



Australia's National  
Science Agency

# CSIRO Healthy Diet Score 2015-2023

An analysis of diet quality comparing the diets of Australians  
with recommendations in the Australian Dietary Guidelines

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# 1 Executive Summary

The CSIRO Healthy Diet Score is an online survey which estimates diet quality using short questions. The survey assesses 9 components of diet, including quantity, quality and variety of foods consumed, and estimates compliance with the *Australian Dietary Guidelines* to generate a score out of 100. This report describes the diet quality of Australian adults based on the diet scores of a weighted sample of 235,268 adults who completed the survey between May 2015 to July 2023.

Key results include:

- The average diet score was 55 out of 100. The average diet score has decreased over time, from 56 in 2015 to 53 in 2023. The greatest decrease was reported in older adults.
- Women reported slightly better diet quality than men, with an average score of 56 compared to 53 for men. The greatest difference was for vegetable consumption. Women scored 8 points higher on the vegetable component than men (62 vs 54 out of 100).
- The diet quality of older adults was better than younger Australians, with 7 points differentiating 18-50 year olds and those over 70 years (53 vs 60 respectively).
- Diet score varied by occupation. Retired Australians and those working in the fitness industry had the highest average diet scores (59 out of 100), while construction workers and unemployed Australians had the lowest scores (51 out of 100).
- The diets of Australian adults aligned most with the beverage (scoring 93 out of 100) and meats and alternatives (78 out of 100) recommendations in the *Guidelines*. There was also reasonable alignment for breads and cereals (70 out of 100) and variety (65 out of 100).
- The diets of Australian adults were least compliant with the *Guidelines* for dairy foods and discretionary foods. Adults reported to consume too many discretionary foods (scoring 20 out of 100) and not enough dairy and alternatives (38 out of 100).
- Diet quality decreased as self-reported weight status increased, but only to a small extent. Adults within the healthy weight range scored 56 out of 100 compared to 53 for obese adults. Adults within the healthy weight range scored higher for fruit, discretionary foods, and variety.
- The average discretionary food consumption was about 28 serves per week. Consumption was highest for those working in construction and the beauty or fashion industry (~48 serves per week) and lowest for those working in research or fitness (~23 serves per week).
- The top contributors to discretionary intake were alcohol, cakes and biscuits, chocolate and confectionary, and takeaway foods. Men consumed about 10 serves per week more than women, and younger adults about 5 serves per week more than older adults.
- The average score for vegetables was 58 out of 100 (one of the lowest scoring components). Only four out of 10 adults reported to always eat 3 or more different vegetables at their main meal – an indicator of a healthy diet. This has decreased from 47% in 2016 to 35% in 2023.
- More women than men (47% vs 40%), more older than younger adults (54% vs 38%), and more adults classified as healthy weight compared to obese (47% vs 39%) reported always having 3 or more different vegetables at their main meal.

## 2 CSIRO Healthy Diet Score

### 2.1 CSIRO Healthy Diet Score survey

In May 2015, CSIRO launched the CSIRO Healthy Diet Score. This online survey is freely available to all Australians (<https://my.totalwellbeingdiet.com/healthy-diet-score>).

The CSIRO Healthy Diet Score is based on a scientifically validated tool which includes 38 purposefully selected short questions about an individual's usual food intake (see Appendix for published papers). The survey assesses the quantity, quality and variety of foods consumed. Individuals respond on the frequency and number of standard servings they consume.

#### Quantity components

- Amounts of fruit, vegetables, breads and cereals, meat and alternatives, dairy foods, and discretionary foods.

#### Quality components

- Frequency of wholegrain consumption, reduced fat dairy, frequency of trimming meat, the type of fat used as spreads, and water consumption (as a proportion of total beverage intake).

#### Variety component

- Variety of foods consumed within each of the 5 healthy food groups.

Responses are compared to age-sex specific food group intake recommendations and serving sizes described in the *Australian Dietary Guidelines*. A score out of 100 is generated with a higher score reflecting greater compliance with the *Australian Dietary Guidelines* and a higher overall diet quality. On completion of the survey, individuals receive personalised diet score and feedback on how to improve their diet quality.

### 2.2 Objectives

This report provides an overview of the diet quality of Australian adults, using data from the CSIRO Healthy Diet Score survey collected since 2015. The report highlights:

- Differences in overall diet score among population subgroups;
- Differences in diet quality component scores; and
- Changes in the overall diet score over time.

## 2.3 Methods

This report uses data from a sample of 235,268 Australian adults who visited the CSIRO Healthy Diet Score website (<https://my.totalwellbeingdiet.com/healthy-diet-score>) and completed the online survey between May 2015 to July 2023.

The survey is freely available, and therefore some individuals have completed the survey on multiple occasions. For this report, data from an individual's first survey completion was identified and used in the analysis. This provides a cross sectional snapshot of the overall diet quality among a large sample Australian adults who have completed the survey.

Partial survey responses were excluded, and outliers removed using previously published criteria (a total of 1,657 survey responses excluded). Outliers were identified as an invalid or extreme age of less than 18 or older than 100 years, a Body Mass Index of less than 13 or greater than 97 kg/m<sup>2</sup>, height less than 1m or greater than 3m, or weight less than 13kg or greater than 250kg.

The demographic distribution of the sample is different to that of the general Australian population according to the most recent 2021 Census data (Table 1). To partially account for this, a weighting factor was calculated for each of the eight sex/age groups and applied so that the data by age group and sex was representative of those characteristics in the 2021 census. In section 4.4 of this report, where results are presented by year of survey completed, population weighting factors were calculated for each discrete year, to ensure each reporting year was representative of the population. Years 2015 to 2018 were weighted to the age and sex subgroup distribution of the Australian population from the 2016 census, and 2019 to 2023 were compared to the 2021 census. See appendix for weighting factors.

Given the large sample size, we used cut offs as a guide to interpret the meaningfulness of differences between groups. A difference less than five points between groups was considered small, five to less than 10 points was considered a medium difference and ten or more considered a large difference. Discussion of results favoured the most meaningful differences.

## 3 Respondent characteristics

Most of the sample who completed the survey were female (74%) with a relatively even distribution of people in the 18-30 (32% of the total sample), 31-50 (34%), 51-70 (30%) year age groups. Only 3% of the sample were in the over 70 age group (Table 1).

Using self-reported height and weight, almost half the sample was classified as overweight or obese (48%) and half (49%) as healthy weight. The online survey attracted participants from all Australian States and Territories, with 28% of survey participants living in Victoria, and 28% living in New South Wales. Of the remaining respondents, 15% resided in Queensland, 10% in Western Australia and 9% in South Australia, and less than 5% in Australian Capital Territory, Northern Territory or Tasmania combined (Table 1).

