4	84.5

Source: SSDA 616, 1995 NNS and AFNMU

Total fat

Table D.6 Comparison of estimated 24-hour intake of TOTAL FAT for adults aged 25-64 years, 1983 and 1995

	Sample size	Mean intake Total fat (g)	Standard deviation	95% CI mean Lower	95% CI mean Upper	Median intake Total fat (g)
Males						
1983	3,021	106.1	49.9	104.3	107.9	100.4
1995 comparable	1,114	100.2	48.9	97.3	103.0	91.5
Females						
1983	3,233	72.4	35.3	71.2	73.6	67.2
1995 comparable	1,253	68.6	35.5	66.6	70.6	64.0

Source: SSDA 616, 1995 NNS and AFNMU

Cholesterol

Table D.7 Comparison of estimated 24-hour intake of CHOLESTEROL for adults aged 25-64 years, 1983 and 1995

	Sample size	Mean intake Cholesterol (mg)	Standard deviation	95% CI mean Lower	95% CI mean Upper	Median intake Cholesterol (mg)
Males						
1983	3,021	412	268	402	422	353
1995 comparable	1,114	355	238	341	369	304
Females						
1983	3,233	309	251	300	318	256
1995 comparable	1,253	241	179	231	251	201

Source: SSDA 616, 1995 NNS and AFNMU

Alcohol

Table D.8 Comparison of estimated 24-hour intake of ALCOHOL for adults aged 25-64 years, 1983 and 1995

	Sample size	Mean intake Alcohol (g)	Standard deviation	95% CI mean Lower	95% CI mean Upper	Median intake Alcohol (g)
Males						
1983	3,021	23.8	37.4	22.4	25.1	6.2
1995 comparable	1,114	18.0	32.4	16.1	19.9	0.00
Females						
1983	3,233	8.7	17.7	8.1	9.3	0.0
1995 comparable	1,253	7.6	22.1	6.41	8.86	0

Source: SSDA 616, 1995 NNS and AFNMU

Dietary fibre

Table D.9 Comparison of estimated 24-hour intake of DIETARY FIBRE for adults aged 25-64 years, 1983 and 1995

				95% CI mean		
	Sample size	Mean intake Dietary fibre (g)	Standard deviation	Lower	Upper	Median intake Dietary fibre (g)
Males						
1983	3,021	24.5	12.9	24.0	24.9	21.6
1995 comparable	1,114	26.9	12.9	26.2	27.7	24.7
Females						
1983	3,233	19.4	10.4	19.1	19.8	17.8
1995 comparable	1,253	20.8	9.7	20.3	21.4	19.5

Source: SSDA 616, 1995 NNS and AFNMU

Vitamin A – retinol equivalent

Table D.10 Comparison of estimated 24-hour intake of VITAMIN A – RETINOL EQUIVALENT for adults aged 25-64 years, 1983 and 1995

				95% CI mean		
	Sample size	Mean intake Vit A-retinol (µg)	Standard deviation	Lower	Upper	Median intake Vit A-retinol (µg)
Males						
1983	3,021	1,427	4,863	1,253	1,600	915
1995 comparable	1,114	1,387	3,515	1,180	1,593	992
Females						
1983	3,233	1,737	7,483	1,479	1,995	742
1995 comparable	1,253	1,118	2,570	976	1,260	760

Source: SSDA 616, 1995 NNS and AFNMU

Thiamin

Table D.11 Comparison of estimated 24-hour intake of THIAMIN for adults aged 25-64 years, 1983 and 1995

				95% CI mean		
	Sample size	Mean intake Thiamin (mg)	Standard deviation	Lower	Upper	Median intake Thiamin (mg)
Males						
1983	3,021	1.47	0.85	1.44	1.50	1.31
1995 comparable	1,114	1.94	1.20	1.87	2.01	1.69
Females						
1983	3,233	1.10	0.64	1.08	1.12	0.99
1995 comparable	1,253	1.35	0.76	1.31	1.40	1.17

Source: SSDA 616, 1995 NNS and AFNMU

Riboflavin

Table D.12 Comparison of estimated 24-hour intake of RIBOFLAVIN for adults aged 25-64 years, 1983 and 1995

				95% CI mean		
	Sample size	Mean intake Riboflavin (mg)	Standard deviation	Lower	Upper	Median intake Riboflavin (mg)
Males						
1983	3,021	2.08	1.29	2.04	2.13	1.85
1995 comparable	1,114	2.32	1.41	2.24	2.40	1.99
Females						
1983	3,233	1.66	1.40	1.61	1.71	1.39
1995 comparable	1,253	1.74	1.00	1.69	1.80	1.53

Source: SSDA 616, 1995 NNS and AFNMU

Niacin equivalent

Table D.13 Comparison of estimated 24-hour intake of NIACIN EQUIVALENT for adults aged 25-64 years, 1983 and 1995

				95% CI mean		
	Sample size	Mean intake Niacin equiv (mg)	Standard deviation	Lower	Upper	Median intake Niacin equiv (mg)
Males						
1983	3,021	47.3	19.2	46.6	48.0	44.8
1995 comparable	1,114	51.5	21.1	50.3	52.8	48.2
Females						
1983	3,233	33.2	14.1	32.7	33.7	31.2
1995 comparable	1,253	34.7	14.1	33.9	35.5	33.0

Source: SSDA 616, 1995 NNS and AFNMU

Vitamin C

Table D.14 Comparison of estimated 24-hour intake of VITAMIN C for adults aged 25-64 years, 1983 and 1995

				95% CI mean		
	Sample size	Mean intake Vit C (mg)	Standard deviation	Lower	Upper	Median intake Vit C (mg)
Males						
1983	3,021	152	141	147	157	115
1995 comparable	1,114	140	119	133	147	112
Females						
1983	3,233	127	106	123	130	100
1995 comparable	1,253	118	99	112	123	92.4

Source: SSDA 616, 1995 NNS and AFNMU

Iron

Table D.15 Comparison of estimated 24-hour intake of IRON for adults aged 25-64 years, 1983 and 1995

				95% CI mean		
	Sample size	Mean intake Iron (mg)	Standard deviation	Lower	Upper	Median intake Iron (mg)
Males						
1983	3,021	15.0	6.6	14.8	15.3	14.0
1995 comparable	1,114	16.6	7.1	16.2	17.0	15.7
Females						
1983	3,233	10.6	5.3	10.4	10.8	9.7
1995 comparable	1,253	12.2	5.7	11.9	12.5	11.3

Source: SSDA 616, 1995 NNS and AFNMU

Calcium

Table D.16 Comparison of estimated 24-hour intake of CALCIUM for adults aged 25-64 years, 1983 and 1995

				95% CI mean		
	Sample size	Mean intake Calcium (mg)	Standard deviation	Lower	Upper	Median intake Calcium (mg)
Males						
1983	3,021	836	485	819	853	741
1995 comparable	1,114	984	600	949	1,019	878
Females						
1983	3,233	682	472	666	698	609
1995 comparable	1,253	763	443	738	788	671

Source: SSDA 616, 1995 NNS and AFNMU

Zinc

Table D.17 Comparison of estimated 24-hour intake of ZINC for adults aged 25-64 years, 1983 and 1995

				95% CI mean		
	Sample size	Mean intake Zinc (mg)	Standard deviation	Lower	Upper	Median intake Zinc (mg)
Males						
1983	3,021	14.7	8.8	14.4	15.0	13.0
1995 comparable	1,114	14.6	7.8	14.1	15.0	13.0
Females						
1983	3,233	10.5	7.5	10.3	10.8	9.1
1995 comparable	1,253	9.9	6.7	9.6	10.3	8.9

Source: SSDA 616, 1995 NNS and AFNMU

Magnesium

Table D.18 Comparison of estimated 24-hour intake of MAGNESIUM for adults aged 25-64 years, 1983 and 1995

	Sample size	Mean intake Magnesium (mg)	Standard deviation	95% CI mean Lower	95% CI mean Upper	Median intake Magnesium (mg)
Males						
1983	3,021	362	136	357	367	344
1995 comparable	1,114	390	151	381	399	364
Females						
1983	3,233	268	110	264	272	254
1995 comparable	1,253	291	116	284	297	272

Source: SSDA 616, 1995 NNS and AFNMU

Appendix E – Estimated 24-hour intake of foods and beverages for adults, 1983 and 1995

The food groups are listed in alphabetical order.

Alcoholic beverages

Table E.1 Comparison of estimated 24-hour intake of ALCOHOLIC BEVERAGES for adults aged 25-64 years, 1983 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Males							
1983	3,021	456	799	427	484	60	52.8
1995 comparable	1,114	369	743	325	413	0	39.2
Females							
1983	3,233	100	220	93	108	0	34.1
1995 comparable	1,253	100	307	83	117	0	24.0

Source: SSDA 616, 1995 NNS and AFNMU

Cereals and cereal products

Table E.2 Comparison of estimated 24-hour intake of CEREALS AND CEREAL PRODUCTS for adults aged 25-64 years, 1983 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Males							
1983	3,021	228	188	222	235	180	96.8
1995 comparable	1,114	271	254	256	286	189	92.4
Females							
1983	3,233	151	125	147	156	119	96.8
1995 comparable	1,253	192	181	182	202	134	94.8

Source: SSDA 616, 1995 NNS and AFNMU

Cereal-based products and dishes

Table E.3 Comparison of estimated 24-hour intake of CEREAL-BASED PRODUCTS AND DISHES for adults aged 25-64 years, 1983 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Males							
1983	3,021	91	130	86	95	34	66.1
1995 comparable	1,114	164	228	150	177	82	70.1
Females							
1983	3,233	58	77	55	60	26	70.0
1995 comparable	1,253	111	162	102	120	42	70.8

Source: SSDA 616, 1995 NNS and AFNMU

Confectionery

Table E.4 Comparison of estimated 24-hour intake of CONFECTIONERY for adults aged 25-64 years, 1983 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Males							
1983	3,021	7	23	7	8	0	19.8
1995 comparable	1,114	9	26	8	11	0	20.5
Females							
1983	3,233	7	21	7	8	0	23.6
1995 comparable	1,253	9	29	8	11	0	22.9

Source: SSDA 616, 1995 NNS and AFNMU

Egg products and dishes

Table E.5 Comparison of estimated 24-hour intake of EGG PRODUCTS AND DISHES for adults aged 25-64 years, 1983 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Males							
1983	3,021	23	45	21	24	0	32.6
1995 comparable	1,114	14	44	11	16	0	16.4
Females							
1983	3,233	17	32	15	18	0	33.4
1995 comparable	1,253	11	35	9	13	0	14.0

Source: SSDA 616, 1995 NNS and AFNMU

Fats and oils

Table E.6 Comparison of estimated 24-hour intake of FATS AND OILS for adults aged 25-64 years, 1983 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Males							
1983	3,021	23	24	22	24	18	82.3
1995 comparable	1,114	14	17	13	15	11	73.8
Females							
1983	3,233	15	15	15	16	10	84.0
1995 comparable	1,253	9	12	8	10	6	73.8

Source: SSDA 616, 1995 NNS and AFNMU

Fish and seafood products and dishes

Table E.7 Comparison of estimated 24-hour intake of FISH AND SEAFOOD PRODUCTS AND DISHES for adults aged 25-64 years, 1983 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Males							
1983	3,021	22	60	19	24	0	19.0
1995 comparable	1,114	30	88	25	35	0	19.1
Females							
1983	3,233	18	49	16	20	0	20.1
1995 comparable	1,253	26	77	21	30	0	20.4

Source: SSDA 616, 1995 NNS and AFNMU

Fruit products and dishes

Table E.8 Comparison of estimated 24-hour intake of FRUIT PRODUCTS AND DISHES for adults aged 25-64 years, 1983 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Males							
1983	3,021	173	259	164	183	71	58.6
1995 comparable	1,114	139	204	127	151	38	52.7
Females							
1983	3,233	181	215	174	188	110	70.0
1995 comparable	1,253	133	163	124	142	69	60.0

Source: SSDA 616, 1995 NNS and AFNMU

Legumes and pulse products and dishes

Table E.9 Comparison of estimated 24-hour intake of LEGUMES AND PULSE PRODUCTS AND DISHES for adults aged 25-64 years, 1983 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Males							
1983	3,021	6	40	5	8	0	5.3
1995 comparable	1,114	15	64	11	19	0	9.6
Females							
1983	3,233	4	24	3	5	0	5.4
1995 comparable	1,253	10	42	7	12	0	8.3

Source: SSDA 616, 1995 NNS and AFNMU

Meat, poultry and game products and dishes

Table E.10 Comparison of estimated 24-hour intake of MEAT, POULTRY AND GAME PRODUCTS AND DISHES for adults aged 25-64 years, 1983 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Males							
1983	3,021	210	171	204	217	179	90.7
1995 comparable	1,114	205	217	192	218	152	84.0
Females							
1983	3,233	128	105	124	132	111	86.2
1995 comparable	1,253	115	132	107	122	81	74.9

Source: SSDA 616, 1995 NNS and AFNMU

Milk products and dishes

Table E.11 Comparison of estimated 24-hour intake of MILK PRODUCTS AND DISHES for adults aged 25-64 years, 1983 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Males							
1983	3,021	317	284	306	327	259	95.3
1995 comparable	1,114	324	336	305	344	250	93.7
Females							
1983	3,233	260	219	253	268	207	95.3
1995 comparable	1,253	245	234	232	258	184	94.1

Source: SSDA 616, 1995 NNS and AFNMU

Non-alcoholic beverages (excluding plain drinking water)

