Food waste avoidance benchmark study



Published by:

Environment Protection Authority
59–61 Goulburn Street, Sydney
PO Box A290, Sydney South 1232
Phone: (02) 9995 5000 (switchboard)
Phone: 131 555 (environment information and publications requests)
Fax: (02) 9995 5999
TTY users: phone 133 677, then ask for 131 555
Speak and listen users: phone 1300 555 727, then ask for 131 555
Email: info@environment.nsw.gov.au
Website: www.epa.nsw.gov.au

EPA 2012/0787
ISBN 978 1 74293 840 0
September 2012

Table of contents

Executive summary

Food waste is a complex environmental, social and economic problem. In NSW, households are throwing away $2.5 billion dollars worth of edible food each year. This amounts to over 800,000 tonnes across the State. To better understand community knowledge, attitudes and behaviours about household food waste 1,200 NSW households were surveyed as part of the Food Waste Avoidance Benchmark Study.

Research background

The online survey was completed by 1,200 NSW residents, aged 16 and older, who were mainly or equally responsible for the purchasing and management of food within their household. The Food Waste Avoidance Benchmark Study represents the most comprehensive and up to date analysis of community knowledge, attitudes and behaviours conducted about food waste in NSW.

The research findings have been used to develop the NSW Government's Love Food Hate Waste program which aims to minimise food wastage in the home. This research is the first of a series of analyses that will monitor the food waste-related knowledge, attitudes and behaviours of the NSW community over three years.

The objectives of this research component were to:

- provide a benchmark of community knowledge, attitudes and behaviour around food waste and food management at the household level
- develop a segmentation of the NSW community based on food waste knowledge, attitudes and behaviours and identify the key target audiences for the program
- provide robust information to:
  - guide the development of an education program
  - track/monitor the effectiveness of educational activities and messages.

Research results

Concern about environmental problems and food waste

An overwhelming majority (93%) of respondents indicated at least some level of concern for environmental problems. The areas of most concern were for future generations (23%) and the maintenance of ecosystems (20%).

Almost half (49%) of respondents indicated they spend money on food that is 'rarely' or 'never' used. Despite food being identified as the most prevalent form of household waste, the level of concern over wasted food was lower than concern about wasted electricity and interest paid on credit cards. Only 47% of respondents indicated concern about wasting food.

A key finding of the research is the disparity between the perceived amount of food that households are throwing out and the estimated value of the food being thrown out. While the average value of food wasted by a typical NSW household was found to be $1,036 per year, only 14% of respondents felt that they were throwing away more uneaten food than they should.

Respondents who were concerned 'a fair amount' about environmental problems were significantly more likely to be concerned 'a great deal' or 'a fair amount' about wasting food (56% compared to 47% of all respondents). Respondents who were only 'a little', 'not really' or 'not at all' concerned about environmental problems were significantly less likely to be concerned about food wastage 'a great deal' or 'a fair amount' (39% and 22% respectively).

Attitudes towards food waste

Respondents generally believed that Australians do waste food (69% agreeing with the statement to some degree). However, only 13% of respondents correctly identified food as the largest component of the average NSW household bin.

Many respondents (67%) agreed that the energy and nutrients that are used to grow, process and transport food are wasted if it is not eaten. But there was not a general consensus that food waste contributes to climate change (46% agreement).Young people (18–24 years old) were more likely to believe that a busy lifestyle makes it hard to avoid food waste.

Economic impacts of food waste on households budgets

Survey respondents were asked to estimate the average weekly cost of the food that their household purchases, does not consume, and eventually throws away. The responses were provided in whole dollars.

Respondents estimated the average weekly value of the food they threw away:

- fresh food, $6.60
- leftovers, $5.40
- packaged and long-life food, $2.90
- drinks, $1.80
- frozen food, $1.80
- home delivered/take away food, $1.40.

The total value of food items wasted was $19.90 per average household, per week in NSW.

Over one year, this amounts to $1,036 per household or $2,556 million for all of NSW (projection based on 2006 Australian Bureau of Statistics (ABS) census estimating 2,470,451 occupied households in NSW).

Food planning and purchasing knowledge, attitudes and behaviours

The attitudes that we have towards purchasing food can influence the way we shop and how much food we waste at home. Most respondents indicated that they feel guilty when they waste food (72%), although only 18% indicated they often find that things [they] have bought don't get used. Similarly, most respondents (69%) claimed that they do think carefully about how much they will use when purchasing food. Young people (18–24 years old) were less likely to think about how much they will use, while those aged 55 years or older were more likely to take this into consideration.

Although most respondents (69%) claimed they thought about how much food they would use, just 57% indicated that they are careful about buying foods that they know will be used. This suggests a disparity between thinking about how much will be used and following through with the corresponding purchasing behaviour.

Most respondents (70%) indicated they only buy the amount of fruit and vegetables they need, while 15% indicated they buy the best value fruit and vegetables even if it is more than what they need. Young people (18–24 year olds) were more likely to shop for fresh produce based on value (20% compared to 15% of respondents of all ages). In contrast, 25–39 year olds and families with children made more of an effort to buy only the amount that they need (76% and 73% respectively compared to 70% of the total sample). When shopping, respondents were more likely to do one large shop (55%) rather than doing small shops regularly (34%). Single person households were more likely than other groups to do smaller shops and to decide what they needed while in store.

Behaviours prior to food shopping

Our behaviour prior to food shopping can also influence the amount of food wasted at home. Two thirds (66%) of respondents reported that they 'mostly' or 'always' check what food is in the house prior to going shopping. Over half of survey respondents reported writing a list and sticking to it as much as possible 'most of the time', but planning meals in advance was less common with just over one third (35%) reporting that they do this 'mostly' or 'always'.

As participant age increased, so did the frequency at which respondents planned ahead before shopping. Respondents aged 55 years and older were more likely to plan meals and write lists prior to shopping. Younger people aged 18–24 and 25–39 years were less likely to write lists and were also less likely to plan meals in advance.

Behaviours while shopping

The most common shopping behaviour reported was checking the 'use by' or 'best before' dates prior to purchase (66%), followed by purchasing food based on supermarket specials (42%). Bulk buying was a less regular behaviour with only one half of respondents indicating that they 'sometimes' do this. Families with children were the least likely to check 'use by' and 'best before' dates, while young consumers (18–24 years) were more likely to buy items in bulk and shop according to a set budget.

Of the 17% of households that indicated that buying too much food contributed to their food waste, most suggested that they think they need more than they actually do (61%). Many of these respondents (44%) identified that they are tempted by supermarket specials, such as two-for-one deals.

Respondents also identified that they buy too much food because:

- they don't check the cupboard or fridge before shopping
- they think that food portions for sale are too large
- they like to have more food at hand than is required
- they don't write shopping lists.

Interesting gender differences emerged when it came to the reasons why respondents bought too much food. Men were more likely to indicate that they did not write lists (36% compared to 23% of women). Women were more likely to identify that they prefer to have more food available rather than not enough (43% compared to 24% of men). Women were also more likely to indicate that they lack the time and organisation to plan ahead (24% compared to 18% of men), that they like fresh ingredients and that they don't keep older ingredients (23% compared to 12% of men).

Willingness to adopt new purchasing behaviours

While more than one third (37%) of respondents indicated that they already used a shopping list, encouragingly a further 46% stated that they were willing to use one in the future to reduce their household's food waste. Although only 28% of young respondents (aged 18–24 years) already use a shopping list, more than half (58%) of this age group indicated they were willing to start using one.

Almost one in two respondents indicated that they are willing to plan a weekly menu (48%), particularly families with children (55%). This is encouraging as families with children had previously indicated that they did not frequently plan or stick to a list. Over two thirds (67%) of respondents stated that they were willing to buy less food to avoid food waste.

While less than one in five (16%) indicated that they were already using a shopping list based on a menu plan, 55% expressed willingness to try and do so.

Food preparation and cooking knowledge, attitudes and behaviours

Cooking too much food is one of the reasons why food gets wasted in NSW households.

7% of respondents indicated that cooking too much food was the main reason why food was wasted in their household and 25% indicated this as a secondary reason for food wastage. Young people (18–24 years old) and higher income households (incomes over $100,000 per year) were less likely to consider portion sizes. When respondents were asked about portion sizes, 22% 'rarely' or 'never' considered portion size when preparing meals.

One in four survey respondents indicated that they cook too much food. The main reason given for this was that they preferred to serve more food than not enough (48%). Women were more likely to want to have too much rather than not enough (60% compared to 35% of men), which is consistent with the way women shop for food, preferring to have more ingredients available than not enough.

Of the respondents who mentioned they cook too much food, almost half (48%) preferred to serve more food than required. One in five respondents either 'always' or 'most times', cooked extra food just in case it may be needed. Again, younger respondents (18–24 year olds) were more likely to do this, as were those in the next age bracket (25–39 year olds). Families with children were also more likely to make extra just in case. 72% of respondents believed that unserved portions are an avoidable form of food waste.

19% of respondents reported that their main reason for food waste was due to one or some members within their household not finishing their meal. Overall, 39% indicated this as a reason for wasting food. Just under half (47%) of respondents believed that scraps left on a plate is avoidable food waste.

Knowing how much food is needed per person was also an area for improvement, with 32% indicating it was difficult to estimate how much to cook per person and 28% feeling it was difficult to know how to cook the right portion sizes.

Willingness to adopt new cooking behaviours

Encouragingly, a total of 64% of respondents reported that they would be willing to cook the right amount of food in the future, and a further 21% indicated that they already do this. Just 11% of 18–24 year olds said they already cooked the right amount, but they were significantly more willing than the total sample to do so in the future to reduce food waste (72%). Those living in single person households also indicated a willingness to cook the right amount of food (72%).

Food storage knowledge, attitudes and behaviours

The way we store our food can significantly impact on its freshness and longevity. Overall, 3% of respondents identified that they were unsure of how to store food and that this contributed to their household wasting food. Of these respondents, 60% were unsure about the best way to store different food types, one third (33%) indicated they often leave food in its original packaging, 24% indicated that they lack time and organisation and 17% identified that they didn't have appropriate storage containers.

Leftovers are often stored for later consumption with 52% of respondents 'always' or 'mostly' saving leftovers in the fridge and eating them afterwards. In addition, 36% identified that they 'always' or 'mostly' stored leftovers in the freezer to consume later. Around 40% of respondents consumed food that had been either stored in the fridge (39%) or freezer (38%) at least sometimes. However, respondents indicated that leftovers stored in the fridge (47%) and freezer (29%) were eventually thrown away without being consumed.

3% of respondents identified that they did not tend to use leftover ingredients in other meals. When asked what prevents them from using leftovers (n=95), nearly two thirds (63%) stated that they forgot about the stored food, 27% advised that they do not like eating leftovers and 18% indicated they had health concerns about consuming leftovers.

Respondents over 55 years of age were less likely to throw unused food out from the fridge (66% compared to 54% of total sample) while families with children indicated they did so more frequently (14% indicated

that they do this ‘always’ or ‘most times’, compared to 9% of all respondents). Around one third of respondents indicated that they dispose of leftovers immediately after a meal at least ‘sometimes’.

When we asked respondents about using leftover ingredients, 63% of young people indicated that they find it easy to make meals out of things that need using up, while families with children were more likely to find this activity difficult.

In general, people are uncertain about the length of time for safely storing different types of food. 28% of all respondents believed it is safe to store cooked items that have been frozen for a year or more as long as they remain frozen. 62% of respondents believed that cooked leftovers stored in the fridge for more than one day are still safe to consume.

The way we store our food can also affect its appearance and shelf life. 46% of respondents indicated that they throw out food that is mouldy, while only 6% cut off the mouldy parts of food and fruit and use the good parts. Men were more likely to cut out mouldy parts than women (22% and 17% respectively).

Householders often waste food that is blemished or wilted. 43% of respondents indicated that they are likely to throw out fruit or vegetables that are blemished or wilted, while just under one third (31%) of respondents indicated they don’t mind what fruit or vegetables look like and use them anyway. Again, men were more likely to indicate that they do not mind what fruit or vegetables look like (34% men and 29% women).

When we asked respondents about ‘use by’ dates, 64% correctly understood that ‘food must be eaten or thrown out by this date’. In addition, the majority of respondents (70%) correctly identified that ‘best before’ dates mean that ‘foods are still safe to eat after this date as long as they are not damaged, deteriorated or perished’. 23% of respondents incorrectly identified that food should be eaten or thrown away by the ‘best before’ date.

Willingness to adopt new storage behaviours

Over one quarter of respondents (29%) reported that they already save leftovers for other meals and 55% indicated that they are willing to start saving leftovers to use for future meals. In addition, 62% of respondents stated that they are willing to change the way they store food to help reduce food waste. 38% of all respondents advised that they are willing to start a compost or worm farm to divert food waste from landfill.

Conclusions

The results of the Food Waste Avoidance Benchmark Study show there is a diversity of interrelated and complex behaviours that lead to food being wasted at the household level in NSW.

The initial challenge for the Love Food Hate Waste program is to raise community awareness about the scale and extent of food waste in NSW and its associated environmental, social and economic impacts. A key component of this broader awareness raising will be to help householders to recognise and understand that their perceived small amount of food waste, when combined with all other households across the State, adds to over 800,000 tonnes each year.

To avoid food waste at the household level, it is recommended that the Love Food Hate Waste program focus on five key behaviour change areas around the themes of planning, cooking and storage. These include:

- menu/meal planning
- writing shopping lists
- correct storage
- measuring portion sizes
- using leftovers.

If these simple and easily adoptable behaviours are implemented at the household level, it is anticipated that the amount of food wasted by NSW households will reduce.

It will be essential to match key program messages and communication materials with the identified target audiences. *Love Food Hate Waste* will need to target these groups directly as each target group has different attitudes and behaviours around food and food management.

The Office of Environment and Heritage is committed to working with local government, business, industry and community partners to reduce the amount of 'good' food that is being wasted in NSW. This Food Waste Avoidance Benchmark Study provides robust data and insightful analysis into the current community knowledge, attitudes and behaviours around food waste and food management at the household level. This research will continue to inform the development of the Love Food Hate Waste program.

Introduction

Background to the research

The Office of Environment and Heritage is developing a Food Waste Avoidance program for the NSW community to raise awareness of the environmental, social and economic impacts of wasting food. The key message is '*Love Food Hate Waste*'. To better understand community knowledge, attitudes and behaviours about household food waste, 1,200 NSW households were surveyed as part of the Food Waste Avoidance Benchmark Study.

The survey was delivered online and completed by NSW residents, aged 16 and older, who were mainly or equally responsible for the purchasing and management of food within their household. The Food Waste Avoidance Benchmark Study represents the most comprehensive and up to date analysis of community knowledge, attitudes and behaviours conducted about food waste in NSW.

The research findings have been used to develop the NSW Love Food Hate Waste program, which aims to minimise food wastage at the household level. This research is the first of a series of analyses that will monitor the food waste-related knowledge, attitudes and behaviours of the NSW community over the next three years.

The objectives of this research were to:

- benchmark and measure/track changes in community knowledge attitudes and behaviour relating to food purchasing, management and wastage (e.g. levels of household food wastage, financial cost to households for food that is uneaten, level of concern about the issue.)
- develop a segmentation of the NSW community based on food waste knowledge, attitudes and behaviours and identify the key target audiences for the program
- provide robust information to:
  - guide the development of an education program
  - track/monitor the effectiveness of educational activities and messages.

This research will provide the foundation for the Love Food Hate Waste program to improve the community's awareness of the environmental, economic and social impacts of food waste, the key solutions to the problem and to assist in evaluating the effectiveness of the program.

The survey was undertaken by Woolcott Research and this report presents the findings of the benchmark component of the research.

Key project tasks

The research covered each of the main areas outlined below.

Awareness and knowledge

This study provided benchmarks of the current level of awareness about the issue of food waste and, more specifically, assessed current knowledge of its impact and the steps that can be taken to reduce food wastage.

Attitudinal shifts

This study incorporated some projected questioning to provide realistic benchmarks on current attitudes in order to measure shifts resulting from the program.

Changes in behaviour

Accurate measurement of true behaviour regarding food waste avoidance activities is extremely difficult to achieve via self reporting, particularly given the propensity for respondents to generally overestimate 'good' behaviours and underestimate 'bad' behaviours. This study used questionnaire techniques that allowed for more considered estimates rather than simply claimed behaviours.

Specifically, the measures incorporated included:

- current household measures undertaken including menu planning, shopping to a list, measuring portion sizes, food storage practices, use of leftovers and home composting and worm farming
- perceptions of the behaviours of other 'typical' households
- reasons for throwing away food.

Current volume and financial value of food waste

The volume of food wasted at a household level was sought to estimate the volume and dollar amount of food wasted by NSW residents, and to identify those segments that are throwing away large amounts of food. This average dollar amount was expected to be an area that respondents may have difficulty in reporting accurately.

To address this risk, the concept of food waste was introduced first to inform respondents that there are different types of food waste, such as unavoidable (food that could not have been eaten, e.g. vegetable peelings, bones) and avoidable waste (i.e. food that could have been eaten if it had been better managed e.g. was not allowed to go off, not been past its use by date or that was left by individuals who choose not to eat it). Respondents were then asked to estimate how much they threw out in an average week, first in a volume sense (e.g. a lot, a little) and then in an approximate volume (L) and dollar amount ($). Visual cues were also used to aid in the estimation process.

Motivations and barriers

It is important to understand the key drivers or motivators for food management at home as well as the barriers to adopting appropriate food waste avoidance practices. As a result, a series of questions were included in the survey that required respondents to either agree or disagree with a number of barrier and driver statements.

Awareness and source of information/communication

To assess the sources of information about food wastage, the survey ascertained where people were currently getting information (e.g. TV, magazines and websites), which sources they would use if they required information of this nature and also the perceived credibility of these information sources.

Segmentation

A range of demographic, behavioural, attitudinal and knowledge questions were asked that allowed segmentation at a number of different levels. For example, simple behavioural segments were used (i.e. the profile of 'high', 'medium' and 'low wasters' by volume).

Research methods

This quantitative research comprised an initial population definition study followed by the core research component of online interviewing.

While telephone and online interviewing methods both have their strengths and weaknesses, it is thought that telephone interviewing can still offer the most accurate results (depending on the type of study).

However, telephone interviewing was seen to have two key limitations for this research. Telephone interviewing tends to under represent younger respondents (who were believed to be a key priority for the study), and it completely excludes those in households without a fixed landline telephone (an increasing proportion). Finally, telephone interviewing does not allow for the visual display of program material and relies instead on descriptions of material being read out to respondents.

For this research study, it was decided that an online approach would be most suitable. To enhance the accuracy and representativeness of this online approach, a population definition study that involved telephone interviewing (primarily) with a small top-up of households without landlines (via an online approach) was completed. This provided the most accurate measure of who the true food decision makers were.

Population definition study

The population definition study supplemented a telephone study with a specified number of online interviews with respondents who did not have a fixed landline. The steps involved are outlined below.

Telephone interviewing via our national omnibus – Omni Access

Several questions were included over two rounds of telephone interviewing in NSW (n=665). These questions determined whether respondents were responsible for food purchasing, preparation, and/or storage within their household.

Online top-up

A series of online interviews were conducted among individuals from NSW households without a fixed landline telephone. Online respondents were sourced from the Research Now Panel; an international online data collection and panel specialist. Research Now panels are compiled through multiple source recruitment, including a wide range of personalised email activities, affiliate networks and targeted website advertising. Members are constantly recruited to ensure new respondents are available for tracking projects. In addition, panels are only used for market research purposes and panellists are given low level incentives for participation. Research Now also carefully manages the panels by having personal contact with panellists, carefully selecting members to take part in specific surveys to ensure they are not over-contacted and monitoring panellist behaviour and satisfaction.

Table 1: Total sample for population definition study (n=number of participants)

Age range	Phone – Omni Access n=	Online – Research Now panel n=	Total n=
16 – 24	71	27	98
25 – 39	175	37	212
40 – 54	200	11	211
55+	234	-	234
Total	680	75	755

The population definition study allowed for the accurate definition of household decision makers in terms of age, sex, location, income and household type. Once the population was defined, this definition was used to properly ‘weight’ the core research component (conducted exclusively online).

Core research

The core research component involved an online study with a sample of 1,200 interviews sourced from the Research Now panel, with quotas applied for some demographic variables. Respondents were screened to ensure that they satisfied the food purchasing, preparation or storage decision making criteria (see Appendix 1). The interview was extensive and the average interview length was approximately 20 minutes.

The online methodology allowed for robust and cost effective implementation for the initial benchmark survey. This method also has the clear advantage of allowing for the inclusion of program materials, such as creative collateral including print advertisements and posters during the tracking survey.

Due to the importance of certain age brackets and life stage groups (as identified in previous research), set quotas were applied for broad age groups to ensure that the end sample allowed for detailed analysis at this level. Metropolitan, regional and rural quotas were also enforced to ensure that there was adequate coverage of each location type.

Table 2: Quotas for specific age brackets

Age range				Total
16–24	25–39	40–54	55+	
300	300	300	300	1,200

The population definition results were used to 'post-weight' the results to ensure that the total sample was as representative as possible of the NSW population for food purchasing, preparation and storage decision makers aged 16 years and older.

The questionnaire in the main fieldwork component was designed to address three key areas of enquiry:

- *attitudes* towards the environment, waste and food waste
- *knowledge* of food waste in NSW
- *behaviours* regarding food and food management at the household level.

Respondent profile

Key measures were compared to the NSW population (as measured by the Australian Bureau of Statistics (ABS)) to ensure a representative sample. The online study is closely matched to the NSW population (Table 3).

Table 3: Respondent profile compared to the NSW population

	NSW population* %	Food waste study %
Age		
18–24	15	13
25–39	27	28
40–54	26	28
55+	31	31
Gender		
Male	49	50
Female	51	50
Work status		
Paid work/employed	60	53
Retired	*	16
Student	*	10
Home duties	9	10
Unemployed	4	6
Other	*	4
Education		
Some secondary school	28	16
Completed secondary school	16	23
Trade/technical qualification	23	30
University/college diploma, degree or higher	33	30
Household income		
Less than $20,000		6
$20,000 to $39,999		8
$40,000 to $59,999		17
$60,000 to $79,999		11
$80,000 to $99,999		12
$100,000 to $149,999		6
$150,000 to $199,999		2
$200,000 or more		1
Prefer not to indicate		38

*Based on 2006 Australian Bureau of Statistics Census

Background to the issue of food waste

Food waste – a complex environmental problem

Recent waste audits conducted by local councils indicate that food is the single largest component of the domestic kerbside waste stream in NSW (almost 38% by weight). Approximately 800,000 tonnes of food waste (or 315 kg/household/year) is now disposed to landfill across NSW every year (DECC, 2009).

The decomposition of food waste (together with other organic materials) in landfill is a major contributor of greenhouse gases across the state. National greenhouse inventory data suggests that landfills contribute to 2% (or ~11MT CO_2-e/annum, after gas capture) of Australia's total greenhouse gas emissions (Department of Climate Change, 2009). For every tonne of food waste diverted from landfill, 0.9 tonnes of CO_2-e is saved (Recycled Organics Unit, 2008).

Food waste can also have a major impact on landfill and how these sites affect the surrounding environment. The breakdown of food waste in landfill releases nutrients, which can migrate out of landfill sites and impact on groundwater reserves and waterways.

In addition, wasteful consumption of food can have a large impact on the greenhouse and environmental impact of Australia's food supply system. Soils, water, natural resources and energy inputs are used to produce, harvest, transport, process, package, distribute and market food products. When food is wasted, the energy and resources invested by the supply chain to deliver food to consumers is lost.

In Australia, the food system is estimated to be responsible for approximately 23% of Australia's total greenhouse gas emissions, making it the second largest emissions-generating activity after power stations (Garnaut, 2008). This includes direct emissions from agriculture and those attributed to energy, transport, food production, processing and distribution. Agriculture is the biggest component of the food system accounting for about 16% of total national emissions (NGGI, 2009).

In 2005, the Australia Institute released a report detailing the national figures for wasteful consumption across Australia (Hamilton, Denniss and Baker, 2005). This report was updated in late 2009 with results indicating that Australians are throwing away $5.2 billion dollars worth of food each year (Baker, Fear and Denniss, 2009). Additionally, The University of Western Sydney reported that Sydney residents throw away in value as much as Sydney farmers receive in income (O'Neil, James and Crabtree, 2009).

Given the data above, more sustainable practices around purchasing, preparation and consumption of food will provide major environmental and greenhouse benefits to the NSW and Australian community.

Love Food Hate Waste

The Office of Environment and Heritage is developing a Food Waste Avoidance program for the NSW community that will initially address household food wastage and later address food wastage in the Commercial and Industrial (C&I) sector. The key message is '*Love Food Hate Waste*'. The Love Food Hate Waste program aims to raise awareness about the environmental and financial impacts of food waste in NSW and the amount of 'good' food being sent to landfill. By promoting easy and practical solutions for buying, cooking and storing food, Love Food Hate Waste will help the NSW community to avoid food waste, save time and money, and reduce our impact on the environment.

This household program will focus on making it easier for consumers to avoid food waste by:

- engaging directly with consumers
- developing clever and engaging marketing
- providing accessible help and encouragement to the target audiences.

Love Food Hate Waste program objectives

The main objectives of this household-level program are to:

- reduce the volume of food waste generated and disposed at the household level
- influence and support new habits and behavioural norms with a shift towards more efficient approaches to food purchase, storage, preparation and consumption (and thus avoidance of food wastage).

