Food Frequency,

Western Australia 2006

Health Outcomes Assessment Unit, Epidemiology Branch

Information Management and Reporting Directorate

Health Information Division

Department of Health

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1 Summary

1.1 Background

Information on nutrition was collected as part of a pilot study into the use of mixed mode Computer Assisted Telephone Interviewing (CATI) and postal collection types. Respondents for the study were recruited from people who had been interviewed in October and November 2006 as part of the Western Australian Health and Wellbeing Surveillance System (HWSS); a continuous data collection system that monitors indicators of health and wellbeing in the population.

This report presents the results of the Food Frequency Questionnaire, where responses were converted to a daily equivalent frequency, using a new method, to enable the intake of individual item foods to be analysed in terms of frequency. While the information collected gives an indication of the frequency at which respondents eat specific food groups, it is not a measure of the *amount* of each food type eaten.

The report indicates that the mixed mode has been successful in attaining reliable and valid data based on the response rate (71% of those eligible to respond and 83.7% of those who agreed to respond) and the test-retest results. Almost everyone (98.8%) agreed to have the information provided on the FFQ linked to the information they had previously given on the HWSS. This enabled a test-retest comparison to be made and validation of selected measures such as height and weight.

1.2 Dairy Foods

- Respondents reported consuming dairy food items on average 3.5 times per day.
- Respondents were significantly more likely to report usually consuming some type of low/reduced fat or skim milk compared with some type of whole milk (55.2% compared with 37.8%).
- Females were significantly more likely to report usually consuming low/reduced fat or skim milk compared with males (three in five or 69% compared with two in five or 41.7%).

1.3 Bread and Cereal Foods

- Respondents reported consuming bread and cereal food items on average 2.7 times per day.
- White bread, wholemeal or mixed grain bread, toast or rolls were the most commonly consumed bread and cereal food items, with a daily equivalent frequency of 0.6 and 0.7 times or more than four times per week.

- One in four respondents (27.3%) reported that they don't usually eat breakfast cereal and over half the respondents (56.8%) reported usually consuming breakfast cereals that were wheat flakes, biscuits, puffed wheat without additions and other cereals (including muesli) with added fruit and/or nuts.

1.4 Meat, Fish, Eggs

- Respondents reported consuming meat, fish and eggs on average 2.2 times per day.
- Red meat items were consumed on average .75 times per day, while seafood items were consumed on average 0.4 times per day or around 3 times per week.
- There were no significant sex or age differences in either the overall consumption of meat, fish and eggs or in the individual item consumption.

1.5 Vegetables

- Respondents reported consuming vegetables on average 6.7 times per day.
- Green/mixed salad in a sandwich or as a side salad was the most commonly consumed vegetable item, with a daily equivalent frequency of 0.7 times or around five times per week.
- Females reported consuming vegetables significantly more frequently compared with males (7.6 compared with 5.8 times per day).
- Respondents reported eating an average of 2.5 serves of vegetables each day, which is half the recommended daily intake of five serves.
- Eighteen to 34 year olds reported eating significantly fewer serves of vegetables compared with respondents aged 55 years and over (2.2 compared with 2.7).

1.6 Fruit

- Respondents reported consuming fruit on average 2.4 times per day.
- Apples or pears were the most commonly consumed fruit item, with a daily equivalent frequency of 0.5 times or around four times per week, and were consumed significantly more frequently than any other fruit item.
- Females reported consuming fruit significantly more frequently compared with males (2.9 compared with 1.9 times per day).
- Respondents reported eating an average of 1.6 serves of fruit each day, which is below the recommended daily intake of two serves.

1.7 Baked Goods and Snacks

- Respondents reported consuming baked goods and snacks on average 1.5 times per day.

- Nuts were the most commonly consumed item, with a daily equivalent frequency of 0.3 times or around twice per week.
- Pizzas and hamburgers with buns were the least commonly consumed item, with a daily equivalent frequent of 0.0 or less than once per month, if at all.

1.8 Oil/Fat Type Usually Used in Cooking

- Almost all respondents (97.1%) reported that they usually cook in oils that are unsaturated.
- Olive oil was the most commonly used cooking oil, reported by more than three times as many respondents compared with canola oil, which was the next most commonly used (69.5% compared with 20.9%).
- Males were three times as likely to report usually cooking with other vegetable oil compared with females (5.8% compared with 1.8).
- Females were significantly more likely to report usually cooking with no oil/fat compared with males (2.3% compared with 0.3).
- Respondents aged 55 years and over were significantly more likely to report usually cooking with sunflower/safflower oil compared with younger respondents (6.3% compared with 1.6).

1.9 Sugar, Spreads and Dressings

- Respondents reported consuming sugar, spreads and dressings on average 2.8 times per day.
- Males were significantly more likely to not know what type of dairy/margarine spreads they used compared with females (3.0% compared with 0.0%).
- Females were more than seven times as likely to report not using any dairy/margarine spreads on bread/crackers compared with males (5.3% compared with 0.7%).
- Respondents aged 18 to 34 years were almost twice as likely to report using butter on bread/crackers compared with older respondents (31.7% compared with 16.7%)
- Respondents aged 18 to 34 years were twice as likely to report not using any dairy/margarine spreads compared with people aged 55 years and over (16.1% compared 5.7%).

1.10 Non-Milk Beverages

- Respondents reported consuming non-milk beverages on average 7.5 times per day.
- Water was the most commonly consumed item, with a daily equivalent frequency of 2.8 times, followed by tea and coffee (2.6 times per day).
- Respondents reported consuming alcoholic drinks 1.0 times per day.
- Respondents aged 55 years and over reported consuming soft drinks and water less frequently than younger respondents.

- Males were twice as likely to report usually consuming regular cola drinks compared with females (33.0% compared with 14.9%).

1.11 Height and Weight

- Two in five respondents reported height and weight measurements that classified them as overweight, while one in seven were classified as obese.
- Based on the Body Mass Index (BMI), males were significantly more likely to be classified as overweight compared with females (48.3% compared with 30.2%).
- One in four respondents reported a waist circumference that classified them as overweight, while one in three were classified as obese.
- Based on waist circumference, females were twice as likely to be classified as obese compared with males (39.8% compared with 18.8%).
- The proportion of respondents classified as obese more than doubled when using waist circumference as the standard.

1.12 Comparisons to HWSS

- There was a high test-retest reliability between the milk type reported in the FFQ and the HWSS.
- The mean serves of vegetables consumed daily was 2.5 in the FFQ compared with 3.2 for the HWSS. There was very poor test-retest reliability between the number of serves of vegetables reported in the FFQ and the HWSS.
- The mean serves of fruit consumed daily was 1.6 in both the FFQ and the HWSS. However, there was poor test-retest reliability between the number of serves of fruit reported in the FFQ and the HWSS.
- The findings for the test-retest reliability of fruit and vegetables in this mixed mode comparison did not confirm previous findings in other test-retest field tests. In this report, the reported retest amounts were lower whereas in previous studies the reported retest amounts were higher.
- Similar mean heights and weights were reported in the FFQ and the HWSS. The test-retest reliability between the height and weight responses of the HWSS and the FFQ was very high.

1.13 Conclusion

The mixed mode pilot proved to be a successful procedure to use in obtaining additional information on a specific topic.

2 Introduction

2.1 Background

Information on nutrition was collected as part of a pilot study into the use of mixed mode Computer Assisted Telephone Interviewing (CATI) and postal collection types. The pilot study has provided information on the possible opportunities of mixed mode methods to the Australian Government Department of Health and Ageing (DOH), which funded the study.

Respondents for the study were recruited from people aged 18 years and over who had been interviewed in October and November 2006, as part of the Western Australian Health and Wellbeing Surveillance System (HWSS). The HWSS is a continuous data collection system, which monitors indicators of health and wellbeing in the population. Each month, 550 people throughout Western Australia are interviewed.

The Food Frequency Questionnaire (FFQ), adapted from the Australian Health Measurement Survey (AHMS), was chosen as the measure of nutrition for the self-completed postal survey. Minor amendments were made to enable direct comparability to some of the questions used on the HWSS. A copy of the FFQ version used in this study can be found in Appendix A.

This report presents the results of the FFQ study. All the information provided in this report is based on self-reported data. While the information collected gives an indication of the frequency at which respondents eat specific food groups, it is not a measure of the *amount* of each food type eaten.

2.2 Methodology

2.2.1 Mode of Administration and Sampling

The HWSS is conducted as a Computer Assisted Telephone Interview (CATI), where households are selected by a stratified random process. An approach letter is sent to all selected households. A specially prepared brochure is included in the letter, which explains about the HWSS and provides contact numbers for people to call for more information.

In October and November 2006 respondents who were interviewed for the Health and Wellbeing Surveillance System (HWSS) were asked whether they would be willing to participate in the Food Frequency Survey. Those who agreed were posted a FFQ to complete. Non-responders received a reminder telephone call after seven days and a final reminder letter after another seven days.

2.2.2 Response Rate

Almost 84% agreed to participate in the study. There was little attrition once the respondent had agreed (1.6%). The response rate for those agreeing to participate was very acceptable in terms of population-based surveys for WA.

The response rate of those who completed the FFQ as a percentage of those who agreed to participate was excellent (83.7%) and the response rate of those who completed the FFQ as a percentage of everyone interviewed who was eligible to participate in the study was still quite high (71%) (Table 1).

Table 1: Response rate

	Number	Percent
Aged 18 and over interviewed Oct and Nov 2006	901	98.5
Refused to complete FFQ	136	15.1
Agreed to complete FFQ	765	84.9
Refused after being sent a FFQ	12	1.3
Completed FFQ of those who agreed to do so	**640**	**83.7**
Completed FFQ of those eligible to participate		**71.0**

2.2.3 Weighting the Data

One of the most important features of a report describing the characteristics of any population is the ability to make comparisons between and within areas or categories. In order to do this data must be weighted to the population that is being described, which in this case is WA.

The FFQ data were weighted to compensate for the over-sampling in the rural and remotes areas of WA[a] and then adjusted to the most recent Estimated Resident Population (ERP) for the year of the survey, which in this case was the 2005 ERP released by the ABS in June 2006.[1]

2.2.4 Linking the Data to the HWSS

Respondents to the FFQ were asked whether they agreed to have their FFQ information linked to the information they provided in the HWSS. Almost all (98.8%) of the respondents agreed. A full explanation of the methodology of the HWSS can be found in the paper titled *Design and Methodology, Technical Paper No 1. May 2005*. This document is available at the following web address: <health.wa.gov.au/publications/pop_surveys.cfm>.

a Rural and remote areas of WA are over-sampled proportional to their populations within WA.

2.3 What This Report Contains

2.3.1 Mean Daily Equivalent Frequencies

To analyse the individual item food intake in terms of a frequency, each response was converted to a daily equivalent frequency using the values in Table 2. These values have been adapted from the Victorian Cancer Council FFQ User Guide to accommodate the different response categories in the AHMS FFQ. The Victorian FFQ User Guide can be found at the following web address <cancervic.org.au/downloads/nutrion_assessment/FFQ_user_guide.pdf>.

Table 2: Daily equivalent frequencies

Original Frequency	Daily Equivalent Frequency
Never	0
Less than once per month	0.02
1-3 times per month	0.07
Once per week	0.14
2-4 times per week	0.43
5-6 times per week	0.78
Once per day	1
2-3 times per day	2.5
4+ times per day	4

Each food item is presented in this report as a mean daily equivalent frequency. The individual items within a broad food category are summed to give an indication of the daily equivalent frequency at which the population eats that particular group of foods. For example, the daily equivalent frequencies of the individual bread and cereal items, such as white bread, muesli and rice have been summed to give an indication of the daily equivalent frequency of bread and cereal consumption.

While the report can give an indication of how often any food group is eaten by Western Australians, it cannot provide information about the amount of food eaten. So, we may know that Western Australians use milk on average six times a day, but we do not know how much milk they use.

The FFQ did collect some information regarding amount of fruit and vegetables eaten, but these were to enable comparisons between the answers given to these same questions during the HWSS CATI interview.

2.3.2 Percentages

Percentages have been used in this report to present the proportion of respondents usually consuming specific types of food items. Appendix B contains the reported frequency of each individual food item before it has been converted to equivalent daily use.

2.3.3 Confidence Intervals

Each table presents the mean or percentage of the population eating specific food items along with the 95% confidence interval around that estimate. The 95% confidence interval is the range in which there is a 95% probability that the true estimate lies. The method used to determine whether or not a difference is statistically significant can be found at <health.wa.gov.au/publications/pop_surveys.cfm>.

Confidence intervals are considered to be a conservative measure of difference and where the upper and lower limits of the confidence interval are very close between two estimates, a Chi Square test[b] was performed to confirm whether or not the difference was statistically significant. Chi square statistics have been shown in brackets where they have been used.

2.3.4 Test-Retest Reliability

The FFQ contained four questions that respondents had already provided answers to when they were interviewed by the HWSS. Comparisons between the responses to the FFQ and the HWSS enable the test-retest reliability of the variables to be assessed. The following test-retest analyses were performed on the similar questions:

- Kappa to assess reliability of nominal categorical variables (e.g. milk type)
- Weighted kappa to assess reliability of ordinal categorical variables (e.g. vegetable and fruit serves)
- Intraclass correlation coefficient (ICC) to assess reliability of continuous variables (height and weight).

As the ICC is based on Analysis of Variance it requires normally distributed variables or at a minimum, a symmetrical distribution. As a general rule agreement is considered to be good if the lower 95% confidence interval of the ICC exceeds 75%.[2]

While both kappa and weighted kappa have been estimated and reported for ordinal variables, the estimate of weighted kappa should be used. Basu and Basu[3] recommend that the lower 95% confidence interval of kappa should lie above 0.4 before an acceptable degree of reliability is reached.

b The Chi Square statistic is a more powerful statistic than the confidence interval and less likely to miss significant differences where they exist.

3 Demographics

The demographic characteristics of the sample and weighted population represented by the adults who participated in the FFQ are shown below in Table 3. The majority of these demographic variables were linked from the HWSS.

Table 3: Demographic characteristics of FFQ respondents

	Unweighted Sample (n)	Estimated Proportion (%)
Age		
18 to 44 yrs	210	51.6
45 to 64 yrs	276	32.7
65 yrs & over	153	15.7
Gender		
Females	435	50.2
Males	204	49.8
Australian Born		
Yes	481	74.9
No	152	25.1
Marital Status		
Married	412	68.0
De facto	46	8.4
Widowed	54	3.6
Divorced	50	3.9
Separated	23	1.9
Never married	47	14.2
Region of Residence		
Metro	320	78.2
Rural	225	15.5
Remote	88	6.3
Household income		
Under $20,000	93	8.5
$20,000 to $40,000	130	17.8
$40,000 to $60,000	84	14.2
$60,000 to $80,000	89	17.1
$80,000 to $100,000	71	14.2
More than $100,000	112	19.6
Highest level of education		
Less than Year 10	105	11.9
Year 10 or Year 11	188	26.6
Year 12	271	52.9
TAFE/Trade qualification	39	8.2
Tertiary degree or equivalent	3	0.4

4 Broad Food Groups

The frequency of the individual food items collected by the FFQ have been summed to give an indication of the daily equivalent frequency at which the population eats broad types of foods, shown below in Table 4.

Table 4: Mean daily equivalent frequency of broad food groups

	$\bar{x}$	95% CI
Dairy Foods	3.52	(3.30 - 3.74)
Bread and Cereal Foods	2.65	(2.49 - 2.82)
Meat, Fish, Eggs	2.24	(2.11 - 2.38)
Vegetables	6.70	(6.17 - 7.24)
Fruit	2.43	(2.08 - 2.78)
Baked goods and snacks	1.45	(1.33 - 1.57)
Sugar, spreads and dressings	2.82	(2.55 - 3.08)
Non-milk beverages	7.46	(7.09 - 7.83)

Non-milk beverages were the most commonly consumed food group, with a daily equivalent frequency of 7.5 times per day followed by vegetables, with a daily equivalent of 6.7 times a day. These two food groups were consumed significantly more frequently than any other food groups. Baked goods and snacks were consumed significantly less frequently than all other food groups, with a daily equivalent of 1.4 times a day.

Vegetables were consumed nearly three times as often as fruit and meat, fish and eggs (6.7 compared with 2.4 and 2.2).

While the FFQ does not give any information about the amount of any food group consumed, the fact that the frequency of eating a particular food type roughly follows the Australian Guide to Health Eating indicates that Western Australians have some appreciation of what they should be eating to be healthy.

The following sections will explore each of the broad food groups in more detail.

5 Dairy Foods

Dairy foods are a rich source of calcium and also contribute protein, vitamin A and some B vitamins to one's diet. Calcium is essential for the normal development and maintenance of the skeleton.[4] The *Australian Guide to Healthy Eating* recommends women aged 19 to 60 years eat two to three serves of milk, yoghurt, cheese or alternatives daily, while men of the same age are recommended to eat four serves daily.[5] The mean daily equivalent consumption of dairy foods is shown by sex in Table 5 and by age group in Table 6.

Table 5: Dairy food, mean daily equivalent, by sex

	Male		Female		Persons	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Flavoured milk/soy drink (e.g. milkshake, iced coffee, hot chocolate)	0.24	(0.15 - 0.33)	0.10	(0.08 - 0.13)	0.17	(0.12 - 0.22)
Milk/soy milk as a drink	0.13	(0.07 - 0.19)	0.17	(0.12 - 0.22)	0.15	(0.11 - 0.19)
Milk/soy milk on breakfast cereals	0.48	(0.37 - 0.59)	0.51	(0.45 - 0.56)	0.49	(0.43 - 0.56)
Milk/soy milk in hot beverages (e.g. in tea)	1.77	(1.49 - 2.05)	1.75	(1.58 - 1.93)	1.76	(1.60 - 1.93)
Cream or sour cream	0.06	(0.04 - 0.08)	0.08	(0.06 - 0.09)	0.07	(0.06 - 0.08)
Ice-cream	0.18	(0.14 - 0.22)	0.12	(0.10 - 0.14)	0.15	(0.13 - 0.17)
Yoghurt	0.24	(0.17 - 0.30)	0.34	(0.29 - 0.40)	0.29	(0.25 - 0.33)
Cottage or ricotta cheese	0.03	(0.02 - 0.04)	0.05	(0.04 - 0.06)	0.04	(0.03 - 0.05)
Cheddar and all other cheeses	0.49	(0.41 - 0.57)	0.44	(0.40 - 0.49)	0.47	(0.42 - 0.51)
Dairy Foods	**3.57**	**(3.21 - 3.93)**	**3.47**	**(3.22 - 3.72)**	**3.52**	**(3.30 - 3.74)**

Respondents reported consuming dairy food items on average 3.5 times per day. Milk/soy milk in hot beverages was the most commonly consumed dairy food item, with a daily equivalent frequency of 1.8 times. This was consumed at least 3.5 times more often than any other dairy item. Milk/soy milk on breakfast cereals was consumed on average 0.5 times per day, or 3.5 times per week, while cottage or ricotta cheese were very rarely consumed.

There were no significant sex differences in the consumption of dairy food items.