**Table 1 Characteristics of the CSIRO Healthy Diet Score survey sample (n=235,268)**

SAMPLE CHARACTERISTICS	UNWEIGHTED COUNT	PERCENTAGE OF SAMPLE (N=235,268)	AUSTRALIAN POPULATION* (N=25,422,788)
<b>Sex</b>			
Male	62115	26.4%	49.3%
Female	173153	73.6%	50.7%
<b>Age group</b>			
18-30 years	76082	32.3%	21.6%
31-50 years	81206	34.5%	35.0%
51-70 years	70148	29.8%	29.2 %
71+ years	7832	3.3%	14.3 %
<b>Weight status**</b>			
Underweight	6863	2.9%	2.0 %
Healthy weight	114942	48.9%	37.7 %
Overweight	66074	28.1%	35.1 %
Obese	47107	20.0%	25.3 %
<b>State or territory</b>			
New South Wales	65374	27.8%	31.8 %
Queensland	36306	15.4%	20.3 %
Australian Capital Territory	10226	4.3%	1.8%
Northern Territory	2265	1.0%	0.9%
Tasmania	7732	3.3%	2.2%
Victoria	66797	28.4%	25.6%
Western Australia	22724	9.7%	10.5%
South Australia	22065	9.4%	7.0%

\*Data on the demographics of the Australian population was extracted from the 2021 Census, except for weight status.

\*\*Weight status data was taken from results of the National Health Survey 2020-21.

## 4 Key findings

### 4.1 Diet score by demographic characteristics

The average diet score of Australian adults was 55 out of a possible 100 (SD=11.7), with scores ranging from 0 to 97 (Table 2).

- Women reported a slightly higher diet score than men, with an average diet score of 56 compared to 53 for men (a difference of 3 points out of 100). This suggests that, overall, the diets of Australian women were more closely aligned than men to the recommendations in the *Australians Dietary Guidelines*.
- Diet scores tended to be higher in older age groups. The average diet score for adults aged 71 years and older was almost 7 points higher than those aged 18-30 years. Young adults (18-30 years) had an average diet score of 53 points out of 100, compared to 60 points out of 100 for those aged 71+ years (Table 3).
- Generation X and Y had lower scores than Baby boomers and the Silent Generation.
- There was little variation in the average diet score between Australian States and Territories, with the average scores ranging from 54-56 (Table 4).
- The average diet score varied by occupation type. There was an 8 point difference between the lowest (unemployed) and highest (retired) subgroups. Retired Australians and those working in the health and fitness industry had an average diet score of 59 out of 100, while those working in construction, logistics/operations, and Australians who were unemployed, had the lowest average diet score of 51 out of 100 (Table 5).

Table 2: Average diet score by sex

	Male (n=62,115)	Female (n=173,153)	Total (n=235,268)
Mean	53.5	56.4	55.0
Standard Deviation	11.7	11.4	11.7
Median	53.4	56.4	55.0
Range	0-96.1	0-97.2	0-97.2

Table 3: Average diet score by age group and birth generation

	Age group/Generation	n	Mean	Standard Deviation
Age group	18-30 years	76082	53.0	11.9
	31-50 years	81206	52.9	11.2
	51-70 years	70148	56.9	11.3
	71+ years	7832	59.6	10.9
Generation	Generation Z	6723	52.2	12.1
	Generation Y	86245	52.8	11.7
	Generation X	72065	53.1	11.3
	Baby Boomers	63729	57.4	11.3
	Silent Generation	6506	59.8	10.9

**Table 4: Average diet score by Australian State or Territory**

State/Territory	n	Mean	Standard Deviation
New South Wales	65374	55.2	11.6
Queensland	36306	54.6	11.8
Australian Capital Territory	10226	55.6	11.6
Northern Territory	2265	54.0	11.5
Tasmania	7732	54.0	11.8
Victoria	66797	55.1	11.6
Western Australia	22724	54.8	11.5
South Australia	22065	55.3	11.7

**Table 5: Average diet score by occupation**

Occupation	n	Mean	Standard Deviation
Retired	23783	59.2	11.0
Personal Trainer / Coach	1407	58.9	12.0
Health Care	22524	56.8	11.3
Research	3252	56.3	10.8
Homemaker	9205	56.1	11.8
Education	21626	55.8	11.2
Social service	2571	54.3	11.3
Consulting	4103	54.2	10.6
Human Resources	2556	54.2	10.9
Student	31711	54.1	11.9
Other	14994	54.0	11.8
Administration	21144	53.8	11.3
News / Information	1651	53.8	11.2
Arts / Entertainment	3128	53.7	11.4
Politician / Public Servant	4014	53.6	10.9
Architecture / Design	2721	53.5	11.1
Beauty / Fashion	1580	53.4	12.1
Event planning	558	53.4	11.3
Finance	10853	53.3	11.3
Buying / Purchasing	496	53.2	11.9
Management	9652	53.2	10.9
Science / Technology	9539	53.2	11.2
Advertising / PR	2222	52.9	10.8
Distribution	631	52.9	12.1
Real Estate	1049	52.5	11.0
Sales / Marketing	6691	52.3	11.4
Customer Service	6203	52.2	12.3
Production	1294	51.9	11.6
Restaurant / Food service	3670	51.6	11.9
Construction	4250	51.5	11.8
Operations / Logistics	2331	51.5	11.7
Unemployed	3839	51.2	13.5



## 4.2 Diet quality component scores

- There are 9 scoring components that make up the overall diet score.
- The component score for beverages was highest (93 out of 100) and discretionary foods was the lowest (20 out of 100).
- The top three highest scoring components, meaning most closely aligned to the *Australian Dietary Guidelines*, were beverages (93 out of 100), followed by meats and alternatives (78 out of 100) and breads and cereals (70 out of 100) (Table 6).
- The three lowest scoring components, meaning consumption was furthest from the *Australian Dietary Guidelines*, were discretionary foods (20 out of 100), followed by dairy and alternatives (38 out of 100) and healthy fats (49 out of 100) (Table 6).

### Differences by sex

- The overall ranking (highest to lowest) of component scores for men and women was similar except for fruit and vegetables. Women scored slightly higher for vegetables than fruit (62 vs 60 out of 100), whereas men scored higher for fruit than vegetables (59 vs 54 out of 100).
- Women scored higher than men on all diet quality components, except for fruit, breads and cereals, and dairy and alternatives, where men and women scored equally (Table 6).
- The greatest difference in component scores was for vegetables, with women scoring 8 points higher than men (62 vs 54) in favour of greater compliance with the *Australian Dietary Guidelines*. Women also scored slightly higher than men for intake of beverages, discretionary foods, and healthy fats – which were all about 4 points higher for women than men.