Table E.12 Comparison of estimated 24-hour intake of NON-ALCOHOLIC BEVERAGES (excluding plain drinking water) for adults aged 25-64 years, 1983 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Males							
1983	3,021	1,108	649	1,071	1,144	1,025	98.4
1995 comparable	1,114	1,274	830	1,225	1,323	1,160	96.8
Females							
1983	3,233	1,067	561	1,032	1,101	1,004	98.6
1995 comparable	1,253	1,159	669	1,122	1,196	1,079	97.8

Source: SSDA 616, 1995 NNS and AFNMU

Seed and nut products and dishes

Table E.13 Comparison of estimated 24-hour intake of SEED AND NUT PRODUCTS AND DISHES for adults aged 25-64 years, 1983 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Males							
1983	3,021	7	21	6	8	0	20.8
1995 comparable	1,114	5	20	4	6	0	14.2
Females							
1983	3,233	5	14	4	5	0	21.9
1995 comparable	1,253	3	13	3	4	0	13.8

Source: SSDA 616, 1995 NNS and AFNMU

Snack foods

Table E.14 Comparison of estimated 24-hour intake of SNACK FOODS for adults aged 25-64 years, 1983 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Males							
1983	3,021	2	9	1	2	0	4.9
1995 comparable	1,114	4	16	3	5	0	8.2
Females							
1983	3,233	1	7	1	1	0	4.9
1995 comparable	1,253	3	15	2	4	0	7.2

Source: SSDA 616, 1995 NNS and AFNMU

Soup

Table E.15 Comparison of estimated 24-hour intake of SOUP for adults aged 25-64 years, 1983 and 1995

	Sample size	Mean intake (g)	Standard deviation	95% CI mean Lower	95% CI mean Upper	Median intake (g)	Proportion consuming (%)
Males							
1983	3,021	75	197	68	82	0	17.9
1995 comparable	1,114	63	182	52	74	0	13.1
Females							
1983	3,233	60	152	55	66	0	18.3
1995 comparable	1,253	80	200	69	91	0	18.3

Source: SSDA 616, 1995 NNS and AFNMU

Sugar products and dishes

Table E.16 Comparison of estimated 24-hour intake of SUGAR PRODUCTS AND DISHES for adults aged 25-64 years, 1983 and 1995

	Sample size	Mean intake (g)	Standard deviation	95% CI mean Lower	95% CI mean Upper	Median intake (g)	Proportion consuming (%)
Males							
1983	3,021	28	34	27	29	18	81.4
1995 comparable	1,114	22	30	20	24	13	73.3
Females							
1983	3,233	18	26	17	18	10	71.7
1995 comparable	1,253	15	31	13	17	6	61.6

Source: SSDA 616, 1995 NNS and AFNMU

Vegetable products and dishes

Table E.17 Comparison of estimated 24-hour intake of VEGETABLE PRODUCTS AND DISHES for adults aged 25-64 years, 1983 and 1995

	Sample size	Mean intake (g)	Standard deviation	95% CI mean Lower	95% CI mean Upper	Median intake (g)	Proportion consuming (%)
Males							
1983	3,021	298	236	289	306	267	91.2
1995 comparable	1,114	284	244	270	299	226	89.0
Females							
1983	3,233	239	176	233	245	215	92.4
1995 comparable	1,253	229	190	219	240	202	88.7

Source: SSDA 616, 1995 NNS and AFNMU

Appendix F – Estimates of physical measurement for adults, 1983 and 1995

Height

Table F.1 Comparison of estimated HEIGHT for adults aged 25-64 years, 1983 and 1995

				95% CI mean		
	Sample size	Mean (cm)	Standard deviation	Lower	Upper	Median (cm)
Males						
1983	3,019	175	7.1	174	175	175
1995 comparable	1,107	174	6.9	174	175	174
Females						
1983	3,233	161	6.3	161	162	162
1995 comparable	1,207	162	6.6	162	163	162

Source: SSDA 414, SSDA 616, 1995 NNS and AFNMU

Weight

Table F.2 Comparison of estimated WEIGHT for adults aged 25-64 years, 1983 and 1995

				95% CI mean		
	Sample size	Mean (kg)	Standard deviation	Lower	Upper	Median (kg)
Males						
1983	3,019	77.6	11.6	77.2	78.0	76.8
1995 comparable	1,107	82.8	13.3	82.1	83.6	81.3
Females						
1983	3,233	63.4	11.5	63.0	63.8	61.5
1995 comparable	1,203	70.3	14.6	69.5	71.1	68.1

Source: SSDA 414, SSDA 616, 1995 NNS and AFNMU

Body mass index (BMI)

Table F.3 Comparison of estimated BODY MASS INDEX (a) estimates for adults aged 25-64 years, 1983 and 1995

				95% CI mean		
	Sample size	Mean	Standard deviation	Lower	Upper	Median
Males						
1983	3,019	25.5	3.5	25.3	25.6	25.1
1995 comparable	1,107	27.2	3.8	27.0	27.5	26.8
Females						
1983	3,233	24.3	4.4	24.2	24.5	23.4
1995 comparable	1,202	26.8	5.4	26.5	27.1	25.6

(a) ratio of weight in kilograms divided by the square of height in metres

Source: SSDA 414, SSDA 616, 1995 NNS and AFNMU

Energy intake over basal metabolic rate (EI/BMR)

Table F.4 Comparison of estimated ENERGY INTAKE OVER BASAL METABOLIC RATE (b) for adults aged 25-64 years, 1983 and 1995

				95% CI mean		
	Sample size	Mean (mJ)	Standard deviation	Lower	Upper	Median (mJ)
Males						
1983	3,019	1.48	0.53	1.46	1.50	1.43
1995 comparable	1,107	1.44	0.53	1.41	1.47	1.36
Females						
1983	3,233	1.29	0.50	1.28	1.31	1.25
1995 comparable	1,207	1.26	0.51	1.23	1.29	1.19

(b) energy intake expressed as a ratio of estimated energy expended at rest based on weight, age and sex (refer glossary)

Source: SSDA 414, SSDA 616, 1995 NNS and AFNMU

Appendix G – Comparison of subsets of the 1995 NNS survey (children) for each nutrient

Data relating to intake of alcohol are excluded because intakes were reported by only a very small number of children.

Energy

Table G.1 Comparison of estimated 24-hour intake of ENERGY for subsets of the 1995 NNS survey (children)

	Boys			Girls		
	Sample size	Mean intake Energy (kJ)	Standard deviation	Sample size	Mean intake Energy (kJ)	Standard deviation
Total NNS95 10-15 years of age	**544**	**11,088**	**3,975**	**488**	**8,488**	**2,740**
Subset 1 - Season	290	11,135	3,581	237	8,593	2,486
Subset 2 - Day	402	10,928	3,784	352	8,395	2,568
Subset 3 - 'Comparable' sample	**220**	**11,164**	**3,441**	**176**	**8,519**	**2,473**

Source: 1995 NNS CURF, AFNMU

Protein

Table G.2 Comparison of estimated 24-hour intake of PROTEIN for subsets of the 1995 NNS survey (children)

	Boys			Girls		
	Sample size	Mean intake Protein (g)	Standard deviation	Sample size	Mean intake Protein (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**95.8**	**38.8**	**488**	**72.8**	**29.5**
Subset 1 - Season	290	98.9	36.4	237	74.5	28.9
Subset 2 - Day	402	93.8	37.3	352	72.0	27.9
Subset 3 - 'Comparable' sample	**220**	**98.3**	**33.8**	**176**	**74.3**	**26.3**

Source: 1995 NNS CURF, AFNMU

Total carbohydrate

Table G.3 Comparison of estimated 24-hour intake of TOTAL CARBOHYDRATE for subsets of the 1995 NNS survey (children)

	Boys			Girls		
	Sample size	Mean intake Total carbo-hydrate (g)	Standard deviation	Sample size	Mean intake Total carbo-hydrate (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**345**	**134**	**488**	**264**	**89.0**
Subset 1 - Season	290	342	124	237	264	78.8
Subset 2 - Day	402	339	123	352	260	81.8
Subset 3 - 'Comparable' sample	**220**	**341**	**113**	**176**	**257**	**75.4**

Source: 1995 NNS CURF, AFNMU

Total starch

Table G.4 Comparison of estimated 24-hour intake of TOTAL STARCH for subsets of the 1995 NNS survey (children)

	Boys			Girls		
	Sample size	Mean intake Total starch (g)	Standard deviation	Sample size	Mean intake Total starch (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**170**	**72.7**	**488**	**126**	**47.4**
Subset 1 - Season	290	167	68.0	237	126	44.2
Subset 2 - Day	402	171	72.9	352	124	44.9
Subset 3 - 'Comparable' sample	**220**	**170**	**67.8**	**176**	**123**	**44.0**

Source: 1995 NNS CURF, AFNMU

Total sugars

Table G.5 Comparison of estimated 24-hour intake of TOTAL SUGARS for subsets of the 1995 NNS survey (children)

	Boys			Girls		
	Sample size	Mean intake Total sugars (g)	Standard deviation	Sample size	Mean intake Total sugars (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**174**	**97.6**	**488**	**137**	**67.6**
Subset 1 - Season	290	174	91.1	237	137	61.9
Subset 2 - Day	402	167*	85.1	352	134	62.9
Subset 3 - 'Comparable' sample	**220**	**169**	**79.8**	**176**	**134**	**56.8**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Total fat

Table G.6 Comparison of estimated 24-hour intake of TOTAL FAT for subsets of the 1995 NNS survey (children)

	Boys			Girls		
	Sample size	Mean intake Total fat (g)	Standard deviation	Sample size	Mean intake Total fat (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**101**	**45.5**	**488**	**77.3**	**33.4**
Subset 1 - Season	290	102	42.4	237	79.6	31.2
Subset 2 - Day	402	100	44.2	352	76.9	32.5
Subset 3 - 'Comparable' sample	**220**	**104**	**43.5**	**176**	**80.5**	**31.2**

Source: 1995 NNS CURF, AFNMU

Cholesterol

Table G.7 Comparison of estimated 24-hour intake of CHOLESTEROL for subsets of the 1995 NNS survey (children)

	Boys			Girls		
	Sample size	Mean intake Cholesterol (mg)	Standard deviation	Sample size	Mean intake Cholesterol	Standard deviation (mg)
Total NNS95 10-15 years of age	**544**	**295**	**188**	**488**	**230**	**156**
Subset 1 - Season	290	308	188	237	233	150
Subset 2 - Day	402	278*	179	352	215*	139
Subset 3 - 'Comparable' sample	**220**	**301**	**189**	**176**	**224**	**140**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Dietary fibre

Table G.8 Comparison of estimated 24-hour intake of DIETARY FIBRE for subsets of the 1995 NNS survey (children)

	Boys			Girls		
	Sample size	Mean intake Dietary fibre (g)	Standard deviation	Sample size	Mean intake Dietary fibre (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**23.2**	**11.7**	**488**	**18.2**	**7.81**
Subset 1 - Season	290	23.5	11.6	237	18.6	7.15
Subset 2 - Day	402	23.2	11.7	352	18.7*	7.87
Subset 3 - 'Comparable' sample	**220**	**23.8**	**11.6**	**176**	**18.9**	**7.04**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Vitamin A-retinol equivalent

Table G.9 Comparison of estimated 24-hour intake of VITAMIN A-RETINOL EQUIVALENT for subsets of the 1995 NNS survey (children)

	Boys			Girls		
	Sample size	Mean intake Vit A-retinol equiv (µg)	Standard deviation	Sample size	Mean intake Vit A-retinol equiv (µg)	Standard deviation
Total NNS95 10-15 years of age	**544**	**1,199**	**2,474**	**488**	**1,074**	**2,651**
Subset 1 - Season	290	1,160	848	237	1,284	3,648
Subset 2 - Day	402	1,240	2,879	352	1,160*	2,904
Subset 3 - 'Comparable' sample	**220**	**1,205**	**910**	**176**	**1,421**	**3,930**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Thiamin

Table G.10 Comparison of estimated 24-hour intake of THIAMIN for subsets of the 1995 NNS survey (children)

	Boys			Girls		
	Sample size	Mean intake Thiamin (mg)	Standard deviation	Sample size	Mean intake Thiamin (mg)	Standard deviation
Total NNS95 10-15 years of age	**544**	**2.26**	**1.47**	**488**	**1.56**	**0.92**
Subset 1 - Season	290	2.28	1.41	237	1.59	0.98
Subset 2 - Day	402	2.30	1.55	352	1.61*	0.96
Subset 3 - 'Comparable' sample	**220**	**2.39**	**1.51**	**176**	**1.64**	**1.02**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Riboflavin

Table G.11 Comparison of estimated 24-hour intake of RIBOFLAVIN for subsets of the 1995 NNS survey (children)

	Boys			Girls		
	Sample size	Mean intake Riboflavin (mg)	Standard deviation	Sample size	Mean intake Riboflavin (mg)	Standard deviation
Total NNS95 10-15 years of age	**544**	**2.88**	**2.01**	**488**	**2.01**	**1.31**
Subset 1 - Season	290	2.82	1.89	237	2.07	1.35
Subset 2 - Day	402	2.95	2.09	352	2.06	1.35
Subset 3 - 'Comparable' sample	**220**	**3.04**	**2.00**	**176**	**2.15**	**1.35**

Source: 1995 NNS CURF, AFNMU

Niacin equivalent

Table G.12 Comparison of estimated 24-hour intake of NIACIN EQUIVALENT for subsets of the 1995 NNS survey (children)

