In-home research

Australian household food waste

Kerbside bin audit findings of actual food waste

FIGHT FOOD WASTE
Cooperative Research Centre
REDUCE - TRANSFORM - ENGAGE

Australian Government
Department of Industry, Science, Energy and Resources

AusIndustry
Cooperative Research Centres Program

This research was commissioned by the Project Steering Group for the *Designing effective interventions to reduce household food waste* project. It is part of a four-year research project delivered through the Fight Food Waste Cooperative Research Centre.

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Report background:

"Designing effective interventions to reduce household food waste" is a Fight Food Waste CRC's research project. The project reports will provide evidence-based insights covering food waste behaviours and attitudes of Australian households, quantification of perceived and actual household food waste, advice regarding priority segments, identification of global best practise interventions, household food waste reduction interventions for priority segments, messages for selected intervention and cost-effective methodologies for evaluating the impact of selected interventions.

How to read the reports in this series:

This report is one of six reports published in the series "Australian household food waste". A summary of the implications and evidence to support these is provided in "A summary of behaviours, attitudes, perceived and actual food waste" whilst the other five reports provide detailed results. These being: "Survey findings of behaviours and perceived food waste", "Electronic-diary findings of recorded food waste and disposal methods", "Kerbside bin audit findings of actual food waste", "Focus group findings of attitudes to food waste", and "Choice model findings of food waste reduction interventions".

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1. Background

1.1. Fight Food Waste Cooperative Research Centre ENGAGE program

The research informs the Fight Food Waste Cooperative Research Centre (FFW CRC) and other interested parties of the composition of household food waste and where most food waste occurs.
The FFW CRC is tackling the problem of food waste by investing in research that reduces the amount of food wasted through the food value chain, transforms unavoidable waste into innovative high-value co-products, and engages with industry and consumers to deliver behavioural change. There are three programs under the FFW CRC – REDUCE, TRANSFORM and ENGAGE. This research is an integral part of the ENGAGE program.

The key objective of FFW CRC ENGAGE program is to provide interventions designed to tackle consumers' food waste behaviour by:

- benchmarking national food waste knowledge, awareness and behaviours in household food management and food waste to gain a deeper understanding of the causes
- identifying key target audiences and unpacking the barriers and opportunities for them to adopt food waste avoidance behaviours
- increasing knowledge and skills in household best practices related to food purchasing, storage, preparation and use of leftovers
- providing support for institutional and inter-generational transfer of knowledge and skills in more efficient food planning, purchasing, preparation and consumption
- providing a platform for increased knowledge and awareness of food wastage in business.

1.2. In-home research on Australian household food waste project

This research project included:

1. A national self-report benchmark survey with 2885 main and joint household food managers (a shortened version of the 2019 survey)
2. A detailed 7-day electronic diary record of food disposed of by 1462 respondents (a sub-set of the benchmark sample of 2885). These respondents completed an electronic diary that recorded all the food waste the respondent was aware of and how it was disposed (i.e., in the red bin, down the sink, fed to animals, placed in the compost or worm farm, etc)
3. Testing of potential interventions: all 1462 respondents who completed the electronic diary also completed one or two discrete choice experiments. Possible interventions designed to support better household food management behaviours were tested, based on the

respondent's weakest food management behaviour identified in the benchmark survey. There were three different models produced based on responses from 2597 respondents (some took part in two choice experiments because their household food management behaviours were equally weak in two areas).

4. Finally, a sub-set of 495 of the 1462 e-diary respondents were selected, and a physical audit was conducted of their bin, carefully aligned to their 7-day electronic diary record.

These four data sets are linked with an anonymous respondent ID and now allows FFW CRC to make comparisons between each, with the physical bin audit capturing the most reliable evidence about the quantity of food waste. The accuracy of self-reported food waste has long been questioned, with reports suspected of being highly inaccurate. The daily record kept by the electronic diary has many advantages as it also captures food waste that is disposed of in ways that the physical bin audit cannot measure (e.g., fluids disposed down the sink). The physical bin audit is highly accurate apart from where food waste is disposed of by other means.