Table 6: Diet score and component scores by sex

	Male (n=62,115)	Female (n=173,153)	Total (n=235,268)	Overall ranking
Overall score (out of 100)	53.5	56.4	55.0	
Component Score (expressed out of 100)				
Vegetables	53.6	61.8	57.8	6
Fruit	59.0	60.5	59.8	5
Breads and cereals	70.4	70.3	70.4	3
Meat and alternatives	76.4	79.2	77.9	2
Dairy and alternatives	38.1	38.0	38.1	8
Beverages	90.6	94.9	92.8	1
Discretionary	18.0	22.0	20.1	9
Healthy Fats	46.9	50.5	48.7	7
Variety	64.2	65.0	64.6	4

## Differences by age group

- Diet quality increased with the increasing age groups. The average diet score was about 7 points higher in the 71+ year age group than the 18-30 age group (Table 7). The component scores that were most different between the oldest and youngest Australians were fruit (with those aged 71+ years scoring 18 points higher than 18-30 years), breads and cereals (14 points difference), healthy fats (10 points difference), and vegetables (9 points difference).
- Adults in older age groups reported a greater variety in their diets compared to younger adults (69 vs 62 points out of 100).
- The average scores for discretionary foods and dairy and alternatives were consistently low (less compliant with guidelines) in all age groups.

Table 7: Diet score and component scores by age group

	18-30 years (n=76,082)	31-50 years (n=81,206)	51-70 years (n=70,148)	71+ years (n=7,832)
Overall score (out of 100)	53.0	52.9	56.9	59.6
Component Score (expressed out of 100)				
Vegetable	56.0	54.3	59.8	65.3
Fruit	55.5	53.5	63.8	73.6
Breads and cereals	67.2	66.1	72.3	81.5
Meat and alternatives	74.5	75.0	82.4	80.6
Dairy and alternatives	36.0	38.8	39.0	37.6
Beverages	92.0	93.1	93.3	92.5
Discretionary foods	20.7	19.0	20.6	20.5
Healthy fats	45.4	46.2	51.1	55.2
Variety	61.6	63.4	66.2	68.8

## Differences by sex and age group

- The difference in diet score between men and women was greater in the older age groups. The difference between men and women was about 2 points for the 18-30 and 31-50 year age groups, and about 3.5 points for the older two age groups (Table 8).
- The greatest difference between groups was observed in the 18-30 and 31-50 year age groups for vegetable consumption where women scored 8 and 10 points (out of 100) higher than men, respectively.
- Young men aged 18-30 years scored higher than women for breads and cereals, and meat and alternatives – meaning their consumption was closer to *Guidelines*. Older men (aged 51-70 years) scored higher than women for dairy and alternatives. Otherwise, women tended to score higher than men across almost all other components of diet quality, regardless of age group.

- Discretionary food component scores were low across all age and sex groups, but the difference between men and women for discretionary foods was greatest in the 51-70 year age group. Women scored 7 points higher than men in this age group (24 vs 17 points out of 100).
- Young women scored higher for healthy fats than young men. The average component score was 41 for men and 50 for women aged 18-30 years, and 44 vs 48 for those aged 31-50 years. In other age groups, the healthy fats scores were similar (Table 8).

**Table 8: Diet score and component scores by sex and age group**

	Age group (years)							
	18-30		31-50		51-70		71+	
	Male (n=20,466)	Female (n=55,616)	Male (n=20,915)	Female (n=60,291)	Male (n=17,853)	Female (n=52,295)	Male (n=2,881)	Female (n=4,951)
Overall Diet Score	52.0	53.9	51.7	54.0	55.1	58.6	57.7	61.2
Component score (expressed out of 100)								
Vegetable	52.1	59.9	49.0	59.4	56.0	63.3	63.3	67.1
Fruit	53.4	57.5	53.8	53.2	63.5	64.0	72.2	74.7
Breads and cereals	69.0	65.5	67.3	64.9	71.0	73.6	79.9	82.9
Meat and alternatives	77.3	71.7	74.1	75.9	78.9	85.7	75.9	84.6
Dairy and alternatives	36.5	35.4	37.6	39.9	41.1	37.0	35.7	39.1
Beverages	90.2	93.8	91.4	94.8	90.6	95.8	89.4	95.1
Discretionary foods	19.3	22.1	18.2	19.9	16.6	24.4	18.5	22.1
Healthy fats	41.2	49.7	43.8	48.5	50.9	51.4	55.6	54.9
Variety	61.6	61.5	63.1	63.7	65.7	66.8	67.8	69.7

### Diet Score by weight status

- The average diet score decreased slightly as the categorisation of weight status increased – although this difference was small. Adults categorised within the healthy weight range reported an average diet score of 56 compared to 53 for obese adults (Table 9).
- The greatest differences in component scores by weight status were for fruit where obese adults scored 12 point lower than healthy weight adults, and discretionary foods where obese adults scored 7 points lower than adults within the healthy weight range, and for variety which 4 points lower in obese adults – indicating poorer diet quality for obese adults for these 3 components.
- Conversely obese adults scored 4 points higher for meat and alternatives and 3 points higher for dairy foods than healthy weight adults (Table 9), meaning their diets were closer to Guidelines in these areas.
- Patterns in component scores by weight status were similar for men and women. However, obese men also scored lower than healthy weight men for vegetables (3 points lower) and breads and cereal (6 points lower) (Table 10).

**Table 9: Diet score and component scores by weight status**

	Underweight (n=6,863)	Healthy weight (n=114,942)	Overweight (n=66,074)	Obese (n=47,107)
Overall Diet Score	54.9	56.1	54.8	53.1
Component score (expressed out of 100)				
Vegetable	59.7	58.7	57.2	56.8
Fruit	62.6	63.4	60.0	51.8
Breads and cereals	68.6	71.5	70.3	68.2
Meat and alternatives	70.4	76.4	78.6	80.5
Dairy and alternatives	33.7	36.8	38.8	40.0
Beverages	90.5	93.8	92.7	91.2
Discretionary foods	26.6	22.9	18.3	16.1
Healthy fats	46.8	48.7	49.1	48.5
Variety	63.4	65.9	64.8	61.8

**Table 10: Diet score and component scores by weight status for males**

	Underweight (n=1,274)	Healthy weight (n=26,400)	Overweight (n=22,888)	Obese (n=11,532)
Overall Diet Score	52.4	54.9	53.4	51.1
Component score (expressed out of 100)				
Vegetable	55.0	54.5	53.7	51.7
Fruit	60.6	62.8	59.4	50.6
Breads and cereals	69.4	72.9	69.9	66.6
Meat and alternatives	71.2	75.3	76.9	78.3
Dairy and alternatives	35.1	37.0	38.6	39.6
Beverages	85.9	91.5	90.9	88.8
Discretionary foods	20.8	21.3	16.5	14.0
Healthy fats	42.0	46.5	47.6	46.5
Variety	63.0	65.7	64.3	60.9