	Boys			Girls		
	Sample size	Mean intake Niacin equiv (mg)	Standard deviation	Sample size	Mean intake Niacin equiv (mg)	Standard deviation
Total NNS95 10-15 years of age	**544**	**43.6**	**19.0**	**488**	**32.8**	**13.6**
Subset 1 - Season	290	44.3	17.3	237	33.3	14.1
Subset 2 - Day	402	43.3	19.4	352	32.7	12.8
Subset 3 - 'Comparable' sample	**220**	**44.9**	**17.1**	**176**	**33.3**	**12.7**

Source: 1995 NNS CURF, AFNMU

Vitamin C

Table G.13 Comparison of estimated 24-hour intake of VITAMIN C for subsets of the 1995 NNS survey (children)

	Boys			Girls		
	Sample size	Mean intake Vit C (mg)	Standard deviation	Sample size	Mean intake Vit C (mg)	Standard deviation
Total NNS95 10-15 years of age	**544**	**121**	**128**	**488**	**116**	**107**
Subset 1 - Season	290	129	148	237	133*	122
Subset 2 - Day	402	116	94.1	352	119	107
Subset 3 - 'Comparable' sample	**220**	**123**	**96.8**	**176**	**137***	**125**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Iron

Table G.14 Comparison of estimated 24-hour intake of IRON for subsets of the 1995 NNS survey (children)

	Boys			Girls		
	Sample size	Mean intake Iron (mg)	Standard deviation	Sample size	Mean intake Iron (mg)	Standard deviation
Total NNS95 10-15 years of age	**544**	**15.4**	**7.95**	**488**	**11.0**	**5.19**
Subset 1 - Season	290	15.5	7.72	237	11.0	5.01
Subset 2 - Day	402	15.2	8.18	352	11.0	5.07
Subset 3 - 'Comparable' sample	**220**	**15.6**	**8.35**	**176**	**11.2**	**4.95**

Source: 1995 NNS CURF, AFNMU

Calcium

Table G.15 Comparison of estimated 24-hour intake of CALCIUM for subsets of the 1995 NNS survey (children)

	Boys			Girls		
	Sample size	Mean intake Calcium (mg)	Standard deviation	Sample size	Mean intake Calcium (mg)	Standard deviation
Total NNS95 10-15 years of age	**544**	**1,054**	**620**	**488**	**794**	**471**
Subset 1 - Season	290	1,059	627	237	833	441
Subset 2 - Day	402	1066	610	352	805	484
Subset 3 - 'Comparable' sample	**220**	**1115**	**633**	**176**	**865***	**441**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Zinc

Table G.16 Comparison of estimated 24-hour intake of ZINC for subsets of the 1995 NNS survey (children)

	Boys			Girls		
	Sample size	Mean intake Zinc (mg)	Standard deviation	Sample size	Mean intake Zinc (mg)	Standard deviation
Total NNS95 10-15 years of age	**544**	**12.1**	**5.75**	**488**	**9.06**	**4.23**
Subset 1 - Season	290	12.6*	5.58	237	9.23	4.06
Subset 2 - Day	402	11.7*	5.42	352	9.03	4.17
Subset 3 - 'Comparable' sample	**220**	**12.5**	**5.36**	**176**	**9.31**	**3.97**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Magnesium

Table G.17 Comparison of estimated 24-hour intake of MAGNESIUM for subsets of the 1995 NNS survey (children)

	Boys			Girls		
	Sample size	Mean intake Magnesium (mg)	Standard deviation	Sample size	Mean intake Magnesium (mg)	Standard deviation
Total NNS95 10-15 years of age	**544**	**311**	**130**	**488**	**240**	**88.5**
Subset 1 - Season	290	312	126	237	249*	86.7
Subset 2 - Day	402	311	126	352	243	89.5
Subset 3 - 'Comparable' sample	**220**	**318**	**118**	**176**	**252***	**87.8**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Appendix H – Comparison of subsets of the 1995 NNS survey (children) for selected major food groups

The food group listing is presented in alphabetical order. Data relating to intake of alcoholic beverages are excluded because intakes were reported by only a very small number of children.

Cereals and cereal products

Table H.1 Comparison of estimated 24-hour intake of CEREALS AND CEREAL PRODUCTS for subsets of the 1995 NNS Survey (children)

	Boys			Girls		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**237***	**214**	**488**	**176**	**159**
Subset 1 - Season	290	221	202	237	181	169
Subset 2 - Day	402	250	222	352	171	155
Subset 3 - 'Comparable' sample	**220**	**239**	**211**	**176**	**165**	**168**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Cereal-based products and dishes

Table H.2 Comparison of estimated 24-hour intake of CEREAL-BASED PRODUCTS AND DISHES for subsets of the 1995 NNS Survey (children)

	Boys			Girls		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**161**	**198**	**488**	**124**	**158**
Subset 1 - Season	290	163	189	237	122	150
Subset 2 - Day	402	150	189	352	115	139
Subset 3 - 'Comparable' sample	**220**	**158**	**194**	**176**	**119**	**140**

Source: 1995 NNS CURF, AFNMU

Confectionery

Table H.3 Comparison of estimated 24-hour intake of CONFECTIONERY for subsets of the 1995 NNS Survey (children)

	Boys			Girls		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**24.5**	**44.6**	**488**	**21.3**	**40.1**
Subset 1 - Season	290	26.6	44.1	237	20.2	28.5
Subset 2 - Day	402	25.2	45.6	352	21.1	33.7
Subset 3 - 'Comparable' sample	**220**	**27.2**	**43.8**	**176**	**21.2**	**26.9**

Source: 1995 NNS CURF, AFNMU

Egg products and dishes

Table H.4 Comparison of estimated 24-hour intake 24-hour intake of EGG PRODUCTS AND DISHES for subsets of the 1995 NNS Survey (children)

	Boys			Girls		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**10.7**	**38.7**	**488**	**7.58**	**28.4**
Subset 1 - Season	290	11.9	44.5	237	7.90	30.8
Subset 2 - Day	402	8.30*	38.9	352	5.79*	24.5
Subset 3 - 'Comparable' sample	**220**	**10.9**	**46.6**	**176**	**4.38***	**25.2**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Fats and oils

Table H.5 Comparison of estimated 24-hour intake of FATS AND OILS for subsets of the 1995 NNS Survey (children)

	Boys			Girls		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**12.3**	**13.9**	**488**	**9.10**	**9.89**
Subset 1 - Season	290	12.0	12.1	237	9.71	10.4
Subset 2 - Day	402	12.6	12.8	352	9.30	9.42
Subset 3 - 'Comparable' sample	**220**	**12.5**	**12.6**	**176**	**9.10**	**8.86**

Source: 1995 NNS CURF, AFNMU

Fish and seafood products and dishes

Table H.6 Comparison of estimated 24-hour intake of FISH AND SEAFOOD PRODUCTS AND DISHES for subsets of the 1995 NNS Survey (children)

	Boys			Girls		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**17.2**	**55.1**	**488**	**15.3**	**54.2**
Subset 1 - Season	290	19.1	53.8	237	22.1*	68.9
Subset 2 - Day	402	16.2	54.9	352	16.8	57.0
Subset 3 - 'Comparable' sample	**220**	**16.1**	**51.0**	**176**	**22.2***	**69.4**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Fruit products and dishes

Table H.7 Comparison of estimated 24-hour intake of FRUIT PRODUCTS AND DISHES for subsets of the 1995 NNS Survey (children)

	Boys			Girls		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**125**	**186**	**488**	**128**	**156**
Subset 1 - Season	290	120	155	237	129	157
Subset 2 - Day	402	136*	183	352	128	146
Subset 3 - 'Comparable' sample	**220**	**133**	**159**	**176**	**122**	**141**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Legumes and pulse products and dishes

Table H.8 Comparison of estimated 24-hour intake of LEGUMES AND PULSE PRODUCTS AND DISHES for subsets of the 1995 NNS Survey (children)

	Boys			Girls		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**10.7**	**59.0**	**488**	**5.80**	**29.0**
Subset 1 - Season	290	7.29	47.4	237	7.44	32.4
Subset 2 - Day	402	7.83	43.7	352	4.17	23.4
Subset 3 - 'Comparable' sample	**220**	**5.40**	**36.5**	**176**	**3.58**	**17.8**

Source: 1995 NNS CURF, AFNMU

Meat, poultry and game products and dishes

Table H.9 Comparison of estimated 24-hour intake of MEAT, POULTRY AND GAME PRODUCTS AND DISHES for subsets of the 1995 NNS Survey (children)

	Boys			Girls		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**139**	**141**	**488**	**107**	**113**
Subset 1 - Season	290	156*	154	237	107	120
Subset 2 - Day	402	133	138	352	106	114
Subset 3 - 'Comparable' sample	**220**	**150**	**152**	**176**	**106**	**118**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Milk products and dishes

Table H.10 Comparison of estimated 24-hour intake of MILK PRODUCTS AND DISHES for subsets of the 1995 NNS Survey (children)

	Boys			Girls		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**484**	**399**	**488**	**349**	**333**
Subset 1 - Season	290	475	404	237	371	318
Subset 2 - Day	402	504	392	352	360	355
Subset 3 - 'Comparable' sample	**220**	**519**	**393**	**176**	**399***	**323**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at a level of 0.05

Source: 1995 NNS CURF, AFNMU

Non-alcoholic beverages (excluding plain drinking water)

Table H.11 Comparison of estimated 24-hour intake of NON-ALCOHOLIC BEVERAGES (excluding plain drinking water) for subsets of the 1995 NNS Survey (children)

	Boys			Girls		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**724**	**651**	**488**	**592**	**465**
Subset 1 - Season	290	726	623	237	556	393
Subset 2 - Day	402	649*	556	352	564*	460
Subset 3 - 'Comparable' sample	**220**	**646***	**519**	**176**	**518***	**381**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Seed and nut products and dishes

Table H.12 Comparison of estimated 24-hour intake of SEED AND NUT PRODUCTS AND DISHES for subsets of the 1995 NNS Survey (children)

	Boys			Girls		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**2.98**	**14.5**	**488**	**2.85**	**11.9**
Subset 1 - Season	290	2.78	12.8	237	2.79	12.0
Subset 2 - Day	402	3.46*	15.1	352	3.32*	13.2
Subset 3 - 'Comparable' sample	**220**	**3.22**	**14.3**	**176**	**3.39**	**13.4**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Snack foods

Table H.13 Comparison of estimated 24-hour intake of SNACK FOODS for subsets of the 1995 NNS Survey (children)

	Boys			Girls		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**11.5**	**25.7**	**488**	**11.9**	**22.4**
Subset 1 - Season	290	10.2	20.2	237	12.1	25.4
Subset 2 - Day	402	11.7	26.5	352	12.6	22.6
Subset 3 - 'Comparable' sample	**220**	**9.14**	**17.7**	**176**	**14.0**	**25.9**

Source: 1995 NNS CURF, AFNMU

Soup

Table H.14 Comparison of estimated 24-hour intake of SOUP for subsets of the 1995 NNS Survey (children)

	Boys			Girls		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**29.6**	**132**	**488**	**20.2**	**89.1**
Subset 1 - Season	290	35.7	158	237	21.4	88.5
Subset 2 - Day	402	24.0	119	352	21.3	93.3
Subset 3 - 'Comparable' sample	**220**	**37.6**	**154**	**176**	**25.5**	**99.0**

Source: 1995 NNS CURF, AFNMU

Sugar products and dishes

Table H.15 Comparison of estimated 24-hour intake of SUGAR PRODUCTS AND DISHES for subsets of the 1995 NNS Survey (children)

	Boys			Girls		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**27.3**	**85.4**	**488**	**26.0**	**61.7**
Subset 1 - Season	290	27.4	100.7	237	21.3	55.9
Subset 2 - Day	402	25.1	84.6	352	21.4	46.3
Subset 3 - 'Comparable' sample	**220**	**22.2**	**91.6**	**176**	**15.5***	**31.0**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Vegetable products and dishes

Table H.16 Comparison of estimated 24-hour intake of VEGETABLE PRODUCTS AND DISHES for subsets of the 1995 NNS Survey (children)

	Boys			Girls		
	Sample size	Mean intake (g)	Standard deviation	Sample size	Mean intake (g)	Standard deviation
Total NNS95 10-15 years of age	**544**	**203**	**205**	**488**	**181**	**171**
Subset 1 - Season	290	228*	219	237	181	165
Subset 2 - Day	402	199	201	352	192	175
Subset 3 - 'Comparable' sample	**220**	**225***	**219**	**176**	**195**	**169**

* Difference between estimated means for the subset and remainder NNS95 is statistically significant at the 0.05 level

Source: 1995 NNS CURF, AFNMU

Appendix I – Foods consumed in 1985 survey able to be mapped to NUTTAB 91/92 food codes (a)

Table I.1 Foods consumed in 1985 survey able to be mapped to NUTTAB 91/92 food codes