Table 6: Dairy food, mean daily equivalent, by age

	18 to 34 years		35 to 54 years		55 years & over	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Flavoured milk/soy drink (e.g. milkshake, iced coffee, hot chocolate)	0.25	(0.14 - 0.36)	0.17	(0.09 - 0.24)	0.09	(0.06 - 0.12)
Milk/soy milk as a drink	0.12	(0.07 - 0.17)	0.19	(0.11 - 0.27)	0.14	(0.09 - 0.18)
Milk/soy milk on breakfast cereals	0.50	(0.37 - 0.63)	0.46	(0.35 - 0.57)	0.54	(0.47 - 0.61)
Milk/soy milk in hot beverages (e.g. in tea)	1.48	(1.13 - 1.83)	1.98	(1.74 - 2.21)	1.80	(1.54 - 2.05)
Cream or sour cream	0.07	(0.04 - 0.10)	0.06	(0.05 - 0.08)	0.08	(0.06 - 0.10)
Ice-cream	0.14	(0.09 - 0.19)	0.14	(0.10 - 0.17)	0.17	(0.14 - 0.20)
Yoghurt	0.26	(0.17 - 0.35)	0.27	(0.22 - 0.32)	0.35	(0.28 - 0.42)
Cottage or ricotta cheese	0.02	(0.01 - 0.03)	0.04	(0.03 - 0.06)	0.05	(0.03 - 0.07)
Cheddar and all other cheeses	0.47	(0.37 - 0.57)	0.48	(0.40 - 0.55)	0.46	(0.39 - 0.52)
Dairy Foods	**3.29**	**(2.83 - 3.75)**	**3.75**	**(3.41 - 4.09)**	**3.46**	**(3.16 - 3.76)**

The daily equivalent frequencies of dairy food items were very similar across all age groups with the exception of milk/soy milk in hot beverages. This was consumed significantly more frequently by 35 to 54 year olds compared with 18 to 34 year olds (2.0 compared with 1.5, t=2.33 df=1 p<0.02).

5.1 Milk Type

Dairy foods are rich in calcium, which is good for health and in particular bone density. These foods can be relatively high in saturated fat, providing over a quarter of the saturated fat in the diet of Australian adults. Adults are recommended to chose reduced-fat varieties where possible.[4] The FFQ included a question about the type of milk usually used and the results are shown by sex in Table 7 and age group in Table 8.

Table 7: Type of milk usually consumed, by sex

	Male		Female		Persons	
	%	95% CI	%	95% CI	%	95% CI
Whole	47.89	(37.99 - 57.96)	22.86	(18.04 - 28.51)	35.60	(29.78 - 41.89)
Low/reduced fat, *with* or *without* added calcium	32.62	(24.17 - 42.37)	43.56	(37.32 - 50.01)	37.99	(32.50 - 43.81)
Skim	6.83	(3.78 - 12.05)	17.74	(12.95 - 23.83)	12.19	(9.11 - 16.12)
Evaporated or sweetened condensed milk	0.63	(0.09 - 4.34)	0.00	(0.00 - 0.00)	0.32	(0.04 - 2.24)
Soy milk - whole	3.80	(1.42 - 9.76)	3.89	(1.72 - 8.58)	3.85	(2.03 - 7.16)
Soy milk - reduced fat	1.10	(0.32 - 3.71)	4.72	(2.36 - 9.20)	2.88	(1.56 - 5.25)
Other - whole	2.99	(0.67 - 12.37)	1.36	(0.37 - 4.83)	2.19	(0.72 - 6.46)
Other - reduced fat	1.17	(0.40 - 3.44)	2.99	(1.33 - 6.58)	2.06	(1.07 - 3.96)
Don't consume milk	2.75	(0.59 - 11.84)	2.89	(1.49 - 5.52)	2.82	(1.23 - 6.33)
Don't know	0.22	(0.03 - 1.55)	0.00	(0.00 - 0.00)	0.11	(0.02 - 0.79)

Respondents were significantly more likely to report usually consuming some type of low/reduced fat or skim milk compared with some type of whole milk (55.2% compared with 41.7%). Soy milk and other milk types were usually consumed by significantly fewer respondents than whole and low/reduced fat or skim milk.

Females were significantly more likely to report usually consuming low/reduced fat or skim milk compared with males (three in five or 69% compared with two in five or 41.7%). Males were more than twice as likely to report usually consuming whole milk compared with females (54.7% compared with 28.2%), while females were more than twice as likely to report usually consuming skim milk compared with males (17.7% compared with 6.8%).

Table 8: Type of milk usually consumed, by age

	18 to 34 years		34 to 54 years		55 years & over	
	%	95% CI	%	95% CI	%	95% CI
Whole	41.30	(27.59 - 56.51)	35.41	(27.89 - 43.73)	29.75	(23.05 - 37.45)
Low/reduced fat, *with* or *without* added calcium	29.38	(18.23 - 43.70)	41.35	(33.61 - 49.54)	42.66	(35.46 - 50.19)
Skim	11.92	(6.07 - 22.09)	10.31	(6.40 - 16.21)	15.03	(10.33 - 21.35)
Evaporated or sweetened condensed milk	0.00	(0.00 - 0.00)	0.00	(0.00 - 0.00)	1.09	(0.15 - 7.35)
Soy milk - whole	4.92	(1.57 - 14.35)	3.52	(1.14 - 10.32)	3.14	(1.35 - 7.12)
Soy milk - reduced fat	3.19	(0.79 - 12.01)	3.14	(1.44 - 6.70)	2.19	(0.96 - 4.92)
Other - whole	3.74	(0.61 - 19.82)	2.57	(0.79 - 8.03)	0.00	(0.00 - 0.00)
Other - reduced fat	2.08	(0.43 - 9.54)	1.27	(0.54 - 2.97)	3.12	(1.32 - 7.19)
Don't consume milk	3.47	(0.49 - 20.75)	2.15	(0.91 - 5.02)	3.02	(1.37 - 6.56)
Don't know	0.00	(0.00 - 0.00)	0.28	(0.04 - 1.98)	0.00	(0.00 - 0.00)

Despite the proportion of respondents who reported usually using whole milk decreasing with age, there were no significant age differences among those who reported usually consuming whole, low/reduced fat or skim milk. Respondents aged 55 years and over were significantly more likely to report usually using evaporated or sweetened condensed milk compared with younger respondents (1.1% compared with 0.0%) and significantly less likely to report usually using other whole milk (0.0% compared with 3.1%).

6 Bread and Cereal Foods

Bread and cereal grains are a good source of carbohydrate and dietary fibre and are an important source of protein. They are good sources of vitamins and minerals and are mostly low in fat. *The Australian Guide to Health Eating* recommends that bread and cereal foods should form the greatest proportion of food and recommend four to nine serves daily for women aged 19 to 60 and five to twelve serves for men of the same age.[5] The mean daily equivalent consumption of bread and cereal foods is shown by sex in Table 9 and by age group in Table 10.

Table 9: Bread and cereal foods, mean daily equivalent, by sex

	Male		Female		Persons	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
White bread, toast or rolls	0.77	(0.60 - 0.95)	0.40	(0.33 - 0.47)	0.58	(0.49 - 0.68)
Wholemeal or mixed grain bread, toast or rolls	0.62	(0.50 - 0.75)	0.73	(0.64 - 0.81)	0.67	(0.60 - 0.75)
English muffin, crumpet, foccacia or flat bread	0.07	(0.04 - 0.09)	0.09	(0.07 - 0.11)	0.08	(0.06 - 0.09)
Dry or savoury biscuits, crispbread, crackers	0.24	(0.17 - 0.31)	0.31	(0.27 - 0.36)	0.27	(0.23 - 0.32)
Muesli	0.11	(0.07 - 0.15)	0.15	(0.11 - 0.18)	0.13	(0.10 - 0.16)
Cooked porridge	0.05	(0.03 - 0.07)	0.18	(0.06 - 0.29)	0.11	(0.05 - 0.17)
Breakfast cereal	0.47	(0.38 - 0.55)	0.42	(0.37 - 0.48)	0.45	(0.40 - 0.50)
Rice including white or brown	0.21	(0.17 - 0.26)	0.23	(0.20 - 0.26)	0.22	(0.19 - 0.25)
Pasta including filled pasta, noodles	0.17	(0.14 - 0.20)	0.22	(0.19 - 0.25)	0.19	(0.17 - 0.22)
Bread and Cereal Foods	**2.67**	**(2.40 - 2.93)**	**2.64**	**(2.45 - 2.83)**	**2.65**	**(2.49 - 2.82)**

Respondents reported consuming bread and cereal food items on average 2.7 times per day. White bread, wholemeal or mixed grain bread, toast or rolls were the most commonly consumed bread and cereal food items, with a daily equivalent frequency of 0.6 and 0.7 times or more than four times per week. In contrast, English muffins, crumpets, foccacia or flat bread, muesli and cooked porridge were consumed 0.1 times per day or less than once per week.

Males reported consuming white bread, toast or rolls twice as frequently compared with females (0.8 compared with 0.4 times per day). Females reported consuming cooked porridge and dry or savoury biscuits, crispbread and crackers significantly more frequently compared with males (0.2

compared with 0.0 times per day and 0.3 compared with 0.2 times per day). There were no other significant differences.

Table 10: Bread and cereal foods, mean daily equivalent, by age

	18 to 34 years		35 to 54 years		55 years & over	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
White bread, toast or rolls	0.52	(0.35 - 0.70)	0.64	(0.48 - 0.80)	0.58	(0.43 - 0.73)
Wholemeal or mixed grain bread, toast or rolls	0.60	(0.45 - 0.76)	0.65	(0.52 - 0.77)	0.78	(0.68 - 0.89)
English muffin, crumpet, foccacia or flat bread	0.09	(0.06 - 0.13)	0.09	(0.07 - 0.11)	0.05	(0.04 - 0.07)
Dry or savoury biscuits, crispbread, crackers	0.15	(0.10 - 0.21)	0.31	(0.24 - 0.39)	0.36	(0.29 - 0.42)
Muesli	0.08	(0.04 - 0.12)	0.15	(0.10 - 0.20)	0.16	(0.11 - 0.21)
Cooked porridge	0.16	(-0.02 - 0.34)	0.06	(0.03 - 0.08)	0.13	(0.10 - 0.17)
Breakfast cereal	0.40	(0.28 - 0.51)	0.42	(0.36 - 0.48)	0.54	(0.47 - 0.61)
Rice including white or brown	0.23	(0.18 - 0.28)	0.26	(0.21 - 0.31)	0.16	(0.13 - 0.19)
Pasta including filled pasta, noodles	0.24	(0.19 - 0.30)	0.20	(0.17 - 0.22)	0.14	(0.11 - 0.16)
Bread and Cereal Foods	**2.46**	**(2.10 - 2.82)**	**2.74**	**(2.49 - 2.98)**	**2.76**	**(2.56 - 2.95)**

Respondents aged 18 to 34 years reported consuming dry or savoury biscuits, crispbread and crackers significantly less frequently compared with older respondents (0.2 compared with 0.3 and 0.4 times per day). There were no other significant differences.

6.1 Bread/Rolls Type

The *Dietary Guidelines for Australian Adults* recommend choosing wholegrain breads, as these are generally higher in dietary fibre, which has been associated with a reduced risk of coronary heart disease.[4] The type of bread/rolls respondents usually consumed is shown by sex in Table 11 and by age in Table 12.

Table 11: Type of bread/rolls usually consumed, by sex

	Male		Female		Persons	
	%	95% CI	%	95% CI	%	95% CI
White fibre-enriched	20.56	(13.83 - 29.45)	13.88	(10.13 - 18.74)	17.37	(13.28 - 22.39)
Other white	30.98	(21.85 - 41.89)	16.04	(11.50 - 21.93)	23.85	(18.41 - 30.29)
Wholemeal	18.27	(12.10 - 26.64)	23.68	(18.00 - 30.50)	20.86	(16.39 - 26.16)
Rye	0.76	(0.23 - 2.49)	2.76	(1.41 - 5.32)	1.72	(0.95 - 3.08)
Mixed grain with soy/linseed	7.49	(4.02 - 13.52)	16.27	(11.76 - 22.09)	11.68	(8.61 - 15.68)
Other mixed/multigrain	21.45	(12.81 - 33.68)	24.75	(19.35 - 31.09)	23.03	(17.49 - 29.69)
Don't eat bread	0.47	(0.07 - 3.32)	2.61	(0.96 - 6.90)	1.49	(0.61 - 3.64)

Two in five respondents reported usually consuming white bread (41.2%), one in three reported usually consuming mixed or multigrain breads (34.7%) and one in five reported usually consuming wholemeal (20.9%). Rye was the least common bread/roll usually consumed (1.7%).

Respondents were twice as likely to report usually consuming other mixed/multigrain breads compared with mixed grain with soy/linseed (23.0% compared with 11.7%).

Males were significantly more likely to report usually consuming white bread compared with females (51.5% compared with 29.9%, x^2=12.04, *df*=1, *p*<.05). In contrast, females were twice as likely to report usually consuming mixed grain with soy/linseed compared with males (16.3% compared with 7.5%, x^2=5.37, *df*=1, *p*<.05).

Table 12: Type of bread/rolls usually consumed, by age

	18 to 34 years		35 to 54 years		55 years & over	
	%	95% CI	%	95% CI	%	95% CI
White fibre-enriched	13.96	(7.20 - 25.33)	24.75	(17.93 - 33.13)	11.02	(6.87 - 17.20)
Other white	26.55	(15.05 - 42.43)	21.18	(14.57 - 29.74)	24.29	(17.61 - 32.50)
Wholemeal	17.44	(9.32 - 30.27)	16.69	(11.14 - 24.25)	31.18	(24.11 - 39.26)
Rye	0.00	(0.00 - 0.00)	2.54	(1.17 - 5.39)	2.70	(1.10 - 6.48)
Mixed grain with soy/linseed	10.16	(4.94 - 19.74)	12.85	(8.21 - 19.57)	11.93	(8.03 - 17.36)
Other mixed/multigrain	30.29	(17.59 - 46.94)	20.52	(14.94 - 27.51)	17.49	(11.99 - 24.80)
Don't eat bread	1.60	(0.22 - 10.64)	1.47	(0.47 - 4.52)	1.39	(0.38 - 4.91)

Respondents aged 35 to 54 years were significantly more likely to report usually consuming white fibre-enriched bread compared with respondents aged 55 years and over (24.8% compared with 11.0%). There was no significant difference in the consumption of other white bread.

Respondents aged 55 years and over were twice as likely to report usually consuming wholemeal bread compared with younger respondents (31.2% compared with 17%). Those 35 years old and over were significantly more likely to report usually consuming rye bread compared with younger respondents (2.6% compared with 0.0%).

6.2 Breakfast Cereal Type

Different cereals provide both different amounts and types of dietary fibre, phytochemicals and nutritive antioxidants. Wholegrain cereals, which are generally higher in dietary fibre, and cereals with a lower glycaemic index are recommended.[4] The type of breakfast cereal respondents usually consumed is shown by sex in

Table 13 and by age in Table 14.

Table 13: Type of breakfast cereal usually consumed, by sex

	Male		Female		Persons	
	%	95% CI	%	95% CI	%	95% CI
Wheat flakes, biscuits, puffed wheat without additions (e.g. Weet-Bix™, Vita Brits™)	31.91	(23.18 - 42.13)	26.59	(20.93 - 33.13)	29.24	(23.92 - 35.19)
Corn and rice-based cereals without additions (e.g. cornflakes, rice bubbles, Special K™)	10.71	(5.87 - 18.75)	9.55	(6.50 - 13.81)	10.13	(7.05 - 14.34)
Bran-based cereals without additions (e.g. Allbran™, Bran Flakes™)	1.99	(0.61 - 6.28)	3.53	(1.73 - 7.09)	2.76	(1.48 - 5.11)
Cereals with added sugar/flavour (e.g. Nutrigrain™, Coco Pops™)	2.78	(0.98 - 7.60)	1.97	(0.85 - 4.50)	2.37	(1.18 - 4.70)
Other cereals (including muesli) with added fruit and/or nuts (e.g. Sustain™, Sultana Bran™, Muesli Flakes™)	23.35	(16.21 - 32.43)	31.81	(25.76 - 38.56)	27.61	(22.66 - 33.17)
Breakfast bars	0.24	(0.03 - 1.68)	0.94	(0.30 - 2.88)	0.59	(0.22 - 1.58)
Don't eat breakfast cereal	29.02	(19.31 - 41.13)	25.60	(19.92 - 32.25)	27.30	(21.43 - 34.09)

While one in four respondents (27.3%) reported that they don't usually eat breakfast cereal, over half the respondents (56.8%) reported usually consuming breakfast cereals that were wheat flakes, biscuits, puffed wheat without additions and other cereals (including muesli) with added fruit and/or nuts.

Corn and rice-based cereals without additions (10.1%) were significantly less likely to be usually consumed compared with wheat flakes, biscuits, puffed wheat without additions (29.2%) and other cereals (including muesli) with added fruit and/or nuts (27.6%). However, corn and rice-based cereals without additions were significantly more likely to be consumed than bran-based

cereals without additions (2.8%), cereals with added sugar/flavour (2.4%) and breakfast bars (0.6%).

Table 14: Type of breakfast cereal usually consumed, by age

	Male		Female		Persons	
	%	95% CI	%	95% CI	%	95% CI
Wheat flakes, biscuits, puffed wheat without additions (e.g. Weet-Bix™, Vita Brits™)	31.91	(23.18 - 42.13)	26.59	(20.93 - 33.13)	29.24	(23.92 - 35.19)
Corn and rice-based cereals without additions (e.g. cornflakes, rice bubbles, Special K™)	10.71	(5.87 - 18.75)	9.55	(6.50 - 13.81)	10.13	(7.05 - 14.34)
Bran-based cereals without additions (e.g. Allbran™, Bran Flakes™)	1.99	(0.61 - 6.28)	3.53	(1.73 - 7.09)	2.76	(1.48 - 5.11)
Cereals with added sugar/flavour (e.g. Nutrigrain™, Coco Pops™)	2.78	(0.98 - 7.60)	1.97	(0.85 - 4.50)	2.37	(1.18 - 4.70)
Other cereals (including muesli) with added fruit and/or nuts (e.g. Sustain™, Sultana Bran™, Muesli Flakes™)	23.35	(16.21 - 32.43)	31.81	(25.76 - 38.56)	27.61	(22.66 - 33.17)
Breakfast bars	0.24	(0.03 - 1.68)	0.94	(0.30 - 2.88)	0.59	(0.22 - 1.58)
Don't eat breakfast cereal	29.02	(19.31 - 41.13)	25.60	(19.92 - 32.25)	27.30	(21.43 - 34.09)

There were no significant differences in the type of breakfast cereal usually consumed by either sex or age.

7 Meat, Fish, Eggs

Meat, fish and eggs contribute a number of important nutrients to diet, including valuable sources of protein and a number of minerals and vitamins, such as iron, zinc and vitamin B_{12}.[3] *The Australian Guide to Healthy Eating* recommends one to one-and-a-half serves of meat, fish and eggs each day for women aged 19 to 60 years and one to two serves for men of the same age. Red meat is recommended to be eaten three to four times per week.[5] The mean daily equivalent consumption of meat, fish and eggs is shown by sex in Table 15 and by age in Table 16.

Respondents reported consuming meat, fish and eggs on average 2.2 times per day. The majority of the food items were consumed at a daily equivalent frequency of 0.1 or 0.2 times per day, or more than once per week. Liver, including pate and other offal were rarely, if ever, consumed — 0.01 times per day. Red meat items were consumed on average .75 times per day, while seafood items were consumed on average 0.4 times per day or around 3 times per week.