**Table 11: Diet score and component scores by weight status for females**

	Underweight (n=5,589)	Healthy weight (n=88,542)	Overweight (n=43,186)	Obese (n=35,575)
Overall Diet Score	56.3	57.1	56.7	54.8
Component score (expressed out of 100)				
Vegetable	62.4	62.0	61.9	61.2
Fruit	63.7	63.8	60.7	52.8
Breads and cereals	68.2	70.4	70.7	69.6
Meat and alternatives	69.9	77.2	81.1	82.3
Dairy and alternatives	32.9	36.6	39.1	40.4
Beverages	93.1	95.6	95.2	93.3
Discretionary foods	30.0	24.2	20.8	17.9
Healthy fats	49.5	50.5	51.0	50.2
Variety	63.6	66.0	65.5	62.6

## 4.3 Discretionary foods

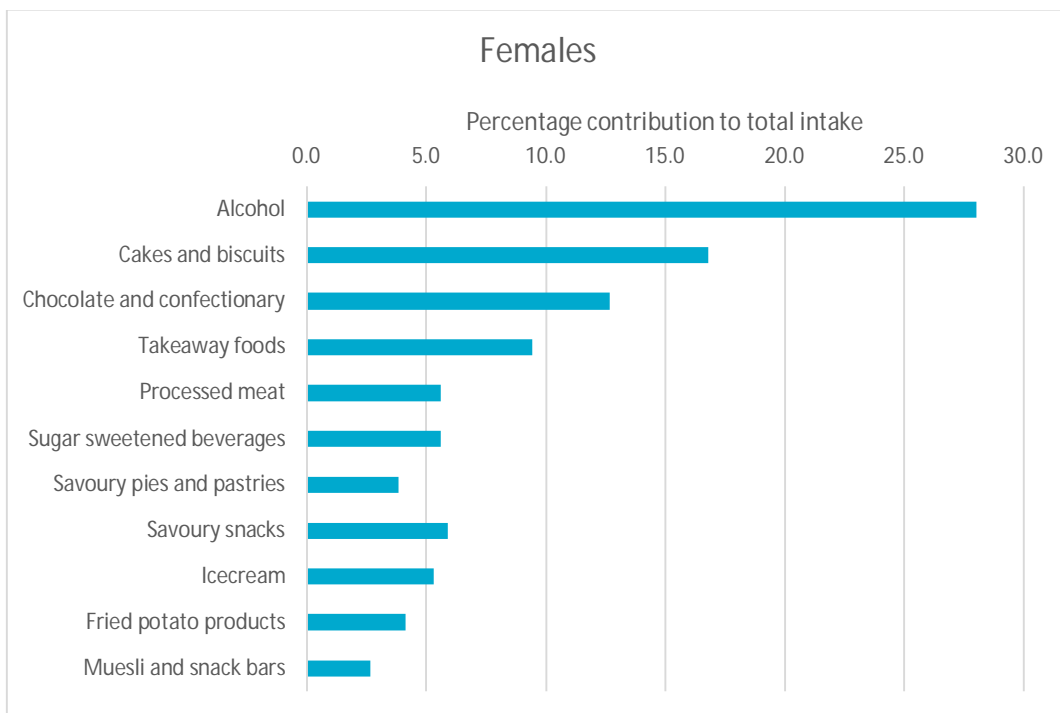
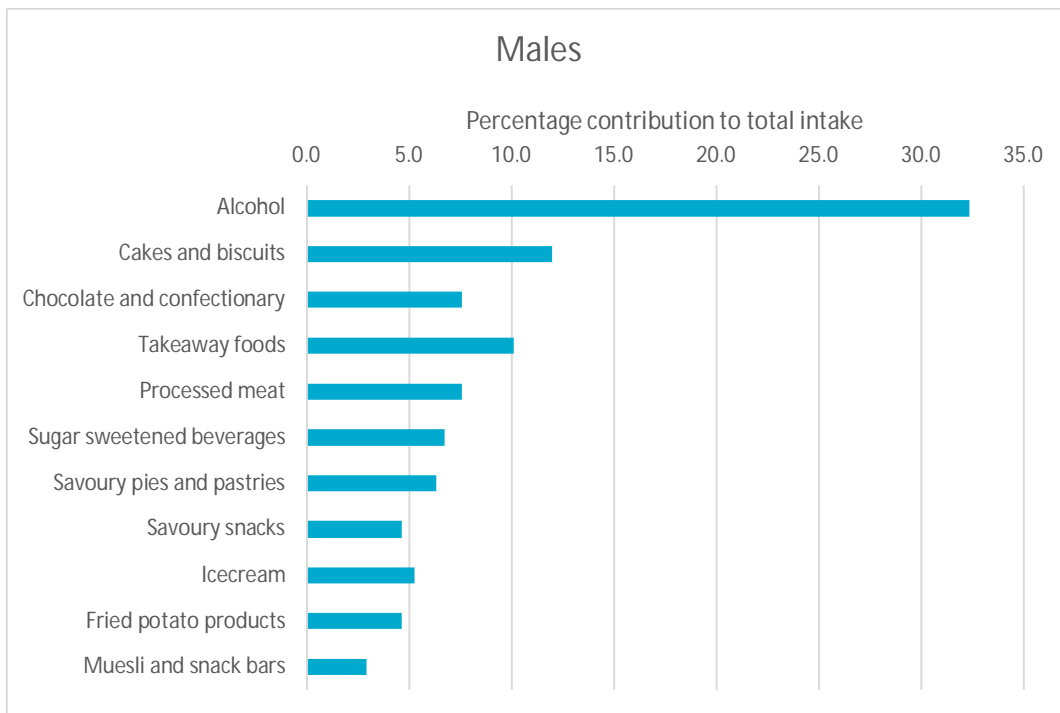
Discretionary foods are not a necessary part of a healthy dietary pattern but are included in the *Australian Dietary Guidelines* to increase variety and enjoyment. Discretionary foods are those foods that are high saturated fat, added sugars, added salt, and/or alcohol; and are usually higher in energy and low in essential nutrients. The discretionary food group includes, for example, high fat takeaway foods, cakes and biscuits, savoury pies and pastries, chocolate and confectionary, processed meats, and dairy desserts. The discretionary category also included some beverages such as sugar-sweetened beverages and alcohol. The overconsumption of these foods and beverages may be associated with an increased risk of obesity and chronic disease.

### Discretionary food component scores

- The discretionary food component was the lowest scoring component of diet quality by all age and sex groups.
- The four subcategories that contributed most to adults' total discretionary food and beverage consumption were alcohol, cakes and biscuits, chocolate and confectionary, and takeaway foods.
- Alcohol contributed about one third (32%) of total discretionary intake for men, followed by 12% for cakes and biscuits, and 10% for takeaway foods. For women, alcohol contributed about 28%, cakes and biscuits 17%, and chocolate and confectionary 13% of total discretionary intake.