No	1985 Code	1985 Survey Name	NUTTAB 91/92 Code
1	1	Barley, pearl, boiled	02A1-014
2	2	Bran, unprocessed, wheat	02A1-021
3	3	Cornflour	02A2-007
4	4	Flour, soya, low fat	13A2-023
5	5	Flour, soya, full fat	13A2-024
6	6	Flour, white, plain	02A2-001
7	7	Flour, white, self raising	02A2-010
8	8	Flour, wholemeal, plain	02A2-002
9	10	Oatmeal/oats, rolled, boiled	02D2-002
10	11	Oatmeal/oats, rolled, raw	02A1-008
11	12	Pasta, boiled	02A1-009
12	13	Pasta, spaghetti, canned	02F4-004
13	14	Rice, brown, boiled	02A1-002
14	15	Rice, white, boiled	02A1-006
15	16	Semolina, polenta, raw	02A1-023
16	17	Wheatgerm, wheathearts	02A1-011
17	18	Soy lecithin	13B2-003
18	20	Flour in coated fried foods	02A2-001
19	22	Gravy powder	02A2-009
20	32	Damper	02B1-006
21	33	Bread, light rye	02B1-004
22	34	Bread, dark rye	02B1-003
23	36	Bread, white	02B1-006
24	37	Bread, w/meal	02B1-008
25	38	Bread, brown	02B1-001
26	39	Bread, lebanese	02B1-005
27	40	Rolls, white	02B1-022
28	41	Rolls, brown	02B1-024
29	42	Breadcrumbs, dried	02B1-025
30	43	Muffins, all types	02B2-008C
31	44	Crumpets	02B2-005C
32	45	Bread, fruit	02E2-001
33	46	Buns, fruit	02E2-003
34	48	Rolls, wholemeal/mixed grain	02B1-024
35	49	Garlic bread	02F3-002
36	50	Croissant	02E4-011

No	1985 Code	1985 Survey Name	NUTTAB 91/92 Code
37	58	Biscuit, h/made, cream sandwich	02C2-009
38	61	Breakfast cereals, all bran	02D1-006
39	62	Breakfast cereals, cornflakes	02D1-004
40	63	Breakfast cereals, special k	02D1-011
41	64	Breakfast cereals, muesli, untoasted	02D1-008
42	65	Breakfast cereals, muesli, toasted.	02D1-009
43	66	Breakfast cereals, muesli flake	02D1-015
44	67	Breakfast cereals, sugar puffs	02D1-010
45	68	Breakfast cereals, weetbix	02D1-003
46	69	Breakfast cereals, puffed wheat	02D1-012
47	70	Muesli bar commercial	12C1-015
48	74	Biscuit, h/made, choc chip	02C2-006
49	77	Anzac	02C2-002
50	78	Cracker high fat	02C1-004
51	81	Biscuit, chocolate, fancy	02C2-008
52	82	Biscuit, cracker medium fat	02C1-005
53	83	Biscuit, plain, dry, cone	02C1-011
54	84	Biscuit, shortbread style	02C2-028
55	85	Biscuit, sweet, fancy	02C2-019
56	86	Biscuit, sweet plain	02C2-026
57	87	Biscuit, limmits	02C2-031
58	88	Biscuit, homemade	02C2-032
59	89	Biscuit, wholemeal h/made	02C2-029
60	90	Pudding, sponge, steamed, commercial	02E1-015
61	91	Cake, fruit, commercial, homemade unknown	02E1-006
62	94	Lamington	02E1-002
63	95	Cake, plain, commercial, homemade unknown	02E1-009
64	98	Cake, sponge, victoria	02E1-016
65	99	Cake, sponge, swiss roll variety	02E1-003
66	100	Cake, sponge, plain, unfilled	02E1-017
67	101	Puddings, self-saucing	02E1-012
68	104	Cakes, rock, commercial	02E2-007
69	107	Pastry, flaky/puff, commercial	02E4-003
70	109	Pastry, shortcrust, commercial	02E4-001
71	111	Pastry, choux, commercial	02E4-015
72	114	Pastry, wholemeal, shortcrust	02E4-002
73	115	Pancake, commercial, homemade unknown	02E3-005
74	117	Pikelet/dropscone, commercial	02E3-001
75	119	Scone, commercial	02E2-005
76	121	Doughnuts, commercial, waffles	02E3-004

No	1985 Code	1985 Survey Name	NUTTAB 91/92 Code
77	122	Dumplings	02E2-009
78	123	Pastry, filo-no add fat, cooked	02E4-009
79	129	Pie, family size, apple, h/made	02E5-012C
80	131	Slice, vanilla	02E5-007
81	132	Baklava	02E5-010
82	133	Biscuit, h/made, fruit	02C2-014
83	138	Custard, h/made, from powder	09D2-002
84	140	Cheesecake, commercial	09D2-001
85	142	Bread & butter pudding, commercial	09D2-003
86	143	Cheesecake, commercial	09D2-001
87	144	Custard, commercial-no egg	09D2-002
88	146	Custard, egg or baked, commercial	09D2-004
89	148	Custard tart, commercial	02E5-014
90	150	Fruit crumble, commercial	06E1-011
91	151	Jelly	12D1-004
92	153	Pie, lemon meringue, commercial	02E5-016
93	154	Trifle, commercial/restaurant	09D2-005
94	155	Pie, fruit, double crust	02E5-005
95	156	Pie, apple, McDonalds	02E5-001
96	157	Fats hard copha	04D1-003
97	158	Fat spreads unknown on sandwich or roll	04B2-003
98	159	Fats, margarine, poly, used as spread	04B1-006
99	160	Fats, hard butter	04A1-002
100	161	Fats margarine unknown type used as spread	04B2-004
101	162	Fats margarine table	04B2-001
102	163	Fat spreads unknown type eg in sandwich	04B2-003
103	164	Oil unknown type used in voluntary situations	04C1-011
104	169	Oil unknown type used in cooking, egg on top of vegetable	04C1-011
105	170	Fats solid, used in cooking	04D1-004
106	171	Cheese, camembert	09B1-003
107	172	Cheese, cheddar	09B1-004
108	173	Cheese, cottage/bakers, creamed	09B2-013
109	174	Cheese, cottage/bakers, low fat	09B2-004
110	175	Cheese, cream	09B1-010
111	176	Cheese, Danish blue type	09B1-001
112	177	Cheese, edam type	09B1-011
113	178	Cheese, parmesan	09B1-030
114	179	Cheese, processed	09B1-005
115	180	Cheese, spread	09B1-029
116	181	Cheese, stilton	09B1-034

No	1985 Code	1985 Survey Name	NUTTAB 91/92 Code
117	184	Milk, blended	09A1-001
118	185	Cream, imitation	04A2-010
119	186	Cream, light sour	04A2-002
120	188	Cream, thickened, sour	04A2-006
121	189	Cream, canned	04A2-007
122	190	Milk, evaporated, skimmed, unsweetened	09A2-002
123	191	Milk, condensed, whole, sweetened	09A2-005
124	192	Milk, condensed, skimmed, sweetened.	09A2-004
125	193	Milk, evaporated, whole, unsweetened.	09A2-003
126	194	Milk, whole	09A1-001
127	195	Milk, skimmed	09A1-004
128	196	Milk, 2% fat	09A1-003
129	197	Milk, goats	09A1-005
130	198	Milk powder, whole	09A3-003
131	199	Milk powder, skim, instant	09A3-002
132	200	Thick shake	09A4-001
133	201	Yoghurt, plain	09C1-001
134	202	Yoghurt, flavoured/fruit	09C1-002
135	203	Yoghurt, flavoured/fruit low fat	09C2-002
136	204	Yoghurt, plain, non fat	09C2-001
137	205	Ice cream	09D1-002
138	206	Milk, evaporated, unsweetened, 2% fat	09A2-001
139	210	Yoghurt flavoured/fruit, red. Fat	09C2-002
140	212	Frozen confection	09D1-003
141	216	Frozen confection	09D1-003
142	219	Egg fried	03A1-007
143	220	Eggs, duck, whole, cooked (no fat)	03A1-009
144	221	Eggs, whole, cooked, no added fat	03A1-006
145	222	Eggs, white, raw	03A1-002
146	223	Eggs, yolk	03A1-001
147	224	Scotch egg	08F1-009
148	225	Plain omelet	03B1-004
149	226	Egg, scrambled	03B1-002
150	227	Cheese, cottage, skim milk	09B2-005
151	229	Sesame seeds	11A1-001
152	230	Cashew nuts	11B1-015
153	231	Almonds, pistachio nuts	11B1-006
154	232	Brazil nuts	11B1-011
155	234	Coconut, desiccated	11B1-018
156	235	Coconut, meat-fresh	11B1-017

No	1985 Code	1985 Survey Name	NUTTAB 91/92 Code
157	237	Hazelnuts	11B1-008
158	238	Nuts roasted salted	11B1-001
159	239	Peanut paste, peanut butter	11B1-016
160	240	Walnuts/pecans	11B1-005
161	241	Macadamias	11B1-012
162	244	Sunflower seeds	11A1-002
163	246	Pine nuts	11B1-013
164	247	Pumpkin seeds	11A1-002
165	257	Margarine, cooking, used as spread	04B2-002
166	258	Oil coconut	04C1-009
167	259	Oil cottonseed	04C1-010
168	260	Oil peanut	04C1-001
169	261	Oil, blended, pus	04C1-002
170	262	Olive oil	04C1-003
171	265	Ice cream, h/made, plain	09D1-002
172	281	Choc coated fancy high fat	02C2-012
173	285	Choc coated plain	02C2-005
174	286	Choc coated fancy	02C2-022
175	288	Salmon rissole	05D1-010
176	289	Tuna, canned in oil, drained	05A1-001
177	290	Tuna, canned in brine, drained	05A1-004
178	291	Salmon, canned, drained	05A1-008
179	293	Calamari, boiled, steamed	05C1-016
180	294	Calamari, coated in batter, fried crumbs	05D2-004
181	295	Fish burger, McDonalds	02F3-006
182	296	Fish paste	05D1-036
183	297	Anchovy	05A1-015
184	298	Crab, boiled	05C1-013
185	299	Crab, canned	05C1-004C
186	300	Fish cakes, fried	05D1-003
187	301	Fish fingers, fried	05D1-009
188	302	Fish, coated & fried	05D1-001
189	303	Fish, crumbed, fried, homemade	05D1-038
190	304	Fish, steamed	05A1-038
191	305	Herring, grilled	05A1-039
192	307	Lobster, boiled or canned	05C1-007
193	308	Mussels, boiled	05C1-009
194	309	Oysters, raw	05C1-010
195	311	Prawns, boiled	05C1-005
196	312	Salmon, canned	05A1-007

No	1985 Code	1985 Survey Name	NUTTAB 91/92 Code
197	315	Sardines, canned in oil	05A1-010
198	316	Sardines, canned in sauce	05D1-040
199	317	Scallops, steamed	05C1-009
200	318	Shrimp, boiled	05C1-014
201	320	Tuna, canned in water or brine	05A1-004
202	321	Tuna, canned in oil	05A1-001
203	322	Sardines, canned in oil, drained	05A1-011
204	329	Trout, steamed, fresh water	05A1-042
205	330	Fish, oven fried, coated	05D1-012
206	331	Prawns, crumbed or battered	05D2-004
207	334	Garlic, garlic powder	13A1-047
208	336	Artichokes, globe, boiled	13A1-127C
209	337	Asparagus, cooked	13A1-129C
210	338	Baked beans, canned in sauce	13B2-001
211	339	Beans, butter, boiled	13A1-131C
212	340	Beans, green, raw	13A1-007
213	341	Beans, green, boiled	13A1-008
214	342	Beans, broad, boiled	13A1-130C
215	345	Beans, soya, boiled	13A2-008
216	347	Chickpeas, raw	13A2-026
217	348	Beans, red kidney, raw	13A2-002
218	349	Bean sprouts, canned	13A2-027
219	350	Beetroot, boiled	13A1-135C
220	351	Broccoli boiled	13A1-136C
221	352	Brussels sprouts, boiled	13A1-137C
222	353	Cabbage, all types, raw	13A1-023
223	354	Cabbage, all types, boiled	13A1-139C
224	355	Capsicum, raw	13A1-026
225	356	Capsicum, cooked	13A1-142C
226	357	Carrots, raw	13A1-027
227	358	Carrots, cooked	13A1-147C
228	359	Carrots, canned	13A1-211
229	360	Cauliflower, raw	13A1-029
230	361	Cauliflower, boiled	13A1-149C
231	363	Cauliflower cheese, commercial	13B1-012
232	364	Celery, raw	13A1-031
233	365	Celery, boiled	13A1-151C
234	366	Corn, boiled	13A1-085
235	367	Cucumber	13A1-040
236	368	Eggplant/aubergine, cooked, nonfried	13A1-158C

No	1985 Code	1985 Survey Name	NUTTAB 91/92 Code
237	370	Leeks, boiled	13A1-163C
238	371	Lentils, boiled	13A2-018
239	372	Lentils, as masur dahl	13B2-006
240	373	Lettuce	13A1-053
241	374	Marrow, raw	13A1-056
242	375	Marrow raw, zucchini	13A1-164C
243	376	Mushrooms, raw	13A1-059
244	377	Mushrooms, boiled or canned	13A1-214
245	378	Potato scallop, potato cake, potato battered/fried	13B1-001
246	379	Onions, raw	13A1-062
247	380	Onions, boiled	13A1-168C
248	381	Parsley	13A1-064
249	382	Parsnips, boiled	13A1-169C
250	383	Peas, raw, snow peas, raw	13A1-066
251	384	Peas, boiled	13A1-067
252	385	Potato, baked	13A1-113
253	386	Potato, boiled	13A1-110
254	387	Potato, canned	13A1-108
255	388	Potato chips/French fried, commercial	13A1-124
256	389	Potato, roast, baked in fat	13A1-112
257	390	Potato chips, oven fries/grilled	13A1-218
258	391	Potato, instant	13A1-125
259	392	Pumpkin, boiled	13A1-174C
260	393	Radishes	13A1-075
261	394	Peas, canned, processed	13A1-069
262	395	Spinach, boiled	13A1-177C
263	396	Swede, boiled	13A1-181C
264	399	Tomato, canned	13A1-226
265	400	Tomato, fried	13A1-231
266	401	Tomato, raw, grilled, baked	13A1-090
267	403	Tomato paste	13A1-228
268	404	Turnips, boiled	13A1-186C
269	406	Coleslaw, KFC fried	13B1-002
270	407	Ratatouille	13B1-013
271	408	Onions, fried	13A1-232
272	409	Alfalfa sprouts raw, bean sprouts	13A1-015
273	410	Potato, KFC fried, mashed	13A1-111
274	412	Beetroot, raw	13A1-016
275	413	Celeriac, boiled	13A1-150C
276	414	Mushrooms, canned in sauce	13A1-216