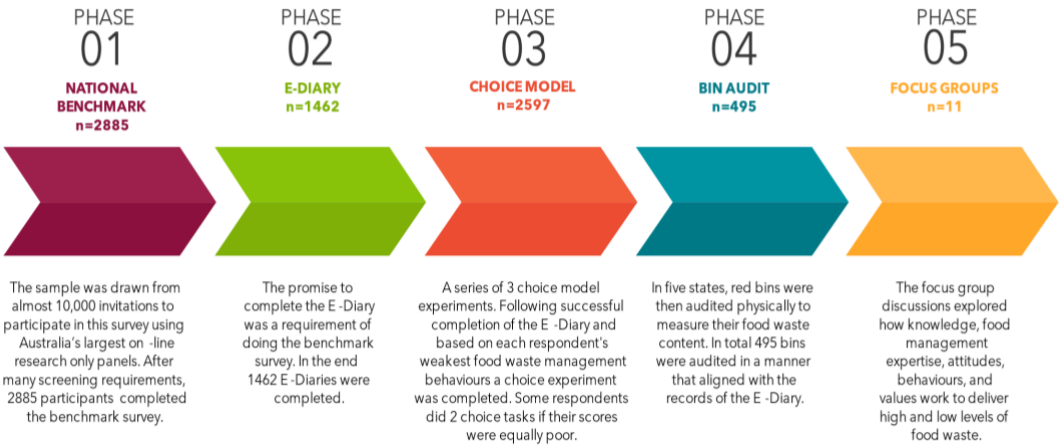

Figure 1: Research phases

The methodology is outlined in Figure 2 below.

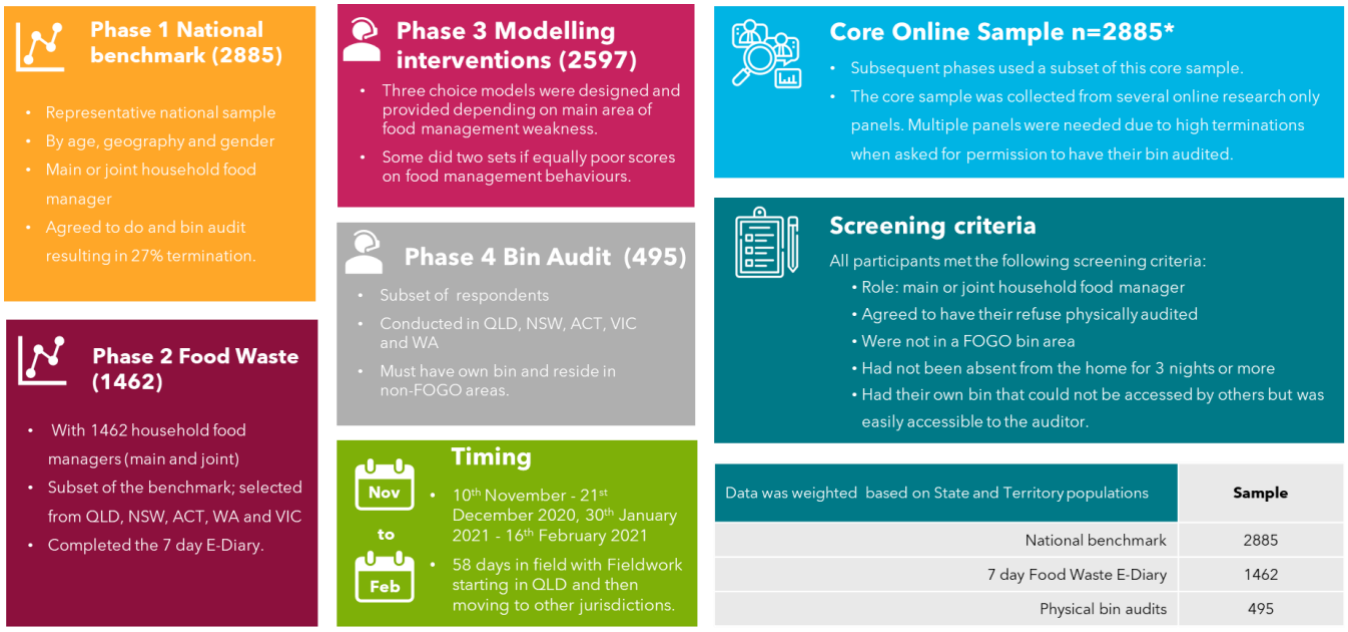

Figure 2: Method

2. Methodology

2.1. The sample selection

The study requested permission for the physical bin audit from every respondent, irrespective of whether their bin was audited or not. This, and other sample requirements, led to a substantial proportion of the sample being terminated before having the opportunity to complete the survey. This potentially affected both the sample quality and the actual food waste behaviour of households, by bringing a bias to the sample from only including those prepared to have their bin physically audited.

About 40% of the original sample was terminated for a variety of reasons (see figure 3)

1. The need for a weekly waste pick-up (many places in Australia have a 14-day one).
2. The sample could not include those people living in a FOGO bin collection area. This would have required two bins to be audited which was outside the scope of the contract, and food waste may have been hard to discern in the FOGO bin. The proportion of Australian households with a FOGO bin is rapidly rising and means the chance to replicate this study will be much harder/more costly in the future. Respondents needed a secure bin to ensure only one household's food waste was present. There was the need for the respondent to be present in the house for most of the week and not away from home.