**Table 12: Estimated average weekly serves of discretionary food intake (in serves) and the percentage contribution of subcategories of discretionary foods to total intake by sex**

	Male (n=62,115)	Female (n=173,153)	Total (n=235,268)
Total discretionary (serves per week)	33.3	23.7	28.4
Alcohol	32.4%	28.1%	30.6%
Cakes and biscuits	12.0%	16.8%	14.0%
Chocolate and confectionary	7.6%	12.7%	9.9%
Takeaway foods	10.1%	9.5%	9.9%
Processed meat	7.6%	5.6%	6.9%
Sugar sweetened beverages	6.7%	5.6%	6.2%
Savoury pies and pastries	6.3%	3.8%	5.4%
Ice cream	5.3%	5.3%	5.2%
Savoury snacks	4.6%	5.9%	5.2%
Fried potato products	4.6%	4.1%	4.4%
Muesli and snack bars	2.9%	2.7%	3.0%



**Figure 1: Percentage contribution of subcategories of discretionary foods to total intake by sex**

## Differences in discretionary food intake by age group

- Australians' intake of discretionary foods decreased with the increasing age groups, with adults aged 50 years reporting almost 5 serves per week more than older adults (Table 13).
- Across all age groups, alcohol was the most consumed discretionary item. As a proportion of total discretionary intake, alcohol contributed about 17% of total intake in 18-30 year old adults and up to 38-39% of total intake in adults aged 51 years or older.
- For young adults (18-30 years) the greatest contributors to total discretionary intake were alcohol (17%), followed by takeaway foods (15%) and cakes and biscuits (13%).
- For adults aged 31-50 years, the greatest contributors to total discretionary intake were alcohol (30%), followed by cakes and biscuits (12%), takeaway foods (11%) and chocolate and confectionary (11%).
- For adults aged 51-70 years and 71+ years, the two greatest contributors to total discretionary food intake were alcohol, and cakes and biscuits.
- Proportionately, the intake of takeaway foods and sugar sweetened beverages decreased across the age groups, whereas the intake of alcohol and cakes and biscuits increased.

**Table 13: Estimated average weekly serves of discretionary food intake (in serves) and the percentage contribution of subcategories of discretionary foods to total discretionary intake by age group**

	18-30 years	31-50 years	51-70 years	71+ years
Total discretionary (serves per week)	30.1	29.8	27.0	25.5
Alcohol	16.7%	29.8%	39.4%	37.9%
Cakes and biscuits	12.6%	12.4%	14.5%	19.8%
Chocolate and confectionary	9.5%	10.6%	9.3%	8.2%
Takeaway foods	15.1%	11.0%	6.2%	4.4%
Processed meat	9.1%	6.8%	5.4%	5.2%
Sugar sweetened beverages	8.4%	7.0%	4.7%	3.3%
Savoury pies and pastries	7.0%	5.2%	4.4%	4.4%
Ice cream	5.3%	4.5%	5.2%	7.4%
Savoury snacks	6.0%	5.4%	4.7%	4.4%
Fried potato products	6.0%	4.5%	3.4%	3.3%
Muesli and snack bars	4.4%	3.1%	2.3%	1.4%

## Differences in discretionary food intake by occupation

- Discretionary food intake varied by occupation, ranging from 23 to 48 serves per week (a difference of 25 serves per week or nearly 4 serves per day) (Table 14).
- Adults working in the beauty or fashion industry and those in construction had the highest average consumption of discretionary items, whereas those working in research and the fitness industry reported the lowest consumption of discretionary foods.
- Proportionately, alcohol made the greatest contribution to total discretionary intake for all adults except students who consumed proportionally more takeaway foods, and cakes and

biscuits. Those working in the beauty and fashion industry also consumed a higher proportion of takeaway foods compared to all other occupations.

**Table 14: Estimated average weekly serves of discretionary food intake (in serves) and the percentage contribution of discretionary subcategories to total discretionary intake by occupation**

Occupation	Total Serves	Alcohol	Cakes and biscuits	Chocolate and confectionary	Fried potato products	Ice cream	Muesli and snack bars	Processed meat	Savoury pies and pastries	Savoury snacks	Sugar sweetened beverages	Takeaway foods
Research	22.9	33.2%	15.7%	10.9%	3.5%	4.8%	3.1%	6.1%	4.8%	4.8%	3.9%	8.7%
Personal Trainer / Coach	23.7	25.7%	12.2%	9.3%	5.1%	5.5%	5.1%	7.2%	6.3%	4.6%	6.8%	12.2%
Retired	25.3	39.5%	19.0%	8.3%	3.2%	7.1%	1.6%	5.5%	4.3%	4.3%	3.6%	4.3%
Health Care (Physical & Mental)	25.3	27.7%	15.4%	12.3%	4.3%	5.1%	3.2%	5.9%	4.7%	5.5%	5.1%	10.7%
Science / Tech / Programming	25.7	30.4%	12.8%	9.3%	5.1%	4.7%	3.1%	7.0%	5.4%	5.1%	5.8%	10.9%
Homemaker	25.9	24.7%	18.5%	13.1%	4.2%	5.0%	1.9%	6.6%	4.2%	6.2%	6.9%	8.9%
Consulting	26.5	37.0%	12.8%	9.1%	3.8%	4.9%	2.6%	6.8%	4.9%	4.9%	4.5%	9.4%
Architecture / Design	26.6	32.7%	12.8%	8.3%	4.9%	4.5%	3.4%	7.1%	6.0%	4.9%	4.9%	10.9%
Human Resources Management	26.7	33.7%	11.6%	12.0%	4.9%	4.1%	2.6%	6.0%	4.9%	5.2%	5.6%	10.1%
Social service	26.7	28.1%	14.6%	12.4%	4.1%	4.9%	2.6%	6.0%	4.9%	5.2%	6.0%	11.2%
Education	27.0	28.1%	15.2%	11.5%	4.1%	4.8%	3.3%	6.7%	5.2%	5.9%	5.6%	9.6%
Admin / Clerical / Reception	27.4	28.5%	14.6%	12.4%	4.4%	4.7%	2.9%	6.2%	4.4%	5.5%	6.6%	10.2%
Accounting / Finance / Banking	27.9	31.9%	12.5%	10.0%	4.7%	5.0%	2.9%	6.5%	4.7%	5.4%	5.7%	10.4%
Student	27.9	13.6%	14.0%	9.7%	6.5%	6.1%	5.0%	9.7%	6.5%	7.2%	7.9%	14.7%
Arts/Leisure / Entertainment	28.1	33.8%	12.1%	9.3%	4.6%	4.3%	2.1%	6.4%	5.7%	5.0%	5.3%	10.7%
News / Information	28.3	36.0%	13.8%	9.5%	4.2%	3.9%	2.5%	5.7%	4.6%	4.9%	4.6%	9.5%
Politician / Public Servant	28.8	31.3%	12.5%	11.8%	4.5%	4.5%	2.8%	6.9%	5.2%	5.2%	5.2%	10.4%
Planning (Meeting, Events, etc )	29.2	34.9%	12.3%	8.9%	4.5%	4.5%	2.7%	6.8%	5.5%	5.5%	4.5%	9.9%
Management (Senior / Corporate)	29.3	41.0%	10.6%	9.2%	3.8%	4.4%	2.4%	6.1%	4.4%	4.4%	5.1%	8.5%
Advertisement / PR	29.6	36.1%	10.1%	9.1%	4.4%	4.4%	2.7%	6.4%	5.4%	5.1%	4.4%	12.2%
Other	31.0	30.6%	12.6%	9.4%	4.2%	4.8%	2.9%	7.1%	5.8%	4.8%	8.1%	10.0%
Sales / Marketing	31.2	35.3%	10.9%	9.3%	4.2%	3.8%	2.6%	6.4%	4.8%	4.8%	6.7%	10.9%
Real Estate	33.2	32.8%	10.8%	9.0%	4.5%	5.1%	2.7%	5.7%	6.3%	5.7%	5.7%	11.1%
Customer Service	33.6	24.4%	12.2%	10.4%	4.8%	4.8%	3.3%	7.4%	5.7%	5.4%	9.5%	12.5%
Production	35.3	32.0%	11.0%	7.6%	4.2%	5.7%	3.1%	6.8%	7.1%	4.2%	8.8%	9.6%
Restaurant / Food service	37.0	25.9%	11.1%	8.6%	5.9%	4.6%	2.2%	7.6%	6.2%	4.9%	9.5%	13.5%
Operations / Logistics	37.4	31.0%	10.4%	7.5%	4.3%	4.8%	3.5%	7.8%	6.7%	4.3%	9.4%	10.7%
Distribution	37.5	31.5%	10.1%	8.3%	4.8%	4.3%	3.5%	6.9%	6.7%	4.0%	8.5%	11.5%
Unemployed	39.6	21.5%	12.6%	8.8%	5.6%	5.8%	2.8%	8.1%	8.1%	5.3%	9.3%	12.1%
Buying / Purchasing	40.0	26.0%	10.0%	8.0%	5.0%	5.5%	3.3%	7.3%	8.5%	5.0%	8.5%	13.8%
Construction	43.7	31.8%	9.4%	6.6%	4.3%	4.1%	3.4%	7.8%	7.8%	4.3%	8.7%	11.9%
Beauty / Fashion	48.4	20.5%	12.4%	9.1%	5.6%	6.8%	3.5%	6.6%	8.9%	4.8%	6.0%	16.5%