There were no significant sex or age differences in either the overall consumption of meat, fish and eggs or in the individual item consumption.

Table 15: Meat, fish and eggs, mean daily equivalent, by sex

	Male		Female		Persons	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Mince dishes (e.g. bolognaise sauce, rissoles, meatloaf)	0.15	(0.12 - 0.18)	0.16	(0.14 - 0.18)	0.16	(0.14 - 0.17)
Mixed dishes with beef or veal (e.g. stir-fry, cooked in simmer sauce or as casserole)	0.15	(0.12 - 0.19)	0.16	(0.14 - 0.18)	0.16	(0.14 - 0.18)
Beef or veal - roast, chop or steak	0.23	(0.19 - 0.27)	0.19	(0.17 - 0.21)	0.21	(0.19 - 0.23)
Mixed dishes with lamb (as for beef)	0.11	(0.09 - 0.13)	0.11	(0.09 - 0.12)	0.11	(0.09 - 0.12)
Lamb - roast, chop or steak	0.11	(0.09 - 0.13)	0.11	(0.09 - 0.12)	0.11	(0.10 - 0.12)
Mixed dishes with pork (as for beef)	0.06	(0.04 - 0.07)	0.06	(0.04 - 0.07)	0.06	(0.05 - 0.07)
Pork - roast, chop or steak	0.07	(0.05 - 0.09)	0.06	(0.05 - 0.07)	0.06	(0.05 - 0.08)
Sausages, frankfurters	0.10	(0.08 - 0.13)	0.07	(0.06 - 0.08)	0.09	(0.07 - 0.10)
Bacon	0.11	(0.08 - 0.13)	0.08	(0.07 - 0.10)	0.09	(0.08 - 0.11)
Ham	0.20	(0.16 - 0.24)	0.18	(0.15 - 0.21)	0.19	(0.17 - 0.21)
Luncheon meats, salami, or devon	0.17	(0.12 - 0.23)	0.10	(0.08 - 0.12)	0.14	(0.11 - 0.17)
Liver including pate	0.01	(0.01 - 0.02)	0.01	(0.01 - 0.02)	0.01	(0.01 - 0.02)
Other offal (e.g. kidneys)	0.01	(0.00 - 0.01)	0.00	(0.00 - 0.01)	0.00	(0.00 - 0.01)
Mixed dishes with chicken, turkey, duck (e.g. stir-fry, cooked in simmer sauce or as casserole)	0.14	(0.10 - 0.17)	0.16	(0.14 - 0.18)	0.15	(0.13 - 0.17)
Chicken, turkey, duck - roast, steamed, BBQ, fried	0.16	(0.13 - 0.19)	0.17	(0.15 - 0.19)	0.16	(0.15 - 0.18)
Canned fish (e.g. tuna, salmon, sardines)	0.12	(0.08 - 0.16)	0.18	(0.15 - 0.21)	0.15	(0.13 - 0.18)
Fish - steamed, baked, grilled	0.08	(0.07 - 0.10)	0.11	(0.10 - 0.13)	0.10	(0.09 - 0.11)
Fish - fried, battered, crumbed	0.07	(0.05 - 0.08)	0.06	(0.05 - 0.08)	0.07	(0.06 - 0.08)
Other seafood (e.g. prawns, oysters, calamari)	0.06	(0.04 - 0.07)	0.05	(0.04 - 0.06)	0.05	(0.04 - 0.06)
Eggs or egg dishes	0.22	(0.18 - 0.26)	0.21	(0.17 - 0.24)	0.21	(0.19 - 0.24)
Meat, Fish, Eggs	**2.30**	**(2.06 - 2.54)**	**2.19**	**(2.06 - 2.32)**	**2.24**	**(2.11 - 2.38)**

Table 16: Meat, fish and eggs, mean daily equivalent, by age

	18 to 34 years		35 to 54 years		55 years & over	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Mince dishes (e.g. bolognaise sauce, rissoles, meatloaf)	0.18	(0.14 - 0.22)	0.16	(0.14 - 0.18)	0.12	(0.10 - 0.15)
Mixed dishes with beef or veal (e.g. stir-fry, cooked in simmer sauce or as casserole)	0.17	(0.13 - 0.21)	0.17	(0.15 - 0.20)	0.13	(0.11 - 0.14)
Beef or veal - roast, chop or steak	0.19	(0.14 - 0.24)	0.23	(0.20 - 0.26)	0.21	(0.18 - 0.24)
Mixed dishes with lamb (as for beef)	0.09	(0.07 - 0.11)	0.12	(0.10 - 0.14)	0.11	(0.09 - 0.13)
Lamb - roast, chop or steak	0.09	(0.07 - 0.12)	0.11	(0.09 - 0.13)	0.12	(0.10 - 0.14)
Mixed dishes with pork (as for beef)	0.05	(0.04 - 0.07)	0.05	(0.04 - 0.07)	0.06	(0.05 - 0.08)
Pork - roast, chop or steak	0.08	(0.05 - 0.11)	0.06	(0.04 - 0.07)	0.06	(0.04 - 0.07)
Sausages, frankfurters	0.09	(0.06 - 0.13)	0.08	(0.06 - 0.10)	0.08	(0.07 - 0.10)
Bacon	0.11	(0.07 - 0.16)	0.08	(0.07 - 0.10)	0.09	(0.07 - 0.11)
Ham	0.23	(0.17 - 0.29)	0.19	(0.15 - 0.22)	0.15	(0.12 - 0.18)
Luncheon meats, salami, or devon	0.17	(0.10 - 0.25)	0.14	(0.10 - 0.18)	0.08	(0.06 - 0.11)
Liver including pate	0.01	(0.00 - 0.01)	0.01	(0.01 - 0.01)	0.03	(0.01 - 0.05)
Other offal (e.g. kidneys)	0.00	(0.00 - 0.01)	0.00	(0.00 - 0.00)	0.01	(0.01 - 0.01)
Mixed dishes with chicken, turkey, duck (e.g. stir-fry, cooked in simmer sauce or as casserole)	0.18	(0.13 - 0.22)	0.16	(0.13 - 0.19)	0.10	(0.08 - 0.11)
Chicken, turkey, duck - roast, steamed, BBQ, fried	0.17	(0.13 - 0.21)	0.20	(0.16 - 0.23)	0.12	(0.10 - 0.14)
Canned fish (e.g. tuna, salmon, sardines)	0.16	(0.10 - 0.23)	0.13	(0.11 - 0.16)	0.16	(0.13 - 0.20)
Fish - steamed, baked, grilled	0.08	(0.06 - 0.10)	0.10	(0.08 - 0.11)	0.13	(0.11 - 0.15)
Fish - fried, battered, crumbed	0.07	(0.05 - 0.09)	0.06	(0.04 - 0.07)	0.08	(0.06 - 0.09)
Other seafood (e.g. prawns, oysters, calamari)	0.05	(0.03 - 0.06)	0.05	(0.04 - 0.06)	0.06	(0.04 - 0.08)
Eggs or egg dishes	0.21	(0.16 - 0.27)	0.22	(0.18 - 0.27)	0.20	(0.17 - 0.23)
Meat, Fish, Eggs	**2.38**	**(2.05 - 2.72)**	**2.30**	**(2.12 - 2.48)**	**2.01**	**(1.85 - 2.18)**

8 Vegetables

Vegetables and legumes are a good source of vitamins, minerals, dietary fibre and carbohydrate. The consumption of a variety of vegetables is recommended, including salad vegetables and fruits (e.g. lettuce, tomato, cucumber and capsicum), dark green vegetables (e.g. spinach and broccoli), orange or yellow vegetables (e.g. pumpkin and carrots), starchy vegetables (e.g. potatoes) and crucifers (e.g. broccoli, cauliflower and cabbage).[4] *The Australian Guide to Healthy Eating* recommends four to seven serves of vegetables and legumes each day for women aged 19 to 60 years and five to eight serves for men of the same age.[5] The mean daily equivalent consumption of vegetables is shown by sex in Table 17 and Table 18 and by age in Table 19 and Table 20.

Table 17: Vegetables, mean daily equivalent, by sex

	Male		Female		Persons	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Green/mixed salad in a sandwich or as a side salad	0.68	(0.54 - 0.83)	0.73	(0.64 - 0.81)	0.71	(0.62 - 0.79)
Stir-fry and mixed cooked vegetables including vegetable soups	0.38	(0.32 - 0.44)	0.54	(0.49 - 0.60)	0.46	(0.42 - 0.51)
Excluding the above dishes						
Potato cooked without fat (e.g. boiled, mashed, dry baked)	0.33	(0.28 - 0.38)	0.32	(0.29 - 0.36)	0.33	(0.30 - 0.36)
Potato cooked with fat (e.g. chips, gems, wedges, saute, roast)	0.14	(0.11 - 0.17)	0.15	(0.08 - 0.22)	0.14	(0.11 - 0.18)
Carrots	0.39	(0.32 - 0.46)	0.50	(0.45 - 0.55)	0.45	(0.40 - 0.49)
Sweet potatoes and other root vegetables	0.16	(0.13 - 0.20)	0.27	(0.23 - 0.31)	0.22	(0.19 - 0.25)
Peas	0.30	(0.25 - 0.35)	0.29	(0.26 - 0.33)	0.30	(0.27 - 0.33)
Grean beans	0.23	(0.19 - 0.28)	0.28	(0.25 - 0.31)	0.26	(0.23 - 0.29)
Silverbeet or spinach	0.11	(0.06 - 0.15)	0.16	(0.13 - 0.19)	0.13	(0.11 - 0.16)
Salad greens including lettuce, rocket or endive	0.40	(0.32 - 0.47)	0.53	(0.48 - 0.58)	0.46	(0.42 - 0.51)
Celery, asparagus or bean sprouts	0.15	(0.10 - 0.19)	0.24	(0.20 - 0.27)	0.19	(0.16 - 0.22)
Broccoli	0.27	(0.22 - 0.31)	0.35	(0.32 - 0.39)	0.31	(0.28 - 0.34)
Cauliflower	0.21	(0.17 - 0.25)	0.26	(0.23 - 0.29)	0.23	(0.21 - 0.26)
Brussel sprouts and all types of cabbage (e.g. coleslaw, chinese, red)	0.13	(0.11 - 0.16)	0.19	(0.15 - 0.22)	0.16	(0.14 - 0.18)

Table 18: Vegetables, mean daily equivalent, by sex continued

	Male		Female		Persons	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Pumpkin	0.11	(0.06 - 0.15)	0.16	(0.13 - 0.19)	0.13	(0.11 - 0.16)
Zucchini, eggplant or squash	0.40	(0.32 - 0.47)	0.53	(0.48 - 0.58)	0.46	(0.42 - 0.51)
Capsicum	0.15	(0.10 - 0.19)	0.24	(0.20 - 0.27)	0.19	(0.16 - 0.22)
Tomatoes including tinned	0.27	(0.22 - 0.31)	0.35	(0.32 - 0.39)	0.31	(0.28 - 0.34)
Tomato products (e.g. dried, paste, sauce)	0.21	(0.17 - 0.25)	0.26	(0.23 - 0.29)	0.23	(0.21 - 0.26)
Avocado	0.13	(0.11 - 0.16)	0.19	(0.15 - 0.22)	0.16	(0.14 - 0.18)
Onion or leeks	0.18	(0.14 - 0.21)	0.23	(0.20 - 0.26)	0.20	(0.18 - 0.23)
Sweetcorn or corn on the cob	0.14	(0.10 - 0.17)	0.17	(0.15 - 0.20)	0.16	(0.13 - 0.18)
Mushrooms	0.14	(0.10 - 0.17)	0.21	(0.17 - 0.24)	0.17	(0.15 - 0.20)
Soybean or tofu	0.02	(0.01 - 0.04)	0.06	(-0.01 - 0.13)	0.04	(0.01 - 0.08)
Baked beans	0.06	(0.05 - 0.08)	0.07	(0.05 - 0.10)	0.07	(0.05 - 0.09)
Other beans/peas (e.g. kidney, borlotti, chickpeas, lentils, dhal, split peas)	0.06	(0.04 - 0.08)	0.10	(0.07 - 0.14)	0.08	(0.06 - 0.10)
Vegetables	**5.81**	**(5.19 - 6.42)**	**7.59**	**(6.77 - 8.41)**	**6.70**	**(6.17 - 7.24)**

Respondents reported consuming vegetables on average 6.7 times per day. Green/mixed salad in a sandwich or as a side salad was the most commonly consumed vegetable item, with a daily equivalent frequency of 0.7 times or around five times per week. This was consumed significantly more frequently than any other vegetable item. Soybean or tofu was the least commonly consumed item, with a daily equivalent frequent of 0.04 or less than once per month. Potato cooked without fat was consumed significantly more frequently than potato cooked with fat (0.3 compared with 0.1 times per day).

Females reported consuming vegetables significantly more frequently compared with males (7.6 compared with 5.8 times per day). Females reported consuming stir-fry and mixed cooked vegetables including soups significantly more frequently compared with males (0.5 compared with 0.4 times per day), plus several other items including carrots, sweet potatoes and other root vegetables, salad greens, avocado and soybean or tofu.

Table 19: Vegetables, mean daily equivalent, by age

	18 to 34 years		35 to 54 years		55 years & over	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Green/mixed salad in a sandwich or as a side salad	0.73	(0.51 - 0.95)	0.74	(0.64 - 0.83)	0.64	(0.56 - 0.72)
Stir-fry and mixed cooked vegetables including vegetable soups	0.50	(0.39 - 0.60)	0.50	(0.44 - 0.56)	0.38	(0.34 - 0.43)
Excluding the above dishes						
Potato cooked without fat (e.g. boiled, mashed, dry baked)	0.24	(0.18 - 0.29)	0.30	(0.26 - 0.34)	0.46	(0.41 - 0.50)
Potato cooked with fat (e.g. chips, gems, wedges, saute, roast)	0.19	(0.08 - 0.30)	0.14	(0.11 - 0.17)	0.10	(0.08 - 0.12)
Carrots	0.32	(0.25 - 0.40)	0.49	(0.42 - 0.57)	0.52	(0.47 - 0.56)
Sweet potatoes and other root vegetables	0.14	(0.09 - 0.19)	0.20	(0.17 - 0.23)	0.33	(0.27 - 0.38)
Peas	0.23	(0.18 - 0.28)	0.31	(0.26 - 0.35)	0.36	(0.32 - 0.41)
Grean beans	0.19	(0.14 - 0.24)	0.26	(0.22 - 0.30)	0.33	(0.29 - 0.37)
Silverbeet or spinach	0.10	(0.06 - 0.15)	0.14	(0.09 - 0.20)	0.15	(0.12 - 0.18)
Salad greens including lettuce, rocket or endive	0.40	(0.30 - 0.50)	0.53	(0.46 - 0.60)	0.45	(0.39 - 0.50)
Celery, asparagus or bean sprouts	0.16	(0.10 - 0.22)	0.17	(0.14 - 0.21)	0.25	(0.19 - 0.31)
Broccoli	0.27	(0.20 - 0.33)	0.33	(0.29 - 0.38)	0.33	(0.29 - 0.37)
Cauliflower	0.17	(0.12 - 0.22)	0.25	(0.21 - 0.30)	0.28	(0.24 - 0.32)
Brussel sprouts and all types of cabbage (e.g. coleslaw, chinese, red)	0.11	(0.07 - 0.15)	0.14	(0.12 - 0.17)	0.23	(0.19 - 0.27)

Table 20: Vegetables, mean daily equivalent, by age continued

	18 to 34 years		35 to 54 years		55 years & over	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Sweetcorn or corn on the cob	0.16	(0.11 - 0.21)	0.18	(0.14 - 0.21)	0.12	(0.10 - 0.14)
Mushrooms	0.20	(0.14 - 0.27)	0.15	(0.12 - 0.18)	0.17	(0.14 - 0.20)
Soybean or tofu	0.07	(-0.04 - 0.18)	0.03	(0.01 - 0.05)	0.03	(0.01 - 0.05)
Baked beans	0.06	(0.01 - 0.10)	0.06	(0.05 - 0.08)	0.09	(0.07 - 0.11)
Other beans/peas (e.g. kidney, borlotti, chickpeas, lentils, dhal, split peas)	0.09	(0.04 - 0.14)	0.07	(0.05 - 0.10)	0.08	(0.06 - 0.11)
Vegetables	**6.23**	**(4.75 - 7.72)**	**6.77**	**(6.27 - 7.28)**	**7.11**	**(6.61 - 7.62)**

Respondents aged 55 years and over reported consuming potato cooked without fat and sweet potato significantly more frequently compared with younger respondents (0.5 compared with 0.3 and 0.3 compared with 0.2). Respondents aged 35 years and over reported consuming carrots significantly more frequently than 18 to 34 year olds (0.5 compared to 0.3).

There was no significant age difference in the overall mean daily equivalent of vegetables.

8.1 Number Of Serves

Respondents were also asked how many serves of vegetables they usually eat each day, where a serve is equal to have a cup of cooked vegetables or a cup of salad. The mean serves of vegetables are shown by sex and by age in Table 21.

Table 21: Mean vegetable serves

	$\bar{x}$	95% CI
Male	2.27	(2.05 - 2.50)
Female	2.64	(2.48 - 2.79)
Persons	2.46	(2.32 - 2.60)
18 to 34 years	2.21	(1.94 - 2.48)
35 to 54 years	2.44	(2.23 - 2.66)
55 years & over	2.73	(2.52 - 2.94)

Respondents reported eating an average of 2.5 serves of vegetables each day, which is half the recommended daily intake of five serves. Females reported eating significantly more serves compared with males (2.6 compared with 2.3) and 18 to 34 year olds reported eating significantly fewer serves of vegetables compared with respondents aged 55 years and over (2.2 compared with 2.7).

9 Fruit

Fruit is a good source of vitamins, such as vitamin C and folate, and provides carbohydrates, in particular natural sugars and fibre, especially in the edible skins. The consumption of a wide variety of fruit is recommended, including apples and pears, citrus fruits, melons, berries and stone fruits.[4] *The Australian Guide to Healthy Eating* recommends two to three serves of fruit each day for women aged 19 to 60 years and two to four serves for men of the same age.[5] The mean daily equivalent consumption of fruit is shown by sex in Table 22 and by age in Table 23.

Table 22: Fruit, mean daily equivalent, by sex

	Male		Female		Persons	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Mixed fruit and fruit salad	0.32	(0.22 - 0.42)	0.45	(0.33 - 0.57)	0.38	(0.30 - 0.46)
Excluding mixed fruit						
Apple or pear	0.48	(0.40 - 0.56)	0.56	(0.49 - 0.63)	0.52	(0.46 - 0.57)
Orange, mandarin or grapefruit	0.25	(0.19 - 0.31)	0.35	(0.31 - 0.40)	0.30	(0.26 - 0.34)
Peach, nectarine, plum, apricot or cherries	0.15	(0.11 - 0.20)	0.25	(0.21 - 0.29)	0.20	(0.17 - 0.23)
Banana	0.22	(0.16 - 0.28)	0.29	(0.18 - 0.40)	0.26	(0.19 - 0.32)
Mango or paw-paw	0.06	(0.03 - 0.08)	0.16	(0.05 - 0.27)	0.11	(0.05 - 0.17)
Pineapple	0.06	(0.05 - 0.08)	0.11	(0.07 - 0.14)	0.08	(0.07 - 0.10)
Berries (e.g. strawberries, blueberries)	0.11	(0.09 - 0.14)	0.27	(0.19 - 0.34)	0.19	(0.15 - 0.23)
Other fruit (e.g. grapes, melon, kiwi fruit)	0.15	(0.12 - 0.18)	0.29	(0.22 - 0.37)	0.22	(0.18 - 0.26)
Dried fruit, all types (e.g. sultanas, apricots, prunes)	0.17	(0.12 - 0.22)	0.25	(0.14 - 0.36)	0.21	(0.15 - 0.28)
Fruit	**1.94**	**(1.65 - 2.23)**	**2.92**	**(2.31 - 3.53)**	**2.43**	**(2.08 - 2.78)**

Respondents reported consuming fruit on average 2.4 times per day. Apples or pears were the most commonly consumed fruit item, with a daily equivalent frequency of 0.5 times or around four times per week. Apples or pears were consumed significantly more frequently than any other fruit item. Pineapple was the least commonly consumed item, with a daily equivalent frequent of 0.1 or less than once per week.