No	1985 Code	1985 Survey Name	NUTTAB 91/92 Code
277	415	Mustard and cress, raw	13A1-233
278	419	Kiwi fruit, raw	06D1-039
279	421	Apricots dried	06C1-023
280	422	Apricots, canned sweetened	06C1-013
281	423	Apricots dried, stewed sweetened	06C1-029
282	424	Apricots, fresh, canned, unsweetened	06C1-009
283	425	Apricots, fresh, stewed sweetened	06C1-030
284	426	Avocado	13A1-004
285	427	Bananas	06D1-033
286	429	Blackberries, stewed sweetened	06A1-010
287	432	Currants, dried	06D1-062
288	434	Dates, dried	06C1-021
289	435	Figs dried	06D1-064
290	438	Fruit mince, sweetened.	06E1-012
291	439	Fruit pie filling, canned	06D1-068
292	440	Fruit salad, canned, sweetened	06E1-003
293	441	Fruit salad, fresh	06E1-013
294	445	Fruit salad, canned in juice, unsweetened	06E1-001
295	447	Grapefruit, raw	06B1-001
296	448	Lemons, fresh	06B1-002
297	449	Lemon juice, fresh	01B3-018
298	454	Cherries, stewed/canned, sweetened	06C1-028
299	456	Mango, canned, sweetened	06D1-070
300	457	Mango, raw	06D1-004
301	458	Melon, cantaloupe/rock melon, raw	06D1-040
302	460	Melon, watermelon, raw	06D1-045
303	462	Olives	10B1-004
304	463	Oranges, raw	06B1-006
305	464	Passionfruit	06D1-005
306	465	Paw paw, raw	06D1-006
307	466	Peaches, raw	06C1-004
308	467	Peaches, dried	06C1-032
309	468	Peaches, stewed/canned, sweetened	06C1-019
310	469	Peaches, stewed/canned, unsweetened	06C1-015
311	470	Pears, raw	06D1-044
312	471	Pears canned without sugar	06D1-046
313	472	Pears, canned, sweetened	06D1-050
314	473	Pineapple, canned, sweetened	06D1-052
315	474	Pineapple, raw	06D1-007
316	475	Plums, raw	06C1-005

No	1985 Code	1985 Survey Name	NUTTAB 91/92 Code
317	477	Plums, stewed/canned, sweetened	06C1-025
318	479	Prunes, dried	06C1-022
319	481	Prunes, cooked, sweetened	06C1-035
320	482	Mulberries, raw	06A1-001
321	483	Raisins	06D1-058
322	485	Raspberries, stewed/canned, sweetened	06A1-005
323	488	Rhubarb, cooked, sweetened	06D1-072
324	489	Strawberries, canned in syrup	06A1-007
325	490	Strawberries, raw	06A1-002
326	491	Sultanas	06D1-063
327	492	Tangerines, raw	06B1-013
328	493	Grapes	06D1-003
329	494	Mandarin oranges, canned	06B1-011
330	496	Apples, raw	06D1-015
331	497	Apples, baked without sugar	06D1-074
332	498	Apples, stewed/canned, unsweetened	06D1-060
333	499	Apples, stewed/canned, sweetened	06D1-075
334	500	Blueberries, raw	06A1-014
335	506	Loquat raw	06D1-020
336	512	Cranberries, raw	06A1-015
337	517	Cherries, glace, maraschino	12B1-007
338	519	Custard apple	06D1-016
339	525	Fruit salad, canned	06E1-003
340	526	Fruit salad in juice	06E1-001
341	527	Fruit salad in heavy syrup	06E1-003
342	528	Apricots canned in pear juice	06C1-011
343	529	Apricots canned unknown type of juice	06C1-013
344	530	Apricots canned, drained	06C1-014
345	531	Pears, canned drained	06D1-051
346	532	Pineapple, canned, drained	06D1-053
347	533	Peaches, canned, drained	06C1-020
348	534	Peaches, canned, in pear juice	06C1-017
349	535	Peaches, canned, unknown type of juice	06C1-019
350	536	Pineapple, canned in juice	06D1-054
351	537	Pineapple, canned, unknown type of juice	06D1-052
352	538	Pears canned in pear juice	06D1-048
353	539	Pears, canned in syrup, fruit& juice	06D1-050
354	540	Snacks, crackers, rice/prawn	02C1-013
355	541	Snacks, pretzels	10D1-005
356	542	Snacks, crackling	10D1-016

No	1985 Code	1985 Survey Name	NUTTAB 91/92 Code
357	543	Snacks, potato crisps, straws	10D1-006
358	544	Snacks, extruded, non-cheese	10D1-003
359	545	Snacks, extruded, cheese flavoured	10D1-002
360	546	Snacks, corn chips	10D1-013
361	556	Honey	12A1-004
362	557	Marmalade	12B1-001
363	558	Jams	12B1-002
364	559	Sugar	12A1-001
365	560	Glucose, liquid, glucose, powder	12A1-006
366	561	Syrup, golden	12A1-005
367	562	Lemon flavoured spread, commercial	12B1-008
368	563	Lemon curd, homemade, fat out	12B1-009
369	567	Meringue	12D1-001
370	575	Confectionery, milk chocolate	12C1-002
371	576	Confectionery, chocolate, dark	12C1-001
372	577	Confectionery, chocolate, filled	12C1-004
373	578	Confectionery, mars bar	12C1-006
374	579	Confectionery, sweets	12C1-017
375	580	Confectionery, bounty bar	12C1-007
376	581	Confectionery, bars, carob	12C1-019
377	582	Confectionery, bars, oilseed/nut	12C1-014
378	583	Confectionery, bars, fruit	12C1-020
379	584	Confectionery, liquorices	12C1-009
380	585	Confectionery, toffees, mixed	12C1-010
381	586	Confectionery pastilles-jellies, gums, marshmallows	12C1-018
382	587	Confectionery, carob button, light	12C1-019
383	588	Popcorn, plain	10D1-018
384	590	Sundae, McDonalds	09D1-001
385	593	Soft drink low energy cola flavoured	14A1-003
386	594	Soya milk, prepared	13B2-004
387	595	Beverage flavouring, drinking chocolate	01B1-006
388	596	Beverage flavouring, cocoa powder	01B1-002
389	597	Beverage flavouring, hotlinks	01B1-003
390	598	Beverage flavouring, ovaltine	01B1-005
391	600	Cider, non alcoholic	01B3-004
392	601	Coffee, instant, dry	01B1-001
393	602	Coffee, instant, made up, black	01B1-009
394	603	Coffee & chickory, concentrate	01B1-010
395	604	Cordial concentrate, lime, other	01B2-004
396	605	Cordial concentrate, ribena	01B2-002

No	1985 Code	1985 Survey Name	NUTTAB 91/92 Code
397	607	Fruit juice drinks	01B3-010
398	608	Fruit juice, apple juice	01B3-005
399	609	Fruit juice, apricot nectar	01B3-009
400	610	Fruit juice, grape, pear	01B3-007
401	611	Fruit juice, grapefruit unsweetened	01B3-006
402	613	Fruit juice, orange juice	01B3-003
403	614	Fruit juice, pineapple juice	01B3-013
404	615	Vegetable juice, tomato juice	01B3-014
405	616	Vegetable juice	01B3-015
406	617	Cola based drinks	01B2-015
407	618	Lemonade	01B2-016
408	619	Mineral water with fruit juice	01B2-014
409	620	Tea, herbal, made up	01B1-011
410	621	Tea, made up	01B1-012
411	622	Water drunk alone	01B1-013
412	624	Soft drinks, tonic water	01B2-021
413	625	Coffee, made up, decaffeinated	01B1-014
414	626	Coffee substitute, made up	01B1-015
415	627	Beverage flavouring, carob powder	01B1-016
416	628	Coffee substitute, dry powder	01B1-001
417	629	Mineral water	01B2-013
418	630	Soft drinks, low energy	14A1-003
419	631	Cordial concentrate, low energy	14A1-004
420	632	Soda water	01B2-022
421	633	Jelly, low energy	14A1-005
422	634	Mineral water, low energy	14A1-006
423	635	Tang powder	01B4-001
424	636	Fruit drink all type	01B3-009
425	637	Fruit juice drinks, except orange or tropical	01B3-009
426	638	Soft drinks, soda stream	01B2-016
427	639	Water as diluting agent	01B1-013
428	663	Gravy unknown recipe	10A1-002
429	664	Dressing, mayonnaise, rich, commercial	10F2-001
430	665	Sauce, chili	10A1-013
431	666	Curry powder	10E1-003
432	667	Sauce, soy	10A1-005
433	668	Horseradish, raw	13A1-230
434	670	Sauce, worcestershire	10A1-004
435	672	Pickles in brine, sweetened	10B1-005
436	673	Chutney, vegetable, relish	10B1-001

No	1985 Code	1985 Survey Name	NUTTAB 91/92 Code
437	674	Chutney, fruit	10B1-002
438	675	Sauce, white sweet, milk	10A2-002
439	676	Sauce, tomato, commercial	10A1-003
440	677	Sauce, tomato	10A1-006
441	678	Sauce, white savoury, milk	10A1-008
442	679	Dressing, commercial, French	10F2-005
443	681	Dressing, commercial, Italian	10F2-007
444	683	Dressing, coleslaw	10F2-003
445	684	Dressing, mayonnaise, light	10F2-002
446	686	Soup, canned/homemade, broth	10C1-016
447	687	Soup, light or vegetable style	10C1-024
448	688	Soup, medium	10C1-010
449	689	Soup, tomato, canned/homemade	10C1-002
450	690	Soup, pea/bean or lentil, homemade	10C1-006
451	692	Sauce, hp	10A1-009
452	693	Sauce, cheese, milk	10A1-010
453	694	Sauce, onion, milk	10A1-011
454	695	Soup, dried, lots of noodles	10C1-022
455	696	Gelatin, dry powder	10F6-004
456	697	Marmite/promite	10F4-003
457	698	Vegemite	10F4-001
458	699	Gravy powder, prepared	10A1-002
459	700	Stock cubes	10F6-003
460	702	Yeast, dried	10F3-002
461	703	Dessert topping, (cream based)	04A2-012
462	704	Coffee whitener	10F6-009
463	709	Chico/spring roll, homemade, fried	02E6-001
464	710	Pizza, homemade	02F1-009
465	711	Pie, meat, individual	02E6-008
466	712	Pie, meat, party	02E6-009
467	713	Pasty, individual	02E6-006
468	714	Chico/spring roll, commercial	02E6-004
469	715	Pie, pork	02E6-014
470	716	Sausage roll, individual	02E6-005
471	717	Sausage roll, party	02E6-003
472	718	Pizza, non-pizza hut	02F1-010
473	719	Pizza, pizza hut	02F1-006
474	721	Chicken croquette	08F1-001
475	722	Chicken, KFC	08E1-005
476	723	Chicken, KFC, thigh, wing	08E1-005

No	1985 Code	1985 Survey Name	NUTTAB 91/92 Code
477	725	Hamburgers, McDonalds, big Mac	02F3-003
478	726	Hamburgers, McDonalds, cheese	02F3-004
479	727	Hamburgers, McDonalds, junior	02F3-007
480	728	Hamburgers, McDonalds, Mcfeast burger	02F3-008
481	729	Hamburgers, plain	02F3-009
482	730	Hamburgers, cheese, cheeseburger	02F3-012
483	732	Meat pie homemade	02E6-007
484	761	Watercress, boiled	13A1-092
485	763	Sweet potato, unspecified, baked	13A1-184C
486	765	Fennel raw	13A1-046
487	766	Broccoli raw	13A1-017
488	772	Potato gem/royal (all cooking methods)	13A1-219
489	780	Sauce, white savoury, homemade	10A1-008
490	782	Beef, ribeye steak, grilled, untrimmed	08A1-029
491	783	Beef, ribeye steak, grilled, trimmed	08A1-028
492	784	Beef, ribeye steak, grilled unknown if trimmed	08A1-030
493	785	Quiche, ham & cheese, commercial	02E6-010
494	786	Pasty	02E6-006
495	793	Beef mince stew, undrained	08F1-008
496	794	Beef mince and vegetable stew	08F1-012
497	797	Beef, fillet, grill/fried, unknown if trimmed	08A1-020
498	798	Cottage pie/shepherd's pie	08F1-007
499	800	Chili con carne	08F1-013
500	802	Pie, meat, family, commercial	02E6-007
501	806	Quiche, homemade	02E6-013
502	807	Quiche, commercial	02E6-010
503	808	Beef & gravy, stewed (canned)	08F1-011
504	809	Pie, savoury, cheese or tyropita	02E6-012
505	811	Lasagna (pasta and cheese and bolognese sauce)	02F4-010
506	813	Macaroni cheese, commercial	09D2-006
507	814	Pie, spinach	02E6-011
508	815	Sauce, bolognese	08F1-016
509	817	Saveloy battered	08E2-002
510	827	Lamb, shank, untrimmed	08A2-036
511	828	Lamb, shank, trimmed	08A2-035
512	829	Beef, rump steak, untrimmed	08A1-034
513	830	Beef, rump streak, trimmed	08A1-033
514	831	Beef, rump steak, unknown if trimmed	08A1-035
515	832	Beef, fillet, grill/fried, trimmed	08A1-018
516	833	Beef, fillet, grill/fried, untrimmed	08A1-019