The program aims to achieve these objectives through:

- increased community knowledge about the environmental, social and economic impacts of food wastage
- increased community concern about food wastage and awareness that urgent action is needed to reduce the amount of food waste generated and sent to landfill
- increased knowledge and skills in best household practices in food purchasing, storage, preparation and use of leftovers
- promotion of a range of simple, benefit-driven, behaviours for individuals that support avoidance of food wastage in the home. A secondary message will address what to do with unavoidable food waste through home composting and worm farming
- support for institutional and inter-generational transfer of knowledge and skills in more efficient food purchasing, preparation and consumption
- providing a platform for increased knowledge and awareness of food wastage in business
- gaining commitments from business to reduce and recover food waste.

The Office of Environment and Heritage's program in NSW will focus on five key areas of behaviour change. These areas include:

- menu planning
- shopping to a list
- correct storage
- portion control
- using leftovers.

For more information on the Love Food Hate Waste program please visit lovefoodhatewaste.nsw.gov.au

Research notes

Total sample size

In figures with subgroup differences, the individual groups may not sum to the total sample size. Some groups do not fit into pre-defined categories. For example, some respondents preferred not to answer questions about income or did not know their household income. Additionally with household type, there were a range of other, smaller household types into which respondents had classified themselves that were not large enough to report on as individual groups (such as single parent with children, de facto, retired couple, couple with no children and couple who have children that have moved out). Given that this group of 'others' is not homogenous, they are not reported on in the figures. However, this data does form part of the broader analysis.

Rounding

Percentages are given to the nearest whole number. In some charts and tables, this may result in totals adding to slightly more or less than 100%, due to rounding. This also means that combined figures reported in the text may differ slightly from the sum of the rounded figures shown in charts.

Significant differences

Where subgroup differences are presented, results that are significantly higher than the total (at the 95% confidence level) are denoted in bold red, and those results that are significantly lower than the total are highlighted with a darker background.

Throughout this report, certain demographic segments are referred to. One segment of particular interest is:

Culturally and linguistically diverse (CALD) respondents

This segment is made up of those respondents who identified that they spoke a language other than English (as a main or second language).

68% of the CALD respondents spoke English as their main language at home (compared to 93% of the total sample, Table 4), while almost one third (31%) indicated that English was the second language spoken at home (Table 5).

11% of CALD respondents identified that they spoke Cantonese as their main language at home. A further 10% indicated that Mandarin was their second language spoken at home.

Table 4: Main language spoken at home

Language	Total (n=1,200) %	CALD (n=263) %
English	93	68
Cantonese	2	11
Mandarin	1	3
Arabic	0	2
Italian	0	2
Greek	0	2
Vietnamese	0	1
Spanish	0	0
Hindi	0	1
Tagalog	0	0
Gujarati	0	1
Indonesian	0	2
Polish	0	0

Table 5: Second language spoken at home

Language	Total (n=1200) %	CALD (n=263) %
No other language	79	1
English	7	31
Cantonese	1	5
Mandarin	2	10
Arabic	2	8
Italian	1	2
Greek	1	5
Vietnamese	0	0
Spanish	0	2
Hindi	0	1
Tagalog	0	2
Gujarati	1	5
Indonesian	0	1
Polish	1	6

Survey findings

Perceived importance of food waste

To assist OEH in developing the Love Food Hate Waste program, it was necessary to investigate:

- general levels of concern about environmental problems
- current perceived levels of general garbage, and in particular food waste (in relation to other types of household waste)
- perceived value of food wasted for an 'average NSW household'
- disposal methods of uneaten food in households.

Section snapshot

The environment

An overwhelming majority (93%) of respondents indicated at least some concern for environmental problems. The areas of most concern were concern for future generations (23%) and the maintenance of ecosystems (20%).

Household waste

Almost half (49%) of respondents indicated that they spend money on food that is 'rarely' or 'never used'. Despite food being the most prevalent form of the six types of household waste listed, the level of concern over wasted food was lower than concern about wasted electricity and interest paid on credit cards (with just 47% of respondents indicating their concern over wasting food).

Respondents were asked about their levels of wastage and 16% indicated they threw out more general garbage than they should and 14% indicated they threw out more food than they should. The majority of respondents (57%) believed they threw out 'very little' food.

However, when asked to estimate how much an 'average NSW household' would spend on food that is purchased but not eaten each year, respondents estimated an average of $620 per year. When respondents were asked to estimate the value of food purchased but not eaten in their household, on average each household was throwing away $1,036 worth of edible food. This is a key area for the Love Food Hate Waste program to address, as respondents do not currently perceive their own personal level of food waste to be excessive, yet estimated other households to be wasting large amounts of food in financial terms.

Disposal methods

Most respondents (73%) perceived packaging to be the largest type of waste in the average NSW household's garbage bin (by weight), with a small minority (13%) identifying it correctly to be food.

The most common disposal method for uneaten food was the household garbage bin, with 46% of respondents indicating this is where they dispose of 'all' or 'most' of their food.

Detailed section findings

Concern about environmental problems

Overall concern about environmental problems

Q1a. In general, how concerned would you say that you are about environmental problems?

Respondents were asked to indicate their level of concern on a five-point scale. The vast majority (93%) of respondents expressed at least some concern for environmental problems (16% claiming they were concerned a great deal, 45% a fair amount and 32% a little). Only 1% claimed they were not at all concerned about environmental problems.

Those in single person households and those who had not completed secondary school were less concerned about environmental problems (87% and 89% respectively indicating at least some concern). University-educated respondents were significantly more likely to be concerned about environmental problems (97% having at least some concern).

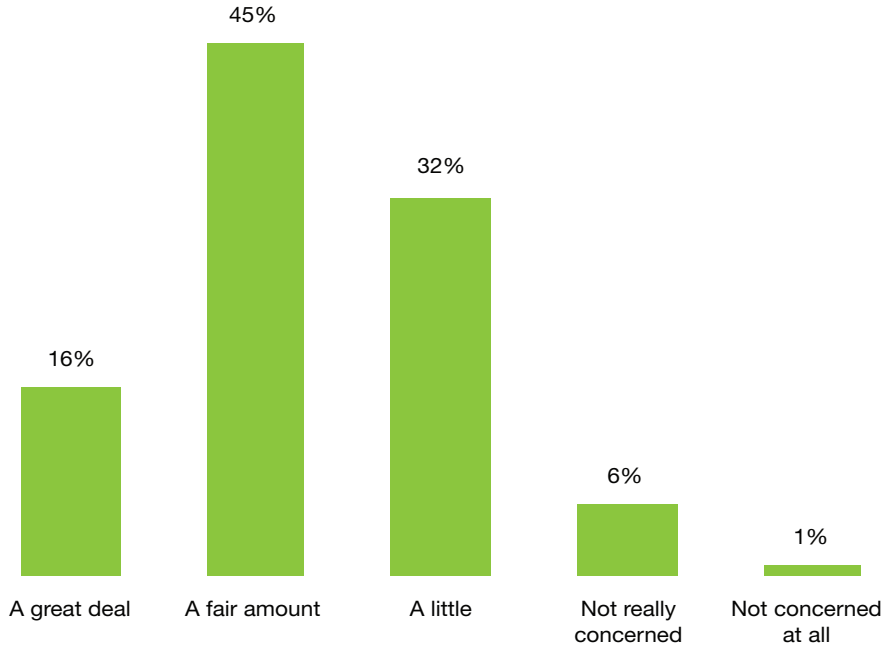

Figure 1: Level of concern about environmental problems
Base: all respondents (n=1,200).

Major reason for concern about environmental problems

Q1b. Please indicate which one (1) of the following you are most concerned about? (Six categories presented).

Those who indicated some level of concern about environmental problems were asked to indicate which of six possible reasons best explained what they were concerned about.

Of the options presented, concern for future generations was the most common response (23%). Maintaining ecosystems (20%) and quality of life (18%) were the second and third most frequent responses. The issues of lesser concern were the health effects of pollution (16%), availability of resources we consume (13%) and long-term economic sustainability (10%).

There were some significant differences between men and women over the environmental aspect of most concern. Concern for future generations was of greatest concern for women (27% compared to 22% of men), followed by maintaining ecosystems (22% compared to 20% of men). Concern for quality of life was of greatest concern for men (21% compared to 16% of women), followed by the availability of the resources we consume (15% compared to 10% of women).

Respondents from culturally and linguistically diverse (CALD) backgrounds were most concerned about the health effects of pollution (26% compared to 16% of all respondents). Furthermore, CALD respondents were also more concerned about quality of life (25% compared to 18% of all respondents).

Respondents who had not completed secondary school were most concerned for future generations (32% compared to 23% of all respondents).

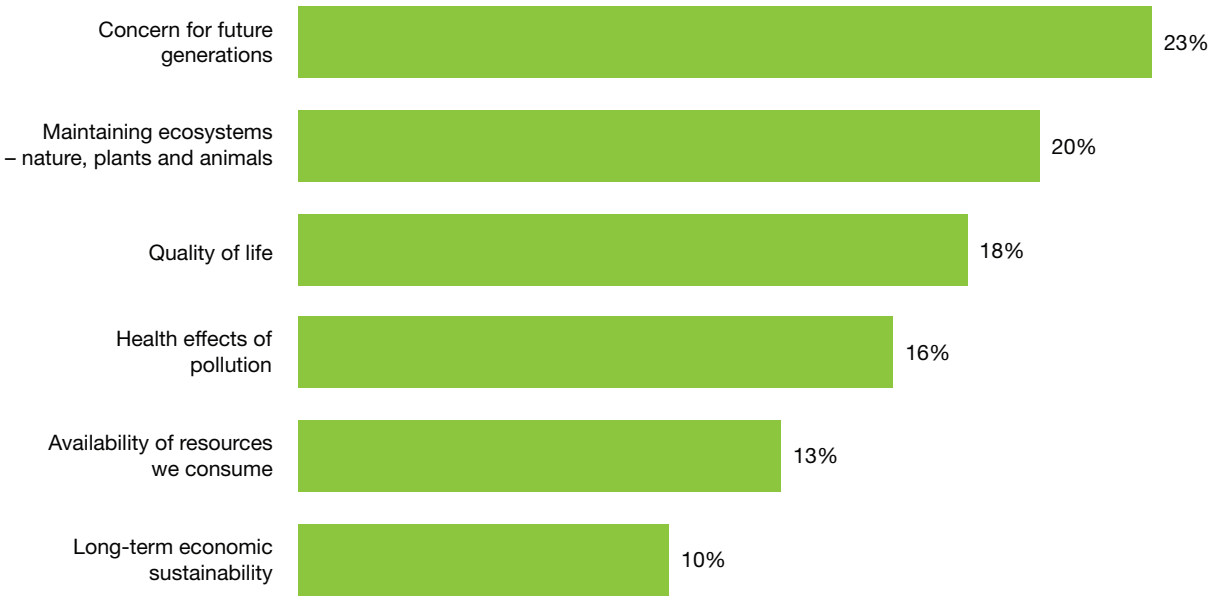

Figure 2: Major reason for concern about environmental problems
Base: all respondents (n=1,200).

Areas of household wastage

Claimed areas of household wastage

Q2a. People sometimes spend money on household goods and services that are never or rarely used. Please indicate whether or not your household ever does any of the following (Five categories presented).

Respondents were asked which goods and services their households spent money on that were rarely or never used. Food was the most frequent response and almost one half (49%) indicated that they wasted food within their household (Figure 3). Electricity (42%) was the next greatest area of wastage followed by interest on credit card purchases (39%), clothes and other personal items (29%) and books/magazines/ CDs/DVDs (28%).

Women were significantly more likely to identify food as an area of wastage in their household (54%, compared to 49% of men). This trend was also evident for families with children (55%) and households with an income of over $100,000 per annum (60%).

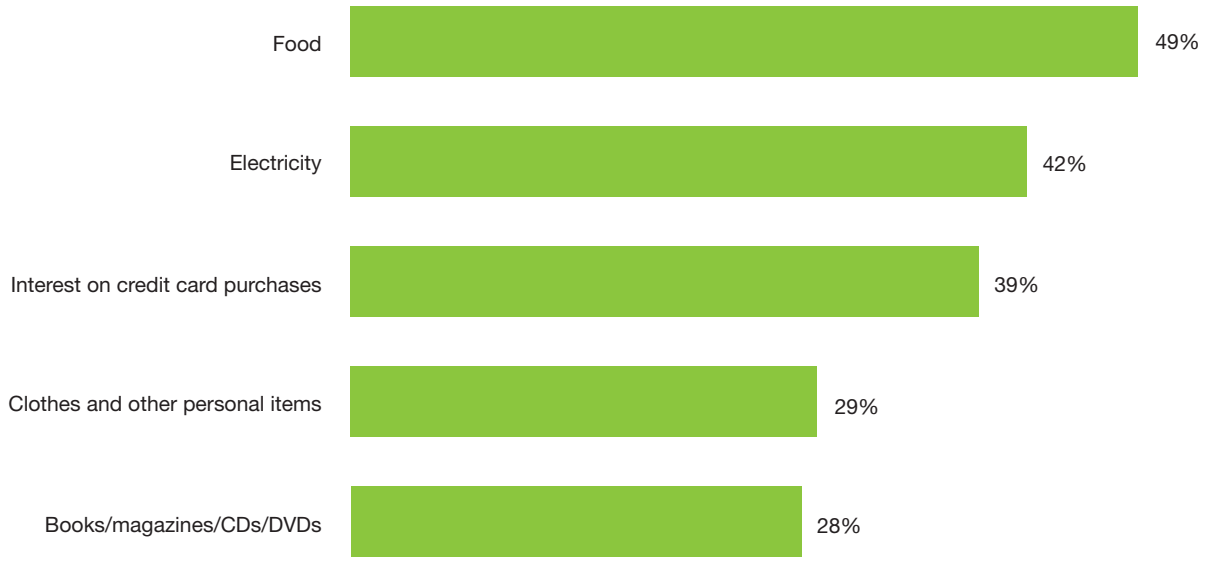

Figure 3: Goods purchased but rarely or never used
Base: all respondents (n= 1,200).

Level of concern over areas of household wastage

Q2b. And how concerned would you say that you are about each of the following? (Five categories presented).

Respondents who indicated that they did purchase items but then rarely or never used them (within the specified categories) were then asked how concerned they were about the areas of wastage. Although respondents wasted more food than other listed goods and services, they were more concerned about waste in other areas. Money spent on interest on credit card purchases and electricity were of highest concern (66% and 63% respectively of this group were concerned either 'a great deal' or 'a fair amount'). In comparison, only 47% of those who bought food that was not used indicated that they were concerned to the same degree.

Respondents who were concerned 'a fair amount' about environmental problems were significantly more likely to be concerned 'a great deal' or 'a fair amount' about wasting food (56% compared to 47% overall). Respondents who were only 'a little', 'not really' or 'not at all' concerned about environmental problems were significantly less likely to be concerned about food wastage 'a great deal' (39%) or 'a fair amount' (22%).

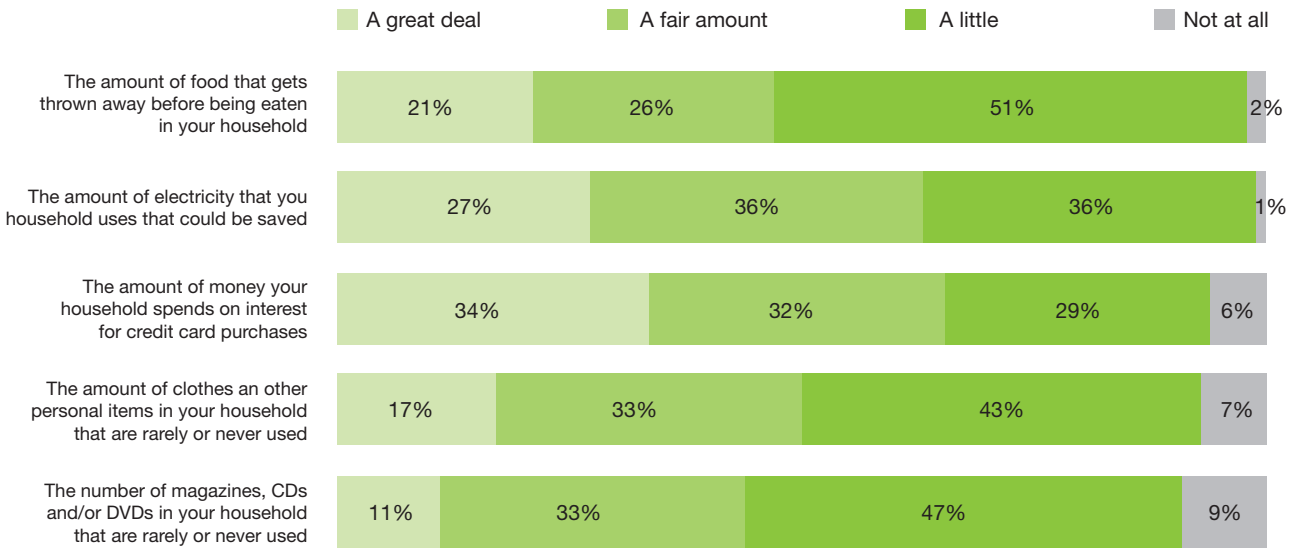

Figure 4: Level of concern about goods that are rarely or never used
Base: all respondents (n=1,200).

The survey assessed the levels of concern about food wastage by age. Respondents aged 18–24 years were the most concerned (57% at least 'a fair amount' of concern), followed by respondents aged 55 years or more (49% at least 'a fair amount' of concern). Among 25–39 year olds and 40–54 year olds, 44% expressed the same degree of concern (Figure 5).

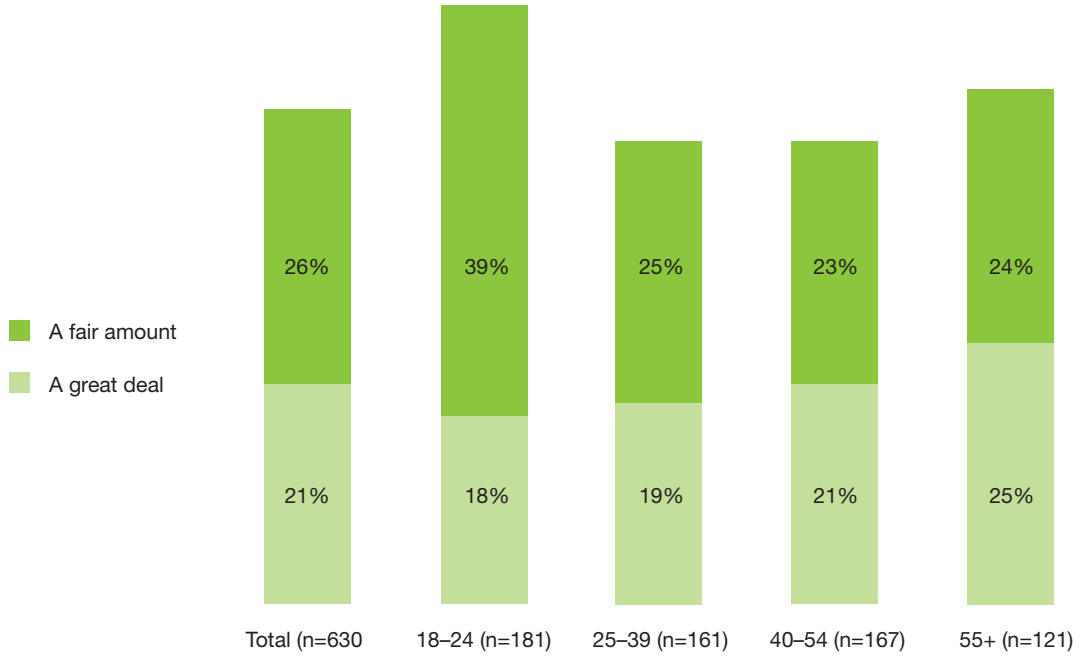

Figure 5: Level of concern about food waste by age
Base: respondents who admitted to food wastage (n=630).

Perception of the average household garbage bin

Q5. What do you think is the largest type of waste in the average household garbage bin? (Five categories presented.)

Respondents were asked to identify the largest type of waste in the average household garbage bin (by weight). Almost three quarters (73%) of respondents selected packaging. Despite almost one in two respondents

previously acknowledging that they wasted food and 47% of these claiming to be concerned about the amount of food they wasted, just 13% correctly identified that food was the largest component of the average household bin (Figure 6).

Sydney respondents were less likely to believe that packaging made up the largest waste type (68%) as were CALD respondents (60%). 21% of CALD respondents believed that food was the largest type of waste in garbage bins.

Acknowledgment of food being the largest type of waste tended to trend downwards with age. Respondents aged 18–24 years were more likely to acknowledge food as a larger type of waste (23%), than 25–39 year olds (19%). Respondents aged 40–54 years were significantly less likely to see food as the biggest contributor to household waste (9%) as were those over 55 years of age (8%).

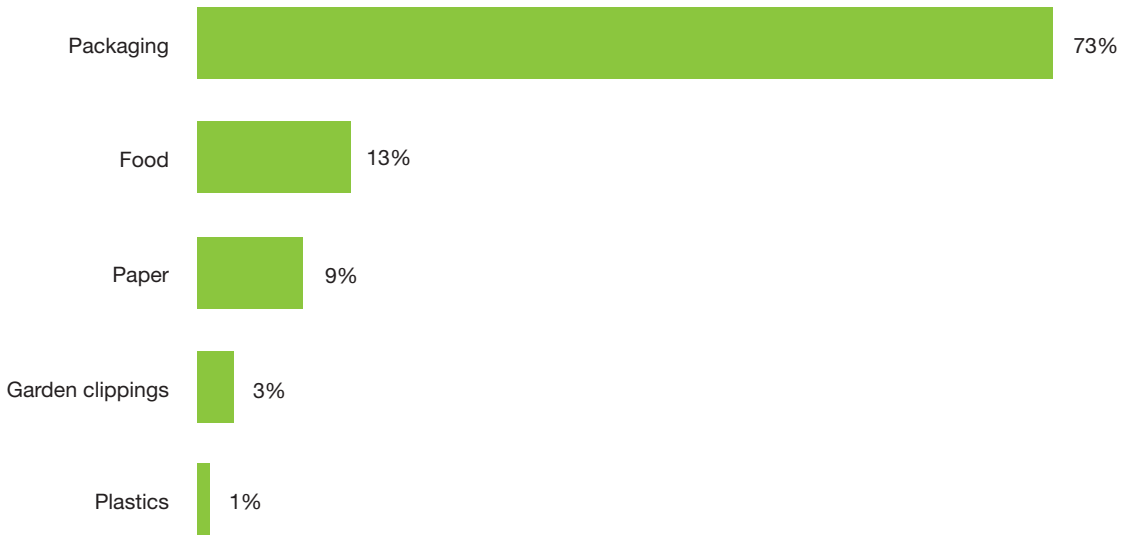

Figure 6: Perceptions of the average household garbage bin
Base: all respondents (n=1,200)

Amount of garbage and food claimed to be thrown away

Q3. How much general garbage including recycling, furniture, clothing and other types of unwanted materials do you think your household usually throws away?

Q4. How much uneaten food would you say that your household usually throws away?

Using a five-point scale from 'much more than you should' to 'none', respondents were asked how much general garbage (including recycling, furniture, clothing and other types of unwanted materials) as well as food was thrown away in their household (Figure 7).

The amount of general garbage thrown out by respondents' households was not perceived to be particularly excessive (52% indicated they throw out 'a reasonable amount' and 16% indicated they threw out 'more' or 'much more' than they should). The perceived amount of food thrown out was considerably less, with many respondents (57%) indicating that they threw out 'very little' food. Only 14% of respondents indicated they threw out 'more' or 'much more' food than they should. Additionally, 9% reported they threw out no food at all.

Respondents aged 18–24 years were more likely to admit that they threw out 'more' or 'much more' general garbage than they should (24% compared to 16% of all respondents); as were 25–39 year olds (21%). In contrast, older respondents (those aged 55 years or more) were less likely to believe they threw out too much general garbage (11% indicating they threw out 'more' or 'much more' than they should).

CALD respondents were also more likely to acknowledge that they throw out 'more' or 'much more' general garbage than they should (22%), as were families with children (23%) and those with a household income of more than $100,000 per year (25%). 29% of respondents who did not complete secondary school admitted to throwing out more general garbage than they should.

Although many demographic groups admitted to wasting more general garbage than they thought they should, the perception of how much food was thrown out was similar across the sample. There were some differences by household type, with families with children being more likely to think they wasted more food than they should (17% compared to 14% for the total). By comparison, just 10% of those in single person households thought they wasted more food than they should.

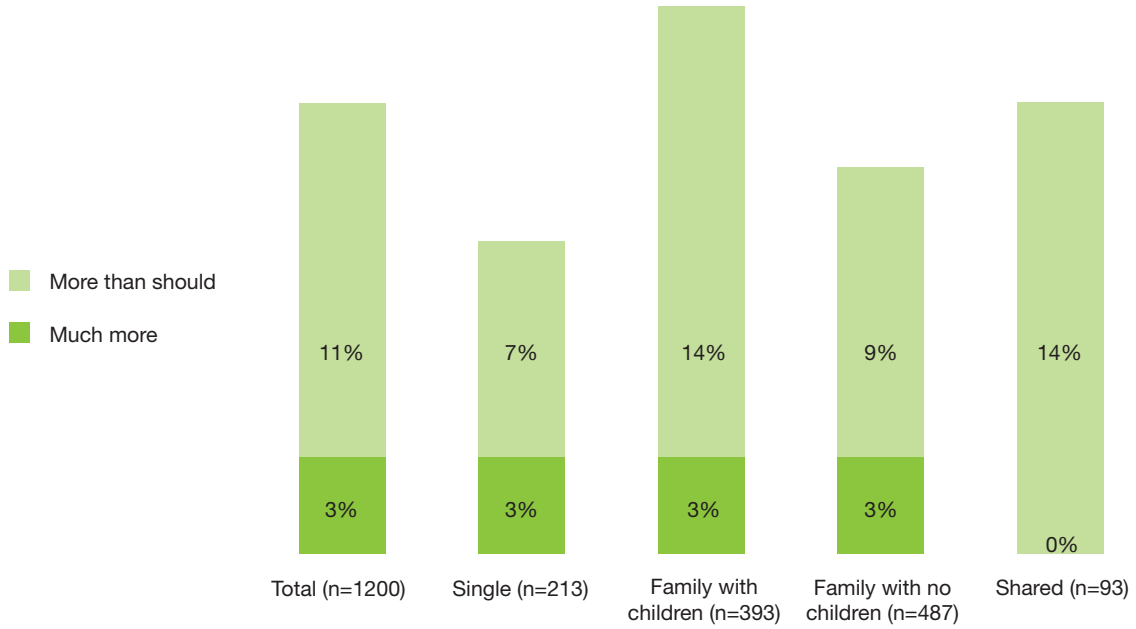

Figure 7: Level of household food waste by household type
Base: all respondents (n=1,200).