Females reported consuming fruit significantly more frequently compared with males (2.9 compared with 1.9 times per day). Females also reported consuming orange, mandarin or grapefruit, berries and other fruit (e.g. grapes, melon, kiwi fruit) significantly more frequently compared with males.

Table 23: Fruit, mean daily equivalent, by age

	18 to 34 years		35 to 54 years		55 years & over	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Mixed fruit and fruit salad	0.35	(0.16 - 0.54)	0.39	(0.28 - 0.49)	0.42	(0.32 - 0.51)
Excluding mixed fruit						
Apple or pear	0.47	(0.35 - 0.59)	0.56	(0.47 - 0.64)	0.53	(0.46 - 0.59)
Orange, mandarin or grapefruit	0.23	(0.16 - 0.30)	0.31	(0.25 - 0.37)	0.36	(0.30 - 0.42)
Peach, nectarine, plum, apricot or cherries	0.19	(0.12 - 0.26)	0.18	(0.14 - 0.23)	0.24	(0.19 - 0.29)
Banana	0.24	(0.06 - 0.42)	0.21	(0.17 - 0.26)	0.32	(0.26 - 0.38)
Mango or paw-paw	0.14	(-0.03 - 0.31)	0.10	(0.07 - 0.13)	0.09	(0.07 - 0.11)
Pineapple	0.09	(0.04 - 0.14)	0.08	(0.06 - 0.10)	0.08	(0.06 - 0.11)
Berries (e.g. strawberries, blueberries)	0.18	(0.07 - 0.29)	0.18	(0.15 - 0.22)	0.21	(0.16 - 0.26)
Other fruit (e.g. grapes, melon, kiwi fruit)	0.23	(0.11 - 0.34)	0.20	(0.16 - 0.24)	0.25	(0.20 - 0.29)
Dried fruit, all types (e.g. sultanas, apricots, prunes)	0.24	(0.06 - 0.42)	0.16	(0.13 - 0.20)	0.25	(0.20 - 0.31)
Fruit	**2.35**	**(1.35 - 3.35)**	**2.34**	**(2.03 - 2.65)**	**2.65**	**(2.39 - 2.91)**

Respondents aged 18 to 34 years reported consuming orange, mandarin or grapefruit significantly less frequently than older respondents (0.2 compared with 0.3).

There was no significant age difference in the overall mean daily equivalent of fruit.

9.1 Number of Serves

Respondents were also asked how many serves of fruit they usually eat each day, where a serve is equal to one medium piece, two small pieces of fruit or one cup of diced fruit. The mean serves of fruit are shown by sex and by age in Table 24.

Table 24: Mean fruit serves

	$\bar{x}$	95% CI
Male	1.56	(1.35 - 1.77)
Female	1.68	(1.54 - 1.82)
Persons	1.62	(1.50 - 1.75)
18 to 34 years	1.55	(1.25 - 1.85)
35 to 54 years	1.54	(1.37 - 1.72)
55 years & over	1.80	(1.64 - 1.96)

Respondents reported eating an average of 1.6 serves of fruit each day, which is below the recommended daily intake of two serves. There were no significant sex or age differences in the number of daily serves eaten.

10 Baked Goods and Snacks

Foods such as many baked goods and snacks are not essential to provide nutrients. These food types often contain a lot of fat, salt and sugars. They are recommended to be eaten zero to two-and-a-half serves each day for women aged 19 to 60 years and zero to three serves for men of the same age.[4] While nuts are often grouped with meat, fish and eggs as they are a protein source, they have been grouped as a snack in this report, in line with the Food Frequency Questionnaire.

The mean daily equivalent consumption of baked goods and snacks is shown by sex in Table 25 and by age in Table 26.

Table 25: Baked goods and snacks, mean daily equivalent, by sex

	Male		Female		Persons	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Meat pie, sausage roll or other savoury pastries	0.08	(0.06 - 0.10)	0.05	(0.04 - 0.05)	0.06	(0.05 - 0.07)
Pizza	0.05	(0.05 - 0.06)	0.04	(0.04 - 0.05)	0.05	(0.04 - 0.05)
Hamburger with bun	0.06	(0.05 - 0.07)	0.03	(0.03 - 0.04)	0.05	(0.04 - 0.05)
Cakes, sweet muffins, scones or pikelets	0.14	(0.11 - 0.17)	0.13	(0.11 - 0.15)	0.14	(0.12 - 0.15)
Sweet pies or sweet pastries	0.04	(0.03 - 0.05)	0.11	(0.00 - 0.22)	0.08	(0.02 - 0.13)
Other puddings and desserts	0.09	(0.06 - 0.11)	0.09	(0.07 - 0.11)	0.09	(0.07 - 0.11)
Plain sweet biscuits	0.22	(0.16 - 0.27)	0.16	(0.13 - 0.19)	0.19	(0.15 - 0.22)
Fancy biscuits including jam/cream filled, chocolate fruit and nut	0.10	(0.08 - 0.13)	0.12	(0.09 - 0.14)	0.11	(0.09 - 0.13)
Chocolate including chocolate bars (e.g. Mars bars™)	0.22	(0.16 - 0.27)	0.23	(0.19 - 0.27)	0.22	(0.19 - 0.26)
Other confectionary	0.13	(0.09 - 0.16)	0.16	(0.12 - 0.20)	0.14	(0.12 - 0.17)
Nuts	0.23	(0.17 - 0.28)	0.28	(0.23 - 0.33)	0.25	(0.22 - 0.29)
Potato chips, corn chips, Twisties™ and other extruded snacks	0.13	(0.09 - 0.16)	0.09	(0.07 - 0.10)	0.11	(0.09 - 0.13)
Baked goods and snacks	**1.45**	**(1.30 - 1.60)**	**1.45**	**(1.26 - 1.63)**	**1.45**	**(1.33 - 1.57)**

Respondents reported consuming baked goods and snacks on average 1.5 times per day. Nuts were the most commonly consumed item, with a daily equivalent frequency of 0.3 times or

around twice per week. In contrast, pizzas and hamburgers with buns were the least commonly consumed item, with a daily equivalent frequent of 0.0 or less than once per month, if at all.

There were no significant sex differences in the overall mean daily equivalent of baked goods and snacks or in individual items.

Table 26: Baked goods and snacks, mean daily equivalent, by age

	18 to 34 years		35 to 54 years		55 years & over	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Meat pie, sausage roll or other savoury pastries	0.07	(0.05 - 0.10)	0.06	(0.05 - 0.08)	0.05	(0.04 - 0.07)
Pizza	0.07	(0.06 - 0.08)	0.05	(0.04 - 0.05)	0.03	(0.02 - 0.03)
Hamburger with bun	0.06	(0.05 - 0.08)	0.05	(0.03 - 0.06)	0.03	(0.02 - 0.03)
Cakes, sweet muffins, scones or pikelets	0.10	(0.07 - 0.13)	0.13	(0.10 - 0.15)	0.18	(0.14 - 0.22)
Sweet pies or sweet pastries	0.14	(-0.04 - 0.32)	0.05	(0.04 - 0.06)	0.05	(0.04 - 0.06)
Other puddings and desserts	0.09	(0.04 - 0.13)	0.06	(0.05 - 0.07)	0.13	(0.10 - 0.16)
Plain sweet biscuits	0.08	(0.05 - 0.12)	0.20	(0.14 - 0.26)	0.27	(0.22 - 0.33)
Fancy biscuits including jam/cream filled, chocolate fruit and nut	0.09	(0.05 - 0.13)	0.12	(0.09 - 0.14)	0.11	(0.09 - 0.14)
Chocolate including chocolate bars (e.g. Mars bars™)	0.28	(0.20 - 0.37)	0.20	(0.17 - 0.24)	0.19	(0.15 - 0.23)
Other confectionary	0.16	(0.10 - 0.22)	0.13	(0.10 - 0.16)	0.14	(0.10 - 0.18)
Nuts	0.17	(0.11 - 0.24)	0.31	(0.25 - 0.37)	0.26	(0.22 - 0.30)
Potato chips, corn chips, Twisties™ and other extruded snacks	0.12	(0.08 - 0.17)	0.12	(0.09 - 0.15)	0.08	(0.05 - 0.10)
Baked goods and snacks	**1.41**	**(1.11 - 1.71)**	**1.46**	**(1.31 - 1.60)**	**1.48**	**(1.32 - 1.64)**

Respondents aged 55 years and over reported consuming pizza significantly less frequently compared with younger respondents. Respondents aged 55 years and over reported consuming plain sweet biscuits significantly more frequently compared with 18 to 34 year olds (0.3 compared with 0.1). Respondents aged 18 to 34 years reported consuming nuts significantly less frequently compared with 35 to 54 year olds (0.2 compared with 0.3).

There was no significant age difference in the overall mean daily equivalent of baked goods and snacks.

11 Oil/Fat Type Usually Used In Cooking

Saturated fats are found in large quantities in butter, lard and dripping as well as in vegetable fats and hydrogenated vegetable oils. These saturated fats are not recommended as they can increase the risk of heart disease. Unsaturated fats, which are found in many oils and margarines, may have a positive health benefit by lowering blood cholesterol levels. The recommendation is to choose predominantly unsaturated vegetable oils, such as olive oil, sunflower and canola oil and to use these products occasionally or in small amounts.[4] The type of oil/fat respondents food is usually cooked in is shown by sex in Table 27 and by age in Table 28.

Table 27: Type of oil/fat food is usually cooked in, by sex

	Male		Female		Persons	
	%	95% CI	%	95% CI	%	95% CI
Olive oil	64.27	(53.45 - 73.80)	74.66	(68.79 - 79.75)	69.47	(63.27 - 75.03)
Canola oil	25.57	(17.18 - 36.26)	16.22	(12.11 - 21.38)	20.89	(16.01 - 26.79)
Sunflower/safflower oil	1.72	(0.58 - 4.97)	4.10	(2.29 - 7.23)	2.91	(1.72 - 4.87)
Other vegetable oil (eg blends, peanut, maize)	5.78	(2.29 - 13.84)	1.84	(0.91 - 3.69)	3.81	(1.85 - 7.68)
Butter or margarine	1.28	(0.31 - 5.13)	0.25	(0.08 - 0.80)	0.76	(0.23 - 2.50)
Dripping/lard	0.00	(0.00 - 0.00)	0.10	(0.03 - 0.42)	0.05	(0.01 - 0.21)
Other	1.11	(0.15 - 7.48)	0.48	(0.10 - 2.28)	0.79	(0.19 - 3.32)
No oil/fat used in cooking	0.28	(0.06 - 1.26)	2.34	(0.91 - 5.91)	1.31	(0.55 - 3.09)
Don't know	0.00	(0.00 - 0.00)	0.00	(0.00 - 0.00)	0.00	(0.00 - 0.00)

Almost all respondents (97.1%) reported that they usually cook in oils that are unsaturated. Of the remaining, 1.3% reported not using any oil/fat. Olive oil was the most commonly used cooking oil, reported by more than three times as many respondents compared with canola oil, which was the next most commonly used (69.5% compared with 20.9%). Dripping/lard was significantly less likely to be used compared with all other oil types.

Males were three times as likely to report usually cooking with other vegetable oil compared with females (5.8% compared with 1.8%, x^2=4.12, *df*=1, *p*<.05). Females were significantly more likely to report usually cooking with no oil/fat compared with males (2.3% compared with 0.3%, x^2=7.88, *df*=1, *p*<.05).

Table 28: Type of oil/fat food is usually cooked in, by age

	18 to 34 years		35 to 54 years		55 years & over	
	%	95% CI	%	95% CI	%	95% CI
Olive oil	71.85	(55.53 - 83.91)	70.40	(62.40 - 77.32)	65.43	(57.59 - 72.52)
Canola oil	19.23	(9.09 - 36.18)	19.85	(14.11 - 27.18)	24.27	(18.13 - 31.69)
Sunflower/safflower oil	0.79	(0.18 - 3.35)	2.20	(0.90 - 5.29)	6.35	(3.21 - 12.17)
Other vegetable oil (eg blends, peanut, maize)	4.60	(0.96 - 19.37)	4.58	(2.10 - 9.70)	1.82	(0.69 - 4.69)
Butter or margarine	1.32	(0.18 - 8.87)	0.25	(0.06 - 1.00)	0.85	(0.20 - 3.57)
Dripping/lard	0.00	(0.00 - 0.00)	0.00	(0.00 - 0.00)	0.19	(0.05 - 0.75)
Other	0.57	(0.08 - 4.02)	1.09	(0.49 - 2.42)	0.00	(0.00 - 0.00)
No oil/fat used in cooking	1.65	(0.23 - 10.90)	1.20	(0.54 - 2.67)	1.09	(0.49 - 2.42)
Don't know	0.00	(0.00 - 0.00)	0.00	(0.00 - 0.00)	0.00	(0.00 - 0.00)

Respondents aged 55 years and over were significantly more likely to report usually cooking with sunflower/safflower oil compared with younger respondents (6.3% compared with 1.6%, x^2=8.41, *df*=1, *p*<.05). Respondents aged 55 years and over were more likely to report usually cooking in dripping/lard and less likely to report cooking in other oils/fats compared with younger respondents.

12 Sugar, Spreads and Dressings

It is recommended that polyunsaturated spreads and dressings are used rather than spreads and dressings based on saturated fat.[4] The mean daily equivalent consumption of sugar, spreads and dressings is shown by sex in Table 29 and by age in Table 30.

Table 29: Sugar, spreads and dressings, mean daily equivalent, by sex

	Male		Female		Persons	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Sugar, syrup or honey	0.77	(0.56 - 0.97)	0.60	(0.45 - 0.76)	0.69	(0.56 - 0.81)
Jam or marmalade	0.23	(0.16 - 0.29)	0.21	(0.17 - 0.24)	0.22	(0.18 - 0.25)
Peanut butter or other nut spreads	0.07	(0.05 - 0.09)	0.10	(0.07 - 0.14)	0.09	(0.07 - 0.11)
Butter, dairy blends or margarine	1.13	(0.96 - 1.30)	0.97	(0.85 - 1.09)	1.05	(0.95 - 1.15)
Vegemite™, Marmite™ or Promite™	0.30	(0.19 - 0.41)	0.34	(0.29 - 0.40)	0.32	(0.26 - 0.38)
Oil and vinegar dressing	0.33	(0.25 - 0.41)	0.33	(0.28 - 0.38)	0.33	(0.28 - 0.38)
Mayonnaise or other creamy dressing	0.19	(0.14 - 0.25)	0.17	(0.14 - 0.20)	0.18	(0.15 - 0.21)
Sugar, spreads and dressings	**2.94**	**(2.52 - 3.37)**	**2.69**	**(2.38 - 2.99)**	**2.82**	**(2.55 - 3.08)**

Respondents reported consuming sugar, spreads and dressings on average 2.8 times per day. Butter, dairy blends or margarine was the most commonly consumed item, with a daily equivalent frequency of 1.0 and this group of spreads was consumed significantly more frequently than any other item. Sugar, syrup or honey was consumed significantly more frequently than any other item with the exception of butter, dairy blends or margarine. Peanut butter or other nut spreads was the least commonly consumed item, with a daily equivalent frequency of 0.1 or less than once per week.

There were no significant sex differences in the overall mean daily equivalent of sugar, spreads and dressings or in individual items.

Table 30: Sugar, spreads and dressings, mean daily equivalent, by age

	18 to 34 years		35 to 54 years		55 years & over	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Sugar, syrup or honey	0.65	(0.34 - 0.97)	0.67	(0.50 - 0.84)	0.74	(0.57 - 0.90)
Jam or marmalade	0.17	(0.08 - 0.27)	0.16	(0.12 - 0.19)	0.34	(0.28 - 0.40)
Peanut butter or other nut spreads	0.10	(0.04 - 0.15)	0.08	(0.06 - 0.11)	0.08	(0.06 - 0.11)
Butter, dairy blends or margarine	0.91	(0.67 - 1.16)	1.09	(0.94 - 1.23)	1.14	(1.01 - 1.27)
Vegemite™, Marmite™ or Promite™	0.43	(0.25 - 0.60)	0.29	(0.24 - 0.35)	0.25	(0.20 - 0.30)
Oil and vinegar dressing	0.29	(0.18 - 0.39)	0.38	(0.30 - 0.47)	0.30	(0.24 - 0.36)
Mayonnaise or other creamy dressing	0.24	(0.16 - 0.32)	0.16	(0.13 - 0.20)	0.15	(0.12 - 0.19)
Sugar, spreads and dressings	**2.71**	**(2.04 - 3.37)**	**2.83**	**(2.48 - 3.17)**	**2.92**	**(2.63 - 3.21)**

Respondents aged 55 years and over reported consuming jam or marmalade significantly more frequently compared with younger respondents (0.3 compared with 0.2). Respondents aged 18 to 34 years reported consuming Vegemite™, Marmite™ or Promite™ significantly more frequently compared with older respondents.

There was no significant age difference in the overall mean daily equivalent of sugar, spreads and dressings.

12.1 Type of Spread Used on Bread/Crackers

It is recommended that unsaturated margarines, such as those from canola, sunflower, safflower or olive oil be chosen rather than butter or hard margarine spreads as they may have a positive health benefit by lowering blood cholesterol levels.[4] The type of spread respondents usually used on bread/crackers is shown by sex in Table 31 and by age in Table 32.

Table 31: Type of spread usually used on bread/crackers, by sex

	Male		Female		Persons	
	%	95% CI	%	95% CI	%	95% CI
Butter	25.00	(16.47 - 36.03)	17.70	(13.35 - 23.10)	21.47	(16.33 - 27.69)
Dairy blend	12.71	(7.59 - 20.52)	14.92	(10.60 - 20.60)	13.78	(10.18 - 18.39)
Polyunsaturated margarine	23.38	(15.91 - 32.98)	17.76	(13.13 - 23.58)	20.66	(16.03 - 26.21)
Canola or olive margarine	13.46	(8.94 - 19.76)	14.23	(10.48 - 19.03)	13.83	(10.73 - 17.65)
Reduced fat margarine spreads	5.20	(2.64 - 10.01)	7.86	(5.14 - 11.84)	6.49	(4.45 - 9.36)
Margarines containing phytosterols (e.g. Logicol™, Pro-activ™)	10.39	(6.29 - 16.69)	8.03	(5.40 - 11.78)	9.25	(6.63 - 12.75)
Other	6.22	(2.08 - 17.10)	14.24	(9.96 - 19.95)	2.89	(1.80 - 4.62)
Don't use dairy/margarine spread	0.67	(0.14 - 3.17)	5.27	(3.24 - 8.44)	10.10	(6.63 - 15.08)
Don't know	2.98	(0.67 - 12.36)	0.00	(0.00 - 0.00)	1.54	(0.34 - 6.64)

While one in ten respondents (10.1%) reported not using any dairy/margarine spreads on bread/crackers, over half (50.2%) reported usually using some sort of margarine spread and one in three (35.2%) reported usually using butter or dairy blends. A significantly higher proportion of respondents reported using polyunsaturated margarine compared with reduced fat margarines and margarines containing phytosterols (20.7% compared with 6.5% and 9.2%).