2.2.Sample Profile

- 4921 Australian households cleared all the screener questions from the original 8289 who were invited to take part in the study.
- 71% agreed to do an electronic diary and have the physical bin audit conducted (3568).
- 2885 (or 81%) completed the benchmark survey and 1462 completed the electronic diary.
- 495 had physical bin audits conducted.

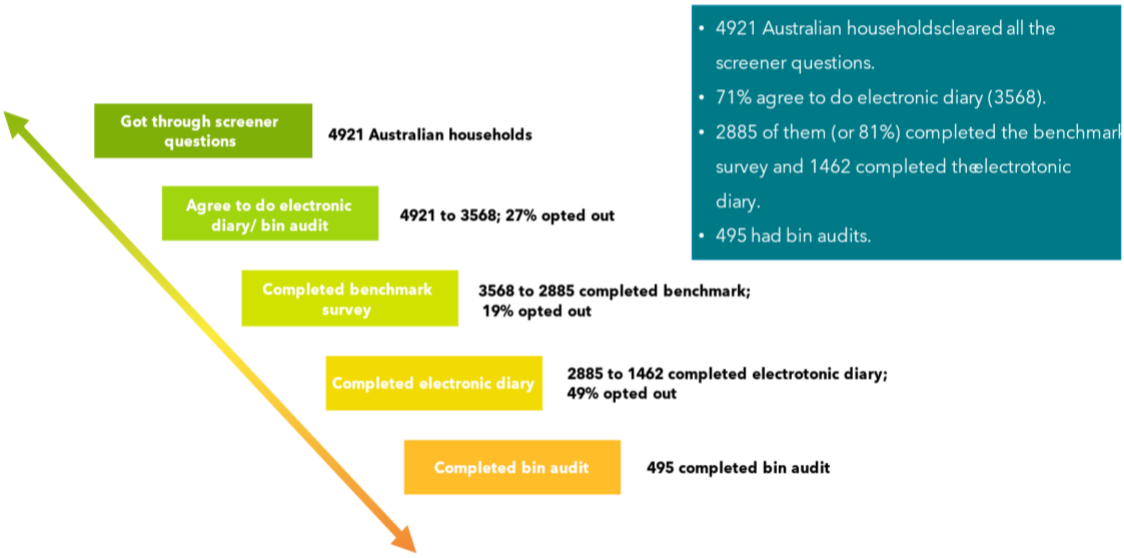

Figure 3: Sample terminations

Despite the potential sample biases introduced by the requirements outlined above, the sample acquired across the three research phases closely resembled the Australian population in many respects. There was a slight skew away from people living alone (23% in the Australian population and slightly less in all phases), and there were similar but minor variations in other demographic categories (Full details provided in Tables 2-9 on subsequent pages)

2.2. Bin audit methodology

The following process was followed to complete the 7-day electronic diary and at the end of the 7-day period, bins were collected and audited.

- The respondents were asked to complete the diary for 7 consecutive days, and were given additional time the day after the bin collection to fill in any missed final meals
- The invitation was sent after completing the survey. They were given suggestions to:
    - Complete the diary after each meal
    - Complete the diary at the end of the day or start of the next day
- The day of the week respondents were invited to the diary varied based on timing for their bin audits, either based on their set council collection date (provided to us in their benchmark survey), or when we were sending out a bin auditor to their area. The invitations were usually sent within the week of finishing the survey
- The link worked on a computer, tablet or smartphone, though we encouraged the respondents to fill it out on a computer for optimal viewing
- A link to view visual, downloadable instructions was provided at the start of the diary alongside the written instructions. The PDF could be accessed again via a pop out window on the first meal of every day
- The diary date was pre-set to the date it was filled in on to minimise errors and effort required by respondents
- Participants were asked to keep their bins out at the end of the 7th day. In most cases this day coincided with their council bin collection day
- Some ACT respondents were invited to start on the same day due to strikes from the contractors responsible for bin collection. These participants were asked to start a new bag for the 7-day period, using this bag to keep any food disposed of that would usually go in their general waste bin. This bag was to be picked up by the auditors at the end of the week. As such, the contents of the bin bags were not put out with the general waste bin during regular or modified council collections during the diary week, and the full contents of the bags were able to be picked up at the end of the week
- In a designated location, the bin auditors analysed the composition of food waste collected. It was weighed (see figure 4) and wasted food categories were recorded (see table 1). All wastes were then collected, taken to designated waste collection areas in the respective state or territory and disposed of
- One of the ACT and NSW audits were observed by each of the authors of this report.