No	1985 Code	1985 Survey Name	NUTTAB 91/92 Code
517	834	Milk, whole, used in coffee	09A1-001
518	835	Milk, skim, used in coffee	09A1-004
519	836	Milk, 2%, used in coffee	09A1-003
520	837	Milk, evaporated, whole, unsweetened	09A2-003
521	839	Water, in coffee	01B1-013
522	853	Pork, chop, loin, untrimmed	08A3-029
523	854	Pork, chop, loin, trimmed	08A3-028
524	855	Pork, chop, forequarter, untrimmed	08A3-009
525	856	Pork, chop, forequarter, trimmed	08A3-008
526	857	Pork, chop, forequarter, unknown if trimmed	08A3-010
527	858	Pork, chop, unspecified, untrimmed	08A3-053
528	859	Pork, chops, unknown type, trimmed	08A3-055
529	860	Pork, chops, unknown type, untrimmed	08A3-056
530	861	Pork, steak, unspecified, untrimmed	08A3-053
531	862	Pork steak, unknown type, trimmed	08A3-055
532	863	Pork, steak, unspecified, unknown if	08A3-056
533	864	Lamb, chump chop, untrimmed	08A2-006
534	865	Lamb, chump chop, trimmed	08A2-005
535	866	Lamb, chump chop, unknown if trimmed	08A2-007
536	868	Lamb, leg, baked, unknown if trimmed	08A2-012
537	869	Lamb, leg, baked, untrimmed	08A2-011
538	870	Lamb, leg, baked, trimmed	08A2-010
539	871	Pork, roast, unspecified, untrimmed	08A3-053
540	872	Pork, roast, unspecified, trimmed	08A3-055
541	873	Pork, roast, unspecified, unknown if trimmed	08A3-056
542	874	Beef, sirloin, grill, untrimmed	08A1-053
543	875	Beef, sirloin, grill, trimmed	08A1-052
544	876	Beef, sirloin, grill, unknown if trimmed	08A1-054
545	877	Fish paste	05D1-036
546	880	Lamb, cutlets, untrimmed	08A2-026
547	881	Lamb, cutlets, trimmed	08A2-025
548	882	Lamb, cutlets, unknown if trimmed	08A2-027
549	883	Lamb, chops, loin, untrimmed	08A2-016
550	884	Lamb, chops, loin, trimmed	08A2-015
551	885	Lamb, chops, loin, unknown if trimmed	08A2-017
552	886	Lamb, chops, unknown type, unknown if trimmed	08A2-070
553	887	Lamb chops, forequarter, stewed, untrimmed	08A2-072
554	888	Lamb, unknown type, roast, unknown if trimmed	08A2-049
555	889	Lamb shoulder, roast unknown if trimmed	08A2-031

No	1985 Code	1985 Survey Name	NUTTAB 91/92 Code
556	891	Pork leg roast unknown if trimmed	08A3-014
557	892	Beef, brisket, untrimmed	08A1-004
558	893	Beef, brisket, trimmed	08A1-003
559	894	Beef, brisket, unknown if trimmed	08A1-005
560	895	Shepherd's pie	08F1-017
561	896	Bacon rashers, grilled, unknown if trimmed	08E3-040
562	897	Bacon rashers, fried, unknown if trimmed	08E3-041
563	898	Beef stewing cuts unknown if trimmed	08A1-014
564	899	Beef sirloin roast unknown if trimmed	08A1-053
565	900	Beef topside roast unknown if trimmed	08A1-058
566	901	Beef silverside corned, unknown if trimmed	08A1-039
567	902	Beef steak grilled unknown if trimmed	08A1-118
568	903	Beef steak all types unknown if trimmed, unknown cook method	08A1-116
569	905	Brawn, presswurst	08E3-015
570	908	Bacon, rashers, grilled, untrimmed.	08E3-040
571	909	Bacon, rashers, grilled, trimmed	08E3-037
572	910	Bacon, rashers, fried, untrimmed	08E3-041
573	911	Bacon, rashers, fried, trimmed	08E3-043
574	912	Beef burger, beef rissole, fried	08F1-006
575	913	Chuck steak, trimmed, stewed	08A1-013
576	914	Chuck steak, untrimmed, stewed	08A1-014
577	915	Beef, mince, stewed	08A1-071
578	916	Beef, unknown type, roast, untrimmed	08A1-116
579	917	Beef, unknown type, roast, trimmed	08A1-117
580	918	Beef, topside, roast, untrimmed	08A1-058
581	919	Beef, topside, roast, trimmed	08A1-059
582	920	Beef, silverside, corned, untrimmed, boiled	08A1-039
583	921	Beef, silverside, corned, trimmed, boiled	08A1-040
584	922	Beef, steak, grilled, untrimmed	08A1-118
585	923	Beef, steak, grilled, trimmed	08A1-119
586	924	Beef, steak, fried, untrimmed	08A1-116
587	925	Beef, steak, fried, trimmed	08A1-117
588	928	Chicken, meat only, all cooking methods	08C1-013
589	929	Chicken meat & skin, all cooking methods	08C1-012
590	930	Chicken, light meat, no skin, all cooking methods	08C1-013
591	931	Chicken, dark meat only, roasted	08C1-006
592	932	Duck, roast, meat only	08C1-019
593	933	Duck, roast, meat & skin	08C1-018
594	934	Frankfurter (not canned)	08E2-004

No	1985 Code	1985 Survey Name	NUTTAB 91/92 Code
595	936	Ham steak, grilled	08E3-024
596	937	Cured ham, prosciutto, kassler	08E3-007
597	938	Luncheon meat	08E3-011
598	939	Corned beef (canned)	08E3-017
599	942	Kidney, cooked	08D1-006
600	943	Lamb, chops, unspecified, untrimmed	08A2-016
601	944	Lamb, chops, loin, trim, grilled	08A2-017
602	945	Lamb, chops, f/quarter, untrimmed, stew	08A2-072
603	946	Lamb, chops, f/quarter, trim, stew	08A2-071
604	947	Lamb, leg, roast, untrimmed	08A2-011
605	948	Lamb, leg, roast, trimmed	08A2-012
606	949	Lamb, shoulder, roast, untrimmed	08A2-031
607	950	Lamb, shoulder, roast, trimmed	08A2-032
608	951	Liver, cooked, coated in flour	08D1-020
609	953	Liver sausage	08E4-001
610	954	Meat paste	08E4-003
611	955	Oxtail, stewed	08D1-008
612	957	Pork, belly rashers, untrimmed, grilled	08A3-058
613	958	Pork, chops, midloin, untrimmed, grilled	08A3-029
614	960	Pork, leg, untrimmed	08A3-014
615	961	Pork, leg, trimmed	08A3-015
616	962	Rabbit, stewed	08B1-003
617	964	Salami	08E3-048
618	965	Sausage, beef	08E2-008
619	966	Sausage, pork	08E2-014
620	968	Tongue, pickled, canned, lamb	08D1-029
621	969	Turkey, roast, meat only	08C1-023
622	970	Turkey, roast, meat & skin	08C1-022
623	972	Turkey, roast, dark meat only	08C1-020
624	973	Veal, crumbed & fried	08E1-008
625	974	Veal, roasted	08A4-008
626	976	Tripe, stewed	08F1-010
627	977	Pork, crackling	10D1-016
628	979	Liver, cooked, not flour coated	08D1-004
629	980	Brains, lamb, boiled	08D1-014
630	981	Liver, cooked, chicken, not flour coated	08D1-031
631	985	Chicken, crumbed & fried	08E1-005
632	986	Chicken, pressed (chicken roll, loaf)	08E3-016
633	989	Hamburger, with bacon	02F3-011
634	992	Beef, steak, blade, untrimmed	08A1-008

No	1985 Code	1985 Survey Name	NUTTAB 91/92 Code
635	993	Beef, steak, blade, trimmed	08A1-010
636	994	Beef, steak, blade, unknown if trimmed	08A1-009
637	995	Veal, schnitzel, frozen, fried	08E1-008

(a) excludes food codes that could be mapped relating to alcoholic beverages, as intake data in both 1985 and 1995 were obtained from only a very small number of children aged 10-15 years.

Source: SSDA 617, NUTTAB 91/92, ANZFA

Appendix J – Estimated 24-hour intake of nutrients for children, 1985 and 1995

Data relating to intake of alcohol are excluded because intakes were reported by only a very small number of children.

Energy

Table J.1 Comparison of estimated 24-hour intake of ENERGY for children aged 10-15 years, 1985 and 1995

				95% CI mean		
	Sample size	Mean intake Energy (kJ)	Standard deviation	Lower	Upper	Median intake Energy (kJ)
Boys						
1985	2,619	9,670	3,615	9,532	9,808	9,154
1995 NNS Total	544	11,088	3,975	10,754	11,422	10,644
Girls						
1985	2,591	7,586	2,400	7,494	7,678	7,378
1995 NNS Total	488	8,488	2,740	8,244	8,731	8,045

Source: SSDA 617, 1995 NNS and AFNMU

Protein

Table J.2 Comparison of estimated 24-hour intake of PROTEIN for children aged 10-15 years, 1985 and 1995

				95% CI mean		
	Sample size	Mean intake Energy (kJ)	Standard deviation	Lower	Upper	Median intake Energy (kJ)
Boys						
1985	2,619	83.8	34.6	82.4	85.1	78.7
1995 NNS Total	544	95.8	38.8	92.5	99.0	88.0
Girls						
1985	2,591	64.5	23.6	63.6	65.4	61.2
1995 NNS Total	488	72.8	29.5	70.2	75.4	67.8

Source: SSDA 617, 1995 NNS and AFNMU

Total carbohydrates

Table J.3 Comparison of estimated 24-hour intake of TOTAL CARBOHYDRATES for children aged 10-15 years, 1985 and 1995

	Sample size	Mean intake Total carbo-hydrates (g)	Standard deviation	95% CI mean Lower	95% CI mean Upper	Median intake Total carbo-hydrates (g)
Boys						
1985	2,619	283	112	279	287	269
1995 NNS Total	544	345	134	334	356	322
Girls						
1985	2,591	224	76	221	227	215
1995 NNS Total	488	264	89	256	272	258

Source: SSDA 617, 1995 NNS and AFNMU

Total starch

Table J.4 Comparison of estimated 24-hour intake of TOTAL STARCH for children aged 10-15 years, 1985 and 1995

	Sample size	Mean intake Total starch (g)	Standard deviation	95% CI mean Lower	95% CI mean Upper	Median intake Total starch (g)
Boys						
1985	2,619	142	67	139	144	131
1995 NNS Total	544	170	73	164	176	160
Girls						
1985	2,591	109	45	107	110	103
1995 NNS Total	488	126	47	121	130	124

Source: SSDA 617, 1995 NNS and AFNMU

Total sugars

Table J.5 Comparison of estimated 24-hour intake of TOTAL SUGARS for children aged 10-15 years, 1985 and 1995

	Sample size	Mean intake Total sugars (g)	Standard deviation	95% CI mean Lower	95% CI mean Upper	Median intake Total sugars (g)
Boys						
1985	2,619	142	72	139	145	132
1995 NNS Total	544	174	98	166	182	158
Girls						
1985	2,591	115	53	113	117	109
1995 NNS Total	488	137	68	131	143	129

Source: SSDA 617, 1995 NNS and AFNMU

Total fat

Table J.6 Comparison of estimated 24-hour intake of TOTAL FAT for children aged 10-15 years, 1985 and 1995

	Sample size	Mean intake Total fat (g)	Standard deviation	95% CI mean Lower	95% CI mean Upper	Median intake Total fat (g)
Boys						
1985	2,619	96	43	94	97	88
1995 NNS Total	544	101	45	97	105	94
Girls						
1985	2,591	75	31	74	76	72
1995 NNS Total	488	77	33	74	80	72

Source: SSDA 617, 1995 NNS and AFNMU

Cholesterol

Table J.7 Comparison of estimated 24-hour intake of CHOLESTEROL for children aged 10-15 years, 1985 and 1995

	Sample size	Mean intake Cholesterol (mg)	Standard deviation	95% CI mean Lower	95% CI mean Upper	Median intake Cholesterol (mg)
Boys						
1985	2,619	289	210	281	297	237
1995 NNS Total	544	295	188	279	311	245
Girls						
1985	2,591	226	190	219	233	188
1995 NNS Total	488	230	156	216	243	192

Source: SSDA 617, 1995 NNS and AFNMU

Dietary fibre

Table J.8 Comparison of estimated 24-hour intake of DIETARY FIBRE for children aged 10-15 years, 1985 and 1995

	Sample size	Mean intake Dietary fibre (g)	Standard deviation	95% CI mean Lower	95% CI mean Upper	Median intake Dietary fibre (g)
Boys						
1985	2,619	20.6	10.6	20.2	21.1	18.9
1995 NNS Total	544	23.2	11.7	22.2	24.1	20.5
Girls						
1985	2,591	16.8	8.00	16.5	17.1	15.5
1995 NNS Total	488	18.2	7.81	17.5	18.9	16.8