Estimated financial value of food wasted by NSW households

Q6. Approximately how much would you estimate that the average NSW household spends on food that is purchased but never eaten each year?

Respondents were asked to give an estimate of how much they felt that the average NSW household spends, on an annual basis, on food that is purchased but never eaten. The mean value of these estimates was $620.30 per household per year (Figure 8).

Although 49% of respondents believed that their own household spent money on food that was rarely or never eaten, only 47% of these were concerned about wasting food. However, when asked about an 'average NSW household', participants indicated a relatively large amount of money was being spent on food that was never eaten. This may mean that although consumers are aware that a problem exists, they may not recognise their personal contribution to the problem or may simply feel that 'others' waste more than they do.

Those living in large country towns estimated that a significantly higher amount of money was being spent by NSW households on food that was not eaten ($735). Those aged 25–39 years, families with children and higher-income earners also estimated significantly higher average amounts of money were being wasted ($685, $686 and $720 respectively).

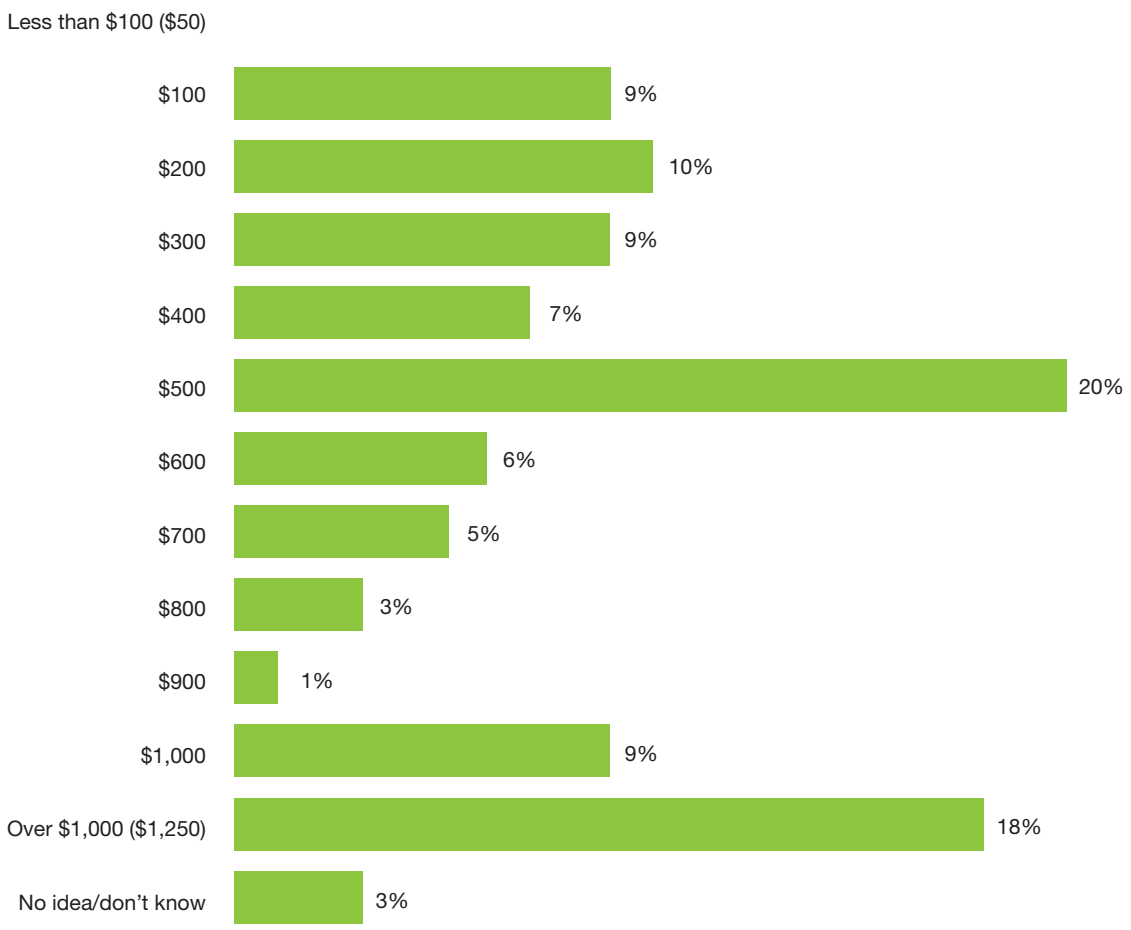

Figure 8: Estimated financial value of food wasted by NSW households
Base: all respondents (n=1,200).

Disposal methods for uneaten food

Q8. How much of your uneaten food (such as vegetable peelings, plate scrapings and spoiled food, before and/or after preparation) is disposed of in the following ways? (Seven categories presented).

Respondents were asked to indicate methods they used to dispose of food waste and to estimate the quantities disposed of in different ways (Figure 9). The most common method of disposal for uneaten food was the household garbage bin, with 20% indicating they dispose of 'all' of their food waste in this manner. A further 26% indicated they dispose of 'most' of their food waste in the garbage bin. The next most popular disposal method was feeding uneaten food to pets and animals, followed by using a home compost or worm farm.

Most respondents aged 18–24 years were significantly more likely to dispose of 'all' or 'most' of their uneaten food in the household garbage bin (55% compared to 46% of all respondents), as were those in single person households (58%).

Higher income households were more likely to feed animals and pets some of their uneaten food (16% give pets/animals 'all' or 'most' of their uneaten food compared to 10% overall), as were 18–24 year olds (16%) and those living in small country towns and rural areas (21%).

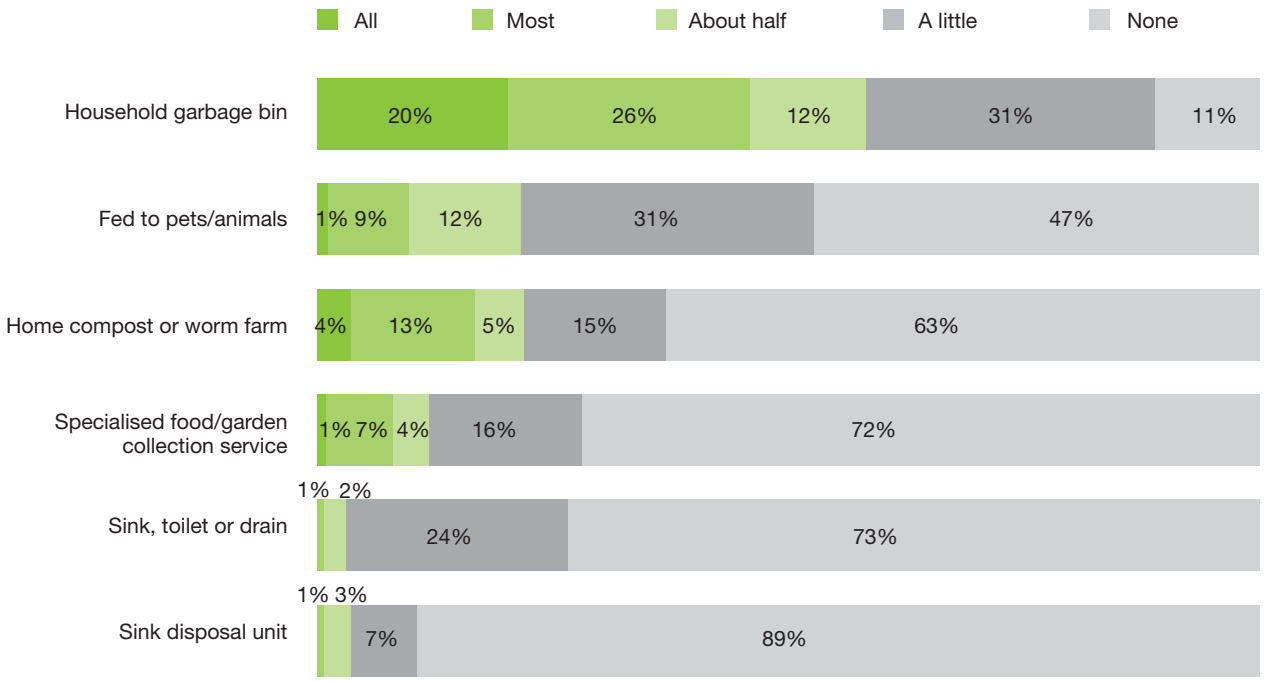

Figure 9: Disposal methods for uneaten food
Base: all respondents (n=1,200).

Knowledge of food waste

To establish current levels of knowledge about food storage and wastage, respondents were asked a series of questions in relation to food labels (e.g. 'use by' and 'best before' dates) and whether they considered different types of food waste to be avoidable or unavoidable. These results provide a benchmark level of knowledge that will be measured again after the Love Food Hate Waste program has been implemented.

Section snapshot

Food labels

Most respondents (70%) correctly identified that food is still safe to eat after the 'best before' date as long as it is not damaged, deteriorated or perished. Fewer respondents (64%) correctly understood that 'use by' dates mean food must be eaten or thrown out by this date. While the majority of respondents in both cases identified the correct definition for these labels, it is an area that Love Food Hate Waste program could address, as there is still some confusion surrounding the definitions.

Avoidable and unavoidable food waste

When asked whether certain types of food waste were avoidable or unavoidable, respondents correctly identified 5.8 out of 9 food types on average. It was widely accepted that unfinished drinks, out-of-date packaged food, old frozen food and spoiled fresh produce were avoidable. However, there was some confusion over scraps that were left on a plate after a meal, with 37% of respondents defining scraps as unavoidable.

Detailed section findings

Knowledge relating to food labels

Q7a.In regard to food labels, which of the following do you think best describes what is meant by the 'use by' date?

Q7b.And which of the following do you think best describes what is meant by the 'best before' date?

To investigate knowledge of 'best before' and 'use by' dates, respondents were shown four statements and asked to indicate which statement best described each date type. In regard to 'use by' dates, 64% of respondents correctly understood that food must be eaten or thrown out by this date (Table 6). Most respondents (70%) believed that 'best before' dates meant that foods were still safe to eat after this date as long as they are not damaged, deteriorated or perished, whereas 23% of respondents thought that food should be eaten or thrown away by this date.

Older respondents (aged 55 years or more) were less knowledgeable about 'use by' dates (with 43% nominating the correct option, compared to 75% of 18–24 year olds) and were more likely to treat 'use by' dates as 'best before' dates.

The reverse trend was evident in relation to 'best before' dates, where respondents aged 55 years or older were more knowledgeable (77% 'correct' compared to 63% of 18–24 year olds), suggesting that some younger respondents were treating 'best before' dates as 'use by' dates. There is therefore, the opportunity for educational messaging around date labels in order to minimise unnecessary waste.

Families with children were more knowledgeable about 'use by' dates, with 72% indicating that food must be thrown away by this date (compared to 64% of all respondents).

CALD consumers had less knowledge of 'best before' dates, with 59% believing that foods are still safe to eat after this date as long as they are not damaged or deteriorated (compared to 70% of all respondents). More than one third (38%) of CALD consumers indicated that they believed food should be thrown out after the 'best before' date (compared to 23% of all respondents).

Table 6: Description of 'use by' and 'best before' dates

Response	'Use By' %	'Best Before' %
Foods must be eaten or thrown away by this date	64	23
Foods are still safe to eat after this date as long as they are not damaged, deteriorated or perished	29	70
Foods must be sold at a discount after this date	4	4
Food tastes best before this date	-	1
Other	3	2

Base: all respondents (n=1,200).

Perceptions of avoidable and unavoidable waste

Q9. If each of the following foods were to be thrown into the garbage bin at home, which would you consider to be waste that could be avoided, or waste that could not be avoided?

Waste that could be avoided = waste that would not have been produced if the food was better managed.

Waste that could not be avoided = waste that would be produced regardless of how well the food was managed.

Respondents were asked to categorise a variety of food types to identify what NSW residents believe to be 'avoidable', 'unavoidable' food waste or 'not waste at all'. The top five 'avoidable' wastes were seen to be unfinished drinks (76% of respondents indicating they were 'avoidable'), out-of-date packaged food (75%), old frozen food (75%), spoiled fresh produce (74%) and unserved portions left after a meal (72%) (Figure 10).

There was confusion over scraps left on the plate after a meal with 47% of respondents indicating that this was 'avoidable' waste, 37% indicating it was 'unavoidable' and 17% not considering it to be waste at

all. While unserved portions were largely considered 'avoidable', this is a potential area for education as consumers indicated that if food has been served and some is left on the plate they cannot avoid throwing it out.

Food waste that was considered largely 'unavoidable' included fruit and vegetable peelings, tea bags and coffee grinds as well as meat bones (with 46%, 55% and 56% respectively indicating they were 'unavoidable'). However, a number of respondents did not consider these items to be waste. This response may be as a result of respondents:

- using alternate disposal methods such as a compost bins and worm farms
- feeding these items to animals
- choosing not to consume this type of food (e.g. meat and coffee)
- using vegetable peelings to make stock
- purchasing only pre-packaged or ready-to-eat fruit and vegetables (e.g. frozen foods).

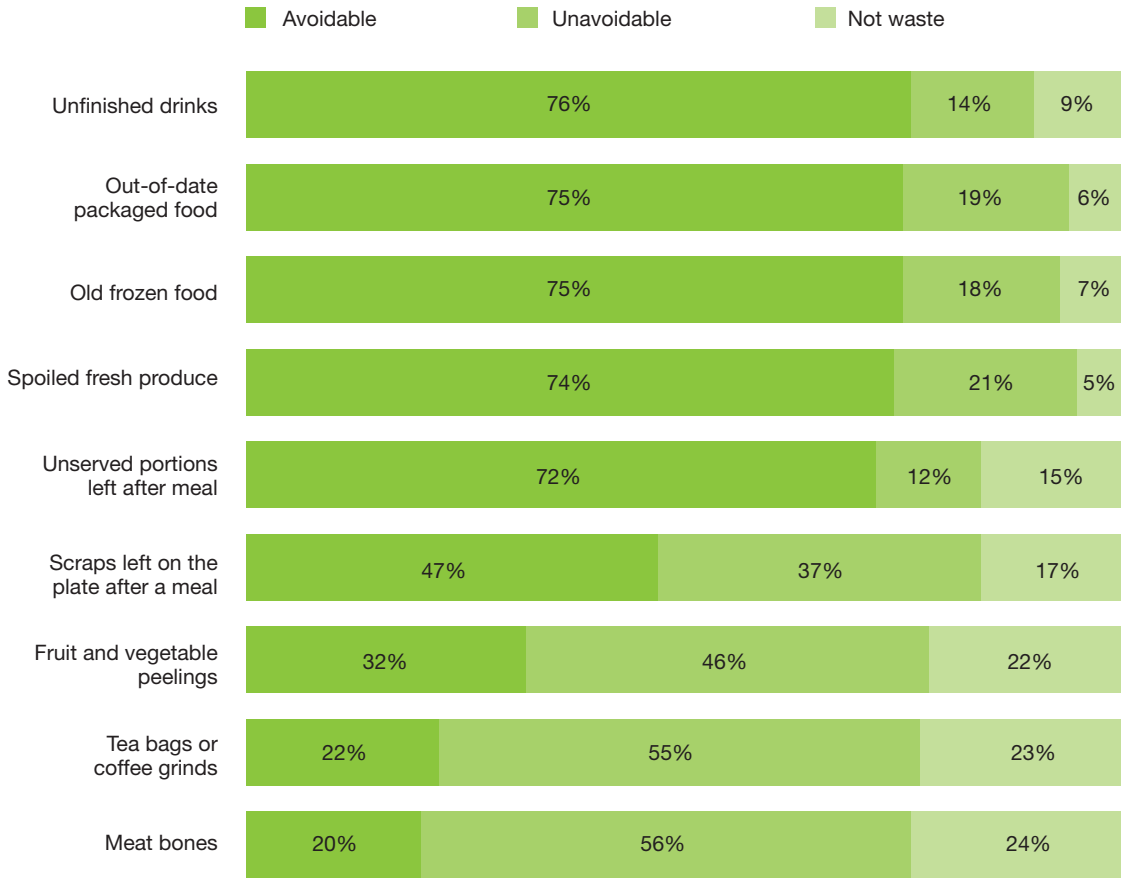

Figure 10: Perceptions of what is avoidable or unavoidable food waste
Base: all respondents (n=1,200).

To easily determine knowledge differences by sub-groups, responses were also converted into scores (based on correct or incorrect responses) (Figure 11).

The mean number of correct responses was 5.8 out of a possible 9. For respondents aged 25–39 years it was slightly higher at 5.9. Families with children were marginally higher than the total sample at 6.0 correct reponses. Families without children had a slightly lower average score (5.5).

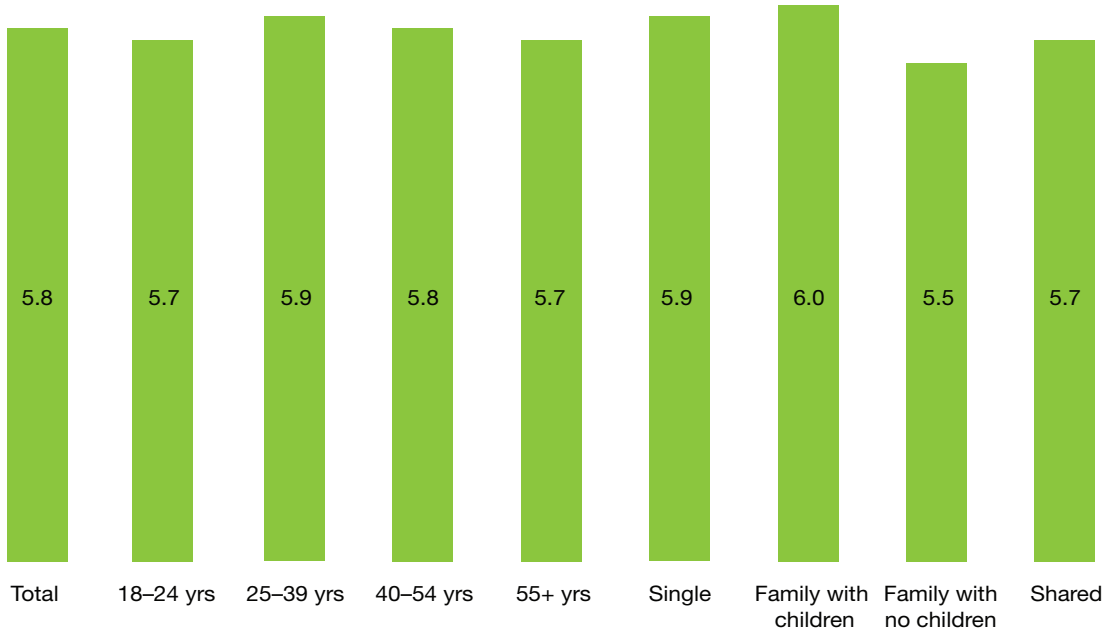

Figure 11: Knowledge of avoidable and unavoidable types of food waste
Base: all respondents (n=1,200).

Attitudes towards food waste

To track any changes in attitudes towards food waste, it was important to benchmark current attitudes. This section outlines respondents' attitudes towards food related issues, such as giving food to pets and animals, the environmental impacts of food waste, who wastes food and why and their attitudes towards food cooking and storage.

Section snapshot

Food for pets

One important attitude that emerged from the study is that more than three in four respondents (76%) believed that food which could have been eaten by people is not wasted if it is fed to pets or composted.

The environment

Two thirds of respondents agreed that the energy, water and nutrients that are used to grow, process and transport food are lost if the food is purchased but not eaten. 46% of respondents believed that food waste contributed to climate change. Given that most respondents previously expressed at least some concern for environmental problems (93%), the link between food waste and climate change could be used to engage and educate the community.

Food wasters

Many respondents (65%) felt that disorganised and lazy people wasted more food and 38% of respondents suggested that a busy lifestyle makes it hard to avoid wasting food. Importantly, many respondents (69%) recognised that Australians were food wasters, again highlighting that consumers may be aware of the problem, but reluctant to admit their own contribution.

Cooking and storage

More than three in four respondents (76%) believed that it was easy to make meals from assorted ingredients that needed using up. However, more than one in five respondents (22%) held the attitude that cooked leftovers that had been in the fridge for more than one day were unsafe to eat. Just over a quarter

of respondents (28%) believed that cooked items could be stored for a year or more if they remain frozen. These mixed attitudes towards food storage show that clear guidelines around food storage need to be communicated.

Mouldy, wilted and blemished produce

When respondents were asked to indicate at what stage they throw food out, over two thirds (69%) indicated they would throw out any food that is mouldy rather than cutting off the good parts. Blemished fruit and vegetables were also likely to be thrown out, with 31% of respondents agreeing that they would throw out this fresh produce.

27% of respondents indicated they would throw fresh food out if it had passed the 'use by' date, with the majority (56%) indicating they would check it first. However, even though the 'best before' date should act as a guide, one in four (24%) would throw packaged food out that had not been opened but that had passed the 'best before' date, without checking to see if the food still smelled and looked the same.

Detailed section findings

General attitudes towards food waste

Q11. Below is a list of statements about food. Please indicate the extent to which you agree or disagree with each of them (Nine categories presented).

All respondents were shown a total of nine statements (in random order), and were asked to what extent they agreed or disagreed with each one using a five-point scale from 'agree strongly' through to 'disagree strongly'.

Food waste and disposal

Most respondents (76%) believed that food, which could have been eaten by people, is not wasted if it is fed to pets or composted. 29% agreed strongly, and 47% indicating they agree with the statement. This view was particularly strong among consumers aged over 55 years (80%) and those in shared households (80%) (see Appendix 2 for a description of shared households).

CALD respondents were less likely to agree with this statement in total (with just 64% saying they either agree or agree strongly) (Figure 12).

Attitudes towards food waste and the environment

Less than half of all respondents believed wasting food contributes to climate change, with only 46% indicating they 'agree' or 'agree strongly' and more than 1 in 4 indicating they neither agree nor disagree. Respondents from small towns and rural communities were the least likely to agree that wasting food contributes to climate change (39% agreed) (Figure 12).

When asked to indicate their level of agreement with the statement 'the energy, water and nutrients that are used to grow, process and transport food are lost if the food is purchased but not eaten', two thirds of all respondents agreed (67% indicated they agree or agree strongly). Those who did not complete secondary school were less likely to agree with this statement (62%). Young respondents (aged 18–24 years) were least likely to agree with this statement (57%) and while they earlier expressed a marginally lower level of environmental concern, this still may represent a knowledge 'gap'.

CALD respondents were more aware of the environmental implications of food waste and were much more likely to 'agree' that wasting food contributes to climate change, with 59% indicating they 'strongly agree' or 'agree' (compared to 46% of all respondents). CALD respondents were also more likely to agree that the energy, water and nutrients used are lost when food is wasted (74% compared to 67% of all respondents).

Perceived attributes of people who waste food

Respondents recognised that Australians waste food, with over two thirds (69%) indicating they disagree or strongly disagree with the statement 'Australians don't waste much food' (Figure 12).

Respondents were more likely to believe that personal attributes were a factor in food waste, as opposed to people's way of life. Almost two thirds (65%) of respondents agreed that people who are disorganised or lazy waste more food than organised people, but fewer were inclined to agree that busy lifestyles make it hard to avoid wasting food (38% in total).

Those aged 55 years or older were most likely to believe that lazy or disorganised people waste more (with 76% total agreement), whereas 18–24 year olds were more likely to agree that a busy lifestyle can make food waste hard to avoid (51% total agreement). CALD respondents and those living in single person households were also more likely to agree that a demanding lifestyle makes food waste avoidance difficult (48% and 47% total agreement respectively).

Cooking and storing food

More than three quarters of respondents (76%) believed that it was easy to make meals from assorted ingredients that need using up. Total agreement with this statement increased with age, from:

- 63% of 18–24 year olds
- 67% of 25–39 year olds
- 78% of 40–54 year olds
- 88% of 55+ year olds.

In terms of storing food, there is confusion about the length of time that food can be kept appropriately. 28% of respondents agreed that as long as cooked items remain frozen they can be stored for a year or more in the freezer, while 49% disagreed (Figure 12). This result shows that respondents are somewhat divided when it comes to the length of time cooked items can be stored in the freezer.

Storing food in the fridge was less polarising, with just 22% agreeing that cooked leftovers which have been in the fridge for more than one day are unsafe to eat, while the majority (62%) disagreed. With one in five respondents not feeling comfortable eating cooked leftovers after one day in the fridge, this could be another area of education for OEH to address.

Respondents who did not complete secondary school indicated that they do not find it easy to make meals from ingredients that need using up (with just 70% agreeing, compared to 76% of all respondents). Additionally, this group were less likely to believe that frozen items can be stored for a year or more (20% compared to 28%).