Table 1: Bin Audit Categories

Bin Audit (13 categories)
1. Food prepared at home
2. Takeaway and home delivery meals
3. Fresh vegetables
4. Frozen/canned/dried vegetables
5. Fresh fruit
6. Frozen/canned/dried fruit
7. Dairy
8. Meat and seafood
9. Bread and bakery
10. Drinks
11. Other (condiments, dried herbs, spices, spreads, oils etc)
12. Inedible parts of food – possibly avoidable
13. Inedible food waste – unavoidable

Figure 4: Images from the ACT bin audit

Constant reminders were sent to the participants to fill the electronic diary and put their bins out for collection (see Appendix 1). On the 7th day of completing the electronic diary, participants were sent the following reminder, clearly asking them to put the bins out for collection by the bin auditors.

Hi «first_name»

Thank you for your hard work with the food diary over the past week. If you aren't all caught up, you can still fill in any missed days.

Just a reminder that a portion of the participant's bins in this study will be audited, as mentioned in the survey. Only the food contents will be recorded, and it is strictly for research purposes.

*To qualify for the $10 incentive, this evening **please put out your general waste bin** (your regular rubbish bin, likely to have a red lid) out on the street **before 9pm** for your usual council bin collection day*

- *Make sure your bin is **clearly labelled with your street number**. If the number on the bin has worn away, please stick a label/ note on it with your street number (and unit number, if applicable). The person auditing the food in the bin will not have your contact details so don't put your name on the bin.*
- *If your bin cannot be accessed by the street (for example a gated community, please let us know as soon as possible)*
- *Please put it out regardless of whether you have a lot of food in the general waste bin, or no food in it at all*

***If you're not quite up to date on the diary,** please continue it here for the last few meals:*

https://survey2.instinctandreason.com/index.php?r=survey/index&sid=689567&token=«token»

Thank you again for participating!

Kind regards,

Instinct and Reason

instinct and reason

This research is commissioned by Central Queensland University, and has been reviewed and approved by its Human Research Ethics Committee. All research data will be stored securely by Central Queensland University for a minimum of 15 years, in accordance with Central Queensland University policy. If you have any complaints or concerns about the research project, please email ethics@cqu.edu.au or phone (07) 4923 2603 quoting the following number 0000022444 within 24 hours if at all possible.

The research company Instinct and Reason checked and cleaned data to remove any participants' data where the food waste audited varies significantly differently from the electronic diaries filled out (removed outliers). Additionally, the bin auditors' were consulted to confirm, based on their experience and expertise, that the contents of the audits were of an expected volume.

2.3. Physical bin audit sample

Table 2: Location

Location	n=	%
Total sample	**495**	**100**
New South Wales	104	21
Victoria	121	24
Queensland	68	14
Western Australia	103	21
South Australia	0	0
Northern Territory	0	0
Australian Capital Territory	99	20
Tasmania	0	0

Table 3: Gender

Gender	n=	%
Total sample	**495**	**100**
Female	328	66
Male	166	34
Other	1	0

Table 4: Residence Type

Household structure	n=	%
Total sample	**495**	**100**
Household of unrelated people	14	3
Couple living together with no children	69	14
Couple with children (<17 years old)	135	27
Couple with adult children (>18 years old)	49	10
Single parent with children (<17 years old)	20	4
Single parent with adult children (>18 years old)	21	4
Couple living without children (child/children no longer reside in same household)	81	16
Living alone	78	16
Other	26	5
Prefer not to say	2	0

Table 5: People in each age group living at your household

Age group	n=	%
Total sample	**495**	**100**
18-34	71	14
35-54	195	39
55-74	202	41
75+	27	5

**includes if they live their half the time or more.*

Table 6: Age of household residents

Age of household residents	n=	%
Total sample	**495**	**100**
1	86	17
2	186	38
3	94	19
4	80	16
5	49	10
0-4 year-olds		
None	426	86
1	48	10
2	21	4
3	0	0
4	0	0
5+	0	0
5-9 year-olds		
None	415	84
1	68	14
2	11	2
3	1	0
4	0	0
5+	0	0

Age of household residents	n=	%
10-14 year-olds		
None	435	88
1	39	8
2	20	4
3	1	0
4	0	0
5+	0	0
15-19 year-olds		
None	443	89
1	39	8
2	11	2
3	2	0
4	0	0
5+	0	0
20-24 year-olds		
None	449	91
1	36	7
2	10	2
3	0	0
4	0	0
5+	0	0