## 4.4 Diet score over time

- Fewer people have completed the CSIRO Healthy Diet Score survey in 2022 and 2023 than previous years.
- These data suggest that the average diet score has decreased slightly between 2015 and 2023, from 56 out of 100 in 2015 to 53 out of 100 in 2023. This decrease was evident in men and women (Table 15).
- The decrease in diet score over time was greatest in older adults (Table 16). The reported diet score of adults aged 71+ years decreased from 61 in 2015 to 55 in 2023 (6 point decrease).

Table 15: Diet score by year of survey completion and sex

Year of survey	2015 n=68124	2016 n=74932	2017 n=26680	2018 n=16514	2019 n=10554	2020 n=21169	2021 n=9692	2022 n=5162	2023 n=2441
Male	53.6	53.6	53.6	53.4	53.0	52.9	52.0	52.3	51.5
Female	57.7	56.8	56.1	55.4	54.8	55.2	54.2	54.2	54.4
All	55.7	55.2	54.9	54.5	53.9	54.1	53.2	53.3	53.0

\*n=weighted count

Table 16: Diet score by year of survey completion, sex and age group

Year of survey	2015 n=68124	2016 n=74932	2017 n=26680	2018 n=16514	2019 n=10554	2020 n=21169	2021 n=9692	2022 n=5162	2023 n=2441
Male									
18-30	52.2	51.4	52.3	53.1	53.5	53.0	51.3	51.4	51.1
31-50	51.9	51.8	51.6	51.4	51.1	50.4	50.5	51.4	50.7
51-70	55.3	55.8	54.7	54.3	54.0	54.3	52.3	53.4	53.1
71+	57.9	57.9	59.5	58.1	55.1	56.2	56.6	53.9	50.9
Female									
18-30	55.0	53.8	53.7	53.9	53.7	53.2	52.3	52.5	51.1
31-50	55.2	54.3	53.4	52.9	51.8	52.8	52.1	52.3	52.9
51-70	60.2	59.5	58.4	57.1	56.6	57.2	55.8	55.7	56.8
71+	62.7	62.3	61.8	60.9	59.5	59.8	58.8	57.9	57.8
Total									
18-30	53.6	52.6	53.0	53.5	53.6	53.1	51.8	52.0	51.1
31-50	53.6	53.1	52.5	52.2	51.5	51.6	51.3	51.9	51.8
51-70	57.8	57.7	56.6	55.7	55.3	55.8	54.1	54.6	55.0
71+	60.6	60.3	60.8	59.6	57.5	58.2	57.8	56.1	54.6

- The diet quality component scores which have changed most over time were healthy fats (which decreased by 8 points between 2015 to 2023), followed by fruit (decreased by 7 points), breads and cereals (decreased by about 6 points), and dairy and alternatives (decreased by about 6 points) (Table 17).
- The scores for meat and alternatives increased slightly between 2015 and 2023, mainly in men (Table 18).
- The average score for discretionary foods did not change much over time overall, however when examined by sex, the score for women decreased by 3 points out of 100 between 2015 and 2023, meaning on average women reported to eat more discretionary food in 2023 compared to 2015 (Table 19).

**Table 17: Component scores by year of survey completion**

<b>Year of survey</b>	<b>2015</b> n=68124	<b>2016</b> n=74932	<b>2017</b> n=26680	<b>2018</b> n=16514	<b>2019</b> n=10554	<b>2020</b> n=21169	<b>2021</b> n=9692	<b>2022</b> n=5162	<b>2023</b> n=2441
Overall score (out of 100)	55.7	55.2	54.9	54.5	53.9	54.1	53.2	53.3	53.0
Component score (expressed out of 100)									
Vegetables	56.9	58.6	58.6	56.8	54.8	58.4	57.6	56.9	56.6
Fruit	61.1	60.3	59.0	57.1	58.1	57.8	56.3	56.0	54.3
Bread & cereal	71.8	70.8	69.6	68.7	68.8	67.8	66.0	66.5	65.9
Meat & alt	75.6	78.3	79.1	79.4	77.9	79.3	79.2	79.9	80.2
Dairy & alt	40.2	37.9	38.4	37.6	36.2	35.2	34.7	34.7	34.2
Beverages	91.5	93.2	92.8	93.7	93.5	94.6	93.7	94.0	93.8
Discretionary	21.5	19.7	19.8	20.9	20.8	19.3	18.0	19.0	19.9
Healthy fats	51.5	49.0	47.5	45.9	45.2	45.5	45.9	44.4	43.8
Variety	65.4	64.9	64.3	63.4	63.2	63.7	62.3	62.5	61.4