Females were more likely to report using other dairy/margarine spreads compared with males (14.2% compared with 6.2% x^2=8.74, *df*=1, *p*<.05). Males were significantly more likely to not know what type of dairy/margarine spreads they used compared with females (3.0% compared with 0.0%). Females were more than seven times as likely to report not using any dairy/margarine spreads on bread/crackers compared with males (5.3% compared with 0.7%).

Table 32: Type of spread usually used on bread/crackers, by age

	18 to 34 years		35 to 54 years		55 years & over	
	%	95% CI	%	95% CI	%	95% CI
Butter	31.66	(19.04 - 47.72)	15.51	(10.47 - 22.38)	18.47	(13.35 - 24.99)
Dairy blend	12.58	(5.90 - 24.82)	14.97	(9.87 - 22.05)	13.45	(8.88 - 19.84)
Polyunsaturated margarine	22.85	(12.83 - 37.34)	17.02	(11.61 - 24.27)	23.34	(16.86 - 31.37)
Canola or olive margarine	7.68	(3.59 - 15.67)	18.05	(12.71 - 24.98)	14.76	(10.48 - 20.38)
Reduced fat margarine spreads	4.67	(1.84 - 11.36)	6.94	(3.80 - 12.32)	7.88	(4.77 - 12.76)
Margarines containing phytosterols (e.g. Logicol™, Pro-activ™)	1.04	(0.25 - 4.17)	13.64	(8.67 - 20.81)	12.22	(7.82 - 18.58)
Other	0.00	(0.00 - 0.00)	4.30	(2.28 - 7.97)	4.14	(2.09 - 8.04)
Don't use dairy/margarine spread	16.05	(7.50 - 31.07)	8.47	(5.35 - 13.16)	5.74	(3.13 - 10.30)
Don't know	3.47	(0.49 - 20.76)	1.11	(0.16 - 7.43)	0.00	(0.00 - 0.00)

In comparison with older respondents, respondents aged 18 to 34 years were:

- almost twice as likely to report using butter on bread/crackers (31.7% compared with 16.7%, x^2=5.03, *df*=1, *p*<0.05)
- significantly less likely to report using canola or olive margarine (7.7% compared with 16.7%, x^2=4.25, *df*=1, *p*<0.05)
- significantly less likely to report using margarines containing phytosterols (1.0% compared with 13.0%)
- significantly less likely to report using other spreads (0.0% compared with 4.2%)
- twice as likely to report not using any dairy/margarine spreads compared with people aged 55 years and over (16.1% compared with 5.7%, x^2=4.80, *df*=1, *p*<.05).

13 Non-Milk Beverages

The Australian Guide to Healthy Eating recommends that adults need to drink at least eight glasses each day, with all fluids, other than alcoholic drinks, contributing to this requirement.[5] Water is a good source of fluids as it does not contribute any additional energy to the diet. However, other drinks add variety and in some cases, such as milk and fruit juices, can add valuable nutrients. Moderation of fluids that contain substantial amounts of added sugars is recommended.[5] Milk beverages, which also contribute to the daily fluid requirement, have been included in the Dairy Food section. The mean daily equivalent consumption of non-milk beverages is shown by sex in Table 33 and by age in Table 34.

Table 33: Non-milk beverages, mean daily equivalent, by sex

	Male		Female		Persons	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Fruit juice	0.51	(0.39 - 0.64)	0.38	(0.31 - 0.44)	0.45	(0.37 - 0.52)
Fruit juice drinks or cordial	0.28	(0.21 - 0.36)	0.18	(0.14 - 0.22)	0.23	(0.19 - 0.27)
Soft drinks including flavoured mineral water	0.50	(0.37 - 0.64)	0.30	(0.23 - 0.36)	0.40	(0.32 - 0.48)
Electrolyte or sports drinks (eg Gatorade™)	0.09	(0.03 - 0.15)	0.02	(0.01 - 0.03)	0.06	(0.03 - 0.09)
Energy drinks (eg Red Bull™, V™, Red Eye™)	0.01	(0.01 - 0.02)	0.01	(0.00 - 0.02)	0.01	(0.01 - 0.02)
Water including unflavoured mineral water, soda & tap water	2.69	(2.44 - 2.94)	2.97	(2.80 - 3.13)	2.83	(2.68 - 2.98)
Coffee	1.15	(0.93 - 1.37)	1.27	(1.10 - 1.43)	1.21	(1.07 - 1.35)
Tea	1.35	(1.09 - 1.60)	1.55	(1.37 - 1.73)	1.45	(1.29 - 1.60)
Beer - low alcohol	0.25	(0.17 - 0.33)	0.05	(0.03 - 0.07)	0.15	(0.10 - 0.19)
Beer - ordinary	0.54	(0.27 - 0.81)	0.05	(0.02 - 0.08)	0.30	(0.15 - 0.44)
Red wine	0.21	(0.13 - 0.29)	0.14	(0.10 - 0.18)	0.17	(0.13 - 0.22)
White wine or champagne/sparkling	0.09	(0.02 - 0.16)	0.16	(0.12 - 0.21)	0.13	(0.08 - 0.17)
Sherry or port	0.03	(0.02 - 0.05)	0.01	(0.01 - 0.02)	0.02	(0.01 - 0.03)
Spirits or liqueurs	0.16	(0.05 - 0.26)	0.13	(0.01 - 0.24)	0.14	(0.06 - 0.22)
All other alcoholic drinks	0.08	(-0.02 - 0.18)	0.06	(-0.01 - 0.13)	0.07	(0.01 - 0.13)
Non-milk beverages	**7.79**	**(7.13 - 8.45)**	**7.12**	**(6.80 - 7.45)**	**7.46**	**(7.09 - 7.83)**

Respondents reported consuming non-milk beverages on average 7.5 times per day. Water was the most commonly consumed item, with a daily equivalent frequency of 2.8 times, followed by tea and coffee (2.6 times per day). Energy drinks and sherry or port were the least commonly consumed items, with a daily equivalent frequency of less than once per month. Respondents reported consuming alcoholic drinks 1.0 times per day and non-alcoholic drinks 6.6 times per day.

In comparison with males, females reported consuming:

- soft drinks less frequently (0.3 compared with 0.5);
- low alcohol beer less frequently (0.0 compared with 0.2);
- ordinary beer less frequently (0.0 compared with 0.5);
- alcoholic drinks less frequently (0.6 compared with 1.3).

There were no significant sex differences in the overall mean daily equivalent of non-milk beverages.

In comparison with younger respondents, respondents aged 55 years and over reported consuming:

- soft drinks less frequently (0.2 compared with 0.5);
- water less frequently (2.4 compared with 3.1 and 2.9);
- ordinary beer less frequently (0.0 compared with 0.5);
- other alcoholic drinks less frequently (0.6 compared with 1.3).

In comparison with older respondents, respondents aged 18 to 34 years reported consuming:

- coffee less frequently (0.7 compared with 1.4);
- tea less frequently (0.9 compared with 1.7).

There were no significant age differences in the overall mean daily equivalent of non-milk beverages.

Table 34: Non-milk beverages, mean daily equivalent, by age

	18 to 34 years		35 to 54 years		55 years & over	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Fruit juice	0.58	(0.39 - 0.77)	0.36	(0.29 - 0.43)	0.41	(0.33 - 0.49)
Fruit juice drinks or cordial	0.31	(0.21 - 0.41)	0.21	(0.15 - 0.27)	0.18	(0.13 - 0.23)
Soft drinks including flavoured mineral water	0.45	(0.32 - 0.59)	0.47	(0.33 - 0.62)	0.24	(0.16 - 0.32)
Electrolyte or sports drinks (eg Gatorade™)	0.10	(0.03 - 0.16)	0.03	(0.01 - 0.04)	0.05	(-0.03 - 0.12)
Energy drinks (eg Red Bull™, V™, Red Eye™)	0.03	(0.01 - 0.04)	0.01	(0.00 - 0.02)	0.00	(0.00 - 0.00)
Water including unflavoured mineral water, soda & tap water	3.09	(2.75 - 3.43)	2.93	(2.73 - 3.13)	2.41	(2.20 - 2.62)
Coffee	0.71	(0.47 - 0.95)	1.47	(1.27 - 1.68)	1.39	(1.21 - 1.57)
Tea	0.91	(0.57 - 1.24)	1.54	(1.32 - 1.77)	1.91	(1.71 - 2.11)
Beer - low alcohol	0.07	(0.02 - 0.11)	0.16	(0.10 - 0.21)	0.21	(0.11 - 0.32)
Beer - ordinary	0.52	(0.12 - 0.93)	0.23	(0.10 - 0.35)	0.15	(0.02 - 0.27)
Red wine	0.12	(0.02 - 0.21)	0.17	(0.11 - 0.24)	0.23	(0.15 - 0.31)
White wine or champagne/sparkling	0.10	(0.03 - 0.17)	0.08	(0.06 - 0.10)	0.22	(0.09 - 0.34)
Sherry or port	0.01	(0.00 - 0.02)	0.01	(0.01 - 0.02)	0.05	(0.03 - 0.08)
Spirits or liqueurs	0.27	(0.03 - 0.50)	0.08	(0.05 - 0.12)	0.09	(0.04 - 0.14)
All other alcoholic drinks	0.17	(-0.02 - 0.37)	0.03	(0.02 - 0.05)	0.02	(0.01 - 0.02)
Non-milk beverages	**7.25**	**(6.28 - 8.21)**	**7.75**	**(7.38 - 8.13)**	**7.30**	**(6.78 - 7.81)**

13.1 Soft Drink Type

While they do provide fluid to the body, soft drinks add energy to the diet without additional nutrient value and sugar is known to play a strong role in the cause of dental problems.[4] Because of this, soft drinks, if consumed, should be consumed in moderation. The type of soft drink respondents usually consumed is shown by sex in Table 35 and by age in Table 36.

Table 35: Type of soft drink usually consumed, by sex

	Male		Female		Persons	
	%	95% CI	%	95% CI	%	95% CI
Flavoured mineral water	3.40	(1.52 - 7.44)	5.98	(3.32 - 10.53)	4.70	(2.91 - 7.49)
Diet cola drinks	15.62	(9.91 - 23.76)	22.79	(17.77 - 28.74)	19.23	(15.18 - 24.06)
Regular cola drinks	32.97	(23.86 - 43.57)	14.90	(10.53 - 20.66)	23.86	(18.61 - 30.05)
Other diet soft drinks	2.16	(0.77 - 5.90)	7.01	(4.61 - 10.53)	4.60	(3.07 - 6.85)
Other soft drinks	19.94	(12.46 - 30.35)	16.10	(11.89 - 21.44)	18.00	(13.48 - 23.63)
Don't consume soft drinks	25.92	(18.63 - 34.86)	33.22	(27.57 - 39.41)	29.60	(24.78 - 34.93)

Three in ten respondents (29.6%) reported not consuming any soft drinks, one in four (23.9%) reported usually consuming regular cola drinks and one in five reported usually consuming diet cola drinks and other soft drinks. A significantly lower proportion of respondents reported consuming flavoured mineral water and other diet soft drinks compared with other drink types.

Males were twice as likely to report usually consuming regular cola drinks compared with females (33.0% compared with 14.9%).

Table 36: Type of soft drink usually consumed, by age

	18 to 34 years		35 to 54 years		55 years & over	
	%	95% CI	%	95% CI	%	95% CI
Flavoured mineral water	3.37	(0.82 - 12.91)	5.11	(2.65 - 9.64)	5.57	(2.97 - 10.20)
Diet cola drinks	15.78	(8.24 - 28.10)	26.52	(20.00 - 34.25)	13.10	(9.31 - 18.11)
Regular cola drinks	37.54	(24.67 - 52.46)	21.83	(15.26 - 30.21)	11.89	(7.65 - 18.03)
Other diet soft drinks	1.73	(0.54 - 5.39)	3.18	(1.53 - 6.49)	9.62	(5.76 - 15.62)
Other soft drinks	23.95	(13.16 - 39.55)	17.00	(12.01 - 23.52)	12.96	(8.66 - 18.94)
Don't consume soft drinks	17.63	(9.17 - 31.20)	26.36	(20.06 - 33.79)	46.87	(39.53 - 54.35)

Compared with younger respondents, respondents aged 55 years and over were more than twice as likely to report not usually consuming soft drinks (46.9% compared with 22.5%) and more than three times as likely to report usually consuming other diet soft drinks (9.6% compared with 2.5%). Respondents aged 35 to 54 years were twice as likely to report usually consuming diet cola drinks compared with 55 year olds and over (26.5% compared with 13.1%).

13.2 Consumption of Vitamin and Mineral Supplements

Respondents were asked how frequently they used vitamins or mineral supplements. The results are shown in Table 37.

Table 37 Vitamin and mineral supplements, mean daily equivalent, by sex and age

	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
	Male		Female		Persons	
Vitamin and mineral supplements including tablets, capsules or drops	0.46	(0.31 - 0.61)	0.53	(0.43 - 0.62)	0.49	(0.41 - 0.58)
	18 to 34 years		35 to 54 years		55 years & over	
	0.49	(0.28 - 0.70)	0.48	(0.35 - 0.61)	0.52	(0.42 - 0.63)

There were no significant differences by age or sex in the mean daily equivalency of vitamin or mineral supplements. These were taken, on average about once every two days.

14 Height and Weight

Respondents were asked to report their height without shoes, their weight and their waist circumference. A Body Mass Index (BMI) was derived from the height and weight figures by dividing weight in kilograms by height in metres squared, as shown in Table 38.

Table 38: Self-reported weight, height and waist circumference measurements

	Height (cm)		Weight (kg)		BMI		Waist circumference (cm)	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Male	178.1	(176.4 - 179.8)	83.4	(80.5 - 86.3)	26.3	(25.5 - 27.0)	91.0	(88.3 - 93.7)
Female	164.4	(163.5 - 165.4)	70.0	(67.9 - 72.2)	25.9	(25.2 - 26.7)	85.0	(82.7 - 87.3)
Persons	171.2	(170.0 - 172.5)	76.7	(74.7 - 78.6)	26.1	(25.6 - 26.6)	88.1	(86.3 - 89.9)
18 to 34 years	174.0	(171.1 - 176.9)	75.3	(70.6 - 80.0)	24.8	(23.6 - 26.0)	85.4	81.8 - 88.9)
35 to 54 years	171.3	(169.6 - 173.0)	78.1	(75.4 - 80.9)	26.5	(25.7 - 27.3)	87.0	(83.5 - 90.4)
55 years & over	168.2	(166.7 - 169.8)	76.1	(74.2 - 78.0)	26.9	(26.3 - 27.4)	91.7	(89.6 - 93.8)

Compared to females males were significantly taller and heavier, and had a significantly larger waist circumference. However, there was no significant sex difference in the body mass index.

14.1 Body Mass Index

The BMIs were then classified as not overweight (BMI<25), overweight (25<BMI<30) or obese (BMI>=30),[6] as shown in Table 39.

Two in five respondents reported height and weight measurements that classified them as overweight, while one in seven were classified as obese. Males were significantly more likely to be classified as overweight compared with females (48.3% compared with 30.2%). There were no significant age differences.

Table 39: BMI classifications

	Not overweight or obese		Overweight		Obese	
	%	95% CI	%	95% CI	%	95% CI
Male	41.4	(31.8 - 51.7)	48.2	(38.4 - 58.1)	10.4	(6.5 - 16.4)
Female	52.5	(46.0 - 58.9)	30.2	(24.5 - 36.5)	17.3	(13.0 - 22.6)
Persons	47.0	(41.1 - 53.0)	39.1	(33.4 - 45.1)	13.9	(10.8 - 17.7)
18 to 34 years	58.9	(44.3 - 72.2)	31.7	(19.5 - 47.0)	9.4	(4.5 - 18.6)
35 to 54 years	44.5	(36.8 - 52.5)	41.3	(33.4 - 49.6)	14.2	(9.5 - 20.7)
55 years & over	37.7	(30.8 - 45.2)	44.0	(36.7 - 51.6)	18.3	(13.6 - 24.1)

14.2 Waist Circumference

Waist circumferences were classified as not overweight (less than 94cm for men and less than 80cm for women), overweight (94 to less than 102 cm for men and 80 to less than 88cm for women) or obese (102 cm and above for men and 88cm and above for women)[7] as shown in Table 40. For comparative purposes these classifications were derived only for respondents for whom a BMI could be calculated.

Table 40: Waist Circumference classifications

	Not overweight or obese		Overweight		Obese	
	%	95% CI	%	95% CI	%	95% CI
Male	55.8	(45.5 - 65.6)	25.4	(17.7 - 35.0)	18.8	(12.4 - 27.6)
Female	35.2	(28.7 - 42.3)	25.0	(19.3 - 31.7)	39.8	(33.4 - 46.5)
Persons	45.8	(39.5 - 52.3)	25.2	(20.2 - 31.0)	29.0	(24.0 - 34.5)
18 to 34 years	60.6	(44.2 - 74.9)	20.0	(9.8 - 36.6)	19.3	(10.3 - 33.4)
35 to 54 years	44.3	(35.9 - 53.1)	27.8	(20.6 - 36.4)	27.9	(20.7 - 36.4)
55 years & over	34.9	(27.9 - 42.6)	26.6	(20.3 - 34.0)	38.5	(31.6 - 45.9)

One in four respondents reported a waist circumference that classified them as overweight, while one in three were classified as obese. While females were twice as likely to be classified as obese compared with males (39.8% compared with 18.8%), males were significantly more likely to be classified as underweight/normal (55.8% compared with 35.2%).

Eighteen to 34 year olds were more than 1.5 times as likely to be classified as underweight/normal compared with 55 year olds and over (60.6% compared with 34.9%). Fifty-five year olds and over were twice as likely to be classified as obese compared with 19 to 34 year olds (38.5% compared with 19.3%, x^2=5.803, df=1, p<0.05).

There were significant differences in the proportion of respondents classified as overweight and obese by their body mass index compared with classifications by waist circumference Table 41.

Table 41: Weight classifications by BMI and Waist Circumference

	Males		Females		Persons	
	Body Mass Index %	Waist Circumference %	Body Mass Index %	Waist Circumference %	Body Mass Index %	Waist Circumference %
Not overweight or obese	41.41	55.81	52.52	35.21	47.02	45.84
Overweight	48.18	25.37	30.17	25.03	39.09	25.20
Obese	10.41	18.82	17.31	39.76	13.89	28.95

The proportion of respondents classified as obese more than doubled when using waist circumference as the standard. This was due to the significant increase in the proportion of females classified as obese when using waist circumference rather than BMI (39.8% compared with 17.3%). The proportion of females classified as not overweight or obese decreased significantly when classified by their waist circumference compared with classification by body mass index (35.2% compared with 52.5%).