Age of household residents	n=	%
Total sample	**495**	**100**
25-34 year-olds		
None	392	79
1	62	13
2	37	7
3	4	1
4	0	0
5+	0	0
35-44 year-olds		
None	369	75
1	65	13
2	60	12
3	1	0
4	0	0
5+	0	0
45-54 year-olds		
None	373	75
1	75	15
2	46	9
3	1	0
4	0	0
5+	0	0

Age of household residents	n=	%
55-64 year-olds		
None	340	69
1	93	19
2	61	12
3	1	0
4	0	0
5+	0	0
65-74 year-olds		
None	388	78
1	65	13
2	41	8
3	1	0
4	0	0
5+	0	0
75+ year-olds		
None	446	90
1	33	7
2	16	3
3	0	0
4	0	0
5+	0	0

Table 7: Household description

Residence type	n=	%
Total sample	**495**	**100**
Separate house	409	83
Semi-detached terrace house, townhouse etc.	45	9
Flat, unit, apartment	36	7
Other	5	1

Table 8: Household income earners

Location	n=	%
Total sample	**495**	**100**
New South Wales	104	21
Victoria	121	24
Queensland	68	14
Western Australia	103	21
South Australia	0	0

Table 9: Household income (before tax per week)

Household income	n=	%
Total sample	**495**	**100**
Negative income	1	0
No income	2	0
$1-$149 per week ($1-$7,799 per year)	4	1
$150-$299 per week ($7,800-$15,599 per year)	4	1
$300-$399 per week ($15,600-$20,799 per year)	5	1
$400-$499 per week ($20,800-$25,999 per year)	19	4
$500-$649 per week ($26,000-$33,799 per year)	10	2
$650-$799 per week ($33,800-$41,599 per year)	28	6
$800-$999 per week ($41,600-$51,999 per year)	23	5
$1,000-$1,199 ($52,000-62,399 per year)	28	6
$1,200-$1,399 ($62,400-$72,799 per year)	36	7
$1,400-$1,549 ($72,800-80,599 per year)	25	5
$1,550-$1,699 ($80,600-$88,399 per year)	25	5
$1,700-$1,799 ($88,400-$93,599 per year)	15	3
$1,800-$1,899 ($93,600-$98,799 per year)	10	2
$1,900-$1,999 ($98,800-$103,999 per year)	26	5

Household income	n=	%
$2,000-$2,199 ($104,000-$114,399 per year)	17	3
$2,200-$2,399 ($114,400-$124,799 per year)	16	3
$2,400-$2,599 ($124,800-$135,199 per year)	16	3
$2,600-$2,799 ($135,200-$145,599 per year)	19	4
$2,800-2,999 ($145,600-$155,999 per year)	16	3
$3,000-3,499 ($156,000-$181,999 per year)	30	6
$3,500-3,999 ($182,000-$207,999 per year)	32	6
$4,000-4,499 ($208,000-$233,999 per year)	10	2
$4,500-4,999 ($234,000-$259,999 per year)	10	2
$5,000-5,999 ($260,000-$311,999 per year)	4	1
$6,000 or more ($312,000+ per year)	6	1
Prefer not to say	58	12

Figure 5: Images from the ACT bin audit

3. Findings

Bin audit data revealed that Australian households throw away 1.78kg of food in the bin per week.

Using the electronic diary, the study also identified the quantities of food disposed of through other methods including feeding to pets, putting down the sink and composting, to identify total food waste. After adjusting for the above factors, it was revealed that 4.22kg of food is wasted per household, per week in Australia.

As the present study was conducted during the Australian summer (October and November) the bin auditors noticed a considerable portion of liquid collected in the bin bags due to food decomposition. As a result, we conducted an in-house experiment to identify the average decomposition weight loss (see Appendix 1 for details of the methodology). Based on this experiment, the total weight loss of food waste due to decomposition was 6.64% (see Appendix 2 for calculation details).

3.1. Only food disposed of in red bin

Table 10: Only food disposed of in red bin

Total amount of food waste from bin audit

- **1.78 kg per household**
- **0.79 kg per person**

Amount of food waste from bin audit by type

	Kg per household	Kg per person
Food prepared at home	0.21	0.09
Takeaway and home delivery meals	0.06	0.03
Fresh vegetables	0.21	0.10
Frozen/canned/dried vegetables	0.00	0.00
Fresh fruit	0.15	0.07
Frozen/canned/dried fruit	0.00	0.00
Dairy	0.02	0.01
Meat and seafood	0.04	0.02
Bread and Bakery	0.16	0.07
Drinks	0.00	0.00
Other (condiments, dried herbs, spices, spreads, oils, etc)	0.14	0.07
Inedible food waste - possibly avoidable & unavoidable	0.77	0.34

3.2. Top wasted foods (only food disposed of in red bin)

Table 11: Top wasted foods (only food disposed of in red bin)