CALD respondents were significantly more likely to 'disagree' or 'strongly disagree' that cooked items can be stored for a year or more in the freezer (56% compared to 49% of the total sample). These respondents were also more likely to believe that cooked leftovers are unsafe to eat after more than one day in the fridge (27% compared to 22% for non-CALD respondents).

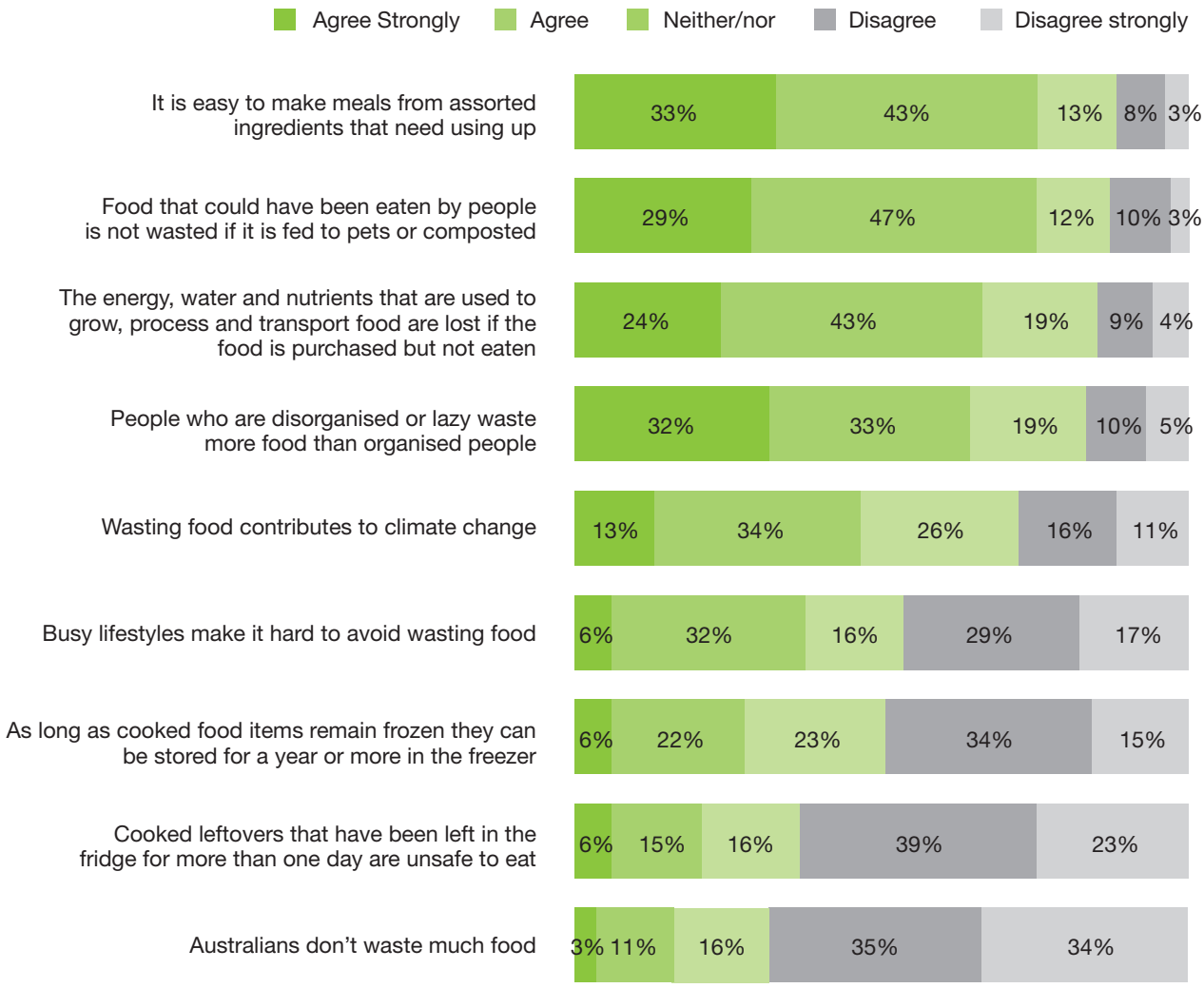

Figure 12: General attitudes towards food waste
Base: all respondents (n=1,200).

Attitudes towards end of use periods

Q12. Please move each 'slider' to indicate where you feel that you fit between the two statements presented. If, for example, the statement on the left fully describes you, you would move the 'slider' as far to the left as possible (Seven paired categories presented).

Respondents were shown a five-point scale where one represented a statement relating to food-wasting behaviour and five described a food waste avoidance behaviour. Respondents were asked to move a 'slider' to the position on the scale that best represented their view. Thus, a mean score closer to 1.0 indicates that respondents were more likely to have attitudes that influence food being wasted.

Mouldy and blemished food

Of the five statement pairs presented (Figure 13), 46% of respondents chose position 1 'I throw out food that is mouldy'. Very few (6%) chose position 5, 'I cut off the mouldy bits of food and fruit and use the good parts', resulting in a mean score of 2.1 for this pairing. Men were more likely to cut mouldy parts off than women (mean=2.2 compared to 2.0 for women).

Blemished food was the next most wasted type of produce (mean=2.8). 12% of respondents chose position 1 with the statement 'I throw out fruit or vegetables that are blemished or wilted' and 31% chose position 2, suggesting that 43% were leaning towards this behaviour. 31% of respondents chose either position 4 or 5, indicating they don't mind what fruit or vegetables look like and use them anyway. Again, men were more

likely to indicate that they did not mind what fruit or vegetables looked like (mean=2.9 compared to 2.7 for women) as were CALD consumers (mean=3.0), and those with an annual household income of less than $20,000 (mean=3.1).

Best before and use by dates

Respondents indicated they were less likely to waste fresh food that had passed the 'use by' date. A mean response of 3.4 indicated that the majority related more to the non-food wasting statement, 'I consider the use by date as a guide and still use the food a day or two later if it looks and smells the same'. Similarly with packaged food, respondents favoured the statement 'I check unopened packaged food if it has passed the best before date and still use it if it looks and smells the same' (mean=3.5).

CALD respondents, as well as families with children, were equally less likely to check unopened packaged food if it had passed the best before date (mean=3.3 compared to 3.5 for all respondents).

Young respondents (18–24 years) indicated they would be more likely to throw out unopened packaged food that has passed the best before dates (mean=3.2 compared 3.5), as well as fresh food that is on or past the use by date (mean=2.8 compared to 3.4).

Figure 13: Attitudes toward food nearing its end of use period
Base: all respondents (n=1,200)

Food wasting behaviour

A key objective of this study was to obtain benchmarks for current behaviours around food management at the household level that can be measured after implementation of the Love Food Hate Waste program. This section outlines respondents' behaviour in relation to how they plan their shopping trip, how they go about purchasing food and their shopping habits. It also details respondents' behaviours when preparing, cooking and storing food. Respondents then identified their estimated quantity of food wasted per week and the financial value of wasted food.

Section snapshot

Food purchase

Many (72%) respondents reported that they felt guilty when they purchased food items that were not used, while a similar proportion (70%) indicated that they only buy what they need. More than two thirds (69%) identified they think carefully when shopping about how much food they will use, yet just over half (57%) say they are careful about only buying foods that they know will be used. Less than half of respondents (42%) reported planning meals in advance and shopping to a strict list.

Behaviour prior to purchase

Two thirds (66%) of respondents claimed to 'always' or 'most times' check what food is in their fridge and cupboard before shopping. 53% indicated they 'always' or 'most times' write a list and stick to it as much as possible.

Shopping

Two thirds (66%) of respondents indicated that they check 'use by' and/or 'best before' dates while shopping. 42% indicated that they frequently shop for specials and deals ('always' or 'most times'). It was less common for respondents to buy food in bulk (18%).

Preparation

Less than half (46%) of respondents indicated that they 'always', or 'most times', consider portion sizes when they are cooking meals. One in five (20%) respondents indicated they make extra food just in case it is needed.

Consumption

In an average week, respondents estimated that all members of their household eat the same main meal together on an average of 4.1 days per week. Respondents indicated that they cooked meals from raw ingredients 3.7 days per week on average, and consumed leftovers from a previous meal an average of 1.5 days per week. Eating take away or frozen meals was less frequent, with respondents indicating they did so less than once per week.

After meal behaviour

Just over half (52%) of respondents indicated that they 'always' or 'most times' saved leftovers in the fridge to consume later, but 10% indicated that when they saved food in the fridge they threw it out later. Saving leftovers in the freezer was less frequent, with only 36% reporting they did so 'always' or 'most times'. However, 8% of respondents indicated that they threw leftovers out after saving them in the freezer.

Quantity of food wasted

Respondents were asked to estimate the volume of certain food types their household threw away each week. Fresh food was the most wasted type of food, with respondents estimating they threw out an average of 2.5 litres (L) of fresh food per week. The next largest area of waste was leftovers, with an estimated 1.7L per household, per week thrown out. In total, respondents estimated that they wasted an average of 6.7L per household, per week.

Value of food wasted

Fresh food was the highest estimated item in value terms (dollars) being thrown out per week at $6.60. Respondents also believed they threw out an average of $5.40 of leftovers every week. In total, it was estimated that households waste an average of $19.90 of food per week, or $1,036 per year.

Detailed section findings

Food purchasing behaviour

Q10. Please move each 'slider' to indicate where you personally feel that you fit between the two statements presented. If, for example, the statement on the left fully describes you, you would move the 'slider' as far to the left as possible. (Five paired categories presented).

Respondents were again shown a five-point scale where one represented a statement relating to a food wasting behaviour and five represented a food waste avoidance behaviour. Respondents were asked to move a 'slider' to the position on the scale that best represented their behaviour. A mean score closer to 1.0 indicates that respondents are more likely to engage in food waste avoiding behaviour.

Buying food that doesn't get used

After buying food that doesn't get used, most respondents (72%) chose position 1 or 2 which is closer to the statement 'when I buy items that don't get used I feel guilty'. Just over 10% of respondents chose positions 4 or 5, indicating that it did not bother them if items didn't get used. The overall mean was 2.1 for this statement pair (Figure 14).

18% of respondents indicated they 'often find that things [they] have bought don't get used' (mean=3.7) and most respondents indicated they felt guilty when they found unused food. Men were less likely to report that they find unused food (mean of 3.8 compared to 3.6 for women).

Thinking ahead about how much food will be used

Most respondents (69%) indicated that they think carefully about how much they will use when purchasing food (mean=2.1). As 49% of consumers previously admitted to spending money on food that is rarely or never used, this clearly highlights the discrepancy between how much food householders think they will use and how much they actually need (Figure 14).

18–24 year olds were less likely to think about how much they will use (mean=2.3), while those aged 55 years or more were more likely to think about how much they will use (mean=1.9). Those living in shared households also said they rarely think about how much food will be used (mean=2.4), as did those from households with an annual income of $100,000 or more (mean=2.4).

However, while many claimed they thought about how much they would use, just 57% indicated that when they are shopping they are careful about buying foods that [they] know will be used (mean=2.4). This suggests a disparity between thinking about how much will be used and following through with vigilant purchasing behaviour.

Buying based on value

Most respondents indicated they only buy the amount of fruit and vegetables they need and 15% indicated they buy the best value fruit and vegetables even if it is more than they need (mean=2.2) (Figure 14).

Men indicated that they were more likely to buy fresh produce based on value, rather than according to the amount they need (mean=2.3 compared to 2.0 for women). 18–24 year olds were also more likely to shop for fresh produce based on value, with a significantly higher mean of 2.5. 25–39 year olds and families with children, were groups that made more of an effort to only buy fruit and vegetables that were needed (means=2.0) (Table 7).

When shopping, respondents were more likely to do one large shop (55%) rather than doing small shops regularly (34%). Single person households were more likely to do smaller shops (mean 3.0) as were CALD respondents (mean=3.1) and those with a university education (mean=2.9) (Table 8).

Planning ahead and writing a list

On the whole, respondents were divided on whether they plan meals in advance and stick to a list whilst shopping (mean=3.0). Older consumers and families without children were more likely to plan meals and use a shopping list (means of 2.6 and 2.7 respectively), whereas single person households were more likely to decide what they needed while in store (mean=3.4) (Table 7).

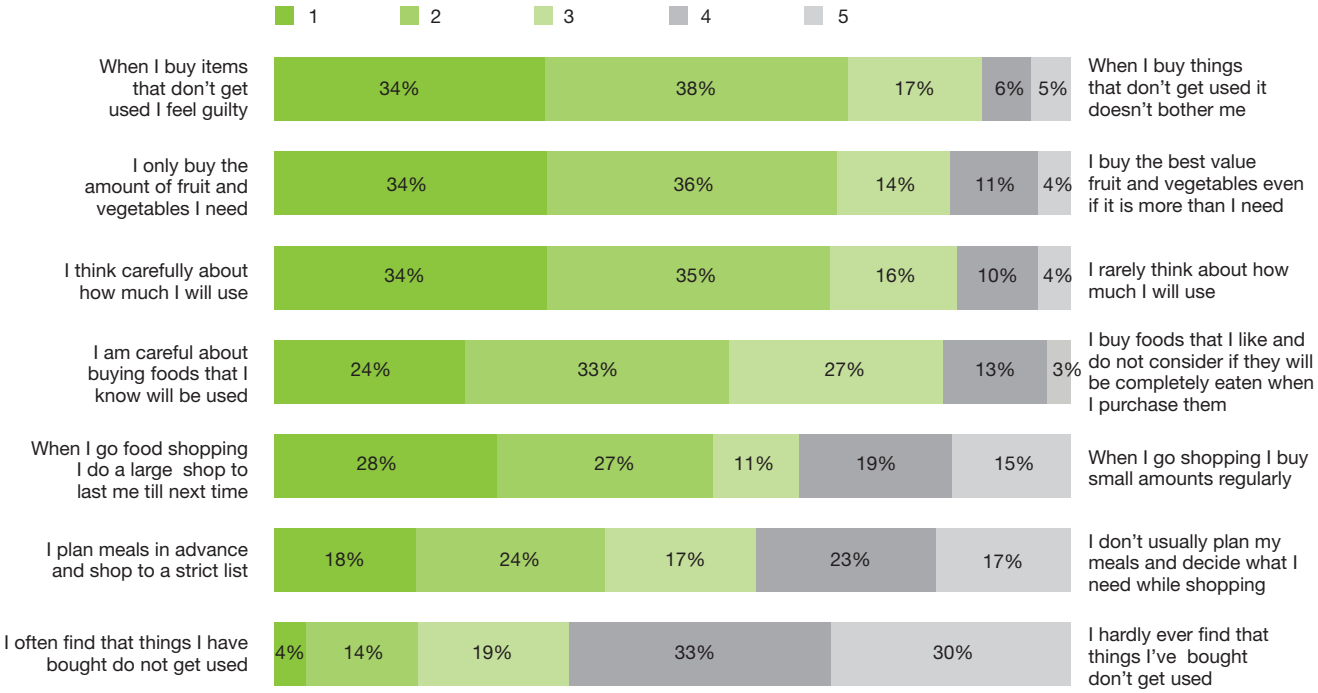

Figure 14: Food purchasing behaviour
Base: all respondents (n=1,200).

Table 7: Food purchasing related behaviour by age (Mean scores out of 5)

	Total (n=1,200)	Age group				
		18-24 (n=288)	25-39 (n=292)	40-54 (n=293)	55+ (n=327)	
When I buy items that do not get used I feel guilty	2.1	2.2	2.2	2.1	2.0	When I buy items that do not get used it does not bother me
I only buy the amount of fruit and vegetables I need	2.1	**2.5**	2.0	2.1	2.2	I buy the best value fruit and vegetables even if it is more than I need
I think carefully about how much I will use	2.1	**2.3**	2.2	2.2	1.9	I rarely think about how much I will use
I am careful about buying only foods that I know will be used	2.4	**2.7**	2.5	2.4	2.2	I buy foods that I like and do not consider if they will be completely eaten when I purchase them
When I go food shopping I do a large shop to last until next time	2.7	2.7	2.7	2.7	2.6	When I go food shopping I buy small amounts regularly
I plan meals in advance and shop to a strict list	3.0	3.2	3.1	3.1	2.6	I do not usually plan meals and decide what I need while shopping
I often find that things I have bought do not get used	3.7	3.6	3.7	3.8	3.8	I hardly ever find that things I have bought do not get used

Note: significant differences
Where subgroup differences are presented, results that are significantly higher than the total (at the 95% confidence level) are denoted in bold red, and those results that are significantly lower than the total are highlighted with a darker background.

Table 8: Food purchasing related behaviour by household type

	Total (n=1,200)	Household type				
		Single (n=213)	Family (with children) (n=393)	Family (no children) (n=487)	Shared (n=93)	
When I buy items that do not get used I feel guilty	2.1	2.1	2.1	2.1	1.8	When I buy items that do not get used it does not bother me
I only buy the amount of fruit and vegetables I need	2.2	2.3	2.0	2.2	2.4	I buy the best value fruit and vegetables even if it is more than I need
I think carefully about how much I will use	2.1	2.2	2.2	2.1	**2.4**	I rarely think about how much I will use
I am careful about buying only foods I know will be used	2.4	2.4	2.5	2.3	2.4	I buy foods that I like and do not consider if they will be completely eaten when I purchase them
When I go food shopping I do a single large shop to last until next time	2.7	**3.0**	2.6	2.6	2.8	When I go food shopping I buy small amounts regularly
I plan meals in advance and shop to a strict list	3.0	**3.4**	3.1	2.7	3.1	I do not usually plan meals and decide what I need while shopping
I often find that things I have bought do not get used	3.7	3.8	3.8	3.7	3.7	I hardly ever find that things I have bought do not get used

Behaviour prior to food purchase

Q19. Before you or your household does your main food shopping, how regularly do you do the following? (Three categories presented).

To investigate whether respondents were planning their shopping trip, they were asked to indicate the frequency with which they conducted certain behaviours, on a five point frequency scale ranging from 'never' (position 1) to 'always' (position 5). A higher mean indicates a more frequent behaviour.

Questioning revealed that the shopper in the household is likely to check what food is already in the house before a main food shop. Almost two thirds of respondents indicated they either 'always' check before shopping or check 'most times' (65%) (Figure 15).

List writing was less regular, with just over one half (53%) of respondents indicating they 'mostly' or 'always' write a list and stick to it as much as possible. CALD respondents were less likely to do this with just 38% indicating they write a list and stick to it 'mostly' or 'always'. Those who did not complete secondary school were also less likely than the total to write a list and stick to it as much as possible (42%).

List writing also increased with age:

- 30% of 18–24 year olds
- 46% of 25–39 year olds
- 53% of 40–54 year olds
- 71% of those aged 55 years and older.

60% of families without children write a list and stick to it compared to 47% of families with children (Table 9).

Only 35% of respondents reported that they plan meals to be cooked in the next few days. Frequency of planning ahead before a shop trended upwards with age. Younger people aged 18–24 years and 25–39 years were less likely to write lists and stick to them (30% and 46% respectively) and were also less likely to plan meals (30% and 27% respectively). Those aged 55 years or more were more likely to do both of these activities (71% with writing lists and sticking to them and 42% planning meals ahead) (Table 9).

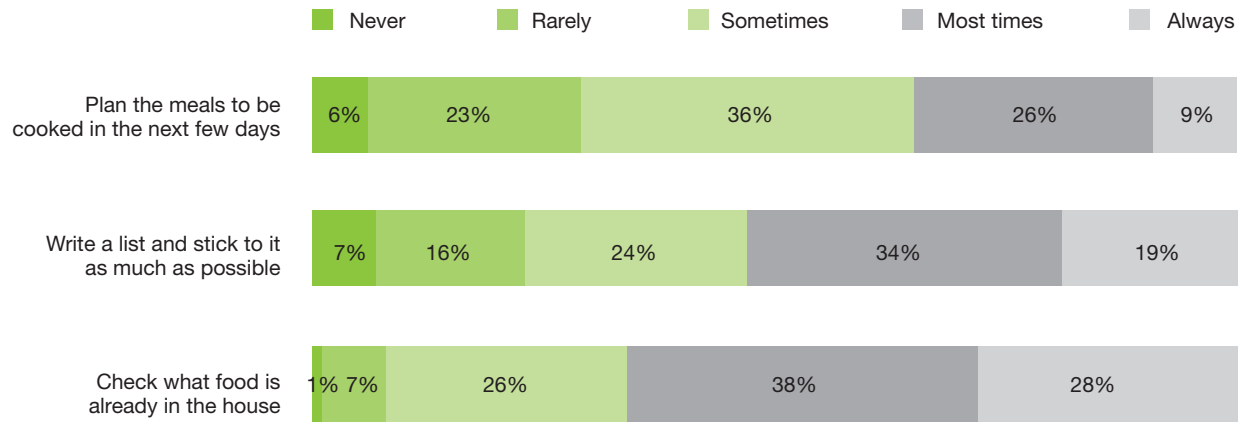

Figure 15: Behaviour prior to food shopping
Base: all respondents (n=1,200).

Table 9: Behaviour prior to food shopping by age and household type (Mean scores out of 5)

	Total n=1,200	Age group				Household			
		18-24 (n=288)	25-39 (n=292)	40-54 (n=293)	55+ (n=327)	Single (n=213)	Family (with children) (n=393)	Family (no children) (n=487)	Shared (n=93)
Check what food is already in the house	3.8	3.7	3.8	3.8	3.9	3.8	3.8	**3.9**	3.8
Write a list and stick to it as much as possible	3.4	2.9	3.2	3.5	**3.8**	3.3	3.3	**3.6**	3.2
Plan the meals to be cooked in the next few days	3.1	2.9	2.9	3.1	**3.3**	3.0	3.1	3.1	3.3

Base: all respondents (n=1,200).

Shopping behaviour

Q20. How regularly do you or your household do the following when you are doing the grocery shopping? (Four categories presented).

Respondents were asked to indicate the frequency of certain behaviours while food shopping on a five-point scale from 'never' (number 1) to 'always' (number 5). A higher mean score indicates a more frequent behaviour.

Of the list provided, the most frequent behaviour was checking the 'use by' or 'best before' dates when purchasing food items (mean 3.8). Families with children were the least likely to do this, with a significantly lower frequency of 3.6 (Figure 16).

Shopping for specials was the next most common behaviour, with 42% of respondents indicating they buy food based on what is on special (mean=3.4). Buying in bulk was less regular, with around one half of respondents indicating they only do this 'sometimes'. This behaviour trended downwards with age, with 18–24 year olds buying in bulk significantly more often than those aged 55 or more (means of 3.1 and 2.6 respectively, compared to 2.8 for all respondents). Families with children were also more likely to buy in bulk (Table 10).

Shopping to a predefined budget was less frequently reported (mean 3.3). Young consumers (18–24 years), those with a household income over $100,000 per annum and single person households were less frequently shopping according to a set budget (means of 2.9, 3.1 and 3.1 respectively), whilst those in a shared house were most likely to shop to a set budget (mean=3.6) (Table 10).

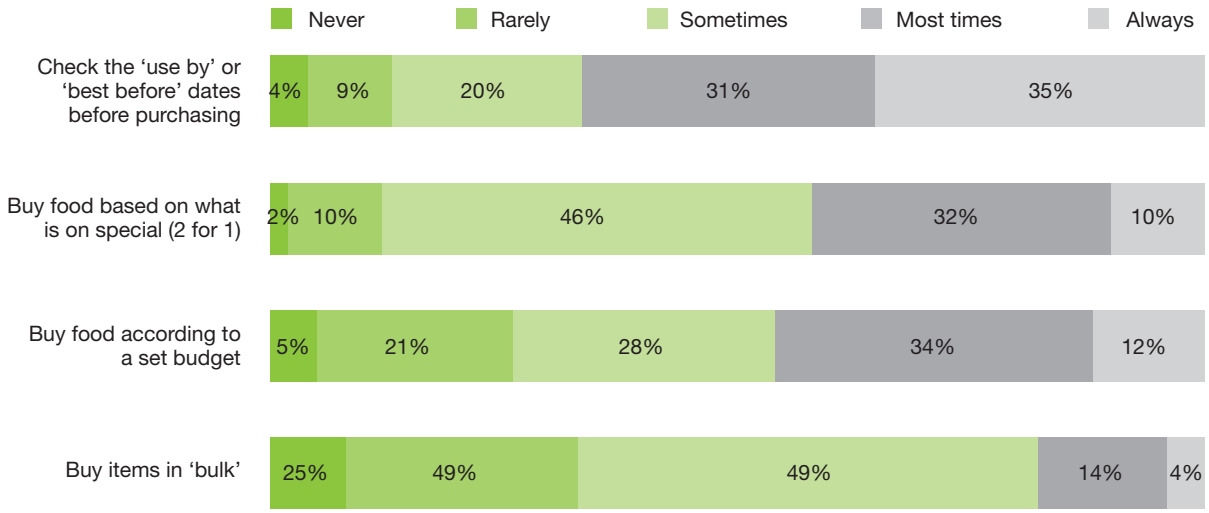

Figure 16: Food purchasing behaviour
Base: all respondents (n=1,200).

Table 10: Behaviour while shopping by age and household type (Mean scores out of 5)

	Total n=1,200	Age group				Household			
		18-24 (n=288)	25-39 (n=292)	40-54 (n=293)	55+ (n=327)	Single (n=213)	Family (with children) (n=393)	Family (no children) (n=487)	Shared (n=93)
Check the 'use by' or 'best before' dates before purchasing food items	3.8	3.7	3.8	3.9	3.8	3.9	3.6	3.9	4.0
Buy food based on what is on special	3.4	3.4	3.4	3.4	3.4	3.3	3.5	3.4	3.3
Buy food according to a set budget	3.3	2.9	3.2	3.4	3.4	3.1	3.4	3.2	**3.6**
Buy items 'in bulk'	2.8	**3.1**	2.9	2.8	2.6	2.7	**3.0**	2.7	2.7

Base: all respondents (n=1,200).