Source: SSDA 617, 1995 NNS and AFNMU

Vitamin A – retinol equivalent

Table J.9 Comparison of estimated 24-hour intake of VITAMIN A – RETINOL EQUIVALENT for children aged 10-15 years, 1985 and 1995

				95% CI mean		
	Sample size	Mean intake Vit A-retinol equiv (µg)	Standard deviation	Lower	Upper	Median intake Vit A-retinol equiv (µg)
Boys						
1985	2,619	1103	3473	970	1236	797
1995 NNS Total	544	1199	2474	991	1407	904
Girls						
1985	2,591	861	1740	794	928	664
1995 NNS Total	488	1074	2651	838	1309	734

Source: SSDA 617, 1995 NNS and AFNMU

Thiamin

Table J.10 Comparison of estimated 24-hour intake of THIAMIN for children aged 10-15 years, 1985 and 1995

				95% CI mean		
	Sample size	Mean intake Thiamin (mg)	Standard deviation	Lower	Upper	Median intake Thiamin (mg)
Boys						
1985	2,619	1.75	1.09	1.71	1.79	1.52
1995 NNS Total	544	2.26	1.47	2.13	2.38	1.91
Girls						
1985	2,591	1.40	0.91	1.36	1.43	1.21
1995 NNS Total	488	1.56	0.92	1.48	1.65	1.34

Source: SSDA 617, 1995 NNS and AFNMU

Riboflavin

Table J.11 Comparison of estimated 24-hour intake of RIBOFLAVIN for children aged 10-15 years, 1985 and 1995

				95% CI mean		
	Sample size	Mean intake Riboflavin (mg)	Standard deviation	Lower	Upper	Median intake Riboflavin (mg)
Boys						
1985	2,619	2.47	1.54	2.41	2.53	2.17
1995 NNS Total	544	2.88	2.01	2.71	3.05	2.47
Girls						
1985	2,591	1.86	1.16	1.82	1.91	1.64
1995 NNS Total	488	2.01	1.31	1.90	2.13	1.72

Source: SSDA 617, 1995 NNS and AFNMU

Niacin equivalent

Table J.12 Comparison of estimated 24-hour intake of NIACIN EQUIVALENT for children aged 10-15 years, 1985 and 1995

	Sample size	Mean intake Niacin equiv (mg)	Standard deviation	95% CI mean Lower	95% CI mean Upper	Median intake Niacin equiv (mg)
Boys						
1985	2,619	34.2	14.9	33.7	34.8	31.7
1995 NNS Total	544	43.6	19.0	42.0	45.2	40.3
Girls						
1985	2,591	26.9	11.0	26.5	27.3	25.3
1995 NNS Total	488	32.8	13.6	31.6	34.0	30.8

Source: SSDA 617, 1995 NNS and AFNMU

Vitamin C

Table J.13 Comparison of estimated 24-hour intake of VITAMIN C for children aged 10-15 years, 1985 and 1995

	Sample size	Mean intake Vit C (mg)	Standard deviation	95% CI mean Lower	95% CI mean Upper	Median intake Vit C (mg)
Boys						
1985	2,619	136	126	131	141	98
1995 NNS Total	544	121	128	110	132	91
Girls						
1985	2,591	129	113	125	134	96
1995 NNS Total	488	116	107	106	125	84

Source: SSDA 617, 1995 NNS and AFNMU

Iron

Table J.14 Comparison of estimated 24-hour intake of IRON for children aged 10-15 years, 1985 and 1995

	Sample size	Mean intake Dietary fibre	Standard deviation	95% CI mean Lower	95% CI mean Upper	Median intake Dietary fibre
Boys						
1985	2,619	13.3	5.98	13.1	13.5	12.2
1995 NNS Total	544	15.4	7.95	14.7	16.1	14.2
Girls						
1985	2,591	9.93	3.95	9.78	10.1	9.48
1995 NNS Total	488	11.0	5.19	10.5	11.4	10.2

Source: SSDA 617, 1995 NNS and AFNMU

Calcium

Table J.15 Comparison of estimated 24-hour intake of CALCIUM for children aged 10-15 years, 1985 and 1995

				95% CI mean		
	Sample size	Mean intake Calcium (mg)	Standard deviation	Lower	Upper	Median intake Calcium (mg)
Boys						
1985	2,619	1007	597	984	1030	888
1995 NNS Total	544	1054	620	1002	1106	934
Girls						
1985	2,591	753	407	737	768	690
1995 NNS Total	488	794	471	752	836	722

Source: SSDA 617, 1995 NNS and AFNMU

Zinc

Table J.16 Comparison of estimated 24-hour intake of ZINC for children aged 10-15 years, 1985 and 1995

				95% CI mean		
	Sample size	Mean intake Zinc (mg)	Standard deviation	Lower	Upper	Median intake Zinc (mg)
Boys						
1985	2,619	11.0	5.84	10.8	11.2	9.94
1995 NNS Total	544	12.1	5.75	11.6	12.6	10.8
Girls						
1985	2,591	8.43	3.97	8.28	8.59	7.78
1995 NNS Total	488	9.06	4.23	8.69	9.44	8.30

Source: SSDA 617, 1995 NNS and AFNMU

Magnesium

Table J.17 Comparison of estimated 24-hour intake of MAGNESIUM for children aged 10-15 years, 1985 and 1995

				95% CI mean		
	Sample size	Mean intake Dietary fibre	Standard deviation	Lower	Upper	Median intake Dietary fibre
Boys						
1985	2,619	276	118	272	281	256
1995 NNS Total	544	311	130	300	322	288
Girls						
1985	2,591	215	81	212	219	206
1995 NNS Total	488	240	88	233	248	231

Source: SSDA 617, 1995 NNS and AFNMU

Appendix K – Estimated 24-hour intake of foods and beverages for children, 1985 and 1995

The food groups are listed in alphabetical order. Data relating to intake of alcoholic beverages are excluded because intakes were reported by only a very small number of children.

Cereals and cereal products

Table K.1 Comparison of estimated 24-hour intake of CEREALS AND CEREAL PRODUCTS for children aged 10-15 years, 1985 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Boys							
1985	2,619	214	190	207	221	162	96.9
1995 NNS Total	544	237	214	219	255	180	98.4
Girls							
1985	2,591	159	134	153	164	125	96.3
1995 NNS Total	488	176	159	162	190	128	95.6

Source: SSDA 617, 1995 NNS and AFNMU

Cereal-based products and dishes

Table K.2 Comparison of estimated 24-hour intake of CEREAL-BASED PRODUCTS AND DISHES for children aged 10-15 years, 1985 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Boys							
1985	2,619	110	145	104	115	60	75.0
1995 NNS Total	544	161	198	144	178	84	75.6
Girls							
1985	2,591	85	106	81	89	46	75.1
1995 NNS Total	488	124	158	110	138	74	72.7

Source: SSDA 617, 1995 NNS and AFNMU

Egg products and dishes

Table K.3 Comparison of estimated 24-hour intake of EGG PRODUCTS AND DISHES for children aged 10-15 years, 1985 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Boys							
1985	2,619	13	38	11	14	0	18.9
1995 NNS Total	544	11	39	7	14	0	12.8
Girls							
1985	2,591	11	37	9	12	0	17.5
1995 NNS Total	488	8	28	5	10	0	10.0

Source: SSDA 617, 1995 NNS and AFNMU

Fats and oils

Table K.4 Comparison of estimated 24-hour intake of FATS AND OILS for children aged 10-15 years, 1985 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Boys							
1985	2,619	19	18	18	20	14	82.2
1995 NNS Total	544	12	14	11	13	10	77.5
Girls							
1985	2,591	15	14	15	16	14	83.2
1995 NNS Total	488	9	10	8	10	6	74.8

Source: SSDA 617, 1995 NNS and AFNMU

Fish and seafood products and dishes

Table K.5 Comparison of estimated 24-hour intake of FISH AND SEAFOOD PRODUCTS AND DISHES for children aged 10-15 years, 1985 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Boys							
1985	2,619	9	35	8	10	0	9.7
1995 NNS Total	544	17	55	13	22	0	12.2
Girls							
1985	2,591	8	28	7	9	0	11.2
1995 NNS Total	488	15	54	10	20	0	10.9

Source: SSDA 617, 1995 NNS and AFNMU

Fruit products and dishes

Table K.6 Comparison of estimated 24-hour intake of FRUIT PRODUCTS AND DISHES for children aged 10-15 years, 1985 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Boys							
1985	2,619	126	163	120	133	85	60.2
1995 NNS Total	544	125	186	109	141	43	52.0
Girls							
1985	2,591	123	136	118	128	86	69.2
1995 NNS Total	488	128	156	115	142	97	58.9

Source: SSDA 617, 1995 NNS and AFNMU

Legumes and pulse products and dishes

Table K.7 Comparison of estimated 24-hour intake of LEGUMES AND PULSE PRODUCTS AND DISHES for children aged 10-15 years, 1985 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Boys							
1985	2,619	7	47	5	9	0	3.5
1995 NNS Total	544	11	59	6	16	0	5.8
Girls							
1985	2,591	3	25	2	4	0	3.0
1995 NNS Total	488	6	29	3	8	0	5.4

Source: SSDA 617, 1995 NNS and AFNMU

Meat, poultry and game products and dishes

Table K.8 Comparison of estimated 24-hour intake of MEAT, POULTRY AND GAME PRODUCTS AND DISHES for children aged 10-15 years, 1985 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Boys							
1985	2,619	138	149	132	144	104	85.1
1995 NNS Total	544	139	141	127	150	111	79.5
Girls							
1985	2,591	106	108	102	110	80	82.8
1995 NNS Total	488	107	113	97	117	78	78.5

Source: SSDA 617, 1995 NNS and AFNMU

Milk products and dishes

Table K.9 Comparison of estimated 24-hour intake of MILK PRODUCTS AND DISHES for children aged 10-15 years, 1985 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Boys							
1985	2,619	542	431	525	558	455	95.3
1995 NNS Total	544	484	399	451	518	392	91.5
Girls							
1985	2,591	372	291	360	383	312	94.9
1995 NNS Total	488	349	333	319	378	281	91.1

Source: SSDA 617, 1995 NNS and AFNMU

Non-alcoholic beverages (excluding plain drinking water)

Table K.10 Comparison of estimated 24-hour intake of NON-ALCOHOLIC BEVERAGES (excluding plain drinking water) for children aged 10-15 years, 1985 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Boys							
1985	2,619	490	414	474	506	438	82.7
1995 NNS Total	544	724	651	670	779	626	87.3
Girls							
1985	2,591	459	362	445	473	429	84.3
1995 NNS Total	488	592	465	551	633	521	85.8

Source: SSDA 617, 1995 NNS and AFNMU

Seed and nut products and dishes

Table K.11 Comparison of estimated 24-hour intake of SEED AND NUT PRODUCTS AND DISHES for children aged 10-15 years, 1985 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Boys							
1985	2,619	3	13	3	4	0	16.9
1995 NNS Total	544	3	14	2	4	0	11.4
Girls							
1985	2,591	3	12	2	3	0	15.6
1995 NNS Total	488	3	12	2	4	0	10.9

Source: SSDA 617, 1995 NNS and AFNMU

Snack foods

Table K.12 Comparison of estimated 24-hour intake of SNACK FOODS for children aged 10-15 years, 1985 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Boys							
1985	2,619	12	28	11	13	0	26.5
1995 NNS Total	544	12	26	9	14	0	28.6
Girls							
1985	2,591	12	26	11	13	0	33.4
1995 NNS Total	488	12	22	10	14	0	36.3

Source: SSDA 616, 1995 NNS and AFNMU

Soup

Table K.13 Comparison of estimated 24-hour intake of SOUP for children aged 10-15 years, 1985 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Boys							
1985	2,619	36	131	31	41	0	9.5
1995 NNS Total	544	30	132	19	41	0	6.8
Girls							
1985	2,591	35	116	31	40	0	11.0
1995 NNS Total	488	20	89	12	28	0	5.8

Source: SSDA 617, 1995 NNS and AFNMU

Sugar products and dishes

Table K.14 Comparison of estimated 24-hour intake of SUGAR PRODUCTS AND DISHES for children aged 10-15 years, 1985 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Boys							
1985	2,619	17	28	16	18	9	74.6
1995 NNS Total	544	27	85	20	34	6	61.5
Girls							
1985	2,591	11	16	11	12	6	67.9
1995 NNS Total	488	26	62	21	31	3	55.2

Source: SSDA 617, 1995 NNS and AFNMU

Vegetable products and dishes

Table K.15 Comparison of estimated 24-hour intake of VEGETABLE PRODUCTS AND DISHES for children aged 10-15 years, 1985 and 1995

				95% CI mean			
	Sample size	Mean intake (g)	Standard deviation	Lower	Upper	Median intake (g)	Proportion consuming (%)
Boys							
1985	2,619	194	179	187	201	165	82.4
1995 NNS Total	544	203	205	186	221	157	78.7
Girls							
1985	2,591	161	135	156	166	145	84.1
1995 NNS Total	488	181	171	166	196	150	83.7

Source: SSDA 617, 1995 NNS and AFNMU

Appendix L – Estimates of physical measurement for children, 1985 and 1995

Height

Table L.1 Comparison of estimated HEIGHT for children aged 10-15 years, 1985 and 1995