Amount of food waste from bin audit by type

	Kg per household	Kg per person
1. Food prepared at home	0.21	0.09
2. Fresh vegetables	0.21	0.10
3. Bread and Bakery	0.16	0.07
4. Fresh fruit	0.15	0.07
5. Other (condiments, dried herbs, spices, spreads, oils, etc)	0.14	0.07
6. Takeaway and home delivery meals	0.06	0.03

$ value of food waste from bin audit

	$ per household	$ per person
1. Staples-dried	2.29	1.1
2. Frozen/canned/dried fruit	1.31	0.66
3. Other (condiments, dried herbs, spices, spreads, oils, etc)	1.26	0.66
4. Bread and bakery (confectionary and snacks)	0.86	0.44
5. Fresh fruit	0.65	0.31
6. Fresh vegetables/ fresh herbs	0.55	0.28

3.3. Bin audit food waste result – by age and gender

Table 12: Bin audit food waste result – by age and gender

By age (kg)	TOTAL (n=495)	18-34 (n=71)	35-54 (n=195)	55-74 (n=202)	75+ (n=27)
Total food waste	**1.78**	**1.97**	**2.16**	**1.42**	**1.16**
Food prepared at home	0.21	0.31	0.27	0.14	0.08
Takeaway and home delivery meals	0.06	0.06	0.10	0.03	0.02
Fresh vegetables	0.21	0.30	0.23	0.17	0.12
Frozen/canned/dried vegetables	0.00	0.00	0.00	0.00	0.00
Fresh fruit	0.15	0.17	0.20	0.10	0.09
Frozen/canned/dried fruit	0.00	0.00	0.01	0.00	0.00
Dairy	0.02	0.01	0.02	0.03	0.00
Meat and seafood	0.04	0.05	0.05	0.03	0.02
Bread and bakery	0.16	0.15	0.23	0.11	0.14
Drinks	0.00	0.00	0.00	0.00	0.00
Other (Condiments, etc)	0.14	0.10	0.15	0.16	0.07
Inedible parts of food	0.77	0.81	0.92	0.63	0.62

By gender (kg)	TOTAL (n=495)	Female (n=328)	Male (n=166)
Total food waste	**1.78**	**1.67**	**2.01**
Food prepared at home	0.21	0.21	0.22
Takeaway and home delivery meals	0.06	0.05	0.07
Fresh vegetables	0.21	0.19	0.25
Frozen/canned/dried vegetables	0.00	0.00	0.00
Fresh fruit	0.15	0.15	0.16
Frozen/canned/dried fruit	0.00	0.00	0.01
Dairy	0.02	0.02	0.02
Meat and seafood	0.04	0.04	0.04
Bread and bakery	0.16	0.16	0.17
Drinks	0.00	0.00	0.00
Other (Condiments, dried herbs, spices, spreads, oils etc)	0.14	0.16	0.11
Inedible parts of food	0.77	0.67	0.96

Significance two tailed test of difference at a 99 per cent level of confidence [○/□ significantly less/more than the total sample]

**other gender <1% not shown*
Base: Total n=495 (18-34 n=71, 35-54 n=195, 55-74 n=202, 75+ n=27); (Female n=328, Male n=166)

3.4. Bin audit food waste result – by state

Table 13: Bin audit food waste result – by state

By state (kg)	**TOTAL** (n=495)	NSW (n=104)	VIC (n=121)	QLD (n=68)	WA (n=103)	ACT (n=99)
Total food waste	**1.78**	**1.88**	**1.71**	**1.83**	**1.70**	**1.79**
Food prepared at home	0.21	0.13	0.18	0.21	0.21	0.34
Takeaway and home delivery meals	0.06	0.11	0.04	0.05	0.09	0.02
Fresh vegetables	0.21	0.24	0.19	0.23	0.17	0.23
Frozen/canned/dried vegetables	0.00	0.01	0.00	0.00	0.00	0.00
Fresh fruit	0.15	0.18	0.14	0.14	0.11	0.17
Frozen/canned/dried fruit	0.00	0.01	0.00	0.01	0.00	0.00
Dairy	0.02	0.03	0.01	0.02	0.01	0.03
Meat and seafood	0.04	0.04	0.07	0.03	0.02	0.01
Bread and bakery	0.16	0.18	0.11	0.21	0.20	0.15
Drinks	0.00	0.00	0.00	0.00	0.00	0.01
Other (Condiments, dried herbs, spices, spreads, oils etc)	0.14	0.09	0.18	0.16	0.11	0.18
Inedible parts of food	0.77	0.86	0.78	0.78	0.77	0.65