Food preparation behaviour

Q21. How regularly do you or your household do the following when preparing a main meal? (Three categories presented).

Respondents were asked to indicate the frequency with which they engaged in certain food preparation behaviours on a five-point scale from 'never' (number 1) to 'always' (number 5). A higher mean score indicates a more frequent behaviour.

The most frequent of the listed behaviours was to consider portion sizes and only make as much as you need (mean=3.3). This behaviour trended upwards with age, as young consumers were significantly less likely to consider portion sizes (18–24 year olds, mean=2.9), and older consumers were more likely to do so (aged 55 and over, mean=3.6) (Figure 17, Table 11).

Overall, respondents were less likely to make extra for a future planned meal with half indicating they did this 'sometimes'. Although 18–24 year olds claimed to have been less likely to consider portion sizes, they were in fact more likely to cook extra food for a later meal (mean=3.2 compared to 3.0 for all respondents). Those in households earning over $100,000 per annum were also more likely to cook extra for an upcoming meal (mean 3.2).

Although less frequent, one in five respondents were reportedly cooking extra food just in case it is needed either 'most times' or 'always'. 18–24 year olds, 25–39 year olds and families with children were all equally likely to cook extra food just in case (means=2.9 compared to 2.7 for all respondents). Those living in large country towns and single person households were less likely to make more food just in case it is needed (means=2.4).

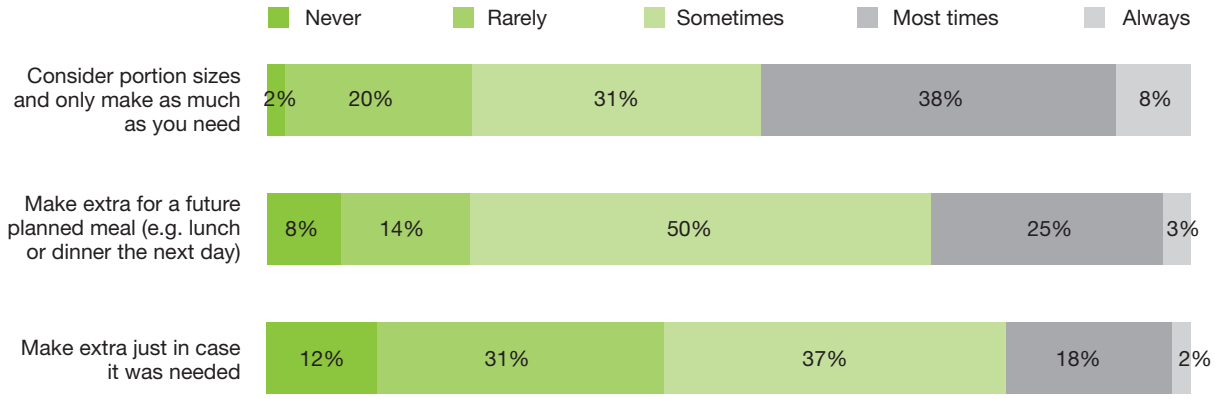

Figure 17: Behaviour when preparing food
Base: all respondents (n=1,200).

Table 11: Behaviour when preparing food by age and household type (Mean score out of 5)

	Total n=1,200	Age group				Household			
		18-24 (n=288)	25-39 (n=292)	40-54 (n=293)	55+ (n=327)	Single (n=213)	Family (with children) (n=393)	Family (no children) (n=487)	Shared (n=93)
Consider portion sizes and only make as much as you need	3.3	2.9	3.2	3.4	**3.6**	3.3	3.2	3.4	3.4
Make extra for a future planned meal	3.0	**3.2**	3.0	3.0	3.0	3.0	3.0	3.0	3.2
Make extra just in case it is needed	2.7	**2.9**	**2.9**	2.6	2.4	2.4	**2.9**	2.6	2.5

Base: all respondents (n=1,200).

Food consumption behaviour

Q18. In a normal week, on how many days does your household do the following? (Five categories presented).

Respondents were asked to indicate how many times per week they engaged in certain behaviours around main meals/dinner on a five-point scale. The scale ranged from 'never' to '5–7 days per week'. These five categories were then converted into days per week for a meaningful average to be determined.

Having all members of the household eat the same meal was the most common behaviour, at an average of 4.1 days per week. Those aged 40–54 years reported to eat together the least number of days per week at 3.4 while those aged 55 years or more ate together significantly more often, at an average of 4.4 days per week. (Figure 18, Table 12).

Respondents indicated that they cook a main meal from raw main ingredients on average 3.7 days per week. Over one third reported doing this 5–7 days per week. 18–24 year olds and 25–39 year olds cooked from raw ingredients less frequently than those aged 55 years or older (3.3, 3.2 and 4.2 days per week respectively). Single person households were the least likely to cook main meals from raw ingredients (average of 2.6 days per week).

Respondents indicated that they eat a leftover meal from a previous day on average 1.5 days per week, with single person households and those aged 40–54 years least likely to have leftovers (mean 1.3). CALD consumers on the other hand, were more likely to eat leftover meals from the day before (mean 1.8).

Eating out or buying a takeaway meal was less frequent overall (average of 0.9 days per week). Young consumers and single or shared households were more likely to eat out and get takeaway (means of 1.1, 1.2 and 1.3 respectively). Similarly, 18–24 year olds and single person households were more likely to eat store-purchased, ready-made meals (0.9 and 1.1 days per week compared to 0.7 for all respondents).

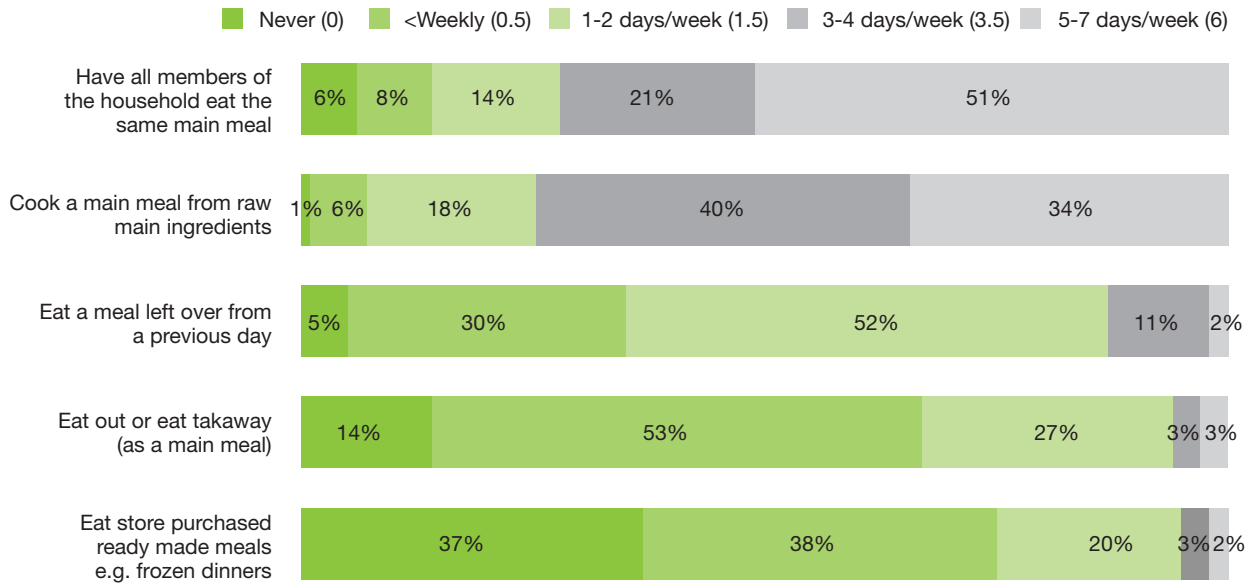

Figure 18: Food consumption behaviour
Base: all respondents (n=1,200).

Table 12: Food consumption behaviour by age and household type (Mean number of days per week)

	Total n=1,200	Age group				Household			
		18-24 (n=288)	25-39 (n=292)	40-54 (n=293)	55+ (n=327)	Single (n=213)	Family (with children) (n=393)	Family (no children) (n=487)	Shared (n=93)
Have all members in the household eat the same main meal	4.1	4.1	4.0	3.7	**4.4**	3.4	4.2	4.2	3.7
Cook a main meal from raw main ingredients	3.7	3.3	3.2	3.9	**4.2**	2.6	3.8	**4.0**	3.9
Eat a meal left over from a previous day	1.5	1.6	1.6	1.3	1.5	1.3	1.4	1.5	1.6
Eat out or eat a takeaway	0.9	**1.2**	**1.1**	0.8	0.8	**1.3**	0.9	0.8	**1.3**
Eat store-purchased ready made meals	0.7	**0.9**	0.7	0.7	0.7	**1.1**	0.6	0.6	0.7

Base: all respondents (n=1,200).

Behaviour after a meal

Q22. How regularly do you or your household do the following after main meals? (Five categories presented).

On a five-point frequency scale ranging from 'never' (number 1) to 'always' (number 5), respondents were asked to indicate how often they consumed, saved (stored) and disposed of leftovers.

The most frequently reported behaviour was saving leftovers in the fridge to consume later (mean=3.5), while saving leftovers in the freezer to eat later was also common (mean=3.0). It was less likely that consumers would save leftovers in the freezer only to throw them out later (mean=2.0). Both younger consumers (18–24 year olds) and CALD respondents were less likely to save things in the freezer to eat later (means=2.7 and 2.8 respectively), yet were more likely to save leftovers in the freezer and eventually throw them out (means=2.2) (Figure 19).

Although many indicated that they saved leftovers with the intention to later consume them, over one third of respondents indicated they 'sometimes' save leftovers in the fridge only to throw them out later (mean=2.4). Those over 55 years of age were less likely to be throwing unused food out from the fridge (mean=2.1), while families with children indicated they did so more frequently (mean=2.6).

Around one third of respondents indicated that they disposed of leftovers immediately after a meal at least 'sometimes' (mean=2.2). This was less likely to occur for those living in single person households (mean=2.0) and those who did not complete secondary school (mean=2.0).

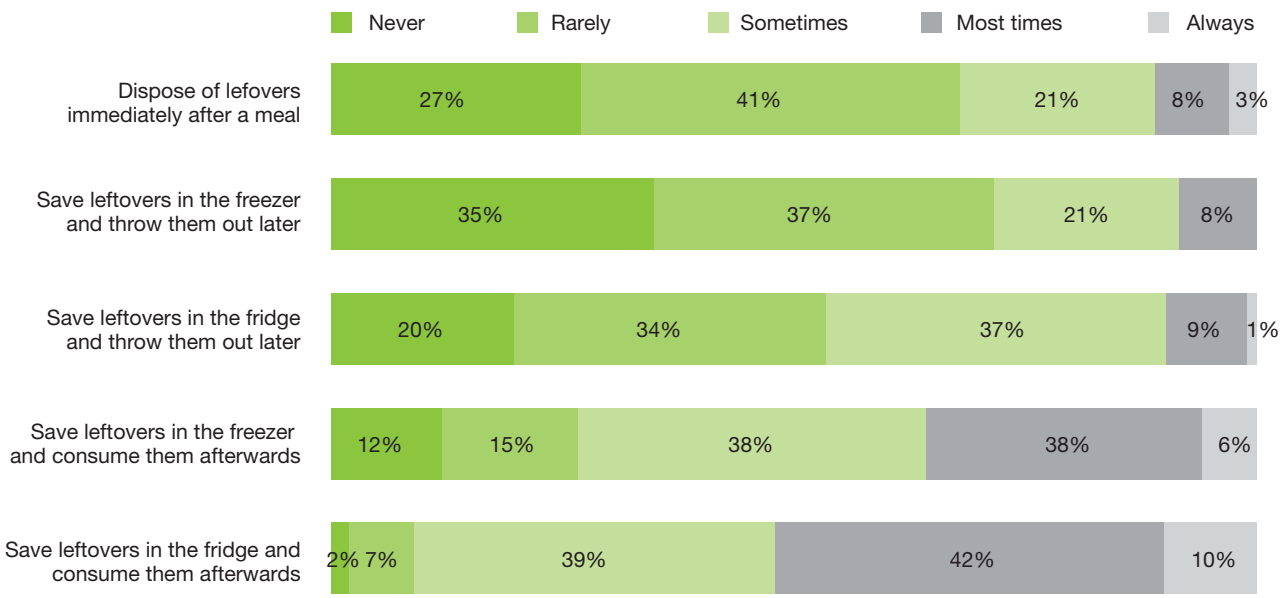

Figure 19: Behaviour after a main meal
Base: all respondents (n=1,200).

Quantity of food wasted

Q14. In a normal week, please estimate how much of the following food types your household throws away (including going to the compost, worm farm or pets) (Five categories presented).

To estimate the volume of food wasted per household, respondents were asked to indicate how many four litre (4L) containers worth of food (within the pre-defined waste categories) they threw out in an average week. Respondents were shown an image of a 4L ice-cream container in order to assist with visualisation of the volume.

On average, respondents estimated that they threw away 2.5L of fresh food per week – the highest volume of all listed food categories. This included food that was composted, worm farmed or fed to pets. Leftovers were the next highest in volume of wasted food at 1.7L per week. Around 1.0L of packaged and long-life food was estimated to be thrown out on average per week, followed by 0.6L of drinks, 0.5L of home delivered/take away food and 0.4L of frozen food. Together, these volumes add to a total quantity of 6.7L of wasted food and drinks per household per week.

Over one year, this amounts to approximately 348L per household or 860 million L for all of NSW (based on 2006 ABS Census data estimating 2,470,451 occupied households in NSW) (Table 14).

CALD respondents produced an estimated volume of 9.1L of food being thrown away in an average week. Those who did not complete secondary school were also found to waste more than average (7.8L per week). High income earners with an annual income of over $100,000 reported wasting 7.5L of food per week (Table 15).

Families with children were also large volume wasters, wasting an average of 8.3L per week. Their main waste areas were fresh food (3.1L) and leftovers (2.2L).

Young consumers were identified as one of the groups generating the greatest amount of waste, averaging 7.7L per week. Both 18–24 year olds and 25–39 year olds wasted significantly more drinks and frozen food than the total, 25–39 year olds also waste more leftovers (Table 14).

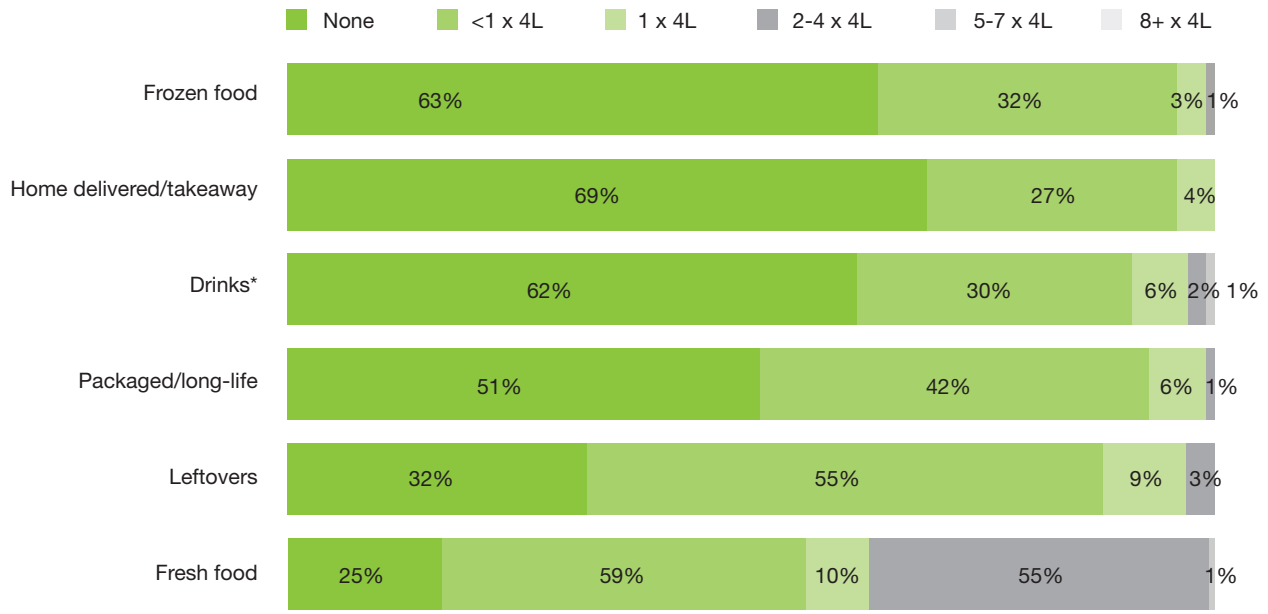

Figure 20: Estimated volume of food wasted (L)
Base: all respondents (n=1,200).
*Drink volumes were <2L, 2L, 4 to 8L, 10+L.

Table 13: Yearly projection quantity of food wasted (L)

Category	Mean weekly household amount (L)	Projected yearly household amount (L)	NSW projection* (million L per year)
Fresh food	2.5	130	321
Leftovers	1.7	88	218
Packaged/ long life	1.0	52	128
Drinks	0.4	21	51
Frozen food	0.6	31	77
Home delivered/ takeaway	0.5	26	64
Total	6.7	348	860

*Based on 2006 ABS data estimating 2,470,451 occupied households in NSW

Table 14: Mean quantity wasted (L) by age range and schooling

Category	Total (n=1,200)	Age group				Those who did not complete secondary school (n=188)
		18-24 (n=288)	25-39 (n=292)	40-54 (n=293)	55+ (n=327)	
Fresh food	2.5	2.4	2.2	2.6	2.7	**2.9**
Leftovers	1.7	1.9	**2.3**	1.5	1.1	**2.1**
Packaged/long life	1.0	1.1	1.2	0.9	0.8	1.2
Drinks	0.4	**0.7**	**0.6**	0.4	0.2	0.4
Frozen food	0.6	0.7	0.7	0.4	0.6	**0.9**
Home delivered/takeaway	0.5	**0.9**	**0.7**	0.3	0.3	0.3
Total	6.7	**7.7**	**7.7**	6.1	5.7	**7.8**

Table 15: Mean quantity wasted (L) by household type and CALD

Category	Total (n=1,200)	Household				CALD (n=256)
		Single (n=213)	Family (with children) (n=393)	Family (no children) (n=487)	Shared (n=93)	
Fresh food	2.5	1.9	**3.1**	2.2	2.2	**3.7**
Leftovers	1.7	1.1	**2.2**	1.5	1.4	1.8
Packaged/long life	1.0	0.8	1.2	0.8	1.4	1.2
Drinks	0.4	0.6	0.6	0.3	0.3	0.6
Frozen food	0.6	0.6	0.8	0.4	0.7	**1.2**
Home delivered/takeaway	0.5	0.5	0.4	0.4	**0.9**	0.6
Total	6.7	5.5	**8.3**	5.6	6.9	**9.1**

Table 16: Mean quantity wasted (L) by household income

Category	Total (n=1,200)	Household income			
		<$20k (n=193)	$20-$60K (n=432)	$60-$100K (n=278)	$100K (n=188)
Fresh food	2.5	1.8	2.3	2.7	2.6
Leftovers	1.7	1.0	1.6	1.8	**2.2**
Packaged/long life	1.0	0.7	0.9	1.2	1.0
Drinks	0.4	**0.9**	0.4	0.6	0.4
Frozen food	0.6	0.6	0.4	0.6	0.9
Home delivered/take away	0.5	0.3	0.3	0.4	1.1
Total	6.7	5.3	5.9	7.3	**7.5**

*Based on 2006 ABS data estimating 2,470,451 occupied households in NSW

Segments by volume

The total respondent base was split into three groups in accordance with the calculated total weekly waste volume for their household, in order to see if there were any significant differences between identified large volume wasters and small volume wasters. The three groups then represented the 'lower', 'mid' and 'higher' volume food wasters.

Lower volume wasters (0.0L to 2.9L per week)

Those that threw away lower amounts of food were more likely to use wilted fruit and vegetables as well as check fresh and packaged food that is past the best before date, prior to throwing it out. They were also less likely to throw out mouldy food or dry bread.

Those who wasted lesser amounts of food were also more organised and prepared. They were more likely to think about how much food would be used and consider portion sizes, plan meals in advance, check what is in the house before shopping and stick to their shopping list.

Many in this group were already taking steps towards reducing food waste, such as using a shopping list, developing the list from a menu plan and cooking the right amount of food. Those in this group who are not already doing these things were willing to change these behaviours.

Mid volume wasters (3.0L to 6.9L per week)

Those who threw out a medium amount of food behaved similarly to those who throw out high amounts. Although this group were slightly more likely to use blemished or wilted fresh food and to check food that is past the best before date, prior to throwing it out.

Although this group wasted a medium amount of food, they made the effort to check what food was in the house before shopping and often checked use by/best before dates prior to purchase. They claimed that they did not often find things had been bought and not used.

The internet was already a valuable source of information for this group and they were more willing to visit a website for more information compared to other groups. Many were willing to buy less, use the right amount of food and use leftovers (if not already doing so).

Higher volume wasters (7.0L or more per week)

Many of the high waste group believed that a busy lifestyle made it hard to avoid wasting food. They were more likely to throw out blemished fresh food, mouldy food and dry bread. They were also more likely to buy foods even if they weren't sure it would be used.

The higher waste group were less likely to plan meals in advance and think about how much they would use. It was less likely that all members of the household would eat together and they were more likely to save leftovers in the fridge, only to throw them out later.

The high waste group was also willing to buy less and use the right amount of food for meals. More than half indicated that they were willing to start a compost/worm farm or attend a kitchen skills workshop. They were also more likely to ask a friend for advice.

Value of food wasted

Q16. In a normal week, please estimate the dollar value of each type of food your household purchases but throws away without being consumed (including going into the compost, worm farm, or fed to pets). Please make your best estimate in whole dollars. (Five categories presented).

A key outcome of this research was to update the financial figures of the value of food wasted in NSW for a variety of food types. Respondents were asked to estimate the value of the food they had purchased but not consumed in a normal week. The responses were provided in whole dollars.

Respondents estimated the value of the fresh food they threw away to be $6.60 per week, on average (Figure 21). As seen in waste volume, fresh food was the highest type of waste (in monetary value terms) of all listed foods and drink categories. Leftovers were the next highest in value wasted per week at $5.40. Approximately $2.90 of packaged and long-life food was estimated to be thrown out per week on average, followed by $1.80 each of drinks and frozen food and $1.40 of home delivered/take away food. The total value of food items wasted was $19.90 per household, per week in NSW.

Over one year, this amounts to $1,036 per household, or $2,556 million for all of NSW (projection based on 2006 ABS Census data estimating 2,470,451 occupied households in NSW).

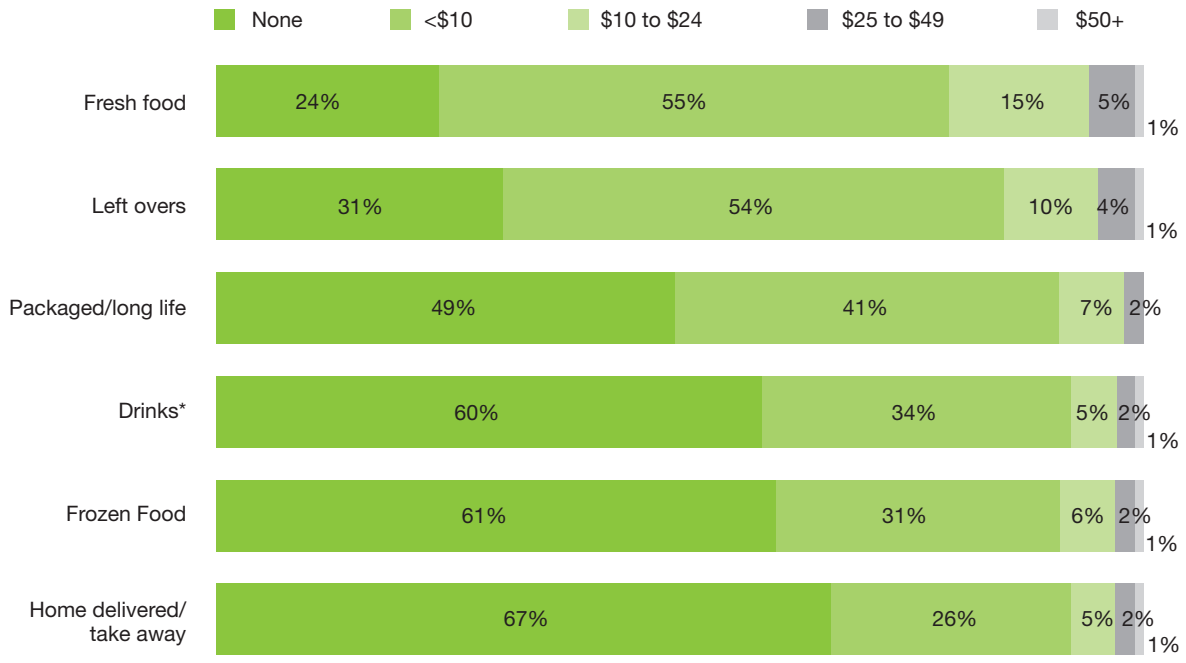

Figure 21: Value ($) of food wasted per week
Base: all respondents (n=1,200).

Table 17: Yearly projection: value of food wasted ($)

Category	Mean weekly household amount ($)	Projected yearly household amount ($)	NSW projection * (million $ per year)
Fresh food	6.60	343	848
Leftovers	5.40	281	694
Packaged/long life	2.90	151	372
Drinks	1.80	94	231
Frozen food	1.80	94	231
Home delivered/ take away	1.40	73	180
Total	19.90	1,036	2,556

Base: all respondents (n=1,200).
*Based on 2006 ABS data estimating 2,470,451 occupied households in NSW.