				95% CI mean		
	Sample size	Mean (cm)	Standard deviation	Lower	Upper	Median (cm)
Boys						
1985	2,533	156	13.0	155	156	155
1995 NNS Total	543	157	13.6	156	159	156
Girls						
1985	2,506	154	9.9	154	154	155
1995 NNS Total	487	156	9.6	155	157	157

Source: SSDA 617, 1995 NNS and AFNMU

Weight

Table L.2 Comparison of estimated WEIGHT for children aged 10-15 years, 1985 and 1995

				95% CI mean		
	Sample size	Mean (kg)	Standard deviation	Lower	Upper	Median (kg)
Boys						
1985	2,619	45.3	14.8	44.8	45.9	44.5
1995 NNS Total	543	50.1	15.3	48.9	51.4	48.4
Girls						
1985	2,591	44.9	13.4	44.4	45.4	46.0
1995 NNS Total	487	51.4	40.8	47.7	55.0	49.4

Source: SSDA 617, 1995 NNS and AFNMU

Body mass index (BMI)

Table L.3 Comparison of estimated BODY MASS INDEX (a) estimates for children aged 10-15 years, 1985 and 1995

				95% CI mean		
	Sample size	Mean	Standard deviation	Lower	Upper	Median
Boys						
1985	2,533	19.0	2.9	18.9	19.1	18.6
1995 NNS Total	543	19.8	3.7	19.5	20.1	19.2
Girls						
1985	2,506	19.3	3.0	19.2	19.5	19.0
1995 NNS Total	486	20.2	3.4	19.9	20.5	19.8

(a) ratio of weight in kilograms divided by the square of height in metres

Source: SSDA 617, 1995 NNS and AFNMU

Energy intake over basal metabolic rate (EI/BMR)

Table L.4 Comparison of estimated ENERGY INTAKE OVER BASAL METABOLIC RATE (b) for children aged 10-15 years, 1985 and 1995

				95% CI mean		
	Sample size	Mean (mJ)	Standard deviation	Lower	Upper	Median (mJ)
Boys						
1985	2,619	1.75	0.67	1.73	1.78	1.66
1995 NNS Total	543	1.75	0.62	1.69	1.80	1.70
Girls						
1985	2,591	1.37	0.50	1.35	1.39	1.32
1995 NNS Total	487	1.53	0.62	1.47	1.58	1.45

(b) energy intake expressed as a ratio of estimated energy expended at rest based on weight, age and sex (refer glossary)

Source: SSDA 617, 1995 NNS and AFNMU

Glossary

Many of the glossary items in this section have been re-printed from Australian Bureau of Statistics publications (ABS 1997, 1998a, 1998b, 1998c and 1999a) with permission from the Director of the Health Section of the Australian Bureau of Statistics.

ANSURS

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

AUSNUT

A CD Rom released by ANZFA in 1999 comprising seven inter-related data files that contain descriptive and numerical data on the food and nutrient composition of Australian foods. It is an updated, commercial version of the technical support files used to code food intakes reported in the 1995 National Nutrition Survey. The nutrient file in AUSNUT is significantly revised and expanded (over 4500 foods) from NUTTAB95 (1800 foods). The nutrient values in AUSNUT are a mixture of analytical, calculated and imputed data rather than a compilation of mostly analytical data, as is the case for NUTTAB95 (refer NUTTAB).

Biased estimates

Survey results that cannot be relied on to give the true population value even after repeated samples.

Basal metabolic rate

BMR is the amount of energy expended at rest over a given period of time. BMR has been predicted in megajoules (mJ) per 24 hour based on age and sex (Schofield 1985), as recommended by the National Health and Medical Research Council (NHMRC 1991).

BASAL METABOLIC RATE

Age group (years)	Males	Females
10-18	0.074 x weight (kg) + 2.754	0.056 x weight (kg) + 2.898
19-30	0.063 x weight (kg) + 2.896	0.062 x weight (kg) + 2.036
31-60	0.048 x weight (kg) + 3.653	0.034 x weight (kg) + 3.538
Over 60	0.049 x weight (kg) + 2.459	0.038 x weight (kg) + 2.755

EI/BMR has been calculated as energy intake divided by predicted BMR, both expressed in megajoules (equivalent to 1,000 kilojoules).

Body mass index - adults

Based on height and weight as measured by the interviewer. Body mass index (BMI) is body weight in kilograms divided by the square of height in metres (kg/m^2). The groups used are those recommended by the World Health Organisation (1995).

BODY MASS INDEX - adults	
Underweight or thinness:	Less than 18.5
Normal or acceptable weight range (a)	18.5 less than or equal to 20.0 20.0 less than or equal to 25.0
Overweight	25.0 less than or equal to 30.0
Obese	30.0+

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

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

Body mass index – children and adolescents

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

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

Capital city

Defined in the 1995 survey in accordance with the Australian Standard Geographical Classification (edition 2.1) for eight state and territory capital city statistical divisions. Capital cities and metropolitan areas are combined on the CURF for all states and territories except Queensland.

Defined in the 1983 survey as within a 16km radius of National Heart Foundation centres for six state capital cities.

Central limit theorem

The central limit theorem states that for a random sample of observations from any distribution with a finite mean and a finite variance, the average will tend to follow a normal distribution for large samples. This theorem is the main justification for the widespread use of confidence intervals

based on the normal distribution and for t tests when estimating the mean and comparing two means.

Confidence interval

The range of values that has a specified probability (eg 95%) of containing the parameter being estimated (eg mean). The range is defined by the lower and upper confidence limit.

Coverage

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

Direct standardisation

Method used to transform population-based data to a single base population distribution. Use of standardized estimates improves comparability of population-based estimates across time and between subpopulation groups. The population standard used in this report was the population distribution used to weight the 1983 survey results.

Eating occasion

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

- breakfast;
- lunch and brunch;
- dinner; and
- other (this included food and/or beverage break, supper, other extended consumption, not stated and don't know).

Energy intake to BMR ratio (EI/BMR)

The ratio of energy intake over a 24-hour period to BMR predicted on the basis of weight, age and sex. This ratio provides an estimate of the level of physical activity and has also been used to develop cut-off limits for implausibly low intakes.

Estimation procedure

Estimates from the 1995 survey were derived using a complex estimation (weighting) procedure which ensures that survey estimates conform to independent population estimates of the Australian population for the third quarter of 1995. Specifically the estimates conform to Australian age by sex estimates and Australian State by part of State estimates.

Estimates from the 1985 survey were derived using post stratification weights relating to age, sex and state of residence for the Australian population at 30 June 1985.

Estimates from the 1983 survey were derived using post stratification weights relating to age, sex, country of birth and city of residence for the population in selected areas of Australia's six state capital cities at 30 June 1983.

	Standardized estimates were prepared based on the population distribution used to weight the 1983 survey using the direct standardization method.
Food Codebook Database	This database was part of ANSURS. The Food Codebook Database contained information used to code the type and amount of each food/ beverage that was reported in the 24-hour recall.
Food codes	Foods and beverages consumed in the 24-hour dietary recall were allocated eight-digit codes to uniquely identify each food. The first four digits can be used to categorise foods and beverages into a hierarchical classification system. This classification has been published in the *National Nutrition Survey Users' Guid*e Cat No 4801.0. Digits five to seven are simply unique identifiers and the last digit indicates whether the food is a modifiable recipe (value of '2') or a single item food/unmodifiable recipe (value of '1').
	There are two fields that indicate the food code. Most food records contain an 8-digit code in the field FOODCOD1. However modified recipes have a 6-digit code in FOODCOD1 and the 8-digit code of the base recipe in FOODCOD2. For most purposes the 8-digit code of the modified recipes is suitable for categorising foods as the recipe modifications while altering nutrient composition did not alter the nature of the food/beverage.
Food groups	Foods and beverages reported in the 24-hour recall can be categorised to varying levels of detail. This classification was based on those used in the 1983 dietary survey of adults, with modifications done in consultation with experts.
	The major food groups are similar to those used in the National dietary survey of adults, 1983 and the National dietary survey of schoolchildren (aged 10-15 years), 1985. However, there are differences in the classification systems between the surveys.
Heteroscedasticity	Assumes that the means being statistically tested come from populations with unequal variances (ie lack of homogeneity of variances).
Individual food intake questionnaire (IFIQ)	Individual food intake questionnaire, also referred to as the 24-hour recall (refer 24-hour dietary recall).
List survey	Surveys using one or more lists as their sample frame (refer sample frame).
Major food group	The broadest level of output data on food consumption available from the 1995 National Nutrition Survey (ABS 1999a). This level was used to output food intake estimates for the 1983, 1985 and 1995 surveys in this report.

Mean	The estimated value consumed by the population on average.
Median	The estimated value at which half the population consumed more and half the population consumed less.
Metropolitan areas	Defined in the 1995 survey as areas containing capital cities or an urban centre with a population of 100,000 or more. Capital cities and metropolitan areas are combined on the CURF for all states and territories except Queensland. Specifically, the urban centres of Gold Coast and Townsville/ Thuringowa are included in the CURF definition of rest of state for Queensland, rather than being combined with Brisbane capital city.
Nutrient	Throughout this report the term nutrient has been used to describe a range of food components including energy, macronutrients (such as carbohydrate), vitamins, minerals and non-nutrients that may affect health (such as dietary fibre).
NUTTAB	A nutrient composition database developed by ANZFA, it is compiled mainly from analytical data published in the Composition of Foods, Australia (COFA) series. The 1987 and a number of later versions of NUTTAB included food codes originally used for coding food intakes reported in the 1983 and 1985 national dietary surveys. Since the 1995 National Nutrition Survey, food codes from older surveys are no longer issued. In 1996, ANZFA developed a separate customised nutrient composition database to code the food intakes reported in the 1995 National Nutrition Survey. The database (referred to above in the AUSNUT entry as one of the technical support files), was developed in collaboration with the former Department of Health and Family Services, is significantly revised and expanded from NUTTAB95, and forms the basis for the AUSNUT data files.
Part of state	Capital city is the capital city statistical division for each state/territory. Rest of the state is the remaining areas in each state/territory. For some states and territories, the rest of state definition differs on the CURF (refer Metropolitan areas).
Plain drinking water	Tap water or any uncarbonated bottled water, with nothing added, not even lemon. Plain drinking water has been classified as a non-alcoholic beverage in ABS tables on food intake. In nutrient intake tables, the only constituent that has been included is the moisture content.
Post stratification	Dividing the population and sample into subgroups after collection of survey results, often for the purpose of applying weights to minimise the effects of survey under-coverage and or non-response.

Prompt card	A card used to assist respondents to understand concepts and definitions relating to specific survey questions.
Proxy interviews	Proxy interviews were used to collect 24-hour food record data in the 1995 NNS for children aged two years up to four years and for adult participants who could not report for themselves because of physical or mental limitations. The preferred proxy was the person responsible for preparing the participant's meals. Interpreters were used for people who could not conduct the interview in English (this could be either another member of the household, if the respondent agreed, or an interpreter arranged by the ABS). Children aged 5-11 years old were asked to provide their own food intake data with the assistance of an adult household member.
Recipe Database	This database was part of ANSURS. It stored information about the ingredients of recipe foods and was used by the recipe processing system in ANSURS to calculate nutrient values for recipe foods, taking into account changes in moisture, vitamins and minerals as a result of cooking.
Recipe foods	Recipe foods consist of several ingredients mixed/cooked together (eg chocolate cake or macaroni cheese). Within ANSURS, the term 'recipe' refers specifically to foods which consist of other foods in the Food Codebook Database and which consequently can have their recipe modified during coding to take account of specific types of ingredients, such as the kind of fat used.
Sample count	Number of survey respondents.
Sample frame	A systematic and structured record of the population from which a sample can be drawn with a known probability.
Significance level	The pre-selected probability (or alpha risk) in statistical testing of incorrectly rejecting the base assumption (null hypothesis) when it is in fact true. The statistical tests in this report have had a null hypothesis that the two population means are equal.
Scope	When used in a statistical context, the term 'scope' refers to the target population covered by a data collection.
Skewed distribution	A frequency distribution that is not symmetrical about its mean. Data from positively skewed (skewed to the right) distributions have values that are bunched together below the mean and a long tail above the mean.
Standard deviation	A measure of the spread in the distribution of responses to the survey.

Sub-major food group	The second and lower level of the output data on food consumption available from the National Nutrition Survey. See appendix 2 in *National Nutrition Survey Foods Eaten* (Cat No 4804.0) for more details.
Subset	A group of units selected from within a sample that meet specified criterion (eg age-range) rather than selection through probability (ie not a sub-sample).
24-hour dietary recall	This was the methodology used in the 1995 and 1983 surveys to collect detailed information on food and nutrient intake from respondents. In 1995, the 24-hour dietary recall collected a list of all foods and beverages consumed the previous day from midnight to midnight, the amount consumed, the time of consumption, the name of the eating occasion, the source of the foods and beverages, whether they were consumed in the home and whether they were ever in the home. Food and nutrient data were obtained by a face-to-face interview with respondents (or proxies) in their homes in 1995 and at a centralised location in 1983. The interview was conducted by a nutritionist/dietitian.
24-hour dietary record	In 1985, survey participants completed a diary record about food and beverage intakes over a 24-hour recording period, roughly midday to midday, with the assistance of trained staff within the selected schools. Respondents were interviewed individually and diaries were checked as part of follow-up activity.
Weights	Adjustment factors applied to survey results to account for differences in the probability of selection, the rate of response or the relative importance of individuals or subgroups within a sample.

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