Significance two tailed test of difference at a 99 per cent level of confidence [O/□ significantly less/more than the total sample]

Base: Total n=495 (NSW n=104, VIC n=121, QLD n=68, WA n=103, ACT n=99)

3.5. Bin audit food waste result – by household structure

Table 14: Bin audit food waste result – by household structure

By household structure (kg)	**TOTAL** (n=495)	Unrelated people (n=14)	Couple with no children (n=69)	Couple with children <17 (n=135)	Couple with adult children >18 (n=49)	Single parent with children <17 (n=20)	Single parent with adult children >18 (n=21)	Empty nesters (n=81)	Living alone (n=78)
Total food waste	**1.78**	**2.34**	**1.35**	**2.39**	**2.10**	**2.21**	**1.41**	**1.29**	**1.00**
Food prepared at home	0.21	0.60	0.14	0.33	0.31	0.20	0.11	0.10	0.07
Takeaway and home delivery meals	0.06	0.05	0.05	0.09	0.07	0.07	0.01	0.03	0.05
Fresh vegetables	0.21	0.19	0.10	0.27	0.27	0.30	0.23	0.16	0.16
Frozen/canned/dried vegetables	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fresh fruit	0.15	0.36	0.16	0.18	0.13	0.20	0.26	0.07	0.11
Frozen/canned/dried fruit	0.00	0.00	0.01	0.00	0.00	0.03	0.00	0.00	0.00
Dairy	0.02	0.01	0.04	0.01	0.06	0.00	0.00	0.00	0.01
Meat and seafood	0.04	0.06	0.03	0.05	0.04	0.05	0.03	0.02	0.04
Bread and bakery	0.16	0.34	0.09	0.25	0.23	0.28	0.06	0.09	0.08
Drinks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other (Condiments, dried herbs, spices, spreads, oils etc)	0.14	0.09	0.14	0.18	0.13	0.10	0.14	0.12	0.09
Inedible parts of food	0.77	0.64	0.61	1.03	0.87	0.97	0.56	0.71	0.38

Significance two tailed test of difference at a 99 per cent level of confidence [O/□ significantly less/more than the total sample]

**other household and prefer not to say types <1% not shown*
Base: Total n=495 (Unrelated people n=14, Couple with no children n=69, Couple with children <17 n=135, Couple with adult children (>18) n=49, Single parent with children (<17) n=20, Single parent with adult children (>18) n=21, Empty nesters n=81, Living alone n=78)

3.6. Bin audit food waste result – by weekly household income

Table 15: Bin audit food waste result – by weekly household income

By household income (kg)	TOTAL (n=495)	No income / negative income (n=3)	$1-$999 (n=93)	$1000-$1999 (n=165)	$2000-$2999 (n=84)	$3000+ (n=92)	Prefer not to say (n=58)
Total food waste	**1.78**	**0.93**	**1.33**	**1.64**	**2.27**	**2.14**	**1.62**
Food prepared at home	0.21	0.07	0.12	0.16	0.29	0.32	0.23
Takeaway and home delivery meals	0.06	0.00	0.04	0.06	0.07	0.08	0.05
Fresh vegetables	0.21	0.00	0.14	0.19	0.28	0.27	0.18
Frozen/canned/dried vegetables	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fresh fruit	0.15	0.00	0.10	0.13	0.19	0.23	0.12
Frozen/canned/dried fruit	0.00	0.00	0.01	0.00	0.01	0.00	0.00
Dairy	0.02	0.00	0.02	0.02	0.02	0.03	0.02
Meat and seafood	0.04	0.67	0.01	0.03	0.05	0.04	0.06
Bread and bakery	0.16	0.00	0.12	0.15	0.27	0.18	0.10
Drinks	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Other (Condiments, dried herbs, spices, spreads, oils etc)	0.14	0.07	0.18	0.13	0.19	0.11	0.12
Inedible parts of food	0.77	0.13	0.58	0.76	0.92	0.88	0.73

Significance two tailed test of difference at a 99 per cent level of confidence [○/□ significantly less/more than the total sample]

Base: Total n=495 (No income and negative income n=3, $1-$999 per week n=93, $1,000-$1,999 per week n=165, $2,000-$2,999 per week n=84, $3,000+ per week n=92, Prefer not to say n=58)

Appendix 1

An email was sent to FFW CRC staff, members of the household food waste project steering committee and their respective organizations with the following explanation and instructions.