Younger consumers were identified as high wasters of food in financial terms, with 18–24 year olds wasting an average of $26.00 per week and 25–39 year olds wasting $24.10 (Table 18).

Families with children were also large wasters in terms of value, wasting an average of $24.90 worth of food per week.

Those with higher household incomes (over $100,000 per year) also wasted more than average, amounting to around $25.50 per week.

Table 18: Mean value ($) of food wasted per week by age range

Category	Total (n=1,200) ($)	Age group			
		18-24 (n=288) ($)	25-39 (n=292) ($)	40-54 (n=293) ($)	55+ (n=327) ($)
Fresh food	6.60	7.00	7.10	7.00	5.60
Leftovers	5.40	6.70	**7.20**	4.30	4.10
Packaged/long life	2.90	**4.30**	3.30	2.80	2.20
Drinks	1.80	**2.90**	**2.40**	1.50	1.00
Frozen food	1.80	**2.80**	1.90	1.70	1.40
Home delivered/ takeaway	1.40	**2.30**	**2.20**	1.00	0.70
Total	19.90	**26.00**	**24.10**	18.30	15.00

Table 19: Mean value ($) of food wasted per week by household type

Category	Total (n=1,200) ($)	Household type			
		Single (n=213) ($)	Family (with children) (n=393) ($)	Family (no children) (n=487)	Share (n=93) ($)
Fresh food	6.60	5.00	**7.90**	6.10	6.10
Leftovers	5.40	3.40	**7.00**	4.80	5.10
Packaged/long life	2.90	2.50	**3.70**	2.40	3.90
Drinks	1.80	2.10	**2.40**	1.20	1.20
Frozen food	1.80	2.40	2.20	1.40	1.20
Home delivered/ takeaway	1.40	2.10	1.70	0.90	2.20
Total	19.90	17.50	**24.90**	16.80	19.70

Table 20: Mean value of food wasted per week by household income ($)

Category	Total (n=1,200) ($)	Household income			
		<$20K (n=193) ($)	$20-$60K (n=432) ($)	$60-$100K (n=278) ($)	$1000K (n=188) ($)
Fresh food	6.60	4.60	5.30	6.90	7.90
Leftovers	5.40	3.40	4.90	5.80	6.20
Packaged/long life	2.90	2.60	2.40	3.60	3.90
Drinks	1.80	2.00	1.50	2.10	1.90
Frozen	1.80	**3.20**	1.50	2.00	2.60
Home delivered/ takeaway	1.40	1.30	1.00	1.40	**3.00**
Total	19.90	17.10	16.60	21.80	**25.50**

Base: all respondents (n=1,200). *Based on 2006 ABS data estimating 2,470,451 occupied households in NSW.

Barriers to behavioural change

An important objective of this study was to identify possible areas of behaviour change. To investigate this, respondents were asked to identify the reasons why food was wasted in their household as well as indicate how willing they would be to adopt new behaviours to reduce food waste.

Section snapshot

Reasons for food waste

Almost one in five (19%) of respondents identified their main reason for household food waste was due to members of the household not finishing their meals, with almost two in five (39%) indicating it was a contributing factor. The next most common reason for food waste in the household was leaving food in the fridge or freezer too long, with 45% of respondents identifying it as being one of the reasons they wasted food and 18% of respondents identifying it as the main reason for food waste.

Changing planning and shopping

More than one third (37%) of all respondents indicated that they already used a shopping list and a further 46% indicated that they were 'extremely', 'very' or 'quite willing' to use one in the future in order to reduce their household's food waste. Additionally, 55% were to some degree willing to try using a shopping list based on a menu plan. The potential behavioural change with the greatest reported willingness (in this area) was found in relation to simply buying less food –two thirds (66%) of all respondents indicated they were willing to do this. However, in order for this to happen, consumers will need to be able to correctly identify how much food will be used and know how to measure correct serving sizes.

Changing cooking and storage

Almost three in ten respondents (29%) reported to already save leftovers for other meals, and over one half (55%) indicated they were willing (to some degree) to start saving leftovers and using them for future meals. Encouragingly, a total of 64% of all respondents reported that they would be willing (to some degree) to cook the right amount of food in the future and a further 21% indicated that they 'already do this'. The Love Food Hate Waste program could focus on educating consumers about serving sizes so they become aware of how much food they actually use. This may encourage householders to cook the right amount and therefore not be left with unplanned leftovers at the end of a meal.

Detailed section findings

Reasons for household food waste

Q17a. Please think about why food gets wasted in your household. Firstly, select the main reason that food gets wasted in your household. Now select all other reasons that apply. (Fourteen categories presented).

The main reason for food being wasted at the household-level was that members of the respondents' household do not finish their meal (19%) (Table 21). This was more evident among women (27% compared to 10% of men) as well as those who did not complete secondary school (31%). A person not finishing a meal is an important contributor to food waste. This will need to be explored further by the Love Food Hate Waste program, as it was shown earlier that there was some confusion over whether scraps left on a plate was in fact avoidable. The next most common reason was leaving food in the fridge or freezer too long (18%). CALD respondents were significantly less likely to say this was a main reason for food being wasted (12%), but were more likely (than respondents overall) to indicate 'family members change their plans', and 'we like to eat the freshest food possible' as the main reasons (11% for each).

When taking into account all the reasons given for food wastage (main and others combined), the top two main reasons were again the most common (not finishing meals [45%] and leaving food in fridge/freezer too long [39%]). The next most common reasons included food going off before the 'use by' or 'best before' dates (26%), sale items not lasting long enough (26%) and cooking too much food (25%). For the high volume wasters, family members changing plans was also an important issue (38%).

Table 21: Reasons for household food waste

Reason	Main reason %	Total reason %
Food is left too long in the fridge and freezer	18	45
Some household members do not always finish their meal	19	39
Food goes off before the 'use by' or 'best before' date	9	26
Food bought on sale does not always last long enough	9	26
We cook too much food	8	25
Family members change their plans (e.g. they do not turn up for dinner)	7	23
We do not tend to use leftover ingredients in other meals	3	17
We do not check the fridge, freezer and cupboard before going shopping	5	17
We buy too much food	3	17
We like to eat as fresh as possible	7	16
We tend not to plan meals in advance	3	16
We are generally too busy to cook meals that we planned	2	9
We are not sure how to or can not store food properly	-	3
Fruit/vegetables going off	2	2
Only throw away vegetables/fruit peelings	1	0
Do not waste food	9	9

Table 22: Total reasons for household food waste by volume wasted

Reason	Total (n=1,200) %	Lower wasters (n=435) %	Mid wasters (n=445) %	Higher wasters (n=320) %
Food is left too long in the fridge and freezer	45	34	**56**	46
Some household members do not always finish their meal	39	24	42	57
Food goes off before the 'use by' or 'best before' date	26	19	**33**	28
Food bought on sale does not always last long enough	26	21	28	30
We cook too much food	25	17	29	**32**
Family members change their plans (e.g. they do not turn up for dinner)	23	15	19	**38**
We do not tend to use leftover ingredients in other meals	17	10	17	**28**
We do not check the fridge, freezer and cupboard before going shopping	17	11	18	**25**
We buy too much food	17	9	20	**23**
We like to eat the freshest food possible	16	13	14	**25**
We tend not to plan meals in advance	16	9	15	**29**
We are generally too busy to cook meals that we planned	9	4	12	12
Food does not get wasted in our household	4	8	1	2
We are not sure how to or can not store food properly	3	2	3	5
Fruit/vegetables going off	2	4	0	1
Only throw away vegetable/fruit peelings	0	1	0	0

Based on the responses to Q17a (reasons for household food waste), respondents were asked a series of follow-up questions to determine why these barriers exist. The following section outlines the responses to this enquiry.

Reasons for buying too much food

Q17b. What prevents you or your household from buying the amount of food you actually need? (Ten categories presented).

Of the 17% of total households that indicated buying too much food contributed to their food waste, most suggested that they think they need more than they actually do (61%). Many (44% of those that indicated that they buy too much) also said that they were tempted by supermarket specials such as '2 for 1 deals' (Table 23).

Other main reasons given for buying too much food included:

- not checking the cupboard or fridge before shopping
- food portions for sale being too large
- the desire to have more food at hand than is required
- not writing shopping lists.

CALD respondents were significantly more likely to indicate that they think they need more food than they actually do (77% compared to 61% overall). Additionally, more than one half of CALD respondents claimed the size of their food portions and packages was too large (52% compared to 35% overall).

Some interesting gender differences also emerged when it came to reasons why consumers bought too much food. Men were more likely to indicate that they did not write lists (36% compared to 23% of women), while women were more likely to indicate they like to have more food available rather than not enough (43% compared to 24% of men). Women were also more likely to indicate that they lack time and organisation to plan ahead (24% compared to 18% of men) and that they like fresh ingredients and don't keep older ingredients (23% compared to 12% of men). This is consistent with the earlier finding that men were more likely to cut off mouldy parts of food and used blemished or wilted fresh produce.

Table 23: Reasons for buying too much food

Reason	Percentage (%)
We think we need more than we actually do	61
We are tempted by supermarket specials e.g. 2 for 1 deals	44
We do not check the cupboard or fridge before shopping	35
Size of food portions and packages is too large	35
We like to have more food or ingredients available than not enough	33
We do not write a list	30
We forget to take our list	24
Lack of time or organisation to plan ahead e.g. no list, no meal	21
We like fresh ingredients and do not keep older ingredients	17
Other (specify)	2

Base: respondents who indicated that they purchase too much food (n=219).

Reasons for cooking too much food

Q17c. What prevents you or your household from cooking the amount of food you actually need? (Eight categories presented).

One in four respondents indicated that they cook too much food. The main reason given for this was that it was preferable to serve too much food than not enough (48%) (Table 24). Women were more likely to want to have too much rather than not enough (60% compared to 35% of men), which is consistent with the way women shop for food, preferring to have more ingredients available than not enough.

Knowing how much food is required was also an issue; with 32% indicating it was difficult to estimate how much to cook per person, while 28% felt it was difficult to know how to cook the right portion sizes. Those who did not complete secondary school were also more likely to indicate that they found it difficult to know what portion sizes to cook (44% compared to 28%).

Table 24: Reasons for cooking too much food

Reason	Percentage (%)
Preferable to serve too much rather than not enough	48
Find it difficult to estimate how much to cook per person	32
Find it difficult to know how to cook the right portion sizes	28
One or more household members have different food preferences or special dietary needs	23
Not sure how many people will be home for meals	17
Lack of time or organisation to plan ahead e.g. no meal plan	14
I am unsure about what visitor's food preference will be	9
Appetite changes	0
Other (specify)	1

Base: respondents who indicated that they cook too much food (n=199).

Reasons for not storing food properly

Q17d. What prevents you or your household from storing food to maximise its longevity? (Seven categories presented).

Only 3% of all respondents claimed that a reason for their overall food waste was that they did not know how to store food properly. Of these respondents, 60% were unsure about the best way to store different food types, while one third indicated they often leave food in its original packaging (Table 25).

Table 25: Reasons for not storing food correctly

Reason	Percentage (%)
I am unsure about the best way to store different food types	60
Tend to leave food products in the original packaging	33
Lack of time and organisation	24
Food goes off before the 'use buy' or 'best before' date	19
Do not have appropriate storage containers	17
Do not read storage instructions	12

Base: respondents who indicated they did not store food properly (n=30).

Reasons for not using leftovers

Q17e. What prevents you or your household from re-using leftovers? (Five categories presented).

In total, 17% of respondents had indicated that not using leftovers was a reason for their level of household food wastage. When asked what prevents them from using leftovers, 63% of respondents indicated they simply forget about having left food in the fridge or freezer (Table 26). Additionally, 27% indicated that they don't like eating leftovers. This was more evident among CALD respondents, with more than one in two saying they did not like eating leftovers (54% compared to 27% overall). This may be a problem area for this group, as it has been previously shown that they purchase more food than they need and are subsequently more likely to throw out cooked leftovers.

Table 26: Reasons for not using leftovers

Reason	Percentage (%)
Forget about leftovers in the fridge and/or freezer	63
Do not like eating leftovers	27
I am unsure about how to use leftover individual/assorted ingredients	19
Health concerns about eating leftovers	18
Other (specify)	1

Base: respondents who indicated they did not reuse leftovers (n=95).

Willingness to change

Q23. Overall, how willing would you say that you are to make changes in the following areas in order to reduce the amount of food waste that your household produces? (Twelve categories presented).

Respondents were asked how willing they were to make changes to their behaviour to avoid wasting food. Earlier, 9% of respondents had reported that they have no household food waste and these respondents were therefore excluded from this section of questioning, but they are represented within the results in order for a complete picture of respondents (and therefore the wider NSW population) to be gained.

In terms of possible responses to these questions, there was an allowance for respondents to indicate that they 'already do this' in addition to a five-point willingness scale ranging from 'extremely willing' to 'not at all willing' to adopt the new behaviour.

Willingness to change planning and shopping

More than one third (37%) of all respondents indicated that they already used a shopping list and a further 46% indicated that they were 'extremely', 'very' or 'quite' willing to use one in the future in order to reduce their household's food waste (Figure 22). More than one half (58%) of young consumers (18–24 years) were willing to start using a shopping list. This could prove to be an important tool for this group to reducing food waste, as just 28% of 18–24 year olds were already using a list. Similarly, just 25% of those living in single person households are currently using a shopping list, but a further 58% indicated they were willing to start. CALD respondents were not as willing to adopt this behaviour. 28% of CALD respondents used a shopping list and 15% indicated they were either 'not particularly willing' or 'not at all willing' to use a shopping list in the future (compared to 8% of all respondents).

Less than one in five (16%) indicated that they were already using a shopping list based on a menu plan, while 55% were 'extremely', 'very' or 'quite willing' to try doing so. Even so, one fifth (20%) were 'not particularly' or 'not at all' willing to write a list based on a menu. CALD respondents were more willing to write a list based on a menu plan, with 62% saying they were 'extremely', 'very' or 'quite willing'. The menu planning aspect is clearly a more attractive option for this group than just simply writing a list.

Those living in non-metropolitan areas were less willing to shop with a list based on a menu plan. Just 46% of large country town respondents indicated they were 'extremely', 'very' or 'quite willing' to shop with a list based on a menu plan (compared to 55% of the total population). Those living in small country towns and rural areas were even less willing (41%).

Almost one in two respondents was willing to plan a weekly menu (48%), but only 13% were already doing so. Families with children indicated that they would be more willing to plan a weekly menu (55%). This is an encouraging result as they had previously indicated that they did not frequently plan a list and stick to it.

The potential behavioural change with the greatest indicated willingness (in this area) was found in relation to simply buying less food –almost two thirds (66%) of all respondents indicated they were 'extremely', 'very' or 'quite' willing to do this.

Figure 22: Willingness to change planning and shopping behaviours
Base: all respondents (n=1,200).

Willingness to change cooking, storage and disposal of food behaviours

Almost three in ten respondents (29%) reported to already save leftovers for other meals, and only 5% suggested that they were not particularly or not at all willing to do this. While this leaves over one half (55%) being willing (to some degree) to start saving leftovers and using them for future meals – only 23% were 'quite' willing in this regard.

Encouragingly, while previously expressing reluctance in this area (when positioned in the context of reducing their level of household food waste), 64% of CALD respondents indicated that they would be 'extremely', 'very' or 'quite willing' to use leftovers for other meals. Just 19% of CALD respondents claimed to already be using leftovers for other meals (compared to 29% of all respondents).

A total of 64% of all respondents reported that they would be willing (to some degree) to cook the right amount of food in the future and a further 21% indicated that they already do this. Just 11% of 18–24 year olds said they already cooked the right amount, but they were significantly more willing than respondents overall to do so in the future, in order to reduce their level of food waste (72%). Those living in single person households also indicated their willingness to cook the right amount of food (72%).

More than six in ten respondents (62%) also indicated that they were willing to change the way they store food to help reduce food waste. Almost one in five (18%) indicated a lack of willingness in this regard. In particular, those who did not complete secondary school were unwilling to change their food storage habits, with 28% saying they were 'not particularly' or 'not at all' willing.

While 17% of all respondents said they already used a compost or worm farm, respondents generally expressed a lower level of willingness to adopt this behaviour (36% not particularly or not at all willing). Those aged 25–39 years were most willing to start a compost or worm farm (47%). Those living in small country towns and rural areas were more likely to already have a compost or worm farm (25%, compared to 17% of all respondents).

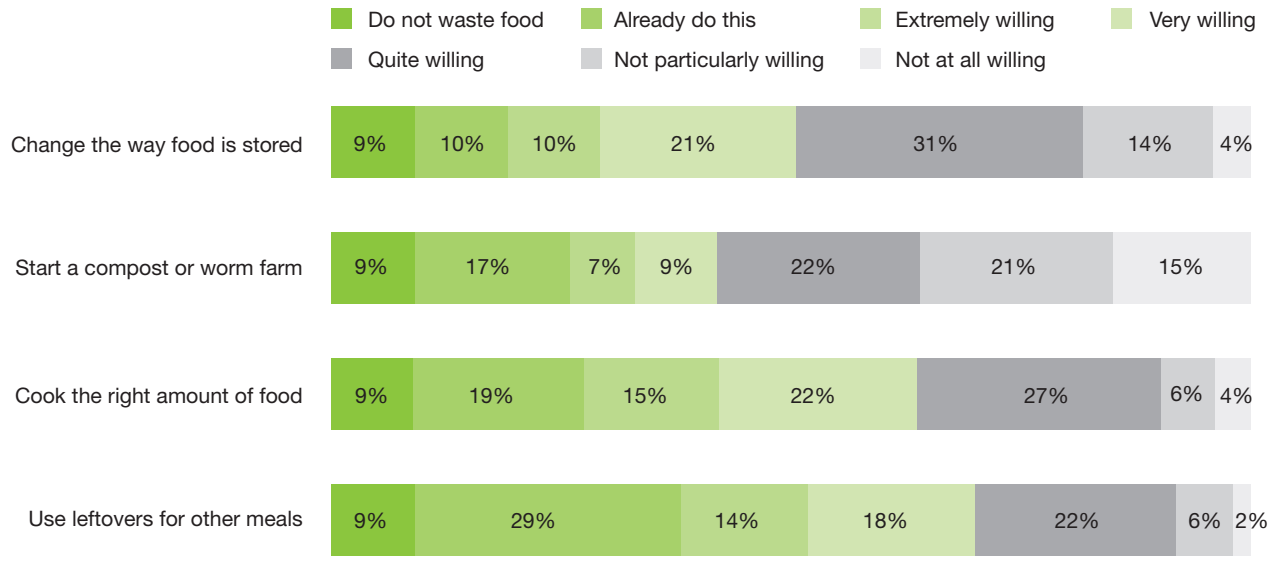

Figure 23: Willingness to change cooking, storage and food disposal behaviours
Base: all respondents (n=1,200).

Information sources

In order to raise awareness of some of the issues surrounding food waste behaviours and attitudes, and to educate consumers about effective ways to reduce their households' food waste, respondents were asked to indicate whether they had previously sought information on food related issues. This provided a comprehensive list of potential communication channels for the Love Food Hate Waste program.

Section snapshot

Current and potential information sources

51% of respondents had sought information about food related issues in the past six months. Of these respondents, the majority (77%) had used the internet and recipe and/or cook books (74%). Similarly, amongst the 49% of respondents that had not sought information recently, the internet was listed as the most likely potential information source (74%), followed again by recipe and/or cook books (59%).

Changing behaviour through information sources

When asked about changing their current behaviour, 56% of respondents indicated they would be willing to visit a website in order to reduce the amount of food waste produced by their household. Many (51%) also indicated they would be willing to ask a friend or family member for advice on how to reduce their food waste.

Reliability of information sources

When asked which sources of information respondents found to be reliable in terms of food related issues, health professionals, food publications, family and friends and consumer advocacy groups were seen to be the most reliable (with 67% or more nominating each source as 'reliable'). 73% of respondents believed that the NSW government had a role to play in assisting NSW residents in reducing the amount of food they waste and 45% saw NSW Government environment agencies as a reliable source of information about food related issues.

Detailed section findings

Incidence of seeking information

Q24. In the past six months have you looked for information about food and related issues e.g. cooking, storage, nutrition, specials, recipes ideas, waste? (Yes/No)

Respondents were asked if they had sought information on food related issues in the last six months. 49% of respondents claimed to have looked for information about food related issues in the last six months. This may have involved information on cooking, storage, nutrition, specials, recipe ideas or food waste.

Women were more likely to have sought information about food related issues with 58% reporting they had done so in the past six months. Those living in shared households were also more likely to have recently sought information (67%).

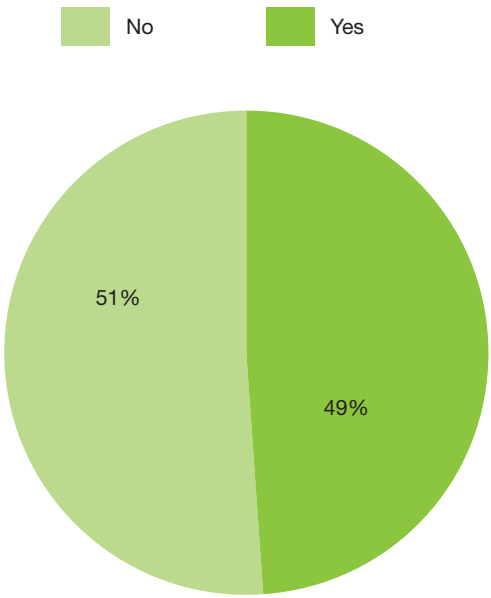

Figure 24: Percentage of respondents who sought food related information in the past six months
Base: all respondents (n=1,200).

Sources used for food related information

Q25. What was your main source for this information? (Fourteen categories presented).

Respondents who indicated they had sought information on food related issues in the last six months were then asked to indicate where they sought this information. The internet was the most popular source of information, with more than one in two respondents saying it was their main source of information (51%). Overall, 77% of those who had sought information in the last six months claimed they had used the internet (in terms of the main and other sources used combined) (Table 27).

Recipe books and/or cook books were also a valuable source of information amongst these respondents, with 74% indicating they had used them and 24% using them as their main source of information on food.

More than one in two (53%) of those who had sought information on food related issues reported to have turned to lifestyle TV programs, such as Better Homes and Gardens and cooking shows, for information on food.

Table 27: Sources used for food related information

Source	Main source (%)	Total source (%)
The Internet	51	77
Recipe/cook books	24	74
Lifestyle TV programs (e.g. Better Homes & Gardens, cooking shows)	10	53
Newspaper and magazine articles	6	37
Family and friends	4	35
Other TV programs (including news, current affairs, documentaries)	2	17
Advertising and promotional materials	1	13
Community events including food festivals	1	9
The local library	1	5
Courses e.g. cooking	-	4
Radio	-	4
Council brochures/information	1	4
Diet/nutritional advice	-	0
Other (specify)	1	1

Base: respondents who sought information (n=630).

Willingness to seek information through new channels

Q23. Overall, how willing would you say that you are to make changes in the following areas in order to reduce the amount of food waste that your household produces? (Twelve categories presented).

Respondents were asked if they were willing to change some of their behaviours in order to reduce the amount of food they wasted. Few respondents (1% to 4%) indicated they were already using one of the presented sources of information to reduce food waste, and it can be seen that respondents had lower willingness to adopt these information seeking activities (Figure 25).

Respondents were most willing to visit a website for more information (56% indicated they were at least quite willing) or ask someone for information (51% reported they were at least quite willing). Respondents that did not complete secondary school were significantly less willing to do either of these activities; with just 45% indicating they would visit a website and 35% indicating they would ask someone else for advice. CALD respondents were more willing to ask someone they know for advice (57%).

Respondents were not as willing to attend a local event about food, with almost one half (49%) indicating they were ‘not particularly’ or ‘not at all’ willing. Similarly, attending a kitchen skills workshop was not a popular choice of information, with over one half (56%) indicating they were ‘not particularly’ or ‘not at all’ willing to attend.

However, those aged 25–39 years were somewhat willing to attend a kitchen skills workshop, with 46% indicating they were ‘extremely’, ‘very’ or ‘quite willing’ (compared to 36% of overall respondents). This age group were also more willing to attend a local event about food (52% compared to 42% of all respondents). Similarly, CALD respondents were at least ‘quite willing’ to attend a kitchen skills workshop (46%) or a local event about food (54%). Additionally, respondents from large country towns indicated they would be willing to attend a workshop (45%).