15 Comparisons to HWSS

Five questions were included in the FFQ to enable comparison between responses made to the HWSS (CATI) and responses made on the FFQ (Self-report postal). These were type of milk consumed, number of serves of fruit and vegetables consumed daily, height and weight.

Comparisons between the FFQ and the HWSS have been derived only for the people who provided responses to both surveys.

15.1 Milk Type

Respondents were asked what milk type they usually consume. While the FFQ and the HWSS used the same question wording, the FFQ used ten response options and the HWSS used seven response options. The responses from each questionnaire were then collapsed into six similar response options, shown below in Table 42.

Table 42: Milk type usually consumed, FFQ compared with HWSS

	FFQ		HWSS	
	%	95% CI	%	95% CI
Full fat or whole milk of any kind, including soya	32.61	(28.85 - 36.36)	31.36	(27.74 - 34.97)
Low/reduced fat milk of any kind, including soya	45.24	(41.26 - 49.22)	48.21	(44.31 - 52.10)
Skim milk, that is milk with no fat content at all	12.79	(10.12 - 15.47)	13.57	(10.90 - 16.24)
Other	0.16	(-0.16 - 0.47)	1.09	(0.28 - 1.90)
Don't use milk	2.65	(1.37 - 3.94)	4.52	(2.91 - 6.14)
Don't know	0.16	(-0.16 - 0.47)	0.00	(0.00 - 0.00)

The test-retest reliability on the six response categories produced a kappa of 0.74 with a lower 95% confidence interval of 0.70, indicating substantial agreement. The percentage agreement was 83.8%.

This finding is congruent with the work done in 2005 by the Western Australian and South Australian Departments of Health and Victorian Department of Human Services.[2] These jurisdictions assessed the test-retest reliability of nutrition questions used in two versions of a CATI survey. The milk type question asked in version A of the questionnaire used five response options, while version B used seven response options. Respondents completed two surveys approximately two weeks apart and were randomly assigned questionnaire versions. The test-

retest kappa statistics were similar for each of the two questions (0.70 for respondents who completed version A on both occasions and 0.65 for respondents who completed version B on both occasions).

15.2 Vegetables

Respondents were asked how many serves of vegetables they usually eat each day with the FFQ and the HWSS using identical wording. The mean daily serves are shown in Table 43.

Table 43: Mean daily serve of vegetables, FFQ compared with HWSS

	FFQ		HWSS	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Persons	2.5	(2.3 - 2.6)	3.2	(3.0 - 3.3)

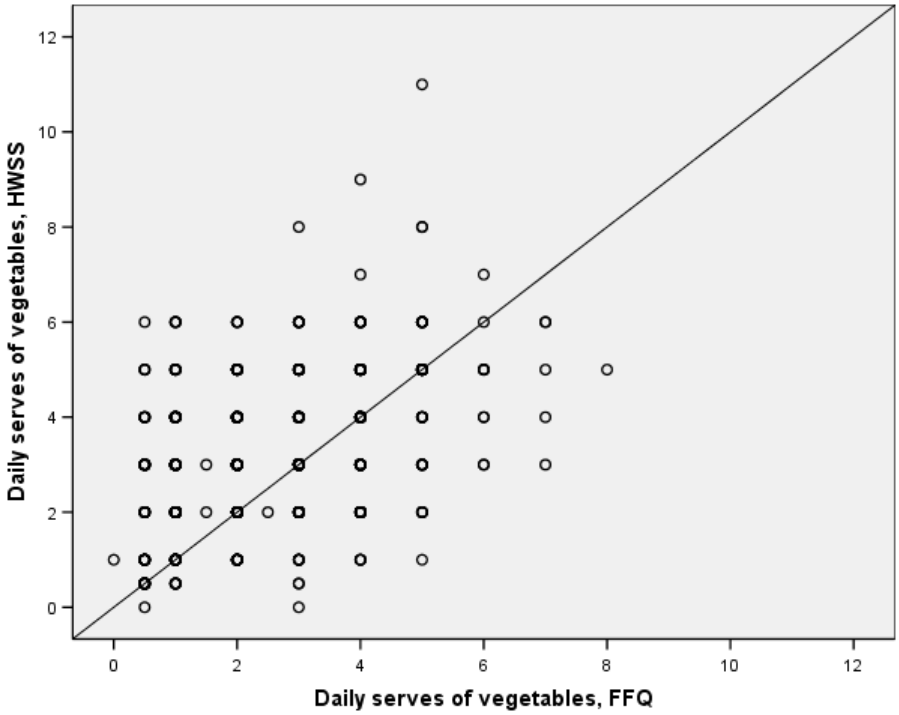
The mean daily serve of vegetables was significantly higher in the HWSS compared with the FFQ (3.2 compared with 2.5%). The normal distribution of the vegetable variables allowed test-retest reliability to be performed using an Intraclass correlation coefficient (ICC). The ICC was .42, indicating poor agreement between the two variables.

While the serves of vegetables may be regarded as a continuous variable, as above, it is probably better classified as an ordinal variable. Ordinal variables assess test-retest reliability by using kappa statistics. The test-retest reliability was performed on the original values provided using both kappa and weighted kappa. The unweighted kappa was 0.15 with a lower 95% confidence interval of 0.11, while the weighted kappa was 0.27 with a lower 95% confidence interval of 0.22, indicating only slight agreement. The percentage agreement was 29.9%.

This finding is also congruent with test-retest reliability study of two slightly different vegetable questions used in two versions of a CATI survey.[2] The vegetable question asked in version A of the questionnaire was identical to the FFQ, while version B asked about serves usually eaten each day or week. When the responses from all versions were converted to serves per day the test-retest weighted kappa statistic was 0.38 with a lower 95% confidence interval of 0.38 and the percentage agreement was 37%.

A scatterplot of the daily serves of vegetables collected by the FFQ and the HWSS is shown below in Figure 1. The average difference in serves of vegetables between the first and second interview was -0.7 serves. This is the opposite of what was found in two previous test retest studies, both of whom found an *increase* of just over one serve in estimated serves on retest.[2,8]

Figure 1: Scatterplot of HWSS and FFQ daily serves of vegetables



The proportion of people who reported eating the recommended five serves of vegetables daily by mode of administration is shown in Table 44.

Table 44: Sufficient daily serves of vegetables, FFQ compared with HWSS

	FFQ		HWSS	
	%	95% CI	%	95% CI
Eats five or more serves of vegetables daily	10.1	(7.8 - 12.5)	21.2	(18.0 - 24.4)

The proportion of respondents eating the recommended daily serve of five or more vegetables was twice as high in the HWSS compared with the FFQ (21.2% compared with 10.1%). The kappa was 0.32 with a lower 95% confidence interval of 0.23.

15.3 Fruit

Respondents were asked how many serves of fruit they usually eat each day with the FFQ and the HWSS using identical wording. The mean daily serves are shown in Table 45.

Table 45: Mean serves of fruit, FFQ compared with HWSS

	FFQ		HWSS	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Persons	1.6	(1.5 - 1.7)	1.6	(1.5 - 1.7)

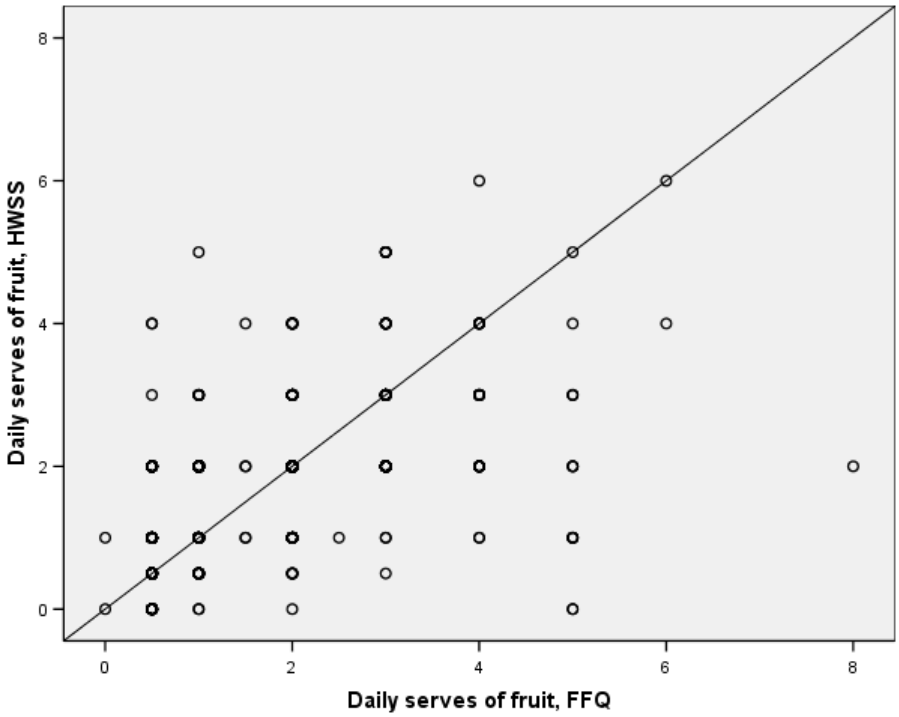
There were no significant differences in the reported mean daily serves of fruit in the HWSS compared with the FFQ.

The unweighted kappa was 0.30 with a lower confidence interval of 0.25. The weighted kappa was 0.48 with a lower 95% confidence interval of 0.43, indicating fair agreement. The percentage agreement was 45.5%.

This finding is congruent with the test-retest reliability of two slightly differently worded fruit questions used in two versions of a CATI survey.[2] The fruit question asked in version A of the questionnaire was identical to the FFQ, while version B mentioned serve size first and asked about serves usually eaten each day or week. When the responses from all versions were converted to serves per day the test-retest weighted kappa statistic was 0.56 with a lower 95% confidence interval of 0.53 and the percentage agreement was 52%.

A scatterplot of the daily serves of fruit collected by the FFQ and the HWSS is shown below in Figure 2. The average differences in serves of fruit between the first and second interview were 0.0 serves. This is different from what was found in two previous test–retest studies, both of which found an increase of just under one serve in estimated serves on retest.[2,8]

Figure 2: Scatterplot of HWSS and FFQ daily serves of fruit



The proportion of people who reported eating the recommended five serves of vegetables daily by mode of administration is shown in Table 46.

Table 46: Sufficient daily serves of fruit, FFQ compared with HWSS

	FFQ		HWSS	
	%	95% CI	%	95% CI
Eats two or more serves of fruit daily	48.2	(44.3 - 52.1)	52.9	(49.0 - 56.8)

There was no significant difference in the proportion of respondents eating the recommended daily serve of two or more fruit (52.9% for the HWSS compared with 48.2% for the FFQ). The kappa was 0.53 with a lower 95% confidence interval of 0.46.

15.4 Height

Respondents were asked to provide their height without shoes, shown in Table 47.

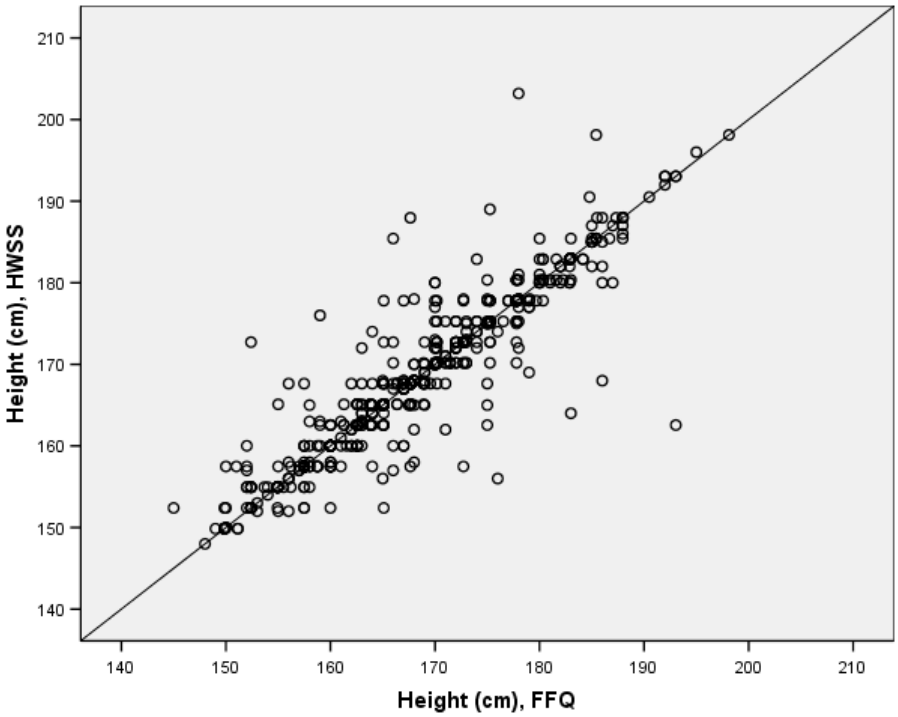
Table 47: Mean height, FFQ compared with HWSS

	FFQ		HWSS	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Persons	171.2	(170.0 - 172.5)	171.4	(170.0 - 172.8)

There were no significant differences in the reported mean heights in the HWSS compared with the FFQ. There was a very strong positive correlation between the two questions (r=.92). The normal distribution of the height variables allowed test-retest reliability to be performed using an ICC. The ICC was high (ICC=.92, lower 95% CI=.91) and a paired samples t-test found there was no significant difference between the responses (*t*=-0.95, *df*=606, p< 0.05).

A scatterplot of the height measurements collected by the FFQ and the HWSS is shown below in Figure 3.

Figure 3: Scatterplot of HWSS and FFQ height measurements



15.5 Weight

Respondents were asked to provide their weight, shown in Table 48.

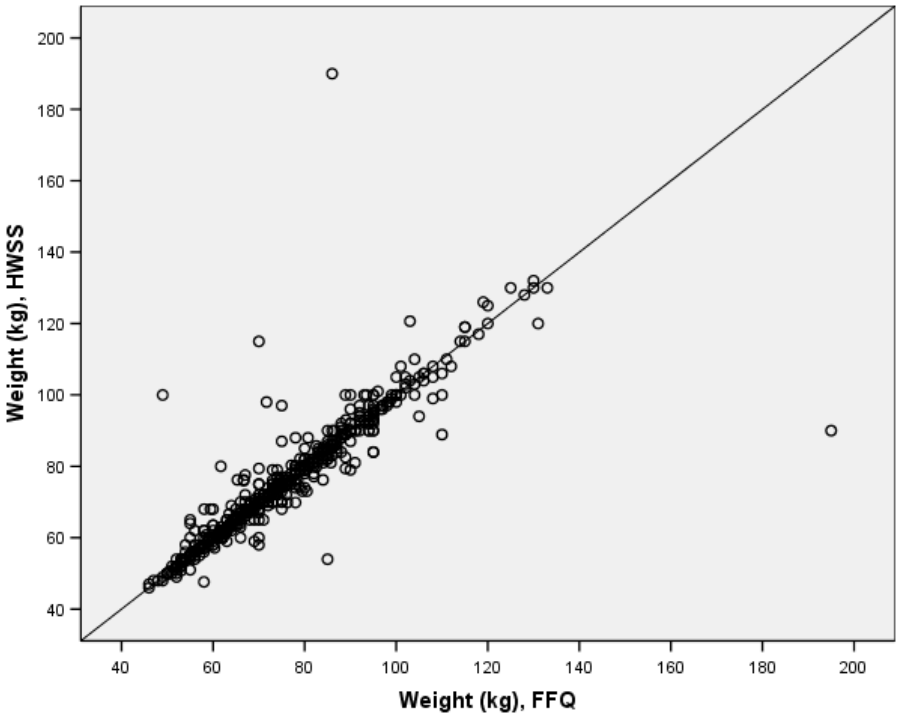
Table 48: Mean weight, FFQ compared with HWSS

	FFQ		HWSS	
	$\bar{x}$	95% CI	$\bar{x}$	95% CI
Persons	76.7	(74.7 - 78.6)	76.6	(74.7 - 78.6)

There were no significant differences in the reported mean weights in the HWSS compared with the FFQ. There was a very strong positive correlation between the two questions (r=.90). The normal distribution of the weight variables allowed test-retest reliability to be performed using an ICC. The ICC was high (ICC=.90, lower 95% CI=.88) and a paired samples t-test found there was no significant difference between the responses (*t*=-0.38, *df*=601, p< 0.05).

A scatterplot of the weight measurements collected by the FFQ and the HWSS is shown below in Figure 4.

Figure 4: Scatterplot of HWSS and FFQ weight measurements



16 Conclusion

The estimated daily equivalent consumption of the broad food group categories indicates that Western Australians are generally consuming the recommended frequency for each group. This does not mean that they are consuming the recommended *amount* of these foods but does show that the emphasis on the types of foods eaten is within the recommendations with few exceptions.

16.1 Dairy Foods

People used a dairy product on average 3.5 times a day and the recommended number of serves per day is two to four depending on gender. While frequency does not equal amount, it does indicate that people are using dairy products frequently enough to attain the amount recommended.

There were some indications that the type of dairy food eaten may not be the recommended type for particular age groups. For example, while over one-third of all those who responded reported that they used whole milk, reduced fat milk is recommended for use for people aged 18 and over. Although both men and women consumed whole milk products, men were more likely to do so.

A comparison of responses to this question, which was asked on both the HWSS (conducted as a CATI) and the FFQ (conducted as a postal) showed that there was a high level of agreement (83.8%) as well as a good level of reliability as measured by the Kappa statistic (.74), used to assess test-retest paired responses.

16.2 Bread and Cereal Foods

People used a bread or cereal product on average 2.7 times a day and the recommended number of serves per day ranges from four to twelve depending on gender. For this group of products, the frequency of consumption would not be likely to closely resemble the number of serves as, for example, one use of this group could be as a sandwich which is equivalent to two serves. Even so, this group does seem to be eaten with less frequency than the recommendations for the amount would indicate.

Wholegrain breads are recommended and one-third of the respondents reported eating wholegrain products. However, white bread was by far the most often consumed product with two in five respondents reporting eating some form of white bread. Although both sexes reported consuming white bread, men were more likely to do so.

As with bread, cereals high in dietary fibre are recommended. Just over one in four people do not eat any cereal products. Of those that do, the most commonly used products were wheat–based products without additions and cereals with additions such as fruit and nuts. Sweetened cereal, bran-based cereal and breakfast bars were least favoured with less than 3% of the population eating any of those products.

16.3 Meat, Fish, Eggs

Overall, the recommended amount of this group of foods is about one to two serves a day, depending on gender. The frequency of consumption is an average of 2.2 times a day and therefore, adequate to ensure the recommended amount is consumed.

The recommended frequency of red meat consumption is three to four times a week. People reported eating red meat or red meat based dishes on average .75 times a day. This would be equivalent to about five times a week, slightly more than the recommended frequency.

16.4 Vegetables

People reported eating vegetables on average 6.7 times a day. If each time consuming was equal to a serve, then respondents would be meeting the recommended five serves per day. However, when asked how much they ate per day, the average number of serves was 2.5, only half the recommended amount. This may mean that either people are over-reporting the frequency of consumption, or under-reporting the amount that they eat or eating a variety of vegetables but less than a serve of each.