Hi (Name),

As you know in late 2020 we commenced data collection for Work Package 2 – In Home research. This is a substantial piece of research which will identify the value and volume of waste generated by Australians. To date, we have successfully completed 2804 surveys, 1426 electronic diaries and 470 bin audits. As bin audits were completed in warm weather, those undertaking the bin audits noticed considerable amounts of liquid emerged due to commencement of decomposition of the food. It was not possible to measure this liquid at the time of undertaking the bin audits and consequently there is some under reporting. In our quick test with three people it was found to be 4.6%. Due this being a material amount the WP2 group decided that we need to determine an adjustment factor. To do this we need more people, representing different states (to account for different weather conditions) to do this experiment.

Hence, we seek your help in participating in this experiment. Could you kindly get a minimum of 3 people from your respective state/territory/organization to participate in this experiment and report us the findings? The objective: to assess the weight loss during food waste decomposition over 7 days in summer.

Duration: 7 days

Methodology:

1. *Collect each day's food waste and weigh it*
2. *Write down the date and weight. eg. Day 1- 250 grams*
3. *Put food waste from each day into one large plastic bag*
4. *Repeat steps 1 and 2 for 7 consecutive days*
5. *At the end of day 7 drain all the liquid out of the large plastic bag by piercing a corner of the bag*
6. *After removing all the liquid, weigh the large plastic bag with 7 days of food waste and write it down. eg. Total weight after removing all the liquid 3270 grams*
7. *Next, click on https://forms.gle/hf6STKYSMAJ9FMpr8 to add and submit your information*

For further clarifications please contact Gami Karunasena (g.gamithri@cqu.edu.au)

Fifteen individuals from different states in Australia answered filled the following Google form by collecting their food waste over 7 days. There were two outliers identified in the data with an extreme high percentage of 73% and negative percentage of food waste loss. Both outliers were removed from the data. The average percentage loss of food waste weight for 13 participants during summer in Australia was 6.64%.

Weight loss due to decomposition- Google form

* Required

Demographics

1. Where are you located? *

Mark only one oval.

ACT

NSW

VIC

QLD

NT

TAS

SA

WA

2.Gender *

Mark only one oval.

Female

Male

Other

3.Age *

Mark only one oval.

Under 17

18-24

25-34

35-44

45-54

55-64

65-74

75+

4.How many adults (over 18) are there in your household? *

Mark only one oval.

1

2

3

4

5

6

more than 6

5.How many children (under 18) are there in your household? *

Mark only one oval.

1

2

3

4

5

6

more than 6

None

Food waste record *

Please record the weight of food you disposed each day

6. Day 1: Food waste (grams) *……

7.Day 2: Food waste (grams) *……

8.Day 3: Food waste (grams) *……

9.Day 4: Food waste (grams) *……

10.Day 5: Food waste (grams) *……

11. Day 6: Food waste (grams) * ……

12. Day 7: Food waste (grams) * ……

13. How many grams of food waste did you record after removing all the liquid from the bag at the end of day 7 * ……

Appendix 2

Table 16: Calculation of percentage of weight loss due to Food Waste (FW) decomposition during summer

DEMOGRAPHICS						Food Waste Record of a week							Total FW (grams)	Total FW after liq removal (grams)	% of FW loss
Respondants	State	Gender	Age	Adults (18+)	Children (under 18)	FW (D1)	FW (D2)	FW (D3)	FW (D4)	FW (D5)	FW (D6)	FW (D7)			
1	QLD	Male	45-54	4	0	700	400	0	250	200	780	1200	3530	3400	3.68272
2	NSW	Female	55-64	2	2	500	340	320	260	310	360	216	2306	2133	7.502168
3	VIC	Female	25-34	2	0	133	102	233	31	206	128	12	845	831	1.656805
4	SA	Female	35-44	2	2	305	380	490	353	221	72	175	1996	1992	0.200401
5	ACT	Female	35-45	1	0	100	300	150	0	160	0	0	710	680	4.225352
6	VIC	Male	45-54	3	0	2163	572	451	1430	180	0	370	5166	4926	4.645761
7	SA	Female	35-44	2	0	192	78	67	230	338	137	227	1269	1220	3.861308
8	WA	Female	35-44	2	1	142	238	200	215	310	321	102	1528	1502	1.701571
9	QLD	Female	25-34	2	0	44	145	1120	26	125	147	70	1677	1177	29.81515
10	SA	Male	45-54	1	0	170	230	85	120	50	210	185	1050	1035	1.428571
11	NSW	Female	35-44	2	2	728	2212	2400	465	587	418	767	7577	7160	5.503497
12	NSW	Female	25-34	2	0	774	500	1689	404	326	313	89	4095	3930	4.029304
13	QLD	Female	45-54	1	1	330	371	326	323	564	59	143	2116	1630	22.96786
										Total FW weight			33865	31616	
										Total weight loss in FW (grams)				2249	
										Average % of weight loss				**6.641075**	

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