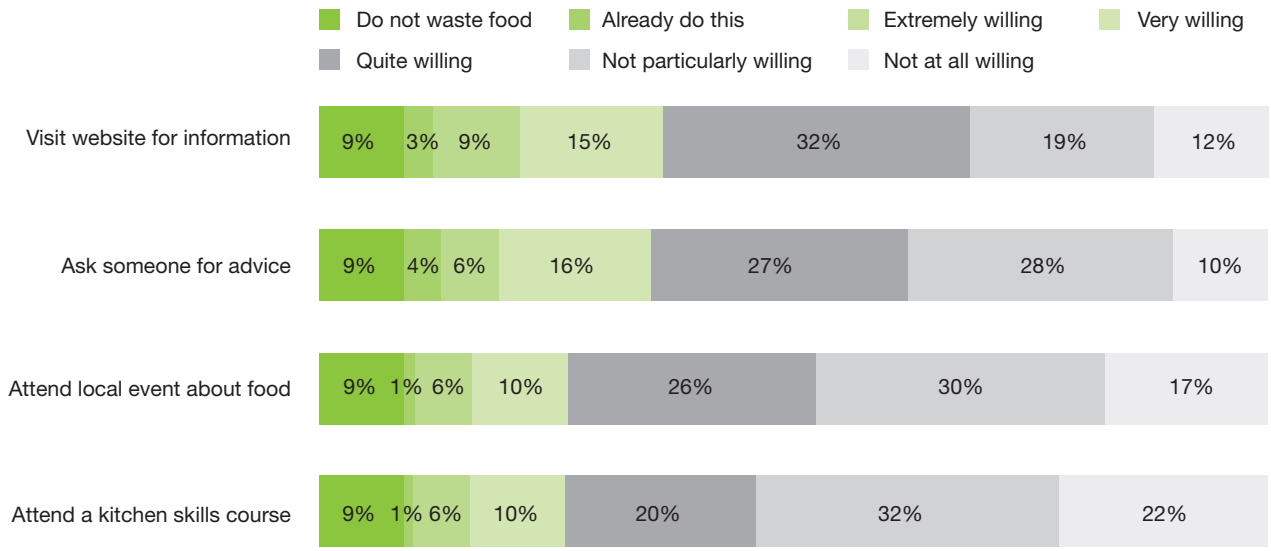

Figure 25: Willingness to seek information through new channels
Base: all respondents (n=1,200).

Potential sources of information

Q26. If you were interested, what would be your main source for information about food and related issues e.g. cooking, storage, nutrition, specials, recipes ideas, waste? And what other sources would you use? (Fourteen categories presented).

For those who had not sought information recently about food, a similar question was asked in terms of sources they would use if they did have a need for it. In total, the internet was the most likely source to be considered amongst these respondents, with 52% indicating it would potentially be their main source of information, and 74% indicating it as one of the sources they would use (Table 28).

As with those who already sought information, a high proportion of respondents also suggested that they would most likely use recipe and cookbooks (59%) and lifestyle TV programs (52%).

Those who did not complete secondary school were more likely to indicate they would ask family and friends about food related issues (24% compared to 11% of all respondents). CALD respondents were also more likely to ask family and friends for this information in the future (19%).

Table 28: Potential sources of information

Source	Main source (%)	Total source (%)
The Internet	52	74
Recipe/cook books	11	59
Lifestyle TV programs (e.g. Better Homes & Gardens, cooking shows)	10	52
Family and friends	11	47
Newspaper and magazine articles	3	25
Other TV programs (including news, current affairs, documentaries)	1	19
Council brochures/information	2	14
Courses e.g. cooking	3	12
Advertising and promotional materials	1	12
Community events including food festivals	-	9
Radio	1	9
The local library	2	9
Other (specify)	-	0

Base: respondents who had not sought information (n=570).

Perceived reliability of various information sources

Q27. How reliable would you find the following as potential sources of information about food and related issues e.g. cooking, storage, nutrition, specials, recipes ideas, waste? (Five categories presented).

Respondents were asked to indicate the level of reliability for a range of potential sources of information about food related issues by using a five point scale from 'very reliable' to 'very unreliable'.

The most trusted of the options presented were health professionals or health authorities (both with a mean of 3.9). Food publications, family and friends and consumer advocacy groups (such as CHOICE) were also seen to be reliable sources (each with means of 3.8) (Figure 26).

NSW Government health agencies were seen as a quite reliable source (mean=3.6). NSW Government environment agencies were eleventh out of the fifteen sources listed, with a mean of 3.3.

Consumer advocacy groups such as CHOICE polarised various segments, with CALD consumers finding them less reliable than most consumers (mean=3.6, overall mean=3.8). Those over 55 years of age indicated consumer advocacy groups were particularly reliable (mean=4.0, overall mean=3.8). 18–24 year olds found consumer advocacy groups less reliable (mean=3.4, overall mean=3.8), but encouragingly they indicated that they found NSW Government environment agencies particularly reliable (mean=3.5, overall mean=3.3).

Those who did not complete secondary school indicated they found health professionals less reliable (mean=3.7, overall mean=3.9), but they did report family and friends as a more reliable source (mean=4.0, overall mean=3.8).

Women also put more trust in family and friends that men (mean=3.9 for females, 3.7 for males). Similarly, women indicated they found NSW Government health agencies more reliable than men (mean=3.7 for females, 3.5 for men).

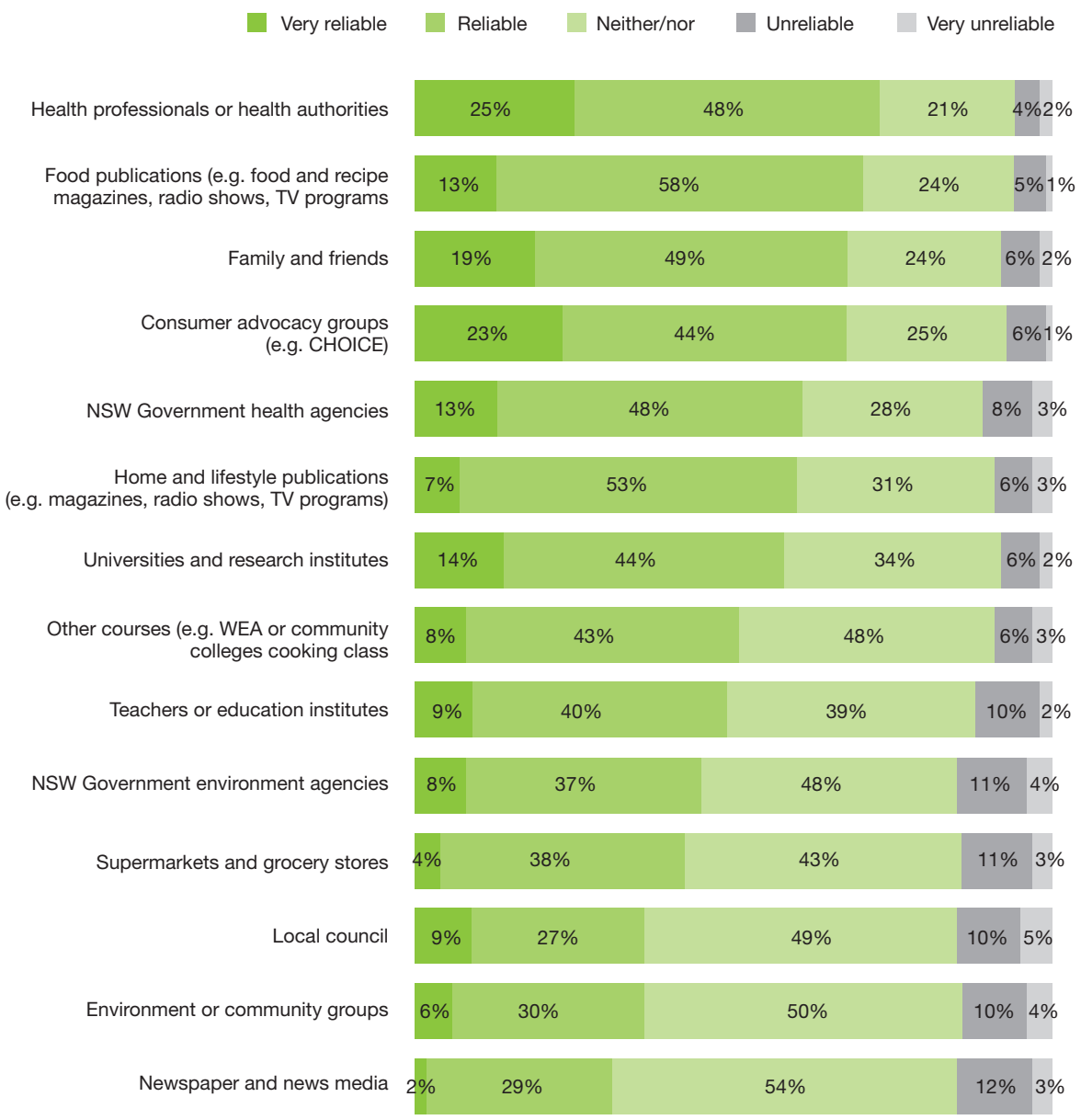

Figure 26: Perceived reliability of a variety of information sources
Base: all respondents (n=1,200).

Role of the NSW Government

Q28. Do you think the NSW Government should have a role in assisting the people of NSW to reduce the amount of food they waste? (Yes/No).

Respondents were asked if the NSW State Government should have a role in assisting people to reduce the amount of food wasted. The majority (73%) of respondents believed that the NSW Government should have a role to play in this area.

Interestingly, those who did not complete secondary school indicated that they strongly believed the NSW Government had a role to play in assisting NSW residents reduce their food waste (80%), as did those living in shared households (84%).

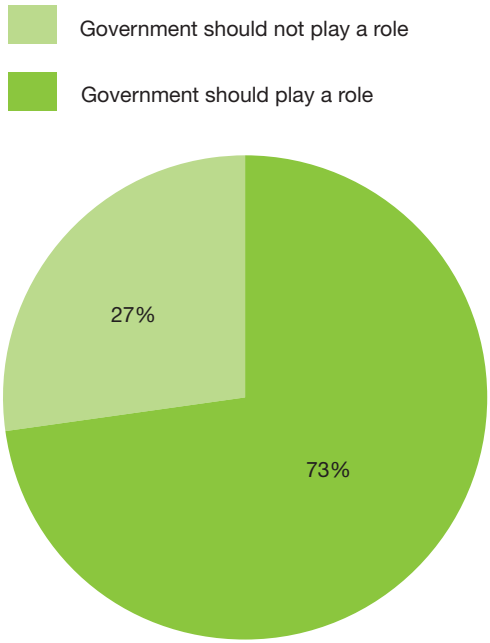

Figure 27: Role of the NSW government in assisting the community to avoid food waste
Base: all respondents (n=1,200).

Summary and conclusions

Perceived relative importance of food waste

In relation to other areas of household wastage, food is clearly a prevalent form of household waste, with just under half of respondents indicating that they wasted food (49%). However, the level of concern about wasting food was reportedly lower than concern over wasted electricity and interest paid on credit cards.

This suggests that while food waste was recognised to some degree, a discrepancy emerged between the amount respondents think they are throwing away and the quantity they actually are throwing away.

Despite the fact that many recognised that they were wasting food, by far the largest amount of household waste was perceived to come from packaging (and not food). In fact, only 13% of respondents correctly identified that food waste was the largest component of the household garbage bin (by weight).

It followed that only 14% of respondents felt that they were throwing away more uneaten food than they should, yet the average dollar amount of food being wasted by a typical NSW household was calculated to be $1,036 per year. This is a significant dollar value considering the low personal amount of food that respondents are claiming to throw away.

Attitudes to food waste

Respondents commonly believed that Australians do waste food, but many felt that food given to pets was not wasted. Respondents also tended to feel that it is easy to make meals from ingredients that need using up and that cooked food should not be eaten after being frozen for a year or more.

In terms of the environment, many respondents agreed that the energy and nutrients that are used to grow, process and transport food is lost if not eaten. However, there was not a general consensus that wasting food contributes to climate change.

Food waste behaviour

In terms of volume, respondents estimated that they wasted, on average, 6.7L of food and drink per week. The high level wasting groups include:

- those aged 18–24 years
- those aged 25–39 years
- household with a high income >$100,000
- families with children
- those who did not complete secondary school
- those from Culturally and Linguistically Diverse backgrounds (CALD)
- Sydney respondents.

In value terms, respondents estimated that their household wasted $19.90 worth of food per household, per week. This is equivalent to $2,556 million of food waste per year across the state of NSW.

Barriers to behavioural change

The main reasons given for household food waste were food being left in the fridge or freezer for too long and household members not always finishing their meals. Other key reasons were, food going off before the use by or best before date, being purchased on sale and therefore not lasting as long, cooking too much food and family members changing their plans.

Willingness to change behaviour

There was some willingness to change planning and shopping behaviour among more than a quarter of respondents. There was also some willingness to cook the right amount, use leftovers and change the way food is stored.

Respondents were less willing to start a compost or worm farm. There was also generally much less willingness to seek out information or advice to reduce the amount of food waste produced.

Areas of opportunity

Raising awareness about the financial impacts of wasting food

In general, respondents did not feel that they were significant wasters of food. Even so, the estimated average dollar amount of food wasted for a typical NSW household was $620. More importantly, reported behaviour showed that the average waste for the respondent base was valued in excess of $1,000. This suggests a clear need to educate people about the monetary value of food that is thrown away.

The environment

Results show that less than half of all respondents agreed that wasting food contributes to climate change, while around two thirds agreed that the energy, water and nutrients used to grow, process and transport food are lost, if food purchased goes uneaten. The Love Food Hate Waste program has a role to educate the community and to make the connections between food production, consumption, disposal and the associated environmental impacts.

There was reluctance to start a compost or worm farm (37% were either ‘not at all’ or ‘not particularly’ willing to do this). Education in this area may assist in the adoption of more environmentally sound disposal methods when waste is produced.

Knowledge

While knowledge of avoidable and unavoidable food waste was reasonably high (an average of 5.8 correct out of a possible 9), there is an opportunity to improve this, particularly in relation to fruit and vegetable peelings, tea bags or coffee grinds and meat bones. Doing so will help highlight the extent of food waste that actually takes place in households.

While knowledge of food labels was also reasonably high, younger participants were more likely to treat ‘best before’ labels as definitive ‘use by’ labels, and therefore throw away food that had reached or exceeded it. Improving knowledge in this area will potentially reduce unnecessary wastage amongst this segment.

Planning

Only 35% of all respondents indicated that they ‘always’ or ‘mostly’ plan the meals that will be cooked in the next few days, while just over one half ‘always’ or ‘mostly’ write a list and stick to it as much as possible when shopping. Younger respondents were less likely to do either activity.

Less than half indicated that they ‘always’ or ‘mostly’ consider portion sizes when preparing meals, while one fifth ‘always’ or ‘mostly’ make extra just in case.

Improvements in pre-planning meals, cooking to match the number of household members and the relevant serving sizes would have an obvious impact in reducing food waste, as leaving food in the fridge/freezer too long and cooking too much food, were two of the key reasons given for household food waste.

Summary of key wastage segments

This section outlines the demographic groups that were identified to waste significantly more food and drinks than the total group. It is highlighted below where these groups significantly differ from the overall group in their attitudes, knowledge, behaviour and willingness to change.

Young people (18–24 years) threw away, on average, 7.6L of food (and drink) a week – 13% of food decision makers

Young people aged 18–24 years are a group with great potential to improve their food waste avoidance behaviours. Young respondents claimed to be concerned about food waste (57%, compared to 47% overall), yet were more likely to acknowledge that they threw out more garbage than they thought they should (24%, compared to 16% of all respondents).

Young people were also more likely to believe that food comprises the largest type of waste in the average household garbage bin (23%, compared to 13% of all respondents) and to indicate that they put 'all' or 'most' of their uneaten food in the garbage bin (55%, compared to 46% overall).

In addition, this group was less likely to correctly understand date labels, with many perceiving 'best before' dates, as 'use by' dates (63% correctly identified the meaning of best before dates compared to 70% of all respondents). As a result, young people were more likely to throw out fresh food and unopened packaged food that had passed the best before date without checking it.

Young people were more likely to believe that a busy lifestyle makes it hard to avoid wasting food (51% compared to 38% of all respondents). They also indicated that they found it harder to use ingredients that need using up (63% indicated they found it easy compared to 76% overall).

Young people indicated that they were less likely to think carefully about how much food they would use when they purchased it. They were also more likely to buy in bulk and to purchase fresh food based on value rather than how much they planned to use. They were less likely to shop to a predefined budget and less likely to consider portion sizes. However, young respondents indicated they were more willing to cook the right amount of food in the future to reduce the amount of food they waste (72%, compared to 64% of all respondents).

The best approach to reducing the food waste generated by this group may be to focus on developing the skills required to buy and cook the right amount of food.

People aged 25–39 years threw away, on average, 7.7 L of food (and drink) a week – 28% of food decision makers

Respondents aged 25–39 years were not as concerned about food waste (44% indicating they were at least concerned 'a fair amount', compared 47% of all respondents), and were more likely to recognise food to be the major contributor to household waste (19% indicated it was the biggest contributor, compared to 13% overall). This group was also significantly more likely to admit they threw out 'more' or 'much more' general garbage than they thought they should (21% compared to 16%). However respondents aged 25–39 years were more knowledgeable when it came to identifying the types of food waste that are avoidable and unavoidable, with an average score of 5.9 compared to the overall mean of 5.8 out of a possible 9.

This group wasted significantly more leftovers (2.3L per week compared to 1.7L per week) and drinks (0.6L per week compared to 0.4L per week) and estimated that the average NSW household wasted significantly more food ($685 compared to $620).

When shopping for food, 25–39 year olds were less likely to buy fruit and vegetables based on value, preferring to only buy what they need. However, this group was less likely to write a list and stick to it as much as possible when shopping (46% indicated they did so, compared to 53% overall). Similarly, 25–39 year olds were less likely to plan meals in advance (27% compared to 35% overall).

Cooking meals from assorted ingredients appeared to be difficult for this group, as they were less likely to 'agree' or 'strongly agree' that it is easy to make meals out of assorted ingredients that need using up (67% compared to 76% of all respondents). They also indicated that they cook meals from raw ingredients less frequently (3.2 compared to 3.7 days per week for all respondents) and buy takeaway food more frequently (1.1 compared to 0.9 days per week). Additionally, when this group cooked meals, they were significantly more likely to cook more 'just in case'. Cooking extra just in case could be one reason why this group was also significantly more likely to throw out leftovers that had been stored in the fridge.

This group was more willing to start a worm or compost farm (47% compared to 33% of all respondents), and to attend a kitchen skills workshop (46% compared to 36%) or a local event about food (52% compared to 42%). These approaches could provide an avenue for improving the way 25–39 year olds plan meals and cook the right portions to reduce the amount of leftovers and unused food they waste.

Higher-income households ($100k+) threw away, on average, 7.5L of food (and drink) – 9% of food decision makers

Respondents with a household income of over $100,000 per year were aware of their food waste habits, with a significantly higher number (60%) initially indicating that they spent money on food that was rarely or never used (compared to 49% overall). Furthermore, one in four (25%) respondents from higher-income households recognised that they threw out more general garbage than they thought they should (compared to 16% of the total sample).

To reduce the amount of food they waste, higher-income households may need to change their shopping and planning behaviours. When shopping, this group was less likely than the total sample to think carefully about how much food would be used and less likely to shop to a strict budget. In addition, respondents from higher-income households indicated they frequently cook extra food for upcoming meals.

While higher-income households are aware of their food wasting behaviour, highlighting the costs of food waste is unlikely to influence their attitudes or behaviours. Communicating the environmental impacts of food waste may be the most effective strategy for this group.

Families with children threw away, on average, 8.4L per week – 30% of food decision makers

Families with children are aware that they throw out more general garbage than they should (with 23% indicating they throw out 'more' or 'much more' than they think they should, compared to 16% of all respondents), and that they throw out more food than they should (17% compared to 14%). More than half of the families with children (55%) initially indicated that they spent money on food that was 'rarely' or 'never' used (compared to 49% overall).

This group was significantly more likely to correctly identify the meaning of 'use by' dates (72%, compared to 64% of all respondents). Additionally, families with children were significantly better at accurately categorising food waste as avoidable and unavoidable (scoring 6.0 out of possible 9, compared to 5.8 for all respondents).

Families with children indicated that they were more likely to only buy fruit and vegetables according to how much they will need, rather than based on value, and that they were more likely to plan meals in advance and use a shopping list. However, this group was less likely to check 'use by' and 'best before' dates when shopping.

This group may have difficulty in cooking the right amount of food as they were significantly more likely to make extra just in case. Families with children also throw out leftovers that have been kept in the fridge more frequently than respondents overall.

To reduce the amount of food wasted by families with children, the best approach may be to focus preparing appropriate portion sizes when cooking. Furthermore, encouraging this group to use the freezer to store leftovers may lead to less food being thrown out after being kept in the fridge for too long.

People who had not completed secondary school threw away, on average, 7.8L of food (and drink) per week – 16% of food decision makers

This group was particularly concerned about the amount of general garbage they threw out (with 29% indicating they threw out 'more' or 'much more' than they thought they should, compared to 16% of all respondents).

People who had not completed secondary school were less knowledgeable about 'use by' dates, with 38% indicating that foods are still safe to eat after this date as long as they are not damaged, deteriorated or perished (compared to 29% of all respondents).

This group was also less confident about cooking, with significantly fewer of these respondents indicating that they found it easy to use ingredients that need using up (70% compared to 76% overall). They also indicated they found it difficult to know the correct portion sizes to cook (44% compared to 28%), and would rather serve too much food than not enough (75% compared to 48%).

Also, people who had not completed secondary school were less likely to write a list and stick to it, with 42% indicating they currently did so compared to 53% of all respondents.

When it came to the environment, this group was more concerned about future generations (32% compared to 23% of all respondents). Highlighting the impact that food waste in landfills will have in the future could be an important way to encourage this group to avoid food waste. People who had not completed secondary school were less likely to indicate that the energy, water and nutrients used to grow and transport food would be lost if food is purchased but not eaten (62% compared to 67% of all respondents). This may be one way of highlighting the environmental impacts of food waste to this group.

Overall, these respondents were less likely to have sought information on food related issues recently (31% compared to 58% of all respondents).

Respondents from Sydney threw away, on average, 7.1L of food (and drink) per week – 63% of food decision makers

Respondents living in Sydney were a significant proportion of our total sample. Compared to Sydneysiders, those living in small country towns and rural areas wasted an average of 5.2L per week. Similarly, those living in larger country towns as well as the metropolitan areas of Wollongong and Newcastle wasted less food than Sydneysiders, with 6.5L and 5.3L per week respectively.

People from a culturally and linguistically diverse (CALD) background threw away, on average, approximately 9.1L of food (and drink) – 21% of food decision makers

Respondents in this segment identified themselves as being from a non-English speaking background and that they spoke a language other than English (as their main or second language). This group differed from the total population on a number of factors, such as being more likely to have responsibility for food purchasing (with 89% indicating they are responsible, compared to 81% of respondents overall). This group were generally younger: significantly more respondents from CALD backgrounds fell into the 18–24 year old category (20% compared to 13% of all respondents). A significant number (85%) of the CALD respondents lived in Sydney (compared to 63% overall), and their household was more likely to be made up of a family with children (42% compared to 33% overall). These respondents were also highly educated, with 42% indicating they have tertiary level qualifications such as a university degree (compared to just 30% of the total sample).

One in five (21%) CALD respondents indicated that they believe food is the largest type of waste in an average household garbage bin (compared to just 13% of all respondents) and they were significantly more likely to identify that they threw out more general garbage than they thought they should (22% compared to 16%).

CALD respondents appeared to be distinct from the total sample in five broad areas:

Health concerns

CALD respondents were more likely to indicate their main environmental concerns were the health effects of pollution (26% compared to 16% of respondents overall), and their quality of life (25% compared to 18%).

This group was also more concerned about the storage life of cooked food, with 27% indicating that cooked leftovers that were stored in the fridge for more than one day were unsafe to eat (compared to 22% of respondents overall). Furthermore, they were less likely to believe that cooked items could stay in the freezer for more than one year, with 56% disagreeing that this was the case compared to 49% of respondents overall. However, CALD respondents were more likely than other respondents to use blemished fruit and vegetables.

Knowledge of food related issues

59% of CALD respondents correctly identified the meaning of 'best before' dates (compared to 70% of all respondents) and 38% of CALD respondents believed that food must be eaten or thrown out by the 'best before' date (compared to 23%). This attitude carried over into their behaviour, with CALD respondents indicating they were significantly less likely to check unopened packaged food that was past the 'best before' date before throwing it out.

CALD respondents were less knowledgeable than the total sample when it came to identifying the types of food waste that are avoidable and unavoidable, with an average score of 5.2 out of 9 (compared to the overall average of 5.8).

Planning ahead

CALD respondents indicated they were more likely to do smaller shops rather than one big shop. This group was less likely to write a list and stick to it, with 38% indicating they did this 'always' or 'most times' (compared to 53% of respondents overall). When asked about willingness to change behaviours to reduce the amount of food wasted, CALD respondents were less willing than other respondents to use a shopping list in the future, with 15% indicating they were 'not particularly' or 'not at all' willing (compared to 8%). However, they were more likely to indicate their willingness to write a list based on a menu plan, with 62% indicating they would be willing to do this compared to 55% of respondents overall.

As CALD respondents were more likely to believe that a busy lifestyles make it hard to avoid wasting food (48% compared to 38%), it may be useful to communicate to this group how planning ahead and using a list can save time for those who are busy.

Using and storing leftovers

CALD respondents were less likely than respondents overall to store leftovers in the freezer to consume later and significantly more likely to eventually throw out leftovers they had saved in the freezer.

CALD respondents indicated they ate leftovers from a previous day more frequently than respondents overall, at an average of 1.8 days per week (compared to 1.3 days per week). However, this group was less likely to identify that the main reason for their food wastage was leaving food in the fridge or freezer too long (12% indicated it was the main reason, compared to 18% of all respondents).

To reduce the amount of food wasted by this group, the best approach may be to address their health concerns about the storage life of different food types in the fridge and freezer, and to encourage people from a CALD background to use the freezer to store their leftovers.

Sources of information

CALD respondents trust their friends and family when it comes to food related issues. This group did not perceive consumer advocacy groups, such as CHOICE, to be as reliable as did respondents overall. Of the respondents who had not sought information about food related issues recently, the CALD group was more likely to indicate that they would ask family and friends for information (19% compared to 11%).

57% of CALD respondents indicated that they would be willing to ask someone they know for advice (compared to 51% of all respondents). Furthermore, this group was also more willing to attend a kitchen skills workshop (46% compared to 36%) or a local event about food (54% compared to 42%).