One of the questions that had been included for comparison with the HWSS data was how many serves of vegetables were eaten each day. As stated, the FFQ respondents estimated their daily intake at 2.5 serves per day and yet these same people had previously estimated their average daily intake at 3.2 serves per day. It is difficult to explain the drop in consumption given the high relative frequency of consumption.

The other anomaly with this finding is the test-retest result. Reponses given on the HWSS (conducted as a CATI) were compared with responses given on the FFQ (conducted as a postal survey) by the same people. The weighted kappa, which is a measure of agreement between paired responses showed very poor reliability and an average decrease in estimated consumption of close to one serve. Two previous reliability studies found an average increase of close to one serve between the first and the second survey. The only difference this time was that the mode of administration was different. It is not possible to determine which mode is reflecting the most accurate estimate of average daily serves of vegetables.

16.5 Fruit

People reported eating fruit on average 2.4 times per day. As with vegetables, if the serves equalled the frequency, people would be eating the recommended two daily serves of fruit. Unlike the finding with vegetables, comparison with responses given on the HWSS showed that the average was the same when reported on the FFQ (1.6 compared with 1.6). However, similar to the finding with vegetables, the test-retest data were different from previous test-retest studies. The FFQ weighted kappa was in the fair range of agreement (which was what was found previously) but the FFQ found no change in the amount consumed on retest while two previous studies found an average increase of just under one serve. As with vegetables, the only difference was the mode of administration and as with vegetables, it is not possible to determine which mode is reflecting the most accurate estimate.

16.6 Baked Goods and Snacks

Foods from this group are not considered essential to nutrition, so the recommendation is to limit consumption to between zero and three serves a day depending on gender. In the FFQ, this food group includes nuts, usually grouped with meat, fish and eggs, but included under this category for consistency with the NHS FFQ. On average, this food group was consumed about 1.5 times a day and nuts were the most commonly consumed item followed by chocolate and plain sweet biscuits.

The frequency of consumption is within the recommended frequency for this food group.

16.7 Oil/Fat Type Usually Used In Cooking

The recommendation is that people consume products that contain unsaturated fats and 97.1% of the respondents reported that they did. Of the remaining 2.9%, 1.3% did not use oil in cooking, leaving 1.6% who used products containing saturated fats of some kind.

16.8 Sugar, Spreads and Dressings

There are no recommendations about frequency of use or amount for this food group, but the guidelines do recommend the use of products that contain unsaturated fats rather than saturated fats.

People consume items from this food group on average 2.8 times a day. Butter, dairy blends or margarine were the most frequently used products being used at least once a day, followed by some form of sweetener such as sugar, syrup or honey used .69 times daily on average.

No assessment of meeting recommendations is possible as butter is combined in the same grouping as margarine, and margarine is not separated into whether or not it contains saturated or unsaturated fats.

16.9 Type Of Spread Used On Bread/Crackers

Under this category, it is possible to assess the frequency of use for products containing unsaturated fats. Just under half of the respondents said that they used some form of spread that could be identified as using unsaturated fats (43.7%). One in three respondents use butter or a dairy blend, which are products containing saturated fats. One in ten people don't use any form of spread on bread or crackers.

16.10 Non-milk Beverages

People are encouraged to drink plenty of fluids, principally water. Other recommended drinks include fruit juices and milk, although moderation is recommended for fluids high in sugar. According to the FFQ, people consume non-milk beverages on average 7.5 times a day. Of these, water was most frequently consumed. Alcohol beverages were consumed at least once a day. This however does not reflect the amount consumed in that daily use.

Soft drinks were consumed an average of .40 times a day. Respondents were asked about the type of soft drinks they usually consumed with almost half of the respondents reporting that they used cola drinks of some sort (43.1%). One in three respondents reported that they did not consume soft drinks at all.

16.11 Height and Weight

Respondents were asked about their height and weight and given instructions on how to measure their waist circumference. These measures can be used to estimate obesity in the population.

Using height and weight, the Body Mass Index can be calculated and grouped into weight categories. Using this method, 10.4% of the men who responded and 17.3% of the women who responded would be classified as obese.

Waist circumference can also be used to obtain estimates of obesity and using this measure, 18.8% of the men who responded and 39.8% of the women who responded would be classified as obese.

Height and weight are also asked on the HWSS and the test-retest reliability between the responses made to the HWSS and on the FFQ was very high. Using Intra Class Correlation

analysis, height had an ICC of .92 and weight an ICC of .90 – both of these were in the excellent reliability range.

These results suggest that respondents may not be 'checking' the accuracy of what they report as their height and weight, presumably because they 'know' these. However, they may not have been aware of their waist measurement and so have to check that. Waist circumference may be a more accurate and realistic assessment of body weight for this reason.

Whatever the reason, the major difference in estimates using these two different methods suggests that a validity study is required to assess which is more accurate.

17 References

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3 Basu S & Basu A, (1995) Comparison of several goodness-of-fit tests for the kappa statistic based on exact power and coverage probability. *Statistics in Medicine*, 14, 347-356.

4 National Health & Medical Research Council, 2003, *Dietary Guidelines for Australian Adults*. Retrieved 16 May 2007, from <nhmrc.gov.au/publications/synopses/_files/n33.pdf>

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6 World Health Organization, *Prevalence of adults (15 years and older) who are obese (percentage).* Retrieved 1 February 2007, from <who.int/healthinfo/statistics/indobeseadults/en>

7 Australian Institute of Health and Welfare, 2005, *Chronic disease risk factors.* Retrieved 21 May, 2007, from <aihw.gov.au/cdarf/risk_fact/index.cfm#box3>

8 NSW Department of Health, 2004, *Final Report: Third field test of core questions for* inclusion in a nationwide preventable chronic disease and behavioural risk factor survey module manual. NSW Health Survey Program, July 2004, NSW Department of Health.

18 Appendix A

IN CONFIDENCE

Section 1: Food Frequency Questionnaire

Introduction

Thank you for agreeing to take part in this study on the food habits of South Australian and Western Australian residents. The study is being undertaken by the SA Department of Health (SA DOH) and by the UWA Survey Research Centre in WA on behalf of the WA Department of Health (WA DOH). The study is funded and supported by the Australian Government Department of Health and Ageing (DOHA), in conjunction with the Australian Bureau of Statistics (ABS).

Please read these introductory pages carefully before you begin. They will tell you important information about the study and how to complete the questionnaire.

Confidentiality

We plan to link the information that you provide in this questionnaire to the information that you have already given about your health and wellbeing. This will allow reports to put context around information on food habits, such as what food habits men and women differ on, or what young people typically eat.

The people who originally interviewed you will attach the information provided on this questionnaire to the information provided on your telephone interview. Be assured that once the information is attached, all potentially identifying data will be deleted from your record and any electronic or paper records associated with the study that contain any identifying data will be destroyed.

The SA Department of Health, the WA Department of Health and the Australian Government Department of Health and Ageing will all have de-identified data sets for analysis. *All reports from this study will be about groups only. No individual data will be used.* If you have any queries about the study, you can call 1800 635 352 in SA or 1800 799 100 in WA.

If you do NOT agree to have your data linked, please sign below:

I do not agree that what I answer in this questionnaire can be linked to my telephone interview.

Signed: _____ Date: _____

What the questionnaire is about

The questionnaire you are being asked to complete is designed to collect information on your usual pattern of eating; that is, how often, on average, you consumed certain foods and beverages during the last 12 months.

Australian Government
Department of Health and Ageing

Government of South Australia
Department of Health

Department of Health

How to fill in the questionnaire

Place an ✕ or a ✔ in the box that best represents your usual pattern of consumption of that food over the last 12 months. Please fill in one box for every food listed, even if you never eat that particular food. For example, If you usually eat banana at breakfast seven times a week and fruit salad at dinner three times a week, and you usually eat no other banana or fruit salad during the week, fill in the box for "*Once per day*" for banana and the box for "*2-4 times per week*" fruit salad.

Section Example

Please fill in one box for each food item listed.

	Average number of times consumed in the last 12 months								
	Never	Less than once per month	1-3 times per month	Once per week	2-4 times per week	5-6 times per week	Once per day	2-3 times per day	4+ times per day
Banana	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ✔	7 ☐	8 ☐
Fruit Salad	0 ☐	1 ☐	2 ☐	3 ☐	4 ✔	5 ☐	6 ☐	7 ☐	8 ☐

When reading through the list of foods, please think back over the last 12 months and your usual weekday and weekend eating patterns, which might be different. Also think carefully about foods and beverages consumed away from home and when on holiday as well as those foods prepared and consumed at home. **Think about all eating occasions.**

Example of holiday food

If you eat grilled or steamed fresh fish 2-3 times a week when you are on holiday during summer and fried fish once on most weekends during the remainder of the year then fill in the box "*Less than once per month*" for the fish - steamed, baked and grilled and the 1-3 times per month box for the fish - fried, battered and crumbed.

Example of seasonal eating

If you eat nectarines four times per week for the 2-3 months of the year when they are in season and tinned apricots once per week for the rest of the year fill in the box "*Once per week*" for peach, nectarine, plum, apricot, and cherries.

Example of mixed foods

Some mixed foods have been listed as a single item to make it easier for you to answer. These include casseroles and meat cooked in simmer sauces, mixed vegetable dishes and stir fries, mixed salad in a sandwich or as a side salad, pizza and hamburger in a bun. Do not count foods, which are part of a mixed dish when filling in the rest of the questionnaire. If you usually eat a pizza once a week, fill in the "*Once per week*" box for pizza and do not count the ham, pineapple, tomato or any other ingredients of the pizza.

Example of sandwiches and filled rolls

For sandwiches and filled rolls record the bread/roll and filling separately. If you usually eat a wholemeal ham and salad sandwich made without any spread three times a week and no other wholemeal bread, ham or mixed salad during the week fill in three "*2-4 times per week*" boxes, 1 for wholemeal bread, 1 for ham and 1 for green/mixed salad.

DEMOGRAPHICS

What age group do you belong to:

1. 18-24 ☐ **2.** 25-34 ☐ **3.** 35-44 ☐ **4.** 45-54 ☐ **5.** 55-64 ☐ **6.** 65-74 ☐ **7.** 75 or over ☐

Are you:

1. Male ☐ **2.** Female ☐

What is your postcode? _____

Would you say that where you live is:

1. Metropolitan SA/WA ☐ **2.** Rural SA/WA ☐ **3.** Remote SA/WA ☐

Section 1 *continued*

Please place a ✕ or a ✔ in one box for each food item listed.

	Average number of times consumed in the last 12 months								
	Never	Less than once per month	1-3 times per month	Once per week	2-4 times per week	5-6 times per week	Once per day	2-3 times per day	4+ times per day
Dairy Foods									
Flavoured milk/soy drink (eg milkshake, iced coffee, hot chocolate)	0	1	2	3	4	5	6	7	8
Milk/soy milk as a drink	0	1	2	3	4	5	6	7	8
Milk/soy milk on breakfast cereals	0	1	2	3	4	5	6	7	8
Milk/soy milk in hot beverages (eg in tea)	0	1	2	3	4	5	6	7	8
Cream or sour cream	0	1	2	3	4	5	6	7	8
Ice-cream	0	1	2	3	4	5	6	7	8
Yoghurt including plain, frozen, flavoured and fromage frais	0	1	2	3	4	5	6	7	8
Cottage or ricotta cheese	0	1	2	3	4	5	6	7	8
Cheddar and all other cheeses	0	1	2	3	4	5	6	7	8
Bread and Cereal Foods									
White bread, toast or rolls	0	1	2	3	4	5	6	7	8
Wholemeal or mixed grain bread, toast or rolls	0	1	2	3	4	5	6	7	8
English muffin, crumpet, foccacia or flat bread	0	1	2	3	4	5	6	7	8
Dry or savoury biscuits, crispbread, crackers	0	1	2	3	4	5	6	7	8
Muesli	0	1	2	3	4	5	6	7	8
Cooked porridge	0	1	2	3	4	5	6	7	8
Breakfast cereal	0	1	2	3	4	5	6	7	8
Rice including white or brown	0	1	2	3	4	5	6	7	8
Pasta including filled pasta, noodles	0	1	2	3	4	5	6	7	8
Meat, Fish, Eggs									
Mince dishes (eg bolognaise sauce, rissoles, meatloaf)	0	1	2	3	4	5	6	7	8
Mixed dishes with beef or veal (eg stir-fry, cooked in simmer sauce or as casserole)	0	1	2	3	4	5	6	7	8
Beef or veal – roast, chop or steak	0	1	2	3	4	5	6	7	8
Mixed dishes with lamb (as for beef)	0	1	2	3	4	5	6	7	8
Lamb – roast, chop or steak	0	1	2	3	4	5	6	7	8
Mixed dishes with pork (as for beef)	0	1	2	3	4	5	6	7	8
Pork – roast, chop or steak	0	1	2	3	4	5	6	7	8
Sausages, frankfurters	0	1	2	3	4	5	6	7	8
Bacon	0	1	2	3	4	5	6	7	8
Ham	0	1	2	3	4	5	6	7	8

Please ensure that you have placed a ✕ or a ✔ in one box on each row.

Section 1 *continued*

Please place a ✕ or a ✓ in one box for each food item listed.

	Average number of times consumed in the last 12 months								
	Never	Less than once per month	1-3 times per month	Once per week	2-4 times per week	5-6 times per week	Once per day	2-3 times per day	4+ times per day
Luncheon meats, salami, or devon	0	1	2	3	4	5	6	7	8
Liver including pate	0	1	2	3	4	5	6	7	8
Other offal (eg kidneys)	0	1	2	3	4	5	6	7	8
Mixed dishes with chicken, turkey, duck (eg stir-fry, cooked in simmer sauce or as casserole)	0	1	2	3	4	5	6	7	8
Chicken, turkey, duck - roast, steamed, BBQ, fried	0	1	2	3	4	5	6	7	8
Canned fish (eg tuna, salmon, sardines)	0	1	2	3	4	5	6	7	8
Fish – steamed, baked, grilled	0	1	2	3	4	5	6	7	8
Fish – fried, battered, crumbed	0	1	2	3	4	5	6	7	8
Other seafood (eg prawns, oysters, calamari)	0	1	2	3	4	5	6	7	8
Eggs or egg dishes	0	1	2	3	4	5	6	7	8
Vegetables (fresh, frozen or tinned)									
Green/ mixed salad (eg lettuce, tomato, cucumber, onion, etc) in a sandwich or as a side salad	0	1	2	3	4	5	6	7	8
Stir-fry and mixed cooked vegetables including vegetable soups	0	1	2	3	4	5	6	7	8
Excluding the above dishes, please indicate how often you eat the following vegetables.									
Potato cooked without fat (eg boiled, mashed, dry baked)	0	1	2	3	4	5	6	7	8
Potato cooked with fat (eg chips, gems, wedges, sauté, roast)	0	1	2	3	4	5	6	7	8
Carrots	0	1	2	3	4	5	6	7	8
Sweet potatoes and other root vegetables	0	1	2	3	4	5	6	7	8
Peas	0	1	2	3	4	5	6	7	8
Green beans	0	1	2	3	4	5	6	7	8
Silverbeet or spinach	0	1	2	3	4	5	6	7	8
Salad greens including lettuce, rocket or endive	0	1	2	3	4	5	6	7	8
Celery, asparagus or bean sprouts	0	1	2	3	4	5	6	7	8
Broccoli	0	1	2	3	4	5	6	7	8
Cauliflower	0	1	2	3	4	5	6	7	8
Brussels sprouts and all types of cabbage (eg coleslaw, chinese, red)	0	1	2	3	4	5	6	7	8
Pumpkin	0	1	2	3	4	5	6	7	8
Zucchini, eggplant or squash	0	1	2	3	4	5	6	7	8
Capsicum	0	1	2	3	4	5	6	7	8

Please ensure that you have placed a ✕ or a ✓ in one box on each row.

Section 1 *continued*

Please place a ✕ or a ✔ in one box for each food item listed.

	Average number of times consumed in the last 12 months								
	Never	Less than once per month	1-3 times per month	Once per week	2-4 times per week	5-6 times per week	Once per day	2-3 times per day	4+ times per day
Tomatoes including tinned	0	1	2	3	4	5	6	7	8
Tomato products (eg dried, paste, sauce)	0	1	2	3	4	5	6	7	8
Avocado	0	1	2	3	4	5	6	7	8
Onion or leeks	0	1	2	3	4	5	6	7	8
Sweetcorn or corn on the cob	0	1	2	3	4	5	6	7	8
Mushrooms	0	1	2	3	4	5	6	7	8
Soybean or tofu	0	1	2	3	4	5	6	7	8
Baked beans	0	1	2	3	4	5	6	7	8
Other beans/peas (eg kidney, borlotti, chickpeas, lentils, dhal, split peas)	0	1	2	3	4	5	6	7	8
Fruits (fresh, frozen or tinned)									
Mixed fruit and fruit salad	0	1	2	3	4	5	6	7	8
Excluding mixed fruit how often do you eat the following fruits									
Apple or pear	0	1	2	3	4	5	6	7	8
Orange, mandarin or grapefruit	0	1	2	3	4	5	6	7	8
Peach, nectarine, plum, apricot or cherries	0	1	2	3	4	5	6	7	8
Banana	0	1	2	3	4	5	6	7	8
Mango or paw-paw	0	1	2	3	4	5	6	7	8
Pineapple	0	1	2	3	4	5	6	7	8
Berries (eg strawberries, blueberries)	0	1	2	3	4	5	6	7	8
Other fruit (eg grapes, melon, kiwi fruit)	0	1	2	3	4	5	6	7	8
Fruits - dried									
All types (eg sultanas, apricots, prunes)	0	1	2	3	4	5	6	7	8
Baked Goods and Snacks									
Meat pie, sausage roll or other savoury pastries	0	1	2	3	4	5	6	7	8
Pizza	0	1	2	3	4	5	6	7	8
Hamburger with bun	0	1	2	3	4	5	6	7	8
Cakes, sweet muffins, scones or pikelets	0	1	2	3	4	5	6	7	8
Sweet pies or sweet pastries	0	1	2	3	4	5	6	7	8
Other puddings and desserts	0	1	2	3	4	5	6	7	8
Plain sweet biscuits	0	1	2	3	4	5	6	7	8
Fancy biscuits including jam/cream filled, chocolate, fruit and nut	0	1	2	3	4	5	6	7	8
Chocolate including chocolate bars (eg Mars bars™)	0	1	2	3	4	5	6	7	8

Please ensure that you have placed a ✕ or a ✔ in one box on each row.

Section 1 *continued*

Please place a ✕ or a ✔ in one box for each food item listed.