**Table 18: Component scores by year of survey completion for males**

<b>Year of survey</b>	<b>2015</b> n=18961	<b>2016</b> n=22000	<b>2017</b> n=6486	<b>2018</b> n=3670	<b>2019</b> n=2307	<b>2020</b> n=4090	<b>2021</b> n=2431	<b>2022</b> n=1454	<b>2023</b> n=716
Overall score (out of 100)	53.7	53.6	53.6	53.4	53.0	52.9	52.0	52.3	51.5
Component score (expressed out of 100)									
Vegetables	51.8	54.4	55.3	53.3	51.3	54.2	53.5	53.5	53.5
Fruit	59.5	59.0	59.1	56.2	58.4	56.9	55.7	55.9	53.3
Bread & cereal	71.6	71.0	69.9	68.5	68.4	67.4	65.8	65.4	63.9
Meat & alt	74.3	76.9	77.6	78.4	77.0	78.3	78.2	79.7	80.6
Dairy & alt	39.9	37.7	38.5	38.2	36.2	35.2	35.3	36.1	34.2
Beverages	88.9	91.2	91.0	91.8	91.3	93.0	92.3	92.7	91.7
Discretionary	18.1	17.2	17.7	20.9	21.1	18.9	16.9	18.0	17.8
Healthy fats	49.7	46.8	45.3	43.3	42.7	43.0	43.8	41.6	42.2
Variety	64.6	64.5	64.0	62.9	62.9	62.9	61.9	62.4	60.3

**Table 19: Component scores by year of survey completion for females**

<b>Year of survey</b>	<b>2015</b> n=49163	<b>2016</b> n=52932	<b>2017</b> n=20194	<b>2018</b> n=12844	<b>2019</b> n=8247	<b>2020</b> n=17079	<b>2021</b> n=7261	<b>2022</b> n=3708	<b>2023</b> n=1725
Overall score (out of 100)	57.7	56.8	56.1	55.4	54.8	55.2	54.2	54.2	54.4
Component score (expressed out of 100)									
Vegetables	61.8	62.7	61.7	60.1	58.2	62.3	61.5	60.1	59.5
Fruit	62.7	61.5	58.9	57.9	57.8	58.6	56.8	56.1	55.3
Bread & cereal	71.9	70.7	69.4	69.0	69.1	68.2	66.3	67.6	67.9
Meat & alt	76.9	79.6	80.5	80.4	78.7	80.1	80.1	80.1	79.8
Dairy & alt	40.5	38.1	38.2	37.1	36.2	35.1	34.1	33.3	34.3
Beverages	94.0	95.1	94.6	95.5	95.6	96.1	95.1	95.2	95.8
Discretionary	24.7	22.0	21.7	21.0	20.4	19.8	19.0	20.0	21.8
Healthy fats	53.2	51.2	49.6	48.4	47.5	47.9	47.8	47.1	45.3
Variety	66.1	65.3	64.6	63.9	63.5	64.4	62.8	62.6	62.5

- The estimated average serves of discretionary foods increased by 10 serves per week between 2015 to 2023.
- As a proportion of total intake, the relative consumption of takeaway foods increased, and alcohol decreased between 2015 and 2023 (Table 20).

**Table 20: Estimated average weekly serves of discretionary food intake (in serves) and the percentage contribution of subcategories of discretionary foods to total intake by year of survey completion**

<b>Year of survey</b>	<b>2015</b> n=68124	<b>2016</b> n=74932	<b>2017</b> n=26680	<b>2018</b> n=16514	<b>2019</b> n=10554	<b>2020</b> n=21169	<b>2021</b> n=9692	<b>2022</b> n=5162	<b>2023</b> n=2441
Total Disc (Serves per week)	26.9	27.7	29.7	30.7	31.4	29.9	31.9	29.5	37.1
Takeaway	9.1%	9.9%	10.6%	10.5%	10.9%	10.1%	11.2%	12.6%	14.0%
Alcohol	31.5%	32.2%	29.7%	27.9%	25.4%	30.4%	25.0%	22.7%	17.4%
Cakes & biscuit	14.6%	13.4%	12.7%	13.5%	14.3%	14.3%	14.3%	14.0%	13.8%
Choc & conf	9.9%	9.9%	9.4%	9.8%	10.0%	9.6%	9.2%	10.0%	10.0%
Process meat	6.5%	6.6%	7.3%	7.1%	6.7%	6.8%	7.9%	8.3%	7.0%
Savoury snacks	4.7%	5.1%	5.4%	5.9%	5.8%	5.6%	5.7%	6.2%	5.8%
SSBs	7.0%	5.8%	6.6%	5.9%	6.3%	5.4%	6.4%	5.7%	6.8%
Ice cream	4.9%	5.1%	5.9%	5.5%	6.5%	5.2%	5.9%	5.2%	7.5%
Fried potato	3.9%	4.3%	4.5%	4.8%	4.9%	4.2%	5.3%	5.7%	5.8%
Savoury Pies	4.9%	5.1%	5.2%	6.2%	5.8%	5.6%	6.4%	6.4%	8.1%
Snack bars	3.1%	2.8%	2.8%	3.2%	3.6%	2.8%	2.9%	3.3%	3.8%

## 4.5 Variety of vegetables at the main meal

Research suggests that consuming a greater variety of vegetables is associated with better diet quality, nutrient adequacy, and a healthier lifestyle. One of the questions in the CSIRO Healthy Diet Score survey asks, “How often would your evening or main meal include three or more different vegetables (including cooked, raw and salad vegetables)?”. Interestingly, these results showed a similar pattern to the overall diet score results.

- 44% of Australians reported to always consume 3 or more different vegetables at the evening or main meal, 37% usually do, 16% sometimes, and less than 3% never do.
- More woman than men reported to always have 3 or more different vegetables at the main meal (47% vs 40%). Likewise, more older than younger adults (54% vs 38%), and more adults classified as healthy weight than obese (47% vs 39%) reported to always have 3 or more different vegetables at the main meal.
- The proportion of adults reporting to always have 3 or more different types of vegetables at the main meal generally trended downward, from 47% in 2016 to 35% in 2023.