Making use of community networks and other high-involvement programs may be an effective way of working with the CALD community on food waste avoidance initiatives.

Conclusion

The NSW Government's Love Food Hate Waste program will first need to address the issue that the majority of consumers do not realise how much food they are wasting. The program should initially focus on increasing awareness about the problem of food waste. The program should aim to 'close the knowledge gap' between the amount of food people think they are throwing away and the amount they are actually throwing away as well as the large amount of food waste that occupies landfills. Additionally, the dollar value that consumers estimate they are wasting should be highlighted.

The program should then focus on educating consumers about the specific issues relating to food waste that are currently causing confusion, such as:

- feeding uneaten food to animals and pets – this is a form of waste, but is largely considered not to be
- what are avoidable and unavoidable types of food waste – in particular, that scraps left on a plate after a meal are avoidable forms of waste
- the length of time that cooked food can be stored in the fridge and freezer
- the distinction between 'best before' and 'use by' dates.

Furthermore, the program should encourage consumers to:

- plan meals in advance
- think carefully about portion sizes at the point of purchase as well as when cooking.

Finally, some consumer segments that are currently wasting large volumes of food will need to be considered separately:

- culturally and linguistically diverse consumers may benefit from a high-involvement, community-focused approach that focuses on food (particularly cooked food) storage times and methods, correct disposal methods for uneaten food and increasing knowledge relating to end of use labels
- families with children should be encouraged to check the end of use labels when shopping and only cook the amount of food they will need by considering portion sizes when preparing meals
- young consumers, aged 18–24 years, need to be encouraged to only purchase food they know will be used, rather than purchasing based on value and bulk sizes. They need to consider portion sizes at the point of purchase as well as when cooking.

Additionally, highlighting the environmental issues surrounding food waste may raise awareness of the issue. This could result in further consideration of the issue in an everyday sense and assist in shifting attitudes towards food waste in NSW households, and potentially result in positive behavioural change.

Appendix 1

Food waste benchmark questionnaire

Today we are conducting a study about food storage and disposal. Please complete the survey by placing your answers in the spaces provided.

- use the 'forward' button to move to the next question
- use the 'back' button if you need to go back and correct a response
- use the 'X' button if you need to suspend the survey

Si. Please enter your post code: ___ ___ ___ ___ CHECK QUOTAS

Sii Where do you live?

Sydney	1
Newcastle	2
Wollongong	3
Large country town (population over 15,000)	4
Small country town (population between 3,000 and 15,000)	5
Country rural area	6

Siii. Please indicate your gender:

Male	1
Female	2

Siv. Please type in your current age: _____ CHECK QUOTAS

Sv. Please indicate if you are the person who is mainly responsible, or equally responsible, for each of the following activities in your household:

	Yes	No
Food purchasing	1	2
Cooking/food preparation	1	2
Food storage (i.e. of grocery items and leftovers)	1	2

CONTINUE IF CODE 1 FOR ANY OF THE ABOVE

Q1a. In general, how concerned would you say that you are about environmental problems?

A great deal	1
A fair amount	2
A little	3
Not really concerned	4
Not at all concerned	5

Q1b. Please indicate which one (1) of the following you are most concerned about:

Health effects of pollution	1
Quality of life	2
Concern for future generations	3
Long-term economic sustainability	4
Maintaining eco-systems – nature, plants and animals	5
Availability of resources we consume	6

Q2a. People sometimes spend money on household goods and services that are never or rarely used. Please indicate whether your household ever does any of the following:

	Yes	No	Don't know
Use more electricity than is necessary	1	2	3
Buy food that gets thrown away before being eaten	1	2	3
Buy books, magazines, CDs and/or DVDs that are rarely or never used	1	2	3
Buy clothes and other personal items that are rarely or never used	1	2	3
Pay interest on credit card purchases	1	2	3

Q2b. FOR EACH CODE 1 AT Q2a: And how concerned would you say that you are about each of the following?

	A great deal	A fair amount	A little	Not at all
The amount of electricity that your household uses that could be saved	1	2	3	4
The amount of food that gets thrown away before being eaten in your household	1	2	3	4
The number of books, magazines, CDs and/or DVDs in your household that are rarely or never used	1	2	3	4
The amount of clothes and other personal items in your household that are rarely or never used	1	2	3	4
The amount of money your household spends on interest for credit card purchases	1	2	3	4

Q3. How much general garbage including recycling, furniture, clothing and other types of unwanted materials do you think your household usually throws away?

Much more than you should	1
More than you should	2
A reasonable amount	3
Very little	4
None	5

Q4. How much uneaten food would you say that your household usually throws away?

Much more than you should	1
More than you should	2
A reasonable amount	3
Very little	4
None	5

Q5. What do you think is the largest type of waste in the average household garbage bin?

Packaging	1
Food	2
Garden clippings	3
Paper	4
Other (Specify) _____	5

Q6. Approximately how much would you estimate that the average NSW household spends on food that is purchased but never eaten each year?

$100	1
$200	2
$300	3
$400	4
$500	5
Over $600	6
Other (Specify) _____	7

Q7a. In regard to food labels, which of the following do you think best describes what is meant by the 'use by' date? SINGLE RESPONSE (INCLUDE VISUAL IMAGE OF LABEL)

Q7b. And which of the following do you think best describes what is meant by the 'best before' date? SINGLE RESPONSE (INCLUDE VISUAL IMAGE OF LABEL)

	USE BY	BEST BEFORE
Foods must be eaten or thrown away by this date	1	1
Foods are still safe to eat after this date as long as they are not damaged, deteriorated or perished	2	2
Foods must be sold at a discount after this date	3	3
Other description for 'use by' (Specify) _____	4	
Other description for 'best before (Specify) _____	5	

Q8. How much of your uneaten food (such as vegetable peelings, plate scrapings and spoiled food, before and/or after preparation) is disposed of in the following ways?

	None	A little	About half	Most	All
Home compost or worm farm	1	2	3	4	5
Household garbage bin	1	2	3	4	5
Sink, toilet or drain	1	2	3	4	5
Sink disposal unit (e.g. In-Sink-Extractor)	1	2	3	4	5
Fed to pets/animals	1	2	3	4	5
Specialised food/garden collection service	1	2	3	4	5
Other (specify)	1	2	3	4	5

Q9. If each of the following foods were to be thrown into the garbage bin at home, which would you consider to be waste that **could** be avoided, or waste that could not be avoided? ROTATE ORDER

Waste that **could** be avoided = waste that would not have been produced if the food was better managed

Waste that **could not** be avoided = waste that would be produced regardless of how well the food was managed

	Waste that could be avoided	Waste that could not be avoided	I do not consider this to be waste
Fruit and vegetable peelings	1	2	3
Old frozen food	1	2	3
Spoiled fresh produce (e.g. fruit, vegetables, dairy or meat)	1	2	3
Scraps left on the plate after a meal	1	2	3
Unfinished drinks	1	2	3
Unserved portions left after a meal	1	2	3
Meat bones	1	2	3
Out-of-date packaged food	1	2	3
Tea bags or coffee grinds	1	2	3

Attitudes and Knowledge

Q10. Please move each 'slider' to indicate where you personally feel that you fit between the two statements presented. If, for example, the statement on the left fully describes you, you would move the 'slider' as far to the left as possible. **USE SLIDER FEATURE**

When I buy items that don't get used I feel guilty	1	2	3	4	5	When I buy items that don't get used it doesn't bother me
When shopping, I think carefully about how much I will use	1	2	3	4	5	When shopping, I rarely think about how much I will use
I often find that things I've bought don't get used	1	2	3	4	5	I hardly ever find that things I've bought don't get used
When I go food shopping I do a large shop to last until next time	1	2	3	4	5	When I go food shopping I buy small amounts regularly
I plan meals in advance and shop to a strict list	1	2	3	4	5	I don't usually plan meals and decide what I need while shopping.

Q11. Below is a list of statements about food. Please indicate the extent to which you agree or disagree with each of them.

	Disagree strongly	Disagree	Neither agree nor disagree	Agree	Agree strongly
Food that could have been eaten by people is not wasted if it is fed to the pets or composted	1	2	3	4	5
Wasting food contributes to climate change	1	2	3	4	5
Australians don't waste much food	1	2	3	4	5
The energy, water and nutrients that are used to grow, process and transport food are 'lost' if food is purchased but not eaten	1	2	3	4	5
People who are disorganised or lazy waste more food than organised people	1	2	3	4	5
Busy lifestyles make it hard to avoid wasting food	1	2	3	4	5
As long as cooked food items remain frozen they can be stored for a year or more in the freezer	1	2	3	4	5
Leftovers that have been kept in the fridge for more than one day are unsafe to eat	1	2	3	4	5
It is easy to make meals from assorted ingredients that need using up	1	2	3	4	5

General Behaviour

Q12. Please move each 'slider' to indicate where you feel that you fit between the two statements presented. If, for example, the statement on the left fully describes you, you would move the 'slider' as far to the left as possible. **USE SLIDER FEATURE**

I throw out fruit or vegetables that are blemished or wilted	1	2	3	4	5	I don't mind what fruit or vegetables look like and use them anyway
I throw out any food that is mouldy	1	2	3	4	5	I cut off the mouldy parts of food and use the good parts
I throw out bread as soon as it becomes dry	1	2	3	4	5	I still use or freeze bread if it is dry for toast, breadcrumbs or cooking recipes
I throw out packaged food that hasn't been opened but has passed the 'best before' date	1	2	3	4	5	I check unopened packaged food if it has passed the 'best before' date and still use it if it looks and smells the same
I throw out fresh food if it is on or past the 'use by' date	1	2	3	4	5	I consider the 'use by' date as a guide and still use the food a day or two later if it looks and smells the same
When I buy fresh fruit and vegetables I try to only buy the amount I need (such as by looking for items available loose rather than pre-packed)	1	2	3	4	5	When I buy fresh fruit and vegetables I buy the best value even if it is more than I need
The current economic climate means I am careful about buying only foods that I know will be used	1	2	3	4	5	I buy foods that I like and do not consider if they will be completely eaten when I purchase them

Behaviour

The following questions relate to the amount of food that you throw away in a normal week.

'Fresh food' includes fresh fruit, vegetables, salad items, herbs, bread, milk and dairy products, meat and seafood.

'Packaged and long life food' includes sweet and savoury biscuits, chips, rice, cereal, flour, coffee and tinned food.

'Frozen food' includes frozen vegetables and fruit, chips, ready made meals and frozen desserts.

'Leftovers' includes any uneaten food portions or ingredients remaining from a previous meal that can be eaten at a later date including take away meals, home cooked dinners or individual cooked ingredients like pasta.

'Home delivered and take away meals' includes meals which have been purchased, not prepared at home including pizza, Thai, Indian or Chinese food.

'Drinks' includes soft drinks, cordial, tea and coffee, juices, milkshakes and purchased bottled water (sparkling and still), but excludes alcohol.

Q13. In a normal week, please estimate the amount of money your household spends on the following food types. Please make your best estimate in whole dollars, and exclude expenditure on food purchased elsewhere e.g. at work or eating out

	Fresh food	Packaged & long life food	Frozen food	Home delivered/ take-away meals	Drinks
I never buy this	1	1	1	1	1
Less than $20	2	2	2	2	2
$20 - $49	3	3	3	3	3
$50 – $99	4	4	4	4	4
$100 - $149	5	5	5	5	5
$150 - $200	6	6	6	6	6
More than $200	7	7	7	7	7

Q14. **FOR EACH ASPECT AT Q13 WITH CODES 2 TO 7:** In a normal week, please estimate how much of the following food types your household throws away (including going to the compost, worm farm or pets).

Please use a 4 Litre (4L) ice cream container as the way of measuring this total, and include the amount, if any, that you composted or fed to animals. (SHOW IMAGE)

	Fresh food	Packaged & long life food	Frozen food	Home delivered/ take-aways	Left overs
None at all	1	1	1	1	1
Less than one 4L container	2	2	2	2	2
One 4L container	3	3	3	3	3
Two to four 4L containers	4	4	4	4	4
Five – seven 4L containers	5	5	5	5	5
More than eight 4L containers	6	6	6	6	6

Q15. **IF CODES 2 TO 7 FOR 'DRINKS AT Q13:** In a normal week, please estimate the volume of drinks your household throws away, including pouring in the sink, toilet, outside or other disposal methods.

Please use a 2 Litre (2L) drink bottle as the measurement. (SHOW IMAGE)

	Drinks
None at all	1
Less than one 2L bottle	2
One 2L bottle	3
Two to four 2L bottles	4
More than five 2L bottles	5

Q16. **FOR EACH ASPECT AT Q13 WITH CODES 2 TO 7:** In a normal week, please estimate the dollar value of each food type that your household purchased but threw away without being consumed (including going into the compost, worm farm or fed to pets). Please make your best estimate in whole dollars.

	Fresh food	Packaged & long life food	Frozen food	Home delivered/ take-away meals	Left overs	Drink
Less than $10	1	1	1	1	1	1
$10-$24	2	2	2	2	2	2
$25-$49	3	3	3	3	3	3
$50-$74	4	4	4	4	4	4
$74-$99	5	5	5	5	5	5
More than $100	6	6	6	6	6	6

Q17a. **SKIP IF CODE 5 AT Q4.** Please think about why food gets wasted in your household. Firstly, select the main reason that food gets wasted in your household. **SINGLE RESPONSE. ROTATE ORDER.** Now select all other reasons that apply.

	Main (Select one)	Others (Select all)
We buy too much food	1	1
We cook too much food	2	2
Food goes off before the ‘use by’ or ‘best before’ date	3	3
Food is left too long in the fridge and freezer	4	4
We don’t check the fridge, freezer and cupboard before going shopping	5	5
We tend not to plan meals in advance	6	6
We don’t tend to use leftover ingredients in other meals	7	7
We aren’t sure how to or can’t store food properly	8	8
Family members change their plans (then don’t turn up for dinner etc)	9	9
We like to eat the freshest food possible	10	10
We’re generally too busy to cook meals that we planned	11	11
Some household members don’t always finish their meal	12	12
Food bought on sale doesn’t always last long enough	13	13
Another reason (specify) _____	14	14

Q17b. **IF CODE 1 FOR STATEMENT 1 At Q17a:** What prevents you or your household from buying the amount of food you actually need?

I/we don't check the cupboard or fridge before shopping	1
I/we don't write a list	2
I/we forget to take our list	3
Think we need more food than we actually do	4
Tempted by supermarket specials e.g. 2 for 1	5
Lack of time or organisation to plan ahead e.g. no list, no meal plan	6
Size of food portions and packages is too large	7
Like fresh ingredients and don't keep older ingredients	8
Like to have more food or ingredients available than not enough	9
Other (specify) _____	10

Q17c. **IF CODE 1 FOR STATEMENT 2 AT Q17a:** What prevents you or your household from cooking the amount of food you actually need?

Preferable to serve too much rather than not have enough	1
Not sure how many people will be home for meals	2
Find it difficult to know how to cook the right portion sizes	3
Find it difficult to estimate how much to cook per person	4
Lack of time or organisation to plan ahead e.g. no meal plan	5
One or more household members have different food preferences or special dietary needs	6
I'm unsure about what visitor's food preferences will be	7
Other (specify) _____	8

Q17d. **IF CODE 1 FOR STATEMENT 8 AT Q17a:** What prevents you or your household from storing food to maximise its longevity?

Don't read storage instructions	1
Don't have appropriate storage containers	2
I'm unsure about the best way to store different food types	3
Food goes off before the use by or best before date	4
Lack of time and organisation	5
Tend to leave food products in the original packaging	6
Other (specify) _____	7

Q17e. **IF CODE 1 FOR STATEMENT 7 AT Q17a:** What prevents you or your household from re-using leftovers?

Forget about leftovers in the fridge and/or freezer	1
I'm unsure how to use leftover individual/assorted ingredients	2
Don't like eating leftovers	3
Health concerns about eating leftovers	4
Other (specify) _____	5

Behaviour – Food purchase, preparation and storage

Q18. In a normal week, on how many days does your household do the following?

	Never	Less than weekly	1-2 Days	3-4 Days	5-7 Days
Cook a main meal from raw main ingredients	1	2	3	4	5
Eat a meal left over from a previous day	1	2	3	4	5
Eat out or eat a takeaway (as a main meal)	1	2	3	4	5
Eat store-purchased ready made meals e.g.frozen dinners	1	2	3	4	5
Have all members of the household eat the same main meal	1	2	3	4	5

Q19. Before you or your household does your main food shopping, how regularly do you do the following?

	Never	Rarely	Some times	Most times	Always
Check what food is already in the house	1	2	3	4	5
Plan the meals to be cooked in the next few days	1	2	3	4	5
Write a list and stick to it as much as possible	1	2	3	4	5

Q20. How regularly do you or your household do the following when you are doing the grocery shopping?

	Never	Rarely	Some times	Most times	Always
Buy food according to a set budget	1	2	3	4	5
Buy food based on what is on special (including 2 for 1 deals)	1	2	3	4	5
Buy items 'in bulk'	1	2	3	4	5
Check the 'use by' or 'best before' dates before purchasing food items	1	2	3	4	5

Q21. How regularly do you or your household do the following when preparing a main meal?

	Never	Rarely	Some times	Most times	Always
Consider portion sizes and only make as much as you need	1	2	3	4	5
Make extra for a future planned meal (e.g. lunch or dinner the next day)	1	2	3	4	5
Make extra just in case it is needed	1	2	3	4	5

Q22. How regularly do you or your household do the following after main meals?

	Never	Rarely	Some times	Most times	Always
Save leftovers in the fridge and consume them afterwards	1	2	3	4	5
Save leftovers in the fridge and throw them out later	1	2	3	4	5
Save leftovers in the freezer and consume them afterwards	1	2	3	4	5
Save leftovers in the freezer and throw them out later	1	2	3	4	5
Dispose of leftovers immediately after the meal	1	2	3	4	5

Q23. **SKIP IF CODE 4 AT Q4.** Overall, how willing would you say that you are to make changes in the following areas in order to reduce the amount of food waste that your household produces?

	Not at all willing	Not particularly willing	Quite willing	Very willing	Extremely willing	Already do this
Plan a weekly menu	1	2	3	4	5	6
Use a shopping list	1	2	3	4	5	6
Write a shopping list based on a menu plan	1	2	3	4	5	6
Buy less extra food	1	2	3	4	5	6
Cook the right amount of food for meals	1	2	3	4	5	6
Change the way you store food	1	2	3	4	5	6
Use leftover food for other meals	1	2	3	4	5	6
Start a compost or worm farm	1	2	3	4	5	6
Attend a 'kitchen skills' workshop	1	2	3	4	5	6
Attend a local event about food	1	2	3	4	5	6
Visit a website to find more information	1	2	3	4	5	6
Ask someone you know for advice	1	2	3	4	5	6

Information

Q24. In the past six months have you looked for information about food and related issues e.g. cooking, storage, nutrition, specials, recipes ideas, waste?

Yes	1
No	2

Q25. IF CODE 1 AT Q24, ASK: What was your main source for this information?

SINGLE RESPONSE

And what other sources did you use?

	Main source (Select one)	Other sources (Select all that apply)
The Internet	1	1
The local library	2	2
Lifestyle TV programs (e.g. Better Homes and Gardens, cooking shows)	3	3
Other TV programs (including news, current affairs, documentaries etc.)	4	4
Council brochures/information	5	5
Radio	6	6
Family and friends	7	7
Courses e.g. cooking	8	8
Recipe/cook books	9	9
Newspaper and magazine articles	10	10
Advertising and promotional materials	11	11
Community events including food festivals	12	12
Other (specify) _____	13	13
No others	-	14

Q26. IF CODE 2 AT Q24, ASK: If you were interested, what would be your main source for information about food and related issues e.g. cooking, storage, nutrition, specials, recipes ideas, waste?

SINGLE RESPONSE

And what other sources would you use?

	Main source (Select one)	Other sources (Select all that apply)
The Internet	1	1
The local library	2	2
Lifestyle TV programs (e.g. Better Homes and Gardens, cooking shows)	3	3
Other TV programs (including news, current affairs, documentaries etc.)	4	4
Council brochures/information	5	5
Radio	6	6
Family and friends	7	7
Courses e.g. cooking	8	8
Recipe/cook books	9	9
Newspaper and magazine articles	10	10
Advertising and promotional materials	11	11
Community events including food festivals	12	12
Other (specify) _____	13	13
No others	-	14

Q27. How reliable would you find the following as potential sources of information about food and related issues e.g. cooking, storage, nutrition, specials, recipes ideas, waste?

	Very unreliable	Unreliable	Neither/nor	Reliable	Very reliable
NSW Government environment agencies	1	2	3	4	5
NSW Government health agencies	1	2	3	4	5
Local Council	1	2	3	4	5
Environment or community groups	1	2	3	4	5
Supermarkets and grocery stores	1	2	3	4	5
Newspapers and news media	1	2	3	4	5
Food publications (e.g. food and recipe magazines, radio shows, TV programs)	1	2	3	4	5
Home and lifestyle publications e.g. magazines, radio shows, TV programs	1	2	3	4	5
Celebrity chefs	1	2	3	4	5
Universities and research institutions	1	2	3	4	5
Health professionals or health authorities	1	2	3	4	5
Family and friends	1	2	3	4	5
Teachers or education institutions	1	2	3	4	5
Other courses e.g. WEA or community college cooking class	1	2	3	4	5
Consumer advocacy groups e.g. CHOICE	1	2	3	4	5

Q28. Do you think the NSW Government should have a role in assisting the people of NSW to reduce the amount of food they waste?

Yes	1
No	2

Classification

Qi. Which of the following best describes the outdoor area(s) available where you live?
MULTIPLE RESPONSE

Balcony	1
Small garden or courtyard	2
Large backyard	3
Small backyard	4
Front yard	5
Acreage	6

Qii. What is the main language spoken at home?

English	1
Cantonese	2
Mandarin	3
Arabic	4
Italian	5
Greek	6
Vietnamese	7
Spanish	8
Hindi	9
Korean	10
Tagalog	11
Other (specify)_____	12
Prefer not to indicate	13

Qiii. What, if any, second language is spoken at home?

No other language	1
English	2
Cantonese	3
Mandarin	4
Arabic	5
Italian	6
Greek	7
Vietnamese	8
Spanish	9
Hindi	10
Korean	11
Tagalog	12
Other (specify)_____	13
Prefer not to indicate	14

Qiv. Which one of the following best describes you?

In paid work (full time or part time - includes being self-employed)	1
Unemployed and looking for work	2
Student	3
Home duties	4

Retired/ Age pensioner	5
Other pensioner	6
Other (specify)	7

Qv. Which of the following best describes your household composition?

Single person household	1
Family with children	2
Family, only adults (16+)	3
Shared household, non-related	4
Other (specify) _____	5

Qvi. **IF CODES 2 to 5 AT Qv:** How many people in your household are in each of the following age bands?

0 to 6	_____
7 to 12	_____
13 to 17	_____
18 to 24	_____
25 to 34	_____
35 to 44	_____
45 to 54	_____
55 to 64	_____
65 plus	_____

Qvii. What is the highest level of education that you have completed?

No formal schooling	1
Primary school	2
Some secondary school	3
Completed secondary school (HSC, Leaving Certificate, etc.)	4
Trade or technical qualification (e.g. TAFE)	5
University or College of Advanced Education diploma, degree or higher degree	6
Prefer not to answer	7

Qviii. Which of the following best describes your household income before tax?

Less than $20,000	1	$80,000 to $99,999	5
$20,000 to $39,999	2	$100,000 to $149,999	6
$40,000 to $59,999	3	$150,000 or more	7
$60,000 to $79,999	4	Prefer not to indicate	8

Thank you very much for your time.

Appendix 2

Shared households

Those living in shared accommodation are also a group that is of interest in this report. They were more likely that the total sample to be young, with 29% being 18–24 years of age (compared to 13% of respondents overall). Shared households were most likely to be two person households, with over one in two (56%) indicating there were two people in the household (compared to 34% of all respondents). It was unlikely that those living in shared households had children, with 91% indicating they had no children. Interestingly, more than one in five (22%) respondents that lived in a shared household were unemployed or looking for work (compared to just 6% of all respondents). Additionally, they were less likely than the total sample to have completed secondary school (with 27% indicating they had completed 'some secondary school' compared to 16%).

The vast majority (93%) of those living in shared households were responsible for food purchasing (compared to 81% of respondents overall). They were also significantly more likely to be responsible for cooking in the household (97% compared to 79% of all respondents). These results indicate that those living in shared households are independent and are likely to take responsibility for all of the food-related behaviours themselves, rather than sharing duties with flatmates.

Appendix 3

Literature cited

Baker D, Fear J and Denniss R. 2009, *What a waste: an analysis of household expenditure on food*, Policy Brief No.6, The Australia Institute, Canberra.

Department of Climate Change (DCC) 2009, *Australia's national greenhouse accounts - national greenhouse gas inventory accounting for the KYOTO target*, Published by DCC, May 2009.

Department of Climate Change (DCC), 2009, 'Australia's national greenhouse accounts', National greenhouse gas inventory report 2007. DCC, Canberra

Department of Environment and Climate Change NSW 2009, Local government kerbside waste audit data from 2007–08, unpublished data.

Garnaut R, 2008, *The Garnaut Climate Change Review,* Cambridge University press, Australia.

Hamilton C, Denniss R and Baker D, 2005, *Wasteful Consumption in Australia.* Discussion Paper No.77, The Australia Institute, Canberra.

O'Neil P, James S and Crabtree L 2009, 'Sydney's food value chain: a discussion paper', presentation to the Hawkesbury Foundation Conference, Sydney, September 2009.

Recycled Organics Unit 2008, 'Greenhouse gas emissions calculator – waste', Unpublished report.