	Average number of times consumed in the last 12 months								
	Never	Less than once per month	1-3 times per month	Once per week	2-4 times per week	5-6 times per week	Once per day	2-3 times per day	4+ times per day
Other confectionery	0	1	2	3	4	5	6	7	8
Nuts	0	1	2	3	4	5	6	7	8
Potato chips, corn chips, Twisties™ and other extruded snacks	0	1	2	3	4	5	6	7	8
Sugar, Spreads and Dressings									
Sugar, syrup or honey	0	1	2	3	4	5	6	7	8
Jam or marmalade	0	1	2	3	4	5	6	7	8
Peanut butter or other nut spreads	0	1	2	3	4	5	6	7	8
Butter, dairy blends or margarine	0	1	2	3	4	5	6	7	8
Vegemite™, Marmite™ or Promite™	0	1	2	3	4	5	6	7	8
Oil and vinegar dressing	0	1	2	3	4	5	6	7	8
Mayonnaise or other creamy dressing	0	1	2	3	4	5	6	7	8
Non-milk beverages									
Fruit juice	0	1	2	3	4	5	6	7	8
Fruit juice drinks or cordial	0	1	2	3	4	5	6	7	8
Soft drinks including flavoured mineral water	0	1	2	3	4	5	6	7	8
Electrolyte or sports drinks (eg Gatorade™)	0	1	2	3	4	5	6	7	8
Energy drinks (eg Red Bull™, V™, Red Eye™)	0	1	2	3	4	5	6	7	8
Water including unflavoured mineral water, soda water, tap water	0	1	2	3	4	5	6	7	8
Coffee	0	1	2	3	4	5	6	7	8
Tea	0	1	2	3	4	5	6	7	8
Beer – low alcohol	0	1	2	3	4	5	6	7	8
Beer – ordinary	0	1	2	3	4	5	6	7	8
Red wine	0	1	2	3	4	5	6	7	8
White wine or champagne/sparkling wine	0	1	2	3	4	5	6	7	8
Sherry or port	0	1	2	3	4	5	6	7	8
Spirits or liqueurs	0	1	2	3	4	5	6	7	8
All other alcoholic drinks	0	1	2	3	4	5	6	7	8
Vitamin and Mineral Supplements including tablets, capsules or drops	0	1	2	3	4	5	6	7	8

Please ensure that you have placed a ✕ or a ✔ in one box on each row.

Section 2 Supplementary Questions

Tick the number next to the option that best describes what you usually consume for each of the following questions. If you usually use more than one of the options given in the question, mark the one you use most often.

1. What type of milk do you usually consume?		
Whole	1	
Low/reduced fat, *with or without added calcium*	2	
Skim	3	
Evaporated or sweetened condensed milk	4	
Soy milk - whole	5	
Soy milk - reduced fat	6	
Other - whole	7	
Other - reduced fat	8	
Don't consume milk	9	
Don't know	10	
2. What type of bread/rolls do you usually consume?		
White fibre enriched	1	
Other white	2	
Wholemeal	3	
Rye	4	
Mixed grain with soy/linseed	5	
Other mixed/multigrain	6	
Don't eat bread	7	
3. What type of spread do you usually use on bread/crackers?		
Butter	1	
Dairy blend	2	
Polyunsaturated margarine	3	
Canola or olive margarine	4	
Reduced fat margarine spreads	5	
Margarines containing phytosterols (eg Logicol™, Pro-activ™)	6	
Don't use dairy/margarine spread	7	
Other	8	
Don't Know	9	
4. What type of oil/fat is your food usually cooked in?		
Olive oil	1	
Canola oil	2	
Sunflower/safflower oil	3	
Other vegetable oil (eg blends, peanut, maize)	4	
Butter or margarine	5	
Dripping /lard	6	
No oil/fat used in cooking	7	
Other	8	
Don't know	9	

19 Appendix B

Table 49: Frequency of dairy food consumption

	Never	Less than once per month	1 to 3 times per month	Once per week	2 to 4 times per week	5 to 6 times per week	Once per day	2 to 3 times per day	4 + times per day
Flavoured milk/soy drink (e.g. milkshake, iced coffee, hot chocolate)	23.25	36.65	15.73	6.44	9.07	0.64	7.04	1.15	0.01
Milk/soy milk as a drink	37.81	27.27	13.72	6.16	7.97	1.05	4.42	1.58	0.03
Milk/soy milk on breakfast cereals	20.10	10.09	6.40	7.06	14.27	10.68	30.72	0.10	0.58
Milk/soy milk in hot beverages (e.g. in tea)	19.35	1.99	3.09	3.59	2.54	2.77	15.02	32.92	18.73
Cream or sour cream	15.68	39.91	28.34	11.04	4.23	0.29	0.47	0.05	0.00
Ice-cream	6.14	30.36	29.54	14.69	15.35	2.39	1.47	0.05	0.00
Yoghurt	19.17	18.90	16.51	9.02	17.26	5.60	13.11	0.21	0.22
Cottage or ricotta cheese	46.51	32.96	13.01	4.19	2.57	0.51	0.20	0.05	0.00
Cheddar and all other cheeses	3.10	6.73	6.65	18.92	36.62	12.23	14.20	1.41	0.13

Table 50: Frequency of bread and cereal foods consumption

	Never	Less than once per month	1 to 3 times per month	Once per week	2 to 4 times per week	5 to 6 times per week	Once per day	2 to 3 times per day	4 + times per day
White bread, toast or rolls	14.79	11.85	12.91	9.38	19.65	6.44	14.28	9.73	0.99
Wholemeal or mixed grain bread, toast or rolls	7.52	9.41	7.31	10.81	19.87	13.60	21.89	9.50	0.08
English muffin, crumpet, foccacia or flat bread	18.63	33.49	29.29	11.29	6.33	0.32	0.65	0.00	0.00
Dry or savoury biscuits, crispbread, crackers	6.19	18.67	20.14	23.98	17.47	6.30	5.91	0.93	0.42
Muesli	51.11	18.09	10.07	5.57	6.28	2.56	6.32	0.00	0.00
Cooked porridge	57.99	17.67	7.79	6.08	5.38	0.93	3.44	0.00	0.72
Breakfast cereal	5.25	7.57	23.53	33.67	25.40	1.75	2.46	0.37	0.00
Rice including white or brown	18.26	8.75	10.81	9.51	15.81	9.90	26.47	0.40	0.08
Pasta including filled pasta, noodles	3.32	8.08	24.38	38.54	23.28	1.04	1.35	0.00	0.00

Table 51: Frequency of meat, fish and egg consumption

	Never	Less than once per month	1 to 3 times per month	Once per week	2 to 4 times per week	5 to 6 times per week	Once per day	2 to 3 times per day	4 + times per day
Mince dishes (e.g. bolognaise sauce, rissoles, meatloaf)	4.38	10.80	25.08	43.42	15.24	0.47	0.61	0.00	0.00
Mixed dishes with beef or veal (e.g. stir-fry, cooked in simmer sauce or as casserole)	3.34	12.83	26.65	38.43	17.90	0.79	0.06	0.00	0.00
Beef or veal - roast, chop or steak	4.90	7.46	22.80	33.22	28.73	2.39	0.49	0.00	0.00
Mixed dishes with lamb (as for beef)	13.94	20.43	29.59	25.47	9.96	0.56	0.05	0.00	0.00
Lamb - roast, chop or steak	10.43	18.89	30.68	30.67	8.93	0.40	0.00	0.00	0.00
Mixed dishes with pork (as for beef)	27.80	31.79	22.69	15.05	2.22	0.26	0.19	0.00	0.00
Pork - roast, chop or steak	25.40	33.94	19.73	16.33	4.34	0.26	0.00	0.00	0.00
Sausages, frankfurters	13.45	28.07	32.10	19.95	5.99	0.44	0.00	0.00	0.00
Bacon	11.05	27.69	33.54	19.83	6.82	1.06	0.00	0.00	0.00
Ham	8.86	17.43	23.50	22.90	23.18	2.52	1.53	0.00	0.08

Table 52: Frequency of meat, fish and egg consumption, continued

	Never	Less than once per month	1 to 3 times per month	Once per week	2 to 4 times per week	5 to 6 times per week	Once per day	2 to 3 times per day	4 + times per day
Luncheon meats, salami, or devon	22.92	22.89	23.29	13.76	12.22	2.55	2.36	0.00	0.00
Liver including pate	64.65	29.87	4.33	0.53	0.12	0.30	0.19	0.00	0.00
Other offal (e.g. kidneys)	82.09	15.40	2.48	0.03	0.00	0.00	0.00	0.00	0.00
Mixed dishes with chicken, turkey, duck (e.g. stir-fry, cooked in simmer sauce or as casserole)	10.69	12.65	26.16	32.77	16.88	0.27	0.58	0.00	0.00
Chicken, turkey, duck - roast, steamed, BBQ, fried	7.44	10.54	28.55	32.34	19.85	0.71	0.51	0.05	0.00
Canned fish (e.g. tuna, salmon, sardines)	16.42	14.18	29.49	22.22	12.83	3.64	1.17	0.05	0.00
Fish - steamed, baked, grilled	15.32	18.82	29.07	29.05	7.58	0.13	0.03	0.00	0.00
Fish - fried, battered, crumbed	13.92	37.75	26.96	18.14	3.16	0.00	0.08	0.00	0.00
Other seafood (e.g. prawns, oysters, calamari)	20.44	37.65	31.70	8.04	1.74	0.15	0.27	0.00	0.00
Eggs or egg dishes	3.96	9.63	26.22	29.47	27.04	2.24	1.17	0.27	0.00

Table 53: Frequency of vegetable consumption

	Never	Less than once per month	1 to 3 times per month	Once per week	2 to 4 times per week	5 to 6 times per week	Once per day	2 to 3 times per day	4 + times per day
Green/mixed salad in a sandwich or as a side salad	1.30	0.31	3.90	13.62	33.49	16.04	24.81	6.35	0.18
Stir-fry and mixed cooked vegetables including vegetable soups	1.66	3.11	11.35	19.64	35.78	11.96	15.48	1.03	0.00
Excluding the above dishes									
Potato cooked without fat (e.g. boiled, mashed, dry baked)	2.23	12.19	11.86	20.36	40.04	8.30	5.02	0.00	0.00
Potato cooked with fat (e.g. chips, gems, wedges, saute, roast)	7.22	22.00	27.33	30.01	11.70	0.44	0.59	0.71	0.00
Carrots	0.54	7.49	9.28	17.95	39.21	13.70	10.57	1.25	0.00
Sweet potatoes and other root vegetables	9.36	20.65	22.20	18.46	19.90	5.05	4.20	0.19	0.00
Peas	5.73	7.23	15.21	25.81	33.94	7.50	4.59	0.00	0.00
Green beans	5.90	12.50	20.42	21.25	30.53	6.18	3.22	0.00	0.00
Silverbeet or spinach	26.12	20.34	23.53	14.60	10.96	2.96	1.03	0.46	0.00
Salad greens including lettuce, rocket or endive	2.30	4.11	10.43	19.38	34.65	13.90	13.97	1.26	0.00

Table 54: Frequency of vegetable consumption, continued

	Never	Less than once per month	1 to 3 times per month	Once per week	2 to 4 times per week	5 to 6 times per week	Once per day	2 to 3 times per day	4 + times per day
Celery, asparagus or bean sprouts	13.04	19.57	24.71	18.80	15.40	5.61	2.59	0.30	0.00
Broccoli	7.65	6.76	14.46	22.38	35.15	9.08	4.51	0.00	0.00
Cauliflower	4.32	13.79	24.75	24.69	23.10	5.91	3.44	0.00	0.00
Brussel sprouts and all types of cabbage (e.g. coleslaw, chinese, red)	10.99	19.56	25.66	23.83	15.99	3.35	0.49	0.13	0.00
Pumpkin	5.73	14.34	23.50	27.05	24.20	3.68	1.50	0.00	0.00
Zucchini, eggplant or squash	24.80	26.95	21.19	14.48	9.94	1.56	0.35	0.02	0.71
Capsicum	8.83	12.54	16.92	22.55	22.64	10.18	5.41	0.23	0.71
Tomatoes including tinned	3.36	4.48	12.34	18.48	34.20	14.32	11.24	1.58	0.00
Tomato products (e.g. dried, paste, sauce)	3.72	9.45	21.36	28.47	30.95	3.96	1.91	0.18	0.00
Avocado	31.90	17.28	16.26	13.48	15.08	3.02	2.03	0.24	0.72

Table 55: Frequency of vegetable consumption, continued

	Never	Less than once per month	1 to 3 times per month	Once per week	2 to 4 times per week	5 to 6 times per week	Once per day	2 to 3 times per day	4 + times per day
Onion or leeks	5.53	5.44	13.32	16.93	36.56	16.02	5.04	1.17	0.00
Sweetcorn or corn on the cob	7.93	20.08	27.86	25.24	14.80	3.69	0.40	0.00	0.00
Mushrooms	17.12	15.25	21.49	21.56	19.90	3.82	0.86	0.00	0.00
Soybean or tofu	80.14	10.23	5.37	0.26	2.22	0.97	0.05	0.76	0.00
Baked beans	30.53	24.99	27.80	11.39	4.19	0.19	0.91	0.00	0.00
Other beans/peas (e.g. kidney, borlotti, chickpeas, lentils, dhal, split peas)	28.89	34.11	17.51	11.54	5.60	0.77	1.55	0.05	0.00

Table 56: Frequency of fruit consumption

	Never	Less than once per month	1 to 3 times per month	Once per week	2 to 4 times per week	5 to 6 times per week	Once per day	2 to 3 times per day	4 + times per day
Mixed fruit and fruit salad	5.89	25.70	17.63	14.67	13.93	7.89	9.70	3.71	0.88
Excluding mixed fruit									
Apple or pear	4.66	8.41	13.12	12.26	24.04	12.90	22.06	2.40	0.14
Orange, mandarin or grapefruit	8.98	16.23	20.38	14.05	23.63	7.20	8.96	0.43	0.14
Peach, nectarine, plum, apricot or cherries	11.09	22.51	26.54	15.33	14.85	5.25	4.01	0.43	0.00
Banana	13.69	24.37	19.27	13.45	15.07	5.12	8.17	0.15	0.71
Mango or paw-paw	33.61	31.26	16.09	9.23	7.01	0.77	1.27	0.06	0.71
Pineapple	17.60	39.38	24.73	11.04	4.81	0.94	1.46	0.04	0.00
Berries (e.g. strawberries, blueberries)	11.12	21.81	26.58	19.38	14.13	1.77	4.31	0.90	0.00
Other fruit (e.g. grapes, melon, kiwi fruit)	5.57	20.86	24.61	22.48	17.99	4.11	3.35	1.03	0.00
Dried fruit, all types (e.g. sultanas, apricots, prunes)	14.42	30.01	20.78	12.01	12.14	4.53	5.04	0.34	0.72

Table 57: Frequency of baked goods and snacks consumption

	Never	Less than once per month	1 to 3 times per month	Once per week	2 to 4 times per week	5 to 6 times per week	Once per day	2 to 3 times per day	4 + times per day
Meat pie, sausage roll or other savoury pastries	14.55	36.98	34.84	9.48	3.86	0.29	0.00	0.00	0.00
Pizza	13.38	40.44	36.04	9.87	0.27	0.00	0.00	0.00	0.00
Hamburger with bun	21.36	40.20	28.60	8.55	1.28	0.00	0.00	0.00	0.00
Cakes, sweet muffins, scones or pikelets	8.75	24.26	31.50	21.53	9.86	2.87	1.12	0.11	0.00
Sweet pies or sweet pastries	21.63	43.11	22.33	9.74	2.11	0.37	0.00	0.00	0.72
Other puddings and desserts	15.28	39.46	24.17	12.58	6.34	1.37	0.81	0.00	0.00
Plain sweet biscuits	15.42	27.09	20.08	15.97	13.11	3.10	4.70	0.32	0.22
Fancy biscuits including jam/cream filled, chocolate fruit and nut	16.33	33.29	21.94	16.51	9.32	2.03	0.50	0.09	0.00
Chocolate including chocolate bars (e.g. Mars bars™)	6.52	18.69	25.14	22.32	16.59	4.84	5.77	0.13	0.00
Other confectionary	8.22	30.49	26.82	19.46	10.23	2.31	2.18	0.29	0.00
Nuts	6.55	19.66	25.11	17.77	18.97	4.13	6.84	0.97	0.00
Potato chips, corn chips, Twisties™ and other extruded snacks	14.82	26.97	26.55	20.24	9.72	1.31	0.39	0.00	0.00

Table 58: Frequency of sugar, spreads and dressings consumption

	Never	Less than once per month	1 to 3 times per month	Once per week	2 to 4 times per week	5 to 6 times per week	Once per day	2 to 3 times per day	4 + times per day
Sugar, syrup or honey	13.92	19.28	10.86	10.58	12.80	3.43	14.89	9.46	4.79
Jam or marmalade	12.87	25.19	19.59	17.06	13.33	2.70	9.13	0.14	0.00
Peanut butter or other nut spreads	39.45	21.90	17.39	12.26	5.73	1.79	1.43	0.04	0.00
Butter, dairy blends or margarine	5.92	5.60	3.66	6.37	13.67	9.22	33.31	21.11	1.14
Vegemite™, Marmite™ or Promite™	18.41	12.14	13.09	17.95	19.93	4.59	12.21	1.68	0.00
Oil and vinegar dressing	12.94	10.04	19.62	15.02	23.66	7.11	10.27	1.34	0.00
Mayonnaise or other creamy dressing	14.64	19.95	22.41	16.20	22.54	0.87	3.15	0.24	0.00

Table 59: Frequency of non-milk beverage consumption

	Never	Less than once per month	1 to 3 times per month	Once per week	2 to 4 times per week	5 to 6 times per week	Once per day	2 to 3 times per day	4 + times per day
Fruit juice	9.57	12.02	17.43	14.83	18.16	6.67	17.29	3.63	0.40
Fruit juice drinks or cordial	27.23	19.45	14.90	11.72	14.12	3.25	7.99	1.16	0.17
Soft drinks including flavoured mineral water	18.14	13.80	18.12	11.16	19.00	5.50	8.30	5.22	0.76
Electrolyte or sports drinks (eg Gatorade™)	67.49	13.62	10.15	3.14	3.37	1.09	0.68	0.46	0.00
Energy drinks (eg Red Bull™, V™, Red Eye™)	83.30	7.01	5.12	3.91	0.47	0.00	0.19	0.00	0.00
Water including unflavoured mineral water, soda & tap water	1.94	1.27	0.88	0.72	2.92	4.23	10.64	28.16	49.24
Coffee	16.12	7.19	6.41	4.49	7.31	3.18	23.84	23.91	7.56
Tea	14.39	8.13	3.89	4.58	7.93	3.67	16.22	29.08	12.11
Beer - low alcohol	53.96	11.44	10.66	9.37	9.08	0.69	3.14	1.26	0.40
Beer - ordinary	46.26	14.60	12.06	7.26	9.90	1.51	2.71	2.39	3.31

Table 60: Frequency of non-milk beverage consumption, continued

	Never	Less than once per month	1 to 3 times per month	Once per week	2 to 4 times per week	5 to 6 times per week	Once per day	2 to 3 times per day	4 + times per day
Red wine	40.86	18.14	12.62	10.28	9.51	1.88	5.08	1.62	0.00
White wine or champagne/sparkling	37.50	23.51	16.18	10.96	8.13	0.93	1.89	0.04	0.85
Sherry or port	66.86	25.38	4.15	1.52	1.21	0.27	0.62	0.00	0.00
Spirits or liqueurs	40.79	27.38	14.70	6.60	5.77	1.20	1.29	1.47	0.81
All other alcoholic drinks	55.28	28.64	10.36	2.14	0.91	0.62	0.27	1.78	0.00

Table 61: Frequency of vitamin and mineral supplements consumption

	Never	Less than once per month	1 to 3 times per month	Once per week	2 to 4 times per week	5 to 6 times per week	Once per day	2 to 3 times per day	4 + times per day
Vitamin & mineral supplements including tablets, capsules or drops	44.45	7.22	3.44	4.13	3.22	2.67	29.08	4.82	0.97

Delivering a **Healthy WA**

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