**Table 21: Proportion of survey respondents reporting to include 3 or more different vegetables at the evening/main meal by demographic subgroup and year of survey completion**

	Always (all the time)	Usually (two thirds of the time)	Sometimes (half the time)	Never	Don't eat vegetables with main meal
<b>Sex</b>					
Male	40.3%	37.2%	18.7%	3.0%	0.8%
Female	47.4%	37.1%	13.7%	1.5%	0.3%
Total	43.9%	37.1%	16.2%	2.2%	0.6%
<b>Age group</b>					
18-30 years	38.1%	37.9%	19.6%	3.3%	1.1%
31-50 years	39.8%	38.9%	18.3%	2.4%	0.5%
51-70 years	48.3%	36.4%	13.5%	1.5%	0.3%
71+ years	54.0%	33.0%	11.2%	1.5%	0.3%
<b>Weight status</b>					
Underweight	46.5%	33.2%	16.1%	3.0%	1.2%
Healthy weight	46.7%	35.9%	14.8%	2.1%	0.5%
Overweight	43.4%	37.9%	16.1%	2.0%	0.5%
Obese	38.6%	38.8%	19.0%	2.8%	0.7%
<b>Year of survey</b>					
2015	44.3%	38.4%	14.9%	2.0%	0.4%
2016	46.7%	36.3%	14.8%	1.8%	0.5%
2017	44.4%	36.5%	16.5%	2.1%	0.6%
2018	41.5%	36.5%	18.2%	3.0%	0.8%
2019	39.4%	37.2%	19.2%	3.4%	0.8%
2020	40.6%	36.9%	18.9%	2.8%	0.8%
2021	37.3%	36.9%	22.0%	3.0%	0.9%
2022	36.0%	37.9%	20.8%	4.3%	1.0%
2023	34.9%	36.7%	22.1%	4.3%	1.9%

## Appendix

### List of published scientific journal articles

- Hendrie, Rebuli, Golley (2017) Reliability and relative validity of a diet index score for adults derived from a self-reported short food survey. *Nutrition & Dietetics*, 74: 291-297.
- Hendrie, Baird, Golley, Noakes (2017) The CSIRO Healthy Diet Score: An online survey to estimate compliance with the Australian Dietary Guidelines. *Nutrients*, 9, 47; doi:10.3390
- Hendrie, Rebuli, Golley, Noakes (2018) Adjustment factors can improve estimates of food group intake assessed using a short dietary assessment instrument. *Journal of the Academy of Nutrition and Dietetics*, 118, 10; doi.org/10.1016
- Hendrie, Golley, Noakes (2018) Compliance with dietary guidelines varies by weight status: A cross-sectional study of Australian adults. *Nutrients*, 10, 197; doi:10.3390

Weighting factors applied for analyses (calculated for each sex/age groups to be representative of those characteristics in the 2021 census)

Age group (years)	Male	Female
18-30	1.253	0.452
31-50	1.929	0.695
51-70	1.870	0.675
71 plus	5.335	3.668

Weighting factors applied for analyses by year of survey complete (calculated for each sex/age groups within each discrete year to be representative of those characteristics in the 2016 census for years 2015 to 2018 and the 2021 census for years 2019 to 2023)

Year	Age group (years)	Male	Female
2015	18-30	1.580	0.515
	31-50	1.719	0.656
	51-70	1.574	0.712
	71 +	4.090	4.033
2016	18-30	1.190	0.418
	31-50	1.668	0.761
	51-70	1.753	0.817
	71 +	4.851	4.593
2017	18-30	1.451	0.546
	31-50	2.030	0.638
	51-70	2.158	0.615
	71 +	4.581	2.908
2018	18-30	1.224	0.528
	31-50	2.579	0.613
	51-70	2.798	0.598
	71 +	5.536	3.611
2019	18-30	1.054	0.411
	31-50	2.682	0.660
	51-70	3.307	0.646
	71 +	7.835	4.053
2020	18-30	2.086	0.725
	31-50	2.933	0.663
	51-70	2.075	0.433
	71 +	4.641	1.735
2021	18-30	1.033	0.482
	31-50	2.803	0.834
	51-70	2.026	0.563
	71 +	4.622	1.612
2022	18-30	0.576	0.273
	31-50	3.328	0.975
	51-70	4.284	1.136
	71 +	8.225	6.130
2023	18-30	0.559	0.253
	31-50	2.553	1.071
	51-70	5.499	1.387
	71 +	12.267	7.850

\*Census years greyed out

Unweighted cell counts for survey response by sex, age group and year of completion.

Unweighted	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Male										
18-30 years	4937	7208	2105	1545	1091	1106	1022	976	476	20466
31-50 years	6845	7758	2270	1106	675	1238	593	266	164	20915
51-70 years	6241	6164	1783	851	453	1448	679	171	63	17853
71+ years	938	870	328	168	88	298	137	41	13	2881
Total	18961	22000	6486	3670	2307	4090	2431	1454	716	62115
Female										
18-30 years	15041	20402	5556	3556	2745	3120	2147	2018	1031	55616
31-50 years	18509	17568	7458	4806	2848	5684	2069	943	406	60291
51-70 years	14442	13831	6544	4165	2453	7333	2581	682	264	52295
71+ years	1171	1131	636	317	201	942	464	65	24	4951
Total	49163	52932	20194	12844	8247	17079	7261	3708	1725	173153
All										
18-30 years	19978	27610	7661	5101	3836	4226	3169	2994	1507	76082
31-50 years	25354	25326	9728	5912	3523	6922	2662	1209	570	81206
51-70 years	20683	19995	8327	5016	2906	8781	3260	853	327	70148
71+ years	2109	2001	964	485	289	1240	601	106	37	7832
Total	68124	74932	26680	16514	10554	21169	9692	5162	2441	235268

Weighted cell counts for survey response by sex, age group and year of completion.

Unweighted	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Male										
18-30 years	7800	8578	3054	1891	1150	2307	1056	562	266	26664
31-50 years	11767	12940	4608	2852	1810	3631	1662	885	419	40575
51-70 years	9823	10805	3848	2381	1498	3005	1376	733	346	33815
71+ years	3836	4220	1503	930	689	1383	633	337	159	13692
Total	33227	36544	13013	8055	5148	10326	4727	2517	1191	114746
Female										
18-30 years	7746	8528	3034	1878	1128	2262	1035	551	261	26422
31-50 years	12142	13369	4758	2946	1880	3768	1726	919	435	41943
51-70 years	10283	11300	4025	2491	1585	3175	1453	775	366	35452
71+ years	4723	5195	1849	1145	815	1634	748	398	188	16695
Total	34893	38392	13666	8459	5407	10840	4961	2644	1250	120513
All										
18-30 years	15547	17106	6088	3769	2278	4569	2091	1113	527	53087
31-50 years	23908	26310	9366	5798	3690	7400	3388	1805	854	82518
51-70 years	20106	22105	7872	4872	3083	6180	2829	1507	713	69267
71+ years	8559	9415	3352	2075	1504	3017	1381	736	348	30387
Total	68120	74936	26679	16514	10555	21166	9688	5161	2441	235259

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